SHIRE OF DENMARK
TOWN PLANNING SCHEME NO. 3

HARLEQUIN STREET & SOUTH COAST HIGHWAY
LOCAL STRUCTURE PLAN

PREPARED FOR TURNER & WELLS
PTY LTD & DIBMWE PTY LTD

PREPARED BY WILLIAMS CONSULTING

WILLIAMS CONSULTING

28 April 2026 - Attachment 9.1.3a

ENDORSEMENT OF STRUCTURE PLAN

This structure plan is prepared under the provisions of Shire of Denmark Town Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

_____ Date

Signed for and on behalf of the Western Australian Planning Commission:

_____

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the *Planning and Development Act 2005* for that purpose, in the presence of:

_____ Witness

_____ Date

_____ Date of Expiry

TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment type	Date approved by WAPC

EXECUTIVE SUMMARY

This Structure Plan applies to Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark located on South Coast Highway, Denmark (the Site). The Site is bounded by South Coast Highway and Zimmerman/Harlequin Street Road Reserve to the north, the residential "Kemsley Estate" subdivision with a density code ranging from R17.5 to R40 and Residential R2 lots to the east, the Denmark to Nornalup rail trail to the south, and Residential zoned (undeveloped) R20 land to the west and a small triangular shaped rural lot, also to the west. The Site is located approximately 1km west of the Denmark CBD.

Under the Shire of Denmark's Town Planning Scheme No.3 (TPS3), the Site is zoned Urban Development. The rezoning of the site was facilitated through Amendment 146 to TPS3 and incorporates specific use classes, development standards, development provisions and additional requirements that apply to the land.

The specific additional requirements applicable for the development of the site are as follows:

- *Provide for fully serviced residential development with reticulated sewer and underground power.*
- *Ensure protection of view lines from South Coast Highway, the Denmark-Nornalup Rail Trail and adjacent established residential areas.*
- *Incorporate measures for identification, retention and management of quality fauna habitat.*
- *Retain areas containing significant environmental value, including consolidated areas of native vegetation, and provide ecological linkages.*
- *Identify mechanisms to ensure the protection of trees identified to be retained on private residential lots.*

The mechanism for addressing the above special additional requirements have been identified in the Structure Plan document.

The majority of land surrounding the Site has been developed or appropriately zoned for future urban development. As noted, there are three lots south east of the Site, which have a Residential zoning with a density of R2 and a rural zoned lot to the west. These lots are identified with the LPS as Urban Residential. These lots do not form part of this Structure Plan.

To support and inform the Structure Plan, the following consultants have prepared the necessary technical reports and are summarised within the Structure Plan. These reports provide justification for the Structure Plan, with complete copies included as technical appendices:

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- PGV Environmental –Environmental Assessment Report and Tree Retention and Black Cockatoo Assessment.
- PGV Environmental- Foreshore and Landscape Management Plan.
- PGV Environmental- Visual Landscape Assessment.
- Aurora Environmental- Tree Assessment Report.
- Ecosystem Solutions – Bushfire Management Plan.
- Transcore- Traffic Management Plan.
- Herring Storer- Noise Management Plan.
- Hyd2o Hydrology- Local Water Management Strategy.
- TABEC- Civil Engineering.

The technical reports have been prepared following comprehensive analysis and engagement with agencies to address the relevant planning and technical considerations.

The following Summary Table provides the key statistics and planning outcomes related to this Structure Plan.

EXECUTIVE SUMMARY TABLE

Item	Data	Structure Plan Ref (Section No.)
Total Area Covered By The Structure Plan	16.88 Hectares	Part 2 Section 1.2
Area Of Each Land Use Proposed: Urban Development Zone	16.88 Hectares, To Allow For Urban Development and Associated Public Open Space.	Local Structure Plan Map
Total Estimated Lot Yield	144	Part 2 Section 4.1.1
Estimated Number Of Dwellings	160	Part 2 Section 4.1.1
Estimated Residential Site Density	One Dwelling Per Site, for majority of development. Allowance made for two group housing sites	Part 2 Section 4.1.1
Estimated Population	400 (Based on 2.5 People Per Dwelling)	Part 2 Section 4.1.1
Number Of High Schools	0	N/A
Number Of Primary Schools	0	N/A
Estimated Commercial Floor Space	0	N/A
Estimated Area And Percentage Of Public Open Space Given Over To: Regional Open Space District Open Space Neighbourhood Parks Local Parks	 0 Hectares 0 Hectares 0 Hectares 2.1037 Hectares	 Part 2 Section 4.2.1
Estimated Percentage Of Natural Area	15%	Opportunities And Constraints

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Appendix I Noise Management Plan
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Appendix K Contamination Advice

PART ONE: IMPLEMENTATION

1 STRUCTURE PLAN AREA AND OPERATION

1.1 APPLICATION AREA

This Structure Plan shall apply to Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark on Plan(s) 230743 and 23279 respectively (the Site), being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map (**Plan 1**).

The Structure Plan area is zoned Urban Development under TPS 3, is located within an Urban Residential identified area as per the LPS and reflects the majority of Planning Unit E from the Shire of Denmark's 1998 Settlement Strategy (refer **Figure 1**- Planning Unit E boundary overlaid onto the LPS Mapping).

The Structure Plan is bounded by South Coast Highway and Zimmerman/Harlequin Street Road Reserve to the north, the residential "Kemsley Estate" subdivision with a density code ranging from R17.5 to R40 and Residential R2 lots to the east, the Denmark to Nornalup rail trail to the south and Residential zoned (undeveloped) R20 land to the west and a small triangular shaped rural lot, also to the west (refer **Figure 2 -** Context Plan).

The Structure Plan is in effect from the date stated on the cover and for a period of 10 years.

1.2 RELATIONSHIP WITH STATUTORY PLANNIG FRAMEWORK

The Structure Plan has been prepared as required by Clause 5.41- Urban Development Zone Provisions of TPS3 and Part 4 of the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes (Deemed Provisions). The Structure Plan is in accordance with the objectives of Liveable Neighbourhoods and supporting state and local planning policies to outline future zones, reserves, public open space and supporting infrastructure.

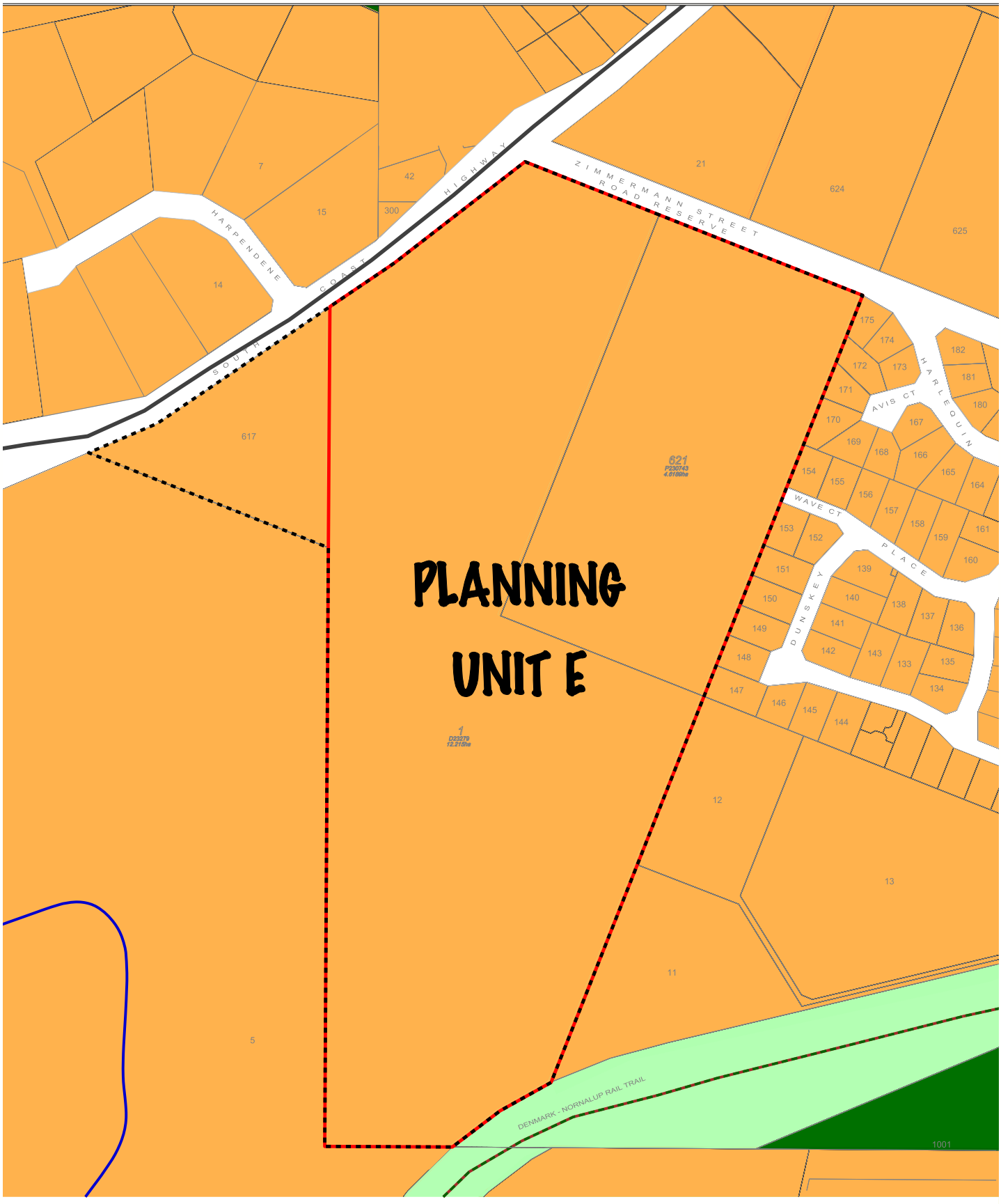
Pursuant to the Deemed Provisions, a decision maker of an application for development or subdivision approval is to have due regard to the provisions of this Structure Plan, including the Structure Plan Map, Implementation Report, Explanatory Report and Technical Appendices.

1.3 STRUCTURE PLAN CONTENT

The Structure Plan comprises:

- Part One – Implementation Section
- Part Two – Explanatory Report
- Appendices – Technical Reports

Part One of the Structure Plan comprises the Map and supporting planning provisions. Part Two of the Structure Plan is the explanatory report component, which can be used to interpret and implement Part One.



LEGEND

LAND USE DESIGNATIONS

- COMMERCIAL
- URBAN RESIDENTIAL
- SPECIAL RESIDENTIAL
- RURAL RESIDENTIAL
- RURAL SMALLHOLDINGS
- PRIORITY AGRICULTURE
- GENERAL AGRICULTURE
- MIXED BUSINESS
- EDUCATION PRECINCT
- WATERWAYS
- INDUSTRIAL
- SERVICE PARK
- REGIONAL ROAD
- NEIGHBOURHOOD CONNECTOR ROAD
- INDICATIVE NEIGHBOURHOOD CONNECTOR ROAD
- SHARED PATH
- HERITAGE RAIL TRAIL
- BIBBULMUN TRACK
- PROPOSED MUNDA BIDDI TRAIL
- AIRPORT BUFFER
- WWTP, WTS AND FUTURE INDUSTRIAL BUFFER AREA
- PARKS AND RECREATION
- PUBLIC USE
- TOURIST
- PLANNING UNIT E
- SUBJECT SITE

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
PLANNING UNIT E BOUNDARY AND LOCAL PLANNING STRATEGY OVERLAY
FIGURE 1

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ph: 0418 116216 | email: samwilliams@westnet.com.au

date - 14 APRIL 2020 | ref - 19-002-003
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621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
CONTEXT PLAN
FIGURE 2

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ph: 0418 116216 | email: samwilliams@westnet.com.au
date - 14 APRIL 2020 | ref - 19-002-004
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2 PURPOSE

The purpose of the Structure Plan is to coordinate subdivision and development of the Site. The Structure Plan will guide subdivision and development in a contextually appropriate manner and facilitate the development of positive community outcomes.

The following key objectives will deliver the vision for the site:

Servicing: Ensuring a full suite of development services are provided for each lot, which will include connection to reticulated sewer and potable water (provided by the Water Corporation), connection to underground power and connection to appropriate telecommunications infrastructure. Supports a legible and accessible walking and cycling opportunities via an integrated network of vehicle and pedestrian connections including green links that facilitate safe linkages through residential areas to areas of open space and natural features.

Integration with Existing Landscape: Being sympathetic to the established vistas into the site from the surrounding locality- namely South Coast Highway, the Denmark-Nornalup Rail Trail and adjoining residential development.

Environmental Consideration: Identification of significant remnant native vegetation and where applicable ensuring the retention for fauna habitat and provision of ecological linkages.

Affordability and Diversity: Offers unique and affordable housing choices via the provision of a range of lot types and sizes that meet the expectation of a regional community, typically providing family sized lots for a variety of purchaser groups.

3 STAGING

The development of the Structure Plan area will be undertaken in various stages reflective of market demand. Detailed planning of street blocks, allocation of residential densities and distribution of Public Open Space (POS) will be informed by detailed design and technical inputs, particularly as they relate to engineering, hydrology and the environment. This will be undertaken as part of subsequent subdivision processes to address WAPC, referral agency and local government requirements.

Considering the above caveat and the servicing conditions outlined in the following section, the proposed indicative subdivision staging is divided into three indicative stages summarised below. These Stages are illustrated in Figure 3. It is emphasised, that depending on market trends, the staging listed below may require review.

1. The first stage of development will be in the northern portion of the Site accessed from Zimmerman Street by the indicative access street and will provide a connection to Ocean Beach Road. The intersection of Harlequin Street with South Coast Highway will be constructed in consultation with Main Roads WA.

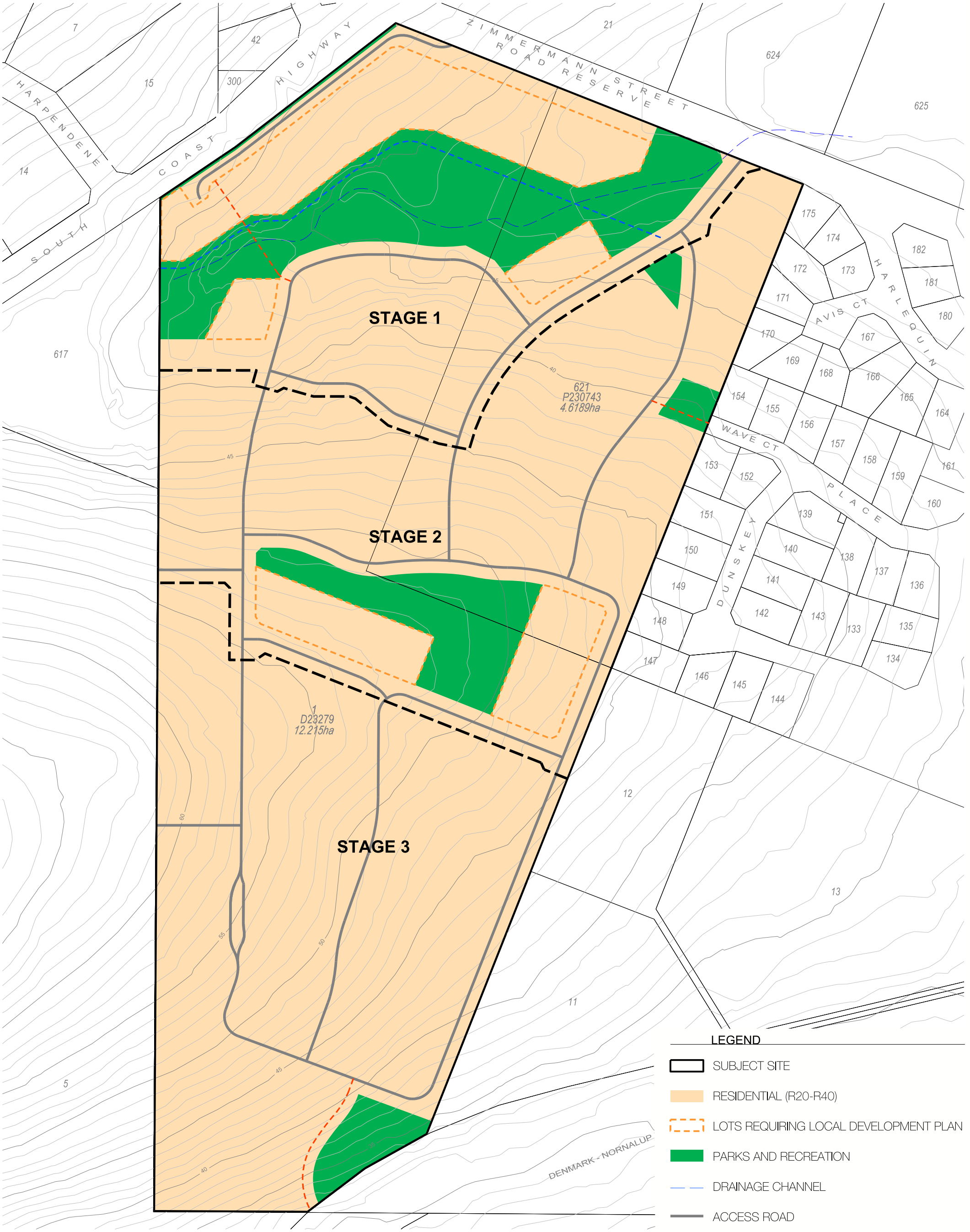
   The provision of POS and drainage is located around the creek line and associated remnant vegetation within the northern portion of the Site.

2. The second stage of development is proposed to extend south from stage one to the central ridgeline on the Site.

   The staged area will be supported by the provision of a centrally located area of POS, which comprises significant Karri and Marri trees.

   The majority of the second stage will comprise residential lots and associated POS.

3. The southern-most extent of the Site is forecast to comprise the third and final stage of development. As addressed in Part 1, Section 4.4.3, this portion of the Site requires consideration with respect to the economically viable connection to wastewater. At the time of development of Stage 3, the type of subdivision will be considered.



621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

STAGING PLAN
Figure 3

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4 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

4.1 LAND USE ZONES AND RESERVES

4.1.1 STRUCTURE PLAN ZONES

Plan 1 is the Structure Plan Map which designates the proposed zones and reserves applicable to land within the Structure Plan.

Subdivision and development of land is to be generally in accordance with the Structure Plan Map. Refinements to the zones and reserves is permitted at subdivision stage subject to submission of an appropriate level of supporting technical justification.

The Structure Plan proposes a Residential zone with a density code of R20 for standard residential lots and R40 for future Group Housing Site, which accord with the TPS3. The Land Use permissibility for the Residential zoning shall be as per TPS3, as informed by Amendment 146.

The objectives of the Residential zoning for the Structure Plan, are as follows:

1. Provide for a range of housing types and encourage a high standard of residential development, whilst respecting the existing environment of the site and surrounding area.
2. Create residential character and amenity reflective the surrounding of the surrounding developed area.
3. Ensure that the density of development takes cognisance of the availability of reticulated sewerage.

4.1.2 MOVEMENT NETWORK

The Structure Plan is subject to the following key movement network considerations:

- The street network should be developed generally in accordance with the road hierarchy shown on Plan 1 Structure Plan Map, which identifies the road order.
- Road reserves and the supporting cross sections should be developed generally in accordance with Liveable Neighbourhoods.
- The cross sections for Access C and D are identified within the Transport Impact Assessment (TIA) within the Structure Plan (refer Appendix A).
- Intersection treatments are described in the TIA with final intersection treatments to be determined at subdivision stage.
- Pedestrian linkages will be in accordance with the recommendations of the TIA and the Shire's standards.

4.1.3 PUBLIC OPEN SPACE

Plan 1- Structure Plan Map identifies Public Open Space is identified as 'Parks and Recreation' reserve.

As demonstrated in **Table 1- POS Schedule**, 2.1037 ha (12.6%) of POS is proposed within the Structure Plan area. Given the broad nature of the Structure Plan, the POS locations on **Plan 1** are indicative and the final position and dimensions of POS will be subject to review.

PUBLIC OPEN SPACE SCHEDULE		
GROSS SITE AREA (HA)		16.88
DEDUCTIONS		
ENVIRONMENTAL (CREEK LINE FLOOD PLAIN)	0.2911	
TOTAL DEDUCTIONS		0.2911
GROSS SUBDIVISIBLE AREA		16.5889
REQUIRED PUBLIC OPEN SPACE (10%)		1.65889
PUBLIC OPEN SPACE REQUIREMENTS		
UNRESTRICTED PUBLIC OPEN SPACE- MINIMUM 80%	1.327	
RESTRICTED PUBLIC OPEN SPACE- MAXIMUM 20%	0.332	
TOTAL		1.65889
UNRESTRICTED PUBLIC OPEN SPACE		
POS 1	1.0746	
POS 2	0.0393	
POS 3	0.0659	
POS 4	0.6029	
POS 5	0.0768	
		1.8595
RESTRICTED PUBLIC OPEN SPACE		
DRAINAGE BASINS (1:5YR STORM EVENT)		
POS 1- CATCHMENT 1	0.051	
POS 1- CATCHMENT 2	0.035	
POS 1- CATCHMENT 4	0.035	
POS 5	0.1232	
TOTAL RESTRICTED OPEN SPACE		0.2442
TOTAL PUBLIC OPEN SPACE		2.1037
POS PROVISION AS PERCENTAGE OF GROSS SUBDIVISIBLE AREA		12.6%

This schedule is to be read in conjunction with Plan 1- Structure Plan

4.1.4 OTHER RESERVES

The creek line traversing the northern portion of the site will comprise a foreshore reserve. The creek line is identified on Plan 1, with the total foreshore reserve area to be ceded to the Shire at the time of development.

4.2 DENSITY AND DEVELOPMENT

Plan 1 designates the R-Codes applicable to the Structure Plan and ultimate subdivision. The majority of subdivision will be undertaken to a density of R20, with lot sizes provided to be responsive to the lifestyle characteristics of the location, whilst maintaining general alignment with State Government density targets.

4.2.1 DENSITY AND R-CODES

This Structure Plan adopts the following density code ranges:

- R20
- R40

An R-Code Plan is to be submitted at the time of subdivision to allocate a specific R-Code for the proposed lots for approval by the WAPC. The R-Code Plan:

a) Shall be consistent with the density ranges and locational criteria set out in this Structure Plan.
b) Is to include a summary of the proposed lot yield of the subdivision application to which it relates.
c) May be varied subject to the further approval of the WAPC. A varied R-Code Plan will replace (entirely or partially) the previously approved R-Code Plan.

Once approved by the WAPC, the R-Code Plan forms part of this Structure Plan.

An R-Code Plan may not be required if the WAPC considers the subdivision application is for one or more of the following:

- Amalgamation of lots, including for land assembly.
- Provision of access, services or infrastructure.

4.2.2 LOCAL DEVELOPMENT PLANS

REQUIREMENT FOR LOCAL DEVELOPMENT PLAN

Local Development Plans (LDPs) shall be prepared for lots abutting POS and addressing South Coast Highway and Zimmerman Street. Notwithstanding, the local government may require a LDP be prepared for an individual lot to address specific design issues within the Structure Plan area.

Site-specific LDPs may be prepared by an owner and submitted to the local government pursuant to Schedule 2, Part 6 of the *Regulations*.

ISSUES TO BE ADDRESSED IN AREAS THAT REQUIRE LOCAL DEVELOPMENT PLANS

Matters to be addressed in LDPs may include (but not be limited to) modifications to the deemed-to-comply provisions in regard to the following:

- Building envelopes and/or building exclusion areas that have been approved through a plan of subdivision.
- Minimum setbacks.
- Access and parking arrangements/restrictions.
- Dwelling orientation and passive surveillance to POS.
- Setback variations.

- Primary address to South Coast Highway, while still providing orientation and passive surveillance to POS.
- Fencing.

4.2.3 INTERFACE WITH ADJOIING AREAS

In making allowance for the approved Structure Plan to the west, this Structure Plan provides two connection points to enable the seamless connection with that development. This road connection will be via a constructed road reserve, which dependent on the development of the land to the west, will have a temporary cul-de-sac head constructed.

Allowance has been made for a future road connection to the low-density land to the east when this is developed. This road connection will be via a constructed road reserve.

4.3 OTHER REQUIREMENTS

4.3.1 BUSHFIRE MANAGEMENT

The Structure Plan is supported by a Bushfire Management Plan (**Appendix B**). Regardless of whether the land has been formally designated as bushfire prone, any building to be erected on land identified within 100 metres of a bushfire hazard is designated as bushfire-prone and shall comply with the requirements of Australian Standard 3959 under the National Construction Code.

Subdivision within the Structure Plan area is required to demonstrate the ability to achieve a maximum post development Bushfire Attack Level (BAL) rating of BAL-29 for all proposed lots and a minimum of two vehicle access and egress points in two different directions, in accordance with the WAPC's Guidelines for Planning in Bushfire Prone Areas.

4.3.2 INFRASTRUCTURE ARRANGEMENTS

The required infrastructure provision has been determined within an Engineering Infrastructure Report (refer **Appendix C**). This establishes the infrastructure requirements for the subdivision, which are to be undertaken by the developer. With respect to this and the staging for infrastructure rollout, the following is noted.

ROAD INFRASTRUCTURE

The Site is a stand-alone development and can be developed independent of any adjoining undeveloped land. The undeveloped land to the west of the Site has its own independent access and egress to South Coast Highway and Ocean Beach Road.

As illustrated in **Plan 1**, the Structure Plan depicts an access street layout, which requires access from the unconstructed portion of Zimmerman Street, which will intersect with South Coast Highway. This carriageway will be constructed at the applicant's expense, with the intersection to South Coast Highway being designed and built in consultation with Main Roads WA. In addressing the requirements of State Planning Policy 3.7- Planning in Bushfire Prone Areas (SPP 3.7), secondary access and egress to the development will be via Harlequin Street, which intersects with Ocean Beach Road and an Emergency Access Way connecting with South Coast Highway, the Denmark-Nornalup Rail Trail and Wave Court.

The detailed road network, to be established in future subdivision applications, shall have regard to this indicative access street layout. This will be subject to detailed design as part of preparation of any subsequent subdivision application.

The road pattern as identified in Plan 1 has been designed to provide the following:

- Access to South Coast Highway, through Zimmerman Street.
- Opportunity for appropriate carriageway configuration to provide a legible road network in accordance with Liveable Neighbourhood design principles.
- A suitable road hierarchy, with road reserves ranging in size from 10m to 15m.

TRANSPORT IMPACT ASSESSMENT

A transport impact assessment supporting the Structure Plan has been prepared by Transcore (refer Appendix A). The transport assessment confirms the level of traffic forecast as per the Structure Plan and ultimate subdivision will not have a material impact under the WAPC's Transport Assessment Guidelines for Developments. Furthermore, given the existing road network infrastructure, access and egress to the Site can be undertaken in accordance with the current standards and be achieved in a safe and appropriate manner.

PEDESTRIAN MOVEMENT AND DUAL USE PATH PROVISION

A shared path is shown on Plan 1, which will provide connectivity and encourage walking within the subdivision. The proposed shared path will integrate with the current shared path on Zimmerman and Harlequin Street.

At the time of subdivision, footpath provision will be made within the subdivision on a staged basis.

STORMWATER

Stormwater drainage will be accommodated via four separate catchments. No external drainage is required.

Construction of the necessary drainage infrastructure will be reflective of the staged approach for the development of the Site.

WASTEWATER

The Site will be connected to the Water Corporation's Wastewater supply. The northern portion of the Site, which slopes from a central ridge towards the creek line, will be serviced via a gravity fed sewer main. The extension to the sewer main to service the northern portion of the development will be constructed by the developer as part of the first stage of construction. As lots are developed at various stages within the northern portion of the Site, they will be connected at the developer's expense to the sewer main.

The southern portion of the Site, which slopes towards the Nornalup Rail Trail, will be gravity fed to this point. The transfer of the sewerage is proposed via the extension of a sewer main to the not yet constructed Denmark Pump Station A, located approximately 700m south east of Lot 1.

The timeframe and the method of discharge are currently unknown. At the time of development of the southern portion of the Site, the developer will work with the Water Corporation.

WATER SUPPLY

Water provision to the Site will be via the Water Corporation's existing water supply in the locality. In accordance with the water reticulation planning, a multi staged works agreement will be entered into with the Water Corporation.

POWER SUPPLY

A three-phase high voltage supply is located on South Coast Highway, which has capacity to service the urban development of the Site. Based on development's proposed load requirements, there will be no major network upgrades required.

An underground power supply will be provided to each lot within the staged development of the Site at the developer's expense.

4.3.3 DEVELOPMENT CONTRIBUTIONS

The Structure Plan area is not located within an identified developer contribution area under TPS3.

The Site will be developed via stand-alone infrastructure upgrades and independently meets Public Open Space requirements. No funding mechanisms are proposed as part of the Structure Plan.

4.3.4 PROTECTION OF ENVIRONMENTAL FEATURES

The Site comprises stands of remnant native vegetation and a creek line. In consideration of this an Environmental Assessment, Tree Retention and Black Cockatoo Assessment and Hydrological Flood Study has been undertaken.

The Environmental Assessment and Tree Retention and Black Cockatoo Assessment (refer Appendix D) has been prepared to guide the development of the site to retain key remnant vegetation where possible.

The majority of remnant vegetation, as identified in the Tree Retention and Black Cockatoo Assessment report can be retained, as follows:

- The Public Open Space comprising the creek line contains stands of remnant vegetation generally in good condition with one tree being identified as a suitable/potential cockatoo nesting tree and other trees identified as having high to medium chance of cockatoo nesting.
- The Public Open Space comprising the ridgeline, which comprises mature Karri and some Marri trees. A significant amount of the vegetation to be retained in the Public Open Space comprises high to medium chance of cockatoo nesting.
- The Wave Court Emergency Access Way connection has been widened to provide for a small area of Public Open Space, which will enable the retention of trees identified as having a medium chance of cockatoo nesting. These trees are also on the boundary of the Site, which abuts the existing Kemsley Estate to the east. The retention of the trees maintain amenity for the Kemsley Estate residents.

- Within the future road reserves there are two trees identified as suitable/potential cockatoo nesting trees and others as high to medium chance of cockatoo nesting. These trees will be retained through the provision of wider road reserves, the strategic alignment of road layout design and the ability for the future carriageway to be constructed to avoid select trees.

- A significant number of trees will be in future residential lots. The Structure Plan has been designed to negate the need for bulk earthworks and retaining walls. This will enable trees to be kept in future residential lots.

- There is a large concentration of remnant vegetation in the southern portion of the site. Most of this vegetation is identified as being medium to low chance of nesting. However, some trees are identified as high and very high chance of nesting and a potential Gnamma Tree is identified. To enable the retention of most of these tree and to also meet the necessary bushfire requirements with the provision of a suitable building envelope, large lots are proposed in this location.

- Where significant trees are in future lots, at the time of subdivision, the developer is willing to enter an agreement with the Shire of Denmark to place a Restrictive Covenant on Title protecting select trees.

Trees that cannot be retained will be identified at the time of detailed engineering design, post subdivision approval. However, in providing guidance on trees that will require removal, as per Figure 3 of the Engineering Infrastructure Report (refer Appendix C), the following is noted:

- Trees within the Zimmerman Street Road reserve to enable the construction of a carriageway to connect with South Coast Highway. To minimise clearing in this locality, a boulevard is proposed with one carriageway to be designed to meander around the trees where possible and the other boulevard to be on cleared land owned by the developer, which will be ceded to the Shire free of cost as Road Reserve at the time of development.

  The construction of the Zimmerman Street boulevard will enable a tree identified in the Tree Retention and Black Cockatoo Assessment report as "Potentially suitable for Black Cockatoos" to be retained.

- Trees within the road reserve within the subdivision, where it will not be possible to widen road reserves or meander future carriageways.

- Firebreak construction and bushfire mitigation works as per the Bushfire Management Plan (BMP)- (refer Appendix B).

ENVIRONMENTAL MANAGEMENT PLAN

In supporting the tree retention, an Environmental Management Plan (EMP) will be prepared at the time of subdivision and implemented prior to the commencement of subdivisional works. The EMP will be prepared in accordance with the Environmental Assessment and Tree Retention and Black Cockatoo Assessment prepared by PGV Environmental and Aurora Environmental in consultation with the Shire.

4.3.5 WATER RESOURCE MANAGEMENT

LOCAL WATER MANAGEMENT STRATEGY

A Local Water Management Strategy (LWMS) has been prepared by Coterra Environment in conjunction with Hyd2o Hydrology (refer **Appendix E**) to address the requirements under *Better Urban Water Management* (WAPC, 2008) and the Department of Water's *Local Water Management Strategy Guidelines* (DoW, 2008).

Matters addressed in the LWMS applicable to development of the Site include:

- Stormwater Management.
- Flood Risk Management.
- Groundwater Management.
- Monitoring and Implementation.

In addition to the above, consultation with Department of Water and Environment Regulation (DWER) has been undertaken to confirm there will be no flood implications from the creek line on the development of the Site (refer **Appendix F-** Correspondence with DWER).

An Urban Water Management Plan (UWMP) will be required prior to subdivision of the land and will be imposed as a condition of subdivision approval. The UWMP will provide the practical implementation of the recommendations of the approved LWMS, which will include and not be limited to, the requirement for drainage easements over all existing and proposed surface water flow paths, dams and any other interceptor basins or storm water infrastructure within private lots.

HYDROLOGICAL FLOOD STUDY

The Hydrological Flood Study (refer **Appendix G)** establishes the 1% Annual Exceedance Probability flood level in accordance with the Department of Water and Environment Regulations (DWER). In consideration of this, the Structure Plan has been designed to ensure there will be no impact from development on the creek or flooding on residential lots.

4.3.6 VISUAL IMPACT ASSESSMENT

A Site level Visual Impact Assessment (VIA) has been undertaken for the Structure Plan area in accordance with the WAPC's *Visual Landscape Planning in Western Australia* and is included in the Landscape Management Plan for the site (refer **Appendix H)**. As documented in the report, the VIA has been prepared to understand the context of the surrounding landscape to the Structure Plan area and consider the view into the Site from South Coast Highway and the Denmark-Nornalup Rail Trail. The VIA included viewshed analysis with a focus of possible views from South Coast Highway.

VISUAL IMPACT ASSESSMENT FINDINGS

The findings from the VIA, as per the Landscape Management Plan, defined the following:

South Coast Highway

"The site is visible to partially visible from South Coast Highway, with views primarily filtered through existing vegetation. In the northernmost section, a middle-ground vista extends across pastoral land towards remnant tree lines. The total length of the highway potentially affected by visual impacts is approximately 145 metres.

This section of South Coast Highway presents a landscape character consistent with extensive stretches of the regional road network, offering similar pastoral and vegetated views across hundreds of kilometres. As such, no significant or unique viewpoints have been identified that would be negatively impacted by the proposed development."

Denmark-Nornalup Rail Trail

"Views from the Denmark–Nornalup Rail Trail to the proposed development are minimal to non-existent, owing to the sunken alignment of the trail in this section abutting the site. The trail is bunded to a height of approximately 2 metres, effectively elevating the ground level above the eyeline of trail users. Additionally, the bund supports a strip of mature trees about 25m wide at the northern end, which enhances visual screening and forms a canopy over the trail, creating a contained and intimate visual environment. This natural screening significantly reduces the potential for any visual intrusion from the development.

The proposed emergency access way to the trail proposed from the development to the Trail will be alongside existing vegetation proposed to be maintained in larger lots. The emergency access way meets the trail as a T-intersection and can provide access to the trail by residents."

Adjacent Residential Areas

The adjoining development is screen from the site via a mix of low open fencing to taller "super six" or "colorbond fencing" style fencing. The residential development of the site is not expected to have an adverse visual impact on existing residents.

VISUAL IMPACT DESIGN RECOMMENDATIONS

The Landscape Management Plan makes commentary on the Structure Plan and recommended visual impact design measures to ensure the protection of view lines, as follows:

South Coast Highway

The design layout provides for physical separation between the built form and South Coast Highway, avoiding a hard-edged, linear, and vertical interface—such as a continuous fence line—that would otherwise dominate the roadside view.

The design layout softens the visual impact by creating a more varied, textured edge to the development. The result is a visually permeable and integrated transition between the built environment and the surrounding rural character of the highway corridor. In addition, the planting of vegetation within Site's future road reserve will reinforce the visual character of the corridor and further mitigate the visual presence of the development.

Denmark-Nornalup Rail Trail

The existing bunding and mature vegetation along the Rail Trail provides a visual screening. However, the provision of large lots in the southern portion of the development comprising remnant vegetation, which cannot be removed through a notification on title, and a planted drainage basin will further enhance the screening from the Rail Trail to the development.

Adjacent Residential Areas

As part of the development, the developer will provide a 1.8m high colorbond fence along the eastern boundary, where necessary. The 1.8m fence will restrict views from the existing development to the future residential lots.

If necessary, an addendum to the VIA can be prepared at the time of subdivision assessment to consider the extent of proposed earthworks, placement of building envelopes and any required visual management/mitigation treatments.

4.3.7 NOISE MANAGEMENT PLAN

A noise management plan supporting the Structure Plan has been prepared by Herring Storer Acoustics (refer Appendix I). The Noise Management Plan identifies the appropriate noise mitigation measures for select lots adjacent to South Coast Highway only.

5 ADDITIONAL INFORMATION

5.1 INFORMATION TO BE SUBMITTED WITH A SUBDIVISION APPLICATION

Prior to any subdivision or development of the land being supported, the following management plans, reports and strategies are to be prepared, as applicable, to the satisfaction of the relevant authority and provided at the relevant approval stage nominated in Table 2.

Table 2 Management Plans, Reports and Strategies as part of subdivision

Additional Information	Reason/ Purpose	Responsible Agency
R-Code Plan	To depict final R-Codes for individual lots in accordance with the locational criteria set out in Part 1.	WAPC
BMP addendums or amended BMP	To demonstrate post development that subdivision will satisfy the WAPC's Guidelines for Planning in Bushfire Prone Areas and outline any works to be implemented during subdivision to achieve an acceptable BAL rating for all proposed lots.	WAPC
Transport Impact Assessment / Addendum	Where major modifications to the road network or internal traffic generation is proposed.	WAPC
Acoustic Assessment / Addendum	In accordance with the requirements of SPP 5.4 Road and Rail Noise.	WAPC

5.2 STUDIES TO BE REQUIRED UNDER A CONDITION OF SUBDIVISION APPROVAL

The following technical reports/strategies are to be prepared in accordance with a future subdivision approval (as applicable), as per Table 3.

Table 3 Management Plans, Reports and Strategies

Additional Information	Reason/ Purpose	Consultation Required
Bushfire Management Plan / Addendum	To demonstrate the requirements set out in any Bushfire Management Plan provided in support of the applicable subdivision have been met.	Shire of Denmark
Urban Water Management Plan	To detail the management of stormwater both on and off site in accordance with the WAPC's Better Urban Water Management Guidelines.	Shire of Denmark
Environmental Management Plan	To meet the Requirements of Amendment 146 to TPS3.	Shire of Denmark

LOCAL STRUCTURE PLAN (PLAN 1)

South Coast Highway and Zimmerman Street intersection construction

Zimmerman Street road construction to be undertaken to minimise clearing of remnant vegetation

ZIMMERMANN STREET ROAD RESERVE

Zimmerman Street Road Reserve Widening

SOUTH COAST HIGHWAY

HARPENDENE

HARLEQUIN

AVIS CT

WAVE CT

DUNSKEY PLACE

DENMARK - NORNALUP

621
P230743
4.6189ha

1
D23279
12.215ha

LEGEND

- SUBJECT SITE
- RESIDENTIAL R20
- RESIDENTIAL R40
- LOTS REQUIRING LOCAL DEVELOPMENT PLAN
- PARKS AND RECREATION
- (D) DRAINAGE LOCATION
- DRAINAGE CHANNEL
- ACCESS STREET C
- ACCESS STREET D (14.2m RESERVE)
- ACCESS STREET D (10m RESERVE)
- SHARED PATH
- EMERGENCY ACCESS WAY

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

STRUCTURE PLAN - INDICATIVE ONLY
PLAN 1

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date - 22/09/2025 | ref - 19-002-007DSP
scale - 1:2000 @ A3

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PART TWO: EXPLANATORY SECTION

1 INTRODUCTION AND PURPOSE

The purpose of the Structure Plan is to facilitate the subdivision and development of the Site into Residential lots with a range of lot sizes.

Based on the Urban Development zoning, which comprises Amendment 146, there is the potential for a minimum of 160 residences. In accordance with the Shire of Denmark's LPS, which identifies an average of 2.5 persons per household, there could be up to 400 people residing within the ultimate development area.

2 SITE AND CONTEXT ANALYSIS

The area of the Site comprises 16.88 hectares, with the individual lot(s) legally described in **Table 4**.

2.1 LOCATION

The Site is located within the Shire of Denmark local government area and is bound bounded by South Coast Highway and Harlequin/Zimmerman Street Road Reserve to the north, the residential "Kemsley Estate" subdivision with a density code ranging from R17.5 to R40 and Residential R2 lots to the east, the Denmark to Nornalup rail trail to the south, and Residential zoned (undeveloped) R20 land to the west and a small triangular shaped rural lot, also to the west. The Site is located approximately 1km west of the Denmark CBD (refer **Figure 4** Location Plan).

Vehicle (and legal) access to the Site is from South Coast Highway and Zimmerman Street.

2.2 AREA AND LAND USE

The majority of the Site has been cleared, with portions of parkland cleared remnant vegetation. Significant stands of large mature Karri trees are located within the creek line and on the ridgeline of the Site. The southern portion of the Site comprises regrowth Marri and Jarrah trees.

The Site has historically been used for animal grazing and associated rural pursuits.

2.3 LEGAL DESCRIPTION AND OWNERSHIP

The combined area of the Site comprises a total area of approximately 16.88 hectares (ha), with the individual lots legally described in **Table 4** below.

Table 4: Land Ownership Details.

Lot No.	C/T Details	Plan Number	Primary Interest Holder
1	1228/982	Plan 23279	Turner & Wells Pty Ltd
621	900/58	Plan 230743	DIBMWE Pty Ltd

Copies of the Certificates of Title are appended at **Appendix J**.

2.4 PLANNING FRAMEWORK

2.4.1 ZONING AND RESERVES

SHIRE OF DENMARK TOWN PLANNING SCHEME NO.3.

The Site is zoned Urban Development under TPS3- refer **Figure 5** Zoning Plan.

The rezoning of the site was facilitated through Amendment 146 to TPS3 and incorporated specific use classes, development standards, development provisions and additional requirements that apply to the land, as follows

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

LOCATION PLAN

Figure 4

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date - 4 AUGUST 2025 | ref - 19-002-005
scale - 1:8000 @ A3

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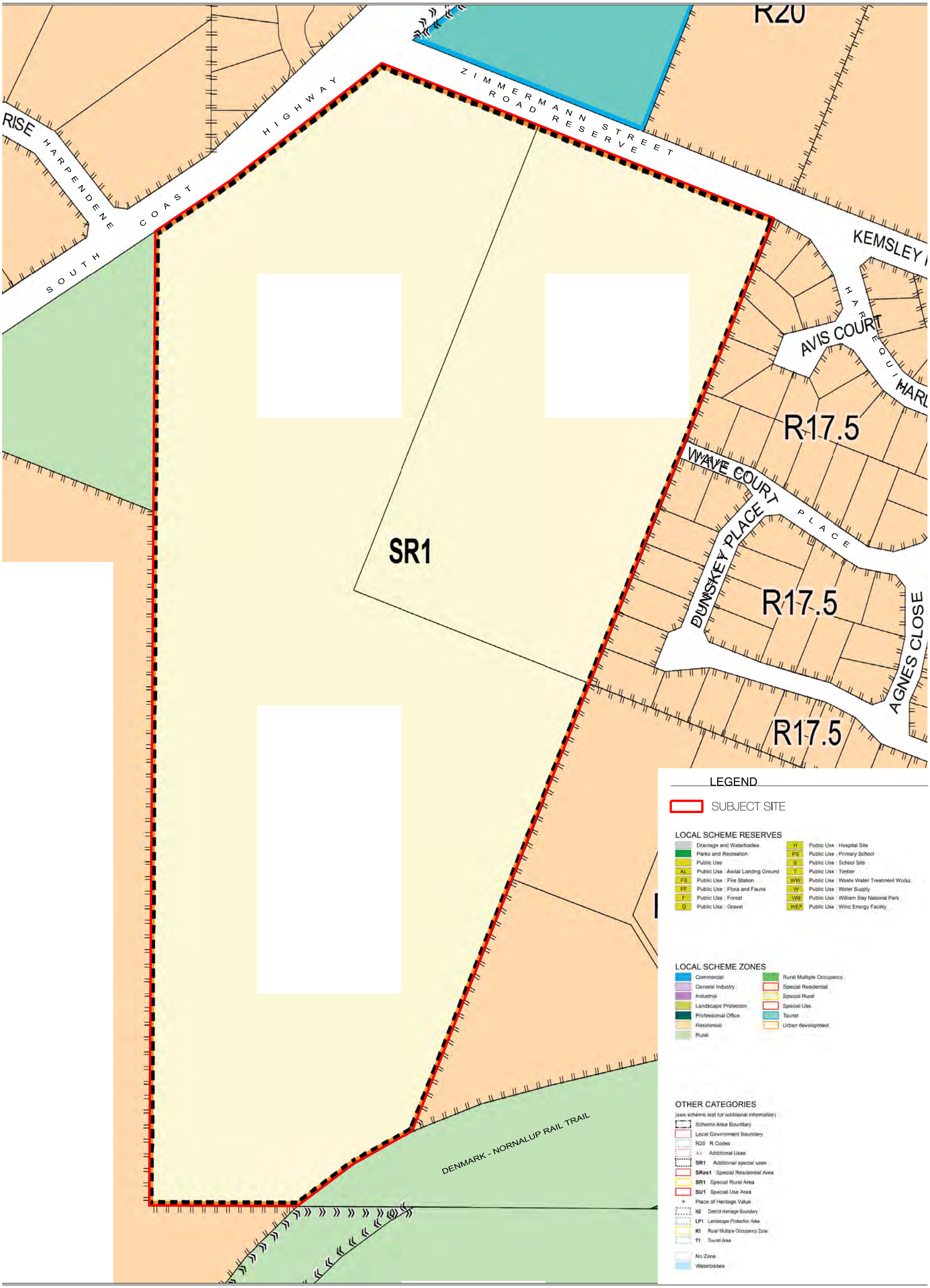

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
ZONING PLAN

Figure 5

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Definition

"Urban Development Zone—to provide an intention of future land use and a basis for more detailed structure planning in accordance with the provisions of this Scheme.

To provide for a range of residential densities to encourage a variety of residential accommodation.

To provide for the progressive and planned development of future urban areas for residential purposes and for commercial and other uses normally associated with residential development. 5."

Permissible Use Classes

Aged or Dependent Persons Dwelling	AA	Relocated Dwelling	AA
Boarding House SA Holiday Home (large)	SA	Single House	P
Holiday Home (standard)	SA	Telecommunication Infrastructure	SA
Home Occupation	P	Tree Felling	AA

Requirements that Apply to the Land

Structure planning is to

- *Provide for fully serviced residential development with reticulated sewer and underground power.*
- *Ensure protection of view lines from South Coast Highway, the Denmark-Nornalup Rail Trail and adjacent established residential areas.*
- *Incorporate measures for identification, retention and management of quality fauna habitat.*
- *Retain areas containing significant environmental value, including consolidated areas of native vegetation, and provide ecological linkages.*
- *Identify mechanisms to ensure the protection of trees identified to be retained on private residential lots.*

Where possible, this Structure Plan document addresses the above requirements. In some instances, these requirements will be addressed at the time of subdivision.

LOCAL PLANNING STRATEGY

The Shire of Denmark's 2011 LPS identifies the Site as future Urban Residential. Whilst this is addressed in detail below, the general intent of Urban Residential is for the extension of urban land from existing residential areas.

2.4.2 PLANNING STRATEGIES

WESTERN AUSTRALIAN PLANNING COMMISSION

Lower Great Southern Strategy 2016 (LGSS)

The LGSS guides regional land use and infrastructure planning and development, with a focus on matters of regional significance. The LGSS addresses land use, transport and infrastructure planning on both a local and regional level. It provides direction to local governments when preparing more detailed local planning strategies and local planning schemes.

The LGSS identifies the Denmark townsite (which comprises the Site) as a Sub-Regional Centre.

The purpose of a Sub-Regional Centre is to provide services and facilities that reflect the needs of a local community. Services provided within the Denmark townsite, as identified within the LGSS, include a high school, district hospital, commercial centre and multiple retail outlets, supermarkets, specialty and convenience stores and community and entertainment facilities.

Based on the Site's close proximity to the Denmark town centre, future residents will have easy access to, and be able to take advantage of, the facilities provided within the Denmark Sub-Regional Centre.

SHIRE OF DENMARK

Local Planning Strategy (2011)

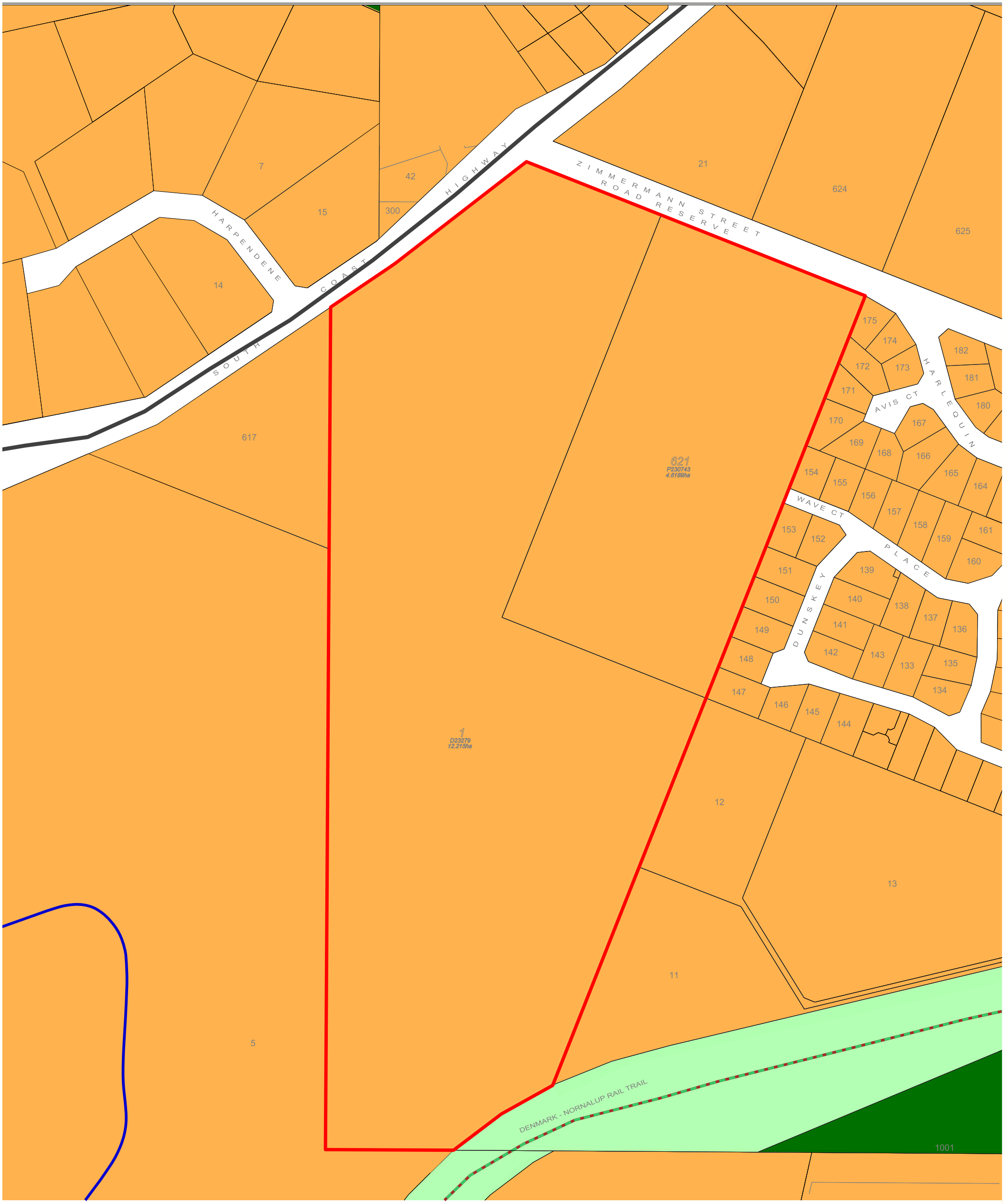
The Shire's 2011 LPS provides the vision to guide the future growth of the Shire for the next 20 years. The LPS objectives for residential expansion within the Denmark townsite is to provide for residential lots for the housing needs and population growth in or near the Denmark townsite, which according to Table 6 within the LPS is forecast to be an additional 1,620 lots by 2031.

The LPS recognises the 1998 Settlement Strategy for Denmark (Settlement Strategy) as being relevant to the townsite's future residential growth. The Settlement Strategy divided the areas identified for Urban Development into Planning Units identified A through to H. Within the Settlement Strategy, the Site is wholly within and comprises the majority of Planning Unit E, which identified the development potential of 140 sewered and un-sewered lots.

Consistent with the Settlement Strategy's identification of the Site for Urban Development, the LPS identifies the Site as Urban Residential- refer **Figure 6 -** LPS Site Identification. The Urban Residential identification is defined in the LPS as:

"…..strategic extensions to existing residential areas on suitable land. They provide logical extensions to the existing development front of Denmark townsite".

This Structure Pan reflects the Site's identification of Urban Residential under the LPS.



LEGEND

LAND USE DESIGNATIONS

- COMMERCIAL
- URBAN RESIDENTIAL
- SPECIAL RESIDENTIAL
- RURAL RESIDENTIAL
- RURAL SMALLHOLDINGS
- PRIORITY AGRICULTURE
- GENERAL AGRICULTURE
- MIXED BUSINESS
- EDUCATION PRECINCT
- WATERWAYS
- INDUSTRIAL
- SERVICE PARK
- REGIONAL ROAD
- NEIGHBOURHOOD CONNECTOR ROAD
- INDICATIVE NEIGHBOURHOOD CONNECTOR ROAD
- SHARED PATH
- HERITAGE RAIL TRAIL
- BIBBULMUN TRACK
- PROPOSED MUNDA BIDDI TRAIL
- AIRPORT BUFFER
- WWTP, WTS AND FUTURE INDUSTRIAL BUFFER AREA
- PARKS AND RECREATION
- PUBLIC USE
- TOURIST
- SUBJECT SITE

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
LOCAL PLANNING STRATEGY
Figure 6

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date - 22 APRIL 2020 | ref - 19-002-007
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2.4.3 PLANNING POLICIES

STATE AND STRATEGIC POLICY

The relevant state strategic and policy documents to the proposal include:

- SPP 3.0: Urban Growth Settlement (2006).
- SPP 3.7: Planning in Bushfire Prone Areas (2015).
- SPP 5.4 Road and Rail Noise (2019).
- DC 5.1: Regional Roads (Vehicular Access) (1998).
- Government Sewerage Policy (2019).
- Draft Liveable Neighbourhoods (2015).

Key State Planning documents are detailed as follows:

STATE PLANNING POLICY NO. 3.0: URBAN GROWTH SETTLEMENT (SPP 3.0)

SPP 3.0 sets out the principles and considerations that apply to planning for urban growth and settlements in Western Australia, with the key objectives relating to this proposal being:

- To promote a sustainable and well-planned pattern of settlement across the State, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space.
- To build on existing communities with established local and regional economies, concentrate investment in the improvement of services and infrastructure and enhance the quality of life in those communities.

The development of the Site will provide for a variety of housing types and associated open space. As the Site is in close proximity to the Denmark townsite (and is identified in the LGSS as part of the Denmark town centre), which has a diverse range of community facilities and services, the development will complement and strengthen these facilities and services including through increased patronage.

STATE PLANNING POLICY NO. 3.7: PLANNING IN BUSHFIRE PRONE AREAS (SPP 3.7)

The Department of Planning's latest SPP 3.7 Planning in Bushfire Prone Areas became operational in November 2024, with the aim of reducing the risk of bushfire to people, property and infrastructure by encouraging a conservative approach to strategic planning, subdivision, development and other planning decisions in bushfire-prone areas. Specifically, SPP 3.7:

- Elevates bushfire considerations to be addressed by the highest level of planning policy available, giving clear status and effect in the land use planning policy framework.
- Emphasises the need to consider bushfire management measures in strategic level policy documents, including regional and local planning schemes, sub-regional and local planning

strategies and structure plans, as well as during statutory planning processes for subdivision and development applications.

- Seeks to achieve the consistent implementation of bushfire management measures across the community.

Planning for Bush Fire Risk Management Guidelines have also been prepared and are designed to supplement the objectives and policy measures established in SPP 3.7, to assist in their interpretation and to provide advice and information on how bushfire risk is to be addressed when designing or assessing a proposal within a bushfire-prone area.

A BMP has been provided within Appendix B and demonstrates compliance with SPP 3.7.

State Planning Policy 5.4: Road and Rail Noise (SPP 5.4)

The intent SPP 5.4 is to minimise the impact of road and rail noise on noise sensitive land uses. The site abuts South Coast Highway, which is classified as a Primary Road in Table 1 of SPP 5.4. As the trigger distance from a sensitive land use to a primary road is 300 metres, SPP 5.4 is applicable to the site.

In accordance with the Noise Management Plan (refer Appendix I), with the application of the appropriate noise mitigation measures for select lots, the site can be developed in compliance with SPP 5.4.

It is noted, the noise modelling for the site was undertaken on South Coast Highway, but not adjacent to the proposed development. However, as per SPP 5.4 there is allowance where the same road can be monitored in another location, provided there are no significant changes between the two locations, i.e. major intersections etc which could change the traffic volumes, which applies to this site. Also, the predictive noise model is calibrated to the measured noise level and the current road traffic and is directly relatable to the development.

Development Control Policy 2.2 – Residential Subdivision (DC 2.2)

DC 2.2 addresses requirements for the subdivision of land into residential lots. The policy facilitates the supply of residential lots of a wide range of sizes and shapes, which reflect the statutory provisions of local planning schemes, the availability of reticulated sewer and the need for frontage to public roads. In this regard it is noted the Site is provided with both reticulated sewer and frontage to a public road.

The Structure Plan demonstrates an appropriate Site layout and development pattern, which will in time be used to guide future subdivision of the Site.

Development Control Policy 5.2: Regional Road Vehicular Access (DC 5.2)

DC 5.2 is applicable to the development of the Site as it relates to vehicle access for development abutting major regional roads (i.e., South Coast Highway, which is a primary road).

As identified in the Transport Impact Assessment appended in Appendix A, primary access and egress to the development will be via the construction of Zimmerman Street road reserve, which intersects with South Coast Highway.

GOVERNMENT SEWERAGE POLICY (2019)

This policy establishes the Western Australian Government's position on the provision of reticulated sewerage in Western Australia for the rezoning, structure planning, subdivision and development of land. Relevant to this Structure Plan, the following policy objectives are identified:

- To require connection of new subdivision and development to reticulated sewerage.
- To protect the environment and the State's water and land resources.
- To promote the efficient use of infrastructure and land.
- To minimise costs to the broader community by ensuring an appropriate level and form of sewerage servicing is provided.

Part 5.1 of the Policy requires planning proposals (i.e. this Structure Plan) to connect to or provide for reticulated sewerage where a proposed subdivision can be reasonably connected to reticulated sewerage.

As addressed in Part One Section 4.4.3 of this report, the Site is in close proximity to the Water Corporation's existing sewerage infrastructure. As part of the development of the Site, connection will be made to this infrastructure.

DRAFT LIVEABLE NEIGHBOURHOODS (2015)

The intent of Liveable Neighbourhoods is to provide an urban structure that facilitates an interconnected movement network. The Structure Plan can meet the relevant local level Elements of Liveable Neighbourhoods as follows:

Element 2- Movement Network

The Structure Plan identifies a local street network comprising local access streets. It is forecast at the time of subdivision; the road reserve widths will range from 25 metres to 13 metres. Within these road reserves allowance has been made for the strategic placement of shared pathways, street trees and the necessary servicing infrastructure.

Element 4- Lot Design

The Structure Plan design makes allowance for an interconnected street network offering a diverse range of fully serviced lots with a density code of R20/R30.

The Structure Plan will enable a range of uniform lots that take advantage of the Site's attributes, which include remnant vegetation, a creek line, natural elevation and contours and the retention of existing structures.

In some instances lots will side onto POS. To ensure overlooking/passive surveillance of the POS, as per Section 5.0 in Part 1 of this report, Local Development Plans will be required to be submitted to the Shire at the time a development application demonstrating compliance with this.

Element 5- Public Open Space

As covered in detail in Section 4.2 below, POS provision has been made to provide recreation and nature spaces, which capitalise on the Site's natural attributes. The area of POS meets the minimum POS requirements as per Liveable Neighbourhoods and the Shire's Town Planning Policy No.39 (refer below).

SHIRE OF DENMARK PLANNING POLICIES

The Shire Planning Policies relevant to the proposal include as follows.

POLICY NO. 28- SETTLEMENT STRATEGY FOR DENMARK (TPS 28)

Council's TPS 28, as mentioned, seeks to establish Council's position for provision of residential land to cater for urban growth to the year 2020. TPS 28 applies to the Denmark townsite with relevance to the Site being the Strategy Objectives outlined in TPS 28, which are as follows:

- *Contain urban sprawl and retain public open spaces and natural bushland near the town centre.*
- *Protect the environment and particularly waterways and water bodies.*
- *Consolidate existing residential areas to enable better facilities and services to be provided close to where people live.*
- *Optimise the utilisation of existing infrastructure investment.*

The Structure Plan for the Site accords with the Strategy Objectives given the following:

- It will contain urban sprawl as it is surrounded by developed residential land and land zoned for future urban development.
- Allowance has been made for the provision of POS and retention of natural bushland.
- The northern portion of the Site has an intermittent creek/waterway. The development process makes allowance for the protection of this, as the waterway will be placed in POS.
- The development will consolidate the surrounding urban development and utilise the existing infrastructure.

Furthermore, as previously stated, the Site falls entirely within Planning Unit E of the Settlement Strategy- refer Figure 7. Key items of relevance to Planning Unit E in support of this Amendment and the corresponding Structure Plan are as follows:

- Acknowledgement the majority of the Site descends/gravitates towards Kemsley Estate and can be connected to the existing reticulated sewerage.
- The Site can be serviced by reticulated water from the existing supply to Kemsley Estate.
- The Site is recognised as being a logical expansion to the Denmark townsite.
- The availability of existing services and their ability to support urban development of the Site.

FIGURE 7 SETTLEMENT STRATEGY FOR DENMARK- SITE IDENTIFICATION

POLICY NO. 39- PUBLIC OPEN SPACE (TPS39)

The Shire's TPS 39 provides criteria for Council's assessment of the quality, size, type and distribution of POS. This Structure Plan accords with TPS 39, based on the following:

- As identified by the Structure Plan (refer **Plan 1**), there are two large areas of POS proposed, being a northern and a central location and minor areas- defined for tree preservation. The two large areas are classified as a Neighbourhood Park and are within 400m of the proposed residential lots. The smaller areas have been located to accommodate drainage for the Site (the southern smaller location) and key remnant vegetation.

- Within the large northern area of POS, a foreshore reserve and riparian zone will be provided in acknowledgement of the creek line flowing west to east. The foreshore reserve is based on a hydrological flood study (refer **Appendix G**). The northern area of POS will also accommodate drainage requirements for the Site. Development of the northern portion will be addressed via a Landscape Management Plan (refer **Appendix H**).

- The POS location reflects key features, being the creek in the northern portion and an east-west ridgeline of significant remnant vegetation across the centre of the Site.

- The POS and surrounding lots have been designed to maximise passive surveillance. In some instances where lots abut onto POS, appropriate overlooking and passive surveillance will be achieved through the Structure Plan's requirement for a Local Development Plan. This will ensure, for those lots, the house design provides habitable rooms orientated towards the POS.

- Detailed POS design will be undertaken at the time of development. However, at this stage it is envisaged the POS areas will be for passive recreation, given there are sufficient areas of active recreation in close proximity to the Site.

- The POS, particularly the northern section, will meet urban water principles as confirmed in the Local Water Management Strategy (LWMS- refer **Appendix E**).

POLICY NO. 42- PUBLIC ART (TPS42)

The Shire's TPS 42 requires the integration of public art for a development with a construction cost exceeding $500,000, with the value of the art being 0.5% of the cost of construction.

As the construction cost will exceed this nominated amount, at the time of development, a public art installation to the value of 0.5% of the value of construction will be proposed and provided. Prior to commissioning any works, the developer will submit the public art proposal to Council for their comment.

3 OPPORTUNITIES AND CONSTRAINTS

A Site Context and Other Land Use Constraints and Opportunities plan has been prepared (refer **Figure 8**). The outcomes of this plan have identified and subsequently informed the design of the Structure Plan.

Key Items covered in the reporting for the development of the site are as follows.

3.1 BIODIVERSITY AND NATURAL AREA ASSETS

Two environmental reports have been undertaken over the site, as follows:

1. PGV Environmental has undertaken an Environmental Assessment

2. Aurora Environmental have undertaken a Tree Retention and Black Cockatoo Assessment

Refer **Appendix D**- Environmental Assessment and Tree Retention and Black Cockatoo Assessment.

The reports established the following with respect to existing Flora and Fauna:

Flora

Whilst the majority of the Site has historically been cleared for agricultural purposes, there are significant stands of remnant vegetation in various locations of the Site as follows:

- A Marri and Jarrah woodland and associated low shrub land is located at the southern end of the Site, which slopes towards the southern boundary. The trees are mostly young, and the understory is predominantly less than 1m high. This woodland is not fenced and is currently grazed.

- A Marri and Karri woodland is located on the upper slope on the southern portion of the Site. The majority of trees comprise Marri (up to 8m) and some young Karri (7m high). The understory comprises Bracken.

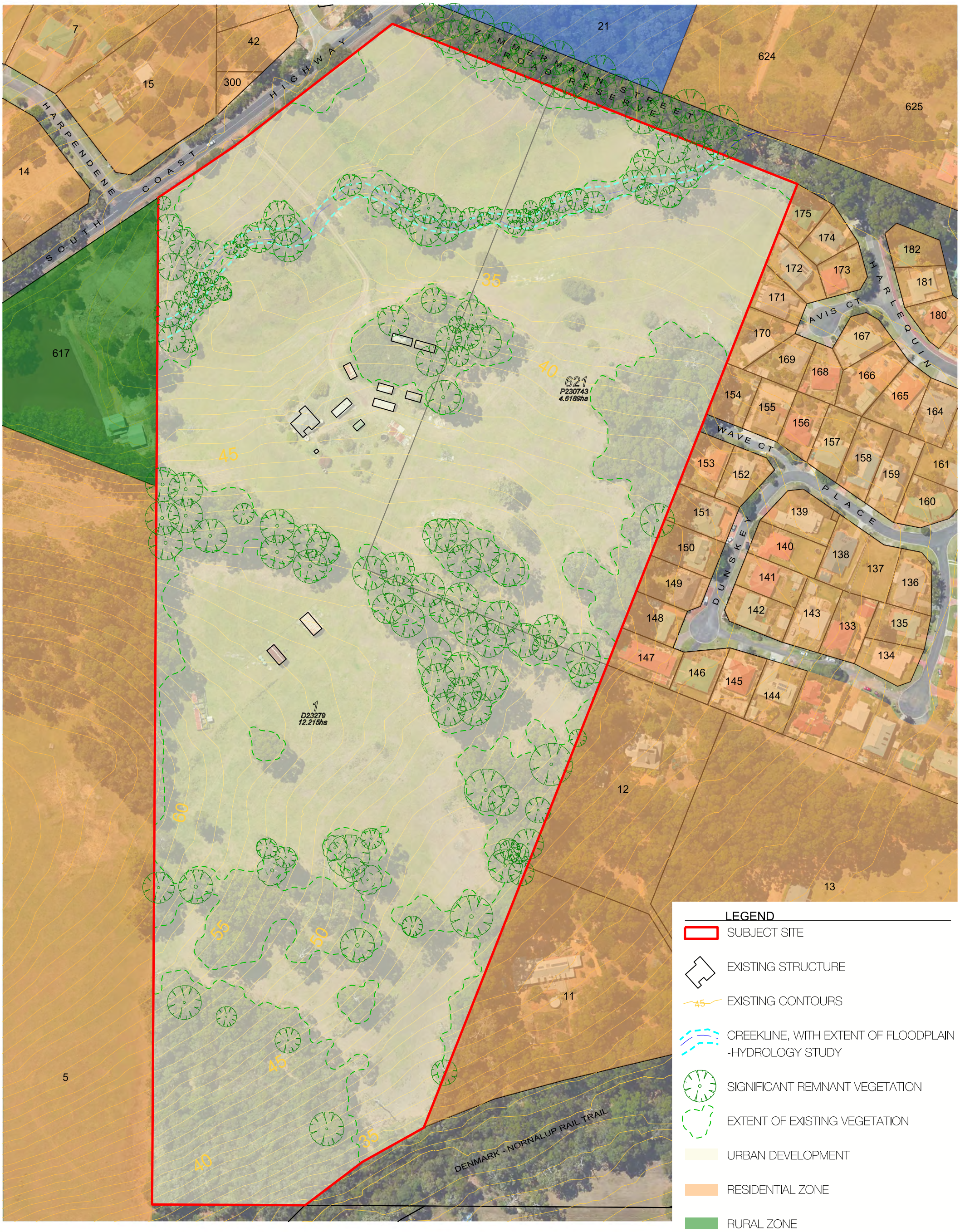
- Karri and Marri are located on the central ridgeline of the Site and comprise the most significant vegetation feature. The Karri is up to 12m high and the Marri less common. The understorey, which is mostly degraded, comprises Bracken.

- Taxandria Tall Open scrub and Sedgeland is located on the western half of the creek line. The Taxandria is up to 4m high and dense.

- The centre and eastern portions of the creek line contain stands of Karri, up to 14m high, and Bracken. Also within this, there are Melaleuca trees up to 8m high.

- As per the Tree Value Plan comprising the Aurora Report, there were 305 significant trees recorded on site, which also include ethe Harlequin Street Road Reserve,

The vegetation in portions of the southern section of the Site is rated as being in excellent to good condition. The balance southern section is degraded to completely degraded and the understorey comprises a high weed species component and scarcity of native species.



621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

SITE CONTEXT AND OTHER LAND USE OPPORTUNITIES AND CONSTRAINTS

Figure 8

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date - 4 AUGUST 2025 | ref - 19-002-008B
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0m 30m

The vegetation within the creek line is rated as good, with two species of declared pests.

The findings from the Environmental Assessment confirm there are no threatened or priority flora species on the Site and the vegetation is not representative of a Threatened or Priority Ecological Community.

Whilst a detailed design of the site will be undertaken at the time of subdivision, informing the engineering and hydrological considerations a Concept Development Plan has been prepared. This plan reflects the road layout, lot design and a surveyed tree pick up. The Concept Development Plan – **Refer Figure 9**: Section 5.5. Concept Development Plan, identifies the indicative retention of significant remnant vegetation within the creek line and the central ridge via the strategic positioning of POS.

In addition to this, where possible, significant trees (Karri and Marri) will be retained in road reserves.

Where possible, the remnant vegetation within the southern portion of the site will be retained through the provision of large lots, which can accommodate the vegetation. Select identified trees will be retained through an appropriate restrictive covenant on title.

Fauna

Based on the remnant vegetation within the woodland and creek line habitats, there is the possibility the Karri and Marri trees provide foraging and potential breeding habitat for three Black Cockatoo species. Within the southern portion of the Site there is the possibility of other ground dwelling fauna species existing. The creek line may provide habitat for two threatened species of fish, however, it is noted the chances of this are very low.

The findings from the Environmental Assessment confirm that as the creek line and many tall trees are to be located in POS, the development will have a minimal disturbance on fauna.

3.2 LANDFORM AND SOILS

In establishing the landform and soils, as part of the Environmental Assessment, PGV Environmental has confirmed the following:

- The Site is undulating with a high central point at around 60m AHD, which slopes to the northern and southern boundaries, with an elevation of 32m AHD at the north and 42m AHD at the south.
- The soils are Keystone Brown Duplex Phase, which are normally associated with Marri and Karri Forest. A small portion of the north eastern corner is identified as Owingup Subsystem, which is normally associated with swamps.

Furthermore, as established in the correspondence from Bowman and Partners Environmental (refer **Appendix K**), given the low scale historical uses on site, there is no contamination risk to the Site.

3.3 GROUNDWATER AND SURFACE WATER

As mentioned, a west-east flowing creek line traverses the northern portion of the Site. The creek line is dammed immediately upstream on the adjoining property (i.e., to the west), which in turn dictates the flow. Immediately surrounding the creek line, isolated portions of the Site is relatively poorly drained.

The balance of the site does not comprise any groundwater or surface water.

In accordance with the Hydrological Flood Study and the LWMS, the proposed development will accommodate the creek line with the appropriate setback distances provided. Furthermore, in accordance with the drainage modelling undertaken (i.e., the drainage catchment plan), it has been demonstrated where the drainage for the northern portion of the site can be accommodated within the land surrounding the creek line.

3.4 BUSHFIRE HAZARD

As identified in Part 1, a BMP has been prepared by Ecosystem Solutions for the Site- refer Appendix B.

The aim of the BMP is to:

- *Identify the fire threats to the proposed Urban Development using vegetation types and tables from AS:3959 and outline the bushfire mitigation works and practices required to reduce the risk of bushfire impacting values, i.e., to life, property, infrastructure and the environment.*
- *Sufficiently meet the requirements of the subdivision approval process and to gain local government approval.*

The responsibilities for the implementation and maintenance of this BMP rest with the owners of the proposed lots (refer to *Section 5 of BMP – Responsibilities for Implementation and Management of the Required Bushire Measures*). The Shire of Denmark's Bushfire Control Officers or Shire Rangers could be expected to monitor this *Bushfire Management Plan* to ensure that the works programmes and maintenance are carried out.

3.4.1 HAZARD ASSESSMENT

As per the BMP, suitable BAL ratings were identified for the Site, both pre development, as per the current vegetation types and surrounding land uses, and post development following subdivision works. The post development BAL identifies areas within the Site subject to BAL FZ and BAL 40, as follows:

- The northern portion adjacent to South Coast Highway and the creekline. At the time of development, this area will be reviewed, with select areas of vegetation to be removed for civil works. This in turn will reduce the hazard. Where the hazard cannot be reduced, suitable APZ scenarios will be established.

- The western portion of the site. The BMP shows this as being within BAL FZ and BAL 29 post development, given the adjoining vegetation. However, as the western landholding (Lot 5) is identified for future residential development and has an approved Structure Plan in place, at the time of development of Lot 5, the BAL will be reduced to enable the development of the current identified BAL FZ and BAL 29 lots.

- The southern portion, which abuts the Denmark to Nornalup Rail Trail. To accommodate the retention of this vegetation, large lots will be provided in this locality to accommodate the required BAL FZ and BAL 29 areas.

- The south eastern portion. To accommodation the remnant vegetation in the developed land to the east, a suitable setback has been provided through a perimeter road and the provision of large lots with significant depth that can accommodate the required BAL FZ and BAL 29 areas.

3.4.2 ASSET PROTECTION ZONE

The requirements for Asset Protection Zones (APZ's) are addressed in the BMP. This lists the required separation distance from a select vegetation plot to achieve a BAL 29 or less.

3.4.3 STRATEGIC FIRE ACCESS

The proposed lots will be accessed from South Coast Highway and Ocean Beach Road, via Zimmerman Street and Harlequin Street. All roads will be sealed, in good condition and meet the requirements of Table 1 (PBRM Guidelines, Appendix 3, Element 3). In addition to this, an Emergency Access Way will also be provided to:

1. South Coast Highway.

2. Wave Court within the Kemsley Estate.

3. The Denmark to Nornalup Rail Trail.

Access to the proposed new lots is provided by sealed bitumen roads as detailed above and will be constructed to meet the relevant technical requirements.

3.4.4 FIREFIGHTING WATER SUPPLY

Scheme water will be connected to all lots in the development. Fire hydrants will be installed at approximately 200 metre intervals along the internal road network and will be marked in accordance with the requirements of the Department of Fire and Emergency Services and the Water Corporation's *No.63 Water Reticulation Standard.*

3.4.5 IMPLEMENTATION

As detailed within the *Bushfire Management Plan* the implementation of that document is recommended to be undertaken as follows:

- Roads and Emergency Access ways to be maintained by the Shire as required.

- Owners to annually comply with the Shire fire notices. Shire Rangers could be expected to do inspections for compliance prior to each fire season.
- This *Bushfire Management Plan* should be reviewed by the Shire every 3 years to ensure it is still current and relevant.

3.5 HERITAGE

3.5.1 ABORIGINAL

A search of the Department of Aboriginal Affairs *Aboriginal Heritage Inquiry System* has been undertaken and there are no registered Aboriginal Heritage Sites recorded within the Site. However, the identification of the potential Gnamma Tree will be reviewed prior to the commencement of subdivision works.

3.5.2 EUROPEAN

A search of the Heritage Council's inherit database has been undertaken and no matches were recorded for the Site.

4 STAKEHOLDER ENGAGEMENT

Prior to lodgement of the Structure Plan, consultation was undertaken, as follows:

Town Planning

The proposal for the development of the Site has been presented to a full Shire Council briefing session. This was followed by the submission of a Scheme Amendment Request (SAR) to rezone the Site from Rural to Development Area (i.e. Urban Development). The SAR was withdrawn based on mutual agreement with the Shire and the applicant.

Subsequent to the withdrawal of the SAR, a meeting was held with the Shire of Denmark's Manager of Planning and Officers from the Department of Planning, Lands and Heritage in their Albany office. At this meeting it was generally agreed the Site could be considered for urban development.

Since the rezoning of the site from Rural to Urban Development under Amendment 146 to TPS 3, various meetings have been held with the Shire of Denmark administration. These meetings have focussed on items to be addressed in the preparation of the subject Structure Plan.

Furthermore, as part of the advertising process for Amendment 146, the Shire of Denmark sought comment from the community and government referral agencies. The feedback from the advertising process has informed the Structure Plan being submitted.

Department of Water and Environmental Regulation

Given the creek line traversing the Site, the project's then hydrologist- Coterra Environment, has been in consultation with the Department of Water and Environmental Regulation (DWER) to ascertain the requirements for addressing the creek line and associated drainage requirements for the proposed Residential development- refer email correspondence within Appendix F. Based on the findings from the Hydrological Flood Study (refer Appendix G), the development requirements surrounding the creek line have been addressed.

Servicing

The project's engineer- TABEC Civil Engineering Consultants, has undertaken preliminary consultation with the Water Corporation and Western Power to confirm availability of services to support the development. The Water Corporation and Western Power have confirmed there is sufficient capacity within the existing network(s) to adequately provide power, water and wastewater services to the Site.

5 DESIGN RESPONSE

The purpose of the Structure Plan is to enable the Residential development of the site with associated POS.

5.1 RESIDENTIAL

Under the Urban Development zoning, the residential density R-Code prescribed for the site will be R20 and R40.

5.1.1 R- CODE RATIONALE

The R20 residential density code within the Structure Plan area has been determined having regard to the planning context, site characteristics, and surrounding land use patterns.

R20 has been selected for the following reasons:

1. Consistency with Local Planning Framework
   The R20 coding aligns with the prevailing densities in adjacent established residential areas. This will provide compatibility with existing built form density.
2. Servicing Capacity
   The site will be serviced by reticulated sewer, water and underground power at a scale appropriate for low-to-medium density residential development.
3. Neighbourhood Character and Amenity
   R20 supports the continuation of a predominantly low-density residential environment, which reflects the established character of the locality.
4. Access and Traffic Considerations
   The projected lot yield under R20 can be accommodated by the existing and proposed road network without generating undue traffic impacts. The density provides an appropriate balance between efficient land use and maintaining safe, low-traffic residential streets.

The R20 density coding represents an appropriate and balanced response to the physical and servicing context of the land and the local planning framework.

The select areas of R40 have been selected for the following reasons:

1. Integration with Public Open Space
   Locating higher-density housing (i.e., R40) opposite POS maximises the amenity benefits of open space for residents, creating attractive opportunities for medium-density living with direct access to recreational areas. This also promotes passive surveillance, contributing to the safety and activation of the open space consistent with Liveable Neighbourhoods principles.
2. Efficient Use of Land
   The R40 lots in proximity to POS ensures medium-density housing is located in areas of high amenity value, while lower-density coding (i.e., R20) is applied elsewhere to maintain character associated with development in the Denmark town centre. This strategic distribution supports housing diversity without compromising established residential form.

3. Diversity of Housing Product
   The inclusion of R40 coding provides opportunities for a broader range of dwelling types, including grouped dwellings. This supports State Planning Policy 7.3 (R-Codes) objectives for housing choice and affordability, meeting the needs of a more diverse community.
4. Walkability and Amenity Outcomes
   Higher-density coding near POS aligns with planning principles of walkability and liveability, ensuring residents in smaller dwellings have ready access to high-quality outdoor spaces. This reduces reliance on larger private lots for open space provision and supports more compact, sustainable development.

The R40 density coding opposite the Public Open Space is an intentional design measure that supports housing diversity, enhances surveillance and activation of community spaces.

5.1.2 INDICATIVE DWELLING AND POPULATION YIELDS

Based on known site opportunities and constraints and general town planning parameters, it is forecast the Site has the potential to deliver 144 residential lots. It is noted, in accordance with Table 9 of the LPS, the forecast lot yield for Planning Unit E (i.e., the Site) is 70 Urban Residential Lots and within the Settlement Strategy for Denmark the potential yield is for 140 lots. Based on the R20 to R40 density code, the Site achieves the lot yield forecast of the LPS and the Settlement Strategy.

In accordance with a yield of 144 lots, this in turn will create the ability for approximately 160 dwellings, given the identification of group housing sites. Assuming a household size of 2.5 persons per occupied dwelling (as per the LPS- Table 2 Households and Family Types) a population of 400 people is estimated for the development.

5.2 PUBLIC OPEN SPACE

POS has been strategically located to provide the high amenity settings envisaged for the subdivision through the provision of green linkages.

The POS is separated into three categories:

- Recreation – POS that is to be developed and will provide opportunities for passive recreation.
- Nature – POS incorporating vegetation that is to be preserved to maintain natural attributes, including the creek line and remnant vegetation.
- Drainage- POS to be developed to provide amenity through suitable landscaping and provide the purpose of drainage through a swale.

The location of POS has had regard to the issues and opportunities and summarised as follows:

Creek Line POS

This considers the riparian vegetation, the established floodplain and a suitable amount of land to the north and south to provide a natural environment. It also provides an east-west ecological linkage, and a mix of nature recreation purposes. This POS will accommodate three drainage swales, which will be designed to seamlessly integrate with the overall POS design.

Central Linear POS

This is located towards the high point of the Site, roughly following an east-west ridgeline. It has been designed to retain the linear alignment of remnant natural vegetation (i.e. mature Karri trees) and to provide an area for passive recreation.

Southern POS

The southern POS has been strategically located to provide for the function of drainage. It will be designed as a swale, which can serve the purpose for passive recreation.

There are two localities within the development where POS will directly abuts future lots as follows:

Creek Line POS

The potential for the boundary of up to 20 lots to directly abut the boundary of the creek line POS. In accordance with Part 1, Section 4.2.2 of this report, future Urban Development will be required to adhere to a suitable Local Development Plan, which amongst a range of items will ensure passive surveillance over the POS. This can be done by mandating habitable rooms overlook the POS and for the developer to construct open weave style fencing to a height of 1.2m on the boundary with the POS.

Central Linear POS

The potential for four large lots, with two developed for the purpose of group housing and two standard residential lots.

As per the Creek Line POS, passive surveillance and interaction with the POS can be ensured through the requirement for the implementation of a Local Development Plan.

The total amount of POS provided achieves the 10% POS requirement of the WAPC and the Shire. The POS areas will be confirmed at time of subdivision when a detailed Plan of Subdivision is prepared. It is understood detailed POS landscaping plans will be required as a condition of subdivision approval to the satisfaction of the Shire.

5.3 WATER MANAGEMENT AND DRAINAGE

Based on studies undertaken for the Site relating to the hydrological and environmental nature, from an urban water management perspective, the majority of the Site is not considered hydrologically constrained.

The west to east creek line within the northern portion of the Site has required design consideration with respect to setbacks, drainage and ensuring flows are maintained along the creek line without causing flooding down stream.

Whilst the detail relating to the Site is addressed in the LWMS, key items for consideration as follows:

- As per the Drainage Catchment Plan, there are four areas of drainage within the Site. Each of these areas addresses drainage through a stormwater infiltration basin. The three stormwater infiltration basins located in the northern portion of the Site have been designed to accommodate a 20% AEP event, with an overland flow into the watercourse.
- Subsoil drainage will be installed within the two northern basins to ensure perched groundwater does not enter or stand in the basins.
- The southern drainage basin has been designed to accommodate a 20% AEP event.
- The hydrological flood study has ascertained where residential lots can be developed in relation to the creek line and where necessary, any fill requirements.

5.4 CONCEPT PLAN

The Concept Plan (refer **Figure 9**) illustrates the design intent for the site based on the Structure Plan.

The overall design responds to the physical characteristics of the site, including topography, vegetation, and bushfire hazard areas, while integrating with the surrounding road network and established residential areas. The layout reflects Liveable Neighbourhoods principles, ensuring a permeable and legible street network, a well-distributed public open space system, and access to services that support community wellbeing.

The concept plan defines the spatial arrangement of key elements within the Structure Plan area, including:

- Residential. Predominantly R20, with select areas with an R40 density codes applied strategically to provide housing diversity while maintaining compatibility with surrounding areas.
- Public Open Space Network: Strategically located park to celebrate the site's attributes including the existing creek line and high point with mature karri trees.
- Movement and Access: A connected road hierarchy that delivers safe and efficient access, multiple egress points for bushfire resilience, and walkable connections for pedestrians and cyclists.

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

CONCEPT DEVELOPMENT PLAN

Figure 9

WILLIAMS CONSULTING | TOWN PLANNING & PROJECT MANAGEMENT
ph: 0418 116216 | email: sam@williamsconsulting.page
date - 25/07/2025 | ref - 19-002-007C
scale - 1:2000 @ A3

- Environmental Interfaces: Design to maintain the significant remnant vegetation on site

The concept plan forms the guiding framework for subdivision and development, ensuring development occurs in a staged, coordinated and sustainable manner. It will be refined and implemented through detailed subdivision design, engineering, and landscaping at later stages, consistent with the intent of this Structure Plan.

6 CONCLUSION

This Structure Plan has been prepared to facilitate the ultimate creation of 144 lots, associated POS and Road Reserves in accordance with the Uran Development zoning of the Site under TPS3. This proposal is consistent with the LPS identification of the Site for Urban Development and represents an efficient use of the land, which will result in a subdivision layout and density, which can be provided for without creating adverse effects on the receiving environment and amenity of the locality.

The Structure Plan has been prepared within the context of the various WAPC and the Shire's guiding planning documents, all of which make provision for and support this type of development subject to appropriate management and protection measures being implemented.

Overall, noting the Site's context and location, and the conclusions of various supporting technical documents, the suitability of the Site for the eventual subdivision has been confirmed.

As a result of the above it is respectfully requested that the Shire of Denmark proceed with the statutory processes to enable the Subdivision of the site.

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APPENDIX A
TRANSPORT IMPACT ASSESSMENT

transcore
20 years anniversary

transport planning
traffic engineering
modelling

Harlequin Street Structure Plan, Denmark

Transport Impact Assessment

PREPARED FOR:
Williams Consutling

April 2025

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1 Summary

Transcore has prepared this Transport Impact Assessment report for the proposed Harlequin Street Structure Plan in Denmark, Shire of Denmark.

The subject structure plan comprises two sites: Lot 621 Harlequin Street and Lot 1 South Coast Highway. It is situated southwest of the Denmark town centre and is bound by South Coast Highway to the west and Harlequin Street (road reserve) to the north and the existing residential structure plan to the east.

The site is currently vacant and located within an aera that is currently being urbanised.

The subject site has recently been rezoned from Rural to Residential R20-40 following the rezoning application (Shire of Denmark Town Planning Scheme No.3, Amendment No.146).

The WAPC document "*Transport Impact Assessment Guidelines for Developments, Volume 3 – Structure plan (August 2016)*", states that a supporting Transport Impact Assessment is to be prepared for all structure plans encompassing more than 100 dwellings as part of the planning process.

Accordingly, this Transport Impact Assessment includes estimation of traffic that would be generated by the proposed structure plan and the resultant traffic patterns on the surrounding road network. A review of the proposed structure plan access system and key local intersections has been undertaken to establish the capacity of the road infrastructure to accommodate the anticipated traffic flows. The Transport Impact Assessment also provides recommendations for any traffic management measures that may be required to ensure satisfactory traffic operations.

2 Introduction

This Transport Impact Assessment (hereafter TIA) has been prepared by Transcore on behalf of Williams Consulting with regard to the proposed Harlequin Street Structure Plan in Denmark, Shire of Denmark. Refer Figure 1 for locality map.

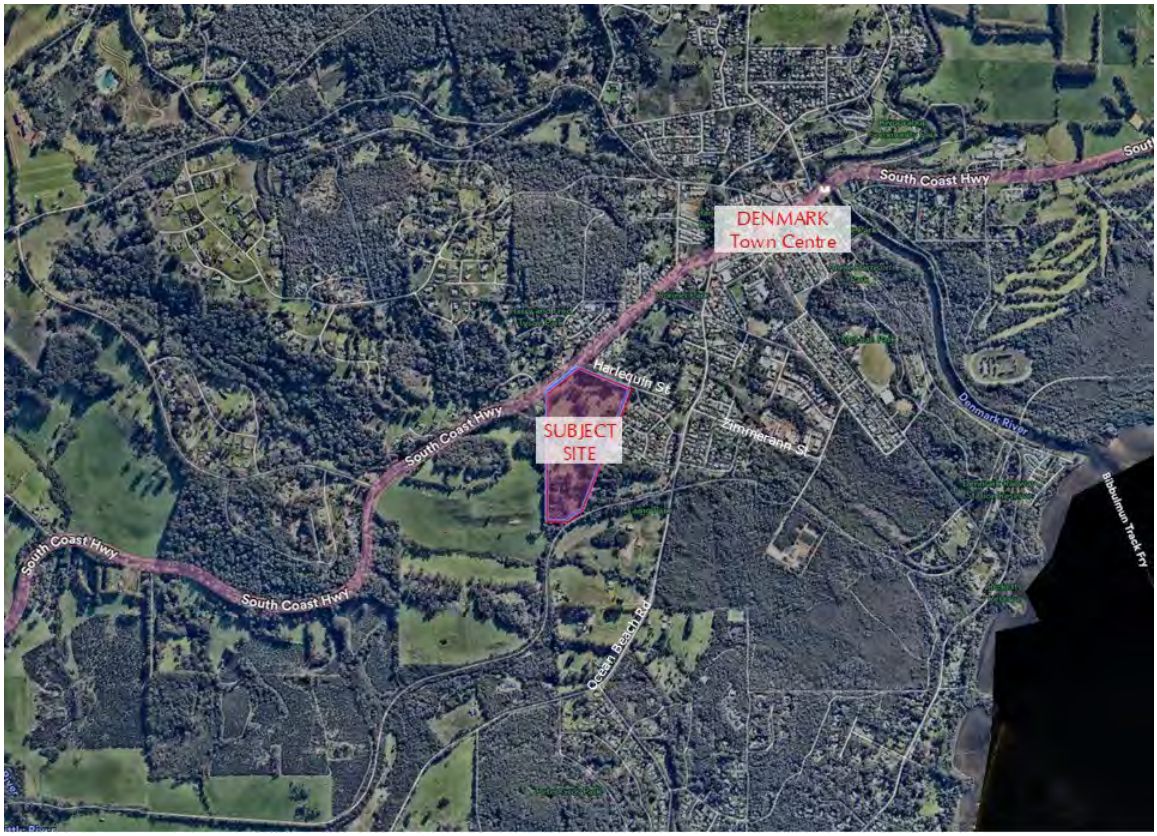


Figure 1: Location of the subject site

The subject site occupies an area which is located approximately 1.1km southwest of Denmark town centre and to the southwest of the South Coast Highway/Harlequin Street (road reserve) intersection.

The site occupies and area of approximately 168.36ha in size and is largely vacant. The subject locality is mostly residential and is currently undergoing further development. The site is also located immediately west of the existing Kemsley Estate.

3 Structure Plan Proposal

The location of the structure plan site in its regional context within the *Local Planning Scheme* is illustrated in Figure 2.

The subject site is zoned as *"Restricted and Additional Use"* in the LPS.

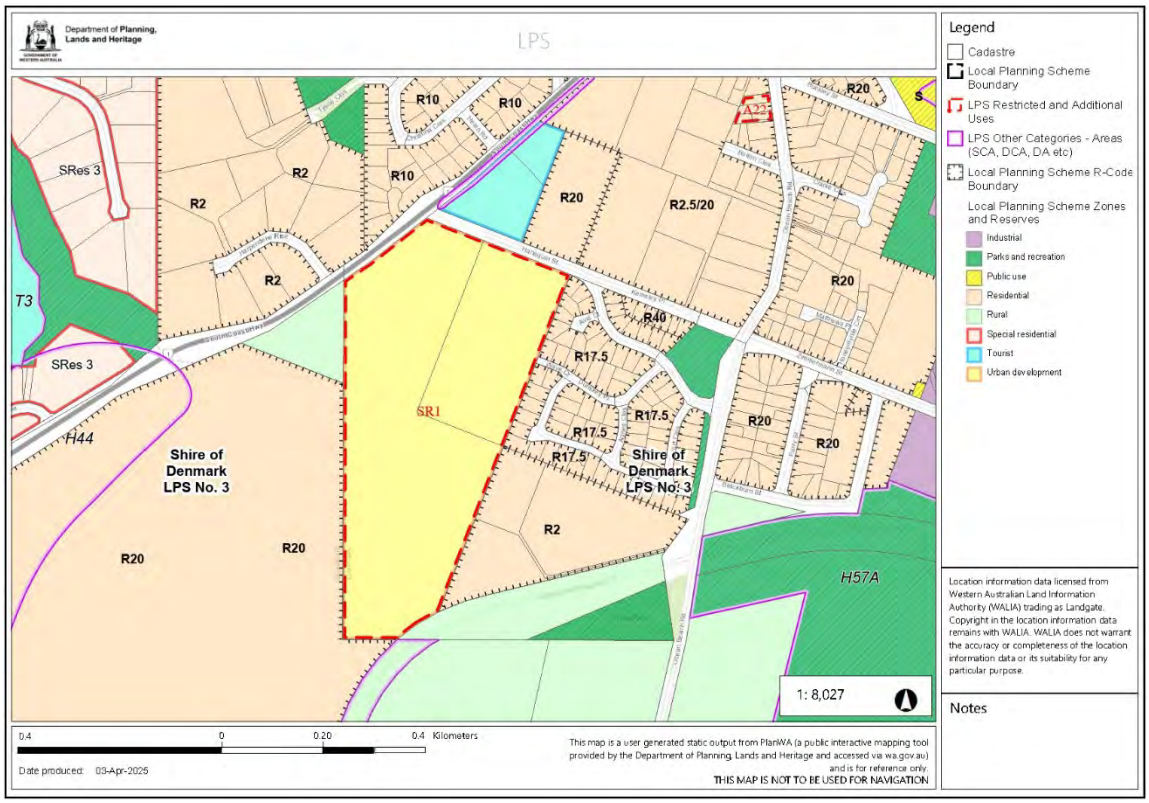


Figure 2: Location of the structure plan within Local Planning Scheme context

The proposed Lot 621 Harlequin Street and Lot 1 South Coast Highway Structure Plan (hereafter HSCH SP) occupies an area of approximately 168.36ha east of South Coast Highway and south of (unmade section of) Harlequin Road (i.e., road reservation of Harlequin Road).

According to the concept plan, the proposed HSCH SP contemplates a residential development comprising approximately 150 residential lots with several P.O.S. distributed across the site.

The internal structure plan road system facilitates efficient and balanced distribution of traffic within the area with the several links to the future external road network, as follows:

- NW full movement crossover on the future Harlequin Street extension;

- NE full movement crossover on the future Harlequin Street extension;
- Two road connections to the future road network to the immediate west of the structure plan area.

As evident, the structure plan accessibility relies on construction of missing elements of the surrounding road network as no direct access off South Coast Highway is proposed. Specifically, as part of the development proposal, a northbound extension of the existing section of Harlequin Street within its road reservation is proposed including its termination intersection with South Coastal Highway. The new South Coastal Highway/Harlequin Street intersection will serve as a principal external gateway to the structure plan. The existing Harlequin Street reservation is 20m wide.

The two road connections at the western side of the structure plan are provided to accommodate seamless integration with the planned future residential structure plan and associated road network to the immediate west.

Detailed assessment of the proposed South Coastal Highway/Harlequin Street extension intersection is undertaken is section 6.5 of this report.

A copy of the concept structure plan is attached in Appendix A.

4 Existing Situation

4.1 Existing Land Use

The subject site is mostly vacant accommodating only one, centrally-located, rural residential development with several outbuildings (sheds), and with the balance of the site undeveloped.

The nearest major retail/commercial nodes are located to the northeast within the Denmark town centre, approximately 1.1km from the site. The closest educational facilities to the subject site are Denmark Primary School and South Regional TAFE, approximately 850m and 2km northeast of the site.

4.2 Existing Road Network

South Coastal Highway is a Primary Regional road under care and control of Main Roads WA. It is constructed as a 7.0m-wide single-carriageway, two-lane road and pedestrian paths along one or both sides only through the town centre. Outside of the town site no pedestrian or cyclist paths are provided.

South Coastal Highway is classified as *Primary Distributor* in the Main Roads WA *Functional Road Hierarchy* document. It is subject to a 60km/h speed limit through Denmark town site with the speed increasing to 80km/h approximately 220m southwest of Harpendene Rise. However, the site frontage to South Coast Highway, including the Harlequin Street reserve, is located in the 60km/h speed zone.

Ocean Beach Road provides connection between Harding River and the Denmark town site. It is constructed as a 7.2m wide single-carriageway, two-lane road with a path on the eastern side of the road.

It is classified as a *Local Distributor* in the Main Roads WA *Functional Road Hierarchy* document. Ocean Beach Road operates under a speed limit regime of 50km/h through the populated area increasing to 80km/h south of Blackburne Street.

Harlequin Street provides connection between the subject site and Ocean Beach Road; however, section between Kemsley Place and South Coast Highway is unmade at this stage. It is constructed as a 6.2m wide single-carriageway, two-lane road with a path on the northern side of the road.

It is classified as an *Access Street* in the Main Roads WA *Functional Road Hierarchy* document. It operates under a default build-up area speed limit regime of 50km/h.

4.3 Existing Traffic Volumes on Roads

According to the most up-to-date traffic data sourced from Main Roads WA South Coast Highway (west of Denmark Mt Baker Road) carried average weekday traffic volumes of about 5,250vpd (2023/24), while east of William Bay Road it carried average weekday traffic volumes of about 1,750vpd (2024/25).

Based on latest available traffic count data sourced from the Shire, Ocean Beach Road, south of Offer Street (i.e., south of South Coast Highway) and south of Weedon Hill carried average weekday traffic volumes of about 5,010vpd (2024/25) and 3,750vpd, respectively in (2024/25).

There are no available traffic counts for Harlequin Street; however, based on the number of dwelling it currently serves it is estimated that this road immediately north of Ocean Beach Road carries under 900vpd.

4.4 Heavy Vehicles

Restricted Access Vehicle (RAV) Network routes are designated for access by large heavy vehicle combinations, which is managed by Main Roads WA. According to Main Roads WA HVS department RAV network map, both South Coast Highway and Ocean Beach Road are currently classified as RAV Network 4 road, as shown in Figure 3. Roads classified as RAV 4 Network are permitted to carry heavy vehicle combinations of up to 27.5m in length.

Figure 3. Existing heavy vehicle road network classification (RAV)

4.5 Public Transport Access

There are no existing public transport services available within the subject locality.

4.6 Pedestrian and Cyclist Facilities

The path network is generally limited to the town centre area with no on-street cycle facilities available. This situation is typical of regional towns.

4.7 Crash Data

Based on Main Roads WA *Crash Map* application there were no crashes on South Coast Highway along the subject structure plan frontage over the 5-year period ending 31 December 2024. Similarly, there were no crashes reported for Ocean Beach Road/Harlequin Street intersection over the same period.

4.8 Changes to the External Transport Networks

The development proposal seeks to achieve indirect access from South Coast Highway via currently missing link of Harlequin Street. It is acknowledged that this intersection is subject to Main Roads WA approval; however, according to Williams Consulting advice, Shire of Denmark "in principle" support has been granted for the intersection of Harlequin Street (extension) with South Coast Highway within its road reservation to provide a northern access and egress point for the development. A 20m-wide road reserve for Harlequin Street is in place between South Coast Highway and Kemsley Place intersection to accommodate this westbound extension of Harlequin Street.

Accordingly, it is proposed to construct the ~280m long section of Harlequin Street from Kemsley Street to South Coast Highway and along the northern frontage of structure plan site including a new South Coast Highway/Harlequin Street T-intersection adjacent to the northwest corner of the subject site. The new road link is proposed as single-carriageway, two-lane road.

The structure plan proposes creation of two priority-controlled T-intersections on the new section of Harlequin Street, approximately 55m and 215m east of South Coast Highway.

4.9 Integration with Surrounding Road Network

The proposed structure plan is consistent with long-term planning for the subject locality. The road network serving the proposed structure plan area will indirectly connect to South Coast Highway and Ocean Beach Road ensuring good integration with the existing and future road network system in the locality. The design of the external structure plan access system ensures no rat-runs through the structure plan.

The proposed internal structure plan pedestrian and cyclist path network will connect to the existing path network on Harlequin Street and Ocean Beach Road providing access to the key local attraction nodes within the town centre.

4.10 Changes to Public Transport

There are no public transport services in the locality.

5 Proposed Internal Transport Network

5.1 Road Hierarchy

As can be seen in the structure plan, all internal roads are broadly in line with the WAPC *"Liveable Neighbourhoods"* road classification guidelines, with variations to the proposed road reservations.

Accordingly, all proposed internal structure plan roads can generally be classified as *Access Street C* and *Access Street D.* However, the proposed roads include a modified road reservation width to suit and integrate seamlessly with the surrounding rural context. Refer Figure 6 for more details.

Some key characteristics of typical road cross-sections, as defined in WAPC *Liveable Neighbourhoods (2009, Update 02)* publication, are outlined and discussed in more detail further in this section.

It should be noted that the final standard of structure plan roads will be further negotiated and established in the subsequent detailed design stages of the project.

Access Street C is a typical residential street with parking on both sides of the street projected to carry up to 3,000vpd.

A typical road reserve of 15.4 with a trafficable carriageway width of 7.2m is recommended by *Liveable Neighbourhoods* for an *Access Street C*. Refer to Figure 4 for typical *Access Street C* cross section.

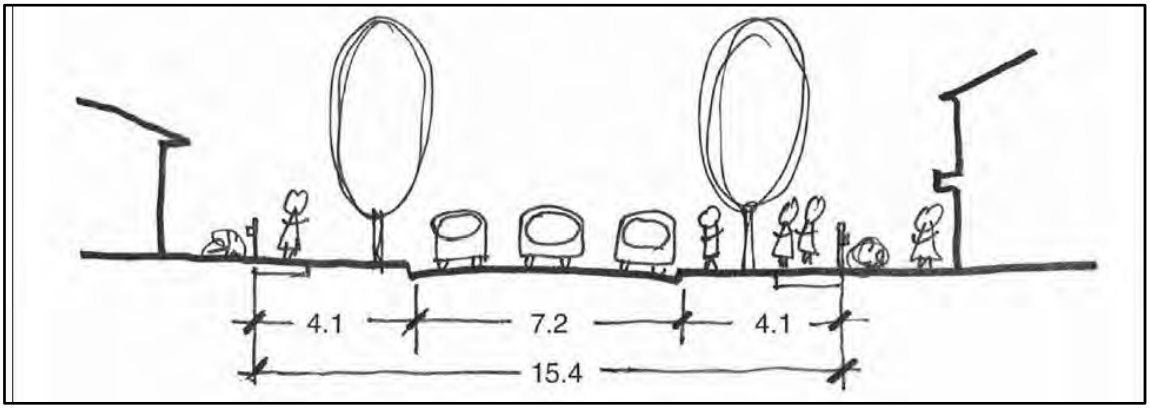


Figure 4. Access Street C – yield (or give way) street with target speed of 40km/h (<3,000vpd)

However, in this case Access Street C with a slightly reduced 15.0m wide road reservation is proposed to serve as higher order street and structure plan statement entry road.

The typical road reserve for *Access Street D* entails a road reserve width of 14.2m with 6.0m wide trafficable carriageway pavement and up to 4.1m wide verges on both sides. In this case, two variations of this type of streets are proposed for the balance of structure plan road network.

In the first case, the modification involves minor widening of the road reservation to a 15.0m width for majority of internal structure plan roads. The second modification involves reduction of the road reservation to 10.0m width for the perimeter roads serving a total of 15 lots at the northwestern corner of the area. These roads are fronting residential dwellings on one side only. Considering a very limited number of dwelling these roads serve the two roads are projected to carry a very limited volume of traffic.

If fronting P.O.S., access street verge adjacent to P.O.S. may be reduced as no services are required along the P.O.S. side of the road.

Maximum desirable daily traffic volume for this type of road is 1,000vpd. The typical cross-section of the *Access Street D* sourced from *"Liveable Neighbourhoods"* is illustrated in Figure 5.

The low density of the proposed development is not expected to result in a significant on-street (visitor) parking demand which is comfortably accommodated by the proposed road reservation.

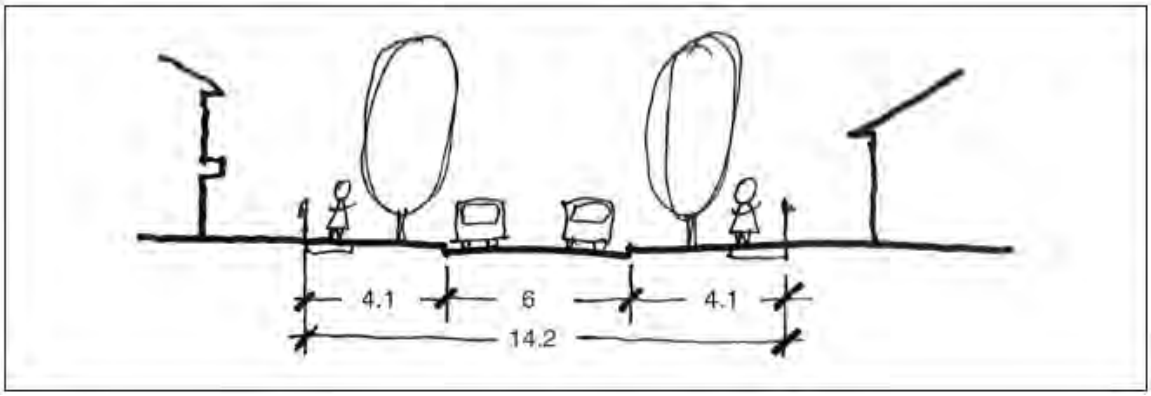


Figure 5. Access Street D (narrow yield) with target speed of 30 km/h (<1,000vpd)

Figure 6. Proposed internal structure plan road hierarchy

5.2 Public Transport

There is no public transport service proposed as part of the development proposal.

5.3 Pedestrian and Cyclist Facilities

The existing pedestrian and cyclist facilities available at this locality are discussed in previous sections (refer section 4.6 for more details).

Pursuant to the provisions of Liveable Neighbourhoods, footpaths on one side of the road are generally applicable to all lower order access streets while a combination of pedestrian paths on one side and a shared path on the other is used for higher order access street.

Hence, the combination of shared path one side and footpath on the other is proposed for the section of *Access Street C* where the shared path is continuing through the northernmost P.O.S.

All other internal structure plan roads are envisaged to incorporate a footpath on one side of the road only. Due to the projected low level of traffic activity on internal structure plan roads it is anticipated that drivers and cyclists can safely share the road environment. The Figure 7 illustrates the proposed structure plan path network.

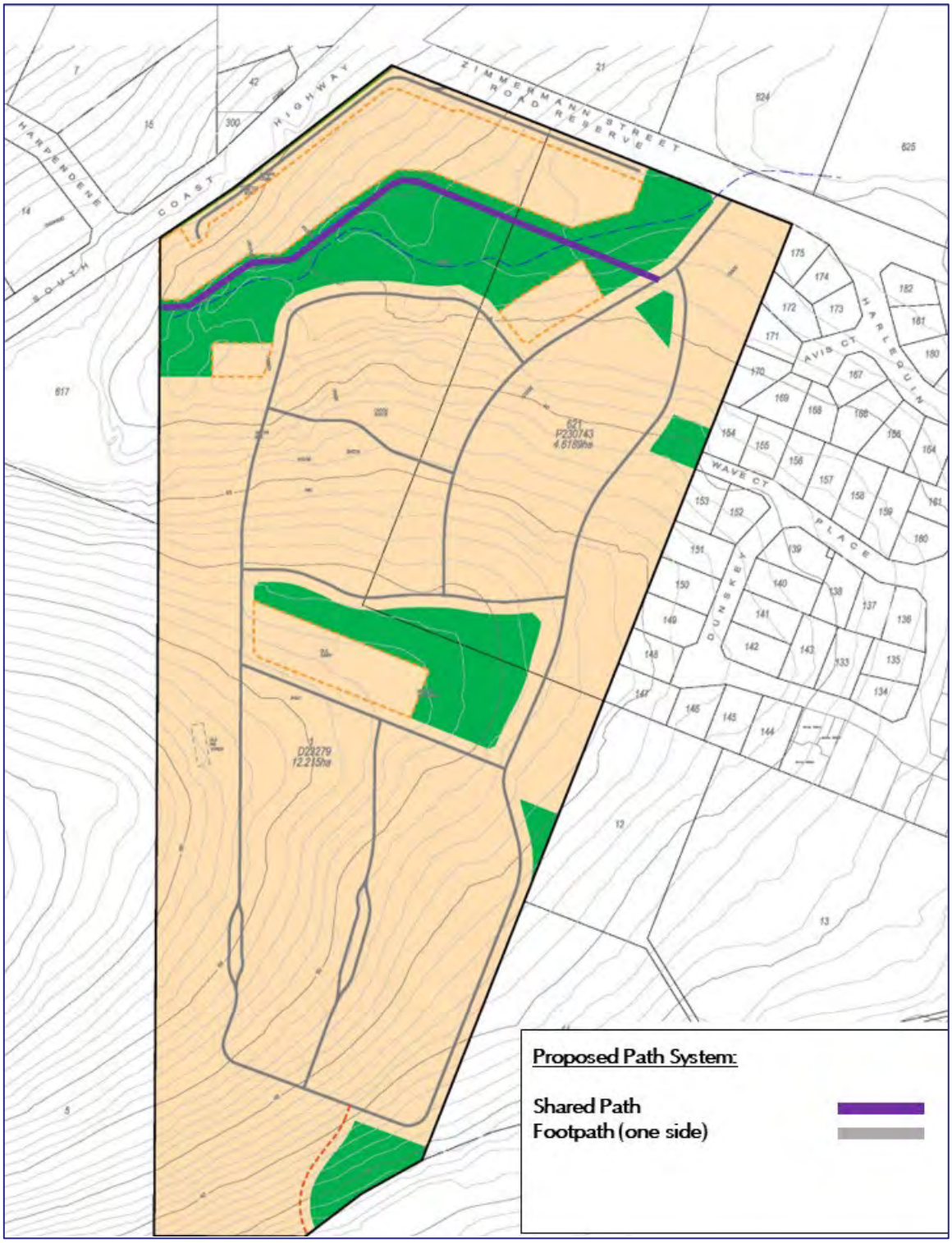


Figure 7. Proposed structure plan path network

6 Traffic Assessment

6.1 Assessment Period

The assessment year that has been adopted for this analysis is post-2036 at which stage it is assumed that the structure plan could be fully built-out and occupied.

Weekday morning (AM) and afternoon (PM) peak hours are typical peak traffic activity hours for the developments that are residential in nature. Hence, typical weekday AM and PM peak periods are deemed appropriate for analysis of key roads and intersections in this assessment.

6.2 Trip Generation and Distribution

The daily traffic generation rate used for the proposed structure plan is 8.0 vehicle trips per day (vpd) per dwelling (0.8 trips during peak AM and PM periods), which corresponds to peak hour trip generation rates recommended in the WAPC *Transport Impact Assessment Guidelines Volume 2 (August 2016)*.

Accordingly, the structure plan is estimated to generate a total of approximately 1,080 total daily vehicular trips during a typical weekday and approximately 108 trips during the morning and afternoon weekday peak hour periods (total of inbound plus outbound trips). For the purpose of conservativeness, it is assumed that all of these trips will be external trips onto the surrounding road network.

The distribution and assignment of the structure plan-generated traffic was based on the local and regional road network layout, available routes, key local and regional attraction nodes and the location of the subject site.

Accordingly, the following assumptions were made for the distribution and assignment of the generated traffic:

- Approximately 28% of the traffic generated from the structure plan would travel to/from the areas to the southwest (via South Coast Highway);
- Approximately 67% of the traffic generated from the structure plan would travel to/from the areas to the northwest (via South Coast Highway); and
- Approximately 5% of the traffic generated from the structure plan would travel to/from the areas to the southeast and southwest (via Ocean Beach Road).

6.3 Traffic Flow Forecasts

The forecast daily traffic volumes on key internal structure plan roads are shown in Figure 8. It should be noted that the remainder of the internal structure plan roads are

all forecast to carry daily traffic volumes significantly less than 500vpd and are therefore not reported.

The Access Streets are all projected to carry daily traffic volumes well within their respective desirable thresholds.

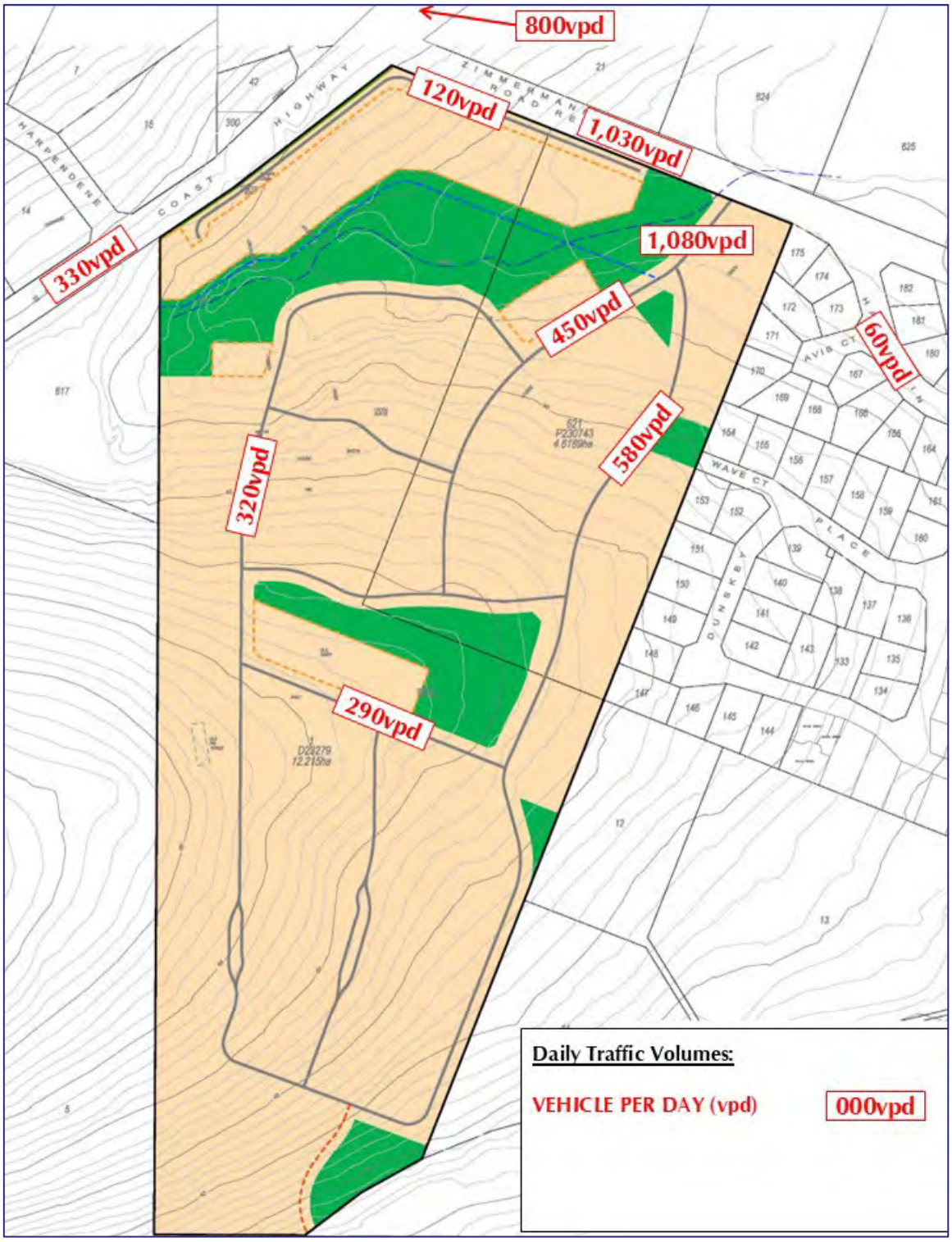


Figure 8. Daily traffic flow forecast for the structure plan area

6.4 Internal Road and Intersection Analysis

6.4.1 Road Capacity Assessment

The internal structure plan road network proposed to accommodate the projected traffic volumes, including the details of the proposed road hierarchy, has been detailed in section 5.1 of this transport assessment. The proposed road hierarchy provides sufficient capacity to accommodate the projected traffic volumes under full structure plan build-up scenario and is generally in line with the road hierarchy and standards recommendations stipulated in the WAPC *Liveable Neighbourhoods (2009, Update 02)* document.

6.4.2 Intersection Capacity Assessment

Traffic flows through the future intersection of Harlequin Street extension/Access Road are expected to be very low hence a more detailed capacity assessment of this future intersection is not warranted.

All internal structure plan intersections are designed as T-intersections. All spacing between staggered intersections and road design implemented in the structure plan area broadly comply with the relevant guidelines.

None of the internal structure plan intersections will require any specific traffic management measures due to relatively low traffic volumes and low speeds involved. It is recommended that all these intersections be designed as priority-controlled intersections.

Therefore, the proposed intersection standard for all internal structure plan intersections is more than sufficient to accommodate the projected traffic volumes on internal road network inclusive of the two external access intersections on the future Harlequin Street extension.

6.5 External Road and Intersection Analysis

6.5.1 Road Capacity Assessment

The projected daily (weekday) traffic volumes generated by the proposed structure plan on the surrounding road links are also shown in Figure 8.

The *WAPC Transport Impact Assessment Guidelines (2016)* provides guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where the

development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

The anticipated peak hour traffic flows on the two key external roads providing proposed structure plan connection to the district-level road network are 6vph on Harlequin Street/Ocean Beach Road, 33vph on South Coast Highway (west) and 81vph on South Coast Highway (east). This level of additional traffic on the three key roads is below the critical material impact thresholds stipulated in the WAPC guidelines.

The theoretical capacity of South Coast Highway as a *Primary Distributor* road is up to 22,900vpd (Level of Service E) hence the projected additional daily traffic volume as a result of the proposed structure plan would equate to approximately 1.4% and 3.5% of total daily traffic capacity of this road.

The Harlequin Street extension, as a single-carriageway, two-way road, (likely) classified as an Access Street is intended to carry daily traffic volume of up to 3,000vpd. Accordingly, the projected traffic load of ~1,080vpd from the structure plan can comfortably be accommodated by intended Harlequin Street standard inclusive of potential rat-runs from the adjacent Kemsley Estate to South Coast Highway.

Base on the traffic distribution estimates presented in Section 6.2 of this report, approximately 60vpd is anticipated to travel through the adjacent Kemsley Estate subdivision to access Ocean Beach Road. This level of traffic increase is considered to be negligible and is not expected to have a material impact on the operation and safety of Harlequin Street between the subject site and Ocean Beach Road.

6.5.2 Intersection Capacity Assessment

The South Coast Highway peak hour volumes have been estimated by extrapolating Main Roads WA count data from the two locations (east of William Bay Road and west of Denmark Mt Baker Road). Based on the location of the structure plan and the available recent traffic counts along South Coast Highway, it is estimated that daily traffic volumes on South Coast Highway, in the immediate vicinity of the site are presently likely to be in order of around 3,000vpd. The peak hour volumes, including directional traffic flow splits for the AM and PM peak hour periods have been corelated to counts undertaken west of Denmark Mt Baker Road.

For the purpose of intersection capacity assessment at 2036 time horizon with the full structure plan build-out, a default 2.0% p.a. background traffic growth was applied to the estimated current traffic flows on South Coast Highway in order to project the 2036 peak hour traffic flows. The assumed 2.0% p.a. background growth is considered robust enough in the context of recent historical traffic volume records on South Coast Highway which suggest that the traffic volumes have plateaued.

Accordingly, the estimated typical weekday AM and PM peak hour traffic flows at the proposed future South Coast Highway/Harlequin Street intersection in 2036 time horizon are shown in Figure 9.

These traffic volumes are used in capacity assessment of South Coast Highway/ Harlequin Street intersection.

Figure 9. Estimated AM and PM peak hour traffic flows at South Coast Highway/Harlequin Street (extension) intersection

The capacity analysis of the intersection was undertaken using the SIDRA computer software package. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- **Degree of Saturation** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for infrequent traffic flow up to one for saturated flow or capacity.
- **Level of Service** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- **Average Delay** is the average of all travel time delays for vehicles through the intersection.
- **95% Queue** is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA capacity analysis are summarised and discussed in the subsequent paragraphs.

South Coast Highway/Harlequin Street (extension) intersection

The SIDRA analysis indicates that this intersection will operate with overall LoS A and with ample spare capacity during both the AM and PM peak hour periods, respectively. No notable queuing or delays are reported on either of the approaches and in either of the two peak hour periods. The intersection is expected to operate at about 12% and 16% capacity during AM and PM peak periods, respectively. Refer Table 1 and Table 2 for more details.

Table 1. SIDRA Results – South Coast Highway/Harlequin Street AM peak hour (2036 horizon)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Harlequin Street															
1	L2	All MCs	27	2.0	27	2.0	0.089	5.2	LOS A	0.3	2.3	0.35	0.60	0.35	47.8
3	R2	All MCs	62	2.0	62	2.0	0.089	6.2	LOS A	0.3	2.3	0.35	0.60	0.35	47.6
Approach			89	2.0	89	2.0	0.089	5.9	LOS A	0.3	2.3	0.35	0.60	0.35	47.6
NorthEast: South Coast Highway															
4	L2	All MCs	23	2.0	23	2.0	0.118	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	56.0
5	T1	All MCs	168	20.1	168	20.1	0.118	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			192	17.9	192	17.9	0.118	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.8
SouthWest: South Coast Highway															
11	T1	All MCs	159	20.1	159	20.1	0.104	0.0	LOS A	0.1	0.5	0.03	0.04	0.03	59.6
12	R2	All MCs	7	2.0	7	2.0	0.104	6.1	LOS A	0.1	0.5	0.03	0.04	0.03	52.4
Approach			166	19.3	166	19.3	0.104	0.3	NA	0.1	0.5	0.03	0.04	0.03	59.2
All Vehicles			447	15.2	447	15.2	0.118	1.6	NA	0.3	2.3	0.08	0.17	0.08	56.3

Table 2. SIDRA Results – South Coast Highway/Harlequin Street PM peak hour (2036 horizon)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Harlequin Street															
1	L2	All MCs	13	2.0	13	2.0	0.047	5.2	LOS A	0.2	1.2	0.37	0.59	0.37	47.7
3	R2	All MCs	32	2.0	32	2.0	0.047	6.5	LOS A	0.2	1.2	0.37	0.59	0.37	47.5
Approach			44	2.0	44	2.0	0.047	6.1	LOS A	0.2	1.2	0.37	0.59	0.37	47.5
NorthEast: South Coast Highway															
4	L2	All MCs	54	2.0	54	2.0	0.135	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	55.4
5	T1	All MCs	168	20.1	168	20.1	0.135	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	58.4
Approach			222	15.7	222	15.7	0.135	1.4	NA	0.0	0.0	0.00	0.14	0.00	57.7
SouthWest: South Coast Highway															
11	T1	All MCs	186	20.1	186	20.1	0.131	0.1	LOS A	0.2	1.5	0.08	0.11	0.08	59.0
12	R2	All MCs	22	2.0	22	2.0	0.131	6.4	LOS A	0.2	1.5	0.08	0.11	0.08	52.0
Approach			208	18.2	208	18.2	0.131	0.8	NA	0.2	1.5	0.08	0.11	0.08	58.1
All Vehicles			475	15.5	475	15.5	0.135	1.6	NA	0.2	1.5	0.07	0.17	0.07	56.7

Therefore, it is concluded that the proposed future intersection of South Coast Highway/Harlequin Street will operate satisfactorily with ample spare capacity in both weekday peak hour periods under the full structure plan build-out scenario.

6.5.3 Intersection Format Assessment

The AUSTROADS "*Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2023)"* and Main Roads WA *"Supplement to AUSTROADS Guide to Road Design – Part 4A"* documents were referenced to ascertain the requirements for auxiliary turn treatments at the proposed future South Coast Highway/Harlequin Street intersection in the post-development stage (year 2036).

Accordingly, Transcore's analysis and review of turn treatment warrants and analysis undertaken using the auxiliary lanes calculation tool provided by Main Roads WA confirmed the following peak hour analysis outcomes:

- AM Peak 2036: Basic Left-turn (BAL)/Basic Right-turn (BAR) format;
- PM Peak 2036: Basic Left-turn (BAL)/Auxiliary Right-turn (AUR) format;

Accordingly, the format of the proposed future South Coast Highway/Harlequin Street intersection would need to accommodate the indicated facilities in line with Austroads and Main Roads WA warrants comprising BAL and AUR treatments.

The intersection warrants assessment calculation for the two peak hour scenarios are presented in Figure 10 and Figure 11.

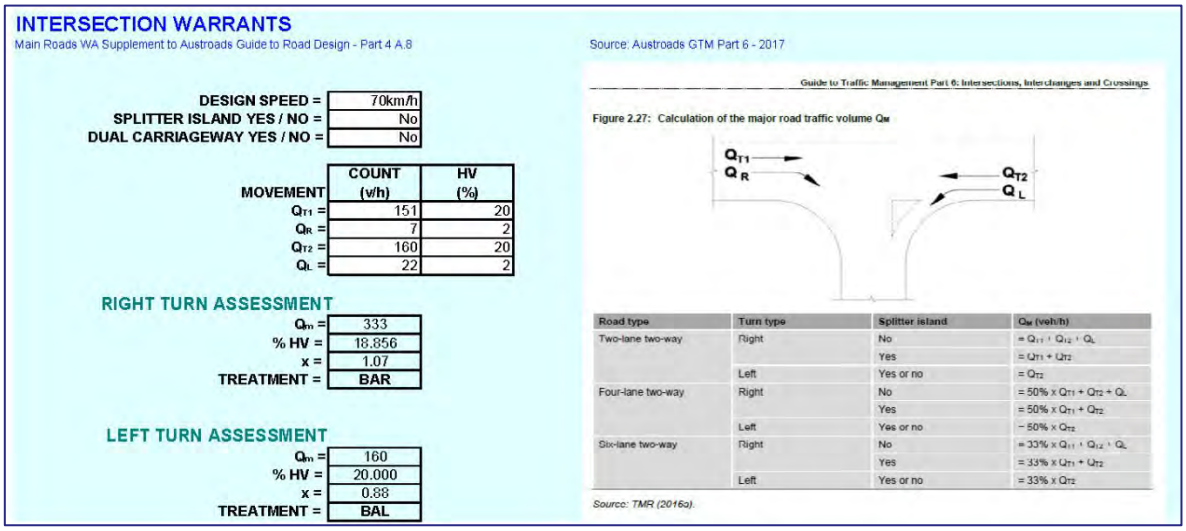
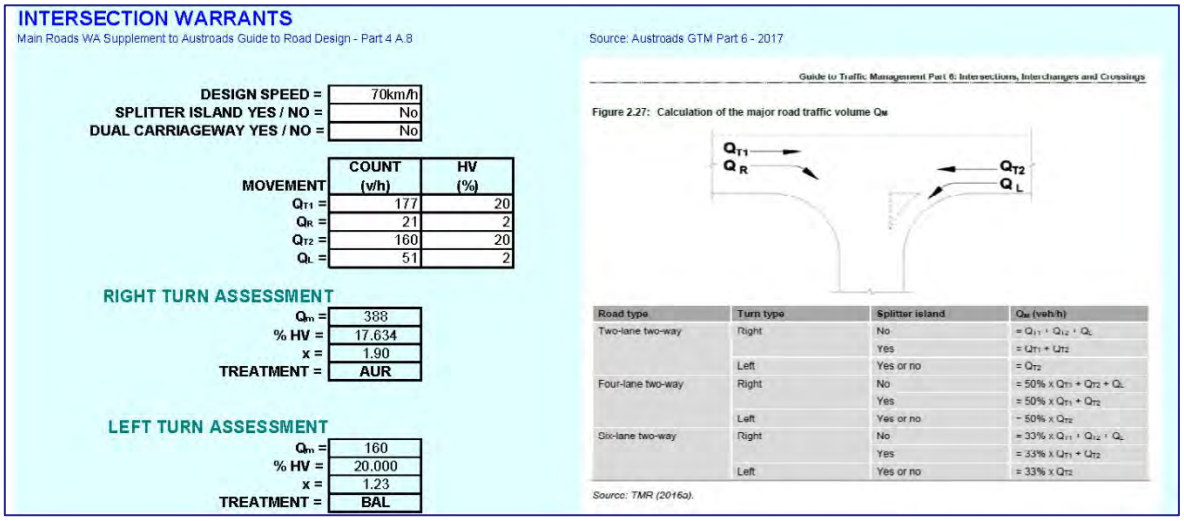


Figure 10. South Coast Highway/Harlequin Street (extension) intersection warrants calculation - AM peak hour



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	70km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	177	20
Q_R =	21	2
Q_{T2} =	160	20
Q_L =	51	2

RIGHT TURN ASSESSMENT

Q_m =	388
% HV =	17.634
x =	1.90
TREATMENT =	AUR

LEFT TURN ASSESSMENT

Q_m =	160
% HV =	20.000
x =	1.23
TREATMENT =	BAL

Source: Austroads GTM Part 6 - 2017

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= Q_{T1} + Q_{T2} + Q_L
		Yes	= Q_{T1} + Q_{T2}
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x Q_{T1} + Q_{T2} + Q_L
		Yes	= 50% x Q_{T1} + Q_{T2}
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x Q_{T1} + Q_{T2} + Q_L
		Yes	= 33% x Q_{T1} + Q_{T2}
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Figure 11. South Coast Highway/Harlequin Street (extension) intersection warrants calculation - PM peak hour

The proposed future Harlequin Street intersection on South Coast Highway is located approximately 41m and 195m (centreline-to-centreline) north of Ross Court and Harpendene Rise intersections on the opposite side of the highway. Both side roads are cul-de-sac roads serving only six and seven residential lots, respectively. Hence, it is unlikely that either of the two roads will ever require provision of turning facilities.

Accordingly, it is considered that a 170m long AUR facility can be accommodated for the South Coast Highway/Harlequin Street intersection, based on right-turn treatment calculation discussed in Main Roads WA *"Supplement to AUSTROADS Guide to Road Design – Part 4A"* document.

6.5.4 Intersection Sightline Assessment

The proposed future South Coast Highway/Harlequin Street intersection is located on a straight and flat section of highway, hence the Safe Intersection Sight Distance (SISD) requirement of 151m for the 60km/h speed limit road (70km/h design speed) is comfortably achieved in line with SISD warrants stipulated in Main Roads WA *"Supplement to AUSTROADS Guide to Road Design – Part 4A"* document.

6.6 Access to Frontage Properties

The WAPC *Liveable Neighbourhoods* policy requires that *"Development along Integrator B and Neighbourhood Connector streets with ultimate vehicle volumes over 5,000 vehicles per day should be designed either so vehicles entering the street can do so travelling forward, or are provided with alternative forms of vehicle access. Wider lots with paired driveways and protected reversing areas in the parking lane may be used on streets with up to 7,000 vehicles per day."*

No internal structure plan roads are experiencing these levels of daily traffic, so this is not an issue for the proposed structure plan.

6.7 Pedestrian and Cycle Networks

The proposed network of paths for pedestrians and cyclists is described in section 5.3 of this transport assessment. This network of paths will provide a satisfactorily level of accessibility and permeability for pedestrians and cyclists within the structure plan.

The WAPC *Transport Impact Assessment Guidelines* provides guidance on the levels of traffic volumes that are likely to affect the ability for pedestrians to cross various types of roads. Based on that guidance an undivided two-lane road should be acceptable for pedestrians crossing traffic volumes of up to approximately 1,100vph and this threshold can be increased to around 2,800vph by adding a central median or pedestrian refuge islands.

None of the roads within the structure plan will reach these levels of traffic to warrant any detailed investigation of crossing facilities at this stage.

6.8 Access to Schools

The proposed structure plan is within the catchment area of the Denmark Primary School which is located approximately 1.2km (walking distance) to the northeast hence it is anticipated that overwhelming majority of children will dropped-off/picked-up to school. A limited number of older children may choose to walk or cycle to school and they can do so using existing paths connecting the structure plan (once path network is completed) with school site.

6.9 Access to Public Transport

As previously discussed, no public transport opportunities exist in this locality.

7 Conclusions

This Transport Impact Assessment has been prepared for the proposed HSCH Structure Plan in Denmark, Shire of Denmark. The subject site (Lot 621 Harlequin Street and Lot 1 South Coast Highway) occupies an area of approximately 168.36ha east of South Coast Highway and south of (unmade section of) Harlequin Road (i.e., road reservation of Harlequin Road).

According to the concept plan, the proposed HSCH SP contemplates a residential development comprising approximately 150 residential lots with several P.O.S. distributed across the site.

The internal structure plan road system is conceptually designed to comprise *Access Street C (yield or give way)* and *Access Street D,* albeit with modified road reservation widths and cross-sections. The internal road system is designed to facilitate internal vehicular, cyclist and pedestrian movements with connections to the adjacent road network via yet to be constructed Harlequin Street extension.

The proposed structure plan is estimated to generate a total of approximately **1,080** total daily vehicular trips during a typical weekday and approximately **108** trips during the morning and afternoon weekday peak hour periods (total of inbound plus outbound trips).

A review of the proposed road network in light of the forecast traffic generation of the structure plan suggests no capacity issues are to be expected for either of the structure plan or the external local roads or intersections. Hence, it is concluded that the local road network will have sufficient capacity to accommodate the anticipated traffic from the proposed structure plan.

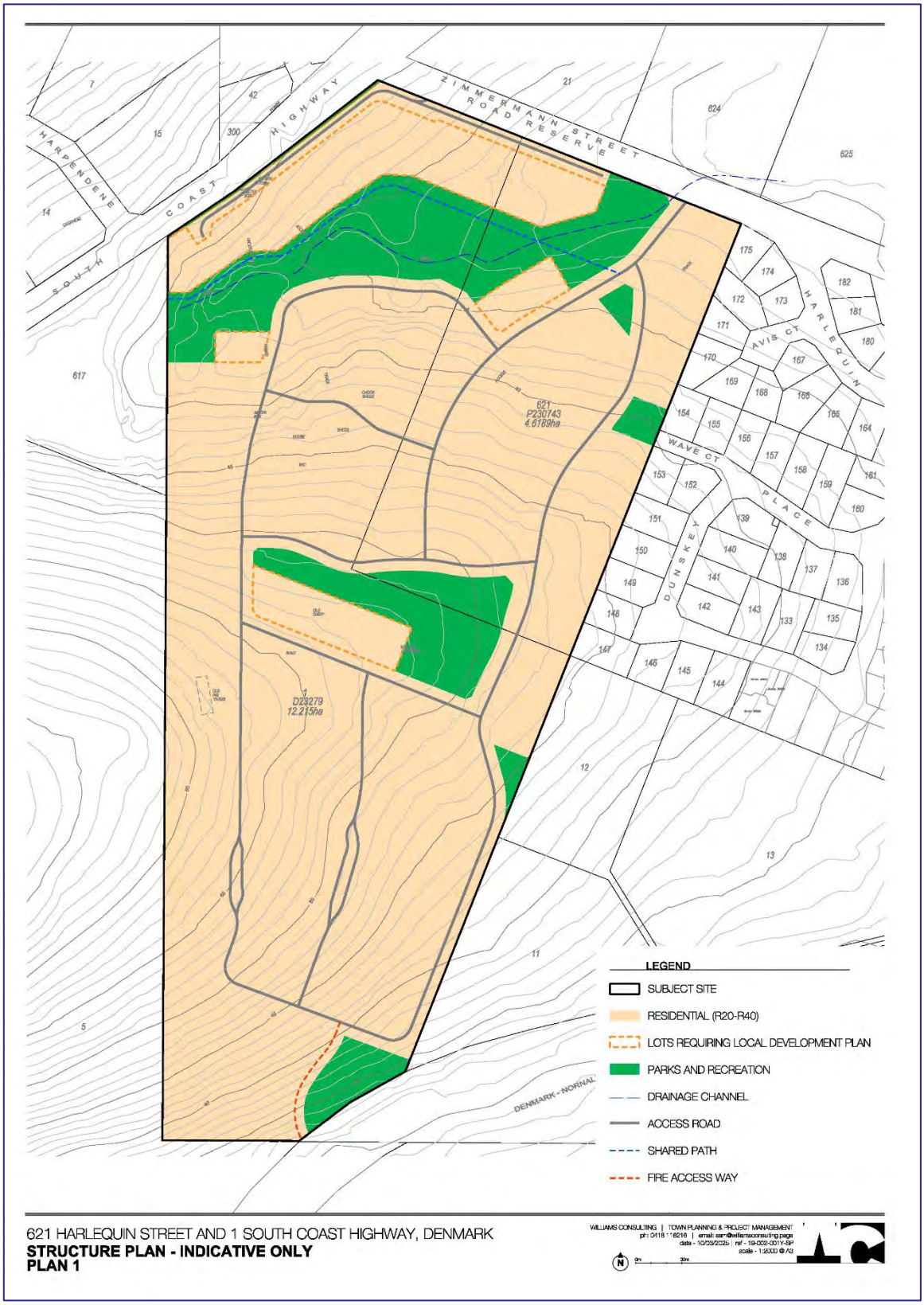
A new South Coast Highway/Harlequin Street (northbound extension) intersection is proposed a northern gateway to the structure plan. According to the capacity assessment undertaken in this report this intersection will operate satisfactorily in the short and long-term future. The location of the intersection secures good sightlines and provides good context for construction of a suitable BAL and AUR intersection standard in line with AUSTROADS "*Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2023)*" and Main Roads WA *"Supplement to AUSTROADS Guide to Road Design – Part 4A"* requirements.

The proposed structure plan also provides for a comprehensive network of paths to facilitate non-motorised movements and to seamlessly integrate with the existing path system within the immediate locality. The proposed path network also provides connectivity to the local primary school site.

Appendix A

PROPOSED STRUCTURE PLAN

20 years anniversary
transcore
transport planning
traffic engineering
modelling


ZIMMERMANN STREET ROAD RESERVE
HIGHWAY
COAST
SOUTH
HARPENDENE
HARLEQUIN
AVIS CT
WAVE CT
PLACE
DUNSKEY
DENMARK - NORMAL
621
P230743
4.6189ha
1
D23279
12.215ha
LEGEND
SUBJECT SITE
RESIDENTIAL (R20-R40)
LOTS REQUIRING LOCAL DEVELOPMENT PLAN
PARKS AND RECREATION
DRAINAGE CHANNEL
ACCESS ROAD
SHARED PATH
FIRE ACCESS WAY
621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
STRUCTURE PLAN - INDICATIVE ONLY
PLAN 1

APPENDIX B
BUSHFIRE MANAGEMENT PLAN

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details					
Site address / Plan reference:	621 Harlequin Street and 1 South Coast Highway				
Suburb:	Denmark	State:	WA	Postcode:	6333
Local government area:	Shire of Denmark				
Description of the planning proposal:	Structure Plan				
BMP / Reference number:	251823	Version:	A	Date of issue:	11/08/20
Client / Business name:	Williams Consulting				

Reason for referral to DFES[1]	Yes	No
Has the BAL been calculated by a method other than Method 1 as outlined in AS3959? (Tick *No* if AS3959 Method 1 has been used to calculate the BAL)	☐	✔
Have any of the bushfire protection criteria elements been addressed through the use of an outcomes-based approach?	☐	✔
Strategic planning proposal (including rezoning applications)	☐	✔
Local planning scheme amendment containing supplementary provisions, additional to the deemed provisions for bushfire risk management	☐	✔
Where a bushfire local planning policy, or variation to the acceptable solutions or the APZ is proposed	☐	✔
Where there is a conflict of opinion between the decision maker and proponent	☐	✔
Expert technical advice on bushfire behaviour, emergency management, or other occasions where bushfire technical advice is required to support planning decision-making	☐	✔
Expert technical advice on bushfire matters referred to State Administrative Tribunal (SAT) or Development Assessment Panel (DAP)	☐	✔
Comments on future buildings' compliance with FES Commissioner's operational requirement guidelines	☐	✔
Decision maker discretionary referral, (e.g. renewable energy, hazardous materials, vulnerable land use)	☐	✔

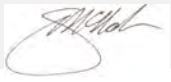
If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Gary McMahon	Level 3	35078	Nov 2025
Company		**Contact No.**	
Ecosystem Solutions Pty Ltd		08 9759 1960	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct.

Signature of Practitioner  Date 11/08/2025

[1] For more information please refer to DFES Referral to DFES Checklist

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Bushfire Management Plan

621 Harlequin Street and 1 South Coast Highway, Denmark

11 August 2025

Prepared for:

Williams Consulting

Limitations Statement

This report has been prepared in accordance with the Agreement between Ecosystem Solutions Pty Ltd and Williams Consulting (**"Client"**). It has been solely prepared for Bushfire Management Plan to support a Structure Plan of 621 Harlequin Street and 1 South Coast Highway, Denmark (**"Site"**).

Information

In undertaking this work the authors have made every effort to ensure the accuracy of the information used. Unless otherwise stated in the report, Ecosystem Solutions Pty Ltd has not independently verified such information and cannot guarantee its accuracy or completeness.

Conclusions

Within the limitations imposed by the scope of work, preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable bushfire consultants under similar circumstances. No other warranty, expressed or implied, is made.

Reliance

This report is solely for the use of the Client and any reliance on this report by third parties will be at such party's sole risk. This report must only be presented in full and may not be used to support any other purpose than those set out in the report and the Agreement, except where prior written approval with comments are provided by Ecosystem Solutions Pty Ltd. All intellectual property rights in documents created by Ecosystem Solutions Pty Ltd remain the property of Ecosystem Solutions Pty Ltd.

Other parties should not rely on the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters. Ecosystem Solutions Pty Ltd accepts no Liability, or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material subsequently used by others. Please note that the contents of this report may not be directly applicable towards another organisation's needs and may not contain sufficient information for purposes of other parties or for other uses.

Ecosystem Solutions Pty Ltd will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of this report.

Other limitations

The measures contained in this report cannot guarantee that a structure or building will not be damaged or would survive a bushfire event on every occasion. This is due to the degree of vegetation management,

the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

The growth, planting or removal of vegetation, poor maintenance of any fire prevention/mitigation measures, addition of structures not included in this report, or other activity can and will change the bushfire threat to all properties detailed in this report. The implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which Ecosystem Solutions Pty Ltd has no control. Should changes be made to the Site, a new Bushfire Management Plan is required.

Ecosystem Solutions Pty Ltd accepts no Liability, including Liability for any Loss in connection with:

- a Claim, damage, or injury to property, or persons caused by fire;
- further growth, planting, or removal of vegetation on the Site;
- poor maintenance of any fire protection measures;
- additional structures not included in this assessment; or
- any other activity that may change the bushfire threat level.

The Client and owner of the Site each acknowledge that they have been made aware of the exclusions above and that such exclusion of Liability is reasonable in all the circumstances.

This report is valid for a period of two years only from the date of its issue. All BAL ratings identified in this report are indicative and are required to be verified at the time of construction of individual buildings to ensure appropriate setbacks identified in the Site/building have been achieved.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005

Gary McMahon
B.Sc. M. Env Mgmt. PG Dip Bushfire Protection. C.EnvP, BPAD Level 3 (35078)

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Planning for Bushfire Guidelines (2024) .

DISCLAIMER

**All capitalised terms used in the Limitations Statement above that are not defined are defined in the Agreement between Ecosystem Solutions Pty Ltd and the Client.*

*** The limitations above are subject to any relevant rights or remedies that the Client may be entitled to under legislation, including Schedule 2 of the Competition and Consumer Act 2010 (Cth).*

Document Control

Client - Williams Consulting

Site – 621 Harlequin Street and 1 South Coast Highway, Denmark

Version	Revision	Purpose	Author	Reviewer	Submitted	
					Form	Date
Report	Rev A	Initial Report	DC (BPAD 48409 - Level 2)	GM (BPAD 35078 - Level 3)	Electronic (email)	7/08/2025

Filename: Y:\PROJECTS\251823 Harlequin Street & South Coast Highway, Denmark BMP\Reports\621 Harlequin Street and 1 South Coast Highway, Denmark BMP.docx

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1 Introduction

This Bushfire Management Plan (BMP) has been prepared for 621 Harlequin Street and 1 South Coast Highway, Denmark (hereafter referred to as the 'Site') by Ecosystem Solutions Pty Ltd, Dani Cuthbert (Dip BM, Dip TM, BPAD 48409 – Level 2) and Gary McMahon (B.Sc. M. Env Mgmt. PG Dip Bushfire Protection. C.EnvP, BPAD 35078 - Level 3). An assessment of the proposal against the requirements for *State Planning Policy (SPP) 3.7* (WPAC, 2024a) and the *Planning for Bushfire Guidelines* (WAPC, 2024b) is included.

The Site is 16.84 ha is size and is located within the Shire of Denmark. The Site is located within a bushfire prone area, as declared by *State Planning Policy 3.7* (Figure 1), and includes areas of remnant vegetation and areas that have previously been cleared for agricultural purposes.

The Site is currently being utilised as rural land with some grazing animals present. Denmark town centre is approximately 1km north east of the Site.

The proposal seeks approval of a Structure Plan, with the indicative layout shown in the Structure Plan (Figure 2) to facilitate future subdivision and development of lots to be zoned residential (R20-R40), with areas of public open space, roads, and emergency access ways.

The purpose of this BMP is to detail the bushfire management methods and requirements that will be implemented as part of the development of the Site. The aim of the BMP is to reduce the threat to residents and fire fighters in the event of a bushfire within or near the Site through assessment against the four bushfire protection criteria.

Figure 1 Extract Map of Bushfire Prone Areas for 621 Harlequin Street and 1 South Coast Highway, Denmark, within the blue polygon, accessed 6th August 2025

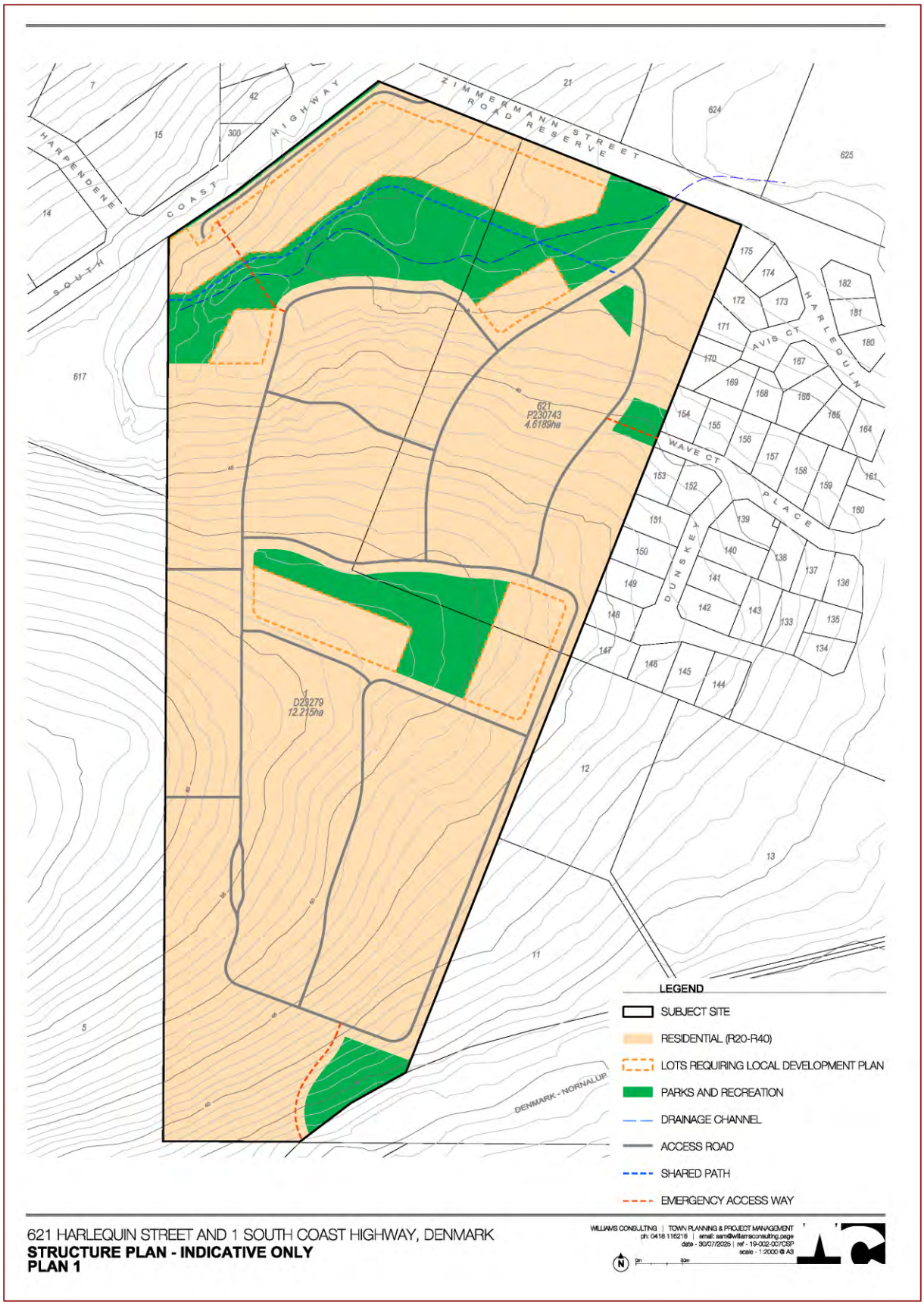

Figure 2 Proposed Structure Plan for 621 Harlequin Street and 1 South Coast Highway, Denmark

2 Environmental Considerations

2.1 Native Vegetation – Modification and Clearing

The Site has a number of environmental values, including areas of remnant vegetation, threatened flora and threatened fauna or fauna habitat.

The full extent of vegetation modification will be determined at subdivision stage. The approximate area that is required to be cleared or modified with a Landscape Management Plan includes 3.34 ha of Class A Forest. Vegetation modification will be required by the Developer, as part of this subdivision, to establish the lots to Asset Protection Zone standards, installation of roads, extension of Zimmerman street, emergency access ways and establishment of the Public Open Space and drainage areas. Vegetation within residential lots is required to be maintained by the Developer to the standards of an Asset Protection Zone until lots are sold, where it becomes the responsibility of the individual landowner. Vegetation within the Public Open Space and Drainage Reserves will need to be established in accordance with an approved Landscape Management Plan by the Developer prior to the sale of any lots. The Public Open Space and Drainage Reserves will be maintained in accordance with an approved Landscape Management Plan for a period of two years, when this land will be ceded to the Crown and vested to the Shire of Denmark.

This bushfire assessment assumes that relevant government approvals for any vegetation modification will be achieved prior to the commencement of any clearing.

The Site and the surrounding 150m buffer have been assessed for environmental values using a simple desktop review (Table 1). The Protected Matters Search Tool and public state databases, searched 5th August 2025, identifies conservation significant flora, fauna, and vegetation with a number of threatened flora and fauna species or species habitat that may occur in the area.

Table 1 Significant environmental values identified within the Site

Environmental Value	Yes or No	If Yes - describe
Conservation Covenants	No	No Conservation Covenants were identified on the Protected Matters Search Tool within the Site.
Bushfire Forever Sites	No	No Bush Forever Sites were identified in the Site (SLIP, DPLH-019).
Conservation Category Wetlands and Buffer	Yes	The Site is within a Water Conservation Act Management Area due to its proximity to Wilson Inlet (DWER-072). The Site contains an unnamed waterway flowing within the north of the Site, noted as being north of Little River, with limited data available on SLIP.
Threatened Ecological Communities (TECs)	Yes	One Threatened Ecological Communities may occur within the area, this is: • *Empodisma* peatlands of southwestern Australian (EN)
Threatened Flora	Yes	A number of threatened flora species or species habitat may occur within the area.
Threatened Fauna	Yes	A number of threatened fauna species or species habitat are known to occur in the area including: • Western Ringtail Possum (*Pseudocheirus occidentalis* – Critically Endangered); and • Black Cockatoo species (*Calyptorhynchus banksii naso* – Vulnerable, *Zanda baudinii* – Endangered & *Zanda latirostris* – Endangered).
Environmentally Sensitive Area	No	No Environmentally Sensitive Areas were identified in the Site (DWER-046).

2.2 Revegetation / Landscape Management Plans

A Landscape Management Plan is required to be prepared and incorporated into a Bushfire Management Plan at subdivision stage, to ensure that the vegetation classification post development is accurately determined and will be maintained in perpetuity.

Any revegetation within the Public Open Space and Drainage Reserves will be subject to an approved Landscape Management Plan to ensure the vegetation post development classification remains accurate and does not increase the BAL ratings for buildings across the Site.

Establishment of the Public Open Space and Drainage Reserves, in accordance with an approved Landscape Management Plan is the responsibility of the Developer for a period of two years, where this area will be ceded to the Crown and vested to the Shire of Denmark for ongoing maintenance, if the Shire of Denmark accepts the responsibility to maintain this vegetation once ceded.

Written confirmation from the Shire of Denmark is required to confirm that they are willing to accept the responsibility of the Public Open Space and Drainage areas in accordance with the Landscape Management Plan, in perpetuity.

3 Bushfire Assessment Results

3.1 Assessment Inputs

A Site inspection was conducted on 12th May 2025 by Dani Cuthbert (BPAD Level 2) and Danae Plowman (BPAD Level 2), for the purpose of determining the Bushfire Attack Level in accordance with AS 3959-2018 Simplified Procedure (Method 1).

All vegetation within 150 m of the Site was classified and the slope under the vegetation determined in accordance with AS 3959-2018, shown in the photos below with map provided in Figure 3 for the current vegetation and Figure 4 for post development.

Plot	1	**Vegetation Classification or Exclusion Clause** – ***Pre-Development***	Class A Forest Downslope >5 to 10 degrees
Plot	1	**Vegetation Classification or Exclusion Clause** - ***Post-Development***	Class A Forest Downslope >5 to 10 degrees / Excluded S 2.2.3.2 (e) or (f)

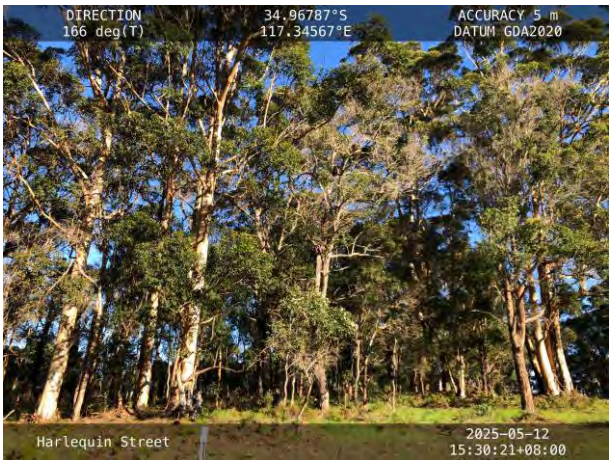

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Photo ID: 6

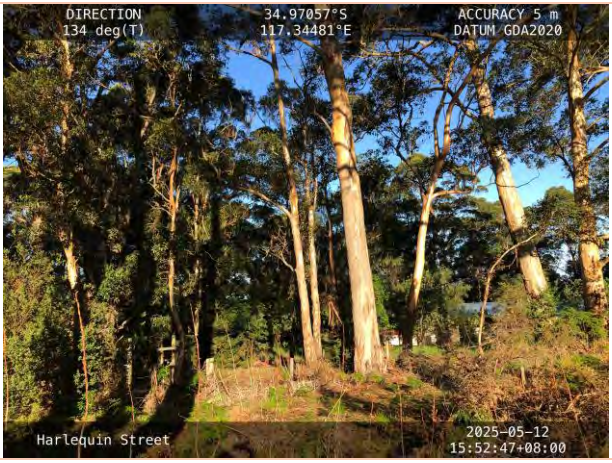


Photo ID: 7

Photo ID: 8

Photo ID: 9

Photo ID: 10

Photo ID: 11

Photo ID: 12

Description / Justification for Classification:	Vegetation of trees up to 30 m high with more than 30% canopy cover at maturity, over an unmanaged understory. The Site is undulating, and some areas of this plot will be Upslope/Flat to proposed lots and Downslope >5 to 10 degrees to others, therefore the entire plot has been classified as Downslope >5 to 10 degrees, as a worst-case scenario. The Vegetation Classification – Post Development mapping (Figure 4) shows that the area of Class A Forest vegetation that is outside of the Site boundary will be retained and will maintain its Class A Forest classification post development, except for the vegetation within the Zimmerman Street road reserve, which will be cleared for the extension of Zimmerman Street or modified in a low fuel state to allow exclusion under S 2.2.3.2 (f). For the purposes of this bushfire management plan, it is assumed that the area of this plot that is located within the Site boundary will be modified to Asset Protection Zone standards within the proposed residential lots and public open space or cleared for the installation of the roads and emergency access ways, and therefore these are excluded in the Vegetation Classification – Post Development mapping (Figure 4). A Landscape Management Plan will be required to ensure the vegetation classification within the proposed Public Open Space and drainage is accurate at subdivision stage.

Plot	2	**Vegetation Classification or Exclusion Clause** – ***Pre-Development***	Class A Forest Downslope >0 to 5 Degrees
Plot	2	**Vegetation Classification or Exclusion Clause - *Post-Development***	Class A Forest Downslope >0 to 5 Degrees / Excluded S 2.2.3.2 (e) or (f)
Photo ID: 13			Photo ID: 14
Photo ID: 15			Photo ID: 16
Description / Justification for Classification:			Vegetation up to 30 m high with more than 30% canopy cover, over an unmanaged understory. The Site is undulating, and some areas of this plot will be Upslope/Flat to proposed lots and Downslope >0 to 5 degrees to others, therefore the entire plot has been classified as Downslope >0 to 5 degrees, as a worst-case scenario. The Vegetation Classification – Post Development (Figure 4) has been prepared based on the vegetation along the creekline within the proposed Public Open Space being retained. For the purposes of this bushfire management plan, it is assumed that the area of this plot that is within the proposed residential lots can be managed to Asset Protection Zone Standards and is therefore excluded in the Vegetation Classification – Post Development Map (Figure 4). A Landscape Management Plan will be required to ensure the

	vegetation classification within the proposed Public Open Space and drainage is accurate at subdivision stage.

Plot	3	**Vegetation Classification or Exclusion Clause** - ***Pre-Development***	Class A Forest Upslope/Flat
Plot	3	**Vegetation Classification or Exclusion Clause** - ***Post-Development***	Class A Forest Upslope/Flat

Photo ID: 17

Photo ID: 18

Photo ID: 19

Description / Justification for Classification:	Vegetation up to 30 m high with more than 30% canopy cover, over an unmanaged understory. This plot is entirely located outside of the subject site, and therefore retains the Class A Forest Classification, as shown on the Vegetation Classification – Post Development (Figure 4).

Plot	4	**Vegetation Classification or Exclusion Clause** – ***Pre-Development***	Class C Shrubland Downslope >5 to 10 degrees
Plot	4	**Vegetation Classification or Exclusion Clause** - ***Post-Development***	Excluded S 2.2.3.2 (e) or (f)

Photo ID: 20

Photo ID: 21

Photo ID: 22

Photo ID: 23

Photo ID: 24

Photo ID: 25

Photo ID: 26	
Description / Justification for Classification:	Low shrubland vegetation under 2m in height, consisting of Bracken. The vegetation within this plot will be removed as part of this development, therefore has been excluded on the Vegetation Classification – Post Development Map (Figure 4).

Plot	5	**Vegetation Classification or Exclusion Clause** - ***Pre-Development***	Class G Grassland Downslope >5 to 10 Degrees
Plot	5	**Vegetation Classification or Exclusion Clause** - ***Post-Development***	Class G Grassland Downslope >5 to 10 Degrees / Excluded S 2.2.3.2 (e) or (f)

Photo ID: 27

Photo ID: 28

Photo ID: 29

Photo ID: 30

Photo ID: 31

Photo ID: 32

Description / Justification for Classification:	Open unmanaged grasses, including scattered trees with a canopy cover less than 10%. The Site is undulating, and some areas of this plot will be Upslope/Flat to proposed lots and Downslope >5 to 10 degrees to others, therefore the entire plot has been classified as Downslope >5 to 10 degrees, as a worst-case scenario. Post development all grasses within the Site will be maintained by the developer under 10cm in height to allow for exclusion under 10cm in height, under individual lots are sold, when this becomes the responsibility of the landowner. This BMP assumes that the grassland vegetation within the Public Open Space and Drainage Reserves will be managed in a low fuel state in perpetuity, if the Shire of Denmark accepts the responsibility to maintain this vegetation in a low fuel state once ceded. A Landscape Management Plan is required to ensure the vegetation within the Public Open Space and drainage areas is classified accurately post development.

Plot	6	**Vegetation Classification or Exclusion Clause - *Pre-Development***	Excluded S 2.2.3.2 (a), (e) or (f)
Plot	6	**Vegetation Classification or Exclusion Clause - *Post-Development***	Excluded S 2.2.3.2 (a), (e) or (f)

Photo ID: 33

Photo ID: 34

Photo ID: 35

Photo ID: 36

Description / Justification for Classification:	Areas greater than 100m from the Site are excluded under S 2.2.3.2 (a). Non-vegetated areas including bare earth, roads and buildings are excluded under S 2.2.3.2 (e). Low threat vegetation including grasses managed at under 10cm in height, managed lawns and gardens are excluded under S 2.2.3.2 (f). The Vegetation Classification – Post Development Map (Figure 4) excludes grassland within the site. The Developer is responsible for establishing and maintaining the lots to Asset Protection Zone standards, including maintaining grasses at under 10cm in height until individual lots are sold, when this will become the responsibility of the individual landowners. A Landscape Management Plan is required to ensure the vegetation within the Public Open Space and drainage areas is classified accurately post development.

Figure 3 Vegetation Classification – Pre-Development

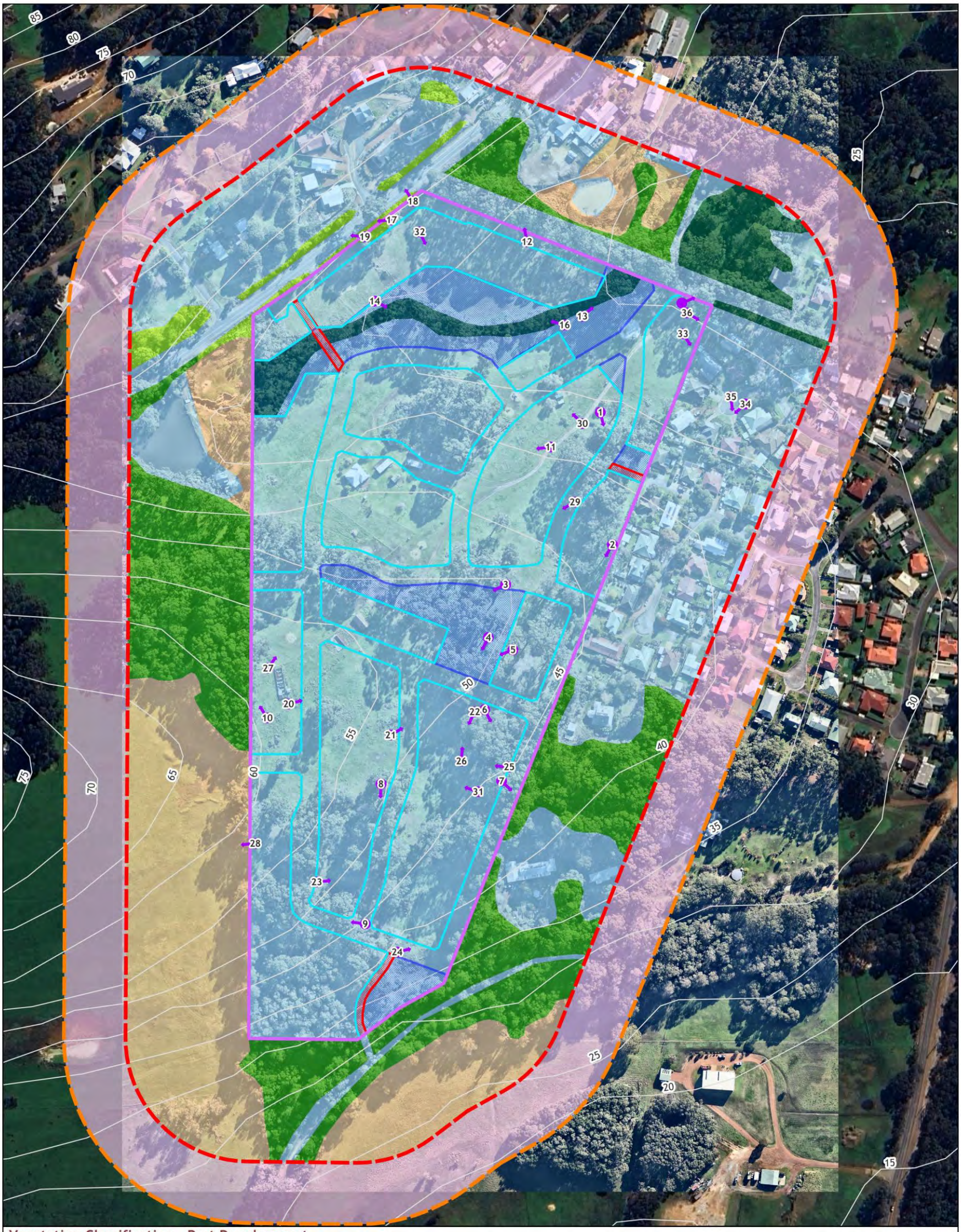


Figure 4 Vegetation Classification – Post-Development

3.2 Assessment Outputs

The Determined Bushfire Attack Level (highest BAL) for the Site has been determined in accordance with clause 2.5 of AS 3959- 2018 with map provided based on the Post Development Vegetation (Figure 4) in Figure 5 and detailed BAL Contour map provided in Figure 6. Figure 7 depicts areas of BAL-40 or BAL-FZ of varying distances within the habitable lots only (all lots excluding Public Open Space, Drainage Reserves or Road Reserves). A habitable building exclusion area will be required with a Local Development Plan (LDP) to ensure that no habitable buildings are located in areas of BAL-40 or BAL-FZ.

Table 2 Site Assessment Result

Method 1 BAL Determination					
Fire Danger Index - 80 (AS 3959-2018 Table 2.1)					
Plot	Vegetation Classification	Maximum effective Slope Under the Classified Vegetation (degrees)	Required Distance Classified (metres)	Separation to the Vegetation	Bushfire Attack Level
1	Class A Forest	Downslope >5 to 10	33m*		BAL-29
2	Class A Forest	Downslope >0 to 5	27m*		BAL-29
3	Class A Forest	Upslope/Flat	21m*		BAL-29
4	Class C Shrubland	Downslope >5 to 10	11m*		BAL-29
6	Class G Grassland	Downslope >5 to 10	10m*		BAL-29
7	Excluded S 2.2.3.2 (a), (e) & (f)	N/A	N/A		BAL-LOW
Determined Bushfire Attack Level					BAL-29**

* This separation distance must be managed to the standards in the Planning for Bushfire Guidelines as an Asset Protection Zone.

** A lower BAL rating can be achieved based on an increased separation distance from the classified vegetation, depending on the location of the dwelling within the Lot. This determination is found using the worst-case scenario based on the plan. A detailed BAL assessment will be required prior to the construction of a dwelling.

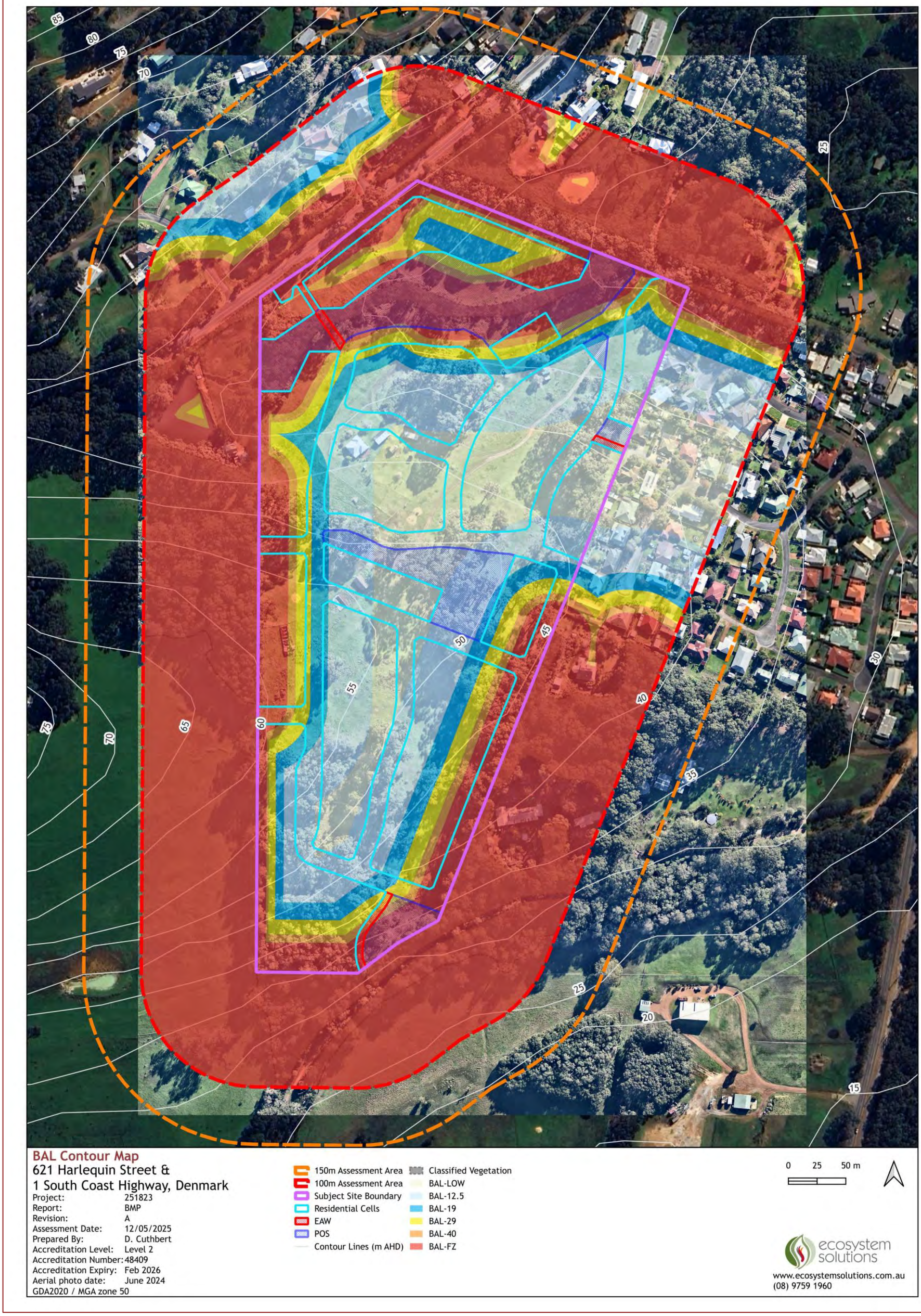


Figure 5 BAL Contour Map

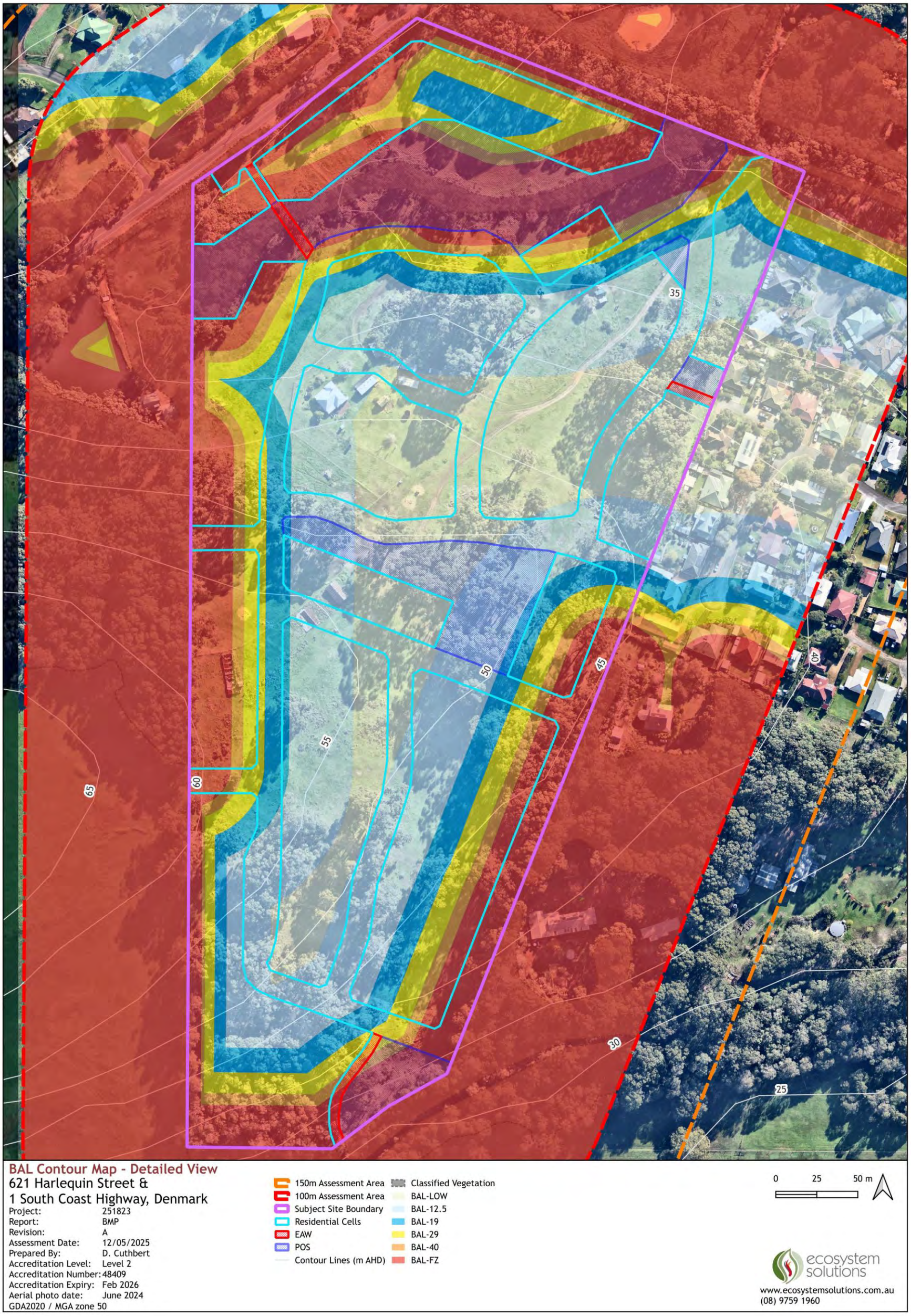


Figure 6 BAL Contour Map – Detailed View

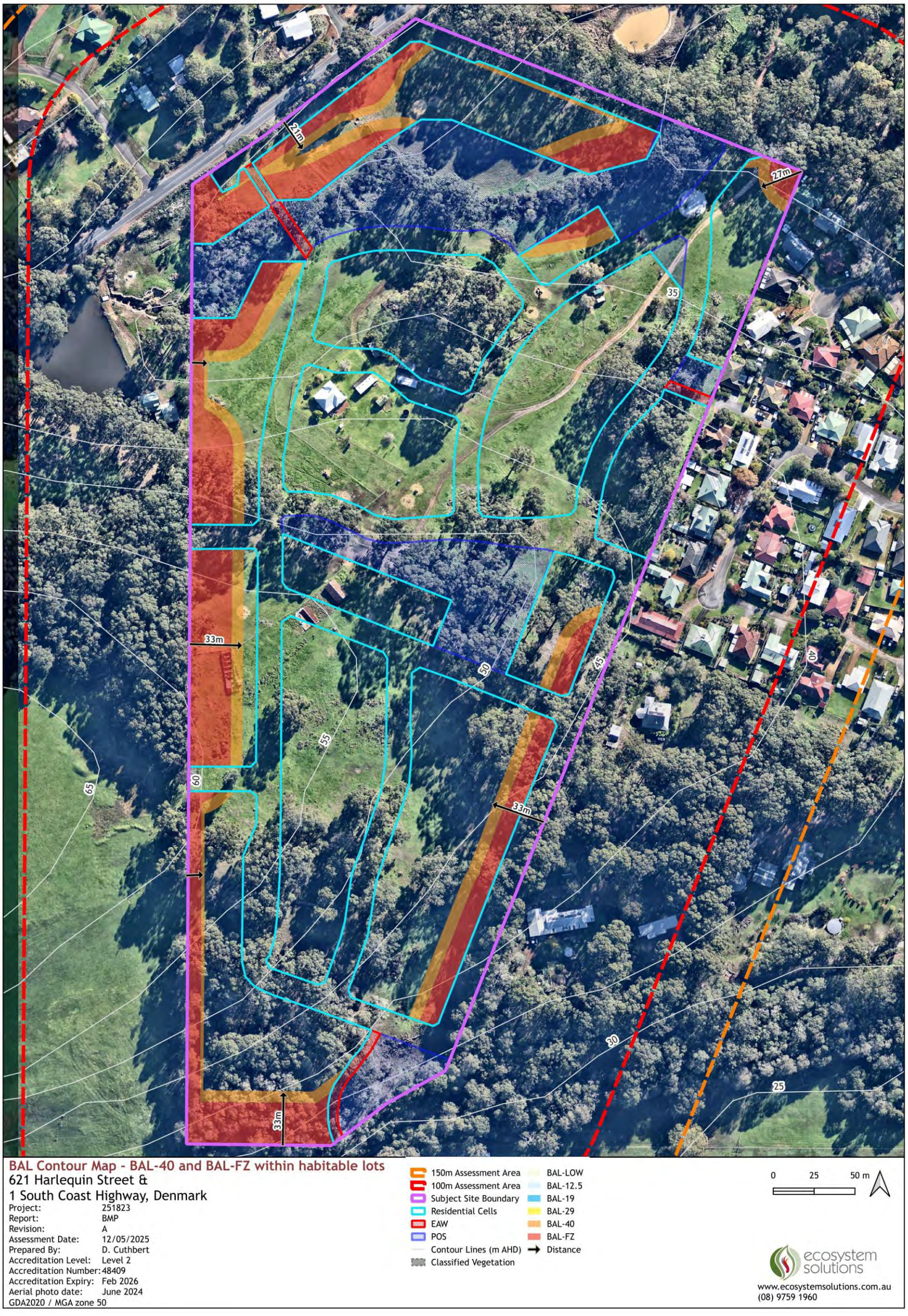
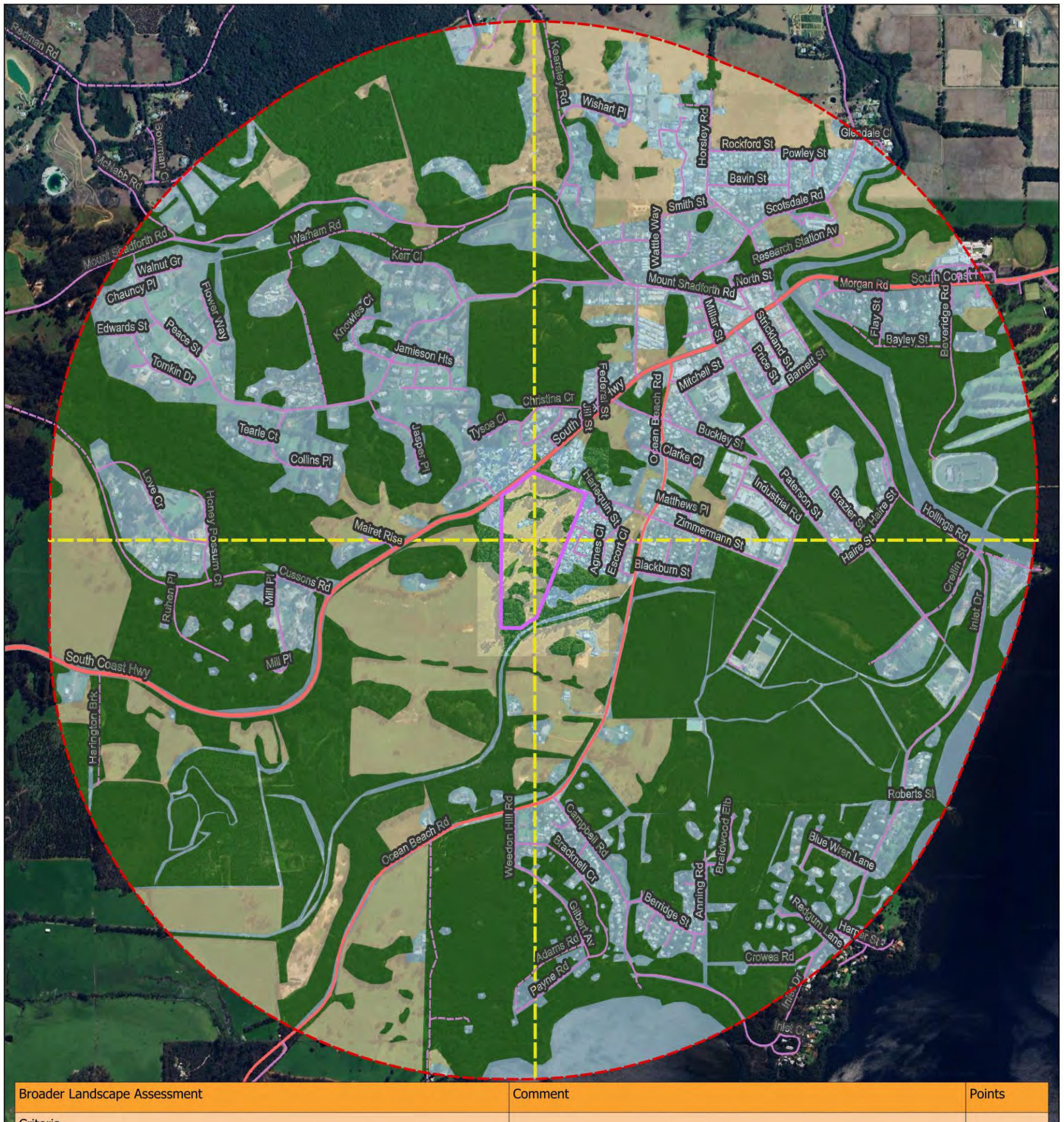


Figure 7 BAL Contour Map – BAL-40 and BAL-FZ within habitable lots only

4 Assessment Against the Bushfire Protection Criteria

4.1 Compliance with the Acceptable Solutions for each Element

Bushfire Protection Criteria – Element 1 - Location	
Outcomes: Avoid broader landscapes that present an unacceptable risk to life, property, and infrastructure.	
Acceptable Solution	**Assessment Statements**
A1.1a Broader Landscape Type A *The subject Site is located in an area that is a Broader Landscape Type A. This location satisfies the policy outcome for Element 1: Broader Location and no additional consideration is required.*	**Compliance with the Acceptable Solution is achieved.** The Broader Landscape Assessment (Figure 8) determined that the Site is located in an area that is a Broader Landscape Type A. No additional consideration is required.



Broader Landscape Assessment	Comment	Points
Criteria		
Proximity of the planning proposal to a suitable destination:	The Site is within 1km of the Denmark Town Centre, which provides a suitable destination	1
The road pattern from the planning proposal to a suitable destination is:	The road pattern from the planning proposal to Denmark town centre will be simple, with limited intersections.	1
The predominant vegetation pattern is:	Large areas of the broader landscape assessment have been developed into residential or rural residential lots, where vegetation has been managed or cleared, therefore the predominant vegetation pattern is mosaic.	2
Exposure of the planning proposal to an identifiable external bushfire hazard (excluding Class G Grassland) is from:	The planning proposal is exposted to one or less aspects of an identified external bushfire hazard.	1
Total Points	Broader Landscape Type A	5

Broader Landscape Assessment
621 Harlequin Street &
1 South Coast Highway, Denmark

Project:	251823
Report:	BMP
Revision:	A
Assessment Date:	08/08/2025
Prepared By:	D. Cuthbert
Accreditation Level:	Level 2
Accreditation Number:	48409
Accreditation Expiry:	Feb 2026
Aerial photo date:	June 2024
GDA2020 / MGA zone 50	

Legend
- 2km Broader Landscape
- Subject Site Boundary
- Transect
- Classified Vegetation
- Unmanaged Grasses
- Low Threat Vegetation

0 250 m

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(08) 9759 1960

Figure 8 Broader Landscape Assessment

Bushfire Protection Criteria – Element 2 – Siting and Design

Outcomes: Ensure siting and design solutions:

- Manage or mitigate the bushfire risk to people, property, and infrastructure; and
- Avoid, or where avoidable, minimise the clearing of native vegetation.

Acceptable Solution	Assessment Statements
A2.1 Siting and design *Ensure that each proposed and existing lot(s) contains a sufficient development Site(s) that can achieve a radiant heat impact not exceeding 29kW/m² (BAL-29).* ***A2.2 Asset Protection Zone (APZ)*** *Where a development Site cannot be wholly located within an area with a radiant heat impact not exceeding 29 kW/m² (BAL-29) in its pre-development state, an indicative APZ is to be provided and meet the following requirements;* • ***Width**: the APZ is to be measured from the development Site, and of sufficient size to ensure the radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances.* • ***Location**: the APZ should be contained solely within the boundaries of the lot, except in instances where:* • *the vegetation on the adjoining lot(s) is, and will continue to be, low threat as per Clause 2.2.3.2 of AS 3959 or the requirements of Appendix B.2, Table 9 – APZ technical requirements, or an alternative standard in a local planning scheme, on an ongoing basis in perpetuity as agreed upon via a substantiated management agreement between the applicable landowners and the local government; or*	The BAL Contour for the Site (Figures 5 to 7) shows the areas within the residential lots where a BAL-29 or lower rating can be achieved. Areas available for the construction of a habitable building within the lots are confined to areas that are BAL-29 or lower rating. There are areas of BAL-40 and BAL-FZ that encroach the proposed residential cells due to the vegetation outside of the Site boundary or within the creekline POS. A habitable building setback area will be required at subdivision stage, secured within a Local Development Plan is required where BAL-40 or BAL-FZ encroach the proposed lots, to ensure habitable dwellings are located in an area of BAL-29 or lower. Residential cells to the west of the Site are currently impacted by BAL-40 and BAL-FZ due to the vegetation within neighbouring Lot 5 South Coast Highway. In the Local Structure Plan for Lot 5 South Coast Highway (Appendix B), the area of Class A Forest is zoned for residential lots and therefore is likely that this area will be developed and becomes excludable in the future, which will reduce the bushfire exposure to the lots. The Bushfire Management Plan for the subdivision may need to include staging to prevent development in this area until Lot 5 South Coast Highway is developed, or the lot layout is designed to ensure all lots achieve a BAL-29 or lower rating. A Landscape Management Plan for the Public Open Space and Drainage Reserves is required to ensure the BAL ratings within the Bushfire Management Plan are accurate. Asset Protection Zones surrounding each habitable

• *the adjoining land is, and will remain in perpetuity, non-vegetated such as a sealed or unsealed road, or a water body.* • ***Management**: the APZ is managed in accordance with the requirements of Appendix B.2, Table 9 – APZ technical requirements, or an alternative standard in a gazetted local planning scheme.*	building that eventuates within the proposed lots will be established and maintained in perpetuity to meet the criteria in the Guidelines (Appendix A) with the following minimum distances required to achieve BAL-29: • 33 m to the Class A Forest Downslope >5 to 10 degrees; • 27 m to the Class A Forest Downslope >0 to 5 degrees; • 21 m to the Class A Forest Upslope/Flat; and • 9 m to the Class G Grassland Downslope >0 to 5 degrees. Any future habitable building and associated APZ should aim to minimise the clearing of native vegetation. Any future subdivision or development within the Site should be designed to minimise the removal and modification of remnant vegetation. All proposed Lots will be established and maintained to APZ standards by the Developer, including maintaining grasses under 10 cm in height until they are sold, when ongoing maintenance will become the responsibility of the individual landowners. Establishment and management of the Public Open Space and Drainage Reserves will occur in accordance with an approved Landscape Management Plan for a period of two years by the Developer. After this period, the land will be ceded to the Crown and vested to the Shire of Denmark, with ongoing management in perpetuity the responsibility of the Shire of Denmark. The final BAL rating of any dwelling will depend on the housing design, orientation, and location within the Lot. Once the building design has been finalised, a separate BAL Assessment is required to be completed and a certificate from a qualified Bushfire Consultant submitted at the building application stage.
A2.3 Clearing of native vegetation	The Site contains areas of remnant vegetation. The

Bushfire Protection Criteria – Element 2 – Siting and Design	
The structure plan or subdivision avoids, or where unavoidable, minimises the clearing of native vegetation.	approximate area that is required to be cleared or modified with a Landscape Management Plan includes 3.34 ha of Class A Forest. Vegetation modification is required to establish the roads, access ways and residential lots to Asset Protection Zone Standards. Vegetation modification may also be required within the areas of Public Open Space and Drainage Reserves to ensure all residential lots achieve a BAL-29 or lower rating. The subdivision plan should be designed to minimise the impact to native vegetation. A Landscape Management Plan is required to be prepared for the Site to detail the vegetation modification, management, and any revegetation.

Bushfire Protection Criteria – Element 3 – Vehicular Access	
Outcomes: Ensure the design and capacity of vehicular access and egress provide: • For efficient and effective evacuation to a suitable destination(s) and/or • As a contingency measure for vulnerable land uses, an on-Site shelter, where demonstrated appropriate, as a last resort option.	
Acceptable Solution	**Assessment Statements**
A3.1 Public Roads *Public roads are to meet the technical requirements in Appendix B.3, Table 10* (Appendix B).	The Developer will extend Zimmerman Street to provide connection to South Coast Highway. The Developer will construct public roads within the Site, and the extension of Zimmerman Street to South Coast Highway to meet the requirements of the relevant class of road in the Local Government Guidelines for Subdivisional Developments, Liveable Neighbourhoods, Austroads standards and/or applicable standards for the local government. Existing public roads in proximity to the Site are in good condition.
A3.2 Access Routes *Public road access should be provided in two different directions to two different suitable destinations, with an all-weather surface.*	All proposed lots are required to have two access/egress routes during each stage of development. The Structure Plan (Figure 1) shows the access roads which will provide all lots with one access route via a public road onto Zimmerman Street, which will be established as a public road connecting to South Coast Highway, provided egress routes to the east and west. Three Emergency access ways are proposed on the Structure Plan (Figure 1) to ensure all lots are provided two access routes (refer A3.3a & A3.4 below). If the subdivision is to be staged, the stages are to be designed to ensure all lots within each stage have two access and egress routes. The Structure Plan (Figure 1) shows two proposed roads connecting to Lot 5 South Coast Highway to the west, these proposed roads align with the proposed roads shown in the Local Structure Plan for Lot 5 South Coast Highway (Appendix B). These will provide future through

	connections to the public road network, providing additional access and egress routes from the Site.
A3.3a No-through roads *If the public road access to the subject Site is via a no-through road which cannot be avoided due to the demonstrated Site constraints, the public road access is to be a maximum of 200 metres from the proposed lot(s) boundary to an intersection where two-way access is provided.* *The no-through road may exceed 200 metres in length if it is demonstrated that an alternative access, including an emergency access way, cannot be provided due to site constraints and the following requirements are met:* • *The no-through road travels towards a suitable destination; and* • *The balance of the no-through road that is greater than 200 metres from the subject site is wholly within BAL-LOW, or is within a residential built out area.*	All roads within the Site are effectively no-through roads, exceeding 200m in length, with secondary access via a public road only available at Zimmerman Street, which will be upgraded and extended to connect to South Coast Highway. Secondary access onto South Coast Highway cannot be provided, due to Main Roads restricting additional accesses on the road. Three emergency access ways are proposed (Refer A3.4 below). These emergency access ways ensure all lots will be provided multiple egress routes in the event of a bushfire. All emergency access ways are less than 200m in length. Any temporary no through roads that occur if the subdivision is stage, are required to be less than 200m in length and comply with the requirements of A3.3b below.
A3.3b No-through road requirements *A no-through road is to meet all the following requirements:* • *Requirements of a public road (Appendix B, Table 10, Column 2); and* • *Turn around area/head (Appendix B, Figure 30).*	All no-through roads will be constructed to the requirements of Table 10, Column 2 (Appendix A). The internal proposed roads form a no-through loop road; therefore, a turnaround area is not required. The proposed road in the north of the Site is a cul-de-sac and a turnaround head is required, in accordance with the requirements of the Guidelines (Appendix A).
A3.4 Emergency access way *Where it is demonstrated that A3.2 and A3.3 cannot be achieved due to Site constraints or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution.* *An emergency access way is to meet the following*	Three emergency access ways (EAW) are proposed from the Site to provide a secondary egress route for all lots. The EAW to the south connects to the Heritage Trail, which may require upgrading to ensure compliance with the Guidelines, with the Shire of Denmark to determine the classification of the trail access, i.e. public road, or emergency access way.

requirements: • *The requirements of Appendix B.3, Table 10, Column 3 (Appendix A);* • *Provides a through connection to a public road;* • *Is no more than 500 metres in length;* • *Connects to a public road network;* • *The proponent obtaining consent from the local government, that it will accept care, control, and management for the access way; and* • *Is signposted and, if gated, gates must open for the whole carriageway width and remain unlocked.*	The EAWs are less than 200m in length and will be constructed to the standards of Table 10, Column 3 of the Guidelines (Appendix A), including a 10m horizontal clearance and 4.5m vertical clearance, and will be signposted. Prior to subdivision approval, the Developer is required to obtain consent from the Shire of Denmark that they will accept care, control, and management of the EAW. Temporary EAWs may be considered in a staged development to ensure multiple access routes are provided at each stage of development as an interim access route. The EAWs will be signposted at both ends.
A3.5a Perimeter roads *A perimeter road is a public road and is to be provided for greenfield or infill development where 10 or more lots are proposed (including as part of a stages subdivision) with the aim of:* • *Separating areas of permanent classified vegetation under AS 3959 which adjoin the subject Site, from the proposed lot(s); and* • *Removing the need for battle-axe lots that back onto areas of classified vegetation.* *A perimeter road is to meet the requirements contained in Appendix B.3, Table 10, Column 1* (Appendix A). *A perimeter road may not be required where:* • *The adjoining classified vegetation is Class G Grassland;* • *Lots are zoned for rural living or equivalent;* • *It is demonstrated that it cannot be provided due to Site constraints; or*	A Perimeter road is proposed around the majority of lots to provide separation from classifiable vegetation, excluding grassland. Some lots directly abut Public Open Space and Drainage Reserves, where a perimeter road is not proposed. An approved Landscape Management Plan is required to ensure that these lots have adequate separation distance to achieve a BAL-29 or lower rating, which will result in these lots not adjoining classifiable vegetation. A perimeter road is not proposed for lots in the west. The Local Structure Plan for Lot 5 South Coast Highway shows that these areas are proposed to be residential housing, therefore a perimeter road may not be required in this area.

Bushfire Protection Criteria – Element 3 – Vehicular Access	
• *All lots have frontage to an existing public road.*	
A3.5b Fire service access route	No FSAR are proposed as part of this development.
A3.6 Battle-axe access legs *There are no battle-axe technical requirements where the point of the battle-axe leg joins the effective area of the battle-axe lot, is less than 50 metres from a public road in a reticulated water supply area.* *In circumstances where the above acceptable solution is not met, or the battle-axe lot is in a non-reticulated water supply area, the battle-axe leg is to meet the following requirements:* • *Requirements in Appendix B.3, Table 10, Column 5;* • *Passing bays every 200 metres with a minimum length of 200 metres and a minimum additional carriageway width of two metres (i.e. the combined carriageway width of the passing bay and constructed private driveway to be a minimum six metres); and* • *Turn-around area/head.*	Battle-axe legs should be avoided where possible. Any battle-axe legs that are proposed at subdivision stage must meet all of the requirement of the Guidelines.

Bushfire Protection Criteria - Element 4 - Water	
Outcomes: Ensure that sufficient water is available and accessible for emergency services, to enable people, property, and infrastructure to be defended from bushfire.	
Acceptable Solution	**Assessment Statements**
A4.1 Identification of future water supply *Evidence that a reticulated or non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2.*	The Site will be reticulated. Reticulated water will be supplied in accordance with the Water Corporation's No. 63 Water Reticulation Standards by the Developer. Fire Hydrants will be supplied in accordance with the Water Corporations requirements by the developer.

4.2 Outcomes Based Approach

The Site assessment was conducted in accordance with AS 3959-2018 Simplified Procedure (Method 1). The Proposal meets all the compliance requirements for the four Bushfire Protection Criteria Elements. There is no outcomes based approach proposed.

4.3 Summary of the Assessment Outcomes

This plan provides acceptable solutions and responses to the performance criteria outlined in the *Planning for Bushfire Guidelines* (WAPC, Nov 2024).

The layout and design of the development is required to be amended or staged so that no habitable building will be required to be exposed to a radiant heat flux in excess of 29kW/m^2 (BAL-29) provided the management as outlined in this Plan is adopted.

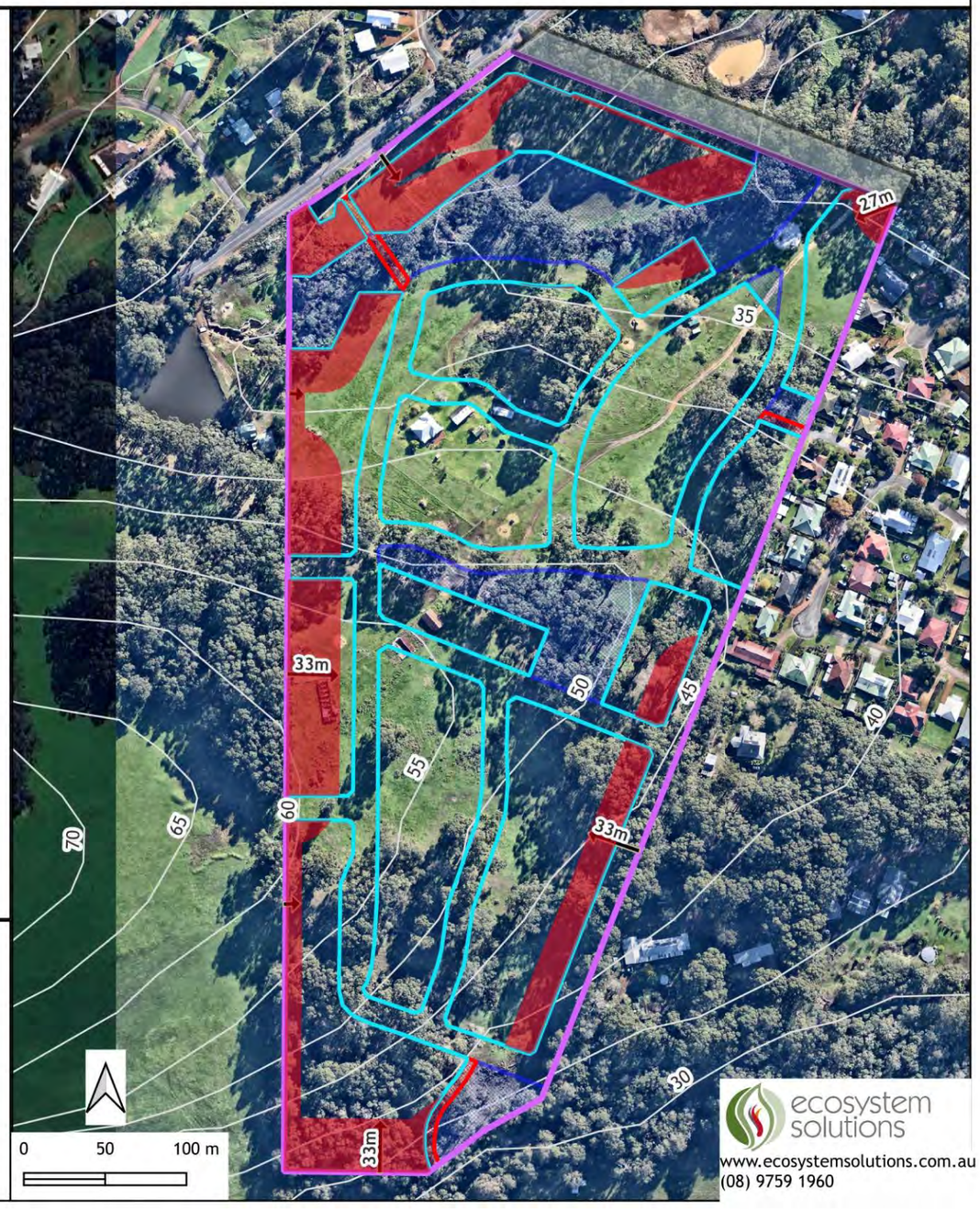
Any class 1, 2, 3 or associated 10a structure that are to be constructed, or additions planned to existing dwellings shall be designed and built to conform with Australian Standards AS 3959-2018:

- BAL-29: sections 3 & 7;
- BAL-19 sections 3 & 6; and
- BAL 12.5 sections 3 & 5.

A summary of the Bushfire Management Strategies to be implemented is provided in Figure 9. An individual BAL assessment may achieve a lower BAL rating, based on the exact location of a dwelling within a lot and classified vegetation.

Spatial representation of the proposed risk management measures

- A Bushfire Management Plan for a subdivision demonstrating complinace with the Bushfire Protection Criteria is require to be prepared.
- A Habitable Building Exclusion Area will be required at subdivision stage, secured by a Local Development Plan, will ensure that any habitable building that eventuates in a proposed lot will achieve a BAL-29 or lower rating.
- The Developer must obtain an approved Landscape Management Plan, at subdivision stage, to determine the vegetation modification or revegetation with the Public Open Space and Drainage Reserves, to ensure the vegetation classification is correct. Written confirmation from the Shire of Denmark is required to ensure ongoing management of the vegetation is implemented in accordance with the Landscape Management Plan once ceded.
- The extension of Zimmerman Street and Public Roads within the Site will be constructed by the Developer to meet the requirements of the relevant road in the Local Government Guidelines for Subdivisional Developmnets, Liveable Neighbourhoods, Austroads Standards and/or applicable standards for the local government.
- The Emergency Access Ways will be constructed in accordance with Table 10, Column 2 of the Guidelines, and will be less than 200m in length.
- The Shire of Denmark will determine the construction standards required for the Heritage Trail to be suitable for vehicle access to comply with the Guidelines.
- Prior to subdivsion approval the developer is required to be obtain consent from the Shire of Denmark that they will accept care, control and management of the EAW's and the area of the Heritage Trail that will be utilised for vehicle access.
- Reticulated water will be supplied in accordance with the Water Corporation's No. 63 Water Reticulation Standards by the Developer.
- Fire Hydrants will be supplied in accordance with the Water Corporation's requirements by the Developer.



Management Strategies Map

621 Harlequin Street and 1 South Coast Highway, Denmark

Project:	251823
Report:	BMP
Revision:	A
Assessment Date:	11/08/2025
Prepared By:	D. Cuthbert
Accreditation Level:	Level 2
Accreditation Number:	48409
Accreditation Expiry:	Feb 2026

GDA2020 / MGA zone 50

- Subject Site Boundary
- Residential Cells
- POS
- EAW
- Habitable Building Exclusion Area
- Distance
- Contour Lines (m AHD)
- Zimmerman Street Extension

Figure 9 Map of Bushfire Management Strategies

5 Responsibilities for Implementation and Management of the Required Bushfire Measures

The responsibilities for the Developer and Local Government are outlined in Table 3 and Table 4, respectively.

Table 3 Developer Responsibilities

Number	Action	Due	Completed
1	Preparation of a Bushfire Management Plan for a subdivision demonstrating compliance with the Bushfire Protection Criteria	Prior to subdivision approval	☐
2	Ensure that the lot layout is designed to ensure all lots have a suitable area where a habitable building can achieve a BAL-29 or lower rating.	Prior to subdivision approval	☐
3	Prepare a Local Development Plan to secure the Habitable Building Exclusion Area to ensure no habitable building can be constructed within BAL-40 or BAL-FZ.	Post subdivision approval, prior to completion and prior to lot sale	☐
4	Construct public roads (A3.1) to the dimensions and standards stated in the Bushfire Management Plan ensuring all lots have two way access, with a minimum 200 m no through road, for all stages of the development.	Post subdivision approval, prior to completion and prior to lot sale	☐
5	Extend and upgrade Zimmerman Street to South Coast Highway to the standards of the Guidelines, with the standards agreed by the Shire of Denmark.	Post subdivision approval, prior to completion and prior to lot sale	☐

Number	Action	Due	Completed
6	Construct the Emergency Access Ways (A3.4) to the dimensions and standards stated within this Bushfire Management Plan.	Post subdivision approval, prior to completion and prior to lot sale	☐
7.	Obtain consent from the Shire of Denmark that they will accept care, control, and management of the Emergency Access Ways.	Prior to planning approval	☐
8.	Design all roads to the standards of Element 3 in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional Development, Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.	Prior to planning approval	☐
9.	Establish and maintain the Public Open Space and Drainage Reserves, in accordance with a Landscape Management Plan, after a period of two years the land will be ceded to the Crown and vested to the Shire of Denmark with management responsibilities handed over to the Shire of Denmark.	Post Planning approval of subdivision and prior to lot sale / until handover to the Shire of Denmark	☐
10.	Establish and maintain all lots in accordance with the Asset Protection Zone Standards, including with grass under 10 cm, year around until the lots are sold, where it becomes the responsibility of the landowners.	Post planning approval of subdivision and prior to lot sale	☐
11.	Install reticulated water and fire hydrants in accordance with the Water Corporation's No. 63 Water Reticulation Standards.	Post planning approval of subdivision and prior to lot sale	☐
12.	Provide a copy and obtain endorsement of this Bushfire Management Plan by those with responsibility under this plan.	Post planning approval	☐

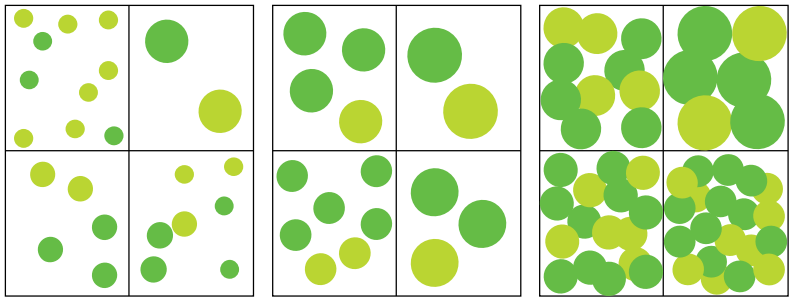
Number	Action	Due	Completed
13	Where WAPC condition a subdivision application approval with a requirement to place a notification onto the certificate(s) of title and a notice of the notification onto the diagram or plan of survey (deposited plan). This will be done pursuant to Section 165 of the *Planning and Development Act 2005* ('Hazard etc. affecting land, notating titles as to:') and applied to lots with a determined BAL rating of BAL-12.5 or above. The notification is to be placed on the title in the form of a Section 70a notifying future purchases that the lot is within a designated bushfire prone area, and the development is to comply with the Bushfire Management Plan. Wording to be provided by the Shire of Demark.	Creation of titles and deposited plan	☐

Table 4 Shire of Denmark's Responsibilities

Number	Action	Due
1	Maintain areas of Public Open Space and Drainage Reserves in accordance with a Landscape Management Plan and this BMP in perpetuity.	Two years post planning approval of subdivision - once responsibility is transferred from the developer.
2	Maintain the Emergency Access Ways in accordance with this Bushfire Management Plan.	Ongoing

Appendix A Technical Guidelines from the Planning for Bushfire Guidelines

Table 9: Asset Protection Zone (APZ) technical requirements

OBJECT	REQUIREMENT
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (combustible, dead vegetation matter less than 6 mm in thickness)	• Should be managed and removed on a regular basis to be maintained as low threat vegetation • Should be maintained at less than two tonnes per hectare (on average) • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* (more than 6 m in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building • Branches at maturity should not touch or overhang a building or powerline • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ. Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%

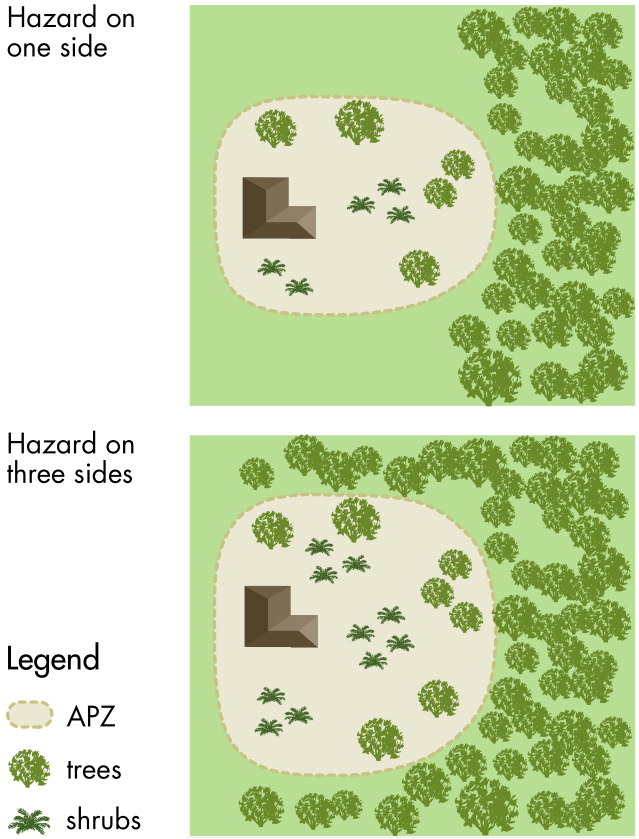
OBJECT	REQUIREMENT
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings • Should not be planted in clumps more than five square metres in area • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground cover*(less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above • Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
Grass	• Grass should be maintained at a height of 100 mm or less, at all times • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non- combustible mulches as prescribed above.
Liquid petroleum gas cylinders	• Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building • The pressure relief valve should point away from the house • No flammable material within six metres from the front of the valve • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

Notes:
** Plant flammability, landscaping design and maintenance should be considered – refer to following explanatory notes*

Fine fuel load is the combustible, dead or dry vegetation matter on the ground, near ground, or elevated. Fine fuel includes grass, leaves, bark and twigs less than six millimetres in diameter that ignite readily and are burnt rapidly when dry.

Fine fuel should be maintained at less than 2t/ha. 100gm/m² equates to 1t/ha. To estimate a fuel load (in t/ha), collect the dry fine fuel from a representative one square meter and weigh (in grams using kitchen scales) and multiply the weight by 0.01.

Figure 25: Design of an Asset Protection Zone



Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, it should be noted that fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation is unsafe.

B.2.4 PLANT FLAMMABILITY

There are certain plant characteristics that are known to influence flammability, such as moisture or oil content and the presence and type of bark. Plants with lower flammability properties may still burn during a bushfire event but may be more resistant to burning and some may regenerate faster post-bushfire.

There are many terms for plant flammability, which should not be confused, including:

- **Fire resistant** – plant species that survive being burnt and will regrow after a bushfire and, therefore, may be highly flammable and inappropriate for a garden in areas of high bushfire risk.
- **Fire retardant** – plants that can absorb more of the heat of the approaching bushfire without burning, compared to more flammable plants.
- **Fire wise –** plants that have been identified and selected based on their low flammability properties and linked to maintenance advice and planting location within a garden.

Although not a requirement of the Guidelines, local governments may develop their own list of fire wise or fire-retardant plant species that suit the environmental characteristics of an area. When developing a recommended plant species list, local governments should consult with ecologists, land care officers or environmental authorities to ensure the plants do not present a risk to threatened ecological communities, threatened or endangered species or their habitat.

When selecting plants, private landholders and developers should aim for plants within the APZ that have the following characteristics:

- grow in a predicted structure, shape and height
- are open and loose branching with leaves that are thinly spread
- have a coarse texture and low surface-area-to-volume ratio
- will not drop large amounts of leaves or limbs that require regular maintenance
- have wide, flat and thick or succulent leaves
- trees that have bark attached tightly to their trunk or have smooth bark
- have low amounts of oils, waxes and resins (which will often have a strong scent when crushed)
- do not produce or hold large amounts of fine dead material in their crowns
- will not become a weed in the area.

B.3: VEHICULAR ACCESS

State Planning Policy outcome for Element 3: Vehicular access

Ensure the design and capacity of vehicular access and egress provide:

- **for efficient and effective evacuation to a suitable destination(s) and/or**
- **as a contingency measure for vulnerable tourism land uses, an on-site shelter, where demonstrated appropriate, as a last resort option.**

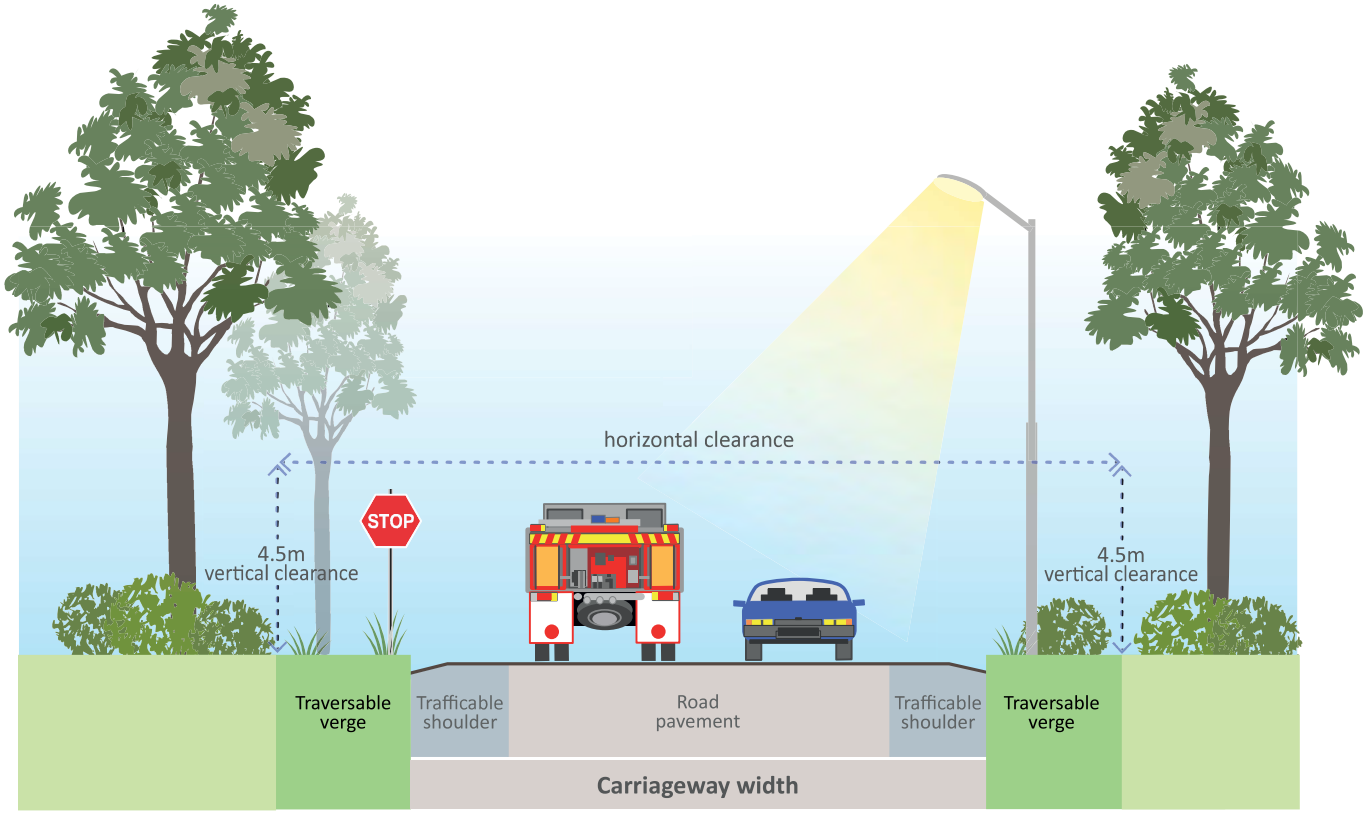
B.3.1 PUBLIC ROADS

The Guidelines do not prescribe values for the carriageway width or the horizontal clearance for public roads (except for perimeter roads). Public roads should be in accordance with the class of road as specified in the Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards, any applicable or relevant Main Roads standards, supplements, policies and any applicable or relevant local government standards or policies.

However, it is important that public roads (and other forms of access) in bushfire prone areas, allow for emergency services vehicles to stop and operate on the side of the public road, specifically where the public road traverses large areas of classified vegetation.

It is, therefore, recommended that public roads achieve a minimum six metres horizontal clearance. Perimeter roads require additional width.

Figure 26: Area encompassing horizontal clearance and vertical clearance



Horizontal clearance: **The carriageway width (including the road pavement and trafficable shoulder) and traversable verge that provides for the movement and parking of vehicles and area required by emergency services to operate. Infrastructure and vegetation within the traversable verge should be frangible, however, non-frangible items can occur providing they do not restrict vehicular movement in the event of an emergency.**

Table 10: Vehicular access technical requirements

	1		2		3		4		5	
TECHNICAL REQUIREMENTS	**PERIMETER ROADS**		**PUBLIC ROADS**		**EMERGENCY ACCESS WAY[3]**		**FIRE SERVICE ACCESS ROUTE[3]**		**BATTLE-AXE & PRIVATE DRIVEWAYS[1]**	
MAP OF BUSH FIRE PRONE AREAS DESIGNATION	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**
Minimum horizontal clearance (metres)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (metres)	4.5									
Minimum weight capacity (tonnes)	15									
Maximum grade unsealed road[2]	See note 5		See note 5		1:10 (10% or 6°)					
Maximum grade sealed road[2,4]					1:7 (14.3% or 8°)					
Maximum average grade sealed road					1:10 (10% or 6°)					
Minimum inner radius of road curves (metres)					8.5					

Notes:

[1] Driveways and battle-axe legs to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision where not required to comply with the widths in this Appendix or the Guidelines.

[2] Dips must have no more than a 1 in 8 (12.5% - 7.1 degrees) entry and exit angle.

[3] To have crossfalls between 3 per cent and 6 per cent.

[4] For sealed roads only the maximum grade of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50 metres is permissible, except for short constrictions to 3.5 metres for no more than 30 metres in length where an obstruction cannot be reasonably avoided or removed.

[5] As outlined in the Institute of **Public Works Engineering Australasia (IPWEA) subdivision guidelines**, **Liveable Neighbourhoods**, **Austroads Standards** Main Roads standard, supplement, policy or guideline and/or any applicable or relevant local government standard or policy.

Where local or state government roads are proposed to be widened or modified by the proponent, as part of the structure planning process or at the subdivision stage, approval is required from the relevant government authority.

B.3.2 ACCESS TO A SUITABLE DESTINATION(S)

Public vehicular access in at least two different directions to at least two different suitable destinations should always be the goal within bushfire prone areas. The more options available for evacuation and for emergency services to respond to the bushfire, the better the bushfire resilience of a development and/or a community.

A suitable destination is likely to be an urban area, townsite or similar. This also includes any evacuation centre, dedicated by the local government, for use during a bushfire event.

Where a planning proposal, such as a structure plan or subdivision, proposes a large number of lots, or where the structure plan or subdivision adjoins an urban area or townsite, this could potentially result in land that is more than 100 metres from classified vegetation (BAL-LOW). In this instance, an argument could be made that the suitable destination is within the subject site or within the adjoining urban area or townsite. For example, where coastal communities are limited to one public road servicing the community, there may be an existing managed area large enough to provide an area suitable for people to locate to before, during and after a bushfire event.

There is no prescribed distance to a suitable destination as it is assumed that in the event of a bushfire, a person would travel any necessary distance to evacuate.

A suitable destination should not be confused with an on-site shelter provided for tourism land uses. On-site shelters are a last resort option, purpose built and designed, and are supported in limited circumstances to facilitate tourism within remote and/or heavily vegetated areas.

On-site shelters are not supported for residential land-uses.

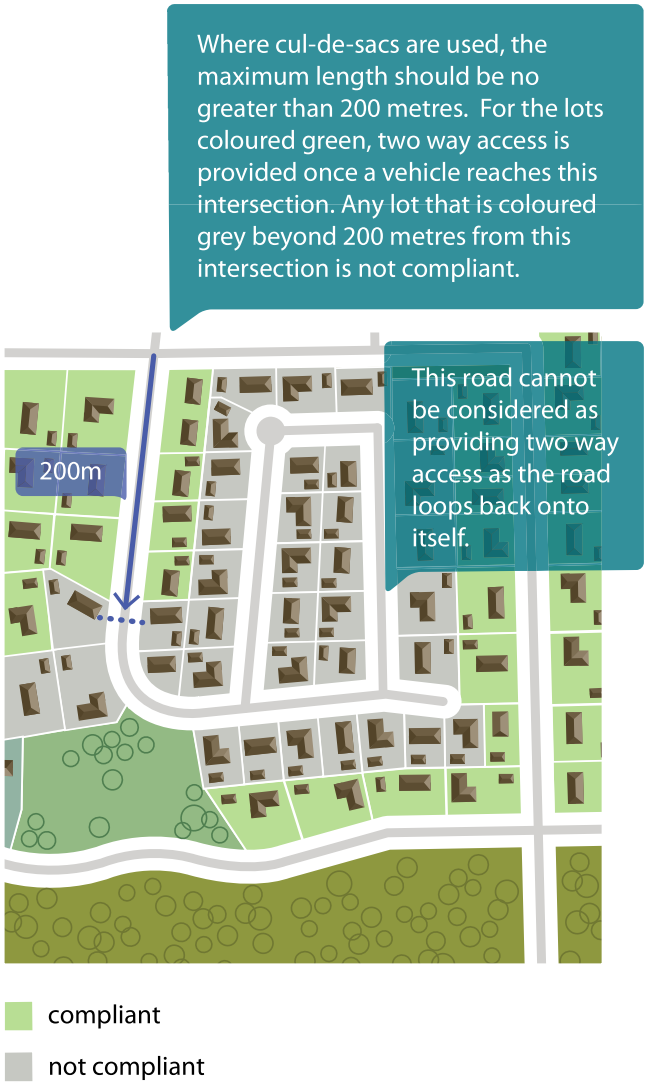
Suitable destination: An area that is not designated as bushfire prone on the *Map of Bush Fire Prone Areas* or is greater than 100 metres from classified vegetation or 50 metres from Class G Grassland, as per AS 3959, and can provide protection during and after a bushfire event.

A suitable destination is located within an urban area, townsite or similar. This also includes any evacuation centre, dedicated by the local government, for use during a bushfire event.

B.3.3 NO-THROUGH ROADS

No-through roads reduce the legibility of a road network and options available for access and egress in the event of a bushfire emergency. The inclusion of new no-through roads within subdivision or structure plan designs, in the first instance, should be avoided in bushfire prone areas.

Figure 27: Example of compliant and non-compliant two-way access



However, where it is demonstrated, to the satisfaction of the decision-maker that a no-through road cannot be avoided due to site or design characteristics, the inclusion of a new no-through road is to be treated as an acceptable solution, if it satisfies the prescribed maximum road length. Where this is not demonstrated, a decision-maker is able to request a redesign to remove the no-through road.

The acceptable solution for no-through roads in areas shown as Area 2 on the *Map of Bush Fire Prone Areas* includes a maximum of 200 metres from the lot(s) boundary to an intersection where two-way access is provided (**Figure 28**). There is no prescribed maximum length for no-through roads in areas shown as Area 1 (Urban) on the *Map of Bush Fire Prone Areas*.

B3.3.1 Outcomes-based approach – no-through roads

It becomes more challenging to comply with the acceptable solutions where the proposal includes existing no-through roads that exceed 200 metres. The 200 metres is a nationally accepted standard and support for development on existing no-through roads longer than the prescribed 200 metres, particularly within vegetation classified as Forest, should be considered carefully. They should be the exception to the rule where it is demonstrated through an outcomes-based approach that the hazards and the road network within the broader landscape are such that, in the event of a bushfire, evacuation to a suitable destination is possible.

An outcomes-based approach should demonstrate the increase in length, and/or the proposed additional lots, on an existing non-compliant no-through road and should consider:

- the broader landscape
- size and scale of the development
- whether the no-through road travels away from the source of the bushfire hazard
- evacuation in the event of a bushfire scenario
- the vegetation within and adjoining the road reserve
- legibility of the broader road network
- whether the no-through road is straight and provides a line of sight
- any improvements to the bushfire resilience of the area, including improvements to the existing road network
- the precedent within the broader area that would be set by supporting development on a non-compliant no-through road.

Figure 28: Demonstration of a lot achieving two-way access within 200 metres

B.3.4 EMERGENCY ACCESS WAY

An emergency access way is not a preferred alternative to public road access. It should be considered acceptable only where it has been demonstrated that public road access cannot be achieved due to site characteristics or environmental values; and that it will provide for the safety and performance needs of emergency services and the community.

The principal function of the emergency access way is to provide a contingency (second) public evacuation route and simultaneously provide access for emergency services in the event of a bushfire. Where an emergency access way traverses classified vegetation, it performs the secondary function of providing access for emergency services to the hazard (vegetation).

Figure 29: Example of a site on a no-through road greater than 200 metres but within 200 metres of BAL-LOW

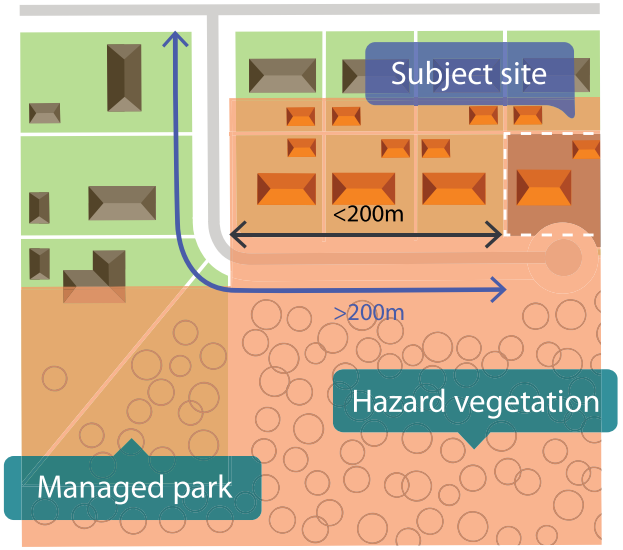
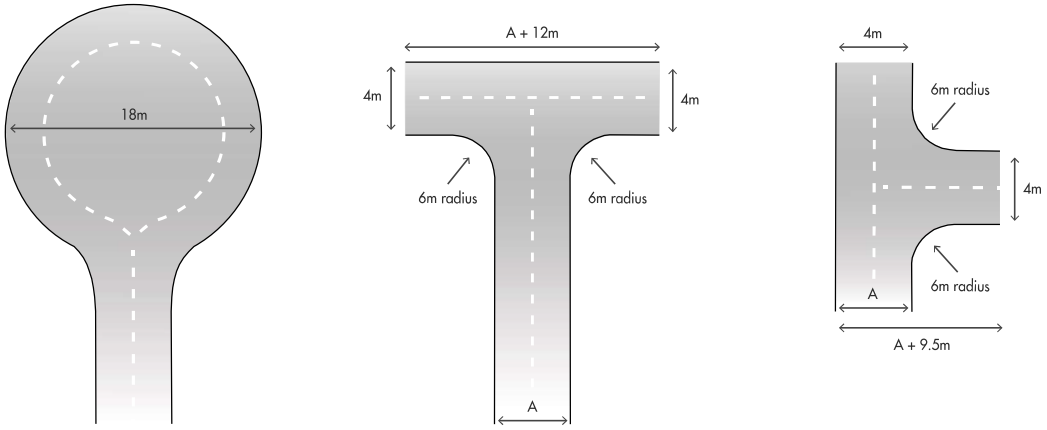


Figure 30: Design requirements for a turn-around area



Where the emergency access way is located within an area shown as Area 2 on the *Map of Bush Fire Prone Areas*, a horizontal clearance of 10 metres should be provided. The 10 metres is to provide access for emergency services to any classified vegetation, including grassland, adjoining the easement (**Figure 31**).

A six metre horizontal clearance should be provided within an area shown as Area 1 (Urban) on the *Map of Bush Fire Prone Areas*.

Emergency access ways should connect to a public road. An emergency access way should not exceed 500 metres in length as there are often issues of legibility and safety. Emergency access ways are generally not part of the formal road network and many are not identified on various online or other mapping platforms, which may limit emergency services and/or the community finding their way through the network in an emergency.

B.3.4.1 Outcomes-based approach emergency access way (width and/or length)

An outcomes-based approach may be used to demonstrate to the satisfaction of the decision-maker that a reduction in the width and/or an extension of the length of the emergency access way provides for the efficient and effective evacuation to a suitable destination(s).

Figure 32 and **Figure 33** are examples where the width of an emergency access way could potentially be reduced. **Figure 32** depicts classified vegetation on one side of the easement and **Figure 33** depicts an easement with lots on either side. An outcomes-based approach could be used to demonstrate that the reduced width satisfies the policy outcome and policy measure 7.5 of SPP 3.7.

Figure 31: Example of a 10 metre wide emergency access way

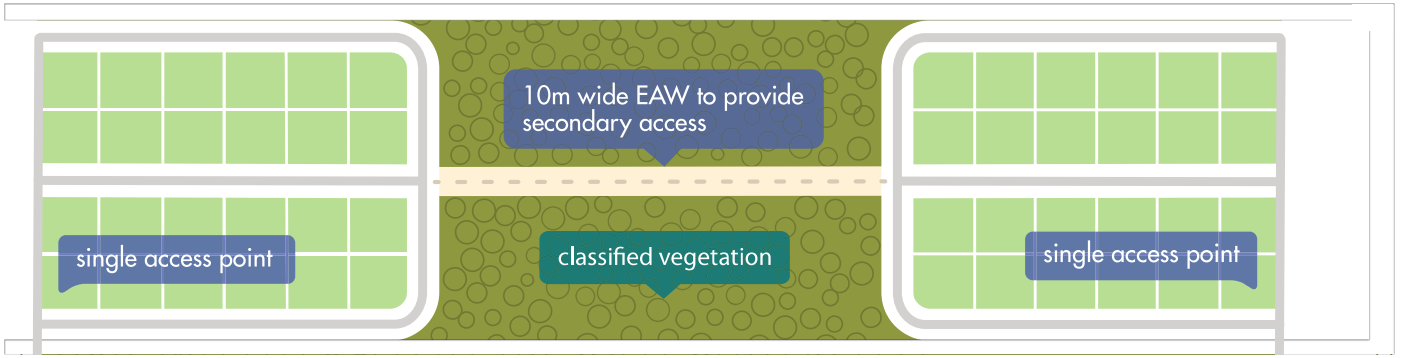
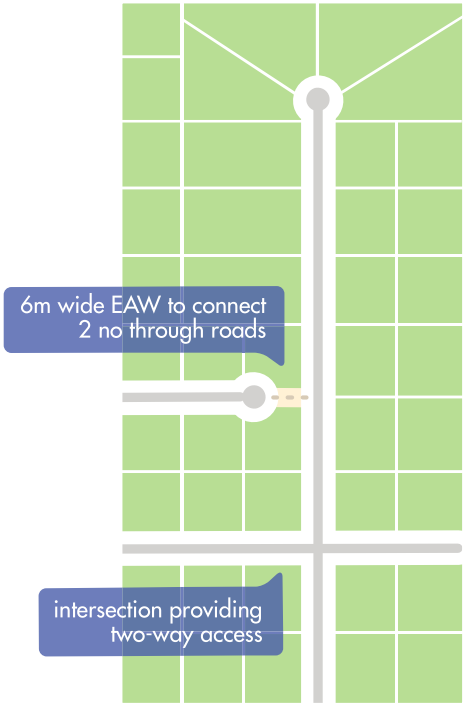


Figure 32: Example of a reduced emergency access way

Figure 33: Example of a 6 metre wide emergency access way



B.3.4.2 Permanent public emergency access way

A public emergency access way can be provided as either a public easement in gross or a right-of-way.

In both approaches, the care, control and management of the emergency access way should be the responsibility of the local government as the grantee of the easement or management body of the right-of-way (ceded to the Crown).

If the emergency access way is provided as an easement, it should be provided as a public easement in gross under sections 195 and 196 of the *Land Administration Act 1997* in favour of the local government and/or public authority, to ensure accessibility by fire emergency services and the public at all times. If the emergency access way traverses an adjoining private lot(s), support will be necessary from the adjoining lot owner(s).

To be provided as a right-of-way, the emergency access way should be vested as such in the Crown under section 152 of the *Planning and Development Act 2005*. Such land should be ceded free of cost and without any payment or compensation by the Crown.

The proponent should obtain written consent from the local government that it will accept care, control and management of the easement or right-of-way.

This should be provided to the decision-maker prior to granting planning approval. Consultation with the Department of Planning, Lands and Heritage (Land Use Management division) should also be undertaken if the land is to be ceded to the Crown.

If gates are used to control traffic flow during non-emergency periods, these will be managed by the local government and should not be locked. They should be double gates wide enough to access the whole carriageway width and accommodate type 3.4 fire appliances with the design and construction to be approved by the relevant local government.

B.3.4.3 Right-of-carriageway emergency access way

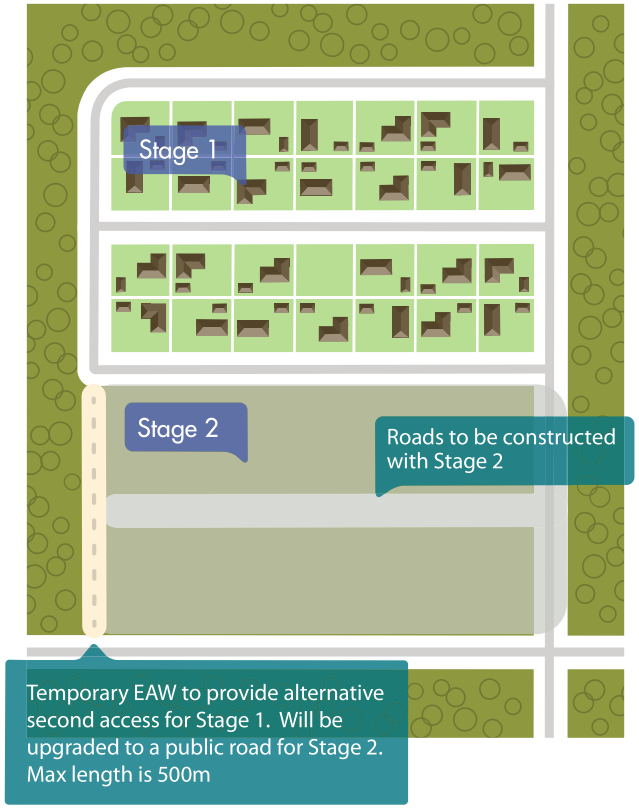
There may be instances where a proposed development is limited to secondary access through the adjoining lot(s). A right-of-carriageway easement can be provided under section 195 of the *Land Administration Act 1997*, which restricts the use of the emergency access way to the lot owner(s) and emergency services and is not available to the public.

Written support is required from the adjoining lot owner(s). Approval for the use of these types of right-of-carriageway is on a case-by-case basis and at the discretion of the decision-maker. The easement is to be granted to the local government and its management should be agreed to by all parties and included within the deed. If gated, the easement area can be locked to restrict day-to-day vehicular access.

B.3.4.4 Temporary emergency access way

A temporary emergency access way may be proposed to facilitate the staging arrangements of a subdivision. The provision of two public roads may not be possible or feasible in the first stage of the subdivision and an emergency access way can be provided as an interim access route, until the second public road is constructed in the subsequent stage of the subdivision (**Figure 34**).

Figure 34: Example of where an emergency access way may be provided



B.3.4.5 Restricted public emergency access way

Emergency access ways should not be gated, or where they are gated should not be locked. However, there may be instances where the local government or Main Roads Western Australia will request that the gate be locked and public vehicular access restricted, except during an emergency. This is usually due to concern regarding the additional vehicular movements onto an existing local or state road. If the emergency access way is locked to restrict access, a common key system should be used. Keys should be available to emergency services and designated fire officers within the local government area and/or surrounding district.

In this scenario, the emergency access way can be provided as an easement under section 195 of the *Land Administration Act 1997*, as public access in the event of a bushfire emergency, or vested in the Crown as a reserve under section 152 of the *Planning and Development Act 2005*. Where vested, such land is to be ceded free of cost without any payment or compensation by the Crown.

The proponent should obtain written consent from the local government accepting care, control and management of the proposed easement or reserve and agree to the terms of the Management Order Conditions (if applicable); this should be provided to the decision-maker prior to granting development approval.

The reserve should be for a public purpose specified in the condition related to the subdivision, for example, for emergency access only or for emergency access and recreation. A reserve for emergency access and recreation optimises the land-use by providing vehicular access in the event of a bushfire emergency and daily access by the public (on foot) as a recreation link. Appropriate signage can ensure the public is aware of the purpose of the reserve.

B.3.5 PERIMETER ROADS

Hazard separation should be provided in the form of a perimeter road where a strategic planning proposal or subdivision application includes the creation of 10 or more lots adjacent to each other, which adjoin classified vegetation under AS 3959 with the exception of Class G Grassland, as part of a greenfield development or large urban infill site.

The creation of 10 or more lots includes cumulative subdivision applications where the subdivision application may be part of a staged subdivision.

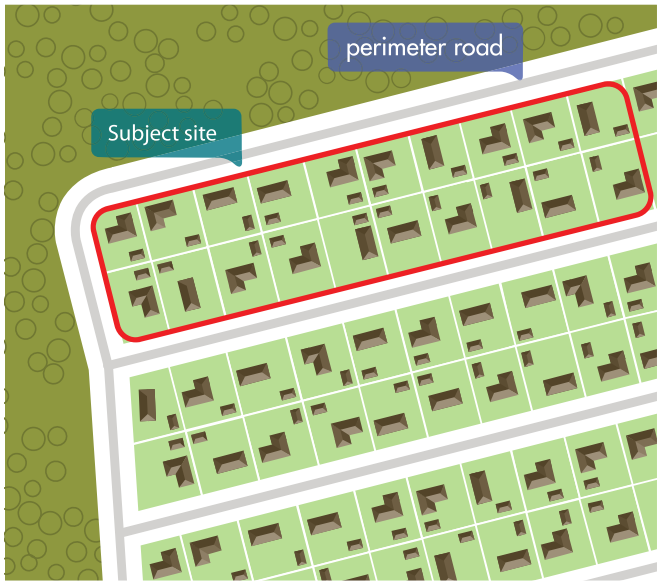
As the road is likely to function as a key neighbourhood distributor or similar, it is important to provide additional width to allow emergency services vehicles to stop and operate on the side of the perimeter road, whilst simultaneously providing for community evacuation. This is reflected in **Table 10**, Column 1 requirements.

When designing a strategic planning proposal and/or subdivision, there are many benefits in creating a large setback between classified vegetation and proposed lots with a perimeter road and orientating habitable buildings to front rather than back onto areas of vegetation.

They include:

- passive surveillance
- defendable space for firefighting and emergency management purposes
- reducing the radiant heat that may impact a habitable building in a bushfire event
- reducing the need for battle-axe lots
- unconstrained public access/egress for the community in the event of a bushfire.

Figure 35: Example of a perimeter road



In developments where no perimeter road exists, property defence in a bushfire event is difficult and can be impossible. Where proposed lots have frontage to an existing public road and abut the hazard at the rear or side, it may be an undesirable planning outcome to create lots that front the existing public road and back onto a perimeter road. In this instance, consideration should be given to a fire service access route.

B.3.6 FIRE SERVICE ACCESS ROUTE

Where a planning proposal adjoins classified vegetation (excluding Class G Grassland) and where a perimeter road is not appropriate and/or not required, there may be a need to provide access for emergency services vehicles to classified vegetation for firefighting and fire management purposes.

This route is not intended to provide residents and the public with emergency egress and, therefore, is not a suitable second access or substitute for a public road.

Where the fire service access route is within an area shown as Area 2 on the *Map of Bush Fire Prone Areas*, a minimum horizontal clearance of 10 metres should be provided to allow access for emergency services to any classified vegetation adjoining the fire service access route. A minimum six metres horizontal clearance should be provided where the area is shown as Area 1 on the *Map of Bush Fire Prone Areas*.

A fire service access route can be provided as either an easement in gross over private or Crown land or ceded to the Crown as a reserve. In both approaches, the management of the fire service access route is by the local government as the grantee of the easement or management body of the reserve. Determining which approach to take depends on the intended tenure of the fire service access route, which is explained below. The proponent should obtain written consent from the local government that it will accept care, control and management of the easement or reserve and agree to the terms of the Management Order Conditions (if applicable). This should be provided to the decision-maker prior to granting approval. The approach taken is at the discretion of the decision-maker and/or the local government. Consultation with Land Use Management Division of the Department of Planning, Lands and Heritage should also be considered if the land is to be ceded to the Crown or if the local government is uncertain of which approach to take.

Where gates are used, they should be double gates wide enough when open to allow vehicles to access the whole carriageway width and accommodate type 3.4 fire appliances. The design and construction are to be approved by the relevant local government.

Gates on fire service access routes may be locked to restrict access provided a common key system is used. Keys are to be available to emergency services and designated fire officers within the local government area and/or surrounding district. Gates should be installed where fences intersect or cross over with fire service access routes. If an easement in gross is proposed, such arrangements for gates should be included in the deed of easement and be agreed to by the local government.

B.3.6.1 Fire service access route to remain in private ownership of multiple landowners

Where a fire service access route will traverse multiple private lots intended to remain in multiple private ownership, it should be provided as an easement in gross under section 195 of the *Land Administration Act 1997*, to ensure accessibility for fire emergency services and not for use by the public. The easement is to be granted to the local government and/or public authority for firefighting and emergency management purposes.

B.3.6.2 Fire service access route to be created under State ownership

Where a fire service access route is proposed to traverse multiple private lots but the decision-maker and/or local government prefer for it in a single parcel for management purposes, the route can be vested in the Crown under section 152 of the *Planning and Development Act 2005* as a reserve. Such land is to be ceded free of cost without any payment or compensation by the Crown. The reserve should be for a public purpose specified in the condition related to the subdivision, for example, for vehicular access for emergency services and the local government only, or for vehicular access for emergency services and the local government and recreation. A reserve for emergency services access and recreation optimises the land-use by providing vehicular access for emergency services and daily access by the public (on foot) as a recreation link.

Appropriate signage will ensure the public is aware of the purpose of the reserve. The approach taken is at the discretion of the decision-maker and/or local government.

Figure 36: Example of a fire service access route (FSAR)

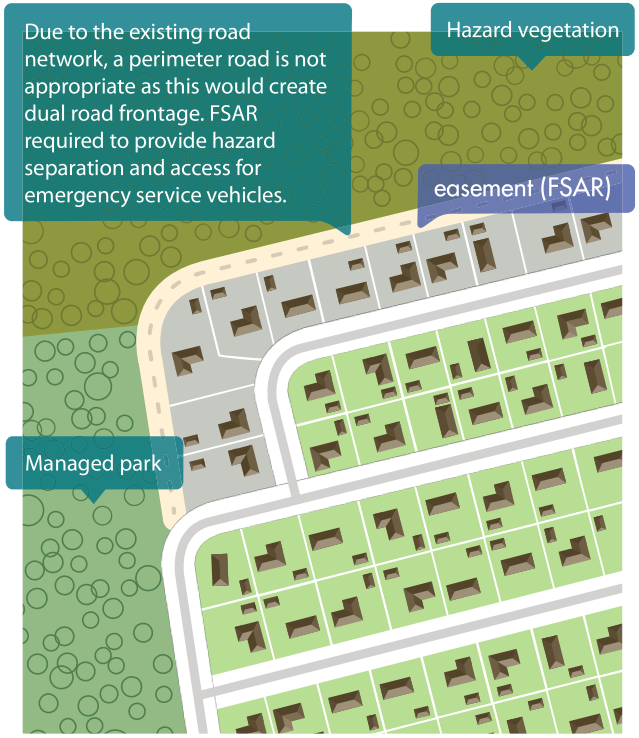
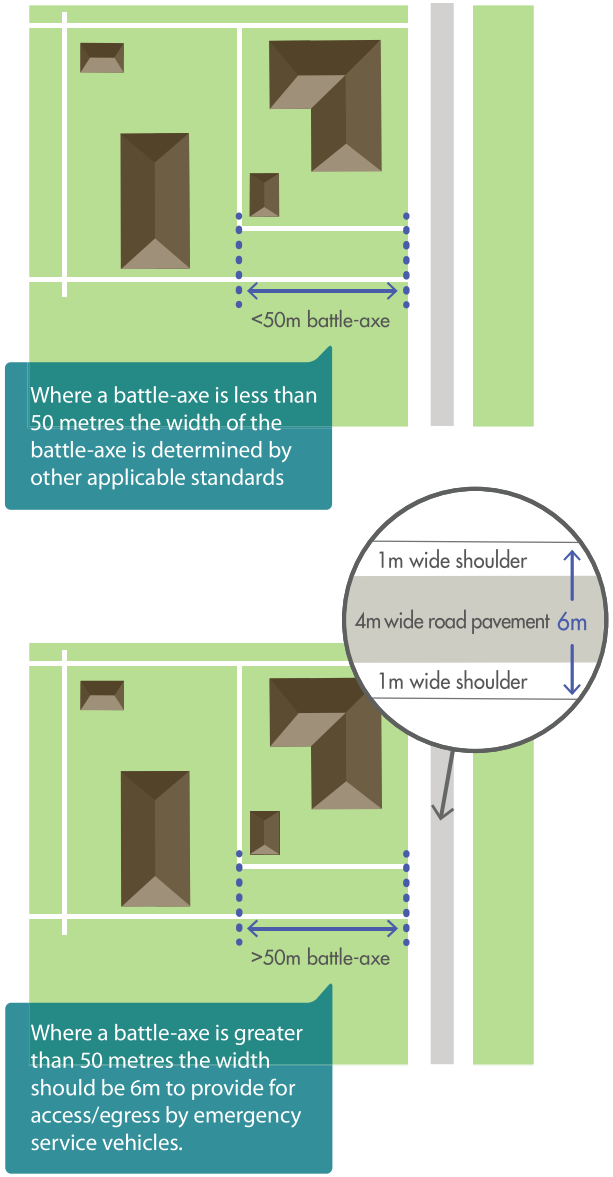


Figure 37: Battle-axe design requirements



3.7 BATTLE-AXE ACCESS LEG

In bushfire prone areas, lots with battle-axe access legs should be avoided because they:

- do not enable the habitable building to be located close to a public road where it is visible to emergency services
- result in longer than necessary access routes for evacuation and the response by emergency services
- may be blocked by falling trees or debris
- may not provide certainty for emergency services regarding the width, length and ability to turn around emergency services vehicles
- In some instances, battle-axe access legs may be appropriate to overcome specific site or design constraints created by the existing road network or lot layout
- The BMP should provide justification for proposed battle- axe access leg(s) and the decision-maker should determine whether the justification is valid
- Where the use of battle-axe access legs is considered appropriate, the measurement should be from the edge of the public road to where the access leg joins the effective area of the battle-axe lot. Effective lot area means that part of the battle-axe lot that is capable of development and excludes the access leg and associated truncations for vehicle maneuverability
- The battle-axe lot should allow safe access and egress for type 3.4 fire appliances to attend the future development site.

B.3.8 PRIVATE DRIVEWAYS

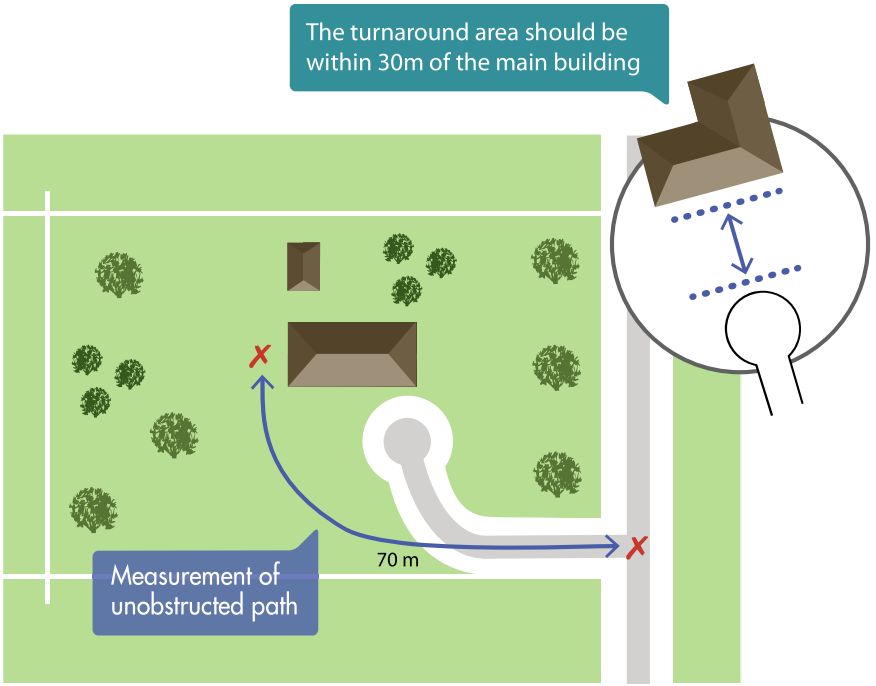
Emergency services vehicles typically operate from the street frontage in areas serviced by reticulated water and where the distance from the public road to the farthest part of the habitable building is no greater than 70 metres.

In the event the habitable building cannot be reached by hose reel from the public road, emergency services vehicles will need to gain access via the driveway to the property. Emergency services vehicles will also need to gain access to the property where access to water is provided by onsite water tanks. In these situations, the driveway and battle-axe access leg (if applicable) will need to be wide enough for access by an emergency services vehicle and a vehicle to evacuate.

It is acceptable for a private driveway to have a carriageway width of four metres with a traversable verge of one metre on either side of the carriageway.

Turn-around areas (**Figure 38**) should be available for conventional two-wheel drive vehicles and type 3.4 fire appliances and should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered.

Figure 38: Design requirements for a private driveway where required



B.4: WATER SUPPLY

State Planning Policy outcome for Element 4: Water Supply

Ensure that sufficient water is available and accessible for emergency services use, to enable people, property and infrastructure to be defended from bushfire.

B.4.1 CONSTRUCTION AND DESIGN

An above-ground tank and associated stand should be constructed of non-combustible material.

Below-ground tanks should have a 200 millimetres diameter access hole to allow tankers or emergency services vehicles to refill direct from the tank, with the outlet location clearly marked on the surface.

Above and below ground tanks may need to comply with AS/NZS 3500.1:2018.

An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018.

Where an outlet for an emergency services vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

B.4.1.1 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire hazard and be in accordance with the applicable section below, unless otherwise specified by the local government.

B.4.1.2 Fittings for above-ground water tanks:

- Commercial land uses: 125 millimetres Storz fitting; or
- Strategic water tanks: 50 millimetres or 100 millimetres (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50 millimetres male camlock coupling with full flow valve; or
- Combined water tanks: 50 millimetres male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses.

B.4.1.3 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

B.4.2 USE OF WATER SUPPLY

Water supply for firefighting in the event of a bushfire can be provided on a lot for use by emergency services or for use by the landowner, if their **Bushfire Survival Plan** is to stay and defend their property.

The combination of drinking water and water for firefighting purposes is not recommended, as stagnant water may alter the quality of the drinking water and the emergency services, by law, may not be able to take water from the water supply to suppress a bushfire.

Combining drinking water and water for firefighting purposes is contrary to provisions within clause 4.2.3 of AS/NZS 3500.1:2021.

B.4.3 INDEPENDENT WATER AND POWER SUPPLY

Bushfires can directly impact a water service provider's equipment or pipes. As such, a reticulated water supply may not be reliable due to a reduction in water pressure or loss of supply. Where development is in an area shown as Area 2 on the *Map of Bush Fire Prone Areas* and/or where the local government area has known issues with water supply or pressure, it is recommended that the landowner consider providing a water tank in accordance with **Table 11**, Water supply dedicated for bushfire firefighting purposes.

In non-reticulated water supply areas, it is recommended that any pumping equipment be powered by means other than the electricity network. The pumping equipment could be a diesel or petrol-powered pump, or an electric pump if there is an onsite generator or backup power supply independent of the electricity network grid.

It is recommended that combustion pumps should be a minimum five hp or three kW diesel or petrol-powered pump and should be shielded against bushfire attack.

Where an electric pump is used, a backup power supply independent of the electricity network grid should be provided. A 3.7 kW/12k W/h sized battery (14.8 kW/h reserved solely for bushfire will power a 3.7 kW system for four hours) with blackout protection or a generator should be provided.

Table 11: Water supply dedicated for bushfire firefighting purposes

SECTIONS FROM THE PLANNING FOR BUSHFIRE GUIDELINES					
SECTION 5[2] STRUCTURE PLANS AND SUBDIVISION APPLICATIONS		**SECTION 6[2] DEVELOPMENT – RESIDENTIAL**	**SECTION 7[2] DEVELOPMENT – COMMERCIAL & INDUSTRIAL**	**SECTION 8[2] – DEVELOPMENT – VULNERABLE LAND USES**	
One additional lot	10,000 litre water tank per lot	10,000 litre water tank per habitable building	For each habitable building - 10,000 litre per 1,500 m^2 of floor space up to 50,000 litre. Provided in a water tank	Camping ground	At the discretion of the local government
Three to 24 lots	10,000 litre water tank per lot[1] **or** 50,000 litre strategic water tank				
25 lots or more	50,000 litre per 25 lots or part thereof, provided as a strategic water tank(s) **and/or** 10,000 litre water tank per lot			Other vulnerable land uses	For each habitable building - 10,000 litre per 500 m^2 of floor space up to 50,000 litre. Provided in a water tank

Notes:

[1] Evidence that the identified water supply amounts in either column denoted is to be provided at the relevant planning stage.

[2] where more than one habitable building is proposed, strategic water tanks are to be provided in accordance with Section 5 requirements and at the discretion of the Local Government.

B.4.4 STRATEGIC WATER SUPPLIES

Many local governments have a well-developed network of strategic water tanks for firefighting within their local government area. Given this, it is at the discretion of the local government to determine if the water supply within a locality is sufficient to cater for an increasing population when a subdivision is proposed. Local governments are encouraged to work with local emergency services to ensure the water supply needs for firefighting are understood.

Where a structure plan or subdivision proposes to create more than three but fewer than 24 lots, it is at the discretion of the local government whether it requires a strategic water tank or for each lot to be provided with a 10,000-litre tank.

A strategic water tank should preferably be located no more than 10 minutes from the farthest development site (20 minute turnaround time at a maximum). The turnaround time is the time it takes an emergency services vehicle to travel at legal road speeds from a lot to the water supply and back to the lot. Where a strategic water tank has been provided at the subdivision stage, the local government should consider whether the tank has the capacity to serve applications for development approval.

A landowner should enquire with their local government to determine whether a private water tank on their lot will be required.

When there is fragmented ownership of a structure plan area, or when staging of a subdivision is to occur and the local government has determined that a strategic water tank is required, then the first stage should include arrangements for the installation of a strategic water tank and the identification of land to be ceded. This should occur free of cost, without any payment or compensation by the Crown, as a Crown reserve for 'strategic water supply for firefighting purposes' (if applicable). Where local planning scheme provisions provide for developer contributions for public infrastructure and the local government is supportive, then a cash-in-lieu arrangement may be established for the provision of a strategic water tank.

B.4.5 LOCATION OF WATER TANKS AND HYDRANTS

Surrounding vegetation should be considered when locating a water tank. Avoid locations where the tank will be situated underneath existing vegetation or where vegetation will grow against or overhang the tank, (**Figure 39**). Where a tank is on the bushfire hazard side of a building, sufficient shielding for the protection of firefighters should be provided. In addition to the tank location, the fitting should be positioned and/or shielded from the bushfire hazard to allow access by emergency services.

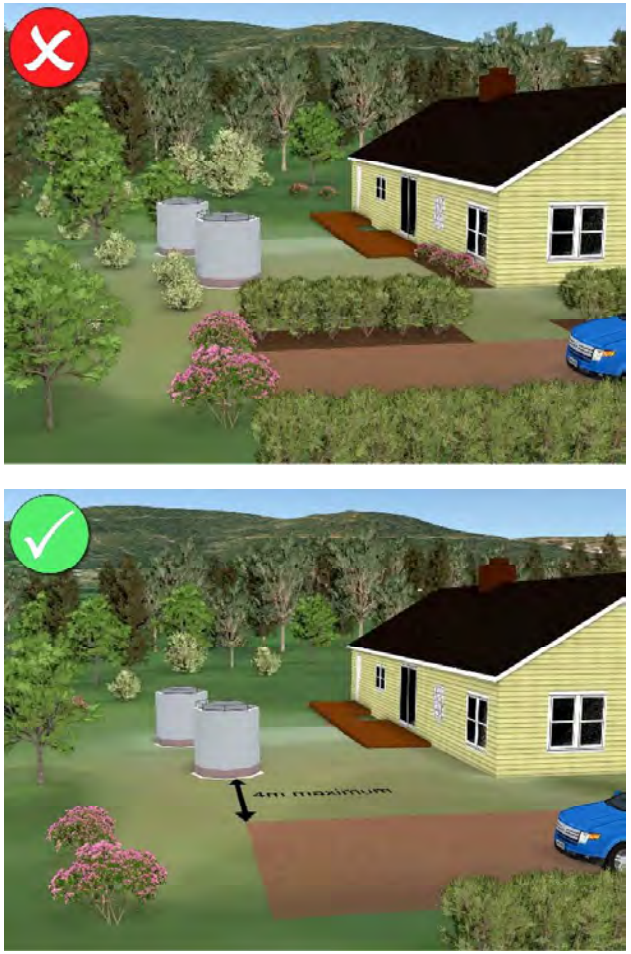
In areas serviced by reticulated water, where the distance from the public road to the farthest part of the habitable building is greater than 70 metres, emergency services vehicles will need to gain access within the property and be provided with a water supply for firefighting purposes. This is because access to reticulated water (fire hydrants) is not possible further than 70 metres, due to the length of the hose reel.

B.4.6 OUTCOMES BASED APPROACH

A dam, river or other source may be considered a firefighting water source for emergency services if it complies with **DFES guidelines for acceptable sources of water**, and it can be demonstrated that the water level will be maintained above the top of the highest fire brigade suction point.

Approval for the use of these types of water supplies is on a case-by-case basis and at the discretion of the decision-maker, in consultation with emergency services and local government.

Figure 39: A good and bad example of landscaping around a water tank



Appendix B Lot 5 South Coast Highway Local Structure Plan

2110-21c N.T.S 20.05.09

LEGEND

- R-Codings
- Low Fuel Zone Fire Management
- Neighbourhood Connector
- Dual Use Paths
- Restricted Access
- Controlled Fencing
- Fire Access & Emergency Egress
- Heritage Trail (Walking, Cycling, Horse Riding)
- Public Open Space
- Indicative Bulding Envelopes

Note: All residential lots to be connected to sewer.

LOCAL STRUCTURE PLAN
LOT 5 SOUTH COAST HIGHWAY, DENMARK

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APPENDIX C
ENGINEERING INFRASTRUCTURE REPORT

TABEC
Civil Engineering Consultants

LOTS 1 AND 621 HARLEQUIN STREET, DENMARK

Engineering Infrastructure Report

August 2025

CLIENT: TURNER AND WELLS PTY LTD ATF TURNER AND WELLS UNIT TRUST

PROJECT: LOTS 1 AND 621 HARLEQUIN STREET, DENMARK, WA

TITLE: HARLEQUIN STREET DENMARK: ENGINEERING INFRASTRUCTURE REPORT

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1 INTRODUCTION

This report has been prepared by TABEC Pty Ltd to provide broad servicing and infrastructure advice for the proposed subdivision of Lot 1 South Coast Highway and Lot 621 Harlequin Street, Denmark. Given both lots have a frontage to the unmade section of Harlequin Street, both lots are referred to as this address in the context of this report.

This report is based on the civil engineering aspects of residential related land uses and summarises the availability of existing infrastructure assets in proximity to the landholding and the potential engineering infrastructure requirements to support urban development within the study area.

The investigation and preparation of the report includes the advice from various service authorities, specialist consultants with relevance to the planning and concept designs completed to date. The information is subject to change as further detail is resolved during the design phases. The report is supported by reports and sketches where appropriate as listed in the references. The information is current as of August 2025.

Figure 1 illustrates the location of the site, highlighted on the aerial image.

Figure 1 – Site location and aerial image (MNG Access)

2 THE STUDY AREA

The proposed development site, including both Lots 1 and 621 combined is approximately 16.83 hectares, with current drive-way access available from South Coast Highway to the north and Harlequin Street to the north-east.

Along the eastern edge of Lot 621 is an existing developed urban area, which forms a shared boundary for 300m in length. There are existing rural-residential homes to the eastern and western boundaries of Lot 1 and to the south is the state-owned Denmark-Nornalup rail trail.

There is an existing house, sheds and rural type facilities which are generally contained to Lot 1. There are also older buildings which have been identified as a former dairy in the central area of the overall site.

The northern portions of the site have been cleared previously, though significant vegetation remains in various grouped locations. In particular, along the natural water course in the low areas across Lots 1 and 621. There are also more densely grouped large trees at the higher elevations. The southern areas of Lot 1 are more densely vegetation where previous clearing was not undertaken as extensively.

An extract of the current concept subdivision plan as prepared by Williams Consulting is included in Figure 2. This plan identifies the various site features such as the building and existing tree locations. It is noted that the longest north-south dimension is approximately 700m, and the greatest east-west dimension is about 370m.

The current estimated yield for the development of both Lots 1 and 621 combined is 144 residential lots and according to the concept plan there is 2.39ha of Public Open Space (POS) shown in total.

2.1 Landform / Topography

Preliminary survey information is available from Harley Dykstra, with the existing surface elevations shown as contour banding included in Figure 3.

The image shows there are higher elevations in the central-west area with an elevation of approximately 62.0mAHD. From that high point in Lot 1, the site grades generally toward the north and south splitting the site into two catchments. The low point at the southern boundary is about 32.0mAHD, and similarly in the north east corner of Lot 621 the existing elevation is approximately 31.0mAHD. The site rises again toward South Coast Highway forming the creek line as a shallow valley that grades west to east. The level along South Coast Highway where existing drive-way access is available is at about 42.0mAHD.

The existing grades in both the northern and southern portions are up to about 10%, which is considered steep. It is also noted that along the boundary of the existing residential lots to the east there is a level change of 12m between the southern and northern boundaries along the 300mm length of shared boundary.

The former dairy building is on the elevated sections of the site, at approximate contour of 53.0mAHD.

From site inspection, there are various locations where surface rock is present. This was generally observed in the higher elevations on site.

Figure 2 – Concept Development Plan (Williams Consulting)

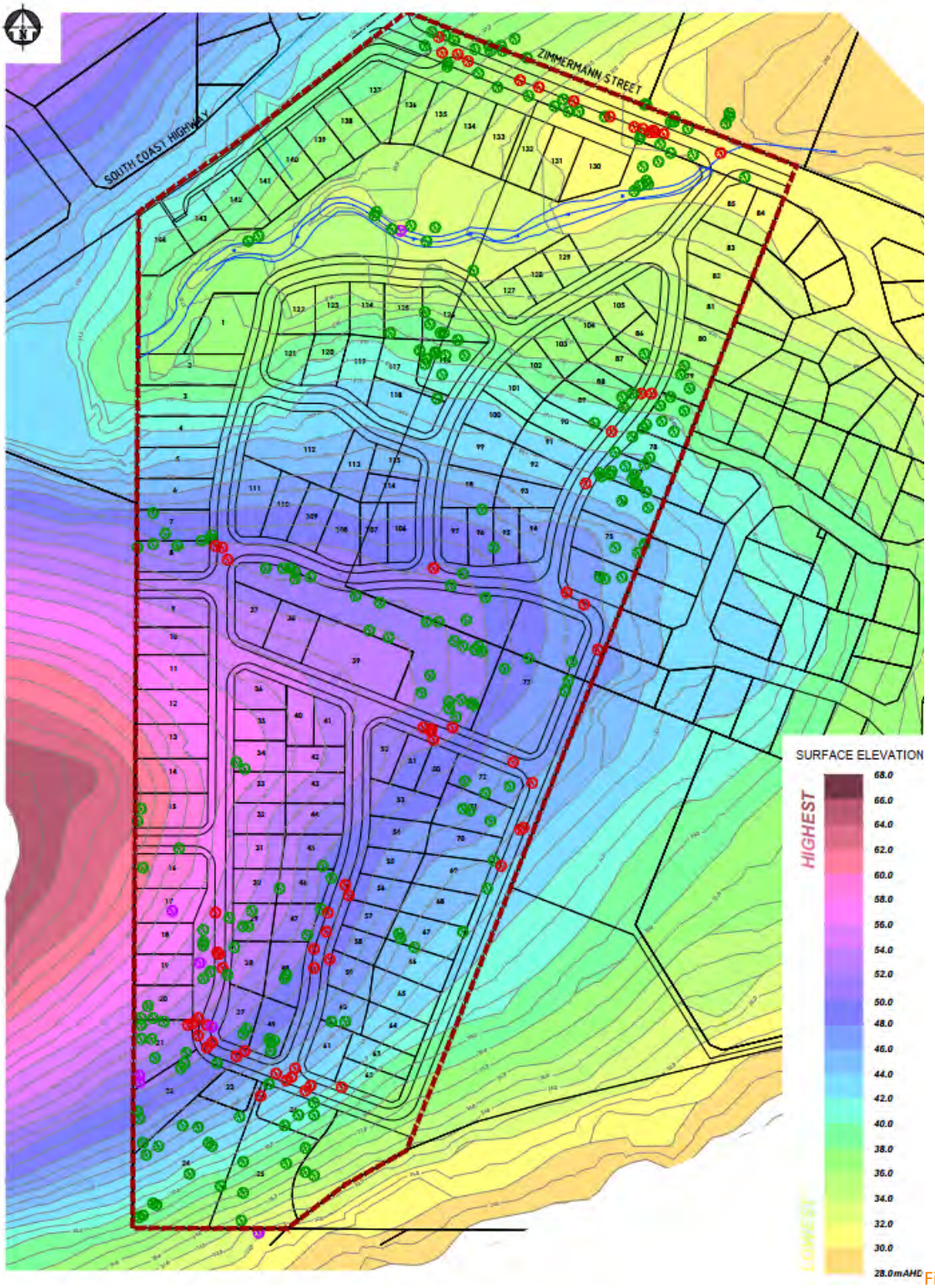

Figure 3 – Existing surface levels and contour banding (TABEC)

2.2 Groundwater and Acid Sulphate Soils

The groundwater was not encountered during geotechnical site investigations, however perched water was found in various test pits in the project site.

Given the Denmark River is approximately 1.2km to the north-east of the site and the Wilson Inlet is about 2km to the east, both at elevations close to sea-level, substantial rise in groundwater across this distance is not anticipated and the groundwater level is expected to be below the lowest elevation of 32mAHD onsite. It is expected that civil works and services installation would therefore not encounter groundwater level within Lots 1 and 621, though localised dewatering to control perched water is anticipated.

In addition, excavations works related to the proposed subdivision are not expected to be greater than 3.0m in depth. Further, works are not within 500m of a known wetland.

According to the Department of Water and Environmental Regulation, the risk of encountering acid sulphate soils generally increases in water-logged, high groundwater table environments.

As there is a limitation on the amount of soil disturbance related to the subdivision works, generally the risk of encountering acid sulphate soils for Lots 1 and 621 Harlequin Street is therefore considered to be low.

To control the perched water onsite, particularly either side of the creek line, the civil design is intended to include sub-soil drains in the road reserves, with outlets provided into the creek above the 100-year flood levels.

3 SITEWORKS

In order to prepare the site for the proposed urban development, the site will be cleared of existing fences, sheds, buildings, the house and other structures in order to facilitate the subdivision plan. A demolition license will be sought from the Shire of Denmark for this purpose and to remove all relevant improvements currently onsite. It is however noted that the former dairy building is intended to be protected, retained and renovated for future uses.

Following this, areas will be cleared of existing vegetation where necessary with grubbing out of the roots. Topsoil will be stripped to remove any shallow organic and root matter, which is generally present onsite in varying depths between approximately 100mm to 200mm.

3.1 Tree Protection

Lots 1 and 621 contain a high number of large trees which are intended to be protected and retained in the development as identified on the preliminary subdivision plan in Figure 2.

Typically, vegetation within ±150mm earthwork band and outside the service trenching requirements can be retained. In addition, POS areas that don't have a drainage function can also generally provide opportunities for the retention or incorporation of significant vegetation into their design.

The major level variations and grades across the project site introduce added complexity to retaining existing vegetation since soil levels should not ordinarily be modified around the base of trees which are to be retained. The preliminary earthworks design however attempts to match existing levels at the nominated tree locations. Trees for retention are located within both POS locations and widened road reserves. Careful potholing prior to site works and road box-out will be required to ensure the protection of major roots. Various trees are located within future lots will also be retained and not unnecessarily cleared during civil subdivision works.

Where works are proposed in close proximity to existing trees, the Tree Protection Zones (TPZ) will be fenced to ensure access is limited and it is anticipated that some boring of services will be necessary through the TPZs to avoid open excavation and root damage.

4 EARTHWORKS

4.1 Ground Conditions

Based on the geology mapping for the area, the ground conditions within Lots 1 and 621 are expected to vary across the site. The shallow sub-surface conditions beneath the majority of the southern portions are likely to contain some granite rock, with northern areas underlain by metamorphic rocks. The north-eastern areas are mapped as showing sandy ground materials.

Great Southern Geotechnics have undertaken an investigation and site classification report for the site, which is dated October 2019. The investigation included the excavation of 18 boreholes onsite up to 2.0m in depth.

Based on the test pits and material descriptions contained within the Great Southern Geotechnics report, the northern areas generally contain light brown sands to a depth of approximately 1m, over sandy-clay and sandy-gravels. The sand is loose to medium-dense in the current state and the deeper sandy-clay and sandy gravels are generally medium-dense to firm. Sandy clays have a low to medium plasticity and will contain some cohesive soil properties. It is noted that some of the northern test pit locations are also reported as containing sand with silt. And generally, with increasing depth below ground in the test pits the material appears to become more clayey which has reduced infiltration properties for stormwater.

With test pits located higher in the landform toward the central areas onsite, the depth of overlying sand decreases. Sandy-clay is found as shallow as 400mm depth in some test pits. Sands containing silt and sandy-clays are also evident in the southern portions of the site, again in loose to medium-dense states. The Great Southern Geotechnics reports states the ground materials have plasticity characteristics, though some of the cohesive clay material at depths greater than 1m were found to be firm to stiff.

The geotechnical report also records fractured quartz rock in the north east corner of Lot 621. A large quantity of cobbles and boulders were also present, causing test pit refusal at 700mm and 1.5m depths in Test Pit numbers 10 and 15 respectively which are generally located more central to the overall development site. This is indicative of rock material that is unable to be penetrated readily.

The geotechnical investigation also reports the California Bearing Ratios (CBR) for the various material types onsite, which is used to evaluate the ground strength. For context, the desirable CBR on a road subgrade would be in the order of 12%. In the Great Southern Geotechnics report, a CBR of 35% was measured on the ‘sand with silt’ sample which is considered high and the test may contain gravel type material to achieve that result. The sandy-gravel test sample has a CBR of 150% which is very strong and would suggest the samples contain rock. Lastly, sandy-clay materials recorded a CBR of 2% and 4% which is considered very soft and unsuitable for a road subgrade, service trench bedding or backfill material.

A low CBR is not unexpected for clayey materials and options to increase the road subgrade strength will need to be considered. This may include re-use of gravel from other areas onsite, over-excavating the clayey material and replacement with backfilling of structurally suitable sand for an improved compacted subbase, or increasing the pavement thickness to improve the strength over softer clay materials. Similarly, sand may need to be used for service trench backfilling to provide suitable compaction and pipe support, especially in trafficable locations.

4.2 Site Preparation

The strategy to minimise regrading of the site in order to support the development form is intended to limit the amount of bulk earthworks and retain as much of the existing landform as possible. Earthworks will generally be limited to road reserves, with encroachments into residential lots only for the proposed extent of earthworks batters. In some locations earthworks will extend inside lots though large scale re-grading to create terraced lots is not proposed.

The only exception is proposed residential lots in the North East of the development site, where lots will need to be elevated above the existing ground levels in order to provide sufficient cover, above top water levels and clearances to flood levels.

By limiting the extent of earthworks and changes in natural ground level, retention of existing trees will be achieved more readily. Existing ground levels within proposed POS areas are generally not proposed to be modified other than to contain stormwater drainage facilities or other required infrastructure.

Notwithstanding this intention some localised cut to fill will be necessary to create urban streets, standard 2% verge grades which will also ensure service installation and cross-over construction. While earthworks are generally limited to road reserves, cut and fill designs will be up to about 1m in maximum depth. There is however a portion of the road in the south-western area where cut will exceed 1.5m in depth due to the road aligned across contours. The concept earthworks plan with depth banding showing cut and fill is included in Figure 5. Clearing, stripping and earthworks within lots generally, is not proposed to be undertaken.

Following stripping of topsoil, organic and any other deleterious material onsite, the earthworks program will require the compaction of loose ground material. It is recommended that the exposed ground beneath earthworks footprints including pavement areas be proof rolled with a vibrating smooth drum roller of say 14 tonnes deadweight. Care should be taken when using a roller in vibration mode near existing structures and services. Heavy vibrating rollers are not recommended within 10m of existing houses or structures which are to be retained. Dilapidation surveys may be undertaken by the Contractor at the time of the earthwork to mitigate and risks with this undertaking.

A depth of 0.5 m of medium dense or denser sand is suggested below subgrade level for the road network. A compaction level of not less than 8 blows per 300 mm Perth sand penetrometer (PSP) penetration at least to a depth of 0.5m below standard pavements is a general recommendation. Due to the presence of silty and clayey onsite, any areas that show signs of excessive deformation during compaction should be compacted until deformation ceases or, alternatively, the poor quality material should be excavated and replaced with suitable structural filling and compacted.

As design proceeds, additional geotechnical advice may be sought to refine recommendations on the site preparation methodology. Since the advice is dependent on the extent of cut to fill, a refined approach will be documented through the design phase.

The intended site preparation works will exclude the resident lots. Geotechnical verification to confirm each lots may be sought, which is expected to vary across Lots 1 and 621, however would be based on the ‘Residential Slabs and Footings’ standard AS2870.

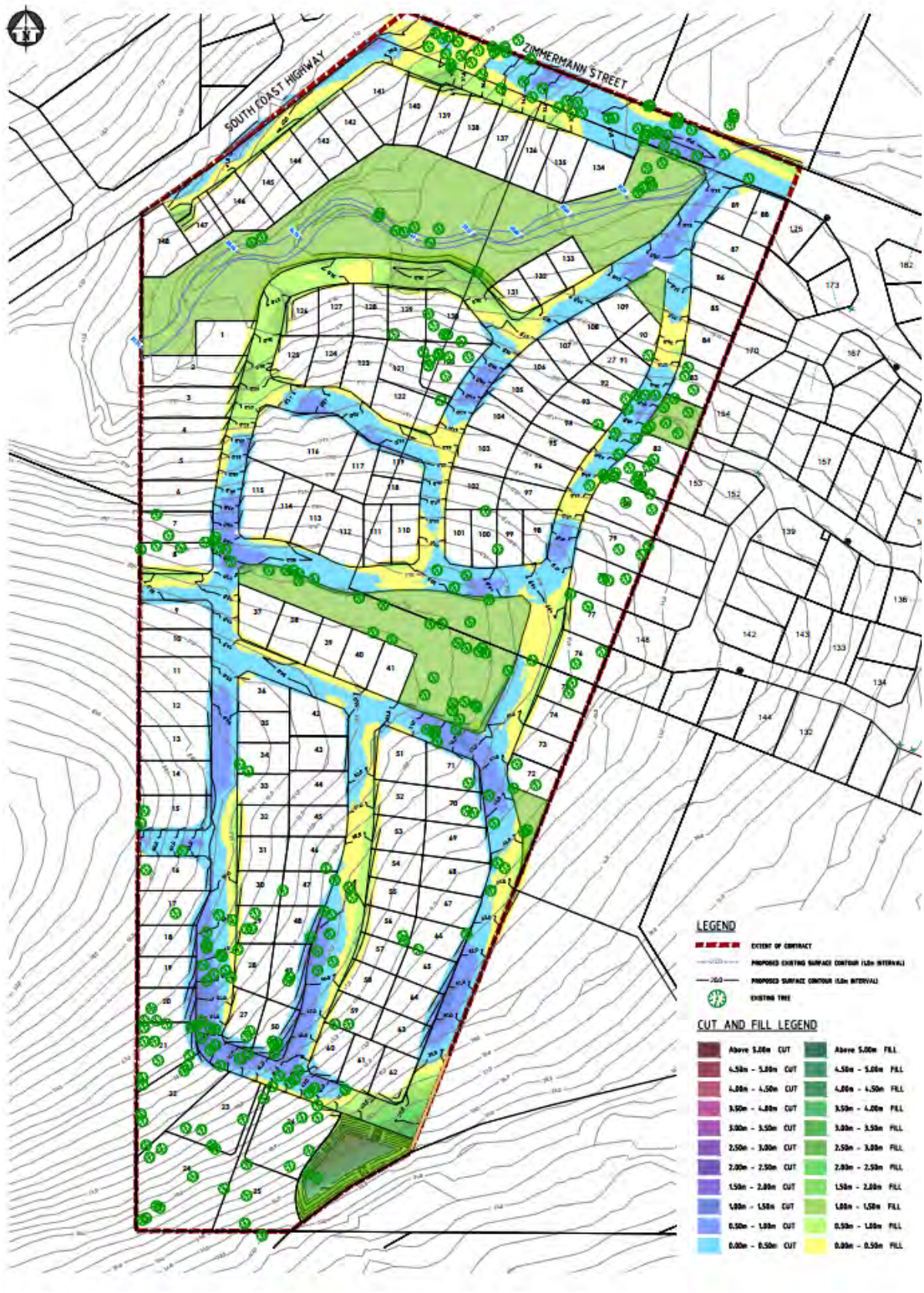

Figure 5 – Depths of Cut and Fill (TABEC)

5 ROADS AND TRAFFIC

5.1 Surrounding Road Network

Currently, Lot 1 has a road frontage to South Coast Highway with driveway access that is located approximately 80m east of Harpendence Rise and 70m west of an existing culdesac. Both of those existing road pavements are on the northern side of South Coast Highway. The posted speed limit along South Coast Highway in this location is 60kp/h and it currently exists as a 2-lane road and is under the control of Main Roads WA. It is noted that road connections and works inside that verge will therefore be subject to Main Roads WA approvals including the proposed intersection with the extension of Zimmerman St.

All other roads surrounding the development site are Shire of Denmark roads. Lot 621 is accessible from Harlequin Street, however is currently an unmade road (noted as the extension of Zimmerman street on the plans) along the north eastern boundary of the site. The reserve does extend through to South Coast Highway but approximately 220m is completely undeveloped. Harlequin Street shall provide an eastern access to Lot 621 as per the Concept Development Plan included in Figure 2. Wave Court is a 3m access road that is also constructed to the boundary of 621, however is not intended to be extended into the proposed subdivision other than for emergency access.

It is noted that beyond the limits of the site boundaries, there are various other existing local road intersections with South Coast Highway. This includes Mairet Rise, Helen Road, Jill Street and Federal Street which all service areas of residential development in the immediate surrounding areas.

5.2 Internal Roads

A variety of road reserve widths have been nominated in the Concept Development Plan. The entry road, providing access from South Coast Highway is shown as a 25m road reserve. All other internal road reserves are generally 15m wide except for a service road current fronting South coast highway and Zimmerman street. Roads fronting POS may be reduced to 13m which is common industry practice. This road reserve hierarchy is logical by providing for a wider pavement on the entry road to the estate with other road reserves generally consistent with the recommendations in Liveable Neighbourhoods.

All intersection shown on the Concept Development Plan can be controlled through Main Roads WA approved signage and line marking. Considering the traffic generated by the development flows, the road network is considered suitable for the estate.

Based on the preliminary earthworks models the intended longitudinal grades will generally fall between 2% and 6%. However, in order to maintain the natural landform, roads in the steeper areas onsite will be up to approximately 10%. The roads will need to be elevated over the creek crossing to ensure adequate freeboard is maintained.

Roads will be paved with asphalt and kerbed in accordance with the Shire of Denmark and Institute of Public Works Engineers Australasia specifications. Alternate treatments, particularly at entry statements may be included in the detailed engineering design.

The current plan includes 3 permanent emergency access routes through private land (controlled via easement) or POS. These tracks should be installed at to a minimum of 4m width, with passing embayment's for any length over 100m. Gates and locks shall be provided to these accesses in accordance with the local government requirements. A permanent access track is expected at the southern extent of the project site, through to the Denmark-Nornalup Rail Trail which can be constructed at the boundary of

the proposed drainage basin. Upgrades to the Denmark-Nornalup rail trail to accommodate emergency access may be required.

Construction of temporary trafficable emergency bushfire access tracks are anticipated between staging. Generally, these are constructed in the form of gated, unlocked access, 4.0m wide traffic lanes with 1m shoulders. The requirements shall be confirmed in a Bushfire Management Plan.

6 STORMWATER DRAINAGE

Based on the preliminary earthworks plan, drainage catchments have been determined which are included in the Local Water Management Strategy (LWMS), prepared separately by Urbaqua.

Generally, from the elevated central areas the development site is broadly split into a northern and a southern catchment to follow the natural topography of Lots 1 and 621. The broad catchment plan is included in Figure 7 below. Based on the silty and clayey material found onsite in the geotechnical investigation, Lots 1 and 621 are likely to have low permeability and onsite infiltration. Also, due to the natural grades which exist in the landform, stormwater runoff shall be addressed with adequate downstream facilities provided.

In the northern portions of the site, shown as Catchments 1 and 2 & 4, stormwater will be directed toward the existing creek line, where collection facilities will be located each side of the existing creek in the nominated POS areas. It is expected that the stormwater runoff from Zimmerman street will be directed directly into the creek line with only minor roadside treatment given the direction of flow in the creek. This produces a more efficient system and is closely align to the existing flow paths.

Given the substantial capacity in the creek and predevelopment flow scenario, the drainage strategy has been reviewed by Urbaqua hydrologists. Based on Urbaqua's discussions with Department of Water and Environment Regulation (DWER) and also the Shire of Denmark, the basins for Catchments 1 and 2 have been modelled and include a post development discharge consistent with predevelopment flow rates. As per DWER advice the detention basins are sized to contain the 20% AEP (0.2 EY) event. The drainage modelling makes provision for DN225mm outlets from the basins in Catchments 1, 2 and 4 for compensated flows into the creek.

Lots will contain onsite detention for minor events and any excess stormwater in a major event would flow toward the creek, consistent with the pre-development scenario. Subsoil drains are proposed to be installed beneath the drainage basins, to ensure each remains free-drainage with outlets provided to the adjacent creek line, with invert levels set nominally 200mm minimum above the base levels of the creek.

As advised by Hyd2o, the creek is required to cater for a major event design flow of 8m3/s, which shall be accommodated at the road crossings with two 1500mm x 1200mm box culverts Under the emergency access track and road. The existing creek line has an average grade of 1:50 between the western and eastern site boundaries

The southern catchment will also require a drainage capture and detention facility, as shown by Catchment 3 in Figure 7. Urbaqua have completed hydrologic modelling and Basin 3 is also intended to contain the 20% AEP event, though without offsite discharge up to that storm frequency – it is expected that a small diameter discharge into the Denmark Nornalup trail drainage will be investigate and may be included in the subdivision design to reduce the overall holding time of flows in the basin.

Stormwater runoff collected from the site will be conveyed via the road network to a conventional pit and pipe drainage network, prior to discharging into the drainage facilities. Due to the expected presence of rock, the pipe network will be designed as shallow as possible to minimise trenching requirements.

The road network will generally be designed with one-way cross-falls to efficiently capture stormwater. The piped stormwater system including outlet structures will be designed and constructed according to Shire of Denmark engineering guidelines and Institute of Public Works Engineering Australasia. The earthworks plans ensure that each lot can accommodate a finished floor level which is at a minimum of 500mm above the 100 year flood levels in the creek, and 300mm above the basin top-water levels.

More detailed drainage management measures are identified through the LWMS and ultimately, the detailed drainage design will be documented in an Urban Water Management Plan (UWMP).

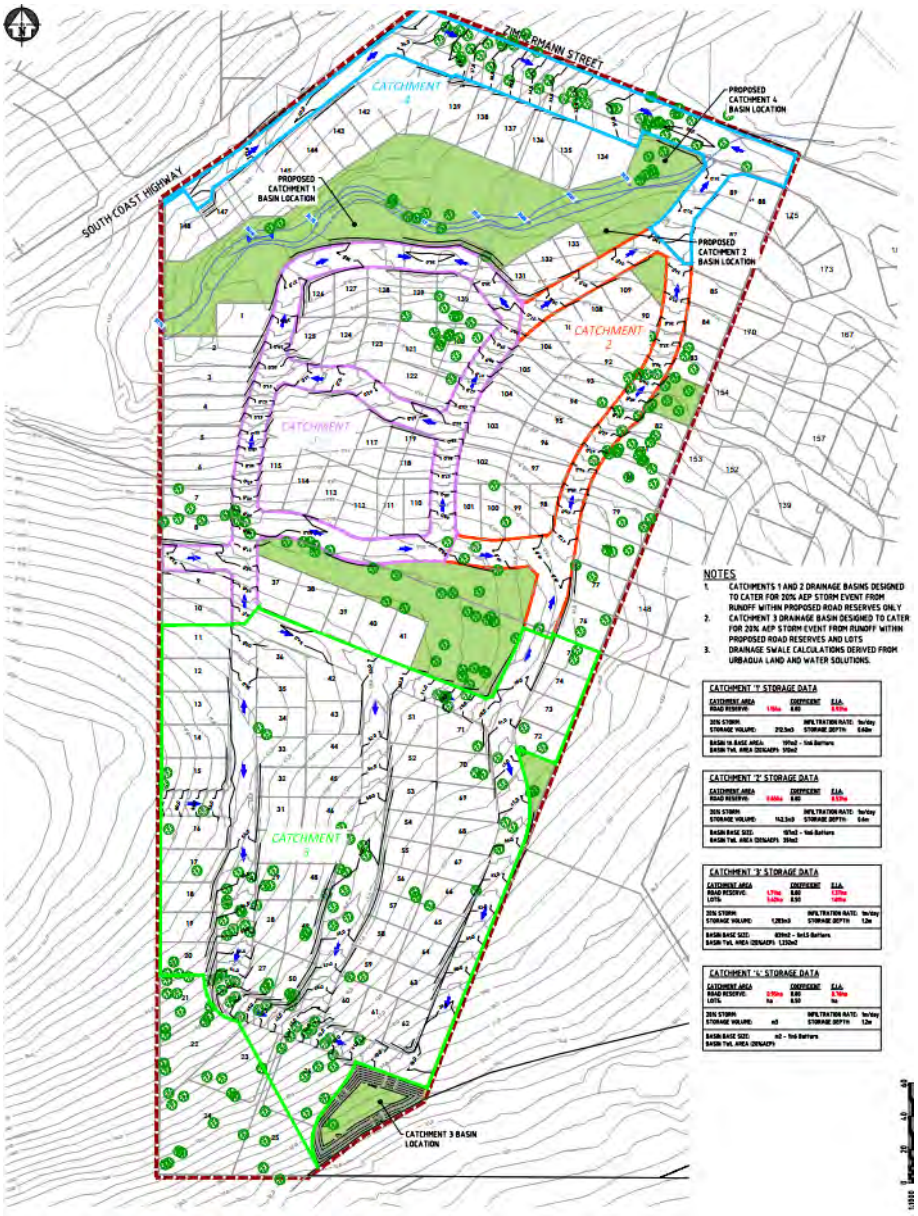

Figure 7 – Stormwater Drainage Catchment Plan (TABEC)

7 WASTEWATER

Water Corporation has existing scheme planning that covers Lots 1 and 621 and advises that the site can be serviced through the extensions of the gravity sewer network provided necessary upgrades are also included. Following the natural terrain, the site generally falls into two catchments, separating the development site into northern and southern portions.

A copy of Water Corporation's waste water scheme planning showing the nominated catchment boundaries is included in Figure 8.

The northern catchment falls into the catchment of the Zimmermann Street Waste Water Pump Station (WWPS) which is located approximately 600m to the east of Lot 621 near the intersection of Melaleuca Lane. The WWPS pumps to the waste water treatment plant at the southern end of Hodgson Street which is approximately 900 east of the proposed development site. The waste water treatment plant has a 250m buffer, which therefore does not impact Lots 1 or 621.

While there are sewer reticulation assets to the immediate east of Lot 621 in Harlequin Street, Water Corporation has advised that a 225mm sewer main is required to be constructed from the Zimmermann Street WWPS to Lot 621 which is in existing road reserves and requires a crossing of Ocean Beach Road. The 225mm sewer main would provide a greater capacity to the development site and it is noted the 225mm main would also serve future development areas north of South Coast Highway, toward Jasper Place given the natural fall and gravity flows to this area. Since the 225mm sewer main is considered 'reticulation' and not headworks, the pipe installation costs are funded by the developer.

The southern portions of the site are more complex to service with reticulated sewer services given Water Corporation's scheme catchment boundaries.

It may be possible to extend reticulation mains from Ocean Beach Road near Escort Close, through the Denmark-Nornalup Rail Trail to the south-west of Lot 1. This would redirect sewer flows from the south of Lot 1 into the Zimmermann Street WWPS catchment and require re-assessment of capacities by Water Corporation. There also appears to be some constraints on cover over proposed assets and this may not be readily achievable.

Water Corporation's planning shows the southern portions of Lot 1 being serviced via a number of future assets which are not yet constructed. Ultimately, the southern end of Lot 1 would be serviced with a 150mm sewer main, which grades toward a future proposed Denmark Pump Station A, located approximately 700m south-east of Lot 1. The location is identified in Figure 8. That WWPS would then discharge to the waste water treatment plant through a proposed 300mm pressure main. Denmark Pump Station A is a future Type 90 pump station which would service areas as far east as Weedon Hill Road.

Given the infrastructure required, and unknown timing for the future assets to the south of Lot 1, a more cost efficient design outcome would include a private, or temporary WWPS in the southern portion of the development site, to collect waste water flows and pump to the northern catchment which then grades to the Zimmermann Street WWPS. This option should be further investigated as a recommended proposal.

For the subdivision, the developer will be responsible for funding reticulation extensions and the installation of sewer network, designed and constructed in accordance with to Water Corporation specifications. Each dwelling is proposed to be provided with a reticulated connection. Standard Water Corporation infrastructure contributions will apply on a per lot basis.

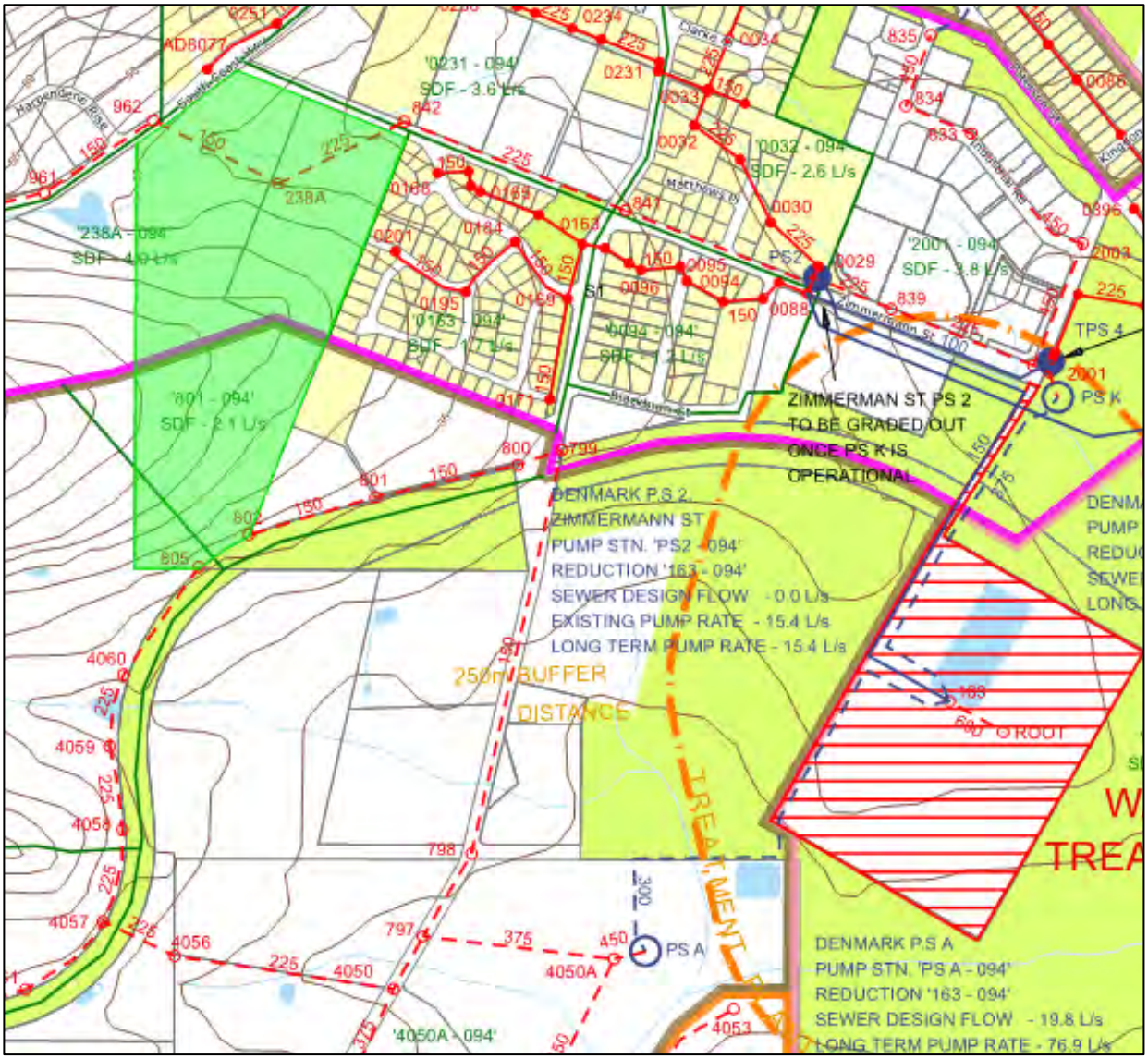

Figure 8 – Waste Water Planning, June 2019 (Water Corporation)

8 WATER SUPPLY

Currently, there are various Water Corporation reticulation mains in close proximity to Lots 1 and 621 which includes a 100mmAC main on the northern side of South Coast Highway, and within Harlequin Street there is also a 100mmAC main and a 100mmP-12 main. In Harlequin Street, the AC main extends along Kemsley Place and connects to a 150mmAC main at the intersection of Ocean Beach Road and Zimmermann Street. The 100P-12 main in Harlequin Street is an extension from the existing urban development to the immediate east of Lot 621.

Water Corporation has advised that the proposed development site, is split into two different water zones and generally, with Lot 621 is in the Gravity Zone and Lot 1 is in a Booster Zone. The water zones boundaries are shown in Figure 9. It is most likely that Lot 621 is able to be serviced from extensions of the existing water reticulation network to the north-east boundary in Harlequin Street.

With reference to servicing the area of Lot 1, Water Corporation advises that there is a likely upgrade required to the booster pump, since it currently serves approximately 90 dwellings, and a further estimated 100 lots are proposed to be connected to this supply. An upgrade to the booster pump facility is considered a headworks item and is therefore undertaken at Water Corporation's cost.

Water Corporation is required to update planning and demand modelling through detailed assessments as this project proceeds, however, on preliminary assessment it is possible that the 100mmAC water main in South Coast Highway may require an upgrade to service Lot 1 from the booster pump. A larger pipe to replace the existing 100mmAC main may be necessary from the existing booster pump near the intersection of Hardy Street and South Coast Highway, to the development front which is approximately 750m. If required, the water main upgrade may be developer funded.

Water mains within the proposed subdivision are to be designed and constructed according to the Water Corporation specifications. Installation will occur based on the staged development and funded by the developer. Standard infrastructure contributions will also be included. Based on the water reticulation planning, it is intended that a Multi-Staged Works Agreement be prepared once subdivision approval is received to enable clearances for each subsequent stage as development proceeds.

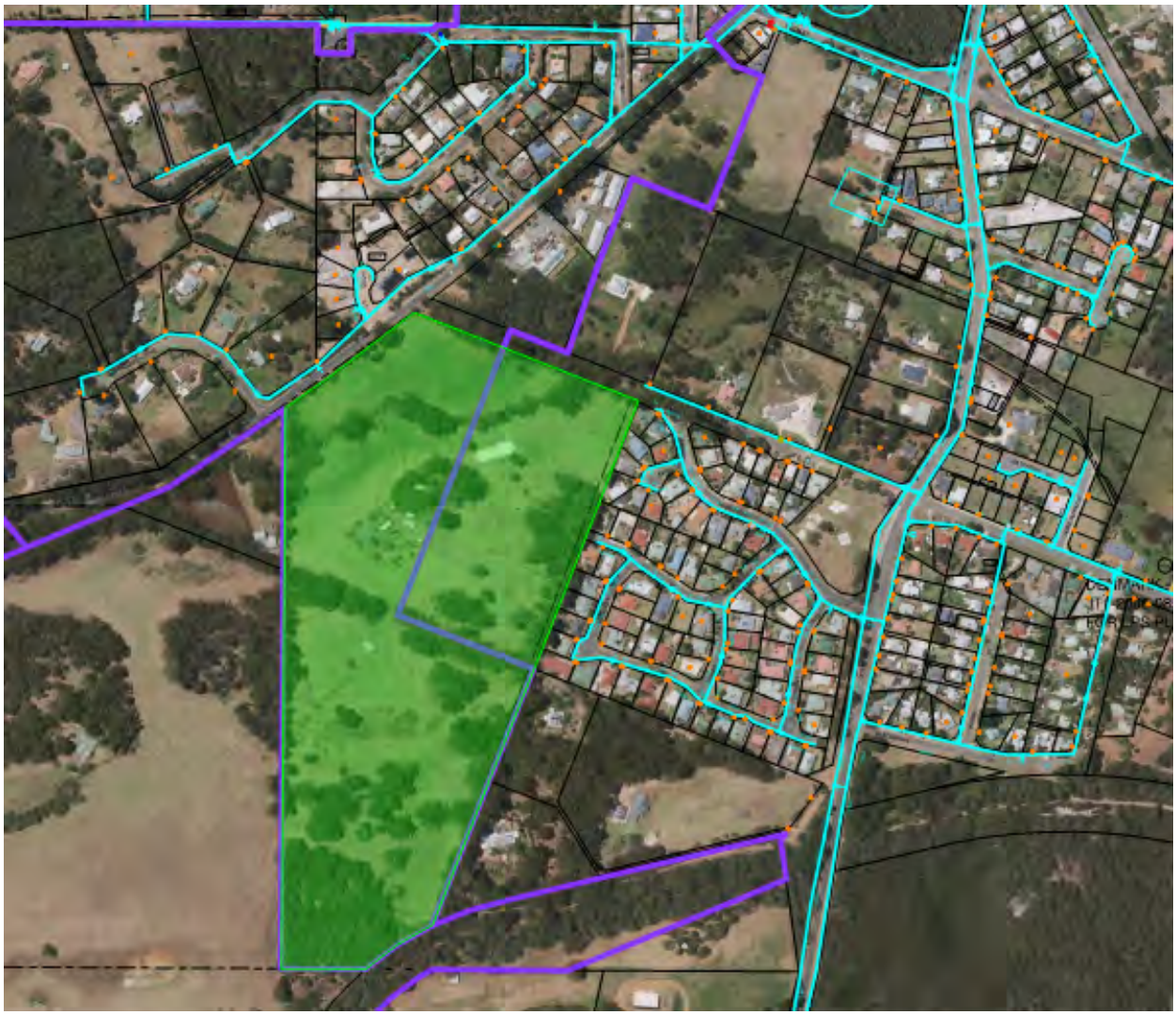

Figure 9 – Water Reticulation Planning, June 2019 (Water Corporation)

9 POWER SUPPLY

9.1 Existing Power Infrastructure

There is an existing three-phase high-voltage overhead power network on the northern side of South Coast Highway and eastern side of Ocean Beach Road with South Coast Highway network being the closest and the likely high-voltage connection point. There is existing underground power in Harlequin Street to the immediate north east of Lot 621.

The zone substation that feeds Denmark is located in Albany. It should be noted that South Coast Highway road reserve is under the control of Main Roads WA and therefore works within this area will require their approval. South Coast Highway currently has very little lighting. Discussions with Main Roads WA is required to confirm level of lighting required at the proposed intersection. Lighting requirements for newly proposed roads to be discussed with Shire of Denmark and will be designed according to their requirements.

A stay pole currently exists near the existing driveway access on South Coast Highway, which will need to be removed in order to create the subdivided lots. With the angles of the overhead aerial bays, discussions will be required with Wester Power confirm extent of the removal works and high-voltage connection arrangement.

Western Power's network mapping tool is included in Figure 10, which demonstrates the capacity of the high-voltage feeder to the locality.

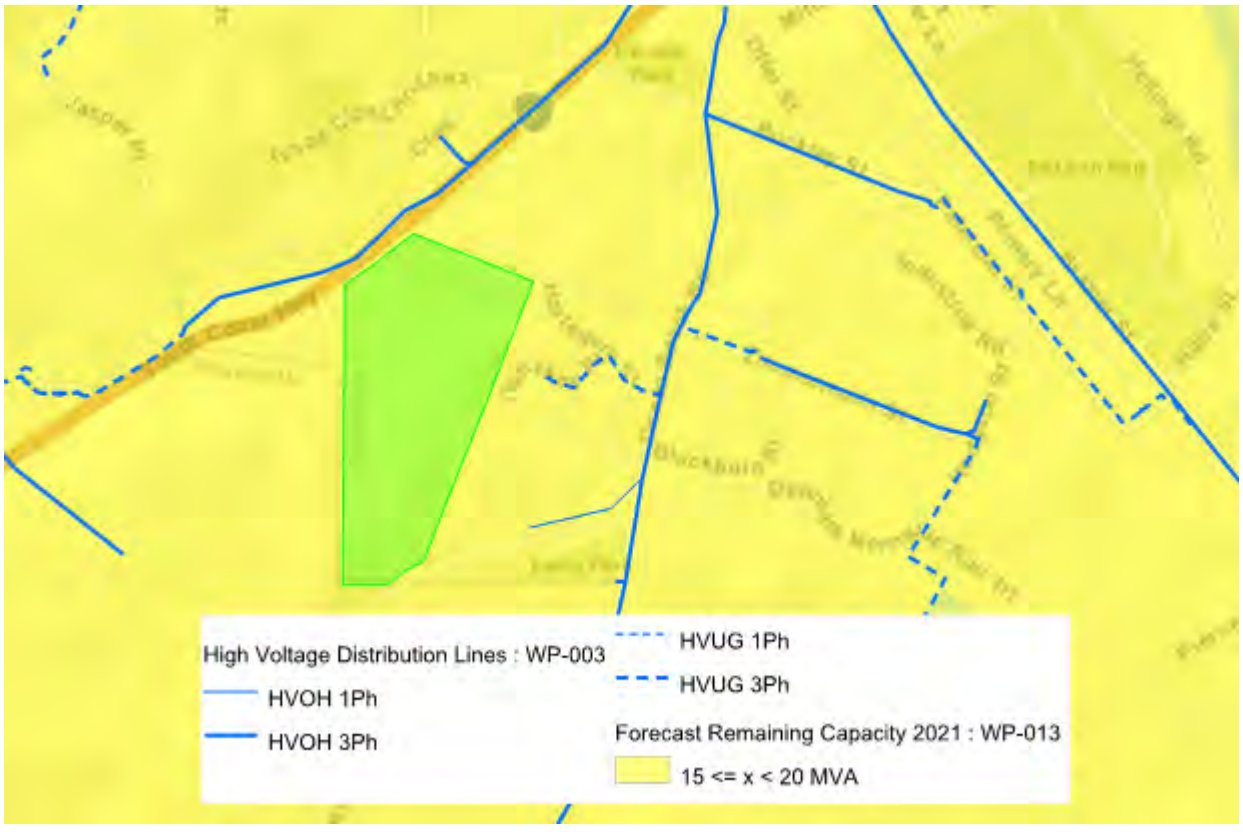

Figure 10 – Western Power network mapping tool. October 2019 (Western Power)

9.2 Proposed Power Infrastructure

With the development consisting of a yield of 144 green title lots and a number of POS areas, at Western Power's standard load allocation, the development total power load will be in the order of 765kVA. Depending on staging, two power transformers would be required to electrically service the development. Each power transformer requires a site to be provided in the order of 6m wide by 4m, and will be included in the subdivision plan as extensions to the road reserve. The transformers will generally be located in POS areas, to provide street front access for Western Power. The sizing and locations of transformers remains to be confirmed during detailed phase.

Based on the load for the overall development, no major network upgrades would be required, in particular if the development is staged in smaller portions. There is potential for some network augmentation to shuffle load in the area to make it available for this site.

In terms of LV power supply to the subdivision, connections to existing roads will need to be provided with adequate street lighting. All lots with otherwise be provided with power connections during the subdivision works.

The effects of earth potential rise (EPR) issues will require investigation with site testing and earth resistivity assessments. EPR reporting will be necessary prior to subdivision works commencing to determine any mitigation requirements that may be necessary.

Confirmation of Western Power servicing of the development is subject to a formal request being lodged. A Design Information Package (DIP) will be requested in order to commence that process.

10 COMMUNICATIONS

NBN Co have existing Fibre to the Node (FTTN) fixed line infrastructure adjacent east of the proposed subdivision on Harlequin Street, utilizing existing Telstra leased pit and pipe systems. Telstra also have infrastructure within South Coast Highway.

The proposed subdivision falls within NBN Co's fixed wireless footprint, indicating NBN Co would be the infrastructure provider of last resort for broadband internet, however it is possible that Telstra may be relied upon for telephone communications.

It is expected NBN Co will extend its fixed line footprint to cover the proposed development providing Fibre to the Premises (FTTP) infrastructure. This will be resolved when a Developer Agreement application is submitted to NBN Co for detailed assessment.

In any case, the developer will be responsible for the installation of a fibre-ready pit and pipe system which is suitable and compliant with the NBN Co policy and design requirements.

As shown in Figure 11 below, the NBN rollout has substantially commenced in Denmark and the town generally appears to have services throughout.

NBN Co levy two infrastructure charges, a Deployment Charge of $600/dwelling for single residential services and often, a backhaul charge where there is insufficient infrastructure. Backhaul charges are not anticipated for the subdivision of Lots 1 and 621 Harlequin Street given the proximity of existing network.

As part of the developer agreement conditions, NBN will take over ownership of the assets upon completion and ensure that fibre is ready 3 months prior to the first occupancy for a new development.

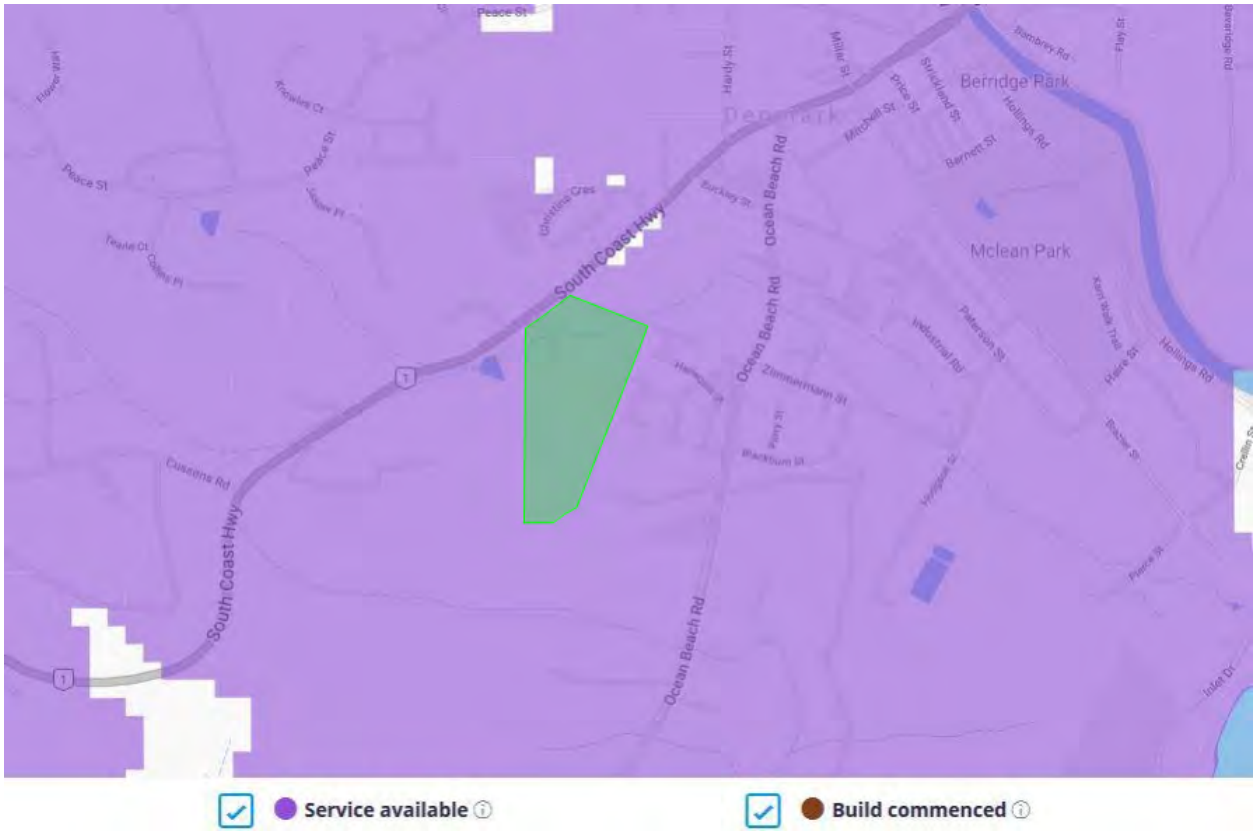

Figure 11 – NBN Rollout Map for Denmark, October 2019 (NBN website)

11 CONCLUSION

Based on the servicing infrastructure review, there does not appear to be engineering related constraints preventing development Lot 1 and 621 Harlequin Street, Denmark.

While each of the servicing proposals are required to be assessed in further detail and in negotiation with the Authorities, it appears the intended subdivision plan is able to be supported by network extensions, upgrades and installations as appropriate.

Following the submission of the Local Structure Plan, subdivision approval will be sought from the Western Australian Planning Commission. Formal detailed engineering design and approvals will be completed in order to satisfy the subdivision conditions that are anticipated to be issued.

As this report is based on the preliminary servicing advice and investigations completed to date, it is recommended that each Authority be kept informed as the planning progresses and concept engineering designs are refined. Communicating the proposed time-frames for the staged development is also important to inform and coordinate designs and approvals from all relevant Authorities.

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APPENDIX D
ENVIRONMENTAL ASSESSMENT AND TREE RETENTION AND BLACK COCKATOO ASSESSMENT REPORT

LOT 621 HARLEQUIN ST AND LOT 1 SOUTH COAST HWY, DENMARK

ENVIRONMENTAL ASSESSMENT

Prepared for:	Turner & Wells Pty Ltd
Report Date:	11 August 2025
Version:	4
Report No.	2019-493

pgv ENVIRONMENTAL

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1 INTRODUCTION

1.1 Background

Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark (the site), are currently undergoing Structure Planning to develop the site for residential purposes (Appendix 1).

The site is currently zoned 'Urban Development' under the Shire of Denmark Town Planning Scheme No.3 and has been largely cleared and used for cattle grazing for many years. Some native vegetation and stands of trees have been retained on various parts of the property, including along a creekline that runs through the northern part of the site, on the central ridgeline and at the southern end.

An initial Environmental Assessment was undertaken in 2020 to identify the opportunities and constraints associated with changing the land use of the site from Rural to Urban, as part of a Town Planning Scheme Amendment and the preparation of a Structure Plan. The findings from this assessment informed the early development of the Structure Plan.

The Environmental Assessment has since been revised to incorporate the outcomes of additional field studies conducted in 2023 and 2025, including a detailed tree survey and a Black Cockatoo Habitat Assessment. This revised assessment also evaluates how the revised Structure Plan (refer to Appendix 1) responds to the site's environmental attributes, ensuring that planning decisions are informed by the most current and comprehensive environmental data available.

1.2 Site Location

The site is located on the southern side of South Coast Highway, approximately 1.4km south-west of the Denmark town centre (Figure 1). The site is approximately 16.88ha in size and is bound by South West Highway and the unmade section of Harlequin Street to the north, residential development and some small rural properties to the east and cleared rural land to the west and south (Figure 2).

1.3 Scope of Works

The Environmental Assessment includes an assessment of the following environmental features of the site in the context of the updated Structure Plan:

- Physical characteristics including a description of:
  - Landform;
  - Drainage and water bodies; and
  - Geological, hydrogeological and hydrological characteristics;
- Recent and present land use including:
  - Surrounding land uses; and
  - Assessment of current and historical activities on the subject site and surrounding areas which have the potential to result in contamination issues at the site;
- A Detailed Flora and Vegetation Survey in accordance with *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) including:

- Desktop search and review of the Department of Biodiversity, Conservation and Attractions (DBCA) Declared Rare and Priority Flora database and Threatened Ecological Communities databases;
- Desktop search of publicly available databases such as Naturemap, Atlas of Living Australia and the Protected Matters Search Tool;
- Field survey using quadrats to record native and introduced species as well as a thorough site walkover of any areas of native vegetation;
- Recording of any significant plant species using a hand-held GPS;
- Description and mapping of vegetation types and vegetation condition;
- Compilation of a flora list; and
- Identification of any flora and vegetation of conservation significance.

- A Basic Fauna Survey in accordance with *Technical Guidance: Fauna Surveys for Environmental Impact Assessment* (EPA, 2020) including:
  - A search of the DBCA Database NatureMap for the general area for Threatened and Priority Species;
  - A search of the Atlas of Living Australia for occurrence records of species in the area;
  - A search of the Commonwealth Government's Protected Matters Search Tool to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or international migratory bird agreements (JAMBA/CAMBA);
  - A description of the fauna habitats present on the site from the site walkover;
  - A Black Cockatoo Habitat Assessment; and
  - An assessment of the significance of the site for conservation significant species in a local and regional context; and
- Other publicly available information.

2 EXISTING ENVIRONMENT

2.1 Land Use

The earliest aerial photography available for the site is from 1962 and shows the site was largely cleared apart from some scattered trees in the paddocks, some cleared or burnt vegetation at the southern end, and some vegetation along a creekline running through the northern part of the site (Plate 1, Lot 1 is shown for reference). A house and sheds are located in the northern part of the site.

Plate 1: Aerial photograph from 1962 (Landgate, 2025)

The next available aerial photograph from 2001 shows that some areas of vegetation have regrown, particularly at the southern end (Plate 2).

Plate 2: Aerial photograph from 2001 (Landgate, 2025)

The site continues to be used for grazing cattle and for horse agistment. The extent of vegetation and trees on the site currently has not changed since the 2001 aerial photograph.

The surrounding land is developed for residential purposes to the east and the remaining parts of the site are surrounded by rural land. The land to the west is zoned Residential and is proposed to be developed for residential purposes. A section of the Denmark-Nornalup Rail Trail abuts the southern boundary.

2.2 Heritage

The Department of Aboriginal Affairs Aboriginal Cultural Heritage Inquiry System (DPLH, 2025) was used to determine if there are any Aboriginal heritage sites recorded on the site. The database did not show any listed sites or places (Appendix 2).

A search of the National heritage register (DCCEEW, 2025) and State heritage register (Heritage Council of WA, 2025) did not show any other heritage values on the site.

2.3 Topography

The site is undulating with a central high point at around 60m AHD that slopes down to the north and south boundaries with elevations of around 32m AHD at the northern end and 42m AHD at the southern end (Figure 2).

2.4 Geology and Soils

The site is located mostly on the Walpole Hills System which are granitic hills and low hills, in the south of the Warren-Denmark Southland and the Broke System in the north-eastern part which are poorly drained plain with low granitic rises, along the coast of the Warren-Denmark Southland (DPIRD, 2019). Sate Regolith maps the site as mostly *Exposed rock, saprolite, and saprock* with an area of *Slope deposits; includes colluvium and sheetwash* in the north-east (DMIRS, 2019).

The soils on the site are described as Keystone Brown Duplex Phase (254WhKYb) which are brown gravelly duplex soils and red of yellow earths with much laterite typically associated with Marri-Karri-Red Tingle-Yellow Tingle forest (DPIRD, 2019). A small area to the north-east is mapped as Owingup Subsystem (254BrOW) which are plains with swamps, lunettes and dunes with yellow solonetzic soils, organic loams and diatomaceous earth and Podzols on dunes. This soil system is associated with Wattle-Paperbark thickets, Teatree heath and reeds and the dunes typically have Banksia-Sheoak woodland. (DPIRD, 2019).

2.5 Hydrology

The northern part of the site contains a creek that runs from west to east. The creek is part of a longer creekline that is estimated to be around 2.9 km long. The entire creek has a fall of 150m along its length (Hyd2o, 2024) with the portion of creek on the site having a fall of approximately 8m. The creek is dammed immediately upstream on an adjoining property to the west. A small, excavated area is also located along the creek on the site.

2.6 Creekline Foreshore Assessment

As part of the site investigations a creekline foreshore assessment was undertaken in 2025 (PGV Environmental, 2025a). The creekline flows eastward, ultimately to Wilson Inlet and in accordance with the Strahler system is a second order watercourse as there are first order tributaries flowing into the creekline downstream from the site (DPE, 2022). The channel width is variable and, in undammed areas, typically ranges between 5 and 15 metres.

A biophysical assessment of the foreshore (PGV Environmental, 2025) found the following:

- Vegetation
  - The parts of the creekline that are vegetated with native species are in Good Condition.
  - The parts of the creekline that are cleared/dominated by weeds and the remainder of the foreshore area is Completely Degraded.
- Hydrology
  - The creekline is mainly a narrow, incised central river and has been impacted by a downstream dam on an adjoining property and crossovers on the site.
- Topography
  - The land adjoining the creekline is sloping and impacts on the foreshore area with the southern banks having a slightly less definition.
- Soil Type
  - The soils Keystone Brown Duplex Phase (254WhKYb) and Owingup Subsystem (254BrOW).
- Erosion
  - The narrow, shallowly incised central creekline have potential for erosion to occur so all existing vegetation should be retained.
- Function
  - Function is flood conveyance to the tributaries ultimately to Wilson Inlet.
- Habitat
  - Habitat is highly impacted outside of the vegetated areas and do not provide significant habitat values.
- Land Use
  - The creekline and foreshore were previously used for agriculture and horse paddocks but this will be ceased when the surrounding land use is changed.

2.7 Visual Landscape Assessment

A Visual Landscape Assessment was undertaken for the Landscape Management Plan (PGV Environmental, 2025b). The site is visible to partially visible from South-West Highway, with views primarily filtered through existing vegetation. The vegetation along the roadside creates a shady, dappled driving experience on the main highway. In the northernmost section, a middle-ground vista extends across pastoral land towards remnant tree lines. The total length of the highway potentially affected by visual impacts is approximately 145 metres. This section of South-West Highway presents a landscape character consistent with extensive stretches of the regional road network, offering similar pastoral and vegetated views across hundreds of kilometres.

In contrast, views from the Denmark–Nornalup Rail Trail are minimal to non-existent, owing to the sunken alignment of the trail. It is bunded to a height of approximately 2 metres, effectively elevating the ground level on the site above the eyeline of trail users. Additionally, the bund supports mature trees, which enhance visual screening and form a canopy over the trail, creating a contained and intimate visual environment. This natural screening significantly reduces the potential for any visual intrusion from the development.

3 FLORA AND VEGETATION

3.1 Methodology

3.1.1 Desktop Searches

Searches of the following databases were undertaken prior to the site survey:

- Department of Biodiversity, Conservation and Attractions (DBCA) Declared Rare and Priority Flora database and Threatened Ecological Communities database (Appendix 3) for a radius of 10km (Reference 07-0919FL);
- DBCA Naturemap Database (DBCA, 2019) (Appendix 4);
- Atlas of Living Australia (ALA, 2025) (Appendix 5) for a radius of 10km; and
- The Commonwealth Government's Protected Matters Search Tool to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* (DCCEEW, 2025). A radius of 5km was used for this database (Appendix 5).

Other available information was also researched to determine any additional studies that had been completed on or near the site.

3.1.2 Site Survey

A Detailed Flora and Vegetation survey of the sites was conducted by Dr Paul van der Moezel of PGV Environmental on 8 October 2019. The whole site was thoroughly walked to record all species in the survey area. In addition, the species composition, height and cover abundance were recorded in seven 10m x 10m non-permanent quadrats. The number of quadrats was considered appropriate given the low diversity of vegetation types, high amount of clearing and relatively small size of the site. Overall site coverage was considered to be high. A second site visit was undertaken on 26 March 2025 to ascertain the current site conditions and to determine if any changes to the original vegetation mapping were required.

3.1.3 Survey Conditions

The conditions that the survey was undertaken in are presented in Table 1 in order to assess the adequacy of the survey. In summary, there were no constraints to the survey.

Table 1: Statement of Botanical Survey Conditions

Issue	Constraints (Y/N)*	Comment
Competency/experience of the consultant conducting the survey	No	Dr Paul van der Moezel has previous survey experience in the area
Proportion of the flora identified^	No	The timing of the survey in early October was optimal to record most of the native species.
Sources of information (historic/recent or new data)	No	Database searches were reviewed.
Proportion of the task achieved and further work that may need to be undertaken	No	No follow-up survey required as no Threatened Flora expected to occur in other seasons.

Issue	Constraints (Y/N)*	Comment
Timing/weather/season/cycle	No	The spring survey was optimal for most flora species. 2019 was an average year for rainfall in the Denmark area (450.6mm for Denmark Jun-Sept in 2019, av 422mm)
Disturbances (Fire)	No	The fire age of the upland vegetation appears less than 5 years.
Intensity of survey (e.g. In retrospect was the intensity adequate)	No	One full day spent on the site.
Completeness (e.g. was relevant area fully surveyed)	No	
Resources (e.g. degree of expertise available for plant identification)	No	Experienced botanist undertook most plant identifications on site with some identification in the office or Perth Reference Herbarium
Remoteness and/or access problems	No	Accessible site close to Denmark townsite.
Availability of contextual (e.g. bioregional) information for the study area.	No	IBRA Vegetation Mapping

*Constraints have been rated as Significant, Moderate or No constraints
^Fungi and nonvascular flora (e.g. algae, mosses and liverworts) were not specifically surveyed for during the survey.

3.2 Results

3.2.1 Flora Database Searches

The flora species identified in the database searches are shown in Table 2.

The Conservation Codes were updated in 2023 and there have been several changes in listings since 2019 so the tables have been updated to reflect current listings and nomenclature such as:

- *Selliera radicans* is now *Goodenia radicans*;
- *Tetraria* sp. Blackwood River (A.R. Annels 3043) is now *Netrostylis* sp. Blackwood River (A.R. Annels 3043); and
- *Melaleuca viminalis* is now thought to be an exotic species and is no longer a Priority species.

An updated search of the Protected Matters Search Tool identified an additional species, *Banksia verticillata*.

Table 2: Identified Significant Flora Species and Likelihood of Occurring on the Site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Banksia verticillata	Granite Banksia, Albany Banksia, River Banksia	Critically Endangered	Vulnerable	The Granite Banksia occurs on sandy loam, on or beside granite outcrops.	Highly Unlikely – no granite outcropping habitat
Calectasia cyanea	Blue Tinsel Lily	Critically Endangered	Critically Endangered	The Blue Tinsel Lily prefers white, grey or yellow sand or gravel. This species is restricted to Torndirrup National Park and Albany region of the South West Botanical Province (Barrett and Dixon, 2001).	Highly Unlikely – not suitable habitat
Commersonia apella	Many-flowered Commersonia	Critically Endangered	Critically Endangered	The Many-flowered Commersonia occurs in grey sand over laterite near a river bank (Westerns Australian Herbarium, 2003).	Highly Unlikely – not suitable habitat
Isopogon uncinatus	Hook-leaf Isopogon	Critically Endangered	Endangered	Hook-leaf Isopogon occurs in loam or sand on granite, peaty sand on swampy depressions, hillslopes.	Highly Unlikely – Known from Mount Barker almost 50km to the north-east
Verticordia apecta	Hay River Featherflower, Scruffy Verticordia	Critically Endangered	Critically Endangered	Hay River Featherflower grows in sandy clay with loam and broken granite on slopes in Eucalyptus wandoo woodland (George and George, 1994).	Possible in creekline habitat
Drakaea micrantha	Dwarf Hammer-orchid	Endangered	Vulnerable	Dwarf Hammer-orchid usually occurs on cleared fire breaks or open sandy patches in Banksia, Jarrah and Sheoak woodlands or forest and often found under Spearwood thickets.	Highly Unlikely – not suitable habitat
Sphenotoma drummondii	Mountain Paper-heath	Endangered	Endangered	Mountain Paper-heath grows in stony or shallow soils over granite or quartzite on steep rocky slopes, crevices of rocks.	Possible in creekline habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Caladenia harringtoniae	Harrington's Spider-orchid, Pink Spider-orchid	Vulnerable	Vulnerable	Harrington's Spider-orchid occurs in sandy loam on winter-wet flats, margins of lakes, creeklines, granite outcrops.	Highly Unlikely – not suitable habitat
Conostylis misera	Grass Conostylis	Vulnerable	Endangered	Grass Conostylis prefers white or grey sand, sandy loam on winter-wet flats.	Highly Unlikely – not suitable habitat
Grevillea fuscolutea	Mt Lindesay Grevillea	Vulnerable		Mt Lindesay Grevillea occurs in coarse grey sand or brown-black loam over granite on granite outcrops.	Highly Unlikely – not suitable habitat
Kennedia glabrata	Northcliffe Kennedia	Vulnerable	Vulnerable	Northcliffe Kennedia occurs in soil pockets, sandy soils on granite outcrops.	Highly Unlikely – not suitable habitat
Goodenia radicans		Priority 1		Goodenia radicans occurs in caline mud in estuarine areas.	Highly Unlikely – not suitable habitat
Stylidium sp. Kordabup (A.R. Annels 1660)		Priority 1		Stylidium sp. Kordabup is recorded from a granite outcrop in shallow soil (Western Australian Herbarium, 1994).	Highly Unlikely – not suitable habitat
Amanita walpolei		Priority 2		Amanita walpolei occurs in wetlands in bare, moist to dry, sedgy, peaty black sand soil.	Highly Unlikely – not suitable habitat
Caladenia applanata subsp. erubescens	Rose Spider Orchid	Priority 2		Rose Spider Orchid grows in sand on consolidated dunes, summer burnt areas.	Highly Unlikely – not suitable habitat
Drepanocladus aduncus		Priority 2		Drepanocladus aduncus is recorded from on top of silted up and debris covered garden pond - damp substrate (State Herbarium of South Australia, 2011).	Highly Unlikely – not suitable habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Amanita drummondii	Drummond's Grisette	Priority 3		Drummond's Grisette is solitary to gregarious in leaf litter in association with Agonis flexuosa, A. theiformis, Allocasuarina fraseriana, Corymbia calophylla, Eucalyptus marginata, E. patens, E. staeri, Jacksonia furcellata, Kunzea glabrescens, Melaleuca sp., Podocarpus drouynianus, Taxandria parviceps. (Davidson et al., 2015) growing in sandy soil (Amanitaceae Org, 2015).	Unlikely – not preferred habitat
Andersonia auriculata		Priority 3		Andersonia auriculata grows in grey or peaty sand, often over laterite in swampy areas, granite outcrops.	Highly Unlikely – not suitable habitat
Andersonia sp. Amabile (N. Gibson & M. Lyons 355)		Priority 3		Andersonia sp. Amabile (N. Gibson & M. Lyons 355) grows in grey or black peaty sand, loam on creek banks, swamp edges, seasonally wet flats.	Highly Unlikely – not suitable habitat
Andersonia sp. Virolens (G.J. Keighery 12000)		Priority 3		Andersonia sp. Virolens (G.J. Keighery 12000) grows in grey sand over laterite or granite on midslopes	Possible
Angianthus drummondii		Priority 3		Angianthus drummondii grows in grey or brown clay soils, ironstone on seasonally wet flats.	Highly Unlikely – not suitable habitat
Anthocercis sylvicola		Priority 3		Anthocercis sylvicola occurs in brown, gravelly, free draining clay-loam soils in moisture gaining sites with Eucalyptus jachsonii, E. guifoyleii and E diversicolor, proximinal to water-shedding areas of granite (Macfarlane and Wardell-Johnson, 1996).	Highly Unlikely – not suitable habitat
Borya longiscapa		Priority 3		Borya longiscapa grows in grey sand on granite outcrops.	Highly Unlikely – not suitable habitat
Lasiopetalum sp. Denmark (B.G. Hammersley 2012)		Priority 3		Lasiopetalum sp. Denmark (B.G. Hammersley 2012) grows in sand, sandy or gravelly loam on granite outcrops, slopes, lateritic ridges.	Possible

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Leucopogon alternifolius		Priority 3		Leucopogon alternifolius grows in grey/white sand in swampy areas, seasonally wet areas.	Highly Unlikely – not suitable habitat
Netrostylis sp. Blackwood River (A.R. Annels 3043)		Priority 3		Netrostylis sp. Blackwood River (A.R. Annels 3043) is recorded from a creek bed (Western Australian Herbarium, 2005).	Possible
Synaphea incurva		Priority 3		Synaphea incurva occurs in gravelly loam, sandy soils on slopes.	Possible
Banksia serra	Serrate-leaved Dryandra	Priority 4		Serrate-leaved Dryandra grows in gravel, sand or clay loam over laterite on hillslopes.	Possible
Banksia sessilis var. cordata		Priority 4		Banksia sessilis var. cordata grows in white/grey sand on coastal limestone.	Highly Unlikely – not suitable habitat
Boronia virgata		Priority 4		Boronia virgata grows in peaty sand or clay on swampy or waterlogged places.	Highly Unlikely – not suitable habitat
Drosera fimbriata	Manypeaks Sundew	Priority 4		Manypeaks Sundew occurs in white sand, granite.	Highly Unlikely – not suitable habitat
Eucalyptus virginea		Priority 4		Eucalyptus virginea grows in clay or sandy loam, shallow soil over granite, laterite loam over clay on lower slopes near watercourses, edge of rock outcrops, gently sloping sites.	Possible – may have habitat in the creekline
Lepidium pseudotasmanicum		Priority 4		Lepidium pseudotasmanicum occurs in loam, sand associated with granite.	Highly Unlikely – not suitable habitat
Microtis pulchella	Beautiful Mignonette Orchid	Priority 4		Beautiful Mignonette Orchid grows in peaty sand in winter-wet swamps.	Highly Unlikely – not suitable habitat
Ornduffia submersa		Priority 4		Ornduffia submersa grows in freshwater 0.05-0.6 m deep in pools, lakes, swamps, winter-wet depressions, claypans.	Highly Unlikely – not suitable habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Pleurophascum occidentale	Western Giant-leaved Moss	Priority 4		Western Giant-leaved Moss is known to occur in a wide range of habitat including shallow soils on the edge of granite, deep white sand on laterite, sandy clay loam on sandstone, pink sand on sandstone as well as sandy soils some distance from granite outcrops (Brown et al., 1998; DEC, 2009). It is generally associated with Agonis flexuosa and Thryptomene saxicola (Wyatt and Stoneburner, 1989).	Highly Unlikely – not suitable habitat
Thomasia quercifolia	Oak Leaved Thomasia	Priority 4		Oak Leaved Thomasia is recorded from grey sand on a slope in coastal dunes (Western Australian Herbarium, 1993).	Highly Unlikely – not suitable habitat
Thomasia solanacea		Priority 4		Thomasia solanacea grows in alluvium, sand over limestone, rocky loam in coastal areas.	Highly Unlikely – not suitable habitat
Xanthosia eichleri		Priority 4		Xanthosia eichleri grows in grey sand over granite, sandy loam on granite outcrops in jarrah/marri woodland.	Highly Unlikely – not suitable habitat

* sourced from Florabase as well as the DBCA database searches unless otherwise denoted

3.2.2 TEC and PEC Desktop Search

A search of DBCA's Threatened (TEC) and Priority Ecological Communities (PEC) database was conducted within a radius of 5km around the site (38-0919EC) (Appendix 7). One TEC and two Priority PECs at State level were identified in the database search (Table 4). The Coastal Saltmarsh PEC is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as a TEC. The communities identified in the database searches are outlined in Table 3.

Table 3: Threatened and Priority Ecological Communities likely to occur within 5km of the Site

Ecological Community	Description	Conservation Status WA	Status under the EPBC Act
Mount Lindesay	Mount Lindesay - Little Lindesay Vegetation Complex	Endangered	
Melaleuca spathulata/ Melaleuca viminea	*Melaleuca spathulata/Melaleuca viminea* Swamp Heath	Priority 1	
Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh	Priority 3	Vulnerable

3.2.3 Flora

A total of 63 plant species were recorded during the 2019 flora survey (Appendix 8). This total consisted of 46 native species and 17 (27%) introduced species. The high percentage of introduced species reflects the past disturbance on the site. The survey did not include all the introduced species in the cleared paddocks.

The plant Families with the highest representation of species were the Cyperaceae (Sedge family - 7 species, all native), Fabaceae (Pea and Wattle family – 7 species, including 4 native and 3 introduced) and Myrtaceae (Myrtle family – 6 species, all native).

Quadrat Data are provided in Appendix 9.

Species richness in the quadrats with vegetation in Excellent condition was 28 and areas in Good condition was seven to 12. The species richness in the area of native vegetation in Degraded or Completely Degraded condition was 11 to 14 which included four to five introduced species. Overall, the species richness is considered moderate for the vegetation types sampled.

No Threatened (Declared Rare) or Priority plant species were recorded on the site.

Three species that are Declared Pests under Section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) were recorded on the site including Arum Lily (*Zantedeschia aethiopica*), Bridal Creeper (*Asparagus asparagoides*) and Blackberry (*Rubus ulmifolius*). Bridal Creeper and Blackberry are also Weeds of National Significance (WoNS).

3.2.4 Vegetation Complex

The site is located in the eastern part of the Warren Interim Bio-geographic Regional Area (IBRA), which extends from the coast from just south of Yallingup to south of the Princess Royal Harbour near Albany. The Region is described as:

> *Dissected undulating country of the Leeuwin Complex and Albany Orogen with loamy soils supporting Karri forest, laterites supporting Jarrah-Marri forest, leached sandy soils in depressions and plains supporting paperbark/sedge swamps, and Holocene marine dunes with Agonis flexuosa woodlands. Moderate Mediterranean* (Environment Australia, 2000).

Vegetation Complexes are a broad level of vegetation description which is based on the underlying geomorphology and rainfall (Heddle *et al*., 1980). The vegetation over most of the site is part of the Keystone Complex which is described as

> *Mosaic of tall open forest of Eucalyptus guilfoylei-Eucalyptus jacksonii-Eucalyptus diversicolor on slopes of major hills rising above coastal plain with Allocasuarina decussata-Banksia grandis-Agonis flexuosa on slopes in hyperhumid and perhumid zones and tall open forest of Eucalyptus brevistylis-Eucalyptus marginata subsp. marginata-Corymbia calophylla and the occasional Eucalyptus megacarpa near rock outcrops in hyperhumid and perhumid zones* (Shepherd *et al*., 2001).

There is a small area in the north-eastern part of the site that is mapped as Owingup Complex which is on the South Coast Dunal System (National Map, 2019). The complex is described as:

> *Mosaic of open woodland of Allocasuarina fraseriana-Banksia attenuata-Banksia ilicifolia, low open woodland of Melaleuca rhaphiophylla-Agonis juniperina, low open woodland of Melaleuca cuticularis and tall shrubland of Melaleuca densa on broad swamps and plains in the hyperhumid zone* (Shepherd *et al*., 2001).

3.2.5 Vegetation Type

Vegetation complexes are a very broad mapping unit used to map the vegetation at the scale of the Swan Coastal Plain for example. For small scale sites, such as the survey area, vegetation mapping can be further refined by using vegetation types which are based on the composition and structure of the dominant species rather than based on geomorphology.

A total of six native vegetation types were described and mapped on the site. The vegetation types are described in Table 4 and mapped in Figure 3. The vegetation types and mapping were unchanged as recorded in the site inspection undertaken in 2025.

Table 4: Vegetation Types on the Site

Vegetation Type	Description	Photograph
CcEm *Corymbia calophylla* (Marri)*/Eucalyptus marginata* (Jarrah) Low Woodland over *Hovea elliptica/Taxandria parviceps/Bossiaea linophylla* Low Shrubland	This vegetation type occurs at the southern end of the site on some land that slopes down to the southern boundary. The area has not been completely cleared in the past although some thinning of trees is likely. The area is unfenced and continues to be grazed by cattle. This area represents the only area of remnant upland vegetation on the site. The Marri and Jarrah trees are mostly young (small diameter) and around 8m high. The understorey is mostly less than 1m high and very open, do most likely to frequent controlled burns. Common species include *Hovea elliptica, Taxandria parviceps, Bossiaea linophylla, Trymalium odoratissimum* var. *trifidum* and *Loxocarya cinerea.* The soils area orange-brown gravelly loam. Quadrat HS1 is representative of this vegetation type.	
CcEd *Corymbia calophylla* (Marri)*/Eucalyptus diversicolor* (Karri) Low Woodland over *Pteridium esculentum/Hibbertia cuneiformis* Open Low Heath	A small area of this vegetation type occurs on the upper slope at the southern end of the site. Marri trees are dominant and up to 8m high with some young Karri trees to 7m. Bracken Fern (*Pteridium esculentum*) dominates the understorey to 1m high with other common species being *Hibbertia cuneiformis* and *Trymalium odoratissimum* var. *trifidum.* The soils are chocolate-brown sandy loam with some laterite at the surface. Quadrats HS2 and HS4 are representative of this vegetation type.	

Vegetation Type	Description	Photograph
EdCc *Eucalyptus diversicolor* (Karri)*/Corymbia calophylla* (Marri) Open Forest over *Pteridium esculentum* Low Shrubland	This is the main native vegetation type on the site, occurring on the central ridge and upper slopes. Karri dominates up to 12m high with Marri less common. The understorey is mostly degraded, with Bracken Fern common as well as *Hibbertia cuneiformis, Leucopogon verticillatus* and *Trymalium odoratissimum* var. *trifidum.* The soils are orange-brown sandy loam with some lateritic rocks at the surface. Quadrat HS3 is representative of this vegetation type.	
Tl *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum/L. effusum/ Pteridium esculentum* Shrubland/Sedgeland	This vegetation type occurs on the western half of the creekline. *Taxandria linearifolia* shrubs are up to 4m high and dense at around 50% over dense creekline sedges (*Lepidosperma effusum, Lepidosperma tetraquetrum*) and Bracken Fern. The soils are grey clay with some flowing water in the creek. Quadrat HS5 is representative of this vegetation type.	

Vegetation Type	Description	Photograph
EdTl *Eucalyptus diversicolor* (Karri) Woodland over *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum* Sedgeland/Shrubland	The middle and eastern portions of the creekline contain stands of tall Karri up to 14m high over *Taxandria linearifolia* shrubs, creekline sedges (*Lepidosperma effusum, Lepidosperma tetraquetrum*) and Bracken Fern. Blackberry is common in this area. The soils are grey clay with some flowing water in the creek. Quadrat HS6 is representative of this vegetation type.	
Ml *Melaleuca lanceolata* Low Woodland over *Taxandria linearifolia* Tall Shrubland over *Lepidosperma effusum/Pteridium esculentum* Sedgeland/Shrubland	A section of the creekline contains *Melaleuca lanceolata* trees up to 8m high over *Taxandria linearifolia* shrubs, creekline sedges (*Lepidosperma effusum, Lepidosperma tetraquetrum*) and Bracken Fern. The soils are grey clay with some flowing water in the creek. Quadrat HS7 is representative of this vegetation type.	

3.2.6 Vegetation Condition

The condition of the vegetation was assessed according to the system of Keighery as described in Bush Forever (Government of Western Australia, 2000) (Table 5).

Table 5: Vegetation Condition Rating Scale

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

The condition of the vegetation is shown in Figure 4. The remnant vegetation in the southern part of the site was rated as being in Excellent Condition with the vegetation on the upper slope in Good condition. The remaining areas of upland vegetation were rated in Degraded to Completely Degraded. While the tree canopy was intact, the understorey had a high weed species component and scarcity of native species due to previous clearing of native vegetation and a long history of cattle grazing (Figure 4).

The vegetation in the creekline was rated as Good. The tree, tall shrub and wetland sedges were common however they were limited to a small fringe along the creekline. Weed species, including two Declared Pests (Blackberry and Bridal Creeper) were common as well as grasses such as Kikuyu and Annual Beardgrass (*Polypogon monspeliensis*).

The results from the 2025 site inspection indicate that the vegetation condition on the site is consistent with the 2019 mapping.

3.3 Conservation Significance of Flora and Vegetation

3.3.1 Flora

No Threatened or Priority flora species were recorded on the site. No other species of conservation significance were recorded.

3.3.2 Vegetation

Vegetation Complex

The vegetation on most of the site is part of the Keystone Complex. The Keystone Complex has 78.25% remaining and 57.5% in secure reserves (DBCA, 2018). There is approximately 44.07% of the Owingup Complex remaining based on the pre-European extent with 39.81% of the entire vegetation complex in secure tenure (DBCA, 2018).

Threatened and Priority Ecological Communities

The site does not contain vegetation that is representative of a Threatened or Priority Ecological Community.

4 FAUNA

4.1 Methodology

A Basic Fauna Survey was undertaken in accordance with EPA Technical Guidance *Fauna Surveys for Environmental Impact Assessment* (EPA, 2020). Desktop studies were undertaken to identify habitats and potential threatened species that may occur on the site.

Searches of the following databases were undertaken prior to the site survey:

- Naturemap (2019) for a radius of 10km for species that have been recorded in the vicinity of the site (Appendix 3);
- Atlas of Living Australia (ALA, 2025) which shows all species that have been recorded within a 10km radius of the site (Appendix 4).
- The EPBC Act Protected Matters Search Tool (DCCEEW, 2025) (Appendix 3) which identifies species that are listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that could potentially have habitat within a 5km radius of the site.

A site reconnaissance was conducted by PGV Environmental on 8 October 2019 to describe the fauna habitats on the site with habitat types and condition reassessed on 26 March 2025. Both surveys included traversing the site on foot.

4.2 Fauna Habitat

Three fauna habitats occur on the site, as follows:

- Open Woodland Habitat (Plate 3);
- Creekline habitat (Plate 4); and
- Cleared habitat (Plate 5).

Plate 3: Open Woodland Habitat

Plate 4: Creekline Habitat

Plate 5: Cleared Habitat

Fauna habitat can be assessed using a number of factors including, the size of the habitat, the level of habitat connectivity, availability of specific resources (e.g., tree hollows) and overall vegetation quality. The habitat was assessed according to the categories in Table 6.

Table 6: Fauna Habitat Value

Habitat Value	Description
High Quality Fauna Habitat	These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.

Habitat Value	Description
Very Good Fauna Habitat	These areas show minimal signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by disturbance.
Good Fauna Habitat	These areas showed signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.
Disturbed Fauna Habitat	These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.
Highly Degraded Fauna Habitat	These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.

From: Coffey Environments, 2009

The Open Woodland Habitat and creekline habitats are in varying condition and are surrounded by large cleared areas with minimal linkage to nearby bushland areas and are therefore considered to be Disturbed Fauna Habitat. The small area of Woodland habitat in the southern part of the site in Good and Excellent condition is rated as Good Fauna Habitat. The Cleared Habitat is Completely Degraded and is considered to be Highly Degraded Fauna Habitat. The results were unchanged in the 2025 survey.

4.3 Database Searches for Conservation Significant Fauna Species

Outlined below in Table 7 is a short description of the preferred habitat for each of the species that were identified in the database searches and their preferred habitats. The Conservation Codes were updated in 2023 and there have been several changes in listings since 2019 so the tables have been updated to reflect current listings and nomenclature.

The preferred habitat has been compared to the habitats on the site described above and the likelihood of each species to be present was determined. Species recorded in the database search results that live in the ocean or birds that are marine and pelagic have not been included in the assessment. Conservation codes are in Appendix 7.

Table 7: Identified Significant Fauna Species and Likelihood of Occurring on the Site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	Critically Endangered	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	Highly Unlikely – not suitable habitat
Calidris tenuirostris	Great Knot	Critically Endangered	Vulnerable/ Marine/ Migratory	The Great Knot winters in Australia, occurring in sheltered coastal habitats such as inlets, bays, harbours, estuaries and lagoons with large intertidal mud and sandflats, oceanic sandy beaches with nearby mudflats, sandy spits and islets, muddy shorelines with mangroves and occasionally exposed reefs or rock platforms. It roosts in refuges such as shallow water in sheltered sites, on coastal dunes or on saltflats amongst mangroves during high tides (BirdLife International, 2015a).	Highly Unlikely – not suitable habitat
Limosa lapponica menzbieri	Bar-tailed Godwit (northern Siberian)	Critically Endangered	Vulnerable/ Marine/ Migratory	The Bar-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh.	Highly Unlikely – not suitable habitat
Numenius madagascariensis	Eastern Curlew	Critically Endangered	Critically Endangered	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.	Highly Unlikely – not suitable habitat
Pezoporus flaviventris	Western Ground Parrot	Critically Endangered	Critically Endangered	The western ground parrot is a ground-dwelling birds that inhabits low, dry or swampy near-coastal heathland. It usually occurs in habitat that has remained unburnt for long periods of time. It mainly flies at dawn or dusk and mostly eats small seeds. It is only known from two locations in the far south-west of Western Australia: Fitzgerald River National Park and Cape Arid National Park/Nuytsland Nature Reserve.	Highly Unlikely – The site is too disturbed

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Pseudocheirus occidentalis	Western Ringtail Possum, Ngwayir	Critically Endangered	Critically Endangered	The Western Ringtail Possum is a medium sized nocturnal marsupial. This species occurs in and near coastal Peppermint Tree (*Agonis flexuosa*) forest and Tuart (*Eucalyptus gomphocephala*) dominated forest with a Peppermint Tree understorey.	Highly Unlikely – not suitable habitat
Botaurus poiciloptilus	Australasian bittern	Endangered	Endangered	The Australasian Bittern occurs mainly in densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands.	Highly Unlikely – not suitable habitat
Calidris canutus	Red Knot	Endangered	Vulnerable/ Marine/ Migratory	In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	Highly Unlikely – not suitable habitat
Galaxiella nigrostriata	Black-stripe Minnow	Endangered	Endangered	The Blackstriped Dwarf Galaxias is found only in coastal wetlands of south-west Western Australia. During summer when ephemeral pools dry out, Blackstriped Dwarf Galaxias burrow into the moist soil below and aestivate until the rains return in autumn (Fishes of Australia, 2015).	Possible – habitat may occur on the site
Parantechinus apicalis	Dibbler	Endangered	Endangered	Dibblers have been recorded over an extensive area and it is likely that they can occupy a diverse range of habitats. Dibblers seem to prefer vegetation with a dense canopy greater than 1 m high which has been unburnt for at least 10 years or more.	Highly Unlikely – the site is too disturbed
Zanda baudinii	Baudin's Black Cockatoo	Endangered	Endangered	Baudin's Black-Cockatoo mainly occurs in eucalypt forests, especially Jarrah (Eucalyptus marginata), Marri (Corymbia calophylla), also Karri (Eucalyptus diversicolor) forest, often feeding in the understorey on proteaceous trees and shrubs, especially banksias (DAWE, 2022).	Possible – habitat occurs on the site
Zanda latirostris	Carnaby's Black Cockatoo	Endangered	Endangered	Carnaby's Cockatoo is found in the south-west of Australia from Kalbarri through to Ravensthorpe. It has a preference for feeding on the seeds of Banksia, Hakea, Eucalyptus, Grevillea, Pinus and	Possible – habitat occurs on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
				Allocasuarina spp. It is nomadic often moving toward the coast after breeding. It breeds in tree hollows that are 2.5 - 12m above the ground and have an entrance 23-30cm with a depth of 1-2.5m. Nesting mostly occurs in smooth-barked trees (e.g. Salmon Gum, Wandoo, Red Morrell) (DAWE, 2022).	
Ardenna carneipes	Flesh-footed Shearwater, Fleshy-footed Shearwater	Vulnerable	Marine/ Migratory	The Flesh-footed Shearwater mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters. Burrows are situated in areas that provide a clear flight-path for birds to enter and exit their colonies.	Highly Unlikely – not suitable habitat
Calyptorhynchus banksii naso	Forest Red-tailed Black-Cockatoo	Vulnerable	Vulnerable	Forest Red-tailed Black Cockatoos frequent the humid to sub-humid south-west of Western Australia from Gingin in the north, to Albany in the south and west to Cape Leeuwin and Bunbury (DAWE, 2022). It nests in tree hollows with a depth of 1-5m, that are predominately Marri (Corymbia calophylla), Jarrah (Eucalyptus marginata) and Karri (Eucalyptus diversicolor) and it feeds primarily on the seeds of Marri (DAWE, 2022).	Possible – habitat occurs on the site
Charadrius leschenaultii	Greater Sand Plover	Vulnerable	Vulnerable/ Marine/ Migratory	In Australasia, the Greater Sand Plover is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons.	Highly Unlikely – not suitable habitat
Dasyurus geoffroii	Chuditch, Western Quoll	Vulnerable	Vulnerable	The Chuditch have been known to occupy a wide range of habitats including woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. They are opportunistic feeders, and forage on the ground at night, feeding on invertebrates, small mammals, birds and reptiles.	Highly Unlikely – the site is too disturbed

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Falco hypoleucos	Grey Falcon	Vulnerable	Vulnerable	The Grey Falcon favours timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined watercourses, but frequents other grassland and woodland habitats (Birdlife International, 2014a).	Highly Unlikely – not suitable habitat
Galaxiella munda	Mud Minnow, Western Dwarf Galaxias	Vulnerable	Vulnerable	Mud Minnow s is most commonly found in shallow, flowing headwater streams and tributaries of rivers in the peat flats and adjacent forested areas, as well as associated pools in the peat flats (DCCEEW, 2024).	Unlikely – not typical habitat
Leipoa ocellata	Mallee Fowl	Vulnerable	Vulnerable	Mallee fowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards in mallee bushland.	No – not mallee habitat
Nannatherina balstoni	Balston's Pygmy Perch	Vulnerable	Vulnerable	Balston's Pygmy Perch inhabits acidic (pH of 3.0-6.5), tannin-stained freshwater pools, streams and lakes in peat flats within 30 km of the coast of south-west Western Australia with seasonally fluctuating temperatures of 11-30°C. It prefers shallow water and is commonly associated with tall sedge thickets and inundated riparian vegetation.	Unlikely – not typical habitat
Setonix brachyurus	Quokka	Vulnerable	Vulnerable	Quokkas were originally very common on the Swan Coastal Plain, however, their distribution is now limited to Rottnest Island and a few isolated areas in the south-west of WA. On the mainland, they prefer densely vegetated areas around wetlands and streams, whereas on Rottnest Island they inhabit low scrubby coastal vegetation where water is not readily available year-round.	Highly Unlikely – the site is too disturbed
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	Vulnerable	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	Highly Unlikely – not suitable habitat
Westralunio carteri	Carter's Freshwater Mussel	Vulnerable	Vulnerable	Carter's Feshwater Mussel is South-West Western Australia's only freshwater mussel (Murdoch University & SERCUL, 2012). Carter's Freshwater Mussel occurs in freshwater streams, rivers, reservoirs and	Highly Unlikely – not suitable habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
				lakes (ICUN, 2015b) and is intolerant to dehydration for more than three days and salinity (Murdoch University & SERCUL, 2012).	
Zephyrarchaea mainae	Main's Assassin Spider	Vulnerable		Main's Assassin Spider occurs in the south-west of Western Australian and have been collected by beating and sifting sedges (*Lepidosperma* sp.), curly grass (*Empodisma gracillimum*) and low shrubs in dense coastal or near-coastal groves of Peppermint (*Agonis* sp.), with several outlying populations also known from wet Karri (*Eucalyptus diversicolor*) forest (Rix and Harvey, 2012).	Unlikely – not typical habitat
Actitis hypoleucos	Common Sandpiper	Migratory	Marine/ Migratory	The Common Sandpiper is mostly found around muddy margins or rocky shores. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands.	Highly Unlikely – not suitable habitat
Apus pacificus	Fork-tailed Swift	Migratory	Marine/Migratory	The Fork-tailed Swift is almost exclusively aerial and is not known to breed in Australia. They are seen in inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. *Apus pacificus* subsp. *pacificus* is the only subspecies to migrate to Australia.	Highly Unlikely – may fly overhead but unlikely to land
Arenaria interpres	Ruddy Turnstone	Migratory	Vulnerable/ Marine/ Migratory	The Ruddy Turnstone is mainly found on coastal regions with exposed rock coast lines or coral reefs. It also lives near platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches.	Highly Unlikely – not suitable habitat
Calidris acuminata	Sharp-tailed Sandpiper	Migratory	Vulnerable/ Marine/ Migratory	The Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Highly Unlikely – not suitable habitat
Calidris alba	Sanderling	Migratory	Marine/ Migratory	Sanderlings occur on most of the coast from Eyre to Derby, and also around Wyndham. They are more often recorded on the south and southwest coasts, north to around southern Shark Bay, with more	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
				sparsely scattered records further north in Gascoyne and Pilbara Regions and the Kimberley Division.	
Calidris melanotos	Pectoral Sandpiper	Migratory	Marine/ Migratory	The Pectoral Sandpiper prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Highly Unlikely – not suitable habitat
Calidris ruficollis	Red-necked Stint	Migratory	Marine/ Migratory	The Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores.	Highly Unlikely – not suitable habitat
Calidris subminuta	Long-toed Stint	Migratory	Marine/ Migratory	The Long-toed Stint prefers shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes and occasionally stunted samphire.	Highly Unlikely – not suitable habitat
Gallinago stenura	Pin-tailed Snipe	Migratory	Marine/ Migratory	The Pin-tailed Snipe occurs most often in or at the edges of shallow freshwater swamps, ponds and lakes with emergent, sparse to dense cover of grass/sedge or other vegetation.	Unlikely – not typical habitat
Glareola maldivarum	Oriental Pratincole	Migratory	Marine/ Migratory	The Oriental Pratincole usually inhabits open plains, floodplains or short grassland (including farmland or airstrips), often with extensive bare areas. They often occur near terrestrial wetlands, such as billabongs, lakes or creeks, and artificial wetlands such as reservoirs, saltworks and sewage farms, especially around the margins. The species also occurs along the coast, inhabiting beaches, mudflats and islands, or around coastal lagoons.	Possible – may be an intermittent visitor to the site but unlikely to rely on it for survival

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Motacilla cinerea	Grey Wagtail	Migratory	Migratory/ Marine	The Grey Wagtail is mostly recorded in coastal areas in Western Australia (ALA, 2015) however is widespread. There is non-breeding habitat only in Australia and the species has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes.	Unlikely – not typical habitat
Pandion haliaetus	Osprey	Migratory	Marine/ Migratory	Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They feed on fish, especially mullet where available, and rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	Highly Unlikely – not suitable habitat
Pluvialis fulva	Pacific Golden Plover	Migratory	Marine/ Migratory	Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as *Sarcocornia*, or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in salt works.	Highly Unlikely – not suitable habitat
Pluvialis squatarola	Grey Plover	Migratory	Vulnerable/ Marine/ Migratory	Grey Plovers occur almost entirely in coastal areas, where they usually inhabit sheltered embayments, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons.	Highly Unlikely – not suitable habitat
Tringa glareola	Wood Sandpiper	Migratory	Marine/ Migratory	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums *Eucalyptus camaldulensis* and often with fallen timber.	Unlikely – not typical habitat
Tringa nebularia	Common Greenshank	Migratory	Endangered /Marine/ Migratory	The Common Greenshank is a wader and does not breed in Australia. This species can be found in many types of wetlands and has the widest distribution of any shorebird in Australia. This species typically feeds on molluscs, crustaceans, insects, and occasionally fish and frogs.	Highly Unlikely – not suitable habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Tringa stagnatilis	Marsh Sandpiper, Little Greenshank	Migratory	Marine/ Migratory	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks.	Highly Unlikely – not suitable habitat
Xenus cinereus	Terek Sandpiper	Migratory	Vulnerable/ Marine/ Migratory	The Terek Sandpiper mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire (Halosarcia spp.).	Highly Unlikely – not suitable habitat
Bubulcus ibis	Cattle Egret		Marine	The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands with breeding in Western Australia recorded in the far north in Wyndham in colonies in wooded swamps such as mangrove forest. This species forages away from water on low lying grasslands, improved pastures and croplands generally in areas that have livestock eating insects, frog, lizards and small mammals.	Possible – may be an intermittent visitor but is unlikely to rely on the site for survival
Charadrius ruficapillus	Red-capped Plover		Marine	The Red-capped Plover is found in wetlands, especially in arid areas, and prefers saline and brackish waters (Birdlife Australia, 2014b).	Highly Unlikely – not suitable habitat
Haliaeetus leucogaster	White-bellied Sea-eagle		Marine	The White-bellied Sea-Eagle is found in coastal habitats with large areas of open water, especially those close to the sea-shore. This species feeds opportunistically on a variety of fish, birds, reptiles, mammals and crustaceans, and on carrion and offal.	Highly Unlikely – not suitable habitat
Himantopus himantopus	Black-winged Stilt		Marine	The Black-winged Stilt is found near coastal lagoons and shallow freshwater or brackish pools with extensive areas of mudflats, salt meadows, saltpans, coastal marshes and swamps (Birdlife International, 2014c).	Highly Unlikely – not suitable habitat

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
Merops ornatus	Rainbow Bee-eater		Marine	Populations of the Rainbow Bee-eater that breed in northern Australia are considered to be resident, and in many northern localities the Rainbow Bee-eater is present throughout the year. The Rainbow Bee-eater nests in a burrow dug in the ground. It is found across the better-watered parts of WA including islands preferring lightly wooded, sandy country near water.	Possible – may be an intermittent visitor but is unlikely to rely on the site for survival
Recurvirostra novaehollandiae	Red-necked Avocet		Marine/ Migratory	The Red-necked Avocet occurs in wetland areas including bogs, marshes, swamps and permanent saline, brackish or alkaline lakes generally preferring saline habitats (BirdsSA, 2025).	Highly Unlikely – not suitable habitat
Phascogale tapoatafa wambenger	South-western Brush-tailed Phascogale, Wambenger	Conservation Dependent		Southern Brush-tailed Phascogales are arboreal marsupials which require tree hollows in suitable woodland or forest and rely on abundant invertebrate prey to sustain populations (Pescott, 2012).	Possible – habitat may occur on the site
Elapognathus minor	Short-nosed Snake	Priority 2		The Short-nosed snake is known from coastal areas and are found in swampy depressions between coastal dunes, with vegetation ranging from low heath to open forest (Shine, 1986).	Highly Unlikely – not suitable habitat
Geotria australis	Pouched Lamprey	Priority 3		The Pouched Lamprey is spawned in freshwater systems and then migrate to sea before returning to freshwater to spawn and die (OzFishNet, 2014).	Highly Unlikely – not suitable habitat
Hydromys chrysogaster	Water-rat, Rakali	Priority 4		The Water Rat generally prefers wetland habitats characterised by dense, low-lying vegetation (0–30 cm from ground), low-density canopy cover and shallow, narrow water bodies (Speldewinde et al., 2013).	Unlikely – not typical habitat
Isoodon fusciventer	Southern Brown Bandicoot, Quenda	Priority 4		Southern Brown Bandicoots are small grey marsupials that prefer dense scrub (up to one metre high). Their diet includes invertebrates (including earthworms, adult beetles and their larvae), underground	Possible – species may occur on the site

Scientific Name	Common Name	Conservation Status (WA)	Status under EPBC Act	Habitat*	Likelihood to occur on the site
				fungi, subterranean plant material, and very occasionally, small vertebrates (DEC, 2012a).	
Notamacropus irma	Western Brush Wallaby	Priority 4		The Western Brush Wallaby is a medium sized marsupial and its optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets (DEC, 2012b).	Highly Unlikely – the site is too disturbed
Oxyura australis	Blue-billed Duck	Priority 4		The Blue-billed Duck is found on terrestrial wetlands in temperate regions, that are freshwater to saline, and may be natural or artificial. It nests in rushes, sedges, Lignum Muehlenbeckia cunninghamii and paperbark Melaleuca (Birdlife International, 2015b). The species is almost completely aquatic, and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn. The daylight hours are spent alone in small concealed bays within vegetation or communally in large exposed rafts far from the shore (Birds in Backyards, 2015).	No - not suitable habitat

* Sourced from the SPRAT Database (DoEE, 2018) unless otherwise indicated

Conservation Codes are in Appendix xx

The woodland and creekline habitats may provide habitat for four Threatened species including:

- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*);
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*);
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*); and
- Black-stripe Minnow (*Galaxiella nigrostriata*).

The Mud Minnow (*Galaxiella munda*) was previously rated as potentially occurring on the site however further studies (DCCEEW, 2024) indicate that the habitat on the site is not typical to the species and as such is not likely to occur.

The South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) which is listed as Conservation Dependent, may occur in the woodland vegetation in the southern part of the site.

The Priority 4 Southern Brown Bandicoot, Quenda (*Isoodon fusciventer*) may also occur on the site.

Species listed as Marine that may intermittently occur on the site are:

- Oriental Pratincole (*Glareola maldivarum*);
- Cattle Egret (*Bubulcus ibis*); and
- Rainbow Bee-eater (*Merops ornatus*).

Due to the proximity of existing development and the disturbed nature of the site it is not considered that these species would rely on the suite for survival.

4.4 Black Cockatoo Habitat

Habitat for three species of Black Cockatoo—listed as Endangered and Vulnerable under both the *Biodiversity Conservation Act 2016* (BC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)—was identified in the original environmental studies conducted on the site. To further investigate the presence and value of this habitat, a Tree Retention and Black Cockatoo Habitat Assessment was undertaken by Aurora Environmental (2023) (refer to Appendix 11). This assessment aimed to evaluate the suitability of the site for Black Cockatoos and to identify priority areas for habitat retention. The study found the following:

> *305 significant/potential habitat trees were recorded at the site comprising 27 Jarrah, 185 Karri, 91 Marri and two dead trees whose species were indeterminate.*
>
> *The site provides suitable foraging habitat for Baudin's and Forest Red-tailed Black Cockatoos.*
>
> *87 trees contained hollows of which three trees contained large hollows potentially suitable for Black Cockatoos and three trees contained hollows that appear large from the ground but were inaccessible via a drone for closer inspection. The other hollows are too small for Black Cockatoos but may provide suitable habitat for other fauna.*
>
> *94 trees were ascribed as low value, 124 as medium, 57 high and 30 very high value. Trees that were ascribed a 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values.*

One tree contained a potential Boorna Gnamma hole which could be culturally significant to the local Aboriginal community (Aurora Environmental, 2023).

The site contains approximately 5.8ha of foraging habitat for Black Cockatoos.

The highest-value habitat areas for Black Cockatoos were identified in the southern portion of the site and within the unmade road reserve to the north. Additionally, the creekline in the northern section of the site supports some suitable habitat. A corridor through the central part of the site also contains trees with moderate habitat value, as well as aesthetic significance.

In contrast, areas assessed as having lower habitat value include:

- The eastern boundary near Wave Court;
- Scattered trees located to the south of the central corridor; and
- The area south of the creekline, near the existing dwelling and sheds.

These findings provided a basis for prioritising habitat retention in future planning.

4.5 Pest Fauna

There are several pest species that are likely to be present on the site outlined in Table 8 mice due to the proximity to surrounding development and the Denmark township.

Table 8: Pest Species Likely to Occur on the Site

Taxa	Family	Species Name	Common Name
Mammalia	Canidae	*Vulpes vulpes*	Red fox
	Felidae	*Felis catus*	Feral cat
	Leporidae	*Oryctolagus cuniculus*	European Rabbit
	Muridae	*Mus musculus*	House Mouse
		Rattus rattus	Black Rat

4.6 Biodiversity Value

The EPA's (2002) *Terrestrial Biological Surveys as an Element of Biodiversity Protection Position Statement No. 3* indicated an ecological assessment of a site must consider its biodiversity value at the genetic, species and ecosystem levels; and its ecological functional value at the ecosystem level. The ecosystem on the site is disturbed and has largely been cleared and is located in proximity to some development and the township. Therefore, the fauna assemblage would be significantly modified from pre-European settlement. This is likely to be due to clearing and would also be impacted by introduced feral species such as foxes, cats and rabbits.

5 ENVIRONMENTAL ASSESSMENT

5.1 Structure Plan

The Structure Plan has been designed to balance environmental conservation with residential development, accommodating housing for approximately 400 people. Areas identified as having the highest environmental value have been integrated into the layout, with the Public Open Space (POS) network specifically designed to preserve the site's rural character. A varied lot size approach is proposed, with larger lots located in the vegetated southern portion of the site. This allows for the retention of existing vegetation within private lots, further supporting habitat conservation and maintaining the natural landscape character.

A significant area of Foreshore Reserve POS has been allocated, which encompasses the creekline, the floodplain associated with the 1% AEP event, and the foreshore reserve totalling 1.4ha. The Foreshore Reserve POS forms a key element of the Structure Plan, serving both an environmental protection function and delivering broader community amenity. The Foreshore Reserve POS also creates a contiguous area of parkland, enhancing connectivity and accessibility for residents and contributing to the overall liveability and character of the neighbourhood.

A shared path is identified on the Structure Plan within the Foreshore Reserve POS, designed to enhance connectivity and promote walkability within the subdivision. The proposed path will integrate with the existing shared path along Harlequin Street, providing a continuous and accessible route for pedestrians and cyclists, and supporting active transport options throughout the development.

A second significant POS area of approximately 6,029 m² is proposed through the central portion of the site, preserving trees identified as having high aesthetic value and habitat value for Black Cockatoos. This POS takes advantage of a central ridgeline, offering scenic views that contribute to the rural character of the proposed development.

In the southern section of the site, where it interfaces with the Denmark–Nornalup Rail Trail, a 2,000 m² POS is proposed that will incorporate a drainage basin with some planted fringing vegetation. This POS not only enhances connectivity with the surrounding landscape but also incorporates a designated access point along its boundary to facilitate emergency access to the Rail Trail.

Two smaller POS areas (659m^2 and 453m^2) are proposed in the eastern part of the site to provide some active open space and visual screening from Wave Court.

5.2 Land Use

The past and current rural land use on the site is not an impediment to development. There are no surrounding land uses that pose an impediment to the proposed development.

5.3 Heritage

The site does not contain any Aboriginal or non-Aboriginal heritage sites. Development of the site is therefore not constrained by heritage.

5.4 Geology and Soils

The published land capability ratings and risks for each of the soils systems mapped on the site are outlined in Table 9.

Table 9: Land Capability/Risk Ratings

Capability Factor	Soil System	Risk/Capability (National Map, 2019)
Wind Erosion Risk	Keystone	10-30% of map unit has a high to extreme wind erosion risk
	Owingup	10-30% of map unit has a high to extreme wind erosion risk
Waterlogging Risk	Keystone	<3% of map unit has a moderate to very high waterlogging risk
	Owingup	>70% of map unit has a moderate to very high waterlogging risk
Water Repellence Risk	Keystone	<3% of map unit has a high water repellence risk
	Owingup	3-10% of map unit has a high water repellence risk
Water Erosion Risk	Keystone	30-50% of map unit has a high to extreme water erosion risk
	Owingup	3-10% of map unit has a high to extreme water erosion risk
Surface Alkalinity	Keystone	<3% of map unit has pHCa >7
	Owingup	3-10% of map unit has pHCa >7
Ease of Excavation	Keystone	30-50% of the map unit has a very low to low rating
	Owingup	50-70% of the map unit has a very low to low rating
Sub Surface Compaction	Keystone	30-50% of the map unit has a high subsurface compaction risk
	Owingup	50-70% of the map unit has a high subsurface compaction risk
Drainage Potential	Keystone	<3% of map unit has very poor to poor potential
	Owingup	50-70% of map unit has very poor to poor potential
Salinity Risk	Keystone	<3% of map unit has a moderate to high salinity risk or is presently saline
	Owingup	3-10% of map unit has a moderate to high salinity risk or is presently saline
Phosphorus Export	Keystone	50-70% of map unit has a high to extreme phosphorus export risk
	Owingup	30-50% of map unit has a high to extreme phosphorus export risk
Microbial Purification	Keystone	10-30% of the map unit has a very low to low rating
	Owingup	>70% of the map unit has a very low to low rating
Land Instability	Keystone	<3% of map unit has a moderate to high hazard
	Owingup	3-10% of map unit has a moderate to high hazard
Flood Risk	Keystone	10-30% of the map unit has a moderate to high flood risk
	Owingup	<3% of the map unit has a moderate to high flood risk

Both soil systems have the potential for low microbial purification and high risk of phosphorus export. The proposed land use as Residential will be sewered, alleviating any potential of contaminating downstream waterbodies. The Keystone system has a low ease of excavation rating which is not considered an impediment to development as it can be overcome by engineering. The Owingup system also has a high risk of flooding and waterlogging, however given the site's location in the landscape the site is deemed to have a low flooding risk. The area that has been developed to the east of the site is also on the Owingup System and has soils that are similar to the site. This soil system therefore is suitable for residential development.

5.5 Hydrology

Stormwater management will be required to be addressed as outlined in *Better Urban Water Management* (WAPC, 2008) in accordance with a Local Water Management Strategy (LWMS) that will be prepared for the Structure Plan. An Urban Water Management Plan (UWMP) will be required at the subdivision stage.

The Local Water Management Strategy show drainage basins to be located along the creekline located within the foreshore reserve, each designed to retain runoff from events up to the 20% AEP. There is also a drainage basin to be located in the southern POS.

Stormwater from these events will be treated via biofiltration swales, in accordance with the LWMS. These swales will include the following features:

- *Vegetation: An appropriate mix of high nutrient stripping plant species will be selected from those identified in Vegetation Guidelines for Stormwater Biofilters in the South-West of Western Australia (Monash University, 2014). Remainder to be local, native, ephemeral plants. Typically, 8-12 plants per m2.*
- *Stone mulch: 100% stone, 4-13mm in size. 50mm thick. No fines. No wood mulch as it will float under flood conditions.*
- *Filter media: 300mm amended soil layer. PRI > 10. Saturated K 100-300mm/hr* (Urbaqua, 2022).

Hydrological management will need to ensure the flows along the creekline are maintained and that water quality is not adversely impacted by development.

5.6 Creekline

The creekline at the northern end of the site will has been retained in the development of the site. There is no statutory setback distance to watercourses in Western Australia. EPA Guidance Statement 33 provides advice on how to determine an acceptable setback based on the environmental and hydrological features of the watercourse and its fringing areas but does not specify any set distances for proposed adjoining land uses.

The Foreshore Reserve POS shown in Structure Plan has been designed to retain the creekline and additional land to factor in an appropriate foreshore reserve based on the results of a flood study undertaken for the creek (Hyd2o, 2020). The POS areas retain the creek and all the riparian vegetation, the 100 year flood plain and additional areas to retain trees at the eastern end and to accommodate passive recreational activity in the foreshore reserve. Most of the foreshore area is completely cleared and does not have biophysical characteristics that would require increasing the proposed foreshore width. The proposed Foreshore Reserve POS area maintains the ecological linkage along the creekline and provides passive recreation amenity for future residents.

The Foreshore Reserve Management Plan (FRMP) (PGV Environmental, 2025) proposes to retain the vegetation in the creekline, revegetate cleared areas of the creekline as well as the area impacted by the 1% AEP to improve bank stability. The remainder of the reserve is proposed to be retained in its current condition to retain the rural character within the POS.

The Local Water Management Strategy (Urbaqua, 2022) shows three detention basins that will be designed to capture and treat first flush events, which typically carry the highest concentrations of sediments, nutrients, and other urban pollutants washed from impervious surfaces during the initial stages of rainfall. By targeting these flows, the system reduces the pollutant load entering the natural waterway. Rainfall events exceeding the 20% AEP will be directed to the creekline, preserving the natural hydrological regime. This approach ensures that higher flows continue to sustain downstream ecological processes, support habitat connectivity, and reduce the risk of long-term hydrological alteration to the receiving environment being Wilson Inlet.

The drainage design will be further detailed in an Urban Water Management Plan (UWMP) for future proposed subdivisions. Specifically, the UWMP for each subdivision will provide stormwater management measures such as:

- Stormwater retention systems within lots, either underground storage systems or vegetated drainage areas, to be located in the POS, adjacent to the road reserve and associated swales;
- Detailed design of drainage basins to hold the 20% AEP event;
- Drainage storage to have a piped connection to the swale network.
- Where clay is present as part of the cut and fill program, the clay must be graded towards the drainage swales within easements/road reserves to prevent localised perching of groundwater.
- Minimum specifications for drainage storages to ensure no flooding of the subdivision; and
- Swales within road reserves and drainage in the POS to be rehabilitated as much as possible with locally endemic species.

The implementation of the LWMS and FRMP will ensure the environmental values of the creekline and water quality upstream is managed.

5.7 Flora and Vegetation

The proposed development will require the clearing of some native vegetation. However, a flora and vegetation survey conducted on the site did not identify any species or vegetation types of conservation significance. As such, the proposed clearing will not impact any conservation-significant flora or vegetation.

The vegetation on the site—both native and planted—has been incorporated into the Structure Plan wherever possible, with some necessary modifications due to bushfire planning requirements. All vegetation within the creekline and foreshore reserve will be retained and enhanced through planting within the 1% AEP floodplain. The Structure Plan also preserves trees along the central ridge to maintain the elevated views across the site, with the potential to integrate historical elements by repurposing the old dairy into a café or restaurant. Both POS areas will retain ecological linkages throughout the site.

Vegetation clearing will be undertaken within the Zimmerman Street road reserve to facilitate construction of the carriageway and to reduce fire hazard. Additionally, exotic trees located south of the creekline will be removed. However, individual trees within private lots will be retained wherever possible. Some clearing of the degraded EdCc vegetation on the eastern side of the site and to the west central ridge in the development footprint is also anticipated. Where feasible, logs from cleared

trees will be repurposed for use within the development. The retention of key trees will be assessed and confirmed at the subdivision stage, once detailed design and earthworks requirements have been finalised.

The subdivision design will aim to retain as many trees as possible within road reserves. In areas where lots interface with native vegetation, the layout will be carefully planned to meet bushfire requirements while ensuring there are no impacts on adjoining bushland.

In the southern part of the site, vegetation will be partially retained to accommodate larger bush blocks, preserving much of the existing vegetation assessed as being in 'Excellent' condition. Adjacent to this area, a large POS will be partially revegetated with native endemic species, creating a parkland setting while increasing tree canopy coverage in a previously cleared area.

Additionally, some of the planted trees on the eastern boundary will be retained in a POS.

5.8 Fauna

The Basic Fauna Survey found that the areas of remnant vegetation in the watercourse, southern woodland and remnant Karri and Marri trees provides potential habitat for the following Threatened fauna species:

- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*);
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*);
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*); and
- Black-stripe Minnow (*Galaxiella nigrostriata*).

The Karri and Marri trees are considered foraging and potential breeding habitat for the three Black Cockatoo species. The site contains approximately 5.8ha of foraging habitat for Black Cockatoos. The proposed development will retain approximately 1.5ha of the foraging habitat in the creekline and ridgeline POS. Additionally, trees will be retained in other POS, 'bush blocks', in road reserves and within larger lots within the Structure Plan area that will be determined during detailed design.

The clearing of more than 1ha of quality foraging habitat (Marri trees) is likely to require a referral under the EPBC Act.

The site contains 305 potential breeding habitat trees for Black Cockatoos. The proposed development will retain at least 43 trees with a number of additional trees that are likely to be retained as part of the planning for the detailed subdivision design.

The clearing of more than one potential breeding habitat tree (Karri and Marri with a diameter at breast height equal to or greater than 50cm) may also require referral under the EPBC Act. The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) will determine whether a proposed impact is likely to be significant and require a full assessment.

The creekline may provide habitat for a Threatened species of fish although the small size of the watercourse and narrow area of riparian vegetation means the potential for the species to occur on the site is very low. Nevertheless, retention of the creekline and the hydrological flows will protect the habitat for these species if they are present.

The clearing of the vegetation in the southern part of the site may impact on other ground-dwelling fauna species such as the Southern Brown Bandicoot. A fauna trapping and relocation program may be required prior to clearing.

The proposed Structure Plan retains the creekline and many of the tall trees on the site, thereby minimising the impact on fauna habitats.

5.9 Visual Landscape

The Visual Landscape for the South-West Highway interface in managed in the Structure plan. The design introduces a cul-de-sac layout rather than positioning residential lots or fencing directly adjacent to the highway. This approach provides physical separation between the built form and the road, avoiding a hard-edged, linear, and vertical interface—such as a continuous fence line—that would otherwise dominate the roadside view.

Instead, this layout softens the visual impact by creating a more varied, textured edge to the development. The result is a visually permeable and integrated transition between the built environment and the surrounding rural character of the highway corridor.

In addition, the interface incorporates a verge, designed to accommodate native, locally endemic species. The verge planting will provide filtered views from South-West Highway, creating a layered, soft screening effect. This landscape treatment is intended to complement the existing vegetation along the remainder of the highway, reinforcing the visual character of the corridor and further mitigating the visual presence of the development.

The existing bunding and mature vegetation along the Denmark–Nornalup Rail Trail already provide substantial visual screening, contributing to the trail's intimate, enclosed character. These natural features effectively mitigate potential visual impacts from the proposed development.

To further enhance this separation, a large POS is proposed at the interface between the development and the trail. This POS will act as an additional spatial buffer, helping to reduce noise impacts and preserve the amenity of the trail environment. In addition, strategic planting of native vegetation within the POS will provide supplementary visual screening, reinforcing the natural setting and ensuring the development remains largely obscured from trail users. Landscaping within this area will be implemented in accordance with the Landscape Management Plan, as detailed in Section 6.

The designated emergency access way intersecting the trail is curved in alignment and is surrounded by native vegetation. This curvilinear design prevents the formation of a direct view corridor from the trail to the development, thereby protecting and maintaining the bushland character of the trail.

All landscaping will be managed under the Landscape Management Plan (PGV Environmental, 2025b).

6 SUMMARY AND CONCLUSION

6.1 Summary

The environmental assessment of the proposed development of Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark resulted in the following:

- The site has been largely cleared and grazed for many years;
- The site is undulating and contains a minor creekline running west to east at the northern end of the site;
- A large number of mature Karri and Marri trees occur throughout the site, mostly over pasture species and Bracken Fern;
- A small area of remnant native Jarrah/Marri Woodland in Excellent condition occurs at the southern end of the site. Remnant native vegetation also occurs along the northern creekline;
- The foreshore assessment of the creekline identified primary factors in determining a suitable setback from the creekline which were:
  - Preserving the existing vegetation;
  - Maintain the hydrological function; and
  - Ensuring the 1% AEP is within the foreshore reserve.
- The foreshore reserve will be managed in accordance with the Foreshore Reserve Management Plan;
- The Visual Assessment concludes that there are no significant visual impacts by the development that won't be mitigated by the implementation of the structure plana dn planting as per the Landscape Management Plan;
- A total of 63 plant species were recorded during the 2019 flora survey including 46 native species and 17 introduced species;
- None of the flora species is a Threatened or Priority species;
- The pockets of remnant vegetation are not a Threatened or Priority Ecological Community or a conservation significant vegetation complex;
- Public Open Space has been designed in the Structure Plan to retain as much of the existing vegetation on the site and will have additional native endemic species planted in cleared areas;
- Large lots in the southern part of the site have been designed to retain some of the vegetation in Excellent condition;
- The fauna habitat on the site provides habitat for three species of Conservation Significant Black Cockatoos with the Karri and Marri trees, and potentially one Threatened species of fish in the watercourse;
- The proposed Structure Plan retains many of the Karri and Marri trees which is habitat for Black Cockatoos. Nevertheless, some trees will need to be cleared for development and a referral under the EPBC Act may be required once detailed design has been undertaken;
- The Structure Plan also retains the northern watercourse and its associated vegetation, thereby maintaining habitat for any fauna that occur in the watercourse; and
- Stormwater drainage will need to be undertaken in accordance with a Local Water Management Strategy that protects the water flows and water quality in the watercourse.

6.2 Conclusion

This Environmental Assessment concludes that development of Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark in accordance with the Structure Plan will retain the most important features of the site. ie the northern watercourse and many of the mature Karri and Marri trees and therefore will not have a significant environmental impact.

7 REFERENCES

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FIGURES

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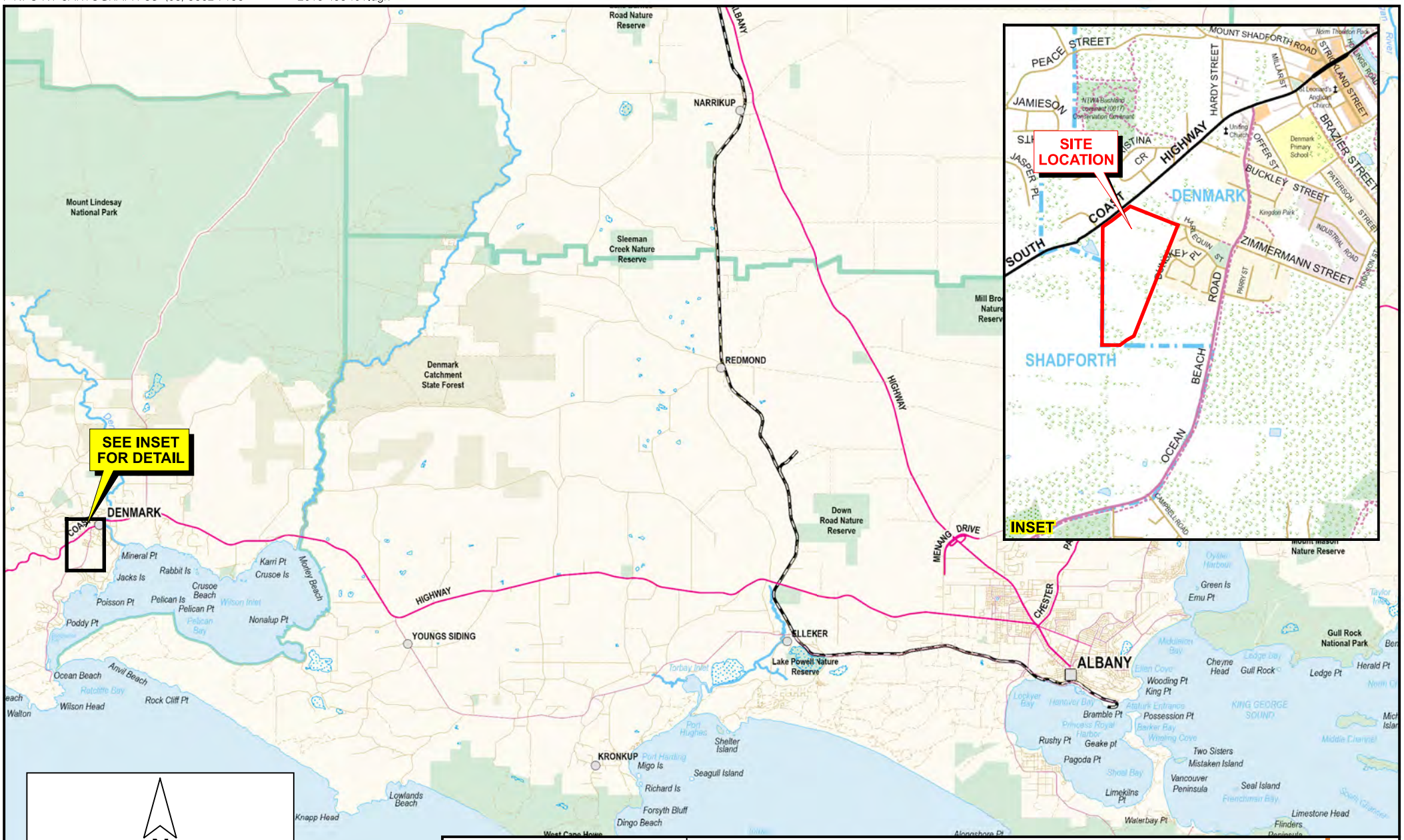

pgv ENVIRONMENTAL

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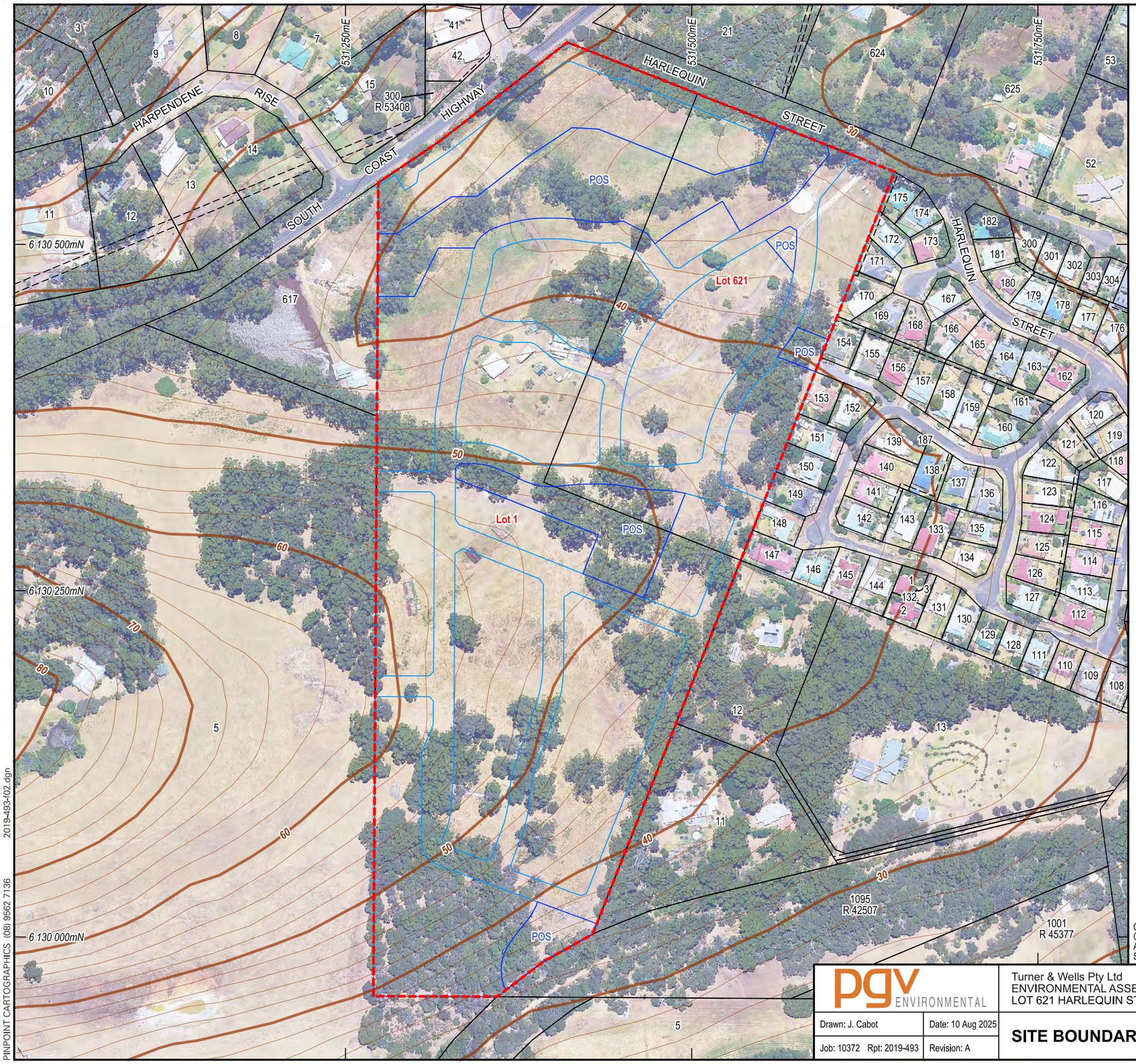
ENVIRONMENTAL ASSESSMENT REPORT
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2019-493 | Revision: A

SITE LOCATION

Figure 1



N

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SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure Plan
- Proposed POS
- Topographic Contour

CADASTRAL SOURCE: Landgate, August 2025.
CONTOUR SOURCE: Dept. of Agriculture, 2000.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

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LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

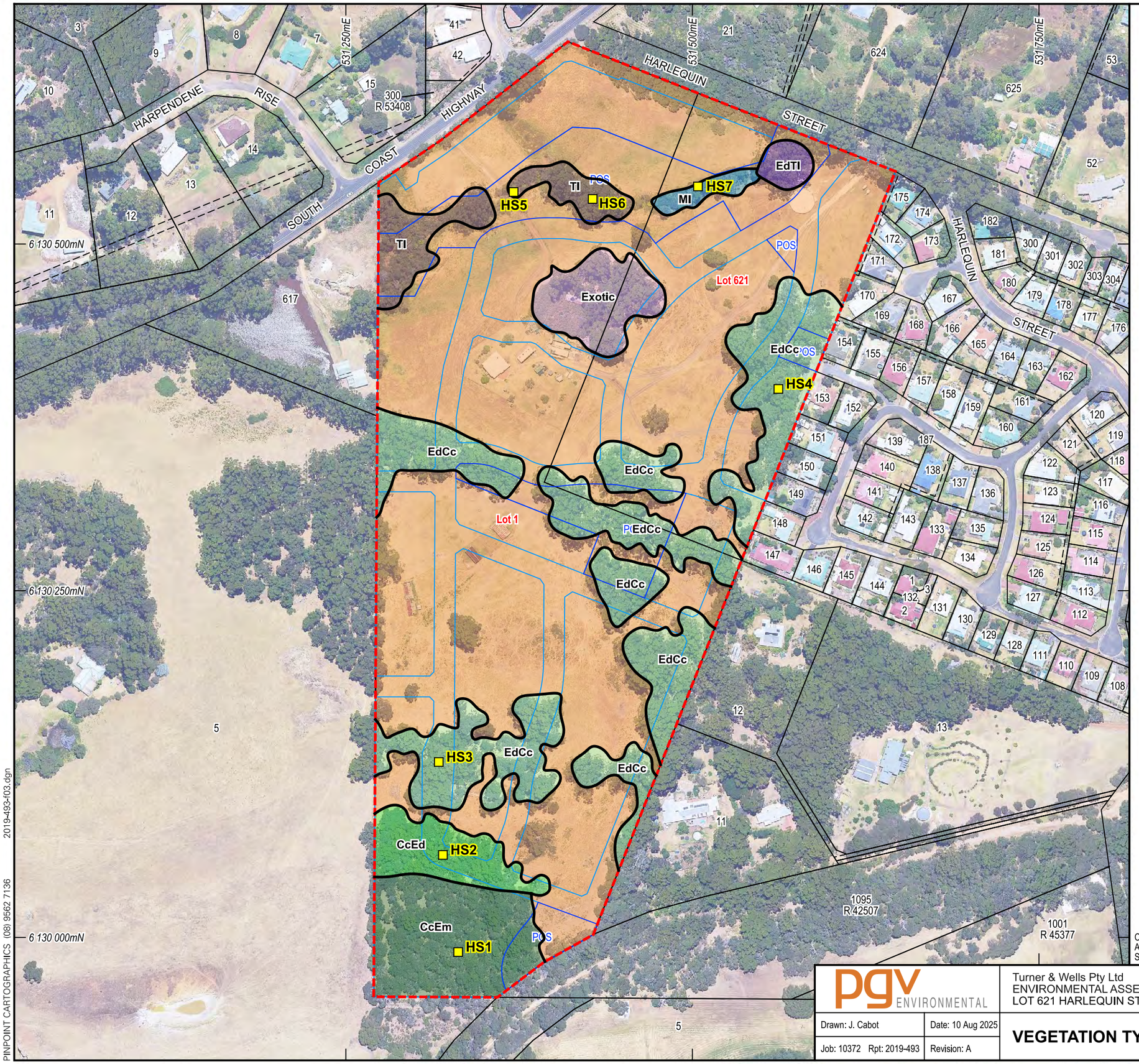
Drawn: J. Cabot	Date: 10 Aug 2025
Job: 10372 Rpt: 2019-493	Revision: A

SITE BOUNDARY AND TOPOGRAPHY

Figure 2

2019-493-f02.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136



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0 20 40 60 80 100m

SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure Plan
- Proposed POS
- Quadrat Location
- Vegetation Type Boundary
- **EdTl** Vegetation Type

Vegetation Types

CcEm
Corymbia calophylla (Marri)/*Eucalyptus marginata* (Jarrah) Low Woodland over *Hovea elliptica*/*Taxandria parviceps*/*Bossiaea linophylla* Low Shrubland

CcEd
Corymbia calophylla (Marri)/*Eucalyptus diversicolor* (Karri) Low Woodland over *Pteridium esculentum*/*Hibbertia cuneiformis* Open Low Heath

EdCc
Eucalyptus diversicolor (Karri)/*Corymbia calophylla* (Marri) Open Forest over *Pteridium esculentum* Low Shrubland

Tl
Taxandria linearifolia Tall Open Scrub over *Lepidosperma tetraquetrum*/*L. effusum*/*Pteridium esculentum* Shrubland/Sedgeland

EdTl
Eucalyptus diversicolor (Karri) Woodland over *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum*/*L. effusum*/*Pteridium esculentum* Sedgeland/Shrubland

MI
Melaleuca lanceolata Low Woodland over *Taxandria linearifolia* Tall Shrubland over *Lepidosperma effusum*/*Pteridium esculentum* Sedgeland/Shrubland

Exotic

Cleared

CADASTRAL SOURCE: Landgate, August 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

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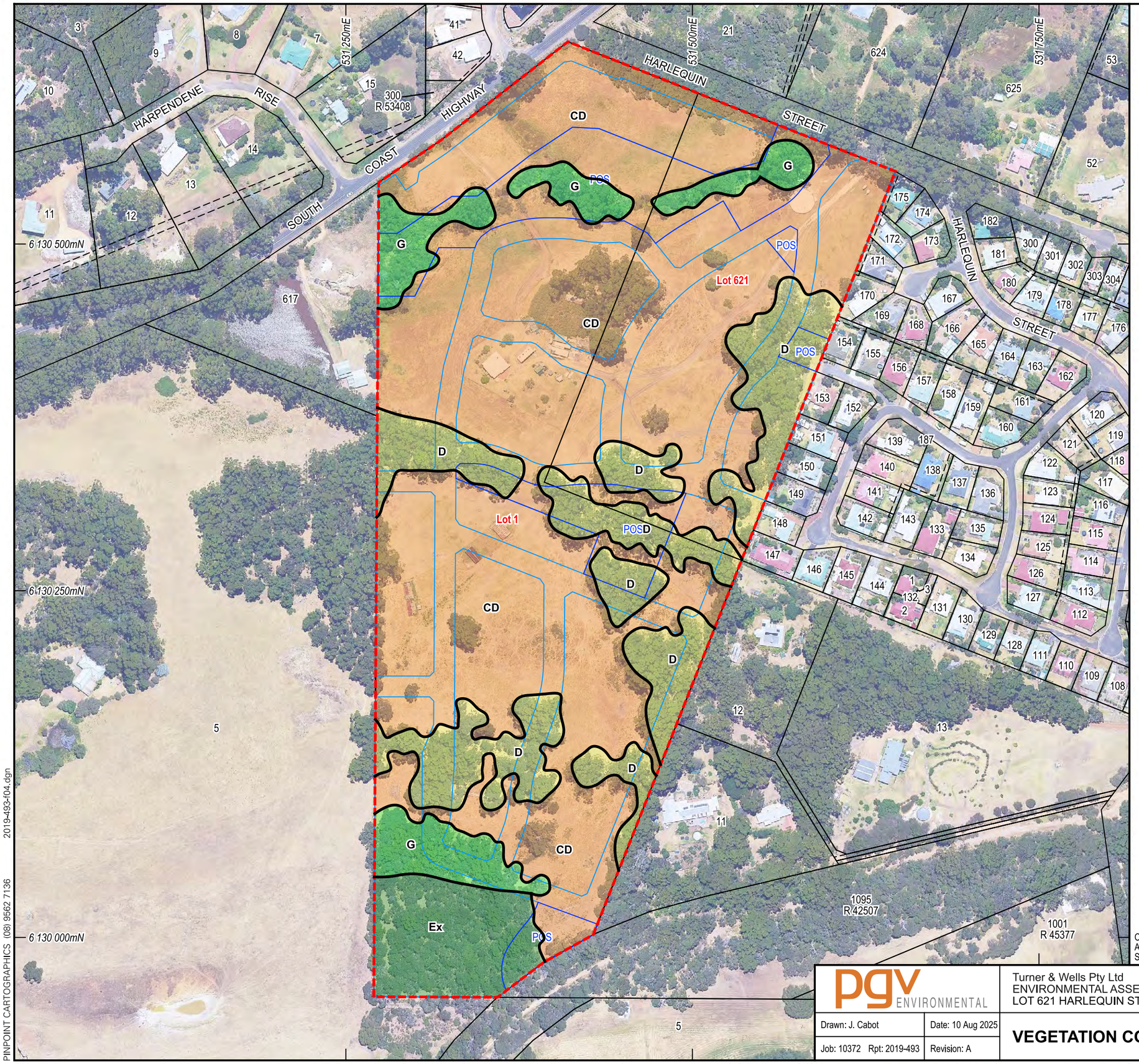
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2019-493 | Revision: A

VEGETATION TYPES

Figure 3

PINPOINT CARTOGRAPHICS (08) 9562 7136 2019-493-f03.dgn



N

0 20 40 60 80 100m

SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure plan
- Proposed POS
- Vegetation Condition Boundary
- Ex Vegetation Condition

Vegetation Condition

- Excellent
- Good
- Degraded
- Completely Degraded

CADASTRAL SOURCE: Landgate, August 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

PINPOINT CARTOGRAPHICS (08) 9562 7136 2019-493-f04.dgn

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LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

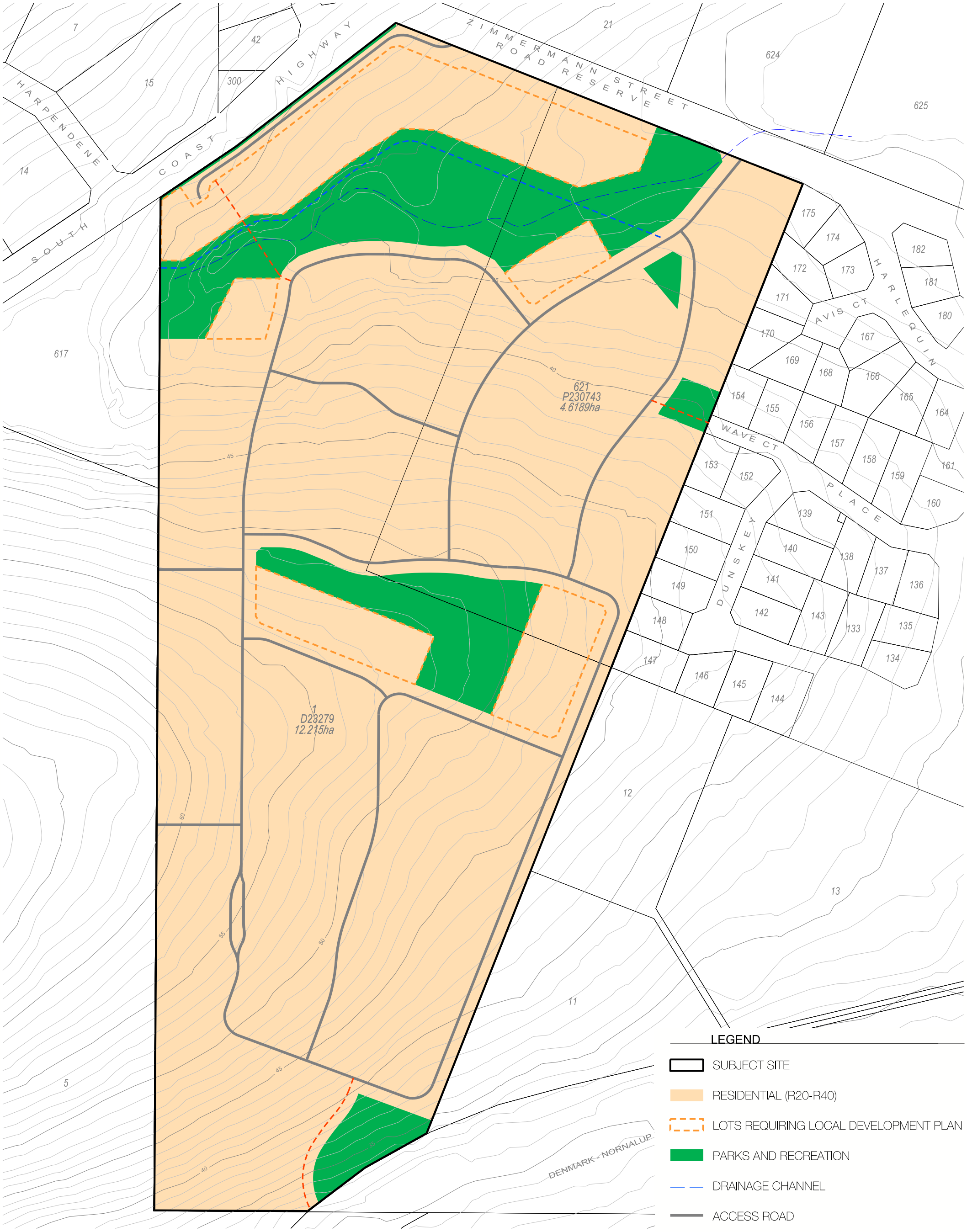
Drawn: J. Cabot	Date: 10 Aug 2025
Job: 10372 Rpt: 2019-493	Revision: A

VEGETATION CONDITION

Figure 4

APPENDIX 1

Structure Plan



621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

STRUCTURE PLAN - INDICATIVE ONLY
PLAN 1

WILLIAMS CONSULTING | TOWN PLANNING & PROJECT MANAGEMENT
ph: 0418 116216 | email: sam@williamsconsulting.page
date - 30/07/2025 | ref - 19-002-007CSP
scale - 1:2000 @ A3

N 0m 30m

APPENDIX 2

Aboriginal Cultural Heritage Inquiry System Reports

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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Search Criteria

No Aboriginal Cultural Heritage (ACH) Register in Custom search area - Polygon - 117.344108552973°E, 34.9661821886393°S (GDA94) : 117.346726388972°E, 34.967114154274°S (GDA94) : 117.345031232874°E, 34.97179140657 7°S (GDA94) : 117.343979806941°E, 34.9721958181044°S (GDA94) : 117.343829603236°E, 34.9725123126897°S (GDA94) : 117.342585058253°E, 34.9724595636771°S (GDA94) : 117.342670888941°E, 34.9671669067287°S (GDA94) : 117.342692346613°E, 34.9671493225809°S (GDA94) : 117.344108552973°E, 34.9661821886393°S (GDA94)

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Wagyl Kaip & Southern Noongar Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will ‘impact’ (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DEMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

Further advice can also be sought from the Department of Planning, Lands and Heritage via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.

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Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register

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Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

0.37 kilometres

Map Scale 1 : 11,300

MGA Zone 50 (GDA2020)

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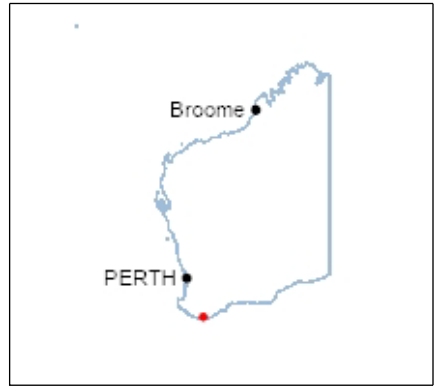

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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South West Settlement ILUA Disclaimer

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Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Lodged

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Legend

- Aboriginal Cultural Heritage (ACH) Lodged
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

0.37 kilometres

Map Scale 1 : 11,300

MGA Zone 50 (GDA2020)

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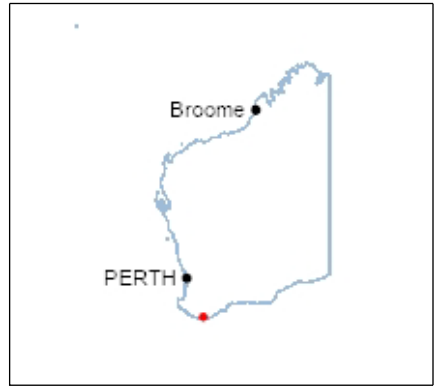

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Historic

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Search Criteria

No Aboriginal Cultural Heritage (ACH) Historic in Custom search area - Polygon - 117.344108552973°E, 34.9661821886393°S (GDA94) : 117.346726388972°E, 34.967114154274°S (GDA94) : 117.345031232874°E, 34.971791406577°S (GDA94) : 117.343979806941°E, 34.9721958181044°S (GDA94) : 117.343829603236°E, 34.9725123126897°S (GDA94) : 117.342585058253°E, 34.9724595636771°S (GDA94) : 117.342670888941°E, 34.9671669067287°S (GDA94) : 117.342692346613°E, 34.9671493225809°S (GDA94) : 117.344108552973°E, 34.9661821886393°S (GDA94)

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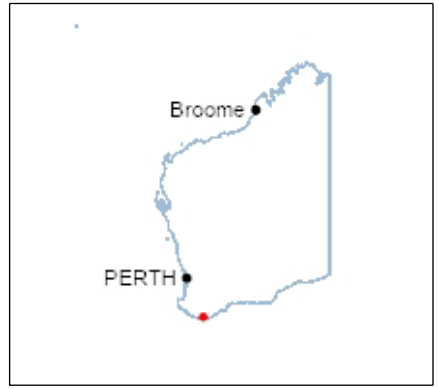

APPENDIX 3

DBCA Flora database Searches

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
5603	5255589	45013	Amanita drummondii	3	Pileus 57 mm wide, plane, very slightly depressed at centre, ovoid, light dull brown, flesh hard, white. Lamellae 24 mm l x 5.5 mm d, free, close, narrow, white. Stipe 123 mm l x 10(apex)-15(above base) mm w, tapering up from soil, central, terete, surfa		Eucalyptus marginata, Allocasuarina fraseriana, Agonis flexuosa, A. parviceps, A. hypericifolia, Melaleuca sp.		Field name: austrogrisette. Piece of gill removed for molecular sequencing - E.M. Davison 16.11.2012.	Cemetery Road, Denmark	MAN	0	3/06/1992
5846	4765281	6301	Andersonia auriculata	3	Shrub, blue flowers.	Lower slope; grey sand.	Allocasuarina fraseriana, Banksia quercifolia, B. illicifolia, Corymbia ficifolia, Eucalyptus patens.			Plot 4273, Gum Link Road,	MAN	0	20/08/1990
6311	6329128	41741	Andersonia sp. Virolens (G.J. Keighery 12000)	3	Low domed shrub to 15 cm. Calyx and corolla creamy white, anthers bright red. Unpleasant smell, lots of flies.	On edge of outcropping granite. SW facing slope. Grey and white shallow coarse sand. Large outcrop.	Heath on edge of outcropping granite.	frequent.		Mount Lindesay walk trail, ca 100 m below summit	MAN	3	16/09/1994
6739	5218306	16321	Anthocercis sylvicola	3	Diffuse shrub with drooping branches. Smaller branches flexuose with a spine and one or two small leaves at each angle. Height 1.5m. Not in flower but a few very immature buds - axillary, solitary & pedunculate. 5-ous with tips of both calyx lobes and pe	Moderate slope between granite summit and gully.	Karri Forest over thicket of Chorilaena quercifolia, Leucopogon verticillatus, L.capitellatus & Xanthorrhoea preissii.		One plant only seen on track but not identified at time of collection. Wider search planned at flowering time.	Denmark Shire. Mt Hallowell Reserve. On Bibbulum Track c.500 m. ENE of Trig.Station.	MAN	0	30/08/1998
9798	3358704	32084	Banksia serra	4	Erect, slender tall shrub 1-4 m. Flowers yellow.	Grey sand. Laterite. N facing slope.	Jarrah/Marri woodland. Acacia browniana, Hibbertia furfuracea, Petrophile diversifolia, Bossiaea linophylla.		Abundance: locally abundant.	Mount Hallowell Recreation Reserve: NE corner at entrance from Hallowell Break Road, Denmark Shire	MAN	0	8/09/1993

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
9827	5796504	32084	Banksia serra	4	Slender erect shrubs to a height of 3 m. Flowers yellow.	Grey sand over laterite on a road verge.	In low Jarrah/Marri Forest A over Heath B. Assoc. with Bossiaea linophylla, Agonis hypericifolia and Hakea amplexicaulis.	an isolated group of ca 50 plants.		Denmark Shire. Scotsdale Road, c.2 kms past the Hamilton Road turn-off.	GPS	0	8/09/2000
9988	8737916	32078	Banksia sessilis var. cordata	4	Shrub, 1.5 m high, 0.8 m wide. Erect open perennial. Flowers yellow.	Dune hillside, Shire Reserve. White sand.	Low trees, tall shrubland. Agonis flexuosa, Spyridium globulosum, Acacia littorea.	over 50 plants.	Population structure: 100% in bud, 100% flowering, 30% fruiting. Reproductive method: seeds.	Shire Reserve 24913. Scattered along walk trails around Point Walton and Wilson Head at end of Ocean Beach Road	GPS	1	7/07/2010
11295	957992	4447	Boronia virgata	4		Near coast.				5 miles W of Denmark, near coast	MAN	3	9/03/1965
11298	3507815	4447	Boronia virgata	4	Erect slender 1.5 m high, Flowers pink with darker central stripe. cf. BGH 993, fewer, flatter leaflets, sepals glabrous.	Peat - peat swamp.	Dense heath A, Agonis parviceps, Astartea fascicularis, Agonis linearifolia.	occasional over large area.		Denmark Shire, William Bay National Park, peat swamp adjacent to NE boundary	MAN	0	24/10/1993
11320	6905498	4447	Boronia virgata	4	Open shrub.	Seasonally inundated. Grey clayey sand.	Boronia stricta, Evandra aristata, Acacia divergens and Beaufortia sparsa.	abundant, more than 1 plant.	95% of population in flower.	Walpole	GPS	1	17/10/2001
11366	4485734	1270	Borya longiscapa	3	Plant with 40 cm scape with pale yellow flowers.	Soil, coarse sand on granite.	In association with Pterostylis vittata and Tribonanthos longipetala.			Stan Road, track west to granite peak, Denmark State Forest, Shire of Denmark,	AUTO	3	24/09/1992
12068	909572	15329	Caladenia applanata subsp. erubescens	2		On steep sand slope.	Growing in heath of Pimelea rosea, Casuarina humilis with pockets of Agonis flexuosa thicket.		Abundance: 20+ plants in full flower.	William Bay National Park, 12 km SW of Denmark, 7.5 km SE of Parryville	MAN	0	7/10/1984

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
12070	264083	15329	Caladenia applanata subsp. erubescens	2	Flowers pink, faint sweet odour.	Undulating to steep sloped hills. Sand and outcropping limestone.	Growing in dense low heath.	50+ plants in full flower.		William Bay National Park; 3.5 km W of Ocean Beach Road on Mooney Valley Road, 8 km SSW of Denmark,	MAN	3	7/10/1984
18664	1824082	13635	Drakaea micrantha	T	Tuberous herb, leaves succulent green, flowers reddish.	Grey gritty sand over granite.	Eucalyptus ? staeri mallee heath.		Abundance: dense colony in full flower.	Mount Lindesay	MAN	0	3/11/1990
18745	6267920	3096	Drosera fimbriata	4	Erect dwarf annual herb to 5 cm high. Leaves red, flowers white.	Grey sand. Sides of walk-track in secondary dunes.	Open dwarf scrub D. Andersonia caerulea and Platysace pendula.	locally frequent.	D.R.F - specimen for Rare Flora report.	Denmark Shire; William Bay National Park. Track from E boundary to Lake Williams	MAN	2	20/10/1993
24073	4533062	19629	Eucalyptus virginea	4	Small multistemmed tree, coppice from old burnt out stump. c. 10 m high, flowers white.	Lower slope of creek bank.	Partly cleared previously Karri and blackbutt, occasional Agonis parviceps now present.			5.5 km W of Denmark off Lapkos Road, Loc. 420,	MAN	0	8/07/1993
24074	4533054	19629	Eucalyptus virginea	4	Small multistemmed tree, coppice from old burnt out stump. c. 10 m high, flowers white.	Lower slope of creek bank.	Partly cleared previously Karri and blackbutt, occasional Agonis parviceps now present.			5.5 km W of Denmark off Lapkos Road, Loc. 420,	MAN	0	8/07/1993
24075	4535499	19629	Eucalyptus virginea	4	Small tree 12 m high, flowers white.	Lower mid-slope, sandy loam site.	Eucalyptus calophylla, E. marginata, Leucopogon verticillatus, L. capitellaus, Mirbelia dilatatus, Hibbertia cuneiformis, H. furfuracea, Agonis parviceps, A. hypocrateiformis, Xanthorrhoea preissii, Xanthosia rotundifolia.			5.5 km W of Denmark off Lapkos road, Loc.420	MAN	0	8/07/1993

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
24076	4533038	19629	Eucalyptus virginea	4	Small multi-stemmed tree, coppice from old tree. Flowers white.	Lower slope, clay loam. Drainage lines have been disturbed and site, so quite wet.	Cleared pasture previously Karri site.			5.5 km W of Denmark off Lapkos Road, Warren District	MAN	0	8/07/1993
24077	4533046	19629	Eucalyptus virginea	4	Small tree, c. 10 m high. Flowers white.	Lower slope near small dam. Clay loam. Drainage disturbed by small dam construction.	Cleared rough pasture previously Karri type.	isolated tree.		5.5 km W of Denmark off Lapkos Road	MAN	0	8/07/1993
24113	1420526	19629	Eucalyptus virginea	4	Coppiced tree to 8-12 m. Bark white, slightly powdery.		In paddock.	6 trees in paddock.		6 km W of Denmark on the Lapkos Road	AUTO	3	/06/1988
24114	1448595	19629	Eucalyptus virginea	4						Lapkos Road, Denmark	MAN	3	23/05/1988
27890	4125312	13084	Grevillea fuscolutea	T	Upright spreading shrub to 1.8 m, flowers yellow, leaves pale green and hairy, stems hairy.	Cultivated in Denmark Garden.				Garden of B.G. Hammersley, Denmark,	MAN	3	10/08/1994
33407	4497333	4039	Kennedia glabrata	T	Prostrate, 20 cm high x 60 cm wide.	Outcrop, brown loam over granite.	Agonis, Anthocerisis, Eutaxia, Stypandra.			Outcrop, William Bay National Park,	MAN	0	29/10/1996
34250	5333121	33498	Lasiopetalum sp. Denmark (B.G. Hammersley 2012)	3	Slender erect shrub from 0.8 to 1.5 m. Flowers white to faintly tinged pink.	In shallow sand in areas of surface laterite.	In Jarrah Woodland with Banksia grandis, Agonis parviceps, Grevillea occidentalis.		Abundance: c. 100 plants.	Denmark Shire. Kernutts Road, c.3.5 km from Denmark-Mt Barker Road at entrance to disused sawmill & in adjacent Forest Reserve 26565.	MAN	0	19/09/1998
34716	3418448	3042	Lepidium pseudotasmanicum	4						Pig yard, State Farm, Denmark	AUTO	3	14/06/1940
34725	3418421	3042	Lepidium pseudotasmanicum	4						Pig yard, State Farm, Denmark	AUTO	3	14/06/1940
37562	8457646	37683	Melaleuca viminalis	2	Slender erect weeping shrub, 3 m high x 2 m wide. Flowers crimson red, in flower.	Creekline. Brown sandy clay.	Remnant Eucalyptus diversicolor forest over sedges.	locally common.		Denmark townsite, near Old Hospital	GPS	1	18/11/2011
38144	294896	1662	Microtis pulchella	4		Peat bog. Burnt in March.				10 km W of Walpole, South of Highway	MAN	3	22/12/1981

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
40846	6943640	19062	Pleurophascum occidentale	4	c.20 tufts varying from 1 to 20 cm diam. in an area 1.5 m.square. One small disjunct tuft in which many plants have orange antheridia.	On moist grey sand.	In thicket.			Denmark Shire. Hallowell Reserve. South side, on the old track to Monkey Rock, ca 25 m from the Lights Road carpark	GPS	1	7/07/2003
43444	4744489	7651	Selliera radicans	1	Prostrate stems to 50 cm, rooting at nodes. Fleshy erect leaves. Flowers sparse, pale blue, pedicillate.	At edge of inlet below high water line, now moist sand.	Open herbs, Lobelia alata, Villarsia parnassifolia, Samolus junceus, Apium prostratum.		Abundance: abundant in restricted area.	Wilson Inlet, W end of Crusoe Beach,	MAN	0	1/02/1997
43445	4744470	7651	Selliera radicans	1	Prostrate stems to 50 cm, rooting at nodes. Fleshy erect leaves. Flowers sparse, pale blue, pedicillate.	In a pile of dead seagrass closed to waters edge in saline mud.	Open Melaleuca scrub over Cyeraceae and Sarcocornia blackiana.		Abundance: small population c. 1 m diam.	Wilson Inlet - Crusoe Beach - E end,	MAN	0	1/02/1997
43447	2763338	7651	Selliera radicans	1	Prostrate.	On saline mud, inundated by estuarine water at high tide.	Shaded by Melaleuca cuticularis.			Caruso Beach on Wilson Inlet, 10 km W of Denmark	AUTO	4	4/03/1977
43448	6476392	7651	Selliera radicans	1	Scrambling, prostrate herbaceous perennial with fleshy bright green leaves and adventitious roots. Flowers (not seen) and fruiting capsules held on a long peduncle. Capsules hold multiple winged seeds that become mucilaginous on wetting. Plants may be cl	Landform: estuarine. Soil type: sand. Parent material: sandstone.	Estuarine. Assoc. sp.: Juncus krausii, Melaleuca spp., Banksia seminuda and Apium prostratum.	100 + plants.	Plants are larger than those at the mouth of the Hay River, with smaller leaves. They are more exposed to weather. More fruit produced.	Crusoe Beach, E of Denmark. Population is W of main beach above rocky shoreline extending about 20 m back behind waterline. S facing	GPS	1	6/05/2002

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43449	8082359	7651	Selliera radicans	1	Prostrate herb 2 cm to 20 cm high x 2 m to 4 m wide. Fleshy bright green leaves.	Outcrop. Inlet. Seasonally inundated. Moist red/brown/black sand/laterite/ granite.	Woodland/herbland/ sedgeland. With Melaleuca preissiana, Melaleuca cuticularis, Sarcocornia blackiana, Isolepis nodosa, Villarsia parnassifolia, dense sedge land.	abundant - 1000+ plants.		Denmark - Porpoise Rock or Poison Point, ca 1 km E from Campbell Road - Inlet drive junction at bottom of an old fishermans track	GPS	1	17/01/2006
43451	8131546	7651	Selliera radicans	1	Prostrate herb < 5 cm high.	Flat shoreline. White-brown sand.		occasional.		W end Crusoe Beach on Crusoe Beach Road from South Coast Highway, E of Denmark	GPS	1	25/11/2004
43452	5119677	7651	Selliera radicans	1	Rhizomatous perennial herb to 5 cm tall x 1-2 m wide. Flowers inconspicuous, creamy yellow. In full flower.	Edging brackish inlet. Wet brown sandy clay over granite.	Melaleuca cuticularis low open woodland.			Honeymoon Island, Wilson Inlet, Denmark,	MAN	0	21/01/1991
43453	4921542	7651	Selliera radicans	1	Prostrate stems rooting at nodes. Leaves erect, semi-succulent. Remains of only two spent flowers found in numerous plants. Pedicels 1 cm.	Low lying, seasonally wet area on the edge of inlet. In soil pockets on broken granite.	Neurachne sp., Isolepis nodosa, Villarsia parnassifolia, Atriplex hypoleuca.		Abundance: recurring over distance of 2 km. More prevalent where associated vegetation is less dense.	Wilson Inlet, adjacent to N boundary of Wilson Inlet Holiday Park,	GPS	1	27/03/1997
45877	4048555	30272	Stylidium sp. Kordabup (A.R. Annels 1660)	1	Tall, slender, clumped, trigger plant to 30 cm; leaves whorled at nodes, also rooting at nodes; flowers pale pink to yellow, no throat markings.	In granite outcrop in shallow soil.	With Eucalyptus marginata and Xanthorrhoea preissii.			Karma Chalets, 7 km WSW of Denmark on Lapkos Road, off South Coast Highway	MAN	0	21/10/1994
46585	4263391	16859	Synaphea incurva	3	2-3 ft, yellow flower.					Denmark	AUTO	3	26/09/1972

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
47746	4131053	35578	Tetraria sp. Blackwood River (A.R. Annels 3043)	3	Rush growing in water on drainage line.	Valley floor.	Eucalyptus diversicolor, Lepidosperma tetraquetrum, L. effusum, Callistachyus lanceolotus.	common.		4.7 km WNW of Denmark, approximately 100 m S of Glenrowan road on Turner Road, NE corner of Gravel Reserve 13255,	TOPO	2	30/08/1995
47750	2334054	35578	Tetraria sp. Blackwood River (A.R. Annels 3043)	3	Native.		Bush.			Near Brooklyn Park Farm [near] Denmark, Warren	AUTO	3	21/02/1979
48470	5519446	5096	Thomasia quercifolia	4	Woody dwarf shrubs 10 to 30 cms high. Flowers pink.	Limestone slope in coastal dunes. Overburden mechanically cleared many years ago leaving very shallow sand pockets on limestone.	Very sparse dwarf scrub. Assoc. with dwarf forms of Acacia littorea, Dryandra sessilis & Pultenaea reticulata.	ca 100 plants scattered over 0.5 ha.		Denmark Shire. Ocean Beach Reserve c. 300 m NE of existing limestone quarry & outside current mining lease.	GPS	1	28/10/1999
48473	5796245	5096	Thomasia quercifolia	4	Woody, spreading shrub to 0.8 m high. Flowers faded, many with seed.	In shallow sand pockets on surface limestone.	In dwarf scrub with Spyridium globulosum, Acacia littorea and Dryandra sessilis.	occasional in a restricted area.		Denmark Shire. Around the Limestone Quarry at Ocean Beach. Same area as previous collection B.G.Hammersley 2164.	GPS	0	10/02/2000
48474	5519454	5096	Thomasia quercifolia	4	Spindly shrub straggling up through thicket to height of 1.5 m. Flowers pink.	Sand over limestone on the lower section of limestone slope in coastal dunes close to watercourse.	Thicket of Spyridium globulosum, Acacia littorea, Pultenaea reticulata & Acrotriche cordata.	ca 100 plants scattered over 0.25 ha.		Denmark Shire. Ocean Beach Reserve c. 300 m NE of existing limestone quarry & outside current mining lease.	GPS	1	28/10/1999

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
48478	5503272	5096	Thomasia quercifolia	4	Spreading woody shrub up to 0.8 m high by 1.5 m wide. Not in flower.	In shallow sand pockets on exposed limestone only. Not found in adjacent areas of deeper coastal sand.	In open low scrub surrounded by thicket. Assoc. with Desmocladus flexuosus, Spyridium globulosum, Acacia littorea & Hakea oleifolia.	dominant on tracks and in open areas. ca 500 plants.		Denmark Shire. Ocean Beach Reserve, close to existing Limestone Quarry and within the zone of Shire's application for a mining lease.	GPS	1	5/05/1999
48479	8244448	5096	Thomasia quercifolia	4	Prostrate shrub to 0.5 m high x 0.5 m wide. Flowers pink - purple.	Ridge. Dry grey soil. Old soil disturbance. Shire reserve - lime quarry. Fire history unknown.	Coastal heath - low shrubland. Spyridium globulosum, Acacia littorea, Desmocladus flexuosa, Olax phyllanthi, Leucopogon parviflorus.	21-50 plants including seedlings.		On western boundary fenceline, old 4 Wheel Drive track, break of existing limestone quarry, Ocean Beach - Denmark	GPS	1	27/04/2010
48480	8244456	5096	Thomasia quercifolia	4	Prostrate shrub 0.5 m high x 0.5 m wide. Flowers pink - purple.	Cliff, limestone carst. Dry grey soil. Old soil disturbance. Fire history unknown.	Coastal heath - low shrubland. Scaevola crassifolia, Dryandra sessilis, Hibbertia sp., Olax phylanthi, Platysace sp., Spyridium globulosum.	21-50 plants.	Percentage of population in bud 40%, flowering 60%.	SW of lime quarry on W boundary of Lime Quarry Lease, on old 4WD track fire break boundary edge of cliff, Reserve No's. 46273, 24913, Ocean Beach - Denmark	GPS	1	27/04/2010
48499	4148185	5100	Thomasia solanacea	4	1 m plant, flowers pink.	Rocky loam.	In association with Acacia and Eucalyptus.		This specimen is housed at Albany.	Inlet Road, Denmark,	MAN	0	17/09/1990
52131	6152511	18453	Xanthosia eichleri	4	Erect herbs to 0.1 m high.	Gravelly sand.	Jarrah-Marri forest with Xanthosia rotundifolia, Pentapeltis silvatica, Platysace compressa, Pimelea and tea tree.	abundant.		Corner of Nornalup and Break roads, c. 30 km NW of Denmark	MAN	3	8/11/1995

FID	Sheet	NameID	Taxon	Cons_ Code	Plant_Desc	Site	Vegetation	Frequency	Notes	Locality	Geo_ Method	Precision	Date
52140	6904017	18453	Xanthosia eichleri	4		Slope. Dry, yellow-grey sand, gravel.	Open woodland - closed heath. Adenanthos cuneatus, Daviesia sp., Agonis parviceps.	50 plants over .05 ha.		South Coast Highway, ca 5.65 km E of Denmark River Bridge, on both side of highway	GPS	1	29/11/2001
52156	7483724	18453	Xanthosia eichleri	4		Outcrop. Dry, brown sand. Sheet rock.	Open sedgeland and herbland. Lepidosperma gladiatum, Patersonia occidentalis, Neurachne alopecuroidea, Chamaescilla corymbosa.	20 mature plants.		Loc. 2077, Ocean Beach Road, Shire of Denmark	GPS	1	26/11/2005

FID	PopId	Nameid	Taxon	ConsStatus	WARank	PopNumber	SubPopCode	Location	District	Vesting	Purpose1	Purpose2	CountDate	Method	MatureCoun	SeedlingCo	LiveTotal	inFlower
2200	94364	41741	Andersonia sp. Virolens (G.J. Keighery 12000)	3		5		Mt Lindesay NP (47891). Mt. Lindesay. On walk track, ca. 100m below summit. Denmark.	FRANKLAND	CC	NPK		16/09/1994 0:00		0		0	N
2383	103320	16321	Anthocercis sylvicola	3		10	B	Mount Hallowell Reserve (46618). Loc. 8065. Bibbulmun Track, Ocean Beach side of Mt Hallowell. Ca. 400-500m from wooden sign post on Mt Hallowell. Both sides of track. Denmark	FRANKLAND	LGA	REC	NRE	22/04/2007 0:00	ESTMT	28		28	N
3977	87095	4447	Boronia virgata	4		8		Track of Proctor Road, off Lights Road, road reserve on the way to William Bay National Park	FRANKLAND	LGA	VER		16/10/1992 0:00	ESTMT	0		100	Y
3979	87084	4447	Boronia virgata	4		10		William Bay National Park - peat swamps in North east corner north of Lake Williams.	FRANKLAND	CC	NPK		11/11/2000 0:00		0		0	N
3988	87089	4447	Boronia virgata	4		17		ca. 0.4 km E of Mt Lindesay Rd, on unnamed track which is ca. 0.5 km N of Churchill Rd. Denmark Catchment SF.	FRANKLAND	CC	FOR		17/10/2001 0:00	ESTMT	100	0	100	Y
4033	84639	1270	Borya longiscapa	3		30		Mt Lindesay NP (47891). Stan Rd, track W to granite peak. Senmark State Forest. Denmark.	FRANKLAND	LGA	VER		24/09/1992 0:00		0		0	N
7479	98326	3096	Drosera fimbriata	4		3	A	William Bay NPk. Sandtrack from E boundary to Lake Williams.	FRANKLAND	CC	NPK	WAT	11/11/2000 0:00	ESTMT	0		10	Y
7480	98327	3096	Drosera fimbriata	4		3	B	William Bay NPk. Lake Williams. Granite which forms eastern margin of lake and on adjacent moss pads.	ALBANY	CC	NPK	WAT	11/11/2000 0:00		0		0	Y

FID	PopId	Nameid	Taxon	ConsStatus	WARank	PopNumber	SubPopCode	Location	District	Vesting	Purpose1	Purpose2	CountDate	Method	MatureCoun	SeedlingCo	LiveTotal	inFlower
9172	104177	19629	Eucalyptus virginea	4		3	A	Lot 1 (Location 414) Lapkos Rd, Denmark. Ca. 2 km SE of Mt Shadforth. NB: Lot 1 Lapkos Rd is part Location 414 and Location 420.	FRANKLAND	PRI			28/01/1993 0:00	ACT_IND	6		6	Y
9173	104178	19629	Eucalyptus virginea	4		3	B	Lot 1 (Location 420) Lapkos Rd, Denmark. Ca. 2 km SE of Mt Shadforth. NB: Lot 1 is part Location 414 and Location 420.	FRANKLAND	PRI			28/01/1993 0:00	ACT_IND	6		6	Y
12071	98944	4039	Kennedia glabrata	T	VU	7	A	William Bay NP, granite outcrop on E margin of Lake Williams.	FRANKLAND	CC	NPK		21/12/2010 0:00	ACT_IND	0	38	0	N
12072	98945	4039	Kennedia glabrata	T	VU	7	B	Northern boundary of William Bay NP and Location 7075, SW corner of PP & NP.	FRANKLAND	CC	NPK		12/09/2008 0:00	ACT_IND	11	5	0	N
12456	105110	33498	Lasiopetalum sp. Denmark (B.G. Hammersley 2012)	3		29	A	UCL. Kernutt's Rdto 180m N, ca. 3.5km from Denmark-Mt Barker Rd at entrance to old saw mill site & in adjacent [UCL]. Adjacent to SW cnr of Loc 6710. Denmark.	FRANKLAND	NON	UCL		1/11/2005 0:00	ESTMT	5000	100	5000	Y
12457	105111	33498	Lasiopetalum sp. Denmark (B.G. Hammersley 2012)	3		29	B	Road Verge. Kernutt's Rd, ca. 3.5km from Denmark-Mt Barker Rd at entrance to old saw mill site & in adjacent [UCL]. Denmark.	FRANKLAND	LGA	VER		19/09/1998 0:00	ESTMT	100		100	Y
14611	94570	19062	Pleurophascum occidentale	4		25		Mt. Hallowell Nature Reserve no. 46618 on the southern side of the old track to Monkey Rock ca.25m from the Lights Rd.carpark.	FRANKLAND	LGA	CON		7/07/2003 0:00	ESTMT	20		20	N
15236	100499	7651	Selliera radicans	1		1	A	UCL. Carusoe beach, at jetty 50m E along shoreline before island. Denmark.	FRANKLAND	NON	UCL	FP	16/02/2007 0:00	ESTMT	40		40	N

FID	PopId	Nameid	Taxon	ConsStatus	WARank	PopNumber	SubPopCode	Location	District	Vesting	Purpose1	Purpose2	CountDate	Method	MatureCoun	SeedlingCo	LiveTotal	inFlower
15237	100500	7651	Selliera radicans	1		1	B	UCL. Carusoe Beach. ca. 300m W of jetty on W end of beach where laterite starts. Another small patch ca. 50m W of jetty along beach under Melaleucas. Denmark.	FRANKLAND	NON	UCL		16/02/2007 0:00	ESTMT	1400		1400	N
15238	100501	7651	Selliera radicans	1		1	C	UCL. Curosoe beach, W of jetty 250 W along shoreline from most W access (steps to inlet). Denmark.	FRANKLAND	NON	UCL		14/01/2004 0:00	ESTMT	0		0	N
15240	89244	7651	Selliera radicans	1		3		Shire Reserve (25797). Honeymoon Island, Wilson Inlet, Denmark.	FRANKLAND	LGA	REC		21/01/1991 0:00		0		0	Y
15241	89245	7651	Selliera radicans	1		4		Shire Reserve (34742). Wilson Inlet (Loc. No. 744) Just E of old Wilson Inlet Holiday Park to Honeymoon Island. Also at boat launch on cnr of Campbell Rd & Inlet Drv in small patch. Denmark.	FRANKLAND	LGA	REC		28/02/2007 0:00	ESTMT	200		200	N
15242	89246	7651	Selliera radicans	1		5		Shire Reserve (12344). ca. 1km E from Campbell Rd-Inlet Drv junc at bottom of old fishermans track. Poisson pt. Porpoise Rock & at boat launch on cnr of Campbell Rd & Inlet Drv. Denmark.	FRANKLAND	LGA	REC		16/02/2007 0:00		600		600	N
16470	99277	5096	Thomasia quercifolia	4		2	A	Crown Reserve (42673), ca.0.7km SW of Ocean Beach near Limestone Quarry wihtin mininglease application. Denmark.	FRANKLAND	CRW	MIN		10/02/2000 0:00		0		0	N
16471	99278	5096	Thomasia quercifolia	4		2	B	Shire Res (24913), SW of Ocean Beach ca. 300m NE of Limestone Quarry outside current mining lease. Denmark.	FRANKLAND	LGA	PAR	REC	28/10/1999 0:00	ESTMT	100		100	Y

APPENDIX 4

Naturemap Report

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 26/11/2019

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	117° 20' 37" E,34° 58' 12" S
Buffer	10km
Group By	Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	1430	9691
Other specially protected fauna	2	10
Priority 1	2	16
Priority 2	6	9
Priority 3	12	27
Priority 4	18	125
Protected under international agreement	18	445
Rare or likely to become extinct	25	236
TOTAL	**1513**	**10559**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Rare or likely to become extinct					
1.	41326	*Ardenna carneipes (Flesh-footed Shearwater, Fleshy-footed Shearwater)*		T	
2.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
3.	24790	*Calidris tenuirostris (Great Knot)*		T	
4.	24731	*Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black Cockatoo)*		T	
5.	24733	*Calyptorhynchus baudinii (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)*		T	
6.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
7.	48400	*Calyptorhynchus sp. (white-tailed black cockatoo)*		T	
8.	25335	*Caretta caretta (Loggerhead Turtle)*		T	
9.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		T	
10.	43347	*Cynotelopus notabilis (Western Australian Pill Millipede)*		T	
11.	24440	*Dasyornis longirostris (Western Bristlebird)*		T	
12.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
13.	13635	*Drakaea micrantha*		T	
14.	34026	*Galaxiella munda (mud minnow, western dwarf galaxias)*		T	
15.	13084	*Grevillea fuscolutea*		T	
16.	4039	*Kennedia glabrata (Northcliffe Kennedia)*		T	
17.	24557	*Leipoa ocellata (Malleefowl)*		T	
18.	24210	*Neophoca cinerea (Australian Sea-lion)*		T	
19.	41348	*Pezoporus flaviventris (Western Ground Parrot)*		T	
20.	24073	*Physeter macrocephalus (Sperm Whale)*		T	
21.	24166	*Pseudocheirus occidentalis (Western Ringtail Possum, ngwayir)*		T	
22.	24715	*Puffinus huttoni (Hutton's Shearwater)*		T	
23.	24145	*Setonix brachyurus (Quokka)*		T	
24.	34007	*Thalassarche chlororhynchos (Atlantic Yellow-nosed Albatross)*		T	
25.	42361	*Zephyrarchaea mainae (Main's assasin spider)*		T	
Protected under international agreement					
26.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
27.	41328	*Ardenna tenuirostris (Short-tailed Shearwater)*		IA	
28.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
29.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
30.	24780	*Calidris alba (Sanderling)*		IA	
31.	25738	*Calidris canutus (Red Knot, knot)*		IA	
32.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
33.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
34.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
35.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
36.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
37.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
38.	48591	*Pandion cristatus (Osprey, Eastern Osprey)*		IA	
39.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
40.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
41.	25642	*Sterna hirundo (Common Tern)*		IA	
42.	48597	*Thalasseus bergii (Crested Tern)*		IA	
43.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
Other specially protected fauna					
44.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
45.	48070	*Phascogale tapoatafa subsp. wambenger (South-western Brush-tailed Phascogale, Wambenger)*		S	
Priority 1					
46.	7651	*Selliera radicans*		P1	
47.	30272	*Stylidium sp. Kordabup (A.R. Annels 1660)*		P1	
Priority 2					
48.	44755	*Amanita walpolei*		P2	
49.	15329	*Caladenia applanata subsp. erubescens*		P2	
50.	20165	*Drepanocladus aduncus*		P2	
51.	25290	*Elapognathus minor (Short-nosed Snake)*		P2	
52.	24347	*Ixobrychus flavicollis subsp. australis (Black Bittern (southwest subpop.), Australian Black Bittern)*		P2	
53.	37683	*Melaleuca viminalis*		P2	
Priority 3					
54.	45013	*Amanita drummondii*		P3	
55.	6301	*Andersonia auriculata*		P3	
56.	41730	*Andersonia sp. Amabile (N. Gibson & M. Lyons 355)*		P3	
57.	41741	*Andersonia sp. Virolens (G.J. Keighery 12000)*		P3	
58.	7829	*Angianthus drummondii*		P3	
59.	16321	*Anthocercis sylvicola*		P3	
60.	1270	*Borya longiscapa*		P3	
61.	34030	*Geotria australis (Pouched Lamprey)*		P3	
62.	33498	*Lasiopetalum sp. Denmark (B.G. Hammersley 2012)*		P3	
63.	6355	*Leucopogon alternifolius*		P3	
64.	16859	*Synaphea incurva*		P3	
65.	35578	*Tetraria sp. Blackwood River (A.R. Annels 3043)*		P3	
Priority 4					
66.	32084	*Banksia serra (Serrate-leaved Dryandra)*		P4	
67.	32078	*Banksia sessilis var. cordata*		P4	
68.	4447	*Boronia virgata*		P4	
69.	3096	*Drosera fimbriata (Manypeaks Sundew)*		P4	
70.	19629	*Eucalyptus virginea*		P4	
71.	24215	*Hydromys chrysogaster (Water-rat, Rakali)*		P4	
72.	48588	*Isoodon fusciventer (Quenda, southwestern brown bandicoot)*		P4	
73.	3042	*Lepidium pseudotasmanicum*		P4	
74.	1662	*Microtis pulchella (Beautiful Mignonette Orchid)*		P4	
75.	48022	*Notamacropus irma (Western Brush Wallaby)*		P4	
76.	36200	*Ornduffia submersa*		P4	
77.	24328	*Oxyura australis (Blue-billed Duck)*		P4	
78.	19062	*Pleurophascum occidentale*		P4	
79.	48135	*Thinornis rubricollis (Hooded Plover, Hooded Dotterel)*		P4	
80.	5096	*Thomasia quercifolia (Oak Leaved Thomasia)*		P4	
81.	5100	*Thomasia solanacea*		P4	
82.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
83.	18453	*Xanthosia eichleri*		P4	
Non-conservation taxon					
84.		*? ?*			
85.	15429	*Acacia alata var. alata*			
86.	15466	*Acacia applanata*			
87.	11731	*Acacia browniana var. browniana*			
88.	3262	*Acacia cochlearis (Rigid Wattle)*			
89.	3282	*Acacia cyclops (Coastal Wattle)*			
90.	3307	*Acacia divergens*			
91.	3347	*Acacia gilbertii*			
92.	3363	*Acacia hastulata*			
93.	18217	*Acacia iteaphylla*	Y		
94.	3424	*Acacia littorea*			
95.	3428	*Acacia luteola*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
96.	3453	*Acacia myrtifolia*			
97.	35624	*Acacia pentadenia subsp. pentadenia*			
98.		*Acacia provincialis*			Y
99.	3502	*Acacia pulchella (Prickly Moses)*			
100.	15483	*Acacia pulchella var. pulchella*			
101.	30036	*Acacia saligna subsp. stolonifera*			
102.	3530	*Acacia scalpelliformis*			
103.	3576	*Acacia tetragonocarpa*			
104.	3591	*Acacia urophylla*			
105.	15487	*Acacia varia var. varia*			
106.	3185	*Acaena novae-zelandiae*	Y		
107.		*Acanthaluteres brownii*			
108.		*Acanthistius serratus*			
109.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
110.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
111.	24262	*Acanthiza inornata (Western Thornbill)*			
112.		*Acanthopagrus butcheri*			
113.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
114.		*Acariformes sp.*			
115.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
116.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
117.	25536	*Accipiter fasciatus (Brown Goshawk)*			
118.	13146	*Acetabularia peniculus*			
119.		*Achoerodus gouldii*			
120.	10824	*Acidonia microcarpa*			
121.	42368	*Acritoscincus trilineatus (Western Three-lined Skink)*			
122.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
123.	6295	*Acrotriche cordata (Coast Ground Berry)*			
124.	5315	*Actinodium cunninghamii (Albany Daisy)*			
125.	6206	*Actinotus omnifertilis*			
126.	1773	*Adenanthos cuneatus (Coastal Jugflower)*			
127.	1791	*Adenanthos obovatus (Basket Flower)*			
128.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
129.	24301	*Aegotheles cristatus subsp. cristatus (Australian Owlet-nightjar)*			
130.		*Aeshnidae sp.*			
131.		*Agaricus augustus*			Y
132.	38752	*Agaricus campestris*			
133.		*Agaricus sp.*			
134.		*Agaricus xanthodermus*			
135.	5316	*Agonis flexuosa (Peppermint, Wonil)*			
136.	17202	*Agonis flexuosa var. flexuosa*			
137.	17203	*Agonis flexuosa var. latifolia*			
138.	19789	*Agonis theiformis*			
139.	177	*Agrostis capillaris*	Y		
140.	182	*Agrostis stolonifera (Creeping Bent)*	Y		
141.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
142.	187	*Aira praecox (Early Hairgrass)*	Y		
143.		*Akamptogonus novarae*			
144.		*Alboa worooa*			
145.		*Aldrichetta forsteri*			
146.	1724	*Allocasuarina decussata (Karri She-oak)*			
147.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
148.	48599	*Amanita arenaria*			
149.		*Amanita austroviridis*			
150.	48786	*Amanita hiltonii*			
151.	38756	*Amanita umbrinella*			
152.	38757	*Amanita xanthocephala*			
153.		*Ambicodamus marae*			
154.	35159	*Ammophila arenaria subsp. arenaria*	Y		
155.		*Ammotretis rostratus*			
156.	4585	*Amperea ericoides*			
157.	4587	*Amperea protensa*			
158.	13101	*Amperea simulans*			
159.	13380	*Amphibromus nervosus*			
160.	194	*Amphipogon amphipogonoides*			
161.	197	*Amphipogon debilis*			
162.	20184	*Amphipogon laguroides subsp. laguroides*			
163.		*Aname tepperi*			
164.	1058	*Anarthria gracilis*			
165.	1062	*Anarthria prolifera*			

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166.	1063	*Anarthria scabra*			
167.	24310	*Anas castanea (Chestnut Teal)*			
168.	24312	*Anas gracilis (Grey Teal)*			
169.	24313	*Anas platyrhynchos (Mallard)*			
170.	24315	*Anas rhynchotis (Australasian Shoveler)*			
171.	24316	*Anas superciliosa (Pacific Black Duck)*			
172.	6306	*Andersonia caerulea (Foxtails)*			
173.	25844	*Andersonia caerulea subsp. caerulea*			
174.	6317	*Andersonia micrantha*			
175.	6321	*Andersonia sprengelioides*			
176.	8616	*Angianthus platycephalus*			
177.	7833	*Angianthus preissianus*			
178.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
179.	1407	*Anigozanthos flavidus (Tall Kangaroo Paw)*			
180.	1413	*Anigozanthos preissii (Albany Catspaw)*			
181.	17455	*Anredera cordifolia*	Y		
182.	6949	*Anthocercis littorea (Yellow Tailflower)*			
183.		*Anthoceros punctatus*			
184.	24561	*Anthochaera carunculata (Red Wattlebird)*			
185.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
186.	7411	*Anthotium humile (Dwarf Anthotium)*			
187.	202	*Anthoxanthum odoratum (Sweet Vernal Grass)*	Y		
188.	38758	*Anthracophyllum archeri*			
189.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
190.	3689	*Aotus intermedia*			
191.	3690	*Aotus passerinoides*			
192.	1117	*Aphelia cyperoides*			
193.	11399	*Apium prostratum subsp. prostratum var. filiforme*			
194.	12040	*Apium prostratum subsp. prostratum var. prostratum (Sea Celery)*			
195.		*Aplodactylus westralis*			
196.	24285	*Aquila audax (Wedge-tailed Eagle)*			
197.		*Arachnura higginsi*			
198.		*Araneus cyphoxis*			
199.		*Araneus senicaudatus*			
200.	38964	*Arcyria cinerea*			
201.	25558	*Ardea ibis (Cattle Egret)*			
202.	41324	*Ardea modesta (great egret, white egret)*			
203.	24341	*Ardea pacifica (White-necked Heron)*			
204.		*Arius thalassinus*			
205.	11542	*Arrhenatherum elatius var. bulbosum (Onion Twitch)*	Y		
206.		*Arripis georgiana*			
207.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
208.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
209.	27584	*Arthonia ilicina*			
210.		*Artoria cingulipes*			
211.		*Artoria flavimana*			
212.		*Aseroe rubra*			Y
213.	8779	*Asparagus asparagoides (Bridal Creeper)*	Y		
214.	24020	*Asparagus scandens*	Y		
215.	61	*Asplenium aethiopicum (Forked Spleenwort)*			
216.	20361	*Astartea arbuscula (Minute Astartea)*			
217.	48190	*Astartea arbuscula x corniculata*			Y
218.	20125	*Astartea corniculata*			
219.	20127	*Astartea glomerulosa (Early Astartea)*			
220.	45213	*Astartea pulchella*			
221.	20283	*Astartea scoparia (Common Astartea)*			
222.		*Asterella drummondii*			
223.	7851	*Asteridea pulverulenta (Common Bristle Daisy)*			
224.		*Asterostroma persimile*			
225.	6325	*Astroloma drummondii*			
226.		*Atelomastix ellenae*			
227.		*Athericidae sp.*			
228.		*Atherinosoma elongata*			
229.		*Atherinosoma wallacei*			
230.		*Atriplectididae sp.*			
231.	2471	*Atriplex prostrata (Hastate Orache)*	Y		
232.	48559	*Auritella arenicolens*			
233.	48560	*Auritella chamaecephala*			
234.		*Austracantha minax*			
235.		*Australomimetus diabolicus*			

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236.		*Austroboletus lacunosus*			
237.		*Austroboletus occidentalis*			
238.		*Austrochthonius australis*			
239.		*Austrogautieria manjimupana*			
240.	42106	*Austroparmelina conlabrosa*			
241.	43942	*Austroparmelina pruinata*			
242.	17240	*Austrostipa flavescens*			
243.	17241	*Austrostipa hemipogon*			
244.	17245	*Austrostipa mollis*			
245.	17253	*Austrostipa semibarbata*			
246.		*Austrosynthemis cyanitincta*			
247.	231	*Avellinia michelii*	Y		
248.	233	*Avena barbata (Bearded Oat)*	Y		
249.	20013	*Axonopus fissifolius*	Y		
250.	24318	*Aythya australis (Hardhead)*			
251.		*Badumna microps*			
252.		*Baetidae sp.*			
253.		*Baiami tegenarioides*			
254.	1800	*Banksia attenuata (Slender Banksia, Piara)*			
255.	1819	*Banksia grandis (Bull Banksia, Pulgarla)*			
256.	1822	*Banksia ilicifolia (Holly-leaved Banksia)*			
257.	1830	*Banksia littoralis (Swamp Banksia, Pungura)*			
258.	1837	*Banksia occidentalis (Red Swamp Banksia)*			
259.	1844	*Banksia quercifolia (Oak-leaved Banksia)*			
260.	1848	*Banksia seminuda (River Banksia)*			
261.	32315	*Barbula calycina*			
262.		*Barnardius zonarius*			
263.	739	*Baumea acuta (Pale Twig-rush)*			
264.	741	*Baumea articulata (Jointed Rush)*			
265.	743	*Baumea juncea (Bare Twigrush)*			
266.	744	*Baumea laxa*			
267.	745	*Baumea preissii*			
268.	747	*Baumea rubiginosa*			
269.	748	*Baumea vaginalis (Sheath Twigrush)*			
270.	1212	*Baxteria australis*			
271.	5381	*Beaufortia decussata (Gravel Bottlebrush)*			
272.	5392	*Beaufortia sparsa (Swamp Bottlebrush)*			
273.	7046	*Bellardia trixago (Bellardia)*	Y		
274.	48868	*Bellardia viscosa*	Y		
275.	3154	*Billardiera coriacea*			
276.	25787	*Billardiera drummondii*			
277.	3157	*Billardiera floribunda (White-flowered Billardiera)*			
278.	25798	*Billardiera fusiformis (Australian Bluebell)*			
279.	3159	*Billardiera laxiflora*			
280.	3165	*Billardiera variifolia*			
281.	24319	*Biziura lobata (Musk Duck)*			
282.	38848	*Bolbitius titubans*			
283.	46074	*Boletellus ananiceps*			
284.		*Boletellus obscurecoccineus*			
285.	46075	*Boletellus sinapipes*			
286.		*Boletus sp.*			
287.	4413	*Boronia crenulata (Aniseed Boronia)*			
288.	11503	*Boronia crenulata subsp. crenulata var. crenulata*			
289.	4416	*Boronia denticulata*			
290.	4422	*Boronia gracilipes (Karri Boronia)*			
291.	4423	*Boronia heterophylla (Kalgan Boronia)*			
292.	4426	*Boronia juncea*			
293.	16631	*Boronia juncea subsp. micrantha*			
294.	4429	*Boronia molloyae (Tall Boronia)*			
295.	4441	*Boronia spathulata (Boronia)*			
296.	4442	*Boronia stricta*			
297.	4443	*Boronia subsessilis*			
298.	1273	*Borya sphaerocephala (Pincushions)*			
299.	14396	*Bossiaea aquifolium subsp. aquifolium*			
300.	14397	*Bossiaea aquifolium subsp. laidlawiana*			
301.	3707	*Bossiaea dentata*			
302.	3713	*Bossiaea linophylla*			
303.	14291	*Bossiaea praetermissa*			
304.	3718	*Bossiaea rufa*			
305.	3723	*Bossiaea webbii (Water Bush)*			

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306.		*Bostockia porosa*			
307.	7871	*Brachyscome ciliaris*			
308.		*Brentidae sp.*			
309.	32327	*Breutelia affinis*			
310.	244	*Briza maxima (Blowfly Grass)*	Y		
311.	245	*Briza minor (Shivery Grass)*	Y		
312.	248	*Bromus catharticus (Prairie Grass)*	Y		
313.	32330	*Bryum argenteum*			
314.	27597	*Buellia disciformis*			
315.	34461	*Buellia tetrapla*			
316.	1385	*Burchardia multiflora (Dwarf Burchardia)*			
317.	25713	*Cacatua galerita (Sulphur-crested Cockatoo)*			
318.	25714	*Cacatua pastinator (Western Long-billed Corella)*			
319.	25716	*Cacatua sanguinea (Little Corella)*			
320.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
321.	24427	*Cacomantis flabelliformis subsp. flabelliformis (Fan-tailed Cuckoo)*			
322.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
323.		*Caenidae sp.*			
324.	15328	*Caladenia applanata subsp. applanata*			
325.	18035	*Caladenia bicalliata subsp. bicalliata*			
326.	15335	*Caladenia brownii*			
327.	1580	*Caladenia cairnsiana (Zebra Orchid)*			
328.	15350	*Caladenia flava subsp. sylvestris*			
329.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
330.	15372	*Caladenia nana subsp. unita*			
331.	1609	*Caladenia pectinata (King Spider Orchid)*			
332.	2845	*Calandrinia brevipedata (Short-stalked Purslane)*			
333.	2848	*Calandrinia corrigioloides (Strap Purslane)*			
334.	2856	*Calandrinia liniflora (Parakeelya)*			
335.	10861	*Callistachys lanceolata (Wonnich)*			
336.	4717	*Callitriche stagnalis (Common Starwort)*	Y		
337.		*Callogobius mucosus*			
338.	33160	*Calochilus uliginosus*			
339.	41654	*Caloplaca dahlii*			
340.	31015	*Caloplaca elixii*			
341.		*Caloplaca sp.*			
342.	5415	*Calothamnus lateralis*			
343.	5425	*Calothamnus preissii*			
344.	5430	*Calothamnus schaueri*			
345.	16493	*Calycopeplus oligandrus*			
346.		*Calymmachernes angulatus*			
347.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
348.	5483	*Calytrix tetragona (Common Fringe-myrtle)*			
349.	32335	*Campylopus bicolor*			
350.	32461	*Campylopus bicolor var. bicolor*			
351.	32338	*Campylopus introflexus*	Y		
352.		*Cantharellus concinnus*			
353.	43884	*Carbonicola foveata*			
354.	7909	*Carduus pycnocephalus (Slender Thistle)*	Y		
355.	2951	*Cassytha flava (Dodder Laurel)*			
356.	2956	*Cassytha pomiformis (Dodder Laurel)*			
357.	2957	*Cassytha racemosa (Dodder Laurel)*			
358.	11799	*Cassytha racemosa forma racemosa*			
359.		*Castoreum radicatum*			
360.		*Ceinidae sp.*			
361.	41564	*Cenchrus clandestinus (Kikuyu Grass)*	Y		
362.	6539	*Centaurium erythraea (Common Centaury)*	Y		
363.	6542	*Centaurium tenuiflorum*	Y		
364.	6214	*Centella asiatica*			
365.	35322	*Centranthus ruber subsp. ruber*	Y		
366.	1121	*Centrolepis aristata (Pointed Centrolepis)*			
367.	1133	*Centrolepis pilosa*			
368.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
369.		*Cephaloziella exiliflora*			
370.		*Cephaloziella varians*			
371.	13119	*Cerastium balearicum*	Y		
372.	38982	*Ceratiomyxa fruticulosa*			
373.	32462	*Ceratodon purpureus subsp. convolutus*			
374.		*Ceratopogonidae sp.*			
375.	24086	*Cercartetus concinnus (Western Pygmy-possum, Mundarda)*			

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376.		*Cercophonius granulosus*			
377.		*Cercophonius sulcatus*			
378.		*Chaetophyllopsis whiteleggei*			
379.	24187	*Chalinolobus morio (Chocolate Wattled Bat)*			
380.	1280	*Chamaescilla corymbosa (Blue Squill)*			
381.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
382.	31	*Cheilanthes austrotenuifolia*			
383.		*Cheilodactylus gibbosus*			
384.		*Chelidonichthys kumu*			
385.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
386.	2483	*Chenopodium album (Fat Hen)*	Y		
387.	2494	*Chenopodium murale (Nettle-leaf Goosefoot)*	Y		
388.	33939	*Cherax cainii (Marron)*			
389.		*Cherax preissii*			
390.		*Cherax quinquecarinatus*			
391.		*Chiloscyphus semiteres*			
392.		*Chiloscyphus semiteres var. semiteres*			
393.		*Chironominae sp.*			
394.		*Chlorophyllum brunneum*			
395.	2335	*Choretrum lateriflorum (Dwarf Sour Bush)*			
396.	4448	*Chorilaena quercifolia (Chorilaena)*			
397.	763	*Chorizandra enodis (Black Bristlerush)*			
398.	13112	*Chorizema aciculare subsp. aciculare*			
399.	3754	*Chorizema diversifolium*			
400.	3757	*Chorizema glycinifolium*			
401.	3758	*Chorizema ilicifolium (Holly Flame Pea)*			
402.	3760	*Chorizema reticulatum (Showy Flame Pea)*			
403.	13107	*Chorizema retrorsum*			
404.	3761	*Chorizema rhombeum*			
405.	24980	*Christinus marmoratus (Marbled Gecko)*			
406.		*Chroicocephalus novaehollandiae*			
407.	6543	*Cicendia filiformis (Slender Cicendia)*	Y		
408.	24288	*Circus approximans (Swamp Harrier)*			
409.	7937	*Cirsium vulgare (Spear Thistle, Scotch Thistle)*	Y		
410.	27663	*Cladia aggregata*			
411.	27668	*Cladia schizopora*			
412.	27669	*Cladia sullivanii*			
413.	27672	*Cladonia calyciformis*			
414.	27673	*Cladonia capitellata*			
415.	28208	*Cladonia cervicornis subsp. verticillata*			
416.	27680	*Cladonia floerkeana*			
417.	27681	*Cladonia glebosa*			
418.	27684	*Cladonia krempelhuberi*			
419.	27688	*Cladonia ochrochlora*			
420.	27690	*Cladonia praetermissa*			
421.	27691	*Cladonia ramulosa*			
422.	27692	*Cladonia rigida*			
423.	27693	*Cladonia scabriuscula*			
424.	27694	*Cladonia southlandica*			
425.	27697	*Cladonia tessellata*			
426.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
427.		*Clavaria miniata*			
428.		*Claviceps purpurea*			
429.	2929	*Clematis pubescens (Common Clematis)*			
430.		*Cnidoglanis macrocephalus*			
431.	27701	*Coccocarpia pellita*			
432.		*Coenagrionidae sp.*			
433.	27707	*Collema subconveniens*			
434.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
435.	24399	*Columba livia (Domestic Pigeon)*	Y		
436.	4550	*Comesperma calymega (Blue-spike Milkwort)*			
437.	4552	*Comesperma confertum*			
438.	4554	*Comesperma flavum*			
439.	4564	*Comesperma virgatum (Milkwort)*			
440.	48634	*Commersonia corniculata*			
441.	40863	*Commersonia corylifolia (Hazel-leaved Rulingia)*			
442.		*Conger wilsoni*			
443.		*Conicochernes crassus*			
444.		*Conicochernes globosus*			
445.	1862	*Conospermum caeruleum (Blue Brother)*			

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446.	15610	*Conospermum caeruleum subsp. caeruleum*			
447.	1863	*Conospermum capitatum*			
448.	1883	*Conospermum teretifolium (Spider Smokebush)*			
449.	11826	*Conostylis aculeata subsp. aculeata*			
450.	1454	*Conostylis setigera (Bristly Cottonhead)*			
451.		*Contusus brevicaudus*			
452.	20074	*Conyza sumatrensis*	Y		
453.		*Coprinellus disseminatus*			
454.		*Coprinellus micaceus*			
455.		*Coprinus comatus*			
456.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
457.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
458.		*Corduliidae sp.*			
459.	44528	*Coreopsis lanceolata (Common Tickseed, Showy Tickseed, Garden Coreopsis)*	Y		
460.		*Cormocephalus hartmeyeri*			
461.		*Cormocephalus michaelseni*			
462.	2891	*Corrigiola litoralis (Strapwort)*	Y		
463.	38774	*Cortinarius archeri*			
464.	41681	*Cortinarius basipurpureus*			
465.		*Cortinarius basirubescens*			
466.		*Cortinarius clelandii*			
467.	48174	*Cortinarius hallowellensis*			
468.		*Cortinarius lavendulensis*			
469.	38776	*Cortinarius phalarus*			
470.		*Cortinarius rotundisporus*			
471.		*Cortinarius sinapicolor*			
472.		*Cortinarius symeae*			
473.	25592	*Corvus coronoides (Australian Raven)*			
474.	17104	*Corymbia calophylla (Marri)*			
475.	1285	*Corynotheca micrantha (Sand Lily)*			
476.	6352	*Cosmelia rubra (Spindle Heath)*			
477.	18319	*Cotoneaster glaucophyllus*	Y		
478.	7943	*Cotula australis (Common Cotula)*			
479.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
480.	7947	*Cotula turbinata (Funnel Weed)*	Y		
481.	24671	*Coturnix pectoralis (Stubble Quail)*			
482.	25701	*Coturnix ypsilophora (Brown Quail)*			
483.	25595	*Cracticus tibicen (Australian Magpie)*			
484.	25596	*Cracticus torquatus (Grey Butcherbird)*			
485.	3137	*Crassula colorata (Dense Stonecrop)*			
486.	15706	*Crassula natans var. minus*	Y		
487.	25398	*Crinia georgiana (Quacking Frog)*			
488.	25399	*Crinia glauerti (Clicking Frog)*			
489.		*Cristiceps australis*			
490.	1514	*Crocosmia x crocosmiiflora*	Y		
491.	4451	*Crowea angustifolia (Crowea)*			
492.	17729	*Crowea angustifolia var. platyphylla*			
493.	1627	*Cryptostylis ovata (Slipper Orchid)*			
494.	25031	*Ctenotus catenifer*			
495.	25049	*Ctenotus labillardieri*			
496.	768	*Cyathochaeta avenacea*			
497.	17618	*Cyathochaeta equitans*			
498.		*Cyclosa trilobata*			
499.	24322	*Cygnus atratus (Black Swan)*			
500.	283	*Cynodon dactylon (Couch)*	Y		
501.	285	*Cynosurus echinatus (Rough Dogstail)*	Y		
502.	783	*Cyperus congestus (Dense Flat-sedge)*	Y		
503.	27708	*Cyphelium trachylioides*			
504.	30901	*Dacelo novaeguineae (Laughing Kookaburra)*	Y		
505.	30902	*Dacelo novaeguineae subsp. novaeguineae (Laughing Kookaburra)*	Y		
506.	287	*Dactylis glomerata (Cocksfoot)*	Y		
507.	7444	*Dampiera hederacea (Karri Dampiera)*			
508.	7452	*Dampiera leptoclada (Slender-shooted Dampiera)*			
509.	7454	*Dampiera linearis (Common Dampiera)*			
510.	7462	*Dampiera pedunculata*			
511.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
512.	5508	*Darwinia citriodora (Lemon-scented Darwinia)*			
513.	5519	*Darwinia oederoides*			
514.	5533	*Darwinia vestita (Pom-pom Darwinia)*			
515.	1218	*Dasypogon bromeliifolius (Pineapple Bush)*			

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516.	10871	*Daucus carota (Wild Carrot)*	Y		
517.	6218	*Daucus glochidiatus (Australian Carrot)*			
518.	3811	*Daviesia flexuosa*			
519.	3817	*Daviesia inflata*			
520.		*Dermocybe austroveneta*			
521.		*Dermocybe clelandii*			
522.	38783	*Dermocybe splendida*			
523.	38784	*Descomyces albus*			
524.	17691	*Desmocladus fasciculatus*			
525.	16595	*Desmocladus flexuosus*			
526.	299	*Deyeuxia quadriseta (Reed Bentgrass)*			
527.		*Diaea socialis*			
528.	306	*Dichelachne crinita (Longhair Plumegrass)*			
529.	32344	*Dicranoloma diaphanoneuron*			
530.	32346	*Didymodon torquatus*			
531.	40865	*Dielsiodoxa lycopodioides*			
532.	320	*Digitaria sanguinalis (Crab Grass)*	Y		
533.	3011	*Diplotaxis muralis (Wall Rocket)*	Y		
534.	3867	*Dipogon lignosus (Dolichos Pea)*	Y		
535.	19649	*Disa bracteata*	Y		
536.	7962	*Dittrichia viscosa*	Y		
537.	1632	*Diuris emarginata (Tall Donkey Orchid)*			
538.	44140	*Diuris jonesii*			
539.	1633	*Diuris laevis (Nannygoat Orchid)*			
540.	1636	*Diuris pauciflora*			
541.	1638	*Diuris setacea (Bristly Donkey Orchid)*			
542.		*Dolichopodidae sp.*			
543.	1640	*Drakaea glyptodon (King-in-his-carriage)*			
544.	1642	*Drakaea thynniphila*			
545.	24470	*Dromaius novaehollandiae (Emu)*			
546.	48751	*Drosera drummondii*			
547.	13218	*Drosera erythrogyne*			
548.	3095	*Drosera erythrorhiza (Red Ink Sundew)*			
549.	3110	*Drosera microphylla (Golden Rainbow)*			
550.	3111	*Drosera modesta (Modest Rainbow)*			
551.	3112	*Drosera myriantha (Star Rainbow)*			
552.	3118	*Drosera pallida (Pale Rainbow)*			
553.	3122	*Drosera platypoda (Fan-leaved Sundew)*			
554.	3124	*Drosera pulchella (Pretty Sundew)*			
555.	3131	*Drosera stolonifera (Leafy Sundew)*			
556.	8914	*Drosera sulphurea (Sulphur-flowered Sundew)*			
557.	33480	*Dysphania pumilio (Clammy Goosefoot)*			
558.		*Dytiscidae sp.*			
559.	32351	*Eccremidium pulchellum*			
560.	11105	*Echinochloa crus-galli*	Y		
561.	25251	*Echiopsis curta (Bardick)*			
562.	6681	*Echium plantagineum (Paterson's Curse)*	Y		
563.		*Edelia vittata*			
564.	25096	*Egernia kingii (King's Skink)*			
565.	25100	*Egernia napoleonis*			
566.		*Egretta garzetta*			
567.		*Egretta novaehollandiae*			
568.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
569.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
570.		*Elanus axillaris*			
571.	39900	*Elaphomyces chlorocarpus*			
572.	25250	*Elapognathus coronatus (Crowned Snake)*			
573.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
574.		*Emertonella maga*			
575.		*Empididae sp.*			
576.	1067	*Empodisma gracillimum*			
577.		*Engraulis australis*			
578.		*Enoplosus armatus*			
579.		*Entoloma kermandii*			
580.		*Entoloma maldea*			
581.	32353	*Entosthodon apophysatus*			
582.	32354	*Entosthodon productus*			
583.		*Eolophus roseicapillus*			
584.	24651	*Eopsaltria australis subsp. griseogularis (Western Yellow Robin)*			
585.	24652	*Eopsaltria georgiana (White-breasted Robin)*			

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586.	11570	*Epilobium billardiereanum subsp. billardiereanum (Smooth Willow Herb)*			
587.	11992	*Epilobium billardiereanum subsp. intermedium*			
588.	24567	*Epthianura albifrons (White-fronted Chat)*			
589.	373	*Eragrostis brownii (Brown's Lovegrass)*			
590.	376	*Eragrostis curvula (African Lovegrass)*	Y		
591.	3149	*Eremosyne pectinata*			
592.	43301	*Erica lusitanica*	Y		Y
593.	1646	*Eriochilus dilatatus (White Bunny Orchid)*			
594.	15412	*Eriochilus dilatatus subsp. multiflorus*			
595.	15414	*Eriochilus helonomos*			
596.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
597.	5605	*Eucalyptus cornuta (Yate, Yeid)*			
598.	5625	*Eucalyptus diversicolor (Karri)*			
599.	5667	*Eucalyptus guilfoylei (Yellow Tingle, Dingul Dingul)*			
600.	5708	*Eucalyptus marginata (Jarrah, Djara)*			
601.	13547	*Eucalyptus marginata subsp. marginata (Jarrah)*			
602.	5709	*Eucalyptus megacarpa (Bullich, Pulidj)*			
603.	5739	*Eucalyptus patens (Swan River Blackbutt, Dwuda)*			
604.	5763	*Eucalyptus rudis (Flooded Gum, Kulurda)*			
605.	5776	*Eucalyptus staeri (Albany Blackbutt)*			
606.	3872	*Euchilopsis linearis (Swamp Pea)*			
607.	25744	*Eudyptes chrysocome (Rockhopper Penguin)*			
608.	24818	*Eudyptula minor subsp. novaehollandiae (Little Penguin)*			
609.	20214	*Eutaxia myrtifolia*			
610.	3879	*Eutaxia parvifolia*			
611.	834	*Evandra aristata*			
612.	10907	*Exocarpos odoratus (Scented Ballart)*			
613.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
614.	25621	*Falco berigora (Brown Falcon)*			
615.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
616.	25623	*Falco longipennis (Australian Hobby)*			
617.	25677	*Falcunculus frontatus (Crested Shrike-tit)*			
618.	24616	*Falcunculus frontatus subsp. leucogaster (Western Shrike-tit, Crested Shrike-tit)*			
619.	430	*Festuca arundinacea (Tall Fescue)*	Y		
620.	20216	*Ficinia nodosa (Knotted Club Rush)*			
621.	32363	*Fissidens curvatus*			
622.	32365	*Fissidens leptocladus*			
623.	32369	*Fissidens tenellus*			
624.	27743	*Flavoparmelia diffractaica*			
625.	27745	*Flavoparmelia haysomii*			
626.	27748	*Flavoparmelia rutidota*			
627.	6221	*Foeniculum vulgare (Fennel)*	Y		
628.	1944	*Franklandia fucifolia (Lanoline Bush)*			
629.	18300	*Fuchsia magellanica*	Y		Y
630.	25727	*Fulica atra (Eurasian Coot)*			
631.	39033	*Fuligo septica*			
632.	2969	*Fumaria capreolata (Whiteflower Fumitory)*	Y		
633.	31532	*Fumaria muralis subsp. muralis*	Y		
634.	34028	*Galaxias occidentalis (Western Minnow)*			
635.	7323	*Galium murale (Small Goosegrass)*	Y		
636.	25729	*Gallinula tenebrosa (Dusky Moorhen)*			
637.	3891	*Gastrolobium bilobum (Heart Leaf Poison)*			
638.	3893	*Gastrolobium brownii*			
639.	20490	*Gastrolobium coriaceum*			
640.	19190	*Gastrolobium cuneatum*			
641.	20511	*Gastrolobium minus*			
642.	20500	*Gastrolobium sericeum*			
643.		*Geastrum sp.*			
644.	32375	*Gemmabryum chrysoneuron*			
645.	32376	*Gemmabryum dichotomum*			
646.	32380	*Gemmabryum pachythecum*			
647.	25404	*Geocrinia leai (Ticking Frog)*			
648.		*Geoglossum glutinosum*			
649.	4340	*Geranium retrorsum*			
650.	25530	*Gerygone fusca (Western Gerygone)*			
651.	24271	*Gerygone fusca subsp. fusca (Western Gerygone)*			
652.		*Girella zebra*			
653.	47962	*Glyciphila melanops (Tawny-crowned Honeyeater)*			
654.		*Gnathanodon speciosus*			
655.		*Gomphodella aff. maia (SAP)*			

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656.	3948	*Gompholobium capitatum*			
657.	10909	*Gompholobium confertum*			
658.	3950	*Gompholobium knightianum*			
659.	3954	*Gompholobium polymorphum*			
660.	11083	*Gompholobium scabrum*			
661.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
662.	3958	*Gompholobium venustum (Handsome Wedge-pea)*			
663.	11115	*Gompholobium villosum*			
664.	16746	*Gonocarpus benthamii subsp. benthamii*			
665.		*Gonorynchus greyi*			
666.	7505	*Goodenia eatoniana*			
667.	7523	*Goodenia leptoclada (Thin-stemmed Goodenia)*			
668.		*Gordiidae sp.*			
669.	24443	*Grallina cyanoleuca (Magpie-lark)*			
670.	14282	*Gratiola pubescens*			
671.	1977	*Grevillea cirsiifolia (Varied-leaf Grevillea)*			
672.	2052	*Grevillea occidentalis*			
673.	15991	*Grevillea pulchella subsp. pulchella*			
674.	2080	*Grevillea quercifolia (Oak-leaf Grevillea)*			
675.	2112	*Grevillea trifida*			
676.		*Gripopterygidae sp.*			
677.		*Gymnopilus dilepis*			Y
678.		*Gymnopilus purpuratus*			
679.	908	*Gymnoschoenus anceps*			
680.	32390	*Gymnostomum calcareum*			
681.		*Gyrinidae sp.*			
682.	2787	*Gyrostemon sheathii*			
683.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			
684.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
685.	1468	*Haemodorum laxum*			
686.	1474	*Haemodorum sparsiflorum*			
687.	1475	*Haemodorum spicatum (Mardja)*			
688.	2128	*Hakea amplexicaulis (Prickly Hakea)*			
689.	2137	*Hakea ceratophylla (Horned Leaf Hakea)*			
690.	2150	*Hakea cucullata (Hood Leaved Hakea)*			
691.	2159	*Hakea falcata*			
692.	2174	*Hakea linearis*			
693.	2191	*Hakea oleifolia (Dungyn)*			
694.	2197	*Hakea prostrata (Harsh Hakea)*			
695.	2203	*Hakea ruscifolia (Candle Hakea)*			
696.	41267	*Halegrapha mucronata*			
697.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
698.	24295	*Haliastur sphenurus (Whistling Kite)*			
699.	6183	*Haloragodendron racemosum (Shrubby Raspwort)*			
700.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
701.	32391	*Hedwigia ciliata*			
702.	32392	*Hedwigidium integrifolium*			
703.	25410	*Heleioporus eyrei (Moaning Frog)*			
704.	439	*Hemarthria uncinata (Matgrass)*			
705.	11451	*Hemarthria uncinata var. uncinata*			
706.		*Hemicorduliidae sp.*			
707.	30919	*Hemiergis gracilipes (skink)*			
708.	25117	*Hemiergis peronii subsp. peronii*			
709.	6855	*Hemigenia humilis*			
710.	6856	*Hemigenia incana (Silky Hemigenia)*			
711.	6865	*Hemigenia podalyrina*			
712.		*Hemiramphus sp.*			
713.		*Henicops dentatus*			
714.		*Heteroclinus eckloniae*			
715.	27777	*Heterodermia obscurata*			
716.	5109	*Hibbertia amplexicaulis*			
717.	5114	*Hibbertia commutata*			
718.	5117	*Hibbertia cuneiformis (Cutleaf Hibbertia)*			
719.	5118	*Hibbertia cunninghamii*			
720.	5119	*Hibbertia depressa*			
721.	5126	*Hibbertia furfuracea*			
722.	19777	*Hibbertia glomerata subsp. glomerata*			
723.	5132	*Hibbertia grossulariifolia*			
724.	5135	*Hibbertia hypericoides (Yellow Buttercups)*			
725.	19687	*Hibbertia notibractea*			

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726.	5154	*Hibbertia perfoliata*			
727.	5155	*Hibbertia pilosa (Hairy Guinea Flower)*			
728.	5159	*Hibbertia pulchra*			
729.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
730.	5169	*Hibbertia serrata (Serrate Leaved Guinea Flower)*			
731.	47965	*Hieraaetus morphnoides (Little Eagle)*			
732.	25734	*Himantopus himantopus (Black-winged Stilt)*			
733.	24491	*Hirundo neoxena (Welcome Swallow)*			
734.	13758	*Histiopteris incisa*			
735.	444	*Holcus lanatus (Yorkshire Fog)*	Y		
736.	5816	*Homalospermum firmum*			
737.	449	*Hordeum leporinum (Barley Grass)*	Y		
738.	3964	*Hovea chorizemifolia (Holly-leaved Hovea)*			
739.	3965	*Hovea elliptica (Tree Hovea)*			
740.		*Hydnangium carneum*			
741.		*Hydnoplicata convoluta*			
742.	38794	*Hydnum repandum*			
743.		*Hydraenidae sp.*			
744.		*Hydrobiosidae sp.*			
745.	6241	*Hydrocotyle tetragonocarpa*			
746.		*Hydrophilidae sp.*			
747.	43384	*Hydrophis platurus (Yellow-bellied Seasnake)*			
748.		*Hydropsychidae sp.*			
749.		*Hydroptilidae sp.*			
750.	38795	*Hygrocybe conica*			
751.		*Hygrocybe polychroma*			
752.		*Hygrocybe viscidibrunnea*			
753.		*Hylaeus (Macrohylaeus) alcyoneus*			Y
754.		*Hymenosomatidae sp.*			
755.	38796	*Hypholoma australe*			
756.	32394	*Hypnum cupressiforme*			
757.	5818	*Hypocalymma cordifolium*			
758.	5819	*Hypocalymma ericifolium*			
759.	43120	*Hypocalymma minus*			
760.	13106	*Hypocalymma scariosum*			
761.	5827	*Hypocalymma strictum*			
762.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
763.	27785	*Hypogymnia pulchrilobata*			
764.	27787	*Hypogymnia subphysodes*			
765.	28219	*Hypogymnia subphysodes var. subphysodes*			
766.	1070	*Hypolaena exsulca*			
767.	19918	*Hypolaena grandiuscula*			
768.	17841	*Hypolaena pubescens*			
769.		*Hypomyces chrysospermus*			
770.		*Hyporhamphus melanochir*			
771.		*Ichthyscopus barbatus*			
772.	44926	*Ileodictyon gracile*			
773.		*Ilyodromus ellipticus*			
774.		*Ilyodromus sp. 255 (south-west, CB)*			
775.	48512	*Inocybe dewrangia*			
776.	48514	*Inocybe eriocaulis*			
777.	48687	*Inocybe fulvotomentosa*			
778.	48523	*Inocybe geniculata*			
779.	48528	*Inocybe ionocaulis*			
780.	48538	*Inocybe olivaceohinnulea*			Y
781.	48553	*Inocybe trachysperma*			Y
782.	38799	*Inocybe violaceocaulis*			
783.	6630	*Ipomoea indica (Morning Glory)*	Y		
784.	32396	*Ischyrodon lepturus*			
785.	11	*Isoetes drummondii (Quillwort)*			
786.	20199	*Isolepis cernua var. cernua*			
787.	20200	*Isolepis cernua var. setiformis*			
788.	911	*Isolepis congrua*			
789.	912	*Isolepis cyperoides*			
790.	916	*Isolepis inundata (Swamp Club Rush)*			
791.	917	*Isolepis marginata (Coarse Club-rush)*			
792.	10831	*Isolepis prolifera (Budding Club-rush)*	Y		
793.		*Isopeda leishmanni*			
794.	2222	*Isopogon attenuatus*			
795.	2226	*Isopogon cuneatus (Coneflower)*			

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796.	3992	*Isotropis cuneifolia (Granny Bonnets)*			
797.	1532	*Ixia maculata (Yellow Ixia)*	Y		
798.	8092	*Ixiolaena viscosa (Sticky Ixiolaena)*			
799.		*Ixodes australiensis*			
800.	45299	*Jackelixia elixii*			
801.	45301	*Jackelixia ligulata*			
802.	4017	*Jacksonia horrida*			
803.	4028	*Jacksonia spinosa*			
804.	1297	*Johnsonia lupulina (Hooded Lily)*			
805.	1299	*Johnsonia teretifolia (Hooded Lily)*			
806.	1177	*Juncus articulatus (Jointed Rush)*	Y		
807.	1178	*Juncus bufonius (Toad Rush)*	Y		
808.	1179	*Juncus caespiticius (Grassy Rush)*			
809.	1180	*Juncus capitatus (Capitate Rush)*	Y		
810.	1184	*Juncus holoschoenus (Jointleaf Rush)*			
811.	11922	*Juncus kraussii subsp. australiensis*			
812.	1186	*Juncus microcephalus*	Y		
813.	1187	*Juncus oxycarpus*	Y		
814.	1188	*Juncus pallidus (Pale Rush)*			
815.	1190	*Juncus planifolius (Broadleaf Rush)*			
816.	1196	*Juncus usitatus (Common Rush)*	Y		
817.	4036	*Kennedia carinata*			
818.	4037	*Kennedia coccinea (Coral Vine)*			
819.	37960	*Kennedia coccinea subsp. calcaria*			
820.	1221	*Kingia australis (Kingia, Pulonok)*			
821.	17506	*Kunzea ericifolia subsp. ericifolia*			
822.	5841	*Kunzea recurva*			
823.	5844	*Kunzea sulphurea*			
824.		*Kurzia compacta*			
825.		*Kurzia hippurioides*			
826.		*Kyphosus gladius MS*			
827.		*Labrid sp.*			Y
828.	38801	*Laccaria proxima*			
829.	48837	*Laccocephalum mylittae*			
830.	38802	*Laccocephalum tumulosum*			
831.	20019	*Lachnagrostis filiformis*			
832.		*Lactarius clarkeae*			
833.	38804	*Lactarius eucalypti*			
834.	2253	*Lambertia uniflora*			
835.		*Lampona brevipes*			
836.		*Lampona cylindrata*			
837.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
838.	25638	*Larus pacificus (Pacific Gull)*			
839.	5033	*Lasiopetalum floribundum (Free Flowering Lasiopetalum)*			
840.	4047	*Lathyrus tingitanus (Tangier Pea)*	Y		
841.	4048	*Latrobea brunonis*			
842.	4050	*Latrobea genistoides*			
843.	1302	*Laxmannia jamesii (James' Paperlily)*			
844.	1304	*Laxmannia minor*			
845.		*Lecanora sp.*			
846.	7572	*Lechenaultia expansa*			
847.	38805	*Lentinellus pulvinulus*			
848.	39038	*Leocarpus fragilis*			
849.	8099	*Leontodon saxatilis (Hairy Hawkbit)*	Y		
850.	3021	*Lepidium bonariense (Peppercress)*	Y		
851.	19989	*Lepidium didymum*	Y		
852.		*Lepidoblennius marmoratus*			
853.	925	*Lepidosperma angustatum*			
854.	932	*Lepidosperma effusum (Spreading Sword-sedge)*			
855.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
856.	934	*Lepidosperma gracile (Slender Sword Sedge)*			
857.		*Lepidosperma sp.*			
858.	945	*Lepidosperma squamatum*			
859.	946	*Lepidosperma striatum*			
860.	948	*Lepidosperma tetraquetrum*			
861.	29386	*Lepraria coriensis*			
862.	1078	*Leptocarpus coangustatus*			
863.	46376	*Leptocarpus denmarkicus*			
864.	19833	*Leptocarpus laxus*			
865.	1080	*Leptocarpus scariosus*			

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866.	1082	*Leptocarpus tenax (Slender Twine Rush)*			
867.	46379	*Leptocarpus thysananthus*			
868.		*Leptoceridae sp.*			
869.	17703	*Leptomeria ellytes*			
870.	2350	*Leptomeria pauciflora (Sparse-flowered Currant Bush)*			
871.	2355	*Leptomeria squarrulosa*			
872.		*Leptophlebiidae sp.*			
873.	17852	*Leptorhynchos scaber (Lanky Buttons)*			
874.	1087	*Lepyrodia hermaphrodita*			
875.	1089	*Lepyrodia monoica*			
876.	1090	*Lepyrodia muirii*			
877.	25154	*Lerista microtis subsp. microtis*			
878.		*Lethocolea pansa*			
879.	46454	*Leucoagaricus leucothites*			
880.	32400	*Leucobryum subchlorophyllosum*			
881.	38807	*Leucopaxillus lilacinus*			
882.	6360	*Leucopogon australis (Spiked Beard-heath)*			
883.	6375	*Leucopogon cordatus*			
884.	6387	*Leucopogon distans*			
885.	6396	*Leucopogon glabellus*			
886.	6402	*Leucopogon hirsutus*			
887.	33380	*Leucopogon interstans*			
888.	6417	*Leucopogon obovatus*			
889.	40940	*Leucopogon obovatus subsp. obovatus*			
890.	40941	*Leucopogon obovatus subsp. revolutus*			
891.	35499	*Leucopogon paradoxus*			
892.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
893.	6435	*Leucopogon polystachyus*			
894.	6436	*Leucopogon propinquus*			
895.	6440	*Leucopogon racemulosus*			
896.	6441	*Leucopogon reflexus (Heart-leaf Beard-heath)*			
897.	10755	*Leucopogon rubricaulis*			
898.	34718	*Leucopogon sp. Southern Forests (B.G. Hammersley 1000)*			
899.	19202	*Leucopogon sp. Walpole (R.J. Cranfield 10940)*			
900.	6453	*Leucopogon unilateralis*			
901.	6454	*Leucopogon verticillatus (Tassel Flower)*			
902.	7676	*Levenhookia pusilla (Midget Stylewort)*			
903.	25005	*Lialis burtonis*			
904.	31280	*Lichenomphalia chromacea*			
905.	25661	*Lichmera indistincta (Brown Honeyeater)*			
906.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
907.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
908.	59	*Lindsaea linearis (Screw Fern)*			
909.	4363	*Linum trigynum (French Flax)*	Y		
910.	41416	*Liopholis pulchra subsp. pulchra (South-western Rock Skink, Spectacled Rock Skink)*			
911.	36180	*Liparophyllum latifolium*			
912.	42413	*Lissolepis luctuosa (Western Swamp Skink)*			
913.	25378	*Litoria adelaidensis (Slender Tree Frog)*			
914.	25388	*Litoria moorei (Motorbike Frog)*			
915.	9289	*Lobelia anceps (Angled Lobelia)*			
916.	7403	*Lobelia heterophylla (Wing-seeded Lobelia)*			
917.	7406	*Lobelia rhombifolia (Tufted Lobelia)*			
918.	7408	*Lobelia tenuior (Slender Lobelia)*			
919.	3048	*Lobularia maritima (Sweet Alyssum)*	Y		
920.	6515	*Logania vaginalis (White Spray)*			
921.	475	*Lolium multiflorum (Italian Ryegrass)*	Y		
922.	476	*Lolium perenne (Perennial Ryegrass)*	Y		
923.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
924.	1222	*Lomandra brittanii*			
925.	1223	*Lomandra caespitosa (Tufted Mat Rush)*			
926.	1229	*Lomandra integra*			
927.	14542	*Lomandra micrantha subsp. micrantha*			
928.	1234	*Lomandra nigricans*			
929.	1238	*Lomandra pauciflora*			
930.	1243	*Lomandra sericea (Silky Mat Rush)*			
931.	1244	*Lomandra sonderi*			
932.		*Lomandra sp.*			
933.		*Lophoictinia isura*			
934.	4059	*Lotus angustissimus (Narrowleaf Trefoil)*	Y		
935.	8564	*Lotus subbiflorus*	Y		

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936.	4063	*Lotus uliginosus (Greater Lotus)*	Y		
937.	1092	*Loxocarya cinerea*			
938.	39048	*Lycogala epidendrum*			
939.	1097	*Lyginia barbata*			
940.	18049	*Lyginia imberbis*			
941.		*Lymnaeidae sp.*			
942.	1656	*Lyperanthus serratus (Rattle Beak Orchid)*			
943.	6456	*Lysinema ciliatum (Curry Flower)*			
944.	6457	*Lysinema conspicuum*			
945.	34736	*Lysinema pentapetalum*			
946.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
947.		*Macrolepiota clelandii*			
948.	24132	*Macropus fuliginosus (Western Grey Kangaroo)*			
949.	85	*Macrozamia riedlei (Zamia, Djiridji)*			
950.	25650	*Malurus elegans (Red-winged Fairy-wren)*			
951.	25654	*Malurus splendens (Splendid Fairy-wren)*			
952.	36522	*Malva pseudolavatera*	Y		
953.		*Marasmius elegans*			
954.		*Maratus linnaei*			
955.	17637	*Marianthus candidus (White Marianthus)*			
956.	25822	*Marianthus sylvaticus*			
957.	4072	*Medicago arabica (Spotted Medic)*	Y		
958.	4076	*Medicago lupulina (Black Medic)*	Y		
959.	4079	*Medicago polymorpha (Burr Medic)*	Y		
960.	27850	*Megalaria grossa*			
961.	27851	*Megalospora occidentalis*			
962.	25758	*Megalurus gramineus (Little Grassbird)*			
963.		*Megapodagrionidae sp.*			
964.	40780	*Melaleuca citrina*	Y		
965.	5900	*Melaleuca cuticularis (Saltwater Paperbark)*			
966.	5902	*Melaleuca densa*			
967.	5922	*Melaleuca lanceolata (Rottnest Teatree, Moonah)*			
968.	5926	*Melaleuca lateritia (Robin Redbreast Bush)*			
969.	5938	*Melaleuca microphylla*			
970.	5946	*Melaleuca pauciflora*			
971.	5952	*Melaleuca preissiana (Moonah)*			
972.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
973.	5968	*Melaleuca spathulata*			
974.	5980	*Melaleuca thymoides*			
975.	5987	*Melaleuca viminea (Mohan)*			
976.		*Melanophyllum haematospermum*			
977.	4085	*Melilotus indicus*	Y		
978.	24587	*Melithreptus chloropsis (Western White-naped Honeyeater)*			
979.	27854	*Menegazzia platytrema*			
980.		*Menneus wa*			
981.	6883	*Mentha pulegium (Pennyroyal)*	Y		
982.	953	*Mesomelaena graciliceps*			
983.	957	*Mesomelaena tetragona (Semaphore Sedge)*			
984.	25419	*Metacrinia nichollsi (Forest Toadlet)*			
985.		*Meuschenia galii*			
986.		*Microcarbo melanoleucos*			
987.	24654	*Microeca fascinans subsp. assimilis (Jacky Winter)*			
988.	485	*Microlaena stipoides (Weeping Grass)*			
989.	1657	*Microtis alba (White Mignonette Orchid)*			
990.	34158	*Microtis alboviridis*			
991.	1658	*Microtis atrata (Swamp Mignonette Orchid)*			
992.	10954	*Microtis media (Tall Mignonette Orchid)*			
993.	12761	*Microtis media subsp. densiflora*			
994.	15419	*Microtis media subsp. media*			
995.	4096	*Mirbelia ovata*			
996.		*Missulena occatoria*			
997.		*Mituliodon tarantulinus*			
998.	4963	*Modiola caroliniana*	Y		
999.	48008	*Morus serrator (Australasian Gannet)*			
1000.	2412	*Muehlenbeckia adpressa (Climbing Lignum)*			
1001.		*Mugil cephalus*			
1002.	24223	*Mus musculus (House Mouse)*	Y		
1003.		*Mycena pura*			
1004.	38813	*Mycena subgalericulata*			
1005.	7292	*Myoporum oppositifolium (Twin-leaf Myoporum)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1006.	7295	*Myoporum tetrandrum (Boobialla)*			
1007.		*Nannoperca vittata*			
1008.		*Nematoda sp.*			
1009.		*Neopataecus waterhousii*			
1010.	24738	*Neophema elegans (Elegant Parrot)*			
1011.	24739	*Neophema petrophila (Rock Parrot)*			
1012.	27880	*Normandina pulchella*			
1013.	25252	*Notechis scutatus (Tiger Snake)*			
1014.	38815	*Nothocastoreum cretaceum*			
1015.		*Notolabrus parilus*			
1016.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
1017.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
1018.	24195	*Nyctophilus gouldi (Gould's Long-eared Bat)*			
1019.	32404	*Ochiobryum blandum*			Y
1020.	27882	*Ochrolechia parella*			Y
1021.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
1022.		*Oecobius navus*			
1023.	6139	*Oenothera glazioviana (Evening Primrose)*	Y		
1024.	2365	*Olax benthamiana*			
1025.	2366	*Olax phyllanthi*			
1026.	8127	*Olearia axillaris (Coastal Daisybush)*			
1027.	8143	*Olearia paucidentata (Autumn Scrub Daisy)*			
1028.		*Oligochaeta sp.*			
1029.	38816	*Omphalotus nidiformis*			
1030.	7348	*Opercularia hispidula (Hispid Stinkweed)*			
1031.	18255	*Opercularia vaginata (Dog Weed)*			
1032.	7354	*Opercularia volubilis (Twining Stinkweed)*			
1033.		*Ophisurus serpens*			
1034.		*Oratemnus curtus*			
1035.	46255	*Orianthera campanulata*			
1036.	46315	*Orianthera serpyllifolia subsp. serpyllifolia*			
1037.	36181	*Ornduffia parnassifolia*			
1038.	4113	*Ornithopus compressus (Yellow Serradella)*	Y		
1039.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
1040.		*Orthocladiinae sp.*			
1041.	32406	*Orthodontium lineare*			
1042.	1540	*Orthrosanthus polystachyus (Many Spike Orthrosanthus)*			
1043.	4349	*Oxalis corniculata (Yellow Wood Sorrel)*	Y		
1044.	18331	*Oxalis debilis var. corymbosa (Pink Shamrock)*	Y		
1045.	30375	*Oxalis exilis*			
1046.	4354	*Oxalis incarnata*	Y		
1047.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
1048.	25707	*Pachyptila salvini (Salvin's Prion)*			
1049.		*Pagrus auratus*			
1050.		*Palaemonidae sp.*			
1051.	38817	*Panaeolus papilionaceus*			
1052.	27888	*Pannaria elixii*			
1053.	516	*Parapholis incurva (Coast Barbgrass)*	Y		
1054.		*Paraplagusia sp.*			
1055.		*Paraplesiops meleagris*			
1056.	17114	*Paraserianthes lophantha subsp. lophantha*			
1057.		*Parastacidae sp.*			
1058.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
1059.	24625	*Pardalotus punctatus subsp. punctatus (Spotted Pardalote)*			
1060.	24626	*Pardalotus punctatus subsp. xanthopyge (Yellow-rumped Pardalote)*			
1061.	25682	*Pardalotus striatus (Striated Pardalote)*			
1062.	1762	*Parietaria debilis (Pellitory)*			
1063.	27923	*Parmotrema cooperi*			
1064.	27924	*Parmotrema praesorediosum*			
1065.	30458	*Parmotrema reticulatum*			
1066.	527	*Paspalum dilatatum*	Y		
1067.	533	*Paspalum vaginatum (Salt Water Couch)*			
1068.	5225	*Passiflora filamentosa*	Y		
1069.	1550	*Patersonia occidentalis (Purple Flag, Koma)*			
1070.	1551	*Patersonia pygmaea (Pygmy Patersonia)*			
1071.	14432	*Patersonia umbrosa var. umbrosa*			
1072.		*Paxillus involutus*			
1073.	4342	*Pelargonium australe (Wild Geranium)*			
1074.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
1075.	4346	*Pelargonium littorale*			

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1076.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
1077.	6246	*Pentapeltis silvatica (Southern Pentapeltis)*			
1078.	11109	*Pericalymma crassipes*			
1079.	15501	*Pericalymma spongiocaule*			
1080.	11020	*Persicaria hydropiper*			
1081.	2267	*Persoonia longifolia (Snottygobble)*			
1082.		*Perthiidae sp.*			
1083.	48060	*Petrochelidon ariel (Fairy Martin)*			
1084.	48061	*Petrochelidon nigricans (Tree Martin)*			
1085.	48066	*Petroica boodang (Scarlet Robin)*			
1086.	24659	*Petroica goodenovii (Red-capped Robin)*			
1087.	2282	*Petrophile acicularis*			
1088.	2293	*Petrophile diversifolia*			
1089.	2302	*Petrophile media*			
1090.	2306	*Petrophile rigida*			
1091.		*Peziza sp.*			
1092.	27962	*Phaeophyscia endococcinodes*			
1093.	25697	*Phalacrocorax carbo (Great Cormorant)*			
1094.	24664	*Phalacrocorax carbo subsp. novaehollandiae (Great Cormorant)*			
1095.	24666	*Phalacrocorax melanoleucos subsp. melanoleucos (Little Pied Cormorant)*			
1096.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
1097.	25699	*Phalacrocorax varius (Pied Cormorant)*			
1098.	548	*Phalaris aquatica (Phalaris)*	Y		
1099.	24409	*Phaps chalcoptera (Common Bronzewing)*			
1100.	25587	*Phaps elegans (Brush Bronzewing)*			
1101.		*Phellinus setulosus*			
1102.	32409	*Philonotis australiensis*			
1103.	1173	*Philydrella pygmaea (Butterfly Flowers)*			
1104.	1478	*Phlebocarya ciliata*			
1105.		*Pholcus phalangioides*			
1106.		*Pholiota highlandensis*			
1107.		*Phryganoporus candidus*			
1108.	48071	*Phylidonyris niger (White-cheeked Honeyeater)*			
1109.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
1110.	4140	*Phyllota barbata*			
1111.	39060	*Physarum album*			
1112.	39063	*Physarum cinereum*			
1113.	27972	*Physcia jackii*			
1114.	27974	*Physcia poncinsii*			
1115.		*Physidae sp.*			
1116.	2793	*Phytolacca octandra (Red Ink Plant)*	Y		
1117.		*Phytophthora cinnamomi*			
1118.	5239	*Pimelea clavata*			
1119.	5243	*Pimelea ferruginea*			
1120.	5249	*Pimelea hispida (Bristly Pimelea)*			
1121.	5251	*Pimelea imbricata*			
1122.	11402	*Pimelea imbricata var. piligera*			
1123.	5252	*Pimelea lanata*			
1124.	5255	*Pimelea longiflora*			
1125.	5261	*Pimelea rosea (Rose Banjine)*			
1126.	18117	*Pimelea rosea subsp. rosea*			
1127.	5264	*Pimelea spectabilis (Bunjong)*			
1128.	5269	*Pimelea sylvestris*			
1129.	5270	*Pimelea tinctoria*			
1130.	48973	*Pisolithus albus*			
1131.	48974	*Pisolithus marmoratus*			
1132.	48975	*Pisolithus microcarpus*			
1133.		*Pisolithus sp.*			
1134.	42281	*Pithocarpa cordata*			
1135.	42260	*Pithocarpa ramosa*			
1136.	16322	*Pittosporum undulatum*	Y		
1137.		*Planorbidae sp.*			
1138.	7303	*Plantago lanceolata (Ribwort Plantain)*	Y		
1139.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
1140.	24842	*Platalea regia (Royal Spoonbill)*			
1141.		*Platycephalus speculator*			
1142.	25720	*Platycercus icterotis (Western Rosella)*			
1143.	24745	*Platycercus icterotis subsp. icterotis (Western Rosella)*			
1144.	24747	*Platycercus spurius (Red-capped Parrot)*			
1145.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			

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1146.	6249	*Platysace compressa (Tapeworm Plant)*			
1147.	6253	*Platysace filiformis*			
1148.	6258	*Platysace pendula*			
1149.	27151	*Platythalia angustifolia*			
1150.	4524	*Platytheca galioides*			
1151.	4525	*Platytheca juniperina*			
1152.	32478	*Pleuridium nervosum var. nervosum*			
1153.		*Pluteus atromarginatus*			
1154.	573	*Poa drummondiana (Knotted Poa)*			
1155.	577	*Poa poiformis (Coastal Poa)*			
1156.	578	*Poa porphyroclados*			
1157.	25703	*Podargus strigoides (Tawny Frogmouth)*			
1158.	24679	*Podargus strigoides subsp. brachypterus (Tawny Frogmouth)*			
1159.		*Podargus strigoides subsp. strigoides*			
1160.	25704	*Podiceps cristatus (Great Crested Grebe)*			
1161.	24680	*Podiceps cristatus subsp. australis (Great Crested Grebe)*			
1162.	86	*Podocarpus drouynianus (Wild Plum, Kula)*			
1163.	8175	*Podolepis gracilis (Slender Podolepis)*			
1164.	38826	*Podoserpula pusio*			
1165.	8182	*Podotheca angustifolia (Sticky Longheads)*			
1166.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
1167.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
1168.	2905	*Polycarpon tetraphyllum (Fourleaf Allseed)*	Y		
1169.	4578	*Polygala virgata*	Y		
1170.	2419	*Polygonum aviculare (Wireweed)*	Y		
1171.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
1172.	25722	*Polytelis anthopeplus (Regent Parrot)*			
1173.		*Pomatomus saltatrix*			
1174.	24683	*Pomatostomus superciliosus (White-browed Babbler)*			
1175.	34013	*Pomatostomus superciliosus subsp. ashbyi (White-browed Babbler (western wheatbelt))*			
1176.	4688	*Poranthera drummondii*			
1177.	4690	*Poranthera huegelii*			
1178.	4691	*Poranthera microphylla (Small Poranthera)*			
1179.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
1180.	24771	*Porzana tabuensis (Spotless Crake)*			
1181.	15424	*Praecoxanthus aphyllus*			
1182.	11066	*Prasophyllum cucullatum (Hooded Leek Orchid)*			
1183.	1670	*Prasophyllum drummondii (Swamp Leek Orchid)*			
1184.	1671	*Prasophyllum elatum (Tall Leek Orchid)*			
1185.	17650	*Prasophyllum odoratissimum*			
1186.	1680	*Prasophyllum parvifolium (Autumn Leek Orchid)*			
1187.	1681	*Prasophyllum regium (King Leek Orchid)*			
1188.	44084	*Prasophyllum sp. early (G. Brockman GBB 1626)*			
1189.	1683	*Prasophyllum triangulare (Dark Leek Orchid)*			
1190.		*Protogarypinus giganteus*			
1191.	6927	*Prunella vulgaris (Self Heal)*	Y		
1192.		*Psathyrella candolleana*			
1193.		*Pseudocaranx dentex*			
1194.		*Pseudocaranx georgianus*			
1195.	36219	*Pseudocrossidium hornschuchianum*			
1196.	27997	*Pseudocyphellaria neglecta*			
1197.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
1198.		*Pseudogobius olorum*			
1199.	25259	*Pseudonaja affinis subsp. affinis (Dugite)*			
1200.		*Pseudophycis breviuscula*			
1201.	4155	*Psoralea pinnata (African Scurfpea)*	Y		
1202.	24703	*Pterodroma lessonii (White-headed Petrel)*			
1203.	1698	*Pterostylis vittata (Banded Greenhood)*			
1204.	32417	*Ptychostomum angustifolium*			
1205.	4165	*Pultenaea barbata*			
1206.	4181	*Pultenaea reticulata*			
1207.	4186	*Pultenaea tenuifolia*			
1208.		*Purpureicephalus spurius*			
1209.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
1210.	8195	*Quinetia urvillei*			
1211.	32480	*Racopilum cuspidigerum var. convolutaceum*			
1212.		*Radula buccinifera*			
1213.	28026	*Ramalina canariensis*			
1214.	28030	*Ramalina glaucescens*			

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1215.	28224	*Ramalina inflata subsp. australis*			
1216.		*Ramaria australiana*			
1217.		*Ramaria versatilis*			
1218.	33645	*Ramboldia arandensis*			
1219.	28036	*Ramboldia sorediata*			
1220.	28037	*Ramboldia stuartii*			
1221.	48904	*Ranunculus repens*	Y		Y
1222.	24243	*Rattus fuscipes (Western Bush Rat)*			
1223.	24245	*Rattus rattus (Black Rat)*	Y		
1224.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
1225.	32421	*Rhacocarpus purpurascens*			
1226.	2578	*Rhagodia baccata (Berry Saltbush)*			
1227.	11341	*Rhagodia baccata subsp. baccata*			
1228.	32422	*Rhaphidorrhynchium amoenum*			
1229.	30818	*Rhinoplocephalus bicolor (Square-nosed Snake)*			
1230.	48096	*Rhipidura albiscapa (Grey Fantail)*			
1231.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
1232.		*Riccardia aequicellularis*			
1233.		*Riccardia bipinnatifida*			
1234.		*Riccardia graeffei*			
1235.		*Riccia bifurca*			
1236.		*Richardsonianidae sp.*			
1237.	4695	*Ricinocarpos glaucus*			
1238.	17020	*Robinia pseudoacacia*	Y		
1239.	16243	*Rosa canina*	Y		
1240.	32424	*Rosulabryum albolimbatum*			
1241.	44608	*Rosulabryum billarderii*			
1242.	32426	*Rosulabryum campylothecium*			
1243.	32429	*Rosulabryum torquescens*			
1244.	20506	*Rubus anglocandicans*	Y		
1245.	2429	*Rumex acetosella (Sorrel)*	Y		
1246.	2432	*Rumex conglomeratus (Clustered Dock)*	Y		
1247.	2433	*Rumex crispus (Curled Dock)*	Y		
1248.	2437	*Rumex frutescens*	Y		
1249.	12017	*Rumex pulcher subsp. pulcher (Fiddle Dock)*	Y		
1250.	2447	*Rumex x pseudopulcher*	Y		
1251.		*Russula adusta*			
1252.		*Russula albonigra*			
1253.	48909	*Russula clelandii*			
1254.		*Russula cyanoxantha*			
1255.		*Russula emetica*			
1256.	38838	*Russula persanguinea*			
1257.	48861	*Russula pumicoidea*			
1258.	48956	*Russula theodoroui*			Y
1259.	48740	*Russula wirrabarensis*			
1260.	40431	*Rytidosperma acerosum*			
1261.	40425	*Rytidosperma caespitosum*			
1262.	40430	*Rytidosperma pilosum*			
1263.	40428	*Rytidosperma racemosum*			Y
1264.	40427	*Rytidosperma setaceum*			
1265.	2906	*Sagina apetala (Annual Pearlwort)*	Y		
1266.	79	*Salvinia molesta (Salvinia)*	Y		
1267.		*Samichus decoratus*			
1268.	6483	*Samolus junceus*			
1269.	6484	*Samolus repens (Creeping Brookweed)*			
1270.	3192	*Sanguisorba minor (Sheep's Burnet)*	Y		
1271.	7613	*Scaevola glandulifera (Viscid Hand-flower)*			
1272.	7614	*Scaevola globulifera*			
1273.	7624	*Scaevola microphylla (Small-leaved Scaevola)*			
1274.	7626	*Scaevola nitida (Shining Fanflower)*			
1275.	7634	*Scaevola phlebopetala (Velvet Fanflower)*			
1276.	7646	*Scaevola striata (Royal Robe)*			
1277.	13175	*Scaevola striata var. striata*			
1278.	24	*Schizaea fistulosa (Narrow Comb Fern)*			
1279.	6263	*Schoenolaena juncea*			
1280.	978	*Schoenus brevisetis*			
1281.	979	*Schoenus caespititius*			
1282.	983	*Schoenus cruentus*			
1283.	984	*Schoenus curvifolius*			
1284.	986	*Schoenus efoliatus*			

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1285.	992	*Schoenus grandiflorus (Large Flowered Bogrush)*			
1286.	8312	*Schoenus maschalinus*			
1287.	1001	*Schoenus multiglumis*			
1288.	1004	*Schoenus nitens (Shiny Bog-rush)*			
1289.	1006	*Schoenus odontocarpus*			
1290.	1017	*Schoenus subbulbosus*			
1291.	1018	*Schoenus subfascicularis*			
1292.	1021	*Schoenus sublaxus*			
1293.		*Scirtidae sp.*			
1294.	32433	*Sematophyllum homomallum*			
1295.	32483	*Sematophyllum subhumile var. contiguum*			
1296.	8208	*Senecio hispidulus (Hispid Fireweed)*			
1297.	20663	*Senecio multicaulis subsp. multicaulis*			
1298.	25884	*Senecio pinnatifolius var. latilobus*			
1299.	8218	*Senecio ramosissimus (Auricled Groundsel)*			
1300.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
1301.	24279	*Sericornis frontalis subsp. maculatus (White-browed Scrubwren)*			
1302.		*Servaea incana*			
1303.		*Servaea melaina*			
1304.	19453	*Setaria parviflora*	Y		
1305.	11803	*Silene gallica var. quinquevulnera*	Y		
1306.		*Sillaginodes punctata*			
1307.		*Sillago bassensis*			
1308.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
1309.		*Simuliidae sp.*			
1310.		*Siphonotus flavomarginatus*			
1311.	30948	*Smicrornis brevirostris (Weebill)*			
1312.	24111	*Sminthopsis gilberti (Gilbert's Dunnart)*			
1313.	6988	*Solanum americanum (Glossy Nightshade)*	Y		
1314.	7017	*Solanum laciniatum (Kangaroo Apple)*	Y		
1315.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
1316.		*Sphaeriidae sp.*			
1317.	17551	*Sphaerolobium drummondii*			
1318.	4204	*Sphaerolobium grandiflorum*			
1319.	20302	*Sphaerolobium hygrophilum*			
1320.	4207	*Sphaerolobium medium*			
1321.	17547	*Sphaerolobium pubescens*			
1322.	17548	*Sphaerolobium rostratum*			
1323.		*Sphaeromatidae sp.*			
1324.	31931	*Sphenotoma capitata*			
1325.	31952	*Sphenotoma gracilis (Swamp Paper-heath)*			
1326.	31951	*Sphenotoma parviflora*			
1327.	31932	*Sphenotoma squarrosa*			
1328.	28063	*Spilonema paradoxum*			
1329.		*Spinicrus minimus*			
1330.	14917	*Sporadanthus rivularis*			
1331.	14915	*Sporadanthus strictus*			
1332.	8710	*Sporobolus africanus (Parramatta Grass)*	Y		
1333.	635	*Sporobolus virginicus (Marine Couch)*			
1334.	27310	*Spyridia filamentosa*			
1335.	4828	*Spyridium globulosum (Basket Bush)*			
1336.	6930	*Stachys arvensis (Staggerweed)*	Y		
1337.	24645	*Stagonopleura oculata (Red-eared Firetail)*			
1338.		*Staphylinidae sp.*			
1339.	636	*Stenotaphrum secundatum (Buffalo Grass)*	Y		
1340.	38840	*Stereum hirsutum*			
1341.	48594	*Sternula nereis (Fairy Tern)*			
1342.	25655	*Stipiturus malachurus (Southern Emu-wren)*			
1343.	24554	*Stipiturus malachurus subsp. westernensis (Southern Emu-wren)*			
1344.		*Storosa tetrica*			
1345.	2320	*Strangea stenocarpoides*			
1346.	25597	*Strepera versicolor (Grey Currawong)*			
1347.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
1348.	39881	*Stylidium acuminatum subsp. meridionale*			
1349.	7678	*Stylidium adnatum (Common Beaked Triggerplant)*			
1350.	7684	*Stylidium amoenum (Lovely Triggerplant)*			
1351.	7695	*Stylidium caespitosum (Fly-away Triggerplant)*			
1352.	7696	*Stylidium calcaratum (Book Triggerplant)*			
1353.	7708	*Stylidium crassifolium (Thick-leaved Triggerplant)*			
1354.	40944	*Stylidium decipiens*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1355.	7712	*Stylidium despectum (Dwarf Triggerplant)*			
1356.	7718	*Stylidium diversifolium (Touch-me-not)*			
1357.	7734	*Stylidium guttatum (Dotted Triggerplant)*			
1358.	7745	*Stylidium junceum (Reed Triggerplant)*			
1359.	7746	*Stylidium laciniatum (Tattered Triggerplant)*			
1360.	7757	*Stylidium luteum (Yellow Triggerplant)*			
1361.	25851	*Stylidium nymphaeum*			
1362.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			
1363.	46517	*Stylidium planirosula*			
1364.	7778	*Stylidium pritzelianum (Royal Triggerplant)*			
1365.	7782	*Stylidium pulchellum (Thumbelina Triggerplant)*			
1366.	7784	*Stylidium pygmaeum (Pygmy Triggerplant)*			
1367.	7785	*Stylidium repens (Matted Triggerplant)*			
1368.	7787	*Stylidium rhynchocarpum (Black-beaked Triggerplant)*			
1369.	7796	*Stylidium scandens (Climbing Triggerplant)*			
1370.	7799	*Stylidium spathulatum (Creamy Triggerplant)*			
1371.	7802	*Stylidium squamosotuberosum (Fleshy-rhizomed Trigger Plant)*			
1372.		*Styloniscidae sp.*			
1373.	1260	*Stypandra glauca (Blind Grass)*			
1374.		*Symphyogyna podophylla*			
1375.	25902	*Symphyotrichum squamatum (Bushy Starwort)*	Y		
1376.	16863	*Synaphea petiolaris subsp. triloba*			
1377.	2326	*Synaphea polymorpha (Albany Synaphea, Pinda)*			
1378.	2328	*Synaphea reticulata*			
1379.		*Synothele rastelloides*			
1380.		*Synthemistidae sp.*			
1381.	32437	*Syntrichia antarctica*			
1382.	32439	*Syntrichia papillosa*			
1383.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
1384.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
1385.		*Talitridae sp.*			
1386.		*Tanypodinae sp.*			
1387.	15827	*Taraxis grossa*			
1388.	24167	*Tarsipes rostratus (Honey Possum, Noolbenger)*			
1389.	24082	*Tasmacetus shepherdi (Shepherd's Beaked Whale)*			
1390.	20100	*Taxandria angustifolia*			
1391.	20114	*Taxandria fragrans*			
1392.	20115	*Taxandria juniperina*			
1393.	20135	*Taxandria linearifolia*			
1394.	20134	*Taxandria marginata*			
1395.	20133	*Taxandria parviceps*			
1396.	32440	*Tayloria octoblepharum*			
1397.		*Telephlebiidae sp.*			
1398.	28065	*Teloschistes chrysophthalmus*			
1399.		*Temnocephalidea sp.*			
1400.		*Temnosewellia chaeropsis*			Y
1401.	4256	*Templetonia retusa (Cockies Tongues)*			
1402.	35477	*Tephromela alectoronica*			
1403.	28068	*Tephromela atra*			
1404.		*Tetragnatha demissa*			
1405.	2823	*Tetragonia implexicoma (Bower Spinach)*			
1406.	1034	*Tetraria capillaris (Hair Sedge)*			
1407.	1036	*Tetraria octandra*			
1408.	35579	*Tetraria sp. Jarrah Forest (R. Davis 7391)*			
1409.	4526	*Tetratheca affinis*			
1410.	4536	*Tetratheca hispidissima*			
1411.		*Thelephora terrestris*			
1412.	1704	*Thelymitra cornicina (Lilac Sun Orchid)*			
1413.	1705	*Thelymitra crinita (Blue Lady Orchid)*			
1414.	1707	*Thelymitra flexuosa (Twisted Sun Orchid)*			
1415.	18248	*Thelymitra granitora*			
1416.	1710	*Thelymitra mucida (Plum Orchid)*			
1417.	1716	*Thelymitra tigrina (Tiger Orchid)*			
1418.	20731	*Thelymitra vulgaris*			
1419.	5091	*Thomasia paniculata*			
1420.	5092	*Thomasia pauciflora (Few Flowered Thomasia)*			
1421.	5094	*Thomasia purpurea*			
1422.	5097	*Thomasia rhynchocarpa*			
1423.	33488	*Thomasia sp. Vasse (C. Wilkins & K. Shepherd CW 581)*			
1424.		*Threpterius maculosus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1425.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
1426.	32442	*Thuidium sparsum*			
1427.	32486	*Thuidium sparsum var. hastatum*			
1428.	28071	*Thysanothecium scutellatum*			
1429.	48804	*Thysanothecium sorediatum*			
1430.	1333	*Thysanotus glaucifolius*			
1431.	1339	*Thysanotus multiflorus (Many-flowered Fringe Lily)*			
1432.		*Tipulidae sp.*			
1433.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
1434.		*Torquigener pleurogramma*			
1435.		*Tortula sp.*			
1436.	19045	*Trachymene grandis*			
1437.	6280	*Trachymene pilosa (Native Parsnip)*			
1438.	38844	*Trametes versicolor*			
1439.	4547	*Tremandra diffusa*			
1440.	4548	*Tremandra stelligera*			
1441.	1481	*Tribonanthes australis (Southern Tiurndin)*			
1442.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
1443.		*Tricholomopsis rutilans*			
1444.	32450	*Trichostomum eckelianum*			
1445.	24158	*Trichosurus vulpecula subsp. vulpecula (Common Brushtail Possum)*			
1446.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
1447.	17145	*Trifolium angustifolium var. angustifolium*	Y		
1448.	17542	*Trifolium arvense var. arvense*	Y		
1449.	17763	*Trifolium campestre var. campestre (Hop Clover)*	Y		
1450.	4293	*Trifolium cernuum (Drooping Flower Clover)*	Y		
1451.	4295	*Trifolium dubium (Suckling Clover)*	Y		
1452.	4302	*Trifolium ligusticum (Ligurian Clover)*	Y		
1453.	4312	*Trifolium striatum (Knotted Clover)*	Y		
1454.	4313	*Trifolium subterraneum (Subterranean Clover)*	Y		
1455.	15509	*Trifolium tomentosum var. tomentosum*	Y		
1456.	151	*Triglochin striata*			
1457.	32451	*Triquetrella papillata*			
1458.	33438	*Trymalium odoratissimum subsp. trifidum*			
1459.	15145	*Trymalium venustum*			
1460.		*Tubaria rufofulva*			
1461.	48147	*Turnix varius (Painted Button-quail)*			
1462.	24852	*Tyto alba subsp. delicatula (Barn Owl)*			
1463.	4317	*Ulex europaeus (Gorse)*	Y		
1464.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		
1465.	28087	*Usnea inermis*			
1466.	28090	*Usnea rubicunda*			
1467.	7148	*Utricularia multifida*			
1468.	7150	*Utricularia simplex (Bluecoats)*			
1469.		*Vanacampus phillipi*			
1470.	25577	*Vanellus miles (Masked Lapwing)*			
1471.	25225	*Varanus rosenbergi (Heath Monitor)*			
1472.		*Veliidae sp.*			
1473.	7662	*Velleia macrophylla (Large-leaved Velleia)*			
1474.	7665	*Velleia trinervis*			
1475.	8257	*Vellereophyton dealbatum (White Cudweed)*	Y		
1476.		*Venator immansueta*			
1477.		*Venatrix pullastra*			
1478.	7107	*Verbascum virgatum (Twiggy Mullein)*	Y		
1479.	36096	*Verbena incompta (Purple-top Verbena)*	Y		
1480.	7108	*Veronica arvensis (Wall Speedwell)*	Y		
1481.	7109	*Veronica calycina (Cup Speedwell)*			
1482.	15618	*Verticordia plumosa var. plumosa*			
1483.	24206	*Vespadelus regulus (Southern Forest Bat)*			
1484.	4320	*Vicia hirsuta (Hairy Vetch)*	Y		
1485.	11474	*Vicia sativa subsp. nigra*	Y		
1486.	11137	*Vulpia fasciculata*	Y		
1487.	724	*Vulpia myuros (Rat's Tail Fescue)*	Y		
1488.	33101	*Vulpia myuros forma myuros*	Y		
1489.		*Vulpia sp.*			
1490.	8282	*Waitzia suaveolens (Fragrant Waitzia)*			
1491.	32455	*Weissia controversa*			
1492.	6939	*Westringia dampieri*			
1493.	12072	*Wurmbea dioica subsp. alba*			
1494.	1402	*Wurmbea sinora*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1495.	28114	*Xanthoparmelia congensis*			
1496.	28124	*Xanthoparmelia dissitifolia*			
1497.	29033	*Xanthoparmelia glabrans*			
1498.	28162	*Xanthoparmelia notata*			
1499.	28165	*Xanthoparmelia parvoincerta*			
1500.	29036	*Xanthoparmelia pulla*			
1501.		*Xanthoparmelia sp.*			
1502.	28182	*Xanthoparmelia tasmanica*			
1503.	44996	*Xanthoria coomae*			
1504.	28194	*Xanthoria parietina*			
1505.	1253	*Xanthorrhoea gracilis (Graceful Grass Tree, Mimidi)*			
1506.	6284	*Xanthosia candida*			
1507.	6289	*Xanthosia huegelii*			
1508.	6292	*Xanthosia rotundifolia (Southern Cross)*			
1509.	44861	*Xerochrysum macranthum*			
1510.	1144	*Xyris flexifolia*			
1511.	1150	*Xyris lanata*			
1512.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
1513.	32457	*Zygodon intermedius*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

APPENDIX 5

Atlas of Living Australia Report

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/e2070aa5-7ab4-41a8-9b41-b3f0c2e26390	Chroicocephalus novaehollandiae	(Stephens, 1826)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Silver Gull	1127
https://biodiversity.org.au/afd/taxa/43abe3ea-7ccc-41cc-920f-d9cfa107207e	Pelecanus conspicillatus	Temminck, 1824	species	Animalia	Chordata	Aves	Pelecaniformes	Pelecanidae	Australian Pelican	962
https://biodiversity.org.au/afd/taxa/97a59c84-af21-4cdc-bac7-a97c5201db42	Rhipidura (Rhipidura) albiscapa	Gould, 1840	species	Animalia	Chordata	Aves	Passeriformes	Rhipiduridae	Grey Fantail	905
https://biodiversity.org.au/afd/taxa/da002998-b551-4328-ac4e-5e04fc72708b	Phylidonyris (Meliornis) novaehollandiae	(Latham, 1790)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	New Holland Honeyeater	900
https://biodiversity.org.au/afd/taxa/5fed5ecf-2199-4f64-a9f7-90b39f88a90a	Barnardius zonarius	(Shaw, 1805)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Australian Ringneck	844
https://biodiversity.org.au/afd/taxa/fe0d4e5e-6bd5-4e46-a77c-00e8cec73410	Zosterops lateralis	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Zosteropidae	Silvereye	814
https://biodiversity.org.au/afd/taxa/8204979f-5302-41ea-943f-01d3c420f7bb	Anthochaera (Anthochaera) carunculata	(Shaw, 1790)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Red Wattlebird	811
https://biodiversity.org.au/afd/taxa/0b7c528a-4104-4a96-853e-05a37c327067	Microcarbo melanoleucos	(Vieillot, 1817)	species	Animalia	Chordata	Aves	Pelecaniformes	Phalacrocoracidae	Little Pied Cormorant	809
https://biodiversity.org.au/afd/taxa/8117f68b-5460-4626-8400-e171464e08ad	Corvus coronoides	Vigors & Horsfield, 1827	species	Animalia	Chordata	Aves	Passeriformes	Corvidae	Australian Raven	790
https://biodiversity.org.au/afd/taxa/5291343e-fdeb-4a65-8ba5-928f5b96acf5	Gymnorhina tibicen	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Artamidae	Australian Magpie	701
https://biodiversity.org.au/afd/taxa/241dd5c6-1235-4eb9-b3d5-a44af6b0d444	Anas (Anas) superciliosa	Gmelin, 1789	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Pacific Black Duck	693
https://biodiversity.org.au/afd/taxa/8fd1977b-9edf-4ddf-b6cf-24a09db4d18c	Egretta novaehollandiae	(Latham, 1790)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	White-faced Heron	673
https://biodiversity.org.au/afd/taxa/dc6cf25d-443c-4eaf-a627-d16ad42f69fb	Malurus (Leggeornis) elegans	Gould, 1837	species	Animalia	Chordata	Aves	Passeriformes	Maluridae	Red-winged Fairy-wren	615
https://biodiversity.org.au/afd/taxa/c96b19fd-2a54-4361-a5cf-baecf741310e	Phalacrocorax (Phalacrocorax) sulcirostris	(Brandt, 1837)	species	Animalia	Chordata	Aves	Pelecaniformes	Phalacrocoracidae	Little Black Cormorant	614
https://biodiversity.org.au/afd/taxa/12efe8e2-13c3-4551-8c7c-2fd6923b0d9e	Platycercus (Violania) icterotis	(Temminck & Kuhl, 1820)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Western Rosella	583
https://biodiversity.org.au/afd/taxa/f5f5ddd8-ae6a-431b-9e08-3e992b12fa64	Threskiornis moluccus	(Cuvier, 1829)	species	Animalia	Chordata	Aves	Ciconiiformes	Threskiornithidae	Australian White Ibis	498
https://biodiversity.org.au/afd/taxa/e75f846e-944e-431e-8c43-b376ac1e2b87	Malurus (Malurus) splendens	(Quoy & Gaimard, 1830)	species	Animalia	Chordata	Aves	Passeriformes	Maluridae	Splendid Fairy-wren	494
https://biodiversity.org.au/afd/taxa/1fc76c4d-4830-4129-9b86-1c7e944c3c50	Dacelo (Dacelo) novaeguineae	(Hermann, 1783)	species	Animalia	Chordata	Aves	Coraciiformes	Alcedinidae	Laughing Kookaburra	487
https://biodiversity.org.au/afd/taxa/30edbd1a-6367-4d84-87f1-3566e6cc54d6	Pachycephala (Pachycephala) pectoralis	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Pachycephalidae	Golden Whistler	480
https://biodiversity.org.au/afd/taxa/31944e98-202b-4c14-b480-6508740dde58	Chenonetta jubata	(Latham, 1801)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Australian Wood Duck	477
https://biodiversity.org.au/afd/taxa/500e1350-1d00-4f1c-b9d3-d02b949cdd47	Acanthiza (Acanthiza) apicalis	Gould, 1847	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Red-rumped Tit	473
https://biodiversity.org.au/afd/taxa/7da6fd6f-c180-4e68-b9e7-70d02e6f8448	Phaps (Phaps) chalcoptera	(Latham, 1790)	species	Animalia	Chordata	Aves	Columbiformes	Columbidae	Common Bronzewing	471
https://biodiversity.org.au/afd/taxa/e848916c-5f2d-43ef-8cba-8e32a9034377	Cygnus atratus	(Latham, 1801)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Black Swan	468
https://biodiversity.org.au/afd/taxa/031b2b69-e9fc-44c6-9df9-03c1470d5ec3	Sericornis (Sericornis) frontalis	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	White-browed Scrubwren	465
https://biodiversity.org.au/afd/taxa/9b4ad548-8bb3-486a-ab0a-905506c463ea	Eolophus roseicapilla	(Vieillot, 1817)	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Galah	440
https://biodiversity.org.au/afd/taxa/ec2c76c7-0cd9-4f26-935e-4d90762590fa	Haematopus longirostris	Vieillot, 1817	species	Animalia	Chordata	Aves	Charadriiformes	Haematopodidae	Australian Pied Oystercatcher	439
https://biodiversity.org.au/afd/taxa/1441c509-faf3-405e-a534-c51cccc4d720	Thalasseus bergii	(Lichtenstein, 1823)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Crested Tern	378
https://biodiversity.org.au/afd/taxa/ada6105e-c2de-4b93-9687-8e64d10863a7	Lichmera (Lichmera) indistincta	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Brown Honeyeater	373
https://biodiversity.org.au/afd/taxa/b26690fc-d652-4777-9ead-3421170129ed	Stagonopleura (Zonaeginthus) oculata	(Quoy & Gaimard, 1830)	species	Animalia	Chordata	Aves	Passeriformes	Estrildidae	Red-eared Firetail	364
https://biodiversity.org.au/afd/taxa/b6f1a62e-55fa-4fa6-9e08-74003d6b704b	Anas gracilis	Buller, 1869	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Grey Teal	324
https://biodiversity.org.au/afd/taxa/7d38efed-12ce-4aa3-b51a-67f89b109ded	Petrochelidon (Hylochelidon) nigricans	(Vieillot, 1817)	species	Animalia	Chordata	Aves	Passeriformes	Hirundinidae	Tree Martin	307
https://biodiversity.org.au/afd/taxa/5254fe03-630b-44b2-9233-df51a7b8f25f	Pardalotus (Pardalotus) punctatus	(Shaw, 1792)	species	Animalia	Chordata	Aves	Passeriformes	Pardalotidae	Spotted Pardalote	296
https://biodiversity.org.au/afd/taxa/0ccbba45-af08-484a-8aaa-ff983ca3a633	Melithreptus (Melithreptus) chloropsis	Gould, 1848	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Gilbert's Honeyeater	291
https://biodiversity.org.au/afd/taxa/a2399fe3-c90f-4fb1-a710-fe81643ff56e	Parvipsitta porphyrocephala	(Dietrichsen, 1837)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Purple-crowned Lorikeet	288
https://biodiversity.org.au/afd/taxa/75e90438-cf36-403e-9223-a7d4737b1fd1	Gerygone fusca	(Gould, 1838)	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Western Gerygone	268
https://biodiversity.org.au/afd/taxa/55994a9e-8ba7-4ff9-89a2-e22586ab25d1	Phalacrocorax (Phalacrocorax) varius	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Pelecaniformes	Phalacrocoracidae	Pied Cormorant	266
https://biodiversity.org.au/afd/taxa/9cc11ab9-ab7a-43d6-a04f-3ae4c7a1a42a	Charadrius (Charadrius) ruficapillus	Temminck, 1821	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Red-capped Plover	258
https://biodiversity.org.au/afd/taxa/0242155c-714e-4f53-b973-333aab1343fb	Acanthorhynchus superciliosus	Gould, 1837	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Western Spinebill	246
https://biodiversity.org.au/afd/taxa/b33b8926-0f03-44ba-b084-a2d3ad149ea0	Crinia glauerti	Loveridge, 1933	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Glauert's Froglet	242
https://biodiversity.org.au/afd/taxa/1c4dce12-16f6-49ab-b578-0673551214fd	Rhipidura (Sauloprocta) leucophrys	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Rhipiduridae	Willie Wagtail	234
https://biodiversity.org.au/afd/taxa/bb53b420-0a1f-4a49-9d1e-2a6154c685a8	Fulica atra	Linnaeus, 1758	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Eurasian Coot	227
https://biodiversity.org.au/afd/taxa/bbce953c-f9e2-4b59-a9d4-0eb587004879	Litoria adelaidensis	(Gray, 1841)	species	Animalia	Chordata	Amphibia	Anura	Pelodryadidae	Slender Tree Frog	220
https://biodiversity.org.au/afd/taxa/cff21565-2bc4-4a67-8c0c-600ae7c10fd8	Zanda baudinii	Lear, 1832	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Long-billed Black-cockatoo	215
https://biodiversity.org.au/afd/taxa/143cc9f0-bc3c-45b7-8e1c-21fbe9319bba	Ardea alba	Linnaeus, 1758	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Great Egret	214
https://biodiversity.org.au/afd/taxa/4e118c73-06a7-4131-bd67-5da5d2d61fd7	Hirundo (Hirundo) neoxena	Gould, 1843	species	Animalia	Chordata	Aves	Passeriformes	Hirundinidae	Welcome Swallow	213
https://biodiversity.org.au/afd/taxa/c319dbaf-a363-4853-b333-75f14c47fc82	Threskiornis spinicollis	(Jameson, 1835)	species	Animalia	Chordata	Aves	Ciconiiformes	Threskiornithidae	Straw-necked Ibis	209
https://biodiversity.org.au/afd/taxa/3dd39f84-1293-4c04-ac87-2474f5c887b0	Platalea (Platibis) flavipes	Gould, 1838	species	Animalia	Chordata	Aves	Ciconiiformes	Threskiornithidae	Yellow-billed Spoonbill	207
https://biodiversity.org.au/afd/taxa/83e8ee9b-1580-4e2f-84b0-f40736b525b8	Geocrinia leai	(Fletcher, 1898)	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Lea's Frog	207
https://biodiversity.org.au/afd/taxa/e3103245-2da1-4cc5-952d-49153f466bbf	Pardalotus (Pardalotinus) striatus	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Passeriformes	Pardalotidae	Striated Pardalote	205

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/aa581ac7-f29a-4e72-be0d-48a5e0a64de3	Acanthiza (Geobasileus) chrysorrhoa	(Quoy & Gaimard, 1830)	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Yellow-rumped Thornbill	202
https://biodiversity.org.au/afd/taxa/da1e1bf2-3684-4eea-b579-1d83507c020d	Hydroprogne caspia	(Pallas, 1770)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Caspian Tern	201
https://biodiversity.org.au/afd/taxa/06d1981c-58a7-4370-9e9a-158dfb89d600	Larus pacificus	Latham, 1801	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Pacific Gull	198
https://biodiversity.org.au/afd/taxa/4072e7ce-7ca4-4112-a9fa-c49a0f0ddd4d	Zanda latirostris	Carnaby, 1948	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Short-billed Black-cockatoo	198
https://biodiversity.org.au/afd/taxa/66f82bb4-ae71-4543-a99e-35452536c4c8	Purpureicephalus spurius	(Kuhl, 1820)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Red-capped Parrot	188
https://biodiversity.org.au/afd/taxa/ee5017ac-06bc-41ae-ac7f-9f6311b8d2e6	Crinia georgiana	Tschudi, 1838	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Tschudi's Froglet	182
https://biodiversity.org.au/afd/taxa/69c22b10-ff42-4bef-bb0f-88dc01a8f96c	Coracina (Coracina) novaehollandiae	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Passeriformes	Campephagidae	Black-faced Cuckoo-shrike	175
https://biodiversity.org.au/afd/taxa/23a8017a-3a2b-4a52-8ca6-d168bf52659c	Pandion haliaetus	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Osprey	171
https://biodiversity.org.au/afd/taxa/046dd167-e59a-4b0f-b573-fc72de406e85	Tadorna (Casarca) tadornoides	(Jardine & Selby, 1828)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Australian Shelduck	166
https://biodiversity.org.au/afd/taxa/7af45089-4a0f-4303-a417-1708623809af	Colluricincla (Colluricincla) harmonica	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Pachycephalidae	Grey Shrike-thrush	159
https://biodiversity.org.au/afd/taxa/05b0f88f-2b75-4885-97e1-e83872f82738	Haematopus fuliginosus	Gould, 1845	species	Animalia	Chordata	Aves	Charadriiformes	Haematopodidae	Sooty Oystercatcher	138
https://biodiversity.org.au/afd/taxa/ce17b284-d607-496a-992f-f3129bfd3997	Grallina cyanoleuca	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Monarchidae	Magpie-lark	134
https://biodiversity.org.au/afd/taxa/135cc880-f84e-4470-a1c1-fbce3a0ed534	Todiramphus (Todiramphus) sanctus	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Coraciiformes	Alcedinidae	Sacred Kingfisher	128
https://biodiversity.org.au/afd/taxa/808f7f5b-f6cd-4677-848a-49315e7babe3	Calyptorhynchus (Calyptorhynchus) banksii	(Latham, 1790)	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Red-tailed Black Cockatoo	125
https://biodiversity.org.au/afd/taxa/95efb4b0-67a8-4093-8bda-d55b2fa836be	Melithreptus (Melithreptus) lunatus	(Vieillot, 1802)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	White-naped Honeyeater	124
https://biodiversity.org.au/afd/taxa/485e7fa6-c632-4288-bcdc-ef8890c87646	Limnodynastes dorsalis	(Gray, 1841)	species	Animalia	Chordata	Amphibia	Anura	Limnodynastidae	Western Banjo Frog	114
https://biodiversity.org.au/afd/taxa/3d2396a0-b532-410a-87e7-d1fe3ab497f6	Calidris (Ereunetes) ruficollis	(Pallas, 1776)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Red-necked Stint	111
https://biodiversity.org.au/afd/taxa/ab455a0c-4545-4c5d-b2e8-1d8f112e413f	Sternula nereis	(Gould, 1843)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Fairy Tern	110
https://biodiversity.org.au/afd/taxa/ae8ff359-0981-4618-86a8-e64fb63b7adc	Himantopus himantopus	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Recurvirostridae	Black-winged Stilt	110
https://biodiversity.org.au/afd/taxa/3e5370e0-fe92-4275-abe0-b5cf5d4fbdb4	Hemiergis peronii	(Gray, 1831)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Lowlands Earless Skink	108
https://biodiversity.org.au/afd/taxa/2803a6a4-1911-4441-be94-c7c30505e44e	Pomatostomus (Morganornis) superciliosus	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Passeriformes	Pomatostomidae	White-browed Babbler	103
https://biodiversity.org.au/afd/taxa/31113d80-ed4f-4bb0-9a65-48080e4c6dd1	Haliastur sphenurus	(Vieillot, 1818)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Whistling Kite	98
https://biodiversity.org.au/afd/taxa/908e6ef4-de96-4951-a603-cb62caae6fdc	Neophema (Neonanodes) elegans	(Gould, 1838)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Elegant Parrot	98
https://biodiversity.org.au/afd/taxa/cf1b96b7-7175-44d4-8ffe-ad3fc07164e6	Litoria moorei	(Copland, 1957)	species	Animalia	Chordata	Amphibia	Anura	Pelodryadidae	Western Green And Golden Bell Frog	97
https://biodiversity.org.au/afd/taxa/1ebf8ec6-9aee-4b58-8789-0be73eb97b2f	Thinornis cucullatus	(Vieillot, 1818)	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Hooded Plover	95
https://biodiversity.org.au/afd/taxa/21a09d44-a9eb-4a94-a39e-6f7cfeb0f403	Anas (Anas) platyrhynchos	Linnaeus, 1758	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Common Mallard	95
https://biodiversity.org.au/afd/taxa/37b96920-e8bf-499c-9967-b6911fedff51	Egretta garzetta	(Linnaeus, 1766)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Little Egret	86
https://biodiversity.org.au/afd/taxa/59b7c7f5-1d07-4ab0-90ef-9be0885de1dd	Anthochaera (Anellobia) lunulata	Gould, 1838	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Western Wattlebird	86
https://biodiversity.org.au/afd/taxa/60bafeba-eee1-46b7-a90c-718d3dd8d994	Christinus marmoratus	(Gray, 1845)	species	Animalia	Chordata	Reptilia	Squamata	Gekkonidae	Marbled Gecko	85
https://biodiversity.org.au/afd/taxa/b4c2ec8d-918d-4fb4-8ef9-f6d5d3bbceda	Poodytes gramineus	(Gould, 1845)	species	Animalia	Chordata	Aves	Passeriformes	Locustellidae	Little Grassbird	85
https://biodiversity.org.au/afd/taxa/b5e44fea-a0a2-412b-a1f7-476b3c1e8e03	Gallinula (Gallinula) tenebrosa	Gould, 1846	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Dusky Moorhen	85
https://biodiversity.org.au/afd/taxa/8f6b91ae-4019-490c-a133-73acb05d25e8	Falco (Tinnunculus) cenchroides	Vigors & Horsfield, 1827	species	Animalia	Chordata	Aves	Falconiformes	Falconidae	Nankeen Kestrel	83
https://biodiversity.org.au/afd/taxa/408ee81c-6558-4ddf-b732-f9ad7d09f1ae	Cacomantis (Vidgenia) flabelliformis	(Latham, 1801)	species	Animalia	Chordata	Aves	Cuculiformes	Cuculidae	Fan-tailed Cuckoo	82
https://id.biodiversity.org.au/node/apni/2896043	Banksia grandis	Willd.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Giant Banksia	80
https://biodiversity.org.au/afd/taxa/320aeab1-aead-4b82-a580-8cd3ae99fdef	Artamus (Angroyan) cyanopterus	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Artamidae	Dusky Woodswallow	78
https://biodiversity.org.au/afd/taxa/947595db-244f-4160-b30d-0473b37d857b	Poliocephalus poliocephalus	(Jardine & Selby, 1827)	species	Animalia	Chordata	Aves	Podicipediformes	Podicipedidae	Hoary-headed Grebe	76
https://biodiversity.org.au/afd/taxa/dec8c88f-7f20-4f30-b2af-c75d09fb066c	Nycticorax caledonicus	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Nankeen Night-heron	76
https://biodiversity.org.au/afd/taxa/715a2874-1942-4762-866c-1194990e7a91	Lophoictinia isura	(Gould, 1838)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Square-tailed Kite	74
https://biodiversity.org.au/afd/taxa/c1d3308d-b6d6-496c-81b0-97c689259d3a	Anhinga novaehollandiae	(Gould, 1847)	species	Animalia	Chordata	Aves	Pelecaniformes	Anhingidae	Australasian Darter	71
https://biodiversity.org.au/afd/taxa/c568921e-f800-4a6e-b88c-6d409def1e20	Circus approximans	Peale, 1848	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Swamp Harrier	71
https://biodiversity.org.au/afd/taxa/7b7a290d-ca89-494f-8f2e-7f05311240f2	Stipiturus malachurus	(Shaw, 1798)	species	Animalia	Chordata	Aves	Passeriformes	Maluridae	Southern Emu-wren	70
https://biodiversity.org.au/afd/taxa/e53a981f-22da-4f2f-a489-85c3ee79473e	Anthus (Anthus) novaeseelandiae	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Passeriformes	Motacillidae	Australian Pipit	70
https://biodiversity.org.au/afd/taxa/29472c00-22e3-42c3-b562-107bd28d1bdc	Phalacrocorax (Phalacrocorax) carbo	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Pelecaniformes	Phalacrocoracidae	Great Cormorant	69
https://biodiversity.org.au/afd/taxa/53e2d734-5e33-44c2-92f7-edf444377380	Biziura lobata	(Shaw, 1796)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Musk Duck	69
https://biodiversity.org.au/afd/taxa/dc420306-4746-4663-9c2d-cf367587f728	Haliaeetus (Pontoaetus) leucogaster	(Gmelin, 1788)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	White-bellied Sea-eagle	67
https://biodiversity.org.au/afd/taxa/e20a0cc7-57e4-4b4b-814b-a88ecf4ed67b	Ctenotus labillardieri	(DumÃ©ril & Bibron, 1839)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Red-legged Ctenotus	65
https://biodiversity.org.au/afd/taxa/d792ddc0-bdc2-4764-ab9c-ea9e43cd586e	Tringa (Glottis) nebularia	(Gunnerus, 1767)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Common Greenshank	64
https://biodiversity.org.au/afd/taxa/3dbe8a1f-e562-42ba-a165-565c0704f8f2	Porphyrio (Porphyrio) porphyrio	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Purple Swamphen	60

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/abeb5bf8-d03e-4b33-a1ea-bcfc0695102c	Actitis hypoleucos	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Common Sandpiper	60
https://biodiversity.org.au/afd/taxa/8ce669b4-fb53-4be0-9203-b02444eca02a	Strepera (Neostrepera) versicolor	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Artamidae	Grey Currawong	59
https://biodiversity.org.au/afd/taxa/c650dca9-69e3-4051-ace8-86444b0ee972	Egretta sacra	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Eastern Reef Egret	58
https://biodiversity.org.au/afd/taxa/430b6cdf-cdf4-4f2f-9e05-20b5bdf3d34e	Heteronympha merope	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Common Brown Butterfly	55
https://biodiversity.org.au/afd/taxa/4b7b9c4a-1b60-4a43-ab70-b57bfc790138	Acanthiza (Geobasileus) inornata	Gould, 1841	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Western Thornbill	53
https://biodiversity.org.au/afd/taxa/cf17c9bb-09d1-47ce-adfe-dc060ba0b04c	Morus serrator	(G.R. Gray, 1843)	species	Animalia	Chordata	Aves	Pelecaniformes	Sulidae	Australasian Gannet	53
https://biodiversity.org.au/afd/taxa/040c3c37-fc42-4b56-8c9d-5fcf9bf78985	Exoneura (Exoneura) pictifrons	Alfken, 1907	species	Animalia	Arthropoda	Insecta	Hymenoptera	Apidae		51
https://biodiversity.org.au/afd/taxa/5acf09e2-44c5-4a7b-9d8b-4e285110dca2	Callomelitta antipodes	(Smith, 1853)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Colletidae	Plasterer Bee	51
https://biodiversity.org.au/afd/taxa/cb748125-0c06-4649-8ed8-e379e81e53c1	Tachybaptus novaehollandiae	(Stephens, 1826)	species	Animalia	Chordata	Aves	Podicipediformes	Podicipedidae	Australasian Grebe	51
https://biodiversity.org.au/afd/taxa/8bbafeb6-72e7-4af8-b602-5f3f5e7eaed6	Heleioporus eyrei	(Gray, 1845)	species	Animalia	Chordata	Amphibia	Anura	Limnodynastidae	Moaning Frog	50
https://id.biodiversity.org.au/node/fungi/60094109	Anthracophyllum archeri	(Berk.) Pegler	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		50
https://biodiversity.org.au/afd/taxa/4bddd400-b075-4b08-967c-2c98a3e84b7c	Myrmeleon acer	Walker, 1853	species	Animalia	Arthropoda	Insecta	Neuroptera	Myrmeleontidae	Common Antlion	49
https://biodiversity.org.au/afd/taxa/a3e5376b-f9e6-4bdf-adae-1e7add9f5c29	Petroica (Petroica) boodang	(Lesson, 1838)	species	Animalia	Chordata	Aves	Passeriformes	Petroicidae	Scarlet Robin	48
https://biodiversity.org.au/afd/taxa/34b31e86-7ade-4cba-960f-82a6ae586206	Cacatua (Licmetis) sanguinea	Gould, 1843	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Little Corella	45
https://biodiversity.org.au/afd/taxa/d470af0d-c131-48f7-961d-a55686e6a185	Accipiter (Leucospiza) fasciatus	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Brown Goshawk	44
https://id.biodiversity.org.au/taxon/apni/51382878	Acacia pentadenia	Lindl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Karri Wattle	44
https://biodiversity.org.au/afd/taxa/ad6c7962-79b8-405b-9390-6d388a6e0120	Diphucrania stigmata	(Gory & Laporte, 1839)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		43
https://biodiversity.org.au/afd/taxa/23e2ccef-06b0-4749-abc6-d8a710b94f69	Aquila (Uroaetus) audax	(Latham, 1801)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Wedge-tailed Eagle	42
https://id.biodiversity.org.au/node/apni/2887218	Banksia quercifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Oak-leaved Banksia	42
https://id.biodiversity.org.au/taxon/apni/51283302	Hibbertia furfuracea	(R.Br. ex DC.) Benth.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		40
https://biodiversity.org.au/afd/taxa/13850efc-183d-421c-bf60-8015ace4e570	Pseudonaja affinis	GÃ¼nther, 1872	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Dugite	39
https://biodiversity.org.au/afd/taxa/15e4bd4f-ea76-45fb-b9a3-ae7eec1486ac	Platycoris brunneus	(McDonald, 1995)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae		39
https://biodiversity.org.au/afd/taxa/3a343e36-aaaf-44c7-aacc-1c509b3a4c32	Austracantha minax	(Thorell, 1859)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Jewel Spider	39
https://id.biodiversity.org.au/node/apni/2909734	Chorilaena quercifolia	Endl.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Chorilaeba	39
https://id.biodiversity.org.au/node/apni/2894031	Dampiera hederacea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Karri Dampiera	38
https://biodiversity.org.au/afd/taxa/b82607ab-9c04-48af-8bbf-8f4266eb36ef	Castiarina rufipennis	(Kirby, 1818)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		37
https://id.biodiversity.org.au/node/apni/2918255	Eucalyptus diversicolor	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Karri	37
https://biodiversity.org.au/afd/taxa/56f4a92b-a940-410d-ac33-e52a25fee937	Rattus fuscipes	(Waterhouse, 1839)	species	Animalia	Chordata	Mammalia	Rodentia	Muridae	Bush Rat	36
https://id.biodiversity.org.au/taxon/apni/51288925	Beaufortia sparsa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Swamp Bottlebrush	36
https://id.biodiversity.org.au/taxon/apni/51401159	Cryptostylis ovata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Tongue Orchid	36
https://id.biodiversity.org.au/node/apni/2889252	Anigozanthos flavidus	RedoutÃ©	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Tall Kangaroo Paw	35
https://id.biodiversity.org.au/node/apni/2908100	Leucopogon verticillatus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Tassel Flower	35
ALA_DR24112_263	Cairina moschata		species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Muscovy Duck	34
https://biodiversity.org.au/afd/taxa/3e9c17c9-270f-4a74-9ed8-7ccabd575be9	Calidris (Calidris) tenuirostris	(Horsfield, 1821)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Great Knot	34
https://biodiversity.org.au/afd/taxa/5d337f86-08d5-4cf7-97f6-e67a0b452d3d	Castiarina anchoralis	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		34
https://biodiversity.org.au/afd/taxa/895f3296-2b6c-48c2-a258-af796b671474	Pseudogobius olorum	(Sauvage, 1880)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Bluespot Goby	34
https://biodiversity.org.au/afd/taxa/f432688e-bb59-4dca-b0fb-9bb407a68014	Atelomastix ellenae	Edward & Harvey, 2010	species	Animalia	Arthropoda	Diplopoda	Spirostreptida	Iulomorphidae		34
https://biodiversity.org.au/afd/taxa/0068714f-cc38-49e8-9541-7ff0e796b5f9	Limosa lapponica	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Bar-tailed Godwit	33
https://id.biodiversity.org.au/node/apni/2908888	Hibbertia cuneiformis	(Labill.) Sm.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Cutleaf Hibbertia	33
https://id.biodiversity.org.au/node/apni/2911540	Anarthria scabra	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		33
https://biodiversity.org.au/afd/taxa/02725816-5d59-41e1-aa00-f7cc41cd66dc	Accipiter (Paraspizias) cirrocephalus	(Vieillot, 1817)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Collared Sparrowhawk	32
https://biodiversity.org.au/afd/taxa/7de6b16a-f854-4b4b-88cf-81868ce74ad8	Felis catus	Linnaeus, 1758	species	Animalia	Chordata	Mammalia	Carnivora	Felidae	Cat	32
https://id.biodiversity.org.au/node/apni/2897492	Adenanthos obovatus	Labill.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Basket Flower	32
https://id.biodiversity.org.au/node/apni/2912734	Agonis flexuosa	(Willd.) Sweet	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Willow Myrtle	32
https://biodiversity.org.au/afd/taxa/b47a4ecd-416b-458c-886a-1dc3490e8175	Hieraaetus (Hieraaetus) morphnoides	(Gould, 1841)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Little Eagle	31
https://id.biodiversity.org.au/node/apni/2893819	Callistachys lanceolata	Vent.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Greenbush	31
https://biodiversity.org.au/afd/taxa/2a4e373b-913a-4e2a-a53f-74828f6dae7e	Dromaius novaehollandiae	(Latham, 1790)	species	Animalia	Chordata	Aves	Struthioniformes	Casuariidae	Emu	30
https://biodiversity.org.au/afd/taxa/378bdcd1-f52a-4907-9f71-0541b05437da	Pachycephala (Alisterornis) rufiventris	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Pachycephalidae	Rufous Whistler	30
https://biodiversity.org.au/afd/taxa/e2b8086f-fb5a-41ac-9003-d9aed827dfe3	Calidris (Calidris) canutus	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Red Knot	30
https://id.biodiversity.org.au/node/apni/2888929	Billardiera drummondii	(C.Morren) L.W.Cayzer & Crisp	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		30
https://id.biodiversity.org.au/node/fungi/60092453	Amanita xanthocephala	(Berk.) D.A.Reid & R.N.Hilton	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		30
https://biodiversity.org.au/afd/taxa/00fe0681-3d9e-4b50-9134-c33536ad57ac	Metacrinia nichollsi	(Harrison, 1927)	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Nicholl's Toadlet	29
https://biodiversity.org.au/afd/taxa/856ed4e8-dbcf-487f-80c8-9c78591d2ff6	Ninox (Ninox) novaeseelandiae	(Gmelin, 1788)	species	Animalia	Chordata	Aves	Strigiformes	Strigidae	Southern Boobook	29
https://id.biodiversity.org.au/node/apni/2895447	Banksia seminuda	(A.S.George) Rye	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	River Banksia	29
https://biodiversity.org.au/afd/taxa/8bf4b8b0-f432-4e9d-8ea6-08fc20c8090c	Daphoenositta (Neositta) chrysoptera	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Neosittidae	Varied Sittella	28

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2910453	Boronia gracilipes	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Karri Boronia	28
https://id.biodiversity.org.au/node/apni/2916661	Stylidium repens	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Matted Triggerplant	28
https://id.biodiversity.org.au/node/apni/2901458	Anarthria prolifera	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		27
https://id.biodiversity.org.au/node/apni/2909260	Lobelia anceps	L.f.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Angled Lobelia	27
https://id.biodiversity.org.au/node/apni/2910549	Billardiera variifolia	DC.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		27
https://biodiversity.org.au/afd/taxa/2bea0a2b-a7ad-4f41-8a72-7e35b25efabf	Paracymus pygmaeus	(W.J. Macleay, 1871)	species	Animalia	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Water Scavenger Beetle	26
https://biodiversity.org.au/afd/taxa/99e4518d-7877-46c8-a809-7e4e4d5bad81	Chalcites lucidus	(Gmelin, 1788)	species	Animalia	Chordata	Aves	Cuculiformes	Cuculidae	Shining Bronze-cuckoo	26
https://id.biodiversity.org.au/node/apni/2892390	Chorizema retrorsum	J.M.Taylor & Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		26
https://id.biodiversity.org.au/node/apni/2913977	Banksia littoralis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Swamp Banksia	26
https://id.biodiversity.org.au/node/fungi/60094367	Omphalotus nidiformis	(Berk.) O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		26
https://id.biodiversity.org.au/taxon/apni/51440932	Caladenia flava	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Cowslip Orchid	26
https://biodiversity.org.au/afd/taxa/70a29d57-3aea-43e3-b675-98c01960979d	Falco (Falco) longipennis	Swainson, 1838	species	Animalia	Chordata	Aves	Falconiformes	Falconidae	Australian Hobby	25
https://biodiversity.org.au/afd/taxa/8bec5cc6-ac31-4d23-9df3-856034968af9	Podargus strigoides	(Latham, 1801)	species	Animalia	Chordata	Aves	Caprimulgiformes	Podargidae	Tawny Frogmouth	25
https://id.biodiversity.org.au/node/apni/2909852	Stylidium nymphaeum	Wege	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae		25
https://id.biodiversity.org.au/node/apni/2918606	Dasypogon bromeliifolius	R.Br.	species	Plantae	Charophyta	Equisetopsida	Dasypogonales	Dasypogonaceae	Pineapple Bush	25
https://id.biodiversity.org.au/node/fungi/60098073	Piptoporus australiensis	(Wakef.) G.Cunn.	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Fomitopsidaceae		25
https://biodiversity.org.au/afd/taxa/0b67b63f-596a-4780-93fa-6c53d5205923	Notechis scutatus	(Peters, 1861)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Tiger Snake	24
https://biodiversity.org.au/afd/taxa/301cf3b1-150e-4b7b-b5a4-5c098a7b25c2	Exoneura nigrescens	Friese, 1899	species	Animalia	Arthropoda	Insecta	Hymenoptera	Apidae	Reed Bee	24
https://id.biodiversity.org.au/node/apni/2909230	Xanthosia rotundifolia	DC.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Southern Cross	24
https://id.biodiversity.org.au/node/apni/7238218	Kennedia coccinea	(Curtis) Vent.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Coral Vine	24
https://biodiversity.org.au/afd/taxa/095c20f5-7bc6-4b63-a7ae-9254aa5242e2	Neophema (Neonanodes) petrophila	(Gould, 1841)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Rock Parrot	23
https://biodiversity.org.au/afd/taxa/681ea214-3788-4cc6-8b97-0b325d6bba6b	Cracticus torquatus	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Artamidae	Grey Butcherbird	23
https://biodiversity.org.au/afd/taxa/b5b0434e-6a9f-44ba-ab4e-17992578285c	Metistete ebenina	Carter, 1915	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		23
https://id.biodiversity.org.au/node/apni/2897625	Comesperma virgatum	Labill.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae	Milkwort	23
https://id.biodiversity.org.au/node/apni/2900496	Taxandria parviceps	(Schauer) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Myrtle	23
https://id.biodiversity.org.au/node/apni/2912367	Hardenbergia comptoniana	(Andrews) Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Western Australian Coral-pea	23
https://biodiversity.org.au/afd/taxa/54bed972-4aa1-4220-a876-41650b93a121	Neuroctenus proximus	(Walker, 1873)	species	Animalia	Arthropoda	Insecta	Hemiptera	Aradidae		22
https://biodiversity.org.au/afd/taxa/e9b141fb-9c47-46a3-b631-39b175a2cd74	Macropus fuliginosus	(Desmarest, 1817)	species	Animalia	Chordata	Mammalia	Diprotodontia	Macropodidae	Western Grey Kangaroo	22
https://id.biodiversity.org.au/node/apni/2903335	Drosera pulchella	Lehm.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Pretty Sundew	22
https://id.biodiversity.org.au/node/apni/2915146	Stylidium pritzelianum	Mildbr.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Royal Triggerplant	22
https://id.biodiversity.org.au/node/apni/2920563	Boronia denticulata	Sm.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Toothed-leaved Boronia	22
https://id.biodiversity.org.au/node/apni/7823819	Hakea oleifolia	(Sm.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Olive-leaved Hakea	22
https://biodiversity.org.au/afd/taxa/1988c921-43bd-4390-b441-8abc4b26b477	Hypotaenidia philippensis	(Linnaeus, 1766)	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Buff-banded Rail	21
https://biodiversity.org.au/afd/taxa/a7b00ef0-108f-44d9-bf89-a062c8674335	Ocyphaps lophotes	(Temminck, 1822)	species	Animalia	Chordata	Aves	Columbiformes	Columbidae	Crested Pigeon	21
https://biodiversity.org.au/afd/taxa/bf5d2694-d652-423b-b812-ff2b38a4abae	Tiliqua rugosa	(Gray, 1825)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Shingle-back	21
https://biodiversity.org.au/afd/taxa/e382a431-801d-4a24-9a5a-03a262be9279	Elanus axillaris	(Latham, 1801)	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Black-shouldered Kite	21
https://id.biodiversity.org.au/node/apni/2891131	Boronia spathulata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Boronia	21
https://id.biodiversity.org.au/node/apni/2902376	Lasiopetalum floribundum	Benth.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Free Flowering Lasiopetalum	21
https://id.biodiversity.org.au/node/fungi/60094405	Cruentomycena viscidocruenta	(Cleland) R.H.Petersen & Kovalenko	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		21
https://id.biodiversity.org.au/taxon/apni/51267100	Thysanotus multiflorus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Many-flowered Fringe	21
https://id.biodiversity.org.au/taxon/apni/51405028	Elythranthera brunonis	(Endl.) A.S.George	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Purple Enamel Orchid	21
https://id.biodiversity.org.au/node/apni/2892900	Stylidium piliferum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Common Butterfly Triggerplant	20
https://id.biodiversity.org.au/node/apni/2895674	Dielsiodoxa lycopodioides	Albr.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		20
https://id.biodiversity.org.au/node/apni/2900260	Andersonia caerulea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Foxtails	20
https://id.biodiversity.org.au/node/apni/2905735	Banksia ilicifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Holly Leaved Banksia	20
https://id.biodiversity.org.au/node/apni/2916077	Tremandra stelligera	R.Br. ex DC.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		20
https://biodiversity.org.au/afd/taxa/8271b6c5-bcc4-461e-bb3a-a686080a895a	Egernia napoleonis	(Gray, 1838)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	South-western Crevice-skink	19
https://biodiversity.org.au/afd/taxa/c1817333-9c62-4a05-af03-fe5fb9c9a0ce	Rattus rattus	(Linnaeus, 1758)	species	Animalia	Chordata	Mammalia	Rodentia	Muridae	Black Rat	19
https://biodiversity.org.au/afd/taxa/dcc98476-b7e7-46aa-b7a6-e94e3d3dc7df	Choerocoris variegatus	Dallas, 1851	species	Animalia	Arthropoda	Insecta	Hemiptera	Scutelleridae	Shield Bug	19
https://biodiversity.org.au/afd/taxa/dd8852f7-9903-4222-b596-7ccce70aaa33	Anas (Nettion) castanea	(Eyton, 1838)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Chestnut Teal	19
https://id.biodiversity.org.au/node/apni/2887834	Clematis pubescens	HÃ¼gel ex Endl.	species	Plantae	Charophyta	Equisetopsida	Ranunculales	Ranunculaceae	Common Clematis	19
https://id.biodiversity.org.au/node/apni/2891523	Trymalium odoratissimum	Lindl.	species	Plantae	Charophyta	Equisetopsida	Rosales	Rhamnaceae		19
https://id.biodiversity.org.au/node/apni/2897913	Taxandria marginata	(Labill.) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Willow Myrtle	19
https://id.biodiversity.org.au/node/apni/2902833	Allocasuarina decussata	(Benth.) L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Fagales	Casuarinaceae	Karri Oak	19
https://id.biodiversity.org.au/node/apni/2907129	Kunzea recurva	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		19
https://id.biodiversity.org.au/node/apni/2908504	Pimelea rosea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae	Rose Banjine	19
https://id.biodiversity.org.au/node/fungi/60099679	Russula clelandii	O.K.Mill. & R.N.Hilton	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		19
https://id.biodiversity.org.au/taxon/apni/51406501	Lyperanthus serratus	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Rattle Beaks	19

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/taxon/apni/51409707	Prasophyllum brownii	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Christmas Leek Orchid	19
https://biodiversity.org.au/afd/taxa/236f808e-7763-4d31-8c41-2182ba399112	Xylochomitermes occidualis	(Gay, 1971)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae		18
https://biodiversity.org.au/afd/taxa/2ac73130-cf41-44f9-a6ad-34edd179a887	Myrmecia regularis	Crawley, 1925	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bull Ant	18
https://biodiversity.org.au/afd/taxa/97b364bd-8144-48d7-aeef-6c4f8a1a30bd	Arachnura higginsi	(L. Koch, 1872)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Scorpion Tailed Spider	18
https://biodiversity.org.au/afd/taxa/b6930f29-3f26-415e-a760-c12c320c2931	Phascogale tapoatafa	(Meyer, 1793)	species	Animalia	Chordata	Mammalia	Dasyuromorphia	Dasyuridae	Brush-tailed Phascogale	18
https://id.biodiversity.org.au/node/apni/2886600	Gompholobium confertum	(DC.) Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		18
https://id.biodiversity.org.au/node/apni/2908467	Patersonia umbrosa	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Yellow Flags	18
https://id.biodiversity.org.au/node/apni/2917118	Grevillea trifida	(R.Br.) Meisn.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		18
https://id.biodiversity.org.au/node/apni/6917219	Zantedeschia aethiopica	(L.) Spreng.	species	Plantae	Charophyta	Equisetopsida	Alismatales	Araceae	White Arum Lily	18
https://id.biodiversity.org.au/node/fungi/60096339	Boletellus obscurecoccineus	(HÃ¶hn.) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		18
https://id.biodiversity.org.au/taxon/apni/51302344	Pimelea longiflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		18
https://id.biodiversity.org.au/taxon/apni/51399117	Caladenia latifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pink Fairies	18
https://id.biodiversity.org.au/taxon/apni/51406630	Microtis media	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Common Mignonette Orchid	18
https://biodiversity.org.au/afd/taxa/1b2b899d-fb07-42ca-89d1-df1dead540b4	Polyzosteria cuprea	Saussure, 1863	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		17
https://biodiversity.org.au/afd/taxa/21cd643a-bdca-4353-9d4c-63a27400ef0b	Gminatus australis	(Erichson, 1842)	species	Animalia	Arthropoda	Insecta	Hemiptera	Reduviidae	Assassin Bug	17
https://biodiversity.org.au/afd/taxa/4dfe0b7f-fd73-4821-b844-04aeba905981	Liopholis pulchra	(Werner, 1910)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	South-western Rock-skink	17
https://biodiversity.org.au/afd/taxa/aac06d61-b8b3-4988-9483-3455b96c4a15	Phaps (Phaps) elegans	(Temminck, 1809)	species	Animalia	Chordata	Aves	Columbiformes	Columbidae	Brush Bronzewing	17
https://id.biodiversity.org.au/node/apni/2894165	Acacia hastulata	Sm.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		17
https://id.biodiversity.org.au/node/apni/2902939	Stylidium caespitosum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Fly-away Triggerplant	17
https://id.biodiversity.org.au/node/apni/2903955	Hakea linearis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		17
https://id.biodiversity.org.au/node/apni/2908891	Conospermum caeruleum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Blue Brother	17
https://id.biodiversity.org.au/node/apni/2913234	Banksia attenuata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Coast Banksia	17
https://id.biodiversity.org.au/node/apni/2915992	Hovea elliptica	(Sm.) DC.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Tree Hovea	17
https://id.biodiversity.org.au/node/apni/2917378	Gompholobium polymorphum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		17
https://id.biodiversity.org.au/node/apni/2920929	Scaevola striata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Royal Robe	17
https://biodiversity.org.au/afd/taxa/22d0ca8a-3192-4da4-9a76-38f1d51242b6	Geitoneura klugii	(GuÃ©rin-MÃ©neville, 1830)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Klug's Xenica	16
https://biodiversity.org.au/afd/taxa/23aa267d-baa6-4c12-81be-f8ef29b4fd1f	Omyta centrolineata	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	16
https://biodiversity.org.au/afd/taxa/2869ce8a-8212-46c2-8327-dfb7fabb8296	Vulpes vulpes	Linnaeus, 1758	species	Animalia	Chordata	Mammalia	Carnivora	Canidae	Fox	16
https://biodiversity.org.au/afd/taxa/68fc5ba7-463f-4a86-8314-e42a5a8d0455	Ninox (Ninox) boobook	(Latham, 1801)	species	Animalia	Chordata	Aves	Strigiformes	Strigidae	Southern Boobook	16
https://biodiversity.org.au/afd/taxa/743cc7d8-b198-4c40-9421-6c66ef173db0	Rhabdosargus sarba	(ForsskÃ¥l, 1775)	species	Animalia	Chordata	Actinopterygii	Perciformes	Sparidae	Tarwhine	16
https://biodiversity.org.au/afd/taxa/a44eab4d-28ba-4a53-b1ab-ab01a0a17802	Elapognathus coronatus	(Schlegel, 1837)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Western Crowned Snake	16
https://biodiversity.org.au/afd/taxa/c69e7308-527a-429d-a80d-143bd20b5100	Recurvirostra novaehollandiae	Vieillot, 1816	species	Animalia	Chordata	Aves	Charadriiformes	Recurvirostridae	Red-necked Avocet	16
https://biodiversity.org.au/afd/taxa/db8a3a39-1d47-4840-a77c-4ced27a2ad26	Ardenna carneipes	(Gould, 1844)	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Flesh-footed Shearwater	16
https://id.biodiversity.org.au/node/apni/2891198	Lechenaultia expansa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		16
https://id.biodiversity.org.au/node/apni/2892673	Corymbia calophylla	(Lindl.) K.D.Hill & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Marri	16
https://id.biodiversity.org.au/node/apni/2895754	Drosera erythrogyne	N.G.Marchant & Lowrie	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		16
https://id.biodiversity.org.au/node/apni/2905697	Johnsonia lupulina	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Hooded Lily	16
https://id.biodiversity.org.au/node/apni/2908337	Eucalyptus virginea	Hopper & Ward.-Johnson	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Mount Lindesay White Gum	16
https://id.biodiversity.org.au/node/apni/2914233	Trymalium venustum	Rye	species	Plantae	Charophyta	Equisetopsida	Rosales	Rhamnaceae		16
https://id.biodiversity.org.au/node/apni/2914832	Lepidosperma effusum	Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Spreading Sword-sedge	16
https://id.biodiversity.org.au/node/apni/2916912	Scaevola nitida	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Shining Fanflower	16
https://id.biodiversity.org.au/taxon/apni/51299833	Anthocercis littorea	Labill.	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Yellow Tailflower	16
https://biodiversity.org.au/afd/taxa/083b413f-8746-4788-8dc1-3da495d78a79	Falco (Hierofalco) peregrinus	Tunstall, 1771	species	Animalia	Chordata	Aves	Falconiformes	Falconidae	Peregrine Falcon	15
https://biodiversity.org.au/afd/taxa/ef76c565-1786-4184-9008-e078877d73fc	Papilio (Princeps) aegeus	Donovan, 1805	species	Animalia	Arthropoda	Insecta	Lepidoptera	Papilionidae	Large Citrus Butterfly	15
https://biodiversity.org.au/afd/taxa/f75b10e2-d382-48e8-8666-0da3d5303a25	Austroaeschna anacantha	Tillyard, 1908	species	Animalia	Arthropoda	Insecta	Odonata	Aeshnidae	Western Darner	15
https://id.biodiversity.org.au/node/apni/2890737	Stylidium adnatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Common Beaked Triggerplant	15
https://id.biodiversity.org.au/node/apni/2892635	Eucalyptus guilfoylei	Maiden	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Yellow Tingle	15
https://id.biodiversity.org.au/node/apni/2896656	Melaleuca preissiana	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Moonah	15
https://id.biodiversity.org.au/node/apni/2901160	Acacia myrtifolia	(Sm.) Willd.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Myrtle Wattle	15
https://id.biodiversity.org.au/node/apni/2903276	Darwinia citriodora	(Endl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Lemon-scented Darwinia	15
https://id.biodiversity.org.au/node/apni/2903771	Billardiera fusiformis	Labill.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	Bluebell Creeper	15
https://id.biodiversity.org.au/node/apni/2911395	Scaevola microphylla	(de Vriese) Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Small Leaved Scaevola	15
https://id.biodiversity.org.au/node/apni/2916557	Taxandria fragrans	(J.R.Wheeler & N.G.Marchant) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		15
https://id.biodiversity.org.au/node/apni/2917156	Stylidium amoenum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Lovely Triggerplant	15
https://id.biodiversity.org.au/node/apni/2918628	Petrophile diversifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		15
https://id.biodiversity.org.au/node/apni/2920431	Lobelia gibbosa	Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Tall Lobelia	15
https://id.biodiversity.org.au/node/fungi/60099895	Stereum hirsutum	(Willd.) Pers.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Stereaceae		15
https://id.biodiversity.org.au/taxon/apni/51284002	Leucopogon glabellus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		15

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/taxon/apni/51309998	Hypocalymma strictum	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		15
https://id.biodiversity.org.au/taxon/apni/51311636	Boronia crenulata	Sm.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Aniseed Boronia	15
https://id.biodiversity.org.au/taxon/apni/51412440	Pterostylis vittata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Banded Greenhood	15
https://id.biodiversity.org.au/taxon/apni/51414290	Thelymitra graminea	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Shy Sun Orchid	15
https://biodiversity.org.au/afd/taxa/057d6fe4-d2ea-40f7-8b90-4e0f9e7ff665	Coptotermes acinaciformis	(Froggatt, 1898)	species	Animalia	Arthropoda	Insecta	Blattodea	Rhinotermitidae	Subterranean Termite	14
https://biodiversity.org.au/afd/taxa/0fa7937f-8452-4c0d-bb08-b9308f97680b	Ocirrhoe unimaculata	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	14
https://biodiversity.org.au/afd/taxa/98def99d-eceb-40ee-b5c3-10841df5e63a	Platycephalus speculator	Klunzinger, 1872	species	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Platycephalidae	Southern Bluespotted Flathead	14
https://biodiversity.org.au/afd/taxa/de840853-a3a3-4ec5-9dc0-7f12680a054f	Climacteris (Climacteris) rufus	Gould, 1841	species	Animalia	Chordata	Aves	Passeriformes	Climacteridae	Rufous Treecreeper	14
https://id.biodiversity.org.au/node/apni/2889663	Nuytsia floribunda	(Labill.) R.Br. ex G.Don	species	Plantae	Charophyta	Equisetopsida	Santalales	Loranthaceae	Western Australian Christmas Tree	14
https://id.biodiversity.org.au/node/apni/2892102	Persoonia longifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Snottygobble	14
https://id.biodiversity.org.au/node/apni/2896451	Utricularia multifida	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lentibulariaceae	Pink Petticoats	14
https://id.biodiversity.org.au/node/apni/2899057	Billardiera heterophylla	(Lindl.) L.W.Cayzer & Crisp	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	Bluebell Creeper	14
https://id.biodiversity.org.au/node/apni/2899772	Actinotus omnifertilis	(F.Muell.) Benth.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		14
https://id.biodiversity.org.au/node/apni/2900824	Desmocladus flexuosus	(R.Br.) B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		14
https://id.biodiversity.org.au/node/apni/2902716	Adenanthos cuneatus	Labill.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Coastal Jugflower	14
https://id.biodiversity.org.au/node/apni/2903052	Hovea chorizemifolia	DC.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Holly-leaved Hovea	14
https://id.biodiversity.org.au/node/apni/2904580	Patersonia occidentalis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Long Purple-flag	14
https://id.biodiversity.org.au/node/apni/2908333	Pelargonium capitatum	(L.) L'HÃ©r.	species	Plantae	Charophyta	Equisetopsida	Geraniales	Geraniaceae	Rose-scented Pelargonium	14
https://id.biodiversity.org.au/node/apni/2908709	Rubus laudatus	A.Berger	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Blackberry	14
https://id.biodiversity.org.au/node/apni/2911209	Stylidium guttatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Dotted Triggerplant	14
https://id.biodiversity.org.au/node/apni/2915937	Macrozamia riedlei	(Fisch. ex Gaudich.) C.A.Gardner	species	Plantae	Charophyta	Equisetopsida	Cycadales	Zamiaceae	Zamia Palm	14
https://id.biodiversity.org.au/taxon/apni/51300349	Taxandria juniperina	(Schauer) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Juniper Myrtle	14
https://id.biodiversity.org.au/taxon/apni/51414264	Thelymitra crinita	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Blue Lady Orchid	14
https://biodiversity.org.au/afd/taxa/501da543-2998-40d9-abc1-e782e6d83970	Storosa tetrica	(Simon, 1908)	species	Animalia	Arthropoda	Arachnida	Araneae	Zodariidae		13
https://biodiversity.org.au/afd/taxa/69bb2340-d214-48bd-8b07-31bd2083ce84	Phonognatha melania	(L. Koch, 1871)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae		13
https://biodiversity.org.au/afd/taxa/cf8e02dd-2a6e-41dc-b14b-0e446444250a	Ardea pacifica	Latham, 1801	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	White-necked Heron	13
https://biodiversity.org.au/afd/taxa/ee694d26-6d4d-4837-99ad-9b25d3454d9d	Aegotheles (Aegotheles) cristatus	(Shaw, 1790)	species	Animalia	Chordata	Aves	Apodiformes	Aegothelidae	Australian Owlet-nightjar	13
https://biodiversity.org.au/afd/taxa/fd2adda6-b736-482b-ad39-99741c0381e9	Egernia kingii	(Gray, 1838)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	King's Skink	13
https://id.biodiversity.org.au/node/apni/2888058	Bossiaea linophylla	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Narrow-leaved Bossiaea	13
https://id.biodiversity.org.au/node/apni/2889387	Drosera pallida	Lindl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Pale Rainbow	13
https://id.biodiversity.org.au/node/apni/2892064	Stylidium planirosula	Wege	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae		13
https://id.biodiversity.org.au/node/apni/2892177	Stypandra glauca	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Nodding Grass-lily	13
https://id.biodiversity.org.au/node/apni/2902225	Jacksonia horrida	DC.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		13
https://id.biodiversity.org.au/node/ausmoss/2896833	Chiloscyphus semiteres	(Lehm. & Lindenb.) Lehm. & Lindenb.	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Lophocoleaceae	Common Crestwort	13
https://id.biodiversity.org.au/node/fungi/60094775	Armillaria luteobubalina	Watling & Kile	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Physalacriaceae		13
https://id.biodiversity.org.au/node/fungi/60096299	Podoserpula pusio	(Berk.) D.A.Reid	species	Fungi	Basidiomycota	Agaricomycetes	Amylocorticiales	Amylocorticiaceae	Pagoda Fungus	13
https://id.biodiversity.org.au/node/fungi/60097863	Rickenella fibula	(Bull.) Raithelh.	species	Fungi	Basidiomycota	Agaricomycetes	Hymenochaetales	Repetobasidiaceae		13
https://id.biodiversity.org.au/taxon/apni/51249803	Pteridium esculentum	(G.Forst.) Cockayne	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Dennstaedtiaceae	Austral Bracken	13
https://id.biodiversity.org.au/taxon/apni/51412424	Pterostylis turfosa	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Bearded Bird Orchid	13
https://id.biodiversity.org.au/taxon/apni/51446872	Crowea angustifolia	Sm.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Crowea	13
NZOR-6-40364	Cladia aggregata	(Sw.) Nyl.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae	Common Coral-lichen	12
https://biodiversity.org.au/afd/taxa/31f37401-664a-4ec0-beb6-3ee7dcc2cd8b	Zapornia tabuensis	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Spotless Crake	12
https://biodiversity.org.au/afd/taxa/6a6b2ada-1597-48d8-a4c5-8d8746e3df29	Arripis georgianus	(Valenciennes, 1831)	species	Animalia	Chordata	Actinopterygii	Perciformes	Arripidae	Australian Herring	12
https://biodiversity.org.au/afd/taxa/88ab4486-1ae6-4179-b62e-163fc33fd95f	Falcunculus frontatus	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Falcunculidae	Crested Shrike-tit	12
https://biodiversity.org.au/afd/taxa/8a981792-0498-4137-aba0-bbce748c8fbd	Aldrichetta forsteri	(Valenciennes, 1836)	species	Animalia	Chordata	Actinopterygii	Mugiliformes	Mugilidae	Yelloweye Mullet	12
https://biodiversity.org.au/afd/taxa/bdf18035-665d-47a1-bb8b-789aaf62223e	Spatula rhynchotis	Latham, 1801	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Australasian Shoveler	12
https://biodiversity.org.au/afd/taxa/e948fd99-7550-4d1b-866a-75666cc61f96	Heteroscenes pallidus	(Latham, 1801)	species	Animalia	Chordata	Aves	Cuculiformes	Cuculidae	Pallid Cuckoo	12
https://biodiversity.org.au/afd/taxa/f452242f-5a35-4d5d-a141-7e2dfb9f176b	Calidris (Erolia) acuminata	(Horsfield, 1821)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Sharp-tailed Sandpiper	12
https://biodiversity.org.au/afd/taxa/f933497e-60d2-4f80-bc5e-08d8b1349c2c	Smicrornis brevirostris	(Gould, 1838)	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Weebill	12
https://biodiversity.org.au/afd/taxa/fd5d306f-a615-4e51-a9bc-8e0cb6785cab	Isoodon fusciventer	(J.E. Gray, 1841)	species	Animalia	Chordata	Mammalia	Peramelemorphia	Peramelidae	Southwestern Brown Bandicoot	12
https://id.biodiversity.org.au/node/apni/2886078	Leucopogon parviflorus	(Andrews) Lindl.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Coast Beard-heath	12
https://id.biodiversity.org.au/node/apni/2891485	Melaleuca cuticularis	Labill.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Western Swamp-paperbark	12
https://id.biodiversity.org.au/node/apni/2893218	Allocasuarina humilis	(Otto & A.Dietr.) L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Fagales	Casuarinaceae	Dwarf Sheoak	12
https://id.biodiversity.org.au/node/apni/2893342	Stylidium assimile	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Bronze-leaved Triggerplant	12

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2893559	Daucus carota	L.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Carrot	12
https://id.biodiversity.org.au/node/apni/2898321	Dipogon lignosus	(L.) Verdc.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Common Dolichos Pea	12
https://id.biodiversity.org.au/node/apni/2900221	Olax phyllanthi	(Labill.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Santalales	Olacaceae	Kowaarany	12
https://id.biodiversity.org.au/node/apni/2909747	Ficinia nodosa	(Rottb.) Goetgh., Muasya & D.A.Simpson	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Knobby Club-rush	12
https://id.biodiversity.org.au/node/apni/2910790	Hakea amplexicaulis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Prickly Hakea	12
https://id.biodiversity.org.au/node/apni/2911351	Velleia trinervis	Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		12
https://id.biodiversity.org.au/node/apni/2915654	Asparagus scandens	Thunb.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Asparagus Fern	12
https://id.biodiversity.org.au/node/apni/2920675	Westringia dampieri	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Shore Westringia	12
https://id.biodiversity.org.au/node/fungi/60092311	Amanita marmorata	Cleland & E.-J.Gilbert	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		12
https://id.biodiversity.org.au/node/fungi/60094045	Tubaria rufofulva	(Cleland) D.A.Reid & E.Horak	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		12
https://id.biodiversity.org.au/taxon/apni/51401282	Cyanicula sericea	(Lindl.) Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Silky Blue Orchid	12
https://id.biodiversity.org.au/taxon/apni/51414280	Thelymitra flexuosa	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Twisted Sun-orchid	12
https://id.biodiversity.org.au/taxon/apni/51443184	Podocarpus drouynianus	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Pinales	Podocarpaceae	Wild Plum	12
https://biodiversity.org.au/afd/taxa/0628244e-287b-4001-946e-5a41ef056f41	Falco (Ieracidea) berigora	Vigors & Horsfield, 1827	species	Animalia	Chordata	Aves	Falconiformes	Falconidae	Brown Falcon	11
https://biodiversity.org.au/afd/taxa/29cbe213-85a4-46b7-b373-4c503231f299	Elseyornis melanops	(Vieillot, 1818)	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Black-fronted Dotterel	11
https://biodiversity.org.au/afd/taxa/51829a26-3d88-4238-be5b-354de5174292	Acrocephalus (Acrocephalus) australis	(Gould, 1838)	species	Animalia	Chordata	Aves	Passeriformes	Acrocephalidae	Australian Reed Warbler	11
https://biodiversity.org.au/afd/taxa/6407a890-1405-48e3-a945-d52796cb4f3f	Hednota crypsichroa	Lower, 1893	species	Animalia	Arthropoda	Insecta	Lepidoptera	Crambidae	Grass Moth	11
https://biodiversity.org.au/afd/taxa/7140047a-1aec-4a2f-82cb-9aced99b7bb8	Nannoperca vittata	(Castelnau, 1873)	species	Animalia	Chordata	Actinopterygii	Perciformes	Percichthyidae	Western Pygmy Perch	11
https://biodiversity.org.au/afd/taxa/81d02163-b4c6-4c59-85ef-e248dbae0c3d	Conicochernes crassus	Beier, 1954	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Chernetidae		11
https://biodiversity.org.au/afd/taxa/8c4b3f88-1b80-47a9-9253-72752cec9e40	Archaeosynthemis leachii	(Selys, 1871)	species	Animalia	Arthropoda	Insecta	Odonata	Synthemistidae	Twinspot Tigertail	11
https://biodiversity.org.au/afd/taxa/8dc32aac-7a30-4d2f-bb11-dc3e8286fcf9	Grania ersei	Coates, 1990	species	Animalia	Annelida	Oligochaeta	Tubificida	Enchytraeidae		11
https://biodiversity.org.au/afd/taxa/9eb24206-e2e4-4625-887f-72853ad4d77f	Sillaginodes punctatus	(Cuvier, 1829)	species	Animalia	Chordata	Actinopterygii	Perciformes	Sillaginidae	King George Whiting	11
https://biodiversity.org.au/afd/taxa/9efd0e81-5b7a-468c-b67d-d65cb7bb8048	Hyleoides zonalis	Smith, 1853	species	Animalia	Arthropoda	Insecta	Hymenoptera	Colletidae		11
https://biodiversity.org.au/afd/taxa/b2d8f15f-9dc2-4caf-aaaa-06ecaf31a242	Afurcagobius suppositus	(Sauvage, 1880)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Southwestern Goby	11
https://biodiversity.org.au/afd/taxa/dabe50b5-0b2e-4e73-9258-f957d870be4c	Sminthopsis fuliginosa	(Gould, 1852)	species	Animalia	Chordata	Mammalia	Dasyuromorphia	Dasyuridae	Grey-bellied Dunnart	11
https://biodiversity.org.au/afd/taxa/ecb2030b-0309-43f2-8fb3-22776db1b98d	Ixobrychus flavicollis	(Latham, 1790)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Black Bittern	11
https://biodiversity.org.au/afd/taxa/f0a6a2c3-adad-4c57-9cae-17956131ecf0	Gliciphila melanops	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Tawny-crowned Honeyeater	11
https://id.biodiversity.org.au/node/apni/2888659	Stylidium androsaceum	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Book Triggerplant	11
https://id.biodiversity.org.au/node/apni/2889583	Chorizema reticulatum	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Showy Flame Pea	11
https://id.biodiversity.org.au/node/apni/2889612	Kingia australis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Dasypogonales	Dasypogonaceae	Drumsticks	11
https://id.biodiversity.org.au/node/apni/2890360	Stylidium calcaratum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Spurred Trigger-plant	11
https://id.biodiversity.org.au/node/apni/2894620	Hibbertia pilosa	Steud.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Hairy Guinea Flower	11
https://id.biodiversity.org.au/node/apni/2895664	Melaleuca densa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Lemon Honey-myrtle	11
https://id.biodiversity.org.au/node/apni/2897654	Grevillea quercifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Oak-leaf Grevillea	11
https://id.biodiversity.org.au/node/apni/2898676	Exocarpos sparteus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae	Broombush	11
https://id.biodiversity.org.au/node/apni/2899600	Sphenotoma gracilis	(R.Br.) Sweet	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Swamp Paper Heath	11
https://id.biodiversity.org.au/node/apni/2900733	Hakea ruscifolia	Labill.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Candle Hakea	11
https://id.biodiversity.org.au/node/apni/2900900	Juncus kraussii	Hochst.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Sea Rush	11
https://id.biodiversity.org.au/node/apni/2901286	Anigozanthos preissii	Endl.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Albany Catspaw	11
https://id.biodiversity.org.au/node/apni/2906270	Pimelea ferruginea	Labill.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae	Pink Rice-flower	11
https://id.biodiversity.org.au/node/apni/2906790	Asplenium aethiopicum	(Burm.f.) Bech.	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Aspleniaceae	Shredded Spleenwort	11
https://id.biodiversity.org.au/node/apni/2908231	Choretrum lateriflorum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae	Dwarf Sour Bush	11
https://id.biodiversity.org.au/node/apni/2911942	Stylidium rhynchocarpum	Sond.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Black-beaked Triggerplant	11
https://id.biodiversity.org.au/node/apni/2913396	Rhagodia baccata	(Labill.) Moq.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Berry Saltbush	11
https://id.biodiversity.org.au/node/apni/2919192	Rubus anglocandicans	A.Newton	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Blackberry	11
https://id.biodiversity.org.au/node/apni/6283310	Conostylis aculeata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Prickly Conostylis	11
https://id.biodiversity.org.au/node/apni/7692612	Kunzea ericifolia	(Sm.) Heynh.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Spearwood	11
https://id.biodiversity.org.au/node/ausmoss/10070703	Dicranoloma diaphanoneuron	(Hampe) Paris	species	Plantae	Bryophyta	Bryopsida	Dicranales	Dicranaceae	Diaphanous Fork-moss	11
https://id.biodiversity.org.au/node/ausmoss/10108619	Racopilum cuspidigerum	(SchwÃ¤gr.) Ã…ngstr.	species	Plantae	Bryophyta	Bryopsida	Hypnodendrales	Racopilaceae	Carpet Moss	11
https://id.biodiversity.org.au/node/fungi/60097225	Cantharellus concinnus	Berk.	species	Fungi	Basidiomycota	Agaricomycetes	Cantharellales	Cantharellaceae		11
https://id.biodiversity.org.au/taxon/apni/51404247	Diuris jonesii	C.J.French & G.Brockman	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Dunsborough Donkey Orchid	11
https://biodiversity.org.au/afd/taxa/092991a6-b6b2-4602-a6d6-a410fa13a9fd	Arniscus humeralis	(Dallas, 1851)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae		10
https://biodiversity.org.au/afd/taxa/1b11ebd1-7e44-4d81-8c12-7141ffddfc78	Myiagra (Seisura) inquieta	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Monarchidae	Restless Flycatcher	10
https://biodiversity.org.au/afd/taxa/27d00742-060a-48c0-881d-5eb8dac6e946	Geitoneura minyas	(Waterhouse & Lyell, 1914)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Western Xenica	10
https://biodiversity.org.au/afd/taxa/460f5b70-28df-4f40-b120-bdc61b08990a	Mecyclothorax (Mecyclothorax) punctipennis	(Macleay, 1871)	species	Animalia	Arthropoda	Insecta	Coleoptera	Carabidae		10
https://biodiversity.org.au/afd/taxa/59d67add-ba69-4640-ba80-3a735a8d171e	Orthetrum caledonicum	(Brauer, 1865)	species	Animalia	Arthropoda	Insecta	Odonata	Libellulidae	Blue Skimmer	10
https://biodiversity.org.au/afd/taxa/5f44995b-559b-4dea-a30d-e3f2adf17f8c	Chlidonias (Pelodes) hybrida	(Pallas, 1811)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Whiskered Tern	10
https://biodiversity.org.au/afd/taxa/64bbd521-e1ad-4768-9c40-bce5f6630095	Heterotermes platycephalus	Froggatt, 1897	species	Animalia	Arthropoda	Insecta	Blattodea	Rhinotermitidae		10

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/692effa3-b719-495f-a86f-ce89e2981652	Oryctolagus cuniculus	(Linnaeus, 1758)	species	Animalia	Chordata	Mammalia	Lagomorpha	Leporidae	Rabbit	10
https://biodiversity.org.au/afd/taxa/6ccdb357-d666-4097-b0f6-88bb1a392112	Gavicalis virescens	(Vieillot, 1817)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Singing Honeyeater	10
https://biodiversity.org.au/afd/taxa/89db4444-f864-48b2-9446-47e54b5174d1	Echiopsis curta	(Schlegel, 1837)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Bardick	10
https://biodiversity.org.au/afd/taxa/a05d49d1-4d7a-4291-ac1b-d05851216f16	Fraus mediaspina	Nielsen & Kristensen, 1989	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		10
https://biodiversity.org.au/afd/taxa/b0017049-e751-4a36-af4c-652fb6334891	Aythya (Nyroca) australis	(Eyton, 1838)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Hardhead	10
https://biodiversity.org.au/afd/taxa/d39efcab-9136-45e4-b56b-64691beabbdd	Apis (Apis) mellifera	Linnaeus, 1758	species	Animalia	Arthropoda	Insecta	Hymenoptera	Apidae	Honey Bee	10
https://biodiversity.org.au/afd/taxa/e7ce580f-103f-4735-8565-2940532a3adb	Stigmodera cancellata	(Donovan, 1805)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		10
https://id.biodiversity.org.au/node/apni/2891342	Levenhookia pusilla	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Tiny Stylewort	10
https://id.biodiversity.org.au/node/apni/2893374	Tricoryne elatior	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Yellow Rush Lily	10
https://id.biodiversity.org.au/node/apni/2894215	Drosera glanduligera	Lehm.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Scarlet Sundew	10
https://id.biodiversity.org.au/node/apni/2894665	Gastrolobium bilobum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Heart-leaved Poison	10
https://id.biodiversity.org.au/node/apni/2894898	Taxandria linearifolia	(DC.) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		10
https://id.biodiversity.org.au/node/apni/2896476	Homalospermum firmum	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		10
https://id.biodiversity.org.au/node/apni/2898995	Isolepis marginata	(Thunb.) A.Dietr.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Little Club-rush	10
https://id.biodiversity.org.au/node/apni/2900587	Spyridium globulosum	(Labill.) Benth.	species	Plantae	Charophyta	Equisetopsida	Rosales	Rhamnaceae	Basket Bush	10
https://id.biodiversity.org.au/node/apni/2902673	Sphaerolobium drummondii	Turcz.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Globe Pea	10
https://id.biodiversity.org.au/node/apni/2903713	Lysinema conspicuum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		10
https://id.biodiversity.org.au/node/apni/2905837	Melaleuca rhaphiophylla	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Swamp Paperbark	10
https://id.biodiversity.org.au/node/apni/2911793	Lomandra nigricans	T.D.Macfarl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		10
https://id.biodiversity.org.au/node/apni/2912917	Burchardia congesta	Lindl.	species	Plantae	Charophyta	Equisetopsida	Liliales	Colchicaceae	Milkmaids	10
https://id.biodiversity.org.au/node/apni/2913413	Lomandra pauciflora	(R.Br.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		10
https://id.biodiversity.org.au/node/apni/2916969	Banksia serra	(R.Br.) A.R.Mast & K.R.Thiele	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Serrate-leaved Dryandra	10
https://id.biodiversity.org.au/node/apni/2919672	Stylidium schoenoides	DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Cow Kicks	10
https://id.biodiversity.org.au/node/apni/2920231	Selliera radicans	Cav.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Raumangu	10
https://id.biodiversity.org.au/node/apni/7907432	Hypocalymma cordifolium	Lehm. ex Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		10
https://id.biodiversity.org.au/node/fungi/60092321	Amanita muscaria	(L.) Lam.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae	Fly Agaric	10
https://id.biodiversity.org.au/node/fungi/60092723	Cortinarius archeri	Berk.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		10
https://id.biodiversity.org.au/node/fungi/60092941	Cortinarius persplendidus	Gasparini	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		10
https://id.biodiversity.org.au/node/fungi/60092965	Cortinarius rotundisporus	Cleland & Cheel	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		10
https://id.biodiversity.org.au/node/fungi/60097389	Hydnum repandum	L.	species	Fungi	Basidiomycota	Agaricomycetes	Cantharellales	Hydnaceae		10
https://id.biodiversity.org.au/taxon/apni/51293764	Leptocarpus denmarkicus	(Suess.) B.G.Briggs	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		10
https://id.biodiversity.org.au/taxon/apni/51398841	Caladenia brownii	Hopper	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Karri Spider Orchid	10
https://id.biodiversity.org.au/taxon/apni/51403416	Disa bracteata	Sw.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	South African Orchid	10
https://id.biodiversity.org.au/taxon/apni/51404666	Drakaea thynniphila	A.S.George	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Hammer Orchid	10
https://id.biodiversity.org.au/taxon/apni/51414242	Thelymitra benthamiana	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Leopard Sun-orchid	10
https://id.biodiversity.org.au/taxon/apni/51736246	Apium prostratum	Labill. ex Vent.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Sea Celery	10
https://biodiversity.org.au/afd/taxa/1ef26825-8768-42fa-85e2-61b7a68d2a73	Amegilla (Notomegilla) chlorocyanea	(Cockerell, 1914)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Apidae	Blue Banded Bee	9
https://biodiversity.org.au/afd/taxa/3a83c473-14ad-49e3-961c-0566240f117f	Opodiphthera helena	(White, 1843)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Saturniidae	Helena Emperor Moth	9
https://biodiversity.org.au/afd/taxa/3cf02a11-d525-4d6c-a8ef-8d82162a7cee	Kalotermes hilli	Emerson in Snyder, 1949	species	Animalia	Arthropoda	Insecta	Blattodea	Kalotermitidae	Termite	9
https://biodiversity.org.au/afd/taxa/45f49e98-84dc-4eb7-b379-1aa2baa882a2	Catasarcus impressipennis	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae	Redlegged Weevil	9
https://biodiversity.org.au/afd/taxa/493993a1-97e6-4032-bc0d-83bde149a7a1	Hypochrysops ignitus	(Leach, 1814)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae	Fiery Jewel	9
https://biodiversity.org.au/afd/taxa/7f252ae7-8f66-4a58-976e-d2202920a949	Arkys walckenaeri	Simon, 1879	species	Animalia	Arthropoda	Arachnida	Araneae	Arkyidae	Walckenaer's Studded Triangular Spider	9
https://biodiversity.org.au/afd/taxa/91f0535a-f513-417d-9826-8294ae640785	Podiceps cristatus	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Podicipediformes	Podicipedidae	Great Crested Grebe	9
https://biodiversity.org.au/afd/taxa/9edd0b3a-57b3-4b26-80d8-cd8e971712d2	Cynotelopus notabilis	Jeekel, 1986	species	Animalia	Arthropoda	Diplopoda	Sphaerotheriida	Cyliosomatidae	Western Australian Pill Millipede	9
https://biodiversity.org.au/afd/taxa/af327fdd-3604-4fde-b911-ba0150407425	Pieris rapae	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pieridae	Cabbage White Butterfly	9
https://biodiversity.org.au/afd/taxa/b2ba552f-d11a-4eb3-949a-9ed92b43837c	Akamptogonus novarae	(Humbert & de Saussure, 1869)	species	Animalia	Arthropoda	Diplopoda	Polydesmida	Paradoxosomatidae		9
https://biodiversity.org.au/afd/taxa/e6ea1087-ce34-4cf8-be85-546a9d732965	Calidris (Erolia) ferruginea	(Pontoppidan, 1763)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Curlew Sandpiper	9
https://biodiversity.org.au/afd/taxa/eedd1767-9b38-4f83-80ba-a8cbe6867550	Parapalaeosepsis plebeia	(De Meijere, 1906)	species	Animalia	Arthropoda	Insecta	Diptera	Sepsidae	Black Scavenger Fly	9
https://biodiversity.org.au/afd/taxa/ef05bc70-73bc-4874-b884-ede42aaa3838	Isopeda leishmanni	Hogg, 1903	species	Animalia	Arthropoda	Arachnida	Araneae	Sparassidae	Huntsman Spider	9
https://id.biodiversity.org.au/node/apni/2889667	Platysace compressa	(Labill.) C.Norman	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Tapeworm Plant	9
https://id.biodiversity.org.au/node/apni/2889697	Hemigenia humilis	Benth.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae		9
https://id.biodiversity.org.au/node/apni/2890488	Thysanotus thyrsoideus	Baker	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		9
https://id.biodiversity.org.au/node/apni/2894580	Acacia urophylla	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Pointed Leaved Acacia	9
https://id.biodiversity.org.au/node/apni/2895963	Haemodorum spicatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Bohn	9
https://id.biodiversity.org.au/node/apni/2896141	Hibbertia racemosa	(Endl.) Gilg	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Stalked Guinea Flower	9
https://id.biodiversity.org.au/node/apni/2897943	Vicia hirsuta	(L.) Gray	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Hairy Vetch	9

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2899048	Burchardia multiflora	Lindl.	species	Plantae	Charophyta	Equisetopsida	Liliales	Colchicaceae	Lesser Burchardia	9
https://id.biodiversity.org.au/node/apni/2900860	Billardiera laxiflora	(Benth.) E.M.Benn.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		9
https://id.biodiversity.org.au/node/apni/2901699	Eucalyptus staeri	(Maiden) Kessell & C.A.Gardner	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Albany Blackbutt	9
https://id.biodiversity.org.au/node/apni/2904201	Lysinema ciliatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Curry Flower	9
https://id.biodiversity.org.au/node/apni/2906911	Euphorbia paralias	L.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae	Sea Spurge	9
https://id.biodiversity.org.au/node/apni/2908064	Briza maxima	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Large Quaking-grass	9
https://id.biodiversity.org.au/node/apni/2910072	Taraxis grossa	B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		9
https://id.biodiversity.org.au/node/apni/2914322	Chorizema ilicifolium	Labill.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Holly Flame Pea	9
https://id.biodiversity.org.au/node/apni/2917506	Melaleuca eurystoma	Barlow ex Craven	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		9
https://id.biodiversity.org.au/node/apni/2920604	Gompholobium tomentosum	Labill.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Hairy Yellow Pea	9
https://id.biodiversity.org.au/node/apni/7988035	Stylidium inundatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Hundreds And Thousands	9
https://id.biodiversity.org.au/node/ausmoss/10113042	Sematophyllum homomallum	(Hampe) Broth.	species	Plantae	Bryophyta	Bryopsida	Hypnales	Sematophyllaceae	Bronze Signal-moss	9
https://id.biodiversity.org.au/node/ausmoss/2919538	Frullania probosciphora	Taylor	species	Plantae	Marchantiophyta	Jungermanniopsida	Porellales	Frullaniaceae	Chocolate Scalewort	9
https://id.biodiversity.org.au/node/fungi/60092755	Cortinarius austrovenetus	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		9
https://id.biodiversity.org.au/taxon/apni/51286820	Paraserianthes lophantha	(Willd.) I.C.Nielsen	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Cape Leeuwin Wattle	9
https://id.biodiversity.org.au/taxon/apni/51404255	Diuris longifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Common Donkey Orchid	9
https://id.biodiversity.org.au/taxon/apni/51429703	Tricoryne humilis	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae		9
https://id.biodiversity.org.au/taxon/apni/51435209	Tetratheca hispidissima	Steetz	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		9
https://id.biodiversity.org.au/taxon/apni/51441699	Eriochilus dilatatus	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	White Bunny Orchid	9
https://id.biodiversity.org.au/taxon/ausmoss/10152591	Campylopus introflexus	(Hedw.) Brid.	species	Plantae	Bryophyta	Bryopsida	Dicranales	Leucobryaceae	Swan-neck Moss	9
ALA_DR22912_1114_1	Coturnix ypsilophora		species	Animalia	Chordata	Aves	Galliformes	Phasianidae		8
https://biodiversity.org.au/afd/taxa/0574c9e2-739d-4c3d-9820-0a3a05786d3e	Aenetus dulcis	(Swinhoe, 1892)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		8
https://biodiversity.org.au/afd/taxa/2118456c-631c-4c4c-b995-72ce9d40d16e	Occasitermes occasus	(Silvestri, 1909)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae		8
https://biodiversity.org.au/afd/taxa/2b6dcb32-6507-4553-970d-d06229af401e	Pygopus lepidopodus	(LacÃ©pÃ¨de, 1804)	species	Animalia	Chordata	Reptilia	Squamata	Pygopodidae	Common Scaly-foot	8
https://biodiversity.org.au/afd/taxa/378e853b-577c-42f7-8fb7-f2951382f0c9	Limnoxenus zealandicus	(Broun, 1880)	species	Animalia	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Water Scavenger Beetle	8
https://biodiversity.org.au/afd/taxa/3b05d614-aca5-4d6e-b4b9-8bd7ac7f7ee6	Calidris (Crocethia) alba	(Pallas, 1764)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Sanderling	8
https://biodiversity.org.au/afd/taxa/4cee8a8f-3848-4095-8734-254056585182	Galaxias occidentalis	Ogilby, 1899	species	Animalia	Chordata	Actinopterygii	Salmoniformes	Galaxiidae	Western Galaxias	8
https://biodiversity.org.au/afd/taxa/758297d1-9e18-4832-81eb-7a047db923b9	Maratus pavonis	(Dunn, 1947)	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae	Species Of Peacock Spider	8
https://biodiversity.org.au/afd/taxa/9aeef589-2845-4876-a57b-b62fcbc49275	Charadrius (Charadrius) leschenaultii	Lesson, 1826	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Greater Sand Plover	8
https://biodiversity.org.au/afd/taxa/a390a6d9-ca4f-459f-8959-e9305918590e	Eopsaltria (Eopsaltria) griseogularis	Gould, 1838	species	Animalia	Chordata	Aves	Passeriformes	Petroicidae	Western Yellow Robin	8
https://biodiversity.org.au/afd/taxa/aaef2128-4dba-4619-86ef-8ba5ed6f1559	Cercophonius sulcatus	Kraepelin, 1908	species	Animalia	Arthropoda	Arachnida	Scorpiones	Bothriuridae		8
https://biodiversity.org.au/afd/taxa/b0508815-ef48-413d-aabe-5da1a1815e06	Rhipicera (Agathorhipis) mystacina	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Coleoptera	Rhipiceridae		8
https://biodiversity.org.au/afd/taxa/c88d6c8a-4ba1-48e7-b789-aa7c64008021	Chrysophrys auratus	(Forster, 1801)	species	Animalia	Chordata	Actinopterygii	Perciformes	Sparidae	Snapper	8
https://biodiversity.org.au/afd/taxa/ca23bd2f-6e05-46bc-9cf2-cc440b6c7532	Synemon directa	Westwood, 1877	species	Animalia	Arthropoda	Insecta	Lepidoptera	Castniidae		8
https://biodiversity.org.au/afd/taxa/dc21add3-0376-4164-9dfe-dacc5c50ef40	Micromus tasmaniae	(Walker, 1860)	species	Animalia	Arthropoda	Insecta	Neuroptera	Hemerobiidae	Tasmanian Brown Lacewing	8
https://biodiversity.org.au/afd/taxa/e05c41be-d2ac-46d1-8efd-c858133211c0	Megachile (Austrochile) remotula	Cockerell, 1910	species	Animalia	Arthropoda	Insecta	Hymenoptera	Megachilidae		8
https://biodiversity.org.au/afd/taxa/eb236480-52c4-4b0e-86ea-4e66c7775d6f	Zizina otis	(Fabricius, 1787)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae	Common Grass-blue	8
https://biodiversity.org.au/afd/taxa/ee2cb6a9-e17c-4ca7-8aef-76d69eb969ed	Trichosurus vulpecula	(Kerr, 1792)	species	Animalia	Chordata	Mammalia	Diprotodontia	Phalangeridae	Common Brushtail Possum	8
https://biodiversity.org.au/afd/taxa/fa5bfcff-c89e-4dda-b7ed-1f61bdf0d1ea	Mugil cephalus	Linnaeus, 1758	species	Animalia	Chordata	Actinopterygii	Mugiliformes	Mugilidae	Sea Mullet	8
https://biodiversity.org.au/afd/taxa/fd928615-5613-47eb-9cd4-7eb8e30a4993	Pluvialis squatarola	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Grey Plover	8
https://id.biodiversity.org.au/node/apni/2886563	Daviesia flexuosa	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		8
https://id.biodiversity.org.au/node/apni/2887860	Platysace pendula	(Benth.) C.Norman	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		8
https://id.biodiversity.org.au/node/apni/2888190	Acacia cyclops	A.Cunn. ex G.Don	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Western Coastal Wattle	8
https://id.biodiversity.org.au/node/apni/2889160	Acacia browniana	H.L.Wendl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Brown's Wattle	8
https://id.biodiversity.org.au/node/apni/2889975	Scaevola globulifera	Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		8
https://id.biodiversity.org.au/node/apni/2893167	Sphaerolobium alatum	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		8
https://id.biodiversity.org.au/node/apni/2893392	Eucalyptus megacarpa	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Bullich	8
https://id.biodiversity.org.au/node/apni/2894397	Xanthosia huegelii	(Benth.) Steud.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Hairy Xanthosia	8
https://id.biodiversity.org.au/node/apni/2901354	Xanthorrhoea gracilis	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Xanthorrhoeaceae	Graceful Grass Tree	8
https://id.biodiversity.org.au/node/apni/2903256	Mesomelaena tetragona	(R.Br.) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Semaphore Sedge	8
https://id.biodiversity.org.au/node/apni/2903774	Schoenus nitens	(R.Br.) Poir.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Shiny Bogrush	8
https://id.biodiversity.org.au/node/apni/2905757	Phyllota barbata	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		8
https://id.biodiversity.org.au/node/apni/2907978	Hibbertia cunninghamii	Aiton ex Hook.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		8
https://id.biodiversity.org.au/node/apni/2908778	Sphenotoma squarrosa	(R.Br.) G.Don	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		8
https://id.biodiversity.org.au/node/apni/2909592	Stylidium fasciculatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Pale Beaked Triggerplant	8
https://id.biodiversity.org.au/node/apni/2910246	Lyginia imberbis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		8
https://id.biodiversity.org.au/node/apni/2911963	Eutaxia myrtifolia	(Sm.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		8

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2912492	Conostylis setigera	R.Br.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Bristly Cottonhead	8
https://id.biodiversity.org.au/node/apni/2914150	Leptocarpus laxus	(R.Br.) B.G.Briggs	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		8
https://id.biodiversity.org.au/node/apni/2914671	Acacia littorea	Maslin	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		8
https://id.biodiversity.org.au/node/apni/2916440	Stylidium scandens	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Climbing Triggerplant	8
https://id.biodiversity.org.au/node/apni/2917430	Schoenus efoliatus	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		8
https://id.biodiversity.org.au/node/apni/2919212	Gompholobium knightianum	Lindl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Knight's Wedge-pea	8
https://id.biodiversity.org.au/node/apni/2919524	Leucopogon pendulus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		8
https://id.biodiversity.org.au/node/apni/7056827	Pithocarpa cordata	(DC.) Schmidt-Leb. & R.L.Barrett	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Tangle Daisy	8
https://id.biodiversity.org.au/node/apni/8504994	Daviesia cordata	Sm.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Bookleaf	8
https://id.biodiversity.org.au/node/fungi/60099609	Lactarius eucalypti	O.K.Mill. & R.N.Hilton	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		8
https://id.biodiversity.org.au/taxon/apni/51283539	Drosera drummondii	Planch.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		8
https://id.biodiversity.org.au/taxon/apni/51285764	Vicia sativa	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Common Vetch	8
https://id.biodiversity.org.au/taxon/apni/51287044	Acacia pulchella	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Prickly Moses	8
https://id.biodiversity.org.au/taxon/apni/51294418	Stylidium squamosotuberosum	Carlquist	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Fleshy-rhizomed Triggerplant	8
https://id.biodiversity.org.au/taxon/apni/51300120	Evandra aristata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Zebra Sedge	8
https://id.biodiversity.org.au/taxon/apni/51302290	Eucalyptus marginata	Donn ex Sm.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Jarrah	8
https://id.biodiversity.org.au/taxon/apni/51399211	Caladenia nana	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pink Fan Orchid	8
https://id.biodiversity.org.au/taxon/apni/51414426	Thelymitra tigrina	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Tiger Orchid	8
https://id.biodiversity.org.au/taxon/apni/51437609	Haloragodendron racemosum	(Labill.) Orchard	species	Plantae	Charophyta	Equisetopsida	Saxifragales	Haloragaceae	Shrubby Raspwort	8
https://id.biodiversity.org.au/taxon/ausmoss/10145639	Thuidiopsis sparsa	(Hook.f. & Wilson) Broth.	species	Plantae	Bryophyta	Bryopsida	Hypnales	Thuidiaceae	Weft Moss	8
https://biodiversity.org.au/afd/taxa/028fcb36-2ec4-49a4-aa3c-75f45ef4ee39	Vanessa kershawi	(McCoy, 1868)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Australian Painted Lady	7
https://biodiversity.org.au/afd/taxa/0bf5aa64-64fb-441d-8b60-8ec252caf487	Myrmecia imaii	Taylor, 2015	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		7
https://biodiversity.org.au/afd/taxa/0c577e55-63a3-4180-b8c8-ca28b5dba656	Simplisetia aequisetis	(Augener, 1913)	species	Animalia	Annelida	Polychaeta		Nereididae	Squirt Worm	7
https://biodiversity.org.au/afd/taxa/1288a458-1631-40e5-837d-fd286679f866	Cladorhynchus leucocephalus	(Vieillot, 1816)	species	Animalia	Chordata	Aves	Charadriiformes	Recurvirostridae	Banded Stilt	7
https://biodiversity.org.au/afd/taxa/12e5f0eb-d91a-4f17-b8d5-ebc4c81ea782	Echthromorpha intricatoria	(Fabricius, 1804)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Ichneumonidae	Cream Spotted Ichneumon Wasp	7
https://biodiversity.org.au/afd/taxa/18ce1fc8-3045-4136-8a45-f5c94d2ef96f	Acanthopagrus butcheri	(Munro, 1949)	species	Animalia	Chordata	Actinopterygii	Perciformes	Sparidae	Black Bream	7
https://biodiversity.org.au/afd/taxa/2f63ef2c-d097-4362-898b-e3b47819d37c	Hyporhamphus melanochir	(Valenciennes, 1847)	species	Animalia	Chordata	Actinopterygii	Beloniformes	Hemiramphidae	Southern Garfish	7
https://biodiversity.org.au/afd/taxa/2fa47871-3637-4b3a-bfd8-89750d53e8fa	Arenaria interpres	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Ruddy Turnstone	7
https://biodiversity.org.au/afd/taxa/39505c08-30cc-4288-9ecd-e6020bb948a1	Cercartetus concinnus	(Gould, 1845)	species	Animalia	Chordata	Mammalia	Diprotodontia	Burramyidae	Western Pygmy-possum	7
https://biodiversity.org.au/afd/taxa/3e7a390b-9af8-4d6e-a1a9-84036522189d	Bothriembryon (Bothriembryon) kingii	(Gray, 1825)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Bothriembryontidae		7
https://biodiversity.org.au/afd/taxa/4b65277d-fe8e-4605-abc6-9ab5b2174d08	Castiarina placida	(Thomson, 1879)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		7
https://biodiversity.org.au/afd/taxa/59fede41-4359-40c9-bff7-c0cbcab02440	Lamprima aurata	Latreille, 1817	species	Animalia	Arthropoda	Insecta	Coleoptera	Lucanidae	Golden Stag Beetle	7
https://biodiversity.org.au/afd/taxa/608a8098-c27c-4358-8b55-59df75089a2e	Dasypodia selenophora	GuenÃ©e, 1852	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Granny Moth	7
https://biodiversity.org.au/afd/taxa/6231c7a7-3895-483c-b647-c873e4535196	Varanus rosenbergi	Mertens, 1957	species	Animalia	Chordata	Reptilia	Squamata	Varanidae	Heath Monitor	7
https://biodiversity.org.au/afd/taxa/62eff46d-29ae-41fe-8bb4-3668316fa9f6	Tholosanus proximus	(Dallas, 1851)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	7
https://biodiversity.org.au/afd/taxa/67c79028-2915-45d1-aa6a-6fddd299675f	Physalia physalis	(Linnaeus, 1758)	species	Animalia	Cnidaria	Hydrozoa	Siphonophorae	Physaliidae	Portuguese Man-of-war	7
https://biodiversity.org.au/afd/taxa/857b8f05-4c44-4da4-bb77-b9c714ac828f	Leptograpsus variegatus	(Fabricius, 1793)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Grapsidae	Purple Rock Crab	7
https://biodiversity.org.au/afd/taxa/879e81d3-a4e8-452c-a2b0-2cdfa1e7dd49	Spilostethus pacificus	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Hemiptera	Lygaeidae	Bug	7
https://biodiversity.org.au/afd/taxa/8d1a4e88-e13b-4ed6-ac51-5042614c7c66	Hemiergis gracilipes	(Steindachner, 1870)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	South-western Mulch-skink	7
https://biodiversity.org.au/afd/taxa/967549e7-7fa9-4770-b86e-5e3520d3c43d	Chelodina (Macrochelodina) oblonga	Gray, 1841	species	Animalia	Chordata	Reptilia	Testudines	Chelidae	Northern Snake-necked Turtle	7
https://biodiversity.org.au/afd/taxa/a88fb5e7-c92b-40c8-8e03-7d4ad013bd99	Cermatulus nasalis	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Predatory Shield Bug	7
https://biodiversity.org.au/afd/taxa/bdd6e28f-8085-409f-8e63-2afbf0d06d26	Dasyornis (Dasyornis) longirostris	Gould, 1841	species	Animalia	Chordata	Aves	Passeriformes	Dasyornithidae	Western Bristlebird	7
https://biodiversity.org.au/afd/taxa/c580bea5-7a14-4902-8d1b-29474d96a396	Anisynta sphenosema	(Meyrick & Lower, 1902)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hesperiidae	Wedge Grass-skipper	7
https://biodiversity.org.au/afd/taxa/d040c910-6f22-4234-8093-f190cf077258	Samichus decoratus	Attems, 1911	species	Animalia	Arthropoda	Diplopoda	Spirostreptida	Iulomorphidae		7
https://biodiversity.org.au/afd/taxa/d699e773-2a2c-4957-9819-053326355d0c	Metistete obscura	(Borchmann, 1908)	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		7
https://biodiversity.org.au/afd/taxa/dc9fa0f5-bd8a-495d-8b3f-754c8a279a05	Favonigobius lateralis	(Macleay, 1881)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Southern Longfin Goby	7
https://biodiversity.org.au/afd/taxa/eb7e9119-1679-4ea8-8acc-d659522fa81a	Castiarina jospilota	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		7
https://id.biodiversity.org.au/node/apni/2886613	Eucalyptus cornuta	Labill.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Yate	7
https://id.biodiversity.org.au/node/apni/2886867	Hakea cucullata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Scallops	7
https://id.biodiversity.org.au/node/apni/2887023	Psoralea pinnata	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	African Scurf-pea	7
https://id.biodiversity.org.au/node/apni/2889615	Aotus intermedia	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/apni/2891037	Aphelia cyperoides	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Centrolepidaceae		7
https://id.biodiversity.org.au/node/apni/2893007	Hakea prostrata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Harsh Hakea	7
https://id.biodiversity.org.au/node/apni/2895002	Sphaerolobium grandiflorum	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/apni/2896402	Agrostocrinum hirsutum	(Lindl.) Keighery	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Grass Lily	7
https://id.biodiversity.org.au/node/apni/2896543	Mentha pulegium	L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Pennyroyal	7
https://id.biodiversity.org.au/node/apni/2896873	Leucopogon australis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Spike Beard-heath	7
https://id.biodiversity.org.au/node/apni/2897219	Eucalyptus patens	Benth.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Blackbutt	7

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2898204	Arctotheca populifolia	(P.J.Bergius) Norl.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Beach Daisy	7
https://id.biodiversity.org.au/node/apni/2899220	Thomasia quercifolia	(Andrews) J.Gay	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Oak Leaved Thomasia	7
https://id.biodiversity.org.au/node/apni/2900060	Gompholobium venustum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Handsome Wedge Pea	7
https://id.biodiversity.org.au/node/apni/2901234	Billardiera floribunda	(Putt.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	White Flowered Billardiera	7
https://id.biodiversity.org.au/node/apni/2901735	Acacia varia	Maslin	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/apni/2907521	Diaspasis filifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Thread-leaved Diaspasis	7
https://id.biodiversity.org.au/node/apni/2910374	Bossiaea praetermissa	J.H.Ross	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/apni/2910676	Senecio elegans	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Purple Groundsel	7
https://id.biodiversity.org.au/node/apni/2911372	Isolepis cyperoides	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		7
https://id.biodiversity.org.au/node/apni/2912761	Sphaerolobium rostratum	R.Butcher	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/apni/2913302	Pimelea clavata	Labill.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		7
https://id.biodiversity.org.au/node/apni/2914900	Opercularia volubilis	R.Br. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Rubiaceae	Twining Stinkweed	7
https://id.biodiversity.org.au/node/apni/2917163	Beaufortia decussata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Gravel Bottlebrush	7
https://id.biodiversity.org.au/node/apni/2918988	Darwinia oederoides	(Turcz.) Benth.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		7
https://id.biodiversity.org.au/node/apni/2919041	Cakile maritima	Scop.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Sea Rocket	7
https://id.biodiversity.org.au/node/apni/2919223	Lindsaea linearis	Sw.	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Lindsaeaceae	Screw Fern	7
https://id.biodiversity.org.au/node/apni/2920316	Chamaescilla corymbosa	(R.Br.) F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Blue Stars	7
https://id.biodiversity.org.au/node/apni/4750977	Muehlenbeckia adpressa	(Labill.) Meisn.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Climbing Lignum	7
https://id.biodiversity.org.au/node/apni/6923911	Centella asiatica	(L.) Urb.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Indian Pennywort	7
https://id.biodiversity.org.au/node/apni/8508892	Eutaxia parvifolia	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/node/fungi/60096317	Austroboletus occidentalis	Watling & N.M.Greg.	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		7
https://id.biodiversity.org.au/node/fungi/60096985	Austropaxillus infundibuliformis	(Cleland) Bresinsky & Jarosch	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Serpulaceae	Fungi	7
https://id.biodiversity.org.au/taxon/apni/51285711	Pultenaea reticulata	(Sm.) Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		7
https://id.biodiversity.org.au/taxon/apni/51286955	Acacia longifolia	(Andrews) Willd.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Sallow Wattle	7
https://id.biodiversity.org.au/taxon/apni/51288225	Orianthera serpyllifolia	(R.Br.) C.S.P.Foster & B.J.Conn	species	Plantae	Charophyta	Equisetopsida	Gentianales	Loganiaceae		7
https://id.biodiversity.org.au/taxon/apni/51288688	Ornduffia parnassifolia	(Labill.) Tippery & Les	species	Plantae	Charophyta	Equisetopsida	Asterales	Menyanthaceae		7
https://id.biodiversity.org.au/taxon/apni/51288759	Astartea pulchella	(DC.) Rye	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		7
https://id.biodiversity.org.au/taxon/apni/51412478	Pyrorchis nigricans	(R.Br.) D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Black Fire-orchid	7
https://id.biodiversity.org.au/taxon/apni/51445303	Banksia sessilis	(Knight) A.R.Mast & K.R.Thiele	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		7
NZOR-6-74117	Rosulabryum billardierei	(SchwÃ¤gr.) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae		6
NZOR-6-89950	Cladonia rigida	(Hook.f. & Taylor) Hampe	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		6
https://biodiversity.org.au/afd/taxa/040ce059-6cc6-4ca2-bdee-436eacd2c81d	Crinia subinsignifera	Littlejohn, 1957	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Small Western Froglet	6
https://biodiversity.org.au/afd/taxa/08ec29a6-d719-4a18-bc89-66dcae4e4ab7	Ascorhis occidua	Ponder & Clark, 1988	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Tateidae		6
https://biodiversity.org.au/afd/taxa/0fe0299f-7b30-4fdf-a986-d955a1b5d94b	Poecilasthena scoliota	(Meyrick, 1891)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		6
https://biodiversity.org.au/afd/taxa/2843e4d8-931a-41f0-875e-f6756f44088f	Hydromys chrysogaster	Geoffroy, 1804	species	Animalia	Chordata	Mammalia	Rodentia	Muridae	Water-rat	6
https://biodiversity.org.au/afd/taxa/296a0ee4-ad0c-4227-87b1-929654c41dd3	Lasioglossum (Chilalictus) mesembryanthemi	(Cockerell, 1926)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae	Sweat Bee	6
https://biodiversity.org.au/afd/taxa/34b6d1d7-81be-46cf-b1e1-e80c68d26b34	Parablennius postoculomaculatus	Bath & Hutchins, 1986	species	Animalia	Chordata	Actinopterygii	Perciformes	Blenniidae	False Tasmanian Blenny	6
https://biodiversity.org.au/afd/taxa/4b1b796a-8991-4150-9359-8f58d9c88bd8	Ficopomatus enigmaticus	(Fauvel, 1923)	species	Animalia	Annelida	Polychaeta		Serpulidae	Tube Worm	6
https://biodiversity.org.au/afd/taxa/67c256a8-6a31-46de-9dde-d75d5578496c	Turnix (Austroturnix) varius	(Latham, 1801)	species	Animalia	Chordata	Aves	Turniciformes	Turnicidae	Painted Button-quail	6
https://biodiversity.org.au/afd/taxa/683a3853-83cd-4c65-b980-747884c6fde4	Acritoscincus trilineatus	(Gray, 1838)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Western Three-lined Skink	6
https://biodiversity.org.au/afd/taxa/74f4fa5d-4fc7-4dea-b41d-6a0829d62a29	Australomisidia socialis	(Main, 1988)	species	Animalia	Arthropoda	Arachnida	Araneae	Thomisidae	Crab Spider	6
https://biodiversity.org.au/afd/taxa/88c246ac-81a1-4307-90db-2cbb0db3ab5b	Maratus griseus	(Keyserling, 1882)	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae		6
https://biodiversity.org.au/afd/taxa/a19849cc-caa1-43c2-97f8-2e3dae6f4cb9	Tatea rufilabris	(A. Adams, 1862)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Tateidae	Freshwater Snail	6
https://biodiversity.org.au/afd/taxa/b898b490-ecde-4a08-a322-7872fde06c03	Archimantis sobrina	Saussure, 1872	species	Animalia	Arthropoda	Insecta	Mantodea	Mantidae	Large Brown Mantid	6
https://biodiversity.org.au/afd/taxa/d6156ed3-bda2-42d6-a948-07d94c7e6559	Chalcites basalis	(Horsfield, 1821)	species	Animalia	Chordata	Aves	Cuculiformes	Cuculidae	Horsfield's Bronze-cuckoo	6
https://biodiversity.org.au/afd/taxa/da5d00fa-02a9-4910-b250-1a7de16ac11c	Lerista microtis	(Gray, 1845)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	South-western Slider	6
https://biodiversity.org.au/afd/taxa/e0c68347-165c-4bff-b74a-005616df9791	Eudyptula minor	(J.R. Forster, 1781)	species	Animalia	Chordata	Aves	Sphenisciformes	Spheniscidae	Little Penguin	6
https://biodiversity.org.au/afd/taxa/ead4aed4-b7dd-4c0b-8fbf-a72ab69b0403	Stenoderus suturalis	(Olivier, 1795)	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		6
https://id.biodiversity.org.au/node/apni/2886127	Lotus angustissimus	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Slender Bird's-foot Trefoil	6
https://id.biodiversity.org.au/node/apni/2886391	Mirbelia dilatata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Holly-leaved Mirbelia	6
https://id.biodiversity.org.au/node/apni/2888598	Pimelea hispida	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae	Bristly Pimelea	6
https://id.biodiversity.org.au/node/apni/2891915	Gastrolobium brownii	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		6
https://id.biodiversity.org.au/node/apni/2892152	Astartea corniculata	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		6
https://id.biodiversity.org.au/node/apni/2892777	Drosera modesta	Diels	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Modest Rainbow	6
https://id.biodiversity.org.au/node/apni/2893227	Lotus uliginosus	Schkuhr	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Greater Bird's-foot Trefoil	6
https://id.biodiversity.org.au/node/apni/2893373	Lotus subbiflorus	Lag.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Hairy Bird's-foot Trefoil	6
https://id.biodiversity.org.au/node/apni/2893596	Kennedia carinata	(Benth.) Van Houtte	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		6

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2894633	Pentapeltis silvatica	(Diels) Domin	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Southern Pentapeltis	6
https://id.biodiversity.org.au/node/apni/2895104	Drosera sulphurea	Lehm.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		6
https://id.biodiversity.org.au/node/apni/2895177	Comesperma flavum	DC.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae		6
https://id.biodiversity.org.au/node/apni/2895762	Acidonia microcarpa	(R.Br.) L.A.S.Johnson & B.G.Briggs	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		6
https://id.biodiversity.org.au/node/apni/2896317	Amperea ericoides	A.Juss.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae		6
https://id.biodiversity.org.au/node/apni/2896952	Templetonia retusa	(Vent.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Cockies Tongue	6
https://id.biodiversity.org.au/node/apni/2899805	Stylidium luteum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Yellow Triggerplant	6
https://id.biodiversity.org.au/node/apni/2900195	Leucopogon sp. Walpole (R.J.Cranfield 10940)	WA Herbarium	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		6
https://id.biodiversity.org.au/node/apni/2903083	Orobanche minor	Sm.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Orobanchaceae	Lesser Broomrape	6
https://id.biodiversity.org.au/node/apni/2903289	Histiopteris incisa	(Thunb.) J.Sm.	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Dennstaedtiaceae	Oak Fern	6
https://id.biodiversity.org.au/node/apni/2903788	Platysace filiformis	(Bunge) C.Norman	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		6
https://id.biodiversity.org.au/node/apni/2903906	Olearia paucidentata	(Steetz) F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Autumn Scrub Daisy	6
https://id.biodiversity.org.au/node/apni/2904766	Hemiandra pungens	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Snakebush	6
https://id.biodiversity.org.au/node/apni/2905255	Leucopogon distans	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		6
https://id.biodiversity.org.au/node/apni/2905888	Xanthorrhoea preissii	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Xanthorrhoeaceae	Grasstree	6
https://id.biodiversity.org.au/node/apni/2906592	Borya sphaerocephala	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Boryaceae	Pincushions	6
https://id.biodiversity.org.au/node/apni/2906672	Cassytha racemosa	Nees	species	Plantae	Charophyta	Equisetopsida	Laurales	Lauraceae	Dodder Laurel	6
https://id.biodiversity.org.au/node/apni/2908251	Melaleuca thymoides	Labill.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		6
https://id.biodiversity.org.au/node/apni/2909248	Boronia stricta	Bartl.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		6
https://id.biodiversity.org.au/node/apni/2909970	Banksia occidentalis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Waterbush	6
https://id.biodiversity.org.au/node/apni/2910179	Kunzea baxteri	(Klotzsch) Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Crimson Kunzea	6
https://id.biodiversity.org.au/node/apni/2911970	Carpobrotus virescens	(Haw.) Schwantes	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Aizoaceae	Pigface	6
https://id.biodiversity.org.au/node/apni/2912788	Thomasia purpurea	(W.T.Aiton) J.Gay	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		6
https://id.biodiversity.org.au/node/apni/2915625	Logania vaginalis	(Labill.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Loganiaceae	White Spray	6
https://id.biodiversity.org.au/node/apni/2916220	Kunzea sulphurea	Tovey & P.Morris	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		6
https://id.biodiversity.org.au/node/apni/2919145	Comesperma calymega	Labill.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae	Blue-spike Milkwort	6
https://id.biodiversity.org.au/node/apni/2920283	Juncus pallidus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Pale Rush	6
https://id.biodiversity.org.au/node/ausmoss/2891280	Radula buccinifera	(Hook.f. & Taylor) Taylor ex Gottsche, Lindenb. & Nees	species	Plantae	Marchantiophyta	Jungermanniopsida	Porellales	Radulaceae	Common Scalewort	6
https://id.biodiversity.org.au/node/ausmoss/2899866	Lunularia cruciata	(L.) Dumort.	species	Plantae	Marchantiophyta	Marchantiopsida	Lunulariales	Lunulariaceae	Crescent Moonwort	6
https://id.biodiversity.org.au/node/ausmoss/2920390	Lethocolea pansa	(Taylor) G.A.M.Scott & K.G.Beckm.	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Acrobolbaceae	Common Pouchwort	6
https://id.biodiversity.org.au/node/fungi/60093081	Descolea maculata	Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		6
https://id.biodiversity.org.au/node/fungi/60093093	Phaeocollybia graveolens	K.Syme & B.J.Rees	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		6
https://id.biodiversity.org.au/node/fungi/60099657	Russula adusta	(Pers.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		6
https://id.biodiversity.org.au/node/fungi/60099739	Russula persanguinea	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		6
https://id.biodiversity.org.au/node/fungi/60100315	Ramaria lorithamnus	(Berk.) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Gomphales	Gomphaceae		6
https://id.biodiversity.org.au/node/fungi/60100587	Aseroe rubra	Labill.	species	Fungi	Basidiomycota	Agaricomycetes	Phallales	Phallaceae	Anemone Stinkhorn Fungus	6
https://id.biodiversity.org.au/node/fungi/60100835	Tremella mesenterica	Retz.	species	Fungi	Basidiomycota	Tremellomycetes	Tremellales	Tremellaceae		6
https://id.biodiversity.org.au/taxon/apni/51268348	Cirsium vulgare	(Savi) Ten.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Spear Thistle	6
https://id.biodiversity.org.au/taxon/apni/51283515	Drosera microphylla	Endl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Golden Rainbow	6
https://id.biodiversity.org.au/taxon/apni/51283549	Drosera erythrorhiza	Lindl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Red Ink Sundew	6
https://id.biodiversity.org.au/taxon/apni/51288753	Astartea glomerulosa	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Early Astartea	6
https://id.biodiversity.org.au/taxon/apni/51293793	Leptocarpus scariosus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		6
https://id.biodiversity.org.au/taxon/apni/51300296	Lythrum hyssopifolia	L.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Lythraceae	Lesser Loosestrife	6
https://id.biodiversity.org.au/taxon/apni/51409865	Prasophyllum regium	R.S.Rogers	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	King Leek Orchid	6
https://id.biodiversity.org.au/taxon/apni/51412292	Pterostylis recurva	Benth.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Recurved Shell Orchid	6
https://id.biodiversity.org.au/taxon/apni/51414286	Thelymitra fuscolutea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Chestnut Sun Orchid	6
https://id.biodiversity.org.au/taxon/apni/51431584	Thysanotus patersonii	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Twining Fringe-lily	6
https://id.biodiversity.org.au/taxon/apni/51434579	Machaerina juncea	(R.Br.) T.Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Bare Twig-rush	6
https://id.biodiversity.org.au/taxon/apni/51435924	Daviesia inflata	Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		6
https://id.biodiversity.org.au/taxon/apni/51436514	Acacia cochlearis	(Labill.) H.L.Wendl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Rigid Wattle	6
https://id.biodiversity.org.au/taxon/apni/51445824	Cheilanthes austrotenuifolia	H.M.Quirk & T.C.Chambers	species	Plantae	Charophyta	Equisetopsida		Pteridaceae	Green Rock-fern	6
https://id.biodiversity.org.au/taxon/apni/51446184	Leptocarpus thysananthus	B.G.Briggs	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		6
https://id.biodiversity.org.au/taxon/ausmoss/10154688	Fissidens tenellus	Hook.f. & Wilson	species	Plantae	Bryophyta	Bryopsida	Dicranales	Fissidentaceae	Tiny Pocket-moss	6
NZOR-6-79306	Poronia erici	Lohmeyer & Benkert	species	Fungi	Ascomycota	Sordariomycetes	Xylariales	Xylariaceae		5
https://biodiversity.org.au/afd/taxa/0dec2a4d-7cad-4792-845d-b614bb59d78c	Myrmecia mandibularis	Smith, 1858	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Toothless Bull Ant	5
https://biodiversity.org.au/afd/taxa/104393e0-22e8-496d-ac72-a8dd8387f612	Coccinella transversalis	Fabricius, 1781	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae	Transverse Ladybird	5

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/148208ff-e6ea-40bd-9999-9f1a6b8acc1e	Phylidonyris (Meliornis) niger	(Bechstein, 1811)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	White-cheeked Honeyeater	5
https://biodiversity.org.au/afd/taxa/18d4c48a-5500-4c6f-b3ac-997231a7ad86	Cnidoglanis macrocephalus	(Valenciennes, 1840)	species	Animalia	Chordata	Actinopterygii	Siluriformes	Plotosidae	Estuary Cobbler	5
https://biodiversity.org.au/afd/taxa/2ecff0de-1ba4-4b53-a368-0e01d36c289d	Tringa (Rhyacophilus) glareola	Linnaeus, 1758	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Wood Sandpiper	5
https://biodiversity.org.au/afd/taxa/44d06aa5-42c6-4a2e-91e1-03630b442be5	Phrissogonus laticostata	(Walker, 1862)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	5
https://biodiversity.org.au/afd/taxa/46306d30-cfa1-4528-906b-cae2e9c5c0e8	Vanellus (Lobipluvia) miles	(Boddaert, 1783)	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Masked Lapwing	5
https://biodiversity.org.au/afd/taxa/486dc705-ba86-4195-a583-cd31a68b02b8	Lissolepis luctuosa	(Peters, 1866)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Western Mourning Skink	5
https://biodiversity.org.au/afd/taxa/5231f2d2-5cf3-484d-9879-4c950b0ece9f	Urophorus humeralis	(Fabricius, 1798)	species	Animalia	Arthropoda	Insecta	Coleoptera	Nitidulidae		5
https://biodiversity.org.au/afd/taxa/629e60e2-9277-4861-9a03-614486db9c33	Megachile (Eutricharaea) chrysopyga	Smith, 1853	species	Animalia	Arthropoda	Insecta	Hymenoptera	Megachilidae	Bee	5
https://biodiversity.org.au/afd/taxa/64c70778-de1a-45ad-a1e3-4e1a3c7efc5f	Phaulacridium vittatum	(SjÃ¶stedt, 1920)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Wingless Grasshopper	5
https://biodiversity.org.au/afd/taxa/79066b7d-cc60-4665-b1ce-fbacbd95a2ae	Iridomyrmex discors	Forel, 1902	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	5
https://biodiversity.org.au/afd/taxa/810174f7-a7ce-4844-9b66-23c4d6148fd3	Iridomyrmex bicknelli	Emery, 1898	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Black Trail Ant	5
https://biodiversity.org.au/afd/taxa/86fb93fd-4551-4b38-9a12-62b6b433729b	Tyto javanica	(Gmelin, 1788)	species	Animalia	Chordata	Aves	Strigiformes	Tytonidae	Eastern Barn Owl	5
https://biodiversity.org.au/afd/taxa/ab8a8b97-90dc-4c83-be78-b0af065685a1	Coryphistes ruricola	(Burmeister, 1838)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Bark-mimicking Grasshopper	5
https://biodiversity.org.au/afd/taxa/c95af018-43ab-43b8-8e14-037604db64f6	Epthianura (Epthianura) albifrons	(Jardine & Selby, 1828)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	White-fronted Chat	5
https://biodiversity.org.au/afd/taxa/d27a6ad6-ac41-4df1-b629-26566d9d4f9c	Pachycisseis bicolor	(Gory & Laporte, 1839)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		5
https://biodiversity.org.au/afd/taxa/d881726a-82bb-41d3-bf44-33e5ff6c23c6	Siphonotus flavomarginatus	Attems, 1911	species	Animalia	Arthropoda	Diplopoda	Polyzoniida	Siphonotidae		5
https://biodiversity.org.au/afd/taxa/e71a6c2c-66f1-4107-a0a5-954b4a5960ad	Archiargiolestes pusillissimus	Kennedy, 1925	species	Animalia	Arthropoda	Insecta	Odonata	Argiolestidae	Tiny Flatwing	5
https://biodiversity.org.au/afd/taxa/ea859860-0730-4425-be76-3402dcfd0d42	Nothancyla verreauxi	NavÃ¡s, 1910	species	Animalia	Arthropoda	Insecta	Neuroptera	Chrysopidae		5
https://biodiversity.org.au/afd/taxa/ef70e7c7-a3ca-4476-ac64-c2cbdc663562	Vespadelus regulus	(Thomas, 1906)	species	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Southern Forest Bat	5
https://biodiversity.org.au/afd/taxa/f2daa035-4db2-4685-bec1-6b89c3274404	Thalassarche melanophris	(Temminck, 1828)	species	Animalia	Chordata	Aves	Procellariiformes	Diomedeidae	Black-browed Albatross	5
https://biodiversity.org.au/afd/taxa/fec9222a-ce22-48ea-9054-57f21768bd21	Apricia jovialis	(L. Koch, 1879)	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae	Australian Jumping Spider	5
https://id.biodiversity.org.au/node/apni/2886948	Gladiolus undulatus	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Wild Gladiolus	5
https://id.biodiversity.org.au/node/apni/2889526	Ricinocarpos glaucus	Endl.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae	Wedding Bush	5
https://id.biodiversity.org.au/node/apni/2889814	Rumex crispus	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Curled Dock	5
https://id.biodiversity.org.au/node/apni/2890569	Anthocercis viscosa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Sticky Tailflowers	5
https://id.biodiversity.org.au/node/apni/2892738	Lobelia rhombifolia	de Vriese	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Tufted Lobelia	5
https://id.biodiversity.org.au/node/apni/2894425	Gompholobium scabrum	Sm.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Painted Lady	5
https://id.biodiversity.org.au/node/apni/2895202	Stylidium crassifolium	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Thick-leaved Triggerplant	5
https://id.biodiversity.org.au/node/apni/2895388	Samolus repens	(J.R.Forst. & G.Forst.) Pers.	species	Plantae	Charophyta	Equisetopsida	Ericales	Primulaceae	Creeping Brookweed	5
https://id.biodiversity.org.au/node/apni/2896226	Oxalis purpurea	L.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	One-o'clock	5
https://id.biodiversity.org.au/node/apni/2896726	Lepidosperma gladiatum	Labill.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Coast Sword-sedge	5
https://id.biodiversity.org.au/node/apni/2896979	Callistemon glaucus	Sweet	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Albany Bottlebrush	5
https://id.biodiversity.org.au/node/apni/2897063	Acacia divergens	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		5
https://id.biodiversity.org.au/node/apni/2897126	Grevillea occidentalis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Western Grevillea	5
https://id.biodiversity.org.au/node/apni/2899501	Eragrostis brownii	(Kunth) Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Bentham's Love-grass	5
https://id.biodiversity.org.au/node/apni/2900092	Polygala virgata	Thunb.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae	Purple Broom	5
https://id.biodiversity.org.au/node/apni/2900231	Xyris lanata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Xyridaceae		5
https://id.biodiversity.org.au/node/apni/2900500	Lepidosperma tetraquetrum	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		5
https://id.biodiversity.org.au/node/apni/2900739	Ipomoea indica	(Burm.) Merr.	species	Plantae	Charophyta	Equisetopsida	Solanales	Convolvulaceae	Purple Morning-glory	5
https://id.biodiversity.org.au/node/apni/2902062	Hypolaena exsulca	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		5
https://id.biodiversity.org.au/node/apni/2902747	Lysinema pentapetalum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Curry Flower	5
https://id.biodiversity.org.au/node/apni/2904752	Boronia virgata	Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		5
https://id.biodiversity.org.au/node/apni/2905202	Leucopogon propinquus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		5
https://id.biodiversity.org.au/node/apni/2907479	Holcus lanatus	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Yorkshire Fog	5
https://id.biodiversity.org.au/node/apni/2908511	Boronia alata	Sm.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Winged Boronia	5
https://id.biodiversity.org.au/node/apni/2908996	Myoporum oppositifolium	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Scrophulariaceae	Twin-leaf Myoporum	5
https://id.biodiversity.org.au/node/apni/2909424	Isopogon sphaerocephalus	Lindl.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Drumstick Isopogon	5
https://id.biodiversity.org.au/node/apni/2910258	Sphenotoma capitata	(R.Br.) Lindl.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		5
https://id.biodiversity.org.au/node/apni/2912636	Opercularia hispidula	Endl.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Rubiaceae	Hispid Stinkweed	5
https://id.biodiversity.org.au/node/apni/2913147	Andersonia sprengelioides	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Sprengelia-like Andersonia	5
https://id.biodiversity.org.au/node/apni/2915129	Aira cupaniana	Guss.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Quicksilver Grass	5
https://id.biodiversity.org.au/node/apni/2915317	Thomasia rhynchocarpa	Turcz.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		5
https://id.biodiversity.org.au/node/apni/2915626	Juncus capitatus	Weigel	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Dwarf Rush	5
https://id.biodiversity.org.au/node/apni/2915685	Rytidosperma setaceum	(R.Br.) Connor & Edgar	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Small-flower Wallaby-grass	5
https://id.biodiversity.org.au/node/apni/2915964	Olearia axillaris	(DC.) F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Coast Daisy-bush	5
https://id.biodiversity.org.au/node/apni/2916743	Agonis theiformis	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		5
https://id.biodiversity.org.au/node/apni/2916907	Comesperma confertum	Labill.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae		5
https://id.biodiversity.org.au/node/apni/2917843	Grevillea fuscolutea	Keighery	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Mt Lindesay Grevillea	5
https://id.biodiversity.org.au/node/apni/2918732	Loxocarya cinerea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		5
https://id.biodiversity.org.au/node/apni/2920473	Chorizema rhombeum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		5

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/3601859	Leucopogon obovatus	(Labill.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		5
https://id.biodiversity.org.au/node/apni/9442728	Isotropis cuneifolia	(Sm.) Walp.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Granny Bonnets	5
https://id.biodiversity.org.au/node/ausmoss/2915630	Riccardia bipinnatifida	(Colenso) Hewson	species	Plantae	Marchantiophyta	Jungermanniopsida	Metzgeriales	Aneuraceae	Germanderwort	5
https://id.biodiversity.org.au/node/fungi/60091443	Agaricus campestris	L.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae	Field Mushroom	5
https://id.biodiversity.org.au/node/fungi/60091963	Macrolepiota clelandii	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		5
https://id.biodiversity.org.au/node/fungi/60092539	Descomyces albus	(Klotzsch) Bougher & Castellano	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Bolbitiaceae		5
https://id.biodiversity.org.au/node/fungi/60093995	Inocybe violaceocaulis	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		5
https://id.biodiversity.org.au/node/fungi/60095421	Gymnopilus junonius	(Fr.) P.D.Orton	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		5
https://id.biodiversity.org.au/node/fungi/60096495	Fistulinella mollis	Watling	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		5
https://id.biodiversity.org.au/node/fungi/60098749	Laccocephalum mylittae	(Cooke & Massee) NÃºÃ±ez & Ryvarden	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Polyporaceae		5
https://id.biodiversity.org.au/node/fungi/60104095	Ceratiomyxa fruticulosa	(O.F.MÃ¼ll.) T.Macbr.	species	Protista	Amoebozoa	Protostelea	Protostelida	Ceratiomyxaceae	Honeycomb Coral Slime Mold	5
https://id.biodiversity.org.au/taxon/apni/51283527	Drosera collina	(N.G.Marchant & Lowrie) Lowrie	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		5
https://id.biodiversity.org.au/taxon/apni/51293816	Leptocarpus tenax	(Labill.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Slender Twine-rush	5
https://id.biodiversity.org.au/taxon/apni/51398805	Caladenia attingens	Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Forest Mantis Orchid	5
https://id.biodiversity.org.au/taxon/apni/51414346	Thelymitra macrophylla	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Scented Sun Orchid	5
ALA_DR22891_81	Thalassarche chlororhynchos		species	Animalia	Chordata	Aves	Procellariiformes	Diomedeidae	Atlantic Yellow-nosed Albatross	4
NZOR-6-134409	Ramboldia stuartii	(Hampe) Kantvilas & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Lecanoraceae		4
NZOR-6-37996	Rubus procerus	P.J.MÃ¼ll. ex Boulay	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae		4
NZOR-6-39175	Hypomyces chrysospermus	Tul. & C. Tul.	species	Fungi	Ascomycota	Sordariomycetes	Hypocreales	Hypocreaceae		4
NZOR-6-47855	Usnea inermis	Motyka	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		4
NZOR-6-59546	Lotus pedunculatus	Cav.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		4
NZOR-6-62156	Megalaria grossa	(Pers. ex Nyl.) Hafellner	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Megalariaceae		4
NZOR-6-78122	Cladonia cervicornis	(Ach.) Flot.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae	Cup Lichen	4
https://biodiversity.org.au/afd/taxa/01a01f4f-c652-4ccf-af3b-28f3c9be59dd	Macrogyrus (Tribologyrus) angustatus	RÃ©gimbart, 1883	species	Animalia	Arthropoda	Insecta	Coleoptera	Gyrinidae	Whirligig Beetle	4
https://biodiversity.org.au/afd/taxa/0218a77b-77c4-4c3e-ac84-c1f2ddb26753	Lissopimpla excelsa	(Costa, 1864)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Ichneumonidae	Dusky Winged Ichneumonid (orchid Dupe Wasp)	4
https://biodiversity.org.au/afd/taxa/068e09d4-bd65-4f0f-88e3-87beb342570b	Omyta spinosa	(Dallas, 1851)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae		4
https://biodiversity.org.au/afd/taxa/100b0451-6b69-4fd8-b972-d95e8b5b771e	Anax papuensis	(Burmeister, 1839)	species	Animalia	Arthropoda	Insecta	Odonata	Aeshnidae	Australian Emperor	4
https://biodiversity.org.au/afd/taxa/15eccbb2-ffab-4d07-bf29-7b7e364c0aa6	Hydrophis platurus	(Linnaeus, 1766)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Yellow-bellied Sea Snake	4
https://biodiversity.org.au/afd/taxa/2111db27-30c5-45a3-974f-ebfe2936a6d1	Pterodroma (Pterodroma) macroptera	(A. Smith, 1840)	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Great-winged Petrel	4
https://biodiversity.org.au/afd/taxa/27654b34-2642-47a3-b70e-9ae7ba37a857	Chalinolobus morio	(J.E. Gray, 1841)	species	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Chocolate Wattled Bat	4
https://biodiversity.org.au/afd/taxa/2b38fa11-b7fb-4bd0-820f-a020e6a5f86a	Argiope trifasciata	(ForsskÃ¥l, 1775)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Orb-weaver Spider	4
https://biodiversity.org.au/afd/taxa/2f2f2bd4-1f44-42b4-97bc-c7d14a5e62bf	Lasioglossum (Glossalictus) etheridgei	(Cockerell, 1916)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae		4
https://biodiversity.org.au/afd/taxa/2f467813-b673-40ad-bbb9-1d5f55de837c	Cryptachaea veruculata	(Urquhart, 1886)	species	Animalia	Arthropoda	Arachnida	Araneae	Theridiidae	Tangle-web Spider	4
https://biodiversity.org.au/afd/taxa/3103c529-ddbe-4bc0-9067-fbe2e21a5c39	Cherax tenuimanus	(Smith, 1912)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Parastacidae	Yabbies	4
https://biodiversity.org.au/afd/taxa/316c5ff9-137b-4356-a46d-5d136aecb1d1	Microeca (Microeca) fascinans	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Petroicidae	Jacky Winter	4
https://biodiversity.org.au/afd/taxa/336bc500-a1b8-41a2-b554-d5b5bf1ba8f7	Neolucia agricola	(Westwood, 1851)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae	Fringed Heath-blue	4
https://biodiversity.org.au/afd/taxa/3575c98d-5e7d-46fd-a62e-a499b15cffbc	Hemicordulia tau	(Selys, 1871)	species	Animalia	Arthropoda	Insecta	Odonata	Corduliidae	Tau Emerald	4
https://biodiversity.org.au/afd/taxa/3db44d56-129a-48f4-a792-a37dfd8da6e5	Tranes vigorsii	Boheman, 1843	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		4
https://biodiversity.org.au/afd/taxa/3f566a91-6f1d-4d70-b54f-ce2a9c1daab3	Myrmecia analis	Mayr, 1862	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		4
https://biodiversity.org.au/afd/taxa/4090ad27-9c69-454d-aa47-23860b9ee50b	Xenus cinereus	(GÃ¼ldenstÃ¤dt, 1775)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Terek Sandpiper	4
https://biodiversity.org.au/afd/taxa/549a4089-2722-4a7b-8d61-4549bf3e18b0	Phonognatha graeffei	(Keyserling, 1865)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Leafcurling Spider	4
https://biodiversity.org.au/afd/taxa/562a5c6b-51e8-457e-9b5d-c921af5e18ed	Tarsipes rostratus	Gervais & Verreaux, 1842	species	Animalia	Chordata	Mammalia	Diprotodontia	Tarsipedidae	Honey Possum	4
https://biodiversity.org.au/afd/taxa/655adcf7-5bb5-4f94-a0fb-0d5b2f75fba8	Oxyura australis	Gould, 1837	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Blue-billed Duck	4
https://biodiversity.org.au/afd/taxa/7497de6e-fed5-4687-9d87-c2a4d03f2f33	Austrolittorina unifasciata	(Gray, 1826)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Littorinidae	Blue Australwink	4
https://biodiversity.org.au/afd/taxa/903fe8da-db46-42c2-a150-727909cc5d9a	Myrmecia clarki	Crawley, 1922	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		4
https://biodiversity.org.au/afd/taxa/952ae705-57e2-43d1-9a06-b35498202469	Mus musculus	Linnaeus, 1758	species	Animalia	Chordata	Mammalia	Rodentia	Muridae	House Mouse	4
https://biodiversity.org.au/afd/taxa/98097ce3-3e12-4aa4-adeb-7f25c62a039d	Ogyris idmo	Hewitson, 1862	species	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae	Large Bronze Azure	4
https://biodiversity.org.au/afd/taxa/992d326a-bd0d-458b-b860-0ea693381526	Ixodes australiensis	Neumann, 1904	species	Animalia	Arthropoda	Arachnida	Ixodida	Ixodidae		4
https://biodiversity.org.au/afd/taxa/9e814e1a-6b46-4332-b451-f5161a3fcde5	Goniaea australasiae	(Leach, 1814)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Gumleaf Grasshopper	4
https://biodiversity.org.au/afd/taxa/a83c96b0-64d5-4b14-97ec-894a158ee417	Heliocidaris erythrogramma	(Valenciennes, 1846)	species	Animalia	Echinodermata	Echinoidea	Camarodonta	Echinometridae	Shortspined Sea Urchin	4
https://biodiversity.org.au/afd/taxa/afc1b7ea-4f2a-4305-8f8c-ae745084696a	Amblyopone australis	Erichson, 1842	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	4
https://biodiversity.org.au/afd/taxa/b6371776-5b00-44fa-9dc1-b70ee040997f	Gastrimargus musicus	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Yellow-winged Locust	4
https://biodiversity.org.au/afd/taxa/bbc91646-4947-459c-9a3b-7f1122e656f7	Cygnus (Chenopis) atratus	(Latham, 1790)	species	Animalia	Chordata	Aves	Anseriformes	Anatidae	Black Swan	4
https://biodiversity.org.au/afd/taxa/be03b6df-ae57-45d1-b94b-165755d1eb62	Orgyia athlophora	(Turner, 1921)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae		4
https://biodiversity.org.au/afd/taxa/c413e82b-40ae-4473-8461-f80ab97f9342	Nasutitermes exitiosus	(Hill, 1925)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae	Snouted Termite	4

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/d201104c-894a-40a1-bb7a-bc4d612d3df3	Castiarina elongata	(Saunders, 1868)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		4
https://biodiversity.org.au/afd/taxa/dadb5f0f-b010-4894-ae2a-2ead57a6cef9	Porpita porpita	(Linnaeus, 1758)	species	Animalia	Cnidaria	Hydrozoa	Anthoathecata	Porpitidae	Blue Button	4
https://biodiversity.org.au/afd/taxa/df461ff0-0913-4824-8db8-07421c1eb02a	Austroagrion cyane	(Selys, 1876)	species	Animalia	Arthropoda	Insecta	Odonata	Coenagrionidae	South-western Billabongfly	4
https://biodiversity.org.au/afd/taxa/e5fc1964-35c5-4afa-bd0a-737cba2f8fa9	Cherax preissii	(Erichson, 1846)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Parastacidae		4
https://biodiversity.org.au/afd/taxa/e9127388-e51c-41bd-88f8-51d3bfaa6773	Melanozosteria morosa	Shelford, 1909	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		4
https://biodiversity.org.au/afd/taxa/f39fa3de-0119-4ccd-9971-d2272569aa3c	Bunduica rubrovenosa	Jacobi, 1909	species	Animalia	Arthropoda	Insecta	Hemiptera	Achilidae		4
https://biodiversity.org.au/afd/taxa/fa87c996-8fa5-45e8-8ded-1119671b6dbc	Venator immansueta	(Simon, 1909)	species	Animalia	Arthropoda	Arachnida	Araneae	Lycosidae	Wolf Spider	4
https://biodiversity.org.au/afd/taxa/ff1ea01a-0cf2-4acf-935c-d322ecd6c4b9	Physalia utriculus	(La MartiniÃ©rÃ©, 1787)	species	Animalia	Cnidaria	Hydrozoa	Siphonophorae	Physaliidae		4
https://id.biodiversity.org.au/node/apni/2886205	Tremulina tremula	(R.Br.) B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Quivery Cord Rush	4
https://id.biodiversity.org.au/node/apni/2886672	Echinochloa crus-galli	(L.) P.Beauv.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Barnyard Grass	4
https://id.biodiversity.org.au/node/apni/2886962	Atriplex prostrata	Boucher ex DC.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Hastate Orache	4
https://id.biodiversity.org.au/node/apni/2887401	Astartea fascicularis	(Labill.) DC.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Recherche Astartea	4
https://id.biodiversity.org.au/node/apni/2888146	Goodenia eatoniana	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		4
https://id.biodiversity.org.au/node/apni/2888259	Dampiera linearis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Wedge-leaved Dampiera	4
https://id.biodiversity.org.au/node/apni/2888350	Franklandia fucifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Lanoline Bush	4
https://id.biodiversity.org.au/node/apni/2889040	Wahlenbergia capensis	(L.) A.DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Cape Bluebell	4
https://id.biodiversity.org.au/node/apni/2892341	Pimelea spectabilis	Lindl.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae	Bunjong	4
https://id.biodiversity.org.au/node/apni/2893089	Dampiera leptoclada	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Slender-shooted Dampiera	4
https://id.biodiversity.org.au/node/apni/2893355	Trifolium angustifolium	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Narrow-leaf Clover	4
https://id.biodiversity.org.au/node/apni/2894807	Lepidosperma gracile	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Slender Sword-sedge	4
https://id.biodiversity.org.au/node/apni/2894817	Thomasia paniculata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		4
https://id.biodiversity.org.au/node/apni/2895152	Tribonanthes australis	Endl.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Southern Tiurndin	4
https://id.biodiversity.org.au/node/apni/2895436	Lyginia barbata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		4
https://id.biodiversity.org.au/node/apni/2895458	Asparagus asparagoides	(L.) W.Wight	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Western Cape Bridal Creeper	4
https://id.biodiversity.org.au/node/apni/2896258	Agrostis capillaris	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Brown-top Bent	4
https://id.biodiversity.org.au/node/apni/2896596	Actinotus glomeratus	Benth.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		4
https://id.biodiversity.org.au/node/apni/2896618	Trachymene grandis	(Turcz.) Rye	species	Plantae	Charophyta	Equisetopsida	Apiales	Araliaceae		4
https://id.biodiversity.org.au/node/apni/2897878	Marianthus sylvaticus	L.W.Cayzer & Crisp	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		4
https://id.biodiversity.org.au/node/apni/2898239	Cotula turbinata	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Ferny Cotula	4
https://id.biodiversity.org.au/node/apni/2899815	Hakea florida	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		4
https://id.biodiversity.org.au/node/apni/2900147	Actinodium cunninghamii	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Swamp Daisy	4
https://id.biodiversity.org.au/node/apni/2901294	Dichelachne crinita	(L.f.) Hook.f.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Long-hair Plume-grass	4
https://id.biodiversity.org.au/node/apni/2901353	Melaleuca microphylla	Sm.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		4
https://id.biodiversity.org.au/node/apni/2902063	Poa poiformis	(Labill.) Druce	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Coast Tussock-grass	4
https://id.biodiversity.org.au/node/apni/2902396	Petrophile acicularis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		4
https://id.biodiversity.org.au/node/apni/2902759	Austrostipa semibarbata	(R.Br.) S.W.L.Jacobs & J.Everett	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Fibrous Spear-grass	4
https://id.biodiversity.org.au/node/apni/2902954	Austrostipa flavescens	(Labill.) S.W.L.Jacobs & J.Everett	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Coast Spear-grass	4
https://id.biodiversity.org.au/node/apni/2904031	Samolus junceus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Primulaceae		4
https://id.biodiversity.org.au/node/apni/2904465	Corynotheca micrantha	(Lindl.) Druce	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Sand Lily	4
https://id.biodiversity.org.au/node/apni/2904675	Vellereophyton dealbatum	(Thunb.) Hilliard & B.L.Burtt	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	White Cudweed	4
https://id.biodiversity.org.au/node/apni/2905053	Acacia alata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Winged Wattle	4
https://id.biodiversity.org.au/node/apni/2905132	Commersonia corylifolia	(Graham) C.F.Wilkins & Whitlock	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		4
https://id.biodiversity.org.au/node/apni/2905224	Dampiera pedunculata	Rajput & Carolin	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		4
https://id.biodiversity.org.au/node/apni/2907538	Thysanotus tenellus	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Grassy Fringe-lily	4
https://id.biodiversity.org.au/node/apni/2907587	Taxandria angustifolia	(Schauer) J.R.Wheeler & N.G.Marchant	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		4
https://id.biodiversity.org.au/node/apni/2907731	Asplenium flabellifolium	Cav.	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Aspleniaceae	Necklace Fern	4
https://id.biodiversity.org.au/node/apni/2908818	Vinca major	L.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Apocynaceae	Blue Periwinkle	4
https://id.biodiversity.org.au/node/apni/2908889	Medicago lupulina	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Black Medic	4
https://id.biodiversity.org.au/node/apni/2910345	Trihaloragis hexandra	(F.Muell.) M.L.Moody & Les	species	Plantae	Charophyta	Equisetopsida	Saxifragales	Haloragaceae		4
https://id.biodiversity.org.au/node/apni/2911185	Astartea arbuscula	(R.Br. ex Benth.) Rye	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Minute Astartea	4
https://id.biodiversity.org.au/node/apni/2911550	Aotus passerinoides	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		4
https://id.biodiversity.org.au/node/apni/2912060	Stackhousia monogyna	Labill.	species	Plantae	Charophyta	Equisetopsida	Celastrales	Celastraceae	Creamy Candles	4
https://id.biodiversity.org.au/node/apni/2913654	Tropaeolum majus	L.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Tropaeolaceae	Nasturtium	4
https://id.biodiversity.org.au/node/apni/2913766	Foeniculum vulgare	Mill.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Fennel	4
https://id.biodiversity.org.au/node/apni/2913921	Amaryllis belladonna	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Amaryllidaceae	Belladonna Lily	4
https://id.biodiversity.org.au/node/apni/2914995	Grevillea pulchella	(R.Br.) Meisn.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Beautiful Grevillea	4

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2915025	Lobelia tenuior	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Slender Lobelia	4
https://id.biodiversity.org.au/node/apni/2915089	Allocasuarina fraseriana	(Miq.) L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Fagales	Casuarinaceae	Western Sheoak	4
https://id.biodiversity.org.au/node/apni/2915319	Cynodon dactylon	(L.) Pers.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Couch	4
https://id.biodiversity.org.au/node/apni/2915857	Gastrolobium sericeum	(Sm.) G.Chandler & Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		4
https://id.biodiversity.org.au/node/apni/2916000	Andersonia hammersleyana	Lemson	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		4
https://id.biodiversity.org.au/node/apni/2916223	Xanthosia eichleri	J.M.Hart & Henwood	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		4
https://id.biodiversity.org.au/node/apni/2916273	Trachymene pilosa	Sm.	species	Plantae	Charophyta	Equisetopsida	Apiales	Araliaceae	Dwarf Trachymene	4
https://id.biodiversity.org.au/node/apni/2917266	Leptomeria squarrulosa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae		4
https://id.biodiversity.org.au/node/apni/2917706	Oxalis incarnata	L.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Pale Wood-sorrel	4
https://id.biodiversity.org.au/node/apni/2917995	Lagurus ovatus	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Hare's Tail Grass	4
https://id.biodiversity.org.au/node/apni/2918187	Asteridea pulverulenta	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Common Bristle Daisy	4
https://id.biodiversity.org.au/node/apni/2918481	Scaevola calliptera	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Royal Robe	4
https://id.biodiversity.org.au/node/apni/2919217	Lachnagrostis filiformis	(G.Forst.) Trin.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Common Blown-grass	4
https://id.biodiversity.org.au/node/apni/2919692	Trifolium cernuum	Brot.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Drooping-flower Clover	4
https://id.biodiversity.org.au/node/apni/2920067	Sporobolus virginicus	(L.) Kunth	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Marine Couch	4
https://id.biodiversity.org.au/node/apni/2920475	Tetragonia implexicoma	(Miq.) Hook.f.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Aizoaceae	Bower Spinach	4
https://id.biodiversity.org.au/node/apni/2920854	Isolepis cernua	(Vahl) Roem. & Schult.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Nodding Club Rush	4
https://id.biodiversity.org.au/node/apni/2921092	Anigozanthos bicolor	Endl.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Little Kangaroo Paw	4
https://id.biodiversity.org.au/node/ausmoss/10059274	Barbula calycina	SchwÃ¤gr.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Common Beard-moss	4
https://id.biodiversity.org.au/node/ausmoss/10063237	Calymperastrum latifolium	(Hampe) I.G.Stone	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae		4
https://id.biodiversity.org.au/node/ausmoss/10073204	Eccremidium pulchellum	(Hook. & Wilson) MÃ¼ll.Hal.	species	Plantae	Bryophyta	Bryopsida	Dicranales	Ditrichaceae	Earth Moss	4
https://id.biodiversity.org.au/node/ausmoss/10087063	Hedwigia ciliata	(Hedw.) P.Beauv.	species	Plantae	Bryophyta	Bryopsida	Hedwigiales	Hedwigiaceae	Grey Hoar-moss	4
https://id.biodiversity.org.au/node/ausmoss/10109089	Rhacocarpus purpurascens	(Brid.) Paris	species	Plantae	Bryophyta	Bryopsida	Hedwigiales	Rhacocarpaceae	Mountain Heath-moss	4
https://id.biodiversity.org.au/node/ausmoss/2903027	Diplasiolejeunea plicatiloba	(Hook.f. & Taylor) Grolle	species	Plantae	Marchantiophyta	Jungermanniopsida	Porellales	Lejeuneaceae	Tiny Pouncewort	4
https://id.biodiversity.org.au/node/ausmoss/2903491	Riccardia graeffei	(Steph.) Hewson	species	Plantae	Marchantiophyta	Jungermanniopsida	Metzgeriales	Aneuraceae	Lace Germanderwort	4
https://id.biodiversity.org.au/node/fungi/60091983	Melanophyllum haematospermum	(Bull.) Kreisel	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		4
https://id.biodiversity.org.au/node/fungi/60092173	Amanita arenaria	K.Syme	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		4
https://id.biodiversity.org.au/node/fungi/60092431	Amanita umbrinella	E.-J.Gilbert & Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		4
https://id.biodiversity.org.au/node/fungi/60092665	Mucronella pendula	(Massee) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae		4
https://id.biodiversity.org.au/node/fungi/60092681	Ramariopsis depokensis	(Overeem) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae		4
https://id.biodiversity.org.au/node/fungi/60092765	Cortinarius basirubescens	Cleland & J.R.Harris	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		4
https://id.biodiversity.org.au/node/fungi/60092807	Cortinarius clelandii	A.H.Sm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		4
https://id.biodiversity.org.au/node/fungi/60093707	Hygrocybe viscidibrunnea	Bougher & A.M.Young	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		4
https://id.biodiversity.org.au/node/fungi/60093745	Lichenomphalia chromacea	(Cleland) Redhead, Lutzoni, Moncalvo & Vilgalys	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae	Yellow Navel	4
https://id.biodiversity.org.au/node/fungi/60094979	Pluteus atromarginatus	(Konrad) KÃ¼hner	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Pluteaceae		4
https://id.biodiversity.org.au/node/fungi/60095057	Coprinellus disseminatus	(Pers.) J.E.Lange	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		4
https://id.biodiversity.org.au/node/fungi/60095471	Hebeloma aminophilum	R.N.Hilton & O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		4
https://id.biodiversity.org.au/node/fungi/60096173	Tricholoma eucalypticum	A.Pearson	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Tricholomataceae		4
https://id.biodiversity.org.au/node/fungi/60096905	Pisolithus marmoratus	(Berk.) E.Fisch.	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Sclerodermataceae		4
https://id.biodiversity.org.au/node/fungi/60099241	Trametes versicolor	(L.) Lloyd	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Polyporaceae	Turkey-tail	4
https://id.biodiversity.org.au/node/fungi/60100695	Calocera guepinioides	Berk.	species	Fungi	Basidiomycota	Dacrymycetes	Dacrymycetales	Dacrymycetaceae		4
https://id.biodiversity.org.au/taxon/apni/51268414	Cotula coronopifolia	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Water Buttons	4
https://id.biodiversity.org.au/taxon/apni/51270456	Centrolepis aristata	(R.Br.) Roem. & Schult.	species	Plantae	Charophyta	Equisetopsida	Poales	Centrolepidaceae	Pointed Centrolepis	4
https://id.biodiversity.org.au/taxon/apni/51283097	Cyperus congestus	Vahl	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Dense Flat-sedge	4
https://id.biodiversity.org.au/taxon/apni/51291052	Bellardia trixago	(L.) All.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Orobanchaceae	Bellardia	4
https://id.biodiversity.org.au/taxon/apni/51293486	Isopogon buxifolius	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		4
https://id.biodiversity.org.au/taxon/apni/51294375	Stylidium laciniatum	C.A.Gardner	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Tattered Triggerplant	4
https://id.biodiversity.org.au/taxon/apni/51398917	Caladenia corynephora	A.S.George	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Club-lipped Spider Orchid	4
https://id.biodiversity.org.au/taxon/apni/51404655	Drakaea glyptodon	Fitzg.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	King-in-his-carriage	4
https://id.biodiversity.org.au/taxon/apni/51404663	Drakaea micrantha	Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Dwarf Hammer Orchid	4
https://id.biodiversity.org.au/taxon/apni/51409982	Prasophyllum triangulare	Fitzg.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Dark Leek Orchid	4
https://id.biodiversity.org.au/taxon/apni/51412234	Pterostylis nana	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Dwarf Greenhood	4
https://id.biodiversity.org.au/taxon/apni/51434978	Drosera huegelii	Endl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Bold Sundew	4
https://id.biodiversity.org.au/taxon/apni/51439113	Craspedia variabilis	J.Everett & Doust	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Common Billy-buttons	4
https://id.biodiversity.org.au/taxon/apni/51447924	Stylidium diversifolium	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Touch-me-not	4
https://id.biodiversity.org.au/taxon/ausmoss/10152539	Campylopus bicolor	(MÃ¼ll.Hal.) Wilson	species	Plantae	Bryophyta	Bryopsida	Dicranales	Leucobryaceae	Swan-neck Moss	4
https://id.biodiversity.org.au/taxon/ausmoss/10154814	Tayloria octoblephara	(Hook.) Mitt.	species	Plantae	Bryophyta	Bryopsida	Splachnales	Splachnaceae	Dung Moss	4
NZOR-6-107291	Hydnoplicata convoluta	(McAlpine) Trappe & Claridge	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pezizaceae		3

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
NZOR-6-20562	Volvopluteus gloiocephalus	(DC.) Vizzini, Contu & Justo	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Pluteaceae		3
NZOR-6-46614	Cladonia tessellata	Ahti & Kashiw.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		3
https://biodiversity.org.au/afd/taxa/00947c3c-6fd2-4fed-9af1-2d8c95438847	Alcaeus varicornis	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Acacia Shield Bug	3
https://biodiversity.org.au/afd/taxa/09843a8d-0a78-4680-8bf4-bd95dc93ef0e	Spilopelia senegalensis	(Linnaeus, 1766)	species	Animalia	Chordata	Aves	Columbiformes	Columbidae	Laughing Turtle-dove	3
https://biodiversity.org.au/afd/taxa/09e007e5-22c5-44ff-9654-4bcf4f1fcdb4	Simosyrphus grandicornis	(Macquart, 1842)	species	Animalia	Arthropoda	Insecta	Diptera	Syrphidae	Hoverfly	3
https://biodiversity.org.au/afd/taxa/0cf87549-56ab-44a0-9dae-98a9152228d6	Pholcus phalangioides	(Fuesslin, 1775)	species	Animalia	Arthropoda	Arachnida	Araneae	Pholcidae	Cellar Spider	3
https://biodiversity.org.au/afd/taxa/0fa027bf-cc4d-4c61-905a-4930ee94cf39	Hednota pedionoma	(Meyrick, 1885)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Crambidae	Grass Moth	3
https://biodiversity.org.au/afd/taxa/10a05291-3acd-4c2f-8c5a-bde2a2b1f01b	Dolichoderus rufotibialis	Clark, 1930	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		3
https://biodiversity.org.au/afd/taxa/171b0bfe-3afa-42bf-91ac-5cd85d3e43d1	Polytelis anthopeplus	(Lear, 1831)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Regent Parrot	3
https://biodiversity.org.au/afd/taxa/17bf9890-da0a-43bb-9fda-d449cd153264	Hyperlopha aridela	Turner, 1902	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae		3
https://biodiversity.org.au/afd/taxa/18359185-4e14-4e47-ab55-0b92a5a036b3	Amitermes obeuntis	(Silvestri, 1909)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae		3
https://biodiversity.org.au/afd/taxa/18fb0aad-dd51-4e28-a5bb-71dfb48a78c0	Tapeigaster paramonovi	McAlpine & Kent, 1982	species	Animalia	Arthropoda	Insecta	Diptera	Heteromyzidae	Fly	3
https://biodiversity.org.au/afd/taxa/190e2669-ac89-4478-8c0a-22b841b98a04	Myrmecia infima	Forel, 1900	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		3
https://biodiversity.org.au/afd/taxa/1f35de54-946d-44e4-ab53-2d737878710e	Tasmacetus shepherdi	Oliver, 1937	species	Animalia	Chordata	Mammalia	Cetacea	Ziphiidae	Tasman Beaked Whale	3
https://biodiversity.org.au/afd/taxa/2309b703-d925-400d-8d5b-7e42087bb519	Polistes (Polistes) dominulus	(Christ, 1791)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Vespidae		3
https://biodiversity.org.au/afd/taxa/2520dcb4-7027-4188-8433-136020c38176	Battalus rugosus	Raven, 2015	species	Animalia	Arthropoda	Arachnida	Araneae	Corinnidae		3
https://biodiversity.org.au/afd/taxa/26d32666-7e08-4f26-a6a1-d00d0aa94811	Helea echidna	(White, 1841)	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		3
https://biodiversity.org.au/afd/taxa/3191705d-10db-47a8-bbbf-1e232203bd22	Thalassarche carteri	(Rothschild, 1903)	species	Animalia	Chordata	Aves	Procellariiformes	Diomedeidae	Indian Yellow-nosed Albatross	3
https://biodiversity.org.au/afd/taxa/3806fbcc-c082-4d25-a3a4-ceaf287af290	Lasioglossum (Chilalictus) amboquestrum	Walker, 1995	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae		3
https://biodiversity.org.au/afd/taxa/3a8aec7c-b339-4ecd-a971-69c788d907b2	Omyta delineata	StÃ¥l, 1865	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae		3
https://biodiversity.org.au/afd/taxa/410f5a43-5ed3-4f1f-b8ed-a5b8d44cb3a2	Calymmachernes angulatus	Beier, 1954	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Chernetidae	Pseudoscorpion	3
https://biodiversity.org.au/afd/taxa/489058be-ee9b-4fe6-bc74-159c10ea620d	Cryptocheilus bicolor	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Pompilidae	Orange Spider Wasp	3
https://biodiversity.org.au/afd/taxa/4e530250-748f-4472-9ba0-4d2e31b903d3	Australomimetus diabolicus	Harms & Harvey, 2009	species	Animalia	Arthropoda	Arachnida	Araneae	Mimetidae		3
https://biodiversity.org.au/afd/taxa/4eeb2e0b-c08a-4fc5-8956-6830f70cab38	Hesperilla donnysa	Hewitson, 1868	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hesperiidae	Varied Sedge-skipper	3
https://biodiversity.org.au/afd/taxa/5076c757-134a-477f-b7fe-cf4cd6f39527	Agrotis infusa	(Boisduval, 1832)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Bogong Moth	3
https://biodiversity.org.au/afd/taxa/52f22ad4-7948-493b-9ea0-b20f90070dbc	Austrolestes analis	(Rambur, 1842)	species	Animalia	Arthropoda	Insecta	Odonata	Lestidae	Slender Ringtail	3
https://biodiversity.org.au/afd/taxa/5526c312-451f-4c90-a69e-088b55be6956	Pluvialis fulva	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Pacific Golden Plover	3
https://biodiversity.org.au/afd/taxa/558fce3a-ca1d-4aa1-a93d-fd45bf601ee0	Pyropsalta melete	(Walker, 1850)	species	Animalia	Arthropoda	Insecta	Hemiptera	Cicadidae	Red Bandit	3
https://biodiversity.org.au/afd/taxa/59bcb0d8-4caf-4055-831c-b319b12870f5	Acrida conica	(Fabricius, 1781)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Giant Green Slant-face	3
https://biodiversity.org.au/afd/taxa/59ef939a-411c-4761-bcb5-d63d89a46b00	Achoerodus gouldii	(Richardson, 1843)	species	Animalia	Chordata	Actinopterygii	Perciformes	Labridae	Western Blue Groper	3
https://biodiversity.org.au/afd/taxa/5ce40890-05fd-4f55-a62d-872d5cdf7567	Dicranolaius bellulus	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Coleoptera	Melyridae	Red And Blue Beetle	3
https://biodiversity.org.au/afd/taxa/5f16504a-94b8-4bca-b5b4-31a6e88979aa	Badumna microps	(Simon, 1908)	species	Animalia	Arthropoda	Arachnida	Araneae	Desidae		3
https://biodiversity.org.au/afd/taxa/618a2c4c-ddf2-4042-a6a7-34a3e893c219	Anthochaera (Anellobia) chrysoptera	(Latham, 1801)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Little Wattlebird	3
https://biodiversity.org.au/afd/taxa/69dc05cf-fb0f-4cd9-bf6b-c52fe269f066	Syneora mundifera	(Walker, 1860)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	3
https://biodiversity.org.au/afd/taxa/6c3c2da2-508b-43c4-b0df-c69a99c0aae0	Artamus (Angroyan) cinereus	Vieillot, 1817	species	Animalia	Chordata	Aves	Passeriformes	Artamidae	Black-faced Woodswallow	3
https://biodiversity.org.au/afd/taxa/6d0b779e-0f97-45ba-95cf-6560ef59bce9	Lasioglossum (Chilalictus) mirandum	(Cockerell, 1914)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae		3
https://biodiversity.org.au/afd/taxa/6f129188-dead-4e5c-b945-7fe12a14a7ae	Oechalia schellenbergii	(GuÃ©rin, 1831)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Predatory Shield Bug	3
https://biodiversity.org.au/afd/taxa/6f1435ae-6fe0-443f-af2a-6fafaf5896b5	Enoplosus armatus	(White, 1790)	species	Animalia	Chordata	Actinopterygii	Perciformes	Enoplosidae	Old Wife	3
https://biodiversity.org.au/afd/taxa/72b23d0a-7050-413f-9100-3562d383888e	Gelochelidon nilotica	(Gmelin, 1789)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	Gull-billed Tern	3
https://biodiversity.org.au/afd/taxa/76b87a56-b1ab-4851-aa40-22d0f2437b7e	Pelates octolineatus	(Jenyns, 1840)	species	Animalia	Chordata	Actinopterygii	Perciformes	Terapontidae	Western Striped Grunter	3
https://biodiversity.org.au/afd/taxa/76fa9d70-bed0-4eb9-9721-a796e36cf797	Plebs cyphoxis	(Simon, 1908)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Orb-weaver Spider	3
https://biodiversity.org.au/afd/taxa/80eebde0-e367-4214-a0f6-7bd6cc4e0824	Vanessa itea	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Australian Admiral	3
https://biodiversity.org.au/afd/taxa/8142b6c4-7b47-4cb3-9f68-f10efa0d775d	Argonauta argo	Linnaeus, 1758	species	Animalia	Mollusca	Cephalopoda	Octopoda	Argonautidae	Greater Argonaut	3
https://biodiversity.org.au/afd/taxa/82f36fbf-fb78-42e0-9794-61598771d1c1	Bulla quoyii	Gray in Dieffenbach, 1843	species	Animalia	Mollusca	Gastropoda	Cephalaspidea	Bullidae		3
https://biodiversity.org.au/afd/taxa/872642c1-0c9b-43df-9a01-5c85c58f3fbd	Merimna atrata	(Gory & Laporte, 1837)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae	Fire Beetle	3
https://biodiversity.org.au/afd/taxa/8c26f157-5a75-4c27-8866-a9375718eebf	Urnisa rugosa	de Saussure, 1884	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae		3
https://biodiversity.org.au/afd/taxa/8e989a9c-8b4d-4107-a53a-ee6bcc1b3b4d	Diodon nicthemerus	Cuvier, 1818	species	Animalia	Chordata	Actinopterygii	Tetraodontiformes	Diodontidae	Globefish	3
https://biodiversity.org.au/afd/taxa/8eaa3f91-cde8-4281-8d7e-8b088d0c9923	Cristiceps australis	Valenciennes, 1836	species	Animalia	Chordata	Actinopterygii	Perciformes	Clinidae	Southern Crested Weedfish	3
https://biodiversity.org.au/afd/taxa/910b27e8-19c3-4194-b55a-fd95a80ccdf9	Caretta caretta	(Linnaeus, 1758)	species	Animalia	Chordata	Reptilia	Testudines	Cheloniidae	Loggerhead Turtle	3
https://biodiversity.org.au/afd/taxa/92ffed59-42cd-408f-a33a-0ff0f75c3111	Myrmecia michaelseni	Forel, 1907	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		3
https://biodiversity.org.au/afd/taxa/939a29c7-b30a-4986-9359-94ad0cdf5747	Ammotretis rostratus	GÃ¼nther, 1862	species	Animalia	Chordata	Actinopterygii	Pleuronectiformes	Pleuronectidae	Longsnout Flounder	3
https://biodiversity.org.au/afd/taxa/93dd19fa-7a09-44f2-8f06-464801fbc252	Lasioglossum (Parasphecodes) hilactum	(Smith, 1853)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae	Sweat Bee	3
https://biodiversity.org.au/afd/taxa/960a92a7-4ffd-4c97-a0ff-499972640aa4	Camponotus terebrans	(Lowne, 1865)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Brown Bearded Sugar Ant	3
https://biodiversity.org.au/afd/taxa/9792950c-4cf3-4e7d-9718-e56fbcd858da	Myrmecia testaceipes	(Clark, 1943)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bull Ant	3
https://biodiversity.org.au/afd/taxa/9bfb84fc-284a-42f1-ac16-e93a63655e92	Iridomyrmex calvus	Emery, 1914	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	3
https://biodiversity.org.au/afd/taxa/9f7965cb-d6a0-4833-a241-7d53ec570b98	Venatrix pullastra	(Simon, 1909)	species	Animalia	Arthropoda	Arachnida	Araneae	Lycosidae		3
https://biodiversity.org.au/afd/taxa/a15503c7-aac4-4b6d-a66c-f6ee0774e2b1	Fletchamia sugdeni	Dendy, 1891	species	Animalia	Platyhelminthes	Rhabditophora	Tricladida	Geoplanidae		3

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/a2074cb8-e146-452c-b326-e2b583f51cc6	Setonix brachyurus	(Quoy & Gaimard, 1830)	species	Animalia	Chordata	Mammalia	Diprotodontia	Macropodidae	Quokka	3
https://biodiversity.org.au/afd/taxa/a581c303-95b9-4e2f-8fdc-103e394dd85f	Antechinus flavipes	(Waterhouse, 1838)	species	Animalia	Chordata	Mammalia	Dasyuromorphia	Dasyuridae	Yellow-footed Antechinus	3
https://biodiversity.org.au/afd/taxa/b57b7147-da45-4b89-a37f-e9b8feff728b	Strepsicrates ejectana	(Walker, 1863)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae	Guava Bud Moth	3
https://biodiversity.org.au/afd/taxa/b585237a-b161-420f-b657-9632e132b40c	Adversaeschna brevistyla	(Rambur, 1842)	species	Animalia	Arthropoda	Insecta	Odonata	Aeshnidae	Blue-spotted Hawker	3
https://biodiversity.org.au/afd/taxa/b684adfe-66f4-4ac7-9ba6-779c6de6ed64	Fraus serrata	Nielsen & Kristensen, 1989	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		3
https://biodiversity.org.au/afd/taxa/b9c4ab1f-5269-482b-a5f7-65814d4e0d28	Janthina janthina	(Linnaeus, 1758)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Epitoniidae	Common Violet Sea Snail	3
https://biodiversity.org.au/afd/taxa/bae6a91e-f616-4f7f-b1f5-84ecefcd9603	Rhantus suturalis	(W.S. Macleay, 1825)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	3
https://biodiversity.org.au/afd/taxa/bb65efb8-6c82-4c63-aafa-854308f4a158	Calamanthus montanellus	Milligan, 1903	species	Animalia	Chordata	Aves	Passeriformes	Acanthizidae	Western Fieldwren	3
https://biodiversity.org.au/afd/taxa/bf8d2470-6c86-4483-b695-51fa1a373ec1	Kalotermes aemulus	Sewell & Gay, 1978	species	Animalia	Arthropoda	Insecta	Blattodea	Kalotermitidae		3
https://biodiversity.org.au/afd/taxa/bfeb0f1a-5581-4034-ba30-e330fe233af6	Pezoporus flaviventris	North, 1911	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Western Ground Parrot	3
https://biodiversity.org.au/afd/taxa/cac655bb-0463-4ea6-811d-1e34247840ff	Australomisidia pilula	(L. Koch, 1867)	species	Animalia	Arthropoda	Arachnida	Araneae	Thomisidae	Crab Spider	3
https://biodiversity.org.au/afd/taxa/cc7aa9fc-3d0f-4be2-9642-a377f545dd2d	Lampona cylindrata	(L. Koch, 1866)	species	Animalia	Arthropoda	Arachnida	Araneae	Lamponidae	White-tailed Spider	3
https://biodiversity.org.au/afd/taxa/ccdfcb55-c27f-4620-aa55-826695b3bd28	Amblyseius lentiginosus	Denmark & Schicha, 1975	species	Animalia	Arthropoda	Arachnida	Mesostigmata	Phytoseiidae		3
https://biodiversity.org.au/afd/taxa/ce0d8052-2172-48c3-9879-991a14055021	Henicops dentatus	Pocock, 1901	species	Animalia	Arthropoda	Chilopoda	Lithobiomorpha	Henicopidae		3
https://biodiversity.org.au/afd/taxa/d3d47129-093c-42a4-b0e5-15d38d8ddc89	Pseudocaranx georgianus	(Cuvier, 1833)	species	Animalia	Chordata	Actinopterygii	Perciformes	Carangidae	Silver Trevallies	3
https://biodiversity.org.au/afd/taxa/d4de2653-2086-4ab9-892f-55c0d8d08097	Quoyornis georgiana	(Quoy & Gaimard, 1830)	species	Animalia	Chordata	Aves	Passeriformes	Petroicidae	White-breasted Robin	3
https://biodiversity.org.au/afd/taxa/d587193d-0d5d-4abc-becb-07eb7e3e2b16	Pezoporus wallicus	(Kerr, 1792)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Eastern Ground Parrot	3
https://biodiversity.org.au/afd/taxa/d5a8bde0-f56a-4af9-962a-d168b3e3308b	Coturnix (Coturnix) pectoralis	Gould, 1837	species	Animalia	Chordata	Aves	Galliformes	Phasianidae	Stubble Quail	3
https://biodiversity.org.au/afd/taxa/e031af48-c8dc-4a2d-99d2-df53bdf4adbc	Miniargiolestes minimus	(Tillyard, 1908)	species	Animalia	Arthropoda	Insecta	Odonata	Argiolestidae	Stream Flatwing	3
https://biodiversity.org.au/afd/taxa/e8b79e3a-5ef8-4ac3-b315-f085ac4507bb	Naupactus leucoloma	Boheman, 1840	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae	White-fringed Weevil	3
https://biodiversity.org.au/afd/taxa/e9b8abc4-1198-4c3f-bf21-fd1aa411305f	Taractrocera papyria	(Boisduval, 1832)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hesperiidae	White-banded Grass-dart	3
https://biodiversity.org.au/afd/taxa/f1afc37a-a055-4714-801a-c070d1fe7119	Patelloida alticostata	(Angas, 1865)	species	Animalia	Mollusca	Gastropoda		Lottiidae	Tall-ribbed Limpet	3
https://biodiversity.org.au/afd/taxa/f5858806-e3de-41a9-bc62-97abee941a18	Ithone westraliensis	Riek, 1974	species	Animalia	Arthropoda	Insecta	Neuroptera	Ithonidae		3
https://biodiversity.org.au/afd/taxa/f59a130b-3848-4da5-94da-c561fcc99bec	Hednota ancylosticha	Koch, 1966	species	Animalia	Arthropoda	Insecta	Lepidoptera	Crambidae		3
https://biodiversity.org.au/afd/taxa/f9338911-56b6-4af9-9e77-e5dacef54a82	Iridomyrmex turbineus	Shattuck & McMillan, 1998	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		3
https://biodiversity.org.au/afd/taxa/fc0c4669-dd26-4a5e-8822-1bd149bef284	Annoselix dolosa	Iredale, 1939	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Charopidae		3
https://biodiversity.org.au/afd/taxa/ff7e0961-2d0b-429d-a612-5d6de87b01df	Myrmecia chasei	Forel, 1894	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		3
https://id.biodiversity.org.au/name/apni/57527	Machaerina articulata	(R.Br.) T.Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Jointed Twig-rush	3
https://id.biodiversity.org.au/node/apni/2886180	Poa drummondiana	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Knotted Poa	3
https://id.biodiversity.org.au/node/apni/2886479	Tetratheca affinis	Endl.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		3
https://id.biodiversity.org.au/node/apni/2887451	Desmocladus fasciculatus	(R.Br.) B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		3
https://id.biodiversity.org.au/node/apni/2887966	Sphaerolobium medium	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		3
https://id.biodiversity.org.au/node/apni/2889922	Eragrostis curvula	(Schrad.) Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	African Love-grass	3
https://id.biodiversity.org.au/node/apni/2891248	Isolepis prolifera	(Rottb.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Proliferous Club-sedge	3
https://id.biodiversity.org.au/node/apni/2891953	Drosera lasiantha	Lowrie & Carlquist	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		3
https://id.biodiversity.org.au/node/apni/2892995	Latrobea genistoides	(Meisn.) Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		3
https://id.biodiversity.org.au/node/apni/2893288	Phyllanthus calycinus	Labill.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Phyllanthaceae	Snowdrop Spurge	3
https://id.biodiversity.org.au/node/apni/2893765	Siloxerus humifusus	Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Procumbent Siloxerus	3
https://id.biodiversity.org.au/node/apni/2894669	Moraea flaccida	(Sweet) Steud.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	One-leaf Cape Tulip	3
https://id.biodiversity.org.au/node/apni/2894829	Drosera fimbriata	DeBuhr	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Manypeaks Sundew	3
https://id.biodiversity.org.au/node/apni/2895338	Gastrolobium coriaceum	(Sm.) G.Chandler & Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		3
https://id.biodiversity.org.au/node/apni/2895730	Hovea trisperma	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Common Hovea	3
https://id.biodiversity.org.au/node/apni/2896151	Gyrostemon sheathii	W.Fitzg.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Gyrostemonaceae		3
https://id.biodiversity.org.au/node/apni/2896169	Adiantum aethiopicum	L.	species	Plantae	Charophyta	Equisetopsida		Pteridaceae	Common Maidenhair	3
https://id.biodiversity.org.au/node/apni/2896256	Isolepis inundata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Swamp Club-rush	3
https://id.biodiversity.org.au/node/apni/2896375	Centranthus ruber	(L.) DC.	species	Plantae	Charophyta	Equisetopsida	Dipsacales	Caprifoliaceae	Red Valerian	3
https://id.biodiversity.org.au/node/apni/2897850	Leucopogon reflexus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		3
https://id.biodiversity.org.au/node/apni/2899072	Rytidosperma acerosum	(Vickery) Connor & Edgar	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		3
https://id.biodiversity.org.au/node/apni/2900324	Juncus microcephalus	Kunth	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Tiny-headed Rush	3
https://id.biodiversity.org.au/node/apni/2900436	Pericalymma ellipticum	(Endl.) Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Swamp Teatree	3
https://id.biodiversity.org.au/node/apni/2900859	Silene gallica	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	French Catchfly	3
https://id.biodiversity.org.au/node/apni/2900880	Synaphea petiolaris	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Synaphea	3
https://id.biodiversity.org.au/node/apni/2901192	Cosmelia rubra	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Spindle Heath	3
https://id.biodiversity.org.au/node/apni/2901876	Pelargonium drummondii	Turcz.	species	Plantae	Charophyta	Equisetopsida	Geraniales	Geraniaceae	Austral Stork's-bill	3
https://id.biodiversity.org.au/node/apni/2902050	Melaleuca pauciflora	Turcz.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		3
https://id.biodiversity.org.au/node/apni/2902156	Chorizema diversifolium	A.DC.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		3
https://id.biodiversity.org.au/node/apni/2902604	Banksia formosa	(R.Br.) A.R.Mast & K.R.Thiele	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Showy Dryandra	3
https://id.biodiversity.org.au/node/apni/2903424	Paspalum vaginatum	Sw.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Water Couch	3
https://id.biodiversity.org.au/node/apni/2903464	Lobelia heterophylla	Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae	Lobelia	3

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2904092	Empodisma gracillimum	(F.Muell.) L.A.S.Johnson & D.F.Cutler	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Tanglefoot	3
https://id.biodiversity.org.au/node/apni/2904168	Stylidium pygmaeum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Pygmy Triggerplant	3
https://id.biodiversity.org.au/node/apni/2904648	Acacia extensa	Lindl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Wiry Wattle	3
https://id.biodiversity.org.au/node/apni/2904997	Juncus bufonius	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Toad Rush	3
https://id.biodiversity.org.au/node/apni/2905235	Deyeuxia quadriseta	(Labill.) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Slender Reed Bent-grass	3
https://id.biodiversity.org.au/node/apni/2905928	Poranthera microphylla	Brongn.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Phyllanthaceae	Small Poranthera	3
https://id.biodiversity.org.au/node/apni/2906027	Juncus oxycarpus	E.Mey. ex Kunth	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Spiny-fruit Rush	3
https://id.biodiversity.org.au/node/apni/2907105	Sporobolus africanus	(Poir.) Robyns & Tournay	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Rat-tail Grass	3
https://id.biodiversity.org.au/node/apni/2907267	Boronia molloyae	J.Drumm.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Tall Boronia	3
https://id.biodiversity.org.au/node/apni/2907367	Hypochaeris glabra	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Smooth Cat's Ear	3
https://id.biodiversity.org.au/node/apni/2907526	Trifolium ligusticum	Loisel.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Ligurian Clover	3
https://id.biodiversity.org.au/node/apni/2907569	Gompholobium capitatum	A.Cunn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Yellow Pea	3
https://id.biodiversity.org.au/node/apni/2907634	Medicago polymorpha	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Spineless Burr Medic	3
https://id.biodiversity.org.au/node/apni/2907668	Cassytha glabella	R.Br.	species	Plantae	Charophyta	Equisetopsida	Laurales	Lauraceae	Slender Dodder-laurel	3
https://id.biodiversity.org.au/node/apni/2907847	Lepidosperma angustatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		3
https://id.biodiversity.org.au/node/apni/2908089	Darwinia vestita	(Endl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Pom-pom Darwinia	3
https://id.biodiversity.org.au/node/apni/2908206	Sporadanthus strictus	(R.Br.) B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Erect Scale Rush	3
https://id.biodiversity.org.au/node/apni/2908502	Amphipogon amphipogonoides	(Steud.) Vickery	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		3
https://id.biodiversity.org.au/node/apni/2909037	Hypocalymma scariosum	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		3
https://id.biodiversity.org.au/node/apni/2909103	Astroloma pallidum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Kick Bush	3
https://id.biodiversity.org.au/node/apni/2909279	Levenhookia stipitata	(Benth.) F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Common Stylewort	3
https://id.biodiversity.org.au/node/apni/2909343	Thysanotus sparteus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Leafless Fringed Lily	3
https://id.biodiversity.org.au/node/apni/2909481	Boronia subsessilis	Benth.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		3
https://id.biodiversity.org.au/node/apni/2909903	Stylidium glaucum	(Labill.) Labill.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Grey Triggerplant	3
https://id.biodiversity.org.au/node/apni/2909971	Crocosmia x crocosmiiflora	(Lemoine ex Ã‰.Morren) N.E.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Montbretia	3
https://id.biodiversity.org.au/node/apni/2910279	Xanthosia candida	(Benth.) Steud.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		3
https://id.biodiversity.org.au/node/apni/2910541	Solanum laciniatum	Aiton	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Cut-leaf Kangaroo-apple	3
https://id.biodiversity.org.au/node/apni/2910944	Persoonia elliptica	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Snottygobble	3
https://id.biodiversity.org.au/node/apni/2911448	Velleia macrophylla	(Lindl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Large-leaf Velleia	3
https://id.biodiversity.org.au/node/apni/2911607	Rytidosperma pilosum	(R.Br.) Connor & Edgar	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Large Velvet Wallaby-grass	3
https://id.biodiversity.org.au/node/apni/2911719	Gratiola pubescens	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Glandular Brooklime	3
https://id.biodiversity.org.au/node/apni/2912120	Arrhenatherum elatius	(L.) P.Beauv. ex J.Presl & C.Presl	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Oatgrass	3
https://id.biodiversity.org.au/node/apni/2912620	Cynosurus echinatus	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Rough Dog's Tail	3
https://id.biodiversity.org.au/node/apni/2912741	Solanum nigrum	L.	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Black Nightshade	3
https://id.biodiversity.org.au/node/apni/2913511	Rhodanthe citrina	(Benth.) Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Pale Immortelle	3
https://id.biodiversity.org.au/node/apni/2913706	Anthoxanthum odoratum	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Sweet Vernal-grass	3
https://id.biodiversity.org.au/node/apni/2913741	Aira praecox	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Early Hair-grass	3
https://id.biodiversity.org.au/node/apni/2913842	Pimelea lanata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		3
https://id.biodiversity.org.au/node/apni/2914187	Marianthus candidus	HÃ¼gel ex Endl.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	White Marianthus	3
https://id.biodiversity.org.au/node/apni/2915188	Platytheca galioides	Steetz	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		3
https://id.biodiversity.org.au/node/apni/2915272	Dactylis glomerata	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Cocksfoot	3
https://id.biodiversity.org.au/node/apni/2916281	Myoporum tetrandrum	(Labill.) Domin	species	Plantae	Charophyta	Equisetopsida	Lamiales	Scrophulariaceae	Boobialla	3
https://id.biodiversity.org.au/node/apni/2917094	Leptorhynchos scaber	(Benth.) Haegi	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Annual Buttons	3
https://id.biodiversity.org.au/node/apni/2917192	Hakea ceratophylla	(Sm.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Horned Leaf Hakea	3
https://id.biodiversity.org.au/node/apni/2917246	Schoenus maschalinus	Roem. & Schult.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Leafy Bog-rush	3
https://id.biodiversity.org.au/node/apni/2917704	Leontodon saxatilis	Lam.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Lesser Hawkbit	3
https://id.biodiversity.org.au/node/apni/2917792	Senecio pinnatifolius	A.Rich.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Variable Groundsel	3
https://id.biodiversity.org.au/node/apni/2918334	Schoenus grandiflorus	(Nees ex Lehm.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Large Flowered Bog-rush	3
https://id.biodiversity.org.au/node/apni/2918410	Phytolacca octandra	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Phytolaccaceae	Red-ink Weed	3
https://id.biodiversity.org.au/node/apni/2919002	Goodenia pusilla	(de Vriese) de Vriese	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Delicate Goodenia	3
https://id.biodiversity.org.au/node/apni/2919576	Sphaerolobium macranthum	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		3
https://id.biodiversity.org.au/node/apni/2919990	Parapholis incurva	(L.) C.E.Hubb.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Curly Ryegrass	3
https://id.biodiversity.org.au/node/apni/2920123	Stylidium spathulatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Creamy Triggerplant	3
https://id.biodiversity.org.au/node/apni/2921108	Stylidium acuminatum	(Carlquist) Wege	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae		3
https://id.biodiversity.org.au/node/apni/7057513	Pithocarpa ramosa	(DC.) Schmidt-Leb. & R.L.Barrett	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		3
https://id.biodiversity.org.au/node/apni/7847972	Boronia juncea	Bartl.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		3
https://id.biodiversity.org.au/node/apni/7983657	Stylidium decipiens	(Carlquist) Wege	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Deceptive Triggerplant	3

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/ausmoss/10079394	Fissidens curvatus	Hornsch.	species	Plantae	Bryophyta	Bryopsida	Dicranales	Fissidentaceae	Portuguese Pocket-moss	3
https://id.biodiversity.org.au/node/ausmoss/10100195	Orthodontium lineare	SchwÃ¤gr.	species	Plantae	Bryophyta	Bryopsida	Orthodontiales	Orthodontiaceae	Cape Thread-moss	3
https://id.biodiversity.org.au/node/ausmoss/10110398	Rosulabryum campylothecium	(Taylor) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Sand Thread-moss	3
https://id.biodiversity.org.au/node/ausmoss/10110826	Rosulabryum torquescens	(De Not.) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Twisting Thread-moss	3
https://id.biodiversity.org.au/node/ausmoss/10113352	Sematophyllum subhumile	(MÃ¼ll.Hal.) M.Fleisch.	species	Plantae	Bryophyta	Bryopsida	Hypnales	Sematophyllaceae		3
https://id.biodiversity.org.au/node/ausmoss/10130154	Rhaphidorrhynchium amoenum	(Hedw.) M.Fleisch.	species	Plantae	Bryophyta	Bryopsida	Hypnales	Sematophyllaceae	Common Signal-moss	3
https://id.biodiversity.org.au/node/ausmoss/2890287	Chaetophyllopsis whiteleggei	(Carrington & Pearson) R.M.Schust.	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Scapaniaceae	Grey Woollywort	3
https://id.biodiversity.org.au/node/ausmoss/2901206	Anthoceros punctatus	L.	species	Plantae	Anthocerotophyta	Anthocerotopsida	Anthocerotales	Anthocerotaceae	Mountain Hornwort	3
https://id.biodiversity.org.au/node/fungi/60091529	Agaricus xanthodermus	Genev.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae	Yellow Stainer	3
https://id.biodiversity.org.au/node/fungi/60091637	Coprinus comatus	(O.F.MÃ¼ll.) Pers.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae	Shaggy Mane	3
https://id.biodiversity.org.au/node/fungi/60091889	Leucoagaricus leucothites	(Vittad.) M.M.Moser ex Bon	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		3
https://id.biodiversity.org.au/node/fungi/60092489	Torrendia arenaria	O.K.Mill. & E.Horak	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		3
https://id.biodiversity.org.au/node/fungi/60092945	Cortinarius phalarus	Bougher & R.N.Hilton	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		3
https://id.biodiversity.org.au/node/fungi/60092991	Cortinarius sinapicolor	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		3
https://id.biodiversity.org.au/node/fungi/60093275	Entoloma kermandii	G.M.Gates & Noordel.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Entolomataceae		3
https://id.biodiversity.org.au/node/fungi/60093909	Inocybe australiensis	Cleland & Cheel	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		3
https://id.biodiversity.org.au/node/fungi/60094283	Marasmius elegans	(Cleland) Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		3
https://id.biodiversity.org.au/node/fungi/60094413	Favolaschia calocera	R.Heim ex R.Heim	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		3
https://id.biodiversity.org.au/node/fungi/60095449	Gymnopilus purpuratus	(Cooke & Massee) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		3
https://id.biodiversity.org.au/node/fungi/60095543	Hypholoma australe	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		3
https://id.biodiversity.org.au/node/fungi/60095683	Pholiota highlandensis	(Peck) Quadr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		3
https://id.biodiversity.org.au/node/fungi/60096329	Boletellus ananiceps	(Berk.) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		3
https://id.biodiversity.org.au/node/fungi/60096899	Pisolithus albus	(Cooke & Massee) Priest	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Sclerodermataceae		3
https://id.biodiversity.org.au/node/fungi/60097563	Coltricia cinnamomea	(Jacq.) Murrill	species	Fungi	Basidiomycota	Agaricomycetes	Hymenochaetales	Hymenochaetaceae		3
https://id.biodiversity.org.au/node/fungi/60098053	Laetiporus portentosus	(Berk.) Rajchenb.	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Fomitopsidaceae	Polypore Fungi	3
https://id.biodiversity.org.au/node/fungi/60099129	Pycnoporus coccineus	(Fr.) Bondartsev & Singer	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Polyporaceae		3
https://id.biodiversity.org.au/node/fungi/60099787	Zelleromyces daucinus	G.W.Beaton, Pegler & T.W.K.Young	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		3
https://id.biodiversity.org.au/node/fungi/60100399	Hysterangium affine	Massee & Rodway	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Hysterangiaceae		3
https://id.biodiversity.org.au/node/fungi/60103637	Tubifera ferruginosa	(Batsch) J.F.Gmel.	species	Protista	Amoebozoa	Myxogastrea	Liceida	Tubiferaceae		3
https://id.biodiversity.org.au/node/fungi/60103751	Fuligo septica	(L.) F.H.Wigg.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Physaraceae		3
https://id.biodiversity.org.au/node/fungi/60112265	Sowerbyella rhenana	(Fuckel) J.Moravec	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pyronemataceae		3
https://id.biodiversity.org.au/node/lichen/30088550	Tephromela alectoronica	Kalb	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Tephromelataceae		3
https://id.biodiversity.org.au/taxon/apni/51267241	Arctotheca calendula	(L.) K.Lewin	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Cape Weed	3
https://id.biodiversity.org.au/taxon/apni/51288192	Orianthera campanulata	(R.Br.) C.S.P.Foster & B.J.Conn	species	Plantae	Charophyta	Equisetopsida	Gentianales	Loganiaceae		3
https://id.biodiversity.org.au/taxon/apni/51291059	Bellardia viscosa	(L.) Fisch. & C.A.Mey.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Orobanchaceae	Yellow Bartsia	3
https://id.biodiversity.org.au/taxon/apni/51294860	Petrophile rigida	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		3
https://id.biodiversity.org.au/taxon/apni/51298304	Hibbertia hypericoides	(DC.) Benth.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Yellow Buttercups	3
https://id.biodiversity.org.au/taxon/apni/51300216	Hibbertia grossulariifolia	(Salisb.) Salisb.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Gooseberry-leaved Hibbertia	3
https://id.biodiversity.org.au/taxon/apni/51398779	Caladenia applanata	Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Broad-lipped Spider Orchid	3
https://id.biodiversity.org.au/taxon/apni/51398865	Caladenia cairnsiana	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Zebra Orchid	3
https://id.biodiversity.org.au/taxon/apni/51399312	Caladenia reptans	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Little Pink Fairies	3
https://id.biodiversity.org.au/taxon/apni/51400255	Calochilus uliginosus	D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Swamp Beard Orchid	3
https://id.biodiversity.org.au/taxon/apni/51401065	Corybas recurvus	D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Helmet Orchid	3
https://id.biodiversity.org.au/taxon/apni/51404335	Diuris setacea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Bristly Donkey Orchid	3
https://id.biodiversity.org.au/taxon/apni/51405030	Elythranthera emarginata	(Lindl.) A.S.George	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pink Enamel Orchid	3
https://id.biodiversity.org.au/taxon/apni/51406604	Microtis alba	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	White Mignonette Orchid	3
https://id.biodiversity.org.au/taxon/apni/51406606	Microtis alboviridis	R.J.Bates	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Scented Mignonette Orchid	3
https://id.biodiversity.org.au/taxon/apni/51409739	Prasophyllum cucullatum	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Hooded Leek Orchid	3
https://id.biodiversity.org.au/taxon/apni/51409747	Prasophyllum drummondii	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Swamp Leek Orchid	3
https://id.biodiversity.org.au/taxon/apni/51409785	Prasophyllum hians	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Yawning Leek Orchid	3
https://id.biodiversity.org.au/taxon/apni/51412476	Pyrorchis forrestii	(F.Muell.) D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pink Beaks	3
https://id.biodiversity.org.au/taxon/apni/51414440	Thelymitra vulgaris	Jeanes	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Slender Sun Orchid	3
https://id.biodiversity.org.au/taxon/apni/51430932	Daucus glochidiatus	(Labill.) Fisch., C.A.Mey. & Ave-Lall.	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Native Carrot	3
https://id.biodiversity.org.au/taxon/apni/51431590	Thysanotus pauciflorus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		3
https://id.biodiversity.org.au/taxon/apni/51434660	Machaerina rubiginosa	(Spreng.) T.Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Baumea	3
https://id.biodiversity.org.au/taxon/apni/51436555	Acacia elata	A.Cunn. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Cedar Wattle	3
https://id.biodiversity.org.au/taxon/apni/51438089	Romulea rosea	(L.) Eckl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Onion Grass	3

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/taxon/apni/51438111	Watsonia meriana	(L.) Mill.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Bugle Lily	3
https://id.biodiversity.org.au/taxon/apni/51439689	Corymbia ficifolia	(F.Muell.) K.D.Hill & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Red-flowering Gum	3
https://id.biodiversity.org.au/taxon/apni/51442541	Briza minor	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Lesser Quaking-grass	3
https://id.biodiversity.org.au/taxon/apni/51442555	Calamagrostis arenaria	(L.) Roth	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Marram Grass	3
https://id.biodiversity.org.au/taxon/apni/51442763	Lolium arundinaceum	(Schreb.) Darbysh.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Tall Fescue	3
https://id.biodiversity.org.au/taxon/ausmoss/10152548	Campylopus clavatus	Wilson	species	Plantae	Bryophyta	Bryopsida	Dicranales	Leucobryaceae	Broody Swan-neck Moss	3
https://id.biodiversity.org.au/taxon/ausmoss/10152948	Breutelia affinis	(Hook.) Mitt.	species	Plantae	Bryophyta	Bryopsida	Bartramiales	Bartramiaceae	Common Breutelia	3
https://id.biodiversity.org.au/taxon/fungi/60118241	Boletellus sinapipes	N.A.Fechner, K.Syme, R.Rob., & Halling	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		3
ALA_DR22913_1660	Cochlicella barbara		species	Animalia	Mollusca	Gastropoda	Stylommatophora	Hygromiidae	White Snail	2
NZOR-6-100999	Puccinia myrsiphylli	G. Winter	species	Fungi	Basidiomycota	Pucciniomycetes	Pucciniales	Pucciniaceae		2
NZOR-6-103041	Physcia poncinsii	Hue	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		2
NZOR-6-113614	Glonium stellatum	Muhl.	species	Fungi	Ascomycota	Dothideomycetes	Mytilinidiales	Gloniaceae		2
NZOR-6-122473	Cladonia floerkeana	(Fr.) FlÃ¶rke	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae	Gritty British Soldiers Lichen	2
NZOR-6-12304	Buellia tetrapla	(Nyl.) MÃ¼ll.Arg.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		2
NZOR-6-123521	Cladonia ramulosa	(With.) J.R.Laundon	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae	Cup Lichen	2
NZOR-6-124439	Peziza repanda	Wahlenb.	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pezizaceae		2
NZOR-6-12638	Cladonia ochrochlora	FlÃ¶rke	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		2
NZOR-6-14092	Spyridia filamentosa	(Wulfen) Harv.	species	Plantae	Rhodophyta	Florideophyceae	Ceramiales	Spyridiaceae		2
NZOR-6-14515	Peronospora trifoliorum	de Bary	species	Chromista	Oomycota	Oomycetes	Peronosporales	Peronosporaceae		2
NZOR-6-1856	Tephromela atra	(Huds.) Hafellner	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Tephromelataceae		2
NZOR-6-25346	Parmotrema reticulatum	(Taylor) M.Choisy	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		2
NZOR-6-30899	Thysanothecium scutellatum	(Fr.) D.J.Galloway	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		2
NZOR-6-38099	Halegrapha mucronata	(Stirt.) LÃ¼cking	species	Fungi	Ascomycota	Lecanoromycetes	Ostropales	Graphidaceae		2
NZOR-6-48398	Leratiomyces ceres	(Cooke & Massee) Bridge & Spooner	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		2
NZOR-6-50420	Teloschistes chrysophthalmus	(L.) Th.Fr.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae	Golden-eye Lichen	2
NZOR-6-59671	Cladonia southlandica	W.Martin	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		2
NZOR-6-63326	Xanthoparmelia glabrans	(Nyl.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		2
NZOR-6-63901	Ascochyta medicaginicola	Q. Chen & L. Cai	species	Fungi	Ascomycota	Dothideomycetes	Pleosporales			2
NZOR-6-66901	Senecio lautus	G.Forst. ex Willd.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Variable Groundsel	2
NZOR-6-79056	Nitella pseudoflabellata	(A. Braun) R.D. Wood	species	Plantae	Chlorophyta	Charophyceae	Charales	Characeae	Green Algae	2
NZOR-6-80243	Gaeumannomyces avenae	(E.M. Turner) Hern.-Restr. & Crous	species	Fungi	Ascomycota	Sordariomycetes	Magnaporthales	Magnaporthaceae		2
NZOR-6-88808	Cladonia krempelhuberi	(Vain.) Zahlbr.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		2
NZOR-6-91548	Hypogymnia subphysodes	(Kremp.) Filson	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		2
NZOR-6-96067	Dufourea ligulata	(KÃ¶rb.) FrÃ¶dÃ©n, Arup & SÃ¸chting	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		2
NZOR-6-99607	Flavoparmelia rutidota	(Hook.f. & Taylor) Hale	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae	Common Biscuit Lichen	2
https://biodiversity.org.au/afd/taxa/024e0fc3-50d8-435c-b6d2-18914fd3708c	Nyctophilus gouldi	Tomes, 1858	species	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Gould's Long-eared Bat	2
https://biodiversity.org.au/afd/taxa/05609eaa-f1c7-491c-8124-d35beb0bc8b6	Camponotus prostans	Forel, 1910	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		2
https://biodiversity.org.au/afd/taxa/08663a67-75d3-43ee-8c8c-dd5665c7d95d	Hylaeus (Prosopisteron) perhumilis	(Cockerell, 1914)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Colletidae	Species Of Yellowfaced Bee	2
https://biodiversity.org.au/afd/taxa/0bb216ad-02d1-4ae6-8ac4-b4853c2140a9	Ocirrhoe lutescens	Distant, 1900	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	2
https://biodiversity.org.au/afd/taxa/0d0c5545-e1eb-4525-b4b1-be10f8a24cc4	Mituliodon tarantulinus	(L. Koch, 1873)	species	Animalia	Arthropoda	Arachnida	Araneae	Miturgidae	Long-legged Sac Spider	2
https://biodiversity.org.au/afd/taxa/10225969-809f-475b-b89b-7300f29a202d	Metaballus frontalis	(Walker, 1869)	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		2
https://biodiversity.org.au/afd/taxa/10f7757e-79b1-4551-954a-1deb0ea91b2b	Cornu aspersum	(MÃ¼ller, 1774)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Helicidae	Common Garden Snail	2
https://biodiversity.org.au/afd/taxa/11dc52e5-20ef-4272-a646-db27796d2f12	Sternopriscus marginatus	Watts, 1978	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	2
https://biodiversity.org.au/afd/taxa/124663d8-5fcb-41c7-a1a1-7684666d45dd	Perga schiodtei	Westwood, 1880	species	Animalia	Arthropoda	Insecta	Hymenoptera	Pergidae		2
https://biodiversity.org.au/afd/taxa/127ae005-62ed-4868-b947-b1a981d5e579	Danaus plexippus	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Wanderer	2
https://biodiversity.org.au/afd/taxa/14ca22b8-aa9f-46ed-a656-59e65d591506	Petricia vernicina	(Lamarck, 1816)	species	Animalia	Echinodermata	Asteroidea	Valvatida	Asteropseidae	Velvet Seastar	2
https://biodiversity.org.au/afd/taxa/19bd6053-5c3f-4fd6-bedc-4f1fec38109c	Prasinocyma semicrocea	(Walker, 1861)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	2
https://biodiversity.org.au/afd/taxa/1b38fca7-8fa6-46d6-ad99-ab18b2f68090	Dacnodes shortridgei	(Burr, 1914)	species	Animalia	Arthropoda	Insecta	Dermaptera	Pygidicranidae		2
https://biodiversity.org.au/afd/taxa/1dfa06ee-4576-4a78-a9d9-8578cc16be34	Doratifera oxleyi	(Newman, 1855)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Limacodidae	Painted Cup Moth	2
https://biodiversity.org.au/afd/taxa/1f1634bf-7fe5-4198-b6c4-d1e449578690	Pelororhinus crassus	Blackburn, 1892	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae	Horse-nosed Weevil	2
https://biodiversity.org.au/afd/taxa/1f4cf48a-ad72-4f16-99bf-2ea2ee1b8f7a	Myrmecia vindex	Smith, 1858	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bull Ant	2
https://biodiversity.org.au/afd/taxa/1fba79d3-4d89-4dbf-9ff1-c22ee386b9bc	Sminthopsis gilberti	Kitchener, Stoddart & Henry, 1984	species	Animalia	Chordata	Mammalia	Dasyuromorphia	Dasyuridae	Gilbert's Dunnart	2
https://biodiversity.org.au/afd/taxa/205dd348-227e-4fff-a2c2-005a1c84c976	Fraus furcata	Nielsen & Kristensen, 1989	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/2ae13397-85e2-45cb-8a6c-6271e92964a4	Limax maximus	Linnaeus, 1758	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Limacidae	Leopard Slug	2
https://biodiversity.org.au/afd/taxa/2c986659-9527-4491-9ab3-23a2435eeee3	Thrips australis	(Bagnall, 1915)	species	Animalia	Arthropoda	Insecta	Thysanoptera	Thripidae	Eucalyptus Thrips	2
https://biodiversity.org.au/afd/taxa/2d41626a-fc2f-4fb9-8a35-a7bd855c1982	Uraba lugens	Walker, 1863	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nolidae	Gum-leaf Skeletoniser	2
https://biodiversity.org.au/afd/taxa/374a7933-97b9-455a-8d9d-c8767d4cb22b	Girella zebra	(Richardson, 1846)	species	Animalia	Chordata	Actinopterygii	Perciformes	Girellidae	Zebrafish	2
https://biodiversity.org.au/afd/taxa/37c12bc0-ea7a-489f-8c96-5e8303732a10	Chelidonichthys kumu	(Cuvier, 1829)	species	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Triglidae	Red Gurnard	2
https://biodiversity.org.au/afd/taxa/37dbd3f0-21ce-40ab-ab03-4d249ef05241	Agrotis munda	Walker, 1857	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Brown Cutworm Moth	2
https://biodiversity.org.au/afd/taxa/3e1b019f-3659-4c9e-8d45-3e7b357aac4b	Hesperotermes infrequens	(Hill, 1927)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae		2
https://biodiversity.org.au/afd/taxa/40311ae3-7584-472f-b6e7-159aea152199	Archaeosynthemis occidentalis	Tillyard, 1910	species	Animalia	Arthropoda	Insecta	Odonata	Synthemistidae	Western Brown Tigertail	2
https://biodiversity.org.au/afd/taxa/43be1b66-57f7-4cd6-9178-dc6747b273f8	Hydrophilus (Hydrophilus) albipes	Castelnau, 1840	species	Animalia	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Water Scavenger Beetle	2
https://biodiversity.org.au/afd/taxa/44a04cd2-e469-4af0-9a82-a6a464d48a5e	Nyctophilus holtorum	Parnaby, King & Eldridge, 2021	species	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Holtâ€™s Long-eared Bat.	2
https://biodiversity.org.au/afd/taxa/48bd256d-536d-4ca8-96eb-950f17e80184	Rhipidura (Rhipidura) fuliginosa	(Sparrman, 1787)	species	Animalia	Chordata	Aves	Passeriformes	Rhipiduridae	New Zealand Fantail	2
https://biodiversity.org.au/afd/taxa/4d6febf7-b822-4379-ac07-4ae3eef0d6ac	Bothriembryon (Bothriembryon) revectus	Iredale, 1939	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Bothriembryontidae		2
https://biodiversity.org.au/afd/taxa/4d9e0e12-1857-48aa-9c41-befa4d400529	Exoneura (Exoneura) robusta	Cockerell, 1922	species	Animalia	Arthropoda	Insecta	Hymenoptera	Apidae	Reed Bee	2
https://biodiversity.org.au/afd/taxa/4e6a101d-a90c-48c6-b0b1-51d6c9243e2c	Ovalipes australiensis	Stephenson & Rees, 1968	species	Animalia	Arthropoda	Malacostraca	Decapoda	Polybiidae	Ocean Sand Crab	2
https://biodiversity.org.au/afd/taxa/4eda2065-0ea5-48d5-a1f5-0c749378b5f7	Onthophagus taurus	(Schreber, 1759)	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae	Bullhorned Dung Beetle	2
https://biodiversity.org.au/afd/taxa/4edccf45-a069-4269-898e-aa74b2d9b7b1	Chironemus maculosus	(Richardson, 1850)	species	Animalia	Chordata	Actinopterygii	Perciformes	Chironemidae	Silver Spot	2
https://biodiversity.org.au/afd/taxa/5093c51f-d856-459c-ac0b-bd72f39eeaca	Geotria australis	Gray, 1851	species	Animalia	Chordata		Petromyzontiformes	Geotriidae	Pouch Lamprey	2
https://biodiversity.org.au/afd/taxa/509d0e8e-bf58-4a27-995c-d854416c3b4a	Archiargiolestes pusillus	(Tillyard, 1908)	species	Animalia	Arthropoda	Insecta	Odonata	Argiolestidae	Little Flatwing	2
https://biodiversity.org.au/afd/taxa/5298b59a-5c28-463a-ac1b-53d4f8045cc2	Crypsiphona ocultaria	(Donovan, 1805)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Redlined Geometrid Moth	2
https://biodiversity.org.au/afd/taxa/53d26cb7-8d84-4433-b63b-e91c7703254a	Baiami tegenarioides	(Simon, 1908)	species	Animalia	Arthropoda	Arachnida	Araneae	Desidae		2
https://biodiversity.org.au/afd/taxa/574e9a03-7382-4647-a3e0-acb8384bdbc8	Armadillidium vulgare	(Latreille, 1804)	species	Animalia	Arthropoda	Malacostraca	Isopoda	Armadillidiidae		2
https://biodiversity.org.au/afd/taxa/5c498e26-7d7e-4b0e-833c-9c541ef4be52	Salsa recherchensis	(Main, 1954)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae		2
https://biodiversity.org.au/afd/taxa/5c732c7a-5995-401d-ac38-c1d0cfe5604b	Nebothriomyrmex majeri	Dubovikoff, 2004	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		2
https://biodiversity.org.au/afd/taxa/5ccc7079-95fe-4b79-9107-69d8964f1597	Notolabrus parilus	(Richardson, 1850)	species	Animalia	Chordata	Actinopterygii	Perciformes	Labridae	Brownspotted Wrasse	2
https://biodiversity.org.au/afd/taxa/61b8777b-5cf6-4b41-9dbb-17c0295c516d	Zephyrarchaea mainae	(Platnick, 1991)	species	Animalia	Arthropoda	Arachnida	Araneae	Archaeidae	Main's Assasin Spider	2
https://biodiversity.org.au/afd/taxa/62830dd0-2840-4ae7-b1a0-89da7241727b	Phyllopteryx dewysea	Stiller, Wilson & Rouse, 2015	species	Animalia	Chordata	Actinopterygii	Syngnathiformes	Syngnathidae	Ruby Seadragon	2
https://biodiversity.org.au/afd/taxa/62b934bc-3033-4422-9cd4-2ed42513f485	Iridomyrmex purpureus	(Smith, 1858)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Meat Ant	2
https://biodiversity.org.au/afd/taxa/647f5964-9593-4cb8-945d-f53a8d3d091d	Tetragnatha demissa	L. Koch, 1872	species	Animalia	Arthropoda	Arachnida	Araneae	Tetragnathidae		2
https://biodiversity.org.au/afd/taxa/6540db4d-6ad2-4d02-a1a3-0ce812f68bca	Chauliognathus tricolor	(Castelnau, 1840)	species	Animalia	Arthropoda	Insecta	Coleoptera	Cantharidae		2
https://biodiversity.org.au/afd/taxa/66cf9e86-f1f3-4716-a4d3-cd4650ff087a	Tringa (Heteroscelus) brevipes	(Vieillot, 1816)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Grey-tailed Tattler	2
https://biodiversity.org.au/afd/taxa/6b602304-3004-4ff1-9904-6ec22d843fc7	Tetraclitella purpurascens	(Wood, 1815)	species	Animalia	Arthropoda	Maxillopoda	Sessilia	Tetraclitidae	Purple Four-plated Barnacle	2
https://biodiversity.org.au/afd/taxa/7114f0f3-f2ac-4f3e-918e-5038ce269c83	Temognatha mitchellii	(Hope, 1846)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		2
https://biodiversity.org.au/afd/taxa/718be9d7-8fde-4023-89d8-c09a4f23fbc4	Aplodactylus westralis	Russell, 1987	species	Animalia	Chordata	Actinopterygii	Perciformes	Aplodactylidae	Western Seacarp	2
https://biodiversity.org.au/afd/taxa/7b31b043-a8c7-4e48-9681-dcea0569d8db	Nyssus coloripes	Walckenaer, 1805	species	Animalia	Arthropoda	Arachnida	Araneae	Corinnidae	Spotted Ground Swift Spider	2
https://biodiversity.org.au/afd/taxa/7c4c530b-41f9-4a5d-afbc-a0783e9b089d	Euoniticellus fulvus	(Goeze, 1777)	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae		2
https://biodiversity.org.au/afd/taxa/82d2cd55-c804-4fb2-8913-812e6cb358b6	Caedicia simplex	(Walker, 1869)	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae	Common Garden Katydid	2
https://biodiversity.org.au/afd/taxa/85b7a274-8f87-4c83-b667-f74c44a0ea0a	Bothriembryon (Bothriembryon) fuscus	Thiele, 1930	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Bothriembryontidae		2
https://biodiversity.org.au/afd/taxa/85e6cb9f-fdaf-4929-89f6-0b2720e325a2	Diphucrania aberrans	(Barker, 2001)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		2
https://biodiversity.org.au/afd/taxa/86d52755-cf9a-4c3f-a900-e2d908343123	Platynectes (Platynectes) reticulosus	(Clark, 1863)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	2
https://biodiversity.org.au/afd/taxa/885ee77a-5a73-4a4f-bfcb-5af2ac6e7416	Carphurus cyanopterus	(Boheman, 1858)	species	Animalia	Arthropoda	Insecta	Coleoptera	Melyridae		2
https://biodiversity.org.au/afd/taxa/89dd1fb0-2549-4285-9b8a-724c39f4542a	Junonia villida	(Fabricius, 1787)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Meadow Argus	2
https://biodiversity.org.au/afd/taxa/8fa8d059-9ce9-41f4-b604-63408d1de0b4	Tringa (Rhyacophilus) stagnatilis	(Bechstein, 1803)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Marsh Sandpiper	2
https://biodiversity.org.au/afd/taxa/909945d7-bf61-47eb-97e1-0e823a500947	Palaemon serenus	Heller, 1862	species	Animalia	Arthropoda	Malacostraca	Decapoda	Palaemonidae	Rock-pool Prawn	2
https://biodiversity.org.au/afd/taxa/92358f59-80ae-482f-8979-5679b23e92cc	Lalage (Lalage) tricolor	(Swainson, 1825)	species	Animalia	Chordata	Aves	Passeriformes	Campephagidae	White-winged Triller	2
https://biodiversity.org.au/afd/taxa/930d12bd-5222-4e24-bd35-4321629e65b3	Neosparassus diana	(L. Koch, 1875)	species	Animalia	Arthropoda	Arachnida	Araneae	Sparassidae	Badge Huntsman Spider	2
https://biodiversity.org.au/afd/taxa/95608f15-df20-4809-bb12-a577a39aa867	Gonocephalum alternatum	Carter, 1915	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		2
https://biodiversity.org.au/afd/taxa/95fcba26-0c2a-40eb-90c6-749b6b9a97dc	Scoliacma pactolias	Meyrick, 1886	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Moth	2
https://biodiversity.org.au/afd/taxa/963a3572-e528-43fe-8849-31303ccec115	Castiarina pallidiventris	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		2
https://biodiversity.org.au/afd/taxa/9937539a-c06e-4d30-8648-f8e0ff8c00cd	Tanychilus gouldi	(Hope, 1843)	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		2
https://biodiversity.org.au/afd/taxa/9e423ee9-92bc-4cd4-87c5-b08f7b1571b8	Arhodia lasiocamparia	GuenÃ©e, 1858	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	2
https://biodiversity.org.au/afd/taxa/9f9ddea7-8c74-46df-8ed9-3233d681e354	Merops (Merops) ornatus	Latham, 1801	species	Animalia	Chordata	Aves	Coraciiformes	Meropidae	Rainbow Bee-eater	2
https://biodiversity.org.au/afd/taxa/9feb7e18-7f75-4a08-bc1b-6bc2120b6e32	Sternopriscus browni	Sharp, 1882	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	2
https://biodiversity.org.au/afd/taxa/9fee6334-def9-466c-be45-102a376ef2ef	Melobasis vittata	Blackburn, 1887	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		2
https://biodiversity.org.au/afd/taxa/a081c2de-aa17-49ca-a4ff-e7e78e447b31	Cyclosa trilobata	(Urquhart, 1885)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Three Lobed Spider	2
https://biodiversity.org.au/afd/taxa/a14de374-38ab-4b72-8304-26f4e7b4cbc7	Mesoplodon grayi	Von Haast, 1876	species	Animalia	Chordata	Mammalia	Cetacea	Ziphiidae	Gray's Beaked Whale	2
https://biodiversity.org.au/afd/taxa/a240892f-e953-453c-9a27-a796bce43b5e	Aphaereta aotea	Hughes & Woolcock, 1976	species	Animalia	Arthropoda	Insecta	Hymenoptera	Braconidae		2
https://biodiversity.org.au/afd/taxa/a3b6da66-f610-4e72-b551-44b6e9f8c7cf	Protogarypinus giganteus	Beier, 1954	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Garypinidae		2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/a3c56f4d-135e-4043-898b-196369ef4c34	Iridomyrmex innocens	Forel, 1907	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		2
https://biodiversity.org.au/afd/taxa/a50d6c52-b097-4b40-aed5-254a4c880db4	Bathytoshia brevicaudata	(Hutton, 1875)	species	Animalia	Chordata	Chondrichthyes	Myliobatiformes	Dasyatidae	Smooth Stingray	2
https://biodiversity.org.au/afd/taxa/b0f5abcb-f023-42bc-9c27-664cfb9588e4	Aenetus scripta	(Scott, 1869)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		2
https://biodiversity.org.au/afd/taxa/b19efd57-d5ec-4bb0-8a5f-a9447326dbd1	Servaea incana	(Karsch, 1878)	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae	Jumping Spider	2
https://biodiversity.org.au/afd/taxa/b5482790-c0f6-4d30-8edf-aa7d736adb97	Aenetus astathes	(Turner, 1915)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		2
https://biodiversity.org.au/afd/taxa/b64598e7-6af6-4d57-9c8c-13e11a4ba705	Deroceras reticulatum	(MÃ¼ller, 1774)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Agriolimacidae	Grey Field Slug	2
https://biodiversity.org.au/afd/taxa/b753892a-155e-4190-98ab-8e85cc9840b7	Bubulcus ibis	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Ciconiiformes	Ardeidae	Cattle Egret	2
https://biodiversity.org.au/afd/taxa/b850276b-4a77-436b-a2bf-f62e8ab81ff6	Hylaeus (Euprosopis) violaceus	(Smith, 1853)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Colletidae	Species Of Yellowfaced Bee	2
https://biodiversity.org.au/afd/taxa/b98ba854-85a8-4f6d-b709-b9a9e5ed887d	Monomorium sordidum	Forel, 1902	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	2
https://biodiversity.org.au/afd/taxa/bdcc0acc-980a-4f51-b8c0-85447ce59bea	Melithreptus (Eidopsarus) brevirostris	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Brown-headed Honeyeater	2
https://biodiversity.org.au/afd/taxa/beaed7ce-52a5-4e32-99e2-b0266a96a7b1	Notoplax subviridis	(Torr, 1911)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Acanthochitonidae		2
https://biodiversity.org.au/afd/taxa/bf9e1fd3-6960-4450-86d4-910adcceb844	Notoncus hickmani	Clark, 1930	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Yellow Epaulet Ant	2
https://biodiversity.org.au/afd/taxa/c041c37c-3fc1-46a7-9d8b-6df2c89de952	Spirula spirula	(Linnaeus, 1758)	species	Animalia	Mollusca	Cephalopoda	Sepiida	Spirulidae	Ram's Horn Squid	2
https://biodiversity.org.au/afd/taxa/c2f71629-33be-45ed-87d7-2a71fd15e5ad	Castulo doubledayi	Newman, 1857	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Moth	2
https://biodiversity.org.au/afd/taxa/c3294d20-8bae-4798-a3fe-53b1541e202c	Physeema labyrinthica	(Walker, 1850)	species	Animalia	Arthropoda	Insecta	Hemiptera	Cicadidae	Dune Ticker	2
https://biodiversity.org.au/afd/taxa/c55da61b-571f-420e-a9cf-9a48e4303219	Porcellio scaber	Latreille, 1804	species	Animalia	Arthropoda	Malacostraca	Isopoda	Porcellionidae		2
https://biodiversity.org.au/afd/taxa/c665ef1a-5612-493a-afe7-94577be1689c	Abantiades fulvomarginatus	Tindale, 1932	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		2
https://biodiversity.org.au/afd/taxa/c79eed6c-2a4d-49fe-bf1b-58244f7d9d60	Chlaenius (Pelasmomimus) greyanus	White, 1841	species	Animalia	Arthropoda	Insecta	Coleoptera	Carabidae		2
https://biodiversity.org.au/afd/taxa/c812dbdf-b2e6-4b13-9514-d7d054015d00	Paropsisterna basalis	(Chapuis, 1877)	species	Animalia	Arthropoda	Insecta	Coleoptera	Chrysomelidae		2
https://biodiversity.org.au/afd/taxa/cd4e3b1b-4387-4338-8fc8-0da4f30a9e0b	Burhinus (Burhinus) grallarius	(Latham, 1801)	species	Animalia	Chordata	Aves	Charadriiformes	Burhinidae	Bush Stone-curlew	2
https://biodiversity.org.au/afd/taxa/cfc91684-311a-4766-b298-52e6284f4dad	Dicathais orbita	(Gmelin, 1791)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Muricidae	Cartrut Shell	2
https://biodiversity.org.au/afd/taxa/d610c62c-e00b-48b8-81e8-58040e05d51a	Elapognathus minor	(GÃ¼nther, 1863)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Little Brown Snake	2
https://biodiversity.org.au/afd/taxa/d76a6b06-4639-4ca4-badc-bad4c14efcdc	Fluviolanatus subtortus	(Dunker, 1857)	species	Animalia	Mollusca	Bivalvia	Cardiida	Trapezidae	Clam	2
https://biodiversity.org.au/afd/taxa/d9061bb7-6e32-4e47-bb5c-ebd6f1919ec0	Hippotion celerio	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Sphingidae	Grapevine Hawk Moth	2
https://biodiversity.org.au/afd/taxa/dafde291-d532-462b-8ca3-6c3d839cd719	Nezara viridula	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Green Vegetable Bug	2
https://biodiversity.org.au/afd/taxa/dc666bfb-4edf-47c9-9948-db9ef26e54e9	Hecatesia thyridion	Feisthamel, 1839	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Southern Whistling Moth	2
https://biodiversity.org.au/afd/taxa/e120f766-ae0d-4d53-860e-30303f5275ef	Rhipicera (Agathorhipis) attenuata	Westwood, 1843	species	Animalia	Arthropoda	Insecta	Coleoptera	Rhipiceridae		2
https://biodiversity.org.au/afd/taxa/e1fa720b-8955-42cf-b96e-9f71d488dd1f	Lasioglossum (Chilalictus) sculpturatum	(Cockerell, 1930)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Halictidae	Sweat Bee	2
https://biodiversity.org.au/afd/taxa/e290c38c-be5b-45e6-b031-b29a3ed293ef	Chrysopasta elegans	(Macquart, 1846)	species	Animalia	Arthropoda	Insecta	Diptera	Tachinidae		2
https://biodiversity.org.au/afd/taxa/e32ef200-cc8d-4d71-88e2-521ac0d38af9	Socca senicaudata	(Simon, 1908)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae		2
https://biodiversity.org.au/afd/taxa/e635e4da-4544-4a85-acb5-e81dbe5b7160	Amitermes modicus	(Hill, 1942)	species	Animalia	Arthropoda	Insecta	Blattodea	Termitidae	Termite	2
https://biodiversity.org.au/afd/taxa/e7c21eea-137b-4580-935c-876cf81a6fdf	Conus (Floraconus) cocceus	Reeve, 1843	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Conidae	The Scarlet-spotted Cone	2
https://biodiversity.org.au/afd/taxa/e7ffc466-9c5b-4dbf-86e6-00b674dd8063	Megachile (Hackeriapis) tosticauda	Cockerell, 1912	species	Animalia	Arthropoda	Insecta	Hymenoptera	Megachilidae	Bee	2
https://biodiversity.org.au/afd/taxa/eb32743f-7f05-4bf3-95da-ffd642036d1a	Moaciria sphenomorphi	Jones, 1979	species	Animalia	Nematoda	Chromadorea	Spirurida	Heterakidae		2
https://biodiversity.org.au/afd/taxa/eb8e7764-472a-4176-b544-39d7e253d8ae	Anophelepis telesphorus	Westwood, 1859	species	Animalia	Arthropoda	Insecta	Phasmida	Phasmatidae	Short-winged Stick-insect	2
https://biodiversity.org.au/afd/taxa/ec750100-c5ee-4ed8-89ec-afed81c366c6	Prothalotia pulcherrimus	(Wood, 1828)	species	Animalia	Mollusca	Gastropoda		Trochidae	Beautiful Cantharidus	2
https://biodiversity.org.au/afd/taxa/f0052736-ed3a-4170-a7b2-94bde6d36d19	Phalaenoides glycinae	Lewin, 1805	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Grapevine Moth	2
https://biodiversity.org.au/afd/taxa/f3522116-9bfc-483a-b765-fee8b17fb100	Pachycephala (Pachycephala) occidentalis	E.P. Ramsay, 1878	species	Animalia	Chordata	Aves	Passeriformes	Pachycephalidae	Western Whistler	2
https://biodiversity.org.au/afd/taxa/f6842842-863f-4363-9f6f-01540175e781	Colomerus vitis	(Pagenstecher, 1857)	species	Animalia	Arthropoda	Arachnida	Trombidiformes	Eriophyidae		2
https://biodiversity.org.au/afd/taxa/f99d2ad9-23dc-4c67-893e-254fc9c614a6	Megaptera novaeangliae	(Borowski, 1781)	species	Animalia	Chordata	Mammalia	Cetacea	Balaenopteridae	Humpback Whale	2
https://biodiversity.org.au/afd/taxa/f9d004aa-200e-4699-8596-162189e7e4ba	Nerita (Lisanerita) atramentosa	Reeve, 1855	species	Animalia	Mollusca	Gastropoda	Neritopsina	Neritidae	Black Crow	2
https://biodiversity.org.au/afd/taxa/fb02f311-20e7-4ad6-aef4-47274638ecc0	Linepithema humile	(Mayr, 1868)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Argentine Ant	2
https://biodiversity.org.au/afd/taxa/fb187fec-d632-46cc-9250-f3ea45892080	Cryptoblepharus buchananii	(Gray, 1838)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Buchanan's Snake-eyed Skink	2
https://biodiversity.org.au/afd/taxa/fb35c759-b175-46c7-b043-cdfc61dc388a	Ctenotus catenifer	Storr, 1974	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Chain-striped South-west Ctenotus	2
https://biodiversity.org.au/afd/taxa/fd3849d3-cd78-4701-ae8a-062da6fffae3	Olganereis edmondsi	(Hartman, 1954)	species	Animalia	Annelida	Polychaeta		Nereididae	Rag Worm	2
https://biodiversity.org.au/afd/taxa/fe80ca2f-f41d-4d5b-b2d1-b1197f8764ec	Agrotis porphyricollis	GuenÃ©e, 1852	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Owlet Moth	2
https://biodiversity.org.au/afd/taxa/ff4fa6c5-a499-4b50-a8b4-00aee475ff8a	Notopilo brevistriatus	Bartlett & Lambkin, 2022	species	Animalia	Arthropoda	Insecta	Coleoptera	Cleridae		2
https://id.biodiversity.org.au/name/apni/51346965	Pterostylis actites	(D.L.Jones & C.J.French) D.L.Jones & C.J.French	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Coastal Short-eared Snail Orchid	2
https://id.biodiversity.org.au/node/apni/2886450	Leucopogon interstans	Hislop	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2886742	Astartea scoparia	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Common Astartea	2
https://id.biodiversity.org.au/node/apni/2886851	Allium triquetrum	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Alliaceae	Angled Onion	2
https://id.biodiversity.org.au/node/apni/2886878	Sparaxis tricolor	(Schneev.) Ker Gawl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Tricolor Harlequin Flower	2
https://id.biodiversity.org.au/node/apni/2886928	Podotheca angustifolia	(Labill.) Less.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Sticky Long-heads	2
https://id.biodiversity.org.au/node/apni/2886982	Juncus holoschoenus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Joint-leaf Rush	2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2887197	Vulpia fasciculata	(Forssk.) Fritsch	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Sand Fescue	2
https://id.biodiversity.org.au/node/apni/2887332	Mesomelaena graciliceps	(C.B.Clarke) K.L.Wilson	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2887496	Gastrolobium minus	(Crisp) G.Chandler & Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2888230	Rhadinothamnus anceps	(DC.) Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Blister Bush	2
https://id.biodiversity.org.au/node/apni/2888864	Paspalum dilatatum	Poir.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Paspalum	2
https://id.biodiversity.org.au/node/apni/2889203	Vulpia myuros	(L.) C.C.Gmel.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Fescue	2
https://id.biodiversity.org.au/node/apni/2889451	Echium plantagineum	L.	species	Plantae	Charophyta	Equisetopsida		Boraginaceae	Paterson's Curse	2
https://id.biodiversity.org.au/node/apni/2889785	Cassytha pomiformis	Nees	species	Plantae	Charophyta	Equisetopsida	Laurales	Lauraceae	Dodder Laurel	2
https://id.biodiversity.org.au/node/apni/2890532	Sphenotoma parviflora	(F.Muell. ex Benth.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2891153	Digitaria sanguinalis	(L.) Scop.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Summer Grass	2
https://id.biodiversity.org.au/node/apni/2891565	Grevillea cirsiifolia	Meisn.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Varied-leaf Grevillea	2
https://id.biodiversity.org.au/node/apni/2891615	Haemodorum laxum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Bloodroot	2
https://id.biodiversity.org.au/node/apni/2891893	Podolepis gracilis	Graham	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Slender Podolepis	2
https://id.biodiversity.org.au/node/apni/2892410	Crassula natans	Thunb.	species	Plantae	Charophyta	Equisetopsida	Saxifragales	Crassulaceae	Swamp Stonecrop	2
https://id.biodiversity.org.au/node/apni/2892432	Gompholobium ovatum	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2892858	Lolium perenne	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Perennial Rye-grass	2
https://id.biodiversity.org.au/node/apni/2892966	Siloxerus filifolius	(Benth.) Ostenf.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		2
https://id.biodiversity.org.au/node/apni/2893021	Bossiaea rufa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2893649	Opercularia vaginata	Labill. ex Juss.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Rubiaceae	Dog Weed	2
https://id.biodiversity.org.au/node/apni/2894809	Lomandra integra	T.D.Macfarl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		2
https://id.biodiversity.org.au/node/apni/2895029	Scaevola phlebopetala	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Velvet Fanflower	2
https://id.biodiversity.org.au/node/apni/2895277	Ranunculus repens	L.	species	Plantae	Charophyta	Equisetopsida	Ranunculales	Ranunculaceae	Creeping Buttercup	2
https://id.biodiversity.org.au/node/apni/2895392	Polygala myrtifolia	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae	Myrtle-leaf Milkwort	2
https://id.biodiversity.org.au/node/apni/2896012	Acanthocarpus preissii	Lehm.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		2
https://id.biodiversity.org.au/node/apni/2896030	Hakea laurina	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Pincushion Hakea	2
https://id.biodiversity.org.au/node/apni/2896184	Sowerbaea laxiflora	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Vanilla Lily	2
https://id.biodiversity.org.au/node/apni/2896389	Juncus usitatus	L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Common Rush	2
https://id.biodiversity.org.au/node/apni/2896777	Rosa canina	L.	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Dog Rose	2
https://id.biodiversity.org.au/node/apni/2896899	Amphipogon laguroides	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		2
https://id.biodiversity.org.au/node/apni/2897232	Crassula colorata	(Nees) Ostenf.	species	Plantae	Charophyta	Equisetopsida	Saxifragales	Crassulaceae	Dense Stonecrop	2
https://id.biodiversity.org.au/node/apni/2897317	Drosera myriantha	Planch.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Star Rainbow	2
https://id.biodiversity.org.au/node/apni/2898177	Leucopogon racemulosus	DC.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2898432	Lepyrodia monoica	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		2
https://id.biodiversity.org.au/node/apni/2898454	Eutaxia virgata	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2898628	Bromus catharticus	Vahl	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Prairie Grass	2
https://id.biodiversity.org.au/node/apni/2899211	Leucopogon alternifolius	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2899294	Centrolepis polygyna	(R.Br.) Hieron.	species	Plantae	Charophyta	Equisetopsida	Poales	Centrolepidaceae	Wiry Centrolepis	2
https://id.biodiversity.org.au/node/apni/2899317	Medicago arabica	(L.) Huds.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Spotted Medic	2
https://id.biodiversity.org.au/node/apni/2899338	Lechenaultia tubiflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Heath Leschenaultia	2
https://id.biodiversity.org.au/node/apni/2899357	Ehrharta longiflora	Sm.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Annual Veldt-grass	2
https://id.biodiversity.org.au/node/apni/2899597	Phylloglossum drummondii	Kunze	species	Plantae	Charophyta	Equisetopsida	Lycopodiales	Lycopodiaceae	Pigmy Clubmoss	2
https://id.biodiversity.org.au/node/apni/2900200	Hemarthria uncinata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Matgrass	2
https://id.biodiversity.org.au/node/apni/2900465	Lomandra purpurea	(Endl.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Purple Mat Rush	2
https://id.biodiversity.org.au/node/apni/2900546	Agapanthus praecox	Willd.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Agapanthaceae	Agapanthus	2
https://id.biodiversity.org.au/node/apni/2900605	Erigeron karvinskianus	DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Bony-tip Fleabane	2
https://id.biodiversity.org.au/node/apni/2900642	Petrorhagia dubia	(Raf.) G.Lopez & Romo	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	Velvet Pink	2
https://id.biodiversity.org.au/node/apni/2901117	Stylidium gloeophyllum	Wege	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae		2
https://id.biodiversity.org.au/node/apni/2901308	Setaria parviflora	(Poir.) Kerguelen	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Slender Pigeon Grass	2
https://id.biodiversity.org.au/node/apni/2901311	Hibbertia amplexicaulis	Steud.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		2
https://id.biodiversity.org.au/node/apni/2901351	Commersonia apella	C.F.Wilkins	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Manyflowered Commersonia	2
https://id.biodiversity.org.au/node/apni/2901414	Anarthria gracilis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		2
https://id.biodiversity.org.au/node/apni/2901489	Stylidium junceum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Reed Triggerplant	2
https://id.biodiversity.org.au/node/apni/2901671	Banksia praemorsa	Andrews	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Cut-leaf Banksia	2
https://id.biodiversity.org.au/node/apni/2902111	Juncus articulatus	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Jointed Rush	2
https://id.biodiversity.org.au/node/apni/2902145	Cenchrus clandestinus	(Hochst. ex Chiov.) Morrone	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Kikuyu	2
https://id.biodiversity.org.au/node/apni/2902165	Ornithopus compressus	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Neat Bird's-foot	2
https://id.biodiversity.org.au/node/apni/2902209	Synaphea reticulata	(Sm.) Druce	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		2
https://id.biodiversity.org.au/node/apni/2902245	Xanthosia tasmanica	Domin	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae	Southern Xanthosia	2
https://id.biodiversity.org.au/node/apni/2902353	Calandrinia brevipedata	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Portulacaceae	Short-stalked Purslane	2
https://id.biodiversity.org.au/node/apni/2903059	Ixiolaena viscosa	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Sticky Ixiolaena	2
https://id.biodiversity.org.au/node/apni/2903275	Leucopogon paradoxus	Hislop	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2903285	Melaleuca lateritia	A.Dietr.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Robin Redbreast Bush	2
https://id.biodiversity.org.au/node/apni/2903310	Conospermum capitatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		2
https://id.biodiversity.org.au/node/apni/2903496	Acacia melanoxylon	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Blackwood	2
https://id.biodiversity.org.au/node/apni/2903804	Chorizema glycinifolium	(Sm.) Druce	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2903963	Schoenolaena juncea	Bunge	species	Plantae	Charophyta	Equisetopsida	Apiales	Apiaceae		2
https://id.biodiversity.org.au/node/apni/2904470	Fuchsia magellanica	Lam.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Onagraceae	Fuchsia	2
https://id.biodiversity.org.au/node/apni/2904661	Cicendia filiformis	(L.) Delarbre	species	Plantae	Charophyta	Equisetopsida	Gentianales	Gentianaceae	Slender Cicendia	2
https://id.biodiversity.org.au/node/apni/2904728	Rumex conglomeratus	Murray	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Clustered Dock	2
https://id.biodiversity.org.au/node/apni/2904896	Schoenus multiglumis	Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2905006	Persicaria hydropiper	(L.) Delarbre	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Water Pepper	2
https://id.biodiversity.org.au/node/apni/2905177	Isopogon attenuatus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		2
https://id.biodiversity.org.au/node/apni/2906496	Chorizandra enodis	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Black Bristle-sedge	2
https://id.biodiversity.org.au/node/apni/2906732	Orthrosanthus polystachyus	Benth.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Many Spike Orthrosanthus	2
https://id.biodiversity.org.au/node/apni/2906808	Cyathochaeta avenacea	(R.Br.) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2907149	Pelargonium littorale	HÃ¼gel ex Endl.	species	Plantae	Charophyta	Equisetopsida	Geraniales	Geraniaceae	Native Pelargonium	2
https://id.biodiversity.org.au/node/apni/2907347	Chenopodium album	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Fat Hen	2
https://id.biodiversity.org.au/node/apni/2907368	Hypochaeris radicata	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Cats-ear	2
https://id.biodiversity.org.au/node/apni/2907453	Sphaerolobium hygrophilum	R.Butcher	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2907576	Laxmannia jamesii	Keighery	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	James' Paperlily	2
https://id.biodiversity.org.au/node/apni/2907658	Austrostipa mollis	(R.Br.) S.W.L.Jacobs & J.Everett	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Soft Speargrass	2
https://id.biodiversity.org.au/node/apni/2907750	Drosera roseana	N.G.Marchant & Lowrie	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae		2
https://id.biodiversity.org.au/node/apni/2908047	Hypolaena pubescens	(R.Br.) Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		2
https://id.biodiversity.org.au/node/apni/2908585	Dielsiodoxa tamariscina	(F.Muell.) Albr.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2908597	Thomasia pauciflora	Lindl.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Few Flowered Thomasia	2
https://id.biodiversity.org.au/node/apni/2908653	Drosera platypoda	Turcz.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Fan-leaved Sundew	2
https://id.biodiversity.org.au/node/apni/2909476	Leptomeria pauciflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae	Sparse-flowered Currant Bush	2
https://id.biodiversity.org.au/node/apni/2909879	Dampiera trigona	de Vriese	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Angled-stem Dampiera	2
https://id.biodiversity.org.au/node/apni/2910012	Olax benthamiana	Miq.	species	Plantae	Charophyta	Equisetopsida	Santalales	Olacaceae		2
https://id.biodiversity.org.au/node/apni/2910021	Lomandra sonderi	(F.Muell.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		2
https://id.biodiversity.org.au/node/apni/2910059	Fumaria muralis	Sond. ex W.D.J.Koch	species	Plantae	Charophyta	Equisetopsida	Ranunculales	Papaveraceae	Fumitory	2
https://id.biodiversity.org.au/node/apni/2910089	Laxmannia sessiliflora	Decne.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Nodding Lily	2
https://id.biodiversity.org.au/node/apni/2910171	Cyathochaeta clandestina	(R.Br.) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2910276	Juncus planifolius	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Broad-leaf Rush	2
https://id.biodiversity.org.au/node/apni/2910304	Melaleuca viminea	Lindl.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Mohan	2
https://id.biodiversity.org.au/node/apni/2910499	Phyllangium paradoxum	(R.Br.) Dunlop	species	Plantae	Charophyta	Equisetopsida	Gentianales	Loganiaceae	Wiry Mitrewort	2
https://id.biodiversity.org.au/node/apni/2910515	Stenotaphrum secundatum	(Walter) Kuntze	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Buffalo Grass	2
https://id.biodiversity.org.au/node/apni/2910753	Andersonia micrantha	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/node/apni/2911212	Acacia provincialis	A.Camus	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Swamp Wattle	2
https://id.biodiversity.org.au/node/apni/2911268	Lepidium pseudotasmanicum	Thell.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Shade Peppercress	2
https://id.biodiversity.org.au/node/apni/2911551	Veronica plebeia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Trailing Speedwell	2
https://id.biodiversity.org.au/node/apni/2911572	Jacaranda mimosifolia	D.Don	species	Plantae	Charophyta	Equisetopsida	Lamiales	Bignoniaceae	Jacaranda	2
https://id.biodiversity.org.au/node/apni/2911746	Tetragonia decumbens	Mill.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Aizoaceae	Sea Spinach	2
https://id.biodiversity.org.au/node/apni/2912379	Centaurium erythraea	Rafn	species	Plantae	Charophyta	Equisetopsida	Gentianales	Gentianaceae	Common Centaury	2
https://id.biodiversity.org.au/node/apni/2912425	Amphipogon debilis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		2
https://id.biodiversity.org.au/node/apni/2913127	Hemigenia incana	(Lindl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Silky Hemigenia	2
https://id.biodiversity.org.au/node/apni/2914117	Leucophyta brownii	Cass.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Coast Cushion Bush	2
https://id.biodiversity.org.au/node/apni/2914154	Amphipogon setaceus	(R.Br.) T.D.Macfarl.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		2
https://id.biodiversity.org.au/node/apni/2914245	Stylidium eriopodum	DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae		2
https://id.biodiversity.org.au/node/apni/2914827	Atriplex hypoleuca	Nees	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae		2
https://id.biodiversity.org.au/node/apni/2915004	Utricularia simplex	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lentibulariaceae	Bluecoats	2
https://id.biodiversity.org.au/node/apni/2915173	Poa porphyroclados	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae		2
https://id.biodiversity.org.au/node/apni/2916170	Acacia tetragonocarpa	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2916644	Gompholobium villosum	(Meisn.) Crisp	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/node/apni/2916688	Sagina apetala	Ard.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	Common Pearlwort	2
https://id.biodiversity.org.au/node/apni/2917351	Anarthria laevis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Anarthriaceae		2
https://id.biodiversity.org.au/node/apni/2917589	Goodenia leptoclada	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Thin-stemmed Goodenia	2
https://id.biodiversity.org.au/node/apni/2917815	Schoenus cruentus	(Nees) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2918109	Goodenia micrantha	Hemsl. ex Carolin	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		2
https://id.biodiversity.org.au/node/apni/2918303	Hybanthus debilissimus	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Violaceae		2
https://id.biodiversity.org.au/node/apni/2918630	Lavandula stoechas	L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Italian Lavender	2
https://id.biodiversity.org.au/node/apni/2919175	Lolium rigidum	Gaudin	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Wimmera Ryegrass	2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2919436	Lepidosperma squamatum	Labill.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/node/apni/2919872	Trifolium arvense	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Haresfoot Clover	2
https://id.biodiversity.org.au/node/apni/2920220	Calandrinia liniflora	Fenzl	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Portulacaceae	Parakeelya	2
https://id.biodiversity.org.au/node/apni/2920526	Verbascum virgatum	Stokes	species	Plantae	Charophyta	Equisetopsida	Lamiales	Scrophulariaceae	Twiggy Mullein	2
https://id.biodiversity.org.au/node/apni/2920682	Wurmbea sinora	T.D.Macfarl.	species	Plantae	Charophyta	Equisetopsida	Liliales	Colchicaceae		2
https://id.biodiversity.org.au/node/apni/2920874	Poranthera huegelii	Klotzsch	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Phyllanthaceae	Heath Poranthera	2
https://id.biodiversity.org.au/node/apni/2921061	Chorizema aciculare	(DC.) C.A.Gardner	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Needle-leaved Chorizema	2
https://id.biodiversity.org.au/node/apni/7061040	Pseudognaphalium luteoalbum	(L.) Hilliard & B.L.Burtt	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Jersey Cudweed	2
https://id.biodiversity.org.au/node/apni/7385749	Centaurium tenuiflorum	(Hoffmanns. & Link) Fritsch	species	Plantae	Charophyta	Equisetopsida	Gentianales	Gentianaceae	Branched Centaury	2
https://id.biodiversity.org.au/node/apni/7458101	Pauridia occidentalis	(Benth.) Snijman & Kocyan	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hypoxidaceae		2
https://id.biodiversity.org.au/node/apni/7689192	Hypocalymma minus	(Strid & Keighery) Keighery	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		2
https://id.biodiversity.org.au/node/apni/7772838	Polypogon monspeliensis	(L.) Desf.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Annual Beardgrass	2
https://id.biodiversity.org.au/node/apni/7984728	Stylidium despectum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Hundreds And Thousands	2
https://id.biodiversity.org.au/node/apni/8354183	Chorizema cordatum	Lindl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Flame Pea	2
https://id.biodiversity.org.au/node/apni/8453517	Utricularia tenella	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lentibulariaceae	Pink Bladderwort	2
https://id.biodiversity.org.au/node/ausmoss/10071573	Didymodon torquatus	(Taylor) Catches.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Beard Moss	2
https://id.biodiversity.org.au/node/ausmoss/10104483	Pleurophascum occidentale	R.E.Wyatt & A.H.Stoneb.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pleurophascaceae		2
https://id.biodiversity.org.au/node/ausmoss/10110769	Rosulabryum subtomentosum	(Hampe) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Tall Thread-moss	2
https://id.biodiversity.org.au/node/ausmoss/10115046	Syntrichia papillosa	(Wilson) Jur.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Screw Moss	2
https://id.biodiversity.org.au/node/ausmoss/10122278	Trichostomum eckelianum	R.H.Zander	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Crisp Moss	2
https://id.biodiversity.org.au/node/ausmoss/10122548	Triquetrella papillata	(Hook.f. & Wilson) Broth.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Common Twine-moss	2
https://id.biodiversity.org.au/node/ausmoss/10125240	Weissia controversa	Hedw.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Green-tufted Stubble-moss	2
https://id.biodiversity.org.au/node/ausmoss/2890476	Pallavicinia lyellii	(Hook.) Gray	species	Plantae	Marchantiophyta	Jungermanniopsida	Pallaviciniales	Pallaviciniaceae		2
https://id.biodiversity.org.au/node/ausmoss/2893182	Symphyogyna podophylla	(Thunb.) Mont. & Nees	species	Plantae	Marchantiophyta	Jungermanniopsida	Pallaviciniales	Pallaviciniaceae	Toothed Ribbonwort	2
https://id.biodiversity.org.au/node/ausmoss/2895141	Cephaloziella varians	(Gottsche) Steph.	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Cephaloziellaceae	Dark Threadwort	2
https://id.biodiversity.org.au/node/ausmoss/2898860	Riccardia aequicellularis	(Steph.) Hewson	species	Plantae	Marchantiophyta	Jungermanniopsida	Metzgeriales	Aneuraceae	Germanderwort	2
https://id.biodiversity.org.au/node/ausmoss/2905307	Kurzia compacta	(Steph.) Grolle	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Lepidoziaceae	Fingerwort	2
https://id.biodiversity.org.au/node/ausmoss/2907672	Goebelobryum unguiculatum	(Hook.f. & Taylor) Grolle	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Acrobolbaceae	Mister Whiskers	2
https://id.biodiversity.org.au/node/ausmoss/2917130	Frullania falciloba	Taylor ex Lehm.	species	Plantae	Marchantiophyta	Jungermanniopsida	Porellales	Frullaniaceae	Rufous Scalewort	2
https://id.biodiversity.org.au/node/ausmoss/2919717	Riccardia cochleata	(Hook.f. & Taylor) Kuntze	species	Plantae	Marchantiophyta	Jungermanniopsida	Metzgeriales	Aneuraceae	Cup Germanderwort	2
https://id.biodiversity.org.au/node/fungi/60091515	Agaricus sylvaticus	Schaeff.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		2
https://id.biodiversity.org.au/node/fungi/60091785	Lepiota aspera	(Pers.) QuÃ©l.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		2
https://id.biodiversity.org.au/node/fungi/60091909	Leucocoprinus birnbaumii	(Corda) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		2
https://id.biodiversity.org.au/node/fungi/60092191	Amanita basiorubra	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		2
https://id.biodiversity.org.au/node/fungi/60092587	Clavaria amoena	Zoll. & Moritzi	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae		2
https://id.biodiversity.org.au/node/fungi/60092651	Clavaria sulcata	(Overeem) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae	Flame Fungus	2
https://id.biodiversity.org.au/node/fungi/60092735	Cortinarius australiensis	(Cleland & Cheel) E.Horak	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		2
https://id.biodiversity.org.au/node/fungi/60092763	Cortinarius basipurpureus	(Bougher) Peintner & M.M.Moser	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		2
https://id.biodiversity.org.au/node/fungi/60092977	Cortinarius sanguineus	(Wulfen) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		2
https://id.biodiversity.org.au/node/fungi/60093425	Fistulina hepatica	(Schaeff.) With.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Fistulinaceae		2
https://id.biodiversity.org.au/node/fungi/60093439	Hydnangium carneum	Wallr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hydnangiaceae		2
https://id.biodiversity.org.au/node/fungi/60093467	Laccaria lateritia	MalenÃ§on	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hydnangiaceae		2
https://id.biodiversity.org.au/node/fungi/60093653	Hygrocybe polychroma	Bougher & A.M.Young	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		2
https://id.biodiversity.org.au/node/fungi/60093795	Panaeolus papilionaceus	(Bull.) QuÃ©l.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales			2
https://id.biodiversity.org.au/node/fungi/60093823	Auritella chamaecephala	Matheny, O.K.Mill. & Bougher ex Matheny, O.K.Mill. & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		2
https://id.biodiversity.org.au/node/fungi/60094179	Gymnopus fusipes	(Bull.) Gray	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		2
https://id.biodiversity.org.au/node/fungi/60095071	Coprinellus micaceus	(Bull.) Vilgalys, Hopple & Jacq.Johnson	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		2
https://id.biodiversity.org.au/node/fungi/60095129	Lacrymaria lacrymabunda	(Bull.) Pat.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		2
https://id.biodiversity.org.au/node/fungi/60095561	Hypholoma fasciculare	(Huds.) P.Kumm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		2
https://id.biodiversity.org.au/node/fungi/60096049	Leucopaxillus lilacinus	Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Tricholomataceae		2
https://id.biodiversity.org.au/node/fungi/60099687	Russula cyanoxantha	(Schaeff.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		2
https://id.biodiversity.org.au/node/fungi/60099725	Russula marangania	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		2
https://id.biodiversity.org.au/node/fungi/60099731	Russula neerimea	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		2
https://id.biodiversity.org.au/node/fungi/60099779	Russula wollumbina	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		2
https://id.biodiversity.org.au/node/fungi/60099989	Phellodon niger	(Fr.) P.Karst.	species	Fungi	Basidiomycota	Agaricomycetes	Thelephorales	Bankeraceae		2
https://id.biodiversity.org.au/node/fungi/60100273	Ramaria australiana	(Cleland) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Gomphales	Gomphaceae		2

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/fungi/60100281	Ramaria capitata	(Lloyd) Corner	species	Fungi	Basidiomycota	Agaricomycetes	Gomphales	Gomphaceae		2
https://id.biodiversity.org.au/node/fungi/60100321	Ramaria ochraceosalmonicolor	(Cleland) Corner	species	Fungi	Basidiomycota	Agaricomycetes	Gomphales	Gomphaceae		2
https://id.biodiversity.org.au/node/fungi/60100613	Ileodictyon gracile	Berk.	species	Fungi	Basidiomycota	Agaricomycetes	Phallales	Phallaceae		2
https://id.biodiversity.org.au/node/fungi/60103625	Lycogala epidendrum	(L.) Fr.	species	Protista	Amoebozoa	Myxogastrea	Liceida	Tubiferaceae		2
https://id.biodiversity.org.au/node/fungi/60112500	Claviceps purpurea	(Fr.) Tul.	species	Fungi	Ascomycota	Sordariomycetes	Hypocreales	Clavicipitaceae		2
https://id.biodiversity.org.au/node/fungi/60112646	Myrothecium verrucaria	(Alb. & Schwein.) Ditmar	species	Fungi	Ascomycota	Sordariomycetes	Hypocreales			2
https://id.biodiversity.org.au/node/fungi/60114529	Xylaria hypoxylon	(L.) Grev.	species	Fungi	Ascomycota	Sordariomycetes	Xylariales	Xylariaceae		2
https://id.biodiversity.org.au/node/lichen/30085020	Arthonia ilicina	Taylor	species	Fungi	Ascomycota	Arthoniomycetes	Arthoniales	Arthoniaceae		2
https://id.biodiversity.org.au/node/lichen/30085440	Caloplaca gallowayi	S.Y.Kondr., KÃ¤rnefelt & Filson	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		2
https://id.biodiversity.org.au/node/lichen/30086128	Flavoparmelia diffractaica	Elix & J.Johnst.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		2
https://id.biodiversity.org.au/node/lichen/30086715	Lepraria coriensis	(Hue) Sipman	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Stereocaulaceae		2
https://id.biodiversity.org.au/taxon/apni/51270276	Polycarpon tetraphyllum	(L.) L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	Four-leaf Allseed	2
https://id.biodiversity.org.au/taxon/apni/51283171	Lepidosperma hopperi	R.L.Barrett	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Hopper's Sword Sedge	2
https://id.biodiversity.org.au/taxon/apni/51283213	Tetraria octandra	(Nees) KÃ¼k.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/taxon/apni/51285669	Jacksonia spinosa	(Labill.) R.Br. ex Sm.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		2
https://id.biodiversity.org.au/taxon/apni/51289298	Calothamnus schaueri	Lehm.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		2
https://id.biodiversity.org.au/taxon/apni/51291098	Fumaria capreolata	L.	species	Plantae	Charophyta	Equisetopsida	Ranunculales	Papaveraceae	White-flowered Fumitory	2
https://id.biodiversity.org.au/taxon/apni/51291824	Lysimachia arvensis	(L.) U.Manns & Anderb.	species	Plantae	Charophyta	Equisetopsida	Ericales	Primulaceae	Pimpernel	2
https://id.biodiversity.org.au/taxon/apni/51294028	Coleonema pulchellum	I.Williams	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Pink Diosma	2
https://id.biodiversity.org.au/taxon/apni/51300223	Hydrocotyle plebeya	R.Br. ex A.Rich.	species	Plantae	Charophyta	Equisetopsida	Apiales	Araliaceae		2
https://id.biodiversity.org.au/taxon/apni/51300244	Juncus caespiticius	E.Mey.	species	Plantae	Charophyta	Equisetopsida	Poales	Juncaceae	Grassy Rush	2
https://id.biodiversity.org.au/taxon/apni/51311078	Leucopogon rubricaulis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		2
https://id.biodiversity.org.au/taxon/apni/51399140	Caladenia longicauda	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	White Spider Orchid	2
https://id.biodiversity.org.au/taxon/apni/51399304	Caladenia radiata	Nicholls	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Ray Spider Orchid	2
https://id.biodiversity.org.au/taxon/apni/51399674	Caleana nigrita	J.Drumm. ex Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae		2
https://id.biodiversity.org.au/taxon/apni/51401270	Cyanicula gemmata	(Lindl.) Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Blue China Orchid	2
https://id.biodiversity.org.au/taxon/apni/51404219	Diuris emarginata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Late Donkey Orchid	2
https://id.biodiversity.org.au/taxon/apni/51404245	Diuris laevis	Fitzg.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Nanny Goat Orchid	2
https://id.biodiversity.org.au/taxon/apni/51404253	Diuris littoralis	D.L.Jones & C.J.French	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Coastal Donkey Orchid	2
https://id.biodiversity.org.au/taxon/apni/51404293	Diuris pauciflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Swamp Donkey Orchid	2
https://id.biodiversity.org.au/taxon/apni/51405094	Eriochilus scaber	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pink Bunny Orchid	2
https://id.biodiversity.org.au/taxon/apni/51407902	Praecoxanthus aphyllus	(Benth.) Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Leafless Orchid	2
https://id.biodiversity.org.au/taxon/apni/51409811	Prasophyllum macrotys	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Inland Leek Orchid	2
https://id.biodiversity.org.au/taxon/apni/51409843	Prasophyllum parvifolium	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Autunm Leek Orchid	2
https://id.biodiversity.org.au/taxon/apni/51409911	Prasophyllum sp. early (G.Brockman GBB 1626)	WA Herbarium	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae		2
https://id.biodiversity.org.au/taxon/apni/51414226	Thelymitra antennifera	(Lindl.) Hook.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Lemon Sun-orchid	2
https://id.biodiversity.org.au/taxon/apni/51414258	Thelymitra cornicina	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Lilac Sun Orchid	2
https://id.biodiversity.org.au/taxon/apni/51414266	Thelymitra cucullata	Rupp	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Swamp Sun Orchid	2
https://id.biodiversity.org.au/taxon/apni/51414298	Thelymitra granitora	D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Coastal Sun Orchid	2
https://id.biodiversity.org.au/taxon/apni/51414364	Thelymitra nuda	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Plain Sun Orchid	2
https://id.biodiversity.org.au/taxon/apni/51428809	Angianthus preissianus	(Steetz) Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Salt Angianthus	2
https://id.biodiversity.org.au/taxon/apni/51431544	Laxmannia minor	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		2
https://id.biodiversity.org.au/taxon/apni/51433159	Dysphania pumilio	(R.Br.) Mosyakin & Clemants	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Small Crumbweed	2
https://id.biodiversity.org.au/taxon/apni/51434704	Machaerina vaginalis	(Benth.) T.Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		2
https://id.biodiversity.org.au/taxon/apni/51434949	Hibbertia microphylla	Steud.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		2
https://id.biodiversity.org.au/taxon/apni/51435886	Daviesia decurrens	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Thorny Bitter-pea	2
https://id.biodiversity.org.au/taxon/apni/51438490	Linum trigynum	L.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Linaceae	French Flax	2
https://id.biodiversity.org.au/taxon/apni/51438989	Commersonia corniculata	(Sm.) K.A.Sheph. & C.F.Wilkins	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		2
https://id.biodiversity.org.au/taxon/apni/51613009	Salicornia quinqueflora	Bunge ex Ung.-Sternb.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Beaded Glasswort	2
https://id.biodiversity.org.au/taxon/ausmoss/10144080	Ceratodon purpureus	(Hedw.) Brid.	species	Plantae	Bryophyta	Bryopsida	Dicranales	Ditrichaceae	Redshank Moss	2
https://id.biodiversity.org.au/taxon/fungi/60117774	Inocybe eriocaulis	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		2
https://id.biodiversity.org.au/taxon/fungi/60117776	Inocybe mallocyboides	Matheny, Bougher, R.Rob. & K.Syme	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		2
https://id.biodiversity.org.au/taxon/fungi/60118003	Inocybe bulbinella	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		2
NZOR-6-10213	Usnea rubicunda	Stirt.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-106961	Cladia schizopora	(Nyl.) Nyl.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
NZOR-6-107386	Hypogymnia pulchrilobata	(Bitter) Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-109394	Xanthoria parietina	(L.) Th.Fr.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1

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NZOR-6-109614	Psathyrella ammophila	(LÃ©v. & Durieu) P.D. Orton	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		1
NZOR-6-113645	Pyxine subcinerea	Stirt.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-118121	Siphula coriacea	Nyl.	species	Fungi	Ascomycota	Lecanoromycetes	Pertusariales	Icmadophilaceae		1
NZOR-6-118645	Phaeophyscia endococcina	(KÃ¶rb.) Moberg	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-119787	Cladonia glebosa	S.Hammer	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
NZOR-6-124554	Pseudocyphellaria neglecta	(MÃ¼ll.Arg.) H.Magn.	species	Fungi	Ascomycota	Lecanoromycetes	Peltigerales	Lobariaceae		1
NZOR-6-129952	Flavoparmelia haysomii	(C.W.Dodge) Hale	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-1303	Russula wirrabarensis	(Grgur.) T. Lebel	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
NZOR-6-130837	Parmotrema perlatum	(Huds.) M.Choisy	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-132819	Lactifluus clarkeae	(Cleland) Verbeken	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
NZOR-6-134340	Bryum chrysoneuron	MÃ¼ll.Hal.	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae		1
NZOR-6-18758	Calicium victorianum	(F.Wilson) Tibell	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Caliciaceae		1
NZOR-6-18862	Buellia disciformis	(Fr.) Mudd	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-19401	Xanthoparmelia tasmanica	(Hook.f. & Taylor) Hale	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-21771	Hyperphyscia adglutinata	(FlÃ¶rke) H.Mayrhofer & Poelt	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-24030	Nitella tasmanica	(O.F. MÃ¼ll. ex. A. Braun) R.D. Wood	species	Plantae	Chlorophyta	Charophyceae	Charales	Characeae	Green Algae	1
NZOR-6-24878	Ochrolechia parella	(L.) A.Massal.	species	Fungi	Ascomycota	Lecanoromycetes	Pertusariales	Pertusariaceae		1
NZOR-6-33046	Pannaria elixii	P.M.JÃ¸rg. & D.J.Galloway	species	Fungi	Ascomycota	Lecanoromycetes	Peltigerales	Pannariaceae		1
NZOR-6-33110	Normandina pulchella	(Borrer) Nyl.	species	Fungi	Ascomycota	Eurotiomycetes	Verrucariales	Verrucariaceae		1
NZOR-6-34400	Xanthoparmelia pulla	(Ach.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-34439	Ramalina canariensis	J.Steiner	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Ramalinaceae		1
NZOR-6-36525	Heterodermia obscurata	(Nyl.) Trevis.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-36869	Calicium salicinum	Pers.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Caliciaceae		1
NZOR-6-37494	Collema subconveniens	Nyl.	species	Fungi	Ascomycota	Lecanoromycetes	Peltigerales	Collemataceae		1
NZOR-6-41065	Lidophia graminis	(Sacc.) J. Walker & B. Sutton	species	Fungi	Ascomycota	Dothideomycetes				1
NZOR-6-47135	Cladonia scabriuscula	(Delise) Nyl.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
NZOR-6-50149	Physcia jackii	Moberg	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-55785	Aleurina ferruginea	(W. Phillips ex Cooke) W.Y. Zhuang & Korf	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pyronemataceae		1
NZOR-6-5669	Ramalina inflata	(Hook.f. & Taylor) Hook.f. & Taylor	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Ramalinaceae		1
NZOR-6-60051	Clavulina samuelsii	R.H. Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Cantharellales	Clavulinaceae		1
NZOR-6-61808	Cladonia praetermissa	A.W.Archer	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
NZOR-6-69584	Austroparmelina pruinata	(MÃ¼ll.Arg.)A.Crespo, Divakar & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-70538	Ramboldia laeta	(Stirt.) Kalb, Lumbsch & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Lecanoraceae		1
NZOR-6-75684	Ramalina glaucescens	Kremp.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Ramalinaceae		1
NZOR-6-76234	Glutinoglossum glutinosum	(Pers.) Hustad, A.N. Mill., Dentinger & P.F. Cannon	species	Fungi	Ascomycota	Geoglossomycetes	Geoglossales	Geoglossaceae		1
NZOR-6-83581	Inocybe leptospermi	(E. Horak) Garrido	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
NZOR-6-8614	Xanthoria coomae	S.Y. Kondr. & KÃ¤rnefelt	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
NZOR-6-87108	Salvinia molesta	D.S.Mitch.	species	Plantae	Charophyta	Equisetopsida	Salviniales	Salviniaceae		1
NZOR-6-93261	Enterographa subgelatinosa	(Stirt.) Redinger	species	Fungi	Ascomycota	Arthoniomycetes	Arthoniales	Roccellaceae		1
NZOR-6-9438	Physcia nubila	Moberg	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae		1
NZOR-6-94580	Austroparmelina conlabrosa	(Hale) A. Crespo, Divakar & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
NZOR-6-99800	Cortinarius anomalus	(Fr.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://biodiversity.org.au/afd/taxa/000d4f70-7d65-4aa0-a557-88575bdedf40	Platylytron amplipenne	Macleay, 1873	species	Animalia	Arthropoda	Insecta	Coleoptera	Carabidae		1
https://biodiversity.org.au/afd/taxa/00117d2a-4a7b-49b5-b09f-8f33ff734fe1	Asianopis schomburgki	(Karsch, 1878)	species	Animalia	Arthropoda	Arachnida	Araneae	Deinopidae		1
https://biodiversity.org.au/afd/taxa/0170e1ba-4fba-4aea-9379-74c77c6dba64	Monistria maculicornis	SjÃ¶stedt, 1921	species	Animalia	Arthropoda	Insecta	Orthoptera	Pyrgomorphidae		1
https://biodiversity.org.au/afd/taxa/02490ca1-6c9e-440b-8752-fa10e05119a5	Clarana arrosta	(Turner, 1945)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae		1
https://biodiversity.org.au/afd/taxa/044b4f39-200e-4305-9ab5-ee87755776ed	Menneus wa	Coddington, Kuntner & Opell, 2012	species	Animalia	Arthropoda	Arachnida	Araneae	Deinopidae		1
https://biodiversity.org.au/afd/taxa/0568b937-e7d6-4934-bf96-9d99fa6662ae	Ephutomorpha macracantha	Turner, 1914	species	Animalia	Arthropoda	Insecta	Hymenoptera	Mutillidae		1
https://biodiversity.org.au/afd/taxa/0696efca-5217-4dbc-9cb2-c75664452c84	Micropoecila cincta	(Gory & Percheron, 1833)	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae		1
https://biodiversity.org.au/afd/taxa/071b1616-57f6-4807-8a07-757837d398f9	Xylopsocus rubidus	Lesne, 1901	species	Animalia	Arthropoda	Insecta	Coleoptera	Bostrichidae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/073efe9c-ce03-4f31-834f-0f634ebc4dd9	Limnichthys fasciatus	Waite, 1904	species	Animalia	Chordata	Actinopterygii	Perciformes	Creediidae	Tommyfish	1
https://biodiversity.org.au/afd/taxa/08cfff97-7ce8-4ac4-8e93-0f2fd2a4b44f	Sidymella hirsuta	(L. Koch, 1874)	species	Animalia	Arthropoda	Arachnida	Araneae	Thomisidae	Crab Spider	1
https://biodiversity.org.au/afd/taxa/093d47c6-6358-462c-b44e-efb81c09b94f	Paraplagusia bilineata	(Bloch, 1787)	species	Animalia	Chordata	Actinopterygii	Pleuronectiformes	Cynoglossidae	Lemon Tongue Sole	1
https://biodiversity.org.au/afd/taxa/099bc1ea-9508-4e50-88a0-a0aebacc96e2	Staurostichus hilaris	(Walker, 1849)	species	Animalia	Arthropoda	Insecta	Diptera	Bombyliidae		1
https://biodiversity.org.au/afd/taxa/0a12b6e0-5c08-4fa3-a2fe-cbcca9dfdd51	Dicherotropis damelii	(Macleay, 1865)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/0a4156fe-cabe-46fb-803e-f8551ce25653	Sinpunctiptilia emissalis	(Walker, 1864)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pterophoridae	Plume Moth	1
https://biodiversity.org.au/afd/taxa/0b24a1ab-6e06-48fe-b73a-5c12ef239772	Heliomystis electrica	Meyrick, 1888	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	1
https://biodiversity.org.au/afd/taxa/0b488763-6bba-4502-8cc9-364cb97319ad	Hypobapta tachyhalotaria	Hausmann, Sommerer, Rougerie & Hebert, 2009	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	1
https://biodiversity.org.au/afd/taxa/0b73e8bb-c141-4f07-8b14-47c3510c9c98	Badumna insignis	(L. Koch, 1872)	species	Animalia	Arthropoda	Arachnida	Araneae	Desidae	Black House Spider	1
https://biodiversity.org.au/afd/taxa/0d60d292-4258-43a8-b2cf-1b4255d799d7	Schizophrys rufescens	Griffin & Tranter, 1986	species	Animalia	Arthropoda	Malacostraca	Decapoda	Majidae		1
https://biodiversity.org.au/afd/taxa/0dc08b22-06c8-4535-a2c3-d37d1c5e3aaf	Intruda signata	(Hogg, 1900)	species	Animalia	Arthropoda	Arachnida	Araneae	Gnaphosidae	Ground Spider	1
https://biodiversity.org.au/afd/taxa/0df8a98a-7d10-4f40-8452-fc9c1a090d4d	Argiope protensa	L. Koch, 1872	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae	Orb-weaver Spider	1
https://biodiversity.org.au/afd/taxa/0fd2f472-9d0f-4c55-958b-8081500f89f5	Ochropolia aclita	(Turner, 1938)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/0feb2ee4-75fe-4a58-9a70-520b489a38ae	Ischnochiton (Autochiton) virgatus	(Reeve, 1848)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Ischnochitonidae		1
https://biodiversity.org.au/afd/taxa/103640bf-ff87-4bc4-94f9-6e4956ea7dca	Chloroclystis catastreptes	(Meyrick, 1891)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	1
https://biodiversity.org.au/afd/taxa/10dbd908-00f3-4ec2-9a9c-a2fd4782eaf1	Petroica (Petroica) goodenovii	(Vigors & Horsfield, 1827)	species	Animalia	Chordata	Aves	Passeriformes	Petroicidae	Red-capped Robin	1
https://biodiversity.org.au/afd/taxa/11940733-4476-4379-9b09-280807cf0632	Petrocheles australiensis	(Miers, 1876)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Porcellanidae	Spiny Porcelain Crab	1
https://biodiversity.org.au/afd/taxa/132a1675-5a8b-4900-8c10-76391f671e5a	Homophyllia australis	(Milne Edwards & Haime, 1849)	species	Animalia	Cnidaria	Anthozoa	Scleractinia	Lobophylliidae		1
https://biodiversity.org.au/afd/taxa/136f317c-6e44-41d6-95b7-5b9615d9fa48	Puffinus (Puffinus) huttoni	Mathews, 1912	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Hutton's Shearwater	1
https://biodiversity.org.au/afd/taxa/141b8896-492e-43ec-aaa2-7d3b2b9e77f4	Callibracon moorei	Quicke & Austin, 1994	species	Animalia	Arthropoda	Insecta	Hymenoptera	Braconidae		1
https://biodiversity.org.au/afd/taxa/14b2288d-284e-4dbe-8164-ca7ee9ad4014	Cheilomenes sexmaculata	(Fabricius, 1781)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae		1
https://biodiversity.org.au/afd/taxa/154ad4d5-98af-4c91-a4fe-3772149bca3f	Camponotus ceriseipes	Clark, 1938	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		1
https://biodiversity.org.au/afd/taxa/1591a51c-6e2e-40a6-9257-7ab6cb1b36d4	Osmylops sejunctus	(Walker, 1853)	species	Animalia	Arthropoda	Insecta	Neuroptera	Nymphidae		1
https://biodiversity.org.au/afd/taxa/17c2b897-a780-4dc8-8afa-87ef0edd570b	Pachyptila salvini	(Mathews, 1912)	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Salvin's Prion	1
https://biodiversity.org.au/afd/taxa/17fdbebd-a20e-4130-92f3-851cf4068b2f	Oratemnus curtus	(Beier, 1954)	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Atemnidae		1
https://biodiversity.org.au/afd/taxa/181526f5-0da4-4234-8423-db3e04502026	Sillago bassensis	Cuvier, 1829	species	Animalia	Chordata	Actinopterygii	Perciformes	Sillaginidae	School Whitings	1
https://biodiversity.org.au/afd/taxa/18bb9547-8105-49a3-829c-5ef1e0ef060f	Diphucrania fulgidicollis	(Macleay, 1888)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/1944d85f-b186-49b3-95d5-056246dd343b	Lepidoblennius marmoratus	(Macleay, 1878)	species	Animalia	Chordata	Actinopterygii	Perciformes	Tripterygiidae	Western Jumping Blenny	1
https://biodiversity.org.au/afd/taxa/19a1a4d0-d22a-489b-a4e2-4a38f7c1d588	Liriomyza brassicae	(Riley, 1885)	species	Animalia	Arthropoda	Insecta	Diptera	Agromyzidae		1
https://biodiversity.org.au/afd/taxa/19bdf913-bbd9-4c4b-8d4d-cd91ee826442	Phyllacanthus irregularis	Mortensen, 1928	species	Animalia	Echinodermata	Echinoidea	Cidaroida	Cidaridae	Sea Urchin	1
https://biodiversity.org.au/afd/taxa/19d973f1-706f-4b67-878f-f3078ea653bd	Oxychilus alliarius	(Miller, 1822)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Zonitidae	Garlic Snail	1
https://biodiversity.org.au/afd/taxa/1afc2e2d-c021-4cfb-8fa8-b002ac1ed3f2	Charadrius (Charadrius) bicinctus	Jardine & Selby, 1827	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Double-banded Plover	1
https://biodiversity.org.au/afd/taxa/1d5211e7-c146-4107-b837-c73629c7a920	Endoxyla leucomochla	(Turner, 1915)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Cossidae	Carpenter Moth	1
https://biodiversity.org.au/afd/taxa/1d8bf3e4-db4a-4e77-b7b8-81fd6ef1a914	Amblychilepas oblonga	(Menke, 1843)	species	Animalia	Mollusca	Gastropoda		Fissurellidae	Oblong Keyhole Limpet	1
https://biodiversity.org.au/afd/taxa/1d9b009d-1a2e-472d-9658-efec61854ab3	Isara badia	(Reeve, 1844)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Mitridae		1
https://biodiversity.org.au/afd/taxa/1dd8c95b-b87b-48ab-8057-628cc513d909	Calepitrimerus vitis	(Nalepa, 1905)	species	Animalia	Arthropoda	Arachnida	Trombidiformes	Eriophyidae		1
https://biodiversity.org.au/afd/taxa/1ed45f0a-8a3a-4a7e-8eca-43a86fb1688c	Erythrogonys cinctus	Gould, 1838	species	Animalia	Chordata	Aves	Charadriiformes	Charadriidae	Red-kneed Dotterel	1
https://biodiversity.org.au/afd/taxa/1f861fd4-9306-4768-8f12-c7c7c7317728	Matuta victor	(Fabricius, 1781)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Matutidae	Common Moon Crab	1
https://biodiversity.org.au/afd/taxa/216871b2-064f-4a39-89c5-69066b6d5ae5	Temognatha conspicillata	(White, 1843)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/21dbca5e-9516-4669-af3d-72581a6e6772	Garrha ocellifera	(Meyrick, 1883)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae	Concealer Moth	1
https://biodiversity.org.au/afd/taxa/2269e465-a778-408a-8868-25a86808dc04	Leptatherina wallacei	(Prince, Ivantsoff & Potter, 1982)	species	Animalia	Chordata	Actinopterygii	Atheriniformes	Atherinidae	Western Hardyhead	1
https://biodiversity.org.au/afd/taxa/2284d513-c89a-4fb0-a8e0-53424c1b9fc0	Ancita marginicollis	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		1
https://biodiversity.org.au/afd/taxa/23de280f-7deb-43e3-a4b3-34ecaf1f225a	Ischnochiton (Heterozona) cariosus	Carpenter in Pilsbry, 1892	species	Animalia	Mollusca	Polyplacophora	Chitonida	Ischnochitonidae		1
https://biodiversity.org.au/afd/taxa/2531c7d2-e848-418e-9f7d-4a0b359610b5	Opogona omoscopa	(Meyrick, 1893)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tineidae		1
https://biodiversity.org.au/afd/taxa/2697ece3-47a5-4010-b6f3-7b99422b3845	Hyborrhinus furcatus	(Macleay, 1865)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/26a90e4c-7bdb-4d29-bdf3-ba83463eef01	Artoria cingulipes	Simon, 1909	species	Animalia	Arthropoda	Arachnida	Araneae	Lycosidae		1
https://biodiversity.org.au/afd/taxa/26c234cf-9d6c-4be6-8ef3-8f5b055addb2	Hemisaga denticulata	(White, 1841)	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		1
https://biodiversity.org.au/afd/taxa/27335d41-6d41-4438-b66a-6b5146234713	Thalaina angulosa	Walker, 1865	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Angled Satin Moth	1
https://biodiversity.org.au/afd/taxa/27920645-e4f5-45e6-998b-71a520753c33	Oxycanus poeticus	Tindale, 1935	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		1
https://biodiversity.org.au/afd/taxa/28324572-7b3c-4c1f-b732-0a5f8406dad2	Australotiphys barmutai	Harvey, 1996	species	Animalia	Arthropoda	Arachnida	Trombidiformes	Pionidae		1
https://biodiversity.org.au/afd/taxa/28f978f9-1e2e-4b8e-af15-0951d37e7924	Paraoxypilus tasmaniensis	Saussure, 1870	species	Animalia	Arthropoda	Insecta	Mantodea	Amorphoscelidae		1
https://biodiversity.org.au/afd/taxa/2a11ad06-7fdc-475b-b2f2-b97d4cb03b12	Cincloramphus (Maclennania) mathewsi	Iredale, 1911	species	Animalia	Chordata	Aves	Passeriformes	Locustellidae	Rufous Songlark	1
https://biodiversity.org.au/afd/taxa/2b3c16df-0ac8-4af5-baa8-0c0e3384699c	Exochomus quadripustulata	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae		1
https://biodiversity.org.au/afd/taxa/2c0ec0d2-2216-466d-9a24-b3574242a91b	Vanacampus phillipi	(Lucas, 1891)	species	Animalia	Chordata	Actinopterygii	Syngnathiformes	Syngnathidae	Port Phillip Pipefish	1
https://biodiversity.org.au/afd/taxa/2c33a1fd-34f4-48ec-9ae6-38b51f2aa7ea	Cacatua (Cacatua) galerita	(Latham, 1790)	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Sulphur-crested Cockatoo	1
https://biodiversity.org.au/afd/taxa/2c8750a3-60ab-4cbf-ac00-c5c5bb7b28a8	Atrichornis (Rahcinta) clamosus	(Gould, 1844)	species	Animalia	Chordata	Aves	Passeriformes	Atrichornithidae	Noisy Scrub-bird	1
https://biodiversity.org.au/afd/taxa/2c90233c-a19a-4fe0-a20b-d26fe56457fe	Melanozosteria nigrofasciata	(Shaw, 1918)	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/2cef7dd5-fdd4-4529-8bc7-1746cfa680c7	Eufrenchia falcata	(Walker, 1851)	species	Animalia	Arthropoda	Insecta	Hemiptera	Membracidae	Treehopper	1
https://biodiversity.org.au/afd/taxa/2d39b86e-18ce-42e3-aaa7-95c48b8e3a24	Meuschenia galii	(Waite, 1905)	species	Animalia	Chordata	Actinopterygii	Tetraodontiformes	Monacanthidae	Bluelined Leatherjacket	1
https://biodiversity.org.au/afd/taxa/2d4b1471-5bbc-4f30-9327-7091abf85ffc	Leucauge dromedaria	(Thorell, 1881)	species	Animalia	Arthropoda	Arachnida	Araneae	Tetragnathidae		1
https://biodiversity.org.au/afd/taxa/2df56ce6-5d5d-4540-928c-ea78d07ef86c	Carposina loxolopha	Turner, 1947	species	Animalia	Arthropoda	Insecta	Lepidoptera	Carposinidae		1
https://biodiversity.org.au/afd/taxa/2e846c6f-7c11-4943-9d40-ff16b88b671c	Cryptorhamphus orbus	StÃ¥l, 1860	species	Animalia	Arthropoda	Insecta	Hemiptera	Cryptorhamphidae	Bug	1
https://biodiversity.org.au/afd/taxa/2eb4258c-e8eb-4cd1-a037-1fa7c040a934	Xederra barbarae	Rentz, 1985	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		1
https://biodiversity.org.au/afd/taxa/2eb53c4d-a293-4a33-a1ac-277a385a8bd4	Cuspicona simplex	Walker, 1867	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Green Potato Bug	1
https://biodiversity.org.au/afd/taxa/2f34e183-2260-4d8c-84bb-ef57c66dde1f	Conocephalus (Chloroxiphidion) upoluensis	(Karny, 1907)	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		1
https://biodiversity.org.au/afd/taxa/31fa3cc8-40dd-4177-a5b7-33647e340196	Palimmeces vernilis	(Turner, 1933)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/3350e8be-b603-46e0-95c3-2b355983adc8	Lialis burtonis	Gray, 1835	species	Animalia	Chordata	Reptilia	Squamata	Pygopodidae	Burton's Snake-lizard	1
https://biodiversity.org.au/afd/taxa/340294e5-93c6-4d5b-9f15-c80187fe5dd3	Gnathanodon speciosus	(ForsskÃ¥l, 1775)	species	Animalia	Chordata	Actinopterygii	Perciformes	Carangidae	Golden Trevally	1
https://biodiversity.org.au/afd/taxa/340b0c41-f809-48ed-ab11-96324150bb09	Myrmecia tepperi	Emery, 1898	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bucktoothed Bull Ant	1
https://biodiversity.org.au/afd/taxa/34207a50-3aad-4820-840a-68d5447c9b9f	Campion tenuistrigus	(Gerstaecker, 1885)	species	Animalia	Arthropoda	Insecta	Neuroptera	Mantispidae		1
https://biodiversity.org.au/afd/taxa/342bad6e-fa4b-4edf-869c-415bab040c79	Calliphora (Paracalliphora) varifrons	Malloch, 1932	species	Animalia	Arthropoda	Insecta	Diptera	Calliphoridae		1
https://biodiversity.org.au/afd/taxa/351ef0f8-f560-43d6-b784-f393edb97df9	Corvus bennetti	North, 1901	species	Animalia	Chordata	Aves	Passeriformes	Corvidae	Little Crow	1
https://biodiversity.org.au/afd/taxa/35fcd6f7-4e80-48b2-a187-7f0d8d812497	Antiporus femoralis	(Boheman, 1858)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	1
https://biodiversity.org.au/afd/taxa/3623c8df-4b97-47c1-b1bd-1e2485e52a0b	Parablennius tasmanianus	(Richardson, 1842)	species	Animalia	Chordata	Actinopterygii	Perciformes	Blenniidae	Tasmanian Blenny	1
https://biodiversity.org.au/afd/taxa/36fcd47e-c0cb-47a4-96e9-24336b966809	Creontiades dilutus	(StÃ¥l, 1859)	species	Animalia	Arthropoda	Insecta	Hemiptera	Miridae	Green Mirid	1
https://biodiversity.org.au/afd/taxa/380590bb-467e-470e-9f2c-61832b68d178	Ctenotus australis	(Gray, 1838)	species	Animalia	Chordata	Reptilia	Squamata	Scincidae	Western Limestone Ctenotus	1
https://biodiversity.org.au/afd/taxa/383daf29-74b1-40b1-9014-51bbf3af8898	Chlidonias (Chlidonias) leucopterus	(Temminck, 1815)	species	Animalia	Chordata	Aves	Charadriiformes	Laridae	White-winged Black Tern	1
https://biodiversity.org.au/afd/taxa/38d12254-ea16-4526-82dc-45f7ac778e66	Pogona minor	(Sternfeld, 1919)	species	Animalia	Chordata	Reptilia	Squamata	Agamidae	Dwarf Bearded Dragon	1
https://biodiversity.org.au/afd/taxa/38f74819-5d5b-4b18-8920-d18a35bc6198	Euomus stephensii	(Gyllenhal, 1834)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/3a812b82-cd25-43f5-a27d-86b6f09deeec	Lima (Lima) nimbifer	Iredale, 1924	species	Animalia	Mollusca	Bivalvia	Limida	Limidae		1
https://biodiversity.org.au/afd/taxa/3b2f1786-163d-4a76-9993-cb606cafd43b	Creophilus erythrocephalus	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Coleoptera	Staphylinidae	Devil's Coach-horse	1
https://biodiversity.org.au/afd/taxa/3c441d79-1941-4e86-a351-4c08afe5e12b	Helicoverpa punctigera	(Wallengren, 1860)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Native Budworm	1
https://biodiversity.org.au/afd/taxa/3cef73ce-d3d1-4947-a31c-f56bc6e4698c	Steriphus curvisetosus	(Lea, 1928)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/3d42fe6b-85d5-4f86-a1d5-35b472cf2856	Eristalis (Eristalis) tenax	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Diptera	Syrphidae	Drone Fly	1
https://biodiversity.org.au/afd/taxa/3defc558-7f2a-497c-96ad-f6c80bb61d6f	Nyctemera amicus	(White, 1841)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Moth	1
https://biodiversity.org.au/afd/taxa/3eb72e21-eeb5-4ef2-806b-f27e42e990e1	Paropsisterna cloelia	(StÃ¥l, 1860)	species	Animalia	Arthropoda	Insecta	Coleoptera	Chrysomelidae		1
https://biodiversity.org.au/afd/taxa/3eda963b-490c-49ea-802d-7da5cedaf126	Aedes (Ochlerotatus) clelandi	(Taylor, 1914)	species	Animalia	Arthropoda	Insecta	Diptera	Culicidae	Mosquito	1
https://biodiversity.org.au/afd/taxa/3f6b4cd7-592b-4cc3-aecb-d11642836ad3	Lampona brevipes	L. Koch, 1872	species	Animalia	Arthropoda	Arachnida	Araneae	Lamponidae		1
https://biodiversity.org.au/afd/taxa/41d3071f-c309-410c-8c95-652df67999be	Eochrois holochra	(Turner, 1946)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/41ed4735-258c-42de-b300-9c055ec10a27	Hypselodoris bullockii	(Collingwood, 1881)	species	Animalia	Mollusca	Gastropoda	Nudibranchia	Chromodorididae		1
https://biodiversity.org.au/afd/taxa/432ff91d-d78a-4d90-8f6e-2371a385610e	Harmonia conformis	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae	Common Spotted Ladybird	1
https://biodiversity.org.au/afd/taxa/434b84c2-25ab-4bf9-98f8-06cf29d4ba50	Ardices glatignyi	(Le Guillou, 1841)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae		1
https://biodiversity.org.au/afd/taxa/438e03b2-9110-4434-882f-d29f70429cdf	Poecilohetaerus aquilus	Schneider, 1991	species	Animalia	Arthropoda	Insecta	Diptera	Lauxaniidae	Acalyptrate Fly	1
https://biodiversity.org.au/afd/taxa/4491debc-214f-46a2-95cf-572fe0150d0d	Tribonyx ventralis	(Gould, 1837)	species	Animalia	Chordata	Aves	Gruiformes	Rallidae	Black-tailed Native-hen	1
https://biodiversity.org.au/afd/taxa/4551e0b2-34e6-4a32-96d8-228a4df45a87	Conus (Pionoconus) achatinus	Gmelin, 1791	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Conidae	Agate Cone	1
https://biodiversity.org.au/afd/taxa/4574c573-e2ea-4ae0-99d0-fe2dd5d88a5c	Melanerythrus mactans	(StÃ¥l, 1866)	species	Animalia	Arthropoda	Insecta	Hemiptera	Lygaeidae	Bug	1
https://biodiversity.org.au/afd/taxa/478992d0-4ee7-44e4-926a-c82323c75c44	Catamola funerea	(Walker, 1863)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pyralidae		1
https://biodiversity.org.au/afd/taxa/4825615e-14ca-41b6-8b83-a23ef0ce7caf	Commonia hesychima	(Turner, 1922)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Notodontidae	Moth	1
https://biodiversity.org.au/afd/taxa/485d1d7c-5a85-40ba-81e0-54ac4b128095	Haliotis laevigata	Donovan, 1808	species	Animalia	Mollusca	Gastropoda		Haliotidae	Greenlip Abalone	1
https://biodiversity.org.au/afd/taxa/48a303d7-ec2e-4c00-aa20-9f9d3a1b0b30	Crinia pseudinsignifera	Main, 1957	species	Animalia	Chordata	Amphibia	Anura	Myobatrachidae	Bleating Froglet	1
https://biodiversity.org.au/afd/taxa/48b98a23-f14e-4a06-ba7c-fdfc9adc4995	Castiarina sieboldi	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/4987409b-ea0a-4150-b9ae-93f3ebe971b7	Campion australasiae	(GuÃ©rin-MÃ©neville, 1844)	species	Animalia	Arthropoda	Insecta	Neuroptera	Mantispidae		1
https://biodiversity.org.au/afd/taxa/49be1744-43bc-4be8-9929-80cd0d3a77da	Siphonaria zelandica	Quoy & Gaimard, 1833	species	Animalia	Mollusca	Gastropoda		Siphonariidae		1
https://biodiversity.org.au/afd/taxa/49d28900-892b-471e-9112-611e632cd061	Tapeigaster cinctipes	(Walker, 1853)	species	Animalia	Arthropoda	Insecta	Diptera	Heteromyzidae	Fly	1
https://biodiversity.org.au/afd/taxa/4a2c0a2c-ca61-4997-a1ae-3e5d869c9998	Myrmecia desertorum	Wheeler, 1915	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bull Ant	1
https://biodiversity.org.au/afd/taxa/4afda0eb-f515-48f7-baf9-75186fbb8b90	Ischnura aurora	(Brauer, 1865)	species	Animalia	Arthropoda	Insecta	Odonata	Coenagrionidae	Aurora Bluetail	1
https://biodiversity.org.au/afd/taxa/4c13ad9a-5bbf-47c4-9004-0a73bc3b5ff5	Uracanthus regalis	McKeown, 1948	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		1
https://biodiversity.org.au/afd/taxa/4c6b91d4-58ee-4f6f-bb76-d2178cb1da3c	Aonychus luctuosus	Pascoe, 1872	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/4cd490c1-3b1b-4c0e-a244-ff925104266b	Aphis (Aphis) gossypii	Glover, 1877	species	Animalia	Arthropoda	Insecta	Hemiptera	Aphididae	Cotton Aphid	1
https://biodiversity.org.au/afd/taxa/4d43d60a-2d3b-4e79-86a8-ed1033588ba7	Phytomyza anthocercidis	Spencer, 1977	species	Animalia	Arthropoda	Insecta	Diptera	Agromyzidae		1
https://biodiversity.org.au/afd/taxa/4d561038-f0fd-40e2-a607-7392ffc39c26	Bardistus cibarius	Newman, 1841	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae	Badee Grub	1
https://biodiversity.org.au/afd/taxa/4da721be-c94b-4972-9f8a-330b29d8d3fe	Pseudocephalus mirus	(Pascoe, 1865)	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		1
https://biodiversity.org.au/afd/taxa/4e22bbd1-59d9-4daf-8869-4571649373c7	Hednota hagnodes	(Turner, 1942)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Crambidae		1
https://biodiversity.org.au/afd/taxa/4f44d739-dee9-4348-81c9-0c39facd3572	Acanthopleura hirtosa	(Blainville, 1825)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Chitonidae		1
https://biodiversity.org.au/afd/taxa/5060e514-bb60-4e65-81a5-5a45ed453e67	Aedes (Rampamyia) notoscriptus	(Skuse, 1889)	species	Animalia	Arthropoda	Insecta	Diptera	Culicidae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/50c5d50c-807f-4e7e-8d0f-1417924a4d99	Cochlicopa lubrica	(MÃ¼ller, 1774)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Cochlicopidae	Glossy Pillar Snail	1
https://biodiversity.org.au/afd/taxa/5166fc12-1bfd-4adf-bd6a-d3628f9bc8d5	Artoria flavimana	Simon, 1909	species	Animalia	Arthropoda	Arachnida	Araneae	Lycosidae	Yellow-handed Forest Runner	1
https://biodiversity.org.au/afd/taxa/522b0861-2e40-4dec-af90-57407f3a1d65	Amelora conia	Turner, 1947	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/5245d7b3-6123-485d-8814-e4fa00d206b0	Rhyssoplax tricostalis	(Pilsbry, 1894)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Chitonidae		1
https://biodiversity.org.au/afd/taxa/53875239-b8ce-44fd-9ae2-7e6ce41fb68d	Cheilopogon pinnatibarbatus	(Bennett, 1831)	species	Animalia	Chordata	Actinopterygii	Beloniformes	Exocoetidae	Tallfin Flyingfish	1
https://biodiversity.org.au/afd/taxa/53b511b6-543c-487e-9786-ee4f5ba1383a	Enneboeopsis australicus	(Kaszab, 1981)	species	Animalia	Arthropoda	Insecta	Coleoptera	Archeocrypticidae		1
https://biodiversity.org.au/afd/taxa/546c604b-7af8-4a59-bf7d-3ef1e339cb30	Ctenaphides porcellus	Pascoe, 1870	species	Animalia	Arthropoda	Insecta	Coleoptera	Brentidae		1
https://biodiversity.org.au/afd/taxa/54d8a8b2-debc-40ef-b934-129951b15d81	Choerocoris paganus	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Hemiptera	Scutelleridae	Ground Shield Bug	1
https://biodiversity.org.au/afd/taxa/54ed587a-00ed-4382-9f12-71162fa8c31c	Platycoris rotundatus	(Dallas, 1851)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	1
https://biodiversity.org.au/afd/taxa/55213c39-1809-442e-b5fb-03fb99e8d97a	Alisterus scapularis	(Lichtenstein, 1816)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Australian King-parrot	1
https://biodiversity.org.au/afd/taxa/55bb2bb4-2268-4e91-8f74-2478c0a7b258	Missulena occatoria	Walckenaer, 1805	species	Animalia	Arthropoda	Arachnida	Araneae	Actinopodidae	Red-headed Mouse Spider	1
https://biodiversity.org.au/afd/taxa/5676e593-55d9-4e4f-99b2-659fba8b18d0	Synothele rastelloides	Raven, 1994	species	Animalia	Arthropoda	Arachnida	Araneae	Barychelidae		1
https://biodiversity.org.au/afd/taxa/56d9d5dc-6374-4bf8-8453-ec3cc18c4636	Xanthorhoe propinqua	(Turner, 1936)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/57dd6203-a90f-43ab-bc07-8bc76ef64745	Dentimitrella menkeana	(Reeve, 1859)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Columbellidae	Menke's Dove Shell	1
https://biodiversity.org.au/afd/taxa/586c6e11-75db-498c-9ea3-991e40c4dd88	Rhinoplocephalus bicolor	MÃ¼ller, 1885	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	MÃ¼ller's Snake	1
https://biodiversity.org.au/afd/taxa/58aadeba-d087-4d60-9b33-eef34cf7a682	Tursiops aduncus	(Ehrenberg, 1832)	species	Animalia	Chordata	Mammalia	Cetacea	Delphinidae	Long-beaked Bottle-nosed Dolphin	1
https://biodiversity.org.au/afd/taxa/58e22f83-a1ad-4429-b3c3-18e3a0149697	Cominella (Josepha) tasmanica	Tenison-Woods, 1876	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Cominellidae	Tasmanian Buccinum Whelk	1
https://biodiversity.org.au/afd/taxa/5a264c77-a7d1-43ca-ae1f-233f59b175aa	Ptilotula ornata	(Gould, 1838)	species	Animalia	Chordata	Aves	Passeriformes	Meliphagidae	Yellow-plumed Honeyeater	1
https://biodiversity.org.au/afd/taxa/5ac50857-f676-49b3-9d4c-b5631040eeec	Arcucornus occidentalis	Scambler, 1997	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		1
https://biodiversity.org.au/afd/taxa/5b409a29-3637-44d2-a907-7d612d2e698f	Rhinotia bidentata	(Donovan, 1805)	species	Animalia	Arthropoda	Insecta	Coleoptera	Belidae	Two-spotted Weevil	1
https://biodiversity.org.au/afd/taxa/5b7ed16c-e133-445a-bb77-24231a92bb8c	Rhantus simulans	RÃ©gimbart, 1908	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	1
https://biodiversity.org.au/afd/taxa/5ba85a24-db9f-4960-9f84-eeec08253e1a	Bathyllus albicinctus	(Erichson, 1842)	species	Animalia	Arthropoda	Insecta	Hemiptera	Cercopidae	Froghopper	1
https://biodiversity.org.au/afd/taxa/5c9ab00e-2da3-49d9-9979-651b2bd4eba3	Pyralis farinalis	Linnaeus, 1758	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pyralidae	Meal Moth	1
https://biodiversity.org.au/afd/taxa/5cacd903-a23e-446f-8aaf-f34de02a7be8	Castiarina simulata	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/5cb15091-4b1a-4399-aa4a-72afa65f6170	Pseudophycis breviuscula	(Richardson, 1846)	species	Animalia	Chordata	Actinopterygii	Gadiformes	Moridae	Bastard Red Cod	1
https://biodiversity.org.au/afd/taxa/5d2efa0d-b3b3-459c-abf6-4b6ca5007e2b	Oxus meridianus	Lundblad, 1947	species	Animalia	Arthropoda	Arachnida	Trombidiformes	Oxidae		1
https://biodiversity.org.au/afd/taxa/5d3f3041-83a6-4d47-a640-67ddbabc845f	Hippodamia variegata	(Goeze, 1777)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae	Spotted Amber Ladybird	1
https://biodiversity.org.au/afd/taxa/5e0ef3d9-24f1-4769-8bc7-5c0e249aee74	Dictyotus caenosus	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Brown Shield Bug	1
https://biodiversity.org.au/afd/taxa/5f10759b-120d-4fc7-a726-9beba1e71010	Eucyclodes buprestaria	(GuenÃ©e, 1857)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Bordered Emerald	1
https://biodiversity.org.au/afd/taxa/5f3e33e4-853b-4e8b-850f-06958d7bf946	Cribrarula exmouthensis	(Melvill, 1888)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Cypraeidae		1
https://biodiversity.org.au/afd/taxa/5f40deca-aff7-4fbb-97ea-b9c89c99c237	Nyctophilus geoffroyi	Leach, 1821	species	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Lesser Long-eared Bat	1
https://biodiversity.org.au/afd/taxa/601d2067-4909-4932-a259-19596cda076f	Minyleon pygmaea	(New, 1985)	species	Animalia	Arthropoda	Insecta	Neuroptera	Myrmeleontidae	Net-winged Insect	1
https://biodiversity.org.au/afd/taxa/607ec6ae-18b6-43e8-9e02-23f946aabdf7	Galaxiella munda	McDowall, 1978	species	Animalia	Chordata	Actinopterygii	Salmoniformes	Galaxiidae	Western Dwarf Galaxias	1
https://biodiversity.org.au/afd/taxa/60ce64ab-0be1-40e3-9bbb-66eb833f49e5	Chlorocoma dichloraria	(GuenÃ©e, 1857)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Guenee's Emerald Moth	1
https://biodiversity.org.au/afd/taxa/61af35ee-c6cd-4231-82c8-62c17ab2659b	Pseudorhombus jenynsii	(Bleeker, 1855)	species	Animalia	Chordata	Actinopterygii	Pleuronectiformes	Paralichthyidae	Smalltooth Flounder	1
https://biodiversity.org.au/afd/taxa/6306a646-2e62-4045-86fc-ef42ed482dfd	Gonorynchus greyi	(Richardson, 1845)	species	Animalia	Chordata	Actinopterygii	Gonorhynchiformes	Gonorynchidae	Beaked Salmon	1
https://biodiversity.org.au/afd/taxa/63c74f91-d166-4064-9ed0-8a345ccd70e6	Aphodius fimetarius	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae		1
https://biodiversity.org.au/afd/taxa/64df17b2-d06e-4ac0-823a-06c5ac85bab4	Abantiades ocellatus	Tindale, 1932	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		1
https://biodiversity.org.au/afd/taxa/66950a6c-6f03-4cf5-bf33-01cee054408c	Milax gagates	(Draparnaud, 1801)	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Milacidae	Jet Slug	1
https://biodiversity.org.au/afd/taxa/6773165e-9d4d-4738-920d-2daf3bd9fc82	Drymaplaneta shelfordi	(Princis, 1954)	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		1
https://biodiversity.org.au/afd/taxa/694a8fde-c6b1-4947-bae1-801541614999	Circus assimilis	Jardine & Selby, 1828	species	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Spotted Harrier	1
https://biodiversity.org.au/afd/taxa/6a73fc39-5edb-413a-a615-8b5aa7124711	Poecilometis lineatus	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae		1
https://biodiversity.org.au/afd/taxa/6d1aeef1-b551-4b14-9136-7b66c7078aa2	Sphenarches anisodactylus	(Walker, 1864)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pterophoridae		1
https://biodiversity.org.au/afd/taxa/6d621b17-f4a0-4618-a3cf-78d2252263a2	Lepidoscia arctiella	(Walker, 1869)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Psychidae		1
https://biodiversity.org.au/afd/taxa/6da002c5-fb5e-4443-8cd5-9a3485c48d04	Anisops thienemanni	Lundblad, 1933	species	Animalia	Arthropoda	Insecta	Hemiptera	Notonectidae	Backswimmer	1
https://biodiversity.org.au/afd/taxa/6e214b36-2195-4548-b2a7-6a5a608cf4bf	Acanthaluteres brownii	(Richardson, 1846)	species	Animalia	Chordata	Actinopterygii	Tetraodontiformes	Monacanthidae	Spinytail Leatherjacket	1
https://biodiversity.org.au/afd/taxa/6e5e11a5-cc63-476f-a3e9-2fb3e5986d1d	Endoxyla lituratus	(Donovan, 1805)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Cossidae	Carpenter Moth	1
https://biodiversity.org.au/afd/taxa/6ed45c88-10d0-4db7-9971-d2733ca45455	Dictyotus roei	(Westwood, 1837)	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	1
https://biodiversity.org.au/afd/taxa/6ee20498-62b3-42aa-a5ed-33dba6579807	Rhyssoplax jugosa	(Gould, 1846)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Chitonidae		1
https://biodiversity.org.au/afd/taxa/6f1e35c9-2365-41b1-a32f-bcbe91f43f81	Euplica bidentata	(Menke, 1843)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Columbellidae		1
https://biodiversity.org.au/afd/taxa/6fba36f1-8b08-4b8f-a347-23fff8acac0a	Acanthistius serratus	(Cuvier, 1828)	species	Animalia	Chordata	Actinopterygii	Perciformes	Serranidae	Western Wirrah	1
https://biodiversity.org.au/afd/taxa/70b173fb-a9cc-4b73-a9ee-598d1b5289a6	Limosa limosa	(Linnaeus, 1758)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Black-tailed Godwit	1
https://biodiversity.org.au/afd/taxa/719484a0-dc73-429c-9c2f-7ecb95026578	Leiopyrga octona	Tate, 1891	species	Animalia	Mollusca	Gastropoda		Trochidae		1
https://biodiversity.org.au/afd/taxa/73b8c0b9-5c5a-4068-bec6-21d80a301137	Platycephalus laevigatus	Cuvier, 1829	species	Animalia	Chordata	Actinopterygii	Scorpaeniformes	Platycephalidae	Rock Flathead	1
https://biodiversity.org.au/afd/taxa/7416a7d2-1eb0-4d62-949a-6dc625e3573e	Agrotis ipsilon	(Hufnagel, 1766)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Owlet Moth	1
https://biodiversity.org.au/afd/taxa/741d7a82-42fa-4e10-9983-b972f7bc2963	Cleobora mellyi	(Mulsant, 1850)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae	Southern Ladybird	1
https://biodiversity.org.au/afd/taxa/747b1f24-ddf5-438a-ac5e-b174c30a64e2	Myrmecia nigriceps	Mayr, 1862	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Bullant	1
https://biodiversity.org.au/afd/taxa/7506a3b0-1fcc-4348-aa3a-b7ee02861ce0	Distoleon somnolentus	(Gerstaecker, 1885)	species	Animalia	Arthropoda	Insecta	Neuroptera	Myrmeleontidae		1
https://biodiversity.org.au/afd/taxa/76762fec-f019-4907-8259-f358bceedaf4	Castiarina amabilis	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/76a62ae3-13c5-4a83-b8e0-a20903aacc8a	Pseudocaranx dentex	(Bloch & Schneider, 1801)	species	Animalia	Chordata	Actinopterygii	Perciformes	Carangidae	Silver Trevallies	1
https://biodiversity.org.au/afd/taxa/77dda4a0-0ac0-455e-b21d-f58804ea2e9c	Technitis procapna	(Turner, 1945)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/78aa4243-7c03-4d35-b5ed-7a54902c9077	Oceanites oceanicus	(Kuhl, 1820)	species	Animalia	Chordata	Aves	Procellariiformes	Oceanitidae	Wilson's Storm-petrel	1
https://biodiversity.org.au/afd/taxa/78e0542e-7cd7-478f-b873-6440000d5a43	Naxia spinosa	(Hess, 1865)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Majidae	Spiny Seaweed-crab	1
https://biodiversity.org.au/afd/taxa/798594cf-fad6-461c-aa6f-acac341b81e2	Melittobia australica	Girault, 1912	species	Animalia	Arthropoda	Insecta	Hymenoptera	Eulophidae		1
https://biodiversity.org.au/afd/taxa/7b13f7fa-4831-4101-953d-9fcf350f81a8	Scutellastra laticostata	(Blainville, 1825)	species	Animalia	Mollusca	Gastropoda		Patellidae	Giant Limpet	1
https://biodiversity.org.au/afd/taxa/7d2fe465-5bed-4d05-9bba-bf5bbc18efdc	Psephotellus varius	Clark, 1910	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Mulga Parrot	1
https://biodiversity.org.au/afd/taxa/7eb4fd6b-d734-4aec-8479-dd95e2cfa7bf	Colymbomorpha vittata	Britton, 1959	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae	Spring Beetle	1
https://biodiversity.org.au/afd/taxa/7f7bbeba-97ad-4b0f-8d4e-d65981f54723	Conus (Virroconus) dorreensis	PÃ©ron, 1807	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Conidae	Chocolate-banded Cone	1
https://biodiversity.org.au/afd/taxa/7f86e06f-d65a-43ee-a557-278ed1cb6e86	Servaea melaina	Richardson & Gunter, 2012	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae		1
https://biodiversity.org.au/afd/taxa/7fa36d45-f662-40c5-8ca0-5c014dcaace1	Notamacropus irma	(Jourdan, 1837)	species	Animalia	Chordata	Mammalia	Diprotodontia	Macropodidae	Western Brush Wallaby	1
https://biodiversity.org.au/afd/taxa/80fd4d8f-0ac6-4fff-9397-66e0094dff52	Ochrogaster lunifer	Herrich-SchÃ¤ffer, [1855]	species	Animalia	Arthropoda	Insecta	Lepidoptera	Notodontidae	Processionary Caterpillar	1
https://biodiversity.org.au/afd/taxa/813c74fa-cb56-479c-b432-7799b70868af	Synemon sophia	(White, 1841)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Castniidae		1
https://biodiversity.org.au/afd/taxa/8165cb87-13a3-4f53-a41c-7105d452daa0	Hednota cotylophora	(Turner, 1942)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Crambidae		1
https://biodiversity.org.au/afd/taxa/82009003-fd3c-494f-99f1-eb49173f50f4	Bursatella hirsuta	Nimbs & Wilson, 2020	species	Animalia	Mollusca	Gastropoda	Aplysiida	Aplysiidae		1
https://biodiversity.org.au/afd/taxa/8522374c-a0d1-452a-9e80-7898db3b18c9	Oxycanus occidentalis	Tindale, 1935	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae	Ghost Moth	1
https://biodiversity.org.au/afd/taxa/869dfe23-30b7-4605-a74e-cfc812e1f6e4	Philobota xanthastis	(Meyrick, 1889)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/87d7d33c-e2e3-442c-aca9-aaa49a758bb2	Austrolestes annulosus	(Selys, 1862)	species	Animalia	Arthropoda	Insecta	Odonata	Lestidae	Blue Ringtail	1
https://biodiversity.org.au/afd/taxa/87e32372-5f8a-4020-b6fc-b483458cac3b	Callococcus acaciae	(Maskell, 1893)	species	Animalia	Arthropoda	Insecta	Hemiptera	Eriococcidae		1
https://biodiversity.org.au/afd/taxa/88434743-8815-4c8a-9bbe-812fda7f2e5d	Salinator fragilis	(Lamarck, 1822)	species	Animalia	Mollusca	Gastropoda		Amphibolidae	Salt Shell	1
https://biodiversity.org.au/afd/taxa/88afce53-8c45-4578-9890-9815d742c67a	Sepia braggi	Verco, 1907	species	Animalia	Mollusca	Cephalopoda	Sepiida	Sepiidae	Slender Cuttlefish	1
https://biodiversity.org.au/afd/taxa/88d5edf5-1e1f-497f-856a-50abe7369a6a	Euomus scorpio	(Boisduval, 1835)	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/8af958df-95ab-4fa8-9468-3df275de414b	Pimelopus nothus	Burmeister, 1847	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae		1
https://biodiversity.org.au/afd/taxa/8b86b6fa-2199-4e92-80b5-f511707ef705	Heteroclinus eckloniae	(McKay, 1970)	species	Animalia	Chordata	Actinopterygii	Perciformes	Clinidae	Kelp Weedfish	1
https://biodiversity.org.au/afd/taxa/8c3055a0-c5b1-418b-8e08-b6b8b59ad9a6	Laxta rieki	Roth, 1992	species	Animalia	Arthropoda	Insecta	Blattodea	Blaberidae		1
https://biodiversity.org.au/afd/taxa/8c350ca5-e29f-4c94-ab97-0aa53605bf33	Tribolium confusum	Jacquelin du Val & Fairmaire, 1862	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae	Confused Flour Beetle	1
https://biodiversity.org.au/afd/taxa/8c7319ee-c6f9-4f11-98ee-e8ca0ebe465d	Rhinotia suturalis	(MacLeay, 1826)	species	Animalia	Arthropoda	Insecta	Coleoptera	Belidae	Tailed Weevil	1
https://biodiversity.org.au/afd/taxa/8d7b78e8-4502-4a03-bc70-01245f63fd08	Perthia branchialis	(Nicholls, 1924)	species	Animalia	Arthropoda	Malacostraca	Amphipoda	Perthiidae	Amphipod	1
https://biodiversity.org.au/afd/taxa/8d866229-b80c-4b77-9a10-e4ee171de9ab	Diphucrania viridipurpurea	(Carter, 1924)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/8e4bd073-9dae-4ec0-b1f8-d82286cdeb7e	Eristalinus (Lathyrophthalmus) punctulatus	(Macquart, 1847)	species	Animalia	Arthropoda	Insecta	Diptera	Syrphidae	Native Drone Fly	1
https://biodiversity.org.au/afd/taxa/8ef0e945-0b77-4fdc-ab85-208454f35b8e	Cherax destructor	Clark, 1936	species	Animalia	Arthropoda	Malacostraca	Decapoda	Parastacidae	Common Yabbie	1
https://biodiversity.org.au/afd/taxa/8f2d4aeb-50eb-438f-a145-5f12e356ffd8	Dicaeum (Dicaeum) hirundinaceum	(Shaw, 1792)	species	Animalia	Chordata	Aves	Passeriformes	Dicaeidae	Mistletoebird	1
https://biodiversity.org.au/afd/taxa/8f812790-ca29-4be4-b450-242d5306e13f	Steganopsis melanogaster	(Thomson, 1869)	species	Animalia	Arthropoda	Insecta	Diptera	Lauxaniidae		1
https://biodiversity.org.au/afd/taxa/90faa6db-ce6d-4194-9d00-c008d03764f0	Opisthoncus polyphemus	(L. Koch, 1867)	species	Animalia	Arthropoda	Arachnida	Araneae	Salticidae		1
https://biodiversity.org.au/afd/taxa/915852d5-ddf0-48eb-9e7e-dbd701eef026	Nola lechriotropa	(Turner, 1944)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nolidae		1
https://biodiversity.org.au/afd/taxa/93be42f9-115d-430e-851e-e0f844c42dd2	Coaustraliobates minor	(Lundblad, 1947)	species	Animalia	Arthropoda	Arachnida	Trombidiformes	Hygrobatidae		1
https://biodiversity.org.au/afd/taxa/946b5655-fc69-4220-97a5-288b9f9eca39	Xanthagrion erythroneurum	(Selys, 1876)	species	Animalia	Arthropoda	Insecta	Odonata	Coenagrionidae	Red & Blue Damsel	1
https://biodiversity.org.au/afd/taxa/9487a340-1507-47eb-9184-3d0a2c174f56	Siphonaria jeanae	Jenkins, 1984	species	Animalia	Mollusca	Gastropoda		Siphonariidae		1
https://biodiversity.org.au/afd/taxa/94a1e879-698a-4565-9ae8-1d4e07a7b768	Pagurus sinuatus	(Stimpson, 1858)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Paguridae		1
https://biodiversity.org.au/afd/taxa/952bd0ab-9178-4a58-bb91-654778554b03	Scopula rubraria	(Doubleday, 1843)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Carpet Moth	1
https://biodiversity.org.au/afd/taxa/9649ef88-bc30-4375-8b6b-49d72dfad9fb	Castiarina subtrifasciata	(Gory & Laporte, 1838)	species	Animalia	Arthropoda	Insecta	Coleoptera	Buprestidae		1
https://biodiversity.org.au/afd/taxa/96bf9e24-0480-4eec-920a-792ce5676569	Austrolestes io	(Selys, 1862)	species	Animalia	Arthropoda	Insecta	Odonata	Lestidae	Iota Ringtail	1
https://biodiversity.org.au/afd/taxa/96caf85e-123d-476a-ad55-9291f6cc5985	Catasarcus hopei	FÃ¥hraeus, 1840	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/9785b869-0853-479c-a356-730f250eef17	Austromegabalanus nigrescens	(Lamarck, 1818)	species	Animalia	Arthropoda	Maxillopoda	Sessilia	Balanidae	Giant Black Barnacle	1
https://biodiversity.org.au/afd/taxa/97e37cd0-622f-42a5-8a42-922fa1332990	Ozius truncatus	H. Milne Edwards, 1834	species	Animalia	Arthropoda	Malacostraca	Decapoda	Oziidae	Reef Crab	1
https://biodiversity.org.au/afd/taxa/982e4028-570f-42bc-a7d6-5bf07df4122e	Polyrhachis (Campomyrma) ops	Forel, 1907	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		1
https://biodiversity.org.au/afd/taxa/99357b2c-bb7b-42a4-8488-7b9f8878a2d6	Aenetus tephroptilus	(Turner, 1915)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		1
https://biodiversity.org.au/afd/taxa/99447700-c858-4ac4-aab0-2f3d8d81c11e	Haletta semifasciata	(Valenciennes, 1840)	species	Animalia	Chordata	Actinopterygii	Perciformes	Labridae	Blue Weed-whiting	1
https://biodiversity.org.au/afd/taxa/9d9d727f-7066-4e0b-a657-54efb0c5b381	Forficula auricularia	Linnaeus, 1758	species	Animalia	Arthropoda	Insecta	Dermaptera	Forficulidae	European Earwig	1
https://biodiversity.org.au/afd/taxa/9dd5d636-cfae-43fe-9df6-548e1fdd00f2	Liriomyza scaevolae	Spencer, 1977	species	Animalia	Arthropoda	Insecta	Diptera	Agromyzidae		1
https://biodiversity.org.au/afd/taxa/9e06d2e8-d288-47c2-9376-65ceb08256a4	Poecilasthena ischnophrica	Turner, 1941	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/9e172b3f-62bb-4b37-ba40-99cba00fe1e1	Conicochernes globosus	Beier, 1954	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Chernetidae		1
https://biodiversity.org.au/afd/taxa/9e53e17e-a1a5-46c2-a728-3211b4bac7b9	Phallaria ophiusaria	GuenÃ©e, 1857	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Brown Leaf Moth	1
https://biodiversity.org.au/afd/taxa/9e7fb198-2967-4487-af8c-acecff61abf2	Dictyotus inconspicuus	Dallas, 1851	species	Animalia	Arthropoda	Insecta	Hemiptera	Pentatomidae	Shield Bug	1
https://biodiversity.org.au/afd/taxa/9f16edd7-89e4-4837-b263-4cfda5c73218	Aleucosia tridentata	Yeates, 1991	species	Animalia	Arthropoda	Insecta	Diptera	Bombyliidae		1
https://biodiversity.org.au/afd/taxa/a0ede648-67e2-4d34-851b-7cd31f8749f4	Ambicodamus marae	Harvey, 1995	species	Animalia	Arthropoda	Arachnida	Araneae	Nicodamidae		1
https://biodiversity.org.au/afd/taxa/a1082989-ce2e-43bc-8413-e7ef2a69d68c	Pterolocera leucocera	(Turner, 1921)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Anthelidae	Lappet Moth	1
https://biodiversity.org.au/afd/taxa/a1590b15-944f-41f8-a2c9-6b3c3c2c3a81	Callogobius depressus	(Ramsay & Ogilby, 1886)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Flathead Goby	1
https://biodiversity.org.au/afd/taxa/a17ca8c6-5a1c-496a-8d7e-3aa7ef4250bf	Cryptoplax striata	(Lamarck, 1819)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Cryptoplacidae		1
https://biodiversity.org.au/afd/taxa/a1c7cf8a-93a5-4381-ac88-318ad232d78c	Lagynochthonius australicus	(Beier, 1966)	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Chthoniidae		1
https://biodiversity.org.au/afd/taxa/a2260672-36df-48be-8a9e-d85a77237ba5	Dasyurus geoffroii	Gould, 1841	species	Animalia	Chordata	Mammalia	Dasyuromorphia	Dasyuridae	Chuditch	1
https://biodiversity.org.au/afd/taxa/a2be3cbf-90b3-4ab9-aed6-0929d5862364	Endotricha pyrosalis	GuenÃ©e, 1854	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pyralidae	Grass Moth	1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/a3a16fa8-d4f5-41c3-b4a0-b5033f189c71	Pseudolaureola wilsmorei	(Nicholls & Barnes, 1926)	species	Animalia	Arthropoda	Malacostraca	Isopoda	Armadillidae		1
https://biodiversity.org.au/afd/taxa/a3bbc0ba-1b39-4a2a-88d3-8e461826ac20	Parasaissetia nigra	(Nietner, 1861)	species	Animalia	Arthropoda	Insecta	Hemiptera	Coccidae	Lapa-da-anoineira	1
https://biodiversity.org.au/afd/taxa/a3db2d48-1ff6-40a4-8851-77e2965b6f80	Tanystola isabella	(White, 1841)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Notodontidae		1
https://biodiversity.org.au/afd/taxa/a5b1896e-ef50-4571-ac94-7c1f1c031049	Calidris (Erolia) melanotos	(Vieillot, 1819)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Pectoral Sandpiper	1
https://biodiversity.org.au/afd/taxa/a698811e-b614-4a8a-b124-01f176294e26	Ferreola handschini	(Haupt, 1935)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Pompilidae	Spider Wasp	1
https://biodiversity.org.au/afd/taxa/a6a836fe-df49-4300-a0de-c21df676a9d3	Siphonognathus beddomei	(Johnston, 1885)	species	Animalia	Chordata	Actinopterygii	Perciformes	Labridae	Pencil Weed Whiting	1
https://biodiversity.org.au/afd/taxa/a6c28c42-f794-4555-a38f-aff9ecf6d53a	Utetheisa pulchelloides	Hampson, 1907	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Crimson Spotted Moth	1
https://biodiversity.org.au/afd/taxa/a7130413-d100-4af4-8a04-e8592a12a20e	Phryctora phryctora	(Meyrick, 1910)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae		1
https://biodiversity.org.au/afd/taxa/a864c176-9e01-465c-b326-9d9c3f99b28b	Callogobius mucosus	(GÃ¼nther, 1872)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Sculptured Goby	1
https://biodiversity.org.au/afd/taxa/a9639dfa-fdc1-4226-b9e5-afb3d346d49d	Hermetia illucens	(Linnaeus, 1758)	species	Animalia	Arthropoda	Insecta	Diptera	Stratiomyidae		1
https://biodiversity.org.au/afd/taxa/a9d6406b-2492-4a91-b78c-867c3a134f9a	Coscinasterias calamaria	(Gray, 1840)	species	Animalia	Echinodermata	Asteroidea	Forcipulatida	Asteriidae		1
https://biodiversity.org.au/afd/taxa/a9de4952-f304-4e3c-a61e-b6fa80db123d	Ornodolomedes nicholsoni	Raven & Hebron, 2018	species	Animalia	Arthropoda	Arachnida	Araneae	Pisauridae		1
https://biodiversity.org.au/afd/taxa/a9f899b7-56ad-445d-bcc3-4fb06ce53179	Megalopsalis walpolensis	Taylor, 2013	species	Animalia	Arthropoda	Arachnida	Opiliones	Neopilionidae		1
https://biodiversity.org.au/afd/taxa/aa722de8-616b-4fca-80fa-68bcf4a0f4e1	Dinocampus coccinellae	(Schrank, 1802)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Braconidae		1
https://biodiversity.org.au/afd/taxa/ab688223-6f7d-4286-8a96-3c62c8a822f0	Scolelepis denmarkensis	Hartmann-SchrÃ¶der, 1983	species	Animalia	Annelida	Polychaeta		Spionidae		1
https://biodiversity.org.au/afd/taxa/ab8816d0-2599-4813-a4c7-00d45d0c7ed0	Cacatua (Licmetis) pastinator	(Gould, 1841)	species	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Western Corella	1
https://biodiversity.org.au/afd/taxa/acd10974-44bc-4daa-8321-367ba18d1881	Stenoptilia zophodactylus	(Duponchel, 1840)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pterophoridae	Plume Moth	1
https://biodiversity.org.au/afd/taxa/ad3e5d24-8443-46be-a571-03f189d3d15f	Conus (Floraconus) anemone	Lamarck, 1810	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Conidae	The Anemone Cone	1
https://biodiversity.org.au/afd/taxa/ad535c78-6f3f-405b-8f08-81fc6e491a07	Agonocheila ruficollis	Sloane, 1898	species	Animalia	Arthropoda	Insecta	Coleoptera	Carabidae		1
https://biodiversity.org.au/afd/taxa/ae2e4095-f8cd-46d1-8883-6e0d802fefae	Chlorodiloma crinita	(Philippi, 1849)	species	Animalia	Mollusca	Gastropoda		Trochidae		1
https://biodiversity.org.au/afd/taxa/b035ca7e-f173-4eb0-8e18-1f6c99e64454	Myrmecorhynchus emeryi	E. AndrÃ©, 1896	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/b0592117-21ee-4351-a745-cea3e2cbcfcf	Thalassarche cauta	(Gould, 1841)	species	Animalia	Chordata	Aves	Procellariiformes	Diomedeidae	Shy Albatross	1
https://biodiversity.org.au/afd/taxa/b12c073a-1717-4852-bca7-1c654de707be	Phaulacridium crassum	Key, 1992	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae		1
https://biodiversity.org.au/afd/taxa/b169b2a5-efd6-44ed-a481-aae5a35944ff	Abbreviata antarctica	(Linstow, 1899)	species	Animalia	Nematoda	Chromadorea	Spirurida	Physalopteridae		1
https://biodiversity.org.au/afd/taxa/b1b3ee6a-6db3-4de9-a360-ea240283d5c9	Idaea philocosma	(Meyrick, 1888)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	1
https://biodiversity.org.au/afd/taxa/b1c41141-c348-4f3f-b597-a35da015da2b	Goniaea vocans	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Slender Gumleaf Grasshopper	1
https://biodiversity.org.au/afd/taxa/b1da0951-640e-4a38-b5eb-5472e3ba0f43	Catomerus polymerus	(Darwin, 1854)	species	Animalia	Arthropoda	Maxillopoda	Sessilia	Catophragmidae	Surf Barnacle	1
https://biodiversity.org.au/afd/taxa/b229e643-ed65-4914-9c38-87253751eeea	Cercophonius granulosus	Kraepelin, 1908	species	Animalia	Arthropoda	Arachnida	Scorpiones	Bothriuridae		1
https://biodiversity.org.au/afd/taxa/b39e99c9-2d72-46d9-af33-45c4a297867f	Tursiops truncatus	(Montagu, 1821)	species	Animalia	Chordata	Mammalia	Cetacea	Delphinidae	Bottlenose Dolphin	1
https://biodiversity.org.au/afd/taxa/b3f5013d-0e2e-4131-a1a0-c9d9501db043	Sorama bicolor	Walker, 1855	species	Animalia	Arthropoda	Insecta	Lepidoptera	Notodontidae	Moth	1
https://biodiversity.org.au/afd/taxa/b4971f23-99a4-419f-bf99-549741781cf9	Macronectes halli	Mathews, 1912	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Northern Giant-petrel	1
https://biodiversity.org.au/afd/taxa/b4a775e2-4e5f-4320-9057-46f3b0010f18	Scolecobrotus westwoodii	Hope, 1833	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae		1
https://biodiversity.org.au/afd/taxa/b4ce0461-bbe3-4263-9cfd-fe80bbfed3ae	Poecilasthena pisicolor	Turner, 1942	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/b52c2f49-9912-4a13-910b-ea8a3e61f6b9	Megaporus howittii	(Clark, 1862)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	1
https://biodiversity.org.au/afd/taxa/b5877db4-1732-48d0-aee0-f445d9333e21	Idiodes apicata	GuenÃ©e, 1857	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Bracken Moth	1
https://biodiversity.org.au/afd/taxa/b62fba79-345d-4180-863f-543aa851b22f	Scomber australasicus	Cuvier, 1832	species	Animalia	Chordata	Actinopterygii	Perciformes	Scombridae	Blue Mackerel	1
https://biodiversity.org.au/afd/taxa/b66ce4f5-01ae-4d38-beff-48f5cdf11200	Aporrectodea caliginosa	(Savigny in Cuvier, 1826)	species	Animalia	Annelida	Oligochaeta		Lumbricidae	Earthworm	1
https://biodiversity.org.au/afd/taxa/b71a311c-f83e-4404-996c-b23a711d8cf1	Guinusia chabrus	(Linnaeus, 1758)	species	Animalia	Arthropoda	Malacostraca	Decapoda	Plagusiidae	Cleft-fronted Shore Crab	1
https://biodiversity.org.au/afd/taxa/b7b99399-082c-4cc0-b0e7-01df84f16aab	Onthophagus haagi	Harold, 1867	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae		1
https://biodiversity.org.au/afd/taxa/b95d4067-84cd-4c3f-a445-081f57d4cde7	Holocola zopherana	(Meyrick, 1881)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae		1
https://biodiversity.org.au/afd/taxa/ba42ac54-b3d4-42ff-b9c6-4ba76f53a977	Myrmecia brevinoda	Forel, 1910	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Giant Bulldog Ant	1
https://biodiversity.org.au/afd/taxa/bab9b73e-4bfa-4135-a482-1819f6e5a051	Crepidomenus occidualis	Calder, 1986	species	Animalia	Arthropoda	Insecta	Coleoptera	Elateridae		1
https://biodiversity.org.au/afd/taxa/bb2995c7-c858-44c2-b176-a236e0731fe0	Austrochthonius australis	Hoff, 1951	species	Animalia	Arthropoda	Arachnida	Pseudoscorpiones	Chthoniidae	Pseudoscorpion	1
https://biodiversity.org.au/afd/taxa/bbbe02a7-029f-451a-9cbc-0b016070ff72	Arrhythmica semifusca	Turner, 1940	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae		1
https://biodiversity.org.au/afd/taxa/bc18e27c-171f-4d50-97c7-a1a8652c1b49	Pterodroma (Pterodroma) lessonii	(Garnot, 1826)	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	White-headed Petrel	1
https://biodiversity.org.au/afd/taxa/bd52c757-3d4a-4352-a8f6-a89fe0bada8b	Netuma thalassina	(RÃ¼ppell, 1837)	species	Animalia	Chordata	Actinopterygii	Siluriformes	Ariidae	Giant Sea Catfish	1
https://biodiversity.org.au/afd/taxa/be3a15b9-7ac9-4763-bf5a-86fd07aadecc	Siphanta roseicincta	(Walker, 1862)	species	Animalia	Arthropoda	Insecta	Hemiptera	Flatidae	Planthopper	1
https://biodiversity.org.au/afd/taxa/be6c3cbc-f8f4-498d-bafa-151d0a1aab40	Boccardia chilensis	Blake & Woodwick, 1971	species	Animalia	Annelida	Polychaeta		Spionidae	Spionid Worm	1
https://biodiversity.org.au/afd/taxa/bee71788-0df3-472e-a692-07823d70ab99	Paraplesiops meleagris	(Peters, 1869)	species	Animalia	Chordata	Actinopterygii	Perciformes	Plesiopidae	Southern Blue Devil	1
https://biodiversity.org.au/afd/taxa/bf76a636-8e6c-49f6-b0fc-b401492c7bce	Anestia semiochrea	(Butler, 1886)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae	Moth	1
https://biodiversity.org.au/afd/taxa/bf8abc11-ebe1-4f1a-9950-805e5bfcf90a	Columba (Columba) livia	Gmelin, 1789	species	Animalia	Chordata	Aves	Columbiformes	Columbidae	Rock Dove	1
https://biodiversity.org.au/afd/taxa/c0a56226-7431-45d1-9aaa-ebbe70da29c0	Hipponix australis	(Lamarck, 1819)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Hipponicidae		1
https://biodiversity.org.au/afd/taxa/c19cff85-293d-42f5-a583-54144c67f7ae	Scioglyptis lyciaria	(GuenÃ©e, 1857)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Geometer Moth	1
https://biodiversity.org.au/afd/taxa/c2056f1b-fcde-45b9-904b-1cab280368d1	Canis familiaris	Linnaeus, 1758	species	Animalia	Chordata	Mammalia	Carnivora	Canidae	Common Dog	1
https://biodiversity.org.au/afd/taxa/c2964e99-8970-49f7-a031-0794f5337d21	Conger monganius	(Phillipps, 1932)	species	Animalia	Chordata	Actinopterygii	Anguilliformes	Congridae	Conger Eels	1
https://biodiversity.org.au/afd/taxa/c441fe0c-c9b9-45a0-973a-14dcd1986b89	Iridomyrmex dromus	Clark, 1938	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/c517dae5-6bf7-48e8-8501-53e8b87e89a4	Trichoglossus haematodus	(Linnaeus, 1771)	species	Animalia	Chordata	Aves	Psittaciformes	Psittacidae	Rainbow Lorikeet	1
https://biodiversity.org.au/afd/taxa/c5e41e53-e526-4b6a-b9ae-a856c54a8335	Labidura riparia	(Pallas, 1773)	species	Animalia	Arthropoda	Insecta	Dermaptera	Labiduridae	Common Brown Earwig	1
https://biodiversity.org.au/afd/taxa/c714b59d-86a6-485f-b855-97b844c7eb9b	Ogyris otanes	(C. & R. Felder, 1865)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae	Small Brown Azure	1
https://biodiversity.org.au/afd/taxa/c7ffc587-a2ad-41df-8335-ece449a44fe5	Lorica volvox	(Reeve, 1847)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Schizochitonidae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/c88713f2-f9e7-4423-a342-7b4b931c55cd	Cryptoplax larvaeformis	(Blainville in Burrow, 1815)	species	Animalia	Mollusca	Polyplacophora	Chitonida	Cryptoplacidae		1
https://biodiversity.org.au/afd/taxa/c9a35a58-7c80-446d-814c-d3f1dc3f338a	Polistes (Polistella) stigma	(Fabricius, 1793)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Vespidae	Wasp	1
https://biodiversity.org.au/afd/taxa/c9bf4003-f60b-4cac-ba08-9bf03107c991	Cormocephalus michaelseni	Kraepelin, 1908	species	Animalia	Arthropoda	Chilopoda	Scolopendromorpha	Scolopendridae		1
https://biodiversity.org.au/afd/taxa/ca0809fd-d921-4262-ae0e-46d09ab00d5e	Ichthyscopus barbatus	Mees, 1960	species	Animalia	Chordata	Actinopterygii	Perciformes	Uranoscopidae	Fringe Stargazer	1
https://biodiversity.org.au/afd/taxa/cc1c005d-05f3-49db-90a0-d56219832418	Ichneumon promissorius	(Erichson, 1842)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Ichneumonidae		1
https://biodiversity.org.au/afd/taxa/ccea26e3-0cb0-4b0e-bd91-591c845f8aec	Bulla ampulla	Linnaeus, 1758	species	Animalia	Mollusca	Gastropoda	Cephalaspidea	Bullidae		1
https://biodiversity.org.au/afd/taxa/cd6ad15a-894b-4d91-9e6c-6e6c21fd5091	Allodessus bistrigatus	(Clark, 1862)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	1
https://biodiversity.org.au/afd/taxa/ce476802-7ef3-41b0-a5e1-ed9ecc71b296	Spinicauda similis	Jones & Watharow, 2010	species	Animalia	Nematoda	Chromadorea	Spirurida	Heterakidae		1
https://biodiversity.org.au/afd/taxa/cfd63b39-3221-47cd-8c57-e4f395fec1ed	Sillago maculata	Quoy & Gaimard, 1824	species	Animalia	Chordata	Actinopterygii	Perciformes	Sillaginidae	Trumpeter Whiting	1
https://biodiversity.org.au/afd/taxa/d169c670-875a-4f1e-a1a9-fbb19430ba10	Melanozosteria occidentalis	Mackerras, 1968	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		1
https://biodiversity.org.au/afd/taxa/d17a5660-110b-40a0-80af-93926fbb3056	Pristoderus elongatus	(Blackburn, 1891)	species	Animalia	Arthropoda	Insecta	Coleoptera	Zopheridae		1
https://biodiversity.org.au/afd/taxa/d1a77892-c594-462c-955a-2a0f8d9b48fa	Eumarcia fumigata	(Sowerby, 1853)	species	Animalia	Mollusca	Bivalvia	Cardiida	Veneridae	Shining Venus Shell	1
https://biodiversity.org.au/afd/taxa/d2d7481a-4639-4993-bcd1-07f97980f962	Bostockia porosa	Castelnau, 1873	species	Animalia	Chordata	Actinopterygii	Perciformes	Percichthyidae	Nightfish	1
https://biodiversity.org.au/afd/taxa/d3b7d115-bd80-4ad4-ad8f-9c48e40450a7	Austrosynthemis cyanitincta	(Tillyard, 1908)	species	Animalia	Arthropoda	Insecta	Odonata	Synthemistidae	Turquoise Tigertail	1
https://biodiversity.org.au/afd/taxa/d44056be-b7e7-4f21-96b9-78e4591f83f4	Transorchestia marlo	Serejo & Lowry, 2008	species	Animalia	Arthropoda	Malacostraca	Amphipoda	Talitridae		1
https://biodiversity.org.au/afd/taxa/d4af7d7a-d873-4ba4-8a54-3b186f373540	Bucolellus ornatus	Blackburn, 1889	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae		1
https://biodiversity.org.au/afd/taxa/d506d8db-0205-486d-a4e1-be4b0bf59c5c	Phlioioletes spanioleuca	(Turner, 1933)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/d560c2ba-faff-4973-a2d1-f4dbcf06bbf0	Clogmia albipunctata	(Williston, 1893)	species	Animalia	Arthropoda	Insecta	Diptera	Psychodidae	Moth Fly	1
https://biodiversity.org.au/afd/taxa/d5b55e5d-c184-4956-9d23-084cbdc34422	Neumichtis nigerrima	(GuenÃ©e, 1852)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Noctuidae	Black Turnip Moth	1
https://biodiversity.org.au/afd/taxa/d5bb2d23-a535-44ba-9e4d-1cbc2255a322	Hyocephalus aprugnus	Bergroth, 1906	species	Animalia	Arthropoda	Insecta	Hemiptera	Hyocephalidae		1
https://biodiversity.org.au/afd/taxa/d67ddf9c-e0ab-4bd1-a694-f3ec70749309	Chrysolarentia phaulophanes	(Turner, 1936)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/d8af29b8-05d6-451a-ac51-ba27f3aa07b7	Oecobius navus	Blackwall, 1859	species	Animalia	Arthropoda	Arachnida	Araneae	Oecobiidae	Wall Spider	1
https://biodiversity.org.au/afd/taxa/da100481-e4a7-4d6e-8535-89a748cf52ad	Plegadis falcinellus	(Linnaeus, 1766)	species	Animalia	Chordata	Aves	Ciconiiformes	Threskiornithidae	Glossy Ibis	1
https://biodiversity.org.au/afd/taxa/da16dcff-6cb1-457a-8f0d-9ce259516a40	Stericta hicanodes	(Turner, 1937)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Pyralidae		1
https://biodiversity.org.au/afd/taxa/da17cf36-b117-48db-804b-740aefdbfb70	Pyrgoptila zalotypa	(Turner, 1935)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/db161d0f-72a7-4986-9348-81231ef8f3b2	Myrmecia swalei	Crawley, 1922	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		1
https://biodiversity.org.au/afd/taxa/db652444-5e16-4894-9337-f3215d49fc51	Prionyx saevus	(Smith, 1856)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Sphecidae		1
https://biodiversity.org.au/afd/taxa/dbdc0dab-ec9c-4cc4-abbb-9d574d95fcb1	Pseudevadne tergestina	(Claus, 1877)	species	Animalia	Arthropoda	Branchiopoda	Diplostraca	Podonidae		1
https://biodiversity.org.au/afd/taxa/dbe30bff-d3b8-4f0d-92d9-5b3c5790d13a	Polyzosteria mitchelli	(Angas, 1847)	species	Animalia	Arthropoda	Insecta	Blattodea	Blattidae		1
https://biodiversity.org.au/afd/taxa/dc3536ae-17ea-45f8-bdf5-a8d978243f57	Engraulis australis	(White, 1790)	species	Animalia	Chordata	Actinopterygii	Clupeiformes	Engraulidae	Australian Anchovy	1
https://biodiversity.org.au/afd/taxa/dc92be94-a3e2-4cb2-8614-7087fccece87	Pseudopenthes hesperis	Lambkin & Yeates, 2003	species	Animalia	Arthropoda	Insecta	Diptera	Bombyliidae		1
https://biodiversity.org.au/afd/taxa/dcc185f8-de0d-4130-ac5e-93780366f774	Kyphosus gladius	Knudsen & Clements, 2013	species	Animalia	Chordata	Actinopterygii	Perciformes	Kyphosidae	Gladius Sea Chub	1
https://biodiversity.org.au/afd/taxa/dd89d7aa-8496-4c78-bfa4-d580b37f3da1	Atherinosoma elongatum	(Klunzinger, 1879)	species	Animalia	Chordata	Actinopterygii	Atheriniformes	Atherinidae	Elongate Hardyhead	1
https://biodiversity.org.au/afd/taxa/ddd13a9c-cba3-4828-8f82-01e3cfcff193	Meridiastra calcar	(Lamarck, 1816)	species	Animalia	Echinodermata	Asteroidea	Valvatida	Asterinidae	Eight-armed Cushion Star	1
https://biodiversity.org.au/afd/taxa/ddd50e40-c4ca-4c22-b59f-78898651664b	Eulechria homopela	(Turner, 1933)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/dded1ff2-92ea-41de-ab64-4d375f1ae423	Nereis cockburnensis	Augener, 1913	species	Animalia	Annelida	Polychaeta		Nereididae	Rag Worm	1
https://biodiversity.org.au/afd/taxa/dedad286-f71b-4ec6-9a36-5a409fd8bdd9	Cheilodactylus gibbosus	Richardson, 1841	species	Animalia	Chordata	Actinopterygii	Perciformes	Cheilodactylidae	Magpie Morwong	1
https://biodiversity.org.au/afd/taxa/e01d2215-16d9-40a3-bb12-b726afd6782d	Pomatomus saltatrix	(Linnaeus, 1766)	species	Animalia	Chordata	Actinopterygii	Perciformes	Pomatomidae	Tailor	1
https://biodiversity.org.au/afd/taxa/e0b9b0bf-8aef-44fa-aa21-087e94848c9c	Xanthorhoe emmelopis	Turner, 1941	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae		1
https://biodiversity.org.au/afd/taxa/e5af2b71-816f-467f-a2c9-b27646de6baf	Brachaluteres jacksonianus	(Quoy & Gaimard, 1824)	species	Animalia	Chordata	Actinopterygii	Tetraodontiformes	Monacanthidae	Southern Pygmy Leatherjacket	1
https://biodiversity.org.au/afd/taxa/e621e01d-c3d0-4c99-bcb6-f4aaea7f6e3b	Steatoda grossa	(C.L. Koch, 1838)	species	Animalia	Arthropoda	Arachnida	Araneae	Theridiidae	Tangle-web Spider	1
https://biodiversity.org.au/afd/taxa/e6fa4496-4588-43c3-a48a-204970541f29	Deliochus humilis	(L. Koch, 1867)	species	Animalia	Arthropoda	Arachnida	Araneae	Araneidae		1
https://biodiversity.org.au/afd/taxa/e743bccc-258c-424f-b019-f9255803efe4	Pelsartia humeralis	(Ogilby, 1899)	species	Animalia	Chordata	Actinopterygii	Perciformes	Terapontidae	Sea Trumpeter	1
https://biodiversity.org.au/afd/taxa/e74f69ce-4557-4930-a025-137009beeda0	Ancylis colonota	(Meyrick, 1911)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Tortricidae		1
https://biodiversity.org.au/afd/taxa/e78784a4-71a6-4749-b23a-53fd838ac9a6	Nyctemera baulus	(Boisduval, 1832)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Erebidae		1
https://biodiversity.org.au/afd/taxa/e7edd9e8-5bd2-4b41-b903-730d86751e0b	Wingia lambertella	(Wing, 1850)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae	Pink Leaf Moth	1
https://biodiversity.org.au/afd/taxa/e8734472-e068-46ab-9340-023eac3d5519	Heoclisis fundata	(Walker, 1853)	species	Animalia	Arthropoda	Insecta	Neuroptera	Myrmeleontidae	Antlion	1
https://biodiversity.org.au/afd/taxa/e886e1b1-9db8-45e5-a50a-e557afe1cb4f	Anonychomyrma nitidiceps	(E. AndrÃ©, 1896)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/e927874e-11f2-45c4-91d8-5abaa1d1b5d1	Tympanophora pellucida	White, 1841	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		1
https://biodiversity.org.au/afd/taxa/ea0dfcd7-c4a7-4012-9ffe-004b9c11547a	Phasmodes ranatriformis	Westwood, 1845	species	Animalia	Arthropoda	Insecta	Orthoptera	Tettigoniidae		1
https://biodiversity.org.au/afd/taxa/ea2678a4-7457-474e-af67-d1232c29e2c2	Patelloida nigrosulcata	(Reeve, 1855)	species	Animalia	Mollusca	Gastropoda		Lottiidae		1
https://biodiversity.org.au/afd/taxa/ea2d172e-284b-400c-bc3c-b1677cac348e	Phoracantha semipunctata	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Coleoptera	Cerambycidae	Common Eucalypt Longicorn	1
https://biodiversity.org.au/afd/taxa/eb2a74f8-fb7e-4d65-9c56-8b2a57f3d93b	Conasprella (Parviconus) rutila	(Menke, 1843)	species	Animalia	Mollusca	Gastropoda	Hypsogastropoda	Conidae	Fiery-red Cone	1
https://biodiversity.org.au/afd/taxa/eba9ef04-13e3-4a67-b359-fd21f1b146bf	Phryganoporus candidus	(L. Koch, 1872)	species	Animalia	Arthropoda	Arachnida	Araneae	Desidae	Spider	1
https://biodiversity.org.au/afd/taxa/ec7f5362-9a1b-4d16-b3e1-9c7eb629df44	Adlerzia froggatti	(Forel, 1902)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/ecb39d68-76ff-492f-b251-1ef1849e3ed2	Anonychomyrma itinerans	(Lowne, 1865)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/ed0c7fe2-1ec2-4c8e-9458-5743c9af06fc	Argyrodes antipodianus	O.P.-Cambridge, 1880	species	Animalia	Arthropoda	Arachnida	Araneae	Theridiidae	Dew Drop Spider	1
https://biodiversity.org.au/afd/taxa/ed979a5a-4952-415b-8805-6870d2c5cd9e	Chelaner rubriceps	(Mayr, 1876)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae	Ant	1
https://biodiversity.org.au/afd/taxa/eeebecff-ccdf-47e2-89ac-39d709f2707b	Barea zeugmatophora	Turner, 1935	species	Animalia	Arthropoda	Insecta	Lepidoptera	Oecophoridae		1
https://biodiversity.org.au/afd/taxa/efe4e6eb-c17e-49e9-9516-a2b47a708e51	Heterocerus simillimus	Charpentier, 1968	species	Animalia	Arthropoda	Insecta	Coleoptera	Heteroceridae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://biodiversity.org.au/afd/taxa/f050e997-29cd-46c9-b703-9059b70c5b09	Lesueurina platycephala	Fowler, 1908	species	Animalia	Chordata	Actinopterygii	Perciformes	Leptoscopidae	Flathead Sandfish	1
https://biodiversity.org.au/afd/taxa/f07f23d6-d511-495c-8316-6ebdcd551695	Macrenches clerica	(Rosenstock, 1885)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Gelechiidae	Twirler Moth	1
https://biodiversity.org.au/afd/taxa/f08d93d5-26a1-4df7-b3c0-8a46f7430759	Neanthes vaalii	Kinberg, 1866	species	Animalia	Annelida	Polychaeta		Nereididae	Rag Worm	1
https://biodiversity.org.au/afd/taxa/f1433b81-cf69-4627-9b97-a0815f60cef3	Actinia tenebrosa	Farquhar, 1898	species	Animalia	Cnidaria	Anthozoa	Actiniaria	Actiniidae	Waratah Anemone	1
https://biodiversity.org.au/afd/taxa/f277346e-8671-487e-9031-a0440310e035	Leptochiton (Leptochiton) matthewsianus	(Bednall in Bednall & Matthews, 1906)	species	Animalia	Mollusca	Polyplacophora	Lepidopleurida	Leptochitonidae		1
https://biodiversity.org.au/afd/taxa/f29f01e6-0bfe-4621-b068-42dac6c758dc	Petrochelidon (Petrochelidon) ariel	(Gould, 1842)	species	Animalia	Chordata	Aves	Passeriformes	Hirundinidae	Fairy Martin	1
https://biodiversity.org.au/afd/taxa/f2cbd0a2-0e0c-41e8-b6b7-18d5bd0606d0	Onthophagus binodis	Thunberg, 1818	species	Animalia	Arthropoda	Insecta	Coleoptera	Scarabaeidae	Humpbacked Dung Beetle	1
https://biodiversity.org.au/afd/taxa/f363e5af-3ce2-471f-986f-786ceb37ff55	Necterosoma penicillatum	(Clark, 1862)	species	Animalia	Arthropoda	Insecta	Coleoptera	Dytiscidae	Diving Beetle	1
https://biodiversity.org.au/afd/taxa/f385585e-724e-4f64-bf6e-16f6296fb3a8	Danaus petilia	(Stoll, 1790)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae	Lesser Wanderer	1
https://biodiversity.org.au/afd/taxa/f3895c37-0880-4283-806f-da48997eb96c	Mytilus planulatus	Lamarck, 1819	species	Animalia	Mollusca	Bivalvia	Mytilida	Mytilidae	Edible Mussel	1
https://biodiversity.org.au/afd/taxa/f4abd087-4596-439f-8359-c0a884502751	Nyssus albopunctatus	(Hogg, 1896)	species	Animalia	Arthropoda	Arachnida	Araneae	Corinnidae	Sac Spider	1
https://biodiversity.org.au/afd/taxa/f4c8a24b-b057-4d11-b91f-163b59db95a3	Saprinus (Saprinus) cyaneus	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Coleoptera	Histeridae	Round Green Hister	1
https://biodiversity.org.au/afd/taxa/f61dace7-3678-4746-b20f-f00aaf41d218	Afurcagobius tamarensis	(Johnston, 1883)	species	Animalia	Chordata	Actinopterygii	Perciformes	Gobiidae	Tamar Goby	1
https://biodiversity.org.au/afd/taxa/f747ca2d-7a60-4390-ae1b-3fe2d6270cc2	Hylaeus (Macrohylaeus) alcyoneus	(Erichson, 1842)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Colletidae	Species Of Yellowfaced Bee	1
https://biodiversity.org.au/afd/taxa/f785ce42-2f8d-4b00-9060-82d448a09245	Poropterus rhyticephalus	Lea, 1905	species	Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae		1
https://biodiversity.org.au/afd/taxa/f86ed8c5-977d-4253-ac00-2a09620fd9df	Epicoma melanosticta	(Donovan, 1805)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Notodontidae	Common Epicoma Moth	1
https://biodiversity.org.au/afd/taxa/f941d4ec-007c-4c73-8952-994801e178e2	Hippotion scrofa	(Boisduval, 1832)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Sphingidae	Scrofa Hawk Moth	1
https://biodiversity.org.au/afd/taxa/f949f55c-63e5-499a-86c5-c4409cbf6373	Ardenna tenuirostris	(Temminck, 1835)	species	Animalia	Chordata	Aves	Procellariiformes	Procellariidae	Short-tailed Shearwater	1
https://biodiversity.org.au/afd/taxa/f9c18789-9b76-4b0b-a4cc-43d05bb32fdb	Oxycanus promiscuus	Tindale, 1935	species	Animalia	Arthropoda	Insecta	Lepidoptera	Hepialidae		1
https://biodiversity.org.au/afd/taxa/fa7c15bb-cb8e-467e-a894-1f8ca72d5e01	Plesanemma fucata	(R. Felder & Rogenhofer, 1875)	species	Animalia	Arthropoda	Insecta	Lepidoptera	Geometridae	Lemon Gum Moth	1
https://biodiversity.org.au/afd/taxa/fb7e87ab-07bd-45d9-9017-a7d3241e4d1a	Iso rhothophilus	(Ogilby, 1895)	species	Animalia	Chordata	Actinopterygii	Atheriniformes	Isonidae	Surf Sardine	1
https://biodiversity.org.au/afd/taxa/fbd4faa9-cf8f-421a-9640-831fa8b1e59d	Coelophora inaequalis	(Fabricius, 1775)	species	Animalia	Arthropoda	Insecta	Coleoptera	Coccinellidae	Common Australian Lady Beetle	1
https://biodiversity.org.au/afd/taxa/fc0367ce-3119-4181-b0a2-61430cb2963a	Hypoponera congrua	(Wheeler, 1934)	species	Animalia	Arthropoda	Insecta	Hymenoptera	Formicidae		1
https://biodiversity.org.au/afd/taxa/fcf4ecf7-2ddf-4978-8ffb-ed0bfbd02200	Megalopsalis minimua	(Kauri, 1954)	species	Animalia	Arthropoda	Arachnida	Opiliones	Neopilionidae		1
https://biodiversity.org.au/afd/taxa/fdb68931-2d35-4a4f-bf3d-0f31a75b8435	Parentia vulgaris	Bickel, 1994	species	Animalia	Arthropoda	Insecta	Diptera	Dolichopodidae		1
https://biodiversity.org.au/afd/taxa/fe0d262e-2847-4493-8aed-68cb376b2779	Suta gouldii	(Gray, 1841)	species	Animalia	Chordata	Reptilia	Squamata	Elapidae	Gould's Hooded Snake	1
https://biodiversity.org.au/afd/taxa/fe41d894-082c-4d2b-b49e-c543ce554b6b	Helea gilesi	(Carter, 1910)	species	Animalia	Arthropoda	Insecta	Coleoptera	Tenebrionidae		1
https://biodiversity.org.au/afd/taxa/ff0b95d5-4c25-48a5-8a31-dc996db2ff78	Austroicetes vulgaris	(SjÃ¶stedt, 1931)	species	Animalia	Arthropoda	Insecta	Orthoptera	Acrididae	Southeastern Austroicetes Grasshopper	1
https://id.biodiversity.org.au/name/apni/51306673	Hibbertia semipilosa	K.R.Thiele	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		1
https://id.biodiversity.org.au/name/apni/51346971	Pterostylis crispula	(D.L.Jones & C.J.French) D.L.Jones & C.J.French	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Slender Snail Orchid	1
https://id.biodiversity.org.au/name/apni/51690400	Xerochrysum wilsonii	T.L.Collins	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		1
https://id.biodiversity.org.au/name/apni/51731116	Lysimachia loeflingii	F.J.JimÃ©nez & M.Talavera	species	Plantae	Charophyta	Equisetopsida	Ericales	Primulaceae		1
https://id.biodiversity.org.au/name/apni/51732833	Hibbertia aplacophylla	K.R.Thiele	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		1
https://id.biodiversity.org.au/node/apni/2886043	Euchilopsis linearis	(Benth.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Swamp Pea	1
https://id.biodiversity.org.au/node/apni/2886101	Grevillea muelleri	Benth.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2886103	Melilotus indicus	(L.) All.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Sweet Melilot	1
https://id.biodiversity.org.au/node/apni/2886301	Delairea odorata	Lem.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Cape Ivy	1
https://id.biodiversity.org.au/node/apni/2886352	Patersonia pygmaea	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Pygmy Patersonia	1
https://id.biodiversity.org.au/node/apni/2886441	Trifolium tomentosum	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Woolly Clover	1
https://id.biodiversity.org.au/node/apni/2886461	Xyris flexifolia	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Xyridaceae		1
https://id.biodiversity.org.au/node/apni/2886539	Erica lusitanica	Rudolphi	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Spanish Heath	1
https://id.biodiversity.org.au/node/apni/2886640	Axonopus fissifolius	(Raddi) Kuhlm.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Narrow-leafed Carpet Grass	1
https://id.biodiversity.org.au/node/apni/2887117	Leptomeria ellytes	Lepschi	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae		1
https://id.biodiversity.org.au/node/apni/2887615	Hordeum leporinum	Link	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Barley Grass	1
https://id.biodiversity.org.au/node/apni/2887774	Exocarpos odoratus	(Miq.) A.DC.	species	Plantae	Charophyta	Equisetopsida	Santalales	Santalaceae	Scented Ballart	1
https://id.biodiversity.org.au/node/apni/2887918	Pimelea tinctoria	Meisn.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		1
https://id.biodiversity.org.au/node/apni/2888174	Lomandra caespitosa	(F.Muell. ex Benth.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Tufted Mat-rush	1
https://id.biodiversity.org.au/node/apni/2888279	Senecio multicaulis	A.Rich.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		1
https://id.biodiversity.org.au/node/apni/2888287	Hemigenia podalyrina	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae		1
https://id.biodiversity.org.au/node/apni/2888413	Cotula australis	(Sieber ex Spreng.) Hook.f.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Common Cotula	1
https://id.biodiversity.org.au/node/apni/2888495	Raphanus raphanistrum	L.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Wild Radish	1
https://id.biodiversity.org.au/node/apni/2888724	Parietaria debilis	G.Forst.	species	Plantae	Charophyta	Equisetopsida	Rosales	Urticaceae	Shade Pellitory	1
https://id.biodiversity.org.au/node/apni/2888791	Anthosachne scabra	(R.Br.) Nevski	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Wheatgrass	1
https://id.biodiversity.org.au/node/apni/2888913	Leucopogon capitellatus	DC.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2889165	Anthocercis sylvicola	T.D.Macfarl. & Ward.-Johnson	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae		1
https://id.biodiversity.org.au/node/apni/2889233	Oxalis debilis	Kunth	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Pink Shamrock	1
https://id.biodiversity.org.au/node/apni/2889510	Lepidium didymum	L.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Lesser Swine's-cress	1
https://id.biodiversity.org.au/node/apni/2889830	Orthrosanthus laxus	(Endl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Morning Iris	1
https://id.biodiversity.org.au/node/apni/2889907	Pultenaea radiata	H.B.Will.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2889955	Hypolaena grandiuscula	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		1
https://id.biodiversity.org.au/node/apni/2889999	Austrostipa hemipogon	(Benth.) S.W.L.Jacobs & J.Everett	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Half-bearded Spear-grass	1
https://id.biodiversity.org.au/node/apni/2890137	Kennedia glabrata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Northcliffe Kennedia	1
https://id.biodiversity.org.au/node/apni/2890151	Metrosideros excelsa	Sol. ex Gaertn.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	New Zealand Christmas Bush	1
https://id.biodiversity.org.au/node/apni/2890225	Cryptandra congesta	Rye	species	Plantae	Charophyta	Equisetopsida	Rosales	Rhamnaceae		1
https://id.biodiversity.org.au/node/apni/2890286	Schoenus subfascicularis	KÃ¼k.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2890378	Anthotium humile	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Dwarf Anthotium	1
https://id.biodiversity.org.au/node/apni/2890403	Eucalyptus jacksonii	Maiden	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Red Tingle	1
https://id.biodiversity.org.au/node/apni/2890451	Pimelea imbricata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		1
https://id.biodiversity.org.au/node/apni/2890500	Cyathochaeta equitans	K.L.Wilson	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2890504	Isopogon cuneatus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Coneflower	1
https://id.biodiversity.org.au/node/apni/2890544	Commersonia grandiflora	(Endl.) C.F.Wilkins & Whitlock	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		1
https://id.biodiversity.org.au/node/apni/2890745	Verbena incompta	P.W.Michael	species	Plantae	Charophyta	Equisetopsida	Lamiales	Verbenaceae	Purple-top Verbena	1
https://id.biodiversity.org.au/node/apni/2891029	Xerochrysum bracteatum	(Vent.) Tzvelev	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Golden Everlasting	1
https://id.biodiversity.org.au/node/apni/2891141	Goodenia coerulea	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		1
https://id.biodiversity.org.au/node/apni/2891344	Gymnoschoenus anceps	(R.Br.) C.B.Clarke	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2891374	Melaleuca lanceolata	Otto	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Dryland Tea-tree	1
https://id.biodiversity.org.au/node/apni/2891531	Lepidosperma longitudinale	Labill.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Pithy Sword-sedge	1
https://id.biodiversity.org.au/node/apni/2891651	Prunella vulgaris	L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Self-heal	1
https://id.biodiversity.org.au/node/apni/2891670	Eucalyptus rudis	Endl.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Flooded Gum	1
https://id.biodiversity.org.au/node/apni/2891817	Rumex x pseudopulcher	Hausskn.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae		1
https://id.biodiversity.org.au/node/apni/2891982	Borya longiscapa	Churchill	species	Plantae	Charophyta	Equisetopsida	Asparagales	Boryaceae		1
https://id.biodiversity.org.au/node/apni/2892003	Wurmbea dioica	(R.Br.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Liliales	Colchicaceae	Common Early Nancy	1
https://id.biodiversity.org.au/node/apni/2893022	Kennedia prostrata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Scarlet Runner	1
https://id.biodiversity.org.au/node/apni/2893275	Hibbertia perfoliata	HÃ¼gel ex Endl.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		1
https://id.biodiversity.org.au/node/apni/2893326	Tremandra diffusa	R.Br. ex DC.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		1
https://id.biodiversity.org.au/node/apni/2893349	Schoenus curvifolius	(R.Br.) Poir.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2893430	Melinis minutiflora	P.Beauv.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Molasses Grass	1
https://id.biodiversity.org.au/node/apni/2893437	Synaphea favosa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2893478	Senecio ramosissimus	DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		1
https://id.biodiversity.org.au/node/apni/2893609	Lomandra sericea	(Endl.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Silky Mat Rush	1
https://id.biodiversity.org.au/node/apni/2893781	Triglochin striata	Ruiz & Pav.	species	Plantae	Charophyta	Equisetopsida	Alismatales	Juncaginaceae	Streaked Arrowgrass	1
https://id.biodiversity.org.au/node/apni/2893806	Leucopogon gracilis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		1
https://id.biodiversity.org.au/node/apni/2893822	Calandrinia granulifera	Benth.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Portulacaceae	Pigmy Purslane	1
https://id.biodiversity.org.au/node/apni/2893990	Cheiranthera preissiana	Putt.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		1
https://id.biodiversity.org.au/node/apni/2894173	Hydrocotyle callicarpa	Bunge	species	Plantae	Charophyta	Equisetopsida	Apiales	Araliaceae	Tiny Pennywort	1
https://id.biodiversity.org.au/node/apni/2894177	Eucalyptus conferruminata	D.J.Carr & S.G.M.Carr	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Bald Island Marlock	1
https://id.biodiversity.org.au/node/apni/2894398	Gahnia decomposita	(R.Br.) Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2894490	Pultenaea barbata	C.R.P.Andrews	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2894636	Lobelia rarifolia	E.Wimm.	species	Plantae	Charophyta	Equisetopsida	Asterales	Campanulaceae		1
https://id.biodiversity.org.au/node/apni/2894677	Typha orientalis	C.Presl	species	Plantae	Charophyta	Equisetopsida	Poales	Typhaceae	Bullrush	1
https://id.biodiversity.org.au/node/apni/2894932	Amperea simulans	R.J.F.Hend.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae		1
https://id.biodiversity.org.au/node/apni/2895468	Sphaerolobium pubescens	R.Butcher	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2895661	Gahnia sclerioides	K.L.Wilson	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2895692	Hypocalymma angustifolium	(Endl.) Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	White Myrtle	1
https://id.biodiversity.org.au/node/apni/2895772	Sonchus oleraceus	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Common Sow-thistle	1
https://id.biodiversity.org.au/node/apni/2895820	Stirlingia tenuifolia	(R.Br.) Steud.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2895833	Calytrix asperula	(Schauer) Benth.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Brush Starflower	1
https://id.biodiversity.org.au/node/apni/2895995	Lathyrus tingitanus	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Tangier Pea	1
https://id.biodiversity.org.au/node/apni/2896053	Atriplex isatidea	Moq.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Coastal Saltbush	1
https://id.biodiversity.org.au/node/apni/2896155	Threlkeldia diffusa	R.Br.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Coast Bonefruit	1
https://id.biodiversity.org.au/node/apni/2896251	Isolepis congrua	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Slender Club-rush	1
https://id.biodiversity.org.au/node/apni/2896623	Oenothera glazioviana	Micheli	species	Plantae	Charophyta	Equisetopsida	Myrtales	Onagraceae	Reddish Evening-primrose	1
https://id.biodiversity.org.au/node/apni/2897057	Veronica arvensis	L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Wall Speedwell	1
https://id.biodiversity.org.au/node/apni/2897155	Nymphaea odorata	Aiton	species	Plantae	Charophyta	Equisetopsida	Nymphaeales	Nymphaeaceae	White Waterlily	1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2897244	Oxalis pes-caprae	L.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Soursob	1
https://id.biodiversity.org.au/node/apni/2897594	Carduus pycnocephalus	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Slender Thistle	1
https://id.biodiversity.org.au/node/apni/2897920	Sporadanthus rivularis	B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		1
https://id.biodiversity.org.au/node/apni/2897980	Calycopeplus oligandrus	P.I.Forst.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae		1
https://id.biodiversity.org.au/node/apni/2898072	Johnsonia teretifolia	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Hooded Lily	1
https://id.biodiversity.org.au/node/apni/2898171	Latrobea brunonis	(Benth.) Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2898215	Thysanotus manglesianus	Kunth	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Fringed Lily	1
https://id.biodiversity.org.au/node/apni/2898271	Isopogon axillaris	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2898294	Utricularia menziesii	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lentibulariaceae	Redcoats	1
https://id.biodiversity.org.au/node/apni/2898846	Synaphea incurva	A.S.George	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2898862	Calandrinia corrigioloides	F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Portulacaceae	Strap Purslane	1
https://id.biodiversity.org.au/node/apni/2898943	Logania buxifolia	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Loganiaceae		1
https://id.biodiversity.org.au/node/apni/2899172	Amyema miquelii	(Lehm. ex Miq.) Tiegh.	species	Plantae	Charophyta	Equisetopsida	Santalales	Loranthaceae	Box Mistletoe	1
https://id.biodiversity.org.au/node/apni/2899198	Bossiaea dentata	(R.Br.) Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2899214	Genista monspessulana	(L.) L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Montpellier Broom	1
https://id.biodiversity.org.au/node/apni/2899343	Plantago lanceolata	L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Ribwort	1
https://id.biodiversity.org.au/node/apni/2899432	Wilsonia humilis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Solanales	Convolvulaceae	Silky Wilsonia	1
https://id.biodiversity.org.au/node/apni/2900289	Adenanthos sericeus	Labill.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Coastal Woollybush	1
https://id.biodiversity.org.au/node/apni/2900395	Hibbertia depressa	Steud.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		1
https://id.biodiversity.org.au/node/apni/2900510	Angianthus platycephalus	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		1
https://id.biodiversity.org.au/node/apni/2900534	Galium murale	(L.) All.	species	Plantae	Charophyta	Equisetopsida	Gentianales	Rubiaceae	Small Bedstraw	1
https://id.biodiversity.org.au/node/apni/2900655	Stachys arvensis	(L.) L.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae	Stagger Weed	1
https://id.biodiversity.org.au/node/apni/2900760	Lomandra drummondii	(Benth.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		1
https://id.biodiversity.org.au/node/apni/2900814	Rytidosperma caespitosum	(Gaudich.) Connor & Edgar	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Common Wallaby-grass	1
https://id.biodiversity.org.au/node/apni/2901412	Trifolium fragiferum	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Strawberry Clover	1
https://id.biodiversity.org.au/node/apni/2901550	Lolium multiflorum	Lam.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Italian Ryegrass	1
https://id.biodiversity.org.au/node/apni/2901610	Geranium retrorsum	L'HÃ©r. ex DC.	species	Plantae	Charophyta	Equisetopsida	Geraniales	Geraniaceae	Grassland Crane's-bill	1
https://id.biodiversity.org.au/node/apni/2902331	Oxalis glabra	Thunb.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Finger-leaf Wood-sorrel	1
https://id.biodiversity.org.au/node/apni/2902335	Billardiera coriacea	Benth.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	Billardiera	1
https://id.biodiversity.org.au/node/apni/2902391	Tetrarrhena laevis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Forest Ricegrass	1
https://id.biodiversity.org.au/node/apni/2902418	Ptilotus esquamatus	(Benth.) F.Muell.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Amaranthaceae		1
https://id.biodiversity.org.au/node/apni/2902421	Trifolium striatum	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Knotted Clover	1
https://id.biodiversity.org.au/node/apni/2902984	Cymbalaria muralis	G.Gaertn., B.Mey. & Scherb.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Ivy-leaf Toadflax	1
https://id.biodiversity.org.au/node/apni/2903217	Phlebocarya ciliata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae		1
https://id.biodiversity.org.au/node/apni/2903384	Rytidosperma racemosum	(R.Br.) Connor & Edgar	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Wallaby Grass	1
https://id.biodiversity.org.au/node/apni/2903489	Schoenus odontocarpus	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2903526	Leucopogon polystachyus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Many-spiked Leucopogon	1
https://id.biodiversity.org.au/node/apni/2903542	Marianthus tenuis	Benth.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		1
https://id.biodiversity.org.au/node/apni/2903567	Pimelea lehmanniana	Meisn.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		1
https://id.biodiversity.org.au/node/apni/2903588	Hakea falcata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2903693	Callistemon viminalis	(Sol. ex Gaertn.) G.Don	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Creek Bottlebrush	1
https://id.biodiversity.org.au/node/apni/2904086	Freesia leichtlinii	Klatt	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Freesia	1
https://id.biodiversity.org.au/node/apni/2904117	Caesia micrantha	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Pale Grass Lily	1
https://id.biodiversity.org.au/node/apni/2904297	Pittosporum undulatum	Vent.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae	Sweet Pittosporum	1
https://id.biodiversity.org.au/node/apni/2904534	Calytrix tetragona	Labill.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Grampians Fringe-myrtle	1
https://id.biodiversity.org.au/node/apni/2904656	Pultenaea tenuifolia	R.Br. & Sims	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Terete-leaf Bush-pea	1
https://id.biodiversity.org.au/node/apni/2904778	Billardiera lehmanniana	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		1
https://id.biodiversity.org.au/node/apni/2904981	Myoporum insulare	R.Br.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Scrophulariaceae	Common Boobialla	1
https://id.biodiversity.org.au/node/apni/2905033	Trifolium subterraneum	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Subterranean Clover	1
https://id.biodiversity.org.au/node/apni/2905167	Chordifex laxus	(R.Br.) B.G.Briggs & L.A.S.Johnson	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Loose Cord Rush	1
https://id.biodiversity.org.au/node/apni/2905275	Pimelea sylvestris	R.Br.	species	Plantae	Charophyta	Equisetopsida	Malvales	Thymelaeaceae		1
https://id.biodiversity.org.au/node/apni/2905276	Anredera cordifolia	(Ten.) Steenis	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Basellaceae	Madeira Vine	1
https://id.biodiversity.org.au/node/apni/2905500	Comesperma ciliatum	Steetz	species	Plantae	Charophyta	Equisetopsida	Fabales	Polygalaceae		1
https://id.biodiversity.org.au/node/apni/2905546	Caesia occidentalis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Pale Grass Lily	1
https://id.biodiversity.org.au/node/apni/2905625	Scaevola auriculata	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae		1
https://id.biodiversity.org.au/node/apni/2905718	Acacia scalpelliformis	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2905770	Amperea protensa	Nees	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Euphorbiaceae		1
https://id.biodiversity.org.au/node/apni/2905855	Laurus nobilis	L.	species	Plantae	Charophyta	Equisetopsida	Laurales	Lauraceae	Bay Laurel	1
https://id.biodiversity.org.au/node/apni/2906084	Agrostis stolonifera	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Creeping Bent	1
https://id.biodiversity.org.au/node/apni/2906431	Dittrichia viscosa	(L.) Greuter	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	False Yellowhead	1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2906546	Avena barbata	Pott ex Link	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Bearded Oats	1
https://id.biodiversity.org.au/node/apni/2906788	Salvinia x molesta	D.S.Mitch.	species	Plantae	Charophyta	Equisetopsida	Salviniales	Salviniaceae	Salvinia	1
https://id.biodiversity.org.au/node/apni/2906921	Acaena novae-zelandiae	Kirk	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Bidgee-widgee	1
https://id.biodiversity.org.au/node/apni/2907019	Corrigiola litoralis	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	Strapwort	1
https://id.biodiversity.org.au/node/apni/2907278	Thysanotus glaucifolius	Brittan	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		1
https://id.biodiversity.org.au/node/apni/2907445	Melaleuca pentagona	Labill.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/node/apni/2907626	Andersonia auriculata	L.Watson	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		1
https://id.biodiversity.org.au/node/apni/2907757	Coreopsis lanceolata	L.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Common Tickseed	1
https://id.biodiversity.org.au/node/apni/2907808	Pithocarpa pulchella	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Dark-stigma Pithocarpa	1
https://id.biodiversity.org.au/node/apni/2908024	Hemigenia barbata	Bartl.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Lamiaceae		1
https://id.biodiversity.org.au/node/apni/2908227	Haemodorum simplex	Lindl.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae		1
https://id.biodiversity.org.au/node/apni/2908256	Lepidosperma striatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2908591	Sphaerolobium vimineum	Sm.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Leafless Globe-pea	1
https://id.biodiversity.org.au/node/apni/2908767	Astroloma drummondii	Sond.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		1
https://id.biodiversity.org.au/node/apni/2909095	Sphaerolobium benetectum	R.Butcher	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2909238	Rumex frutescens	Thouars	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Argentine Dock	1
https://id.biodiversity.org.au/node/apni/2909307	Acacia truncata	(Burm.f.) Hoffmanns.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2909463	Spyridium riparium	Rye	species	Plantae	Charophyta	Equisetopsida	Rosales	Rhamnaceae		1
https://id.biodiversity.org.au/node/apni/2909491	Robinia pseudoacacia	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Black Locust	1
https://id.biodiversity.org.au/node/apni/2909517	Ixia maculata	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Yellow Ixia	1
https://id.biodiversity.org.au/node/apni/2909588	Oxalis corniculata	L.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Creeping Wood-sorrel	1
https://id.biodiversity.org.au/node/apni/2909615	Gladiolus carneus	D.Delaroche	species	Plantae	Charophyta	Equisetopsida	Asparagales	Iridaceae	Broad-leaf Painted Lady	1
https://id.biodiversity.org.au/node/apni/2909696	Azolla pinnata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Salviniales	Salviniaceae	Ferny Azolla	1
https://id.biodiversity.org.au/node/apni/2910014	Baxteria australis	R.Br. ex Hook.	species	Plantae	Charophyta	Equisetopsida	Dasypogonales	Dasypogonaceae		1
https://id.biodiversity.org.au/node/apni/2910254	Epilobium hirtigerum	A.Cunn.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Onagraceae	Hairy Willow-herb	1
https://id.biodiversity.org.au/node/apni/2910424	Bossiaea aquifolium	Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Water Bush	1
https://id.biodiversity.org.au/node/apni/2910497	Phalaris aquatica	L.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Phalaris	1
https://id.biodiversity.org.au/node/apni/2910657	Mirbelia ovata	Meisn.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2910698	Poranthera drummondii	Klotzsch	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Phyllanthaceae		1
https://id.biodiversity.org.au/node/apni/2910869	Pericalymma spongiocaule	Cranfield	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/node/apni/2910980	Lomandra micrantha	(Endl.) Ewart	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae	Small-flower Mat-rush	1
https://id.biodiversity.org.au/node/apni/2911110	Pelargonium australe	Willd.	species	Plantae	Charophyta	Equisetopsida	Geraniales	Geraniaceae	Austral Stork's-bill	1
https://id.biodiversity.org.au/node/apni/2911305	Platytheca juniperina	Domin	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Elaeocarpaceae		1
https://id.biodiversity.org.au/node/apni/2911396	Lomandra brittanii	T.S.Choo	species	Plantae	Charophyta	Equisetopsida	Asparagales	Asparagaceae		1
https://id.biodiversity.org.au/node/apni/2911439	Rumex pulcher	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Fiddle Dock	1
https://id.biodiversity.org.au/node/apni/2911471	Sanguisorba minor	Scop.	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Sheep's Burnet	1
https://id.biodiversity.org.au/node/apni/2911613	Gahnia trifida	Labill.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Cutting Grass	1
https://id.biodiversity.org.au/node/apni/2911621	Boronia nematophylla	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		1
https://id.biodiversity.org.au/node/apni/2911683	Lobularia maritima	(L.) Desv.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Sweet Alyssum	1
https://id.biodiversity.org.au/node/apni/2912209	Carpobrotus aequilaterus	(Haw.) N.E.Br.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Aizoaceae	Angled Pigface	1
https://id.biodiversity.org.au/node/apni/2912261	Acrotriche cordata	(Labill.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Blunt-leaf Ground-berry	1
https://id.biodiversity.org.au/node/apni/2912409	Isoetes drummondii	A.Braun	species	Plantae	Charophyta	Equisetopsida	Isoetales	Isoetaceae	Plain Quillwort	1
https://id.biodiversity.org.au/node/apni/2912523	Lepyrodia muirii	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		1
https://id.biodiversity.org.au/node/apni/2912565	Acacia luteola	Maslin	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2912595	Hypolaena fastigiata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Tassel Rope Rush	1
https://id.biodiversity.org.au/node/apni/2912707	Ulex europaeus	L.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Gorse	1
https://id.biodiversity.org.au/node/apni/2912739	Quinetia urvillei	Cass.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Quinetia	1
https://id.biodiversity.org.au/node/apni/2912980	Acacia applanata	Maslin	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Grass Wattle	1
https://id.biodiversity.org.au/node/apni/2913819	Pericalymma crassipes	Lehm. ex Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/node/apni/2914146	Haemodorum sparsiflorum	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Commelinales	Haemodoraceae	Mardja	1
https://id.biodiversity.org.au/node/apni/2914196	Tetraria capillaris	(F.Muell.) J.M.Black	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Hair Sedge	1
https://id.biodiversity.org.au/node/apni/2914214	Hibbertia serrata	Hotchk.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae	Serrate-leaved Guinea Flower	1
https://id.biodiversity.org.au/node/apni/2914355	Lepyrodia macra	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae	Large Scale Rush	1
https://id.biodiversity.org.au/node/apni/2914583	Spinifex hirsutus	Labill.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Rolling Spinifex	1
https://id.biodiversity.org.au/node/apni/2914881	Modiola caroliniana	(L.) G.Don	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Red-flowered Mallow	1
https://id.biodiversity.org.au/node/apni/2915024	Amphibromus nervosus	(Hook.f.) Baill.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Swamp Wallaby Grass	1
https://id.biodiversity.org.au/node/apni/2915094	Boronia heterophylla	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Kalgan Boronia	1
https://id.biodiversity.org.au/node/apni/2915193	Cerastium balearicum	F.Herm.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Caryophyllaceae	Chickweed	1
https://id.biodiversity.org.au/node/apni/2915203	Acacia baileyana	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Cootamundra Wattle	1
https://id.biodiversity.org.au/node/apni/2915260	Lepyrodia hermaphrodita	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		1
https://id.biodiversity.org.au/node/apni/2915383	Centrolepis pilosa	Hieron.	species	Plantae	Charophyta	Equisetopsida	Poales	Centrolepidaceae		1
https://id.biodiversity.org.au/node/apni/2915489	Hibbertia pulchra	Ostenf.	species	Plantae	Charophyta	Equisetopsida		Dilleniaceae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/apni/2915499	Angianthus drummondii	(Turcz.) Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae		1
https://id.biodiversity.org.au/node/apni/2915775	Schoenus sublaxus	KÃ¼k.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2915810	Leucopogon pulchellus	Sond.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae	Beard Heath	1
https://id.biodiversity.org.au/node/apni/2915837	Philydrella pygmaea	(R.Br.) Caruel	species	Plantae	Charophyta	Equisetopsida	Commelinales	Philydraceae	Lesser Butterfly Flowers	1
https://id.biodiversity.org.au/node/apni/2915911	Thomasia triloba	Turcz.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		1
https://id.biodiversity.org.au/node/apni/2916361	Thomasia solanacea	(Sims) J.Gay	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae		1
https://id.biodiversity.org.au/node/apni/2916567	Gastrolobium cuneatum	Henfr.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	River Poison	1
https://id.biodiversity.org.au/node/apni/2916653	Cephalotus follicularis	Labill.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Cephalotaceae	Albany Pitcher Plant	1
https://id.biodiversity.org.au/node/apni/2916692	Drosera stolonifera	Endl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Leafy Sundew	1
https://id.biodiversity.org.au/node/apni/2916956	Microlaena stipoides	(Labill.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Weeping Grass	1
https://id.biodiversity.org.au/node/apni/2916964	Lepidium bonariense	L.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Peppercress	1
https://id.biodiversity.org.au/node/apni/2916970	Lambertia uniflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/2917239	Schizaea fistulosa	Labill.	species	Plantae	Charophyta	Equisetopsida	Schizaeales	Schizaeaceae	Narrow Comb-fern	1
https://id.biodiversity.org.au/node/apni/2917382	Bossiaea webbii	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Water Bush	1
https://id.biodiversity.org.au/node/apni/2917475	Marianthus coeruleopunctatus	Klotzsch	species	Plantae	Charophyta	Equisetopsida	Apiales	Pittosporaceae		1
https://id.biodiversity.org.au/node/apni/2917770	Scaevola glandulifera	DC.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Viscid Hand-flower	1
https://id.biodiversity.org.au/node/apni/2917887	Leucojum aestivum	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Amaryllidaceae	Snowflake	1
https://id.biodiversity.org.au/node/apni/2918204	Hypocalymma robustum	(Endl.) Lindl.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Swan River Myrtle	1
https://id.biodiversity.org.au/node/apni/2918337	Schoenus acuminatus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2918415	Schoenus subbulbosus	Benth.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2918518	Melaleuca spathulata	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/node/apni/2918603	Callitriche stagnalis	Scop.	species	Plantae	Charophyta	Equisetopsida	Lamiales	Plantaginaceae	Common Water-starwort	1
https://id.biodiversity.org.au/node/apni/2918625	Johnsonia acaulis	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae		1
https://id.biodiversity.org.au/node/apni/2918656	Malva pseudolavatera	Webb & Berthel.	species	Plantae	Charophyta	Equisetopsida	Malvales	Malvaceae	Cretan Hollyhock	1
https://id.biodiversity.org.au/node/apni/2918921	Schoenus brevisetis	(R.Br.) Poir.	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/node/apni/2919200	Acacia iteaphylla	F.Muell. ex Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Flinders Range Wattle	1
https://id.biodiversity.org.au/node/apni/2919688	Lilium formosanum	A.Wallace	species	Plantae	Charophyta	Equisetopsida	Liliales	Liliaceae	Formosan Lily	1
https://id.biodiversity.org.au/node/apni/2919940	Dampiera alata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asterales	Goodeniaceae	Winged-stemmed Dampiera	1
https://id.biodiversity.org.au/node/apni/2920206	Synaphea polymorpha	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Albany Synaphea	1
https://id.biodiversity.org.au/node/apni/2920461	Oxalis exilis	A.Cunn.	species	Plantae	Charophyta	Equisetopsida	Oxalidales	Oxalidaceae	Short-fruit Oxalis	1
https://id.biodiversity.org.au/node/apni/2920466	Chenopodium murale	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Sowbane	1
https://id.biodiversity.org.au/node/apni/2920956	Passiflora filamentosa	Cav.	species	Plantae	Charophyta	Equisetopsida	Malpighiales	Passifloraceae	Palmate Passionflower	1
https://id.biodiversity.org.au/node/apni/2921020	Acacia podalyriifolia	A.Cunn. ex G.Don	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Mount Morgan Wattle	1
https://id.biodiversity.org.au/node/apni/2921152	Latrobea diosmifolia	(Benth.) Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/node/apni/2921185	Rubus x loganobaccus	L.H.Bailey	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Loganberry	1
https://id.biodiversity.org.au/node/apni/2921246	Ehrharta calycina	Sm.	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Perennial Veldt-grass	1
https://id.biodiversity.org.au/node/apni/5040372	Banksia dallanneyi	A.R.Mast & K.R.Thiele	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/node/apni/7859298	Philotheca nodiflora	(Lindl.) Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae		1
https://id.biodiversity.org.au/node/apni/7867056	Azolla rubra	R.Br.	species	Plantae	Charophyta	Equisetopsida	Salviniales	Salviniaceae	Pacific Azolla	1
https://id.biodiversity.org.au/node/apni/7989386	Stylidium pulchellum	Sond.	species	Plantae	Charophyta	Equisetopsida	Asterales	Stylidiaceae	Thumbelina Triggerplant	1
https://id.biodiversity.org.au/node/apni/8449332	Maireana oppositifolia	(F.Muell.) Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Chenopodiaceae	Salt Bluebush	1
https://id.biodiversity.org.au/node/ausmoss/10075384	Entosthodon productus	Mitt.	species	Plantae	Bryophyta	Bryopsida	Funariales	Funariaceae	Cord Moss	1
https://id.biodiversity.org.au/node/ausmoss/10085108	Funaria hygrometrica	Hedw.	species	Plantae	Bryophyta	Bryopsida	Funariales	Funariaceae	Common Cord-moss	1
https://id.biodiversity.org.au/node/ausmoss/10086811	Gymnostomum calcareum	Nees & Hornsch.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Lime Cave-moss	1
https://id.biodiversity.org.au/node/ausmoss/10089505	Hypnum cupressiforme	Hedw.	species	Plantae	Bryophyta	Bryopsida	Hypnales	Hypnaceae	Common Plait-moss	1
https://id.biodiversity.org.au/node/ausmoss/10089977	Ischyrodon lepturus	(Taylor) Schelpe	species	Plantae	Bryophyta	Bryopsida	Hypnales	Fabroniaceae	Golden Silk-moss	1
https://id.biodiversity.org.au/node/ausmoss/10093403	Leucobryum candidum	(P.Beauv.) Wilson	species	Plantae	Bryophyta	Bryopsida	Dicranales	Leucobryaceae	Milk Moss	1
https://id.biodiversity.org.au/node/ausmoss/10097758	Mittenia plumula	(Mitt.) Lindb.	species	Plantae	Bryophyta	Bryopsida	Pottiales	Mitteniaceae	Glow-worm Moss	1
https://id.biodiversity.org.au/node/ausmoss/10102605	Philonotis australiensis	D.G.Griffin & W.R.Buck	species	Plantae	Bryophyta	Bryopsida	Bartramiales	Bartramiaceae	Pale Apple-moss	1
https://id.biodiversity.org.au/node/ausmoss/10104241	Pleuridium nervosum	(Hook.) Mitt.	species	Plantae	Bryophyta	Bryopsida	Dicranales	Ditrichaceae	Earth Moss	1
https://id.biodiversity.org.au/node/ausmoss/10105825	Pseudocrossidium hornschuchianum	(Schultz) R.H.Zander	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Beard Moss	1
https://id.biodiversity.org.au/node/ausmoss/10110301	Rosulabryum albolimbatum	(Hampe) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Thread Moss	1
https://id.biodiversity.org.au/node/ausmoss/10110349	Rosulabryum billarderii	(SchwÃ¤gr.) J.R.Spence	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Common Thread-moss	1
https://id.biodiversity.org.au/node/ausmoss/10114784	Syntrichia antarctica	(Hampe) R.H.Zander	species	Plantae	Bryophyta	Bryopsida	Pottiales	Pottiaceae	Bristly Screw-moss	1
https://id.biodiversity.org.au/node/ausmoss/10126359	Zygodon intermedius	Bruch & Schimp.	species	Plantae	Bryophyta	Bryopsida	Orthotrichales	Orthotrichaceae	Common Zygodon	1
https://id.biodiversity.org.au/node/ausmoss/10126455	Zygodon menziesii	(SchwÃ¤gr.) Arn.	species	Plantae	Bryophyta	Bryopsida	Orthotrichales	Orthotrichaceae	Zygodon	1
https://id.biodiversity.org.au/node/ausmoss/10126512	Zygodon minutus	MÃ¼ll.Hal. & Hampe	species	Plantae	Bryophyta	Bryopsida	Orthotrichales	Orthotrichaceae	Zygodon	1
https://id.biodiversity.org.au/node/ausmoss/10128650	Gemmabryum chrysoneuron	(MÃ¼ll.Hal.) J.R.Spence & H.P.Ramsay	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Bloody Bryum	1
https://id.biodiversity.org.au/node/ausmoss/10128935	Gemmabryum dichotomum	(Hedw.) J.R.Spence & H.P.Ramsay	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Broody Bryum	1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/ausmoss/10129376	Gemmabryum pachytheca	(MÃ¼ll.Hal.) J.R.Spence & H.P.Ramsay	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Acorn-fruited Thread-moss	1
https://id.biodiversity.org.au/node/ausmoss/2888919	Kurzia hippurioides	(Hook.f. & Taylor) Grolle	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Lepidoziaceae	Fingerwort	1
https://id.biodiversity.org.au/node/ausmoss/2898726	Asterella drummondii	(Taylor) R.M.Schust. ex D.G.Long	species	Plantae	Marchantiophyta	Marchantiopsida	Marchantiales	Aytoniaceae	Licorice Strap	1
https://id.biodiversity.org.au/node/ausmoss/2911980	Frullania pentapleura	Taylor	species	Plantae	Marchantiophyta	Jungermanniopsida	Porellales	Frullaniaceae	Khaki Scalewort	1
https://id.biodiversity.org.au/node/ausmoss/2914027	Cephaloziella exiliflora	(Taylor) Douin	species	Plantae	Marchantiophyta	Jungermanniopsida	Jungermanniales	Cephaloziellaceae	Crimson Coalwort	1
https://id.biodiversity.org.au/node/ausmoss/2919920	Riccia bifurca	Hoffm.	species	Plantae	Marchantiophyta	Marchantiopsida	Marchantiales	Ricciaceae	Lizard Crystalwort	1
https://id.biodiversity.org.au/node/fungi/60091147	Xylaria polymorpha	(Pers.) Grev.	species	Fungi	Ascomycota	Sordariomycetes	Xylariales	Xylariaceae		1
https://id.biodiversity.org.au/node/fungi/60091619	Chlorophyllum brunneum	(Farl. & Burt) Vellinga	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		1
https://id.biodiversity.org.au/node/fungi/60091941	Lycoperdon pratense	Pers.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		1
https://id.biodiversity.org.au/node/fungi/60092165	Amanita ananiceps	(Berk.) Sacc.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092185	Amanita austroviridis	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae	Green-gilled Amanita	1
https://id.biodiversity.org.au/node/fungi/60092199	Amanita brunneistriatula	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092235	Amanita eucalypti	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092241	Amanita fibrillopes	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092245	Amanita flaviphylla	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092273	Amanita griselloides	D.A.Reid	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092285	Amanita hiltonii	D.A.Reid	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092451	Amanita walpolei	O.K.Mill.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/node/fungi/60092503	Bolbitius titubans	(Bull.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Bolbitiaceae		1
https://id.biodiversity.org.au/node/fungi/60092617	Clavaria miniata	Berk.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae		1
https://id.biodiversity.org.au/node/fungi/60092687	Ramariopsis helvola	(Pers.) R.H.Petersen	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Clavariaceae		1
https://id.biodiversity.org.au/node/fungi/60092719	Cortinarius alboviolaceus	(Pers.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60092837	Cortinarius erythrocephalus	Dennis	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60092997	Cortinarius subarcheri	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60093009	Cortinarius symeae	(Bougher, Fuhrer & E.Horak) Peintner, E.Horak, M.M.Moser & Vilgalys	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae	Symes Rozites	1
https://id.biodiversity.org.au/node/fungi/60093041	Cortinarius walpolensis	A.A.Francis & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60093085	Descolea recedens	(Cooke & Massee) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60093097	Phaeocollybia ratticauda	E.Horak	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60093109	Protoglossum luteum	Massee	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Cortinariaceae		1
https://id.biodiversity.org.au/node/fungi/60093341	Entoloma sericellum	(Fr.) P.Kumm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Entolomataceae		1
https://id.biodiversity.org.au/node/fungi/60093427	Fistulina spiculifera	(Cooke) D.A.Reid	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Fistulinaceae		1
https://id.biodiversity.org.au/node/fungi/60093475	Laccaria proxima	(Boud.) Pat.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hydnangiaceae		1
https://id.biodiversity.org.au/node/fungi/60093511	Humidicutis viridimagentea	K.Syme & A.M.Young	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		1
https://id.biodiversity.org.au/node/fungi/60093537	Hygrocybe austropratensis	A.M.Young	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		1
https://id.biodiversity.org.au/node/fungi/60093573	Hygrocybe conica	(Schaeff.) P.Kumm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		1
https://id.biodiversity.org.au/node/fungi/60093747	Lichenomphalia umbellifera	(L.) Redhead, Lutzoni, Moncalvo & Vilgalys	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae		1
https://id.biodiversity.org.au/node/fungi/60093821	Auritella arenicolens	(Cleland) Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/node/fungi/60093897	Crepidotus variabilis	(Pers.) P.Kumm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae	Fungi	1
https://id.biodiversity.org.au/node/fungi/60093923	Inocybe dewrangia	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/node/fungi/60093989	Inocybe striatula	(Cleland) Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/node/fungi/60094231	Marasmiellus candidus	(Bolt.) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		1
https://id.biodiversity.org.au/node/fungi/60094261	Marasmius alveolaris	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Marasmiaceae		1
https://id.biodiversity.org.au/node/fungi/60094475	Mycena carmeliana	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		1
https://id.biodiversity.org.au/node/fungi/60094561	Mycena mijoi	Grgur.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		1
https://id.biodiversity.org.au/node/fungi/60094601	Mycena pura	(Pers.) P.Kumm.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		1
https://id.biodiversity.org.au/node/fungi/60094633	Mycena subgalericulata	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Mycenaceae		1
https://id.biodiversity.org.au/node/fungi/60094899	Pleurotus australis	(Cooke & Massee) Sacc.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Pleurotaceae		1
https://id.biodiversity.org.au/node/fungi/60094993	Pluteus pauperculus	E.Horak	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Pluteaceae		1
https://id.biodiversity.org.au/node/fungi/60095127	Lacrymaria asperospora	(Cleland) Watling	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		1
https://id.biodiversity.org.au/node/fungi/60095159	Psathyrella candolleana	(Fr.) Maire	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Psathyrellaceae		1
https://id.biodiversity.org.au/node/fungi/60095231	Schizophyllum commune	Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Schizophyllaceae	Splitgill Mushroom	1
https://id.biodiversity.org.au/node/fungi/60095305	Galerina autumnalis	(Peck) A.H.Sm. & Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		1
https://id.biodiversity.org.au/node/fungi/60095335	Galerina marginata	(Batsch) KÃ¼hner	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae	Funeral Bell	1
https://id.biodiversity.org.au/node/fungi/60095389	Gymnopilus allantopus	(Berk.) Pegler	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		1
https://id.biodiversity.org.au/node/fungi/60095407	Gymnopilus dilepis	(Berk. & Broome) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		1
https://id.biodiversity.org.au/node/fungi/60095545	Hypholoma brunneum	(Massee) D.A.Reid	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Strophariaceae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/fungi/60096029	Lepista sordida	(Fr.) Singer	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Tricholomataceae		1
https://id.biodiversity.org.au/node/fungi/60096075	Melanoleuca melaleuca	(Pers.) Murrill	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Tricholomataceae		1
https://id.biodiversity.org.au/node/fungi/60096225	Macrotyphula juncea	(Alb. & Schwein.) Berthier	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Typhulaceae	Slender Club	1
https://id.biodiversity.org.au/node/fungi/60096309	Austroboletus lacunosus	(Kuntze) T.W.May & A.E.Wood	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		1
https://id.biodiversity.org.au/node/fungi/60096333	Boletellus dissiliens	(Corner) Pegler & T.W.K.Young	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		1
https://id.biodiversity.org.au/node/fungi/60096497	Fistulinella prunicolor	(Cooke & Massee) Watling	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		1
https://id.biodiversity.org.au/node/fungi/60096651	Suillus granulatus	(L.) Roussel	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		1
https://id.biodiversity.org.au/node/fungi/60096655	Suillus luteus	(L.) Roussel	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Boletaceae		1
https://id.biodiversity.org.au/node/fungi/60096779	Astraeus hygrometricus	(Pers.) Morgan	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Diplocystidiaceae		1
https://id.biodiversity.org.au/node/fungi/60096815	Hygrophoropsis aurantiaca	(Wulfen) Maire	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Hygrophoropsidaceae		1
https://id.biodiversity.org.au/node/fungi/60096859	Paxillus involutus	(Batsch) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Paxillaceae		1
https://id.biodiversity.org.au/node/fungi/60096907	Pisolithus microcarpus	(Cooke & Massee) G.Cunn.	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Sclerodermataceae		1
https://id.biodiversity.org.au/node/fungi/60097745	Phellinus conchatus	(Pers.) QuÃ©l.	species	Fungi	Basidiomycota	Agaricomycetes	Hymenochaetales	Hymenochaetaceae		1
https://id.biodiversity.org.au/node/fungi/60097789	Phellinus setulosus	(Lloyd) Imazeki	species	Fungi	Basidiomycota	Agaricomycetes	Hymenochaetales	Hymenochaetaceae		1
https://id.biodiversity.org.au/node/fungi/60098405	Phlebia subceracea	(Wakef.) Nakasone	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Meruliaceae	Golden Splash Tooth	1
https://id.biodiversity.org.au/node/fungi/60098753	Laccocephalum tumulosum	(Cooke) NÃºÃ±ez & Ryvarden	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Polyporaceae		1
https://id.biodiversity.org.au/node/fungi/60098865	Neolentinus dactyloides	(Cleland) Redhead & Ginns	species	Fungi	Basidiomycota	Agaricomycetes	Polyporales	Polyporaceae		1
https://id.biodiversity.org.au/node/fungi/60099323	Artomyces piperatus	(Kauffman) JÃ¼lich	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Auriscalpiaceae		1
https://id.biodiversity.org.au/node/fungi/60099325	Artomyces pyxidatus	(Pers.) JÃ¼lich	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Auriscalpiaceae		1
https://id.biodiversity.org.au/node/fungi/60099351	Lentinellus pulvinulus	(Berk.) Pegler	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Auriscalpiaceae		1
https://id.biodiversity.org.au/node/fungi/60099417	Asterostroma persimile	Wakef.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Lachnocladiaceae		1
https://id.biodiversity.org.au/node/fungi/60099559	Cystangium theodoroui	T.Lebel	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099587	Gymnomyces pallidus	Massee & Rodway	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099665	Russula albonigra	(Krombh.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099723	Russula luteirosea	(Bougher) T.Lebel	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099743	Russula pumicoidea	T.Lebel	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099777	Russula viridis	Cleland	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Russulaceae		1
https://id.biodiversity.org.au/node/fungi/60099937	Stereum versicolor	(Sw.) Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Russulales	Stereaceae		1
https://id.biodiversity.org.au/node/fungi/60100067	Thelephora terrestris	Ehrh.	species	Fungi	Basidiomycota	Agaricomycetes	Thelephorales	Thelephoraceae		1
https://id.biodiversity.org.au/node/fungi/60100169	Geastrum javanicum	LÃ©v.	species	Fungi	Basidiomycota	Agaricomycetes	Geastrales	Geastraceae		1
https://id.biodiversity.org.au/node/fungi/60100187	Geastrum saccatum	Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Geastrales	Geastraceae		1
https://id.biodiversity.org.au/node/fungi/60100345	Ramaria versatilis	QuÃ©l.	species	Fungi	Basidiomycota	Agaricomycetes	Gomphales	Gomphaceae		1
https://id.biodiversity.org.au/node/fungi/60100377	Austrogautieria manjimupana	Trappe & E.L.Stewart	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Gallaceaceae		1
https://id.biodiversity.org.au/node/fungi/60100425	Hysterangium inflatum	Rodway	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Hysterangiaceae		1
https://id.biodiversity.org.au/node/fungi/60100439	Hysterangium rhodocarpum	Trappe, Claridge & Castellano	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Hysterangiaceae		1
https://id.biodiversity.org.au/node/fungi/60100459	Castoreum radicatum	Cooke & Massee	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Mesophelliaceae		1
https://id.biodiversity.org.au/node/fungi/60100551	Nothocastoreum cretaceum	(Lloyd) G.W.Beaton	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Mesophelliaceae		1
https://id.biodiversity.org.au/node/fungi/60100559	Protubera canescens	G.W.Beaton & Malajczuk	species	Fungi	Basidiomycota	Agaricomycetes	Hysterangiales	Phallogastraceae		1
https://id.biodiversity.org.au/node/fungi/60100605	Colus pusillus	(Berk.) Reichert	species	Fungi	Basidiomycota	Agaricomycetes	Phallales	Phallaceae		1
https://id.biodiversity.org.au/node/fungi/60100655	Phallus hadriani	Vent.	species	Fungi	Basidiomycota	Agaricomycetes	Phallales	Phallaceae		1
https://id.biodiversity.org.au/node/fungi/60100753	Heterotextus peziziformis	(Berk.) Lloyd	species	Fungi	Basidiomycota	Dacrymycetes	Dacrymycetales	Dacrymycetaceae		1
https://id.biodiversity.org.au/node/fungi/60101069	Aecidium eburneum	McAlpine	species	Fungi	Basidiomycota	Pucciniomycetes	Pucciniales			1
https://id.biodiversity.org.au/node/fungi/60101241	Uromycladium tepperianum	(Sacc.) McAlpine	species	Fungi	Basidiomycota	Pucciniomycetes	Pucciniales	Pileolariaceae		1
https://id.biodiversity.org.au/node/fungi/60101939	Tilletia viennotii	Syd.	species	Fungi	Basidiomycota	Exobasidiomycetes	Tilletiales	Tilletiaceae		1
https://id.biodiversity.org.au/node/fungi/60103665	Diderma spumarioides	(Fr.) Fr.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Didymiaceae		1
https://id.biodiversity.org.au/node/fungi/60103757	Leocarpus fragilis	(Dicks.) Rostaf.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Physaraceae		1
https://id.biodiversity.org.au/node/fungi/60103767	Physarum album	(Bull.) Chevall.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Physaraceae		1
https://id.biodiversity.org.au/node/fungi/60103777	Physarum cinereum	(Batsch) Pers.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Physaraceae		1
https://id.biodiversity.org.au/node/fungi/60103831	Physarum viride	(Bull.) Pers.	species	Protista	Amoebozoa	Myxogastrea	Physarida	Physaraceae		1
https://id.biodiversity.org.au/node/fungi/60103949	Stemonitis splendens	Rostaf.	species	Protista	Amoebozoa	Myxogastrea	Stemonitida	Stemonitidaceae		1
https://id.biodiversity.org.au/node/fungi/60103981	Arcyria cinerea	(Bull.) Pers.	species	Protista	Amoebozoa	Myxogastrea	Trichiida	Arcyriaceae		1
https://id.biodiversity.org.au/node/fungi/60109310	Elaphomyces chlorocarpus	Castellano, Trappe & T.Lebel	species	Fungi	Ascomycota	Eurotiomycetes	Eurotiales	Elaphomycetaceae		1
https://id.biodiversity.org.au/node/fungi/60110842	Geoglossum glutinosum	Pers.	species	Fungi	Ascomycota	Geoglossomycetes	Geoglossales	Geoglossaceae		1
https://id.biodiversity.org.au/node/fungi/60110856	Trichoglossum hirsutum	(Pers.) Boud.	species	Fungi	Ascomycota	Geoglossomycetes	Geoglossales	Geoglossaceae		1
https://id.biodiversity.org.au/node/fungi/60111526	Lanzia lanaripes	(Dennis) Spooner	species	Fungi	Ascomycota	Leotiomycetes	Helotiales	Rutstroemiaceae		1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/node/fungi/60112095	Anthracobia muelleri	(Berk.) Rifai	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pyronemataceae		1
https://id.biodiversity.org.au/node/fungi/60112117	Cheilymenia raripila	(W.Phillips) Dennis	species	Fungi	Ascomycota	Pezizomycetes	Pezizales	Pyronemataceae		1
https://id.biodiversity.org.au/node/fungi/60112728	Fusarium avenaceum	(Fr.) Sacc.	species	Fungi	Ascomycota	Sordariomycetes	Hypocreales	Nectriaceae		1
https://id.biodiversity.org.au/node/fungi/60114758	Agaricus augustus	Fr.	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Agaricaceae		1
https://id.biodiversity.org.au/node/lichen/30085423	Caloplaca dahlii	Elix, S.Y.Kondr. & KÃ¤rnefelt	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
https://id.biodiversity.org.au/node/lichen/30085426	Caloplaca elixii	S.Y.Kondr. & KÃ¤rnefelt	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
https://id.biodiversity.org.au/node/lichen/30085566	Carbonicola foveata	(Timdal) Bendiksby & Timdal	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Carbonicolaceae		1
https://id.biodiversity.org.au/node/lichen/30085713	Cladonia calyciformis	Nuno	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
https://id.biodiversity.org.au/node/lichen/30085934	Cyphelium trachylioides	(Nyl.) Erichsen ex Keissl.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Caliciaceae		1
https://id.biodiversity.org.au/node/lichen/30086135	Flavoparmelia marchantii	Elix, O.Blanco & A.Crespo	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30086471	Jackelixia angustata	(S.Y.Kondr. & KÃ¤rnefelt) S.Y.Kondr., Fedorenko, S.Stenroos, KÃ¤rnefelt & A.Thell	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
https://id.biodiversity.org.au/node/lichen/30086476	Jackelixia ligulata	(KÃ¶rb.) S.Y.Kondr., Fedorenko, S.Stenroos, KÃ¤rnefelt & A.Thell	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
https://id.biodiversity.org.au/node/lichen/30086684	Lecidella flavovirens	Kantvilas & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Lecanoraceae		1
https://id.biodiversity.org.au/node/lichen/30086885	Megalaria subtasmanica	Kantvilas	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Megalariaceae		1
https://id.biodiversity.org.au/node/lichen/30086970	Menegazzia platytrema	(MÃ¼ll.Arg.) R.Sant.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30087342	Parmotrema cooperi	(J.Steiner & Zahlbr.) SÃ©rus.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30087373	Parmotrema praesorediosum	(Nyl.) Hale	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30087556	Pertusaria pertractata	Stirt.	species	Fungi	Ascomycota	Lecanoromycetes	Pertusariales	Pertusariaceae		1
https://id.biodiversity.org.au/node/lichen/30088181	Ramboldia arandensis	(Elix) Kalb, Lumbsch & Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Lecanoraceae		1
https://id.biodiversity.org.au/node/lichen/30088194	Ramboldia sorediata	Kalb	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Lecanoraceae		1
https://id.biodiversity.org.au/node/lichen/30088408	Spilonema paradoxum	Bornet	species	Fungi	Ascomycota	Lecanoromycetes	Peltigerales	Coccocarpiaceae		1
https://id.biodiversity.org.au/node/lichen/30088660	Thysanothecium sorediatum	Elix	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Cladoniaceae		1
https://id.biodiversity.org.au/node/lichen/30088930	Xanthoparmelia congensis	(J.Steiner) Hale	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30088953	Xanthoparmelia dissitifolia	Kurok.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30089082	Xanthoparmelia parvoincerta	Elix & J.Johnst.	species	Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae		1
https://id.biodiversity.org.au/node/lichen/30089192	Xanthoria parietina	(L.) Beltr.	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1
https://id.biodiversity.org.au/taxon/apni/51266598	Narcissus tazetta	L.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Amaryllidaceae	Polyanthus Narcissus	1
https://id.biodiversity.org.au/taxon/apni/51267741	Brachyscome ciliaris	(Labill.) Less.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Variable Daisy	1
https://id.biodiversity.org.au/taxon/apni/51269054	Ursinia anthemoides	(L.) Poir.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Ursinia	1
https://id.biodiversity.org.au/taxon/apni/51269785	Diplotaxis muralis	(L.) DC.	species	Plantae	Charophyta	Equisetopsida	Brassicales	Brassicaceae	Wall Rocket	1
https://id.biodiversity.org.au/taxon/apni/51283626	Drosera neesii	Lehm.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Jewel Rainbow	1
https://id.biodiversity.org.au/taxon/apni/51288662	Liparophyllum latifolium	(Benth.) Tippery & Les	species	Plantae	Charophyta	Equisetopsida	Asterales	Menyanthaceae		1
https://id.biodiversity.org.au/taxon/apni/51289181	Calothamnus preissii	Schauer	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/taxon/apni/51289571	Calothamnus lateralis	Lindl.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae		1
https://id.biodiversity.org.au/taxon/apni/51290390	Eucalyptus decipiens	Endl.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Redheart	1
https://id.biodiversity.org.au/taxon/apni/51291699	Rumex acetosella	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Sorrel	1
https://id.biodiversity.org.au/taxon/apni/51293740	Leptocarpus coangustatus	Nees	species	Plantae	Charophyta	Equisetopsida	Poales	Restionaceae		1
https://id.biodiversity.org.au/taxon/apni/51300013	Cyathea cooperi	(Hook. ex F.Muell.) Domin	species	Plantae	Charophyta	Equisetopsida	Cyatheales	Cyatheaceae	Straw Tree-fern	1
https://id.biodiversity.org.au/taxon/apni/51398940	Caladenia denticulata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Wispy Spider Orchid	1
https://id.biodiversity.org.au/taxon/apni/51399090	Caladenia huegelii	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Grand Spider Orchid	1
https://id.biodiversity.org.au/taxon/apni/51399170	Caladenia longiclavata	E.Coleman	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Clubbed Spider Orchid	1
https://id.biodiversity.org.au/taxon/apni/51399190	Caladenia marginata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	White Fairy Orchid	1
https://id.biodiversity.org.au/taxon/apni/51399251	Caladenia pectinata	R.S.Rogers	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	King Spider Orchid	1
https://id.biodiversity.org.au/taxon/apni/51399347	Caladenia serotina	Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Christmas Spider Orchid	1
https://id.biodiversity.org.au/taxon/apni/51401348	Cyrtostylis huegelii	Endl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Midge Orchid	1
https://id.biodiversity.org.au/taxon/apni/51401350	Cyrtostylis reniformis	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Small Gnat-orchid	1
https://id.biodiversity.org.au/taxon/apni/51401352	Cyrtostylis robusta	D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Large Gnat-orchid	1
https://id.biodiversity.org.au/taxon/apni/51404239	Diuris heberlei	D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Heberle's Donkey Orchid	1
https://id.biodiversity.org.au/taxon/apni/51404661	Drakaea livida	J.Drumm.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Warty Hammer Orchid	1
https://id.biodiversity.org.au/taxon/apni/51405086	Eriochilus helonomos	Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Swamp Bunny Orchid	1
https://id.biodiversity.org.au/taxon/apni/51405100	Eriochilus tenuis	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Slender Bunny Orchid	1
https://id.biodiversity.org.au/taxon/apni/51406461	Leporella fimbriata	(Lindl.) A.S.George	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Fringed Hare-orchid	1
https://id.biodiversity.org.au/taxon/apni/51406612	Microtis atrata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Yellow Onion-orchid	1
https://id.biodiversity.org.au/taxon/apni/51406614	Microtis brownii	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Sweet Mignonette Orchid	1
https://id.biodiversity.org.au/taxon/apni/51406642	Microtis pulchella	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Beautiful Mignonette Orchid	1

Species	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Vernacular Name	Number of records
https://id.biodiversity.org.au/taxon/apni/51407862	Pheladenia deformis	(R.Br.) D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Bluebeard Orchid	1
https://id.biodiversity.org.au/taxon/apni/51409749	Prasophyllum elatum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Tall Leek-orchid	1
https://id.biodiversity.org.au/taxon/apni/51409759	Prasophyllum fimbria	Rchb.f.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Fringed Leek Orchid	1
https://id.biodiversity.org.au/taxon/apni/51409771	Prasophyllum gibbosum	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Hooded Leek Orchid	1
https://id.biodiversity.org.au/taxon/apni/51409781	Prasophyllum gracillimum	Nicholls	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Slender Leek Orchid	1
https://id.biodiversity.org.au/taxon/apni/51409829	Prasophyllum odoratissimum	D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Scented Leek Orchid	1
https://id.biodiversity.org.au/taxon/apni/51409847	Prasophyllum paulinae	D.L.Jones & M.A.Clem.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pauline's Laughing Leek Orchid	1
https://id.biodiversity.org.au/taxon/apni/51412034	Pterostylis barbata	Lindl.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Bird Orchid	1
https://id.biodiversity.org.au/taxon/apni/51414362	Thelymitra mucida	Fitzg.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Plum Orchid	1
https://id.biodiversity.org.au/taxon/apni/51414376	Thelymitra paludosa	Jeanes	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Plain Sun Orchid	1
https://id.biodiversity.org.au/taxon/apni/51414378	Thelymitra pauciflora	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Slender Sun Orchid	1
https://id.biodiversity.org.au/taxon/apni/51429001	Melaleuca nesophila	F.Muell.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Showy Honey Myrtle	1
https://id.biodiversity.org.au/taxon/apni/51432117	Erigeron sumatrensis	Retz.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Tall Fleabane	1
https://id.biodiversity.org.au/taxon/apni/51432629	Blechnum parrisiae	Christenh.	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Blechnaceae	Common Rasp Fern	1
https://id.biodiversity.org.au/taxon/apni/51434529	Machaerina acuta	(Labill.) J.Kern	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Pale Twig-rush	1
https://id.biodiversity.org.au/taxon/apni/51434593	Machaerina laxa	(Nees) T.Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae	Lax Twig-rush	1
https://id.biodiversity.org.au/taxon/apni/51434627	Machaerina preissii	(Nees) L.A.S.Johnson & T. Koyama	species	Plantae	Charophyta	Equisetopsida	Poales	Cyperaceae		1
https://id.biodiversity.org.au/taxon/apni/51434997	Drosera macrantha	Endl.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Droseraceae	Bridal Rainbow	1
https://id.biodiversity.org.au/taxon/apni/51435324	Leucopogon unilateralis	Stschegl.	species	Plantae	Charophyta	Equisetopsida	Ericales	Ericaceae		1
https://id.biodiversity.org.au/taxon/apni/51436346	Trifolium campestre	Schreb.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Hop Clover	1
https://id.biodiversity.org.au/taxon/apni/51436351	Trifolium dubium	Sibth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Suckling Clover	1
https://id.biodiversity.org.au/taxon/apni/51437674	Dianella revoluta	R.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Hemerocallidaceae	Blueberry Lily	1
https://id.biodiversity.org.au/taxon/apni/51438836	Nephrolepis cordifolia	(L.) C.Presl	species	Plantae	Charophyta	Equisetopsida	Polypodiales	Lomariopsidaceae	Fishbone Fern	1
https://id.biodiversity.org.au/taxon/apni/51439656	Callistemon citrinus	(Curtis) Skeels	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Crimson Bottlebrush	1
https://id.biodiversity.org.au/taxon/apni/51440290	Melaleuca incana	R.Br.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Grey Honeymyrtle	1
https://id.biodiversity.org.au/taxon/apni/51440862	Epilobium billardiereanum	Ser.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Onagraceae	Variable Willow-herb	1
https://id.biodiversity.org.au/taxon/apni/51442535	Avellinia festucoides	(Link) ValdÃ©s & H.Scholz	species	Plantae	Charophyta	Equisetopsida	Poales	Poaceae	Avellinia	1
https://id.biodiversity.org.au/taxon/apni/51444874	Polygonum aviculare	L.	species	Plantae	Charophyta	Equisetopsida	Caryophyllales	Polygonaceae	Prostrate Knotweed	1
https://id.biodiversity.org.au/taxon/apni/51445472	Isopogon formosus	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Rose Coneflower	1
https://id.biodiversity.org.au/taxon/apni/51445645	Hakea lorea	(R.Br.) R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae	Corkbark Tree	1
https://id.biodiversity.org.au/taxon/apni/51446343	Cotoneaster glaucophyllus	Franch.	species	Plantae	Charophyta	Equisetopsida	Rosales	Rosaceae	Large-leaf Cotoneaster	1
https://id.biodiversity.org.au/taxon/apni/51447475	Selaginella kraussiana	(Kunze) A.Braun	species	Plantae	Charophyta	Equisetopsida	Selaginellales	Selaginellaceae	Garden Selaginella	1
https://id.biodiversity.org.au/taxon/apni/51447742	Solanum americanum	Mill.	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Solanum	1
https://id.biodiversity.org.au/taxon/apni/51471299	Acacia leioderma	Maslin	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae		1
https://id.biodiversity.org.au/taxon/apni/51614244	Senecio hispidulus	A.Rich.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Rough Fireweed	1
https://id.biodiversity.org.au/taxon/apni/51614272	Petrophile squamata	R.Br.	species	Plantae	Charophyta	Equisetopsida	Proteales	Proteaceae		1
https://id.biodiversity.org.au/taxon/apni/51702959	Bossiaea ornata	(Lindl.) Benth.	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Broad-leaved Brown Pea	1
https://id.biodiversity.org.au/taxon/apni/51744680	Lagenophora huegelii	Benth.	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Coarse Bottle-daisy	1
https://id.biodiversity.org.au/taxon/ausmoss/10144499	Bryum argenteum	Hedw.	species	Plantae	Bryophyta	Bryopsida	Bryales	Bryaceae	Silver Moss	1
https://id.biodiversity.org.au/taxon/ausmoss/10153043	Hedwigidium imberbe	(Sm.) Bruch & Schimp.	species	Plantae	Bryophyta	Bryopsida	Hedwigiales	Hedwigiaceae		1
https://id.biodiversity.org.au/taxon/ausmoss/10155438	Fissidens leptocladus	MÃ¼ll.Hal. ex Rodway	species	Plantae	Bryophyta	Bryopsida	Dicranales	Fissidentaceae	Pocket Moss	1
https://id.biodiversity.org.au/taxon/fungi/60115527	Gyroporus robinsonii	Davoodian	species	Fungi	Basidiomycota	Agaricomycetes	Boletales	Gyroporaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117772	Inocybe geniculata	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117778	Inocybe olivaceohinnulea	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117782	Inocybe ionocaulis	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117864	Inocybe invadens	Matheny, Bougher & G.M.Gates	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117937	Inocybe trachysperma	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60117945	Inocybe calocephala	Matheny & Bougher	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Inocybaceae		1
https://id.biodiversity.org.au/taxon/fungi/60118703	Amanita drummondii	E.M.Davison	species	Fungi	Basidiomycota	Agaricomycetes	Agaricales	Amanitaceae		1
https://id.biodiversity.org.au/taxon/lichen/30232084	Jackelixia elixii	(S.Y.Kondr. & KÃ¤rnefelt) S.Y.Kondr., Fedorenko, S.Stenroos, KÃ¤rnefelt & A.Thell	species	Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae		1

APPENDIX 6

Protected Matters Search Tool Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 16-May-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	63
Listed Migratory Species:	59

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	77
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	8
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	4
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Xenus cinereus			
Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Zanda baudinii listed as Calyptorhynchus baudinii			
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Galaxiella munda			
Western Dwarf Galaxias, Western Mud Minnow [79240]	Vulnerable	Species or species habitat may occur within area	In feature area
Galaxiella nigrostriata			
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat may occur within area	In buffer area only
Nannatherina balstoni			
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Nannoperca pygmaea](#) Little Pygmy Perch [88315]	Endangered	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Dasyurus geoffroii](#) Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
[Parantechinus apicalis](#) Dibbler [313]	Endangered	Species or species habitat likely to occur within area	In feature area
[Pseudocheirus occidentalis](#) Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Setonix brachyurus](#) Quokka [229]	Vulnerable	Species or species habitat likely to occur within area	In feature area
OTHER			
[Westralunio carteri](#) Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
[Banksia verticillata](#) Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Caladenia harringtoniae](#) Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calectasia cyanea](#) Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Commersonia apella](#) Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Drakaea micrantha](#) Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Isopogon uncinatus](#) Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area	In feature area
[Kennedia glabrata](#) Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Sphenotoma drummondii](#) Mountain Paper-heath [21160]	Endangered	Species or species habitat may occur within area	In feature area
[Verticordia apecta](#) Hay River Featherflower, Scruffy Verticordia [65545]	Critically Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In buffer area only
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
SHARK			
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula alfredi as Manta alfredi			
Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris			
Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Orcinus orca			
Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba			
Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
[Calidris subminuta](#) Long-toed Stint [861]		Species or species habitat known to occur within area	In buffer area only
[Calidris tenuirostris](#) Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Gallinago stenura](#) Pin-tailed Snipe [841]		Species or species habitat known to occur within area	In buffer area only
[Glareola maldivarum](#) Oriental Pratincole [840]		Species or species habitat known to occur within area	In buffer area only
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
[Limosa limosa](#) Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
[Pluvialis squatarola](#) Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Tringa glareola](#) Wood Sandpiper [829]		Species or species habitat known to occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51396]	WA	In buffer area only
Commonwealth Land - [51440]	WA	In buffer area only
Commonwealth Land - [51614]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Fish			
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In buffer area only
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
Mammal			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In buffer area only
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
McLean Road	Nature Reserve	WA	In buffer area only
Mount Shadforth	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0017)	Conservation Covenant	WA	In feature area
NTWA Bushland covenant (0096)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0097)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0142)	Conservation Covenant	WA	In buffer area only
Redmond Road	Nature Reserve	WA	In buffer area only
Scotsdale Road	Nature Reserve	WA	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Denmark East Development Precinct (clearing for eastern precinct)	2016/7835	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In buffer area only
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX 7

Conservation Codes

Conservation Codes for Western Australian Flora and Fauna

Threatened, Extinct and Specially Protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

The lists of Threatened, Extinct and Specially Protected species are listed under Part 2 of the Biodiversity Conservation Act 2016.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

> ***Threatened fauna*** is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.
>
> ***Threatened flora*** is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of Ministerial Guideline (Number 1) and Ministerial Guideline (Number 2) that adopts the use of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species Categories and Criteria 4, and is based on the national distribution of the species.

CR Critically endangered species

> Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".
>
> Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.

EN Endangered species

> Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".
>
> Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.

VU Vulnerable species

> Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.

Extinct Species

EX Presumed extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Currently only fauna are listed as species of special conservation interest.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Currently only fauna are listed as species otherwise in need of special protection.

P Priority species

Priority is not a listing category under the BC Act.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

Species that are adequately known, meet criteria for near threatened, or are rare but not threatened, or that have been recently removed from the threatened species list or conservation dependent or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of priority status is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

Priority 3: Poorly-known species

Species that are known from several locations and the species does not appear to be under imminent threat or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. These species need further survey.

Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

Western Australian Ecological Communities

<u>Threatened Ecological Communities</u>

The BC Act provides for the statutory listing of threatened ecological communities (TECs) by the Minister.

Presumed Totally Destroyed (PD)

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally

destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

Critically Endangered (CR)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

Endangered (EN)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Vulnerable (VU)

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

Priority Ecological Communities

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities

Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha).

Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

Priority Two: Poorly-known ecological communities

Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:

(ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;

(iii) munities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

(i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.

(ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category.

(iii) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Commonwealth of Australia Conservation Codes

Threatened Flora and Fauna

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

Extinct

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

Extinct in the wild

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Critically endangered

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

Conservation dependent

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
b) the following subparagraphs are satisfied:
    i. the species is a species of fish;

ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

Threatened Ecological Communities

Threatened Ecological communities under the EPBC Act are listed in three categories.

Critically endangered

If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).

Endangered

If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).

Vulnerable

If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).

APPENDIX 8

DBCA TEC/PEC Database Search

OCC_UNIQUE	COM_ID	COM_NAME	STATE_CATG	COMM_CATG	S_ID_COUNT	FIRST_S_ID	LAST_S_ID	BUFFER	OCC_CONFID	BDY_ID	ORIG_FID
435	Mount Lindesay	Mount Lindesay - Little Lindesay Vegetation	Endangered		1	ML207		500	No	528	402
2142	Mount Lindesay	Mount Lindesay - Little Lindesay Vegetation	Endangered		1	ML208-1		500	No	532	406
4570	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs07		500	No	2501	2097
4571	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs08		500	No	2502	2098
4572	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs09		500	No	2503	2099
4573	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		2	Youngs10	Youngs11	500	No	2504	2100
4574	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs12		500	No	2505	2101
4575	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs13		500	No	2506	2102
4676	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs14		500	No	2589	2188
4677	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs15		500	No	2590	2189
4678	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs16		500	No	2591	2190
4679	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs17		500	No	2592	2191
4680	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs18		500	No	2593	2192
4681	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs19		500	No	2594	2193
4682	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs20		500	No	2595	2194
4683	Melaleuca spathulata/ Melaleuca viminea	Melaleuca spathulata/Melaleuca viminea Swamp Heath	Priority 1		1	Youngs21		500	No	2596	2195
5654	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	WilsInNE		500	No	3336	2923
5655	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	WilsInE01		500	No	3337	2924
5656	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	WilsInE02		500	No	3338	2925
5657	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	NenamupIn		500	No	3339	2926
5658	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	YoungsLake		500	No	3340	2927
5659	Coastal Saltmarsh	Subtropical and Temperate Coastal	Priority 3	Vulnerable	1	WilsInSW		500	No	3341	2928

APPENDIX 9

Species List

SPECIES LIST – Harlequin Street, Denmark

FERNS

CYATHEACEAE
**Cyathea cooperi*

DENNSTAEDTIACEAE
Pteridium esculentum

MONOCOTYLEDONS

ARACEAE
**Zantedeschia aethiopica*

ANARTHRIACEAE
Anarthria prolifera

ASPARAGACEAE
**Asparagus asparagoides*

COLCHICACEAE
Burchardia congesta

CYPERACEAE
Lepidosperma effusum
Lepidosperma gladiatum
Lepidosperma leptostachyum
Lepidosperma squamatum
Lepidosperma tetraquetrum
Schoenus grandiflorus
Schoenus sp.

HAEMODORACEAE
Conostylis setigera

HEMEROCALLIDACEAE
Johnsonia lupulina

ORCHIDACEAE
Thelymitra macrophylla

POACEAE
Amphipogon turbinatus
**Anthoxanthum odoratum*
**Briza maxima*
**Cenchrus clandestinus*
**Polypogon monspeliensis*

RESTIONACEAE
Desmocladus flexuosus
Loxocarya cinerea

XANTHORRHOEACEAE
Xanthorrhoea brunonis

DICOTYLEDONS

APIACEAE
**Foeniculum vulgare*
Pentapeltis sylvatica

ASTERACEAE
**Cirsium vulgare*
**Hypochaeris glabra*
**Sonchus oleraceus*
**Taraxacum officinale*

CASUARINACEAE
Allocasuarina fraseriana

DILLENIACEAE
Hibbertia amplexicaulis
Hibbertia cuneiformis
Hibbertia racemosa

DROSERACEAE
Drosera macrantha

ERICACEAE
Leucopogon obovatus var. *revolutus*
Leucopogon verticillatus
Needhamiella pumilio
Styphelia pallida
Styphelia propinqua

FABACEAE
**Acacia dealbata*
Acacia moirii

Bossiaea linophylla
Chorizema ilicifolium
Hovea elliptica
**Trifolium campestre*
**Vicia sativa*

GOODENIACEAE
Dampiera linearis

MALVACEAE
Thomasia foliosa

MYRTACEAE
Corymbia calophylla
Eucalyptus diversicolor
Eucalyptus marginata
Melaleuca lanceolata
Taxandria linearifolia
Taxandria parviceps

OXALIDACEAE
**Oxalis purpurea*

PROTEACEAE
Banksia littoralis
Hakea amplexicaulis
Hakea linearis
Hakea undulata

RHAMNACEAE
Trymalium odoratissimum var. *trifidum*

RUBIACEAE
Opercularia hispidula
**Rubus ulmifolius*

APPENDIX 10

Quadrat Data

QUADRAT HS1

50 531330 E 6129988 N

Vegetation: *Corymbia calophylla/Eucalyptus marginata* Low Woodland over *Hovea elliptica/Taxandria parviceps/Bossiaea linophylla* Low Shrubland

Condition: Excellent

Soil Type: Orange-brown gravelly loam

Landform: Mid-slope, sloping down to the south

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Corymbia calophylla	8	20
Eucalyptus marginata	6	5
Hakea amplexicaulis	1.7	1
Hovea elliptica	1	2
Bossiaea linophylla	0.8	2
Hakea costata	0.8	1
Taxandria parviceps	0.6	5
Anarthria prolifera	0.6	4
Johnsonia lupulina	0.6	1
Xanthorrhoea brunonis	0.6	1
Loxocarya cinerea	0.4	2
Trymalium odoratissimum var. *trifidum*	0.4	2
Hibbertia cuneiformis	0.4	1
Schoenus sp	0.4	1
**Anthoxanthum odoratum*	0.4	1
Schoenus grandiflorus	0.4	<1
Burchardia congesta	0.4	<1

SPECIES	HEIGHT (m)	COVER (%)
Amphipogon turbinatus	0.3	<1
**Briza maxima*	0.2	2
Conostylis setigera	0.2	<1
Opercularia hispidula	0.2	<1
Dampiera linearis	0.2	<1
Pentapeltis peltigera	0.1	1
Desmocladus flexuosus	0.1	1
Styphelia pallida	0.1	<1
**Taraxacum officinale*	Flat	<1
**Hypochaeris glabra*	Flat	<1
Drosera macrantha	Climber	<1

* introduced species

QUADRAT HS2

50 531319 E 6130058 N

Vegetation: *Corymbia calophylla/Eucalyptus diversicolor* Low Woodland over *Pteridium esculentum* Open Low Heath

Condition: Good

Soil Type: Chocolate-brown sandy loam, some laterite at surface

Landform: Upper slope, sloping down to the south

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Corymbia calophylla	8	20
Eucalyptus diversicolor	7	2
Pteridium esculentum	1	25
Hibbertia cuneiformis	0.7	<1
Xanthorrhoea brunonis	0.6	<1
**Anthoxanthum odoratum*	0.4	5
**Foeniculum vulgare*	0.4	<1
Trymalium odoratissimum subsp. *trifidum*	0.3	10
**Briza maxima*	0.3	5
Opercularia hispidula	0.3	<1
Desmocladus flexuosus	0.1	<1
**Taraxacum officinale*	Flat	1

* introduced species

QUADRAT HS3

50 531316 E 6130125 N

Vegetation: *Eucalyptus diversicolor/Corymbia calophylla* Open Forest over *Pteridium esculentum* Low Shrubland
Condition: Degraded
Soil Type: Orange-brown sandy loam, some laterite rocks
Landform: Upper slope, sloping down to the south

Quadrat (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus diversicolor	12	25
Corymbia calophylla	8	10
Leucopogon verticillatus	1.1	1
Hibbertia cuneiformis	1	1
Pteridium esculentum	0.8	20
Xanthorrhoea brunonis	0.6	<1
Lepidosperma gladiatum	0.6	<1
Trymalium odoratissimum subsp. *trifidum*	0.5	5
**Anthoxanthum odoratum*	0.4	2
**Cenchrus clandestinus*	0.3	<1
Opercularia hispidula	0.2	1
**Vicia sativa*	0.1	<1
**Cirsium vulgare*	Flat	<1
**Taraxacum officinale*	Flat	<1

* introduced species

QUADRAT HS4

50 531561 E 6130394 N

Vegetation: *Corymbia calophylla/Eucalyptus diversicolor* Woodland over *Pteridium esculentum/Hibbertia cuneiformis* Low Shrubland
Condition: Completely Degraded
Soil Type: Orange-brown sandy loam, some laterite
Landform: Upper slope, sloping down to the north

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus diversicolor	15	10
Corymbia calophylla	10	20
Pteridium esculentum	0.8	5
Hibbertia cuneiformis	0.7	4
**Anthoxanthum odoratum*	0.4	10
Trymalium odoratissimum subsp. *trifidum*	0.3	<1
Opercularia hispidula	0.3	<1
Lepidosperma gladiatum	0.3	<1
**Vicia sativa*	0.1	<1
**Sonchus oleraceus*	0.1	<1
**Taraxacum officinale*	Flat	<1

* introduced species

QUADRAT HS5

50 531370 E 6130536 N

Vegetation: *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum* Shrubland/Sedgeland
Condition: Good
Soil Type: Grey clay, running water
Landform: Creekline

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Taxandria linearifolia	4	50
Lepidosperma effusum	1.8	5
Lepidosperma tetraquetrum	1.5	20
Pteridium esculentum	1.2	10
**Cenchrus clandestinus*	0.3	5
**Asparagus asparagoides*	Climber	<1

* introduced species

QUADRAT HS6

50 531427 E 6130531 N

Vegetation: *Eucalyptus diversicolor* Woodland over *Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum* Sedgeland/Shrubland

Condition: Good

Soil Type: Grey clay, running water

Landform: Creekline

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Eucalyptus diversicolor	14	20
Taxandria linearifolia	2.5	1
Lepidosperma tetraquetrum	2	70
Pteridium esculentum	2	10
Lepidosperma effusum	1.8	10
**Rubus ulmifolius*	1.8	5
**Cenchrus clandestinus*	0.3	2
**Trifolium campestre*	0.3	<1

* introduced species

QUADRAT HS7

50 531503 E 6130540 N

Vegetation: *Melaleuca lanceolata* Low Woodland over *Taxandria linearifolia* Tall Shrubland over *Lepidosperma effusum/Pteridium esculentum* Sedgeland/Shrubland

Condition: Good

Soil Type: Clay, running water

Landform: Creekline

QUADRAT (10 x 10m)

SPECIES	HEIGHT (m)	COVER (%)
Melaleuca lanceolata	6-8	25
Taxandria linearifolia	3.5	25
Lepidosperma effusum	2	60
Pteridium esculentum	1.7	5
Lepidosperma tetraquetrum	1.7	2
**Cenchrus clandestinus*	0.3	20
**Asparagus asparagoides*	Climber	<1

* introduced species

APPENDIX 11

Tree Retention & Black Cockatoo Assessment (Aurora Environmental, 2023)

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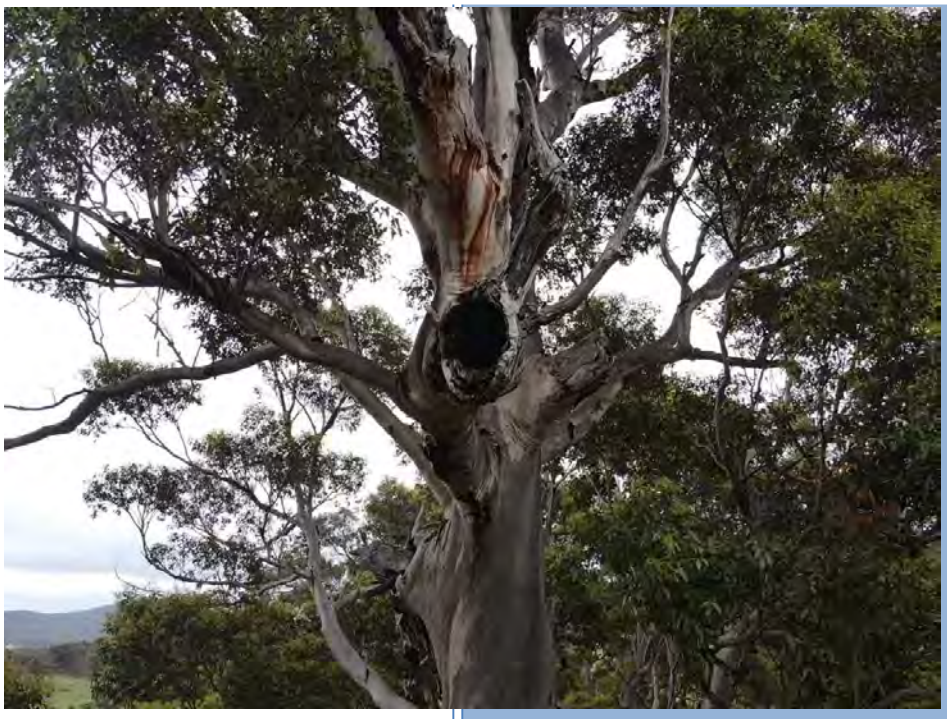
TREE RETENTION & BLACK COCKATOO ASSESSMENT

621 HARLEQUIN ST & 1 SOUTH COAST HWY DENMARK



Prepared For:	Turner and Wells Pty Ltd
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Appendix 1: Black Cockatoo Foraging Habitat Scoring Tool

Appendix 2: Individual Tree Data

EXECUTIVE SUMMARY

A tree retention and Black Cockatoo habitat assessment is required for the proposed rezoning of Lot 621 Harlequin Street and Lot 1 South Coast Highway from 'Rural' to 'Residential' to address the retention of remnant vegetation, significant trees and visual and social amenities of the site. The assessment also includes a targeted Black Cockatoo habitat assessment to determine the value of vegetation for cockatoo foraging and breeding.

Aurora Environmental assessed all the significant/potential habitat trees (Diameter at Breast Height (DBH) >50 cm) and completed a targeted Black Cockatoo habitat assessment at the site in November 2023 to help inform the development of the subdivision design.

The conclusions of the survey are:

- 305 significant/potential habitat trees were recorded at the site comprising 27 Jarrah, 185 Karri, 91 Marri and two dead trees whose species were indeterminate.
- The site provides suitable foraging habitat for Baudin's and Forest Red-tailed Black Cockatoos.
- 87 trees contained hollows of which three trees contained large hollows potentially suitable for Black Cockatoos and three trees contained hollows that appear large from the ground but were inaccessible via a drone for closer inspection. The other hollows are too small for Black Cockatoos but may provide suitable habitat for other fauna.
- 94 trees were ascribed as low value, 124 as medium, 57 high and 30 very high value. Trees that were ascribed a 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values.
- One tree contained a potential Boorna Gnamma hole which could be culturally significant to the local Aboriginal community.
- Area 1 provides high quality foraging habitat for Black Cockatoos as well a suitable habitat for other fauna including phascogales and is considered high value at the site.
- Area 2 provides moderate foraging habitat and two potential nesting trees for Black Cockatoos. This area is of moderate to high value at the site.
- Area 4 is primarily of aesthetic value. The trees provide some foraging habitat for Forest Red-tailed Black Cockatoos and there are currently no trees with suitable nesting hollows for Black Cockatoos.
- Areas 3, 5 and 6 are of low value to the site and trees should be chosen for retention based on their individual values rather than the area as a whole.
- Area 7 is within creekline habitat and is planned to be retained as public open space. It contains one tree that potentially has suitable hollows for Black Cockatoos (unconfirmed) and one tree with a small hollow currently occupied by Australian Ringneck Parrots (Twenty-eights).
- Area 8 is within the roadside reserve. One tree contains a potential cockatoo hollow (unconfirmed). Trees of high to very high value should be retained where possible.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Shire of Denmark is proposing to rezone Lot 621 Harlequin Street and Lot 1 South Coast Highway from 'Rural' to 'Residential'. The implementation of this zone is likely to result in the clearing of native vegetation including habitat potentially suitable for conservation significant fauna such as Black Cockatoos, South-western Brush-tailed Phascogales and Quenda. There may also be impacts on visual and social amenities to the surrounding residential areas and the Denmark-Nornalup Rail Trail.

The Environmental Protection Authority (EPA) has considered the scheme amendment and considered that it is unlikely to have a significant effect on the environment (EPA, 2022). It supported the Shire's provision of a Landscape Management Plan that would address the retention of remnant vegetation and visual and social amenities such as view lines from South Coast Highway, the Denmark-Nornalup Rail Trail and established residential area. It indicated that the plan would also need to be informed by a targeted Black Cockatoo habitat assessment and determine the value of vegetation for cockatoo foraging and breeding habitat. Although the EPA considers the project to have limited impact on the environment, they advised that the implementation of the scheme may have obligations under the Commonwealth *Environment Protection and Biodiversity Conservation Act* (EPBC Act) for Black Cockatoos.

1.2 PURPOSE AND SCOPE OF WORK

The purpose of the project was to assess the trees at the site and assess their value for their visual, social and environmental values including a targeted Black Cockatoo habitat assessment to help inform the development of a Landscape Management Plan. The scope of the work included:

- A value assessment of each significant tree (>50 cm Diameter at Breast Height (DBH)) at the site including species, landscape and aesthetic value, rarity, health/public safety and suitability for Black Cockatoos.
- A targeted Black Cockatoo habitat assessment in accordance with DCCEEW's (Department of Climate Change, Energy, the Environment and Water) referral guidelines to investigate evidence of Black Cockatoo activity and assess the presence of suitable breeding, foraging and roosting habitat at the site.
- Documenting the results of the assessment including the preparation of relevant spatial data.

2 SITE CONTEXT

2.1 LAND USE

The site contains a residential dwelling and sheds associated with agriculture. It is predominantly cleared with bands of paddock trees and vegetation (Figure 1). A minor creekline runs through the northern portion of the property from the western to northeastern boundaries and flows into the Wilson Inlet. The site is currently used as a horse agistment property by the Denmark Equestrian Club.

Residential areas are present to the north and east of the property and the remaining parts of the site are surrounded by rural land. South Coast Highway runs along the northwestern boundary and Denmark-Nornalup Rail Trail is adjacent to the southern boundary (Figure 1).

2.2 PREVIOUS ENVIRONMENTAL SURVEYS

An environmental assessment was previously undertaken at the site by PGV Environmental (2020). This assessment identified:

- A large number of mature Karri and Marri trees occur throughout the site, mostly over pasture species and Bracken Fern;
- Sixty-three plant species were recorded at the site including 46 native and 17 introduced species. None of these are Threatened or Priority species;
- The areas of remnant vegetation do not comprise Threatened or Priority Ecological Communities;
- Six native vegetation types were described and mapped at the site;
- Most of the vegetation was in Degraded to Completely Degraded condition. The tree canopy was intact but understorey was dominated by weeds due to past land clearing and cattle grazing. The remnant vegetation around the creekline and upper slope were in Good condition and the remnant vegetation in the southern part was in Excellent condition.
- The site is considered predominantly Disturbed to Highly Degraded fauna habitat. The small area of Good to Excellent vegetation in the southern portion is considered Good fauna habitat.
- The Marri and Karri trees provide habitat for three species of Conservation Significant Black Cockatoos (Baudin's Cockatoo (*Zanda baudinii*), Carnaby's Cockatoo (*Zanda latirostris*) and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*));
- The creekline may provide habitat for two Threatened species of fish (Black-stripe Minnow (*Galaxiella nigrostriatal*) and Mud Minnow (*Galaxiella munda*)) but this is considered very unlikely due to the small size of the water course and very narrow area of riparian vegetation.
- The woodland at the southern portion of the site may also provide habitat for South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) and the creekline may provide suitable habitat for Quenda (*Isoodon fusciventer*);

- The retention of the watercourse and some of the mature Karri and Marri trees means that the project is not likely to have a significant environmental impact; and
- Clearing of >1 ha of quality foraging habitat (Marri trees) or potential breeding trees is likely to require referral under the EPBC Act and a more detailed survey of potential habitat trees would be required.

FIGURE 1: CURRENT LAND USE

Source: Nearmap (2023) https://apps.nearmap.com/maps/#/@-34.9684953,117.3524559,16.00z,0d/V+R

3 METHODOLOGY

3.1 TREE VALUE ASSESSMENT

The tree value assessment was undertaken on the 8 – 9 November 2023 by Melanie Price (experienced environmental scientist, qualified zoologist and Black Cockatoo specialist), Dr Catherine Hall (experienced environmental scientist) and Paul Clifton (experienced environmental scientist) of Aurora Environmental. All trees at the site with a Diameter at Breast Height (DBH) >50 cm were assessed. Trees were assessed from the ground and trees that appeared to contain large hollows were assessed with a drone where possible. The following characteristics were collected for each tree:

- Location (GPS coordinates)
- Species
- Circumference (cm)
- Health[1] (poor, moderate, good). This was based on external observations of leaf/branch health, dieback, evidence of damage from termites or fire.
- Connectivity (low, medium, high). Low connectivity indicates stand-alone trees. Medium connectivity indicates trees with an overlapping canopy with other trees but do not connect to vegetation outside of the site. High connectivity indicates trees have an overlapping canopy with other trees and the combined canopy extends beyond the boundaries of the site to adjacent native vegetation.
- Tree hollows (none, small, large). Hollows assessed on presence and their potential to provide habitat for cockatoos or other fauna such as phascogales and other bird species.
- Value (low, medium, high, very high). Value ascribed to each tree based on the previous characteristics as well as their aesthetic value.

Results from individual trees were also collated to provide a value assessment of each patch of vegetation with regard to environmental and aesthetic values.

3.2 BLACK COCKATOO HABITAT ASSESSMENT

A Black Cockatoo habitat assessment was undertaken in conjunction with the tree value assessment on 8 – 9 November 2023 to determine the likelihood that Black Cockatoos utilise the survey area for breeding, roosting or foraging in accordance with the referral guidelines (Department of Agriculture, Water and the Environment, 2022).

Breeding Habitat

Assessment of black cockatoo breeding habitat involves the identification of all hollow forming trees species within the survey area that have a DBH >50 cm. If potential breeding trees were present, the

[1] Tree health was assessed from obvious, external characteristics. The survey team were not trained arborists and therefore cannot make a complete assessment of tree health. Advice for this characteristic should be accepted with caution.

circumference of each tree was measured using a tape measure. The location of each potential breeding tree identified was recorded with a GPS and details of the tree species and the number and size of hollows (if any) were recorded. Target tree species include Marri, Jarrah and Karri or any other hollow forming species (e.g. *Corymbia/Eucalyptus*) of a suitable size that were present. Peppermint, *Banksia*, Sheoak and *Melaleuca* tree species (for example) were not assessed as they do not develop hollows that are used by black cockatoos.

For the purposes of this survey, a tree containing a potential cockatoo nest hollow was defined as:

> *Any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) suitable for occupation by black cockatoo for the purpose of nesting/breeding. Hollows with an entrance greater than 10 cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk, will be recorded as a 'potential nest hollow'.*

Identified hollows were examined using binoculars and a drone (where possible) for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches). The calls of chicks were also listened for if a suitable hollow was present.

Night Roosting Habitat

Direct and indirect evidence of black cockatoos roosting within trees in the survey area was noted if observed. This included searching for branch clippings, droppings and moulted feathers.

Foraging Habitat

Foraging habitat is scored according to its ability to provide suitable food, its context in the landscape and the likelihood of black cockatoos using the area. A score is assigned vegetation within the impact area out of 10 for each species of black cockatoo using a template developed by DCCEEW (Department of Agriculture, Water and the Environment 2022; Appendix 1). Scores ranging from 5-10 indicate high quality foraging habitat and scores of 0-4 indicate low quality foraging habitat (Department of Agriculture, Water and the Environment, 2022).

The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey was recorded, if present. The nature and extent of potential foraging habitat present was also documented irrespective of the presence of any actual foraging evidence.

4 RESULTS AND DISCUSSION

A total of 305 trees with a DBH >50 cm were recorded at the site comprising 27 Jarrah (*Eucalyptus marginata*), 185 Karri (*E. diversicolor*), 91 Marri (*Corymbia calophylla*) and two dead trees whose species were indeterminate (Figure 2). An assessment of each tree is provided in Appendix 2.

The vegetation on the site has also been divided into eight areas (Figure 2) to aid in discussing the value of individual trees and also the value of different sections of the vegetation.

4.1 BLACK COCKATOO HABITAT ASSESSMENT

4.1.1 Cockatoo Foraging Habitat

The trees at the site comprise Jarrah, Marri and Karri. All of these species are suitable as foraging habitat for Black Cockatoos. There was evidence of foraging (chewed Marri nuts) by parrot species (potentially Black Cockatoos) throughout the site where Marri trees were present (Areas 1, 2 and 5).

Using the DCCEEW habitat scoring tool as an initial foraging habitat assessment, the site scores 10 (highest rating) for foraging habitat quality for each of the three species of Black Cockatoo as the habitat type (Karri/Marri/Jarrah woodland), foraging evidence and proximity to known breeding and roosting sites and other suitable foraging habitat indicate high suitability for Black Cockatoo utilisation (Table A). Further appraisal of the vegetation at the site for foraging suitability refined the results for each species.

TABLE A: FORAGING HABITAT SCORING

STARTING SCORE		BAUDIN'S COCKATOO	CARNABY'S COCKATOO	FOREST RED-TAILED BLACK COCKATOO
10		Survey area is native Eucalypt Woodland (Karri/Marri/Jarrah) and >1 ha	Survey area is native Eucalypt Woodland (Karri/Marri/Jarrah) and >1 ha	Survey area is native Eucalypt Woodland (Karri/Marri/Jarrah) and >1 ha
Attribute	**Subtractions**	**Context Adjustor**		
Foraging Potential	0	Foraging evidence present	Foraging evidence present	Foraging evidence present
Connectivity	0	Other foraging habitat present within 12 km of survey area	Other foraging habitat present within 12 km of survey area	Other foraging habitat present within 12 km of survey area
Proximity to breeding	0	Within 12 km of breeding habitat	Within 12 km of breeding habitat	Within 12 km of breeding habitat
Impact from significant plant disease	0	No evidence of plant disease	No evidence of plant disease	No evidence of plant disease
Total Score		**10**	**10**	**10**

Imagery: Landgate (2023)

N

0 60m

Scale: 1:3,500
MGA94 (Zone 50)

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Significant Trees

Figure: **2**

Baudin's Cockatoo

Karri trees are not a preferred foraging species by Baudin's Cockatoos and therefore areas of predominantly Karri trees at the site (Areas 3, 4, 6, 7 and 8) are not considered a suitable foraging resource for Baudin's Cockatoo.

Marri seeds and flowers comprise a significant part of the diet of Baudin's cockatoo, especially during breeding season (Department of Agriculture, Water and the Environment, 2022; Main Roads, 2023). The areas at the site that comprise significant numbers of Marri trees (Areas 1, 2 and 5) are potentially suitable foraging resources for Baudin's Cockatoos. The tree canopy is intact in these areas however, due to historic grazing the understorey is completely degraded in Areas 2 and 5. This means that no proteaceous or other foraging species are present in the understorey which also comprise an important part of the Baudin's Cockatoo diet. The vegetation in Area 1 is in good to excellent condition and contains some native understorey (PGV Environmental, 2020). However, the understorey does not contain many foraging species for Baudin's Cockatoos.

The site is within 12 km of a suitable water source (including the dam on the adjacent property) and is within the known breeding range of Baudin's Cockatoos. The vegetation is Area 1 is in good to excellent condition and is well connected to healthy native vegetation in the adjacent Nornalup Rail Trail. There was evidence of foraging from parrot species in this area. Area 1 provides high quality foraging habitat for Baudin's Cockatoos.

Area 2 is more degraded, but contains Marri trees as well as some Jarrah trees that are a minor foraging resource for Baudin's Cockatoos (Department of Agriculture, Water and the Environment, 2022). This area is within close proximity to Area 1 and contains one tree with a suitable hollow for cockatoo nesting and one tree with a potential hollow that could not be confirmed (see Section 4.1.2). This increases the value of this area vegetation as a resource for Baudin's Cockatoos. There was some evidence of parrot foraging in this area.

The general health of the trees in Area 5 was lower than other parts of the site. There was rubbish present and disturbance from grazing and the adjacent residential area. Area 5 has lower connectivity to other areas of native bushland. Although there was some evidence of parrot foraging in this area, overall Area 5 provides a moderate to low foraging resource for Baudin's Cockatoos and does not provide a significant resource in the context of the surrounding landscape.

Carnaby's Cockatoo

Carnaby's Cockatoos feed predominantly on proteaceous species such as *Banksia*, *Hakea* and *Grevillea* as well as introduced species such as Pine trees, Canola, Wild Radish and nut trees (Department of Agriculture, Water and the Environment, 2022). These species are not present at the site or only exist in very low numbers. Marri trees are a minor foraging resource and Karri trees are not a preferred species. Although Denmark is within the modelled distribution of Carnaby's Cockatoo habitat (DCCEEW, 2023), the region is not within the estimated breeding zone for this species (EPA, 2019). The site provides very low-quality foraging habitat for Carnaby's Cockatoos and they are unlikely to be present at the site.

Forest Red-tailed Black Cockatoos (FRTBC)

FRTBC feed primarily of Jarrah and Marri seeds in woodland or forest as well as the edges of Karri forests (Department of Agriculture, Water and the Environment, 2022). All of the remnant vegetation at the site provides a potential foraging resource for FRTBC. Based on the condition of the vegetation, tree species diversity and habitat connectivity Area 1 provides the best foraging habitat for this species and is considered high quality. This considers the intent to retain other areas of Karri trees at the site as Public Open Space which will provide additional foraging habitat for FRTBC. Area 2 also provides higher quality habitat as it contains a tree with a suitable breeding hollow and a tree with a potential breeding hollow (see section 4.1.2).

4.1.2 Black Cockatoo Habitat Trees

A total of 305 potential habitat trees (DBH >50 cm) were recorded at the site (Figure 2). Of these 87 contained hollows. Three trees (70, 77, 235) contained large hollows potentially suitable for Black Cockatoos and three trees (10, 82, 281) contained hollows that appear large from the ground but were inaccessible with the drone for closer inspection (Figure 3). None of the hollows show any evidence of use by Black Cockatoos.

Imagery: Landgate (2023)

N

0 60m

Scale: 1:3,500
MGA94 (Zone 50)

CAD Ref: a3005F002

Date: Dec 2023 | Rev: A | A4

Aurora environmental

Author: C. Hall | AU Ref: TWE/AP00/653

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Tree Hollows

Figure: **3**

Tree 70 is a Marri located on the adjacent property within the Nornalup Rail Trail, however there is a very large, hollow branch that overhangs the boundary fenceline. The branch contains a large, deep hollow that is suitable for Black Cockatoos (Plate 1) although it currently contains a beehive which will prevent Black Cockatoos from nesting there. It is within native bushland and adjacent to Area 1 which is considered high quality foraging habitat for Baudin's Cockatoos and FRTBC.

PLATE 1: HOLLOW IN TREE 70

Tree 77 is a Marri within Area 2. It contains a large hollow that appears deep enough for Black Cockatoos from drone photos (Plate 2). This area is adjacent to the high-quality foraging habitat in Area 1 however, the habitat is more disturbed and is fragmented from areas of adjacent variation (i.e. it is close by to native vegetation but does not have a continuous canopy). The surrounding landscape is mostly cleared, and the area is likely to experience a higher level of disturbance from human activities. This hollow is less likely to be utilised for cockatoo breeding.

PLATE 2: HOLLOW IN TREE 77

Tree 235 is a Karri tree in Area 6. The hollow assessment was made from the ground as it was inaccessible to the drone. The hollow appeared large from the ground (Plate 3) but conclusions of suitability for Black Cockatoos are precautionary. Tree 235 is in good health. However, the ground appears unstable leaving many roots exposed and the tree is leaning significantly and may fall in the future. This tree is in the Creekline habitat which is planned for retention.

PLATE 3: TREE 235

Tree 10 it a Karri tree in Area 1. From the ground there appeared to be two hollow branches potentially suitable for Black Cockatoos. The drone footage confirmed that the lowest branch was not hollow (Plate 4) however the second branch was inaccessible to the drone and its suitability cannot be confirmed. This tree is at the edge of Area 1 and would be more prone to disturbance.

PLATE 4: TREE 10

Tree 82 is a Marri tree in Area 2 (Plate 4). The canopy made it impossible to take drone footage of the potential hollow and identify its suitability. This tree is within a patch of remnant vegetation that is adjacent to the high-quality foraging vegetation in Area 1. If this patch is retained, it is possible that Black Cockatoos would use the hollow (if present) for nesting.

PLATE 5: TREE 82

Tree 281 is a Karri tree in Area 8 within the road reserve. This tree was inaccessible on foot and by drone. The DBH and precise coordinates were estimated from approximately 2 m away. It contains one hollow that from the ground appears to have a large enough opening. However, this could not be confirmed (Plate 6). This tree is within a large patch of native vegetation that extends beyond the boundaries of the site.

PLATE 6: TREE 281

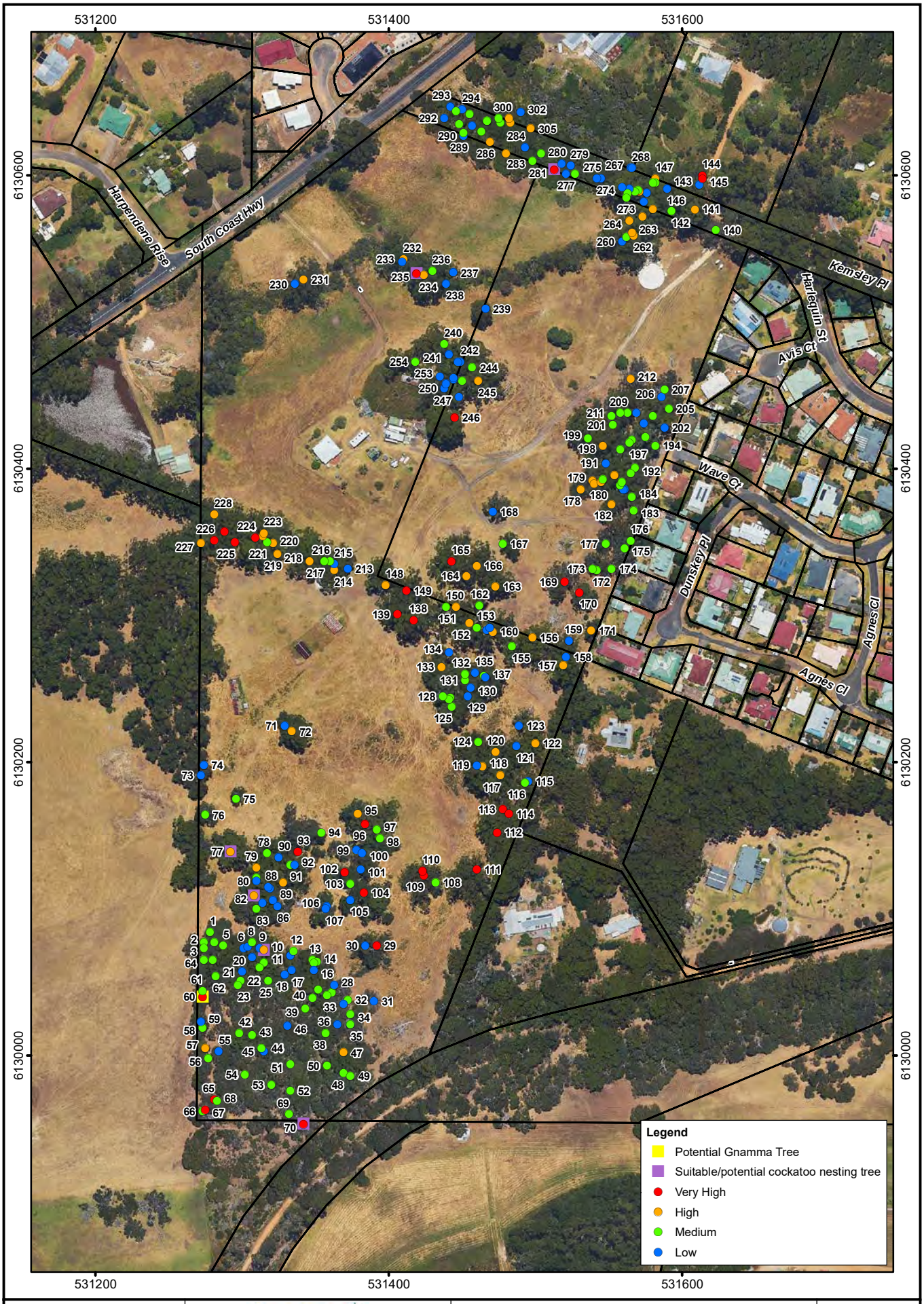
4.2 TREE VALUE

All 305 trees with a DBH >50 cm were assessed for their individual value. Ninety-four trees were ascribed as low value, 124 as medium, 57 high and 30 very high (Figure 4; Appendix 2). Trees that were ascribed as 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values.

Tree 60 (Plate 7) is a potential Boorna Gnamma tree. Gnamma trees were cultivated, shaped and used by Aboriginal people for water storage and therefore have very high cultural significance.

Of the trees with suitable or potential cockatoo hollows (see section 4.1.2) three trees (70, 235 and 281) were assessed as very high value. The remaining three trees (77, 10 and 82) were assessed as high value.

PLATE 7: TREE 60 - POTENTIAL GNAMMA TREE



Imagery: Landgate (2023)

N

0 60m

Scale: 1:3,500
MGA94 (Zone 50)

CAD Ref: a3005F003

Date: Dec 2023 | Rev: A | A4

Aurora environmental

Author: C. Hall | AU Ref: TWE/AP00/653

Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202

Tree Value

Figure:

4.3 AREA VALUES

Area 1

Area 1 comprises Marri/Jarrah/Karri woodland. The vegetation is in Good to Excellent condition (PGV Environmental, 2020). It provides high quality foraging habitat for Black Cockatoos. There are also 13 trees with small hollows that can provide habitat to fauna such as phascogales (Figure 3). As the vegetation condition and the connectivity of this area to native vegetation outside of the site is high, Area 1 provides suitable habitat for other fauna species. Although the trees within this area were generally assessed as low to moderate value individually, Area 1 overall is of high value within the site. This area also contains a potential Boorna Gnamma tree and a potential nesting tree. Tree 70, which is located outside of the site but has a significant hollow that overhangs the boundary.

Area 2

Area 2 is more fragmented and disturbed than Area 1. This area contains two potential nesting trees for Black Cockatoos and the Marri trees and adjacent habitat in Area 1 provide suitable foraging habitat. Towards the east of this area, there are a number of very tall Karri trees that are of very high value within the landscape both aesthetically and as fauna habitat. They may provide suitable Cockatoo nesting habitat in the future. This area is of moderate to high value in the site.

Area 3

Area 3 has a highly disturbed understorey but is connected to native vegetation in neighbouring properties. The trees in the southern portion of this area are assessed as high to very high value due to their size and age, and therefore their aesthetic and faunal values. Decisions in this area can be made around the value of individual trees rather than the area overall.

Area 4

Area 4 comprises Karri trees with no understorey along a ridge line. The trees were generally shorter than other Karris at the site. There are several trees with small hollows which may provide habitat for small birds and bats but do not currently provide suitable habitat for Black Cockatoos. The value of the trees in this area are primarily aesthetic. Trees in the eastern part of this area show evidence of burning in the past which means they may have a lower health condition (see Appendix 2 for details on individual trees).

Area 5

The condition of this area was generally lower than at other parts of the site. The trees showed more scarring and damage than other areas. Horses are grazing regularly in this part of the site. There were only three trees that contained hollows (all small) and the area is not connected to native vegetation in the surrounding landscape. This area is low value at the site. Trees of high value should be retained if possible.

Area 6

Area 6 contains multiple Karri trees however they tended to be smaller and more spindly than other trees at the site. Only one tree was assessed as high value and one as very high (Figure 4). The area is of low value in the site.

Area 7

Area 7 represents the creekline habitat at the site. There were only a few Karri trees within this habitat type and most of them are low to moderate value (Figure 4). The creekline habitat is planned to be retained as public open space. There was one tree (235) which appear to have a large hollow. However, this was not confirmed. Another tree in this area (234) has a small hollow currently occupied by Australian Ringneck Parrots (Twenty-eights).

Area 8

Area 8 comprises the trees in the Kemsley Place Road Reserve. The sedge understorey made some of the trees inaccessible and therefore exact locations and DBH measurements could not always be obtained (particularly trees 275 – 285). Many of the Karri trees in this area were smaller and some showed signs of lower health condition (Appendix 2). Trees of high to very high value in this area should be retained where possible. Tree 281 has a potential cockatoo hollow, but this was inaccessible to determine more accurately. Trees in this area should be assessed for retention on an individual basis based on road design.

5 CONCLUSIONS

- 305 significant trees were recorded at the site comprising 27 Jarrah, 185 Karri, 91 Marri and two dead trees whose species were indeterminate.
- The site provides suitable foraging habitat for Baudin's and Forest Red-tailed Black Cockatoos.
- 87 trees contained hollows of which three trees contained large hollows potentially suitable for Black Cockatoos and three trees contained hollows that appear large from the ground but were inaccessible with the drone for closer inspection. The other hollows are too small for Black Cockatoos but provide suitable habitat for other fauna.
- 94 trees were ascribed as low value, 124 as medium, 57 high and 30 very high value. Trees that were ascribed as 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values.
- One tree contained a potential Boorna Gnamma hole which could be culturally significant to the local Aboriginal community.
- Area 1 provides high quality foraging habitat for Black Cockatoos as well a suitable habitat for other fauna including phascogales and is considered high value at the site.
- Area 2 provides moderate foraging habitat and two potential nesting trees for Black Cockatoos. This area is of moderate to high value in the site.
- Area 4 is primarily of aesthetic value. The trees provide some foraging habitat for Forest Red-tailed Black Cockatoos and there are currently no trees with suitable nesting hollows for Black Cockatoos.
- Areas 3, 5 and 6 are of low value to the site and trees should be chosen for retention based on their individual values rather than the area as a whole.
- Area 7 is within creekline habitat and is planned for retention. It contains one tree that potentially has suitable hollows for Black Cockatoos (unconfirmed) and one tree with a small hollow currently occupied by Australian Ringneck Parrots (Twenty-eights).
- Area 8 is within the roadside reserve. One tree contains a potential cockatoo hollow (unconfirmed). Trees of high to very high value should be retained where possible.

6 REFERENCES

Department of Agriculture, Water and the Environment (2022) *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo*, Department of Agriculture, Water and the Environment, Canberra.

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APPENDIX 1
Black Cockatoo Foraging Habitat Scoring Tool

From: ***Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo***

Table A1 Foraging quality scoring tool template

Starting score		Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10		**Start at a score of 10** if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. **This tool only applies to sites equal to or larger than 1 hectare in size.**
Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	**-2**	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.
Connectivity	**-2**	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.
Proximity to breeding	**-2**	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.
Proximity to roosting	**-1**	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.
Impact from significant plant disease	**-1**	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.
Total score		*Enter score*	*Enter score*	*Enter score*
Appraisal		To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.		

APPENDIX 2
Individual Tree Data

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
1	531278	6130084	Marri	427	Good	High	Medium	No				Photo1
2	531274	6130077	Marri	245	Good	High	Medium	No				Photo2
3	531274	6130073	Marri	165	Good	High	Medium	No				Photo3
4	531281	6130077	Marri	210	Good	High	Medium	No				Photo4
5	531287	6130075	Karri	391	Good	High	Medium	Yes	No	Yes		Photo5
6	531301	6130073	Marri	157	Poor	High	Low	No				Photo6
7	531304	6130074	Marri	175	Good	High	Low	No				Photo7
8	531307	6130077	Jarrah	196	Moderate	High	Medium	No			Termites, leaning	Photo8
9	531312	6130073	Marri	272	Good	High	Low	No				Photo9
10	531315	6130072	Karri	305	Good	High	High	Yes	Possible		Lower hollow is not fully formed. Other hollow inaccessible.	Photo10
11	531333	6130068	Karri	247	Poor	High	Low	Yes	No	Yes		Photo11
12	531335	6130071	Marri	233	Good	High	Medium	No				Photo12
13	531348	6130065	Karri	233	Good	High	Medium	No				Photo13
14	531351	6130064	Marri	272	Poor	High	Medium	Yes	No	Yes	Lots of dead sections	Photo14
15	531349	6130063	Karri	251	Good	High	Medium	Yes	No	Yes		Photo15
16	531349	6130058	Karri	157	Good	High	Low	No				Photo16
17	531334	6130058	Marri	162	Moderate	High	Low	No				Photo17
18	531329	6130055	Marri	170	Poor	High	Low	No			Termites	Photo18
19	531315	6130063	Karri	248	Good	High	Medium	Yes	No	Yes		Photo19
20	531307	6130067	Karri	163	Good	High	Low	No				Photo20
21	531300	6130057	Karri	158	Good	High	Low	No				Photo21
22	531299	6130051	Marri	177	Good	High	Medium	No				Photo22
23	531297	6130048	Marri	163	Good	High	Medium	No				Photo23
24	531312	6130060	Marri	190	Good	High	Medium	No				Photo24
25	531318	6130051	Jarrah	172	Good	High	Medium	No				Photo25
26	531352	6130045	Karri	216	Good	High	Medium	No				Photo26
27	531361	6130043	Marri	199	Good	High	Medium	No				Photo27
28	531363	6130048	Marri	207	Good	High	Low	No				Photo28

[1] Diameter is over 50 cm is circumference is >157 cm

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
29	531392	6130075	Karri	710	Moderate	Medium	Very high	Yes	No	Yes	Hollows large but in very poor condition. Contains beehive	Photo29
30	531384	6130075	Karri	163	Good	Medium	Low	No				Photo30
31	531390	6130037	Marri	315	Poor	Medium	Low	No				Photo31
32	531372	6130038	Marri	225	Good	High	Medium	No				Photo32
33	531369	6130035	Marri	160	Good	High	Low	No				Photo33
34	531374	6130028	Marri	228	Good	High	Medium	No				Photo34
35	531374	6130021	Marri	214	Moderate	High	Low	No				Photo35
36	531365	6130021	Marri	164	Moderate	High	Low	No				Photo36
37	531374	6130021	Marri	211	Good	High	Medium	No				Photo37
38	531357	6130015	Karri	230	Good	High	Medium	No				Photo38
39	531343	6130032	Marri	190	Good	High	Medium	Yes	No	Yes		Photo39
40	531348	6130039	Karri	220	Good	High	Medium	No				Photo40
41	531358	6130041	Marri	188	Good	High	Medium	No				Photo41
42	531298	6130015	Karri	193	Good	High	Medium	No				Photo42
43	531307	6130014	Karri	208	Good	High	Medium	No				Photo43
44	531315	6130003	Jarrah	179	Poor	High	Low	No				Photo44
45	531313	6130005	Jarrah	214	Dead	High	Medium	Yes	No	Yes		Photo45
46	531331	6130020	Jarrah	158	Good	High	Low	No				Photo46
47	531369	6130002	Karri	360	Good	High	High	Yes	No	Yes		Photo47
48	531369	6129988	Marri	181	Good	High	Medium	No				Photo48
49	531374	6129986	Marri	167	Good	High	Medium	No				Photo49
50	531358	6129993	Marri	209	Good	High	Medium	No				Photo50
51	531333	6129994	Marri	180	Good	High	Medium	No				Photo51
52	531333	6129976	Marri	191	Good	High	Medium	No				Photo52
53	531320	6129980	Marri	215	Good	High	Medium	No				Photo53
54	531302	6129987	Marri	197	Good	High	Medium	No				Photo54
55	531284	6130003	Jarrah	279	Poor	High	Low	No			Dead sections, termites.	Photo55
56	531277	6129998	Marri	289	Good	High	Medium	No				Photo56
57	531275	6130005	Marri	280	Good	High	High	Yes	No	Yes		Photo57

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
58	531273	6130019	Marri	195	Good	High	Medium	No			Leaning	Photo58
59	531272	6130023	Marri	175	Good	High	Low	Yes	No	Yes		Photo59
60	531273	6130040	Marri	542	Good	High	Very High	No			Potential Gnamma tree	Photo60
61	531273	6130044	Marri	245	Good	High	Medium	No				Photo61
62	531282	6130054	Marri	200	Good	High	Medium	No				Photo62
63	531280	6130065	Karri	196	Good	High	Medium	No				Photo63
64	531274	6130065	Marri	189	Good	High	Medium	No				Photo64
65	531281	6129970	Jarrah	439	Good	High	Very High	Yes	No	Yes		Photo65
66	531273	6129962	Marri	172	Good	High	Medium	No				Photo66
67	531275	6129963	Marri	329	Good	High	Very high	Yes	No	Yes		Photo67
68	531283	6129969	Marri	205	Good	High	Medium	No				Photo68
69	531332	6129960	Marri	203	Good	High	Medium	Yes	No	Yes		Photo69
70	531342	6129953	Marri	400	Good	High	Very high	Yes	Yes	Yes	Huge hollow with beehive. Outside property but overhanging boundary	Photo70
71	531329	6130225	Jarrah	230	Good	Low	Low	No			Exposed heartwood	Photo71
72	531334	6130221	Karri	475	Good	Low	High	Yes	No	Yes		Photo72
73	531272	6130191	Jarrah	241	Poor	High	Low	No			Burnt centre	Photo73
74	531274	6130198	Jarrah	244	Poor	High	Low	Yes	No	Yes	Burnt centre, termites	Photo74
75	531296	6130175	Jarrah	289	Good	Low	Medium	Yes	No	Yes		Photo75
76	531275	6130164	Jarrah	365	Poor	Medium	Medium	No			Termites, dead sections	Photo76
77	531292	6130139	Karri	620	Good	Medium	High	Yes	Yes	Yes	Hollow appears deep from drone. Termites in fallen dead branches, maybe termites in tree.	Photo77
78	531317	6130138	Karri	260	Good	Medium	Medium	No				Photo78
79	531310	6130128	Karri	285	Good	Medium	High	Yes	No	Yes		Photo79
80	531310	6130121	Karri	241	Good	Medium	Medium	No				Photo80
81	531310	6130119	Marri	163	Good	Medium	Low	No				Photo81
82	531308	6130109	Marri	360	Good	Medium	High	Yes	Possible	Yes	Hollow inaccessible	Photo82

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
83	531310	6130100	Karri	253	Good	Medium	Medium	Yes	No	Yes		Photo83
84	531314	6130104	Karri	195	Good	Medium	Low	No				Photo84
85	531321	6130106	Marri	210	Good	Medium	Low	No				Photo85
86	531324	6130102	Marri	197	Good	Medium	Low	No				Photo86
87	531319	6130114	Marri	171	Good	Medium	Low	No				Photo87
88	531318	6130115	Karri	160	Good	Medium	Low	No				Photo88
89	531328	6130118	Karri	400	Good	Medium	High	Yes	No	Yes		Photo89
90	531325	6130135	Karri	190	Good	Medium	Low	No				Photo90
91	531333	6130130	Karri	203	Good	Medium	Medium	Yes	No	Yes		Photo91
92	531336	6130130	Karri	241	Good	Medium	Low	No				Photo92
93	531338	6130139	Marri	600	Good	Medium	Very high	Yes	No	Yes		Photo93
94	531354	6130152	Marri	200	Good	Medium	Medium	No				Photo94
95	531379	6130165	Jarrah	372	Moderate	Medium	High	No			Termites	Photo95
96	531384	6130158	Karri	703	Good	Medium	Very high	Yes	No	Yes	Incipient cockatoo hollows	Photo96
97	531392	6130154	Jarrah	290	Moderate	Medium	Medium	No			Exposed heartwood	Photo97
98	531394	6130148	Jarrah	340	Good	Medium	Medium	Yes	No	Yes	Termites	Photo98
99	531378	6130140	Marri	317	Good	Medium	Low	No				Photo99
100	531382	6130138	Marri	244	Good	Medium	Low	No				Photo100
101	531381	6130127	Karri	185	Moderate	Medium	Low	No			Could split in half. Potentially termites.	Photo101
102	531370	6130125	Marri	600	Good	Medium	Very high	Yes	No		Incipient cockatoo hollows	Photo102
103	531374	6130117	Marri	201	Good	Medium	Medium	No				Photo103
104	531383	6130111	Karri	600	Good	Medium	Very high	Yes	No	Yes		Photo104
105	531374	6130106	Marri	208	Good	Medium	Low	No				Photo105
106	531358	6130102	Marri	209	Good	Medium	Low	No			Right against a large fallen tree	Photo106
107	531357	6130100	Karri	205	Good	Medium	Low	No				Photo107
108	531432	6130118	Jarrah	260	Good	Medium	Medium	Yes	No	Yes		Photo108
109	531424	6130123	Karri	424	Good	Medium	Very high	Yes	No	No	Termites, incipient cockatoo hollows	Photo109
110	531423	6130126	Karri	557	Good	Medium	Very high	Yes	No	Yes		Photo110
111	531460	6130127	Karri	847	Good	High	Very high	Yes	No	Yes	Incipient cockatoo hollows	Photo111

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
112	531474	6130152	Karri	300	Good	High	Very high	Yes	No	Yes		Photo112
113	531478	6130168	Karri	500	Good	High	Very high	Yes	No	Yes		Photo113
114	531482	6130165	Karri	306	Good	High	Very high	Yes	No	Yes		Photo114
115	531495	6130187	Jarrah	222	Moderate	High	Low	No				Photo115
116	531493	6130186	Karri	360	Good	High	Medium	No				Photo116
117	531476	6130191	Karri	448	Good	High	High	No				Photo117
118	531464	6130197	Karri	450	Good	High	High	Yes	No	No		Photo118
119	531460	6130198	Karri	182	Good	High	Low	No				Photo119
120	531473	6130207	Karri	293	Good	High	High	Yes	No	Yes		Photo120
121	531487	6130211	Karri	187	Good	High	Low	No				Photo121
122	531500	6130213	Karri	350	Good	High	High	Yes	No	Yes		Photo122
123	531489	6130225	Jarrah	248	Good	High	Low	No				Photo123
124	531461	6130214	Karri	350	Good	High	Medium	Yes	No	Yes		Photo124
125	531443	6130238	Karri	298	Good	Medium	Medium	No				Photo125
126	531442	6130244	Jarrah	278	Good	Medium	Medium	Yes	No	Yes		Photo126
127	531441	6130243	Jarrah	189	Good	Medium	Medium	Yes	No	Yes		Photo127
128	531437	6130245	Jarrah	296	Good	Medium	Medium	No				Photo128
129	531454	6130245	Jarrah	375	Poor	Medium	Low	No			Looks likely to snap	Photo129
130	531456	6130251	Karri	196	Good	Medium	Low	No				Photo130
131	531452	6130256	Karri	250	Good	Medium	Medium	Yes	No	Yes		Photo131
132	531452	6130260	Karri	280	Good	Medium	Medium	No				Photo132
133	531436	6130265	Karri	498	Good	Medium	High	Yes	No	Yes		Photo133
134	531441	6130275	Jarrah	200	Good	Medium	Low	No				Photo134
135	531459	6130261	Karri	201	Good	Medium	Low	No				Photo135
136	531465	6130259	Karri	227	Good	Medium	Medium	No				Photo136
137	531466	6130258	Karri	177	Good	Medium	Low	No				Photo137
138	531417	6130297	Karri	450	Good	Medium	Very high	Yes	no	Yes	Incipient cockatoo hollows	Photo138
139	531406	6130301	Karri	400	Good	Medium	Very high	Yes	No	Yes		Photo139
140	531623	6130563	Marri	200	Good	High	Medium	No				Photo140
141	531609	6130577	Karri	250	Good	High	High	No				Photo141
142	531593	6130576	Marri	180	Good	High	Medium	No				Photo142

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
143	531612	6130594	Karri	250	Good	High	Low	No				Photo143
144	531614	6130600	Karri	402	Good	High	Very high	Yes	No	Yes	Adjacent to deep creek	Photo144
145	531614	6130598	Karri	301	Good	High	Very high	Yes	No	Yes	Potentially stabilising creek bank	Photo145
146	531590	6130591	Karri	200	Good	High	Low	No				Photo146
147	531582	6130598	Karri	300	Good	High	High	Yes	No	Yes		Photo147
148	531398	6130321	Karri	510	Good	Medium	High	Yes	No	Yes		Photo148
149	531412	6130317	Karri	382	Good	Medium	Very high	Yes	No	Yes		Photo149
150	531439	6130306	Karri	329	Good	Medium	Medium	No				Photo150
151	531446	6130306	Karri	312	Good	Medium	High	No				Photo151
152	531455	6130295	Karri	450	Good	Medium	High	Yes	No	Yes		Photo152
153	531460	6130292	Karri	273	Good	Medium	Medium	No				Photo153
154	531467	6130290	Karri	307	Poor	Medium	Low	No				Photo154
155	531484	6130279	Karri	297	Good	Medium	Medium	No				Photo155
156	531498	6130285	Karri	490	Good	Medium	High	No			Termites	Photo156
157	531519	6130266	Karri	450	Good	Medium	High	Yes	No	Yes		Photo157
158	531521	6130272	Karri	574	Poor	Medium	Low	No			Burnt out, termites, leaning	Photo158
159	531523	6130283	Karri	574	Poor	Medium	Low	No			Burnt out, termites, leaning	Photo159
160	531471	6130289	Karri	363	Good	Medium	High	Yes	No	Yes		Photo160
161	531469	6130292	Karri	264	Moderate	Medium	Low	No				Photo161
162	531462	6130307	Karri	340	Moderate	Medium	Medium	Yes	No	Yes		Photo162
163	531473	6130320	Karri	370	Good	Medium	High	No				Photo163
164	531453	6130327	Karri	342	Good	Medium	High	No				Photo164
165	531443	6130337	Karri	397	Good	Medium	Very high	No				Photo165
166	531460	6130334	Karri	370	Good	Medium	High	Yes	No	Yes		Photo166
167	531478	6130349	Jarrah	260	Good	Medium	Medium	No				Photo167
168	531471	6130371	Marri	380	Good	Low	Low	No				Photo168
169	531520	6130323	Marri	764	Moderate	Medium	Very high	No				Photo169
170	531530	6130316	Marri	645	Good	Medium	Very high	No				Photo170
171	531538	6130290	Jarrah	406	Good	Medium	High	No				Photo171

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
172	531542	6130331	Marri	227	Good	Medium	Medium	No				Photo172
173	531539	6130332	Marri	283	Good	Medium	Medium	No				Photo173
174	531552	6130332	Marri	235	Good	Medium	Medium	No				Photo174
175	531561	6130346	Marri	656	Good	Medium	Medium	No				Photo175
176	531565	6130351	Karri	446	Good	Medium	Medium	No				Photo176
177	531548	6130349	Jarrah	310	Good	Medium	Medium	No				Photo177
178	531531	6130386	Marri	376	Good	Medium	High	No				Photo178
179	531539	6130392	Marri	272	Good	Medium	High	No				Photo179
180	531540	6130390	Marri	235	Good	Medium	High	No				Photo180
181	531545	6130391	Marri	212	Good	Medium	High	No				Photo181
182	531552	6130376	Marri	376	Good	Medium	High	No				Photo182
183	531567	6130372	Marri	360	Good	Medium	Medium	No				Photo183
184	531566	6130381	Karri	265	Good	Medium	Medium	No				Photo184
185	531561	6130386	Other	175	Dead	Medium	Low	No				Photo185
186	531560	6130386	Marri	185	Poor	Medium	Low	No				Photo186
187	531558	6130389	Marri	220	Good	Medium	Medium	No				Photo187
188	531559	6130391	Marri	240	Good	Medium	Medium	No				Photo188
189	531554	6130396	Karri	347	Good	Medium	High	No				Photo189
190	531546	6130393	Marri	213	Good	Medium	Medium	No				Photo190
191	531548	6130404	Marri	195	Poor	Medium	Low	No				Photo191
192	531568	6130401	Marri	227	Good	Medium	Medium	No				Photo192
193	531565	6130397	Marri	236	Good	Medium	Medium	No				Photo193
194	531582	6130416	Marri	195	Good	Medium	Medium	No				Photo194
195	531575	6130422	Marri	368	Good	Medium	Medium	No				Photo195
196	531566	6130420	Marri	267	Good	Medium	Medium	Yes	No	Yes		Photo196
197	531564	6130418	Marri	259	Good	Medium	Medium	No				Photo197
198	531546	6130416	Karri	384	Good	Medium	High	Yes	No	Yes		Photo198
199	531536	6130421	Karri	546	Moderate	Medium	Medium	No			Scaring, exposed heartwood	Photo199
200	531558	6130413	Jarrah	250	Good	Medium	Medium	No				Photo200
201	531553	6130430	Marri	217	Good	Medium	Medium	No				Photo201

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
202	531588	6130428	Karri	228	Poor	Medium	Low	No			Exposed heartwood	Photo202
203	531574	6130431	Marri	244	Poor	Medium	Low	No			Leaves dying	Photo203
204	531580	6130436	Karri	184	Good	Medium	Medium	No				Photo204
205	531591	6130441	Karri	180	Good	Medium	Medium	No				Photo205
206	531586	6130449	Other	358	Dead	Medium	Low	No				Photo206
207	531588	6130454	Marri	224	Good	Medium	Medium	no				Photo207
208	531569	6130438	Marri	209	Poor	Medium	Low	No				Photo208
209	531563	6130438	Karri	205	Good	Medium	Medium	No				Photo209
210	531558	6130438	Karri	230	Good	Medium	Medium	No				Photo210
211	531552	6130436	Marri	164	Good	Medium	Medium	No				Photo211
212	531565	6130461	Marri	519	Good	Medium	High	Yes	No	Yes		Photo212
213	531372	6130332	Karri	300	Good	High	Low	No				Photo213
214	531363	6130331	Karri	455	Good	High	High	No				Photo214
215	531363	6130335	Karri	185	Good	High	Low	No				Photo215
216	531360	6130337	Karri	230	Good	High	Medium	No				Photo216
217	531356	6130337	Karri	264	Good	High	Medium	No				Photo217
218	531346	6130337	Karri	412	Good	High	High	No				Photo218
219	531324	6130342	Karri	206	Good	High	High	Yes	No	Yes		Photo219
220	531321	6130349	Karri	386	Good	High	High	No				Photo220
221	531317	6130350	Karri	204	Good	High	Medium	No				Photo221
222	531314	6130354	Karri	316	Good	High	High	No				Photo222
223	531315	6130356	Karri	365	Good	High	High	No				Photo223
224	531309	6130353	Karri	320	Good	High	Very high	Yes	No	Yes		Photo224
225	531295	6130350	Karri	287	Good	High	Very high	Yes	No	Yes		Photo225
226	531281	6130351	Karri	336	Moderate	High	Very high	Yes	No	Yes	Exposed heartwood, beehive	Photo226
227	531272	6130349	Karri	327	Good	High	High	Yes	No	Yes		Photo227
228	531281	6130369	Karri	295	Good	High	High	Yes	No	Yes		Photo228
229	531288	6130357	Karri	443	Good	High	Very high	Yes	No	Yes		Photo229
230	531336	6130526	Karri	350	Good	Low	Low	No				Photo230
231	531342	6130529	Karri	500	Good	Low	High	Yes	No	Yes		Photo231

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
232	531410	6130543	Karri	323	Good	Medium	High	No				Photo232
233	531409	6130541	Karri	170	Good	Medium	Low	Yes	No	Yes	Larger trunk fallen over creek	Photo233
234	531424	6130532	Karri	426	Good	Medium	High	Yes	No	Yes	Leaning. Australian Ringnecks (Twenty-eights) nesting in hollow	Photo234
235	531419	6130533	Karri	450	Good	Medium	Very high	Yes	Yes	Yes	Leaning. Unlikely to last long before falling	Photo235
236	531430	6130535	Karri	260	Good	Medium	Medium	No				Photo236
237	531444	6130534	Karri	172	Good	Medium	Low	No				Photo237
238	531439	6130526	Karri	170	Good	Medium	Low	No				Photo238
239	531466	6130509	Karri	243	Good	Low	Low	No				Photo239
240	531438	6130485	Karri	446	Good	Medium	Medium	No				Photo240
241	531441	6130478	Karri	176	Good	Medium	Low	No				Photo241
242	531449	6130473	Karri	295	Good	Medium	Low	No				Photo242
243	531447	6130473	Karri	224	Good	Medium	Low	No				Photo243
244	531457	6130469	Karri	509	Good	Medium	Medium	Yes	No	Yes		Photo244
245	531461	6130460	Karri	420	Good	Medium	High	Yes	No	Yes		Photo245
246	531445	6130435	Karri	635	Good	Medium	Very high	Yes	No	Yes	Possible termites	Photo246
247	531448	6130449	Karri	263	Moderate	Medium	Low	Yes	No	Yes	Dead sections at the top	Photo247
248	531450	6130460	Karri	302	Good	Medium	Medium	Yes	No	Yes		Photo248
249	531444	6130461	Karri	374	Good	Medium	Low	Yes	No	Yes		Photo249
250	531438	6130455	Karri	745	Good	Medium	Low	No				Photo250
251	531439	6130458	Karri	176	Moderate	Medium	Low	No				Photo251
252	531444	6130462	Karri	193	Good	Medium	Low	Yes	No	Yes		Photo252
253	531435	6130463	Karri	284	Good	Medium	Low	No				Photo253
254	531418	6130473	Karri	362	Good	Medium	Medium	No				Photo254
255	531582	6130595	Marri	201	Good	High	Medium	No				Photo255
256	531580	6130595	Karri	191	Good	High	Medium	No				Photo256
257	531574	6130582	Karri	303	Moderate	High	Low	Yes	No	Yes	Dead but resprouting	Photo257
258	531576	6130588	Karri	183	Good	High	Low	No				Photo258
259	531571	6130589	Karri	320	Good	High	High	Yes	No	Yes		Photo259

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
260	531559	6130555	Karri	170	Good	High	Low	No				Photo260
261	531562	6130558	Karri	350	Good	High	Medium	Yes	No	Yes	Leaning	Photo261
262	531567	6130559	Karri	510	Good	High	High	No				Photo262
263	531566	6130561	Karri	375	Good	High	High	No				Photo263
264	531564	6130569	Karri	403	Good	High	High	No				Photo264
265	531573	6130572	Karri	200	Good	High	High	No				Photo265
266	531580	6130577	Karri	280	Good	High	High	No				Photo266
267	531565	6130605	Karri	181	Good	High	Low	No				Photo267
268	531566	6130605	Karri	215	Good	High	Low	No				Photo268
269	531570	6130590	Karri	200	Good	High	Medium	No				Photo269
270	531568	6130589	Karri	204	Good	High	Medium	No				Photo270
271	531564	6130591	Karri	204	Good	High	Low	No				Photo271
272	531563	6130588	Karri	258	Good	High	Medium	No				Photo272
273	531562	6130585	Karri	215	Good	High	Medium	No				Photo273
274	531559	6130592	Karri	170	Good	High	Low	No				Photo274
275[2]	531545	6130598	Karri	170	Good	High	Low	No				Photo275
276	531542	6130598	Karri	170	Good	High	Low	No				Photo276
277	531527	6130601	Karri	200	Good	High	Medium	Yes	No	Yes		Photo277
278	531521	6130601	Karri	170	Good	High	Low	No				Photo278
279	531524	6130607	Karri	170	Good	High	Low	No				Photo279
280	531518	6130608	Karri	170	Good	High	Low	No				Photo280
281	531513	6130604	Karri	300	Good	High	Very high	Yes	Possible	Yes	Possible cockatoo hollow. Inaccessible to view closer	Photo281
282	531504	6130615	Karri	200	Good	High	Medium	No				Photo282
283	531498	6130610	Karri	200	Good	High	Medium	Yes	No	Yes		Photo283
284	531493	6130619	Karri	205	Good	High	Low	No				Photo284
285	531480	6130615	Karri	390	Good	High	High	Yes	No	Yes		Photo285
286	531469	6130623	Karri	478	Good	High	High	No				Photo286
287	531463	6130630	Karri	279	Good	High	Medium	No				Photo287

[2] Green highlight indicates trees that were not easily accessible. Coordinates and circumference measurements are approximate.

Tree ID	Easting	Northing	Species	Circumference (cm)[1]	Health	Connectivity	Value	Hollows	Hollow Suitability		Comments	Photo
									Cockatoos	Other Fauna		
288	531457	6130634	Karri	171	Good	High	Low	No				Photo288
289	531451	6130627	Karri	166	Good	High	Low	No				Photo289
290	531451	6130629	Karri	238	Good	High	Medium	No				Photo290
291	531448	6130635	Karri	207	Good	High	Medium	No				Photo291
292	531438	6130639	Karri	231	Poor	High	Low	No				Photo292
293	531442	6130647	Karri	276	Poor	High	Low	Yes	No	Yes		Photo293
294	531450	6130645	Karri	321	Poor	High	Low	No			Root rot	Photo294
295	531446	6130644	Karri	170	Moderate	High	Medium	No				Photo295
296	531455	6130642	Karri	180	Good	High	Medium	No				Photo296
297	531467	6130637	Karri	158	Good	High	Medium	No				Photo297
298	531467	6130637	Karri	210	Good	High	Medium	No				Photo298
299	531476	6130636	Karri	200	Good	High	Medium	No				Photo299
300	531475	6130639	Karri	195	Good	High	Medium	Yes	No	Yes		Photo300
301	531483	6130636	Karri	200	Good	High	Medium	No				Photo301
302	531490	6130643	Karri	323	Poor	High	Low	No				Photo302
303	531483	6130636	Karri	330	Good	High	High	No				Photo303
304	531482	6130639	Karri	237	Good	High	High	No				Photo304
305	531497	6130632	Karri	263	Good	High	High	No				Photo305

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15 December 2023

Turner and Wells Pty Ltd
mitchwells@icloud.com

Attention: Mitchell Wells

Dear Mitchell,

RE: TREE ASSESSMENT 621 HARLEQUIN STREET & SOUTH COAST HIGHWAY, DENMARK

Turner and Wells commissioned Aurora Environmental (Aurora) to undertake a survey of significant trees (Diameter at Breast Height (DBH) >50 cm) and a targeted Black Cockatoo habitat survey at Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark. This was undertaken in November 2023. The results of the assessment were documented in *Tree Retention Report: 621 Harlequin St & 1 South Coast Hwy, Denmark* (Aurora Environmental, 2023). This memo provides a brief summary of the pertinent findings from the survey along with advice on tree/vegetation retention and potential environmental approvals and referrals that may be required.

A total of 305 significant trees were recorded at the site 27 Jarrah, 185 Karri, 91 Marri and two dead trees whose species were indeterminate (Attachment 1). The vegetation at the site was divided into eight areas to aid in the discussion of the value of individual trees and different sections of the vegetation.

Eighty-seven trees contained hollows (Attachment 2). Three trees had hollows that are large enough and potentially suitable for Black Cockatoos and a further three trees appeared to have large hollows from ground observation, but this could not be confirmed as they were inaccessible to the drone. One tree contained a potential Boorna Gnamma hole (Attachment 2) which could be culturally significant to the local Aboriginal people.

Of the 305 significant trees, 94 trees were ascribed as low value, 124 as medium, 57 high and 30 very high value (Attachment 3). Trees that were ascribed as 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values. To retain environmental and aesthetic values at the site, it is preferable to retain as many trees as possible. However, with planning development and bushfire regulations it is not possible to keep all of the trees. Therefore, Aurora recommends that trees with a higher value be retained in preference to trees of a lower value, where possible. The tree with the Boorna Gnamma hole and the six trees with suitable (or potentially suitable) cockatoo hollows are the most significant with regards to legislation and Aurora recommends that every effort is made to retain these trees. Confirmation of the trees with potentially suitable hollows may be desirable as this may determine that these trees are less significant. This would likely require machinery to access the hollows and adequately assess their suitability for Black Cockatoos. Significant trees within the road reserve should be retained where possible with a higher preference for trees with 'high' and 'very high' value.

LEGISLATIVE CONTEXT

As the EPA has already considered the proposal (EPA, 2022) this section provides information on potential environmental approvals and referrals likely to be required under the federal EPBC Act, and the *Aboriginal Heritage Act 1972*.

Environmental and Biodiversity Conservation Act

Matters of National Environmental Significance (MNES) are factors that are protected under the EPBC Act. Referral to DCCEEW under the EPBC Act is triggered if a proposed action has or potentially has a significant impact on any MNES as described in *Significant Impact Guidelines 1.1* (Department of Environment, 2013).

Significant impact criteria assist in determining if an action is likely to have a significant impact on Threatened species, including:

- Lead to a long-term decrease in the size of a population.
- Reduce the area of occupancy of the species.
- Fragment an existing population into two or more populations.
- Adversely affect habitat critical to the survival of a species.
- Disrupt the breeding cycle of a population.
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- Result in invasive species that are harmful to a Threatened species becoming established in the species' habitat.
- Introduce disease that may cause the species to decline.
- Interfere with the recovery of the species.

Under the current Referral Guidelines for Black Cockatoos loss or impact to known, suitable or potential (suitable trees with DBH >50 cm) nesting trees and the loss of >1 ha of high-quality foraging habitat require referral (Department of Agriculture, Water and the Environment, 2022).

The assessment determined that the site provided suitable habitat for Baudin's Cockatoos and Forest Red-tailed Black Cockatoos (FRTBC) (Aurora Environmental, 2023). The Marri and Jarrah trees are suitable foraging species for both species and the Karri trees provide a very limited foraging resource to FRTBC. Area 1 provides high quality foraging habitat for Baudin's Cockatoos and FRTBC. The vegetation condition in Area 2 is lower. However, based on its proximity to Area 1 and the presence of two trees with potentially suitable hollows, it is also considered to provide moderate to high foraging habitat. Area 5 also provides suitable foraging habitat. However, the health and connectivity of this area is lower and therefore this area is much less significant in the landscape. The combined clearing of these areas needs be less than 1 ha to avoid the requirement to refer for impacts to Black Cockatoos foraging habitat. Aurora recommends that Area 1 (and potentially Area 2) are retained to preserve Black Cockatoo foraging habitat at the site and avoid the need for referral for foraging habitat.

Under the Referral Guidelines for Black Cockatoos, all 305 significant trees are considered potential breeding trees for Black Cockatoos as they have the potential to develop suitable breeding hollows in the future (Department of Agriculture, Water and the Environment, 2022). However, tree age is also

an important factor with suitable hollows unable to form in trees <100 years old and unlikely to form in trees <200 years old (Main Roads, 2023). Comparison of the aerial photography from 1962 (provided in PGV Environmental, 2020; page 3) and the tree value assessment (Attachment 3) show that many of the trees ascribed as 'high value' were present at the site in 1962 (as opposed to most of the other vegetation which was cleared) and therefore potentially old enough to develop suitable hollows. Under the current referral guidelines, it is unlikely that the project can avoid referral under the EPBC Act once the final structure plan is established on the basis of removal of potential habitat trees. However, Aurora recommends planning the retention of as many 'very high' value trees as possible in the southern half of the site (from the band of vegetation along the boundary of Lot 621 south) to conserve cockatoo habitat and increase the likelihood of a positive outcome from referral with limited (or no) conditions.

In addition, Aurora recommends the retention of the three trees with suitable breeding hollows (Tree 70 (Area 1), Tree 77 (Area 2) and Tree 235 (Area 6)) as well as either retaining or confirming the three trees that may have suitable hollows but are unconfirmed due to limited access (Tree 10 (Area 1), Tree 82 (Area 2) and Tree 281 (Area 8). This will reduce the potential impact to Black Cockatoos and increase the likelihood of a positive outcome from referral. It should be noted that Tree 70 is on the adjacent property with the hollow overhanging the boundary fenceline. Under the referral guidelines, the habitat surrounding potential habitat trees is also important and therefore retention of Areas 1 and 2 as foraging habitat would also preserve the habitat trees 10, 70, 77 and 82. Tree 235 is part of the creekline habitat and therefore already planned to be retained. Tree 281 is part of the road reserve and therefore road design should accommodate this tree and as much of the immediate surrounding habitat as possible.

Ongoing Management - Tree Exclusion Zones

For trees that are to be retained, exclusion zones are recommended to maintain tree health. The size of the exclusion zone is dependent on tree species. In general, the recommended exclusion zone is the area from the trunk to the edge of the 'drip zone' – the area directly beneath the tree canopy. Estimates of the distance of trees to buildings to protect buildings in the event that the tree falls over should be made by a trained arborist.

Marri

Marri trees typically grow to 20 - 40 m in height and can reach up to 60 m (WA Herbarium, 1998-). The canopy is usually restricted in woodland environments due to the proximity to other trees, but individual trees can grow a canopy up to 8 m in total width. They drop fruit (honky nuts) and may drop branches. They are suitable for areas where they do not overhang buildings and other infrastructure (Shire of Serpentine Jarrahdale, 2023). This species is also prone to Marri Canker (*Quambalaria coyrecup*) disease. Marri trees near infrastructure should be inspected annually[1] and diseased sections removed by a licensed arborist.

Jarrah

Jarrah trees often grow to 40 m in height (WA Herbarium, 1998-). Tree canopy can grow up to 7 m in width. This tree needs a lot of root space and is not suitable near bike paths or multiuse paths (Shire of Serpentine Jarrahdale, 2023). Jarrah trees are susceptible to dieback (*Phytophthora* spp.) and

[1] Inspections can be completed by anyone who is familiar with what diseased trees look like, but maintenance should always be carried out by a licensed professional.

individual trees should be inspected annually for signs of the disease. Dieback hygiene measures should be in place around woodland areas containing jarrah trees.

Karri

Karri trees typically grow 10 – 60 m in height but can grow up to 90 m (WA Herbarium, 1998-). The Karri trees along the ridgeline (Area 4) are unlikely to grow as tall as they are more exposed to wind, and the soils are likely to be shallower. Karris are not recommended for suburban settings as they have a deep root system and are prone to dropping branches.

Native Vegetation Clearing

Clearing of native vegetation is administered by the Department of Water and Environmental Regulation (DWER) and requires a clearing permit under Part V of the EP Act, except when clearing is for an exempt activity prescribed under Schedule 6 of the EP Act or Regulation 5 of the *Environmental Protection (Clearing Native Vegetation) Regulations 2004.* Regulation 5 exemptions are not applicable for clearing conducted within an Environmentally Sensitive Area (ESA). The survey area is not part of an ESA.

A Clearing Permit may be required for the project, as under the EP Act, clearing includes activities that involve the killing and destruction and substantial damage to some or all of the native vegetation in an area, including flooding or draining of land or other activities that are likely to kill native vegetation.

Exempt activities include clearing for requirements associated with a subdivision approval (limited to activities such as construction of roads and installation of services), installation of fire breaks and compliance with approved Bushfire Management Plans.

The DWER will assess the clearing application against the 'Ten Clearing Principles' to determine whether the clearing is likely to be at variance with the Principles. The Ten Clearing Principles aim to ensure that potential impacts resulting from removal of native vegetation can be assessed in an integrated way. An assessment response based on the flora, fauna and desktop surveys are provided below.

Assessment Against the Ten Clearing Principles

CLEARING PRINCIPLE	ASSESSMENT RESPONSE	VARIANCE
a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	The flora and vegetation survey indicated that species present were widespread, and the vegetation communities were not restricted to the survey area. The proposed development will not significantly impact on the biodiversity values of the area.	Not at variance.
b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to WA.	Foraging habitat utilised by Black Cockatoos has been assessed for the Site. The Site provides foraging and potentially nesting habitat. However, the habitat is not considered to be essential for the protection of the species. Significant resources for the species are protected in the region, including the Walpole Wilderness, Mount Lindsay National Park and large areas of State Forest.	Not at variance.

CLEARING PRINCIPLE	ASSESSMENT RESPONSE	VARIANCE
c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No threatened or priority flora were found within the survey area.	Not at variance.
d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community	The vegetation within the survey area is not representative of a threatened ecological community.	Not at variance.
e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	The vegetation on most of the site is part of the Keystone Complex. The Keystone Complex has 78.25% remaining and 57.5% in secure reserves (DBCA, 2018). There is approximately 44.07% of the Owingup Complex remaining based on the pre-European extent with 39.81% of the entire vegetation complex in secure tenure (DBCA, 2018). The survey area is not a significant remnant of an area that has been extensively cleared.	Not at variance.
f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	Watercourses will not be disturbed.	Not at variance.
g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Development activities on Site can be adequately managed to prevent land degradation.	Not likely to be at variance.
h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The survey area is not adjacent or near any conservation areas.	Not at variance.
i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	Development activities on Site can be adequately managed to prevent deterioration of ground and surface water.	Not likely to be at variance.
j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	The area is not subject to risk of flooding.	Not at variance.

Conclusions

The Site assessment found:

- 305 significant trees were recorded at the site comprising 27 Jarrah, 185 Karri, 91 Marri and two dead trees whose species were indeterminate.
- The site provides suitable foraging habitat for Baudin's and Forest Red-tailed Black Cockatoos.
- 87 trees contained hollows of which three trees contained large hollows potentially suitable for Black Cockatoos and three trees contained hollows that appear large from the ground but were inaccessible with the drone for closer inspection. The other hollows are too small for Black Cockatoos but provide suitable habitat for other fauna.
- 94 trees were ascribed as low value, 124 as medium, 57 high and 30 very high value. Trees that were ascribed as 'very high' value were usually very old and large with very high aesthetic, heritage and/or fauna values.
- One tree contained a potential Boorna Gnamma hole which could be culturally significant to the local Aboriginal community.
- Area 1 provides high quality foraging habitat for Black Cockatoos as well a suitable habitat for other fauna including phascogales and is considered high value at the site.
- Area 2 provides moderate foraging habitat and two potential nesting trees for Black Cockatoos. This area is of moderate to high value in the site.
- Area 4 is primarily of aesthetic value. The trees provide some foraging habitat for Forest Red-tailed Black Cockatoos and there are currently no trees with suitable nesting hollows for Black Cockatoos.
- Areas 3, 5 and 6 are of low value to the site and trees should be chosen for retention based on their individual values rather than the area as a whole.
- Area 7 is within creekline habitat and is planned for retention. It contains one tree that potentially has suitable hollows for Black Cockatoos (unconfirmed) and one tree with a small hollow currently occupied by Australian Ringneck Parrots (Twenty-eights).
- Area 8 is within the roadside reserve. One tree contains a potential cockatoo hollow (unconfirmed). Trees of high to very high value should be retained where possible.

In summary our advice for the Site is:

- The Site contains foraging and potential breeding habitat for Black Cockatoos. If more than 1 ha of foraging habitat is proposed to be cleared then referral under the EPBC Act is required.
- Retention of trees with hollows potentially suitable for Black Cockatoos should be retained, where possible. If this cannot be achieved, mitigation could include the installation of artificial nesting hollows.
- Significant trees should be incorporated into public open space, where possible.
- Based on available information, it is likely that the project will require a native vegetation clearing permit for areas where exemptions do not apply.

For and on behalf of Aurora Environmental,

Dr Catherine Hall
Senior Environmental Scientist

REFERENCES

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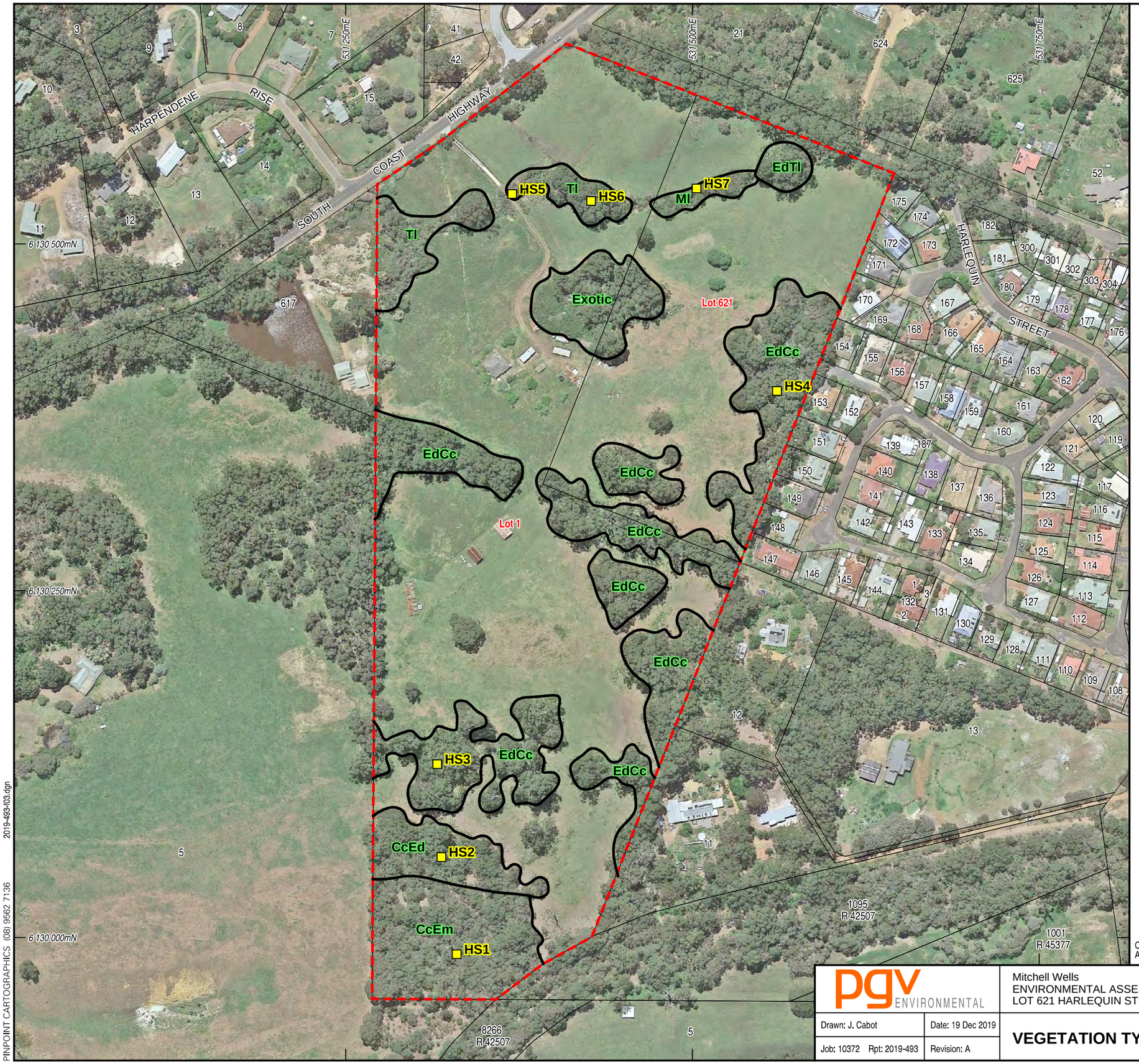
ATTACHMENT 1

Vegetation Mapping



N

0 20 40 60 80 100m

SCALE 1 : 2 750 at A3 (MGA)

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Quadrat Location
- Vegetation Type Boundary
- MI Vegetation Type

Vegetation Types

CcEm
Corymbia calophylla (Marri)/*Eucalyptus marginata* (Jarrah) Low Woodland over *Hovea elliptica/Taxandria parviceps/Bossiaea linophylla* Low Shrubland **HS1**

CcEd
Corymbia calophylla (Marri)/*Eucalyptus diversicolor* (Karri) Low Woodland over *Pteridium esculentum/ Hibbertia cuneiformis* Open Low Heath **HS2 and 4**

EdCc
Eucalyptus diversicolor (Karri)/Corymbia calophylla (Marri) Open Forest over Pteridium esculentum Low Shrubland **HS3**

Tl
Taxandria linearifolia Tall Open Scrub over *Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum* Shrubland/ Sedgeland **HS5**

EdTl
Eucalyptus diversicolor (Karri) Woodland over *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum* Sedgeland /Shrubland **HS6**

MI
Melaleuca lanceolata Low Woodland over *Taxandria linearifolia* Tall Shrubland over *Lepidosperma effusum/Pteridium esculentum* Sedgeland/Shrubland **HS7**

CADASTRAL SOURCE: Landgate, November 2019.
AERIAL PHOTOGRAPH SOURCE: GoogleEarth, flown November 2017.

pgv ENVIRONMENTAL

Mitchell Wells
ENVIRONMENTAL ASSESSMENT
LOT 621 HARLEQUIN STREET & LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 19 Dec 2019
Job: 10372 Rpt: 2019-493 | Revision: A

VEGETATION TYPES

Figure 3

2019-493-f03.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136

DISCLAIMER

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Picture 1

Picture 2

Picture 3

Picture 4

Picture 5

Picture 6

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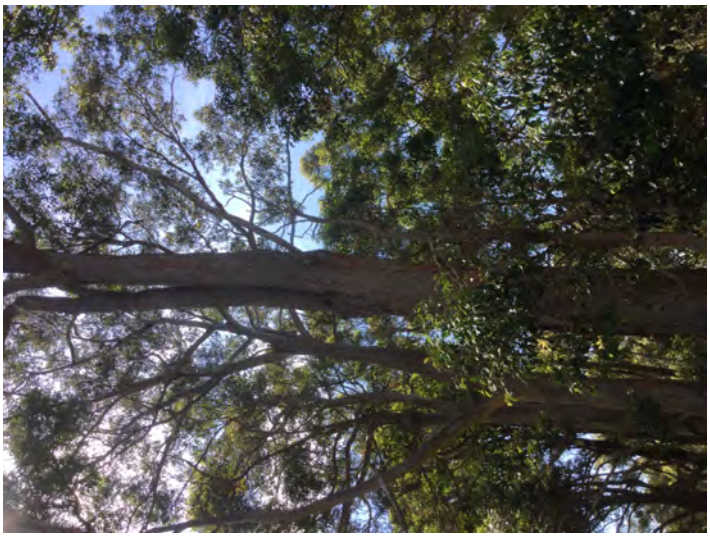

Picture 7

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Picture 10

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Picture 11

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Picture 14

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Picture 15

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Picture 18

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Picture 19

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Picture 34

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Picture 35

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Picture 40

Picture 41

Picture 42

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Picture 43

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PHOTOGRAPHIC REPORT

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TREE RETENTION & BLACK COCKATOO ASSESSMENT- 621 HARLEQUIN ST & 1 SOUTH COAST HWY, DENMARK FILE: TWE_AP00632_TREE_ch_1_TreePhotos	Project Code: TWE_AP00632 Author: Dr Catherine Hall Date: Photos taken November 2023

Picture 195

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PHOTOGRAPHIC REPORT

Project Name:	Topic: Photos of Significant Tres
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Picture 199

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PHOTOGRAPHIC REPORT

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PHOTOGRAPHIC REPORT

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PHOTOGRAPHIC REPORT

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Picture 247

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Picture 251

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PHOTOGRAPHIC REPORT

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PHOTOGRAPHIC REPORT

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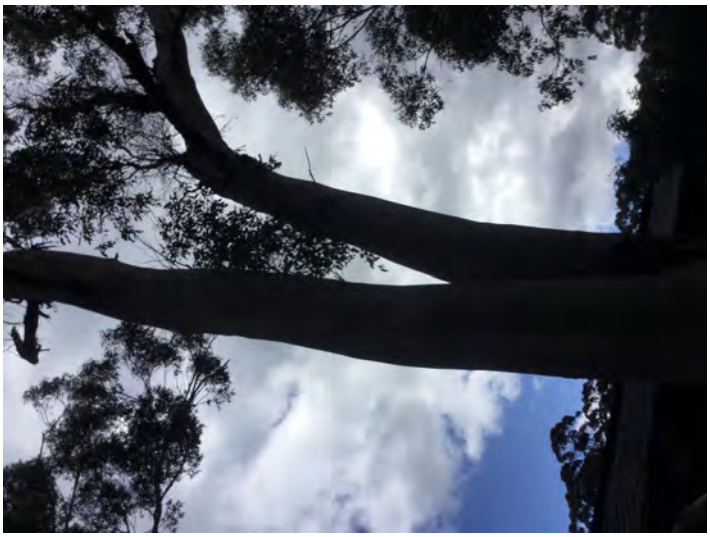
Picture 267



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PHOTOGRAPHIC REPORT

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Picture 275

Picture 276

APPENDIX E
LOCAL WATER MANAGEMENT STRATEGY

621 Harlequin Road

Local Water Management Strategy

Prepared for Turner and Wells

By Urbaqua

February 2022

urbaqua
land and water solutions

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EXECUTIVE SUMMARY

This document outlines the Local Water Management Strategy (LWMS) for the site and has been developed in accordance with Better Urban Water Management (BUWM) practices (WAPC, 2008). The tables below provide an overview of the site and a summary of design elements for best management practices and control points. An LWMS checklist is provided in Appendix 1.

Site Overview	Description
Site Location	Lot 621 Harlequin Street and Lot 1 South Coast Highway
Size	16.84 ha
Proposed Construction	Residential R20 lots with associated roads and 6 public open space areas. The existing stream is to be retained and integrated within proposed POS areas in the north of the site.
Planning Context	The site is currently zoned as "Rural" under the Shire of Denmark District Planning Scheme and "Urban Residential" under the Shire of Denmark Local Planning Strategy.
Hydrological Constraints	• An existing watercourse intersects the northern portion of the site. • Low permeability soils surrounding the watercourse. • Underlying fractured rock aquifer.
Hydrological Opportunities	• Maintain flows along the watercourse, detaining up to the 20% AEP onsite (as agreed with Shire of Denmark). • Utilise the natural slope for stormwater conveyance to the north/south.

Design Element	Design and Compliance to Objectives
Site Characteristics (Section 2)	• The site was previously used for cattle pasture and has existing agricultural buildings with one rural residential dwelling. • A topographic spur slopes the site approximately from the middle of the site to the north, east, and south. Elevations range from 61 mAHD at the top of the spur, and low points of 31 mAHD (north) and 33 mAHD (south) • Regional geology and mapping indicate the site contains colluvium soils in the north and porphyritic biotite granite and adamellite in the south. The site is relatively poorly drained in the watercourse area. • The site-specific geotechnical report indicate soils are mostly sandy clays or sandy silts with some gravel. • Geotechnical PRI testing indicates soils are "strongly adsorbing" across most of the site and "moderately adsorbing" in the north east corner. • CSIRO mapping indicates there is an "Extremely Low Probability of Occurrence" of ASS within 3m of the surface level of the site. • A watercourse intersects the site in the northern portion. Flow of this depends on overflow of a dam located in the neighbouring property to the west. • Groundwater varies across the site due to the underlying fractured rock aquifer and poorly draining soils present. Groundwater was encountered during geotechnical investigations only around the watercourse (September 2019). • No wetland, heritage or contaminated sites are located within site boundaries.
Water Use Strategy (Section 3)	• Water supply and sewer connections will be supplied via extensions to the existing Water Corporation scheme networks.

Design Element	Design and Compliance to Objectives
Stormwater Management (Section 4)	• The site is divided into four sub-catchment areas (Catchment1a and 1b, Catchment 2 and Catchment 3), each draining to respective stormwater detention basins to manage up to the 20% AEP. • Road drainage from Catchments 1 and 2 (north end) will infiltrate in basins 1A, 1B and Basin 2, with overflows to the existing watercourse at pre-development flow rates (in a 20% AEP event). • Basin 3 (south end) has been sized to contain and infiltrate road drainage up to the 20% AEP from Catchment 3. • Water quality treatment will be managed through vegetated areas in the three detention basins. This will treat the 1EY ("first flush") event.
Flood Management (Section 5)	• Flood modelling was undertaken (by Hyd2o) to predict flood levels within the watercourse and to provide lot setback requirements (outside the floodway). DWER requested the modelling to predict the levels assuming the upstream neighbouring dam were not present (ie. a worst case 'future' scenario if the dam were removed). • Lots adjacent to the watercourse will achieve the required separation distances to modelled flood levels (0.5 m above flood fringe levels). • It is anticipated the lot topography and levels will follow existing natural slopes excluding proposed Lots 12 to 14 and 156 as identified by the conceptual development plan, which will require fill to achieve separation distance requirements. • Lot levels will achieve adequate separation to basin top water levels (0.3 m). Lots 154-156 and Lots 15 and 37 will require fill to achieve the required separation to basin TWL.
Groundwater Management (Section 6)	• Lots will retain natural fall and level changes where possible. The construction of houses is expected to be integrated more naturally into the landscape and topographical variations with split levelled or stilted housing, depending on the topography of the individual lot. • Basin 2 and 3 achieve the required separation distance from basin inverts to groundwater (0.3m) • Basins 1a and 1b are unlikely to achieve the separation to perched groundwater based on the initial geotechnical investigations, so subsoil drainage is proposed close to basins to provide a controlled perched groundwater level and to ensure basins do not experience perched groundwater ingress.
Monitoring and Reporting (Section 7)	• Post-development monitoring is not proposed due to site hydrogeology (inconsistent fractured rock aquifer or perching). • Presence of the neighbouring dam currently restricts flow of the watercourse, and as water is not present during most of the year (ephemeral), surface water monitoring is not proposed.

1 INTRODUCTION

1.1 Background

This Local Water Management Strategy (LWMS) outlines the proposed water management approach to the development of lots located at 621 Harlequin Street and Lot 1 South Coast Highway, Denmark ('the site') within Western Australia's Great Southern region. The site is located approximately 2 km from Denmark town centre which lies in the east, and 2 km from the Wilson Inlet to the south (Figure 1).

This LWMS has been prepared in accordance with the LWMS guidelines (DWER, 2008) and Better Urban Water Management (BUWM) guidelines (WAPC, 2008). The LWMS Checklist has been provided in Appendix 1.

1.2 Planning Context

The site is currently zoned as "Urban Residential" under the Shire of Denmark Local Planning Strategy (SoD, 2012), and "Rural" under the Shire of Denmark's Town Planning Scheme No.3 (TPS3) (DPLH, 2015). This Local Water Management Strategy (LWMS) is required to support both the Local Structure Plan (LSP) and Amendment 146 to TPS3, which will rezone the site to Residential R20.

1.3 Proposed Development

The site is a total of 16.8 ha, and will be comprise of the following features:

- 156 residential lots,
- POS areas totalling 2.24 ha

The structure plan is presented in Figure 2.

1.4 Design and Management Objectives

1.4.1 Policy and Guidelines

The aim of this LWMS is to provide an understanding of existing groundwater and surface water sources at the site, and to outline advice for stormwater drainage, water quality, water supply, wastewater disposal and flood and groundwater management needs.

This LWMS has been prepared in accordance with State Planning Policy 2.9 Water Resources (WAPC, 2006), *Better Urban Water Management* (WAPC, 2008), and *Interim: Local Water Management Strategies* (DoW, 2013). The LWMS has also considered the following documents.

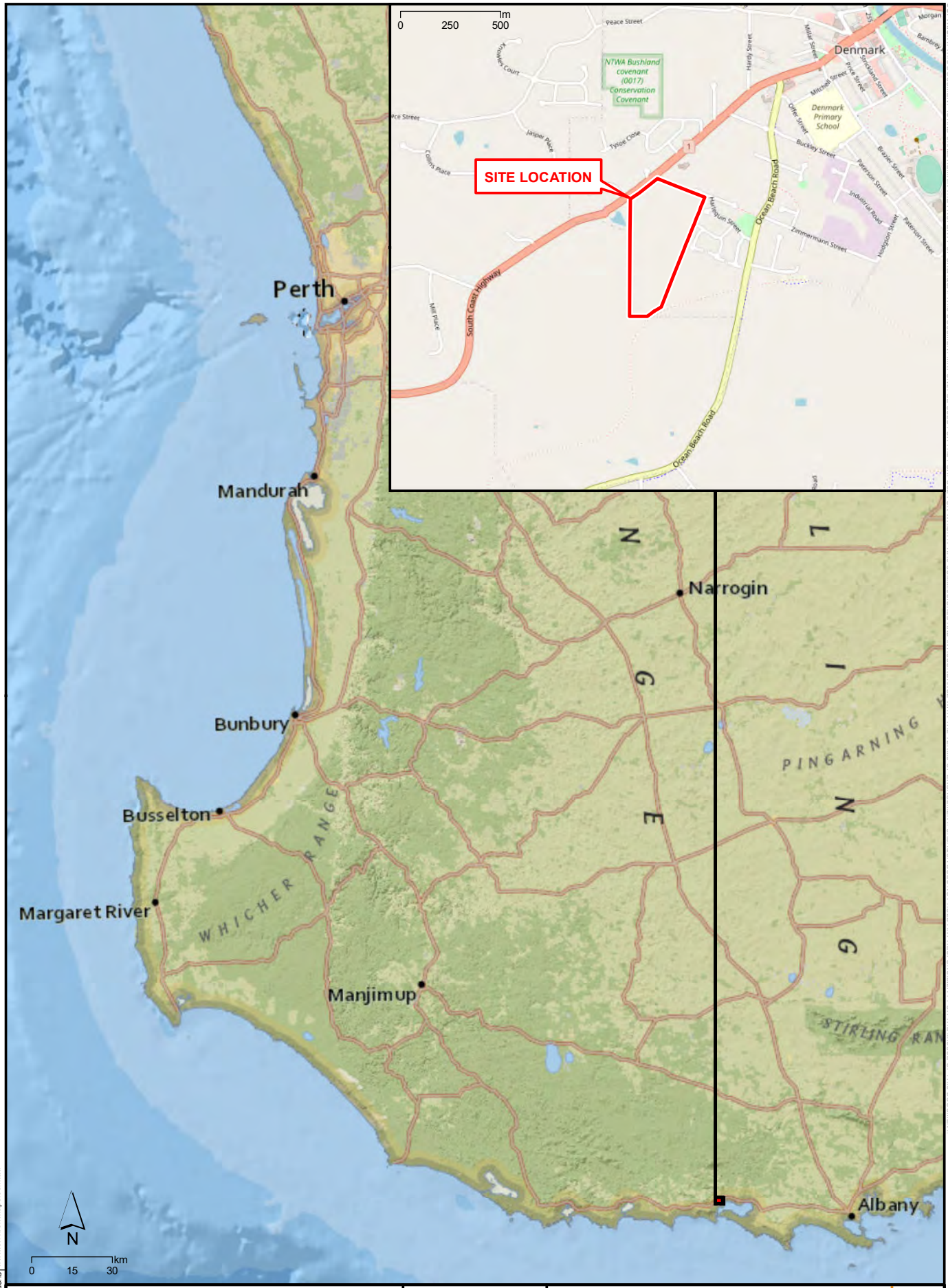
- Shire of Denmark Guidelines for the Subdivision of Land (Section 8 and 9).
- Lower Great Southern Strategy 2016 (WAPC, 2016).
- WA State Water Strategy (Department of the Premier and Cabinet, 2004).
- WA State Water Plan (Department of the Premier and Cabinet, 2007).
- Water Sensitive Design Policy (EMRC, 2008).
- Government Sewerage Policy (Government of Western Australia, 2019).

1.4.2 Design Objectives

The design objectives for the site are presented in Table 1, and have been created in accordance with the policy and guidelines listed in Section 1.4.1.

Table 1: Design Objectives

Element	Principle	Objective
Surface Water Management	Manage catchments to maintain or improve water resources.	Manage and treat stormwater as close to source as much as possible.
		Maintain surface water flow paths and discharges from the site.
		Maintain or where possible improve the water quality in the watercourses through stormwater treatment.
		Maintain surface water quality at pre-development levels.
	Maintain foreshore watercourses	Exclude development from the foreshore watercourses where possible.
Groundwater Management	Manage catchments to maintain or improve water resources.	Maintain or improve groundwater quality.
	Manage risks to human life and property.	Provide adequate management of perched groundwater (if present).
Flood Risk Management	Manage risks to human life and property.	Protect people and the built environment from flooding and inundation on site.
		No adverse impact in terms of flood risk to communities upstream and downstream of the development.
Nutrient Management	Manage catchments to maintain or improve water resources.	Reduce nitrogen load generated on the site.
		Reduce phosphorous load generated on the site.
Water conservation strategy (potable and wastewater)	Manage catchments to maintain or improve water resources.	Maintain or reduce water usage.
	Ensure the efficient use of water resources	Achieve WA State Water Plan targets of household potable water consumption
		Minimise the external use of potable water.



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DENMARK LWMS
621 HARLEQUIN ST & 1 SOUTH COAST HWY

SITE LOCATION

Figure 1

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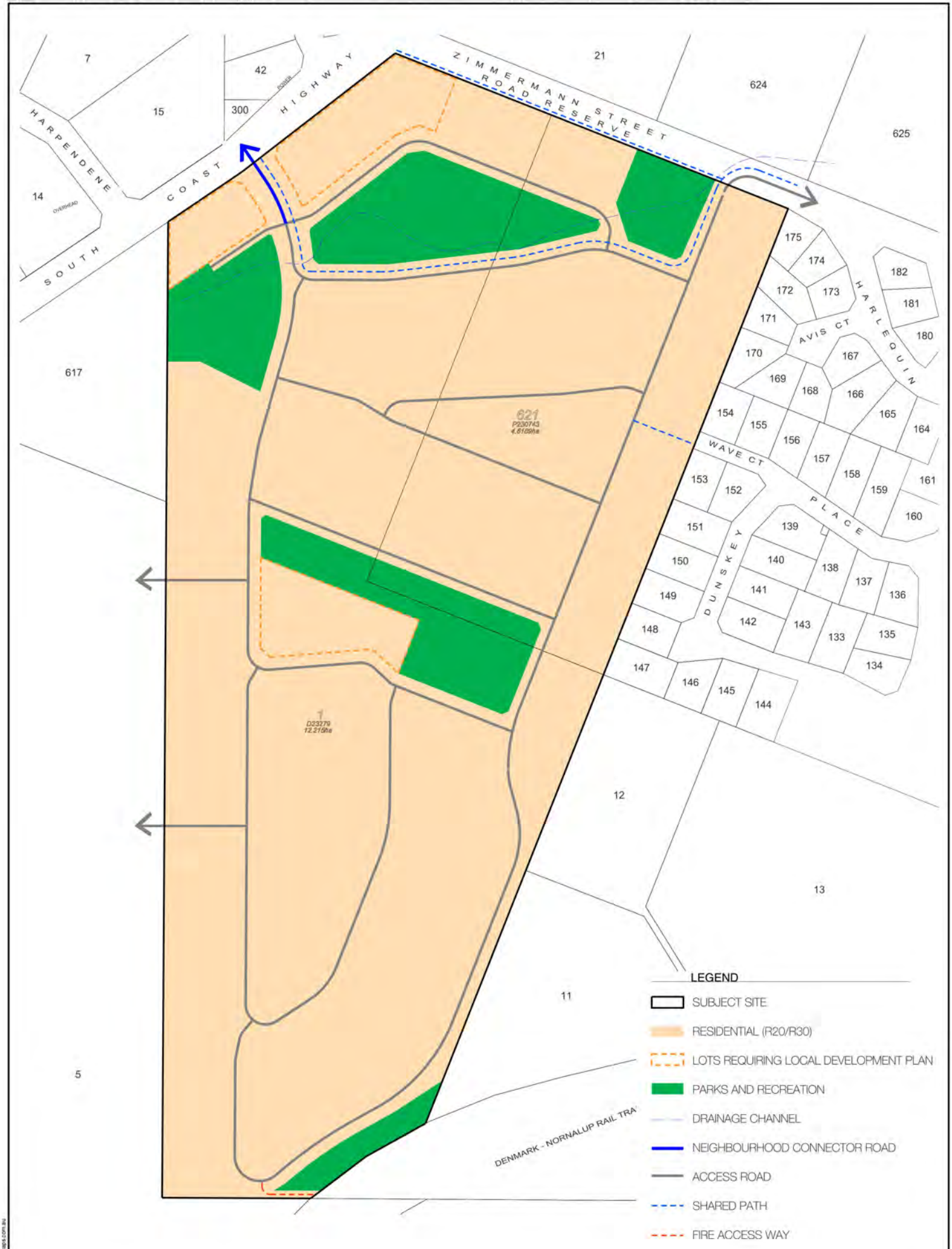

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STRUCTURE PLAN

Figure 2

2 SITE CHARACTERISTICS

2.1 Land Use

2.1.1 Existing and Historical Land Use

The site contains existing chicken sheds, one rural residential dwelling and sheds previously used for dairy production. The rest of the site is predominantly used for cattle pasture.

Historically, aerial imagery indicates no other previous land use, other than rural buildings and the old dairy sheds and associated buildings.

2.1.2 Surrounding Land Use

Residential development is adjacent to the site along the eastern boundary. Larger rural-residential lots are located to the north-west along South Coast Highway. The Denmark Nornalup Rail Trail exists along the south-eastern boundary. The lot is approximately 1 km to the north-west of a Wastewater Treatment Plant (WWTP) (outside of its' buffer zone).

2.2 Climate and Rainfall

The site experiences a mild temperate climate with mild wet winters and dry summers. Rainfall data from the Bureau of Meteorology (BOM) has recorded rainfall statistics since 1897. The long term and short-term data has been provided in Table 2 below. Higher rainfall is typically received from May to September, with a short-term average annual rainfall of 983.99 mm. The long-term average is 1085.2 mm, the difference of approximately 100 mm indicating a declining rainfall trend.

Table 2: Average Monthly Rainfall Statistics

Month	Long-Term Average	Short-Term Average [1]
January	28.10	33.38
February	27.00	23.08
March	47.80	43.58
April	77.10	63.60
May	128.10	99.62
June	152.80	123.90
July	170.00	155.58
August	148.30	147.50
September	117.60	127.39
October	93.60	70.06
November	52.80	53.49
December	35.20	38.01
Annual	1085.20	983.99

1 Short term average from 2011 to 2021, long term average since 1897.

Source: (BOM, 2021)

2.3 Topography

The site topography shows a slight undulation with a spur across the middle of the site with slopes towards the north, east and south. This is typical of the topography seen in the larger Denmark area.

The high point of the spur sits at approximately 61 mAHD mid-way through the site. Topographic contours indicate the northern end of the spur slopes down to 31 mAHD, which is also the low point of the watercourse. The southern slope descends to approximately 33 mAHD.

The land also slopes down on the small portion of land to the north of the unnamed stream towards the centreline of the stream.

2.4 Geology and Soils

2.4.1 Regional Geology and Soil Description

The Warren-Denmark hydrozone (DAF, 2014) suggests the larger Denmark area (a study area of 1.56 million ha) soil profile is comprised of deeply weathered granite and gneiss overlain by Tertiary and Quarternary sediments. Soil mapping indicates the following soils are present on site:

- Qc: Colluvium - sand, silt, clay.
- P_gp: Porphyritic biotite granite and adamellite
- Czs: Sand - white, grey or brown; commonly contains iron pisoliths and overlies laterite.

Regional mapping indicates the northern half of the site is comprised of Colluvium soils, and the southern half of the site is comprised of porphyritic biotite granite and adamellite, as shown on Figure 3. DMP mapping also indicates exposed dolerite dykes are present within the local area (DMP, 2015).

2.4.2 Geotechnical Investigation

A geotechnical investigation was undertaken by Great Southern Geotechnics (GSG) in September of 2019. This investigation consisted of 18 boreholes, excavated up to a depth of 2 m. Table 3 below displays the soil type findings at each test pit. The geotechnical; report has been provided in Appendix 2. Figure 3 displays the test pit locations. Water presence observations are discussed in Section 1.4.5 below.

Overall, predominant soil types across the site are sand with silt, sandy clay, and sandy gravel.

Table 3: Soil Types at Test Pit Locations

Location	Depth	Soil
TP1	0-200	Sand with silt
	200-1000	
	1000-2000	Sandy clay
TP2	0-100	Sand with silt
	100-1000	
	1000-1200	Sandy gravel, refusal at 1.2 mbGL
TP3	0-200	Sand with silt
	200-1100	
	1100-1800	Sandy clay
	1800-2000	Gravelly sand with clay
TP4	0-200	Sand with silt
	200-700	
	700-1500	Sandy clay
TP5	0-100	Sand with silt
	100-700	Sandy gravel
	700-2000	Sandy clay
TP6	0-100	Sand with silt
	100-900	Sandy gravel
	900-1600	Sandy clay
	1600-2000	
TP7	0-75	Sand with silt
	75-1050	Sandy gravel
	1050-2000	Sandy clay
TP8	0-100	Sand with silt
	100-500	
	500-900	Sandy gravel
	900-2000	Sandy clay
TP9	0-200	Sand with silt
	200-400	
	400-1600	Sandy clay
	1600-2000	
TP10	0-150	Sand with silt
	150-700	Sandy gravel
TP11	0-150	Sand with silt
	150-750	
	750-1100	Sandy clay
	1100-2000	
TP12	0-100	Sand with silt
	100-950	Sandy gravel
	950-1200	Sandy clay
	1200-2000	Sandy clay
TP13	0-200	Sand with silt
	200-1100	Clayey sand
	1100-1700	
	1700-2000	Sandy clay
TP14	0-150	Sand with silt
	100-1000	Sandy gravel
	1000-2000	Sandy clay
TP15	0-100	Sand with silt
	100-400	Sandy gravel
	400-1200	Sandy Clay
	1200-1500	Sandy Clay, refusal at 1.5 mbGL
TP16	0-100	Sand with silt
	100-450	Gravelly sand
	450-1200	Sandy clay
	1200-2000	
TP17	0-200	Sand with silt
	200-850	
	850-1100	Sandy clay
	1100-2000	
TP18	0-100	Sand with silt
	100-1000	Sandy gravel
	1000-1500	
	1500-2000	Clayey sand

2.4.3 Soil Permeability

Department of Primary Industries and Regional Development (DPIRD) land quality mapping indicates that a small portion of land (approximately 10 % of the site area) in the north-east corner is 'moderate to very high' for waterlogging risk, and site drainage potential is 'poor to very poor' (DPIRD, 2018). This area is associated with the watercourse.

The GSG geotechnical study (Appendix 2) undertook laboratory testing using a falling head permeability test method, for soil samples taken at test pits TP13, TP14 and TP16 (Figure 3). Tests showed that the test pits had the following k values:

- TP13: 3.9 x 10-10 m/s (at 0.2 m to 1.1 mbgl)
- TP14: 1.6 x 10-10 m/s (at 1.0 m to 2.0 mbgl)
- TP16: 2.74 x 10-10 m/s (at 1.2 m to 2.0 mbgl)

This equates to a range of 1 x 10-5 to 2 x 10-5 m/day.

2.4.4 Phosphorus Retention Index

The PRI of a soil defines how much phosphorus will bind to the soil via physio-chemical and chemical fixation processes as water infiltrates through the soil. The PRI of different soil types have been classified by the former Department of Environment in Table 4 below. There is generally a correlation between the permeability of a soil and the PRI; soils with a lower permeability (e.g., clays) have a higher PRI. Based on the soil types and the permeability of the onsite soils, the estimated PRI of the soils would be approximately 30+ due to the Colluvium present.

Onsite soil PRI testing was undertaken as part of the geotechnical investigation and is presented in Table 5 below with locations shown in Figure 3. The site PRIs show the onsite soil is "strongly to very strongly adsorbing" of phosphorus as per Table 6. This is relatively in line with predictions made from Table 4. TP3 in the east showed soil is moderately adsorbing in this area.

Table 4: Relative permeability and PRI for various substrates

Substrate	Permeability (m/day)	PRI
Bassendean Sands	30+	0-0.5
Karrakatta Sands	10+	2-4
Cottesloe Sands	10+	5-12
Crushed limestone or lime sands	2-5	5-20
Natural clay or loam soils	<0.4	30-1,000+

Source: Department of Environment

Table 5: Onsite PRI Results

Test Pit Location	PRI
Test Pit 3	15.7
Test Pit 12	155.2
Test Pit 13	180.0
Test Pit 15	251.8

Table 6: PRI Fixation Properties

PRI	Description
Negative	desorbing
0–2	weakly adsorbing
2–20	moderately adsorbing
20–100	strongly adsorbing
>100	very strongly adsorbing

Source: Department of Agriculture and Food

1.4.3 Acid Sulphate Soils

Acid Sulphate Soil (ASS) mapping conducted by the CSIRO for the Australian Soil Resource Information System (ASRIS) indicates that there is an "Extremely Low Probability of Occurrence" of ASS for the site.

2.5 Surface Water

2.5.1 Watercourses

The site is intersected by an ephemeral (seasonally present) unnamed stream in the site's north. This stream ultimately flows into the Wilson Inlet, located approximately 2 km to the south east of the site.

The neighbouring Lot 617 to the west of the site contains a large dam, which restricts flow to the unnamed stream. Historical aerial photography indicates this dam has been present since at least 1962, which is as far back as aerial records show (Landgate, 2019). The flow of this stream across the site is largely dependent on the overflow of the dam. Controlled release of water from the dam for stock watering has been previously observed.

Photos were taken onsite in February 2020, giving an indication of those areas of sections of the stream which may be ephemeral or perennial in nature. These are displayed in Plate 1 to Plate 8 below, with locations shown on Figure 4.

Plate 1: PP1 Location, Photo 1 (North)

Description: At the upper end of the stream, this shows water is present but not flowing. The stream is surrounded by rocks which appear to be naturally eroded, and sparse grass and weeds. Mature trees are a short distance away further to the north.

Plate 2: PP1 Location, Photo 2 (East)

Description: The stream is shown to be surrounded by understorey vegetation and young trees. No water is present, indictating this section may be ephermeral in nature.

Plate 3: PP1 Location, Photo 3 (North-East)

Description: The stream is shown to be surrounded by tall grass, intersecting a wire fence. Mature trees are shown in the distance.

Plate 4: PP2 Location, Photo 1 (North-East)

Description: The stream is surrounded by riparian vegetation, with a mature fallen tree and young trees present.

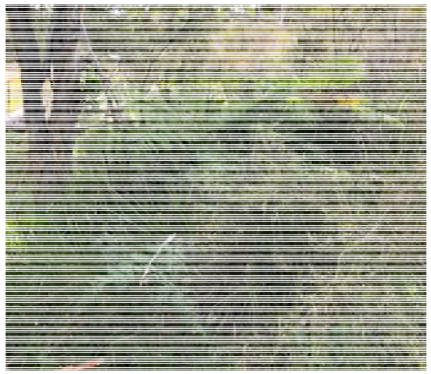

Plate 5: PP3 Location Photo 2

Description: Further along the stream the riparian vegetation is dense with shrubs, and some mature and young trees. No water appears to be present.

Plate 6: PP4 Location, Photo 1 (North)

Description: This shows the riparian vegetation is less dense as PP2, with no trees or water present. Vegetation is mainly shrubs and weeds.

Plate 7: PP4 Location, Photo 2

Description: This shows the riparian vegetation is dense in this location, comprising grass, weeds, shrubs, and a mixture of young and mature trees. No water appears to be present.

Plate 8: PP5 Location, Photo 1

Description: This shows the stream at a distance, surrounded by young and mature trees with riparian vegetation. Vegetation is less dense further from the stream, and mainly grass.

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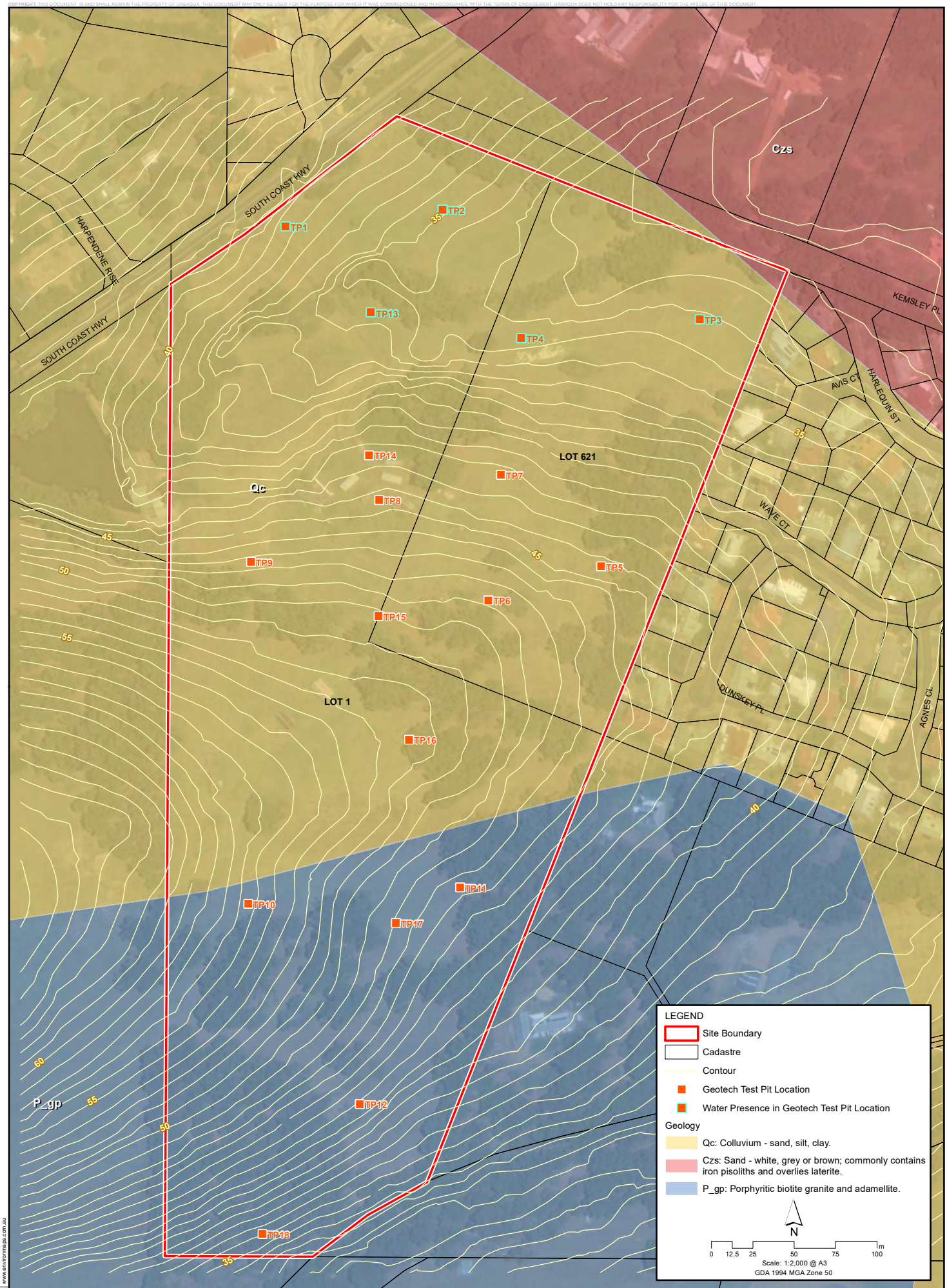

LEGEND

- Site Boundary
- Cadastre
- Contour
- Geotech Test Pit Location
- Water Presence in Geotech Test Pit Location

Geology

- Qc: Colluvium - sand, silt, clay.
- Czs: Sand - white, grey or brown; commonly contains iron pisoliths and overlies laterite.
- P_gp: Porphyritic biotite granite and adamellite.

N

0 12.5 25 50 75 100 m

Scale: 1:2,000 @ A3
GDA 1994 MGA Zone 50

Source: Contours - DPIRD, 2019
Cadastre - Landgate, 2019
Orthophoto - Open Source
Geology - DoIR: Geological Survey of W.A., 1999

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TOPOGRAPHY AND SOILS

Figure 3

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LEGEND

- Site Boundary
- Cadastre
- Photo Point
- Dam
- 1% AEP Flood Level (mAHD)
- 1% AEP Floodplain

N

0 12.5 25 50 75 100 m

Scale: 1:2,000 @ A3
GDA 1994 MGA Zone 50

Source: Contours - DPIRD, 2019
Cadastre - Landgate, 2019
Orthophoto - Landgate
Floodplain and Flood Levels - hyd2o, 2020

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SURFACE WATER FEATURES

Figure 4

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2.5.2 Floodplain

Flood modelling has been conducted (by Hyd2o) for the existing waterway which intersects the northern portion of the site. Liaison was undertaken with DWER regarding the modelling requirements, as a dam on the adjacent property currently prevents a substantial amount of stormwater from entering the existing stream. DWER requested that the modelling not include the large upstream dam located in the westerly neighbouring property and assumed all catchment flows are directed towards the waterway with no retention/detention in the dam (to model the flood risk if the catchment was restored to its original flow and the dam was removed as a "worst-case-scenario"). DWER correspondence has been provided in Appendix 3.

Estimation of 1% AEP Flood Levels

Flood levels were modelled using HECRAS. Flood levels within the site vary from 37.75 mAHD at the upstream boundary, to 31.21 mAHD at the downstream boundary. Table 7 below displays the flood levels for the 1% AEP storm event at various cross sections along the stream. These locations are shown in Figure 4, along with the 1% AEP floodplain area.

Table 7: 1% AEP Flood Levels

Cross Section	Flood Level (mAHD)
XS1	37.74
XS2	35.46
XS3	34.75
XS4	32.47
XS5	32.12
XS6	31.69
XS7	31.61
XS8	31.21

Table 8 below displays the design flows recommended by this modelling, with the full Hyd2o flood modelling report provided in Appendix 4.

Pre-development Flows

Table 8 below displays the design flows estimated for the site by Hyd2o. These design flow rates used a combination of methods for their determination, as initial design flows suggested an overestimation of catchment area for larger events. The full flood modelling report is available in Appendix 4.

Table 8: Pre-Development Flow Estimates

Storm Event	Recommended Design Flow (m^3/s)
0.5 EY	1.38
0.2 EY	2.39
10% AEP	3.34
5% AEP	4.63
2% AEP	6.55
1% AEP	8.0

1.4.4 Wetlands

There are no wetlands present within the site boundaries.

2.6 Groundwater

The following aquifers underlying the site were found, from most shallow to deep:

- Combined – Fractured Rock West – Alluvium
- Combined – Fractured Rock West – Calcrete
- Combined – Fractured Rock West – Palaeochannel
- Combined – Fractured Rock West – Fractured Rock

There is limited online regional groundwater information for the site, with no groundwater contour information available. As such, groundwater studies for the local area were researched to gain a better understanding of possible groundwater activity underlying the site.

2.6.1 Warren-Denmark Southland Analysis

An analysis of groundwater trends in the south-west of WA describes the site to lie in the hydrozone of "Warren-Denmark Southland" (DAF, 2014). Groundwater within this hydrozone indicated:

- 56% of bores within the study had stable groundwater levels (i.e., with minimal groundwater level fluctuation) from 2007-2012. This has increased since 1991-2000 groundwater trends (31%).
- 19% of bores within the study had a falling level trend in groundwater levels from 2007-2012. This has increased since 1991-2000 groundwater trends (16%).
- 25% of bores displayed a rising trend in groundwater levels from 2007-2012. This has decreased since 1991-2000 groundwater trends (53%).

Plate 9 below shows the locations of the bores, taken from the DAF study. The bore located closest to this site showed a rising groundwater trend from 2007 to 2012. This is located a significant distance from the site to the east.

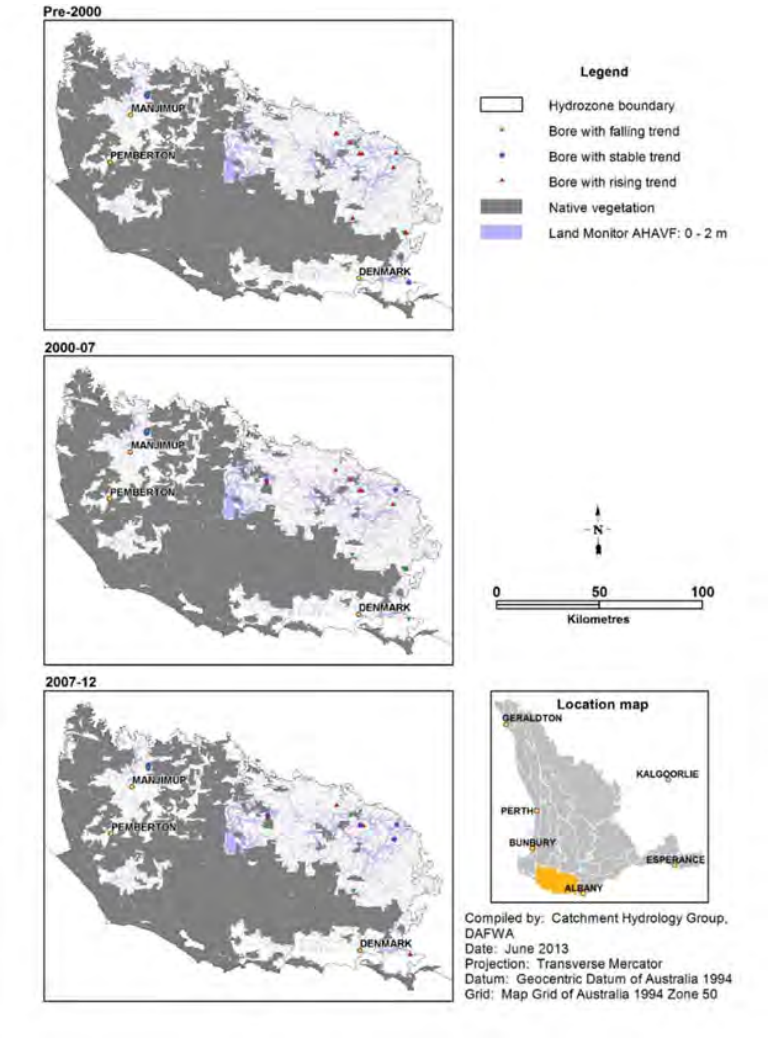

Plate 9: Groundwater Trends in the Warren-Denmark Southland

Source: DAF, 2014

The analysis further suggests dolerite dykes (which are mapped as present in the local area, [DMP, 2015]) and shear zones present within this hydrozone may result in groundwater systems that are "local and compartmentalised". This information when combined with the geotechnical results have informed groundwater management across the site (Section 6).

1.4.5 Site Specific Investigations

A geotechnical investigation was conducted by Great Southern Geotechnics (GSG) in September 2019 (Section 2.4). This is considered approximately the annual peak groundwater period for most aquifers across the Swan Coastal Plain. Table 9 below displays the geotechnical water table observations from the geotechnical investigation.

Table 9: Geotechnical Water Table Observations

Test Pit	Depth (m)	Water Table Observation (as written by GSG)	Depth of Settled Groundwater after 1hr (mbGL)	Approximate Groundwater Level (mAHD)[2]
TP1	2	Water seeping in over clay layer at 1 mbGL. 1°hr after excavation water level had settled at 1 mbGL.	1	38.5
TP2	1.2	Water flowing in over gravel layer at 1 mbGL into saturated sand layer above. 1 hr after excavation water level had settled at 0.4 mbGL. Due to water ingress test pit flooded and representative sampling could not occur. Fast rate of water ingress indicates potential underground springs.	0.4	34.9
TP3	2	Water seeping in over clay layer at 1.1 mbGL. 1 hr after excavation water level had settled at 1 mbGL.	1	32.2
TP4	1.51	Water seeping in over clay layer at 0.7 mbGL below existing ground level. 1 hr after excavation water level had settled at 0.7 mbGL	0.7	33.0
TP13	2	Water seeping through wall of excavation. 1 hr after excavation water level had settled at 0.65 mbGL	0.65	34.05

1 Hand auger used with width of 100 mm

2 Calculated based off topographic contour elevations (Figure 3) – test pit location elevation not surveyed specifically

Source: GSG, 2019

During this investigation, water was found in test pit locations TP1 to TP4 and TP13. These pits are all located in the northern third of the site, within close proximity to the watercourse. TP2, 4 and 13 all displayed less than 1 m separation of groundwater to the surface and are located toward the middle of the waterway. TP2 observed a fast rate of water ingress, which could potentially indicate underground springs.

The other test pit locations did not encounter water.

1.5 Contamination

There are no contaminated sites located within the site boundary.

1.6 Heritage

There are no places of Aboriginal or European heritage sites located within site boundary.

3 WATER USE STRATEGY

3.1 Water Supply

Water Corporation has advised that the proposed development site is split into two different water zones. Lot 621 is in the Gravity Zone and Lot 1 is in a Booster Zone. The water zone boundaries are shown in Plate 10 below. It is likely that Lot 621 can be serviced from extensions of the existing water reticulation network to the north-east boundary in Harlequin Street (Tabec, 2022). As Lot 1 is within the Booster Zone, the existing booster pump and water main is likely to be upgraded to accommodate the additional dwellings from this development. Further information is provided in the Infrastructure Report in Appendix 6 (Tabec, 2022).

Plate 10: Water Corporation Water Reticulation Planning

Source: Tabec Infrastructure Report, 2022

3.2 Wastewater Disposal

Wastewater will be disposed of via a reticulated sewer network, following extensions of the existing network. Water Corporation has existing scheme planning and has advised that the site can be serviced through the extensions of the gravity sewer network along with appropriate upgrades. A copy of Water Corporation's wastewater scheme planning showing the nominated wastewater catchment boundaries is included in Plate 11.

No septic tanks or online disposal of wastewater will be used. Further information is provided in the Infrastructure Report in Appendix 6 (Tabec, 2022).

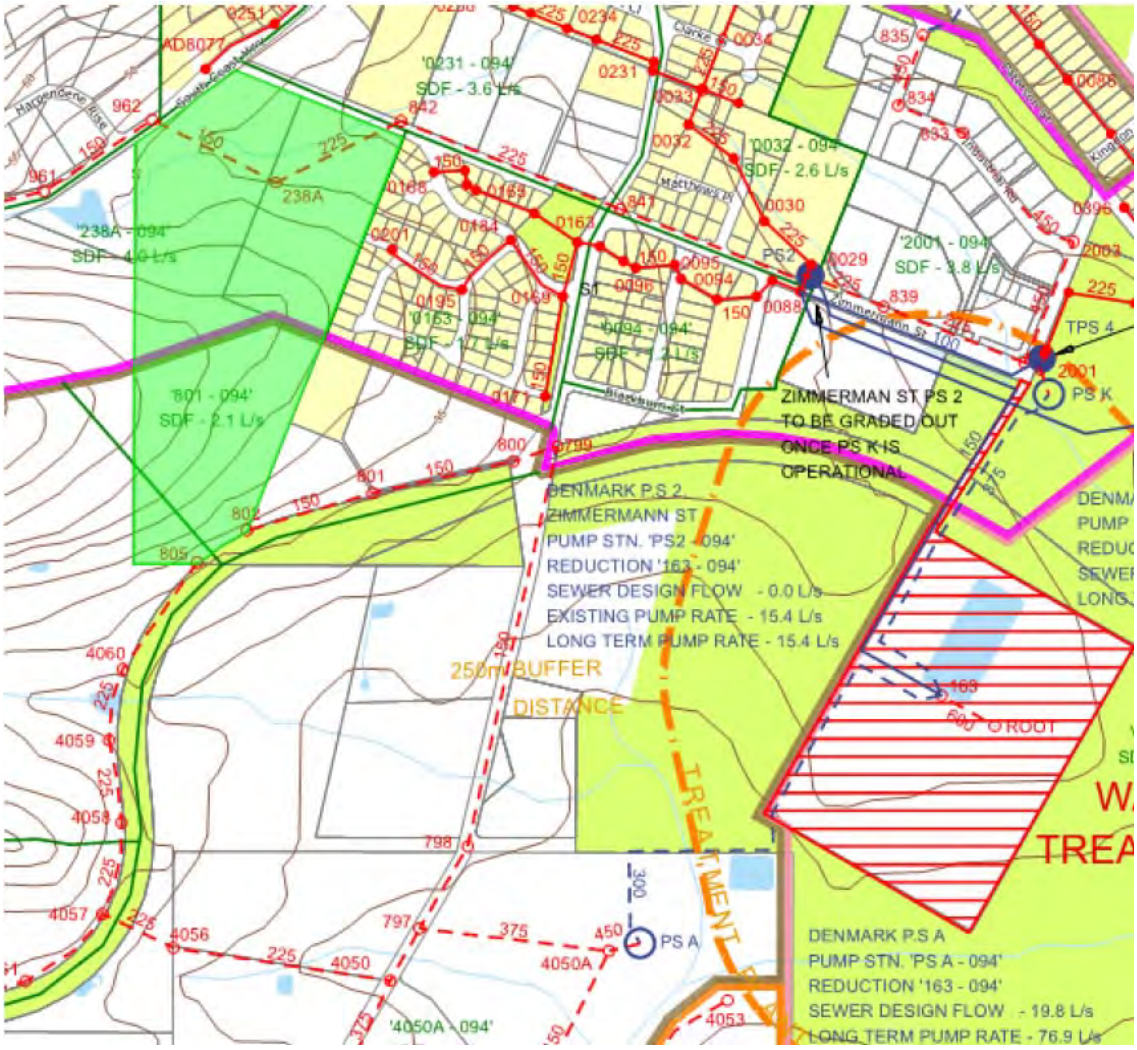

Plate 11: Water Corporation Wastewater Planning

Source: Tabec, 2022

3.3 Household Water Efficiency and Conservation

Household water use efficiency will be required through compliance with the 'Energy Use in Houses Code' and the 'Water Use in Houses Code'. These are known as the 5 Star Plus Codes, introduced by the Department of Housing and Works in 2007 (DoH, 2007 a, b).

The following requirements will be mandatory for each dwelling:

- Gas hot water system with a minimum 5 stars WELS rating (or a solar hot water system, or a high energy efficient electric heat pump).
- Water efficient (i.e. 3 star WELS rated) shower heads.
- Water efficient (i.e. 4 star WELS rated) tap fittings in all kitchen sinks, bathroom basins and vanities.
- Water efficient (i.e. 4 star) dual flush toilets.
- Pool blankets for all new pools to reduce the rate of evaporation.

- Hot water outlets must be located close to the hot water system or a recirculating hot water supply to minimise wastage of energy and water.

4 STORMWATER MANAGEMENT

4.1 Principles and Objectives

The following specific Water Sensitive Urban Design objectives have been implemented, consistent with the principles outlined in the *Better Urban Water Management* guidelines (WAPC, 2008):

- Protect life and property from flooding events.
- Manage runoff from small rainfall events on-site or as close to the source as possible.
- Protect and enhance sensitive receiving environments by managing the water cycle, water quality, habitat diversity and biodiversity.
- Control stormwater quality through implementation of appropriate non-structural source controls and structural controls.
- Achieve good urban amenity by integrating stormwater management systems within the design of road reserves.
- Maintain runoff volumes, peak flow rates, and improve water quality, biodiversity, and aesthetics by managing stormwater through the retention and planting of vegetation.

The Shire of Denmark was also consulted to confirm the acceptable storage volumes and peak flow design objectives. It was agreed with the Shire that storage and predevelopment flow rates were to:

- Detain up to the 20% AEP rainfall event within site boundaries.
- Maintain predevelopment flow rates exiting the site for the 20% AEP rainfall event.

Correspondence has been provided in Appendix 3.

4.2 Catchment Overview

The site is divided by the natural slope of the site and the earthworks levels into 3 main catchments. Catchments 1 and 2 are in the northern portion of the site and Catchment 3 in the south of the site. Catchment 1 has been further divided into sub catchments 1A and 1B, as the watercourse separates the northern and southern portions. Each Catchment drains to a respective detention basin. The catchment plan and basin locations are shown on Figure 5.

4.3 Lot Drainage Management

As determined by the geotechnical investigation (Section 2.4.2), underlying soils are predominantly clays, with groundwater perching predicted across most of the site. As such, soakwells for lot drainage management have not been proposed. Instead, lot stormwater for all catchments will be conveyed to the road drainage network via overland flow for detention within basins for each catchment. This will help to mimic the predevelopment drainage conditions. Lot drainage has therefore been accounted for in the drainage modelling (Section 4.5).

4.4 Road Drainage Management

Stormwater will be collected and conveyed via a conventional pit and pipe road drainage network, prior to discharging to drainage basins located in POS areas. The road network will be designed with one-way crossfalls for stormwater capture efficiency. Typical road intersections are provided in Appendix 7

All sub-catchments will drain to their respective basins, which have been sized to infiltrate up to the 20% AEP event. Basins 1A, 1B and 2 have also been designed with controlled overflow outlets to the creek to maintain the predevelopment flows within the watercourse.

The catchment flow pathways and basin locations are shown in Figure 5.

4.5 Basin Sizing

Basin volume requirements have been sized by Urbaqua using Infoworks ICM. Each basin has been sized to detain up to the 20% AEP event with a predevelopment discharge rate (see Section 4.6). This management strategy has been agreed with the Shire of Denmark, with correspondence provided in Appendix 3. A drainage modelling summary has been provided in Appendix 5 which details the modelling and parameters used for basin sizing.

Modelled volumes were provided to Tabec to incorporate into the earthworks design in line with the natural topography. Resultant basin sizing results are provided in Table 10.

Table 10: Basin Volumes and Levels

Basin	Side Slope (m:m)	Invert Level (mAHD)	Base Area (m^2)	Top Area (m^2)	Storage Depth (m)	Modelled 20% AEP Volume (m^3)	Modelled 20% AEP TWL
Basin 1A	1:6	32.1	125	269	0.45	88	32.05
Basin 1B	1:6	31.6	197	510	0.6	213	32.70
Basin 2	1:6	35.6	137	351	0.6	142	36.20
Basin 3	Varied	34.4	839	1,232	1.20	1203	35.60

Note: Top and base dimensions have been designed by Tabec according to modelled volume results.

4.6 Peak Flows for Detention Basins

Peak flow rates throughout the watercourse were modelled to ensure detention basins and development would not result in significant change to the flow regime. With request from DWER, the neighbouring dam was excluded from both flood and flow modelling, to represent a 'worst case scenario' event in which the dam is removed by the neighbouring property. The outflow point from the site was modelled as the downstream C8 culvert (Harlequin Street) (Appendix 4). The results of the modelling undertaken indicates the following flows at C8:

- Predevelopment: The modelled 20% AEP peak flow rate at the downstream location (C8) is 1.56 m^3/s, with a critical duration of 6 hours.
- Post-development: The modelled 20% AEP peak flow rate at the downstream location (C8) is 1.67 m^3/s, with a critical duration of 6 hours.
- Post development flows will therefore increase marginally by 0.11 m^3/s at the downstream location C8.

Table 11 displays the outflow pipe details used in the Infoworks ICM basin modelling. These control peak flows from basins discharging to the watercourse to meet pre development. These are shown in the engineering drawings in Appendix 7.

Table 11: Basin Outflow Pipe Detail

Basin	Pipe Diameter (mm)	Outflow Pipe Invert US (in Basin) (mAHD)	Outflow Pipe Invert DS (to Stream) (mAHD)
Basin 1A	225	31.9	31.5
Basin 1B	225	32.3	30.9
Basin 2	225	35.9	35.5

Emptying times are all below 96 hours for disease and nuisance vectors in all basins.

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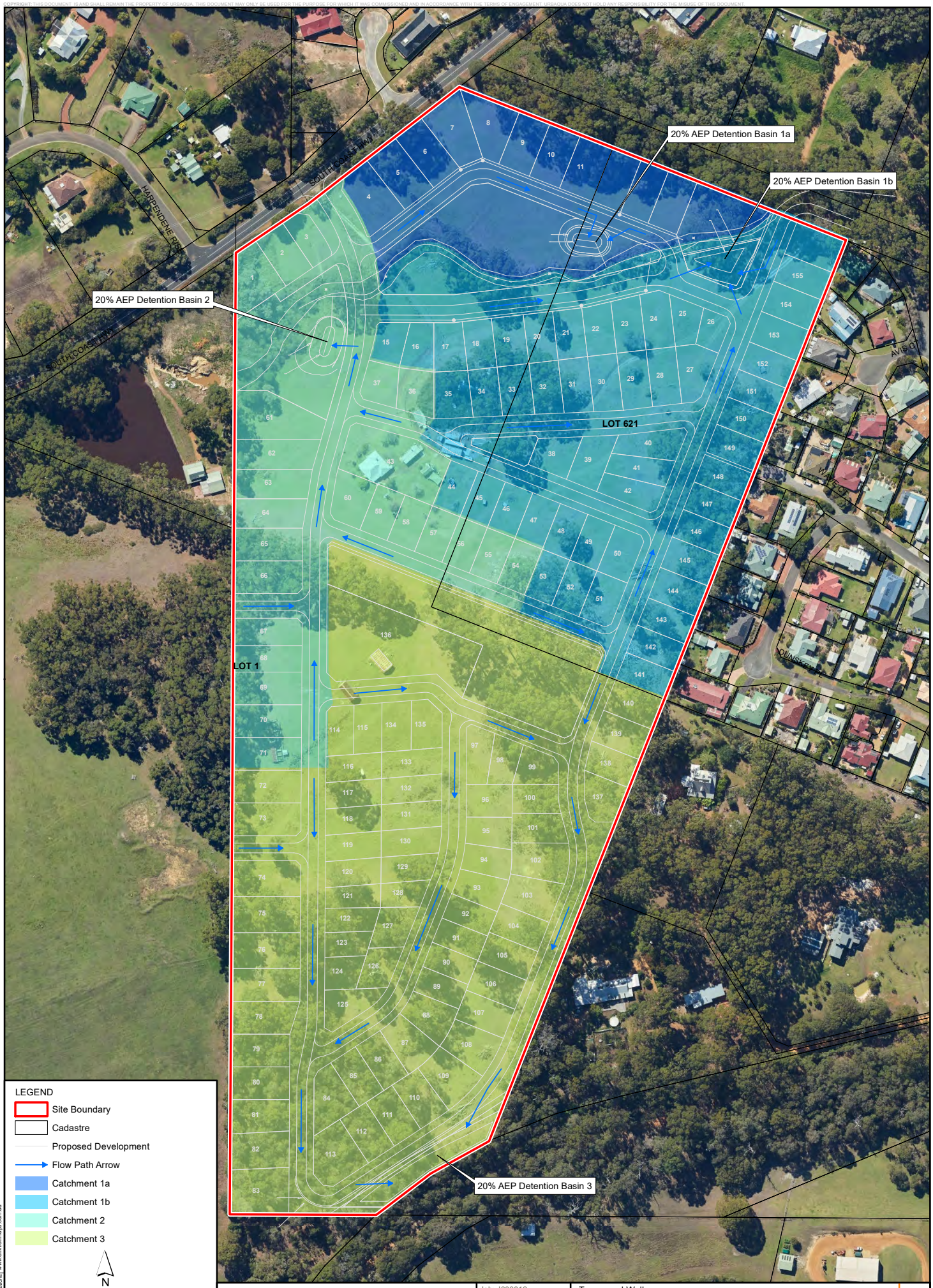

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STORMWATER MANAGEMENT

Figure 5

4.7 Water Quality Treatment

4.7.1 Structural Controls

Stormwater quality will be managed through vegetated areas in the base of basins. Runoff generated in the 'first flush' event of the year (15 mm) generally contains the highest concentration of contaminants. All runoff from this event will be collected and treated prior to discharge/infiltration. Water quality treatment areas within the basins (1EY area of basins) will typically comprise of the following profile (see Plate 12 below):

- Vegetation: An appropriate mix of high nutrient stripping plant species will be selected from those identified in *Vegetation Guidelines for Stormwater Biofilters in the South-West of Western Australia* (Monash University, 2014). Remainder to be local, native, ephemeral plants. Typically, 8-12 plants per m^2.
- Stone mulch: 100% stone, 4-13mm in size. 50mm thick. No fines. No wood mulch as it will float under flood conditions.
- Filter media: 300mm amended soil layer. PRI > 10. Saturated K 100-300mm/hr.

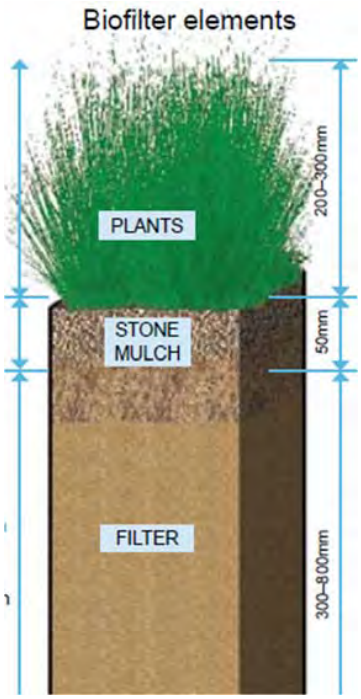


Plate 12: Typical Vertical Profile Of Water Quality Treatment Areas

Source: DoW, 2011

4.7.2 Non-Structural Controls

In addition to the stormwater management as described above, the following non-structural controls will be employed at the site:

- Ongoing litter management such as street sweeping, and manual litter collections will be included in routine maintenance programs.

- Restrict the use of fertiliser on POS areas given the already established native vegetation being retained in POS areas, to limit the potential addition of nutrients to stormwater runoff
- Residents will be informed of the need for stormwater quality management and how they can contribute via measures such as community signage and/or information packs included in lot purchase documentation.
- Construction practices such as drainage, erosion, sediment, housekeeping, and dust controls will be employed during construction and major landscaping.

5 FLOOD MANAGEMENT

5.1 Lot Separation to Basin Top Water Levels

The DWER policy states; "*Protect people and property from flooding by constructing residential, commercial and industrial building habitable floor levels with the following minimum clearances above the 1 per cent annual exceedance probability (AEP) flood level:*

- *road drainage systems: 0.3 m*
- *terminal retention or detention areas with no overflow relief: 0.5 m*
- *major drainage system and waterways: 0.5 m*

As agreed with the authorities, basins are sized for the 20% AEP so although the basins do not accommodate up to the 1 % AEP event, the separation distances to the top water levels in the basins (20% AEP levels) has still been assessed to ensure the risk from flooding is minimised. As detailed in the DWER requirements above, Basin 1a, 1b and 2 all require 0.3m separation as they collect water from the road drainage system and have a detention system with overflow relief. Basin 3 collects water from the road drainage system and the overflow relief flows would be offsite, downhill (ie. lots are up gradient) so 0.3m is also required.

Separation distances of nearby lot levels to basin top water levels are summarised below. The lots achieve a minimum separation distance of 0.3 m, and where roads are separating basins from lots the road levels area designed to be elevated above lot levels to prevent flooding to lots.

Table 12: Lot Separation to Basin Top Water Levels

Basin Location	Basin TWL (mAHD)	Min. Level on Nearby Lots (mAHD)	Separation (m)
1A	32.05	33.0	0.95
1B	32.70	33.0	0.30
2	36.20	36.5	0.30
3	35.60	37.0	1.4

5.2 Lot Separation to Flood Levels

Lot levels need to be constructed 0.5 meters above the 1% AEP event (flood fringe) flood level of the creek for adequate flood risk management.

As described in Section 2.5, modelling has been conducted by Hyd2o for estimation of post-development flood levels and design flows if the neighbouring dam were to be removed. This modelling indicates flood levels to range from 37.74 mAHD (west) to 32.21 mAHD (east) in the creek.

Separation distances of nearby lots to all modelled 1% AEP flood level points have been provided in Table 13 below. All lots will meet the required 0.5 m separation, with lots at least 1.39 m above flood levels.

Table 13: Minimum Lot Level Separation to Flood Levels

Location	Flood Level (mAHD)[1]	Lowest Indicative Lot Level ([Lot number] mAHD)		Separation (m)
XS1	37.74	[61]	40.00	2.26
XS2	35.46	[3]	39.00	3.54
XS3	34.75	[15]	36.50	1.75
XS4	32.47	[19]	35.00	2.53
XS5	32.12	[21]	35.00	2.88
XS6	31.69	[22]	34.50	2.81
XS7	31.61	[14]	33.00	1.39
XS8	31.21	[14]	33.00	1.79

1 *Flood levels taken from the Hyd2o flood modelling report (Hyd2o, 2020) (Appendix 4)*

1.6.1 Basin Top Water Levels to Waterway Flood Levels

Basins 1A, 1B and 2 are located adjacent to the watercourse for overflow in large rainfall events. Basin TWLs have been compared to the 1% AEP levels within the watercourse to ensure the watercourse doesn't flow into stormwater storage infrastructure. This comparison is presented in

Table 14: Separation Between Basin TWL and Watercourse 1% AEP Levels

Basin	Adjacent 1% AEP Flood Level (mAHD)	Basin TWL (mAHD)	Separation to Watercourse level (m)
Basin 1A	31.65	32.05	0.51
Basin 1B	31.21	32.70	1.91
Basin 2	35.40	36.20	1.04

6 GROUNDWATER MANAGEMENT

6.1 Lot Separation to Groundwater

As identified in Sections 2.6 and 2.3, the site is underlain by a fractured rock aquifer and has sloping topography. Earthworks will be predominantly undertaken on road reserves, with lots retaining natural fall and level changes where possible. Recommended finished floor levels for lots surrounding the watercourse have been indicated to ensure adequate separation from flood levels and basin TWLs (as described in Section 5).

However, given the inconsistent nature of the hydrogeology in fractured rock aquifers, lot levels have not been set for the other lots. The construction of houses is expected to be integrated more naturally into the landscape and topographical variations with split levelled or stilted housing, depending on the topography of the individual lot.

6.2 Basin Inverts Separation to Groundwater

The *Urban Water Management Plans: Guidelines for preparing plans and for complying with subdivision conditions* (DoW, 2008) require that the invert of storage areas or swales should be set at least 0.3 metres above the MGL or approved controlled groundwater level.

Geotechnical testing indicated groundwater presence (perched) around the watercourse (Section 2.6). The geotechnical locations are not located in the exact locations of the basins however they are considered indicative of the possible groundwater to be encountered in the vicinity of the Basins 1A, 1B, and 2.

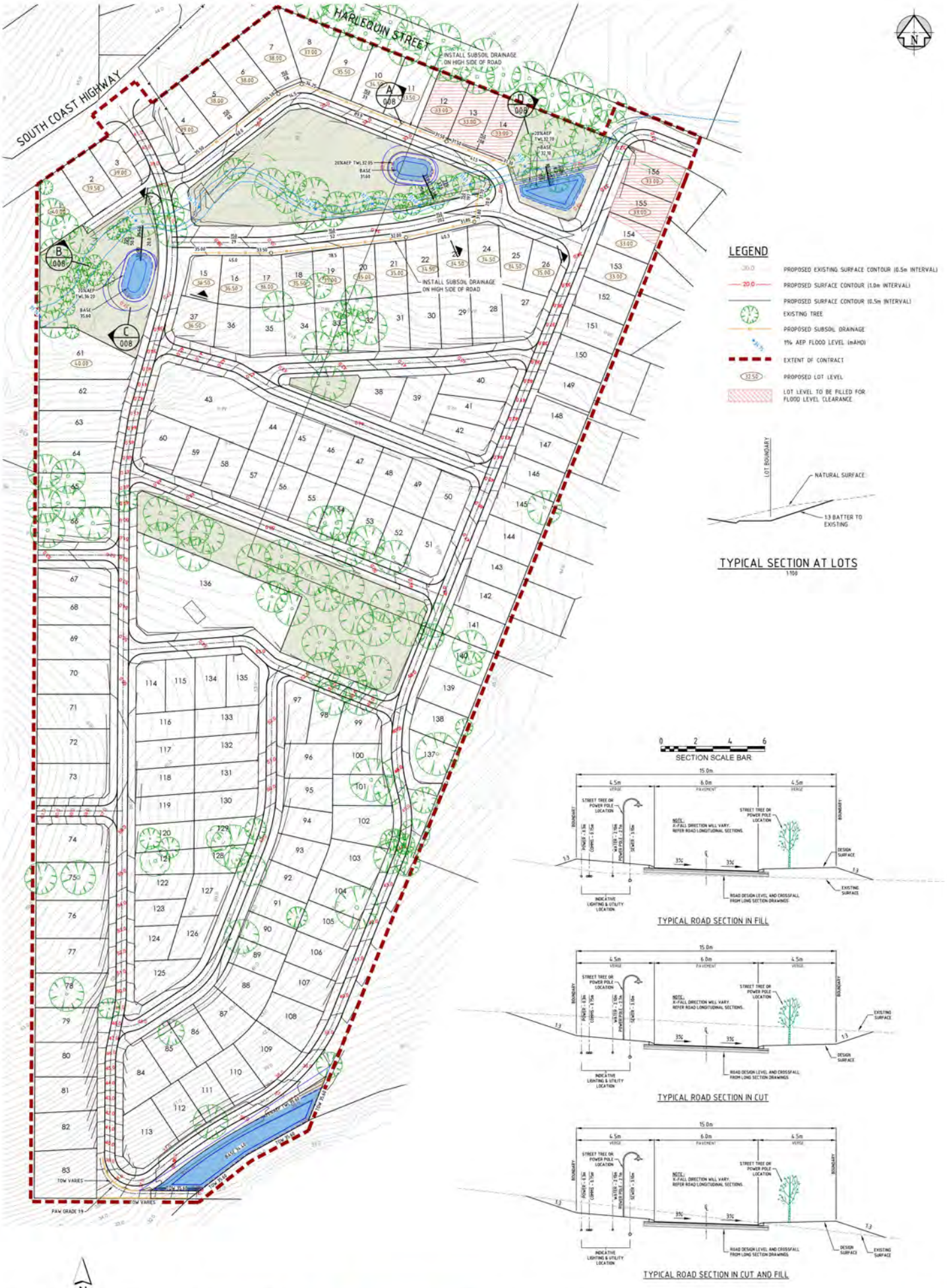
The separation distances achieved are shown in Table 15. Basin 2 and 3 achieve the required separation distance however Basins 1a and 1b are unlikely to achieve the separation based on the initial geotechnical investigations, so subsoil drainage is proposed close to basins to provide a controlled perched groundwater level and to ensure basins do not experience perched groundwater ingress. Subsoil management is described in Section 6.3 below.

Table 15: Basin Inverts to Groundwater Level

Basin Number	Basin Invert Level (mAHD)	Groundwater Level in nearby test pit (mAHD [TP shown in Figure 3])	Separation to Groundwater from Basin base (m)
Basin 1A	31.6	34.6 [TP2]	- 3.0 m
Basin 1B	32.0	32.2 [TP3]	- 0.2 m
Basin 2	35.5	33.85 [TP13]	1.65 m
Basin 3	34.4	None encountered [TP18]	2+ m

6.3 Subsoil Management

Subsoil drainage is proposed nearby to Basins 1A and 1B, due to the perched groundwater observations made during the geotechnical investigation as described in Section 6.2. The subsoils will discharge to the watercourse. Subsoil drainage is shown in the cross sections provided in Appendix 7 and detailed subsoil design will be provided at subdivision stage.



LEGEND

- PROPOSED EXISTING SURFACE CONTOUR (0.5m INTERVAL)
- PROPOSED SURFACE CONTOUR (1.0m INTERVAL)
- PROPOSED SURFACE CONTOUR (0.5m INTERVAL)
- EXISTING TREE
- PROPOSED SUBSOIL DRAINAGE
- 1% AEP FLOOD LEVEL (mAHD)
- EXTENT OF CONTRACT
- PROPOSED LOT LEVEL
- LOT LEVEL TO BE FILLED FOR FLOOD LEVEL CLEARANCE

TYPICAL SECTION AT LOTS
1:100

0 2 4 6
SECTION SCALE BAR

TYPICAL ROAD SECTION IN FILL

TYPICAL ROAD SECTION IN CUT

TYPICAL ROAD SECTION IN CUT AND FILL

Source: TABEC, 09.02.22 REV K

urbaqua

Job: J000812
Doc: 006
Date: 09.02.22
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E: info@urbaqua.org.au

Turner and Wells
DENMARK LWMS
621 HARLEQUIN ST & 1 SOUTH COAST HWY

EARTHWORKS

Figure 6

ENVIRONMAPS t: 0406 550 006 Environmental Mapping Solutions www.environmaps.com.au

7 MONITORING

7.1 Pre-development Monitoring

A geotechnical investigation was conducted by Great Southern Geotechnics (GSG) in September 2019 (Section 2), gathering data for the peak groundwater period in 2019. During this investigation, water was found in test pit locations TP1 to TP4 and TP13. These test pits are located closest to the existing waterway, with no other test pit locations encountering groundwater (Section 2.6). Groundwater was encountered at the depths indicated by Table 16.

Table 16: Geotechnical Groundwater Findings

Test Pit Location	Excavation Depth (m)	Water Table Observation (as written by GSG)	Depth of Settled Groundwater after 1hr (mbGL)	Approximate Groundwater Level (mAHD)[2]
TP1	2	Water seeping in over clay layer at 1 mbGL. 1°hr after excavation water level had settled at 1 mbGL.	1	38.5
TP2	1.2	Water flowing in over gravel layer at 1 mbGL into saturated sand layer above. 1 hr after excavation water level had settled at 0.4 mbGL. Due to water ingress test pit flooded and representative sampling could not occur. Fast rate of water ingress indicates potential underground springs.	0.4	34.9
TP3	2	Water seeping in over clay layer at 1.1 mbGL. 1 hr after excavation water level had settled at 1 mbGL.	1	32.2
TP4	1.5[1]	Water seeping in over clay layer at 0.7 mbGL below existing ground level. 1 hr after excavation water level had settled at 0.7 mbGL	0.7	33.0
TP13	2	Water seeping through wall of excavation. 1 hr after excavation water level had settled at 0.65 mbGL	0.65	34.05

Source: GSG, 2019

7.2 Post-development Monitoring

Post-development groundwater monitoring is not proposed due to site hydrogeology. There is no presence of a consistent confined aquifer, with water only being encountered close to the existing waterway intersecting the northern portion of the site (see Section 2.6).

Post-development watercourse monitoring is also not proposed, as the large upstream dam on the western neighbouring property limits flow during most of the year. Water is predominantly not present year-round (see Section 2.5).

8 IMPLEMENTATION

The effective implementation of the LWMS requires ongoing involvement by the relevant stakeholders. The roles and responsibilities associated with the site are summarised in Table 17 below.

Table 17: Implementation Schedule

Principal	Commitment	Responsibility	Timescales
Potable Water Supply and Disposal	Connections for water supply and wastewater infrastructure	Proponent	Following detailed engineering design
	Provision of educational material for water efficiency and conservation measures	Proponent	At point of sale
	Installation of water efficiency and conservation measures	Lot owner	At lot point of sale, house design and installation
Stormwater Management	Design and construction of stormwater infrastructure	Proponent	Following detailed engineering design
	Provision of soak wells for individual lots	Lot owners	During construction, house design and installation
	Maintenance of basins	Proponent	Until handover
Groundwater Management	Cut and fill requirements for roads and basins	Proponent	Following detailed engineering design
Monitoring	Not proposed	NA	NA

9 REFERENCES

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Appendix 1 LWMS Checklist

DWER LWMS Guideline Requirements		Report Reference
LWMS item	Deliverable	
Executive Summary		
Summary of the development design strategy, outlining how the design objectives are proposed to be met	Table 1 1 Design Objectives	Executive Summary
Introduction		
Total water-cycle management – principles and objectives		Section 1.4
Planning background		Section 1.2
Previous studies		N/A
Proposed development		
Structure plan, zoning, and land use	Site context plan	Section 1.2,
Key landscape features	Structure plan	Figure 2
Previous land use		Section 2.1
Landscape – proposed public open space areas, public open space credits, water source, bore(s), lake details, irrigation areas (if applicable)	Landscape plan and Proposed Bore Locations	Figure 2, and Section 7.2
Design Criteria		
Agreed design objectives and source of objectives		Section 1.4
Pre-development environment		
Existing information and more detailed assessments (monitoring). How do the site characteristics affect the design?		Section 2
Site conditions – existing topography/contours, aerial photo underlay, major physical features	Site condition plan	Section 2.3 and Figure 3
Geotechnical – topography, soils including acid sulfate soils and infiltration capacity, test pit locations		Section 2.4, and Figure 3. Appendix 2
Environmental – areas of significant flora and fauna, wetlands and buffers, waterways and buffers, contaminated sites	Environmental plan plus supporting data where appropriate	Section 2.5, Section 2.7 and Figure 4
Surface water – topography, 100- year flood ways and flood fringe areas, water quality of flows entering and leaving (if applicable)	Surface-water plan	Section 2.5

Groundwater – topography, predevelopment groundwater levels and water quality, test bore locations	Groundwater plan plus site investigations	Section 2.6, Figure 4
Water sustainability initiatives		
Water efficiency measures – private and public open spaces including method of enforcement		Section 3
Water supply (fit-for-purpose) strategy, agreed actions and implementation		
Wastewater management		
Stormwater management strategy		
Flood protection – peak flow rates, volumes and top water levels at control points, 100-year flow paths and100-year detention storage areas	100-year-event plan Long section of critical points	Section 5 Figure 5
Manage serviceability – storage and retention required for the critical 5- year ARI storm events. Minor roads should be passable in the 5-year ARI event	5-year event plan	Section 3.3, Figure 5 and cross sections in Appendix 6
Protect ecology – detention areas for the 1-year 1-hour ARI event, areas for water quality treatment and types of agreed structural and non-structural best management practices and treatment trains (including indicative locations). Protection of waterways, wetlands (and their buffers), remnant vegetation and ecological linkages	1-year-event plan Typical cross sections	
Groundwater management strategy		
Post-development groundwater levels, existing and likely final surface levels, outlet controls, and subsoil drain areas/exclusion zones	Groundwater/subsoil plan	Figure 6
Actions to address acid sulfate soils or contamination		N/A
The next stage – subdivision and urban water management plans		
Content and coverage of future urban water management plans to be completed at subdivision. Include areas where further investigations are required before detailed design.		Section 8
Monitoring		
Recommended future monitoring plan including timing, frequency, locations, and parameters, together with arrangements for ongoing actions		Section 7
Implementation		
Developer commitments		Section 8

Roles, responsibilities, funding for implementation
Review

Appendix 2 Geotechnical Report (GSG, 2019)

Report No
2024/1

Great Southern
GEOTECHNICS

Site Classification Report

Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust
Harlequin Street Development

Monday, 28 October 2019

Presented By: A.Purdie
Great Southern Geotechnics Pty Ltd
5a 209 Chester Pass Rd, Albany WA

1.0 INTRODUCTION

As authorised by Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust (C/o Williams Consulting) a site investigation was undertaken for the proposed Harlequin Street Development over the 16th and 18th of September 2019.

2.0 GENERAL

This site investigation was carried out to determine the:
- Surface site conditions
- Subsurface soil profile
- Subsurface soil characteristics/parameters

The scope included:
- Observations of site conditions,
- Sufficient test pits drilled and sampled to an appropriate depth, and
- Sampling of material for laboratory testing of samples.

3.0 SITE INVESTIGATION

Site conditions and test pit locations were recorded and are shown in Appendix 1 .
The field investigation consisted of 18 boreholes excavated on-site to depths of up to 2.0m using a Kubota KX41-3V mini excavator with a 300mm Auger (Test Pit 4 was inaccessible due to fencing and livestock so was hand augered). These test holes were located across the proposed subdivision as per the clients site mark-up.

All soil layers encountered were visually assessed and classified on-site.

4.0 LABORATORY TESTING

Results of any relevant laboratory testing performed are shown in **Appendix 2**. (Test Results - Report 2024/2)

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Comments.

All test pit profiles noted are recorded from existing ground levels as on the day of investigation and any removal or addition of imported material will alter the results found. The results of the investigation are valid for the state in which it was conducted on the day.

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes. This report was prepared solely for the use by Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust (C/o Williams Consulting) and any reliance assumed by other parties on this report shall be at such parties own risk.

IMPORTANT NOTE: We have endeavoured to locate the test holes so that they are representative of the subsurface materials across the proposed subdivision. However, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

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Appendix 1

Test Pit Logs

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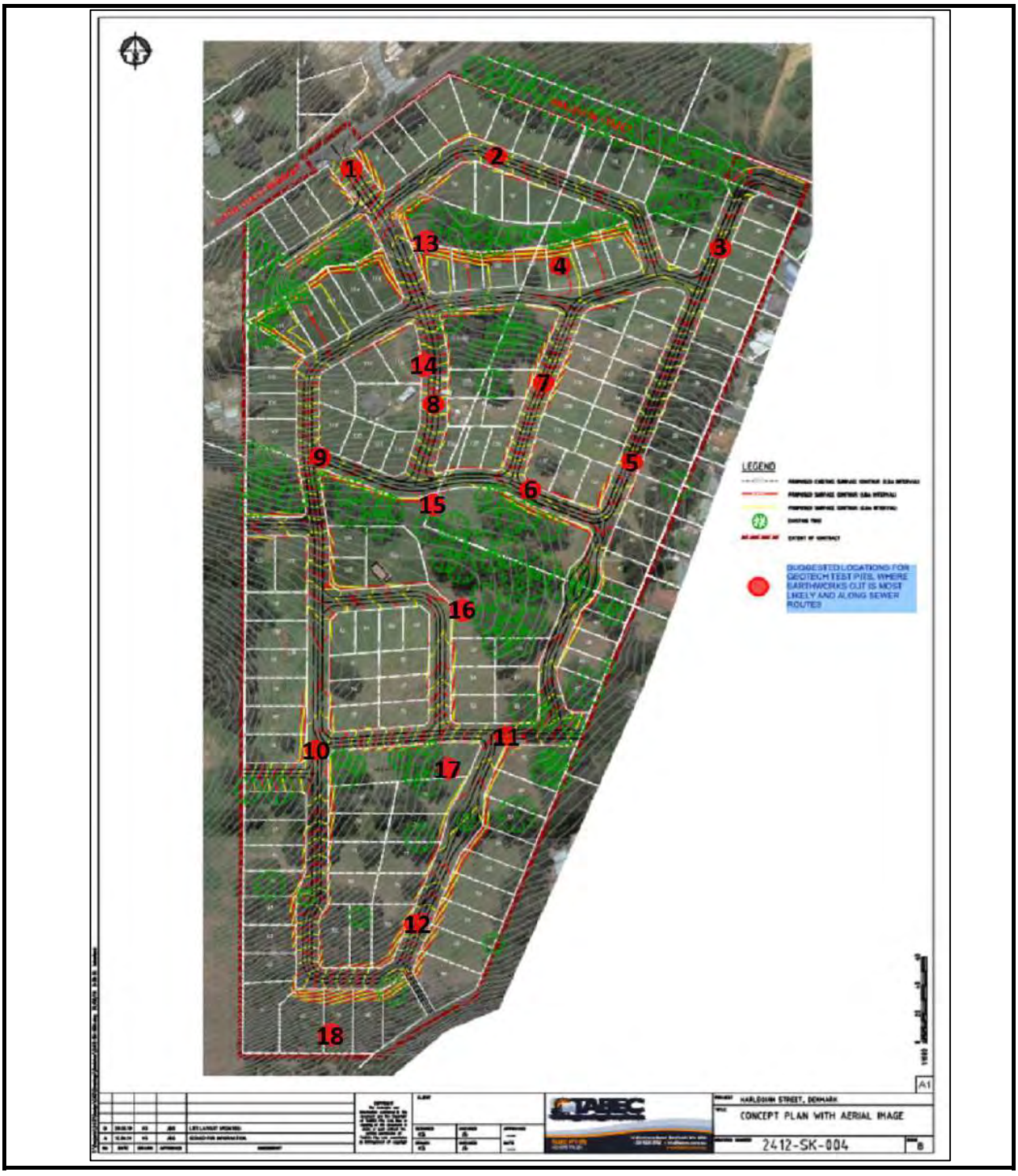
Figure 1 - Harlequin Street Development Approximate Test Pit Locations



GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No: 2024
Client: Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust
Project: Harlequin Street Development

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 6 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP1** Sample No. **2024G1**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		Water seeping in over clay layer @ 1000mm below existing ground level. 1 hr after excavation water level had settled @ 1000mm below existing ground level.		
200 - 1000	800	**SAND with silt:** Light brown to grey, fine to medium.	M-W	L-MD				#
1000 - 2000	1000	**Sandy CLAY:** Low to medium plasticity, light brown to grey with red mottle. Fine to medium sand.	M-W	F-St				

Comments

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		Rock	Cementation
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 1 - Excavation

Test Pit No. 1 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP1**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 8 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP2** Sample No. **2024G2**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	1.2 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M-W	L-MD		Water flowing in over gravel layer @ 1000mm below existing ground level into saturated sand layer above. 1 hr after excavation water level had settled @ 400mm below existing ground level.		
100 - 1000	**900**	**SAND with silt (trace clay):** Low plasticity, light brown/yellow, fine to medium.	M-W	St-f				
1000 - 1200	**200**	**Sandy GRAVEL (trace clay):** Brown, fine to medium, sub-rounded to sub-angular.	W	MD				
		Fine to medium sand.						
1200		**Refusal**						

Comments

3 excavations were made at this location. Refusal also encountered at 1000mm on 2nd attempt. 3rd attempt was able to drill to 1850mm where a high plasticity grey clay was encountered. Due to water ingress test pit flooded and representative sampling could not occur. Fast rate of water ingress indicates potential underground springs.

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth		
Cave In		
Refusal	✓	1200
Near Refusal		
Flooding	✓	1200
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 2 - Excavation

Test Pit No. 2 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP2**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 10 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP3** Sample No. **2024G3**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	**(Topsoil) SAND with silt:** Light brown/grey, fine to medium. Roots and root fibers.	M	L-MD		Water seeping in over clay layer @ 1100mm below existing ground level. 1 hr after excavation water level had settled @ 1000mm below existing ground level.		
200 - 1100	900	**SAND with silt:** Light brown/yellow, fine to medium.	M	MD				#
1100 - 1800	700	**Sandy CLAY:** Low to medium plasticity, light brown/yellow with red and orange mottle. Fine to coarse, angular sand.	M	F-St				
1800 - 2000	200	**Gravelly SAND with clay:** Low to medium plasticity, light grey/white, fine to coarse. Fine to medium, angular to sub-angular gravel. (*Refer to comments)	M	St				

Comments

**Appears to be fractured quartz rock.*

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength

Cohesive	Non-Cohesive
VS - Very Soft	VL - Very Loose
S - Soft	L - Loose
F - Firm	MD - Medium Dense
St - Stiff	D - Dense
VSt - Very Stiff	VD - Very Dense
H - Hard	CO - Compact

Rock

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Cementation

IN - Indurated
PC - Poorly Cemented
MC - Moderately Cemented
WC - Well Cemented

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 3 - Excavation

Test Pit No. 3 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No: 2024 **Test Pit No:** **TP3**
Client: Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust
Project: Harlequin Street Development

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ACN: 613 485 644 ABN: 77 613 485 644

Email: Info@gsgeotechnics.com
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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 12 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Hand Held Auger
Project No.	-	Excavation Method :	100mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP4** Sample No. **2024G4**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	1.5 (m)	Width	0.1 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water seeping in over clay layer @ 700mm below existing ground level. 1 hr after excavation water level had settled @ 700mm below existing ground level.		
0 - 200	**200**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
200 - 700	**500**	**SAND with silt:** Brown to light brown, fine to medium.	M-W	MD				
700 - 1500	**800**	**Sandy CLAY:** Low to medium plasticity, light brown/orange with red mottle Fine to medium sand.	M-W	MD				

Comments

Test location hand augured due to inaccessibility for machinery.

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth		
Cave In	✓	1500
Refusal		
Near Refusal		
Flooding	✓	1500
Lack of Reach		

Materials Consistency/Strength

Cohesive	Non-Cohesive
VS - Very Soft	VL - Very Loose
S - Soft	L - Loose
F - Firm	MD - Medium Dense
St - Stiff	D - Dense
VSt - Very Stiff	VD - Very Dense
H - Hard	CO - Compact

Rock

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Cementation

IN - Indurated
PC - Poorly Cemented
MC - Moderately Cemented
WC - Well Cemented

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 4 - Excavation

Test Pit No. 4 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP4**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 14 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP5** Sample No. **2024G5**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
100 - 700	**600**	**Sandy GRAVEL:** Light brown, fine to coarse, sub-rounded to sub-angular.	M	MD-D				
		Fine to medium sand. (*Refer to comments)						
700 - 2000	**1300**	**Sandy CLAY:** Low to medium plasticity, light brown/grey with red and orange mottle.	M	F-St				
		Fine to medium sand.						

Comments

** Contains cobbles and boulders. First attempt to drill in this location had refusal @ 600mm.*

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 5 - Excavation

Test Pit No. 5 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP5**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 16 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP6** Sample No. **2024G6**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
100 - 900	**800**	**Sandy GRAVEL:** Light brown, fine to coarse, sub-rounded to sub-angular.	M	MD-D				
		Fine to medium sand. (*Refer to comments)						
900 - 1600	**700**	**Sandy CLAY:** Low to medium plasticity, light brown/grey with red and orange mottle.	M	F-St				
		Fine to medium sand.						
1600 - 2000	**400**	**Sandy CLAY:** Low to medium plasticity, grey with orange mottle.	M	F-St				
		Fine to medium sand.						

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 6 - Excavation

Test Pit No. 6 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP6**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 18 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP7** Sample No. **2024G7**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 75	**75**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
75 - 1050	**975**	**Sandy GRAVEL:** Light brown/orange, fine to coarse, sub-rounded to sub-angular.	M	MD-D				#
		Fine to medium sand.						
1050 - 2000	**950**	**Sandy CLAY:** Low to medium plasticity, light brown/orange.	M	F-St				
		Fine to medium sand.						

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 7 - Excavation

Test Pit No. 7 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP7**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 20 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP8** Sample No. **2024G8**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
100 - 500	**400**	**SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	MD				
500 - 900	**400**	**Sandy GRAVEL:** Dark brown/grey, fine to medium, sub-rounded to sub-angular.	M	MD				
		Fine to medium sand.						
900 - 2000	**1100**	**Sandy CLAY:** Low to medium plasticity, light brown/grey with red and orange mottle.	M	F-St				
		Fine to coarse, angular to sub-angular sand.						

Comments

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength

Cohesive	Non-Cohesive
VS - Very Soft	VL - Very Loose
S - Soft	L - Loose
F - Firm	MD - Medium Dense
St - Stiff	D - Dense
VSt - Very Stiff	VD - Very Dense
H - Hard	CO - Compact

Rock

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Cementation

IN - Indurated
PC - Poorly Cemented
MC - Moderately Cemented
WC - Well Cemented

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 8 - Excavation

Test Pit No. 8 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP8**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 22 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP9** Sample No. **2024G9**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	**(Topsoil) SAND with silt:** Brown, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
200 - 400	400	**SAND with silt:** Brown, fine to medium.	M-D	L-MD				
400 - 1600	1200	**Sandy CLAY:** Low to medium plasticity, light brown/orange with red mottle. Fine to medium sand.	D	F-St				#
1600 - 2000	400	**Sandy CLAY:** Low to medium plasticity, light brown/grey. Fine to medium sand.	D-M	F-St				

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 9 - Excavation

Test Pit No. 9 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP9**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 24 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP10** Sample No. **2024G10**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	0.7	(m) Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 150	150	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
150 - 700	550	**Sandy GRAVEL:** Brown/orange, fine to coarse, sub-rounded to sub-angular.						
		Fine to medium sand. (*Refer to comments)	M	MD-D				

Comments

**Large quantity of cobbles and boulders present. Unable to reach a depth further than 700mm after 5 attempts.*

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth		
Cave In		
Refusal	✓	700
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		Rock	Cementation
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 10 - Excavation

Test Pit No. 10 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP10**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 26 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP11** Sample No. **2024G11**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 150	**150**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
150 - 750	**600**	**SAND with silt:** Orange to light brown, fine to medium.	M	MD				
750 - 1100	**350**	**Sandy CLAY:** Low to medium plasticity, orange with red mottle. Fine to medium sand.	M	F-St				
1100 - 2000	**900**	**Sandy CLAY:** Low to medium plasticity, light grey with red and orange mottle. Fine to medium sand.	M	F-St				

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 11 - Excavation

Test Pit No. 11 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP11**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 28 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP12** Sample No. **2024G12**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	**150**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
100 - 950	**850**	**Sandy GRAVEL:** Light brown/orange to brown, fine to coarse, sub-rounded to sub-angular.	M	MD				#
		Fine to medium sand						
950 - 1200	**250**	**Sandy CLAY:** Low to medium plasticity, brown/orange with red mottle.	M	F-St				
		Fine to medium sand.						
1200 - 2000	**800**	**Sandy CLAY:** Low to medium plasticity, light brown/grey with red and orange mottle.	M	F-St				
		Fine to coarse, angular sand.						

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 12 - Excavation

Test Pit No. 12 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP12**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 30 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP13** Sample No. **2024G13**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 200	200	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		Water seeping through wall of excavation. 1 hr after excavation water level had settled @ 650mm below existing ground level.		
200 - 1100	900	**Clayey SAND:** Low to medium plasticity, light brown/grey, fine to medium	M-W	F-St				#
1100 - 1700	600	**Clayey SAND:** Low plasticity, light brown, fine to medium.	M-W	F-St				
1700 - 2000	300	**Sandy CLAY:** Medium to high plasticity, blue/grey.	M	St				
		Fine to medium sand.						

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 13 - Excavation

Test Pit No. 13 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP13**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 32 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP14** Sample No. **2024G14**	Elevation:	n/a

Date Commenced:	16/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 150	150	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
100 - 1000	900	**Sandy GRAVEL:** Dark brown/orange, fine to medium, sub-rounded to sub-angular.	M	MD-D				
		Fine to medium sand.						
1000 - 2000	1000	**Sandy CLAY:** Low to medium plasticity, light brown/orange with orange and white mottle.	M	F-St				#
		Fine to medium sand.						

Comments

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		Rock	Cementation
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 14 - Excavation

Test Pit No. 14 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP14**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 34 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP15** Sample No. **2024G15**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	1.5 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark brown, fine to medium. Roots and root fibers.	M	L-MD				
100 - 400	**400**	**Sandy GRAVEL:** Brown/orange, fine to coarse, sub-rounded to sub-angular.	M	D				
		Fine to medium sand. (*Refer to comments)						
400 - 1200	**800**	**Sandy CLAY:** Low to medium plasticity, light brown/orange with red mottle.	M	F-St				#
		Fine to medium sand.						
1200 - 1500	**300**	**Sandy CLAY:** Low to medium plasticity, light grey with red and orange mottle.	M	F-St				
		Fine to medium sand.						
1500		**Refusal**						

Comments

** Contains cobbles and boulders.*

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	1500
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength

Cohesive	Non-Cohesive
VS - Very Soft	VL - Very Loose
S - Soft	L - Loose
F - Firm	MD - Medium Dense
St - Stiff	D - Dense
VSt - Very Stiff	VD - Very Dense
H - Hard	CO - Compact

Rock

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Cementation

IN - Indurated
PC - Poorly Cemented
MC - Moderately Cemented
WC - Well Cemented

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 15 - Excavation

Test Pit No. 15 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP15**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 36 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP16** Sample No. **2024G16**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth	2.0 (m)	Width	0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
100 - 450	**350**	**Gravelly SAND:** Brown, fine to medium.	M	L-MD				
		Fine to medium, sub-rounded to sub-angular gravel.						
450 - 1200	**750**	**Sandy CLAY:** Low to medium plasticity, light brown/orange with red mottle.	M	F-St				
		Fine to medium sand.						
1200 - 2000	**800**	**Sandy CLAY:** Low to medium plasticity, light grey with red and orange mottle.	M	F-St				#
		Fine to medium sand.						

Comments

Large quantity if surface granite cobble and boulders visible

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength

Cohesive	Non-Cohesive
VS - Very Soft	VL - Very Loose
S - Soft	L - Loose
F - Firm	MD - Medium Dense
St - Stiff	D - Dense
VSt - Very Stiff	VD - Very Dense
H - Hard	CO - Compact

Rock

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Cementation

IN - Indurated
PC - Poorly Cemented
MC - Moderately Cemented
WC - Well Cemented

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 16 - Excavation

Test Pit No. 16 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP16**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 38 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP17** Sample No. **2024G17**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 200	**200**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD				
200 - 850	**650**	**SAND with silt:** Brown to cream, fine to medium. Roots and root fibers.	M	L-MD				
850 - 1100	**250**	**Sandy CLAY:** Low to medium plasticity, brown/orange with red mottle.	M	F-St				
		Fine to medium sand.						
1100 - 2000	**900**							
		Sandy CLAY: Low to medium plasticity, light grey with red and orange mottle.	M	F-St				
		Fine to medium sand.						

Comments

Pit Terminated at: ✓ or ×		(mm) below ground level
Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		**Rock**	**Cementation**
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 17 - Excavation

Test Pit No. 17 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP17**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No 2024	**Report** 2024/1	**Sheet** 40 **of** 42

Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust	Operator/Contractor:	GSG
Project:	Harlequin Street Development	Equipment type:	Kubota KX41-3V
Project No.	-	Excavation Method :	300mm Auger
Location:	Proposed Development	Position:	See site plan
Test Pit No.:	**TP18** Sample No. **2024G18**	Elevation:	n/a

Date Commenced:	18/09/2019	Logged By:	M.Coffey & A.Purdie	Excavation Dimensions: Depth 2.0 (m) Width 0.3 (m)

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	**100**	**(Topsoil) SAND with silt:** Dark grey, fine to medium. Roots and root fibers.	M	L-MD		No water table encountered.		
100 - 1000	**900**	**Sandy GRAVEL:** Brown/orange, fine to coarse, sub-rounded to sub-angular. Fine to medium sand.	M	MD-D				
1000 - 1500	**500**	**Sandy GRAVEL with clay:** Low to medium plasticity, Brown/orange, fine to coarse, sub-rounded to sub-angular. Fine to medium sand.	M	MD-D				
1500 - 2000	**500**	**Clayey SAND:** Low to medium plasticity, light brown/cream, fine to coarse, angular.	M	MD				#

Comments

** Contains cobbles and boulders.*

Pit Terminated at: ✓ or × (mm) below ground level

Target Depth	✓	2000
Cave In		
Refusal		
Near Refusal		
Flooding		
Lack of Reach		

Materials Consistency/Strength		Rock	Cementation
Cohesive	**Non-Cohesive**		
VS - Very Soft	VL - Very Loose	EL - Extremely Low	
S - Soft	L - Loose	VL - Very Low	IN - Indurated
F - Firm	MD - Medium Dense	L - Low	PC - Poorly Cemented
St - Stiff	D - Dense	M - Medium	MC - Moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	WC - Well Cemented
H - Hard	CO - Compact	VH - Very High	
		EH - Extremely High	

▼ Water
Water first Encountered

Moisture
D - Dry M - Moist W - Wet

General
N/A - Not Applicable
N/D - Not Determined

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Test Pit No. 18 - Excavation

Test Pit No. 18 - Spoil

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No:	2024	**Test Pit No:**	**TP18**
Client:	Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust		
Project:	Harlequin Street Development		

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Appendix 2

Test Results

GREAT SOUTHERN GEOTECHNICS

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2019**	
Client No.	**-**	Sample No.	**2024G19**	
Project	**Harlequin Street Development**	Curing Period Water	**51**	hour(s)
Road	**-**	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**SAND with silt**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**200mm to 1000mm**	Location Details	**TP1, 200mm to 1000mm**	
		LL Determined By	**Estimated**	

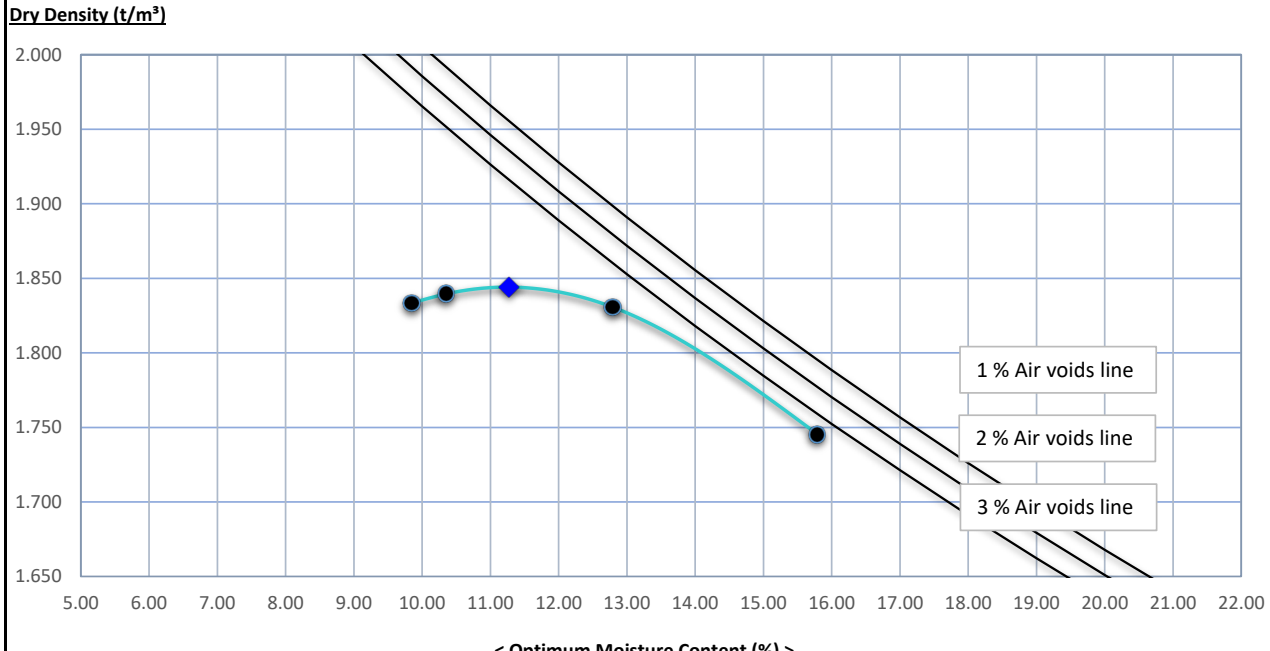
Oversize Material

Retained 19.0mm	**0**	%
Retained 37.5mm		%

Laboratory Moisture & Density Results

Moisture Content (%)	**10.0**	**10.5**	**13.0**	**16.0**	
Dry Density (t/m³)	**1.83**	**1.84**	**1.83**	**1.75**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.84**
Optimum Moisture Content (%)	**11.5**

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 12-October-2019

GREAT SOUTHERN GEOTECHNICS

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CALIFORNIA BEARING RATIO TEST REPORT

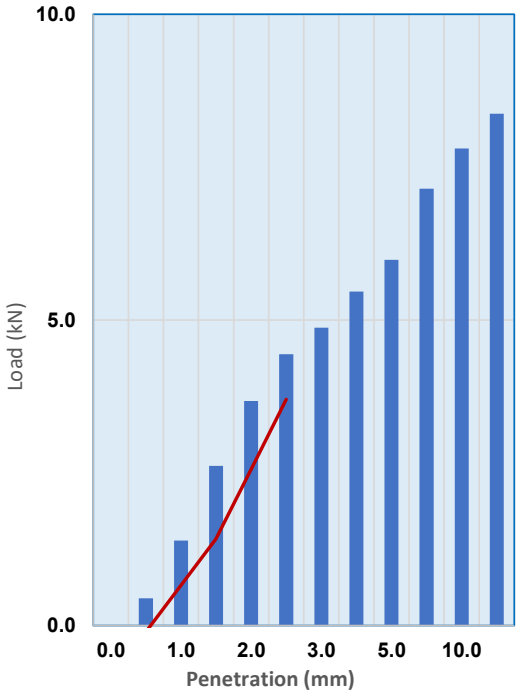
Report No.	**2024 /2**	Sample No.	**2024G16**
Job No.	**2024**	Date Sampled	**16/09/2019**
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Received	**18/09/2019**
Client No.	**-**	Material Description	**SAND with silt**
Project	**Harlequin Street Development**	Test Depth (mm)	**TP1, 200mm to 1000mm**
Road	**-**	Layer Type	**In Situ**
Section	**Proposed Development**	Sampling Method	**AS 1289.1.2.1**

AS 1289.6.1.1, 1289.2.1.1

Compaction Details			
LL Determined By	**Estimated**	Curing Time (hours)	**52.3**
% Retained 19.0mm	**0**	Excluded/Replaced	**Excluded**
Maximum Dry Density (t/m^3)	**1.84**	Optimum Moisture (%)	**11.5**
Target Dry Density Ratio (%)	**95**	Target Moisture Ratio (%)	**100**
Compaction Rammer	**AS 1289.5.2.1**		
Specimen Conditions At Compaction			
Dry Density (t/m3)	**1.75**	Density Ratio (%)	**95.0**
Moisture Content (%)	**11.3**	Moisture Ratio (%)	**98.0**
Specimen Conditions After Soak			
Soaked or Unsoaked	**Soaked**	Soaking Period (days)	**4**
Surcharges Applied (kg)	**11.25**	Measured Swell (%)	**0.0**
Dry Density (t/m³)	**1.75**	Dry Density Ratio (%)	**95.0**
Moisture Content (%)	**15.2**	Moisture Ratio (%)	**134.5**
Specimen Conditions After Test			
Top 30mm Moisture (%)	**17.0**	Remaining Depth (%)	**14.2**

California Bearing Ratio (CBR)	**35%**
Determined at a Penetration of	**2.5mm**
Correction applied to Penetration	**0.4mm**

Load - Penetration Curve



NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 24/10/2019

GREAT SOUTHERN GEOTECHNICS

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2019**	
Client No.	-	Sample No.	**2024G20**	
Project	**Harlequin Street Development**	Curing Period Water	**47**	hour(s)
Road	-	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Sandy GRAVEL**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**75mm to 1050mm**	Location Details	**TP7, 75mm to 1050mm**	
		LL Determined By	**Estimated**	

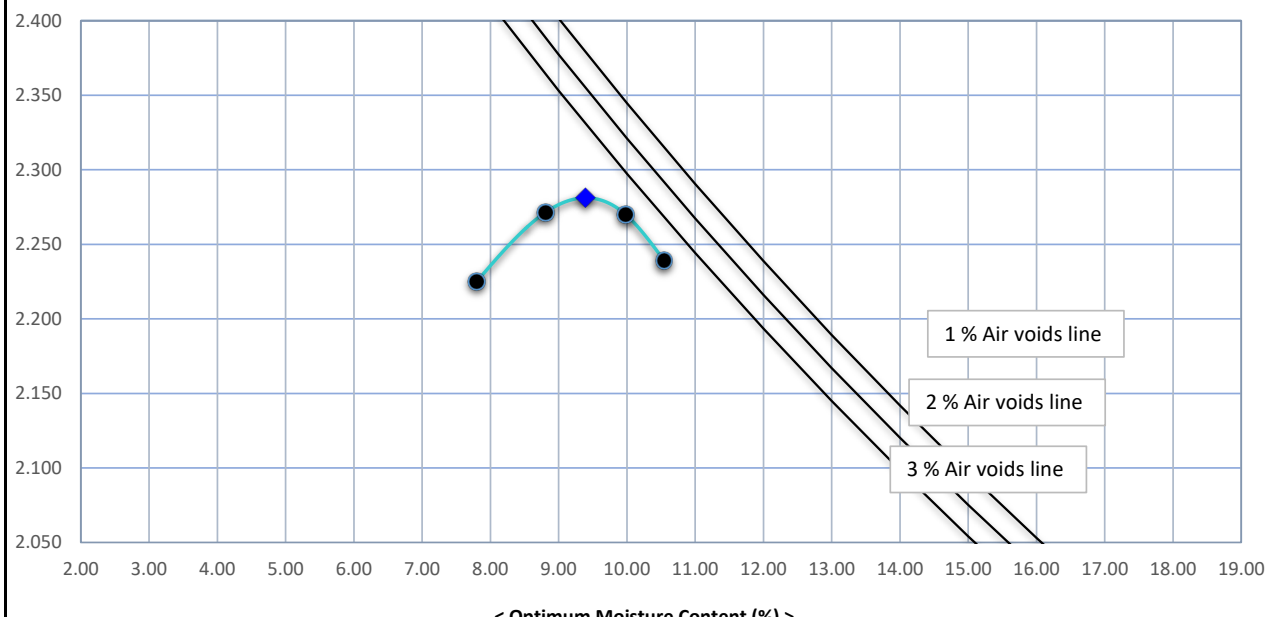
Oversize Material

Retained 19.0mm	**11**	%
Retained 37.5mm	**1**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**8.0**	**9.0**	**10.0**	**10.5**	
Dry Density (t/m³)	**2.23**	**2.27**	**2.27**	**2.24**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**2.28**
Optimum Moisture Content (%)	**9.5**

NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 11-October-2019

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CALIFORNIA BEARING RATIO TEST REPORT

Report No.	**2024 /2**	Sample No.	**2024G20**
Job No.	**2024**	Date Sampled	**16/09/2019**
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Received	**18/09/2019**
Client No.	**-**	Material Description	**Sandy GRAVEL**
Project	**Harlequin Street Development**	Test Depth (mm)	**TP7, 75mm to 1050mm**
Road	**-**	Layer Type	**In Situ**
Section	**Proposed Development**	Sampling Method	**AS 1289.1.2.1**

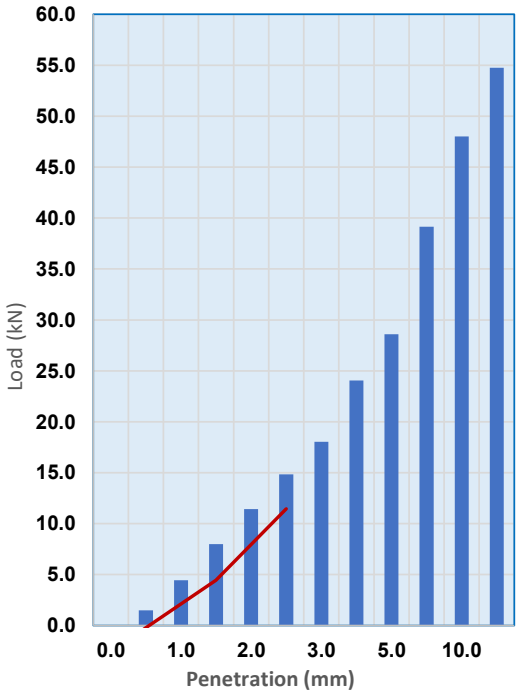
AS 1289.6.1.1, 1289.2.1.1

Compaction Details

LL Determined By	**Estimated**	Curing Time (hours)	**56.8**
% Retained 19.0mm	**10**	Excluded/Replaced	**Excluded**
Maximum Dry Density (t/m^3)	**2.28**	Optimum Moisture (%)	**9.5**
Target Dry Density Ratio (%)	**95**	Target Moisture Ratio (%)	**100**
Compaction Rammer	**AS 1289.5.2.1**		
Specimen Conditions At Compaction			
Dry Density (t/m3)	**2.17**	Density Ratio (%)	**95.5**
Moisture Content (%)	**9.1**	Moisture Ratio (%)	**96.5**
Specimen Conditions After Soak			
Soaked or Unsoaked	**Soaked**	Soaking Period (days)	**4**
Surcharges Applied (kg)	**11.25**	Measured Swell (%)	**0.0**
Dry Density (t/m³)	**2.17**	Dry Density Ratio (%)	**95.5**
Moisture Content (%)	**11.1**	Moisture Ratio (%)	**118.5**
Specimen Conditions After Test			
Top 30mm Moisture (%)	**10.7**	Remaining Depth (%)	**9.7**

California Bearing Ratio (CBR)	**150%**
Determined at a Penetration of	**5.0mm**
Correction applied to Penetration	**0.4mm**

Load - Penetration Curve



NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 24/10/2019

GREAT SOUTHERN GEOTECHNICS

5a 209 Chester Pass Road, Milpara WA 6330

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2019**	
Client No.	**-**	Sample No.	**2024G21**	
Project	**Harlequin Street Development**	Curing Period Water	**53**	hour(s)
Road	**-**	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Sandy CLAY**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**400mm to 1600mm**	Location Details	**TP9, 400mm to 1600mm**	
		LL Determined By	**Estimated**	

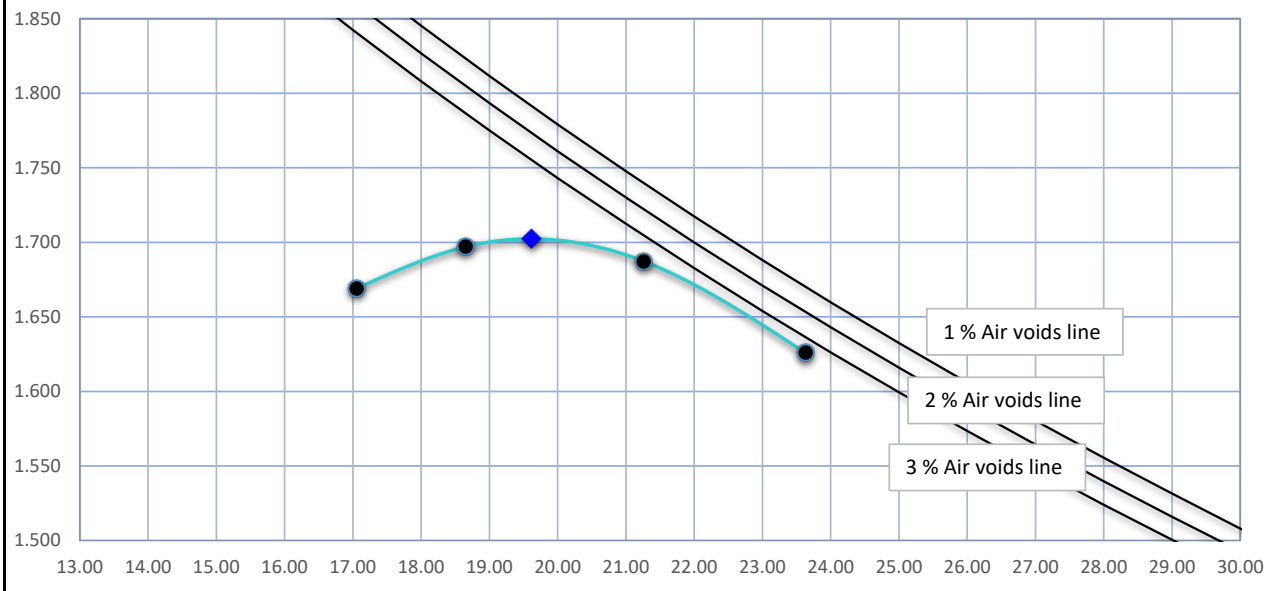
Oversize Material

Retained 19.0mm	**2**	%
Retained 37.5mm	**1**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**17.0**	**18.5**	**21.5**	**23.5**	
Dry Density (t/m³)	**1.67**	**1.70**	**1.69**	**1.63**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.70**
Optimum Moisture Content (%)	**19.5**

NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 24-October-2019

GREAT SOUTHERN GEOTECHNICS

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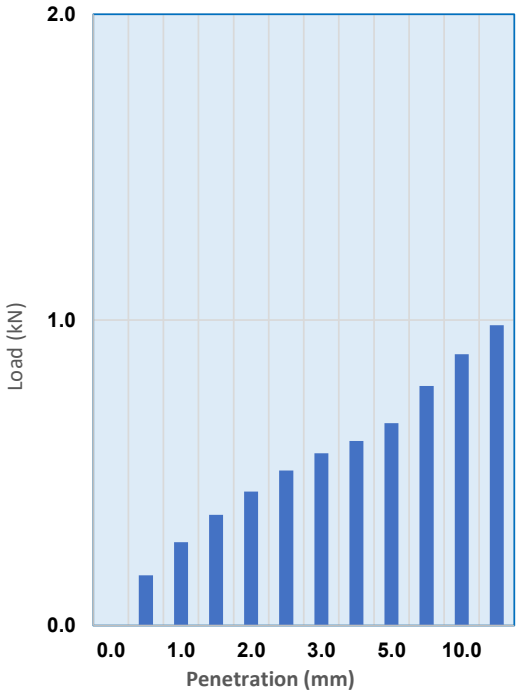
CALIFORNIA BEARING RATIO TEST REPORT

Report No.	**2024 /2**	Sample No.	**2024G21**
Job No.	**2024**	Date Sampled	**16/09/2019**
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Received	**18/09/2019**
Client No.	**-**	Material Description	**Sandy CLAY**
Project	**Harlequin Street Development**	Test Depth (mm)	**TP9, 400mm to 1600mm**
Road	**-**	Layer Type	**In Situ**
Section	**Proposed Development**	Sampling Method	**AS 1289.1.2.1**

AS 1289.6.1.1, 1289.2.1.1

Compaction Details			
LL Determined By	**Estimated**	Curing Time (hours)	**55.7**
% Retained 19.0mm	**2**	Excluded/Replaced	**Excluded**
Maximum Dry Density (t/m^3)	**1.70**	Optimum Moisture (%)	**19.5**
Target Dry Density Ratio (%)	**95**	Target Moisture Ratio (%)	**100**
Compaction Rammer	**AS 1289.5.2.1**		
Specimen Conditions At Compaction			
Dry Density (t/m3)	**1.61**	Density Ratio (%)	**94.5**
Moisture Content (%)	**20.1**	Moisture Ratio (%)	**102.5**
Specimen Conditions After Soak			
Soaked or Unsoaked	**Soaked**	Soaking Period (days)	**4**
Surcharges Applied (kg)	**11.25**	Measured Swell (%)	**6.0**
Dry Density (t/m³)	**1.52**	Dry Density Ratio (%)	**89.5**
Moisture Content (%)	**27.7**	Moisture Ratio (%)	**141.0**
Specimen Conditions After Test			
Top 30mm Moisture (%)	**31.1**	Remaining Depth (%)	**27.8**
California Bearing Ratio (CBR)	**4%**		
Determined at a Penetration of	**2.5mm**		
Correction applied to Penetration			

Load - Penetration Curve



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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**11/10/2019**	
Client No.	-	Sample No.	**2024G22**	
Project	**Harlequin Street Development**	Curing Period Water	**71**	hour(s)
Road	-	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Sandy CLAY**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**400mm to 1200mm**	Location Details	**TP15, 400mm to 1200mm**	
		LL Determined By	**Estimated**	

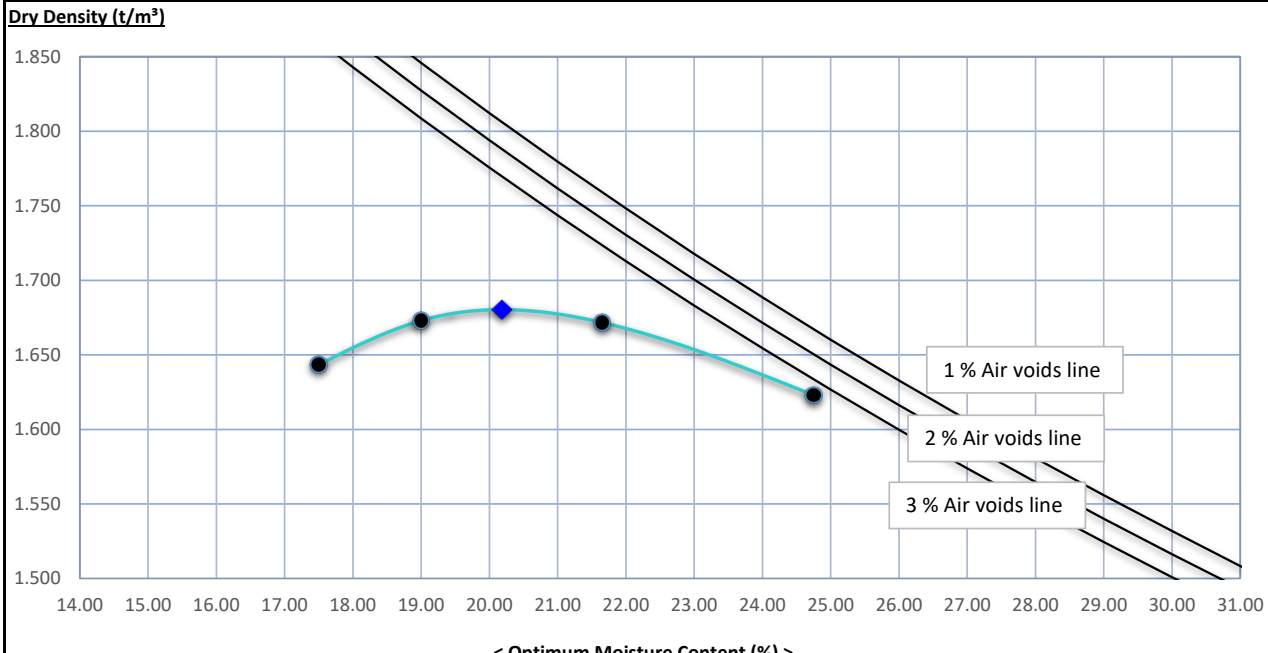
Oversize Material

Retained 19.0mm	**5**	%
Retained 37.5mm	**1**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**17.5**	**19.0**	**21.5**	**25.0**	
Dry Density (t/m³)	**1.64**	**1.67**	**1.67**	**1.62**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.68**
Optimum Moisture Content (%)	**20.0**

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 12-October-2019

GREAT SOUTHERN GEOTECHNICS

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CALIFORNIA BEARING RATIO TEST REPORT

Report No.	**2024 /2**	Sample No.	**2024G22**
Job No.	**2024**	Date Sampled	**16/09/2019**
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Received	**18/09/2019**
Client No.	**-**	Material Description	**In Situ**
Project	**Harlequin Street Development**	Test Depth (mm)	**TP15, 400mm to 1200mm**
Road	**-**	Layer Type	**In Situ**
Section	**Proposed Development**	Sampling Method	**AS 1289.1.2.1**

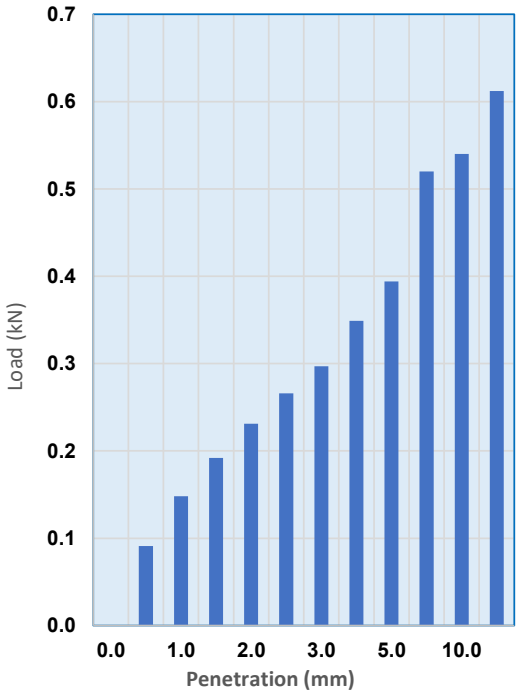
AS 1289.6.1.1, 1289.2.1.1

Compaction Details

LL Determined By	**Estimated**	Curing Time (hours)	**57.3**
% Retained 19.0mm	**4**	Excluded/Replaced	**Excluded**
Maximum Dry Density (t/m^3)	**1.68**	Optimum Moisture (%)	**20.0**
Target Dry Density Ratio (%)	**95**	Target Moisture Ratio (%)	**100**
Compaction Rammer	**AS 1289.5.2.1**		
Specimen Conditions At Compaction			
Dry Density (t/m3)	**1.60**	Density Ratio (%)	**95.0**
Moisture Content (%)	**19.8**	Moisture Ratio (%)	**98.0**
Specimen Conditions After Soak			
Soaked or Unsoaked	**Soaked**	Soaking Period (days)	**4**
Surcharges Applied (kg)	**11.25**	Measured Swell (%)	**5.5**
Dry Density (t/m³)	**1.52**	Dry Density Ratio (%)	**90.0**
Moisture Content (%)	**28.0**	Moisture Ratio (%)	**139.0**
Specimen Conditions After Test			
Top 30mm Moisture (%)	**33.4**	Remaining Depth (%)	**27.0**

California Bearing Ratio (CBR)	**2%**
Determined at a Penetration of	**2.5mm**
Correction applied to Penetration	

Load - Penetration Curve



NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 24/10/2019

GREAT SOUTHERN GEOTECHNICS

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2019**	
Client No.	-	Sample No.	**2024G23**	
Project	**Harlequin Street Development**	Curing Period Water	**53**	hour(s)
Road	-	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Clayey SAND**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**200mm to 1100mm**	Location Details	**TP13, 200mm to 1100mm**	
		LL Determined By	**Estimated**	

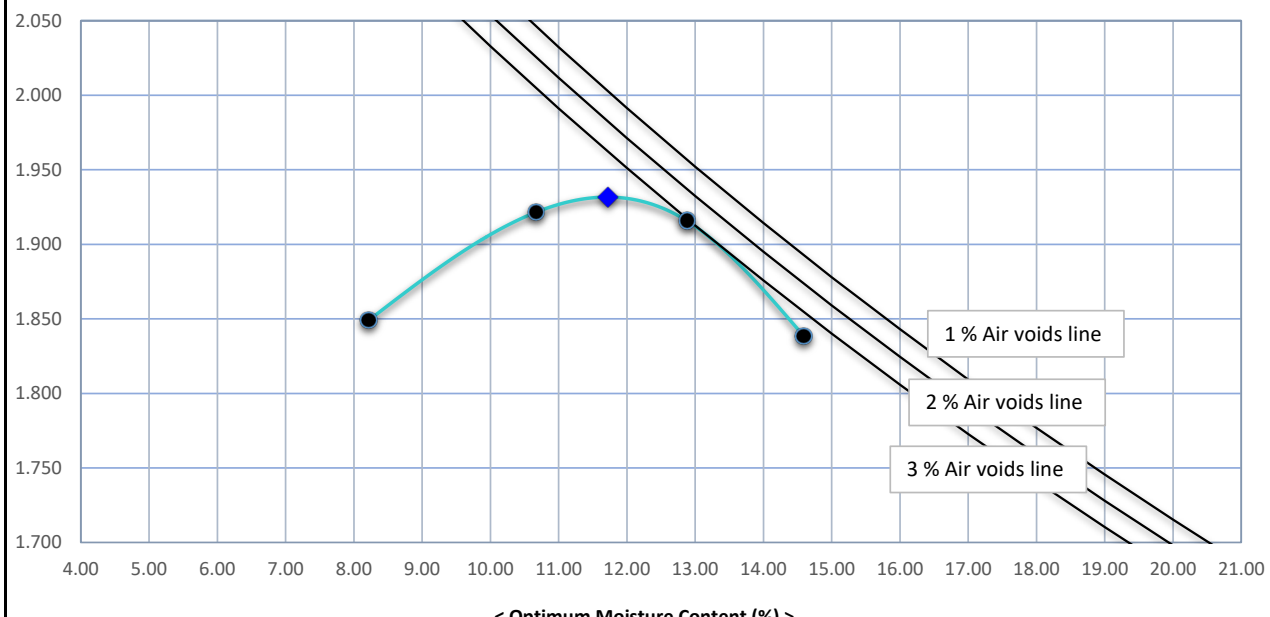
Oversize Material

Retained 19.0mm	**0**	%
Retained 37.5mm	**0**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**8.0**	**10.5**	**13.0**	**14.5**	
Dry Density (t/m³)	**1.85**	**1.92**	**1.92**	**1.84**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.93**
Optimum Moisture Content (%)	**11.5**

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Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 11-October-2019

GREAT SOUTHERN GEOTECHNICS

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2019**	
Client No.	**-**	Sample No.	**2024G24**	
Project	**Harlequin Street Development**	Curing Period Water	**51**	hour(s)
Road	**-**	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Sandy CLAY**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**1000mm to 2000mm**	Location Details	**TP14, 1000mm to 2000mm**	
		LL Determined By	**Estimated**	

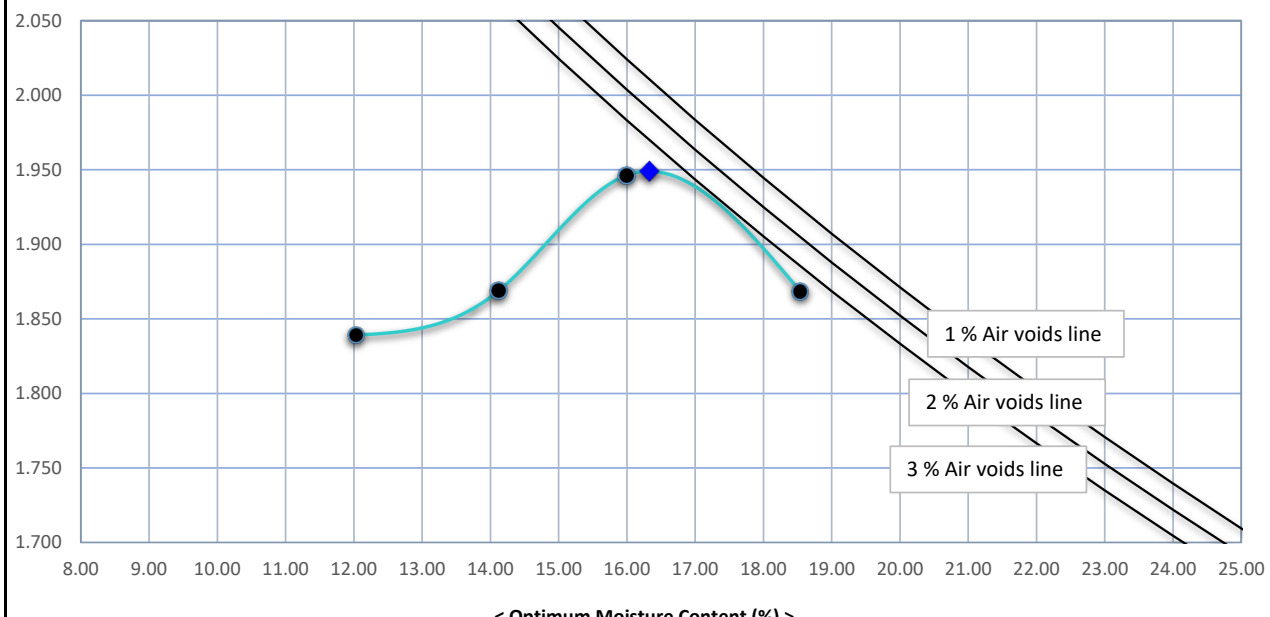
Oversize Material

Retained 19.0mm	**1**	%
Retained 37.5mm	**0**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**12.0**	**14.0**	**16.0**	**18.5**	
Dry Density (t/m³)	**1.84**	**1.87**	**1.95**	**1.87**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.95**
Optimum Moisture Content (%)	**16.5**

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 11-October-2019

GREAT SOUTHERN GEOTECHNICS

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DRY DENSITY & MOISTURE CONTENT RELATION OF SOIL TEST REPORT

AS 1289.5.2.1

Report No.	**2024 /2**	Date Sampled	**16/09/2019**	
Job No.	**2024**	Date Received	**18/09/2019**	
Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Date Tested	**10/10/2010**	
Client No.	**-**	Sample No.	**2024G25**	
Project	**Harlequin Street Development**	Curing Period Water	**52**	hour(s)
Road	**-**	Curing Period Stabilizer	**N/A**	hour(s)
Section	**Proposed Development**	Stabilizer Added	**N/A**	%
Layer Type	**In Situ**	Sampling Method	**AS 1289.1.2.1-6.5: In-situ material**	
Material Description	**Sandy CLAY**	Preperation Method	**AS 1289.1.1**	
Test Depth (mm)	**1200mm to 2000mm**	Location Details	**TP16, 1200mm to 2000mm**	
		LL Determined By	**Estimated**	

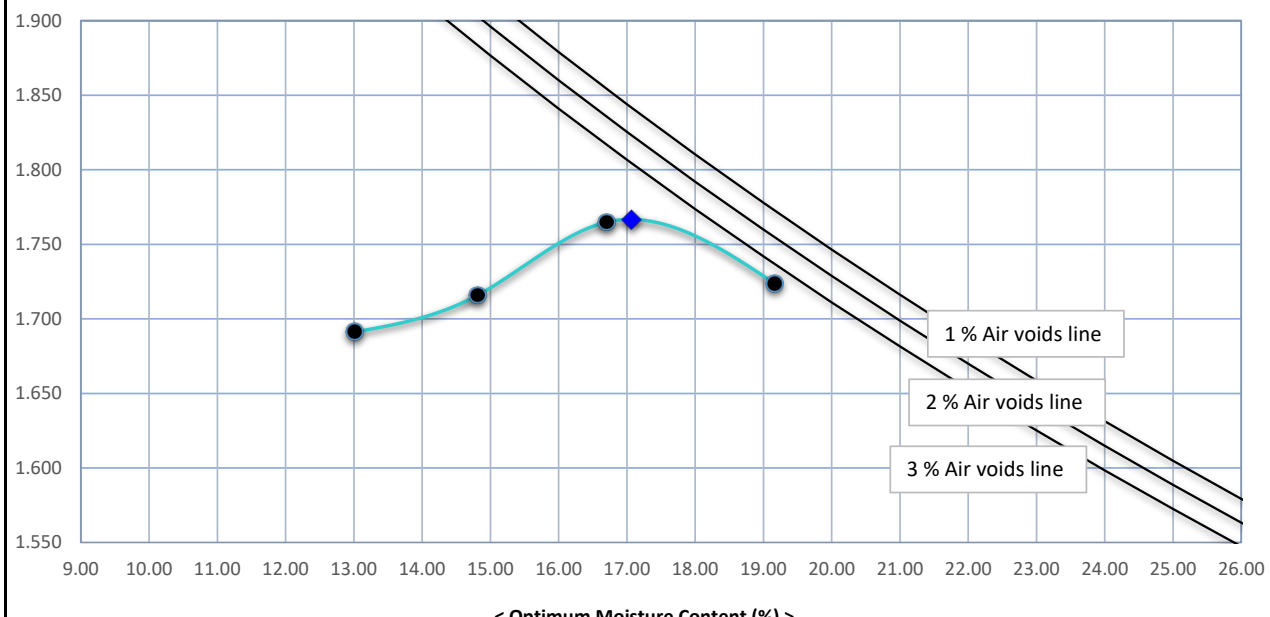
Oversize Material

Retained 19.0mm	**5**	%
Retained 37.5mm	**3**	%

Laboratory Moisture & Density Results

Moisture Content (%)	**13.0**	**15.0**	**16.5**	**19.0**	
Dry Density (t/m³)	**1.69**	**1.72**	**1.76**	**1.72**	

Dry Density vs. Moisture Content



Maximum Dry Density (t/m³)	**1.77**
Optimum Moisture Content (%)	**17.0**

NATA WORLD RECOGNISED ACCREDITATION

Comments

Distribution *Laboratory File / Sam Williams*

Approved Signatory:

Name: A.PURDIE

Function: Laboratory Manager

Date: 12-October-2019

Liquid Labs WA
08 94723349
16B/81 Briggs Street
Carlisle, WA 6101

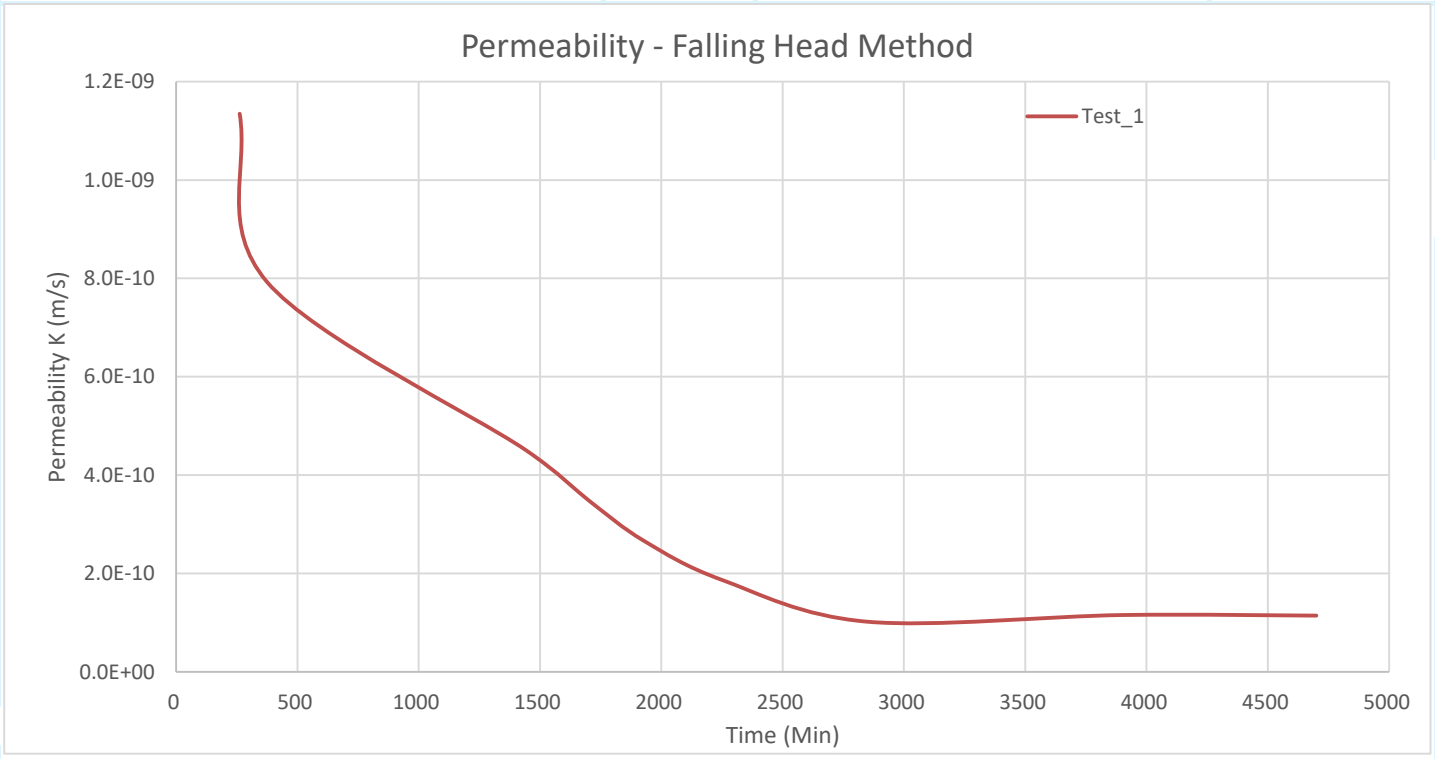
FALLING HEAD PERMEABILITY TEST REPORT

AS 1289.6.7.2, 2.1.1, 5.2.1

Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Ticket No.	**S3713**
Client Address	**5a 209 Chester Pass Rd, Milpara WA 6330**	Report No.	**LLS19/3964 _1_FHPERM**
Project	**Proposed Development**	Sample No.	**LLS19/3964**
Location	**Harlequin Street Development**	Sampled By	**Client**
Sample Identification	**TP13, 200mm to 1100mm (GSG# 2024G23)**		
Sampling Method:	**Sampled by Client, Tested as Received**	Date Tested	**18/10/2019**

Specimen conditions at test

Laboratory Density Ratio (%)	**94.9**	**Laboratory Moisture Ratio (%)**	**100.7**
Compactive Effort	**Modified**	**% Retained on 19mm Sieve**	**0.0**
Surcharge (kPa)	**3**	**Date tested**	**18/10/2019**



Coefficient of Permeability K_{20} (m/s) **3.90E-10**

Comments:

Approved Signatory

Name Curwin Boltman
Function Assistant Laboratory Manager
Issue Date 28-October-2019

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Carlisle, WA 6101

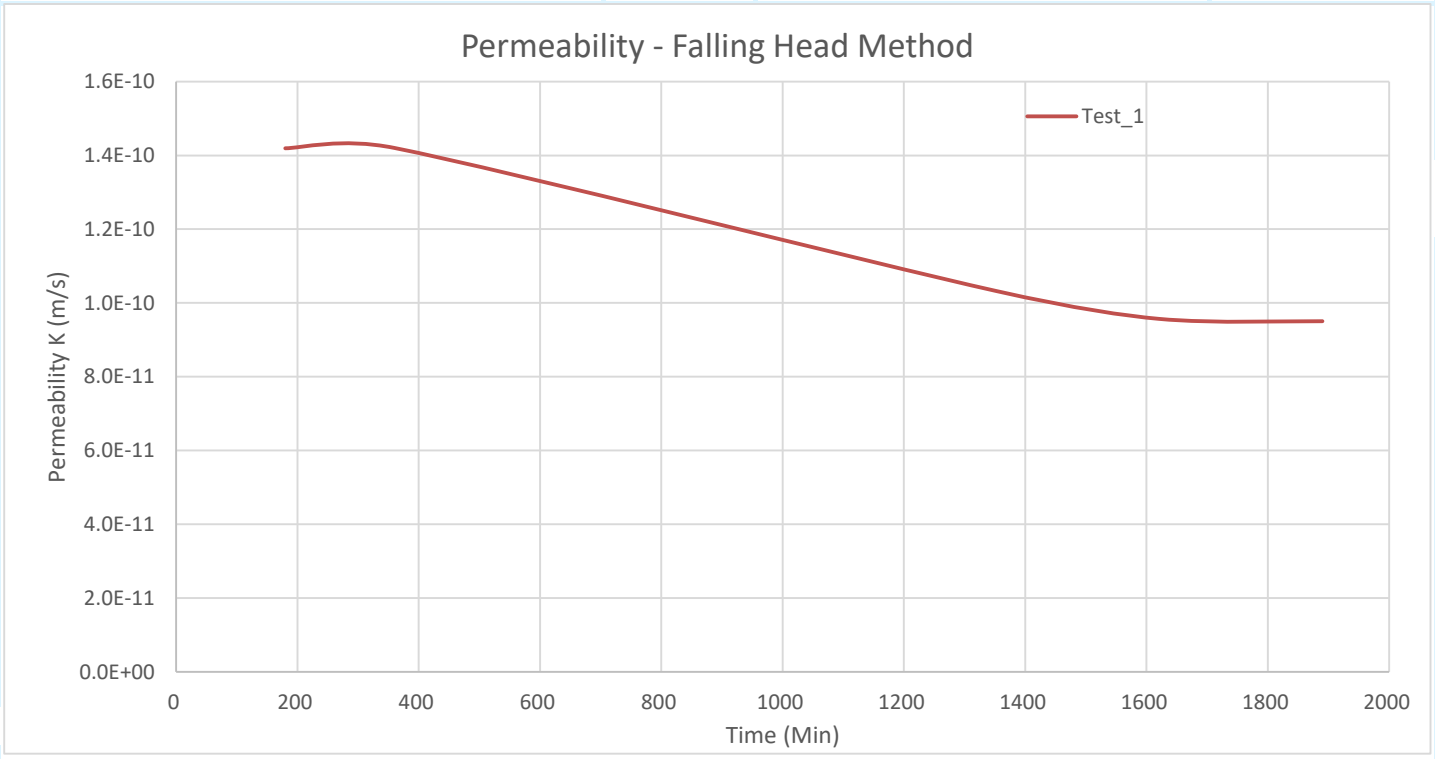
FALLING HEAD PERMEABILITY TEST REPORT

AS 1289.6.7.2, 2.1.1, 5.2.1

Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Ticket No.	**S3713**
Client Address	**5a 209 Chester Pass Rd, Milpara WA 6330**	Report No.	**LLS19/3965 _1_FHPERM**
Project	**Proposed Development**	Sample No.	**LLS19/3965**
Location	**Harlequin Street Development**	Sampled By	**Client**
Sample Identification	**TP14, 1000mm to 2000mm (GSG# 2024G24)**		
Sampling Method:	**Sampled by Client, Tested as Received**	Date Tested	**23/10/2019**

Specimen conditions at test

Laboratory Density Ratio (%)	**94.1**	**Laboratory Moisture Ratio (%)**	**100.5**
Compactive Effort	**Modified**	**% Retained on 19mm Sieve**	**0.0**
Surcharge (kPa)	**3**	**Date tested**	**23/10/2019**



Coefficient of Permeability K_{20} (m/s) **1.16E-10**

Comments:

Approved Signatory

Name Curwin Boltman
Function Assistant Laboratory Manager
Issue Date 28-October-2019

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16B/81 Briggs Street
Carlisle, WA 6101

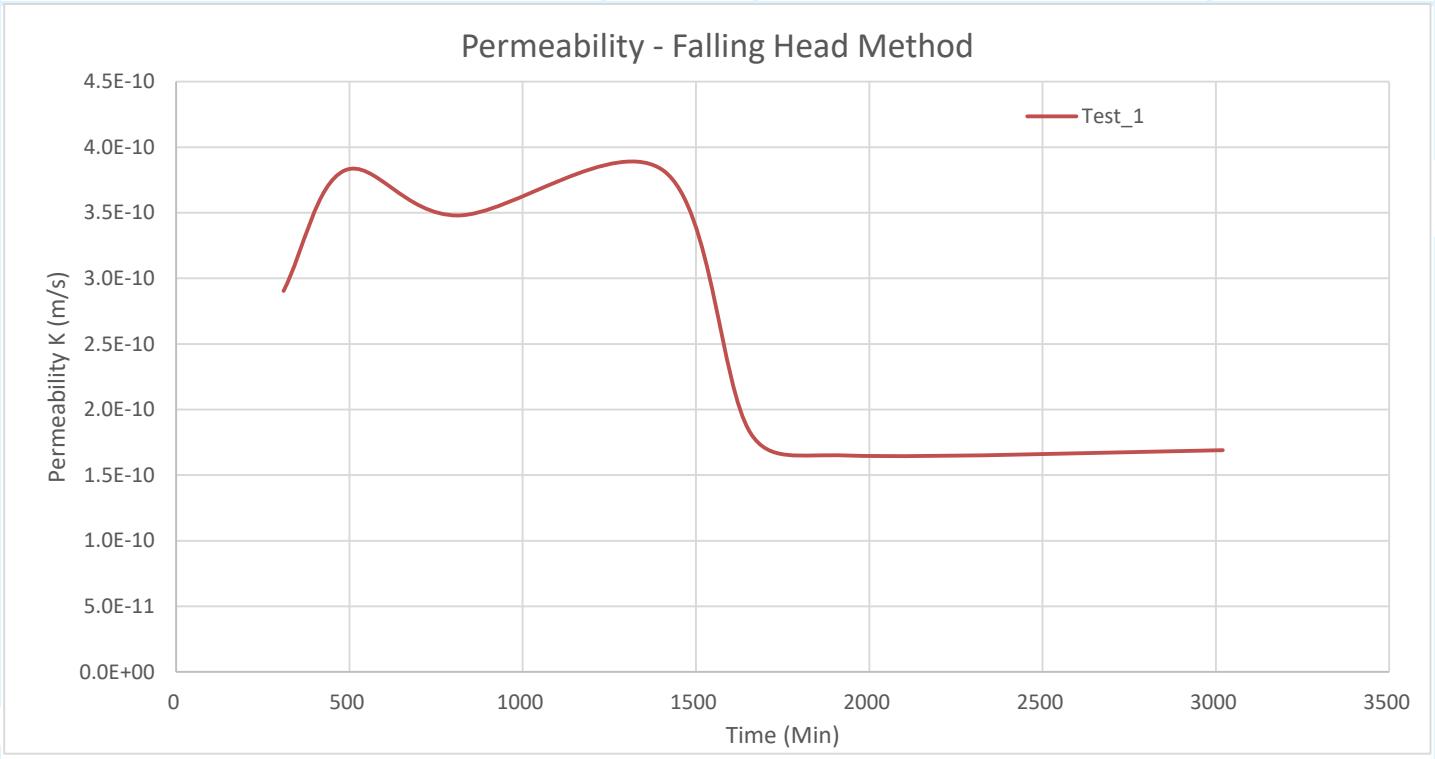
FALLING HEAD PERMEABILITY TEST REPORT

AS 1289.6.7.2, 2.1.1, 5.2.1

Client	**Turner and Wells Pty Ltd ATF Turner and Wells Unit Trust**	Ticket No.	**S3713**
Client Address	**5a 209 Chester Pass Rd, Milpara WA 6330**	Report No.	**LLS19/3966 _1_FHPERM**
Project	**Proposed Development**	Sample No.	**LLS19/3966**
Location	**Harlequin Street Development**	Sampled By	**Client**
Sample Identification	**TP16, 1200mm to 2000mm (GSG# 2024G25)**		
Sampling Method:	**Sampled by Client, Tested as Received**	Date Tested	**21/10/2019**

Specimen conditions at test

Laboratory Density Ratio (%)	**95.2**	**Laboratory Moisture Ratio (%)**	**102.7**
Compactive Effort	**Modified**	**% Retained on 19mm Sieve**	**0.0**
Surcharge (kPa)	**3**	**Date tested**	**21/10/2019**



Coefficient of Permeability K_{20} (m/s) **2.74E-10**

Comments:

Approved Signatory

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Function Assistant Laboratory Manager
Issue Date 28-October-2019

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Great Southern GEOTECHNICS

Explanatory Notes

COLOURS

BLACK - BROWN (bk)	BLUE (bl)	ORANGE (or)
BROWN (br)	BLUE - GREEN (bl/gr)	RED (rd)
GREY - BROWN (gy/br)	GREEN (gr)	RED - BROWN (rd/br)
GREY (gy)	YELLOW (yl)	PINK (pk)
BLUE - GREY (bl/gy)	YELLOW - BROWN (yl/br)	PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR	SUB-ANGULAR	SUB-ROUNDED	ROUNDED

PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63-200mm	20-63mm	6-20mm	2.36-6mm	0.6-2.36mm	0.2-0.6mm	0.075-0.2mm	0.002-0.075mm	<0.002mm

GRAIN SIZE

SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	← SAND (SA) →		← GRAVEL (GR) →				COBBLES (CO)
SIZE	< 2µm	2-75µm	Fine 0.075-0.2mm	Medium 0.2-0.6mm	Coarse 0.6-2.36mm	Fine 2.36-6mm	Medium 6-20mm	Coarse 20-63mm	63-200mm
SHAPE & TEXTURE	Shiny	Dull	← angular or subangular or subrounded or rounded →						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

Great Southern GEOTECHNICS

Explanatory Notes

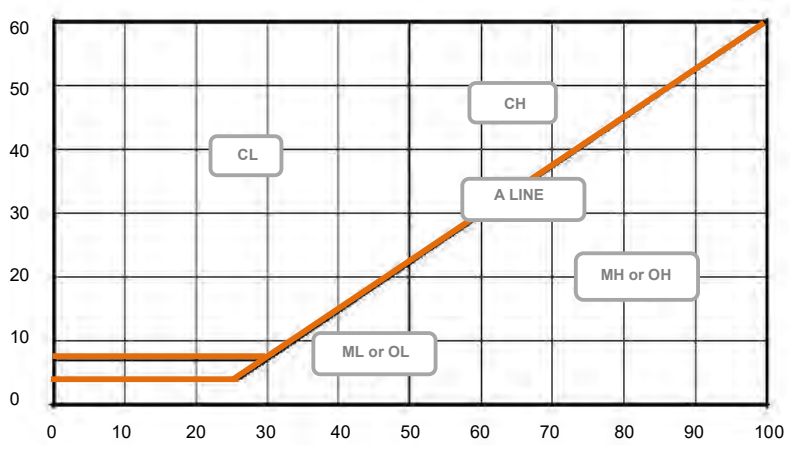
CLASSIFICATION CHART

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels
		GRAVELS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength '	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands
		SANDS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures

FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm					
		DRY STRENGTH	DILATANCY	TOUGHNESS		
	SILTS AND CLAYS Liquid limit less than 50	None to low	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		Low to medium	Slow	Low	OL	Organic silts and organic silt-clays of low to medium plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow to none	Low to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH	Inorganic clays of high plasticity.
		Medium to high	None to very slow	Low to medium	OH	Organic clays of high plasticity
HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture				Pt	Peat and other highly organic soils

PLASTICITY CHART

For laboratory classification of fine grained soils



Great Southern GEOTECHNICS
Explanatory Notes

PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY - Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 - 25	25 - 50	50 - 100	100 - 200	> 200
SPT (N) Blowcount	0 - 2	2 - 4	4 - 8	8 - 15	15 - 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY - Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 - 4	4 - 10	10 - 30	30 - 50	50 - 100	> 50/150 mm
Density Index (%)	< 15	15 - 35	35 - 65	65 - 85	85 - 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component Field Guide	Coarse grained soils: < 5% Fine grained soils: <15% Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30% Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

Great Southern GEOTECHNICS
Explanatory Notes

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, i.e. brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS(50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be ironstaining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.

Appendix 3 Correspondence

From: Martin Buczak <martin.buczak@denmark.wa.gov.au>
Sent: Monday, 11 October 2021 11:10 AM
To: Rebecca Epworth; Luke Tulloch; nicolie.sykora@dwer.wa.gov.au
Cc: Sam Williams
Subject: RE: Local Water Management Strategy - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

HI Rebecca

I can confirm that the shire will be happy with the 20% AEP for storage and predevelopment flow rate.

regards

Martin Buczak
Manager Technical Services
Shire of Denmark, PO Box 183, Denmark WA 6333
P: 9848 0322 | M: 0409 277 948
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From: Rebecca Epworth <Rebecca@urbaqua.org.au>
Sent: Tuesday, 5 October 2021 11:02 AM
To: Luke Tulloch <luke.tulloch@denmark.wa.gov.au>; nicolie.sykora@dwer.wa.gov.au
Cc: Martin Buczak <martin.buczak@denmark.wa.gov.au>; Sam Williams <sam@williamsconsulting.page>
Subject: RE: Local Water Management Strategy - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

OK great thanks Luke. Ill touch base with Martin again when he returns just to confirm.

Regards

Rebecca Epworth
Director

Suite 4/226 Carr Place, Leederville WA 6007
P: 08 6383 7551
M: 0437 707 472

www.urbaqua.org.au

From: Luke Tulloch <luke.tulloch@denmark.wa.gov.au>
Sent: Tuesday, 5 October 2021 11:00 AM
To: Rebecca Epworth <Rebecca@urbaqua.org.au>; nicolie.sykora@dwer.wa.gov.au
Cc: Martin Buczak <martin.buczak@denmark.wa.gov.au>; Sam Williams <sam@williamsconsulting.page>
Subject: RE: Local Water Management Strategy - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

Hi Rebecca,

I have not had any involvement with this project to date so cannot comment on the context of the below stormwater modelling but typically we are happy with 20% AEP storage with 20%AEP pre-development flow rates within the Shire.

Martin is currently on leave but will confirm his approval when he is back in the office.

Cheers,

Luke Tulloch
Civil Engineer, MIE Aust.
Shire of Denmark, PO Box 183, Denmark WA 6333
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From: Rebecca Epworth <Rebecca@urbaqua.org.au>
Sent: Thursday, 30 September 2021 12:39 PM

To: nicolie.sykora@dwer.wa.gov.au
Cc: Martin Buczak <martin.buczak@denmark.wa.gov.au>; Luke Tulloch <luke.tulloch@denmark.wa.gov.au>; Sam Williams <sam@williamsconsulting.page>
Subject: RE: Local Water Management Strategy - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

Hi Nicolie, Martin/Luke,

Nicolie, further to our conversation this morning, I gave the Shire a call but unfortunately Martin (and Luke) are on leave at the moment so I haven't had a chance to talk to them yet. I understand Luke is back next week.

Martin/Luke – Regarding this site and the original DWER email advice below. I had a chat with Nicolie this morning. We have revised the strategy and undertaken modelling to include detention basins with a post development discharge at predevelopment flow rates. As per DWERs advice below, we just wanted to confirm they would be happy with 20% AEP (0.2 EY) detention basins (maintaining the predev 20% AEP flow rates).

Nicolie confirmed that would be fine with them, but asked that I double check that is OK with you. Happy to talk through this with you further when you return, but just thought I'd send through the previous emails and record of the DWER discussion for your reference in the meantime.

Thanks and speak soon, Bec

Rebecca Epworth
Director

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From: Nicolie Sykora <nicolie.sykora@dwer.wa.gov.au>
Sent: Thursday, 29 October 2020 12:22 PM
To: Rebecca Epworth <rebecca.epworth@coterra.com.au>
Cc: Craig Pursey <planning@jerramungup.wa.gov.au>; Martin Buczak <engineer2@denmark.wa.gov.au>
Subject: Local Water Management Strategy - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

Your ref:
Our ref: PA36566 / DWERDT328265 / RF1082-02

Attn: Rebecca Epworth

Dear Rebecca

Local Water Management Strategy (LWMS) - Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark

Thank you for providing the LWMS to the Department of Water and Environmental Regulation (Department) for advice. Please find the Department's comments below.

Maintenance of pre-development flow rates
With regard to the protection of the unnamed creek which flows into Wilson Inlet, the LWMS's response to the Department's guideline requirements is considered to be adequate with regard to treatment of stormwater runoff

from the 1EY. While the creek is a modified system along the majority of its length, it retains much of its natural channel and form downstream of the development area. The natural values of the creek should be protected. As the creek flows directly into Wilson Inlet, management of these values should be a priority within the LWMS.

Based on the geotechnical report by TABEC (August 2020), given the nature of the site, with overall soil types predominantly sand with silt/clay and gravel and topography (existing grades in the northern and southern portions are up to 10%) it may not be possible for the LWMS to achieve Water sensitive urban design principles to treat and/or infiltrate close to source.

While the LWMS states that pre-development flows will be maintained, with the basins in Catchments 1 & 2 designed to hold the 1% AEP, there will be no flow in the creek unless these basins overflow. Therefore, there will be no minor flows in the creek. DWER recommends that minor flows be maintained at pre-development rates. LWMS are expected to have design criteria to
restore waterways in a manner reflective of natural systems. It is questioned why the basins are designed to cater for the 1% AEP. Only minor events including up to the 0.2 EY or 10% AEP need runoff control.

Infiltration of minor events
As Figure 5 shows, for the purpose of runoff calculation, only proposed road reserves are considered for Catchment 1 & 2 and calculation excludes lot area. There is an assumption in the LWMS that for Catchment 1 and 2 all minor event runoff will be captured at source within lots. However, with a proposed lot size of 350 m2 - 450 m2, on-site detention for minor events is considered unlikely as on-site detention is limited to use of soakwells. It should be questioned if this is sufficient to increase water residence time within the catchment given the shallow depth of sandy soils with underlying clay in the development area. It is recommended that Coterra confirm if the Shire is willing to support the assumption of the LWMS that minor events will be capable of being infiltrated on lots.

Basin 3
How will discharge from Basin 3 in Catchment 3 be managed as there is no waterway to overflow into, is this basin purely be an infiltration basin?

Basin bunding
In regard to the proposed bunds to protect Basin 1 and 2 against the 1% AEP flood levels in the creek, it is recommended that the bunds are revegetated. The bund for Basin 1 is proposed to be 2.6m high. It is considered the bunds will be unsightly and visually detract from the creek and landscaped basins. As discussed above, it is considered that Catchment Basins 1 & 2 are over-engineered for the purpose. If the Shire believe containment of the 1% AEP event is necessary within the POS, it is recommended that planting is required as a minimum to improve the aesthetics of these structures when viewed from residential lots.

Public Open Space
All POS areas except the north-west basin closest to South Coast Highway have roads bordering them. There should be demarcation between lots which front onto the POS including proposed Lot 1 and 61.

Commercial lot s
The commercial nature of the two lots within the proposed development area should be taken into consideration within the existing basins capacity and within calculations.

Should you require any further information on the comments please contact Nicolie Sykora on 9841 0123.

Regards,
Nicolie

Nicolie Sykora
Environmental Officer - Planning Advice
South Coast Region

Department of Water and Environmental Regulation
5 Bevan Street, ALBANY, WA 6330
PO Box 525, ALBANY, WA 6331

From:	Karen McKeough
To:	Rebecca Epworth
Cc:	Martin Buczak; Craig Pursey; Mitchell Wells (mitchwells@icloud.com); Sam Williams; Angus Turner
Subject:	RE: Lot 621 Harlequin Street, Denmark
Date:	Friday, 3 January 2020 3:51:42 PM
Attachments:	image001.png image003.png image007.png image008.png

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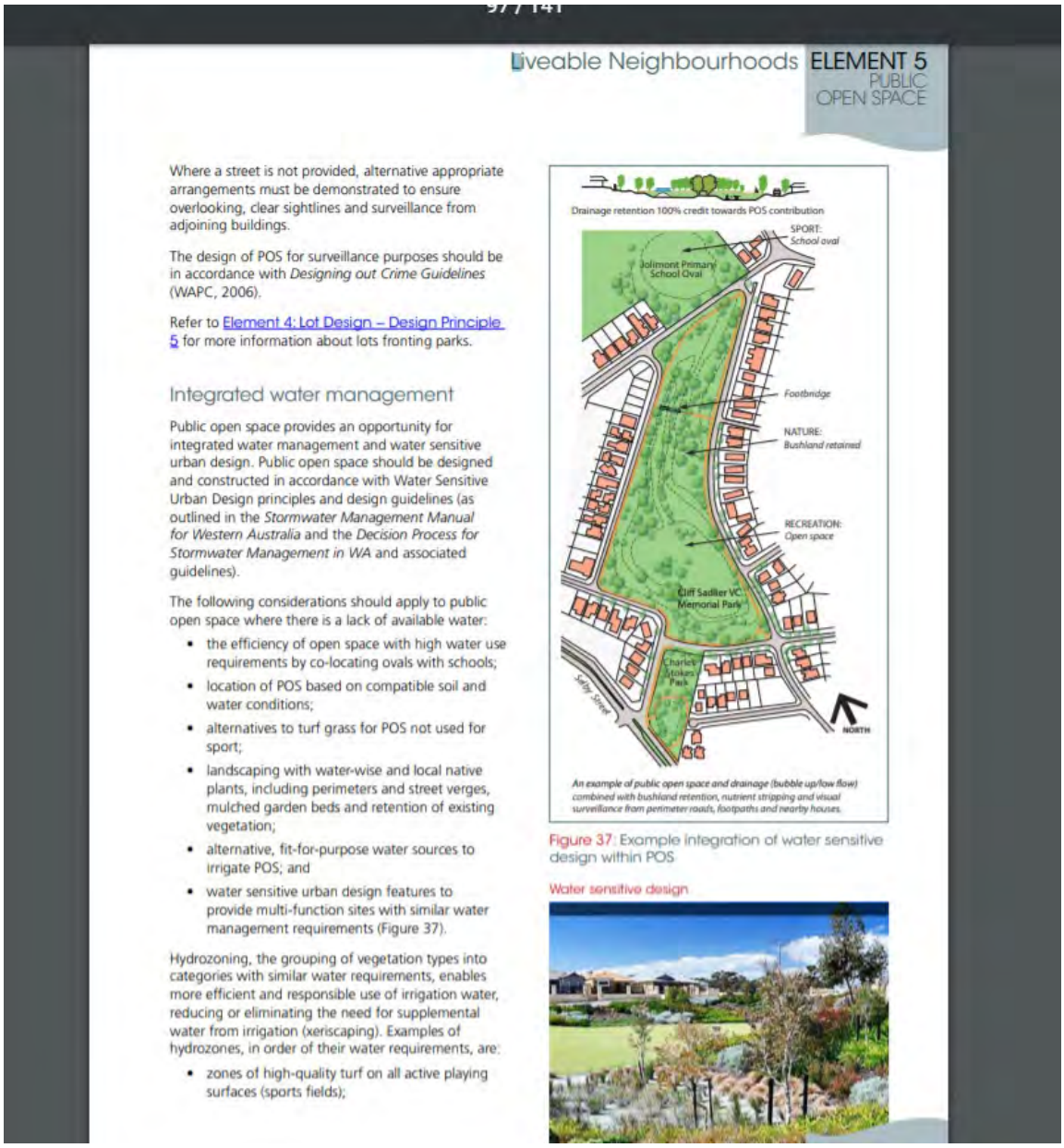
Hi Rebecca,
Yes you are correct. As per the *Decision Process for Stormwater Management in WA,* you should consider the existing upstream land use catchment (also assuming the dam is not present) for your modelling exercise. My apologies for providing incorrect advice.

With regard to the foreshore setback, I would suggest that there should be a development setback based on the 1% AEP, however there may be other criteria associated with the foreshore POS, i.e. pathways or stormwater treatment infrastructure that may influence the final boundaries of the POS.

As for the draft concept design for the site that was previously provided, the proposed design that shows rear of the lots backing onto the POS is not supported by DWER.
Liveable Neighbourhoods provides strategies for good design of POS. Lot design should allow for surveillance of the POS through the use of road or pathway frontage to the POS.
See illustration below, extracted from Liveable Neighbourhoods.

Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
5 Bevan Street, ALBANY WA 6330
PO Box 525, ALBANY WA 6330
T: (08) 9841 0128 | VOIP - 1528
E: karen.mckeough@dwer.wa.gov.au | www.dwer.wa.gov.au



Liveable Neighbourhoods ELEMENT 5 PUBLIC OPEN SPACE

Where a street is not provided, alternative appropriate arrangements must be demonstrated to ensure overlooking, clear sightlines and surveillance from adjoining buildings.

The design of POS for surveillance purposes should be in accordance with *Designing out Crime Guidelines* (WAPC, 2006).

Refer to Element 4: Lot Design – Design Principle 5 for more information about lots fronting parks.

Integrated water management

Public open space provides an opportunity for integrated water management and water sensitive urban design. Public open space should be designed and constructed in accordance with Water Sensitive Urban Design principles and design guidelines (as outlined in the *Stormwater Management Manual for Western Australia* and the *Decision Process for Stormwater Management in WA* and associated guidelines).

The following considerations should apply to public open space where there is a lack of available water:

- the efficiency of open space with high water use requirements by co-locating ovals with schools;
- location of POS based on compatible soil and water conditions;
- alternatives to turf grass for POS not used for sport;
- landscaping with water-wise and local native plants, including perimeters and street verges, mulched garden beds and retention of existing vegetation;
- alternative, fit-for-purpose water sources to irrigate POS; and
- water sensitive urban design features to provide multi-function sites with similar water management requirements (Figure 37).

Hydrozoning, the grouping of vegetation types into categories with similar water requirements, enables more efficient and responsible use of irrigation water, reducing or eliminating the need for supplemental water from irrigation (xeriscaping). Examples of hydrozones, in order of their water requirements, are:

- zones of high-quality turf on all active playing surfaces (sports fields);

An example of public open space and drainage (bubble up/low flow) combined with bushland retention, nutrient stripping and visual surveillance from perimeter roads, footpaths and nearby houses.

Figure 37: Example integration of water sensitive design within POS

Water sensitive design

From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Monday, 30 December 2019 12:03 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Martin Buczak <engineer2@denmark.wa.gov.au>; Craig Pursey <craig.pursey@denmark.wa.gov.au>; Mitchell Wells (mitchwells@icloud.com) <mitchwells@icloud.com>; Sam Williams <samwilliams@westnet.com.au>; Angus Turner <angus.turner@gmail.com>
Subject: Re: Lot 621 Harlequin Street, Denmark

Hi Karen,

Apologies for the delay is getting back to you on this - Regarding your comments below. The proponent is happy to undertake modelling of the upstream catchment from the subject site to determine the 1% AEP flood area within the watercourse (with the assumption the current neighbouring dam is not present or is removed).

However regarding this comment "You will need to consider the future fully developed upstream catchment, which will likely see an increase in runoff as greenfield areas are developed". DWERs policy *Decision Process for Stormwater Management in WA* specifies that to manage catchments, proponents need to;

- *"Maintain the 1 per cent annual exceedance probability (AEP) pre-development flood regime (flood level, peak flow rates and storage volumes) for catchments that do not have a published catchment plan"*

Given it is the responsibility of each land owner/developer to maintain the predevelopment hydrological regime, if they are changing their land use from rural to urban, we understand that it is their responsibility to assess and manage the implications of

that (not for the downstream land owner to accommodate increases in flows due to increased runoff from urbanisation). Given each developer will need to maintain the predevelopment (rural) flows on their site as per the criteria above, even if the upstream catchment is urbanised, the pre development flows of the current catchment that we are modelling will remain the same. As such we are proposing to model the upstream catchment based on the current land use scenario.

I trust it is sufficient that the foreshore setback on site will then be based on the flood extent of the 1% AEP event (as modelled without the neighbouring dam present, and the current catchment land uses)?

I look forward to hearing from you.

Thanks, Bec

Rebecca Epworth
Director
BSc (Hons), MSc, MSc(Eng)

COTERRA ENVIRONMENT

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---

From: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Sent: Thursday, 17 October 2019 10:48 AM
To: Rebecca Epworth <rebecca.epworth@coterra.com.au>
Cc: Martin Buczak <engineer2@denmark.wa.gov.au>; Craig Pursey <craig.pursey@denmark.wa.gov.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Rebecca,
I have spoken to the Shire of Denmark regarding this matter.
We all agree, that as the large dam immediately upstream of the subject site is in private property the Shire has no long term control over how the dam is managed, or even retained.
While the current owners have established a water regime that influences flow on the subject site, there is no guarantee that water regime will continue into the future when the property is sold. DWER and Shire of Denmark need to be confident that infrastructure and private housing is going to be located appropriately and not at risk of flooding. The Shire will wear the cost of flooding impacts if for some reason the dam is removed or fails.
Coterra will need to model the entire upstream catchment from the subject site to determine the 1% AEP. You will need to consider the future fully developed upstream catchment, which will likely see an increase in runoff as greenfield areas are developed. Once the 1% event is modelled setbacks to the waterway or FFL need to be created to protect future development from flooding.
See catchment map below that shows the large area upstream of the dam.
Please contact me if you require any further information.
Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
5 Bevan Street, ALBANY WA 6330
PO Box 525, ALBANY WA 6330
T: (08) 9841 0128 | VOIP - 1528
E: karen.mckeough@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Thursday, 10 October 2019 3:57 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Sam Williams <samwilliams@westnet.com.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Karen,

Thank you for your response. Regarding the future of the upstream dam located on Lot 1203 South Coast Highway:

- Historical aerial photographs (Landgate) show that the dam has been there for at least 60 years (present in the earliest aerial photo available in 1961).
- On 25 August 2009, the Shire of Denmark introduced a Dams and Water Features Policy under their Town Planning Scheme No.3 requiring town planning approval for the construction of dams of a certain size. The policy states in the introduction:
  - "P*reviously farm dams for the purpose of stock watering, aquaculture, irrigation, farm water supply or similar rural activities did not require approval from Council. "*
  - Given the dam was constructed before 2009, retrospective planning approval cannot be requested by the Shire of Denmark so from a planning perspective the dam would not be required to be removed.
- With regards to whether there is future intention to remove the dam. It is also noted the owner of the dam has recently undertaken significant works to turn have a significant water feature. The works include the placement of large rocks to create a waterfall and it is understood a pump has been installed to recirculate the water and make the waterfall flow year round. Given this investment, it can be assumed the owner of the dam has no intention of removing it.

Regarding the 1% AEP modelling:

- Given the planning status of the dam, the long historical presence of the dam and the likely future intentions of the dam, it is considered that the dam will most likely remain.
- The current watercourse ecology and habitats would all be reflective of the current water regime (ie having an upstream dam) as it has evolved to be reflective of that.
- Modelling the upstream catchments for the watercourse and determining the 1% AEP inundation levels would not be reflective of the past 60 years, the current situation or the most likely future scenario and so perhaps this would not be appropriate to base the design on?
- Given the dam only lets out small flows and under controlled circumstances, we consider that the main catchment to the existing watercourse is actually the site runoff catchment.
- The site runoff volumes will be managed though the drainage design and sizing (which will be presented in the LWMS).
- Would this be an acceptable approach instead?

Regarding the green corridor:

- Yes, we can confirm it will be rehabilitated, as agreed with the client, and it will become a green corridor in the form of POS ceded to the crown free of cost.
- We are proposing to set back the corridor as per the current DRAFT concept plan if you are supportive in principal, subject to further detail in the LWMS?

Thank you for you advice, look forward to hearing from you.

Thanks, Bec

Rebecca Epworth
Director
BSc (Hons), MSc, MSc(Eng)

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---

From: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Sent: Tuesday, 8 October 2019 9:48 AM
To: Rebecca Epworth <rebecca.epworth@coterra.com.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Rebecca,
DWER would be supportive of the proposed strategy to manage surface water and the waterway on the property. The upstream dam is a bit challenging for your planning/design calculations. Maybe you should still model the 1% AEP and allow for this setback in your design. The current management of the dam may not continue into the future. I would check in with the Shire of Denmark about this as well.
DWER would like to see the waterway rehabilitated and become a green corridor.
Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
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From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Monday, 7 October 2019 4:17 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Sam Williams <samwilliams@westnet.com.au>
Subject: Lot 621 Harlequin Street, Denmark

Hi Karen,

We are working on a site on Harlequin Street and South Coast Highway in Denmark. We have been commissioned to undertake the Local Water Management Strategy (LWMS) for the site. Prior to undertaking, I just wanted to touch base with you regarding the site and the likely concerns or requirements the Department might have. Firstly, as a bit of background please find below a summary of the site characteristics;

- There is a drainage line/ephemeral watercourse transecting the site flowing from west to east.
  - The neighbouring western Lot 617 contains a large dam, which restricts flow to the drainage line intersecting the northern portion of the proposed development. Historical aerial photography indicates this dam has been present since at least 1962, which is as far back as records show (Landgate, 2019).
  - Analysis of topographic contours indicate this dam receives water from a the north west catchment.
  - The flow of this drainage line is largely dependent on the overflow requirements (if any) of the dam.
  - It is understood that the dam water is recirculated (overflow to a small waterfall and pumped back into the dam) to aid with aeration and water quality.
  - It is also understood that any overflow that comes from the dam and results in flow going down this drainage line is via a controlled release of water. The flow in the watercourse is therefore not reflective of the overall catchment size or any 'normal' hydrological response to the catchment and rainfall/climate. The flow regime and extent of water inundation is currently entirely artificial and without seasonal patterns.
  - The controlled release of water from the dam for stock watering has been previously observed.

- The drainage line is relatively deep and well defined (photos will be provided in the LWMS).
- The vegetation appears to be sparse along most of the drainage line with clumps of denser vegetation. A vegetation survey is going to be undertaken this month (spring survey) to confirm however. In addition the current concept plan idenfiies the retention of the dense clumps of vegetation across the drainage line (but also across the site in general). The vegetation on the drainage line can be seen in the aerial below (as can the neighbouring dam).

- There are no wetlands on site.
- The site topography shows slight undulation, with a high point across the middle. Site topographic contours indicate the north-east corner sits at 31 mAHD, the low point of the drainage channel. The land slopes down on either side of this channel. The high-point of the site is approximately mid-way down to the south, sitting at 60 mAHD. This high point then slopes down towards the south to approximately 34 mAHD.
- The Geotech study indicates the northern half of the site is comprised of Colluvium soils, with an area of Sand in the north-east corner. The southern half of the site is comprised of porphyritic biotite granite and adamellite, which is partially exposed and mapped as a dolerite dyke (DMP, 2015).
- There is limited regional groundwater information however the Geotech study was undertaken in September 2019 which is expected to coincide with the peak groundwater period and therefore reflective of maximum groundwater levels at the site. No other monitoring has been undertaken.
  - Water seepage above the clay layer was found at 5 test pits in the northern end of the site (in proximity of the drainage line).
  - This suggests a perched water table may exist in the northern portion of the site.
  - The depth varies depending on the clay layer depth but in the pit locations this varied between 0.4m and 1.1m below ground level.

- The site will be sewered so there will be no onsite wastewater disposal.

Please find attached the DRAFT concept design, this is a working draft only. The overall drainage and stormwater strategy is still being determined and the LWMS will cover this with the information required as per the BUWM guidelines. However at this point in the design, we just wanted to touch base with you regarding the proposed POS area surrounding the drainage line. It is proposed the water course and an area on either side of it will be ceded to the Crown for POS. The POS design has incorporated tree retention where possible and some setbacks from lots taking into account the unusual hydrological nature of the drainage line. Could you please provide comment on whether you see any particular issues with the proposed area? Or you would be looking for any further specific information in the LWMS?

If you need further information please do not hesitate to contact me.

Thanks, Bec

Rebecca Epworth
Director
BSc (Hons), MSc, MSc(Eng)

COTERRA ENVIRONMENT

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Level 3, 25 Prowse Street, West Perth WA 6005 | www.coterra.com.au | LinkedIn

Coterra would like to congratulate our clients and thank them for the opportunity to be involved with the following projects that have won awards over the last two years:

- 2018 UDIA WA Environmental Excellence Award – Rosehill Waters for Noahs Rosehill Waters
- 2018 UDIA WA Residential Development Award – Trinity at Alkimos for Northern Corridor Developments
- 2018 UDIA EnviroDevelopment Certification 6 leaves – Catalina Beach and Catalina Grove for Tamala Park Regional Council and Satterley Property Group
- 2018 Stormwater Western Australia Excellence in Strategic or Master Planning – Rosehill Waters
- 2018 Australian Water Association Water Sensitive Urban Design (Grahame Heal) Award – Rosehill Waters
- 2017 UDIA National Environmental Excellence Award – Osprey Waters for Mirvac
- 2017 UDIA WA EnviroDevelopment Chairman's Award – Rosehill Waters for Noahs Rosehill Waters
- 2017 UDIA EnviroDevelopment Certification 6 leaves – Rosehill Waters for Noahs Rosehill Waters
- 2017 UDIA WA Urban Water Excellence Award – White Gum Valley for LandCorp.

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Appendix 4 Flood Modelling Report (Hyd2o, 2020)

28 February 2020

Your Ref:
Our Ref: H19075Av1

Mitchell Wells
c/o Coterra
Level 3, 25 Prowse St
West Perth WA 6005

ATTENTION: Mitchell Wells

Dear Mitchell,

RE: LOTS 1 & 621 SOUTH COAST HIGHWAY, DENMARK: FLOOD STUDY

Please find below Hyd2o's report detailing the results of our field investigation and analysis to determine the 1% average exceedance probability (AEP) flood levels for the waterway within Lots 1 & 621 South Coast Hwy in Denmark.

1. BACKGROUND

Lots 1 & 621 South Coast Hwy are located within the Denmark townsite in the Shire of Denmark. The site is bounded by South Coast Hwy to the north west, existing subdivision to the south east and rural type landholdings in other directions (Figure 1).

The site is a former rural landholding with an existing dwelling and several small sheds. A local structure plan is proposed for the site which includes residential development and associated public open space. An unnamed waterway runs through the site from the western boundary to the north east boundary. Immediately upstream of the site is a dam which collects the majority of catchment flows from the waterway north of South Coast Hwy. The waterway flows through neighbouring residential properties until its ultimate discharge into Wilson Inlet.

This report provides estimates of 1% AEP flood levels and floodplain mapping for the waterway to assist the planning process for this development. No previous Department of Water and Environmental Regulation (DWER) estimates of peak flows or flood levels exist for this site.

2. FIELD INVESTIGATION

A field investigation of the site was conducted by Hyd2o on 23 December, 2019. During this visit, Hyd2o gained familiarity with the site, reviewed the local topography, and assessed the channel condition to enable assessment of Manning's n roughness coefficient for modelling purposes. Hyd2o also identified the positioning and sizes of all

hydraulic structures which were considered likely to affect flood levels and backwater conditions.

No significant debris outside of the main river channel was observed during the field investigation indicating recent flooding of the river outside of the main channel had not occurred.

The field investigation also determined the locations for surveyed river cross sections and culvert locations along the waterway. The survey was undertaken by Harley Dykstra Planning and Survey Solutions on 19 February 2020 key locations of cross sections and culverts are shown in Figure 1.

3. SURFACE WATER HYDROLOGY

The contributing catchment area to the waterway is estimated to be 2.16 km^2 with 45% of the catchment estimated to be cleared. The main stream length is estimated as 2.9 km and there is a fall of 150m along its length. A catchment map is provided as Figure 2 which shows that the catchment is predominantly on the upstream side of South Coast Hwy.

There are six culvert locations that convey flows across the catchment with a total of 10 individual barrels ranging in size from 375 mm diameter to 600 mm diameter. Table 1 below summarises the location, size, and number of barrels at each culvert location. Hyd2o have also estimated culvert capacities prior to the road overtopping based on application of HY-8, a specialist culvert hydraulic computation model. These capacities are used as a cross check for flow estimates given known frequencies of road overtopping. The sum of flows generated from HY-8 culvert capacity estimates is 4.5 m^3/s.

Culvert C7 is located immediately downstream of the site and provides a similar capacity to incoming flow across South Coast Hwy by providing approximately 4.7 m^3/s providing a crossing for a local track. Culvert C8 is where the waterway crosses Ocean Beach Road and is used as the backwater condition for the model.

Table 1: Existing Culvert Capacities (ex GST)

Culvert	Location	Easting	Northing	Diameter (mm)	Estimated Capacity (m3/s)
C1	South Coast Hwy	530801	6130321	375	0.3
C2	South Coast Hwy	530873	6130358	3 x 600	1.7
C3	South Coast Hwy	530988	6130430	375	0.3
C4	South Coast Hwy	531018	6130444	600	0.7
C5	South Coast Hwy	531056	6130453	450	0.4
C6	South Coast Hwy	531179	6130494	375	0.3
C7	South Coast Hwy	631342	6130611	2 x 450	0.8
C8	Track South of Site	531613	6130592	1500 x 1200	4.7
C9	Ocean Beach Rd	531988	6130611	3 x 1200	9.9

Figure 1 also shows the location of a surface water dam which this catchment drains into. Upon request from DWER, the modelling undertaken as part of this study does not account for the dam and assumes that all catchment flows are directed towards the waterway with no retention/detention in the dam.

4. ESTIMATION OF DESIGN FLOWS

Hyd2o estimates of peak flows for the catchments for a range of storm events up to the 1% AEP for predevelopment conditions based on applying various methodologies are summarised in Table 2 with detailed model outputs contained in Attachment A.

It should be noted that latest version of Australian Rainfall and Runoff (Ball et al, 2016) has resulted in changes in terminology being recommended to describe design rainfalls. Generally, Exceedance per Year (EY) terminology is recommended to be used for very frequent design rainfalls, Annual Exceedance Probability (AEP, %) terminology used for frequent and infrequent design rainfalls, and AEP (1 in x) terminology used for rare design rainfalls. For the purpose of this report, Average Recurrence Interval (ARI) terminology is therefore replaced with the updated terminology where appropriate as follows:

- 2 Year ARI – replaced with 0.5 EY
- 5 Year ARI – replaced with 0.2 EY
- 10 Year ARI – replaced with 10% AEP (approximate only as 10% AEP is 9.49 Year ARI)
- 20 Year ARI – replaced with 5% AEP
- 50 Year ARI – replaced with 2% AEP

- 100 Year ARI – replaced with 1% AEP

The various methods used to estimate flows included:

- Australian Rainfall and Runoff 1987 regional flood estimation methods including the Rational Method and Flood Index Methods,
- The Australian Rainfall and Runoff 2016 Regional Flood Frequency Estimation (RFFE) method

Table 2 recommends a design flows for use based on consideration of the various results via the different methods. A review of ARR 2016 RFFE methods indicates an overestimate of flow. Upon review of the gauging stations in its automated analysis the generated flows are equivalent to a nearby catchment that is approximately 50 km^2 in comparison to the 2.16 km^2 catchment considered here. On this basis it is considered major events may be overestimated in this area using this technique. RFFE inputs and estimates are provided as Attachment A to this report.

It is recommended ARR 1987 rational method flow estimates be adopted for design purposes.

Table 2: Pre Development Flow Estimates

Storm ARI	ARR 1987 Rational (m^3/s)	ARR 1987 Index Flood (m^3/s)	Storm New Term.	ARR 2016 RFFE (m^3/s)	Recommended Design Flow (m^3/s)
2	1.38	1.28	0.5 EY	0.71	1.38
5	2.39	2.24	0.2 EY	1.96	2.39
10	3.34	3.26	10% AEP	3.37	3.34
20	4.63	4.48	5% AEP	5.30	4.63
50	6.55	6.53	2% AEP	8.89	6.55
100	8.0	8.0	1% AEP	12.6	8.0

5. ESTIMATION OF 100 YEAR FLOOD LEVELS

A HECRAS model of the waterway were developed based on site survey undertaken by Harley Dykstra (2020) with key locations shown in Figure 1.

Individual modelled cross section outputs from HECRAS are provided in Attachment 2. The model was extended downstream of the site to Ocean Beach Rd to extablish the starting backwater for the system.

Manning roughness coefficients were estimated based on field observations and correlated to Chow (1959). A value of 0.035 was used to represent overbank flow which occurs within a grassed paddock. A value of 0.04 was used for the main river channel for the waterway which is characterised by some weeds and underbrush, with a smooth base and no sluggish sections.

Estimated 1% AEP flood levels and associated floodplain are shown in Figure 3. Floodplain mapping is considered to be accurate at each surveyed cross section and interpolated based on 2m topography between sections.

Flood levels within the site vary from 37.74 mAHD at the upstream boundary to 31.21 mAHD at the downstream boundary, flood levels at each cross section are provided in Table 3 below and Figure 3.

Table 3: 1% AEP Flood Levels

Cross Section	Flood Level (mAHD)
XS1	37.74
XS2	35.46
XS3	34.75
XS4	32.47
XS5	32.12
XS6	31.69
XS7	31.61
XS8	31.21

It should be noted that culvert C8 is modelled as part of this study and was found to overtop the track in the 1% AEP. An upgrade of this culvert as part of subdivisional works may be considered to further lower flood levels within the site.

DWER typically require development levels to be 0.5m above the 1% AEP, and no anecdotal evidence is known to exist for the site to indicate a higher clearance requirement is required. It is however recommended that advice on a suitable clearance above the 1% AEP flood level be requested from DWER in review of this report to inform the development levels.

6. REFERENCES

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2016, Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia.

Chow, V.T. (1959) Open Channel Hydraulics

Engineers Australia (2003) Australian Rainfall and Runoff – A Guide to Flood Estimation Volumes 1&2

Should you have any queries regarding this report, please do not hesitate to contact Sasha Martens or Suzanne Smart of this office.

Yours sincerely,

Suzanne Smart

Senior Environmental Hydrologist

Figures

1. Location Plan
2. Catchment Plan
3. 1% AEP Floodplain Mapping

Attachments

1. Peak Flow Estimates: ARR 1987 Methods & RFFE 2016
2. Modelled Cross Sections

This document is published in accordance with and subject to an agreement between Hyd2o and the Client for whom it has been prepared, and is restricted to those issues that have been raised by the Client in its engagement of Hyd2o. It has been prepared using the skill and care ordinarily exercised by hydrologists in the preparation of such documents. Hyd2o recognise site conditions change and contain varying degrees of non-uniformity that cannot be fully defined by field investigation. Measurements and values obtained from sampling and testing in this document are indicative within a limited timeframe, and unless otherwise specified, should not be accepted as conditions on site beyond that timeframe. Any person or organisation that relies on or uses the document for purposes or reasons other than those agreed by Hyd2o and the Client does so entirely at their own risk. Hyd2o denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence of relying on this document for any purpose other than that agreed with the Client.

Date:27/02/2020 Job No. H19075

Site

Culvert Locations

Waterway Cross Sections

hyd2o

Lots 1 & 621 South Coast Hwy: Flood Study

Location Plan

Figure 1

Date : 28/02/2020 Job No H19075

Easting 531613 Northing 6130582, Area 216 ha, 2.9 km mainstream length, 30mAHD-180mAHD mainstream drop (catchment length to width ratio 4:1)

hyd$_2$o

Lots 1 & 621 South Coast Hwy, Denmark: Flood Study

Catchment Plan

Figure 2

Date:27/02/2020 Job No. H19075

Site

1% AEP Flood Level (mAHD)

1% AEP Floodplain

Topography (mAHD)

hyd2o

Lots 1 & 621 South Coast Hwy: Flood Study

1% AEP Floodplain Mapping

Figure 3

Attachment 1

AR&R 1987 Peak Flow Calculator

SOUTH WEST REGION

hyd2o HYDROLOGY

Catchment name	Denmark	
Catchment type	Jarrah forest with loamy soils	

RATIONAL METHOD

Catchment area	2.16	km^2
Mainstream length	2.9	km
Slope	50.0	m/km
Catchment cleared	45.0	%

C_{10} =	0.458		C10=2.15*10-1 *100.0073Cl
t_c =	210.1	mins	$tc=2.31A^{0.54}$
	3.5	hours	

$Q_y = 0.278\ C_{10}*(C_y/C_{10})\ I_{tc}\ A$

ARI (yrs)	2	5	10	20	50	100	
C_y/C_{10}	0.57	0.80	1.00	1.20	1.42	extrapolate	
I_{tc} values	8.82	10.84	12.16	14.04	16.77		mm/hr
Q =	1.38	2.39	3.34	4.63	6.55	8.00	m^3/s

INDEX FLOOD METHOD

Catchment area	2.16	km^2
Annual rainfall	1040.0	mm
Slope	50.0	m/km
Mainstream length	2.9	km
Catchment cleared	50.0	%

Q2 =	1.280	Q2 = 3.68*10-8 A0.68 P 2.29 100.0081CL

$Q_y = Q_2*(Q_y/Q_2)$

ARI (yrs)	2	5	10	20	50	
(Q_y/Q_2)	1.00	1.75	2.55	3.50	5.10	
Q =	1.28	2.24	3.26	4.48	6.53	m^3/s

Regional Flood Frequency Estimation Model

Release Version of the Regional Flood Frequency Estimation Model for the 4th edition of Australian Rainfall and Runoff.

Input Data

Basic | Advanced

Catchment Name

Denmark

Catchment Outlet Latitude

-34.967

Catchment Outlet Longitude

117.346

Catchment Centroid Latitude

-34.964

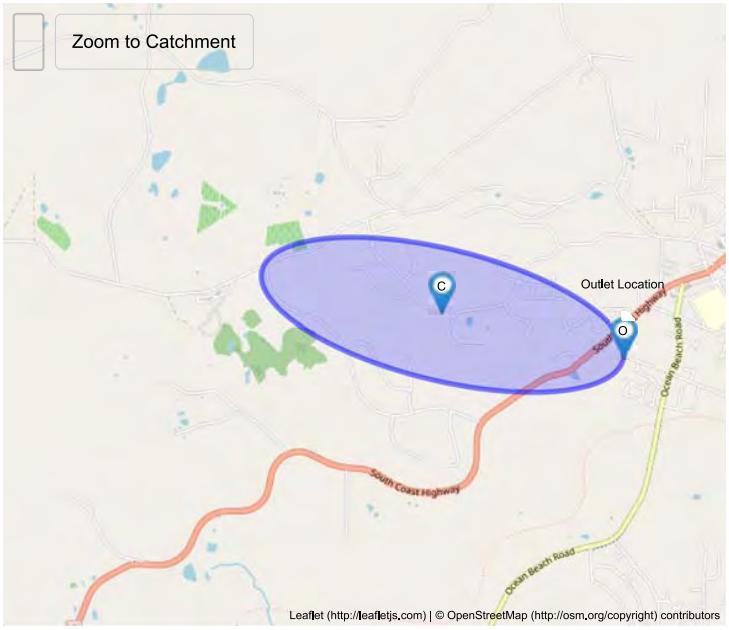
Catchment Centroid Longitude

117.331

Catchment Area (km²)

2.16

Submit



Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

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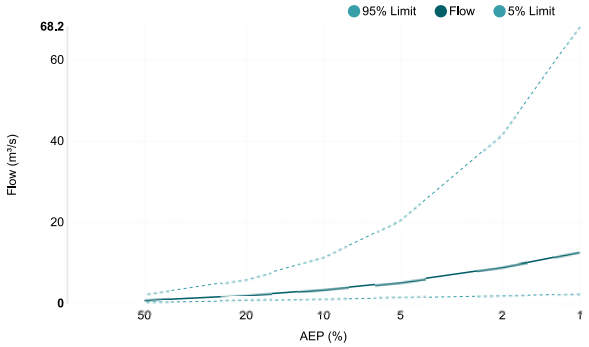
(http://www.uws.edu.au)

Results | Regional Flood Frequency Estimation Model



AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	0.710	0.240	2.16
20	1.96	0.660	5.98
10	3.37	1.01	11.3
5	5.30	1.38	20.4
2	8.89	1.89	41.6
1	12.6	2.30	68.2

Input Data	
Date/Time	2019-12-04 11:34
Catchment Name	Denmark
Latitude (Outlet)	-34.967
Longitude (Outlet)	117.346
Latitude (Centroid)	-34.964
Longitude (Centroid)	117.331
Catchment Area (km^2)	2.16
Distance to Nearest Gauged Catchment (km)	13.62
50% AEP 6 Hour Rainfall Intensity (mm/h)	4.951491
2% AEP 6 Hour Rainfall Intensity (mm/h)	10.684031
Rainfall Intensity Source (User/Auto)	Auto
Region	SW WA
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	0.96
Interpolation Method	Natural Neighbour
Bias Correction Value	1.705

Statistics

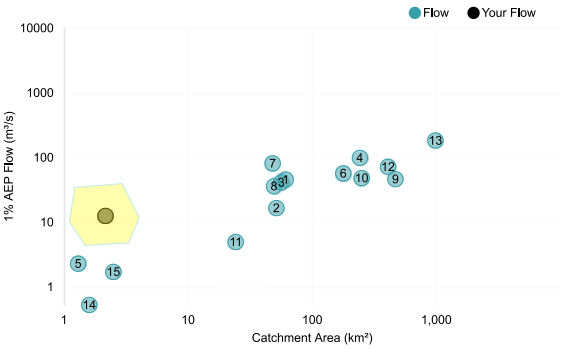
Variable	Value	Standard Dev
Mean	-0.202	0.677
Standard Dev	1.199	0.423
Skew	0.100	0.092

Note: These statistics come from the nearest gauged catchment. Details.

Correlation		
1.000		
-0.280	1.000	
-0.050	-0.070	1.000

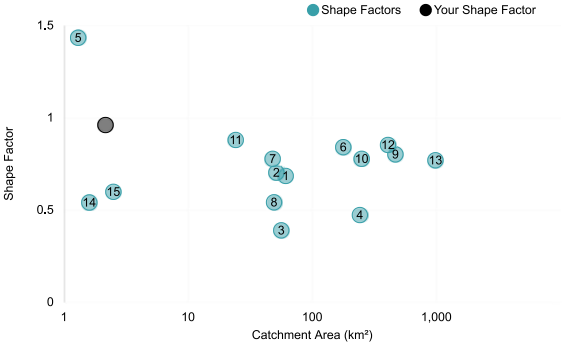
Note: These statistics are common to each region. Details.

1% AEP Flow vs Catchment Area

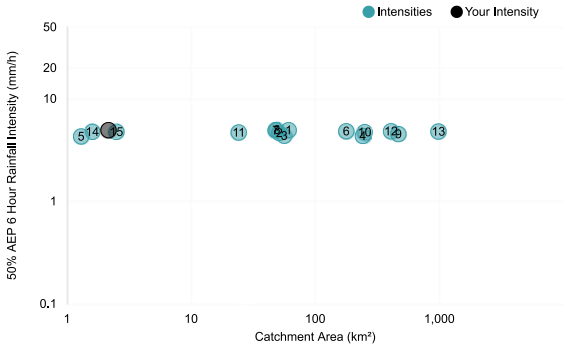


Shape Factor vs Catchment Area

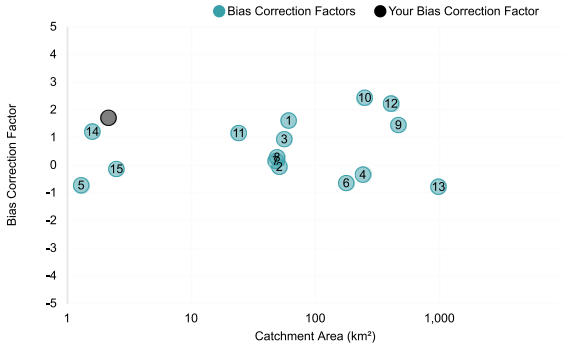
Note: This region does not use shape factors



Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area



Download

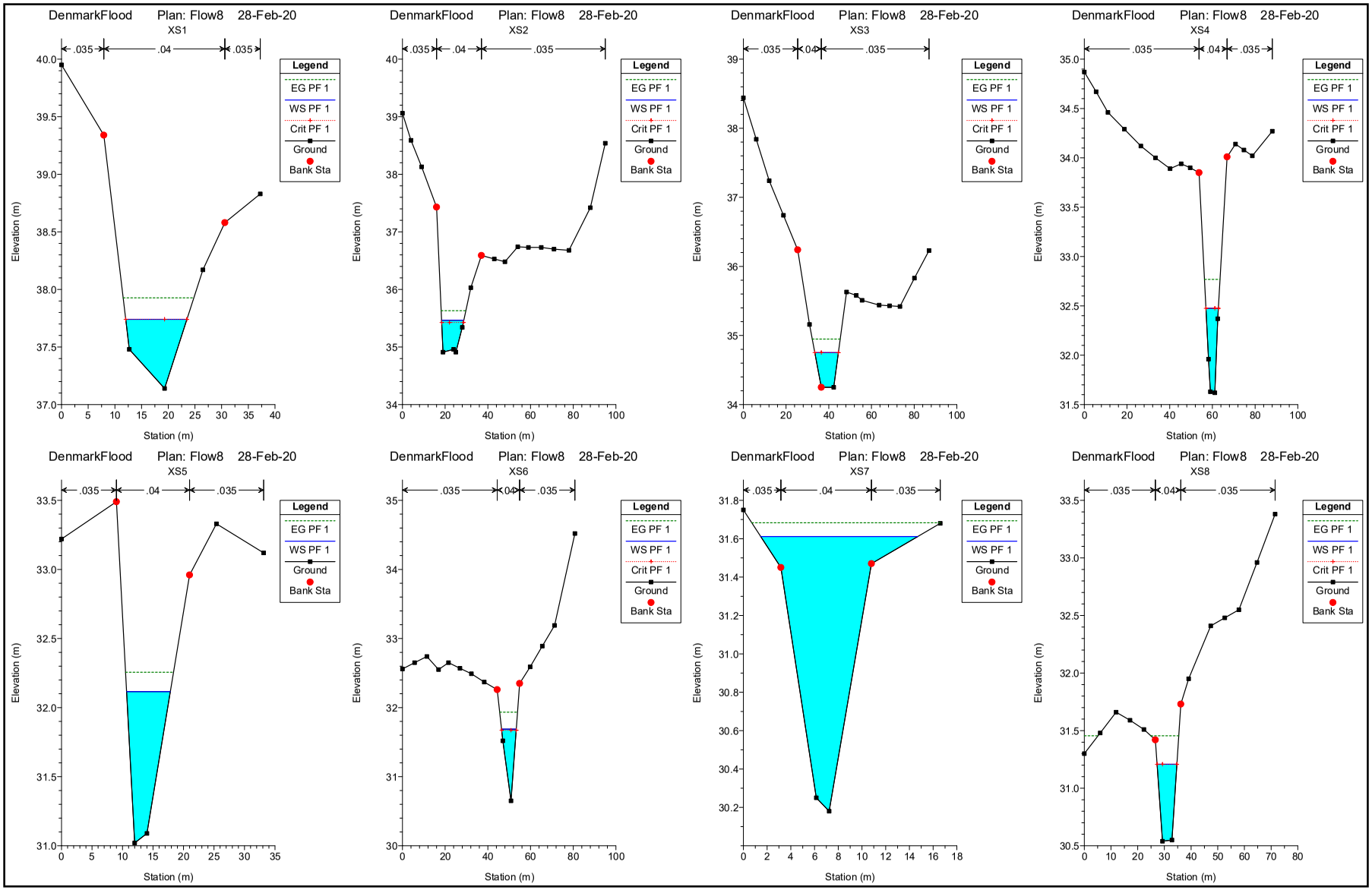
TXT | Nearby | JSON

Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

(http://www.engineersaustralia.org.au)

(http://www.uws.edu.au)

Attachment 2



Appendix 5 Drainage Modelling Summary

DRAINAGE SIZING

The Model

Infoworks ICM is a hydraulic modelling software package which provides the ability to model natural and engineered above- and below- ground drainage systems including sewers, surface water, rivers and floodplains. Infoworks is used to develop links (weirs, pipes, culverts and open or overland channels), nodes (manholes, soakwells, and storage areas such as basins or swales), and spatially distributed models that are used for the analysis, design and simulation of stormwater collection and conveyance systems. Infoworks can dynamically model flow in natural systems including rivers, lakes, floodplains with groundwater interaction.

The storm durations assessed for 1EY and 20% AEP events were 0.5, 1, 3, 6, 12 hours, including 10 temporal patterns for each storm event. Two different models were created to represent the predevelopment hydrology and the post-development hydrology of the site and the unnamed stream which intersects it.

Hydrology

A predevelopment model was developed to determine the predevelopment flows and levels across the unnamed stream which intersects the site in the north. The post-development model was used to determine the post-development flows and levels within the stream after development of the site, and to size drainage infrastructure to maintain the predevelopment flow and levels. The hydrology of the site is determined by using catchment areas, land use, slope, losses and rainfall for the RAFTS (Laurenson Runoff Routing Procedure) in the ICM package. A summary of these components is provided below.

Catchment Areas

Predevelopment Catchments

The predevelopment catchment area of the unnamed stream was determined based on topographic contours and existing survey elevation data of the site. The total catchment was further split into sub catchments based on culvert locations across the stream. Sub catchments have been named per the corresponding culvert, C1 to C9:

- C1 to C6: catchments upstream of the site which drain to the unnamed stream.
- C8: across the northern portion of the site which drains to the unnamed stream.
- C7 and C9: downstream of the site which drain to the unnamed stream.

Post-development Catchments

The post-development catchment kept the external catchments to the site the same (C1 to C7 and C9), and proposed earthworks elevations were used to determine the new internal catchment areas. The internal area is split into 3 main catchments:

- Catchment 1 and Catchment 2: drain towards the unnamed stream across the northern portion of the site.
- Catchment 3: drains to the south.

The 3 internal catchments were further broken down into sub catchments 1A to 1F, 2A to 2D, and 3A to 3F. The overall catchment plan is provided in Figure 5 of the LWMS.

Land Use

The breakdown of sub-catchments by land use allows for assessment of runoff from different surface types in accordance with Australian Rainfall and Runoff (ARR2019) guidance and associated with the different land use types. A summary of the catchment areas and land use components are presented in the sections below.

Predevelopment Land Use

Predevelopment catchments were broken down into roads, residential and rural land use types. Predevelopment catchment areas are provided in Table A 1 below.

Table A 1: Predevelopment Catchment Areas

Catchment	EIA (ha)	ICA (ha)	Rural (ha)	Total Catchment
C1	0.000	1.860	1.860	3.72
C2	6.440	28.374	89.886	124.70
C3	0.111	0.123	0.906	1.14
C4	3.223	16.953	26.724	46.90
C5	0.054	2.799	1.677	4.53
C6	0.127	1.071	4.002	5.20
C7	0.365	6.860	1.405	8.63
C8	0.000	18.981	2.109	21.09
C9	3.819	17.830	22.571	44.22

Post-development Land Use

The post-development internal catchment areas were broken down into Lots, POS, Road and Road Reserve land use areas. These are presented in Table A 2 below including the external sub catchments for the unnamed stream.

Table A 2: Post-development Catchment Areas

Catchment	Roads (ha)	Lots (ha)	POS (ha)	Road Reserve (ha)	Total (ha)
1A	0.123	0.851	0.659	0.151	1.784
1B	0.147	0.672	0.366	0.167	1.352
1C	0.086	0.611	0	0.124	0.821
1D	0.156	0.921	0.047	0.199	1.323
1E	0.073	0.341	0	0.081	0.495
1F	0.108	0.492	0	0.134	0.734
2A	0.082	0.207	0.068	0.104	0.461
2B	0.101	0.448	0.372	0.13	1.051
2C	0.137	0.813	0	0.183	1.133
2D	0.099	0.39	0	0.105	0.594
3A	0.107	0.729	0.683	0.139	1.658
3B	0.102	0.852	0	0.139	1.093
3C	0.08	0.746	0	0.118	0.944
3D	0.135	0.683	0	0.209	1.027
3E	0.119	0.902	0	0.183	1.204
3F	0.134	0.665	0.158	0.206	1.163

1.1.1 Catchment Losses

An initial and continuing loss is applied to each land use type within the Project Area and proportionally applied to each sub-catchment based on three different surface types, which are:

Effective Impervious Areas (EIA): These are Impervious areas that are directly connected to a modelled part of the drainage system, e.g., areas draining into pipes or direct into modelled storages. These areas are modelled with 2 mm initial loss and zero continuing loss.

Indirectly Connected Areas (ICA): This includes a mix of pervious and impervious areas that are not directly connected to the drainage system – e.g.: residential lots with soakwells. These areas are modelled with 18.6 mm initial loss and 2.0 mm/hour continuing loss consistent with ICA losses recommended by ARR2019 for this location.

Pervious areas: Because many urban pervious areas are considered as part of the ICA, this surface type is reserved for large pervious areas where there is limited opportunity for direct or indirect interaction with the drainage system. These areas are modelled with 31 mm initial loss and 3.0 mm continuing loss consistent with the pervious area losses recommended by ARR2019 for this location.

Table A 3 provides the breakdown of surface types applied to land uses in modelling and Table A 4 provides a summary of the resulting initial and continuing losses by land use.

Table A 3: Surface Types Applied to Land Use

Land use	EIA	ICA	Pervious	Comments
Lots	60%	40%	-	On-site infiltration storage (soakwells) has not been allowed for due to underlying clayey soils and low infiltration rate
Road Reserve (without tree-pits/raingardens)	20%	80%	-	ICA includes verges draining to pits/pipes and infiltration areas
POS	-	100%	-	ICA includes buildings and hardstand areas draining to pervious parts of the site
Roads	-	-	100%	Roads includes hardstand areas only as EIA

Table A 4: Initial and Continuing Losses

Land Use	Initial Loss (m)	Continuing Loss (mm/hr)
EIA	0.002	0.0
ICA	0.0186	2.0
Rural	0.031	3.3

1.1.2 Hydraulics

Hydraulic modelling using the Infoworks package is achieved by constructing a network of model nodes (road network pits, basins and stream sections) connected by model conduits that represent conveyance pathways between nodes (pipes or open channel stream sections). This setup is a common approach to simulation of hydraulics and allows calculation of water levels, velocities and flows along defined pathways. This type of simulation is common across a variety of simulation platforms and is referred to as 1 dimensional modelling (1-D) because the governing equations that characterise physical processes consider flow in one direction (along user defined conduits).

The extent and level of detail in modelling hydraulic controls were selected to optimise processing requirements while allowing reporting of outcomes necessary for assessment of the arterial drainage system. A summary of the hydraulic structure of the model is provided in Table A 5 below.

Table A 5: Hydraulic Structure Summary

Upstream Node Name	Downstream Node Name	Link Type	Size (m)	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)	Conduit gradient (m/m)
Basin 1A	Flow to stream 2	Conduit	0.225	48	31.9	31.5	0.08333
Basin 1B	Flow to stream 3	Conduit	0.225	12.4	32.3	30.9	0.11290
Basin 2	Flow to stream 1	Conduit	0.225	14.7	35.9	35.5	0.00272
C1	C1DS	Conduit	0.375	11.7	55.53	55	0.04546
C1DS	C2	Stream Section	0.5	80.6	55	52.5	0.03101
C2	C2DS	Conduit	0.6 x 3	8.8	52.5	52	0.05661
C2DS	C3DS	Stream Section	1	134.4	52	46.5	0.04093
C3	C3DS	Conduit	0.375	9.4	46.78	46.4	0.04032
C3DS	C4DS	Stream Section	1	32.4	46.5	45.25	0.03856
C4	C4DS	Conduit	0.6	10.3	46.05	45.25	0.07745
C4DS	C5DS	Stream Section	1.2	37	45.05	43.3	0.04725
C5	C5DS	Conduit	0.45	9.8	44.7	43.45	0.1271
C5DS	C6DS	Stream Section	1.2	131.8	43.3	43	0.00228
C6	C6DS	Conduit	0.375	10.6	44.53	43.03	0.14202
C6DS	Flow to stream 1	Stream Section	1.5	155.4	43	34	0.05793
C7	C7DS	Conduit	0.45 x 2	7.7	41.5	41	0.06493
C8	C8DS	Conduit	1.2	29.7	28.45	28.2	0.00842
C8DS	C9	Stream Section	1.5	455.1	28	20	0.01758
C9	C9DS	Conduit	1.2 x 3	10.6	19.95	19.7	0.02353
Culvert to 1A US	Basin 1A	Conduit	0.3	10	32.1	32	0.00996
Culvert to 1B US	Basin 1B	Conduit	0.6	14.1	31.8	31.7	0.0071

Culvert to 2	Basin 2	Conduit	0.6	6.3	36	35.8	0.03154
Flow to stream 1	Flow to stream 2	Stream Section	2	198.4	34	30	0.02016
Flow to stream 2	Flow to stream 3	Stream Section	1.5	82.2	30.5	29.9	0.0073
Flow to stream 3	C8	Stream Section	1	24.1	29.9	29.45	0.01867
p1b	p1c	Conduit	0.45	45.5	32.3	31.8	0.01098
p1c	Culvert to 1B US	Conduit	0.6	15.1	31.8	31.8	0
p1d to basin 1	Culvert to 1A US	Conduit	0.45	43.8	32.45	32	0.01027
p1f	p1g	Conduit	0.3	72.4	47.2	43.45	0.05182
p1g	p1i	Conduit	0.3	76.1	43.45	37.95	0.07226
p1i	p1b	Conduit	0.45	75	37.8	32.3	0.07337
p1j	p1c	Conduit	0.6	142.4	32.8	31.8	0.00702
p1l	p1i	Conduit	0.45	145.7	41.95	37.95	0.02746
p2b to basin 2	Culvert to 2	Conduit	0.45	12.1	36.3	36	0.02486
p2d	p2b to basin 2	Conduit	0.45	54.6	37.3	36.3	0.0183
p2f	p2d	Conduit	0.45	81.4	45.8	37.3	0.10448
p2g	p2f	Conduit	0.3	45.8	50.7	45.95	0.10362
p2l	p2g	Conduit	0.3	53.3	53.95	50.7	0.06096
p3a to basin 3	Basin 3	Conduit	0.6	19	34.8	34.7	0.00526
p3b	p3a to basin 3	Conduit	0.6	56.9	36.8	34.8	0.03512
p3c	p3b	Conduit	0.6	79.5	46.3	36.8	0.11948
p3d	p3c	Conduit	0.6	63.2	51.8	46.3	0.08703
p3e	p3d	Conduit	0.6	69.6	55.05	51.8	0.0467
p3f	p3c	Conduit	0.6	63.3	47.3	46.3	0.0158
p3g	p3f	Conduit	0.6	100.2	48.3	47.3	0.00998
p3i	p3j	Conduit	0.6	90.8	46.3	43.3	0.03304

p3j	p3k	Conduit	0.6	142.6	43.3	37.05	0.04384
p3k	p3a to basin 3	Conduit	0.6	66.6	37.05	34.8	0.0338

Each link in the model has been modelled with the roughness data in Table A 5 and a road surface based on the earthworks plan provided by Tabec.

Table A 6: Roughness Parameters

Type	Manning's n
Pipe	0.014
Road Surface	0.020

Basin Design Details

All basins have been sized to infiltrate and detain stormwater up to a 20% AEP event. 1EY areas within basin bases are to be vegetated in biofiltration areas to provide water quality treatment. Basins 1A, 1B, and 2 will have overflow outlets to the existing watercourse, to maintain predevelopment flow rates. Basin sizing details are provided in Table A 7 below.

Basin 1A and Basin 1B have been sized to a maximum depth of 0.8 m, and Basin 2 has been sized to a maximum depth of 1 m. This is to provide more clearance to groundwater, which may be higher in the northern portion of the site due to soil types. Basin 2 was sized to be a maximum depth of 1.2 m.

Table A 7: Basin Sizing Details

Basin	Side Slope (m:m)	Invert Level (mAHD)	20% AEP TWL (mAHD)	20% AEP Depth (m)	20% Volume (m^3)	Critical duration
Basin 1A	1:6	31.6	32.05	0.45	88	3 hr
Basin 1B	1:6	32.1	32.70	0.6	213	1 hr
Basin 2	1:6	35.6	36.20	0.6	142	1 hr
Basin 3	1:6	34.4	35.60	1.20	1203	12 hr

Volumes were used by Tabec to determine final inverts and TWLs

Appendix 6 Infrastructure Report (Tabec, 2022)

TABEC
Civil Engineering Consultants

LOTS 1 AND 621 HARLEQUIN STREET, DENMARK

Engineering Infrastructure Report

February 2022

CLIENT: **TURNER AND WELLS PTY LTD ATF TURNER AND WELLS UNIT TRUST**

PROJECT: **LOTS 1 AND 621 HARLEQUIN STREET, DENMARK, WA**

TITLE: **HARLEQUIN STREET DENMARK: ENGINEERING INFRASTRUCTURE REPORT**

DOCUMENT REVIEW				
Revision	Date Issued	Written By	Reviewed By	Approved By
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3	20/08/2020	JBSMALL	JBSMALL	CCBITMEAD
4	25/01/2022	JBSMALL	JBSMALL	CCBITMEAD
5	10/02/2022	JBSMALL	JBSMALL	CCBITMEAD

Note:

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1 INTRODUCTION

This report has been prepared by TABEC Pty Ltd to provide broad servicing and infrastructure advice for the proposed subdivision of Lot 1 South Coast Highway and Lot 621 Harlequin Street, Denmark. Given both lots have a frontage to the unmade section of Harlequin Street, both lots are referred to as this address in the context of this report.

This report is based on the civil engineering aspects of residential related land uses and summarises the availability of existing infrastructure assets in proximity to the landholding and the potential engineering infrastructure requirements to support urban development within the study area.

The investigation and preparation of the report includes the advice from various service authorities, specialist consultants with relevance to the planning and concept designs completed to date. The information is subject to change as further detail is resolved during the design phases. The report is supported by reports and sketches where appropriate as listed in the references. The information is current as of February 2022.

Figure 1 illustrates the location of the site, highlighted on the aerial image.

Figure 1 – Site location and aerial image (MNG Access)

2 THE STUDY AREA

The proposed development site, including both Lots 1 and 621 combined is approximately 16.83 hectares, with current drive-way access available from South Coast Highway to the north and Harlequin Street to the north-east.

Along the eastern edge of Lot 621 is an existing developed urban area, which forms a shared boundary for 300m in length. There are existing rural-residential homes to the eastern and western boundaries of Lot 1 and to the south is the state-owned Denmark-Nornalup rail trail.

There is an existing house, sheds and rural type facilities which are generally contained to Lot 1. There are also older buildings which have been identified as a former dairy in the central area of the overall site.

The northern portions of the site have been cleared previously, though significant vegetation remains in various grouped locations. In particular, along the natural water course in the low areas across Lots 1 and 621. There are also more densely grouped large trees at the higher elevations. The southern areas of Lot 1 are more densely vegetation where previous clearing was not undertaken as extensively.

An extract of the current concept subdivision plan as prepared by Williams Consulting is included in Figure 2. This plan identifies the various site features such as the building and existing tree locations. It is noted that the longest north-south dimension is approximately 700m, and the greatest east-west dimension is about 370m.

The current estimated yield for the development of both Lots 1 and 621 combined is 156 residential lots and according to the concept plan there is 2.35ha of Public Open Space (POS) shown in total.

2.1 Landform / Topography

Preliminary survey information is available from Harley Dykstra, with the existing surface elevations shown as contour banding included in Figure 3.

The image shows there are higher elevations in the central-west area with an elevation of approximately 62.0mAHD. From that high point in Lot 1, the site grades generally toward the north and south splitting the site into two catchments. The low point at the southern boundary is about 32.0mAHD, and similarly in the north east corner of Lot 621 the existing elevation is approximately 31.0mAHD. The site rises again toward South Coast Highway forming the creek line as a shallow valley that grades west to east. The level along South Coast Highway where existing drive-way access is available is at about 42.0mAHD.

The existing grades in both the northern and southern portions are up to about 10%, which is considered steep. It is also noted that along the boundary of the existing residential lots to the east there is a level change of 12m between the southern and northern boundaries along the 300mm length of shared boundary.

The former dairy building is on the elevated sections of the site, at approximate contour of 53.0mAHD.

From site inspection, there are various locations where surface rock is present. This was generally observed in the higher elevations on site.

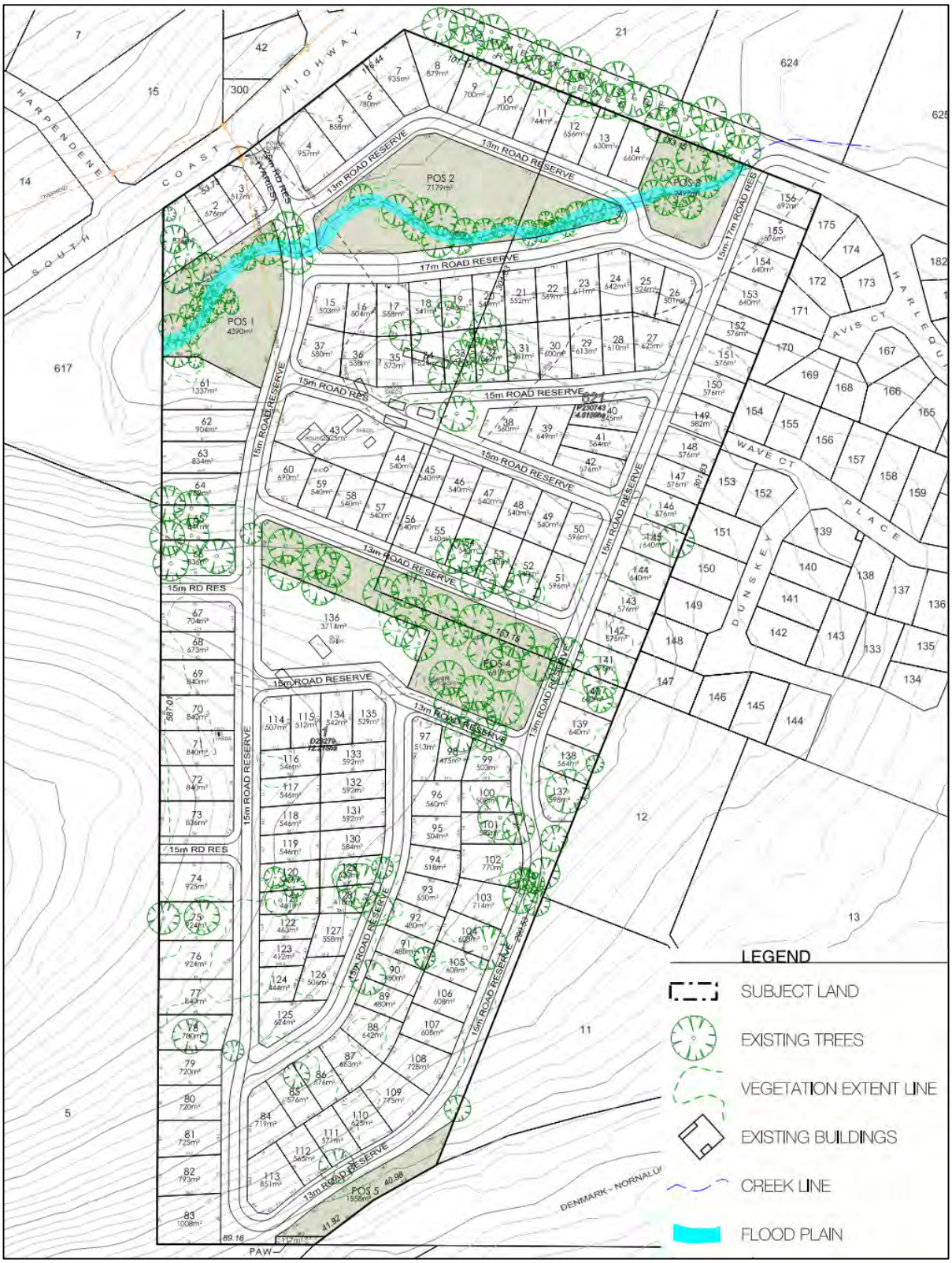

Figure 2 – Concept Development Plan (Williams Consulting)

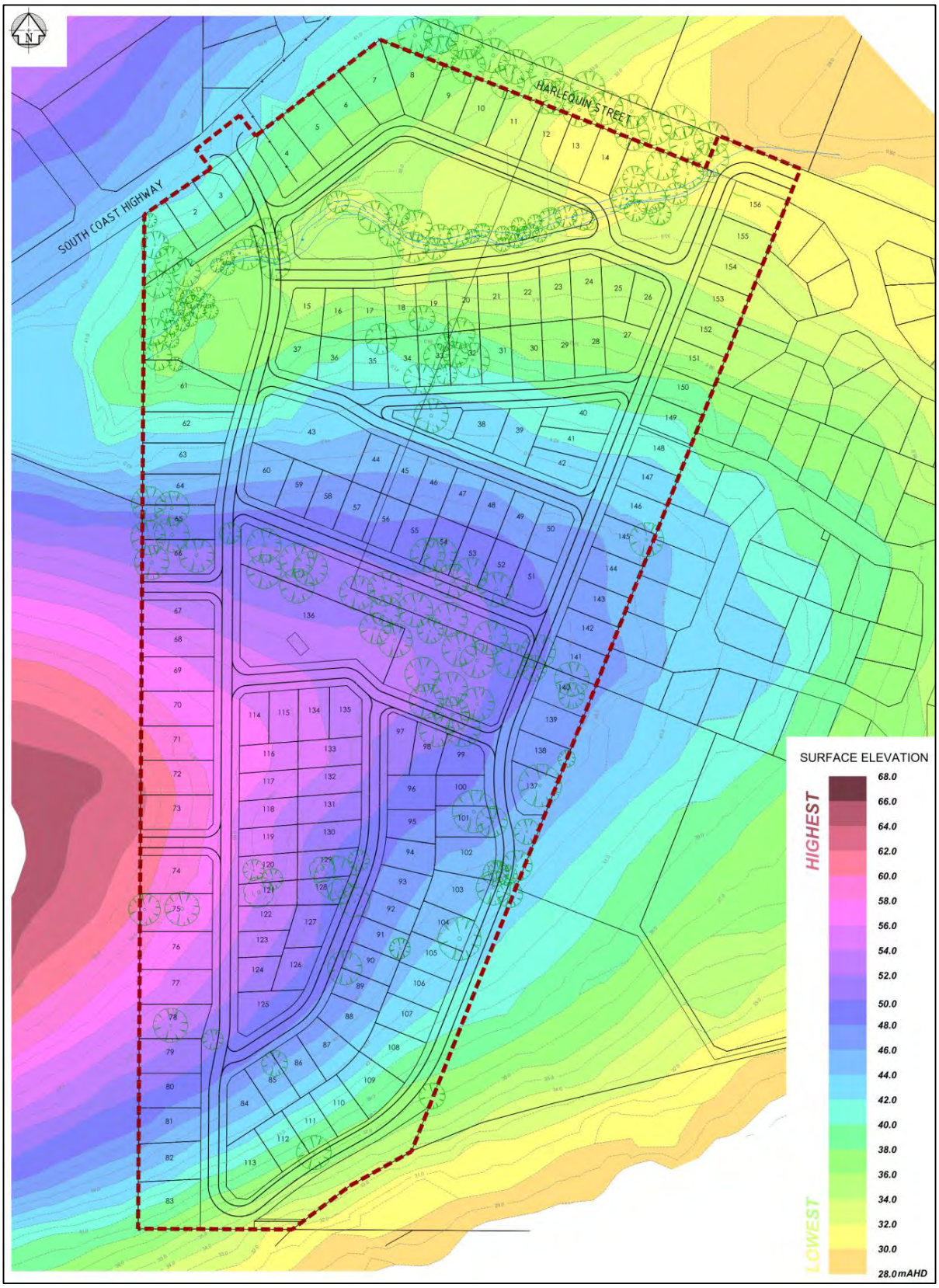

Figure 3 – Existing surface levels and contour banding (TABEC)

2.2 Groundwater and Acid Sulphate Soils

The groundwater was not encountered during geotechnical site investigations, however perched water was found in various test pits in the project site.

Given the Denmark River is approximately 1.2km to the north-east of the site and the Wilson Inlet is about 2km to the east, both at elevations close to sea-level, substantial rise in groundwater across this distance is not anticipated and the groundwater level is expected to be below the lowest elevation of 32mAHD onsite. It is expected that civil works and services installation would therefore not encounter groundwater level within Lots 1 and 621, though localised dewatering to control perched water is anticipated.

In addition, excavations works related to the proposed subdivision are not expected to be greater than 3.0m in depth. Further, works are not within 500m of a known wetland.

According to the Department of Water and Environmental Regulation, the risk of encountering acid sulphate soils generally increases in water-logged, high groundwater table environments.

As there is a limitation on the amount of soil disturbance related to the subdivision works, generally the risk of encountering acid sulphate soils for Lots 1 and 621 Harlequin Street is therefore considered to be low.

To control the perched water onsite, particularly either side of the creek line, the civil design is intended to include sub-soil drains in the road reserves, with outlets provided into the creek above the 100-year flood levels.

3 SITEWORKS

In order to prepare the site for the proposed urban development, the site will be cleared of existing fences, sheds, buildings, the house and other structures in order to facilitate the subdivision plan. A demolition license will be sought from the Shire of Denmark for this purpose and to remove all relevant improvements currently onsite. It is however noted that the former dairy building is intended to be protected, retained and renovated for future uses.

Following this, areas will be cleared of existing vegetation where necessary with grubbing out of the roots. Topsoil will be stripped to remove any shallow organic and root matter, which is generally present onsite in varying depths between approximately 100mm to 200mm.

3.1 Tree Protection

Lots 1 and 621 contain a high number of large trees which are intended to be protected and retained in the development as identified on the preliminary subdivision plan in Figure 2.

Typically, vegetation within ±150mm earthwork band and outside the service trenching requirements can be retained. In addition, POS areas that don't have a drainage function can also generally provide opportunities for the retention or incorporation of significant vegetation into their design.

The major level variations and grades across the project site introduce added complexity to retaining existing vegetation since soil levels should not ordinarily be modified around the base of trees which are to be retained. The preliminary earthworks design however attempts to match existing levels at the nominated tree locations. Trees for retention are located within both POS locations and widened road reserves. Careful potholing prior to site works and road box-out will be required to ensure the protection

of major roots. Various trees are located within future lots will also be retained, and not unnecessarily cleared during civil subdivision works.

Where works are proposed in close proximity to existing trees, the Tree Protection Zones (TPZ) will be fenced to ensure access is limited and it is anticipated that some boring of services will be necessary through the TPZs to avoid open excavation and root damage.

4 EARTHWORKS

4.1 Ground Conditions

Based on the geology mapping for the area, the ground conditions within Lots 1 and 621 are expected to vary across the site. The shallow sub-surface conditions beneath the majority of the southern portions are likely to contain some granite rock, with northern areas underlain by metamorphic rocks. The north-eastern areas are mapped as showing sandy ground materials.

Great Southern Geotechnics have undertaken an investigation and site classification report for the site, which is dated October 2019. The investigation included the excavation of 18 boreholes onsite up to 2.0m in depth and the locations are shown on Figure 4.

Based on the test pits and material descriptions contained within the Great Southern Geotechnics report, the northern areas generally contain light brown sands to a depth of approximately 1m, over sandy-clay and sandy-gravels. The sand is loose to medium-dense in the current state and the deeper sandy-clay and sandy gravels are generally medium-dense to firm. Sandy clays have a low to medium plasticity and will contain some cohesive soil properties. It is noted that some of the northern test pit locations are also reported as containing sand with silt. And generally, with increasing depth below ground in the test pits the material appears to become more clayey which has reduced infiltration properties for stormwater.

With test pits located higher in the landform toward the central areas onsite, the depth of overlying sand decreases. Sandy-clay is found as shallow as 400mm depth in some test pits. Sands containing silt and sandy-clays are also evident in the southern portions of the site, again in loose to medium-dense states. The Great Southern Geotechnics reports states the ground materials have plasticity characteristics, though some of the cohesive clay material at depths greater than 1m were found to be firm to stiff.

The geotechnical report also records fractured quartz rock in the north east corner of Lot 621. A large quantity of cobbles and boulders were also present, causing test pit refusal at 700mm and 1.5m depths in Test Pit numbers 10 and 15 respectively which are generally located more central to the overall development site. This is indicative of rock material that is unable to be penetrated readily.

The geotechnical investigation also reports the California Bearing Ratios (CBR) for the various material types onsite, which is used to evaluate the ground strength. For context, the desirable CBR on a road subgrade would be in the order of 12%. In the Great Southern Geotechnics report, a CBR of 35% was measured on the ‘sand with silt’ sample which is considered high and the test may contain gravel type material to achieve that result. The sandy-gravel test sample has a CBR of 150% which is very strong and would suggest the samples contain rock. Lastly, sandy-clay materials recorded a CBR of 2% and 4% which is considered very soft and unsuitable for a road subgrade, service trench bedding or backfill material.

A low CBR is not unexpected for clayey materials and options to increase the road subgrade strength will need to be considered. This may include re-use of gravel from other areas onsite, over-excavating the clayey material and replacement with backfilling of structurally suitable sand for an improved compacted

subbase, or increasing the pavement thickness to improve the strength over softer clay materials. Similarly, sand may need to be used for service trench backfilling to provide suitable compaction and pipe support, especially in trafficable locations.

4.2 Site Preparation

The strategy to minimise regrading of the site in order to support the development form is intended to limit the amount of bulk earthworks and retain as much of the existing landform as possible. Earthworks will generally be limited to road reserves, with encroachments into residential lots only for the proposed extent of earthworks batters. In some locations earthworks will extend inside lots though large scale re-grading to create terraced lots is not proposed.

The only other exception is proposed residential lot numbers 12-14 and 156 in the north-eastern area of the development site, where lots will need to be elevated above the existing ground levels in order to provide sufficient cover, above top water levels and clearances to flood levels.

By limiting the extent of earthworks and changes in natural ground level, retention of existing trees will be achieved more readily. Existing ground levels within proposed POS areas are generally not proposed to be modified other than to contain stormwater drainage facilities.

Notwithstanding this intention, due to the large variations in levels across Lots 1 and 621, some localised cut to fill will be necessary to create urban streets, standard 2% verge grades which will also ensure service installation and cross-over construction. While earthworks are generally limited to road reserves, cut and fill designs will be up to about 1m in maximum depth. There is however a portion of the road in the south-western area where cut will exceed 1.5m in depth due to the road aligned across contours. The concept earthworks plan with depth banding showing cut and fill is included in Figure 5. Clearing, stripping and earthworks within lots generally, is not proposed to be undertaken.

Following stripping of topsoil, organic and any other deleterious material onsite, the earthworks program will require the compaction of loose ground material. It is recommended that the exposed ground beneath earthworks footprints including pavement areas be proof rolled with a vibrating smooth drum roller of say 14 tonnes deadweight. Care should be taken when using a roller in vibration mode near existing structures and services. Heavy vibrating rollers are not recommended within 10m of existing houses or structures which are to be retained.

A depth of 0.5 m of medium dense or denser sand is suggested below subgrade level for the road network. A compaction level of not less than 8 blows per 300 mm Perth sand penetrometer (PSP) penetration at least to a depth of 0.5m below standard pavements is a general recommendation. Due to the presence of silty and clayey onsite, any areas that show signs of excessive deformation during compaction should be compacted until deformation ceases or, alternatively, the poor quality material should be excavated and replaced with suitable structural filling and compacted.

As design proceeds, additional geotechnical advice may be sought to refine recommendations on the site preparation methodology. Since the advice is dependent on the extent of cut to fill, a refined approach will be documented through the design phase.

The intended site preparation works will exclude the resident lots. Geotechnical verification to confirm each lots may be sought, which is expected to vary across Lots 1 and 621, however would be based on the ‘Residential Slabs and Footings’ standard AS2870.

Figure 4 – Geotechnical Test Pit Locations (Great Southern Geotechnics)

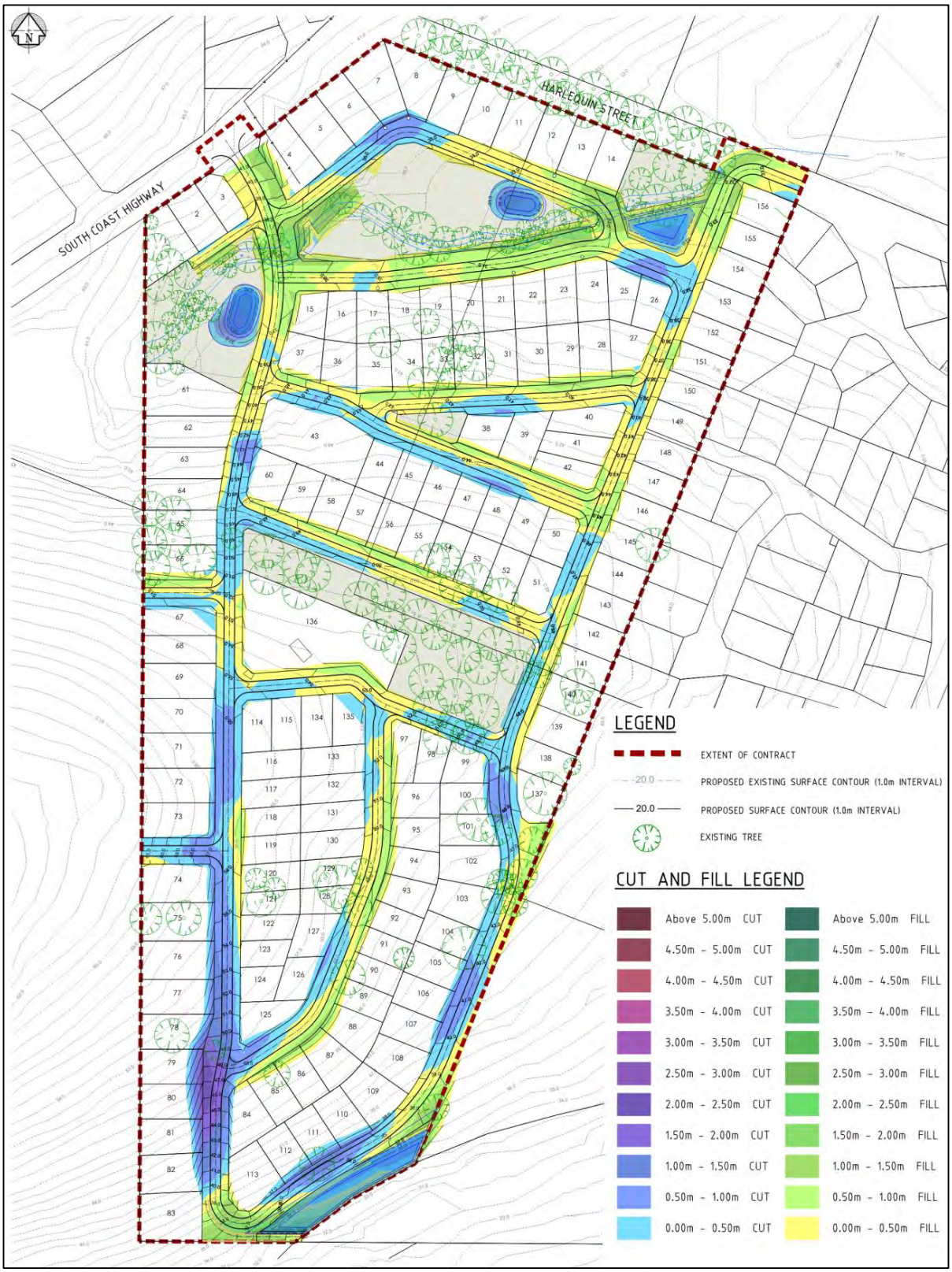

Figure 5 – Depths of Cut and Fill (TABEC)

5 ROADS AND TRAFFIC

5.1 Surrounding Road Network

Currently, Lot 1 has a road frontage to South Coast Highway with driveway access that is located approximately 80m east of Harpendence Rise and 70m west of an existing culdesac. Both of those existing road pavements are on the northern side of South Coast Highway. The posted speed limit along South Coast Highway in this location is 60kp/h and it currently exists as a 2-lane road and is under the control of Main Roads WA. It is noted that road connections and works inside that verge will therefore be subject to Main Roads WA approvals.

All other roads surrounding the development site are Shire of Denmark roads. Lot 621 is accessible from Harlequin Street, however is currently an unmade road along the north eastern boundary of the site, though the reserve does extend through to South Coast Highway. Given the significant vegetation within the reserve, and unnecessary requirement for the road extension, Harlequin Street is not intended to be constructed through to South Coast Highway. Harlequin Street shall only provide an eastern access to Lot 621 as per the Concept Development Plan included in Figure 2. Wave Court is also constructed to the boundary of 621, however is not intended to be extended into the proposed subdivision.

It is noted that beyond the limits of the site boundaries, there are various other existing local road intersections with South Coast Highway. This includes Mairet Rise, Helen Road, Jill Street and Federal Street which all service areas of residential development in the immediate surrounding areas.

5.2 Internal Roads

A variety of road reserve widths have been nominated in the Concept Development Plan. The entry road, providing access from South Coast Highway is shown as a 25m road reserve. All other internal road reserves are generally 15m wide except for those fronting POS boundaries that are shown a 13m reserves, which is common industry practice. This road reserve hierarchy is logical by providing for a wider pavement on the entry road to the estate with other road reserves generally consistent with the recommendations in Liveable Neighbourhoods.

There is one four-way intersection shown on the Concept Development Plan, which can be controlled through Main Roads WA approved signage and line marking. Considering the traffic generated by the development flows, the road network is considered suitable for the estate.

Included in Figure 6 is a road grade plan based on the preliminary earthworks models which demonstrates how the intended longitudinal grades will generally fall between 2% and 6%. However, in order to maintain the natural landform, roads in the steeper areas onsite will be up to approximately 10%. The roads will need to be elevated over the creek crossing to ensure adequate freeboard is maintained.

Roads will be paved with asphalt and kerbed in accordance with the Shire of Denmark and Institute of Public Works Engineers Australasia specifications. Alternate treatments, particularly at entry statements may be included in the engineering design.

Construction of temporary trafficable emergency bushfire access tracks are anticipated between staging. Generally, these are constructed in the form of gated, unlocked access, two 3.0m wide traffic lanes with 1m shoulders. The requirements shall be confirmed in a Bushfire Management Plan. A permanent access track is expected at the southern extent of the project site, through to the Denmark-Nornalup Rail Trail which can be constructed at the boundary of the proposed drainage basin.

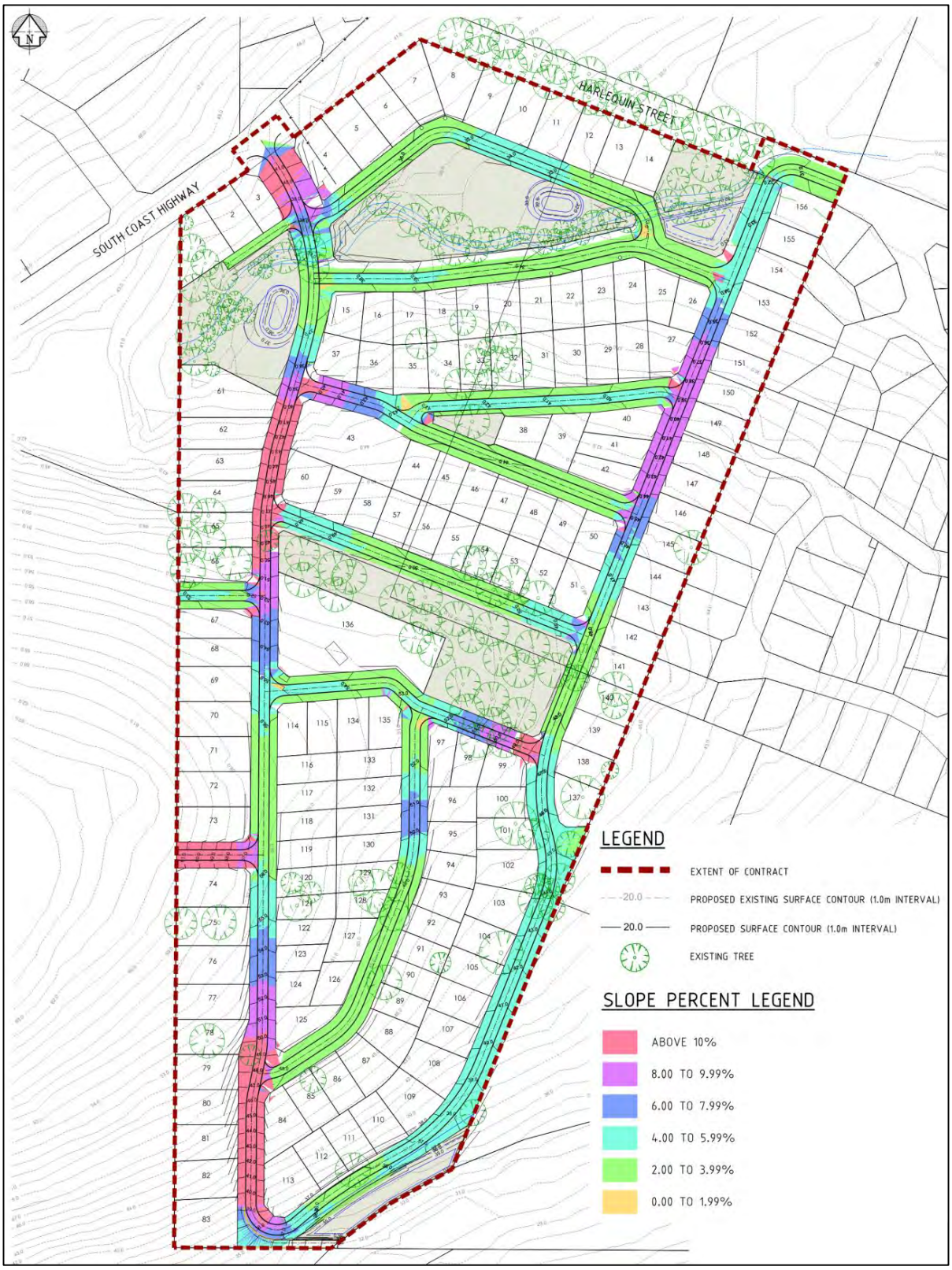

Figure 6 – Road Grade Plan (TABEC)

6 STORMWATER DRAINAGE

Based on the preliminary earthworks plan, drainage catchments have been determined which are included in the Local Water Management Strategy (LWMS), prepared separately by Urbaqua.

Generally, from the elevated central areas the development site is broadly split into a northern and a southern catchment to follow the natural topography of Lots 1 and 621. The broad catchment plan is included in Figure 7 below. Based on the silty and clayey material found onsite in the geotechnical investigation, Lots 1 and 621 are likely to have low permeability and onsite infiltration. Also, due to the natural grades which exist in the landform, stormwater runoff shall be addressed with adequate downstream facilities provided.

In the northern portions of the site, shown as Catchments 1 and 2, stormwater will be directed toward the existing creek line, where collection facilities will be located each side of the existing creek in the nominated POS areas.

Given the substantial capacity in the creek and predevelopment flow scenario, the drainage strategy has been reviewed by Urbaqua hydrologists. Based on Urbaqua's discussions with Department of Water and Environment Regulation (DWER) and also the Shire of Denmark, the basins for Catchments 1 and 2 have been modelled and include a post development discharge consistent with predevelopment flow rates. As per DWER advice the detention basins are sized to contain the 20% AEP (0.2 EY) event. The drainage modelling makes provision for DN225mm outlets from the basins in Catchments 1 and 2 for compensated flows into the creek.

Lots will contain onsite detention for minor events and any excess stormwater in a major event would flow toward the creek, consistent with the pre-development scenario. Subsoil drains are proposed to be installed beneath the drainage basins, to ensure each remains free-drainage with outlets provided to the adjacent creek line, with invert levels set nominally 200mm minimum above the base levels of the creek.

As advised by Hyd2o, the creek is required to cater for a major event design flow of 8m3/s, which shall be accommodated at the road crossings with two 1500mm x 1200mm box culverts under each road. The existing creek line has an average grade of 1:50 between the western and eastern site boundaries

The southern catchment will also require a drainage capture and detention facility, as shown by Catchment 3 in Figure 7. Urbaqua have completed hydrologic modelling and Basin 3 is also intended to contain the 20% AEP event, though without offsite discharge up to that storm frequency.

Stormwater runoff collected from the site will be conveyed via the road network to a conventional pit and pipe drainage network, prior to discharging into the drainage facilities. Due to the expected presence of rock, the pipe network will be designed as shallow as possible to minimise trenching requirements.

The road network will generally be designed with one-way cross-falls to efficiently capture stormwater. The piped stormwater system including outlet structures will be designed and constructed according to Shire of Denmark engineering guidelines and Institute of Public Works Engineering Australasia. The earthworks plans ensure that each lot can accommodate a finished floor level which is at a minimum of 500mm above the 100 year flood levels in the creek, and 300mm above the basin top-water levels.

More detailed drainage management measures are identified through the LWMS and ultimately, the detailed drainage design will be documented in an Urban Water Management Plan (UWMP).

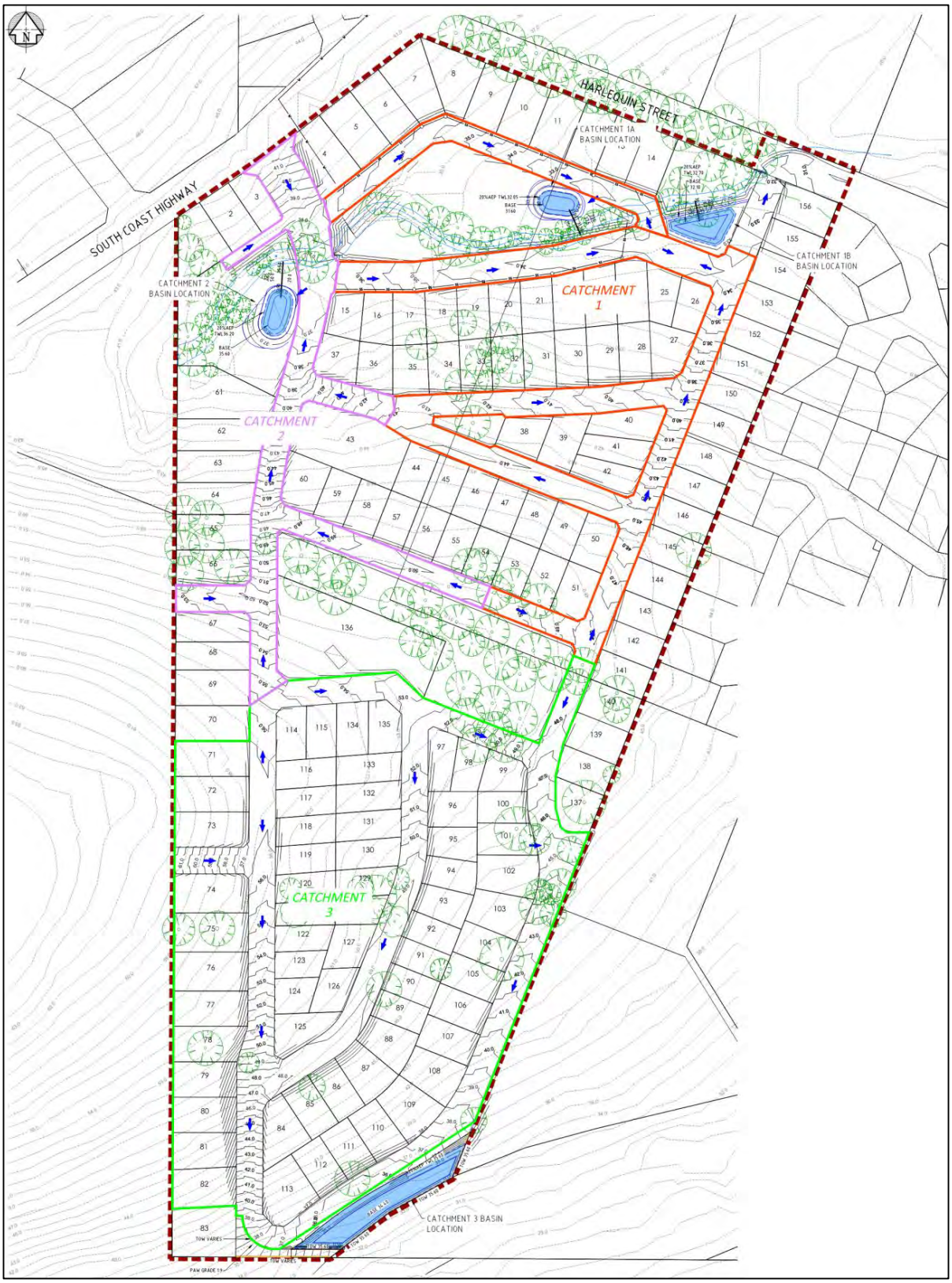

Figure 7 – Stormwater Drainage Catchment Plan (TABEC)

7 WASTEWATER

Water Corporation has existing scheme planning that covers Lots 1 and 621 and advises that the site can be serviced through the extensions of the gravity sewer network provided necessary upgrades are also included. Following the natural terrain, the site generally falls into two catchments, separating the development site into northern and southern portions.

A copy of Water Corporation's waste water scheme planning showing the nominated catchment boundaries is included in Figure 8.

The northern catchment falls into the catchment of the Zimmermann Street Waste Water Pump Station (WWPS) which is located approximately 600m to the east of Lot 621 near the intersection of Melaleuca Lane. The WWPS pumps to the waste water treatment plant at the southern end of Hodgson Street which is approximately 900 east of the proposed development site. The waste water treatment plant has a 250m buffer, which therefore does not impact Lots 1 or 621.

While there are sewer reticulation assets to the immediate east of Lot 621 in Harlequin Street, Water Corporation has advised that a 225mm sewer main is required to be constructed from the Zimmermann Street WWPS to Lot 621 which is in existing road reserves and requires a crossing of Ocean Beach Road. The 225mm sewer main would provide a greater capacity to the development site and it is noted the 225mm main would also serve future development areas north of South Coast Highway, toward Jasper Place given the natural fall and gravity flows to this area. Since the 225mm sewer main is considered 'reticulation' and not headworks, the pipe installation costs are funded by the developer.

The southern portions of the site are more complex to service with reticulated sewer services given Water Corporation's scheme catchment boundaries.

It may be possible to extend reticulation mains from Ocean Beach Road near Escort Close, through the Denmark-Nornalup Rail Trail to the south-west of Lot 1. This would redirect sewer flows from the south of Lot 1 into the Zimmermann Street WWPS catchment and require re-assessment of capacities by Water Corporation. There also appears to be some constraints on cover over proposed assets and this may not be readily achievable.

Water Corporation's planning shows the southern portions of Lot 1 being serviced via a number of future assets which are not yet constructed. Ultimately, the southern end of Lot 1 would be serviced with a 150mm sewer main, which grades toward a future proposed Denmark Pump Station A, located approximately 700m south-east of Lot 1. The location is identified in Figure 8. That WWPS would then discharge to the waste water treatment plant through a proposed 300mm pressure main. Denmark Pump Station A is a future Type 90 pump station which would service areas as far east as Weedon Hill Road.

Given the infrastructure required, and unknown timing for the future assets to the south of Lot 1, a more cost efficient design outcome would include a private, or temporary WWPS in the southern portion of the development site, to collect waste water flows and pump to the northern catchment which then grades to the Zimmermann Street WWPS. This option should be further investigated as a recommended proposal.

For the subdivision, the developer will be responsible for funding reticulation extensions and the installation of sewer network, designed and constructed in accordance with to Water Corporation specifications. Each dwelling is proposed to be provided with a reticulated connection. Standard Water Corporation infrastructure contributions will apply on a per lot basis.

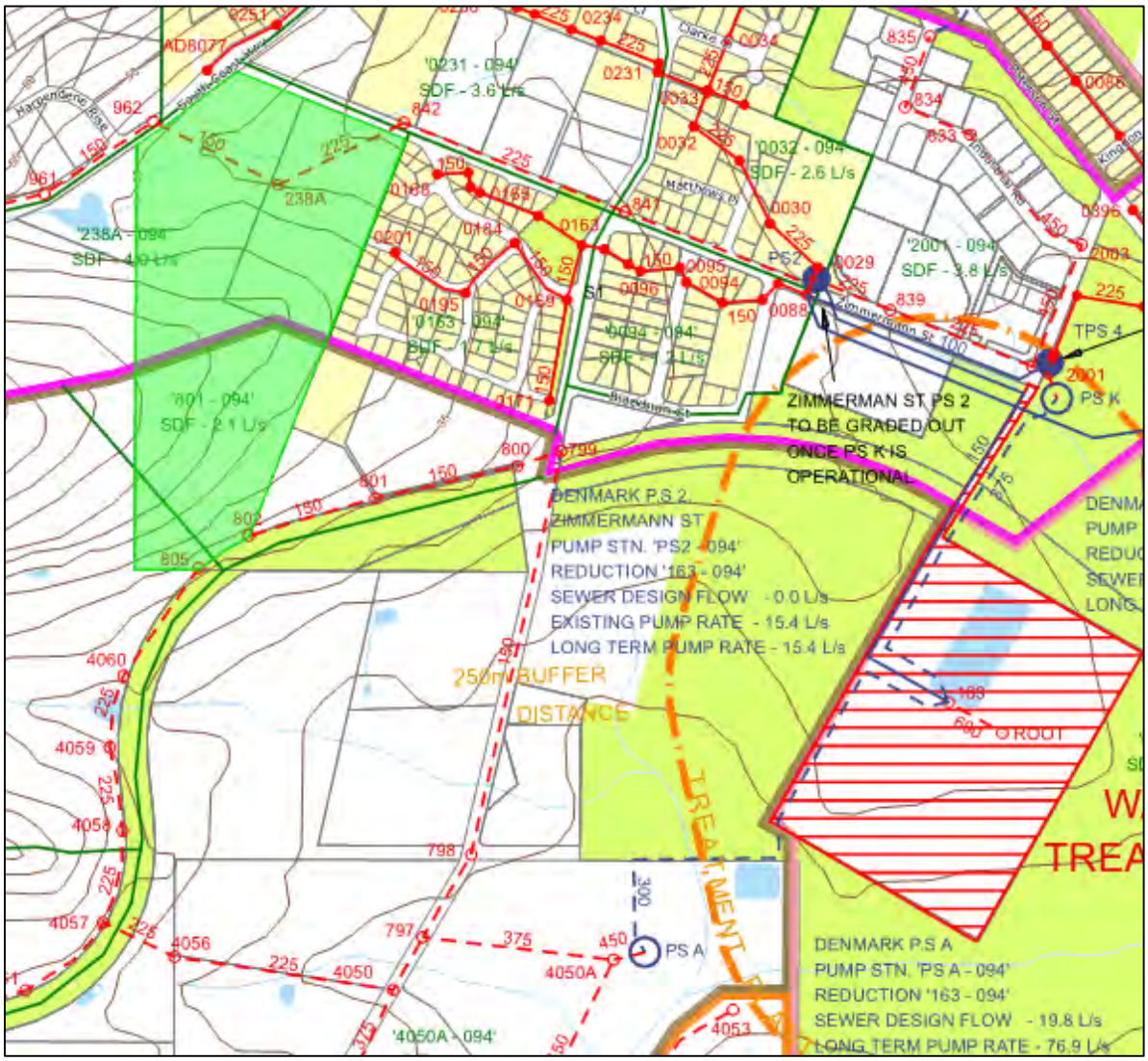

Figure 8 – Waste Water Planning, June 2019 (Water Corporation)

8 WATER SUPPLY

Currently, there are various Water Corporation reticulation mains in close proximity to Lots 1 and 621 which includes a 100mmAC main on the northern side of South Coast Highway, and within Harlequin Street there is also a 100mmAC main and a 100mmP-12 main. In Harlequin Street, the AC main extends along Kemsley Place and connects to a 150mmAC main at the intersection of Ocean Beach Road and Zimmermann Street. The 100P-12 main in Harlequin Street is an extension from the existing urban development to the immediate east of Lot 621.

Water Corporation has advised that the proposed development site, is split into two different water zones and generally, with Lot 621 is in the Gravity Zone and Lot 1 is in a Booster Zone. The water zones boundaries are shown in Figure 9. It is most likely that Lot 621 is able to be serviced from extensions of the existing water reticulation network to the north-east boundary in Harlequin Street.

With reference to servicing the area of Lot 1, Water Corporation advises that there is a likely upgrade required to the booster pump, since it currently serves approximately 90 dwellings, and a further estimated 100 lots are proposed to be connected to this supply. An upgrade to the booster pump facility is considered a headworks item and is therefore undertaken at Water Corporation's cost.

Water Corporation is required to update planning and demand modelling through detailed assessments as this project proceeds, however, on preliminary assessment it is possible that the 100mmAC water main in South Coast Highway may require an upgrade to service Lot 1 from the booster pump. A larger pipe to replace the existing 100mmAC main may be necessary from the existing booster pump near the intersection of Hardy Street and South Coast Highway, to the development front which is a distance of approximately 750m. If required, the water main upgrade may be developer funded.

Water mains within the proposed subdivision are to be designed and constructed according to the Water Corporation specifications. Installation will occur based on the staged development and funded by the developer. Standard infrastructure contributions will also be included. Based on the water reticulation planning, it is intended that a Multi-Staged Works Agreement be prepared once subdivision approval is received to enable clearances for each subsequent stage as development proceeds.

Figure 9 – Water Reticulation Planning, June 2019 (Water Corporation)

9 POWER SUPPLY

9.1 Existing Power Infrastructure

There is an existing three-phase high-voltage overhead power network on the northern side of South Coast Highway and eastern side of Ocean Beach Road with South Coast Highway network being the closest and the likely high-voltage connection point. There is existing underground power in Harlequin Street to the immediate north east of Lot 621.

The zone substation that feeds Denmark is located in Albany. It should be noted that South Coast Highway road reserve is under the control of Main Roads WA and therefore works within this area will require their approval. South Coast Highway currently has very little lighting. Discussions with Main Roads WA is required to confirm level of lighting required at the proposed intersection. Lighting requirements for newly proposed roads to be discussed with Shire of Denmark and will be designed according to their requirements.

A stay pole currently exists near the existing driveway access on South Coast Highway, which will need to be removed in order to create the subdivided lots. With the angles of the overhead aerial bays, discussions will be required with Wester Power confirm extent of the removal works and high-voltage connection arrangement.

Western Power's network mapping tool is included in Figure 10, which demonstrates the capacity of the high-voltage feeder to the locality.

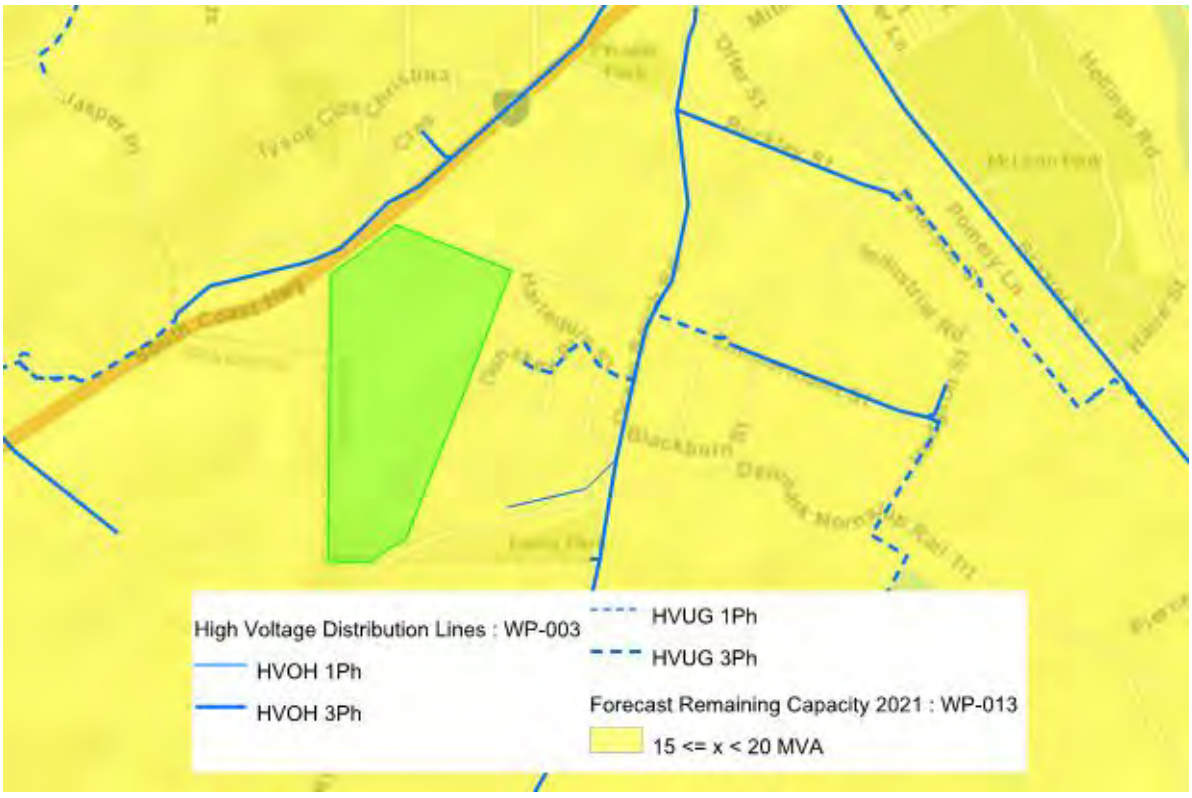

Figure 10 – Western Power network mapping tool. October 2019 (Western Power)

9.2 Proposed Power Infrastructure

With the development consisting of a yield of 156 green title lots and a number of POS areas, at Western Power's standard load allocation, the development total power load will be in the order of 765kVA. Depending on staging, two power transformers would be required to electrically service the development. Each power transformer requires a site to be provided in the order of 6m wide by 4m, and will be included in the subdivision plan as extensions to the road reserve. The transformers will generally be located in POS areas, to provide street front access for Western Power. The sizing and locations of transformers remains to be confirmed during detailed phase.

Based on the load for the overall development, no major network upgrades would be required, in particular if the development is staged in smaller portions. There is potential for some network augmentation to shuffle load in the area to make it available for this site.

In terms of LV power supply to the subdivision, connections to existing roads will need to be provided with adequate street lighting. All lots with otherwise be provided with power connections during the subdivision works.

The effects of earth potential rise (EPR) issues will require investigation with site testing and earth resistivity assessments. EPR reporting will be necessary prior to subdivision works commencing to determine any mitigation requirements that may be necessary.

Confirmation of Western Power servicing of the development is subject to a formal request being lodged. A Design Information Package (DIP) will be requested in order to commence that process.

10 COMMUNICATIONS

NBN Co have existing Fibre to the Node (FTTN) fixed line infrastructure adjacent east of the proposed subdivision on Harlequin Street, utilizing existing Telstra leased pit and pipe systems. Telstra also have infrastructure within South Coast Highway.

The proposed subdivision falls within NBN Co's fixed wireless footprint, indicating NBN Co would be the infrastructure provider of last resort for broadband internet, however it is possible that Telstra may be relied upon for telephone communications.

It is expected NBN Co will extend its fixed line footprint to cover the proposed development providing Fibre to the Premises (FTTP) infrastructure. This will be resolved when a Developer Agreement application is submitted to NBN Co for detailed assessment.

In any case, the developer will be responsible for the installation of a fibre-ready pit and pipe system which is suitable and compliant with the NBN Co policy and design requirements.

As shown in Figure 11 below, the NBN rollout has substantially commenced in Denmark and the town generally appears to have services throughout.

NBN Co levy two infrastructure charges, a Deployment Charge of $600/dwelling for single residential services and often, a backhaul charge where there is insufficient infrastructure. Backhaul charges are not anticipated for the subdivision of Lots 1 and 621 Harlequin Street given the proximity of existing network.

As part of the developer agreement conditions, NBN will take over ownership of the assets upon completion and ensure that fibre is ready 3 months prior to the first occupancy for a new development.

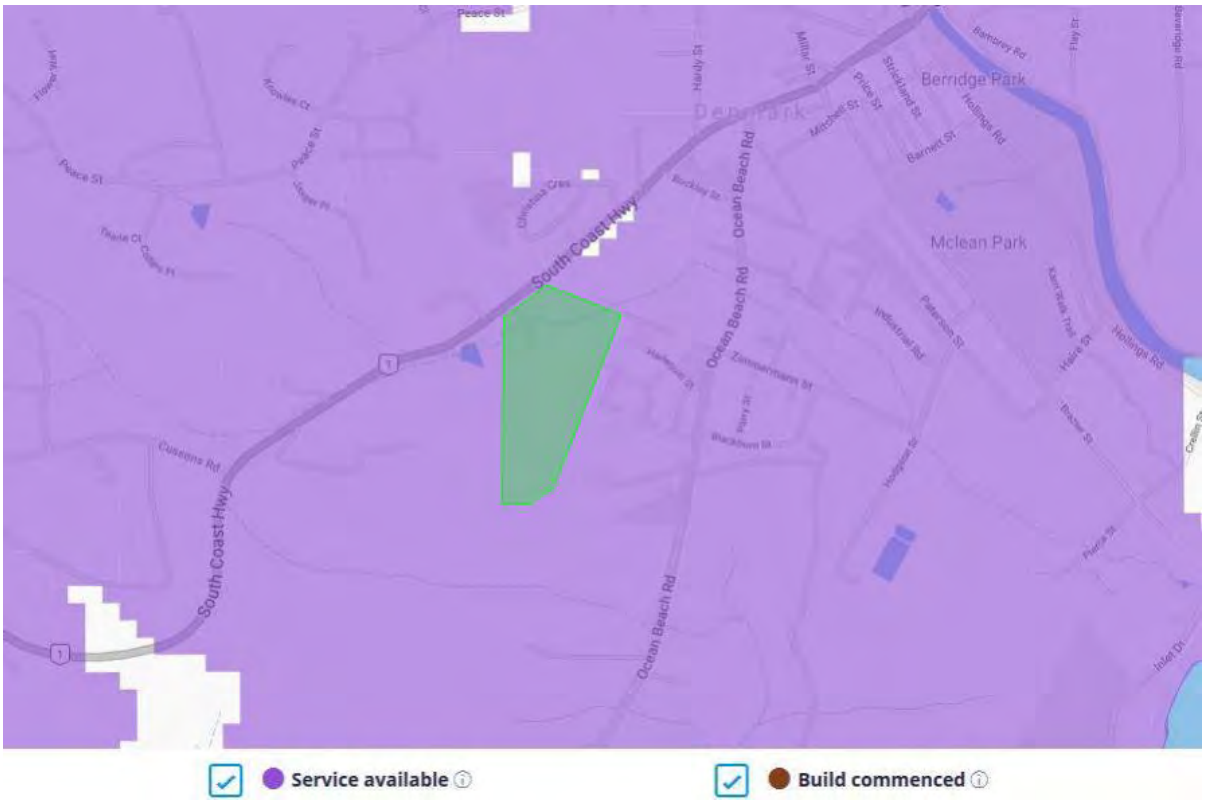

Figure 11 – NBN Rollout Map for Denmark, October 2019 (NBN website)

11 CONCLUSION

Based on the servicing infrastructure review, there does not appear to be engineering related constraints preventing development Lot 1 and 621 Harlequin Street, Denmark.

While each of the servicing proposals are required to be assessed in further detail and in negotiation with the Authorities, it appears the intended subdivision plan is able to be supported by network extensions, upgrades and installations as appropriate.

Following the submission of the Local Structure Plan, subdivision approval will be sought from the Western Australian Planning Commission. Formal detailed engineering design and approvals will be completed in order to satisfy the subdivision conditions that are anticipated to be issued.

As this report is based on the preliminary servicing advice and investigations completed to date, it is recommended that each Authority be kept informed as the planning progresses and concept engineering designs are refined. Communicating the proposed time-frames for the staged development is also important to inform and coordinate designs and approvals from all relevant Authorities.

12 REFERENCES

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- TABEC, Harlequin Street Earthworks Concept Plan, Cut and Fill Depths. 2412-SK-002 Revision F. February 2022
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- TABEC, Concept Plan with Aerial Image. 2412-SK-004 Revision 4. February 2022
- TABEC, Harlequin Street Drainage Catchment Plan. 2412-SK-007 Revision H. February 2022
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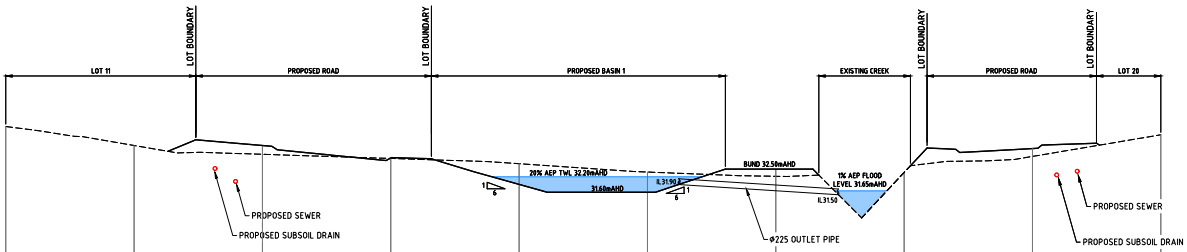
- Williams Consulting, 621 Harlequin Street and 1 South Coast Highway, Concept Development Plan. June 2020
- Water Corporation, planning and infrastructure mapping. October 2019
- Water Corporation, Denmark - Servicing Enquiry, emails. 19 and 20 June 2019
- Western Power, Network Capacity Mapping Tool. October 2019

Appendix 7 Engineering Drawings (Tabec, 2022)



DATUM RL 29.000

DESIGN		33.421	32.831	31.905	31.600	32.500	32.603	33.300	
SURVEY	34.157	33.420	33.077	32.915	32.710	32.386	32.220	32.603	32.995	33.837
CHAINAGE	0	10	20	30	40	50	60	70	80	90

SECTION A 001
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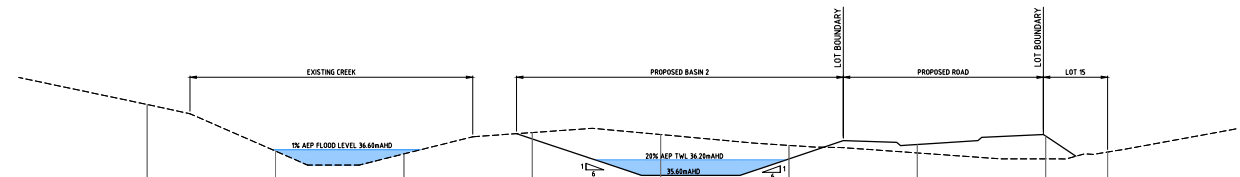
V: 1:100



DATUM RL 34.000

DESIGN			36.746	35.600	36.239	36.802	37.132	
SURVEY	38.361	36.545	36.436	37.267	37.190	36.767	36.474	36.241	36.508
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SECTION B 001
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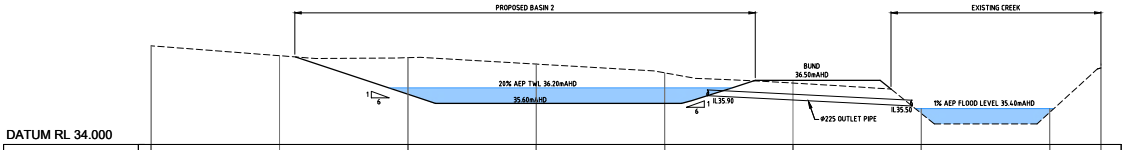

DATUM RL 34.000

DESIGN			35.960	35.600	35.600	36.500		
SURVEY	37.844	37.459	35.961	37.132	36.792	36.384	36.085	36.440	
CHAINAGE	0	10	20	30	40	50	60	70	75

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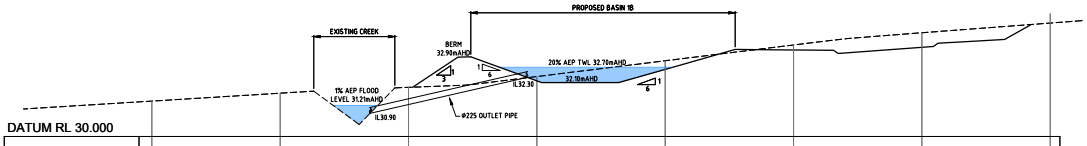

DATUM RL 30.000

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SURVEY	31.377	31.684	31.912	32.334	32.948	33.563	34.039	34.416
CHAINAGE	0	10	20	30	40	50	60	70

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A1

No.	DATE	DRAWN	APPROVED	AMENDMENT
D	25.01.22	KS	JBS	DRAINAGE OUTLET PIPES ADDED TO CROSS SECTIONS
C	10.11.21	KS	JBS	CROSS SECTION UPDATED
B	20.08.20	KS	JBS	SUBSOIL DRAINAGE AND SECTION C ADDED
A	29.07.20	KS	JBS	ISSUED FOR INFORMATION.

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DRAWN	CHECKED	DATE
KS	JS	.....

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t 08 9425 5900 e info@tabec.com.au
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PROJECT HARLEQUIN STREET, DENMARK

TITLE BASIN CROSS SECTIONS

DRAWING NUMBER 2412-SK-008

ISSUE 0

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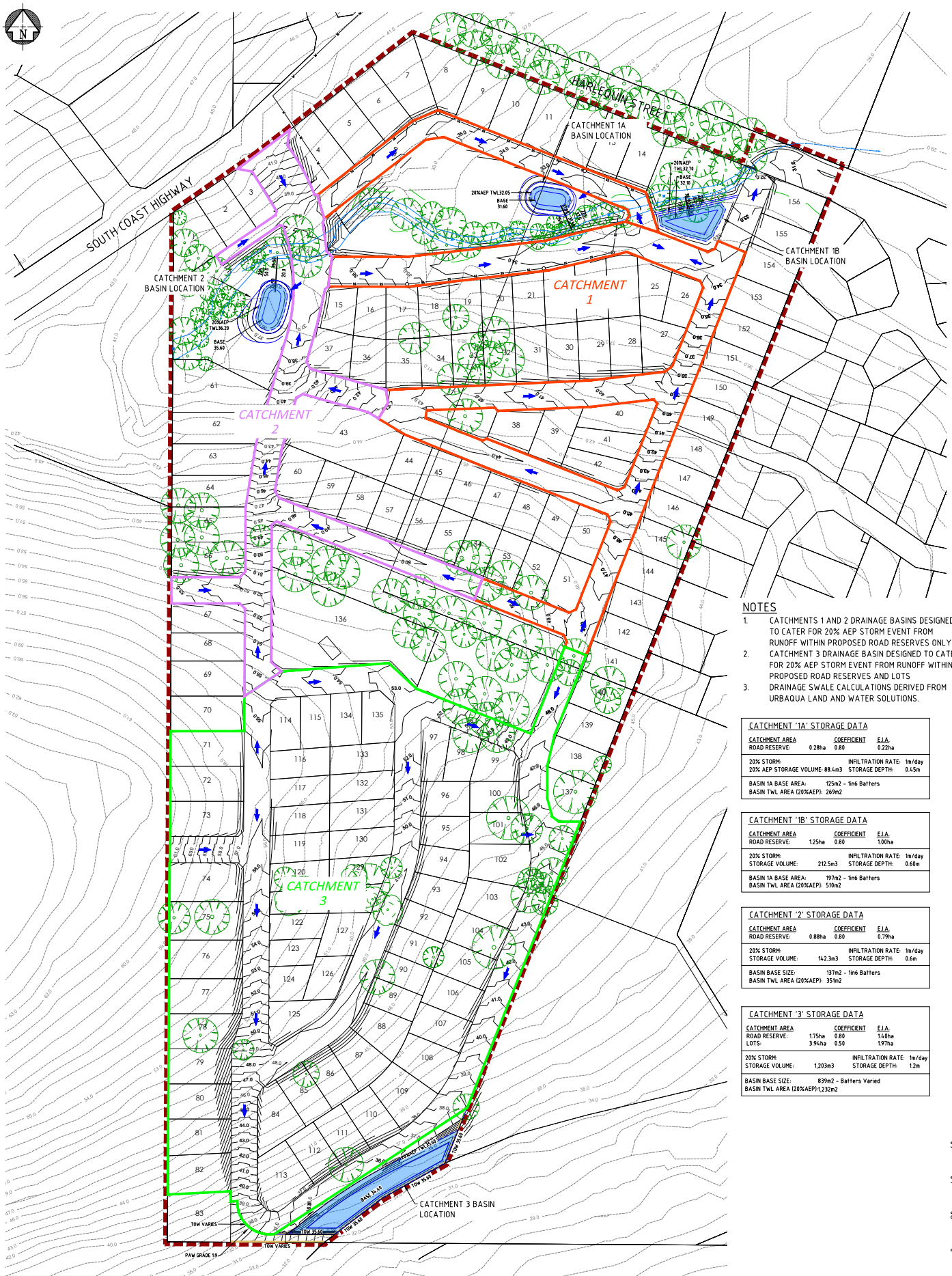

NOTES

1. CATCHMENTS 1 AND 2 DRAINAGE BASINS DESIGNED TO CATER FOR 20% AEP STORM EVENT FROM RUNOFF WITHIN PROPOSED ROAD RESERVES ONLY
2. CATCHMENT 3 DRAINAGE BASIN DESIGNED TO CATER FOR 20% AEP STORM EVENT FROM RUNOFF WITHIN PROPOSED ROAD RESERVES AND LOTS
3. DRAINAGE SWALE CALCULATIONS DERIVED FROM URBAQUA LAND AND WATER SOLUTIONS.

CATCHMENT '1A' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	0.28ha	0.80	0.22ha
20% STORM:		INFILTRATION RATE:	1m/day
20% AEP STORAGE VOLUME:	88.4m3	STORAGE DEPTH:	0.45m
BASIN 1A BASE AREA:	125m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	269m2		

CATCHMENT '1B' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	1.25ha	0.80	1.00ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	212.5m3	STORAGE DEPTH:	0.60m
BASIN 1A BASE AREA:	197m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	510m2		

CATCHMENT '2' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	0.88ha	0.80	0.79ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	142.3m3	STORAGE DEPTH:	0.6m
BASIN BASE SIZE:	137m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	351m2		

CATCHMENT '3' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	1.75ha	0.80	1.40ha
LOTS:	3.94ha	0.50	1.97ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	1,203m3	STORAGE DEPTH:	1.2m
BASIN BASE SIZE:	839m2 - Batters Varied		
BASIN TWL AREA (20%AEP):	1,232m2		

1:1000 (0, 20, 40, 60)

A1

No.	DATE	DRAWN	APPROVED	AMENDMENT
H	09.02.22	KS	JBS	PLAN UPDATED, OUTLET PIPES ADDED
G	02.12.21	KS	JBS	BASIN 3 UPDATED
F	10.11.21	KS	JBS	BASINS UPDATED
E	20.08.20	KS	JBS	BASIN SUBSOIL ADDED
D	12.08.20	KS	JBS	1 EY TOP WATER LEVELS AND AREAS ADDED
C	27.07.20	KS	JBS	LAYOUT REVISED, DRAINAGE UPDATED
B	12.05.20	KS	JBS	LAYOUT UPDATED, DRAINAGE DATA ADDED
A	04.11.19	KS	JBS	ISSUED FOR INFORMATION.

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KS	JS	.....
DRAWN	CHECKED	DATE
KS	JS	.....

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PROJECT: HARLEQUIN STREET, DENMARK

TITLE: DRAINAGE CATCHMENT PLAN

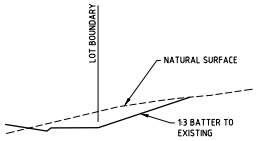
DRAWING NUMBER: 2412-SK-007

ISSUE: H

D:\JOBS\data\18-20\2412 - Harlequin Street Denmark_38\CAD\CAD\2412-SK-007 Drainage Catchment Plan.dwg 09/02/22 2:25:33 lahartland

LEGEND

- PROPOSED EXISTING SURFACE CONTOUR (0.5m INTERVAL)
- PROPOSED SURFACE CONTOUR (1.0m INTERVAL)
- PROPOSED SURFACE CONTOUR (0.5m INTERVAL)
- EXISTING TREE
- PROPOSED SUBSOIL DRAINAGE
- 1% AEP FLOOD LEVEL (mAHD)
- EXTENT OF CONTRACT
- PROPOSED LOT LEVEL
- LOT LEVEL TO BE FILLED FOR FLOOD LEVEL CLEARANCE



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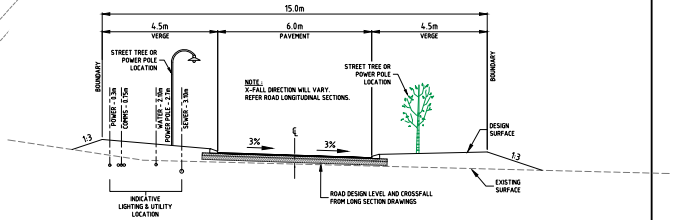

TYPICAL ROAD SECTION IN FILL
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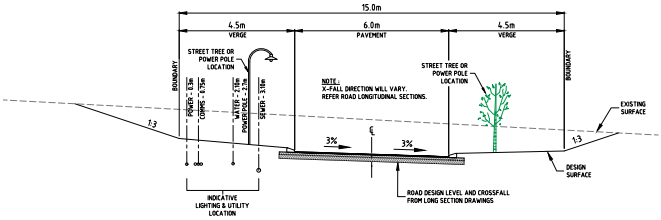

TYPICAL ROAD SECTION IN CUT
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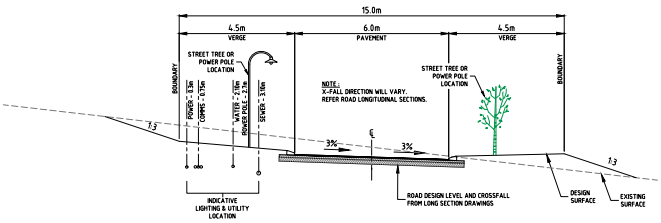

TYPICAL ROAD SECTION IN CUT AND FILL
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No.	DATE	DRAWN	APPROVED	AMENDMENT
K	09.02.22	KS	JBS	LAYOUT UPDATED, OUTLET PIPES ADDED TO BASINS
J	02.12.21	KS	JBS	BASIN 3 UPDATED AND PAW ADDED
I	10.11.21	KS	JBS	BASINS UPDATED
H	25.08.21	KS	JBS	TYPICAL ROAD SECTIONS ADDED
G	20.08.20	KS	JBS	SUBSOIL DRAINAGE ADDED
F	12.08.20	KS	JBS	1 EY TOP WATER LEVELS ADDED
E	04.08.20	KS	JBS	DRAINAGE LEVELS ADDED
D	29.07.20	KS	JBS	LAYOUT UPDATED
C	13.05.20	KS	JBS	LAYOUT UPDATED
B	20.08.19	KS	JBS	LOT LAYOUT UPDATED.
A	30.07.19	KS	JBS	ISSUED FOR INFORMATION.

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PROJECT: HARLEQUIN STREET, DENMARK

TITLE: EARTHWORKS AND DRAINAGE CONCEPT PLAN

DRAWING NUMBER: 2412-SK-001

ISSUE: K

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Client: Turner and Wells

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
LWMS	Rev 1	RMu	REp	Electronic	Feb 2022

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09 September 2025

Your Ref:
Our Ref: H25030Av1

Williams Consulting
354 Redman Rd
Denmark, WA 6333
ATTENTION: Sam Williams

Dear Sam,

621 HARLEQUIN ST & 1 SOUTH COAST HIGHWAY DENMARK
LOCAL WATER MANAGEMENT STRATEGY ADDENDUM

This Local Water Management Strategy (LWMS) addendum has been prepared by Hyd2o on behalf of Williams Consulting to provide revised stormwater modelling to support revisions to the Local Structure Plan (LSP) for the proposed development at 621 Harlequin St and 1 South Coast Highway Denmark.

The modelling in this report is intended to supersede previous modelled as detailed in the site's previous LWMS (Urbaqua, 2022). Extracts from the previous LWMS are included as Appendix A. Key principles and objectives of the approved LWMS remain current and valid for implementation.

This addendum report does not intend to reproduce all elements of the previous LWMS (Urbaqua, 2022). It is intended to be read in conjunction with the previous document and provide only the relevant information necessary to demonstrate overall compliance with the original LWMS.

1. REVISED STORMWATER MODELLING

The proposed revised local structure plan is shown in Figure 1.

Figure 2 shows the proposed stormwater catchments relative to POS and proposed stormwater management areas. These catchments are broadly similar to those detailed in Urbaqua (2022) with minor amendments to accommodate the LSP changes. The post development land use breakdown per catchment is shown in Table 1.

All catchments flowing to the sites northern watercourse have been designed to maintain rates of discharge post development consistent with predevelopment flow estimates. These have been derived by Hyd2o based on previous Urbaqua (2022) modelling as an equivalent pro-rata discharge rate of 7 l/s/ha. This has been applied to the design of Catchments 1, 2, and 4. A small area of Catchment 4 associated with the northern half of Zimmerman St is proposed to discharge directly to the watercourse. This will assist in preserving existing trees within the adjacent Catchment 4 POS by reducing the stormwater land take in this area.

Consistent with Urbaqua (2022), storages for Catchments 1, 2 and 4 have been designed to manage the 20% Annual Exceedance Probability (AEP) event, with larger events proposed to discharge to the watercourse.

Catchment 3 is located in the southern portion of the site and has been designed to manage up to 1% AEP event on site with an acceptable outflow rate determined via predevelopment modelling using the Australian Rainfall and Runoff (AR&R) Regional Flood Frequency Estimation (RFFE) method and verified as appropriate using XP-Storm modelling. A rate of 0.23 m^3/s for the 1% AEP event was the adopted acceptable outflow from this catchment on the basis of the above approach.

This design approach differed from Urbaqua (2022) which sized this catchment's post development storage as an infiltration basin for the 20% AEP event. Given low permeability soils in the area (Great Southern Geotechnics, 2019), it was not clear how infiltration would occur and a compensating storage is therefore considered by Hyd2o as more appropriate approach in this location.

Modelling was undertaken using XP-Storm to determine stormwater requirements. The design storms modelled by XP-Storm were based on methodology in Australian Rainfall & Runoff (AR&R) and the Bureau of Meteorology Computerised Design IFD Rainfall System. The rainfall temporal pattern was assumed to be spatially uniform across the catchment. Storm durations modelled ranged from 30 minutes to 72 hours.

Key parameters and criteria used to inform the stormwater modelling are summarised as follows:

- Storage and outlet inverts have been adopted consistent with Urbaqua (2022).
- Due to clay nature of soil profile and geotechnical reporting, the modelling of basins has assumed no infiltration.
- Catchments 1, 2 and 4 storages sized to manage the 20% AEP event discharging at estimated allowable flow rates in matching predevelopment conditions. Estimated allowable flow rates for each of these catchments based on 7 L/s/ha.
- Storages 2 and 4 sized to a maximum depth of 0.8 m, with Storage 1 to a maximum depth of 1.0 m.
- Catchment 3 storage sized to detain up to the 1%AEP event discharging an allowable flow rate consistent with estimated predevelopment conditions (0.23 m^3/s).
- A maximum depth of 0.8m was also adopted for the Catchment 3 storage.
- Batter slopes of 1:6 adopted for all stormwater storage areas.

Revised stormwater modelling of the LSP is summarised in Figure 2 and Table 1. Detailed outputs of stormwater modelling included as Appendix B.

It is recommended these results be used to inform future stormwater planning, civil engineering, and landscape planning for the site. The results indicate proposed POS areas to be sufficient in size to manage storage runoff from the site post development.

Note the POS storages shown in Figure 2 are indicative only for illustrative purposes and it is expected the shapes and respective locations will be adjusted at later stages of planning to consider and maximise the retention of native vegetation. This will be further refined during the development of the site's Urban Water Management Plan (UWMP) in due course.

Table 1: Revised Stormwater Management Modelling

Catchment Name	1	2	3	4 (DD : direct discharge to watercourse)
Residential lots (ha) (1% AEP 60%; 20% AEP 50%; 15mm 45%)	2.56	1.63	4.67	1.37
POS (ha) (1% AEP 1%; 20% AEP 1%; 15mm 10%)	0.42	0.36	0.88	0.85
Roads (ha) (1% AEP 77%; 20% AEP 69%; 15mm 62%)	1.19	0.68	1.77	0.67 + 0.27 DD
Total Catchment Area (ha)	4.17	2.66	7.32	2.89 + 0.27 DD
15 mm Event EIA (ha)	1.90	1.16	3.21	1.04 + 0.17 DD
20% AEP EIA (ha)	2.11	1.29	3.56	1.16 + 0.19 DD
1% AEP EIA (ha)	2.50	1.54	4.25	1.42 + 0.21 DD
Storage Characteristics				
Base Area (m^2)	137	198	840	90
Side Slopes for Flood Storage (1:v)	6	6	6	6
Basin Invert (mAHD)	35.6	32.1	34.4	31.6
Pre Dev Discharge Rate (m^3/s)	0.03 (20% AEP)	0.02 (20% AEP)	0.23 (1% AEP)	0.02 (20% AEP)
Modelled Outlet Diameter (mm) (Nominal only – subject to future design)	135	100	350	120
Nominal Outlet Pipe Invert (mAHD)	35.9	32.3	34.4	31.9
63% AEP Event				
Flood Rise (m)	0.69	0.54	0.26	0.58
TWL Area (m^2)	426	309	1043	274
Volume (m^3)	190	104	241	101
Peak Discharge Rate (m^3/s)	0.03	0.02	0.09	0.02
20% AEP Event				
Flood Rise (m)	1.0	0.78	0.36	0.79
Volume (m^3)	347	188	348	168
TWL Area (m^2)	594	422	1127	365
Critical Storm (hr)	3	3	1	3
Peak Discharge Rate (m^3/s)	0.03	0.02	0.13	0.02
1% AEP Event				
Flood Rise (m)	To Northern Watercourse		0.80	To Northern Watercourse
Volume (m^3)			930	
TWL Area (m^2)			1527	
Critical Storm (hr)			1	
Peak Discharge Rate (m^3/s)			0.23	
Urbaqua (2022) Volumes	*142*	*213*	*1203*	*88*

2. REFERENCES

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Western Australian Planning Commission (2008), Better Urban Water Management

Williams Consulting (2022), Shire of Denmark Town Planning Scheme No. 3, Harlequin Street & South Coast Highway Local Structure Plan

Should you have any queries regarding this report, please do not hesitate to contact Sasha Martens or Brian Lau of this office.

Yours sincerely,

Brian Lau
Environmental Hydrologist

Attachments

Figure 1: Revised Structure Plan (Williams Consulting, 2025)
Figure 2: Revised Stormwater Management Plan
Appendix A: LWMS Stormwater Plan Extracts (Urbaqua, 2022)
Appendix B: Revised Stormwater Modelling Results

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FIGURES

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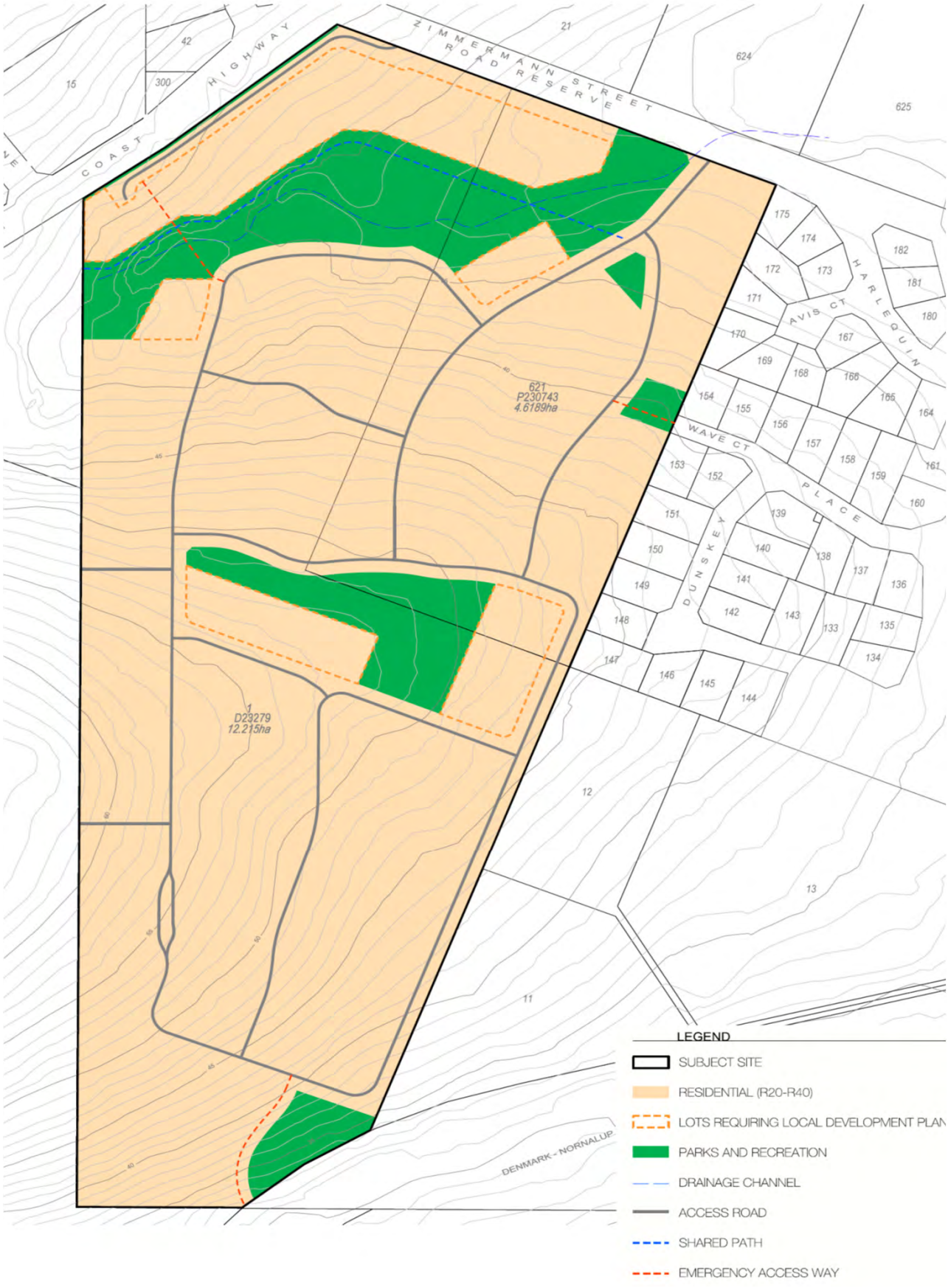

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621 Harlequin St & 1 South Coast Hwy Denmark LWMS Addendum

Revised Structure Plan

Figure 1

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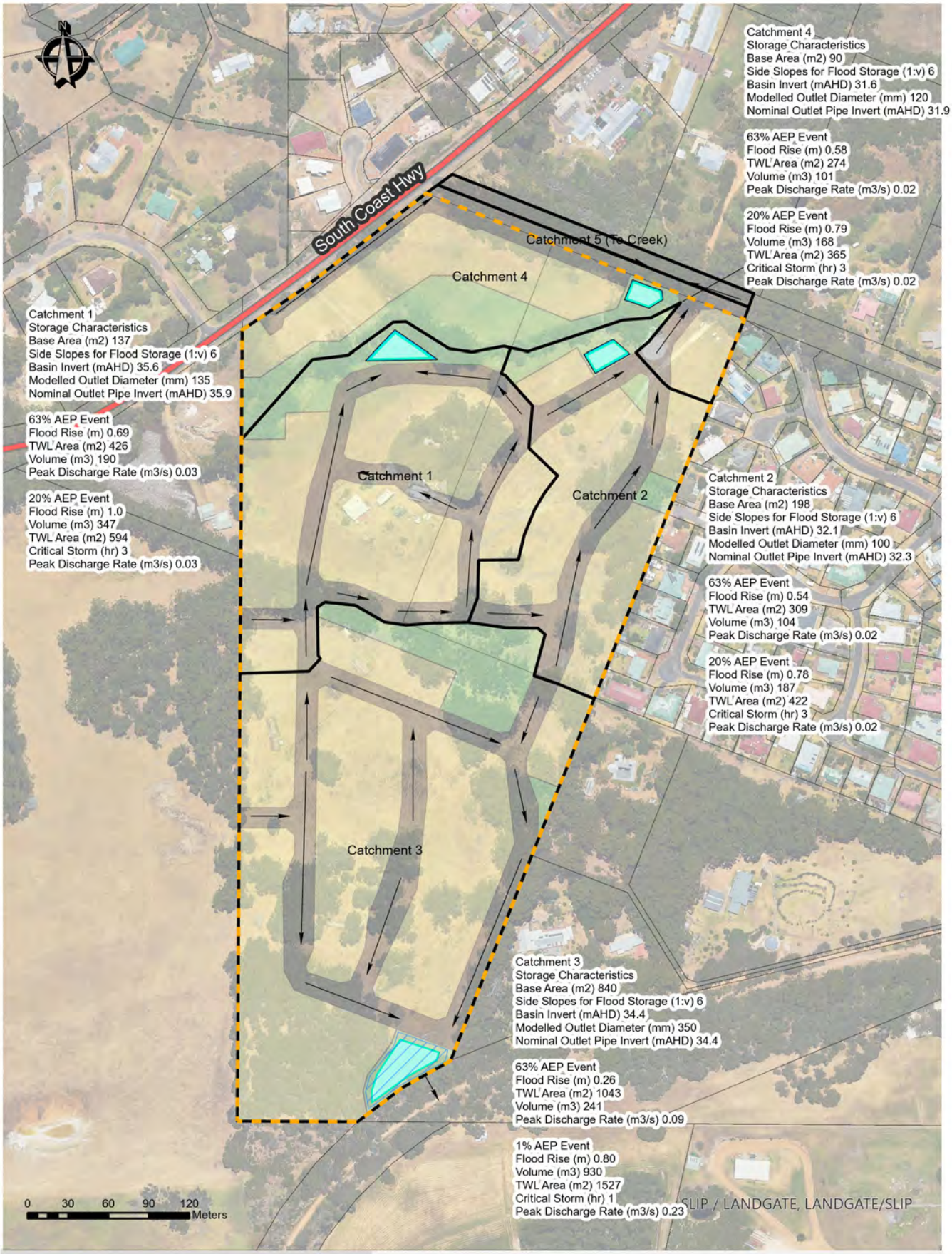

hyd2o

621 Harlequin St & 1 South Coast Hwy Denmark LWMS Addendum

Revised Stormwater Management Plan

Figure 2

APPENDIX A

LWMS Extracts (Urbaqua, 2022)

621 Harlequin Road

Local Water Management Strategy

Prepared for Turner and Wells

By Urbaqua

February 2022

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4 STORMWATER MANAGEMENT

4.1 Principles and Objectives

The following specific Water Sensitive Urban Design objectives have been implemented, consistent with the principles outlined in the *Better Urban Water Management* guidelines (WAPC, 2008):

- Protect life and property from flooding events.
- Manage runoff from small rainfall events on-site or as close to the source as possible.
- Protect and enhance sensitive receiving environments by managing the water cycle, water quality, habitat diversity and biodiversity.
- Control stormwater quality through implementation of appropriate non-structural source controls and structural controls.
- Achieve good urban amenity by integrating stormwater management systems within the design of road reserves.
- Maintain runoff volumes, peak flow rates, and improve water quality, biodiversity, and aesthetics by managing stormwater through the retention and planting of vegetation.

The Shire of Denmark was also consulted to confirm the acceptable storage volumes and peak flow design objectives. It was agreed with the Shire that storage and predevelopment flow rates were to:

- Detain up to the 20% AEP rainfall event within site boundaries.
- Maintain predevelopment flow rates exiting the site for the 20% AEP rainfall event.

Correspondence has been provided in Appendix 3.

4.2 Catchment Overview

The site is divided by the natural slope of the site and the earthworks levels into 3 main catchments. Catchments 1 and 2 are in the northern portion of the site and Catchment 3 in the south of the site. Catchment 1 has been further divided into sub catchments 1A and 1B, as the watercourse separates the northern and southern portions. Each Catchment drains to a respective detention basin. The catchment plan and basin locations are shown on Figure 5.

4.3 Lot Drainage Management

As determined by the geotechnical investigation (Section 2.4.2), underlying soils are predominantly clays, with groundwater perching predicted across most of the site. As such, soakwells for lot drainage management have not been proposed. Instead, lot stormwater for all catchments will be conveyed to the road drainage network via overland flow for detention within basins for each catchment. This will help to mimic the predevelopment drainage conditions. Lot drainage has therefore been accounted for in the drainage modelling (Section 4.5).

4.4 Road Drainage Management

Stormwater will be collected and conveyed via a conventional pit and pipe road drainage network, prior to discharging to drainage basins located in POS areas. The road network will be designed with one-way crossfalls for stormwater capture efficiency. Typical road intersections are provided in Appendix 7

All sub-catchments will drain to their respective basins, which have been sized to infiltrate up to the 20% AEP event. Basins 1A, 1B and 2 have also been designed with controlled overflow outlets to the creek to maintain the predevelopment flows within the watercourse.

The catchment flow pathways and basin locations are shown in Figure 5.

4.5 Basin Sizing

Basin volume requirements have been sized by Urbaqua using Infoworks ICM. Each basin has been sized to detain up to the 20% AEP event with a predevelopment discharge rate (see Section 4.6). This management strategy has been agreed with the Shire of Denmark, with correspondence provided in Appendix 3. A drainage modelling summary has been provided in Appendix 5 which details the modelling and parameters used for basin sizing.

Modelled volumes were provided to Tabec to incorporate into the earthworks design in line with the natural topography. Resultant basin sizing results are provided in Table 10.

Table 10: Basin Volumes and Levels

Basin	Side Slope (m:m)	Invert Level (mAHD)	Base Area (m^2)	Top Area (m^2)	Storage Depth (m)	Modelled 20% AEP Volume (m^3)	Modelled 20% AEP TWL
Basin 1A	1:6	32.1	125	269	0.45	88	32.05
Basin 1B	1:6	31.6	197	510	0.6	213	32.70
Basin 2	1:6	35.6	137	351	0.6	142	36.20
Basin 3	Varied	34.4	839	1,232	1.20	1203	35.60

Note: Top and base dimensions have been designed by Tabec according to modelled volume results.

4.6 Peak Flows for Detention Basins

Peak flow rates throughout the watercourse were modelled to ensure detention basins and development would not result in significant change to the flow regime. With request from DWER, the neighbouring dam was excluded from both flood and flow modelling, to represent a 'worst case scenario' event in which the dam is removed by the neighbouring property. The outflow point from the site was modelled as the downstream C8 culvert (Harlequin Street) (Appendix 4). The results of the modelling undertaken indicates the following flows at C8:

- Predevelopment: The modelled 20% AEP peak flow rate at the downstream location (C8) is 1.56 m^3/s, with a critical duration of 6 hours.
- Post-development: The modelled 20% AEP peak flow rate at the downstream location (C8) is 1.67 m^3/s, with a critical duration of 6 hours.
- Post development flows will therefore increase marginally by 0.11 m^3/s at the downstream location C8.

Table 11 displays the outflow pipe details used in the Infoworks ICM basin modelling. These control peak flows from basins discharging to the watercourse to meet pre development. These are shown in the engineering drawings in Appendix 7.

Table 11: Basin Outflow Pipe Detail

Basin	Pipe Diameter (mm)	Outflow Pipe Invert US (in Basin) (mAHD)	Outflow Pipe Invert DS (to Stream) (mAHD)
Basin 1A	225	31.9	31.5
Basin 1B	225	32.3	30.9
Basin 2	225	35.9	35.5

Emptying times are all below 96 hours for disease and nuisance vectors in all basins.

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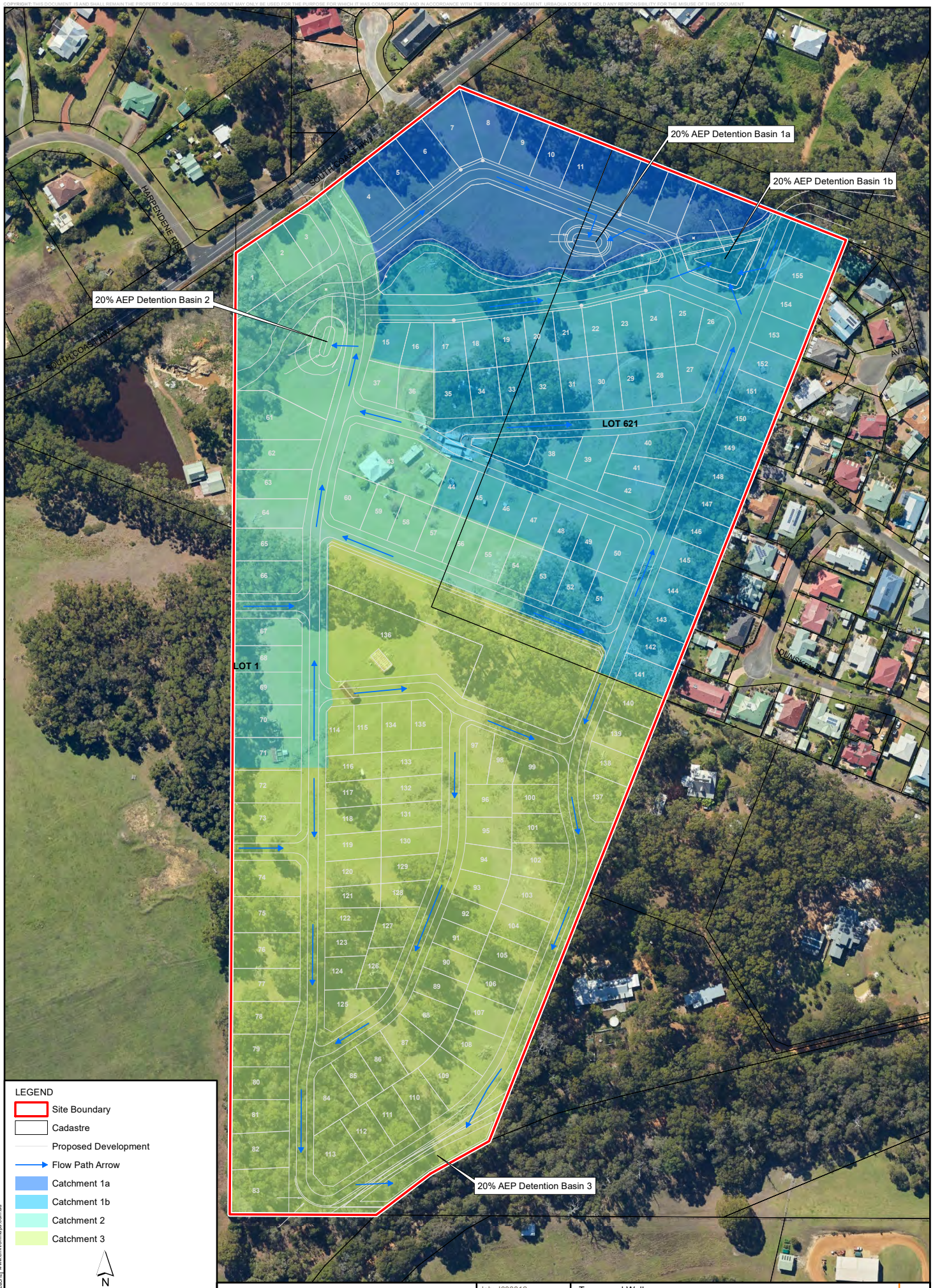

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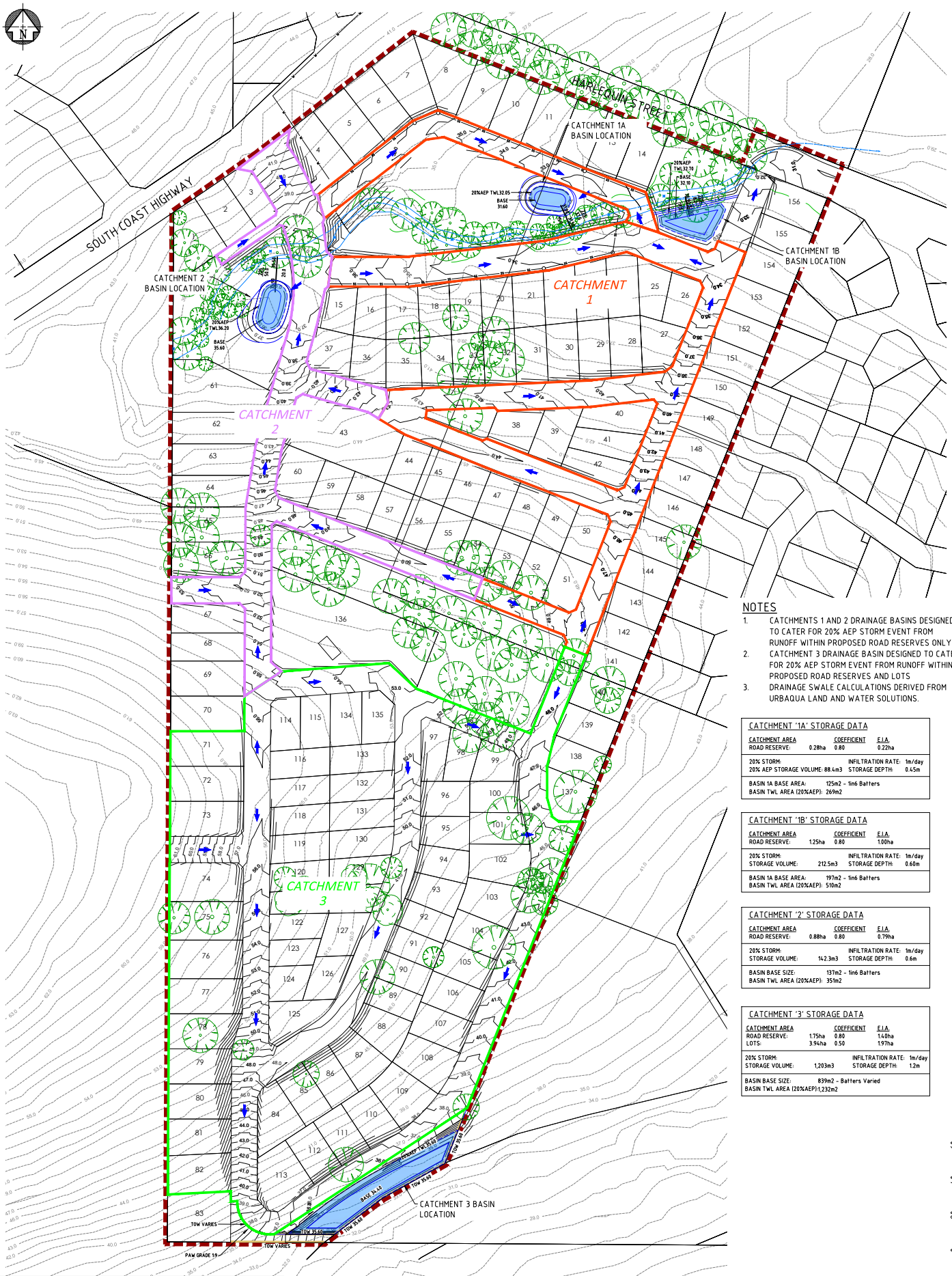
STORMWATER MANAGEMENT

Figure 5



NOTES

1. CATCHMENTS 1 AND 2 DRAINAGE BASINS DESIGNED TO CATER FOR 20% AEP STORM EVENT FROM RUNOFF WITHIN PROPOSED ROAD RESERVES ONLY
2. CATCHMENT 3 DRAINAGE BASIN DESIGNED TO CATER FOR 20% AEP STORM EVENT FROM RUNOFF WITHIN PROPOSED ROAD RESERVES AND LOTS
3. DRAINAGE SWALE CALCULATIONS DERIVED FROM URBAQUA LAND AND WATER SOLUTIONS.

CATCHMENT '1A' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	0.28ha	0.80	0.22ha
20% STORM:		INFILTRATION RATE:	1m/day
20% AEP STORAGE VOLUME:	88.4m3	STORAGE DEPTH:	0.45m
BASIN 1A BASE AREA:	125m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	269m2		

CATCHMENT '1B' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	1.25ha	0.80	1.00ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	212.5m3	STORAGE DEPTH:	0.60m
BASIN 1A BASE AREA:	197m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	510m2		

CATCHMENT '2' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	0.88ha	0.80	0.79ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	142.3m3	STORAGE DEPTH:	0.6m
BASIN BASE SIZE:	137m2 - 1in6 Batters		
BASIN TWL AREA (20%AEP):	351m2		

CATCHMENT '3' STORAGE DATA

CATCHMENT AREA		COEFFICIENT	E.I.A.
ROAD RESERVE:	1.75ha	0.80	1.40ha
LOTS:	3.94ha	0.50	1.97ha
20% STORM:		INFILTRATION RATE:	1m/day
STORAGE VOLUME:	1,203m3	STORAGE DEPTH:	1.2m
BASIN BASE SIZE:	839m2 - Batters Varied		
BASIN TWL AREA (20%AEP):	1,232m2		

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No.	DATE	DRAWN	APPROVED	AMENDMENT
H	09.02.22	KS	JBS	PLAN UPDATED, OUTLET PIPES ADDED
G	02.12.21	KS	JBS	BASIN 3 UPDATED
F	10.11.21	KS	JBS	BASINS UPDATED
E	20.08.20	KS	JBS	BASIN SUBSOIL ADDED
D	12.08.20	KS	JBS	1 EY TOP WATER LEVELS AND AREAS ADDED
C	27.07.20	KS	JBS	LAYOUT REVISED, DRAINAGE UPDATED
B	12.05.20	KS	JBS	LAYOUT UPDATED, DRAINAGE DATA ADDED
A	04.11.19	KS	JBS	ISSUED FOR INFORMATION.

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DRAWING NUMBER: 2412-SK-007

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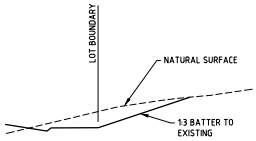
LEGEND

- PROPOSED EXISTING SURFACE CONTOUR (0.5m INTERVAL)
- PROPOSED SURFACE CONTOUR (1.0m INTERVAL)
- PROPOSED SURFACE CONTOUR (0.5m INTERVAL)
- EXISTING TREE
- PROPOSED SUBSOIL DRAINAGE
- 1% AEP FLOOD LEVEL (mAHD)
- EXTENT OF CONTRACT
- PROPOSED LOT LEVEL
- LOT LEVEL TO BE FILLED FOR FLOOD LEVEL CLEARANCE



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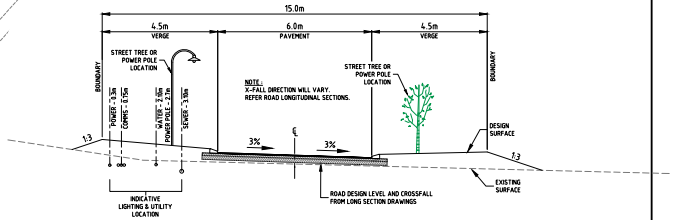

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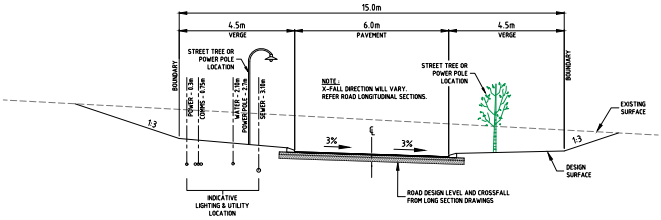

TYPICAL ROAD SECTION IN CUT
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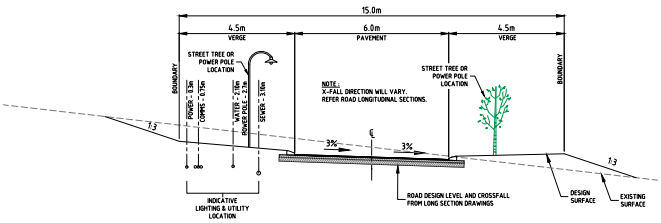

TYPICAL ROAD SECTION IN CUT AND FILL
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1:1000 0 20 40 60

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No.	DATE	DRAWN	APPROVED	AMENDMENT
K	09.02.22	KS	JBS	LAYOUT UPDATED, OUTLET PIPES ADDED TO BASINS
J	02.12.21	KS	JBS	BASIN 3 UPDATED AND PAW ADDED
I	10.11.21	KS	JBS	BASINS UPDATED
H	25.08.21	KS	JBS	TYPICAL ROAD SECTIONS ADDED
G	20.08.20	KS	JBS	SUBSOIL DRAINAGE ADDED
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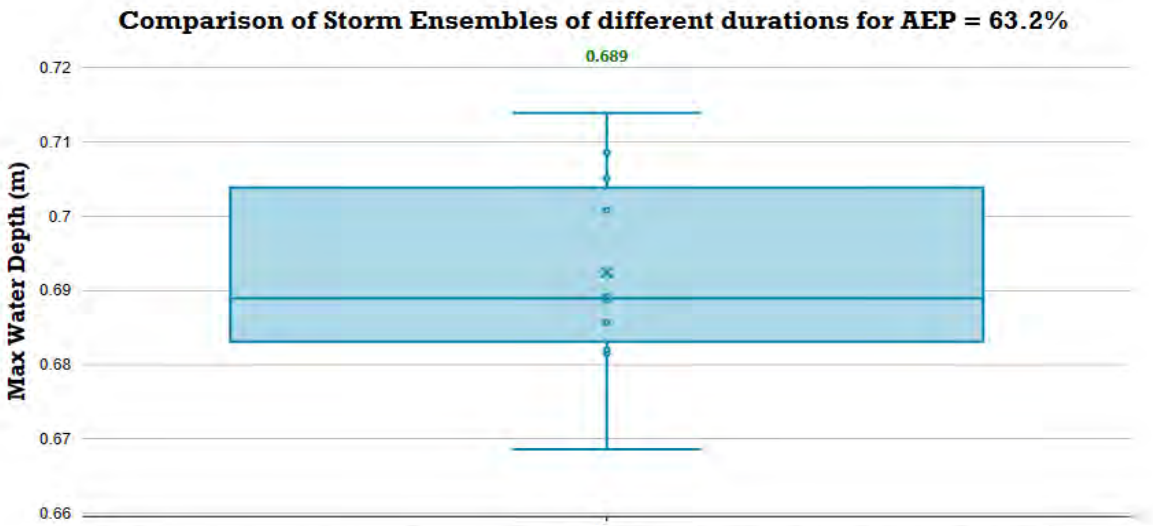
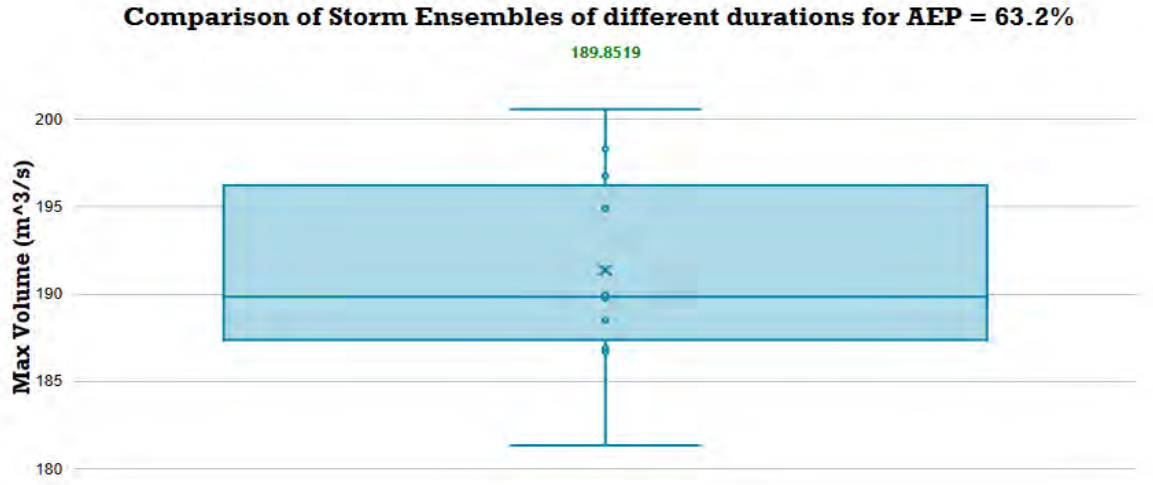
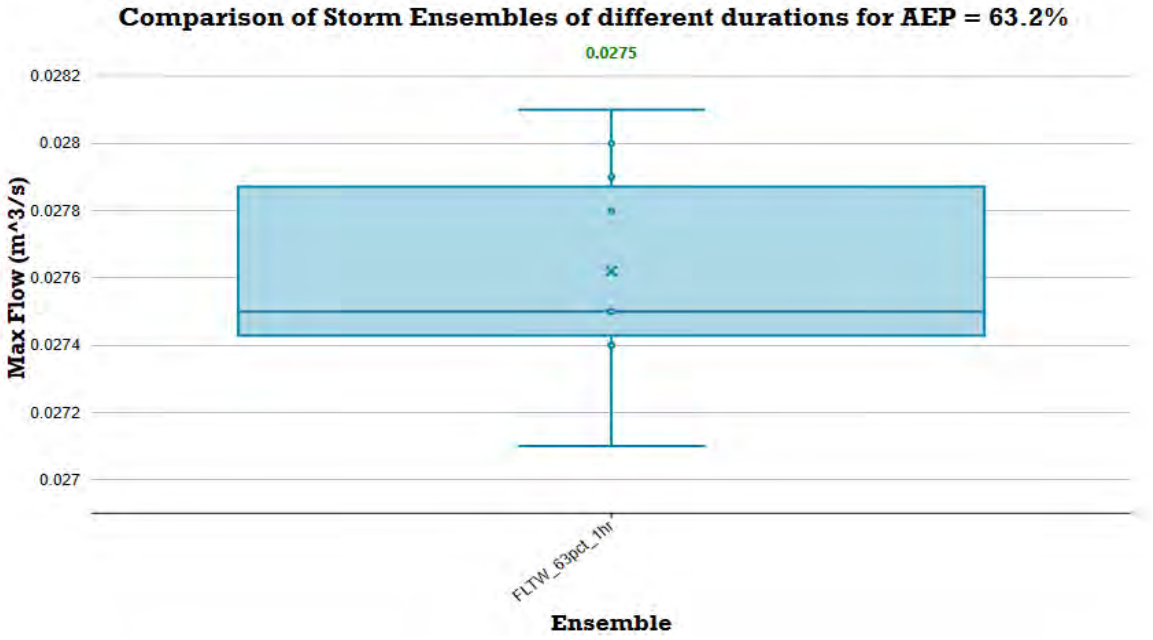
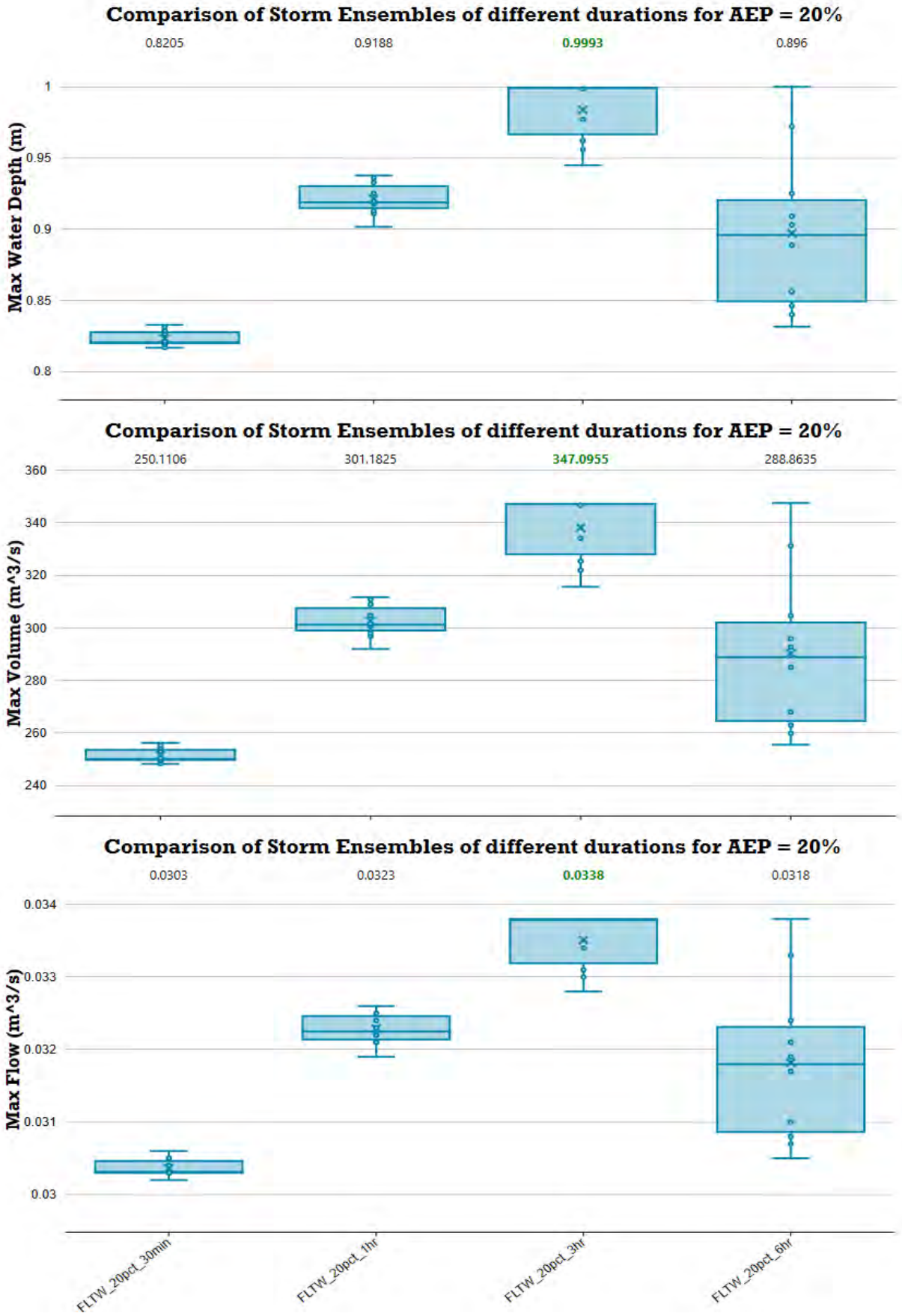
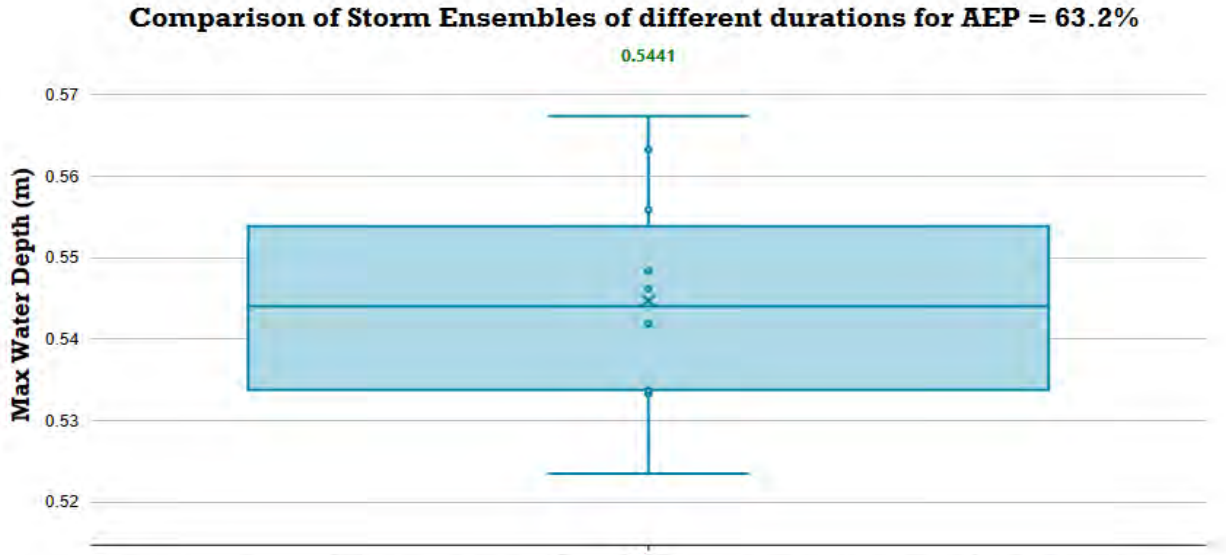
APPENDIX B
XP-Storm Modelling Results

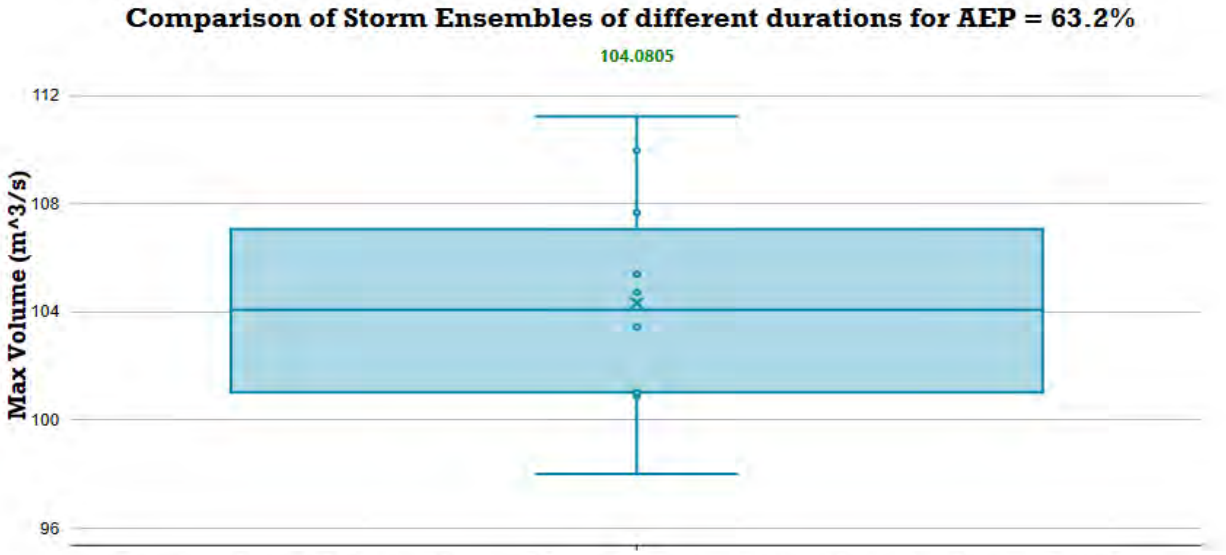

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.689
Max Water Depth (m)
0.72
0.71
0.7
0.69
0.68
0.67
0.66

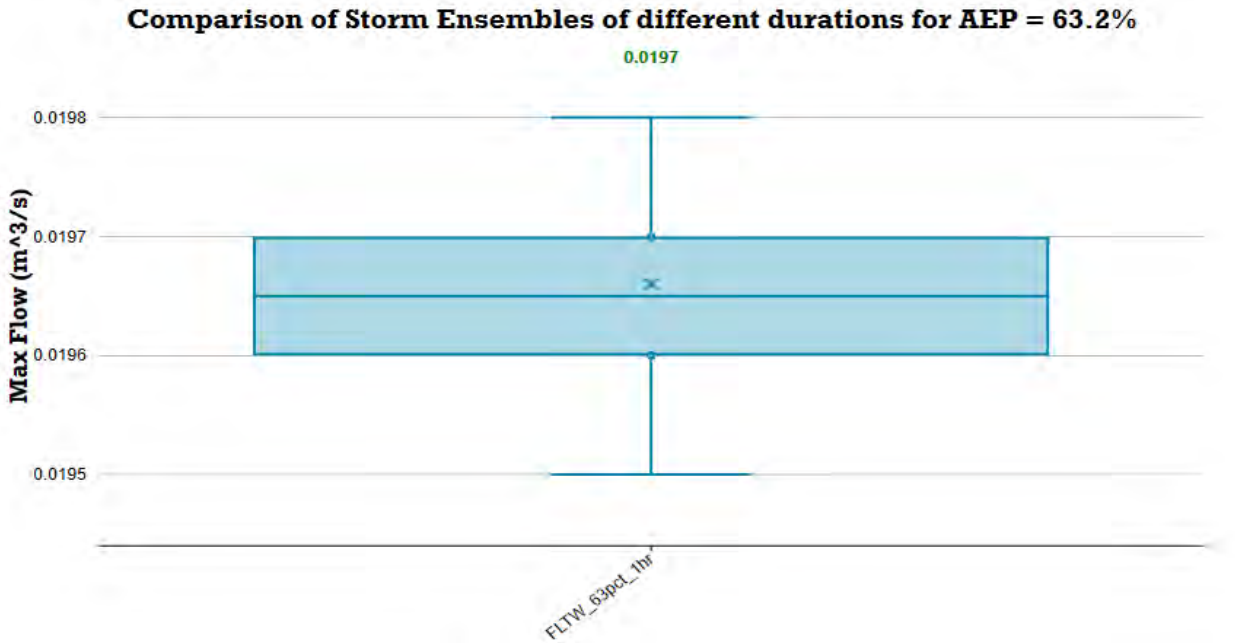

Comparison of Storm Ensembles of different durations for AEP = 63.2%
189.8519
Max Volume (m^3/s)
200
195
190
185
180

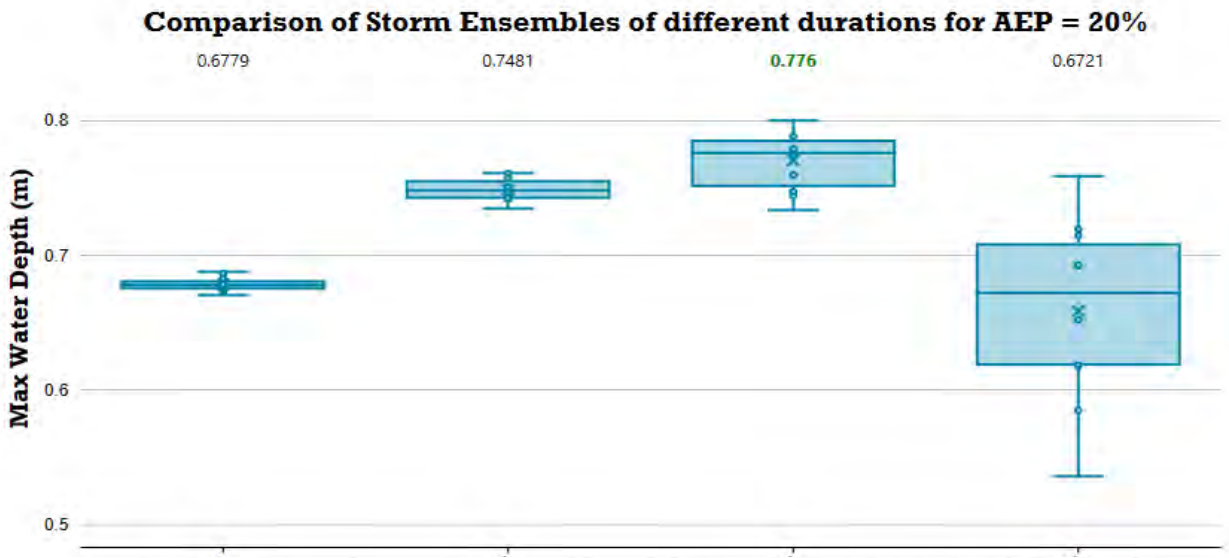

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.0275
Max Flow (m^3/s)
0.0282
0.028
0.0278
0.0276
0.0274
0.0272
0.027
FLTW_63pct_1hr
Ensemble

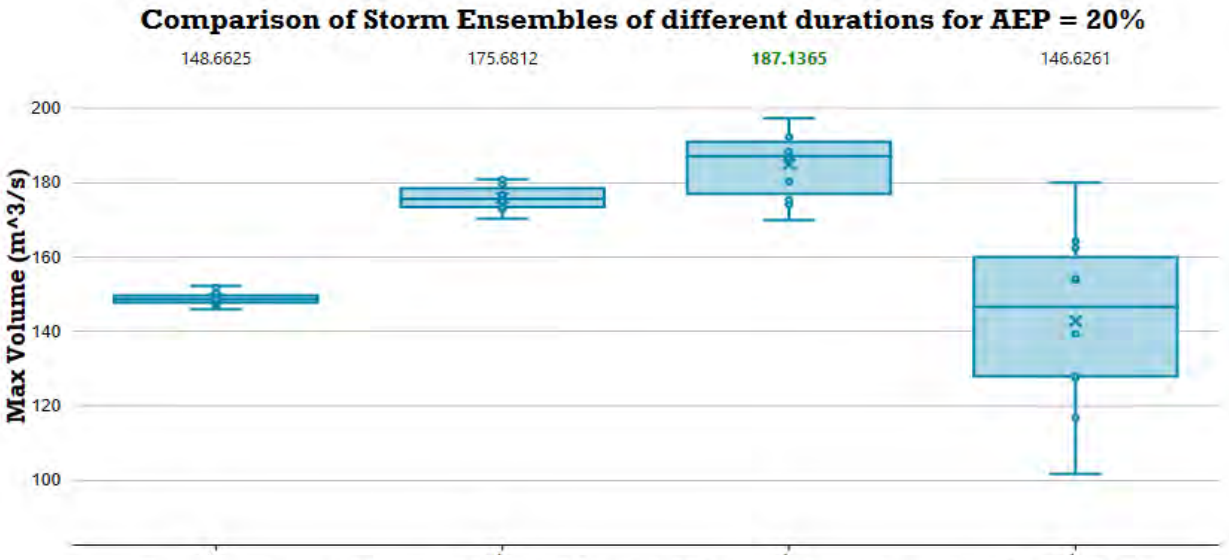

Comparison of Storm Ensembles of different durations for AEP = 20%
0.8205
0.9188
0.9993
0.896
Max Water Depth (m)
1
0.95
0.9
0.85
0.8
Comparison of Storm Ensembles of different durations for AEP = 20%
250.1106
301.1825
347.0955
288.8635
Max Volume (m^3/s)
360
340
320
300
280
260
240
Comparison of Storm Ensembles of different durations for AEP = 20%
0.0303
0.0323
0.0338
0.0318
Max Flow (m^3/s)
0.034
0.033
0.032
0.031
0.03
FLTW_20pct_30min
FLTW_20pct_1hr
FLTW_20pct_3hr
FLTW_20pct_6hr

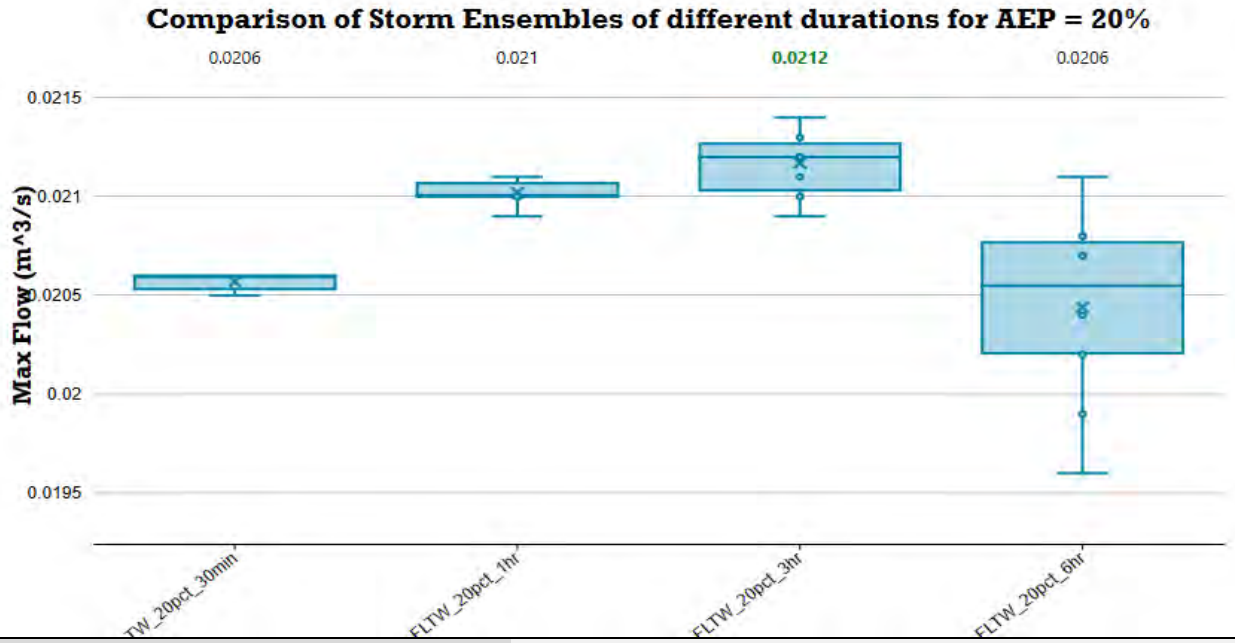

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.5441
Max Water Depth (m)
0.57
0.56
0.55
0.54
0.53
0.52

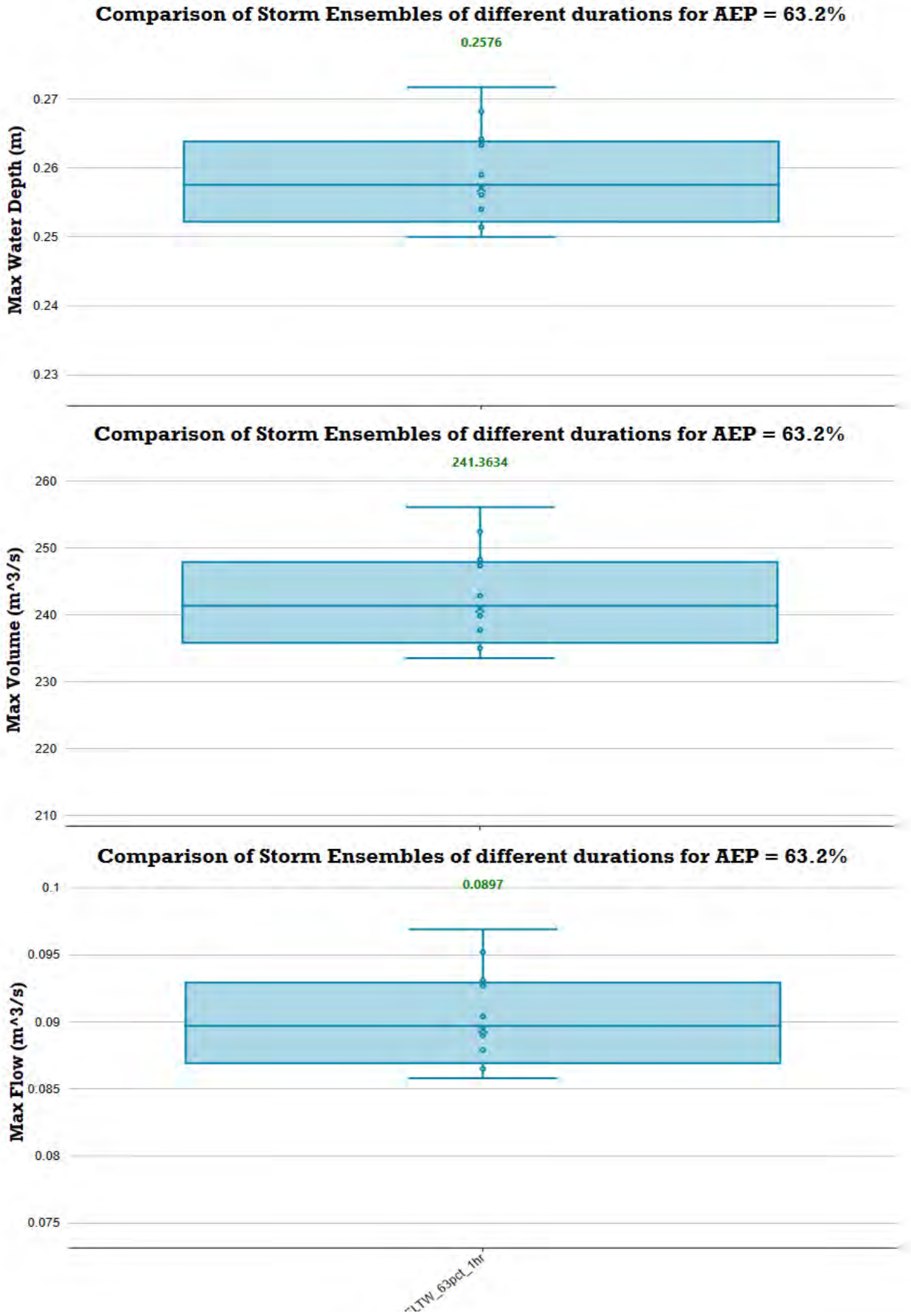

Comparison of Storm Ensembles of different durations for AEP = 63.2%
104.0805
Max Volume (m^3/s)
112
108
104
100
96

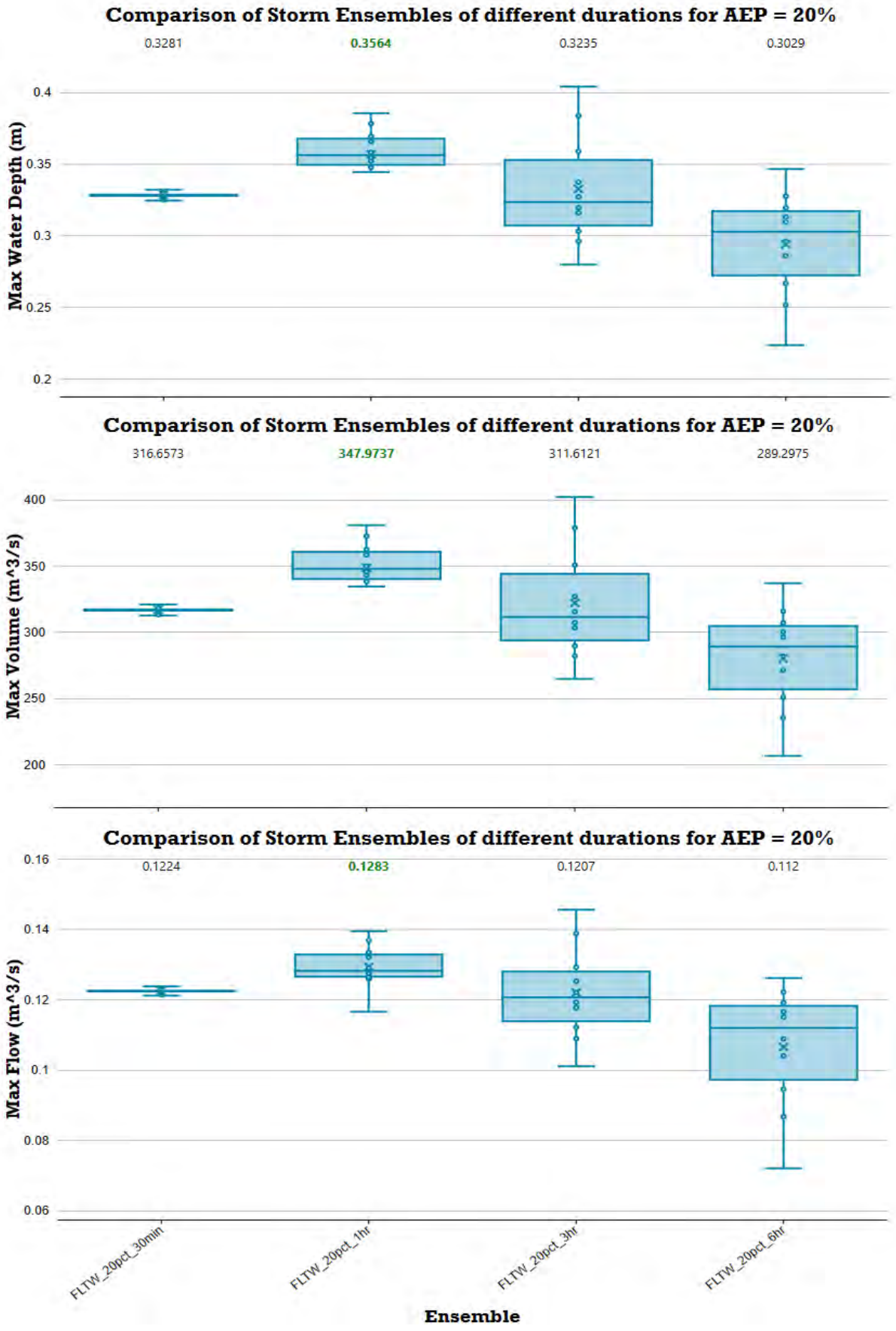

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.0197
Max Flow (m^3/s)
0.0198
0.0197
0.0196
0.0195
FLTW_63pct_1hr

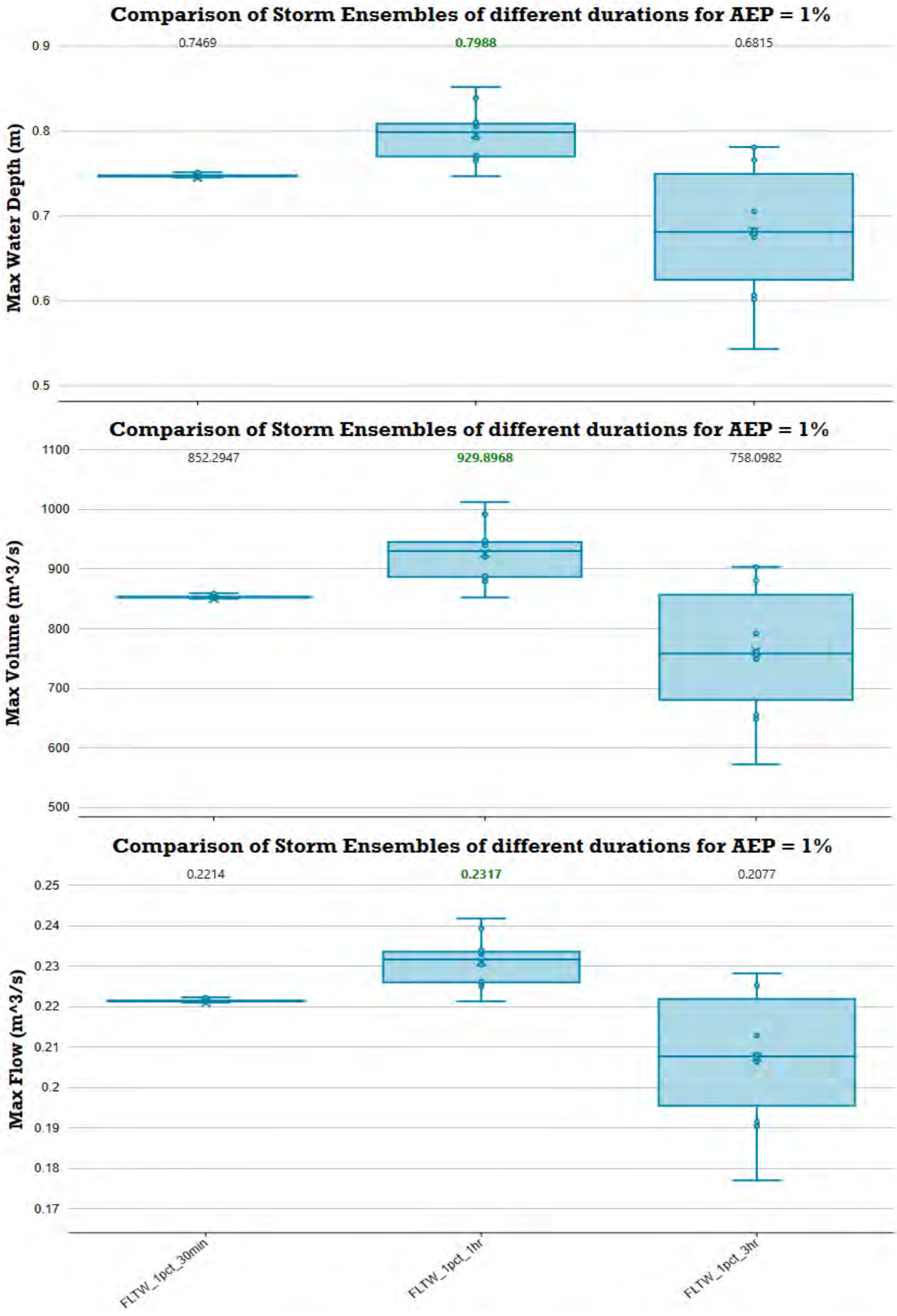

Comparison of Storm Ensembles of different durations for AEP = 20%
0.6779
0.7481
0.776
0.6721
Max Water Depth (m)
0.8
0.7
0.6
0.5

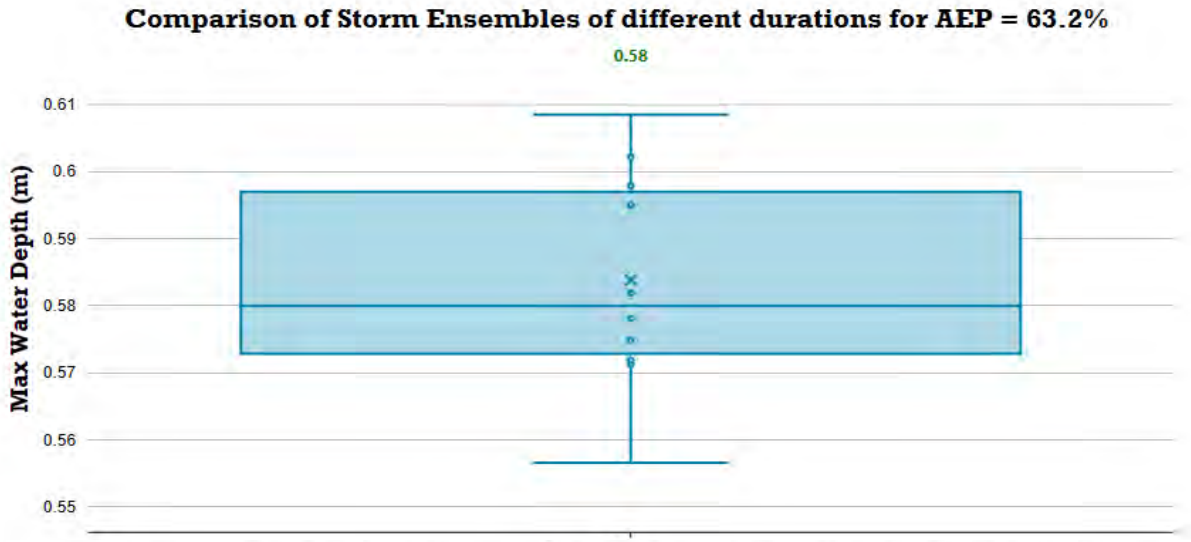

Comparison of Storm Ensembles of different durations for AEP = 20%
148.6625
175.6812
187.1365
146.6261
Max Volume (m^3/s)
200
180
160
140
120
100

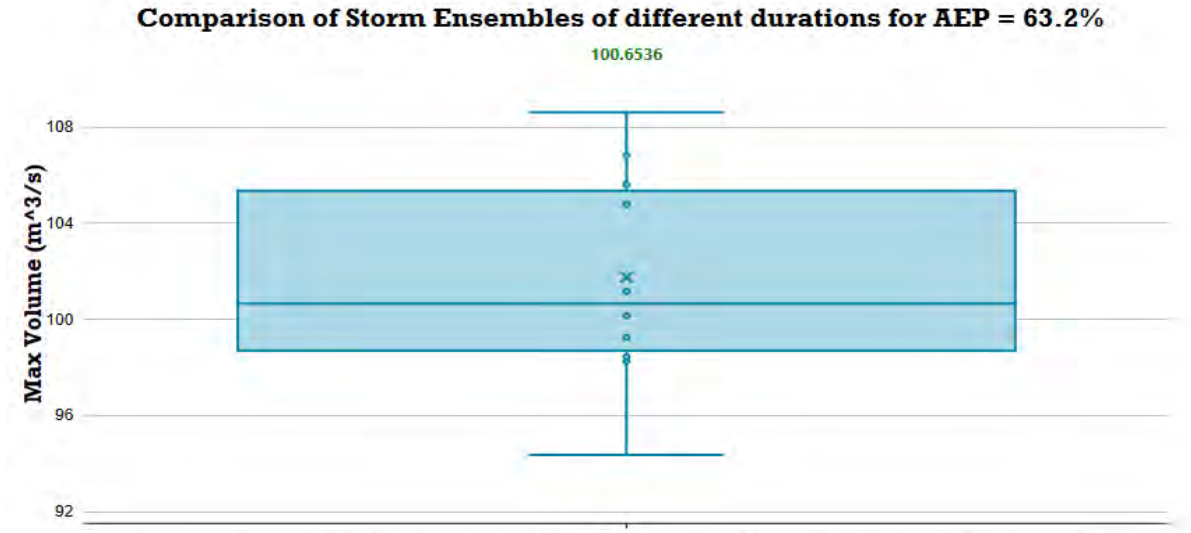

Comparison of Storm Ensembles of different durations for AEP = 20%
0.0206
0.021
0.0212
0.0206
Max Flow (m^3/s)
0.0215
0.021
0.0205
0.02
0.0195
FLTW_20pct_30min
FLTW_20pct_1hr
FLTW_20pct_3hr
FLTW_20pct_6hr

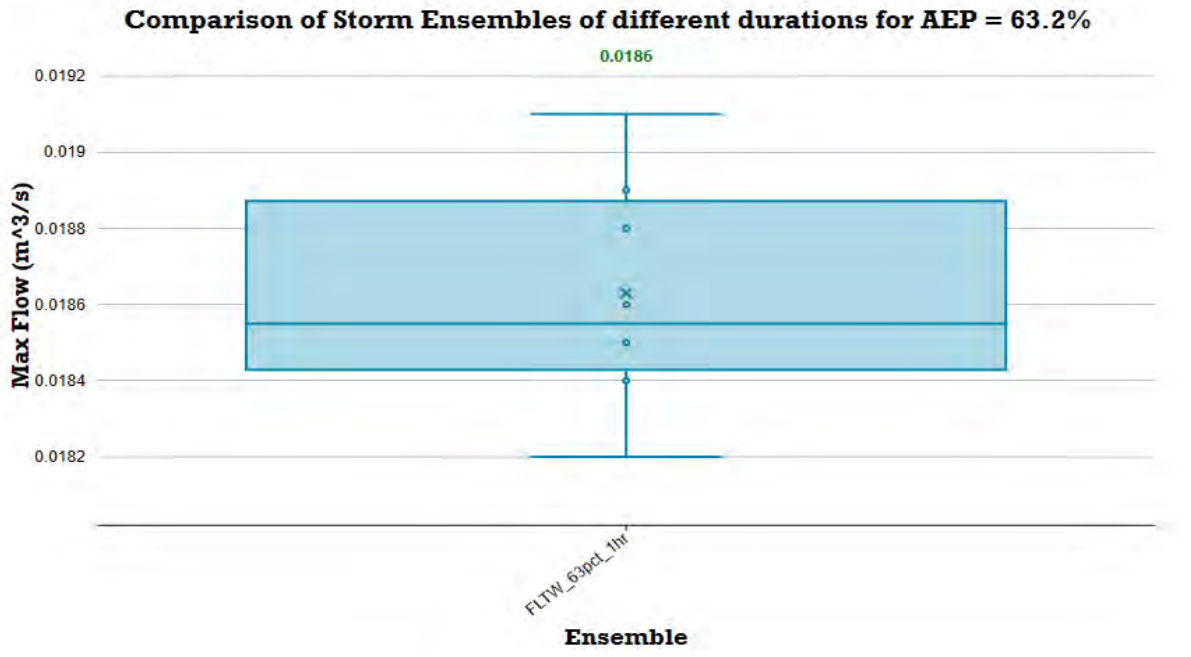

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.2576
Max Water Depth (m)
0.27
0.26
0.25
0.24
0.23
Comparison of Storm Ensembles of different durations for AEP = 63.2%
241.3634
Max Volume (m^3/s)
260
250
240
230
220
210
Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.0897
Max Flow (m^3/s)
0.1
0.095
0.09
0.085
0.08
0.075
LTW_63pct_1hr

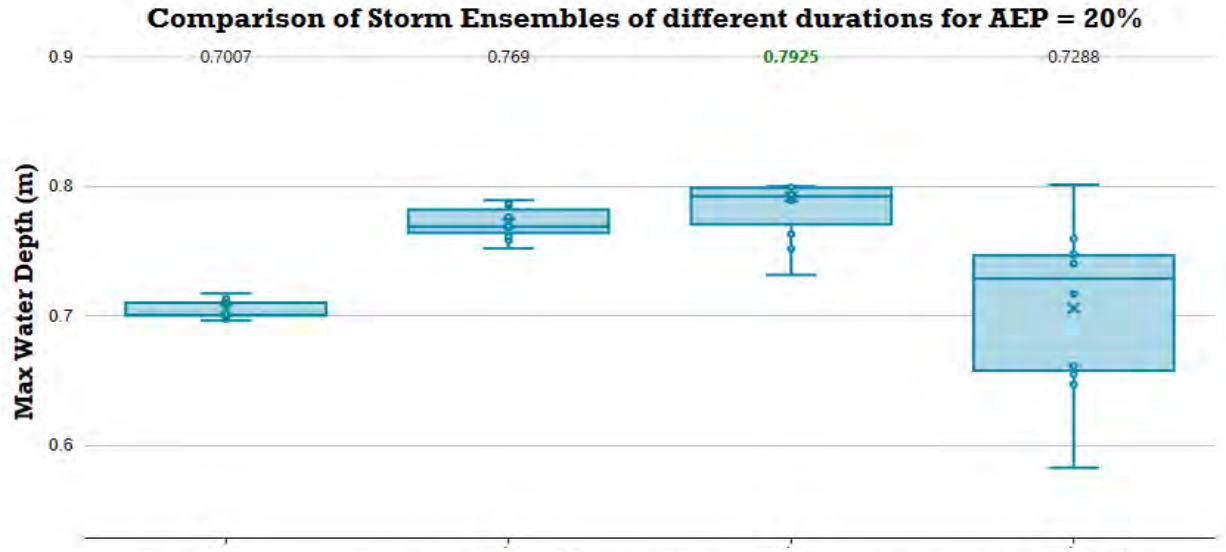

Comparison of Storm Ensembles of different durations for AEP = 20%
0.3281
0.3564
0.3235
0.3029
Max Water Depth (m)
0.4
0.35
0.3
0.25
0.2
Comparison of Storm Ensembles of different durations for AEP = 20%
316.6573
347.9737
311.6121
289.2975
Max Volume (m^3/s)
400
350
300
250
200
Comparison of Storm Ensembles of different durations for AEP = 20%
0.1224
0.1283
0.1207
0.112
Max Flow (m^3/s)
0.16
0.14
0.12
0.1
0.08
0.06
FLTW_20pct_30min
FLTW_20pct_1hr
FLTW_20pct_3hr
FLTW_20pct_6hr
Ensemble

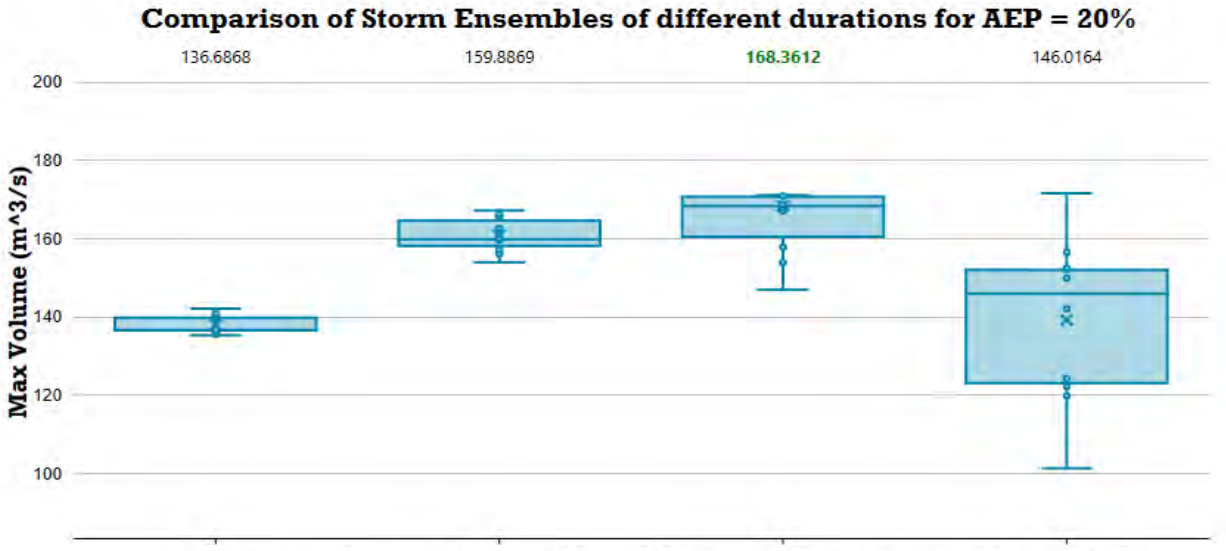

Comparison of Storm Ensembles of different durations for AEP = 1%
Max Water Depth (m)
0.7469
0.7988
0.6815
0.9
0.8
0.7
0.6
0.5
Comparison of Storm Ensembles of different durations for AEP = 1%
Max Volume (m^3/s)
852.2947
929.8968
758.0982
1100
1000
900
800
700
600
500
Comparison of Storm Ensembles of different durations for AEP = 1%
Max Flow (m^3/s)
0.2214
0.2317
0.2077
0.25
0.24
0.23
0.22
0.21
0.2
0.19
0.18
0.17
FLTW_1pct_30min
FLTW_1pct_1hr
FLTW_1pct_3hr

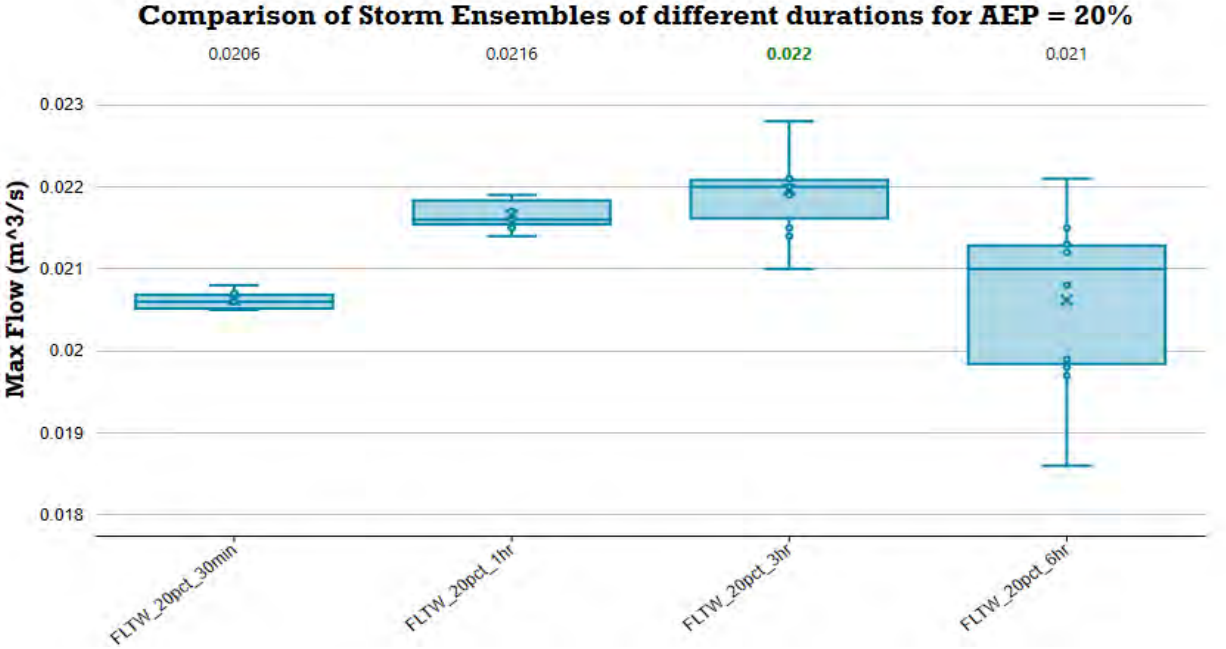

Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.58
Max Water Depth (m)
0.61
0.6
0.59
0.58
0.57
0.56
0.55


Comparison of Storm Ensembles of different durations for AEP = 63.2%
100.6536
Max Volume (m^3/s)
108
104
100
96
92


Comparison of Storm Ensembles of different durations for AEP = 63.2%
0.0186
Max Flow (m^3/s)
0.0192
0.019
0.0188
0.0186
0.0184
0.0182
FLTW_63pct_1hr
Ensemble


Comparison of Storm Ensembles of different durations for AEP = 20%
0.7007
0.769
0.7925
0.7288
Max Water Depth (m)
0.9
0.8
0.7
0.6


Comparison of Storm Ensembles of different durations for AEP = 20%
136.6868
159.8869
168.3612
146.0164
Max Volume (m^3/s)
200
180
160
140
120
100


Comparison of Storm Ensembles of different durations for AEP = 20%
0.0206
0.0216
0.022
0.021
Max Flow (m^3/s)
0.023
0.022
0.021
0.02
0.019
0.018
FLTW_20pct_30min
FLTW_20pct_1hr
FLTW_20pct_3hr
FLTW_20pct_6hr

APPENDIX F
CORRESPONDENCE FROM DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION

From: **Karen McKeough** karen.mckeough@dwer.wa.gov.au
Subject: RE: Lot 621 Harlequin Street, Denmark
Date: 3 January 2020 at 3:51 pm
To: Rebecca Epworth rebecca.epworth@coterra.com.au
Cc: Martin Buczak engineer2@denmark.wa.gov.au, Craig Pursey craig.pursey@denmark.wa.gov.au, Mitchell Wells (mitchwells@icloud.com) mitchwells@icloud.com, Sam Williams samwilliams@westnet.com.au, Angus Turner angus.turner@gmail.com

KM

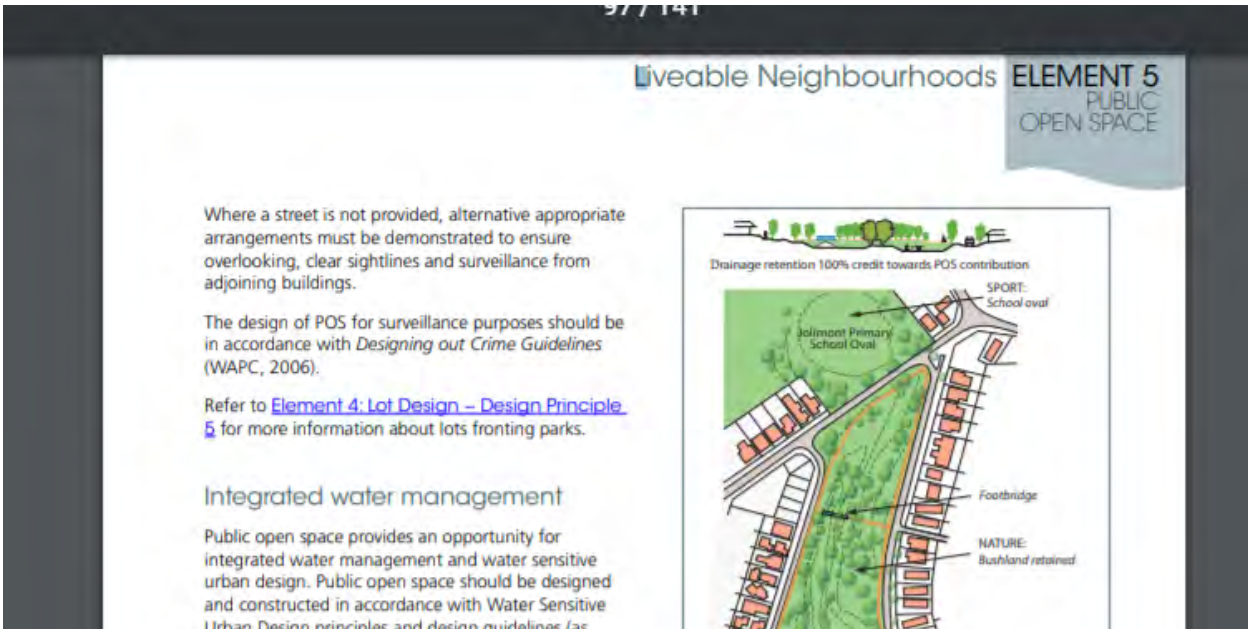
Hi Rebecca,
Yes you are correct. As per the *Decision Process for Stormwater Management in WA,* you should consider the existing upstream land use catchment (also assuming the dam is not present) for your modelling exercise. My apologies for providing incorrect advice.

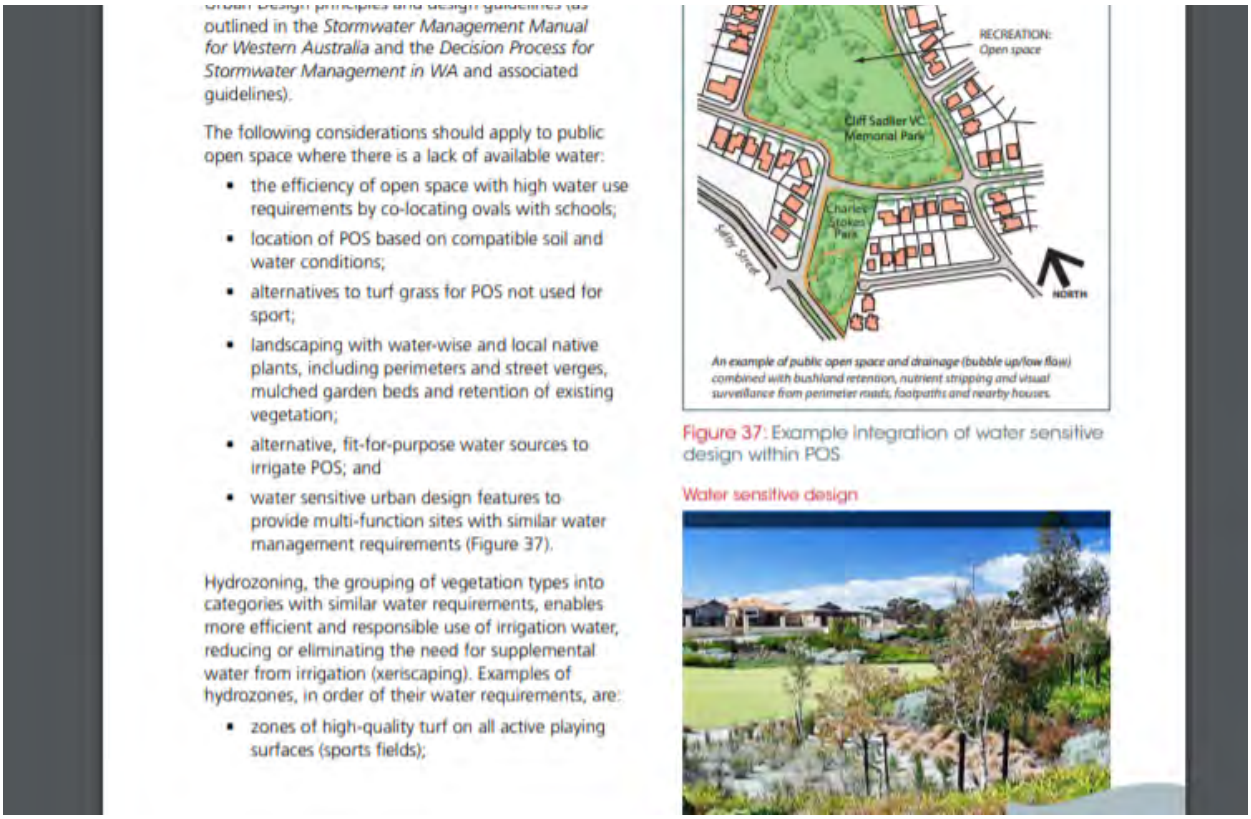
With regard to the foreshore setback, I would suggest that there should be a development setback based on the 1% AEP, however there may be other criteria associated with the foreshore POS, i.e. pathways or stormwater treatment infrastructure that may influence the final boundaries of the POS.

As for the draft concept design for the site that was previously provided, the proposed design that shows rear of the lots backing onto the POS is not supported by DWER.
Liveable Neighbourhoods provides strategies for good design of POS. Lot design should allow for surveillance of the POS through the use of road or pathway frontage to the POS.
See illustration below, extracted from Liveable Neighbourhoods.

Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
5 Bevan Street, ALBANY WA 6330
PO Box 525, ALBANY WA 6330
T: (08) 9841 0128 | VOIP - 1528
E: karen.mckeough@dwer.wa.gov.au | www.dwer.wa.gov.au





urban design principles and design guidelines (as outlined in the *Stormwater Management Manual for Western Australia* and the *Decision Process for Stormwater Management in WA* and associated guidelines).

The following considerations should apply to public open space where there is a lack of available water:

- the efficiency of open space with high water use requirements by co-locating ovals with schools;
- location of POS based on compatible soil and water conditions;
- alternatives to turf grass for POS not used for sport;
- landscaping with water-wise and local native plants, including perimeters and street verges, mulched garden beds and retention of existing vegetation;
- alternative, fit-for-purpose water sources to irrigate POS; and
- water sensitive urban design features to provide multi-function sites with similar water management requirements (Figure 37).

Hydrozoning, the grouping of vegetation types into categories with similar water requirements, enables more efficient and responsible use of irrigation water, reducing or eliminating the need for supplemental water from irrigation (xeriscaping). Examples of hydrozones, in order of their water requirements, are:

- zones of high-quality turf on all active playing surfaces (sports fields);

An example of public open space and drainage (bubble up/low flow) combined with bushland retention, nutrient stripping and visual surveillance from perimeter roads, footpaths and nearby houses.

Figure 37: Example integration of water sensitive design within POS

Water sensitive design

From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Monday, 30 December 2019 12:03 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Martin Buczak <engineer2@denmark.wa.gov.au>; Craig Pursey <craig.pursey@denmark.wa.gov.au>; Mitchell Wells (mitchwells@icloud.com) <mitchwells@icloud.com>; Sam Williams <samwilliams@westnet.com.au>; Angus Turner <angus.turner@gmail.com>
Subject: Re: Lot 621 Harlequin Street, Denmark

Hi Karen,

Apologies for the delay is getting back to you on this - Regarding your comments below. The proponent is happy to undertake modelling of the upstream catchment from the subject site to determine the 1% AEP flood area within the watercourse (with the assumption the current neighbouring dam is not present or is removed).

However regarding this comment "You will need to consider the future fully developed upstream catchment, which will likely see an increase in runoff as greenfield areas are developed". DWERs policy *Decision Process for Stormwater Management in WA* specifies that to manage catchments, proponents need to;

- *"Maintain the 1 per cent annual exceedance probability (AEP) pre-development flood regime (flood level, peak flow rates and storage volumes) for catchments that do not have a published catchment plan"*

Given it is the responsibility of each land owner/developer to maintain the predevelopment hydrological regime, if they are changing their land use from rural to urban, we understand that it is their responsibility to assess and manage the implications of that (not for the downstream land owner to accommodate increases in flows due to increased runoff from urbanisation). Given each developer will need to maintain the predevelopment (rural) flows on their site as

per the criteria above, even if the upstream catchment is urbanised, the pre development flows of the current catchment that we are modelling will remain the same. As such we are proposing to model the upstream catchment based on the current land use scenario.

I trust it is sufficient that the foreshore setback on site will then be based on the flood extent of the 1% AEP event (as modelled without the neighbouring dam present, and the current catchment land uses)?

I look forward to hearing from you.

Thanks, Bec

Rebecca Epworth
Director
BSc (Hons), MSc, MSc(Eng)

COTERRA ENVIRONMENT

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From: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Sent: Thursday, 17 October 2019 10:48 AM
To: Rebecca Epworth <rebecca.epworth@coterra.com.au>
Cc: Martin Buczak <engineer2@denmark.wa.gov.au>; Craig Pursey <craig.pursey@denmark.wa.gov.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Rebecca,
I have spoken to the Shire of Denmark regarding this matter.
We all agree, that as the large dam immediately upstream of the subject site is in private property the Shire has no long term control over how the dam is managed, or even retained. While the current owners have established a water regime that influences flow on the subject site, there is no guarantee that water regime will continue into the future when the property is sold. DWER and Shire of Denmark need to be confident that infrastructure and private housing

is going to be located appropriately and not at risk of flooding. The Shire will wear the cost of flooding impacts if for some reason the dam is removed or fails.
Coterra will need to model the entire upstream catchment from the subject site to determine the 1% AEP. You will need to consider the future fully developed upstream catchment, which will likely see an increase in runoff as greenfield areas are developed. Once the 1% event is modelled setbacks to the waterway or FFL need to be created to protect future development from flooding.
See catchment map below that shows the large area upstream of the dam.
Please contact me if you require any further information.
Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
5 Bevan Street, ALBANY WA 6330
PO Box 525, ALBANY WA 6330
T: (08) 9841 0128 | VOIP - 1528
E: karen.mckeough@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Thursday, 10 October 2019 3:57 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Sam Williams <samwilliams@westnet.com.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Karen,

Thank you for your response. Regarding the future of the upstream dam located on Lot 1203 South Coast Highway:

- Historical aerial photographs (Landgate) show that the dam has been there for at least 60

- Historical aerial photographs (Landgate) show that the dam has been there for at least 60 years (present in the earliest aerial photo available in 1961).
- On 25 August 2009, the Shire of Denmark introduced a Dams and Water Features Policy under their Town Planning Scheme No.3 requiring town planning approval for the construction of dams of a certain size. The policy states in the introduction:
    - "P*reviously farm dams for the purpose of stock watering, aquaculture, irrigation, farm water supply or similar rural activities did not require approval from Council. "*
    - Given the dam was constructed before 2009, retrospective planning approval cannot be requested by the Shire of Denmark so from a planning perspective the dam would not be required to be removed.
- With regards to whether there is future intention to remove the dam. It is also noted the owner of the dam has recently undertaken significant works to turn have a significant water feature. The works include the placement of large rocks to create a waterfall and it is understood a pump has been installed to recirculate the water and make the waterfall flow year round. Given this investment, it can be assumed the owner of the dam has no intention of removing it.

Regarding the 1% AEP modelling:

- Given the planning status of the dam, the long historical presence of the dam and the likely future intentions of the dam, it is considered that the dam will most likely remain.
- The current watercourse ecology and habitats would all be reflective of the current water regime (ie having an upstream dam) as it has evolved to be reflective of that.
- Modelling the upstream catchments for the watercourse and determining the 1% AEP inundation levels would not be reflective of the past 60 years, the current situation or the most likely future scenario and so perhaps this would not be appropriate to base the design on?
- Given the dam only lets out small flows and under controlled circumstances, we consider that the main catchment to the existing watercourse is actually the site runoff catchment.
- The site runoff volumes will be managed though the drainage design and sizing (which will be presented in the LWMS).
- Would this be an acceptable approach instead?

Regarding the green corridor:

- Yes, we can confirm it will be rehabilitated, as agreed with the client, and it will become a green corridor in the form of POS ceded to the crown free of cost.
- We are proposing to set back the corridor as per the current DRAFT concept plan if you are supportive in principal, subject to further detail in the LWMS?

Thank you for you advice, look forward to hearing from you.

Thanks, Bec

Rebecca Epworth
Director
BSc (Hons), MSc, MSc(Eng)

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---

From: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Sent: Tuesday, 8 October 2019 9:48 AM
To: Rebecca Epworth <rebecca.epworth@coterra.com.au>
Subject: RE: Lot 621 Harlequin Street, Denmark

Hi Rebecca,
DWER would be supportive of the proposed strategy to manage surface water and the waterway on the property. The upstream dam is a bit challenging for your planning/design calculations. Maybe you should still model the 1% AEP and allow for this setback in your design. The current management of the dam may not continue into the future. I would check in with the Shire of Denmark about this as well.
DWER would like to see the waterway rehabilitated and become a green corridor.
Regards,

Karen McKeough
Program Manager – Planning Advice
South Coast Region
Department of Water and Environmental Regulation
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PO Box 525, ALBANY WA 6330
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E: karen.mckeough@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Rebecca Epworth [mailto:rebecca.epworth@coterra.com.au]
Sent: Monday, 7 October 2019 4:17 PM
To: Karen McKeough <karen.mckeough@dwer.wa.gov.au>
Cc: Sam Williams <samwilliams@westnet.com.au>
Subject: Lot 621 Harlequin Street, Denmark

Hi Karen,

We are working on a site on Harlequin Street and South Coast Highway in Denmark. We have been commissioned to undertake the Local Water Management Strategy (LWMS) for the site. Prior to undertaking, I just wanted to touch base with you regarding the site and the likely concerns or requirements the Department might have. Firstly, as a bit of background please find below a summary of the site characteristics;

- There is a drainage line/ephemeral watercourse transecting the site flowing from west to east.
    - The neighbouring western Lot 617 contains a large dam, which restricts flow to the drainage line intersecting the northern portion of the proposed development. Historical aerial photography indicates this dam has been present since at least 1962, which is as far back as records show (Landgate, 2019).
    - Analysis of topographic contours indicate this dam receives water from a the north west catchment.

- The flow of this drainage line is largely dependent on the overflow requirements (if any) of the dam.
- It is understood that the dam water is recirculated (overflow to a small waterfall and pumped back into the dam) to aid with aeration and water quality.
- It is also understood that any overflow that comes from the dam and results in flow going down this drainage line is via a controlled release of water. The flow in the watercourse is therefore not reflective of the overall catchment size or any 'normal' hydrological response to the catchment and rainfall/climate. The flow regime and extent of water inundation is currently entirely artificial and without seasonal patterns.
- The controlled release of water from the dam for stock watering has been previously observed.
- The drainage line is relatively deep and well defined (photos will be provided in the LWMS).
- The vegetation appears to be sparse along most of the drainage line with clumps of denser vegetation. A vegetation survey is going to be undertaken this month (spring survey) to confirm however. In addition the current concept plan idenfiies the retention of the dense clumps of vegetation across the drainage line (but also across the site in general). The vegetation on the drainage line can be seen in the aerial below (as can the neighbouring dam).

- There are no wetlands on site.
- The site topography shows slight undulation, with a high point across the middle. Site topographic contours indicate the north-east corner sits at 31 mAHD, the low point of the drainage channel. The land slopes down on either side of this channel. The high-point of the site is approximately mid-way down to the south, sitting at 60 mAHD. This high point then slopes down towards the south to approximately 34 mAHD.
- The Geotech study indicates the northern half of the site is comprised of Colluvium soils, with an area of Sand in the north-east corner. The southern half of the site is comprised of porphyritic biotite granite and adamellite, which is partially exposed and mapped as a dolerite dyke (DMP, 2015).
- There is limited regional groundwater information however the Geotech study was undertaken in September 2019 which is expected to coincide with the peak groundwater period and therefore reflective of maximum groundwater levels at the site. No other monitoring has been undertaken.
    - Water seepage above the clay layer was found at 5 test pits in the northern end of the site (in proximity of the drainage line).
    - This suggests a perched water table may exist in the northern portion of the site.
    - The depth varies depending on the clay layer depth but in the pit locations this varied between 0.4m and 1.1m below ground level.
- The site will be sewered so there will be no onsite wastewater disposal.

Please find attached the DRAFT concept design, this is a working draft only. The overall drainage and stormwater strategy is still being determined and the LWMS will cover this with the information required as per the BUWM guidelines. However at this point in the design, we just wanted to touch base with you regarding the proposed POS area surrounding the drainage line. It is proposed the water course and an area on either side of it will be ceded to the Crown for POS. The POS design has incorporated tree retention where possible and some setbacks from lots taking into account the unusual hydrological nature of the drainage line. Could you please provide comment on whether you see any particular issues with the proposed area? Or you would be looking for any further specific information in the LWMS?

If you need further information please do not hesitate to contact me.

Thanks, Bec

Rebecca Epworth

Director
BSc (Hons), MSc, MSc(Eng)

COTERRA ENVIRONMENT

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Coterra would like to congratulate our clients and thank them for the opportunity to be involved with the following projects that have won awards over the last two years:

- 2018 UDIA WA Environmental Excellence Award – Rosehill Waters for Noahs Rosehill Waters
- 2018 UDIA WA Residential Development Award – Trinity at Alkimos for Northern Corridor Developments
- 2018 UDIA EnviroDevelopment Certification 6 leaves – Catalina Beach and Catalina Grove for Tamala Park Regional Council and Satterley Property Group
- 2018 Stormwater Western Australia Excellence in Strategic or Master Planning – Rosehill Waters
- 2018 Australian Water Association Water Sensitive Urban Design (Grahame Heal) Award – Rosehill Waters
- 2017 UDIA National Environmental Excellence Award – Osprey Waters for Mirvac
- 2017 UDIA WA EnviroDevelopment Chairman's Award – Rosehill Waters for Noahs Rosehill Waters
- 2017 UDIA EnviroDevelopment Certification 6 leaves – Rosehill Waters for Noahs Rosehill Waters
- 2017 UDIA WA Urban Water Excellence Award – White Gum Valley for LandCorp.

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APPENDIX G
HYDROLOGICAL FLOOD STUDY

28 February 2020

Your Ref:
Our Ref: H19075Av1

Mitchell Wells
c/o Coterra
Level 3, 25 Prowse St
West Perth WA 6005

ATTENTION: Mitchell Wells

Dear Mitchell,

RE: LOTS 1 & 621 SOUTH COAST HIGHWAY, DENMARK: FLOOD STUDY

Please find below Hyd2o's report detailing the results of our field investigation and analysis to determine the 1% average exceedance probability (AEP) flood levels for the waterway within Lots 1 & 621 South Coast Hwy in Denmark.

1. BACKGROUND

Lots 1 & 621 South Coast Hwy are located within the Denmark townsite in the Shire of Denmark. The site is bounded by South Coast Hwy to the north west, existing subdivision to the south east and rural type landholdings in other directions (Figure 1).

The site is a former rural landholding with an existing dwelling and several small sheds. A local structure plan is proposed for the site which includes residential development and associated public open space. An unnamed waterway runs through the site from the western boundary to the north east boundary. Immediately upstream of the site is a dam which collects the majority of catchment flows from the waterway north of South Coast Hwy. The waterway flows through neighbouring residential properties until its ultimate discharge into Wilson Inlet.

This report provides estimates of 1% AEP flood levels and floodplain mapping for the waterway to assist the planning process for this development. No previous Department of Water and Environmental Regulation (DWER) estimates of peak flows or flood levels exist for this site.

2. FIELD INVESTIGATION

A field investigation of the site was conducted by Hyd2o on 23 December, 2019. During this visit, Hyd2o gained familiarity with the site, reviewed the local topography, and assessed the channel condition to enable assessment of Manning's n roughness coefficient for modelling purposes. Hyd2o also identified the positioning and sizes of all

hydraulic structures which were considered likely to affect flood levels and backwater conditions.

No significant debris outside of the main river channel was observed during the field investigation indicating recent flooding of the river outside of the main channel had not occurred.

The field investigation also determined the locations for surveyed river cross sections and culvert locations along the waterway. The survey was undertaken by Harley Dykstra Planning and Survey Solutions on 19 February 2020 key locations of cross sections and culverts are shown in Figure 1.

3. SURFACE WATER HYDROLOGY

The contributing catchment area to the waterway is estimated to be 2.16 km^2 with 45% of the catchment estimated to be cleared. The main stream length is estimated as 2.9 km and there is a fall of 150m along its length. A catchment map is provided as Figure 2 which shows that the catchment is predominantly on the upstream side of South Coast Hwy.

There are six culvert locations that convey flows across the catchment with a total of 10 individual barrels ranging in size from 375 mm diameter to 600 mm diameter. Table 1 below summarises the location, size, and number of barrels at each culvert location. Hyd2o have also estimated culvert capacities prior to the road overtopping based on application of HY-8, a specialist culvert hydraulic computation model. These capacities are used as a cross check for flow estimates given known frequencies of road overtopping. The sum of flows generated from HY-8 culvert capacity estimates is 4.5 m^3/s.

Culvert C7 is located immediately downstream of the site and provides a similar capacity to incoming flow across South Coast Hwy by providing approximately 4.7 m^3/s providing a crossing for a local track. Culvert C8 is where the waterway crosses Ocean Beach Road and is used as the backwater condition for the model.

Table 1: Existing Culvert Capacities (ex GST)

Culvert	Location	Easting	Northing	Diameter (mm)	Estimated Capacity (m3/s)
C1	South Coast Hwy	530801	6130321	375	0.3
C2	South Coast Hwy	530873	6130358	3 x 600	1.7
C3	South Coast Hwy	530988	6130430	375	0.3
C4	South Coast Hwy	531018	6130444	600	0.7
C5	South Coast Hwy	531056	6130453	450	0.4
C6	South Coast Hwy	531179	6130494	375	0.3
C7	South Coast Hwy	631342	6130611	2 x 450	0.8
C8	Track South of Site	531613	6130592	1500 x 1200	4.7
C9	Ocean Beach Rd	531988	6130611	3 x 1200	9.9

Figure 1 also shows the location of a surface water dam which this catchment drains into. Upon request from DWER, the modelling undertaken as part of this study does not account for the dam and assumes that all catchment flows are directed towards the waterway with no retention/detention in the dam.

4. ESTIMATION OF DESIGN FLOWS

Hyd2o estimates of peak flows for the catchments for a range of storm events up to the 1% AEP for predevelopment conditions based on applying various methodologies are summarised in Table 2 with detailed model outputs contained in Attachment A.

It should be noted that latest version of Australian Rainfall and Runoff (Ball et al, 2016) has resulted in changes in terminology being recommended to describe design rainfalls. Generally, Exceedance per Year (EY) terminology is recommended to be used for very frequent design rainfalls, Annual Exceedance Probability (AEP, %) terminology used for frequent and infrequent design rainfalls, and AEP (1 in x) terminology used for rare design rainfalls. For the purpose of this report, Average Recurrence Interval (ARI) terminology is therefore replaced with the updated terminology where appropriate as follows:

- 2 Year ARI – replaced with 0.5 EY
- 5 Year ARI – replaced with 0.2 EY
- 10 Year ARI – replaced with 10% AEP (approximate only as 10% AEP is 9.49 Year ARI)
- 20 Year ARI – replaced with 5% AEP
- 50 Year ARI – replaced with 2% AEP

- 100 Year ARI – replaced with 1% AEP

The various methods used to estimate flows included:

- Australian Rainfall and Runoff 1987 regional flood estimation methods including the Rational Method and Flood Index Methods,
- The Australian Rainfall and Runoff 2016 Regional Flood Frequency Estimation (RFFE) method

Table 2 recommends a design flows for use based on consideration of the various results via the different methods. A review of ARR 2016 RFFE methods indicates an overestimate of flow. Upon review of the gauging stations in its automated analysis the generated flows are equivalent to a nearby catchment that is approximately 50 km^2 in comparison to the 2.16 km^2 catchment considered here. On this basis it is considered major events may be overestimated in this area using this technique. RFFE inputs and estimates are provided as Attachment A to this report.

It is recommended ARR 1987 rational method flow estimates be adopted for design purposes.

Table 2: Pre Development Flow Estimates

Storm ARI	ARR 1987 Rational (m^3/s)	ARR 1987 Index Flood (m^3/s)	Storm New Term.	ARR 2016 RFFE (m^3/s)	Recommended Design Flow (m^3/s)
2	1.38	1.28	0.5 EY	0.71	1.38
5	2.39	2.24	0.2 EY	1.96	2.39
10	3.34	3.26	10% AEP	3.37	3.34
20	4.63	4.48	5% AEP	5.30	4.63
50	6.55	6.53	2% AEP	8.89	6.55
100	8.0	8.0	1% AEP	12.6	8.0

5. ESTIMATION OF 100 YEAR FLOOD LEVELS

A HECRAS model of the waterway were developed based on site survey undertaken by Harley Dykstra (2020) with key locations shown in Figure 1.

Individual modelled cross section outputs from HECRAS are provided in Attachment 2. The model was extended downstream of the site to Ocean Beach Rd to establish the starting backwater for the system.

Manning roughness coefficients were estimated based on field observations and correlated to Chow (1959). A value of 0.035 was used to represent overbank flow which occurs within a grassed paddock. A value of 0.04 was used for the main river channel for the waterway which is characterised by some weeds and underbrush, with a smooth base and no sluggish sections.

Estimated 1% AEP flood levels and associated floodplain are shown in Figure 3. Floodplain mapping is considered to be accurate at each surveyed cross section and interpolated based on 2m topography between sections.

Flood levels within the site vary from 37.74 mAHD at the upstream boundary to 31.21 mAHD at the downstream boundary, flood levels at each cross section are provided in Table 3 below and Figure 3.

Table 3: 1% AEP Flood Levels

Cross Section	Flood Level (mAHD)
XS1	37.74
XS2	35.46
XS3	34.75
XS4	32.47
XS5	32.12
XS6	31.69
XS7	31.61
XS8	31.21

It should be noted that culvert C8 is modelled as part of this study and was found to overtop the track in the 1% AEP. An upgrade of this culvert as part of subdivisional works may be considered to further lower flood levels within the site.

DWER typically require development levels to be 0.5m above the 1% AEP, and no anecdotal evidence is known to exist for the site to indicate a higher clearance requirement is required. It is however recommended that advice on a suitable clearance above the 1% AEP flood level be requested from DWER in review of this report to inform the development levels.

6. REFERENCES

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2016, Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia.

Chow, V.T. (1959) Open Channel Hydraulics

Engineers Australia (2003) Australian Rainfall and Runoff – A Guide to Flood Estimation Volumes 1&2

Should you have any queries regarding this report, please do not hesitate to contact Sasha Martens or Suzanne Smart of this office.

Yours sincerely,

Suzanne Smart

Senior Environmental Hydrologist

Figures
1. Location Plan
2. Catchment Plan
3. 1% AEP Floodplain Mapping

Attachments
1. Peak Flow Estimates: ARR 1987 Methods & RFFE 2016
2. Modelled Cross Sections

This document is published in accordance with and subject to an agreement between Hyd2o and the Client for whom it has been prepared, and is restricted to those issues that have been raised by the Client in its engagement of Hyd2o. It has been prepared using the skill and care ordinarily exercised by hydrologists in the preparation of such documents. Hyd2o recognise site conditions change and contain varying degrees of non-uniformity that cannot be fully defined by field investigation. Measurements and values obtained from sampling and testing in this document are indicative within a limited timeframe, and unless otherwise specified, should not be accepted as conditions on site beyond that timeframe. Any person or organisation that relies on or uses the document for purposes or reasons other than those agreed by Hyd2o and the Client does so entirely at their own risk. Hyd2o denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence of relying on this document for any purpose other than that agreed with the Client.

Date:27/02/2020 Job No. H190075

Site

Culvert Locations

Waterway Cross Sections

hyd2o

Lots 1 & 621 South Coast Hwy: Flood Study

Location Plan

Figure 1

Date : 28/02/2020 Job No H19075

Easting 531613 Northing 6130582, Area 216 ha, 2.9 km mainstream length, 30mAHD-180mAHD mainstream drop (catchment length to width ratio 4:1)

hyd$_2$o

Lots 1 & 621 South Coast Hwy, Denmark: Flood Study

Catchment Plan

Figure 2

Date:27/02/2020 Job No. H19075

Site

Topography (mAHD)

1% AEP Flood Level (mAHD)

1% AEP Floodplain

hyd2o

Lots 1 & 621 South Coast Hwy: Flood Study

1% AEP Floodplain Mapping

Figure 3

Attachment 1

AR&R 1987 Peak Flow Calculator

SOUTH WEST REGION

hyd2o HYDROLOGY

Catchment name	Denmark
Catchment type	Jarrah forest with loamy soils

RATIONAL METHOD

Catchment area	2.16	km^2
Mainstream length	2.9	km
Slope	50.0	m/km
Catchment cleared	45.0	%

C_{10} =	0.458		C10=2.15*10-1 *100.0073Cl
t_c =	210.1	mins	tc=2.31A $^{0.54}$
	3.5	hours	

$Q_y = 0.278\ C_{10}*(C_y/C_{10})\ I_{tc}\ A$

ARI (yrs)	2	5	10	20	50	100	
C_y/C_{10}	0.57	0.80	1.00	1.20	1.42	extrapolate	
I_{tc} values	8.82	10.84	12.16	14.04	16.77		mm/hr
Q =	1.38	2.39	3.34	4.63	6.55	8.00	m^3/s

INDEX FLOOD METHOD

Catchment area	2.16	km^2
Annual rainfall	1040.0	mm
Slope	50.0	m/km
Mainstream length	2.9	km
Catchment cleared	50.0	%

Q2 =	1.280	Q2 = 3.68*10-8 A0.68 P 2.29 100.0081CL

$Q_y = Q_2*(Q_y/Q_2)$

ARI (yrs)	2	5	10	20	50	
(Q_y/Q_2)	1.00	1.75	2.55	3.50	5.10	
Q =	1.28	2.24	3.26	4.48	6.53	m^3/s

Regional Flood Frequency Estimation Model

Release Version of the Regional Flood Frequency Estimation Model for the 4th edition of Australian Rainfall and Runoff.

Input Data

Basic | Advanced

Catchment Name

Denmark

Catchment Outlet Latitude

-34.967

Catchment Outlet Longitude

117.346

Catchment Centroid Latitude

-34.964

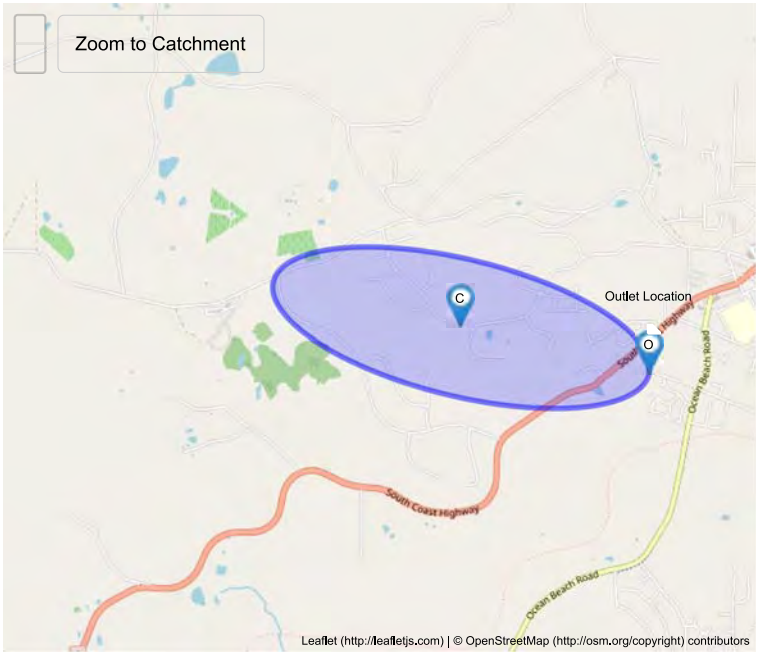
Catchment Centroid Longitude

117.331

Catchment Area (km²)

2.16

Submit

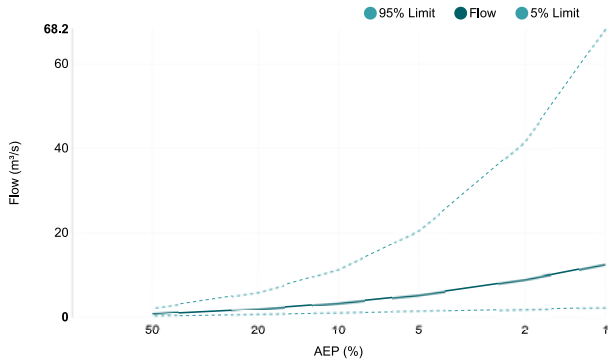


Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

(http://www.engineersaustralia.org.au)

(http://www.uws.edu.au)

Results | Regional Flood Frequency Estimation Model



AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	0.710	0.240	2.16
20	1.96	0.660	5.98
10	3.37	1.01	11.3
5	5.30	1.38	20.4
2	8.89	1.89	41.6
1	12.6	2.30	68.2

Input Data	
Date/Time	2019-12-04 11:34
Catchment Name	Denmark
Latitude (Outlet)	-34.967
Longitude (Outlet)	117.346
Latitude (Centroid)	-34.964
Longitude (Centroid)	117.331
Catchment Area (km^2)	2.16
Distance to Nearest Gauged Catchment (km)	13.62
50% AEP 6 Hour Rainfall Intensity (mm/h)	4.951491
2% AEP 6 Hour Rainfall Intensity (mm/h)	10.684031
Rainfall Intensity Source (User/Auto)	Auto
Region	SW WA
Region Version	RFFE Model 2016 v1
Region Source (User/Auto)	Auto
Shape Factor	0.96
Interpolation Method	Natural Neighbour
Bias Correction Value	1.705

Statistics

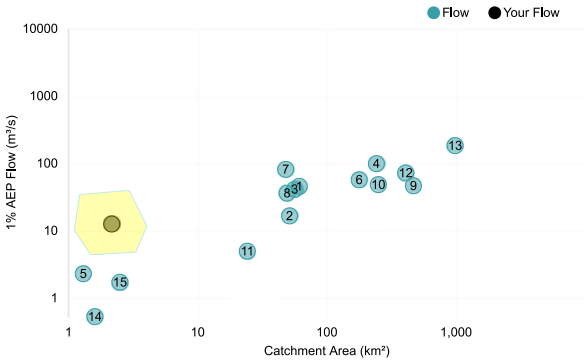
Variable	Value	Standard Dev
Mean	-0.202	0.677
Standard Dev	1.199	0.423
Skew	0.100	0.092

Note: These statistics come from the nearest gauged catchment. Details.

Correlation		
1.000		
-0.280	1.000	
-0.050	-0.070	1.000

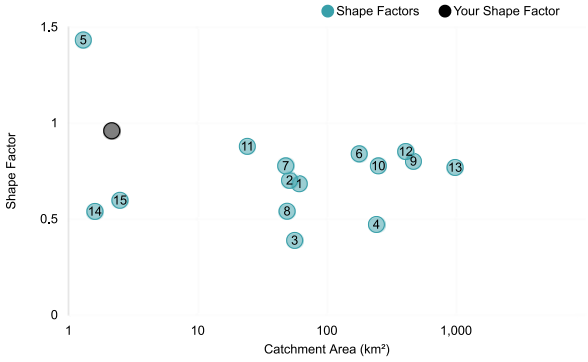
Note: These statistics are common to each region. Details.

1% AEP Flow vs Catchment Area

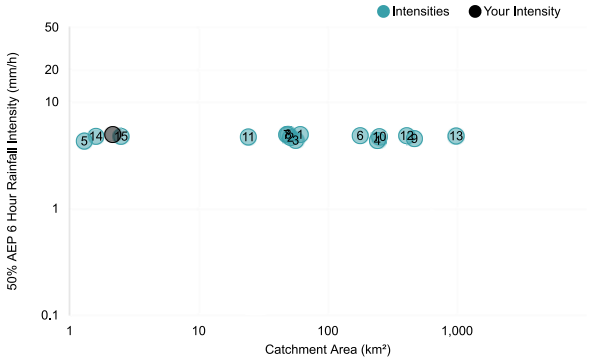


Shape Factor vs Catchment Area

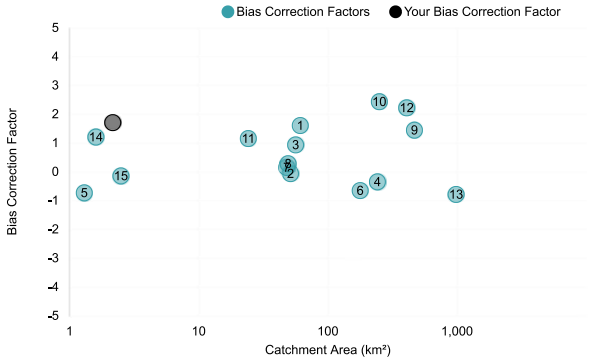
Note: This region does not use shape factors



Intensity vs Catchment Area



Bias Correction Factor vs Catchment Area



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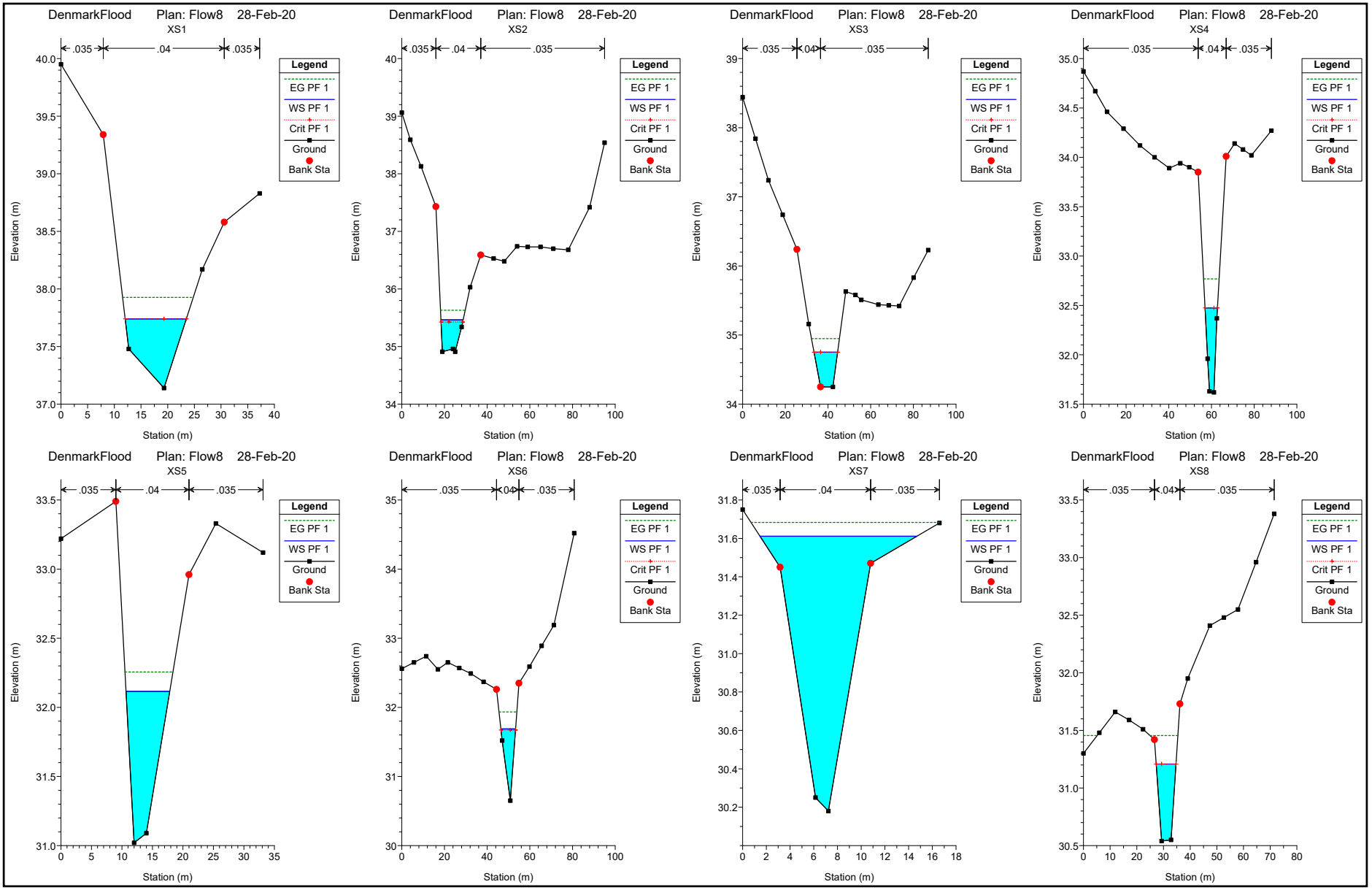
TXT | Nearby | JSON

Method by Dr Ataur Rahman and Dr Khaled Haddad from Western Sydney University for the Australian Rainfall and Runoff Project. Full description of the project can be found at the project page (http://arr.ga.gov.au/revision-projects/project-list/projects/project-5) on the ARR website. Send any questions regarding the method or project here (mailto:admin@arr-software.org).

ENGINEERS AUSTRALIA (http://www.engineersaustralia.org.au)

WESTERN SYDNEY UNIVERSITY (http://www.uws.edu.au)

Attachment 2



APPENDIX H
LANDSCAPE MANAGEMENT PLAN

LOT 621 HARLEQUIN ST AND LOT 1 SOUTH COAST HWY, DENMARK

LANDSCAPE MANAGEMENT PLAN

Prepared for:	Turner & Wells Pty Ltd
Report Date:	11 August 2025
Version:	2
Report No.	2025-905

pgv ENVIRONMENTAL

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Appendix 1: Proposed Structure Plan

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1 INTRODUCTION

1.1 Background

Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark (the site), are currently undergoing Structure Planning to develop the site for residential purposes (Appendix 1).

The site is currently zoned 'Urban Development' under the Shire of Denmark Town Planning Scheme No.3 and has been largely cleared and used for cattle grazing for many years. Some native vegetation and stands of trees have been retained on various parts of the property, including along a creekline that runs through the northern part of the site, on the central ridgeline and at the southern end.

The Shire of Denmark has indicated that a Landscape Management Plan (LMP) should be prepared as part of the Structure Planning process for the following purpose:

> *A Landscape Management Plan to optimise environmental and landscape amenity outcomes for retention of remnant vegetation, and the protection of view lines from South Coast Highway, the Denmark-Nornalup Rail Trail and adjacent established residential areas.*

The landowners commissioned PGV Environmental to prepare this LMP.

1.2 Site Location

The site is located on the southern side of South Coast Highway, approximately 1.4km south-west of the Denmark town centre (Figure 1). The site is approximately 16.88ha in size and is bound by South Coast Highway and the unmade section of Harlequin Street to the north, residential development and some small rural properties to the east and cleared rural land to the west and south (Figure 2).

1.3 Scope of Works

The scope of work for the Landscape Management Plan is as follows:

- A description of the areas to be landscaped in the Structure Plan;
- The objective for each area, including passive open space, recreation or conservation;
- Management measures during civil works for the protection of vegetation to be retained;
- Recommendations for plant species to be used in landscaped areas; and
- The design of landscaped areas to protect view lines from South Coast Highway, the Denmark-Nornalup Rail Trail and adjacent established residential areas.

2 POLICY AND GUIDELINES

Preparation of the Landscape Management Plan has taken into consideration the following legislation, policy and guidelines and these will guide the required and expected management outcomes from the State and Local government agencies.

2.1 State Policy and Guidance

2.1.1 Visual Landscape Planning in Western Australia

The Visual Landscape Planning Manual prepared by the WAPC (2007) was developed to help public and private sector planners address visual landscape in the planning process. The manual explains the fundamental planning tools of visual landscape evaluation and visual impact assessment. It also provides guidelines for siting and design in relation to a range of landscape types and land uses, including urban development land uses and states the importance of considering the potential cumulative visual impacts resulting from the progressive stages of development.

The methodology used for the visual impact assessment in this report follows the guidelines set out in the manual.

2.1.2 State Planning Policy No. 2 Environment and Natural Resources

The Environment and Natural Resources Policy (WAPC, 2003) defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues within the framework of the State Planning Strategy. This policy also identifies the importance of protecting and enhancing landscapes and states the need for:

- Identification and protection of landscapes with high natural resource value
- Careful planning, siting and design of development proposals in a way that is sensitive to the landscape character
- Landscape or visual impact assessment for proposals that may impact on sensitive landscapes (WAPC, 2003).

2.1.3 Environmental Guidance for Planning and Development

The purpose of Environmental Protection Authority (EPA) Guidance Statement No. 33 *Environmental Guidance for Planning and Development* (EPA, 2008) is to outline the significance of environmental factors and to provide the key definitions associated with the environmental factors. In particular, EPA Guidance Statement No. 33 aims to:

- Provide an overview to environmental protection processes and information;
- Describe the referral and environmental impact assessment process under Part IV of the EP Act; and
- Provide the EPA's position and advice on a range of environmental factors, outlining how to protect, conserve and enhance the environmental values.

2.1.4 A Guide to Preparing Revegetation Plans for Clearing Permits

The *Guide to Preparing Revegetation Plans for Clearing Permits (DWER, 2013)* provides guidance on revegetation methodologies, which can also be applied when revegetating areas with the aim of

creating a more natural landscape character. The guide recommends researching the surrounding environment to determine the vegetation types likely to have naturally occurred in the area, ensuring that revegetation efforts are ecologically appropriate and contextually integrated.

2.2 Shire of Denmark

The Shire of Denmark has a number of Local Planning Policies (LPPs) that detail the Shire's expectations with regards to managing the environment during planning and development as well as the factors that need to be considered throughout the planning process. Key LPPs and other guidelines that are applicable to the landscaping on the site are outlined below:

- Shire of Denmark *Sustainability Strategy 2021-2031* (Shire of Denmark, 2021) which outlines the overarching goal of sustainable living; and
- Shire of Denmark Town Planning Scheme Policy No. 39 *Public Open Space* (Shire of Denmark, 2010) which outlines the requirements for different types of Public Open Space such as the proposed foreshore reserve.

3 EXISTING ENVIRONMENT

3.1 Topography

The site is undulating with a central high point at around 60m AHD that slopes down to the north and south boundaries with elevations of around 32m AHD at the northern end and 42m AHD at the southern end (Figure 2).

3.2 Geology and Soils

The site is located mostly on the Walpole Hills System which are granitic hills and low hills, in the south of the Warren-Denmark Southland and the Broke System in the north-eastern part which are poorly drained plain with low granitic rises, along the coast of the Warren-Denmark Southland (DPIRD, 2025). Sate Regolith maps the site as mostly *Exposed rock, saprolite, and saprock* with an area of *Slope deposits; includes colluvium and sheetwash* in the north-east (DMIRS, 2025).

The soils on the site are described as Keystone Brown Duplex Phase (254WhKYb) which are brown gravelly duplex soils and red of yellow earths with much laterite typically associated with Marri-Karri-Red Tingle-Yellow Tingle forest (DPIRD, 2025). The north-eastern is mapped as Owingup Subsystem (254BrOW) which are plains with swamps, lunettes and dunes with yellow solonetzic soils, organic loams and diatomaceous earth and Podzols on dunes. This soil system is associated with Wattle-Paperbark thickets, Teatree heath and reeds and the dunes typically have Banksia-Sheoak woodland (DPIRD, 2025).

3.3 Heritage

Heritage sites can be listed under the following lists/registers:

- World Heritage Sites;
- National Heritage Sites;
- Commonwealth Heritage Sites;
- Sites on the register of the National Estate;
- Sites on the Western Australian Heritage Council Register; and
- Sites listed in the Shire of Denmark Municipal Heritage Inventory List.

There are no listed Aboriginal Cultural Heritage Sites, lodged Heritage Sites or historic heritage sites mapped on the site (Appendix 2) (DPLH, 2025).

There are no listed no-Aboriginal Heritage Sites or Interim Heritage Sites on the site (National Map, 2025; Heritage Council of Western Australia, 2025; DCCEEW, 2025).

3.4 Flora and Vegetation

3.4.1 Flora

A Detailed Flora and Vegetation Survey of the Structure Plan area was undertaken by PGV Environmental on 8 October 2019 (PGV Environmental, 2020) in accordance with the Technical Guidance: *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). The survey

included desktop database searches and a comprehensive site survey including the sampling of seven quadrats.

A total of 63 plant species were recorded during the 2019 flora survey (PGV Environmental, 2020). This total consisted of 46 native species and 17 (27%) introduced species. The high percentage of introduced species reflects the past disturbance on the site. The survey did not include all the introduced species in the cleared paddocks.

Three weed species recorded on the site are listed as Declared Pests under the State *Biosecurity and Agriculture Management Act 2007*, namely:

- *Asparagus asparagoides* (Bridal Creeper);
- *Rubus ulmifolius* (Blackberry); and
- *Zantedeschia aethiopica* (Arum Lily).

Bridal Creeper and Blackberry are also listed as Weeds of National Significance (WoNS). There are also areas of dense Kikuyu.

3.4.2 Vegetation Types

The vegetation mapped on the site from the 2019 survey (PGV Environmental, 2020) are as follows:

CcEm *Corymbia calophylla (Marri)/Eucalyptus marginata (Jarrah) Low Woodland over Hovea elliptica/Taxandria parviceps/Bossiaea linophylla Low Shrubland*

CcEd *Corymbia calophylla (Marri)/Eucalyptus diversicolor (Karri) Low Woodland over Pteridium esculentum/Hibbertia cuneiformis Open Low Heath*

EdCc *Eucalyptus diversicolor (Karri)/Corymbia calophylla (Marri) Open Forest over Pteridium esculentum Low Shrubland*

Tl *Taxandria linearifolia Tall Open Scrub over Lepidosperma tetraquetrum/L. effusum/ Pteridium esculentum Shrubland/Sedgeland*

EdTl *Eucalyptus diversicolor (Karri) Woodland over Taxandria linearifolia Tall Open Scrub over Lepidosperma tetraquetrum/L. effusum/Pteridium esculentum Sedgeland/Shrubland*

Ml *Melaleuca lanceolata Low Woodland over Taxandria linearifolia Tall Shrubland over Lepidosperma effusum/Pteridium esculentum Sedgeland/Shrubland*

3.4.3 Vegetation Condition

The condition of the vegetation was assessed by PGV Environmental according to the system devised by Keighery and described in Bush Forever (Government of Western Australia, 2000) (Table 1).

Table 1: Vegetation Condition Rating Scale

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: Government of Western Australia, 2000.

The condition of the vegetation is shown in Figure 4. The remnant vegetation in the southern part of the site was rated as being in Excellent Condition with the vegetation on the upper slope in Good condition. The remaining areas of upland vegetation were rated in Degraded to Completely Degraded. While the tree canopy was intact, the understorey had a high weed species component and scarcity of native species due to previous clearing of native vegetation and a long history of cattle grazing (Figure 4).

The vegetation in the creekline was rated as Good. The tree, tall shrub and wetland sedges were common however they were limited to a small fringe along the creekline. Weed species, including two Declared Pests (Blackberry and Bridal Creeper) were common as well as grasses such as Kikuyu and Annual Beardgrass (*Polypogon monspeliensis*).

The results from the 2025 site inspection indicate that the vegetation condition on the site is consistent with the 2019 mapping.

3.4.4 Conservation Significance of Flora and Vegetation

No Threatened or Priority flora species were recorded on the site. No other species of conservation significance were recorded. The site does not contain vegetation that is representative of a Threatened or Priority Ecological Community.

3.5 Fauna

3.5.1 Fauna Habitats

A Basic (then Level 1) Fauna Survey was undertaken by PGV Environmental in 2019. The survey is consistent with EPA Technical Guidance *Fauna Surveys for Environmental Impact Assessment* (EPA,

2020). The survey included desktop studies and site reconnaissance to evaluate the fauna habitats on the site. Three fauna habitats occur on the site, as follows:

- Open Woodland Habitat;
- Creekline habitat; and
- Cleared habitat.

Fauna habitat can be assessed using a number of factors including, the size of the habitat, the level of habitat connectivity, availability of specific resources (e.g., tree hollows) and overall vegetation quality. The habitat was assessed according to the categories in Table 2.

Table 2: Fauna Habitat Value

Habitat Value	Description
High Quality Fauna Habitat	These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.
Very Good Fauna Habitat	These areas show minimal signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by disturbance.
Good Fauna Habitat	These areas showed signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.
Disturbed Fauna Habitat	These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.
Highly Degraded Fauna Habitat	These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.

From: Coffey Environments, 2009

The Creekline habitat is in varying condition (Good and Completely Degraded) and is surrounded by large cleared areas with minimal linkage to nearby bushland areas and are therefore considered to be Disturbed Fauna Habitat.

3.5.2 Conservation Significant Species

The habitat may provide habitat for four Threatened species including:

- Baudin's Black Cockatoo (*Zanda baudinii*);

- Carnaby's Black Cockatoo (*Zanda latirostris*);
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*);
- Black-stripe Minnow (*Galaxiella nigrostriata*); and

The South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) which is listed under Schedule 6, Fauna in need of protection, may occur in the woodland vegetation in the southern part of the site. The Priority 4 Southern Brown Bandicoot, Quenda (*Isoodon fusciventer*) may also occur on the site.

Species listed as Marine that may intermittently occur on the site are:

- Oriental Pratincole (*Glareola maldivarum*);
- Cattle Egret (*Bubulcus ibis*); and
- Rainbow Bee-eater (*Merops ornatus*).

Due to the proximity of existing development and the disturbed nature of the site it is not considered that these species would rely on the suite for survival.

4 VISUAL LANDSCAPE ASSESSMENT

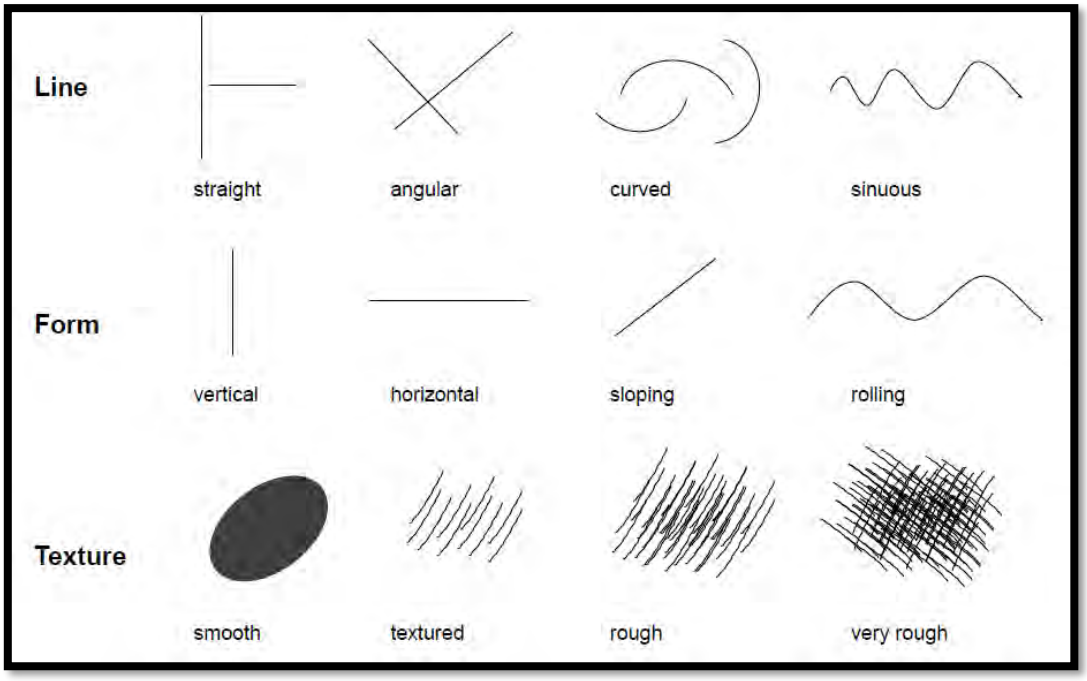
4.1 Methodology

The methodology recommended by the *Visual Landscape Planning Manual* (WAPC, 2007) specifies a five-step process to the visual assessment including:

- Step 1: Define the scope of the evaluation and set the context.
- Step 2: Describe the visual landscape character.
- Step 3: Evaluate the way the visual landscape character is viewed, experienced and valued.
- Step 4: Develop strategies for managing visual landscape character.
- Step 5: Implementation strategies through the planning system (WAPC, 2007).

A field assessment was undertaken by PGV Environmental on 26 March 2025 to evaluate the visual landscape character. The site survey included a thorough examination of the site and sampling of 5 locations along South Coast Highway and one location along the Denmark-Nornalup Rail Trail interface. The interface with the residential area to the east and one lot to the west was also assessed. The landscape at each location was assessed using the terminology as applied by CALM, 1994 (Plate 1).

Plate 1: Visual Terminology to Describe Landscape Character (CALM 1994)



The view experience was assessed using the following categories:

- Feature View: This type of view includes significant natural or built features as key visual elements. These features dominate the scene and are central to the viewer's experience.
- Focal View: A view that draws attention to a singular, prominent feature, often along a road or pathway. The composition of the landscape directs the observer's gaze toward this focal point.

- Landmark View: This involves views of distinct local landmarks, which could be natural formations or man-made structures. Such views are important for orientation and cultural significance.
- Canopied View: A corridor-like view in a forested area where the tree canopy creates an overhead 'ceiling', often producing a tunnel effect that frames the path ahead.
- Enclosed View: A view constrained by landform or vegetation, occurring close to the road and limiting long-distance visibility. This creates a sense of enclosure and intimacy within the landscape.
- Filtered View: A view partially obscured by elements such as trees, foliage, or built structures. These features allow glimpses of the broader landscape while maintaining a sense of depth and layering. Filtered views can create visual interest by revealing portions of the scenery gradually and encouraging movement or exploration.
- Framed View: A view bordered or defined by landscape features, such as hills or trees, that create a natural frame.

4.2 Access Scope of Evaluation

The scope of this evaluation (Step 1) is to assess the visual impact of the proposed development on South Coast Highway and the Denmark–Nornalup Rail Trail. This will be achieved by:

- Assessing the landscape character and identifying key landscape features of the site and its surrounding area;
- Evaluating the visual experience by identifying key viewpoints along South Coast Highway and the Denmark–Nornalup Rail Trail; and
- Capturing photographs from selected locations along South Coast Highway and the Denmark–Nornalup Rail Trail to represent the perspective of road and trail users.

4.3 Visual Landscape Character

The view evaluation (Step 2) was undertaken in five locations on South Coast Highway and two on the Denmark-Nornalup Rail Trail. The locations are shown on Plate 3 and the evaluation outlined in Table 3. There are no locations that have been identified as scenic lookouts. South Coast Highway is situated at a higher elevation than the site, resulting in an elevated viewing position from the road toward the development area.

The South Coast Highway on the northern end of the site is oriented in a south-west to north-east direction. The development site is oriented to the south-east of the Highway.

Plate 2: Locations on South Coast Highway

Plate 3: Location on Denmark-Nornalup Rail Trail

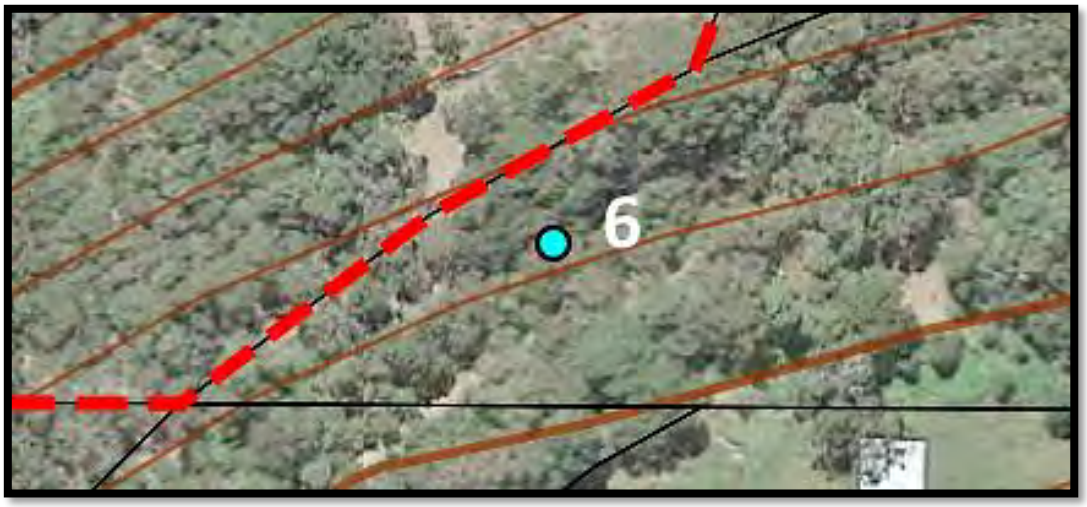


Table 4: View Line Assessment

Location	Line	Form	Texture	Colour	View Experience	Photographs
1 – South Coast Highway	• Straight – fence lines, fence poles, power poles and powerlines • Angular – Tree branches, glimpses of structures • Curved – tree canopy • Sinuous – tree line	• Vertical – fence poles, power poles, tree trunks • Horizontal – fence lines, powerlines, rooflines, flat paddocks • Sloping – verges • Rolling – tree line	• Smooth – built form e.g. sheds, fence poles, roads • Textured – foliage, grasses • Rough – gravel/blue metal verges	• Greens – tree canopy, Bracken • Bright green – pasture grasses (winter) • Light brown – grasses (summer) and bracken, verges • Dark brown – fence poles, power poles, tree trunks • Grey – roads, power poles and power lines, sheds • White – road lines, roof	Filtered View with limited view corridors due to vegetation	Northbound Southbound South-East

Location	Line	Form	Texture	Colour	View Experience	Photographs
2 – South Coast Highway	• Straight – fence lines, fence poles, power poles and powerlines • Angular – Tree branches, glimpses of structures • Curved – tree canopy • Sinuous – tree line	• Vertical – fence poles, power poles, tree trunks • Horizontal – fence lines, powerlines, rooflines, flat paddocks • Sloping – verges • Rolling – tree line	• Smooth – built form e.g. sheds, fence poles, roads • Textured – foliage, grasses • Rough – gravel/blue metal verges	• Greens – tree canopy, Bracken • Bright green – pasture grasses (winter) • Light brown – grasses (summer) and bracken, verges • Dark brown – fence poles, power poles, tree trunks • Grey – roads, power poles and power lines, • White – road lines, roof	Filtered/Enclosed View with limited view corridors due to vegetation	Northbound Southbound South-East

Location	Line	Form	Texture	Colour	View Experience	Photographs
3 – South Coast Highway	• Straight – fence lines, fence poles, power poles and powerlines • Angular – Tree branches, glimpses of structures • Curved – tree canopy, topography • Sinuous – tree line	• Vertical – fence poles, power poles, tree trunks • Horizontal – fence lines, powerlines, rooflines, flat paddocks • Sloping – verges • Rolling – tree line	• Smooth – built form e.g. sheds, fence poles, roads • Textured – foliage, grasses • Rough – gravel/blue metal verges	• Greens – tree canopy, Bracken • Bright green – pasture grasses (winter) • Light brown – grasses (summer) and bracken, verges • Dark brown – fence poles, power poles, tree trunks • Grey – roads, power poles and power lines, sheds • White – road lines, roof	Filtered View with limited view corridors due to vegetation	Northbound Southbound South-East

Location	Line	Form	Texture	Colour	View Experience	Photographs
4 – South Coast Highway	• Straight – fence lines, fence poles, power poles and powerlines • Angular – Tree branches, glimpses of structures • Curved – tree canopy, topography • Sinuous – tree line	• Vertical – fence poles, power poles, tree trunks • Horizontal – fence lines, powerlines, rooflines, flat paddocks • Sloping – verges • Rolling – tree line	• Smooth – built form e.g. sheds, fence poles, roads • Textured – foliage, grasses • Rough – gravel/blue metal verges	• Greens – tree canopy, Bracken • Bright green – pasture grasses (winter) • Light brown – grasses (summer) and bracken, verges • Dark brown – fence poles, power poles, tree trunks • Grey – roads, power poles and power lines, sheds • White – road lines, roof	Canopy – northbound, Filtered View with limited view corridors due to vegetation	Northbound Southbound South-East

Location	Line	Form	Texture	Colour	View Experience	Photographs
5 – South Coast Highway	• Straight – fence lines, fence poles, power poles and powerlines • Angular – Tree branches, glimpses of structures • Curved – tree canopy, tree line topography • Sinuous – tree line	• Vertical – fence poles, power poles, tree trunks • Horizontal – fence lines, powerlines, rooflines, flat paddocks • Sloping – verges • Rolling – tree line	• Smooth – built form e.g. sheds, fence poles, roads • Textured – foliage, grasses • Rough – gravel/blue metal verges	• Greens – tree canopy, Bracken • Bright green – pasture grasses (winter) • Light brown – grasses (summer) and bracken, verges • Dark brown – fence poles, power poles, tree trunks • Grey – roads, power poles and power lines, sheds • White – road lines, roof	Canopy – southbound, Rolling View with middle-ground vistas due to limited vegetation in the foregroundand trees in the background.	Northbound Southbound South-East

Location	Line	Form	Texture	Colour	View Experience	Photographs
6 – Denmark-Nornalup Rail Trail	• Curved – tree canopy, trail • Angular – Tree branches, glimpses of structures • Sinuous – tree line	• Vertical – tree trunks • Horizontal – bund edge • Sloping – bund banks • Rolling – tree line	• Textured – foliage, grasses • Rough – tree bark • Very Rough – gravel, bunds	• Greens – tree canopy • Light brown – grasses • Dark brown – tree trunks Red-brown – gravel	Framed by earthen bunds and Canopy view along the trail.	Facing South-West Facing North

4.4 Evaluation

The evaluation of the six reference points for this visual assessment considers how the landscape is viewed, experienced, and valued as per Step 3.

The site is visible to partially visible from South Coast Highway, with views primarily filtered through existing vegetation. The vegetation along the road side creates a shady, dappled driving experience on the main highway. In the northernmost section, a middle-ground vista extends across pastoral land towards remnant tree lines. The total length of the highway potentially affected by visual impacts is approximately 145 metres.

This section of South Coast Highway presents a landscape character consistent with extensive stretches of the regional road network, offering similar pastoral and vegetated views across hundreds of kilometres. As such, no significant or unique viewpoints have been identified that would be negatively impacted by the proposed development.

Views from the Denmark–Nornalup Rail Trail to the proposed development are minimal to non-existent, owing to the sunken alignment of the trail in this section abutting the site. The trail is bunded to a height of approximately 2 metres, effectively elevating the ground level above the eyeline of trail users. Additionally, the bund supports a strip of mature trees about 25m wide at the northern end, which enhances visual screening and forms a canopy over the trail, creating a contained and intimate visual environment. This natural screening significantly reduces the potential for any visual intrusion from the development.

The proposed emergency access way to the trail proposed from the development to the Trail will be alongside existing vegetation proposed to be maintained in larger lots. The emergency access way meets the trail as a T-intersection and can provide access to the trail by residents.

4.5 Views From Residential Areas

The existing fences along the boundary of the development site and residential houses to the east is a mix of low, open fencing (Plate 4) and taller super-six type fencing (Plate 5).

Plate 4: Open Fencing on Eastern Boundary

Plate 5: Super-six Type Fencing on Eastern Boundary

4.6 Visual Management and Implementation

To manage and mitigate the visual impact of the proposed development on views from South Coast Highway and the Denmark–Nornalup Rail Trail, , as per Step 4 and 5, a series of visual management measures have been incorporated into the concept development plan.

For the South Coast Highway interface, the design introduces a cul-de-sac layout rather than positioning residential lots or fencing directly adjacent to the highway. This approach provides physical separation between the built form and the road, avoiding a hard-edged, linear, and vertical interface—such as a continuous fence line—that would otherwise dominate the roadside view.

Instead, this layout softens the visual impact by creating a more varied, textured edge to the development. The result is a visually permeable and integrated transition between the built environment and the surrounding rural character of the highway corridor.

In addition, the interface incorporates a verge, designed to accommodate native, locally endemic tree species. Plants will provide filtered views from South Coast Highway, creating a layered, soft screening effect. This landscape treatment is intended to complement the existing vegetation along the remainder of the highway, reinforcing the visual character of the corridor and further mitigating the visual presence of the development.

Planting will be undertaken in accordance with the Landscape Management Plan, as detailed in Section 6.

The existing bunding and mature vegetation along the Denmark–Nornalup Rail Trail already provides substantial to complete visual screening, contributing to the trail's intimate, enclosed character. These natural features effectively mitigate potential visual impacts from the proposed development.

To further enhance this separation, a large POS is proposed at the interface between the development and the trail. This POS will contain a drainage basin and will act as an additional spatial buffer, helping to reduce noise impacts and preserve the amenity of the trail environment. In addition, strategic planting of native vegetation along the edge of the drainage basin will provide supplementary visual screening, reinforcing the natural setting and ensuring the development remains largely obscured from trail users. Landscaping within this area will be implemented in accordance with the Landscape Management Plan, as detailed in Section 6.

The designated emergency access way intersecting the trail is curved in alignment and is surrounded by native vegetation. This curvilinear design prevents the formation of a direct view corridor from the trail to the development, thereby protecting and maintaining the bushland character of the trail.

The developer has committed to installing a new 1.8m high solid fence along the eastern interface, where necessary, where the proposed development abuts existing residential dwellings. The 1.8m high solid wall should restrict views from the residential lots to the new lots in the development.

5 STRUCTURE PLAN

5.1 Structure Plan

The Structure Plan has been carefully designed to balance environmental conservation with residential development, accommodating housing for approximately 400 people. Areas identified as having the highest environmental value have been integrated into the layout, with the POS network specifically designed to preserve the site's rural character. A varied lot size approach is proposed, with larger lots located in the vegetated southern portion of the site. This allows for the retention of existing vegetation within private lots, further supporting habitat conservation and maintaining the natural landscape character.

A significant area of Foreshore Reserve POS (POS 1) has been allocated, which encompasses the creekline, the floodplain associated with the 1% AEP event, and the foreshore reserve totalling 1.4867ha. The Foreshore Reserve POS forms a key element of the Structure Plan, serving both an environmental protection function and delivering broader community amenity. The Foreshore Reserve POS also creates a contiguous area of parkland, enhancing connectivity and accessibility for residents and contributing to the overall liveability and character of the neighbourhood. The management of the Foreshore Reserve and associated landscaping/revegetation is detailed in the Foreshore Reserve Management Plan and as such the Landscaping Management Plan is not relevant to this area.

A second significant POS area of approximately 6,029 m² is proposed through the central portion of the site (POS 4), preserving trees identified as having high aesthetic and habitat value for Black Cockatoos. This POS, hereafter referred to as the 'Central Linear POS', takes advantage of a central ridgeline, offering scenic views that contribute to the rural character of the proposed development.

In the southern section of the site, adjacent to the Denmark–Nornalup Rail Trail, a 2,000 m² Public Open Space (POS), hereafter referred to as the 'Southern POS', is proposed. This space is designed to serve a dual function, incorporating a large, planted drainage swale to manage stormwater. The swale bed and banks will be vegetated with native endemic species to enhance ecological connectivity with the surrounding landscape. A designated fire access track will be provided along the boundary of the POS to enable emergency access to the Rail Trail.

Two smaller POS areas (659m^2, and 453m^2) are proposed in the eastern part of the site. The larger POS has been designed to provide visual screening from Wave Court, hereafter referred to as the 'Wave Court POS'. The 453m^2 POS is a small park designed to provide some active open space hereafter referred to as the 'Northern Park'.

Additionally, the 2m planting strip adjacent to the South Coast Highway will be landscaped to provide a strip of screening vegetation.

5.2 Public Open Space Objectives

5.2.1 Central Linear POS

The Ridge POS has been designed to take advantage of the higher position in the landscape to provide views as well as preserving the large mature trees.

5.2.2 Southern POS

The Southern POS provides separation from the Denmark-Nornalup Rail Trail and proposed development as well as performing a drainage function.

5.2.3 Wave Court POS

Wave Court POS is a small area that contains a number of significant trees that are proposed to be retained. The POS provides screening from the open end of Wave Court to the east, protecting the view from Wave Court.

5.2.4 Park

The Northern Park is a small area designed to provide pockets of active open space while retaining existing trees where possible. This park contributes to urban cooling by helping to mitigate the urban heat island effect through the preservation of vegetation and the provision of shaded, green areas.

6 LANDSCAPE MANAGEMENT PLAN

6.1 Construction Management

6.1.1 Clearing Actions

Most of the POS areas contain trees that are proposed to be retained except where bushfire mitigation works are required. To avoid inadvertent clearing of trees prior to any works being undertaken the retained vegetation will be shown on all plans issued to contractors and will be surveyed and pegged on site using flagging tape.

The Site Manager will require clearing contractors to undertake a site specific induction including a site walk-over. The site walkover will include the identification of the limits of clearing and areas in which access is restricted to works only required for the management and revegetation of the foreshore reserve. The induction will explain procedures, clarify any queries and the scope of work, highlight areas of significance, discuss the methods to be employed and provide contact details for any further enquiries.

Management Actions

M1 Clearly identify the location and limit of clearing of vegetation within all work areas on site (surveyed, pegged and flagged with marking tape) and delineated on appropriate plans prior to installing the fencing.

M2 All contract staff will be properly inducted by the Site Manager in a site walk-over which will include the identification of the limits of clearing and identification of vegetation to be cleared. The induction will explain procedures, clarify any queries and the scope of work, highlight areas of significance, discuss the methods to be employed and provide contact details for any further enquiries.

6.1.2 Erosion and Sedimentation

All batters from construction on the perimeter of the POS areas will be restricted to the specified grade identified at detailed design and will be stabilised as soon as possible after they are constructed.

Monitoring of stockpiles, newly contoured land, and batters along the perimeter of the development footprint will be undertaken to inspect for signs of water erosion or sedimentation. Inspections will be undertaken on a weekly basis or after significant rainfall greater than the 1/1 ARI rainfall event.

Management Actions

M3 Batters to be constructed to specified grades

M4 Batters greater than 1:2 to be stabilised as soon as possible after construction

M5 Areas of open soil will be inspected weekly or after a 1/1 ARI rainfall event for signs of water erosion or sedimentation.

6.1.3 Hygiene Management

Hygiene management procedures will be implemented on the site with signage erected at all access points to the site during subdivision works. The signs should include the following procedures to be implemented:

- Vehicle inspection protocols to ensure the vehicle is free from soil/organic material prior to entry and exit;
- Brush down of contaminated vehicles and machinery in dry weather
- Wash down of contaminated vehicles and machinery used in clearing with suitable disinfectant such as bleach dilution, methylated spirits or an approved product such as Phytoclean during wet weather.

To prevent transfer of potentially infected soil into existing remnant vegetation outside of designated areas to be cleared soil stockpiles will be located away from retained vegetation and no soil will be pushed into these areas. Earthworks will ensure that no contours are created that drain surface water from the development area to the foreshore reserve.

All soils or mulch to be imported to the foreshore reserve during works will be disease and pathogen free. All plants used for landscaping will be free of dieback.

Management Actions

M6 The following hygiene protocols will be followed:
- Vehicle inspection protocols to ensure the vehicle is free from soil/organic material prior to entry and exit;
- Brush down of contaminated vehicles and machinery in dry weather
- Wash down of contaminated vehicles and machinery used in clearing with suitable disinfectant such as bleach dilution, methylated spirits or an approved product such as Phytoclean during wet weather.

M7 There will be no soil pushed from the development footprint into areas of vegetation that is to be retained.

M8 All imported revegetation materials (i.e. soil, mulch, seedlings) brought onsite will be weed free and certified dieback free.

6.2 Revegetation Plans

6.2.1 Areas to be Revegetated

All revegetation and associated management actions will be undertaken during subdivision. The POS areas will be handed over to the Shire at the time of subdivision and the developer will maintain the POS for one year.

Landscaping plans will be developed at subdivision for any of the POS areas (Figure 5) that are within the subdivision boundary. The Landscaping Plans will:

- Clearly show all of the vegetation to be retained;
- Delineate areas for planting including native planting and landscaping garden beds; and

- Provide a planting palette for the POS in accordance with the species lists in this Landscape Management Plan or justification of any additional species is provided to demonstrate their contribution to ecological function, particularly for habitat enhancement.

Management Action

M9 Detailed landscaping plans to be developed at subdivision to identify vegetation to be retained, planting areas and planting type.

M10 Mapping of areas to be revegetated/landscaped garden beds will be refined following the completion of weed mapping and removal.

6.2.2 Reference Information

As per *A Guide to Preparing Revegetation Plans for Clearing Permits* (DWER, 2013) the surrounding environments have been researched to determine the vegetation that was likely to occur in the cleared areas along the creekline (PGV Environmental, 2020). Existing species will be used as a guide to the vegetation types that may be present and species to be used will be tailored to soil types and inferred vegetation from the species that remain in the creekline.

The drainage swales and basins will be planted with locally endemic sedges to encourage biological nutrient uptake, consistent with the *Vegetation guidelines for stormwater biofilters in the south-west of Western Australia* (Monash University, 2014).

6.2.3 Site Preparation

6.2.3.1 Soil Preparation

Soil compaction refers to the reduction in soil pore size and total pore space caused by applied stresses. Compacted soils restrict root elongation and reduce the soil volume available for water and nutrient uptake (van Gool et al., 2005). The Keystone Brown Duplex Phase (254WhKYb) has a high subsurface compaction risk across 30–50% of the map unit, while the Owingup Subsystem (254BrOW) has a very high compaction risk affecting more than 70% of the land unit (DPIRD, 2025). Given the site's history of agricultural use, the soils are likely to exhibit some degree of compaction.

Deep ripping is highly effective as it breaks apart a fairly typical compaction layer which forms from continual grazing at approximately 150mm depth and traffic associated with agricultural practices at 10 to 40cm depth (Gilkes and Hunt, 1992). Ripping will be undertaken where possible which will only be in completely cleared parts of the POS areas that are proposed to be revegetated The soil will be ripped where possible to 50 – 80 cm depth in late summer/ early autumn, as this is when the soil compaction layer will shatter. Riplines will follow contours and will be kept outside the foliage line of remnant tree/shrub vegetation or 0.5m from existing sedge/bracken remnant vegetation.

In areas that are not able to be accessed by machinery, planting will be done in soil that will be dug by manual means.

If there are significant non-wetting areas of soil a wetting agent will be required. The use of a wetting agent in a wetland environment can have detrimental impacts on fauna, particularly tadpoles so it is important to ensure that the wetting agent does not flow into the creekline. Soil wetting agents must

be active in the soil for a minimum of six months, must be non-ionic, non-toxic, pH neutral range of 6-8 and must be applied in accordance with the manufacturer's published specifications.

As the soils have elevated nutrient concentrations due to the past pasture land use it is not recommended that fertilisers are used for planting.

Management Actions

M11 Ripping in areas devoid of native vegetation will be undertaken to break up any sub-surface compaction.

M12 If there are any areas that have standing water over winter the soils will be mounded prior to planting.

M13 Wetting agent that is active in the soil for a minimum of six months, that is non-ionic, non-toxic and pH neutral range of 6-8 can be used in areas that are hydrophobic and must be applied in accordance with the manufacturer's published specifications.

M14 No fertilisers to be used during planting of native species

6.2.3.2 Weed Mapping

There are 32 *Weeds of National Significance* (WoNS) which are listed by the Federal Government based on their invasive tendencies, impacts, potential for spread and impact on socioeconomic and environmental values. A *Declared Pest* is a plant that impacts on individual people, agricultural production and the community. These are plants declared under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and all landholders are obliged to control these on their properties according to the rankings and information provided by the Department of Primary Industry and Regional Development (DPIRD). An *Environmental Weed* is an introduced plant that is established in a natural ecosystem and adversely modifies natural processes, resulting in decline of invaded communities (EPA, 2009). The following Declared Pests have been recorded on the site, however are generally confined to the creekline:

- *Asparagus asparagoides* (Bridal Creeper) (listed in WoNS);
- *Rubus ulmifolius* (listed in WoNS); and
- *Zantedeschia aethiopica* (Arum Lily).

The effective management of weeds prior to revegetation is key to successful re-establishment of native species. Weed mapping will be undertaken in areas to be planted in winter prior to the commencement of revegetation. Weed mapping will be undertaken in alignment with the *Standard Operating Procedure* (SOP) *Techniques for mapping weed distribution and cover in bushland and wetlands* (DEC, 2011). The following will be recorded for significant weeds:

- Location;
- Date;
- Field observers;
- Overall coverage of weeds in each quadrat using the Braun-Blanquet scale;
- Each weed species present; and
- The coverage of each separate weed species using the adapted Braun-Blanquet scale.

An adaption of the Braun-Blanquet scale as suggested previously by DBCA (DBCA Pers Comm, 2013) will be adopted as follows:

- + = <1% coverage;
- 1 = 1–5% coverage;
- 2 = 6–25% coverage;
- 3 = 26–50% coverage;
- 4 = 51–75% coverage; or
- 5 = 76–100% coverage.

Management Action

M15 Weed mapping to be undertaken in the winter prior to the commencement of revegetation in each area in alignment with *Standard Operating Procedure* (SOP) *Techniques for mapping weed distribution and cover in bushland and wetlands* (DEC, 2011).

6.2.3.3 Weed Control

The creekline has areas of dense native species such as Bracken Fern present in most areas so treatment of weeds using machinery is not appropriate in most cases. Therefore, in areas that cannot be accessed by a vehicle, weeds will be sprayed by hand using backpack sprayers or equivalent delivery system to ensure that only weeds are impacted by the spray.

For Bridal Creeper the optimal treatment is to spray 0.2 g metsulfuron methyl + Pulse® in 15 L water (or 2.5 - 5g /ha + Pulse®) with best results achieved when the plant is flowering in July/August (DBCA, 2025).

Blackberries are best controlled through a multi-session management program. The primary method involves spraying with metsulfuron-methyl at a rate of 1 g per 10 L of water, combined with the wetting agent Endose® at 30 mL per 10 L, during the summer–autumn period in areas that are away from standing water. This approach will require follow-up treatments over several years. In areas with small infestations or within sensitive environments such as areas near any standing water, hand-pulling of small plants or seedlings is recommended. For larger plants, stems should be cut and painted with a 20–50% glyphosate solution or slash canes. Regrowth should be allowed to reach approximately 50 cm in height before re-spraying with the metsulfuron-methyl and Endose® mixture, again during summer–autumn (DBCA, 2025).

For the most effective control of Arum Lily spot spray metsulfuron methyl 0.4 g/15 L of water (or 5g /ha) + 225 mL glyphosate + Pulse®. As glyphosate is non selective, only apply where there is no chance of off target application on native vegetation. Otherwise, spot spray metsulfuron methyl or chlorsulfuron 0.4 g/15 L of water (or 5g /ha) + Pulse®. Herbicide application can send some tubers into dormancy therefore any control program needs to continue for at least five years (DBCA, 2025).

Kikuyu Grass is a dominant weed in the creekbed. This can be controlled using a 'frog friendly' Glyphosate-based herbicide such as Roundup Biactive or similar, at the recommended rates. This will be applied twice a year just after the break of season (April to May) and in late winter to early spring. If summer rainfall is sufficient for germination herbicide will be applied at this time also (DBCA, 2025).

Due to the density of weeds within the revegetation area a full year of weed control will be undertaken prior to revegetation.

Management Actions

M16 All WoNS and Declared weeds will be managed in the POS Areas.

M17 Management of all WoNS, Declared weeds and invasive species including Bridal Creeper, Blackberry, Arum Lily and Kikuyu to be undertaken in accordance with specified treatments treatment notes in Florabase (DBCA, 2025).

M18 If other dominant weeds are identified during the baseline weed survey they will be managed in accordance with the treatment notes in Florabase (DBCA, 2025).

M19 Weed control to be undertaken for a full year prior to planting.

M20 Weed control programs will be implemented for five years.

6.2.4 Species List

The species lists for the revegetation areas are consistent with species that may have been present on site prior to clearing. Specialised species lists have been compiled to ensure the resultant vegetation is suited to the soil type, hydrology and is compatible with the surrounding vegetation (Table 5). The creekline area is the area from the base of the creekline to the top of bank, the uplands are from the top of bank to the edge of the floodplain and the drainage basins are the three excavated basins.

Table 5: Species List

Strata	Growth Habit	Species	Common Name
Uplands			
Overstorey	Tree	*Agonis flexuosa*	Peppermint
		Corymbia calophylla	Marri
		Eucalyptus diversicolor	Karri
Understorey	Shrub	*Acacia myrtifolia*	
		Acacia pentadenia	Karri Wattle
		Agonis theiformis	
		Allocasuarina decussata	
		Allocasuarina humilis	Dwarf Sheoak
		Beaufortia decussata	Gravel Bottlebrush
		Billardiera variifolia	
		Bossiaea linophylla	
		Chorizema cordata	
		Crowea angustifolia	Crowea
		Dampiera hederacea	Karri Dampiera
		Darwinia citriodora	Lemon-scented Darwinia
		Daviesia flexuosa	
		Kunzea recurva	
		Lambertia inermis	Chittick
		Melaleuca lanceolata	

Strata	Growth Habit	Species	Common Name
		Persoonia longifolia	Snottygobble
		Taxandria linearifolia	
		Sphaerolobium medium	
		Verticordia plumosa	Plumed Featherflower
	Herb	*Dasypogon bromeliifolius*	Pineapple Bush
		Desmocladus fascicularis	
		Patersonia occidentalis	Purple Flags
		Scaevola striata	Royal Robe
Sedges for Drainage Basin			
Understorey	Sedge	*Ammothryon grandiflorum*	Large Flowered Bog-rush
		Juncus pallidus	Pale Rush
		Ficinia nodosa	Knotted Club Rush
		Lepidosperma effusum	Spreading Sword-sedge
		Lepidosperma gladiatum	Coast Sword-sedge
		Lepidosperma leptostachyum	
		Lepidosperma squamatum	
		Lepidosperma tetraquetrum	
		Machaerina articulata	Jointed Bog Rush
		Tremula tremulina	

As all species have varied availability from year to year a planting plan will be submitted to the Shire of Denmark in the year prior to planting commencing. The planting plan will designate the area to be planted, the species to be used, density of each species and number of tubestock to be planted. There is the possibility that Bracken rootstock may be transferred from dense areas for use in Completely Degraded areas.

The planting plan will ensure that there are at least two overstorey species and at least 5 understorey species with a mix of shrubs and sedges in the upland areas. The planting plan will identify any areas that are more suited to a sedge understorey, being wetter areas or those areas that would employ a mixture. The planting plan will give adequate information to justify the mixture of such as soil conditions, presence of surface water and existing vegetation the proposed species mix to be used.

Management Actions

M21 Species to be planted to be taken from the species lists specific to the revegetation area.

M22 A planting plan is to be submitted to the Shire of Denmark in the year prior to planting in the POS areas and drainage basins designating the area to be planted, the species to be used, density of each species and number of tubestock to be planted.

M23 The planting plan will provide justification such as purpose of the POS, any Bushfire mitigation requirements, soil conditions, presence of surface water and existing vegetation for the proposed species mix to be used.

6.2.5 Source

Tubestock will be sourced from specialist nurseries that collect local provenance seed and raise tubestock. The nursery used will be a Nursery Industry Accreditation Scheme Australia (NIASA) accredited nursery.

Management Action

M24 Local provenance tubestock will be source from a NIASA accredited nursery for native plantings.

6.2.6 Density

The densities to be planted will vary in areas that are landscaped garden beds or more formal plantings and will be included in the planting plans at subdivision. As a general guide the densities in and around drainage basins for each growth habit are outlined in Table 6.

Table 6: Planting Densities

Growth Habit	Density
Trees	1 tree per $20m^2$
Shrubs	1.6 shrubs per $1m^2$
Herbs	1 herb per $2m^2$
Sedge	Average 6 stems per $1m^2$

Management Actions

M25 Planting densities to be 1 tree per $20m^2$, 1.6 shrubs per $1m^2$, 1 herb per $2m^2$ and an average 6 sedge stems per $1m^2$.

M26 Planting densities to be shown in the planting plan.

6.2.7 Planting

All revegetation will be planted in a semi-random fashion to ensure the final vegetation appears as natural as possible. Tubestock will be used in all cases, however if weed control is successful in the first 2 years some seed may be spread over areas to enhance the rehabilitated areas to a natural looking bushland.

Management Actions

M27 All planting to be done in a semi-random fashion in revegetation areas and drainage basins.

6.2.8 Timing

Planting will commence after opening rains of 100mm in the autumn/winter period which generally is in June/July, consistent with *Guide to Preparing Revegetation Plans for Clearing Permits*. Table 7 outlines the proposed timing for revegetation works.

Table 7: Timing for Revegetation Works

Year	Time	Phase	Pest/Weed Control	Planting	Monitoring
1	Commencement		Weed Control		
2	Winter	Planting commences		After 100mm of rain has fallen (break of season)	Monitoring commences for Weed Control
	Spring		Spray September to October if required		Monitoring commences for Revegetation
	Summer				Monitoring
3	Autumn	Infill Planting	Spray in April to May if required		Monitoring
	Winter			Break of season	Monitoring
	Spring		Spray September to October if required		Monitoring
	Summer				Monitoring
If survival completion criteria not met repeat Year 3					
4	Autumn	Maintenance Year 1	Spray in April to May if required		Monitoring
	Winter				Monitoring
	Spring		Spray September to October if required		Monitoring
	Summer				Monitoring
Complete if criteria are met – cede to the Shire of Denmark					

Management Actions

M28 Planting will be initially undertaken after at least one year of weed control has been completed

M29 Planting will be undertaken at the break of the season, typically after more than 100mm of rain has fallen.

7 MONITORING

7.1 Weeds

Monitoring will be undertaken to assess the success of weed control. Weeds will be visually assessed every three months in Summer, Autumn, Winter and Spring for the three years. This assessment will be undertaken by traversing broad transects to record what is emerging and where to direct weed control contractors to areas and species that require maintenance. The weed coverage will be estimated using an adaption of the Braun-Blanquet scale as suggested previously by DBCA (DBCA Pers Comm, 2013). The scale to be used will be:

- + = <1% coverage;
- 1 = 1–5% coverage;
- 2 = 6–25% coverage;
- 3 = 26–50% coverage;
- 4 = 51–75% coverage; or
- 5 = 76–100% coverage.

Management Action

M30 Monitoring to be undertaken each season to direct weed control efforts.

7.2 Revegetation

Monitoring of the revegetation will measure progress toward the completion criteria and will allow for the areas requiring augmentation or remedial works to be identified early and for appropriate planning. Monitoring will ensure that the objectives of the management plan are achieved and that any changes or new developments in management techniques can be incorporated.

Monitoring of planted tubestock survival rates will be undertaken by a suitably qualified consultant or contractor and will commence during the first spring after planting. Areas that are planted with tubestock or both will be visually assessed every three months in Summer, Autumn Winter and Spring for the first 2 years. This assessment will be undertaken by traversing broad transects to record what is emerging and where to direct infill planting the following autumn. Monitoring will also include permanent 10mx10m quadrats to be monitored annually in revegetated areas. If the foreshore reserve is to be revegetated at once there will be three quadrats established or if revegetation is to be done progressively there will be one quadrat per area revegetated. These sites will be monitored on an annual basis in spring. The following will be recorded in the quadrats:

- All species present (seeded, tubestock or established naturally);
- Native species canopy cover using the adapted Braun-Blanquet (DBCA Pers Comm, 2013) measurement of coverage;
- Weed coverage in the sub-quadrats;
- Percentage bare soil;
- Species frequency in the sub-quadrats (numbers of individuals of each species present);
- All weed species present; and

- Any observations regarding plant health, evidence of disease and evidence of pest species.
- All coverage will be estimated using the adaption of the Braun-Blanquet scale (DBCA Pers Comm, 2013).

Management Actions

M31 Assessment of overall tubestock survival each season.

M32 Annual monitoring of planted areas and assessment against completion criteria.

8 MAINTENANCE

8.1 Revegetation

An initial three-year management period will be implemented by the developer prior to the hand-over to the Shire of Denmark after meeting completion criteria. The three-year management period will commence following the initial planting of tubestock.

If monitoring of the revegetation/planted areas indicates that areas that are bare and will not meet the completion criteria infill planting will be undertaken in the following year after the break of season. Infill planting will be guided by the planting plan or a revised planting plan based on monitoring results.

Management Action

M33 If the completion criteria for revegetation are not likely to be met, infill planting will be undertaken each year in accordance with the planting plan or a revised planting plan based on monitoring results.

8.2 Weed Control

Necessary weed control will be determined during the weed inspections. Each separate area will be assessed individually for the presence and severity of weed re-establishment. Weed species will be treated with herbicide as per Florabase (DBCA, 024) by an appropriately qualified weed contractor.

The main aim of the weed control program is to prevent weed seed set therefore, the site weed inspection schedule will be continually audited to determine whether an increase or decrease in the frequency of inspections is necessary in order to achieve this aim. Ongoing weed control is likely to be required at least twice per year.

Management Action

M34 Ongoing weed control as directed by monitoring results will be undertaken by an appropriately qualified contractor in accordance with treatment notes on Florabase (DBCA, 2025).

8.3 Pest Management

The site is adjacent to areas of bushland and it is likely that rabbits and kangaroos could impact on revegetation by grazing. Site inspections to monitor for pest animal activity will be undertaken quarterly. If significant loss is evident from grazing tree guard will be installed. If tree guards are used they will be removed no more than 2 years after installation. Regular inspections (monthly) as well as inspections after storm events will be undertaken to ensure the guards have not been blow off.

Management Actions

M35 If the revegetation is adversely impacted by grazing tree guards will be installed.

M36 If evidence of dieback or other disease/pathogen is recorded appropriate treatment will be utilised.

8.4 Disease Management

If there are any symptoms of dieback or other disease in susceptible species in the rehabilitated areas in the first two years the species composition will be adjusted to avoid using sensitive species. If required, treatment of the disease will be undertaken by an appropriately qualified contractor.

Management Action

M37 If species are impacted by disease or pathogens the species list may be adjusted to avoid using sensitive species.

M38 If evidence of dieback or other disease/pathogen is recorded appropriate treatment will be utilised.

9 CONTINGENCY PLANS

9.1 Revegetation

If the completion criteria are not likely to be met after the first two monitoring periods, then further planting will occur in the second year using the species from Table 6.

If there is a significant decline or loss in surviving plants the following contingency plan will be implemented:

1. Determine if the decline may be within normal limits – ie. due to harsh summer conditions.
2. Consider potential causes for decline in vegetation health including but not limited to:
    a. Increase in competition with weed species;
    b. Predation by herbivores including rabbits and possibly kangaroos; or
    c. Water stress.
3. Implement measures to manage identified causes which may include, but not limited to:
    a. Management of weed species;
    b. Use of tree guards; or
    c. Watering during summer months.
4. Infill plants into impacted areas in the next planting season to ensure that the completion criteria can be met.
5. Continue monitoring vegetation health and the effectiveness of remedial actions.

9.2 Revegetation Condition

If there is a decline in the revegetation health or condition the following contingency plan will be implemented:

1. Consider potential causes for decline in revegetation health or increase in weed cover, including factors such as climatic conditions, uncontrolled access.
2. Determine if the decline may be within normal limits.
3. If decline in health is not within normal limits, determine the most likely cause of this decline.
4. Implement measures to minimise the cause of the decline if possible including additional access restrictions or the potential watering of the foreshore reserve area in summer while the plants are establishing
5. Continue monitoring revegetation health and the effectiveness of remedial actions.

9.3 Erosion and Sedimentation

In the event that visual erosion or sedimentation occurs in the foreshore reserve:

1. Investigate cause.
2. If the cause is due to construction activities implement appropriate control to reduce or rectify impact which could include:
    - restricting access to areas that are impacted
    - stabilising the areas with hydromulch/jute mats/revegetation/mulch
3. Continue to observe any changes.

9.4 Dust

If dust deposition is recorded on foliage in the revegetation areas:

1. Investigate cause.
2. If the dust is the result of construction activities, ensure dust control measures are being implemented and are appropriate.
3. Consider spraying dust covered vegetation with water truck to remove dust (note this should occur no more than monthly during October – April).

10 COMPLETION CRITERIA

10.1 Weeds

The completion criteria for the weeds within the foreshore reserve area is to have:

- No declared weeds (such as Arum Lily, Bridal Creeper or Blackberry) or WoNS.

Management Actions

M39 Completion criteria of no Declared Pests or WoNS.

M40 Annual monitoring against the completion criteria will be undertaken until the revegetation reaches these criteria or after three years, whichever is longer.

10.2 Revegetation

The following completion criteria for revegetation have been determined:

- Revegetation works initially achieve a minimum species richness of 80% of the species list as provided in the planting plan; and
- The surviving density of trees, shrubs, sedges, climbers and groundcovers to be at least 80% of the planting densities shown in the planting plan at two years of implementation or contingencies must be undertaken.

Annual monitoring will assess the vegetation against these criteria. Monitoring will cease when the revegetation reaches these criteria or after five years, whichever is longer.

Management Actions

M41 Completion criteria of 80% of the density shown in the planting plan will be applied to the revegetated areas.

11 REPORTING AND REVIEW

11.1 Reporting

Actions taken and outcomes will be included in an annual monitoring report submitted to the Shire of Denmark. The report will include weed control actions, planting, infill planting, results of monitoring as well as any remedial actions taken.

Management Action

M42 Actions taken and outcomes will be submitted in an annual report to the Shire of Denmark until the POS areas are ceded to the Shire of Denmark.

12 SUMMARY OF MANAGEMENT ACTIONS

The developer will be responsible for the implementation of the recommendations in this Management Plan, except where identified, to the satisfaction of the Shire of Denmark (Table 8).

Table 8: Summary of Management Actions, Timing and Responsibility

No.	Management Action	Timing	Responsibility
Clearing Actions			
M1	Clearly identify the location and limit of clearing of vegetation within all work areas on site (surveyed, pegged and flagged with marking tape) and delineated on appropriate plans prior to installing the fencing.	Prior to clearing in the development footprint	Developer and contractor
M2	All contract staff will be properly inducted by the Site Manager in a site walk-over which will include the identification of the limits of clearing and identification of vegetation to be cleared. The induction will explain procedures, clarify any queries and the scope of work, highlight areas of significance, discuss the methods to be employed and provide contact details for any further enquiries.	Prior to clearing in the development footprint	Developer and contractor
Erosion and Sedimentation			
M3	Batters to be constructed to specified grades	During Construction	Developer
M4	Batters greater than 1:2 to be stabilised as soon as possible after construction	During Construction	Developer
M5	Areas of open soil will be inspected weekly or after a 1/1 ARI rainfall event for signs of water erosion or sedimentation.	During Construction	Contractor
Hygiene			
M6	The following hygiene protocols will be followed: – Vehicle inspection protocols to ensure the vehicle is free from soil/organic material prior to entry and exit; – Brush down of contaminated vehicles and machinery in dry weather – Wash down of contaminated vehicles and machinery used in clearing with suitable disinfectant such as bleach dilution, methylated spirits or an approved product such as Phytoclean during wet weather.	During revegetation	Developer and contractor
M7	There will be no soil pushed from the development footprint into areas of vegetation that is to be retained.	During construction	Contractor

No.	Management Action	Timing	Responsibility
M8	All imported revegetation materials (i.e. soil, mulch, seedlings) brought onsite will be weed free and certified dieback free.	During revegetation	Developer and contractor
Areas to be Revegetated			
M9	Detailed landscaping plans to be developed at subdivision to identify vegetation to be retained, planting areas and planting type.	Prior to revegetation	Developer and contractor
M10	Mapping of areas to be revegetated/landscaped garden beds will be refined following the completion of weed mapping and removal.	Prior to revegetation	Developer and contractor
Soil Preparation			
M11	Ripping in areas devoid of native vegetation will be undertaken to break up any sub-surface compaction.	Prior to revegetation	Developer and contractor
M12	If there are any areas that have standing water over winter the soils will be mounded prior to planting.	Prior to revegetation	Developer and contractor
M13	Wetting agent that is active in the soil for a minimum of six months, that is non-ionic, non-toxic and pH neutral range of 6-8 can be used in areas that are hydrophobic and must be applied in accordance with the manufacturer's published specifications.	Prior to revegetation	Developer and contractor
M14	No fertilisers to be used during planting of native species	Prior to revegetation	Developer and contractor
Weed Mapping			
M15	Weed mapping to be undertaken in the winter prior to the commencement of revegetation in each area in alignment with *Standard Operating Procedure* (SOP) *Techniques for mapping weed distribution and cover in bushland and wetlands* (DEC, 2011).	One year prior to commencement of revegetation	Developer and weed contractor
Weed Control			
M16	All WoNS and Declared weeds will be managed in the POS Areas.	Commencing one year prior to revegetation	Developer and weed contractor
M17	Management of all WoNS, Declared weeds and invasive species including Bridal Creeper, Blackberry, Arum Lily and Kikuyu to be undertaken in accordance with specified treatments treatment notes in Florabase (DBCA, 2025).	Commencing one year prior to revegetation	Developer and weed contractor
M18	If other dominant weeds are identified during the baseline weed survey they will be managed in accordance with the treatment notes in Florabase (DBCA, 2025).	Commencing one year prior to revegetation	Developer and weed contractor

No.	Management Action	Timing	Responsibility
M19	Weed control to be undertaken for a full year prior to planting.	Commencing one year prior to revegetation	Developer and weed contractor
M20	Weed control programs will be implemented for five years.	Total of five years from commencement	Developer and weed contractor
Species List			
M21	Species to be planted to be taken from the species lists specific to the revegetation area.	Prior to revegetation	Developer and revegetation contractor
M21	Species to be planted to be taken from the species lists specific to the revegetation area.	Prior to revegetation	Developer and revegetation contractor
M22	A planting plan is to be submitted to the Shire of Denmark in the year prior to planting in the POS areas and drainage basins designating the area to be planted, the species to be used, density of each species and number of tubestock to be planted.	Prior to revegetation	Developer and revegetation contractor
Source			
M24	Local provenance tubestock will be source from a NIASA accredited nursery for native plantings.	Prior to revegetation	Developer and revegetation contractor
Density			
M25	Planting densities to be 1 tree per 20m^2, 1.6 shrubs per 1m^2, 1 herb per 2m^2 and an average 6 sedge stems per 1m^2.	Prior to revegetation	Developer and revegetation contractor
M26	Planting densities to be shown in the planting plan.	Prior to revegetation	Developer and revegetation contractor
Planting			
M27	All planting to be done in a semi-random fashion in revegetation areas and drainage basins	During planting	Revegetation contractor
Timing			
M28	Planting will be initially undertaken after at least one year of weed control has been completed	After one year of weed control	Revegetation contractor

No.	Management Action	Timing	Responsibility
M29	Planting will be undertaken at the break of the season, typically after more than 100mm of rain has fallen.	Break of season	Revegetation contractor
Monitoring			
M30	Monitoring to be undertaken each season to direct weed control efforts.	Quarterly	Developer
M31	Assessment of overall tubestock survival each season.	Annually in spring	Developer
M32	Annual monitoring of planted areas and assessment against completion criteria.	Quarterly	Developer
Maintenance			
M33	If the completion criteria for revegetation are not likely to be met, infill planting will be undertaken each year in accordance with the planting plan or a revised planting plan based on monitoring results.	Annually until completion criteria are met	Developer and revegetation contractor
M34	Ongoing weed control as directed by monitoring results will be undertaken by an appropriately qualified contractor in accordance with treatment notes on Florabase (DBCA, 2025).	When required until completion criteria are met	Developer/Shire of Denmark and weed contractor
M35	If the revegetation is adversely impacted by grazing tree guards will be installed.	If required	Developer/Shire of Denmark and revegetation contractor
M36	If evidence of dieback or other disease/pathogen is recorded appropriate treatment will be utilised.	If required	Developer/Shire of Denmark and revegetation contractor
M37	If species are impacted by disease or pathogens the species list may be adjusted to avoid using sensitive species.	If required	Developer/Shire of Denmark and revegetation contractor
M38	If evidence of dieback or other disease/pathogen is recorded appropriate treatment will be utilised.	If required	Developer/Shire of Denmark and revegetation contractor

No.	Management Action	Timing	Responsibility
Completion Criteria			
M39	Completion criteria of no Declared Pests or WoNS.	Completion	Developer
M40	Annual monitoring against the completion criteria will be undertaken until the revegetation reaches these criteria or after three years, whichever is longer.	Annually	Developer
M41	Completion criteria of 80% of the density shown in the planting plan will be applied to the revegetated areas.	Completion	Developer
Reporting			
M42	Actions taken and outcomes will be submitted in an annual report to the Shire of Denmark until the POS areas are ceded to the Shire of Denmark.	Annually	Developer

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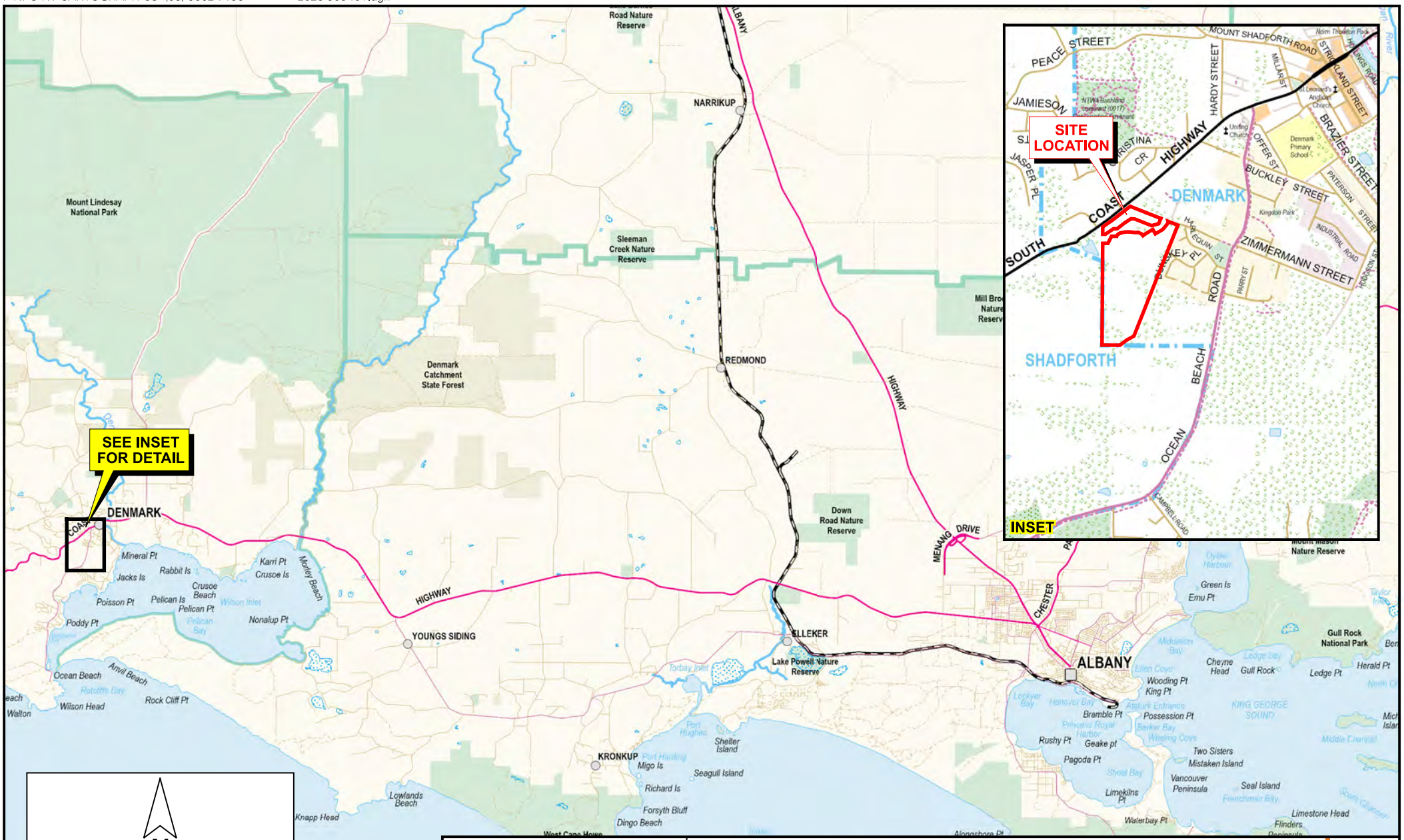
FIGURES

PINPOINT CARTOGRAPHICS (08) 9562 7136 2025-905-f01.dgn



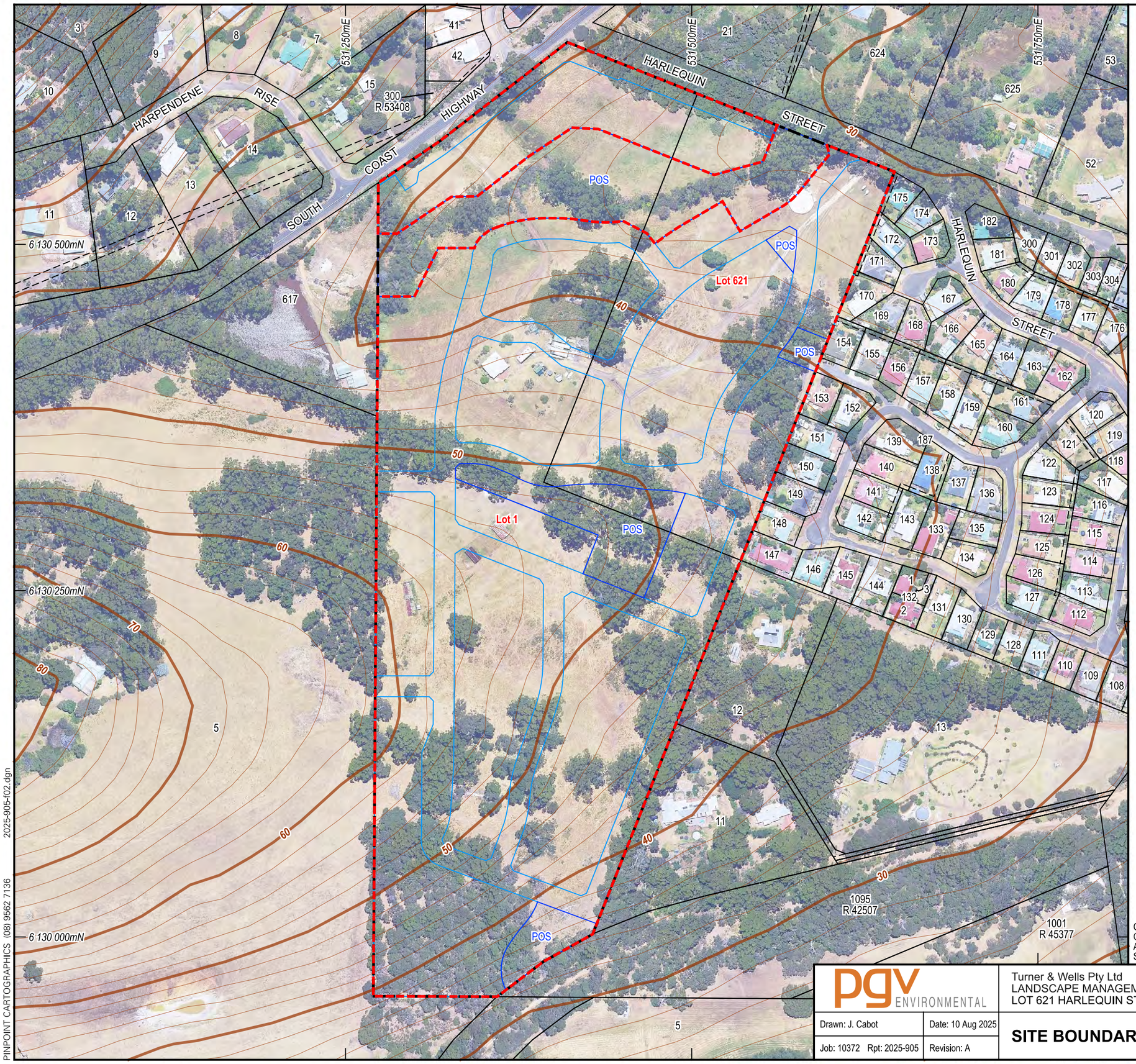
pgv ENVIRONMENTAL

Turner & Wells Pty Ltd
LANDSCAPE MANAGEMENT PLAN
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot	Date: 10 Aug 2025
Job: 10372 Rpt: 2025-905	Revision: A

SITE LOCATION

Figure 1



N

0 20 40 60 80 100m

SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Structure Plan Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure Plan
- Proposed POS
- Topographic Contour

CADASTRAL SOURCE: Landgate, August 2025.
CONTOUR SOURCE: Dept. of Agriculture, 2000.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

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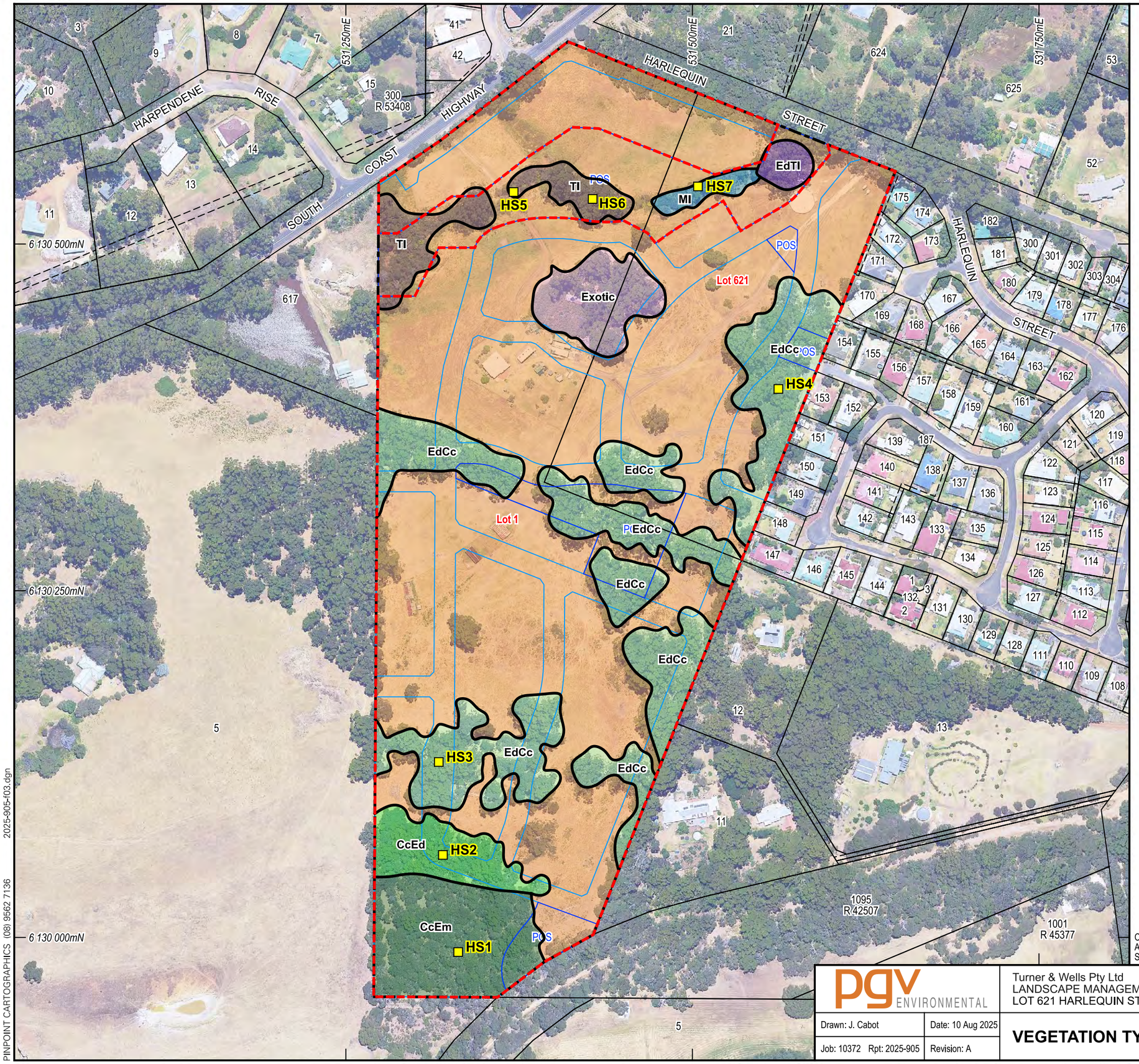
LANDSCAPE MANAGEMENT PLAN
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2025-905 | Revision: A

SITE BOUNDARY AND TOPOGRAPHY

Figure 2

PINPOINT CARTOGRAPHICS (08) 9562 7136 2025-905-f02.dgn



N

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SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Structure Plan Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure Plan
- Proposed POS
- Quadrat Location
- Vegetation Type Boundary
- **EdTl** Vegetation Type

Vegetation Types

CcEm
Corymbia calophylla (Marri)/*Eucalyptus marginata* (Jarrah) Low Woodland over *Hovea elliptica*/*Taxandria parviceps*/*Bossiaea linophylla* Low Shrubland

CcEd
Corymbia calophylla (Marri)/*Eucalyptus diversicolor* (Karri) Low Woodland over *Pteridium esculentum*/*Hibbertia cuneiformis* Open Low Heath

EdCc
Eucalyptus diversicolor (Karri)/*Corymbia calophylla* (Marri) Open Forest over *Pteridium esculentum* Low Shrubland

Tl
Taxandria linearifolia Tall Open Scrub over *Lepidosperma tetraquetrum*/*L. effusum*/*Pteridium esculentum* Shrubland/Sedgeland

EdTl
Eucalyptus diversicolor (Karri) Woodland over *Taxandria linearifolia* Tall Open Scrub over *Lepidosperma tetraquetrum*/*L. effusum*/*Pteridium esculentum* Sedgeland/Shrubland

MI
Melaleuca lanceolata Low Woodland over *Taxandria linearifolia* Tall Shrubland over *Lepidosperma effusum*/*Pteridium esculentum* Sedgeland/Shrubland

Exotic

Cleared

CADASTRAL SOURCE: Landgate, August 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

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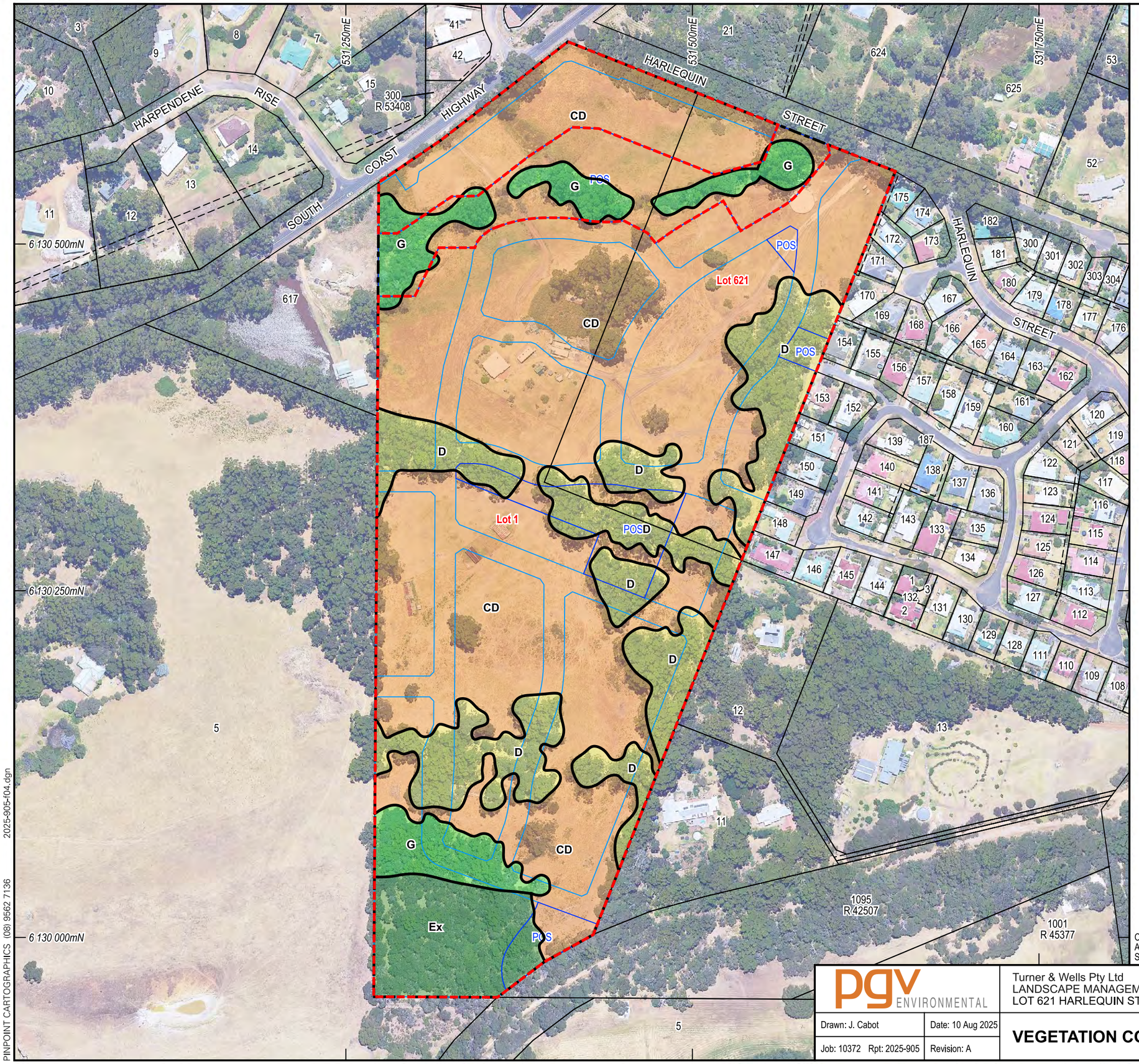
Turner & Wells Pty Ltd
LANDSCAPE MANAGEMENT PLAN
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2025-905 | Revision: A

VEGETATION TYPES

Figure 3

PINPOINT CARTOGRAPHICS (08) 9562 7136 2025-905-f03.dgn



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SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Structure Plan Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure plan
- Vegetation Condition Boundary
- Ex Vegetation Condition

Vegetation Condition

- Excellent
- Good
- Degraded
- Completely Degraded

CADASTRAL SOURCE: Landgate, August 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

PINPOINT CARTOGRAPHICS (08) 9562 7136 2025-905-f04.dgn

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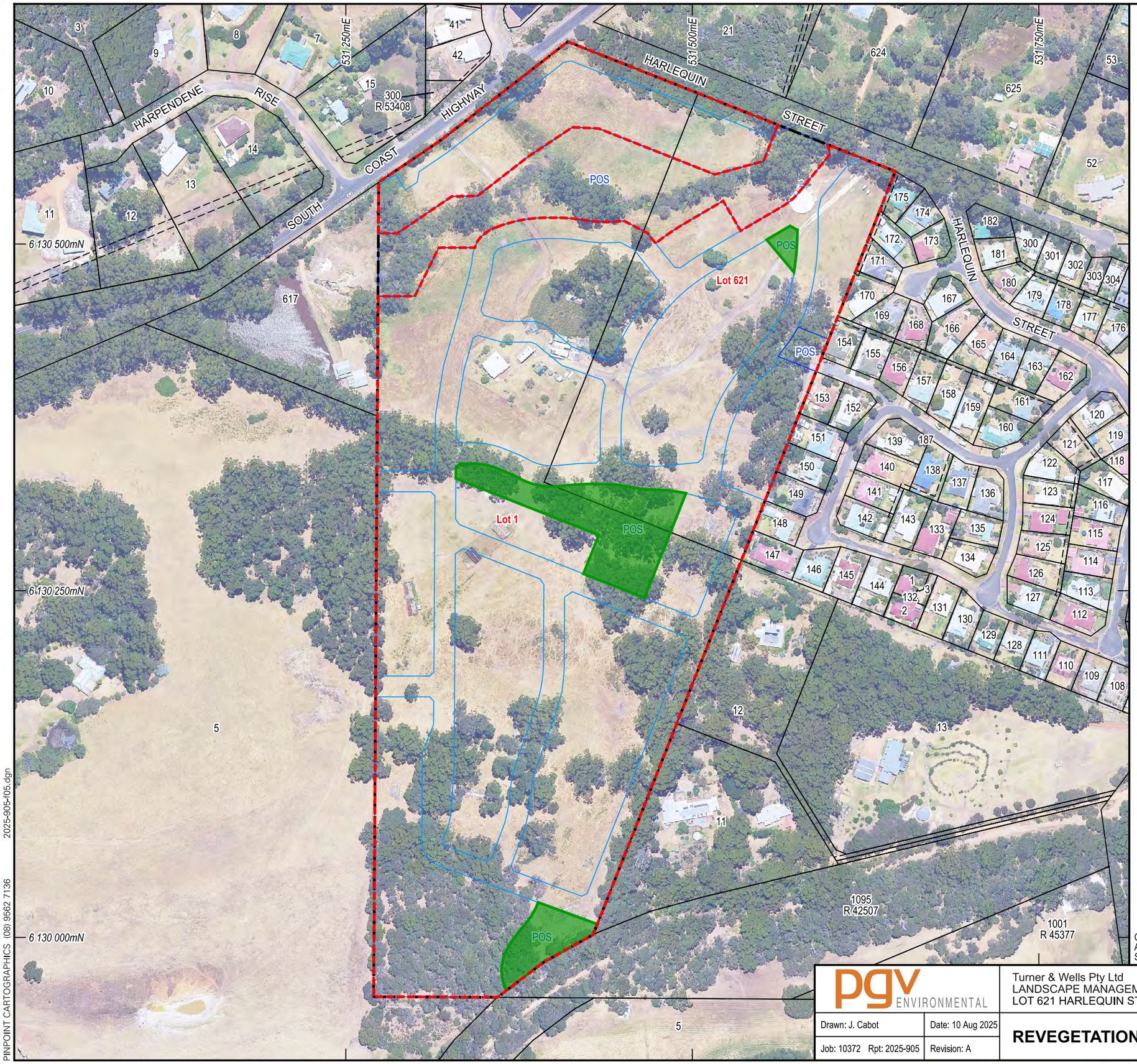
Turner & Wells Pty Ltd
LANDSCAPE MANAGEMENT PLAN
LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2025-905 | Revision: A

VEGETATION CONDITION

Figure 4



N

0 20 40 60 80 100m

SCALE 1 : 2 750 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Structure Plan Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Structure plan
- Proposed POS
- Public Open Space (POS) Area

CADASTRAL SOURCE: Landgate, August 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.
STRUCTURE PLAN SOURCE: Williams Consulting, Dwg No. 19-002-007C, 25/07/2025.

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LOT 621 HARLEQUIN STREET AND LOT 1 SOUTH COAST HIGHWAY, DENMARK

Drawn: J. Cabot | Date: 10 Aug 2025
Job: 10372 Rpt: 2025-905 | Revision: A

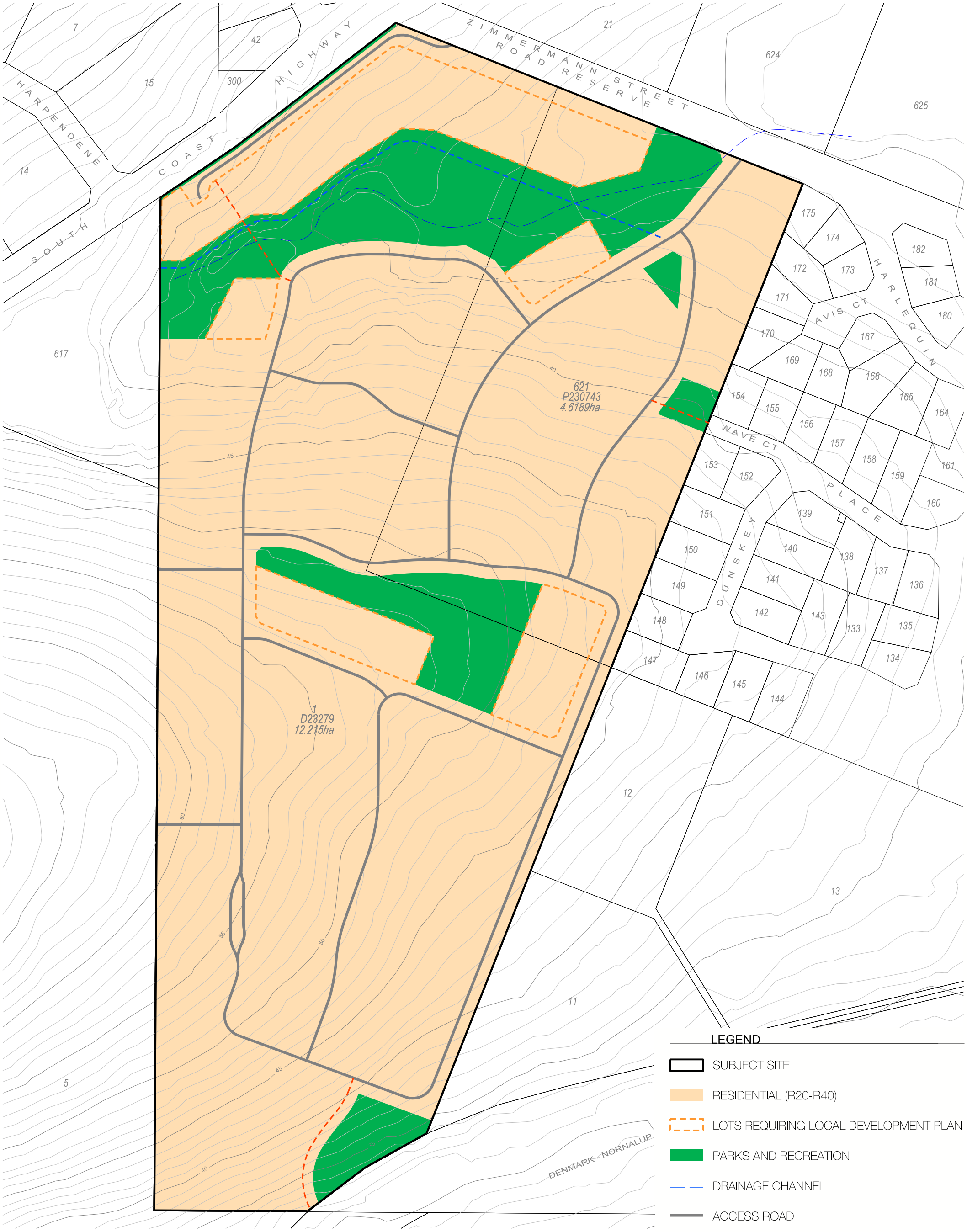
REVEGETATION AREAS

Figure 5

PINPOINT CARTOGRAPHICS (08) 9562 7136 2025-905-f05.dgn

APPENDIX 1

Structure Plan



621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

STRUCTURE PLAN - INDICATIVE ONLY
PLAN 1

WILLIAMS CONSULTING | TOWN PLANNING & PROJECT MANAGEMENT
ph: 0418 116216 | email: sam@williamsconsulting.page
date - 30/07/2025 | ref - 19-002-007CSP
scale - 1:2000 @ A3

N 0m 30m

APPENDIX 2

Aboriginal Cultural Heritage Inquiry System Reports

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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Search Criteria

No Aboriginal Cultural Heritage (ACH) Register in Custom search area - Polygon - 117.344108552973°E, 34.9661821886393°S (GDA94) : 117.346726388972°E, 34.967114154274°S (GDA94) : 117.345031232874°E, 34.97179140657 7°S (GDA94) : 117.343979806941°E, 34.9721958181044°S (GDA94) : 117.343829603236°E, 34.9725123126897°S (GDA94) : 117.342585058253°E, 34.9724595636771°S (GDA94) : 117.342670888941°E, 34.9671669067287°S (GDA94) : 117.342692346613°E, 34.9671493225809°S (GDA94) : 117.344108552973°E, 34.9661821886393°S (GDA94)

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Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Wagyl Kaip & Southern Noongar Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will ‘impact’ (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DEMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

Further advice can also be sought from the Department of Planning, Lands and Heritage via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.

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Map coordinates are based on the GDA 2020 Datum.

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Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register

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Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

0.37 kilometres

Map Scale 1 : 11,300

MGA Zone 50 (GDA2020)

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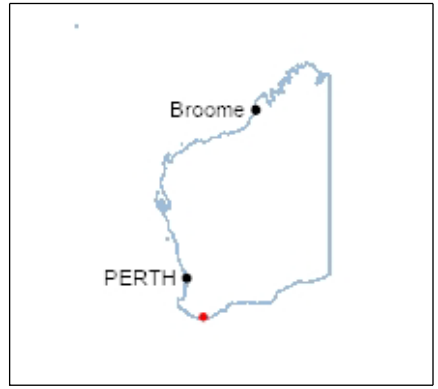

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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Legend

- Aboriginal Cultural Heritage (ACH) Lodged
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

0.37 kilometres

Map Scale 1 : 11,300

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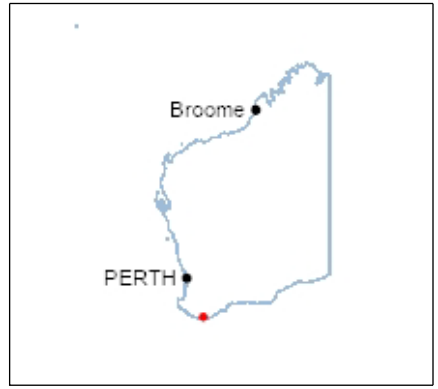

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No Aboriginal Cultural Heritage (ACH) Historic in Custom search area - Polygon - 117.344108552973°E, 34.9661821886393°S (GDA94) : 117.346726388972°E, 34.967114154274°S (GDA94) : 117.345031232874°E, 34.971791406577°S (GDA94) : 117.343979806941°E, 34.9721958181044°S (GDA94) : 117.343829603236°E, 34.9725123126897°S (GDA94) : 117.342585058253°E, 34.9724595636771°S (GDA94) : 117.342670888941°E, 34.9671669067287°S (GDA94) : 117.342692346613°E, 34.9671493225809°S (GDA94) : 117.344108552973°E, 34.9661821886393°S (GDA94)

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Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Wagyl Kaip & Southern Noongar Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will ‘impact’ (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

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If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DEMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

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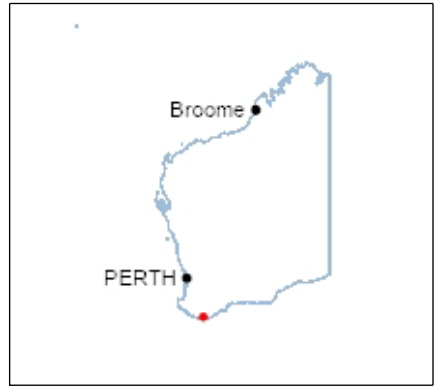

APPENDIX I
NOISE MANAGEMENT PLAN

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY DENMARK

RESIDENTIAL DEVELOPMENT

SPP5.4 NOISE MANAGEMENT PLAN

JUNE 2021

OUR REFERENCE: 27965-1-21228

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
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D	NOISE MONITORING DATA
E	QUIET HOUSE DESIGN

EXECUTIVE SUMMARY

Herring Storer Acoustics have been commissioned by Williams Consulting, to carry out an acoustical assessment of noise emissions associated with the proposed residential development located at 621 Harlequin Street and 1 South Coast Highway, Denmark.

The results of the acoustic assessment indicate that noise received at the ground floor level of residences located adjacent to South Coast Highway, could exceed the above acoustic criteria. In the worst-case location, the level of exceedance would be approximately 7 dB(A).

Therefore, to comply with the Policy, the following options have been provided:

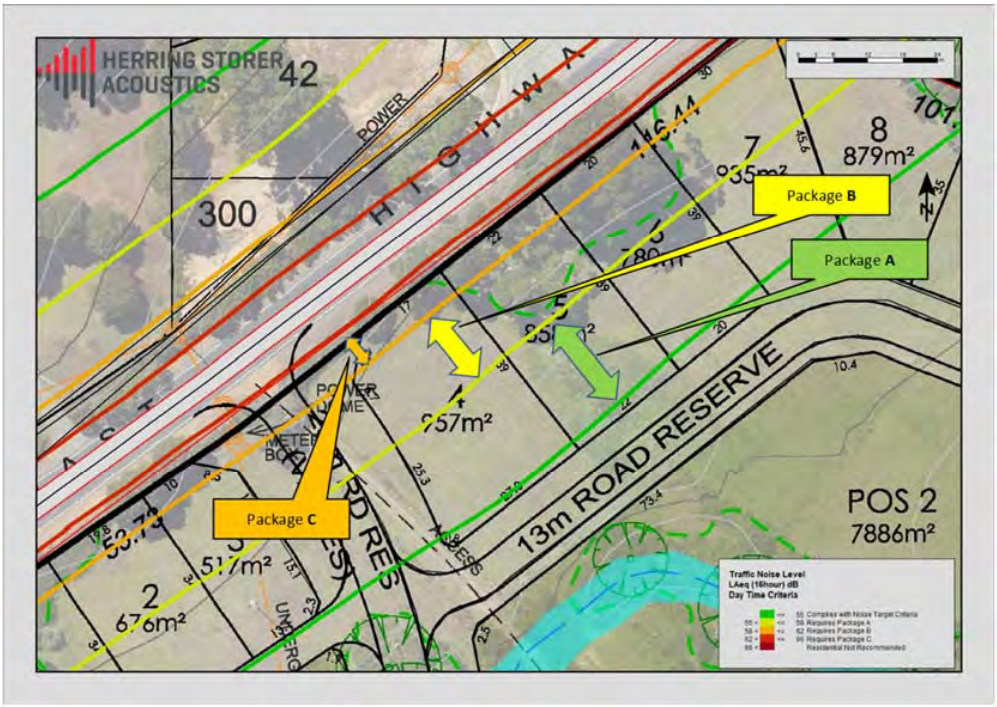
- Quiet House Design Package A to B.
- Building envelopes (setbacks).

For South Coast Highway, we do not believe that it would be either practicable or desirable to construct noise barriers at the edge of the road reserve, between the road and the residence. As the first row of lots located adjacent to the South Coast Highway are larger than average, there is an opportunity to have building envelopes setback within the lots. This setback to the edge of the building envelopes would provide sufficient distance to reduce noise levels to a point where "Quiet House" design, likely in the form of Package A to Package B, would allow the internal noise criteria to be met. Additionally, these lots also require notification on title of the impact of traffic noise from the future South Coast Highway.

Any lots exceeding the 55 dB(A) day target criteria would require notification on Titles.

If considering residential development within areas above 55 dB(A), "Quiet House" design as outlined in SPP 5.4 guidance would be required to further ameliorate noise levels to meet internal noise level criteria.

The package requirement depends on the external noise levels, however, for guidance the Figure below details the quiet house design for the future noise levels associated with the highway, without any noise control in the form of barriers.



FUTURE NOISE LEVELS

1.0 INTRODUCTION

Herring Storer Acoustics have been commissioned by Williams Consulting, to carry out an acoustical assessment of noise emissions associated with the proposed residential development of 621 Harlequin Street and 1 South Coast Highway, Denmark.

As the proposed development contains residential usage, an assessment of noise ingress into the development from traffic on the South Coast Highway has been undertaken.

The objectives of the study were to:

- Determine by noise modelling the noise levels that would be received at residences within the development from vehicles travelling on the future South Coast Highway.
- Assess the predicted noise levels received at residence for compliance with the requirements of the WAPC State Planning Policy 5.4 "Road and Rail Noise" (SPP 5.4).
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

The work was commissioned to accompany the development application.

2.0 CRITERIA

2.1 NOISE INGRESS INTO DEVELOPMENT

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 *"Road and Rail Noise".* The requirements of State Planning Policy 5.4 are outlined below.

POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

*a) noise-sensitive land-use within the policy's trigger distance of a transport corridor as specified in **Table 1**;*

*b) New or major upgrades of roads as specified in **Table 1** and maps **(Schedule 1,2 and 3);** or*

*c) New railways or major upgrades of railways as specified in maps (**Schedule 1, 2 and 3);** or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

***Table 1** identifies the State's transport corridors and the trigger distances to which the policy applies.*

*The designation of land within the trigger distances outlined in **Table 1** should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are un-affected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/ mitigation required. An initial screening assessment (**guidelines: Table 2: noise exposure forecast**) will determine if the lot is affected and to what extent."*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	***Trigger distance***	***Distance measured from***
Roads		
Strategic freight and major traffic routes *Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume*	*300 metres*	*Road carriageway edge*
Other significant freight/traffic routes *These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)*	*200 metres*	*Road carriageway edge*
Passenger railways		
	100 metres	*Centreline of the closest track*
Freight railways		
	200 metres	*Centreline of the closest track*

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

***Table 2** sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.*

In the application of the noise targets the objective is to achieve:

- *indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.*

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	***New/Upgrade***	***Noise Targets***		
		Outdoor		***Indoor***
		Day (L_{Aeq}(Day) dB) (6 am-10 pm)	***Night (L_{Aeq}(Night)dB) (10 pm-6 am)***	***(L_{Aeq} dB)***
Noise-sensitive land-use and/or development	*New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor*	*55*	*50*	*L_{Aeq} (Day) 40(Living and work areas)* *L_{Aeq} (Night) 35 (bedrooms)*
Roads	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*
Railways	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*

Notes:

- *The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.*
- *For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.*
- *The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.*
- *Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.*

Noise Exposure Forecast (Section 6.2)

*When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2**: noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/ or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:*

- *no further measures is required;*
- *noise-sensitive land-use and/or development is acceptable subject to deemed-to- comply mitigation measures; or*
- *noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/ or development is subject to mitigation measures outlined in a noise management plan."*

3.0 NOISE MONITORING

Noise monitoring was undertaken as part of a previous study within the same area, with the results used to calibrate the noise model.

In summary, the monitoring was undertaken over seven-day period commencing Monday 29th March 2021. Monitoring was conducted at corner of Wentworth Road and South Coast Highway. The monitor was placed 20m from the nearest running edge of respective road of interest.

The results of this monitoring are summarised in Table 3.1.

TABLE 3.1 : SUMMARY OF MEASURED ROAD TRAFFIC NOISE LEVELS (dB(A))

Date	South Coast Highway Monitor		
	$L_{A10(18hour)}$	$L_{Aeq,day}$ (6am to 10pm)	$L_{Aeq,night}$ (10pm to 6am)
AVERAGE	**58.1**	**58.1**	**45.7**

Note: Based on the results of the noise monitoring the difference between the L_{Aeq} (Day) and L_{Aeq} (Night) is greater than 5 dB(A) (ie; 12.4 dB(A)). Hence, achieving compliance with the day period criteria would also result in compliance with the night period criteria. Therefore, the day period has been used for the assessment.

For information, the results of the monitoring are shown graphically in Appendix E with Figure 3.1 showing the location map, and Figure 3.2 showing the monitor in situ and the South Coast Highway surface.

FIGURE 3.1 - NOISE MONITOR LOCATION PLAN

FIGURE 3.2 - NOISE MONITOR IN SITU AND ROAD SURFACE

4.0 METHODOLOGY

4.1 ROAD TRAFFIC

The future road traffic volumes were based on information provided on the MRWA traffic web site for current traffic flows. For the future proposed traffic volumes, an increase of 2.5% per annum was used.

Predictive noise modelling has allowed for 3,600 vpd in the future (2041) which is around a 2.5 % annual increase. This equates to a 2 dB(A) increase in noise levels for the future road traffic volumes which is inline with the requirements of SPP 5.4.

Other information relevant to the calculations are shown below in Table 4.1.

TABLE 4.1 - NOISE MODELLING INPUT DATA

Parameter	Current (2020)	Future (2041)
Traffic flows VPD South Coast Highway	2,424	3,600
Heavy Vehicles (%)	14.2%	14.2%
Traffic Speed km/hr	90	90
Road Surface	Chip Seal	Chip Seal
Façade Correction	+2.5	+2.5

Other input data for the model included:

- Traffic data from MRWA (https://mrapps.mainroads.wa.gov.au/TrafficMap/)
- Noise source heights for the three road source strings (Passenger Vehicles, Heavy Vehicles Engine and Heavy Vehicle Exhausts) are +0.5, +1.5 and +3.6m, with a noise correction of -0.8 and -8.0 applied to the heavy vehicles engine and exhaust noise sources.
- Topographical data, with the ground level within the development based on natural ground levels as surveys conducted.
- A +2.5 dB adjustment to allow for façade reflection.
- Development receiver heights at 1.4m above ground level.

To determine the noise that would be received within the development from the surrounding road network, acoustic modelling was carried out using the computer program 'SoundPlan'. The receiver location relates to the proposed Lots, which is outlined in the development as shown in Figure 4.1 for information purposes.

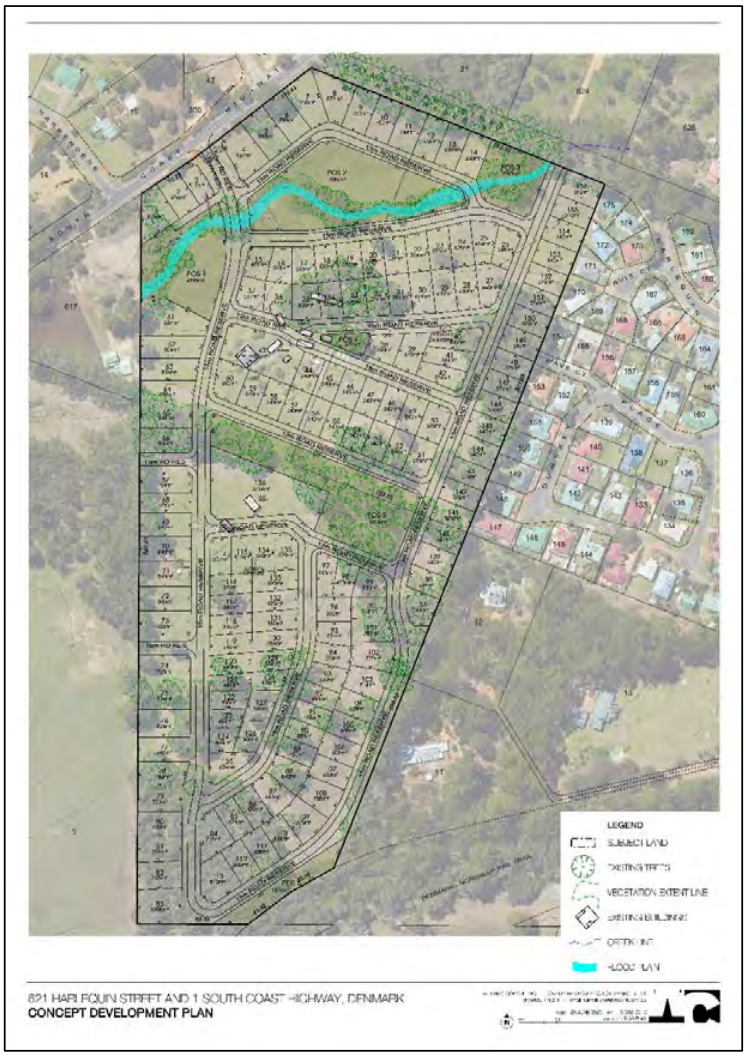


FIGURE 4.1 – RECEIVER LOCATIONS

The following scenario was modelled:

1. Future traffic volumes, without any noise amelioration.

Based on the above, the noise contours plot for day period for the above modelling scenario is attached in Appendix B.

5.0 RESULTS

5.1 ROAD TRAFFIC

Under the WAPC State Planning Policy 5.4, for this development, the appropriate "Noise Targets" to be achieved under SPP 5.4, external to a residence are:

External

Day	Maximum of 55 dB(A) L_{Aeq}
Night	Maximum of 50 dB(A) L_{Aeq}

The policy states that the "outdoor targets are to be met at all outdoor areas as far as reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines". The Policy also states, under Section 6 – Policy Measures that "a reasonable degree of acoustic amenity for living areas on each residential lot". The policy recognises that "it may not be practicable to meet the outdoor noise targets".

The Policy states the following acceptable internal noise levels:

Internal

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

For this development, compliance with the requirements of SPP 5.4, noise modelling and assessment are based on the day period for residential Lots located adjacent to South Coast Highway.

The results of the acoustic assessment indicate that noise received at the Lots would exceed the "Noise Targets" as outlined in SPP 5.4, therefore noise amelioration would be required. The Figure below shows the future noise contour plot showing the spread of noise into the development.

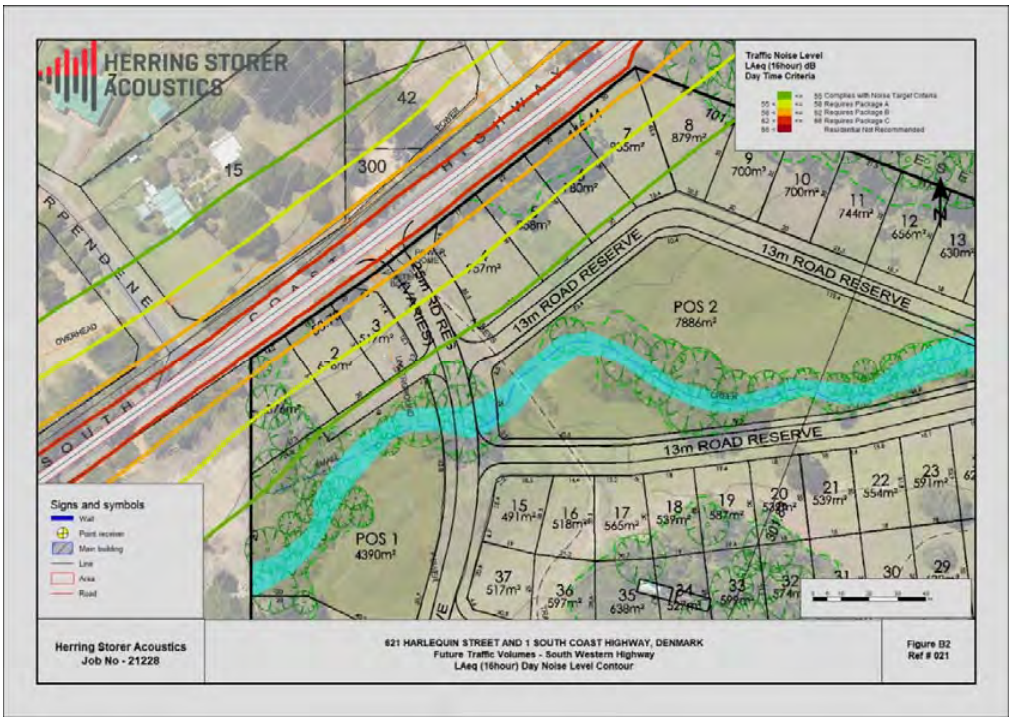


FIGURE 5.1 – FUTURE NOISE LEVELS

6.0 ASSESSMENT

Under the WAPC State Planning Policy 5.4, for this development, the Noise Targets as listed in Table 2 are the appropriate noise levels to be achieved. Based on the noise monitoring, the difference between the $L_{Aeq(16hr)}$ and the $L_{Aeq(8hr)}$ would be greater than 5 dB(A). Therefore, the day period would be the critical period for compliance and if compliance with the day period noise limit is achieved, then compliance with the night period noise limits would also be achieved. The policy states that the outdoor criteria applies to the ground floor level only, however, it also states that noise mitigation measures should be implemented with a view to achieving the target levels in least one outdoor living area.

For residential premises, the Policy states that residence should be designed to meet the following acceptable internal noise levels:

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

The results of the acoustic assessment indicate that noise received at the ground floor level of residences located adjacent to South Coast Highway, could exceed the above acoustic criteria. In the worst-case location, the level of exceedance would be approximately 7 dB(A).

Therefore, to comply with the Policy, the following options have been provided:

- Quiet House Design Package A to B.
- Building envelopes (setbacks).

For South Coast Highway, we do not believe that it would be either practicable or desirable to construct noise barriers at the edge of the road reserve, between the road and the residence. As the first row of lots located adjacent to the South Coast Highway are larger than average, there is an opportunity to have building envelopes setback within the lots. This setback to the edge of the building envelopes would provide sufficient distance to reduce noise levels to a point where “Quiet House” design, likely in the form of Package A to Package B, would allow the internal noise criteria to be met. Additionally, these lots also require notification on title of the impact of traffic noise from the future South Coast Highway.

Any lots exceeding the 55 dB(A) day target criteria would require notification on Titles.

If considering residential development within areas above 55 dB(A), “Quiet House” design as outlined in SPP 5.4 guidance would be required to further ameliorate noise levels to meet internal noise level criteria.

The package requirement depends on the external noise levels, however, for guidance Figure 6.1 details the quiet house design for the future noise levels associated with the highway, without any noise control in the form of barriers, with a summary contained in Table 6.1 below.

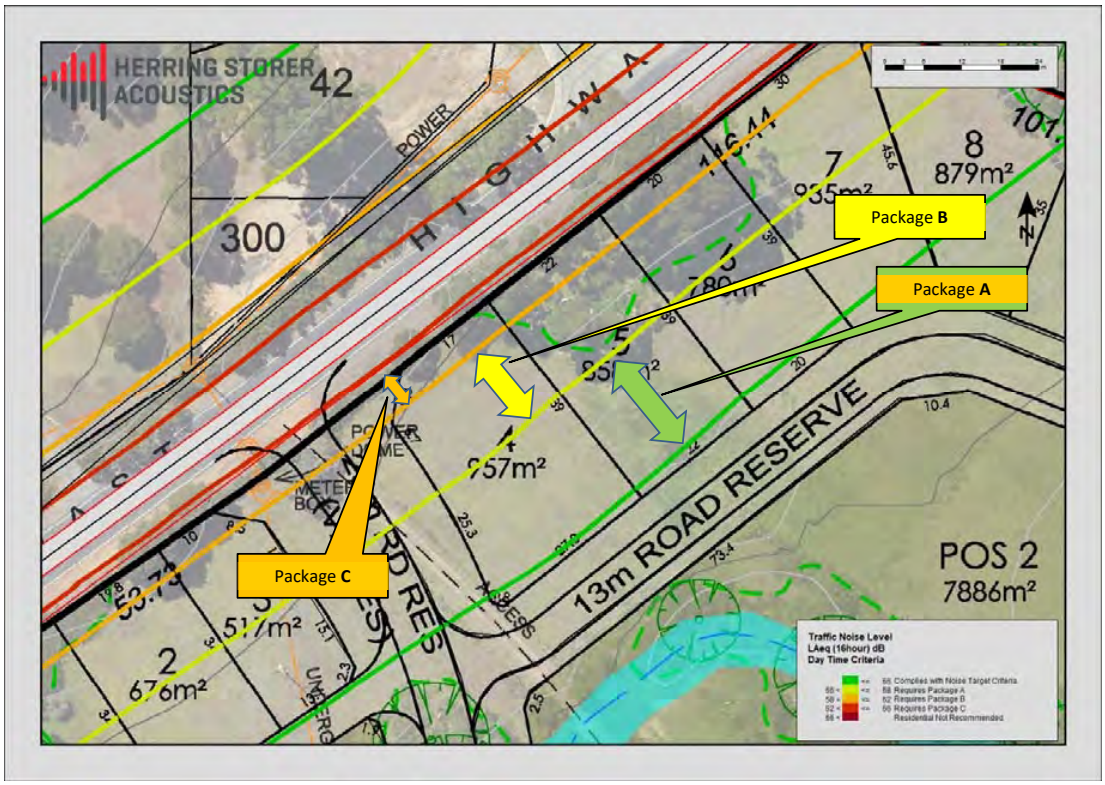


FIGURE 6.1 – PACKAGE REQUIREMENTS

TABLE 6.1 ROAD AND RAIL NOISE GUIDELINES SEPTEMBER 2019 (TABLE 2) : NOISE EXPOSURE FORECAST

Forecast Excess Noise Level, dB	Exposure Category	Policy requirements for noise-sensitive land-use and/or development
0 or less	-	No further measures Noise-sensitive land-use and/or development is acceptable, subject to: Mitigation measures in accordance with an approved noise management plan; Or quiet house package as specified
1 to 3	A	
-	*A+	
4 to 7	B	
-	*B+	
8 to 11	C	
-	*C+	
12 to 15	D	Noise-sensitive land-use and /or development is not recommended. There is no default quiet house option due to excessive forecast noise: Professional design input is required in order to achieve compliance with relevant criteria. If noise-sensitive land-use and/or development is unavoidable, an approved noise management plan is required to demonstrate compliance with the noise target (see Table 1).
16+	E	

*Assists to mitigate short term noise events from freight rail.

Information on the deemed to satisfy constructions for the various “Quiet House Design” packages are contained in Appendix E.

Notes:

1 We understand that the development is a Proposed Structure Plan stage, hence the information contained in Appendix B regarding areas requiring “Quiet House” design will need to be refined once the lots have been defined and final heights are established. Additionally, any modifications to the Structure Plan, would vary the noise mitigation requirements relating “Quiet House” design outlined in Appendix C.

2 The summary of the Quiet House Design Packages attached in Appendix E, are “Deemed to Satisfy” constructions. Alternative constructions would be acceptable, provided they are supported by an acoustic report prepared by a suitably qualified acoustic consultant.

3 Quiet House Design requirements are likely to lessen for residential premises set back from the highway, as the façade residences will barrier those behind.

4 Additionally, these residences also require Notifications on Titles.

APPENDIX A

Development Plans

621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK

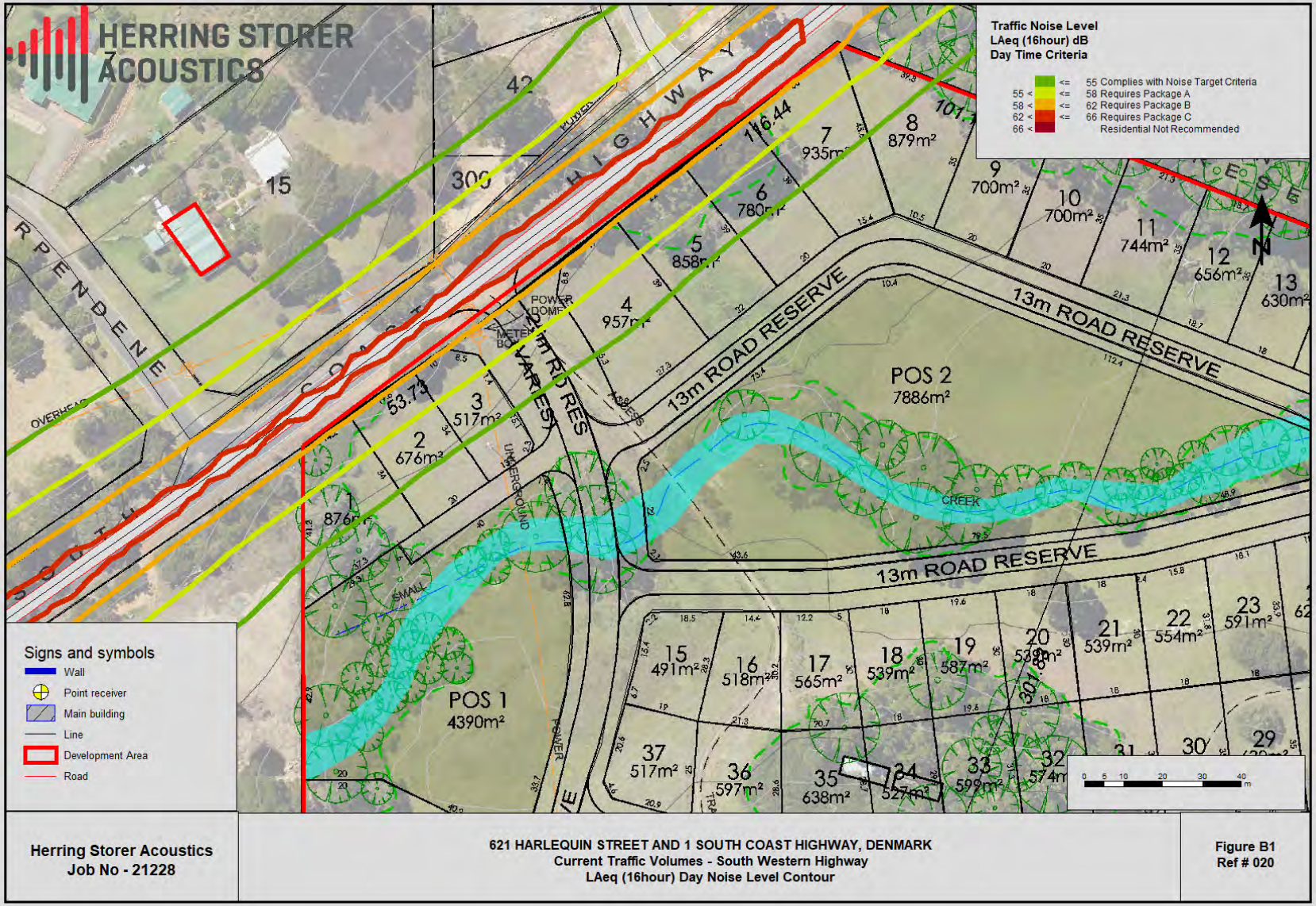
CONCEPT DEVELOPMENT PLAN

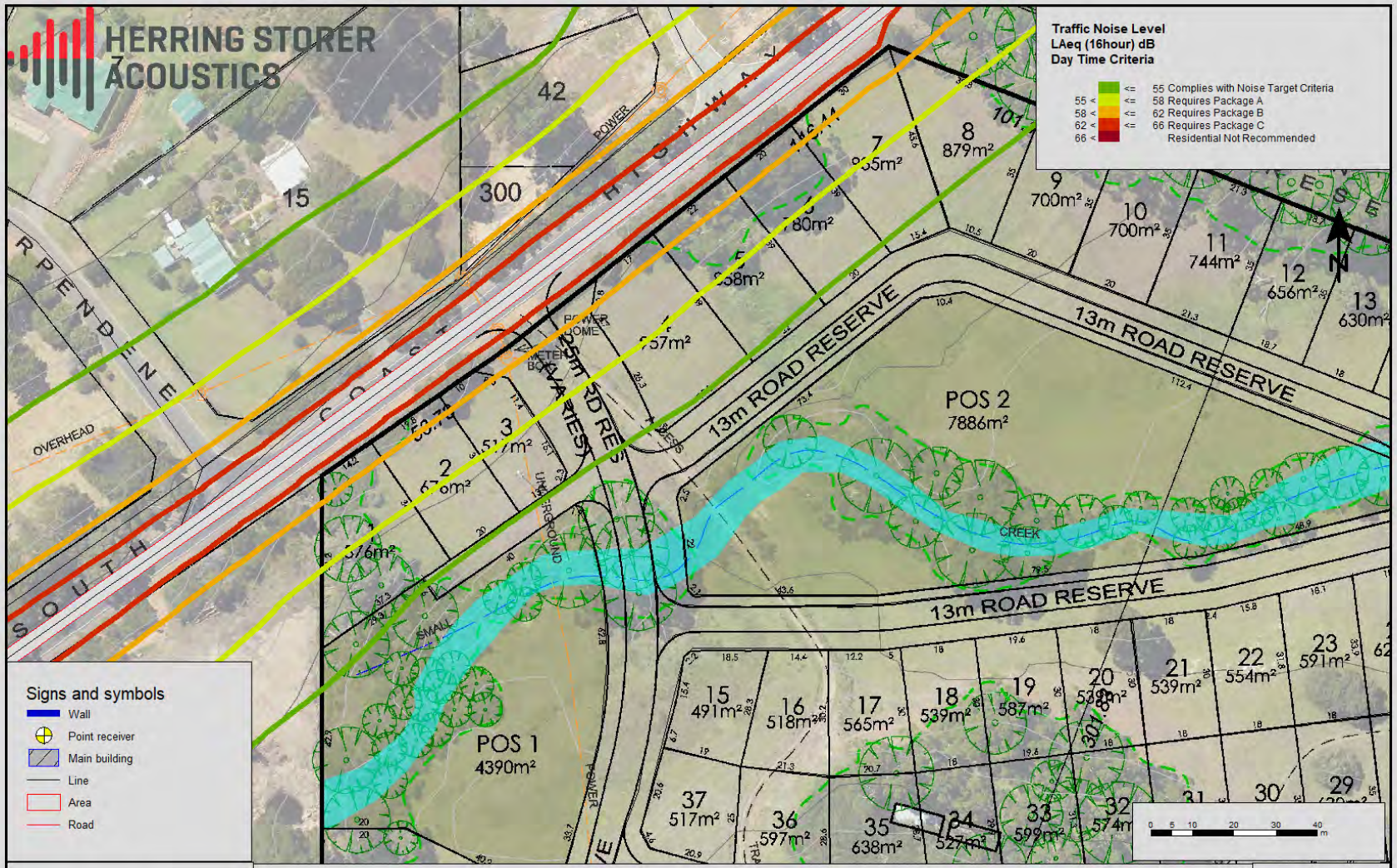
WILLIAMS CONSULTING | TOWN PLANNING & PROJECT MANAGEMENT
ph: 0418 110210 | email: samwi.arts@westnet.com.au

date - 25 JUNE 2020 | ref - 19-002-00 D
scale - 1:2000 @ A3

APPENDIX B

$L_{Aeq(16hr)}$ DAY
NOISE CONTOURS FOR SOUTH COAST HIGHWAY


HERRING STORER ACOUSTICS
Traffic Noise Level
LAeq (16hour) dB
Day Time Criteria
<= 55 Complies with Noise Target Criteria
55 < <= 58 Requires Package A
58 < <= 62 Requires Package B
62 < <= 66 Requires Package C
66 < Residential Not Recommended
HIGHWAY
SOUTH COAST
PENDENE
13m ROAD RESERVE
POS 1
4390m²
POS 2
7886m²
CREEK
Signs and symbols
Wall
Point receiver
Main building
Line
Development Area
Road
Herring Storer Acoustics
Job No - 21228
621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
Current Traffic Volumes - South Western Highway
LAeq (16hour) Day Noise Level Contour
Figure B1
Ref # 020


HERRING STORER ACOUSTICS
Traffic Noise Level
LAeq (16hour) dB
Day Time Criteria
<= 55 Complies with Noise Target Criteria
55 < <= 58 Requires Package A
58 < <= 62 Requires Package B
62 < <= 66 Requires Package C
66 < Residential Not Recommended
SOUTH COAST HIGHWAY
RPENDENE
OVERHEAD
POWER
42
15
300
101
8
879m²
9
700m²
10
700m²
11
744m²
12
656m²
13
630m²
13m ROAD RESERVE
POS 2
7886m²
CREEK
POS 1
4390m²
SMALL
UNDERGROUND
POWER
3
2
15
491m²
16
518m²
17
565m²
18
539m²
19
587m²
20
21
539m²
22
554m²
23
591m²
37
517m²
36
597m²
35
638m²
34
527m²
33
599m²
32
30
29
Signs and symbols
Wall
Point receiver
Main building
Line
Area
Road
0 5 10 20 30 40 m
Herring Storer Acoustics
Job No - 21228
621 HARLEQUIN STREET AND 1 SOUTH COAST HIGHWAY, DENMARK
Future Traffic Volumes - South Western Highway
LAeq (16hour) Day Noise Level Contour
Figure B2
Ref # 021

APPENDIX C

TRAFFIC FLOW VOLUMES – SOUTH COAST HIGHWAY

mainroads WESTERN AUSTRALIA

SITE 15391

Hourly Volume

South Coast Hwy (H009)

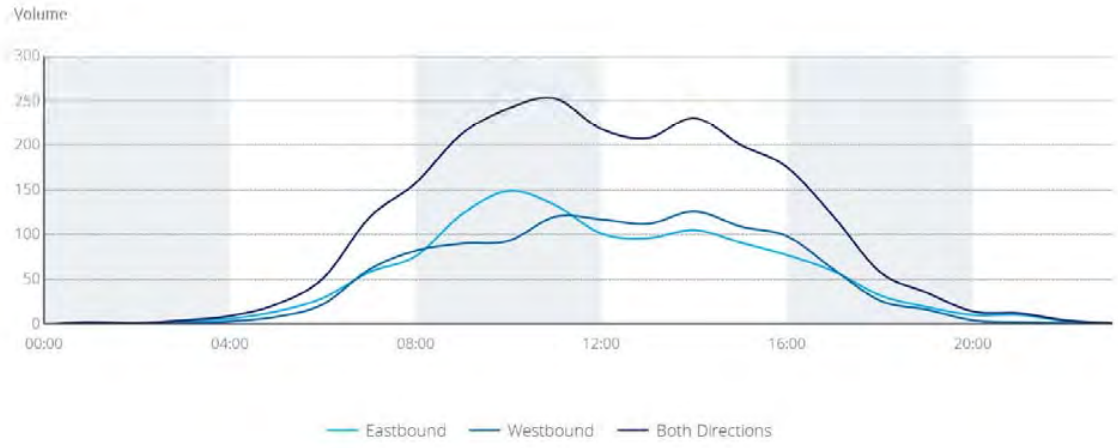
East of William Bay Rd (SLK 449.84)

2020/21
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	0	0	0	0	0	0	0.0
01:00	1	1	2	0	0	0	0.0
02:00	0	1	1	0	0	0	0.0
03:00	3	1	4	1	0	1	25.0
04:00	6	3	9	2	1	3	33.3
05:00	14	8	22	3	1	4	18.2
06:00	29	22	51	6	5	11	21.6
07:00	58	61	119	13	11	24	20.2
08:00	76	82	158	11	14	25	15.8
09:00	123	90	213	19	17	36	16.9
10:00	149	93	242	23	18	41	16.9
11:00	133	120	253	21	17	38	15.0
12:00	101	117	218	16	21	37	17.0
13:00	96	112	208	16	17	33	15.9
14:00	105	126	231	16	21	37	16.0
15:00	91	109	200	12	24	36	18.0
16:00	77	98	175	9	12	21	12.0
17:00	59	61	120	5	7	12	10.0
18:00	32	26	58	2	4	6	10.3
19:00	19	16	35	1	1	2	5.7
20:00	10	4	14	0	1	1	7.1
21:00	10	2	12	1	0	1	8.3
22:00	3	1	4	0	0	0	0.0
23:00	1	0	1	0	0	0	0.0
TOTAL	1196	1154	2350	177	192	369	15.7

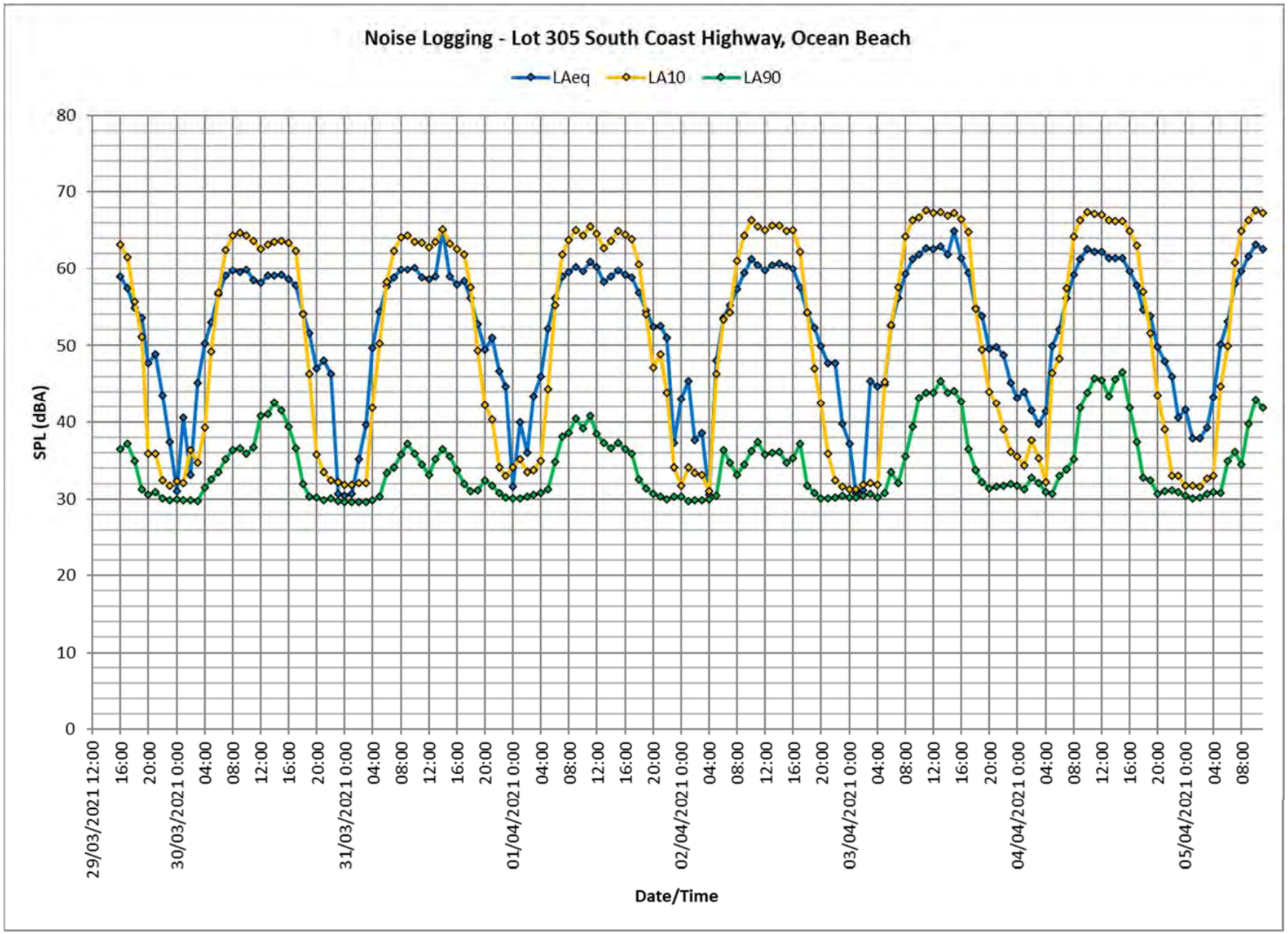
Peak Statistics

AM	TIME	09:45	11:30	11:00	10:00	11:30	10:00
	VOL	155	126	253	23	20	41
PM	TIME	13:45	14:00	14:15	13:45	15:00	12:15
	VOL	108	126	231	18	24	38



APPENDIX D

MONITORING DATA


Noise Logging - Lot 305 South Coast Highway, Ocean Beach
LAeq
LA10
LA90
SPL (dBA)
80
70
60
50
40
30
20
10
0
29/03/2021 12:00
16:00
20:00
30/03/2021 0:00
04:00
08:00
12:00
16:00
20:00
31/03/2021 0:00
04:00
08:00
12:00
16:00
20:00
01/04/2021 0:00
04:00
08:00
12:00
16:00
20:00
02/04/2021 0:00
04:00
08:00
12:00
16:00
20:00
03/04/2021 0:00
04:00
08:00
12:00
16:00
20:00
04/04/2021 0:00
04:00
08:00
12:00
16:00
20:00
05/04/2021 0:00
04:00
08:00
Date/Time

APPENDIX E

QUIET HOUSE DESIGN

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					Mechanical ventilation/air conditioning considerations
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	
A **Quiet House A**	**Facing**	**Bedroom and Indoor Living and work areas to Rw + Ctr 45dB** **Stud Frame Walls** ➢ One row of 92mm studs at 60mm centres with: ➢ Resilient steel channels fixed to the outside of the studs; and ➢ 9.5mm hardboard or 9mm fibre cement weatherboards or one layer of 19mm board cladding fixed to the outside of the channels; and ➢ 75mm glass wool (11kg/m3) or 75mm polyester (14kg/m3) insulation, positioned between the studs; and ➢ -Two layers of 16mm fire-protective grade plasterboard fixed to the inside face of the studs. **Brick Walls** ➢ Single leaf of 150mm brick masonry with 13mm cement render on each face: **OR** ➢ Double brick: two leaves of 90 mm clay brick masonry with a 20mm cavity between leaves.	**Bedrooms**: ➢ Fully glazed hinged door with certified R_w+C_{tr} **28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (R_w+C_{tr} **28 dB**). Sealed awning or casement windows may use 6 mm glazing instead**: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (R_w+C_{tr} **31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (R_w+C_{tr} **25dB**)**: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB : OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (R_w+C_{tr} **31 dB**).	**To R_w+C_{tr} 35dB** ➢ Concrete or terracotta tile or metal sheet roof with sarking and at least 10mm plasterboard ceiling	➢ At least one outdoor living area located on the opposite side of the building from the transport corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of **Rw 40dB** into sensitive spaces ➢ Evaporative systems require attenuated ceiling air vents to allow closed windows ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable
	Side On		As per "Facing" above, except R_w+C_{tr} values may be 3dB less, e.g. glazed sliding door with 10 mm glass and weather seals for bedrooms	As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%			
	Opposite		No specific requirements	No specific requirements			

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					Mechanical ventilation/air conditioning considerations
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	
B **Quiet House B**	**Facing**	**Bedroom and indoor living and work areas to R_w+C_{tr} 50dB** **Single leaf of 90 mm clay brick masonry with:** ➢ A row of 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres; ➢ A cavity of 25 mm between leaves; ➢ 50 mm glass wool or polyester cavity insulation (R2.0+) insulation between studs; and ➢ One layer of 10mm plasterboard fixed to the inside face ➢ Single leaf of 220mm brick masonry with 13mm cement render on each face ➢ 150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face **Double brick: two leaves of 90mm clay brick masonry with:** ➢ A 50mm cavity between leaves ➢ 50mm glass wool or polyester cavity insulation (R2.0+) ➢ Resilient ties where required to connect leaves **Double brick: two leaves of 110mm clay brick masonry with** ➢ 50mm cavity between leaves and R2.0+ cavity insulation	**Bedrooms** ➢ Fully glazed hinged door with certified **R_w+C_{tr} 31dB** rated door and frame including seals and 10mm glass **Indoor Living and work areas** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor areas: Fixed sash, awning or casement with minimum 6mm single or 6mm-12mm-6mm double insulted glazing (**Rw+Ctr 31dB**). ➢ Up to 60% floor area: as per above but must be minimum10mm single or 6mm-12mm-10mm double insulated glazing (**Rw+Ctr 34dB**) **Indoor Living and work areas** ➢ Up to 40% floor area; Sliding or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (R_w+C_{tr} 28dB). Sealed awning or casement windows may use 6mm glazing instead. **: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**R_w+C_{tr} 31dB**). **: OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 34dB).**	**To R_w+C_{tr} 35dB** ➢ Concrete or terracotta tile sarking and at least 10mm plasterboard ceiling, R3.0+ insulation **OR** ➢ Metal sheet roof, sarking and at least 10mm plasterboard ceiling, R3.0+ insulation	➢ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2.4 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of **Rw 40dB** into sensitive spaces ➢ Evaporative systems require attenuated ceiling air vents to allow closed windows ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable
	Side-On		**Bedrooms**: ➢ Fully glazed hinged door with certified **R_w+C_{tr} 28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 28 dB**). Sealed awning or casement windows may use 6 mm glazing instead. **: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (**R_w+C_{tr} 31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 25dB**). **: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB**) **: OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 31 dB**).			
	Opposite		As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%	As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%			

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	**Mechanical ventilation/air conditioning considerations**
C **Quiet House C**	**Facing**	**Bedroom and indoor living and work areas to R_w+C_{tr} 50dB** **Single leaf of 90 mm clay brick masonry with:** ➢ A row of 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres; ➢ A cavity of 25 mm between leaves; ➢ 50 mm glass wool or polyester cavity insulation (R2.0+) insulation between studs; and ➢ One layer of 10mm plasterboard fixed to the inside face ➢ Single leaf of 220mm brick masonry with 13mm cement render on each face ➢ 150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face **Double brick: two leaves of 90mm clay brick masonry with:** ➢ A 50mm cavity between leaves ➢ 50mm glass wool or polyester cavity insulation (R2.0+) ➢ Resilient ties where required to connect leaves **Double brick: two leaves of 110mm clay brick masonry with** ➢ 50mm cavity between leaves and R2.0+ cavity insulation	**Bedrooms** ➢ External doors to bedrooms facing the corridor are not recommended. **Indoor Living and work areas** ➢ Fully glazed hinged door with certified **Rw+Ctr 31dB** rated door and frame including seals and 10mm glass**: OR** 40mm solid core timber frame and door (without glass or with glass inserts not less than 6mm), side hinged with certified **Rw 32dB** acoustically rated door and frame system including seals	**Bedrooms**: ➢ Total external door and window system area up to 20% of room floor area: Fixed sash, awning or casement with minimum 6mm single or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 31dB): OR** ➢ Up to 40% floor area; as per above but must be minimum 10mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 34dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulated glazing (**R_w+C_{tr} 31dB**). Sealed awning or casement windows may use 6mm glazing instead**: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr 34dB)**	**To R_w+C_{tr} 40dB** ➢ To al bedrooms, 2 layers of 10mm plasterboard, or one layer 13mm high density sealed plasterboard (minimum surface density of 12.5 kg/m2), affixed using steel furring channels beneath ceiling rafters/supports**: and** ➢ R3.0+ insulation batts laid in cavity **: and** ➢ Concrete or terracotta tile roof with sarking, or metal sheet roof with foil backed R2.0+ fibre insulation between steel sheeting and roof battens	➢ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2.4 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of Rw 40dB into sensitive spaces. ➢ Evaporative systems require attenuated ceiling air cents to allow closed windows. ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, close or relocated to building sides facing away from the corridor where practicable.
	Side-on		**Bedrooms** ➢ Fully glazed hinged door with certified **R_w+C_{tr} 31dB** rated door and frame including seals and 10mm glass **Indoor Living and work areas** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals				
	Opposite		**Bedrooms**: ➢ Fully glazed hinged door with certified **R_w+C_{tr} 28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 28 dB**). Sealed awning or casement windows may use 6 mm glazing instead**: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (**R_w+C_{tr} 31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 25dB): OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB : OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 31 dB**).			

Note: The above treatments are a deemed to satisfy construction. Alternative designs are acceptable, provided they are certified by a suitable qualified acoustic consultant.

APPENDIX K
CONTAMINATION ADVICE

B|&PE
BOWMAN & PARTNERS
ENVIRONMENTAL
ENVIRONMENTAL SCIENTISTS · INDEPENDENT VERIFIERS

PO Box 95 Dunsborough WA, 6281
M: 0408 942 909
E: bpe@westnet.com.au
ABN: 11 159 736 777

Your Ref: 621 Harlequin Street and 1 South Coast Highway Denmark
Our Ref: WC/001/2025

9th March 2025

Mr Sam Williams
Williams Consulting

By email to: Sam Williams <sam@williamsconsulting.page>

Dear Mr Williams

Historical Dairy Area on Lot 1 South Coast Highway Denmark

I refer to your verbal and email correspondence seeking advice in regard to the matter of a historical dairy located on this land.

I understand that you have prepared a Structure Plan for this land and an adjacent lot. This follows the rezoning of the land to Residential under the Town Planning Scheme.

You have advised that as part of their considerations of the proposal, the Shire of Denmark has sought advice in regard to a historical dairy which operated on the site several decades ago, and any implications for contamination which arise from this matter.

I understand the Department of Health made comment during the referral period of the scheme amendment, asking for evidence there is no contamination associated with the former dairy. As the DWER is the responsible authority for contaminated sites we have deferred to the Contaminated Sites Act 2003, and appropriate DWER documentation.

Under the Contaminated Site Act 2003, the Department of Water and Environmental Regulation has published the document *Guidelines: Assessment and Management of Contaminated Sites* (DWER, 2021). At Appendix B of this document there is a list of industries and land uses which are considered to have the potential to cause contamination of the environment.

I note that "dairy", as an industry or land use, is not listed within Appendix B, and is therefore not considered to create contamination risk potential.

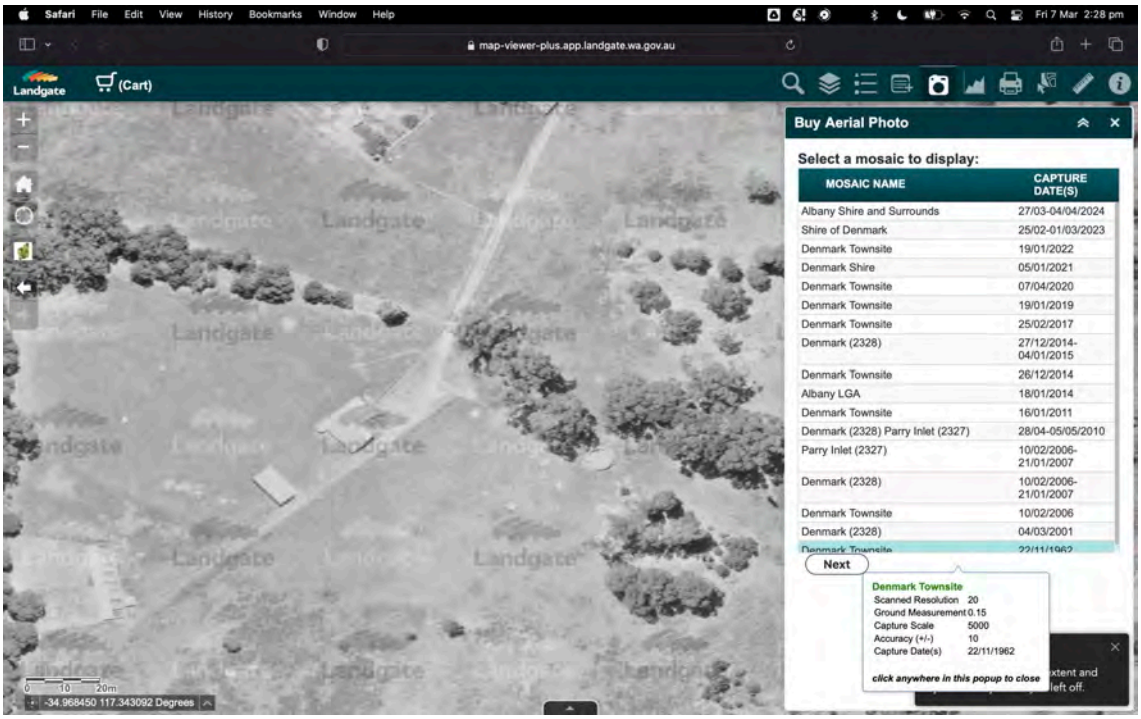
Notwithstanding this policy position via the guideline document, I can provide commentary about dairy operations, in the context of this activity on this site.

I have been advised by you that the dairy was of a very small scale, and likely a hobby scale operation to provide milk to the farm residents.

I have extracted a historical aerial photograph from 1961 and examined the area pointed out to me as the dairy. The photography shows a single small shed reached by a gravel track and with a gravel parking apron. The scale and appearance of the site are consistent with the dairy being for family use only, and there are no associated structures or facilities which suggest it was a commercial operation.

For larger scale commercial dairies, there is normally a requirement to install effluent ponds where washdown water from the dairy floor is directed. This water would contain cattle manure and spilt milk washdowns. Depending on site management and environmental settings, these ponds can result in elevated nitrogen in underlying groundwater.

For this site, by viewing historical aerial photographs, I can see no evidence of any pond structures, either in 1961 or on aerial photography over the decades until the presence.



This figure is a screenshot of the site in 1961 taken from the DOLA Shared Land Information System Platform. The dairy milking shed is the larger building located in the centre of the photograph.

Your advice together with this aerial photography evidence indicates that the milking of a few dairy cows was a very small operation, and did not require any ponds, with washdown water simply drained into the surrounding land.

At this scale, it is reasonable to conclude that animal manure and any milk spillages, when washed into the surrounding lands, would simply be assimilated by the soil and pasture system, likely leading to assistance in the growth of pasture.

The aerial photographic records and the nature and scale of the dairy building indicate, together with the assessment guidelines, indicate that contamination risk should not be a relevant factor in the consideration of the Structure Plan.

I trust this advice is sufficient for your purposes, and invite you to refer any queries or requirements for further information to me.

Yours sincerely,

MARTIN BOWMAN

Director

2110-21c N.T.S 20.05.09

LEGEND

- R-Codings
- Low Fuel Zone Fire Management
- Neighbourhood Connector
- Dual Use Paths
- Restricted Access
- Controlled Fencing
- Fire Access & Emergency Egress
- Heritage Trail (Walking, Cycling, Horse Riding)
- Public Open Space
- Indicative Bulding Envelopes

Note: All residential lots to be connected to sewer.

28 April 2026 - Attachment 9.1.3c

LOCAL STRUCTURE PLAN
LOT 5 SOUTH COAST HIGHWAY, DENMARK

THIS PLAN IS CURRENT AT THE REVISED DATE & SUBJECT TO APPROVAL, SURVEY &
ENGINEERING DETAIL. THIS PLAN IS THE PROPERTY OF CHAPPELL LAMBERT EVERETT ©

Mr David Schober
Chief Executive Officer
Shire of Denmark
PO Box 183
DENMARK WA 6333

Our Ref: *APP0000074*
Enquiries: *Renee Blandin, 6364 6786*
Email: *renee.blandin@dwer.wa.gov.au*

Dear Mr Schober

DECISION UNDER SECTION 48A(1)(a)
Environmental Protection Act 1986

SCHEME	**Shire of Denmark Town Planning Scheme 3 Amendment 146**
LOCATION	**Lot 621 Harlequin Street and Lot 1 South Coast Highway Denmark**
RESPONSIBLE AUTHORITY	**Shire of Denmark**
DECISION	**Referral Examined, Preliminary Investigations and Inquiries Conducted. Scheme Amendment Not to be Assessed Under Part IV of the EP Act. Advice Given. (Not Appealable)**

Thank you for referring the above scheme to the Environmental Protection Authority (EPA).

After consideration of the information provided by you, the EPA considers that the proposed scheme should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the attached advice and recommendations. I have also attached a copy of the Chair's determination of the scheme.

Please note the following:

- For the purposes of Part IV of the EP Act, the scheme is defined as an assessed scheme. In relation to the implementation of the scheme, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision to not assess the scheme.

A copy of the Chairs' determination, this letter and the attached advice and recommendations will be made available to the public via the EPA website.

Yours sincerely

Prof. Matthew Tonts
Chair of the Environmental Protection Authority

24 October 2022

Encl. Chair's Determination

ADVICE UNDER SECTION 48A(1)(a)
ENVIRONMENTAL PROTECTION ACT 1986

Shire of Denmark Town Planning Scheme (TPS) 3 Amendment 146

Location: Lot 621 Harlequin Street and Lot 1 South Coast Highway Denmark

Determination: Scheme Not Assessed – Advice Given (Not Appealable)

Determination Published: 24 October 2022

Summary

The Shire of Denmark proposes to rezone Lot 621 Harlequin Street and Lot 1 South Coast Highway Denmark from Rural to Residential R20-R40 and amend the scheme map accordingly. Amendment 146 also proposes to modify the scheme text to include Structure Plan provisions for the amendment area.

The Environmental Protection Authority (EPA) has considered the scheme amendment in accordance with the requirements of the *Environmental Protection Act 1986* (EP Act). The EPA considers that the scheme amendment is unlikely to have a significant effect on the environment and does not warrant formal assessment under Part IV of the EP Act. The EPA has based its decision on the documentation provided by the Shire of Denmark. Having considered this matter, the following advice is provided.

1. Environmental Factors

In reference to the EPA (2021) Statement of Environmental Principles, Factors, Objectives and Aims of Environmental Impact Assessment (EIA), the EPA has identified the following preliminary environmental factors relevant to this scheme amendment:

- Flora and Vegetation.
- Terrestrial Fauna.
- Inland Waters.
- Social Surroundings.

2. Advice and Recommendations regarding Environmental Factors

Flora and Vegetation and Terrestrial Fauna

The amendment area contains native vegetation, including stands of Marri, Jarrah and Karri. The condition of this vegetation ranges from 'Completely Degraded' to 'Excellent' (PGV Environmental, 2020).

The vegetation is potential habitat for threatened black cockatoo species and conservation significant fauna including the South-western Brush-tailed Phascogale, Quenda and several migratory bird species.

The implementation of the scheme amendment may result in the clearing of native vegetation and significant fauna habitat.

The EPA supports the Shire's proposed scheme provision requiring that any future Structure Plan for the amendment area is to include a Landscape Management Plan which addresses

the retention of remnant vegetation. In addition, the scheme text is recommended to be modified to request identification, retention and management of quality fauna habitat as part of the structure planning process. The EPA expects that a targeted black cockatoo habitat assessment be undertaken to guide the retention of significant habitat areas which should be considered as part of the design phase of structure planning.

The indicative Structure Plan provided with the amendment documentation shows some areas of riparian vegetation and native vegetation/fauna habitat as proposed for use as 'Parks and Recreation'. However, it is noted that the draft Local Water Management Strategy (LWMS) shows portions of these areas are proposed to be utilised for stormwater management.

The EPA expects that future structure planning would retain areas containing significant environmental value including consolidated areas of native vegetation (particularly vegetation in 'Excellent' condition) and supporting habitat (foraging and potential breeding trees) for conservation significant fauna species.

It is also expected future structure planning will consider the provision of ecological linkages throughout the amendment area.

It is recommended that future planning considers the EPA's 2021 *Guidance for planning and development: Protection of naturally vegetated areas in urban and peri-urban areas*. Avoidance and management measures (such as road and lot layout, public open space/drainage design) can be applied to minimise impact to environmental values within the amendment area.

The implementation of the amendment (impact to Matters of National Environmental Significance i.e. Black cockatoo) may have obligations under the (Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Inland Waters

The amendment area contains an unnamed watercourse which traverses the site, ultimately discharging to the Wilson Inlet. The watercourse is dammed immediately upstream of the site. Future development associated with the amendment has the potential to impact groundwater and surface water hydrology and quality of the immediate environment and the Wilson Inlet. The watercourse may provide habitat for conservation significant aquatic fauna species including the black stripe minnow and mud minnow.

The EPA supports the Shires' proposed scheme text provision requiring future local structure planning to address stormwater management as informed by an approved LWMS, and for the preparation of a Foreshore Reserve Management Plan.

The EPA expects that the natural values of the watercourse will be protected. The Foreshore Management Plan and determination of waterway setbacks should be informed by a foreshore (biophysical) assessment and hydrological studies.

Water management planning should maintain or improve groundwater and surface water quality, and maintain pre-development hydrology. The LWMS (and any future water management plans) is expected to demonstrate consideration of water sensitive urban design principles and have design criteria to manage the watercourse in a manner reflective of natural systems. The Department of Water and Environmental Regulation should be consulted regarding any future water management planning documents.

Stormwater management should be designed to minimise impacts to native (including riparian) vegetation and fauna habitat, including consideration of the placement of retention/detention areas.

Future planning for the amendment area should be consistent with the Wilson Inlet Management Strategy (Wilson Inlet Catchment Committee, 2013) (and/or future versions of this strategy).

Social Surroundings

The EPA supports the Shires' proposed scheme provisions addressing visual and social amenity. This includes provisions addressing view lines from the Denmark-Nornalup Trail, and development designs that are climate-responsive.

Conclusion

The EPA concludes that the amendment can be managed to meet the EPAs' environmental objectives through the proposed scheme provisions. In addition, the application of scheme provisions, future planning processes and management measures will manage potential impacts. The EPA recommends its advice and recommendations are implemented to mitigate potential impacts to the above environmental factors.

SCHEDULE OF SUBMISSIONS: HARLEQUIN STRUCTURE PLAN – Lot 621 Harlequin Street & Lot 1 South Coast Highway (PLN.93 A5735 & A5734)

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S1	[redacted]	The plan for the sewage collection line looks as it may possibly impact [redacted]. I understand that this project is still in the conceptual stage and the drawings supplied are very basic and not very clear with regards to boundaries. I be grateful to be notified upon further developments as they come to hand.	The Structure Plan does not approve detailed servicing design. Sewer alignments and construction impacts will be assessed at subdivision stage in consultation with Water Corporation and affected landowners. Boundary impacts will be managed through detailed engineering design and statutory approvals.	No modification required to the Structure Plan. Advise note: Detailed sewer and service infrastructure design and landowner consultation will occur at subdivision stage.
S2	[redacted]	This submission outlines my opposition to specific elements of the proposal, particularly those related to road linkages that could impact Kemsley Place Road. Aspects of the Proposal Being Opposed The proposed development includes road linkages connecting to South West Highway and a link road through Harlequin Street to Ocean Beach Road. I am particularly concerned about how these linkages may relate to or facilitate future access via Kemsley Place Road, potentially leading to its opening as a through-route to Ocean Beach Road. This would fundamentally alter the character and safety of our residential area. Statement of Opposition I strongly oppose any proposal or future implication that would result in Kemsley Place Road being opened to provide access to	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise**.

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		Ocean Beach Road. Kemsley Place Road must remain closed to through-traffic and should never be utilized as a connecting route, irrespective of the current development proposal or any subsequent plans. Reasons for Opposition Reason 1 - Traffic Safety Linking Kemsley Place Road to Ocean Beach Road would create a four-way intersection in a residential zone, which is widely recognized as unsafe and prone to increased collision risks. Such intersections introduce complex traffic movements, higher speeds from through-vehicles, and greater hazards for local residents, pedestrians, and cyclists navigating the area daily. Reason 2 - Impact on Hopson Reserve Opening Kemsley Place Road would add a third road surrounding Hopson Reserve, a local park that serves as a vital community space. This would significantly compromise pedestrian and child safety by increasing vehicle traffic around the park's perimeter, exposing users to greater risks from passing cars. Furthermore, the added noise and activity would degrade the park's amenity value, diminishing its role as a peaceful recreational area for families and the broader Denmark community.		

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		Reason 3 - Loss of Cul-de-Sac Amenity Cul-de-sacs like Kemsley Place Road are rare and highly valued in residential planning, offering safe, quiet streets with minimal through-traffic. This configuration is particularly beneficial for families with children, fostering a secure environment for play and community interaction. Opening the road would permanently destroy this amenity, transforming it into a busier thoroughfare and eroding the quality of life that drew residents to this area. Reason 4 - Adequate Emergency Access Already Exists Concerns regarding emergency access are already sufficiently addressed by the existing fire vehicle access gate on Kemsley Place Road. This provision ensures that emergency services can reach the area when needed without necessitating the opening of the road to general traffic, which would introduce unnecessary risks and disruptions for no additional benefit. Concerns Regarding Road Construction and Tree Removal In addition to the road linkage issues, I am deeply concerned about the broader road construction proposed for the development, particularly at the corner of Harlequin Street and Kemsley Place Road. This would require		

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		the removal of significant old growth Marri and Karri trees, which hold irreplaceable environmental and heritage value to the local area. The environmental survey has identified these trees as potential nesting sites for endangered black cockatoos, highlighting their critical role in supporting threatened species and contributing to the biodiversity and character of the Denmark community. Despite this important finding, the proposal still indicates that some trees will need to be removed to accommodate road construction requirements. I urge the planning authority to prioritize the preservation of these trees and explore alternatives that avoid such environmental loss. Request for Clarification on Naming Conventions I request that the Shire clarify and correct an apparent error in the naming conventions for the proposed access road to South Coast Highway. Structure Plan Sept 25 incorrectly refers to this road as "Zimmerman Extension," whereas the Transport Impact Assessment accurately identifies it as "Harlequin Extension". This inconsistency could lead to confusion among residents and stakeholders reviewing the application. I ask that the Shire amend Structure Plan Sept 25 accordingly and ensure uniformity across all planning documents for this proposal to maintain		

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		accuracy and transparency. Request for Conditions or Modifications To safeguard the interests of residents, I request that the approval of proposal PLN.93 include specific conditions or modifications explicitly prohibiting the use of Kemsley Place Road as a through-route to Ocean Beach Road. This should ensure that Kemsley Place Road remains a cul-de-sac, with no provisions for future openings or linkages that could compromise its current status. Conclusion In conclusion, I respectfully urge the planning authority to carefully consider these serious safety, amenity, and environmental concerns in evaluating development proposal PLN.93. Protecting Kemsley Place Road from being opened as a through-route is essential to preserving the well-being of our community, and I trust that my submission will be given due weight in the decision-making process.		
S3	[redacted]	My name is [redacted]. My wife and I have owned and lived at [redacted] for nearly twenty years. One reason for buying here was the quiet cul- de- sac, no noisy vehicle movement past our home. The term Court suggested that it would always be a no through road. The original proposed plan called for a pedestrian walkway from Wave	1. Wave Court Emergency Access Way. Shire recognises concerns regarding the configuration and presentation of emergency accessways, particularly at Wave Court. Emergency accessways are required to meet bushfire planning requirements under State Planning Policy 3.7 and the Planning for Bushfire	No modifications in relation to the Wave Court Emergency Access Way proposed. Modify the Structure Plan to: • Retain and protect the area of high-quality vegetation along the southern boundary of the subject

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		COURT into the development. We could live with that. Now the plan shows a 6-metre-wide roadway, disguised as an "emergency access", being part of the POS. So much for peaceful Denmark. We are already experiencing increased vehicle movement crossing the verge and entering the property via a gateway cut into the fence. I am led to believe that this requires Shire approval. Another attribute that brought us to Denmark was the trees. Those trees on our western boundary provides us with early afternoon shade. I am not a Greenie, but I hate the idea of the destruction of these trees, replaced with bricks and concrete. No where in the submission does Global Warming get a mention. Making lots 78 and 79 part of the POS (trees not grassland) would produce a wood land green belt between Kemsley estate and the proposed development. This woodland is partially degraded with rocks; wood, soil and barbwire bull dosed into the woodland as a result of widening the fire break. This debris manmade could be cleaned up to enhance this remnant . Animals and birds visit our backyard on a daily basis via the woodland The desktop analysis	Guidelines. These accessways are not intended to function as general traffic routes and will be designed, managed and signposted accordingly. Detailed design, treatment and management of emergency accessways will be addressed at subdivision stage in consultation with DFES and Shire. **2. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity.	land within public open space for conservation purposes. • Identify larger lots where trees are proposed to be protected within private lots and recommend that Tree Protection Zones (TPZs) and building envelopes be identified at subdivision stage.

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		only considers the Black Cockatoos. What about the following birds; Red-Capped Parrots, Western Rosella, Galahs, Australian Ringneck Parrots, Magpies, Silvereyes, New Holland Honeyeaters, Grey Fantails, Fairy Wrens, Bronze Wing Doves, Pardalotes, White Browed Babbler. These species have all been confirmed multiple times during the Aussie Bird Count in October each year. Besides the birds that frequent our back yard, we have two resident Blue Tongue lizards and one or two Black Skinks. Originally from next door. They don't recognise fences. Cut down most if not all the trees and we will lose that habitat which supports all these creatures. The proposed development could make use of the already cleared land without bull dosing every thing to give a plain sheet of paper to cut up. Attachment A Woodland green belt between Kemsley and new proposed development ear marked for demolition. Attachment B Shows the break up of the area which was once woodland. Where have all the trees gone? "If you damage something man made, we call		

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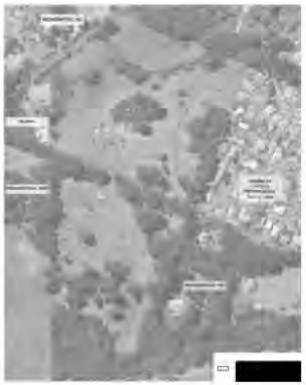
		it Vandalism. If you damage something made by nature, we call it Progress." 		
S4	[redacted]	Upon review of the documents prepared by Williams Consulting and supplied by The Shire of Denmark in regard to land located at Lot 621 Harlequin Street and Lot 1 South Coast Highway, Denmark, we [redacted], have the following comments: 1 - In general we are supportive of urban development in the Town of Denmark, we understand that as the town's population grows high quality land developments are essential. We would urge the Shire of Denmark and the Western Australian Planning commission to carefully consider if this and future proposals of its kind are indeed providing a positive community outcome. 2 - The intention outlined in the structure plan from Williams Consulting has been stated as follows:	Shire acknowledges concerns regarding visual privacy, noise impacts, night-time light spill and impacts on existing residents amenity from the proposed intersection location to South Coast Highway. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. This will result in the protection of remnant vegetation on the road reserve and mitigating the impact from this intersection on your residential amenity.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise.**

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		Servicing: Ensuring a full suite of development services are provided for each lot, which will include connection to reticulated sewer and potable water (provided by the Water Corporation), connection to underground power and connection to appropriate telecommunications infrastructure. Supports a legible and accessible walking and cycling opportunities via an integrated network of vehicle and pedestrian connections including green links that facilitate safe linkages through residential areas to areas of open space and natural features. Integration with Existing Landscape: Being sympathetic to the established vistas into the site from the surrounding locality- namely South Coast Highway, the Denmark-Nornalup Rail Trail and adjoining residential development. Environmental Consideration: Identification of significant remnant native vegetation and where applicable ensuring the retention for fauna habitat and provision of ecological linkages. Affordability and Diversity: Offers unique and affordable housing choices via the provision of a range of lot types and sizes that meet the expectation We question the statement that the proposal is actually Being sympathetic to the established vistas into the site from the		

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		surrounding locality- namely South Coast Highway, the Denmark-Nornalup Rail Trail and adjoining residential development. The removal of a significant number of established trees and vegetation on the Zimmerman street road reserve will negatively impact vistas into the site from South Coast Hwy, The Denmark Tavern, Koorabup Motel, and properties located on the northern side of South Coast Hwy within the locale of the site in question. When driving through the town of Denmark at present there are no residential areas of this kind visible from South Coast Hwy, this condition impacts greatly the atmosphere and experience of both visitors to and residents of the town which we feel is a quality to be protected as much as practicable. As such we feel retaining as much of the existing mature vegetation proximal to the Hwy should be considered a priority of this development. The previous Structure plan did not utilise the Zimmerman Street road reserve for vehicle access to the site, and hence did not require the removal of this established vegetation. The current structure plan now includes a 10 m wide road reserve running parallel to south coast Hwy with only a 2m wide zone for planting separating the two. There is no detail on the height of this road relative to South Coast Hwy, however we assume that it will be		

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		at a lower level so as to comfortably provide access to lots 130 – 144 which have a natural ground level well below the Hwy. This 2m wide planting zone would therefore be sloped which could impact any planting along this slim 2m wide zone. An additional impact of this new road configuration would be a perceptual widening of the road at this point further impacting the experience of both visitors to and residents of the town. We similarly question the statement that the proposal is actually Identifying significant remnant native vegetation and where applicable ensuring the retention for fauna habitat and provision of ecological linkages. The removal of a significant number of established trees and vegetation on the Zimmerman street road reserve will negatively impact fauna habitat and provision of ecological linkages. 3 – Utilising the Zimmerman Street road reserve for site access will also impact property owners on Ross Court as the proposed position of the intersection with South Coast Hwy is now circa 50 from the Ross Court intersection, and directly faces the houses on Ross Court. We note that Ross Court and the lots accessed from Ross court have not been fully depicted on the drawing following page 11 of the structure plan, and have been cut off from the		

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		aerial photo image drawing, and all subsequently following drawings. Additionally the *Location Plan figure 4* following page 28 has Ross Court and the residential lot outlines removed from the drawing and utilises an outdated aerial photograph underlay that does not depict the current conditions of the residential properties on Ross Court. We question why this is the case? The structure plan has been prepared using clearly outdated information which is highly unprofessional, as anyone using this report to assess and comment on the proposal does not have the correct information to do so. We strongly urge the Shire to firstly review the current extent of properties on Ross court in relation to this aspect of the proposal, and to request that Williams Consulting provide an updated structure plan with accurate information that can be used to properly assess the proposal. We also note that the Noise management plan has not been updated to assess the current proposal and is based on the previous structure plan. Vehicles moving from the site onto South Coast Hwy will now directly face our house impacting the amenity of our property. Particularly after dark headlights from vehicles will be directed toward		

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		Living room and bedroom windows located along that side of the house. We cannot see any details on the structure plan as to how this impact may be mitigated. We invite further any information regarding this and urge the Shire to consider this aspect of the new road layout in the updated structure plan.		
S5	[redacted]	With the development proposal adjacent to the Kemsley Estate recently communicated with residents (Draft Structure Plan - Lot 621 Harlequin Street and Lot 1 South Coast Highway), potential future traffic linkages in the area have become a matter of community concern. In the unlikely event that Kemsley Place (the extension of Zimmerman Road) is ever proposed to be fully opened as a vehicle route past Hopson Reserve and through to Ocean Beach Road, we wish to formally advocate for its retention as a cul-de-sac. Kemsley Place already includes a fire gate, ensuring emergency access when required. Our concerns are outlined below: 1. Traffic safety Opening Kemsley Place to Ocean Beach Road would create a high-risk four-way intersection. This risk would be particularly acute during peak holiday periods and weekday school	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise.**

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		drop-off and pick-up times, when traffic volumes are already elevated. 2. Impact on Hopson Reserve Hopson Reserve would be bordered by roads on three sides, significantly reducing its safety and amenity. Increased vehicle movement would make the reserve less suitable for community use and pose additional risks to children and pets. This area is very well utilised by the many families with small children who live in the area. 3. Loss of a quiet residential refuge As cul-de-sacs become increasingly rare in modern urban design, including within the Shire of Denmark, Kemsley Place provides a valuable low-traffic environment for children and residents from the surrounding neighbourhood. In fact, many children have learned to ride their bikes here. Its current layout also allows safe and direct pedestrian access to the park and vehicle parking east of the fire gate. 4. Emergency access already addressed Retaining Kemsley Place as a cul-de-sac does not compromise fire or emergency management. The existing fire gate provides adequate emergency egress and access. We have spoken with the majority of landholders along Kemsley Place between the		

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		roundabout and the fire gate. To date, all are in agreement with the position outlined in this submission. Residents will either be co-signing this letter or providing their own individual submissions in support. Thank you for considering this community concern.		
S6	[redacted]	With the development proposal adjacent to the Kemsley Estate recently communicated with residents (Draft Structure Plan - Lot 621 Harlequin Street and Lot 1 South Coast Highway), potential future traffic linkages in the area have become a matter of community concern. In the unlikely event that Kemsley Place (the extension of Zimmerman Road) is ever proposed to be fully opened as a vehicle route past Hopson Reserve and through to Ocean Beach Road, we wish to formally advocate for its retention as a cul-de-sac. Kemsley Place already includes a fire gate, ensuring emergency access when required. Our concerns are outlined below: 1. Traffic safety Opening Kemsley Place to Ocean Beach Road would create a high-risk four-way intersection. This risk would be particularly acute during peak holiday periods and weekday school drop-off and pick-up times, when traffic	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise**.

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S9	[redacted]	With the development proposal adjacent to the Kemsley Estate recently communicated with residents (Draft Structure Plan - Lot 621 Harlequin Street and Lot 1 South Coast Highway), potential future traffic linkages in the area have become a matter of community concern. In the unlikely event that Kemsley Place (the extension of Zimmerman Road) is ever proposed to be fully opened as a vehicle route past Hopson Reserve and through to Ocean Beach Road, we wish to formally advocate for its retention as a cul-de-sac. Kemsley Place already includes a fire gate, ensuring emergency access when required. Our concerns are outlined below: 1. Traffic safety Opening Kemsley Place to Ocean Beach Road would create a high-risk four-way intersection. This risk would be particularly acute during peak holiday periods and weekday school drop-off and pick-up times, when traffic volumes are already elevated.	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise**.

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		2. Impact on Hopson Reserve Hopson Reserve would be bordered by roads on three sides, significantly reducing its safety and amenity. Increased vehicle movement would make the reserve less suitable for community use and pose additional risks to children and pets. This area is very well utilised by the many families with small children who live in the area. 3. Loss of a quiet residential refuge As cul-de-sacs become increasingly rare in modern urban design, including within the Shire of Denmark, Kemsley Place provides a valuable low-traffic environment for children and residents from the surrounding neighbourhood. In fact, many children have learned .to ride their bikes here. Its current layout also allows safe and direct pedestrian access to the park and vehicle parking east of the fire gate. 4. Emergency access already addressed Retaining Kemsley Place as a cul-de-sac does not compromise fire or emergency management. The existing fire gate provides adequate emergency egress and access. We have spoken with the majority of landholders along Kemsley Place between the roundabout and the fire gate. To date, all are in agreement with the position outlined in this		

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S10	[redacted]	With the development proposal adjacent to the Kemsley Estate recently communicated with residents (Draft Structure Plan - Lot 621 Harlequin Street and Lot 1 South Coast Highway), potential future traffic linkages in the area have become a matter of community concern. In the unlikely event that Kemsley Place (the extension of Zimmerman Road) is ever proposed to be fully opened as a vehicle route past Hopson Reserve and through to Ocean Beach Road, we wish to formally advocate for its retention as a cul-de-sac. Kemsley Place already includes a fire gate, ensuring emergency access when required. Our concerns are outlined below: 1. Traffic safety Opening Kemsley Place to Ocean Beach Road would create a high-risk four-way intersection. This risk would be particularly acute during peak holiday periods and weekday school drop-off and pick-up times, when traffic volumes are already elevated.	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise**.

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S11	[redacted]	With the development proposal adjacent to the Kemsley Estate recently communicated with residents (Draft Structure Plan - Lot 621 Harlequin Street and Lot 1 South Coast Highway), potential future traffic linkages in the area have become a matter of community concern. In the unlikely event that Kemsley Place (the extension of Zimmerman Road) is ever proposed to be fully opened as a vehicle route past Hopson Reserve and through to Ocean Beach Road, we wish to formally advocate for its retention as a cul-de-sac. Kemsley Place already includes a fire gate, ensuring emergency access when required. Our concerns are outlined below: 1. Traffic safety Opening Kemsley Place to Ocean Beach Road would create a high-risk four-way intersection. This risk would be particularly acute during peak holiday periods and weekday school drop-off and pick-up times, when traffic volumes are already elevated.	Shire acknowledges the concerns raised regarding traffic safety, residential amenity and the creation of through-traffic via Kemsley Place and the Zimmerman Street road reserve. The Shire report concludes that access via the Zimmerman Street road reserve onto South Coast Highway is not supported, due to unacceptable impacts on ecological values associated with the creekline and remnant vegetation. The Structure Plan does not support, and Shire does not intend to support, the use of Kemsley Place Road as a general traffic connection to Ocean Beach Road or South Coast Highway. Emergency access requirements can be met through alternative arrangements consistent with bushfire planning provisions without opening existing cul-de-sacs to general traffic.	Modify the Structure Plan to remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise.**

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S12	[redacted]	**Do You Support the Proposal?** No **Comments** I do not support the proposal in its current form. The potential loss of up to 262 of the 305 identified potential breeding habitat trees for threatened species of Black Cockatoos is completely unacceptable. The loss of foraging habitat is also significant. It would be extremely ironic for this habitat to be lost, given the work being undertaken by groups such as Wilson Inlet Catchment Committee to install Black Cockatoo nesting boxes and protect remnant vegetation elsewhere in the region. When the science shows clearly that more Black Cockatoo foraging and nesting habitat is required, it is unacceptable that existing habitat be cleared. Additionally, the patch of vegetation at the end of Wave Court is not even considered significant remnant vegetation in the plans, yet we regularly observe a variety of birds using the large trees that we can see from our backyard. I am also concerned that an Aboriginal heritage survey has not been undertaken. Desktop review of existing registered sites is insufficient. I	**1. Protection of remnant vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Aboriginal Heritage Protection** Shire acknowledges that Aboriginal heritage matters require appropriate consideration as part	Modify the Structure Plan to: • Retain and protect the area of high-quality vegetation along the southern boundary of the subject land within public open space for conservation purposes. • Identify larger lots where trees are proposed to be protected within private lots and recommend that Tree Protection Zones (TPZs) and building envelopes be identified at subdivision stage. • Consistent with WAPC's *State Planning Policy 2.9: Water*, identify a minimum setback of 30m to both sides of the creek line to protect, manage and conserve water quality, native vegetation, aquatic and riparian habitats, ecological linkages and associated biodiversity values. • Review the public open spaces that demonstrably meet the design objectives of both the Shire's Local Planning Policy 39:

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		support the need for additional housing in Denmark, and this development has the potential to add to this. However, there is plenty of open paddock space that would enable housing lots to be sensitively planned around existing vegetation. I would support higher density housing in the open areas of the lots, rather than larger lots that take up more of the area and remove significant amounts of vegetation. I do support and endorse the maintenance of some open public space and dual use paths - again, this could be further enhanced through higher-density development over a smaller footprint and greater protection of remnant vegetation. Additionally, consideration should be given to the placement of restrictions on the development to ensure that the bulk of the housing is retained for long-term use not the short-term holiday market. If a high proportion of the housing lots end up being owned for occasional use by people whose primary residence is not in Denmark, or used as holiday housing or permanent AirBNB, then the development would not meaningfully contribute to the community and the benefits of the development would not be significant enough to outweigh the costs. Thank you for considering my comments.	of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland, landform and cultural landscapes. Accordingly, and consistent with the Department of Planning, Lands and Heritage's *Strategic Engagement Framework* and *Aboriginal Engagement Toolkit*, meaningful engagement should occur prior to final endorsement of the Structure Plan, while opportunities remain to inform layout, public open space configuration and associated planning outcomes. **3. Retention of homes for LT residents** Shire acknowledges the importance of retaining residential dwellings for long-term residents and notes that it is intending to review its policy framework in due course to strengthen Shire's ability to manage where short-term tourist accommodation, including Airbnb-style uses, may be permitted.	Public Open Space and Liveable Neighbourhoods having regard for shape, function and edge treatment (i.e. no private or group housing sites abutting POS). • Consistent with DPLH's Strategic Engagement Framework and Aboriginal Engagement Toolkit, engagement with relevant Traditional Owners / Aboriginal representative bodies for the Denmark area, should be undertaken prior to final Structure Plan endorsement.
S13	[redacted] [redacted]	**Do You Support the Proposal?** Yes **Comments**	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding	

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	[redacted]	Loss of black cockatoo nesting and forage tree and the loss or damage to Aboriginal heritage sites like Gnamma trees.	vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Protection of Aboriginal Heritage** Shire acknowledges that Aboriginal heritage matters require appropriate consideration as part of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland,	

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S14	[redacted]	Do You Support the Proposal? No Comments Proposal Process We would like to register our disappointment with the brevity of the consultation period available to study and comment on the advertised structure plan. During this period there have been several public holidays and limited response from Shire Officers: A longer consultation period should have been offered. Permission to copy sections of this submission has been given to other residents. In support of this development and structure plan, please note the following: Currently the WA state population is growing at 2.2% per year but this rate is expected to fall. (p. 25 West Australian, 10 January 2025). Assuming the growth is at 1.8%, the rate suggested by the WA Department of Planning	**1. Density of Development and Group Housing** The proposed residential density of R20 is the predominant residential density across much of the Denmark townsite and its established suburbs. Group housing sites that are proposed is of a density of R40. Group housing are typically dwellings arranged in groups such as villas and townhouses. **2. Public Open Space Provision** Shire acknowledges concerns that the proposed public open space (POS) network. POS areas must be functional, appropriately shaped, actively addressed by surrounding development and capable of supporting recreation, passive surveillance and community use. Shire report concludes that the current POS configuration does not adequately meet the objectives of *Liveable Neighbourhoods* or the	Modify the Structure Plan to: • Review the public open spaces that demonstrably meet the design objectives of both the Shire's Local Planning Policy 39: Public Open Space and Liveable Neighbourhoods having regard for shape, function and edge treatment (i.e. no private or group housing sites abutting POS). • Retain and protect the area of high quality remnant vegetation along the southern boundary of the subject land within Public Open Space for conservation purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified

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		and 6900 as an estimate for the population of the town of Denmark in 2026, then the population will potentially grow by between 120 and 180 in each of the next 20 years. Given the reported housing crisis, we welcome the efforts of the developers and the Shire to address the problem by providing more housing for the local community and for those wishing to relocate to Denmark. The proposed development is very suitably positioned in the town given the current location of the primary school and the proposed locations of the new supermarket and the Denmark library. The proposed development includes a variety of lot sizes and should thus provide for the variety of buyer needs. We ask that the developers consider the following questions: What is the process by which the residents adjacent to the development will learn about the staging of the development? How will they be told which areas are in each stage, which processes will occur in each stage and at what time the next stage will commence. Further to this, how will these residents be informed about aspects that will affect them e.g., the identification and development of access roads. Such information will allow said residents to prepare for the ensuing traffic	Shire's *Local Planning Policy 39: Public Open Space* and requires amendments to address this. **3. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity.	at subdivision stage.

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		disruption, noise and dust likely to be generated and to take action to address the impacts. Perceived negative features of the proposed structure plan. Density of the proposed development. It appears there is no other location in the Denmark town area in which the housing density is so high. The density appears to resemble a city suburb rather than a regional town. The "green" and open environment is a very attractive feature of Denmark, and development as dense as the one proposed detracts from this feature. Density is associated with noise, crowding, busy streets, parking difficulties and lack of privacy. The neighbouring Kemsley estate is an example of a density that supports a more enjoyable lifestyle. Lack of play areas within the development. While Hopgood park is not far from the development itself, it is a long way for little children to go to play. The public open spaces (Fig 9 Concept Development Plan) seem to be of limited value as play areas. One is located on both sides of a creek bed, two more are near emergency accesses and the large POS lies along a central ridge of trees to be retained. There appears to be insufficient space for play equipment and open-air activities e.g. family picnics, kicking a football,		

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		etc.. Loss of aesthetically pleasing bush environment: The view up over the ridgeline and to the hill across South Coast Highway will be lost if the development goes ahead as described in the Structure Plan. While we see it is necessary to provide housing, we do not see it necessary that so much of this view has to be lost. As well as losing the view, the loss of the trees will impact the bird population in the Kemsley estate. Just one example: Having the blue fairy wrens play in the garden around our house, and no doubt many others, is unlikely to continue with the loss of so many trees. These losses, along with the expected increase in traffic will lead to the Kemsley, estate being a less attractive place to live. Loss of native vegetation. The vegetation in the south-west corner, described as Area 1 in Figure 2 of the Aurora Report is classified as being in "Good to Excellent condition" and providing high quality foraging habitat for Black Cockatoos". How can such a loss be justified? Relying on Lot owners to retain as many trees as possible is too open to interpretation. (Appendix D, p. 39) Issues with the development and structure plan which we believe should be considered		

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		before the plan is approved. Nowhere in the document or in any of the Appendices is Group Housing defined. This query is not indicative of an aversion to Group Housing but rather seeking clarification as to the nature of any associated dwellings. For example, could it include a multi-storey block of apartments? Could it be a group of dwellings for people living with disabilities? In either case, where will all the residents, service providers and carers be able to park? Development of the Central ridgeline: This is described as Area 4 in the Aurora Report which claims the karri trees are mostly of aesthetic value in this area. Some of these trees are directly behind our house and given their size and the size of the hollows it is difficult to believe that they are not worth preserving. We would recommend that the area of the central ridgeline to be retained is expanded and the location of roads around this POS and group housing be reconsidered. We believe that building and maintaining roads around the ridgeline would damage the environment for these trees and lead to their loss. We also suggest that the developers seek advice from the local bird society and the Denmark Environment Centre re the value of these trees to the Denmark area. Tree protection: The proposal recognises "Lots 1 and 621 contain a high number of large		

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		trees which are intended to be protected and retained" (Appendix C: Engineering Report p. 6) and indicates that– "individual trees within private lots will be retained wherever possible" (Appendix D: environmental p 39. Such recognition is welcome, but we are concerned that unless there is a process by which these ideals are implemented then many trees will be lost or damaged during development. We ask that the Shire seeks clarification of, and agrees to, the process by which these ideals are implemented. This process should include the evaluation of individual trees throughout the two lots, the identification of trees to be retained, the identification of those responsible for maintaining trees in the different sections and the ongoing monitoring of such retention. Lot owners and those responsible for the POS should be made aware of the consequences of non-compliance. In the document (App A, p. 14) it was suggested that the need for on-street parking would be insignificant and thus the roads would be of minimum width. Our observations of properties around Denmark indicate that many households have two cars and quite a few have a boat and/or a caravan. We suggest a further consideration of the road width to accommodate a bike path on one side (to encourage children to ride or walk to school) and unrestricted on-street parking on the		

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		other. Is the variety of Lot sizes reflective of the desires of people currently living in and likely to relocate to Denmark? We suggest the Shire, unless it has already done so, collect relevant data from the local Real estate agents to determine the proportions of the various block sizes sought by buyers. We further suggest that the Shire examine the age distribution of people moving to Denmark to ascertain the attractiveness of the various Lot sizes. It is generally accepted that the population of Denmark has increased over the last three years, but this has not led to an increase in the overall school population between 2022 and 2025. The author can provide reliable and relevant data to support this claim. An enquiry of the local Child Care Sector also revealed that there has not been any increase in the demand for daycare places over the last three years. Given these two facts, it would seem that any increase in population is due to older families moving to the area. An investigation of the types of properties likely to attract such age groups is warranted. Population growth in Denmark: Population growth in Denmark is facilitated by such a development as this, particularly in view of its density. Has the Shire considered the impact of this growth of the town's services and facilities (e.g., parking, retail, education,		

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		health) and planned for the relevant and necessary changes? For us, a major attraction of living in Denmark is its size and location as a regional town. Does the Shire have a long-term plan which describes the type of regional town that the community wishes Denmark to become, and will the proposed development support this long-term plan.		
S15	[redacted]	**Do You Support the Proposal?** Undecided **Comments** I am commenting in my capacity as an Anthropologist employed by Wagyl Kaip Southern Noongar Aboriginal Corporation. WKSN AC is responsible for administering the Indigenous Land Use Agreement for the WKSN area and for assisting the Noongar community of the region to protect Aboriginal Heritage values in the WKSN ILUA area. WKSN AC has not been made aware of this proposed development, and reviewing the Structure Plan and appendices I can see no consideration of how Aboriginal Heritage values may be impacted by the proposed development. I note that a search of the ACHIS maintainted by the DPLH is not adequate. I was only made aware of this Structure Plan today by another Denmark	The Structure Plan was referred to the Department of Planning, Lands and Heritage (DPLH) for comment as the responsible for administering the *Aboriginal Heritage Act 1972* and Aboriginal cultural heritage matters. No comments were received during the consultation period in relation to Aboriginal heritage. Shire acknowledges that Aboriginal heritage matters require appropriate consideration as part of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland, landform and cultural landscapes. Accordingly, and consistent with the Department of Planning, Lands and Heritage's *Strategic Engagement Framework* and *Aboriginal Engagement Toolkit*, meaningful engagement should occur prior to	Modify the Structure Plan to: • Consistent with DPLH's Strategic Engagement Framework and Aboriginal Engagement Toolkit, engagement with relevant Traditional Owners / Aboriginal representative bodies for the Denmark area, should be undertaken prior to final Structure Plan endorsement.

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		resident and will be taking this matter to the WKSN AC CEO, but note that WKSN AC is a stakeholder and should have been notified and consulted about this proposed development. My work email address is [redacted] and I would appreciate a member of the DSC Planning Team getting in contact with me at earliest convenience to discuss this further.	final endorsement of the Structure Plan, while opportunities remain to inform layout, public open space configuration and associated planning outcomes.	
S16	[redacted]	**Do You Support the Proposal? No** **Comments** DENMARK I do not support the proposal in its current form. The potential loss of up to 262 of the 305 identified potential breeding habitat trees for threatened species of Black Cockatoos is completely unacceptable. The loss of foraging habitat is also significant. It would be extremely ironic for this habitat to be lost, given the work being undertaken by groups such as Wilson Inlet Catchment Committee to install Black Cockatoo nesting boxes and protect remnant vegetation elsewhere in the region. When the science shows clearly that more Black Cockatoo foraging and nesting habitat is required, it is unacceptable that existing habitat be cleared. I am also concerned that an Aboriginal heritage survey has not been undertaken.	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage.

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S17	[redacted]	Do You Support the Proposal? No Comments Proposal Process We would like to register our disappointment with the brevity of the consultation period available to study and comment on the advertised structure plan. During this period there have been several public holidays and limited response from Shire Officers: A longer consultation period should have been offered. Permission to copy sections of this submission has been given to other residents. In support of this development and structure plan, please note the following: Currently the WA state population is growing at 2.2% per year but this rate is expected to fall. (p. 25 West Australian, 10 January 2025). Assuming the growth is at 1.8%, the rate suggested by the WA Department of Planning and 6900 as an estimate for the population of the town of Denmark in 2026, then the	**1. Density of Development and Group Housing** The proposed residential density of R20 is the predominant residential density across much of the Denmark townsite and its established suburbs. Group housing sites that are proposed is of a density of R40. Group housing are typically dwellings arranged in groups such as villas and townhouses. **2. Public Open Space Provision** Shire acknowledges concerns that the proposed public open space (POS) network. POS areas must be functional, appropriately shaped, actively addressed by surrounding development and capable of supporting recreation, passive surveillance and community use. Shire report concludes that the current POS configuration does not adequately meet the objectives of *Liveable Neighbourhoods* or the Shire's *Local Planning Policy 39: Public Open*	Modify the Structure Plan to: • Review the public open spaces that demonstrably meet the design objectives of both the Shire's Local Planning Policy 39: Public Open Space and Liveable Neighbourhoods having regard for shape, function and edge treatment (i.e. no private or group housing sites abutting POS). • Retain and protect the area of high quality remnant vegetation along the southern boundary of the subject land within Public Open Space for conservation purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage.

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		impacts. Perceived negative features of the proposed structure plan. Density of the proposed development. It appears there is no other location in the Denmark town area in which the housing density is so high. The density appears to resemble a city suburb rather than a regional town. The "green" and open environment is a very attractive feature of Denmark, and development as dense as the one proposed detracts from this feature. Density is associated with noise, crowding, busy streets, parking difficulties and lack of privacy. The neighbouring Kemsley estate is an example of a density that supports a more enjoyable lifestyle. Lack of play areas within the development. While Hopgood park is not far from the development itself, it is a long way for little children to go to play. The public open spaces (Fig 9 Concept Development Plan) seem to be of limited value as play areas. One is located on both sides of a creek bed, two more are near emergency accesses and the large POS lies along a central ridge of trees to be retained. There appears to be insufficient space for play equipment and open-air activities e.g. family picnics, kicking a football, etc.. Loss of aesthetically pleasing bush		

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		environment: The view up over the ridgeline and to the hill across South Coast Highway will be lost if the development goes ahead as described in the Structure Plan. While we see it is necessary to provide housing, we do not see it necessary that so much of this view has to be lost. As well as losing the view, the loss of the trees will impact the bird population in the Kemsley estate. Just one example: Having the blue fairy wrens play in the garden around our house, and no doubt many others, is unlikely to continue with the loss of so many trees. These losses, along with the expected increase in traffic will lead to the Kemsley, estate being a less attractive place to live. Loss of native vegetation. The vegetation in the south-west corner, described as Area 1 in Figure 2 of the Aurora Report is classified as being in "Good to Excellent condition" and providing high quality foraging habitat for Black Cockatoos". How can such a loss be justified? Relying on Lot owners to retain as many trees as possible is too open to interpretation. (Appendix D, p. 39) Issues with the development and structure plan which we believe should be considered before the plan is approved. Nowhere in the document or in any of the		

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		Appendices is Group Housing defined. This query is not indicative of an aversion to Group Housing but rather seeking clarification as to the nature of any associated dwellings. For example, could it include a multi-storey block of apartments? Could it be a group of dwellings for people living with disabilities? In either case, where will all the residents, service providers and carers be able to park? Development of the Central ridgeline: This is described as Area 4 in the Aurora Report which claims the karri trees are mostly of aesthetic value in this area. Some of these trees are directly behind our house and given their size and the size of the hollows it is difficult to believe that they are not worth preserving. We would recommend that the area of the central ridgeline to be retained is expanded and the location of roads around this POS and group housing be reconsidered. We believe that building and maintaining roads around the ridgeline would damage the environment for these trees and lead to their loss. We also suggest that the developers seek advice from the local bird society and the Denmark Environment Centre re the value of these trees to the Denmark area. Tree protection: The proposal recognises "Lots 1 and 621 contain a high number of large trees which are intended to be protected and retained" (Appendix C: Engineering Report p. 6) and indicates that– "individual trees within		

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		private lots will be retained wherever possible" (Appendix D: environmental p 39. Such recognition is welcome, but we are concerned that unless there is a process by which these ideals are implemented then many trees will be lost or damaged during development. We ask that the Shire seeks clarification of, and agrees to, the process by which these ideals are implemented. This process should include the evaluation of individual trees throughout the two lots, the identification of trees to be retained, the identification of those responsible for maintaining trees in the different sections and the ongoing monitoring of such retention. Lot owners and those responsible for the POS should be made aware of the consequences of non-compliance. In the document (App A, p. 14) it was suggested that the need for on-street parking would be insignificant and thus the roads would be of minimum width. Our observations of properties around Denmark indicate that many households have two cars and quite a few have a boat and/or a caravan. We suggest a further consideration of the road width to accommodate a bike path on one side (to encourage children to ride or walk to school) and unrestricted on-street parking on the other. Is the variety of Lot sizes reflective of the desires of people currently living in and likely		

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		to relocate to Denmark? We suggest the Shire, unless it has already done so, collect relevant data from the local Real estate agents to determine the proportions of the various block sizes sought by buyers. We further suggest that the Shire examine the age distribution of people moving to Denmark to ascertain the attractiveness of the various Lot sizes. It is generally accepted that the population of Denmark has increased over the last three years, but this has not led to an increase in the overall school population between 2022 and 2025. The author can provide reliable and relevant data to support this claim. An enquiry of the local Child Care Sector also revealed that there has not been any increase in the demand for daycare places over the last three years. Given these two facts, it would seem that any increase in population is due to older families moving to the area. An investigation of the types of properties likely to attract such age groups is warranted. Population growth in Denmark: Population growth in Denmark is facilitated by such a development as this, particularly in view of its density. Has the Shire considered the impact of this growth of the town's services and facilities (e.g., parking, retail, education, health) and planned for the relevant and necessary changes? For us, a major attraction of living in Denmark is its size and location as a		

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		regional town. Does the Shire have a long-term plan which describes the type of regional town that the community wishes Denmark to become, and will the proposed development support this long-term plan.		
S18	[redacted]	We are making this submission in response to the Draft Structure Plan currently on public exhibition. Lot 625 and adjacent properties within the existing Kemsley estate, are directly affected by the proposed Zimmerman Street extension and the associated changes to traffic movement and tree canopy coverage. The Draft Structure Plan raises several significant concerns that I respectfully request Shire address prior to any finalisation or approval. 1. Loss of high environmental value trees The Draft Structure Plan proposes a road extension through an area containing mature trees of significant environmental value. These trees form part of an established landscape corridor and contribute materially to biodiversity, canopy cover, climate moderation, and local amenity. The proposal: • Is in direct conflict with the Shire of Denmark's recently released **Shire Plan – Our Future 2035**, which prioritises environmental protection, climate resilience, and the	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Zimmerman Street Road Reserve** Shire acknowledges concerns about the impact of the proposed Zimmerman Street extension on the existing cul-de-sac character, tree canopy and	Modify the Structure Plan to: • Retain and protect the area of high quality remnant vegetation along the southern boundary of the subject land within Public Open Space for conservation purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage. • Remove vehicle access via the Zimmerman Street road reserve onto South Coast Highway and **instead provide access via the central point between Ross Court and Harpendene Rise.**

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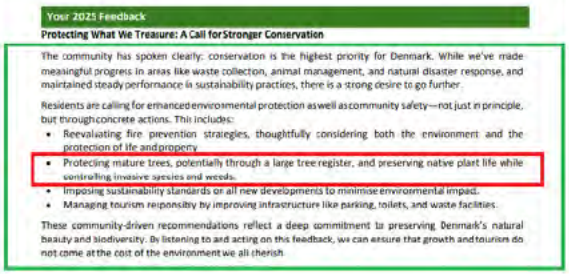
		retention of high-value natural assets • Does not adequately identify or map high-value trees within the Zimmerman Street extension, noting that the area contains mature Karri trees, some of which may pre-date colonisation • Does not demonstrate that avoidance and retention of these trees has been prioritised during alignment selection • Lacks enforceable commitments to protect retained trees during design, construction, and ongoing operation This omission is inconsistent with the Shires – **Shire Plan – Our future 2035 (**direct attachments are referenced below) and best-practice structure planning, which requires road infrastructure to be designed around existing high-value environmental features rather than at their expense. Natural Environment  Your 2025 Feedback **Protecting What We Treasure: A Call for Stronger Conservation** The community has spoken clearly: conservation is the highest priority for Denmark. While we've made meaningful progress in areas like waste collection, animal management, and natural disaster response, and maintained steady performance in sustainability practices, there is a strong desire to go further. Residents are calling for enhanced environmental protection as well as community safety—not just in principle, but through concrete actions. This includes: • Reevaluating fire prevention strategies, thoughtfully considering both the environment and the protection of life and property. • Protecting mature trees, potentially through a large tree register, and preserving native plant life while controlling invasive species and weeds. • Imposing sustainability standards on all new developments to minimise environmental impact. • Managing tourism responsibly by improving infrastructure like parking, toilets, and waste facilities. These community-driven recommendations reflect a deep commitment to preserving Denmark's natural beauty and biodiversity. By listening to and acting on this feedback, we can ensure that growth and tourism do not come at the cost of the environment we all cherish.	residential amenity. Shire agrees that its use as a connector road would result in unacceptable traffic, landscape and amenity impacts. Accordingly, Shire does not support vehicle access via Zimmerman Street and has recommended the Structure Plan be modified to remove this connection, thereby retaining the existing streetscape and residential character.	

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		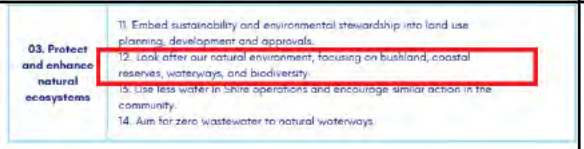 2. Lack of integration with the existing Kemsley Estate landscape The proposed road Zimmerman extension fails to integrate with the established landscaped character of the existing Street and surrounds. The existing streetscape is defined by: • A mature and continuous tree canopy • Low traffic volumes • A cul-de-sac configuration that supports residential amenity and pedestrian and child safety The transition from a natural bush setting within a residential cul-de-sac to a high-volume connector road represents a fundamental change in street character. The Draft Structure Plan does not outline sufficient mitigation measures to manage this change or to preserve the existing landscape values. 3. Absence of clear and enforceable tree protection commitments While the Draft Structure Plan references environmental values at a strategic level, it		

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		does not: • Commit to the retention of specific high-value trees, including mature Karri trees within the Zimmerman Street extension corridor • Provide minimum tree protection zones or buffers • Include binding design controls to ensure high-value vegetation is preserved through all stages of development Without these controls, there is a significant risk that environmentally valuable trees will be removed at later stages under the guise of detailed design or engineering constraints. 4. Loss of residential amenity and property impacts The proposed change from a cul-de-sac to a through-road carrying traffic volumes in excess of 1,000 vehicles per day is likely to result in: • Increased traffic noise • Reduced residential amenity • Loss of the quiet, low-traffic character relied upon by existing residents This represents a material change to the conditions under which affected properties were purchased and developed. The Draft		

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		Structure Plan does not adequately assess or mitigate impacts on adjoining residential properties, including impacts on reasonable enjoyment and property value. 5. Lack of clear commitment or guarantees that in the future there will not be a creation of a through-road connection to Ocean Beach Road via Kemsley place A key concern not adequately addressed in the Draft Structure Plan is the potential for future transformation of Zimmerman Street proposed ext / Kemsley pl from a residential cul-de-sac into a through-road connecting road to Ocean Beach Road. This connection will: • Convert Zimmerman Street ext into a traffic thoroughfare rather than a local access street • Encourage through-traffic seeking an alternative route to Ocean Beach Road and the South Coast Hwy • Increase traffic volumes, speed, and noise beyond what is appropriate for a residential street • Fundamentally alter the function and character of Kemsley place The Draft Structure Plan does not sufficiently address this potential future change, nor does		

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		it provide guarantees that future changes will **not** occur to Kemsley place as a connector to Ocean Beach rd. Additionally it does not assess whether alternative road network solutions could achieve broader connectivity objectives without sacrificing residential amenity. **Requested outcomes** I respectfully request that Shire: 1. Amend the Draft Structure Plan to avoid or realign the Zimmerman Street extension to retain high environmental value trees or consider an alternate connection point to South Coast Highway 2. Clearly identify and protect significant trees through enforceable planning controls, through the proposed large tree register 3. Reconsider the function and traffic role of Zimmerman Street to retain its residential amenity and cul-de-sac character 4. Provide a clear commitment that Kemsley place will **not** be used as a connector road to Ocean Beach road In its current form, the Draft Structure Plan does not adequately balance development outcomes with environmental protection specifically canopy cover and mature tree protection and residential		

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		amenity. Furthermore, it does not provide any surety that Kemsley place will be retained as a del de sac. I respectfully request that Shire give serious consideration to the matters raised in this submission and amend the Draft Structure Plan accordingly before proceeding further.		
S19	[redacted]	**Do You Support the Proposal?** Undecided **Comments** I am concerned about the removal of the old growth trees that house a variety of birds ie black cockatoos magpies Willie wagtails and pink and grey galahs to name a few. I am also concerned about the size of the blocks and the number of people predicted to house by developers.	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Size of block and population** The proposed block sizes is that of a residential	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage.

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			density of R20 is the predominant residential density across much of the Denmark townsite and its established suburbs.	
S20	[redacted]	I write on behalf of residents [redacted], immediately **south-east** of the proposed Structure Plan to record concerns and request specific conditions before any subdivision approval or clearing is permitted. We do not oppose orderly, well-designed infill. Our submission identifies specific, material concerns arising from the Structure Plan and its technical appendices that will directly affect the rural-residential properties immediately south-east of the proposed development. We request that the Shire require the proponent to resolve these matters to the satisfaction of the Shire and affected neighbours before subdivision approval, and to include clear, enforceable conditions on any approval. **Noise, traffic and transport impacts** Noice impact study done at south coast highway and addresses noise of external roads on residential development, however there is on reference to the noise impact on existing residents. Are there any regulations about height and upstairs verandahs being able to look down	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Public Open Space Provision** Shire acknowledges concerns that the proposed public open space (POS) network. POS areas must be functional, appropriately shaped, actively addressed by surrounding development and	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage. • Review the provision of public open spaces that demonstrably meet the design objectives of both the Shire's *Local Planning Policy 39: Public Open Space* and *Liveable Neighbourhoods* having regard for shape, function and edge treatment (i.e. no private or group housing sites abutting the POS).

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		onto our property? The plans do not seem to take into account the impact of the development on neighbours. Traffic plan makes no mention of neighbourhood impact for existing residents. The developer has committed to installing a new 1.8m high solid fence along the eastern interface, where necessary, where the proposed development abuts existing residential dwellings. The 1.8m high solid wall **should** restrict views from the residential lots to the new lots in the development. Is this to be made of sound proof material ? What happens to houses that are higher up the hill, they will still be looking into our property. The report states that the wall SHOULD restrict views, how can this be guaranteed in the setbacks and development of new houses? What guarantee will the Shire / developer provide that roofs will not be reflecting light excessively, that building materials will blend in with the environment and not impact the rural amenity. We request: no continuous retaining walls along the shared boundary without neighbour agreement; where retaining is necessary, it must be terraced and landscaped to minimise visual	capable of supporting recreation, passive surveillance and community use. Shire report concludes that the current POS configuration does not adequately meet the objectives of *Liveable Neighbourhoods* or the Shire's *Local Planning Policy 39: Public Open Space* and requires amendments to address this. **3. Privacy and Overlooking** All new residential development will be assessed against the WAPC's Residential Design Codes) R-Codes). The R-Codes provide planning and design provisions for residential development across WA and include detailed controls for setbacks, window placement, visual privacy separation distances and screening to protect residential privacy and minimise overlooking. These matters are assessed at development application stage to ensure appropriate interface and amenity outcomes are achieved. Where proposed development does not meet deemed-to-comply provisions, the Shire consults with adjoining and affected neighbours. **4. Subdivision Construction Impacts on Residential Amenity** The WAPC routinely applies subdivision conditions relating to drainage, earthworks, vegetation protection, construction management and interface treatments to ensure new	

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		impact. A landscape buffer on the developer side of the boundary (minimum width to be determined by the Shire) planted with native species from the LMP to maintain screening and habitat. "The Structure Plan has been carefully designed to balance environmental conservation with residential development, accommodating housing for approximately 400 people" What guarantee do we have that the developer will do this? A varied lot size approach has been proposed, with larger lots located in the vegetated southern portion of the site however this is still R20 so 430 sqm minimum. So how do you stop the development simply being a high density suburb? It seems to contradict itself. The Noise Management Plan (Herring Storer, Jun 2021) predicts exceedances up to **~7 dB(A)** and recommends **Quiet House design** and building envelope setbacks. We request: (a) mandatory Quiet House Package (A/B/C as required) for affected lots. The Plan only takes noise from South Coast highway and does not consider the noise impact on neighbours of 400 houses. Local residents do not appear to be considered at all. **Vegetation, biodiversity and POS**	subdivision does not result in unreasonable impacts on adjoining properties. **5. Other matters raised** Other matters raised in the submission are noted; however, they fall outside the scope of the Structure Plan preparation and determination process.	

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		management **Concern:** loss of remnant vegetation and long-term maintenance of revegetation. **Evidence & request:** The Landscape Management Plan (PGV Environmental, Aug 2025) and BMP require a **Landscape Management Plan** and two-year maintenance by the developer. We request the LMP be **approved by the Shire** and include weed control, planting densities, and a long-term maintenance agreement (with Shire acceptance in writing) before ceding POS. **POS** on the southern section is small and does not appear to include the stand of marri's which appear to have been classified as Class A forest and yet will be removed to accommodate small blocks of land! The report is contradictory depending upon the report one reads, some say vegetation will be maintained where possible, other reports indicate vegetation clearance. Who monitors this so we avoid mature trees being felled by developers who are willing to pay the small fine involved. **No** plans indicate the definitive, mapped list of trees to be retained vs removed adjacent to our properties and the long term impact on the health of neighbourhood trees and risk of collapse, once the vegetation is cleared up the southern slope for development. A detailed, lot-specific plan showing exactly		

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		what vegetation will be removed or modified is requested. Pre-works notification and neighbour consent process for any clearing within 30 m of existing rural-residential boundaries. No net loss requirement for retained habitat where possible. A requirement for the developer to fund and implement joint fuel-management agreements (registered on title where appropriate) and to provide a maintenance schedule and enforcement mechanism. P: 10 The full extent of vegetation modification will be determined at subdivision stage. The approximate area that is required to be cleared or modified with a Landscape Management Plan includes 3.34 ha of Class A Forest. I understand Class A forests in Western Australia are crucial as they provide the highest level of protection for areas of significant conservation and community value and the subsequent table 1 highlights that the area is: Conservation Category Wetlands and Buffer Threatened Ecological Communities (TECs) Empodisma peatlands of southwestern Australia Threatened Fauna A number of threatened		

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		fauna species or species habitat are known to occur in the area including: ▪ Western Ringtail Possum (Pseudocheirus occidentalis – Critically Endangered); and ▪ Black Cockatoo species (Calyptorhynchus banksii naso – Vulnerable, Zanda baudinii – Endangered & Zanda latirostris – Endangered). ▪ Due to the proximity of existing development and the disturbed nature of the site it is not considered that these species would rely on the suite for survival. We regularly witness the presence of the Black Cockatoo species although Pink and Grey Galahs are increasingly becoming a pest and competing. Additional corridor loss along the creek line and up the rail reserve will impact on habitat and nesting due to loss of mature trees. **Impacts:** loss of canopy and understorey, fragmentation of wildlife corridors (black cockatoo habitat), loss of visual amenity and privacy, altered microclimate and soil mycorrhizal networks will all have an impact on the vegetation and erosion on neighbouring properties. Requested actions: A definitive Tree Retention and Protection Plan (TPP) showing individual trees to be retained, TPZs, fencing, and construction exclusion zones, with legal protection (e.g., covenant or condition of		

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		subdivision). Expansion of the public open space along the eastern boundary protecting privacy, reducing noise and traffic movement for neighbours along with early advice regarding boundary fencing and its style / type. No-net-loss policy for high-value habitat: where removal is unavoidable, replacement planting at a minimum 3:1 ratio in the POS with species and densities from the approved LMP, and a 5-year maintenance and survival guarantee. Independent arboricultural supervision during clearing and construction; plus penalties for unauthorised removal. Denmark has seen too many developments where the developer is prepared to pay the small fine, because it increases profit and development footprint. Compensation/mitigation for impact on existing mature trees to neighbouring properties (e.g., funding for removal or replacement of trees on neighbour land or other agreed remediation as well as coverage should mature karri trees fall as a result of the development. **Stormwater, drainage and groundwater (runoff, infiltration and downstream impacts)** Map 150 200 Meters hyd2o Lots 1 & 621 South Coast Hwy: Flood Study SOUTH COAST		

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		HWY H C Location Plan Figure 1 does not show the runoff through the southern section of the property and the potential impact on our property. If water is reduced, and storm water redirected, this will impact the karri forest that surrounds the rural residential properties, **Concern:** The engineering and LWMS material confirm low permeability soils (silty/clayey). We are down-flow of the site and need certainty that runoff volumes, peak flows and water quality will not worsen for our land or damage trees (karri) and soils. Requested actions: We request modelling that explicitly includes the downstream impact on rural-residential parcels. Constructed drainage easement and legally binding maintenance schedule for all drainage infrastructure that discharges toward our property is requested. At least two years of monitoring to demonstrate no adverse impacts to neighbours from groundwater contamination and water reduction. **Topography, earthworks, vibration and property damage** **Concern:** The site has steep grades (up to ~10%) and significant level change along the shared boundary (12 m over ~300 m). Earthworks, cut/fill and compaction (including		

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		proof-rolling with heavy rollers) may cause ground movement, vibration and damage to sensitive structures – we have an old mudbrick house that may crack easily from disturbance. Monitoring has been indicated in the report, but no mention of by whom. Does the developer pay for this after its all sold and done dusted? What commitment do we have this will take place? Easy to say in a report. How does the Shire and developer ensure root damage to boundary trees on our property will not be affected? Clearing, earthworks and plant movements will increase dust, spread weeds (Bridal Creeper, Blackberry, Kikuyu) and risk disease/pests. How is this to be prevented? During construction hygiene controls have been proposed however who monitors if they are being abided by? How will dust be managed with south westerly blowing it over neighbours, Requested actions: Construction Hygiene Plan (weed hygiene, vehicle washdown, seed containment) enforceable by the Shire. Dust management measures (watering, wheel-wash, restricted hours for dusty operations). Weed monitoring and control program for two		

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		years post-construction funded by the developer, with reporting to the Shire and neighbours. **Visual amenity, privacy and fencing** The Structure Plan will change outlooks and privacy for neighbouring rural lots. We are concerned about the potential for retaining walls, high fences or a "wall of houses" along the shared boundary. We will suffer loss of views, increased overlooking, reduced privacy, potential for unsympathetic boundary treatments. We request that lots abutting existing rural properties and POS require building setbacks, maximum building heights, orientation for passive surveillance away from neighbour boundaries, and fencing treatments that complement the environment. Specific requests for further consultation and transparency Neighbour review period: require the developer to provide final, detailed engineering, drainage and tree retention plans to directly affected neighbours at least 28 days before any clearing or earthworks, with a formal process for lodging concerns to the Shire. Enforceable agreements: any maintenance obligations, fuel management plans, or access		

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		arrangements that affect neighbours must be recorded on title or via enforceable agreements (not just informal commitments). Compensation mechanism: a clear, time-limited process for neighbours to lodge claims for construction-related damage, with independent assessment and prompt remediation or compensation. Retain a continuous native buffer along the shared boundary (minimum width to be determined by the Shire) to preserve privacy, reduce dust and maintain habitat connectivity. Use non-vibratory compaction methods within 10 m of existing dwellings; where vibration is unavoidable, provide temporary structural protection and monitoring. Install sediment traps and gross pollutant traps at all drainage outlets that discharge toward private land. Provide a 5-year revegetation maintenance bond for POS and foreshore revegetation works. We ask the Shire of Denmark to: Require the developer to address each of the items listed above to directly affected neighbours before any clearing or earthworks. Ensure a formal neighbour consultation process is run for the detailed design and		

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		subdivision stages (not just the Structure Plan stage), with a named Shire contact and a developer liaison officer. We are prepared to work constructively with the Shire and the developer to create a sub-division we can all be happy with however we require robust, enforceable protections before irreversible clearing and earthworks commence. 		
S21	[redacted]	**Do You Support the Proposal?** Undecided **Comments.** Hi I am aware of the need of additional housing and therefore not generally opposed to this development. Having said this I am still concerned about the loss of habitats for wild life especially for cockatoos. I think it is imperative to find a balance between	**Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions.	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for

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	[redacted]	development and environmental protection. Therefore a would like to see generous incorporation of the natural vegetation in the reserves. This would protect fauna and flora, enrich the living value for the new residents and keeps Denmark natural beauty a bit more intact.	Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity.	conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage.
S22	[redacted]	**Do You Support the Proposal?** No **Comments.** I wish to formally object to the proposal in its current form. The anticipated loss of up to 262 of the 305 identified potential breeding habitat trees for threatened Black Cockatoo species is of serious concern and, in my view, unacceptable. The associated loss of foraging habitat is also significant. This is particularly troubling given the substantial efforts being made locally by groups such as the Wilson Inlet Catchment Committee to protect remnant vegetation and install nesting boxes for Black Cockatoos. At a time when scientific evidence clearly demonstrates the need to increase, not decrease, suitable foraging and	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage. • Consistent with DPLH's *Strategic*

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		breeding habitat, it is inappropriate for existing habitat to be cleared. I am also concerned that the patch of vegetation at the end of Wave Court is not recognised as significant remnant vegetation in the plans. This area supports a variety of birdlife, with regular observations of birds utilising the mature trees visible from our property. Its ecological value should not be underestimated. Further, I note that no Aboriginal heritage survey has been undertaken. A desktop review of registered sites alone is insufficient and does not provide an adequate level of cultural due diligence for a development of this scale. While I acknowledge and support the need for additional housing in Denmark, this can and should be achieved in a way that is sensitive to the existing natural environment. There appears to be ample cleared paddock land within the site that would allow for housing to be designed around and integrated with existing vegetation, rather than requiring its removal. I also urge the Shire to consider mechanisms to ensure that the majority of dwellings are retained for long-term residential use. If a significant proportion of lots are used as holiday homes or short-term accommodation (such as AirBnB), the development will not meaningfully contribute to the local community and the social benefits will be limited. In that scenario, the environmental costs would far outweigh the	envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **2. Protection of Aboriginal Heritage** Shire acknowledges that Aboriginal heritage matters require appropriate consideration as part of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland, landform and cultural landscapes. Accordingly, and consistent with the Department of Planning, Lands and Heritage's *Strategic Engagement Framework* and *Aboriginal Engagement Toolkit*, meaningful engagement should occur prior to final endorsement of the Structure Plan, while opportunities remain to inform layout, public open space configuration and associated planning outcomes.	*Engagement Framework* and the *Aboriginal Engagement Toolkit*, engagement with relevant Traditional Owners / Aboriginal representative bodies for the Denmark area, should be undertaken prior to final Structure Plan endorsement.

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		community gain. Thank you for the opportunity to comment on this proposal.		
S23	[redacted]	**Do You Support the Proposal?** Yes **Comments.** I am worried about the black cockatoo habitat. The potential loss of up to 262 of the 305 identified potential breeding habitat trees for threatened species of Black Cockatoos is unacceptable. The loss of foraging habitat is also significant. It would be extremely ironic for this habitat to be lost, given the work being undertaken by groups such as Wilson Inlet Catchment Committee to install Black Cockatoo nesting boxes and protect remnant vegetation elsewhere in the region. When the science shows clearly that more Black Cockatoo foraging and nesting habitat is required, it is unacceptable that existing habitat be cleared.	**Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity.	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage.
S24	[redacted]	**Do You Support the Proposal?** Undecided **Comments.** Density of development and impact on privacy. despite a 1.8 m fence, we will still have houses looking down on us. Loss of rural amenity and fauna corridor loss due to vegetation clearance. strategy seems to contradict itself , indicating vegetation	See submission S20	

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	[redacted]	clearance to enable lot size of R20, but no specific identification of which mature trees will be kept. black cockatoos use the southern portion as a corridor. loss of mature trees may have an impact on the mature trees on our property. is the developer liable if our trees die due to loss of stormwater runoff, given it will be drained away. southern slopes are steep as mentioned, erosion already happens over winter however with so many roofs and roads, what is the impact on those below this development. who pays for repair of our roads driveways if erosion increases? POS on southern end does not appear to cover the marriage forest on the southern boundary. this is stated as Class A forest and yet it looks as if most of it will be cleared to create tiny lots. Noise impact has only been taken from south coast highway. why is the noise impact on neighbours from 400 homes not taken into consideration. what guarantee can the shire give neighbours that this will not become an air bnb suburb? are there any restrictions on this? the neighbours to this development do not appear to have much consideration in the planning. noise traffic management seem to only consider residents. during development and land works, what guarantee can the Shire give us that our mud brick home will not be impacted by compaction and rolling. how does the developer manage and monitor ona day to day basis dust and hygiene issues. whilst the report says they will be managed, who		

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		monitors them to ensure this is completed. how will dust be managed during development. when a south westerly is blowing? that sand dust etc will be flying into our property. the bush fire report indicates a 30m buffer from neighbours fences, will this be where the road is built or is the road outside of this area. this is unclear depending upon the reports one reads. I understand that development needs to take place however this a large residential suburb being built and it will impact our privacy, peace and interaction with nature. I do not support r20 and pray that the developer honours their words that nature and remanent vegetation will be kept. I want the Shire to advise what course of action will be taken if soil disruption, changed water flows, land disturbance and clearing has an impact on the karri trees bordering our property. why can i only upload one document! Shirelors need to have an understanding of the vegetation on the southern end of the property and the loss of vege that will occur. how will the Shire ensure vegetation will be retained as promised, based upon previous developments that have been willing to pay a small fine when trees are removed. who will monitor this? Concerns: density and loss of rural amenity. run off and erosion impacts to the properties south east of development impact on existing karri on neighbour properties with reduced wi ter rains due to extensive drainage Noise and		

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		privacy loss Creation of an air bnb suburb being built loss of vegetation and impact on native fauna. Video Attached - https://s3-ap-southeast-2.amazonaws.com/ehq-production-australia/91ecb14069689608c19f0cd35fb94767900aeb86/original/1768550012/2928e80c79eb02518445894125907f0d_IMG_1496.mov?1768550012		
S25	[redacted]	I do not support the proposal in its current form. The potential loss of up to 262 of the 305 identified potential breeding habitat trees for all three threatened species of Black Cockatoos endemic to South West Western Australia is unacceptable. Baudin's Black-Cockatoo, Carnaby's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo are all listed as threatened species under state and federal legislation. As a local resident, residing in Kemsley Estate I regularly observe these species in mature, established Marri and Karri trees within the proposed development site. Of particular note the portion of vegetation at the end of Wave Court (within the proposed development site and extending SSW several hundred metres along the boundary) is not considered significant remnant vegetation in the plans, yet we regularly observe a variety of birds (including multiple black cockatoo species) using the large trees that we can see	**1. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity.	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Identify large lots where trees are proposed to be protected within private lots and recommend that tree protection zones and building envelopes be identified at subdivision stage. • Consistent with DPLH's Strategic Engagement Framework and the Aboriginal Engagement Toolkit, engagement with relevant Traditional Owners / Aboriginal representative bodies for the Denmark area, should be

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		from our backyard. Whilst the loss of roosting and nesting sites is concerning, so too is the loss of foraging habitat. The Shire of Denmark LGA is situated in an area of high conservation value due to the number of endemic species that occur here. It would be extremely counterproductive for this habitat to be lost, given the work being undertaken by groups such as South Coast NRM, Wilson Inlet Catchment Committee, and other engaged community members and groups to install Black Cockatoo nesting boxes and protect remnant vegetation in the Denmark Shire LGA and more widely across the region. The science shows clearly that more Black Cockatoo foraging and nesting habitat is required, it is unacceptable that existing known habitat be cleared. Surely this is antithetical to the Shire of Denmark's work towards effective management and conservation of biodiversity values, including threatened and endemic flora and fauna? I am also concerned that an Aboriginal heritage survey has not been undertaken. Desktop review of existing registered sites is insufficient. The existence of a possible Gnamma tree within the site surely warrants the undertaking of a more comprehensive survey? I support the need for additional housing in	**2. Protection of Aboriginal Heritage** The Structure Plan was referred to the Department of Planning, Lands and Heritage (DPLH) for comment. While DPLH is responsible for administering the *Aboriginal Heritage Act 1972* and Aboriginal cultural heritage matters, no comments were received during the consultation period in relation to Aboriginal heritage. Shire acknowledges that Aboriginal heritage matters require appropriate consideration as part of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland, landform and cultural landscapes. Accordingly, and consistent with the Department of Planning, Lands and Heritage's *Strategic Engagement Framework* and *Aboriginal Engagement Toolkit*, meaningful engagement should occur prior to final endorsement of the Structure Plan, while opportunities remain to inform layout, public open space configuration and associated planning outcomes.	undertaken prior to final Structure Plan endorsement.

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		Denmark, this development has the potential to add to this. However, there is plenty of open paddock / cleared agricultural space within the site that would enable housing lots to be sensitively planned around existing vegetation. Additionally, consideration should be given to the placement of restrictions on the development to ensure that the bulk of the housing is retained for long-term use not for the short-term holiday market. If a high proportion of the housing lots end up being owned for occasional use by people whose primary residence is not in Denmark, or used as holiday housing or permanent short-term accommodation (i.e. Airbnb) then this development would not meaningfully contribute to the acute housing needs of the Denmark community and the benefits of the development would not be significant enough to outweigh the costs.	**4. Retention of homes for LT residents** Shire acknowledges the importance of retaining residential dwellings for long-term residents and notes that it is intending to review its policy framework in due course to strengthen Shire's ability to manage where short-term tourist accommodation, including Airbnb-style uses, may be permitted.	
S26	[redacted]	**Do You Support the Proposal?** Undecided **Comments.** Wagyl Kaip Southern Noongar Aboriginal Corporation plays an important role in preserving and protecting Noongar heritage sites and cultural values in Denmark and the Southern Region of WA. This response is lodged after reviewing the documents and with the approval of our CEO, heritage and land management team. While we acknowledge there may be no legal	**1. Protection of Aboriginal Heritage** The Structure Plan was referred to the Department of Planning, Lands and Heritage (DPLH) for comment. While DPLH is responsible for administering the *Aboriginal Heritage Act 1972* and Aboriginal cultural heritage matters, no comments were received during the consultation period in relation to Aboriginal heritage. Shire acknowledges that Aboriginal heritage	Modify the Structure Plan to: • Consistent with DPLH's Strategic Engagement Framework and Aboriginal Engagement Toolkit, engagement with relevant Traditional Owners / Aboriginal representative bodies for the Denmark area, should be undertaken prior to final Structure

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	[redacted]	requirement to directly consult with WKSN prior to the submission of a Structure Plan by a developer, prior to advertising for public comment, we would draw your attention to the fact that no due diligence or consultation occurred with WKSN in the planning process for this development, from the date of a request to amend the Town Planning Scheme in October 2022, to the last day of the public response period to the Structure Plan. This planning includes the decision under Section 48A(1)(a) under the Environmental Protection Act 1986 to consider social surrounds and heritage impacts. Importantly, the amendment area contains native vegetation, including stands of Marri, Jarrah and Karri. The condition of this vegetation ranges from 'Completely Degraded' to 'Excellent' (PGV Environmental, 2020). The vegetation is potential habitat for threatened black cockatoo species and conservation of significant fauna, including the South-western Brush-tailed Phascogale, Quenda and several migratory bird species. The structure plan also acknowledges an Aboriginal site or "gnamma tree" exists within the proposed development envelope. According to the Structure Plan, there is a large concentration of remnant vegetation in the southern portion of the site, identified as being medium to low chance of nesting with some trees identified as high and very high chance of nesting and a potential Gnamma Tree is identified. The only	matters require appropriate consideration as part of the Structure Plan process. While no registered Aboriginal Heritage Sites are recorded on the Aboriginal Cultural Heritage Inquiry System for the subject land, the Shire report recognises that the absence of registered sites does not remove the need for engagement with Aboriginal people or consideration of cultural values. Structure Plans establish long-term land use patterns that can affect waterways, bushland, landform and cultural landscapes. Accordingly, and consistent with the Department of Planning, Lands and Heritage's *Strategic Engagement Framework* and *Aboriginal Engagement Toolkit*, meaningful engagement should occur prior to final endorsement of the Structure Plan, while opportunities remain to inform layout, public open space configuration and associated planning outcomes.	Plan endorsement.

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		recommendation is that large lots are proposed in this location. Given there is significant clearing of native vegetation and significant fauna habitat proposed the Landscape Management Plan ought to ensure engagement and cultural heritage advice is sought before completion of the Structure Plan to inform the planning process, not simply via an Activity Notice to WKSN to ensure a survey is done after building approvals are granted. An Aboriginal Cultural Heritage site survey is a statutory requirement where projects impact sites, whether registered or not, and consultation should be considered as part of the due diligence and structure planning. This is because most Aboriginal sites in our region are not listed on the State's DPLH Aboriginal Cultural Heritage Inquiry System. Moreover, the implementation of the amendments and design may also have obligations under the State Aboriginal Heritage Act 1972 and (Commonwealth) Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). In short, there has been no consultation in the planning process with WKSN and we urge the proponents and Shire to exercise due diligence in the early stages of major projects that impact on cultural heritage. DPLH's Strategic Engagement Framework and associated Aboriginal Engagement Toolkit promote early engagement and culturally aligned consultation practices in the planning		

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		system. There is currently no assessment of intangible cultural values, no Aboriginal heritage field survey, no cultural landscape assessment, no consultation with Traditional Owners, and no reference to obligations under the WA Aboriginal Cultural Heritage Act. As such, the Structure Plan needs a response, both to resolve the contradictions between the Plan's reference to an Aboriginal site and supporting planning documents vis-à-vis statements that there are "no Aboriginal sites" in the development zone. This will help mitigate risks of infringing the Aboriginal Heritage Act by adhering to the State's intention to encourage developers and local government to consult early in the development process. Given the Structure Plan identifies a potential Gnamma tree and the site contains mature trees, creek lines and landforms often associated with Noongar heritage, there is a high likelihood of other Aboriginal cultural values associated with the proposal. The current Structure Plan simply notes the presence of a potential Gnamma tree to be reviewed prior to subdivision works. We urge that proper consultation is undertaken with WKSN to conduct a heritage assessment before any major projects that identify risk to Aboriginal heritage to help mitigate those risks and guide the planning process. WKSN is happy to assist in outlining what needs to happen in relation to consultation with DPLH and WKSN prior to		

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		planning decisions being made.		
G1	[redacted] DBCA – Parks & Wildlife Service [redacted]	Thank you for your letter seeking comments on the Draft Structure Plan for Lot 621 Harlequin Street and Lot 1 South Coast Highway. Parks and Wildlife Service has no objections or further comments to make on this proposal.	Noted	No modification required
G2	[redacted] DPIRD [redacted]	The Department of Primary Industries and Regional Development (DPIRD) does not object to the proposed Draft Structure Plan for the abovementioned lots, as the area has previously been identified for residential use. The area is zoned *Urban Development* in the Shire of Denmark's Town Planning Scheme No.3.	Noted	No modification required
G3	[redacted] in Main Roads [redacted]	Main Roads has significant concerns with the proposed plans. We cannot support this current concept plan since it represents a significant risk to the future function of the inter-regional link the South Coast Highway provides. As the only east west route through the Denmark townsite it provides access to the Ports of Albany and Bunbury and provides inter-town connectivity. Main Roads has previously raised a number of critical concerns regarding inappropriate urban residential development westward along the South Coast Highway and the	Shire undertook a detailed assessment of the opportunities and constraints in relation to the Zimmerman Street road reserve intersection with South Coast Highway (which considered Main Roads objection) and concluded that this intersection is not supported. While it offers some initial advantages, the overall environmental impacts are significant and outweigh the benefits. The centrally located access (between Ross Court and Haperdene Rise) is preferred as it avoids through traffic issues and better protects environmental and landscape values.	Modify the Structure Plan to; • Remove vehicle access via Zimmerman Street road reserve onto South Coast Highway, and instead provide access via the central point between Ross Court and Harpendene Rise

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		adverse impact this will have on the future performance of the South Coast Highway as a Strategic transport route. Unfortunately, these issues have not been appropriately addressed and consequentially exposes the State to a significant future financial liability. The proposed extension of Harlequinn Rd to the north and its proposed "Gateway" connection with the South Coast Highway is problematic in several aspects. The South Coast Highway road reserve is of insufficient width to accommodate both future road upgrade and development utility service needs, whilst retaining the existing remanent roadside vegetation. An alternate development service corridor may need to be identified and acquired for the development. Key points The Concept Development Plan fails to identify any future road connectivity except Harlequin which is both unsuitable to the north and restricted to the south. There are significant additional seasonal traffic loads demonstrated in the area and the real traffic loads are not verified. The proposed location of Lots 130-144 restricts potential for widening of South Coast Highway.		

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		The proposed 2m wide planting strip is an insignificant buffer. There are significant numbers of large trees and vegetation that would need to be removed to realise the Harlequin Rd extension alignment. There are significant drainage issues that would need to be addressed to realise the Harlequin Rd extension alignment. Main Roads has no option but to oppose the current concept as there must be certainty for future network opportunities before we can further consider this plan.		
G4	[redacted] A/Senior Advisor – Land Use Planning Water Corp [redacted]	Water Corporation offers the following comments in support of the proposed structure plan: **Water** Reticulated water is able to service the subject area with upgrades and extensions of the existing infrastructure, dependent on staging and further assessment of a design proposal. All extensions are to be in accordance with the Utility Providers Code of Practice. **Wastewater** Reticulated sewerage is able to service the subject area with upgrades and extensions of	Noted	No modifications to the Structure Plan required.

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		the existing infrastructure. The developer is responsible for funding extensions in accordance with the Utility Providers Code of Practice. **General Comments** Any works carried out in proximity to our Assets must receive prior approval by applying for an Asset Protection Risk Assessment (APRA) To assess whether the proposed development will require and APRA details of the Prescribed Proximities and relevant legislation are available in our guidelines. The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid.		
G5	[redacted] Land Use Planning Specialist Western Power [redacted]	Under the Shire of Denmark's Town Planning Scheme No.3 (TPS3), the Site is zoned Urban Development. The rezoning of the site was facilitated through Amendment 146 to TPS3 and incorporates specific use classes, development standards, development provisions and additional requirements that apply to the land, adopting R20 and R40 density coding: The Executive Summary Table confirms the area being 16.88 ha with estimated lot yield of 144, with estimated number of dwellings being 160 over a staged process:	Noted. Matters raised by Western Power will be dealt with at Subdivision Stage.	No modifications to Structure Plan required.

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		  The supporting document states that there is existing three-phase high voltage overhead power network on the northern side of South Coast and there is sufficient capacity for the proposed structure plan development area. However, the information is based on October 2019 data. The current Network Mapping Tool confirms Albany Substation provides power to the site area with a capacity of less than 5MVA. Western Power confirms that the supply of electrical power to the subject site is distributed from the Albany substation, which is already above the planning capacity. The network capacity information for the proposed structure plan is currently pending and will be forwarded to you when it is available. The following is an overview of Western		

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		Power's network and recommendations relevant to the subsequent strategic and statutory planning processes: With any new and infill urban development, it is important that the electrical transmission infrastructure is located such that the electrical supply to these areas is optimised. This infrastructure should be embedded within new and reinforced within infill areas, whilst also ensuring that off-site impacts often arising are adequately managed. Should the site require the upgrading and provision of additional electrical infrastructure as part of any future development, the proponents are to engage directly with Western Power to inform specific development requirements. Works of this nature are customer funded, as part of the subdivision and development process. Any development application will need to be referred to Western Power prior to the approval of any development or works located within proximity to Western Power infrastructure. Written advice is to be obtained from Western Power and is to be given due regard when determining any development application. Western Power recommends the following standard Advice Notes prior to development or subdivision for the provision of an easement as required, pursuant to Section		

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		167 of the Planning and Development Act 2005: Advice Notes (i) The development shall be designed and constructed to protect Western Power infrastructure and interests from potential land use conflict. (ii) No development (including drainage, fill, fencing, storage or parking) will be permitted within Western Power line and cable easements or safe clearance zones without the prior written approval of Western Power. (iii) The applicant should formally progress the Western Power network connection arrangements with Western Power. (iv) Arrangements being made to the specifications of Western Power for the provision of necessary electricity easements as and where required.		
G6	[redacted] Senior Strategic Land Use Planning Officer DFES [redacted]	This advice relates to the *State Planning Policy 3.7 Bushfire* (SPP 3.7) and supporting *Planning for Bushfire Guidelines* (Guidelines), as well as DFES' role and responsibilities as Hazard Management Agency for Fire in Western Australia. **General Comment** DFES acknowledges that an approved structure plan (DMK14) exists for the adjacent	Modification required to the Bushfire Management Plan is acknowledged. The Shire foresees a substantial update to the BMP based on the proposed modifications to the Structure Plan. DFES required modifications will be considered as part of this update.	Modify the Structure Plan to: • Update the Bushfire Management Plan to consider the outcomes of modifications required to the Structure Plan, including the modifications required by DFES.

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		Lot 5 South Coast Highway and was endorsed in 2009, however it is unclear from the BMP or Structure Plan Report if this approval remains valid. DFES also acknowledges that the proposed Draft Structure Plan includes an indicative layout for the future subdivision and development of residential lots, areas of Public Open Space and roads. Specific requirements of SPP 3.7 and the Guidelines are to be further addressed in the BMP as outlined in the below assessment Tables 1 and 2. **Recommendation: Compliance with acceptable solutions not demonstrated – modifications required** DFES advises that the BMP has not demonstrated that the proposed Draft Structure Plan complies with the following requirements of SPP 3.7 and the Guidelines: Element 2: Siting and Design; and Element 3: Vehicular Access. DFES recommends the BMP be modified as per the Assessment advice provided in Tables 1-3 to ensure it is accurate, and the bushfire risk management/mitigation measures are effective and can be implemented in perpetuity to manage/mitigate the bushfire risk to people, property and infrastructure to		

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		an acceptable level and appropriate to the proposal and location. The required modifications are listed in the table(s) below. Should the modified BMP affect the design of the proposal, the proposal should be amended to reflect these modifications. In addition, DFES recommends the proposed Structure Plan Report (section 3.4) be amended to be consistent with the modified BMP. The proposed changes include commitments regarding the location of residential lots in areas of BAL-29 or below; and vehicular access and vegetation management to meet the requirements of SPP 3.7 and Guidelines at all stages of the planning process.		
G7	[redacted] Dept of Health [redacted]	DoH position - No objection – with comments and/or recommended conditions and advice notes provided below. DoH Comments 1. Water supply and wastewater disposal The proposal must be connected to reticulated sewerage services and reticulated drinking water services provided by a licensed service provider, as outlined in the Draft Structure Plan and Local Water Management Strategy. 2. Amenity (medical entomology) The subject land is in a region that	Noted. Matters raised by the Department will be managed and controlled during subdivision stage.	No modifications required to the Structure Plan.

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		occasionally experiences problems with nuisance and disease carrying mosquitoes. These mosquitoes are known carriers of Ross River (RRV) and Barmah Forest (BFV) viruses. Human cases of RRV and BFV diseases have been reported in this region. Any future development needs to avoid the creation of additional mosquito breeding habitats. DoH recommends that the proponent ensures proposed site works do not create additional mosquito breeding habitat as follows: • Changes to topography resulting from earthworks must prevent run-off from creating surface ponding as it may become mosquito breeding habitat. • Mosquito-proof design should be incorporated into building design for accommodation and recreational facilities (such as mosquito mesh on doors and windows) in order to minimise resident and visitor exposure to mosquito bites. • Water tanks and other water-holding containers must be sealed or screened to prevent mosquito access and breeding. • Waste items should be filled with sand/soil, kept undercover or punctured to reduce the chances of these items holding water and becoming mosquito breeding		

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		habitat. • Constructed water bodies must be located, designed and maintained so they do not create or contribute to mosquito breeding. 3. Contaminated sites DoH provided comment during the scheme amendment referral period recommending the proponent obtain a Basic Summary of Records relating to the land and its surroundings to complete their assessment of the site's suitability for rezoning to sensitive land uses. In this submission, the proponent referred to potentially contaminating industries, activities and land uses within Appendix B of Guidelines: Assessment and Management of Contaminated Sites (DWER, 2021). DoH recognises that, through aerial imagery, small-scale dairy operations occurred historically at the site. The Contamination Advice Statement (Appendix K) outlines that "dairy" is not listed within Appendix B of Guidelines: Assessment and Management of Contaminated Sites (DWER, 2021) and is not considered to create a contamination risk. However, DoH notes that dairy operations can be attributed to "Intensive Agriculture" as a potentially contaminating land use. Historical		

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		contaminating industries and activities are important to consider when changing land uses (i.e. rural to residential). DoH therefore still advises that the proponent obtain a Basic Summary of Records as a precautionary measure to confirm their assessment of the site's suitability for the development of sensitive land uses. 4. Public health risks from noise DoH notes results of the acoustic assessment indicate that noise received at the lots would exceed acoustic criteria as outlined in State Planning Policy 5.4 "Road and Rail Noise" (SPP 5.4) and noise amelioration would be required. DoH recommends the proponent undertake consultation with DWER prior to subdivision to ensure protection against the associated human health impacts for sensitive land uses.		
G8	[redacted] Dept of Education 151 Royal Street East Perth [redacted]	Every new residential development or intensification of residential density create demand for, or on, public schools. Accordingly, this requires careful planning consideration to ensure that the anticipated student demand balances with the provision of public schools in the locality. The Department will continue to monitor and assess the public education needs as development progresses in this locality and that new public school site/s and/or augmentation/ expansion of the existing	Noted.	No modifications required to the Structure Plan.

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		school site (e.g. off-site early childhood facility) may be required. As such, any requirement for primary school developer contributions will be assessed and may be applied at the subdivision stage. In view of the above, the Department has no in-principle objections to the draft Structure Plan. Notwithstanding this, any further changes to the zoning, residential density coding and dwelling lot numbers which may result in an increase to the student yield in the locality will require prior consultation with the Department.		
G9	[redacted] Senior Natural Resources Management Officer Planning Advice South Coast Water Regulation [redacted]	DWER acknowledges that the DRAFT Structure Plan (DSP) reflects recommendations made on the Urban Water Management Plan in 2020 and during the 2022 Scheme Amendment no. 146 phase. While DWER does not object to the DSP, it should be noted that the following issues remain a concern and should be addressed at future stages. **Stormwater Management** An Urban Water Management Plan (UWMP) will be required at the subdivision stage. An urban water management plan (UWMP) should be required as a condition of subdivision and be submitted to the satisfaction of the Shire of Denmark. The	**1. Urban Water Management Plan** The requirement to prepare an Urban Water Management Plan at subdivision stage is noted, including matters to be addressed under the UWMP. **2. Protection of Remnant Vegetation and Black Cockatoo Habitat** Shire acknowledges concerns regarding vegetation clearing and impacts on Black Cockatoo habitat, which are supported by environmental assessments, EPA advice and Local Planning Scheme provisions. Shire does not support subdivision of areas containing remnant vegetation in good to excellent condition due to fragmentation risks associated with development and bushfire management, and instead recommends their	Modify the Structure Plan to: • Retain and protect the area of high-quality remnant vegetation along the southern boundary of the subject land within a Public Open Space for conservations purposes. • Consistent with WAPC's *State Planning Policy 2.9: Water*, establish a minimum setback of 30m to both sides of the creek line to protect, manage and conserve water quality, native vegetation, aquatic and riparian habitats, ecological linkages and associated biodiversity val

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		UWMP should be consistent with the conceptual designs and demonstrate protection of the waterway, including during the construction period. The UWMP should consider previous advice regarding stormwater from DWER and EPA in relation to this site, including the resolution of any conflicts arising from stormwater management within park and recreation areas. **Foreshore Management** Can we prescribe a defined setback to creek line? **Native Vegetation** Can we ask for more veg in the south to be protected? **Noise Management:** South Coast Planning Advice has not reviewed the Noise Management Plan (NMP) associated with the DSP. If the Shire would like specific advice regarding the NMP, questions can be referred to the region for follow-up with DWER noise branch. In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be	protection within public open space for long-term conservation. In areas identified as quality fauna habitat, larger lots are supported where necessary to accommodate building envelopes and Tree Protection Zones. Retention of trees within road reserves is also supported, subject to identification of Tree Protection Zones at subdivision stage and construction methods that protect tree integrity. **3. Foreshore Reserve/ Setback from Creek Line** The proposed creekline setback is not supported, as the minimal separation between private lots and the creekline fails to provide an adequate riparian buffer to protect waterway function, accommodate earthworks impacts, or enable effective revegetation and long-term management. State Planning Policy 2.9: Water generally requires a minimum 30-metre foreshore setback from each side of a waterway to protect ecological values. While the Environmental Assessment identified no biophysical constraints requiring a wider buffer, the reduced setback shown in the Structure Plan is considered insufficient and inconsistent with policy objectives.	

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		assessed.		