# SHIRE OF DENMARK

# TOWN PLANNING SCHEME NO. 3

# AMENDMENT No. 149



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### **MINISTER FOR PLANNING**

### PROPOSAL TO AMEND A TOWN PLANNING SCHEME

LOCAL AUTHORITY:SHIRE OF DENMARKDESCRIPTION OF LOCAL<br/>PLANNING SCHEME:TOWN PLANNING SCHEME No. 3TYPE OF SCHEME:DISTRICT SCHEME

SERIAL No. OF AMENDMENT:

**AMENDMENT No. 149** 

PROPOSAL:

To move portion Lot 9010 Beaufortia Gardens, Hay, Shire of Denmark, from the Tourist (T9) zone and Parks and Recreation reserve to the Special Residential (SRes6) zone, to rezone Lots 193, 194, 195 & 196 Pimelea View & portion Lots 180, 181, 182 & 184 Beaufortia Gardens from the Tourist (T9) zone to the Special Residential (SRes6) zone, to move a portion of Reserve 52123 from the Tourist (T9) zone to the Parks and Recreation reserve and to delete Tourist Zone (T9) from Appendix XIII of the Scheme.

## **TOWN PLANNING SCHEME No. 3**

**AMENDMENT No. 149** 

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- 1. **RESOLUTION**
- 2. REPORT
- 3. EXECUTION

May 2022 modified following referral to EPA. September 2022 modified in accordance with DPLH Schedule of Modifications prior to Advertising.

### PLANNING AND DEVELOPMENT ACT 2005

### RESOLUTION DECIDING TO AMEND A TOWN PLANNING SCHEME

### SHIRE OF DENMARK

### TOWN PLANNING SCHEME No. 3

### DISTRICT SCHEME

### AMENDMENT No. 149

RESOLVED that the local government pursuant to Section 72 of the *Planning and Development Act 2005*, amend the above Local Planning Scheme by:

- 1. Rezoning portion Lot 9010 Beaufortia Gardens, Hay, Shire of Denmark, from the Tourist (T9) Zone to Special Residential (SRes6) Zone;
- 2. Reserving portion Lot 9010 from Tourist (T9) Zone to the Parks & Recreation Reserve;
- 3. Reserving portion Lot 9010 Beaufortia Gardens, Hay, Shire of Denmark, from the Special Residential (SRes6) Zone to the Parks & Recreation Reserve;
- 4. Rezoning portion Reserve 52123, from the Tourist (T9) Zone to the Parks & Recreation Reserve;
- 5. Rezoning portion Lots 180, 181, 182 & 184 Beaufortia Gardens from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- 6. Rezoning Lots 193, 194, 195 & 196 Pimelea View from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- 7. Reserving portion of Beaufortia Gardens, Tassel Place and Pimelea View from the Tourist (T9) Zone and the Special Residential (SRes6) Zone to Road Reserve;
- 8. Delete Tourist Zone (T9) from Appendix XIII;
- 9. Modify Appendix XIV S Res 6 Special Provisions as follows:
  - Delete the words "Livestock Grazing see clause (viii)a)" from the Proposed Uses column.
  - Delete provisions a), b), c) and d) of provision viii) and replace with:

a) Intensive horticulture and grazing of livestock is not permitted;

- 10. Add the following to SRes 6 Special Provisions in Appendix XIV;
  - xii) In addition to the Special Provisions outlined above, for the purpose of subdivision and development of land contained within that area generally bound by Beaufortia Gardens to the east, Wilson Inlet to the south, Pimelea View and Lot 196 to the north, and Reserve 12232 to the west, the following additional provisions shall apply, noting in the event of any conflict these additional provisions will prevail:
    - (a) The Special Residential lots should comply with the requirements of the Government Sewerage Policy 2019 unless further supporting information is provided to demonstrate capability. A lot size of no less than 3000m2 will be considered.

- (b) In addition to the minimum setback requirements prescribed under provision ii) (a) above, all buildings, site works and retaining walls shall be set back a minimum of 20 metres from the western boundary with Reserve 12232. No further reduction in this setback will be permitted.
- (c) Subdivision of the site shall generally accord with an approved Structure Plan that incorporates the following supporting documents:
  - 1) A site specific Flora and Fauna Assessment.
  - 2) The Springdale Beach Estate Urban Water Management Plan 2014 is to be updated to the satisfaction of the Shire of Denmark and the Department of Water and Environmental Regulation and include reference to consistency with the Wilson Inlet Management Strategy.
  - 3) An addendum to the Site and Soil Evaluation report prepared by Aurora Environmental (December 2021), to inform appropriate lot sizes, configuration, and yield, the proposed method of on-site effluent disposal, building envelopes, remediation works (where applicable) and consistency with the Wilson Inlet Management Strategy, is to be prepared to the satisfaction of the Shire of Denmark, Department of Water and Environmental Regulation and Department of Health.
  - 4) An addendum to the existing Foreshore Management Plan that includes appropriate management conditions consistent with the Wilson Inlet Foreshore Reserve Management Plan 2008 (or its equivalent as amended) and the Wilson Inlet Management Strategy. The addendum is to be prepared to the satisfaction of the Shire of Denmark and the Department of Water and Environmental Regulation to address, amongst other matters:- protection of vegetation and fauna habitat, erosion control, weed management, walkways/ bike paths and access controls, lighting to incorporate dark sky principles as referenced in the WAPC's Position Statement "Dark Sky and Astrotourism" and the "National Light Pollution Guidelines for Wildlife" (as amended), revegetation, setbacks and parking and any other matters appurtenant to or impacting upon the adjacent foreshore area.
  - 5) A Landscape Management Plan shall be prepared to the satisfaction of the Shire of Denmark for the balance of the development area to address the provision of street trees, identification and protection of trees to be retained, areas for replanting, the protection of fauna habitat, a preference for use of locally indigenous native species in domestic gardens and public reserves, fertilizer/ nutrient input, mechanisms for implementation and timing, lighting to incorporate dark sky principles as referenced in the WAPC Position Statement "Dark Sky and Astrotourism" and the National Light Pollution Guidelines for Wildlife (as amended), including consideration of estate covenants and/ or Local Development Plans if deemed appropriate.
  - 6) A Bushfire Management Plan that addresses and responds to the requirements and recommendations of the Flora and Fauna Assessment, Foreshore Management Plan, and Landscape Management Plan.
  - 7) The requirement for preparation of a Construction Management Plan prior to the commencement of subdivision or development site works to the satisfaction of the Shire of Denmark to address such matters as erosion and sediment transport control and dieback control (including land based movement and groundwater movement).

- (d) Where required under an approved Structure Plan, a local development plan is to be prepared for all or part of the structure plan area.
- (e) All buildings, retaining walls and effluent disposal systems are to be contained within an approved building envelope if nominated on an approved Structure Plan.
- (f) Where informed by recommendations contained within a Site and Soil Evaluation report and/ or approved Structure Plan Council may impose conditions at the time of subdivision to address site remediation, fill and compaction of house pads and effluent disposal areas within the defined building envelopes.
- (g) Where identified on an approved Structure Plan, Council may impose conditions at the time of subdivision to require the construction of Strategic Firebreaks/ Fire Service Access Routes and a requirement for registration of such as an easement in gross under Section 195 of the Land Administration Act 1997.
- (h) No clearing of significant trees or endemic vegetation shall be permitted where such vegetation is shown on the approved Structure Plan for retention unless:
  - Such clearing is approved in conjunction with a development application granted by the Shire of Denmark.
  - Trees are diseased or dangerous as confirmed in writing by a qualified arborist and verified by the Shire of Denmark.
  - Such works have been mandated under the Shire of Denmark's Fire Management Notice.

and

11. Amending the Scheme maps accordingly.

The amendment is 'Complex' under the provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015* for the following reason.

• The amendment is not consistent with the Shire of Denmark Local Planning Strategy which designates the site for tourism development.

Dated this	2155	day of	June	2022

*EF EXECUTIVE OFFICER* 

# SHIRE OF DENMARK

**TOWN PLANNING SCHEME NO. 3** 

AMENDMENT No. 149

**PLANNING REPORT** 

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### 1. INTRODUCTION

The main purpose of this scheme amendment is to rezone portion of Lot 9010 South Coast Highway located within the Springdale Beach Estate from the Tourist zone to the Special Residential zone. At the same time the scheme amendment seeks to rationalise the zoning of a number of adjoining Special Residential Lots that are under the Tourist zone and transfer the Tourist zone that exists over portion of Reserve 52123 to the Parks & Recreation Reserve and a portion of Parks & Recreation Reserve on Portion Lot 9010 to the Special Residential zone. The Estate is located approximately 5.6 kms to the east of the Denmark Townsite. Refer Location Plan below.



Figure 1: Location Plan

The Springdale Beach Estate was zoned and gazetted in October 2001. The relevant portion of Lot 9010 is located adjacent to the Wilson Inlet foreshore and is accessed by Beaufortia Gardens which is one of the main subdivisional roads within the Special Residential Estate. Despite the fact that all the supporting infrastructure has been in place for many years, the developer, LWP Denmark, has been unable to attract any interest to develop portion Lot 9010 for tourism development. In the meantime, much of the residential area has been subdivided and developed and the community is no longer supportive of Tourist development which has its main access through the residential area.

In accordance with the WAPC's Planning Bulletin 83/2013: 'Planning for Tourism', it is requested approval be granted to rezone the Tourist Site to the 'Special Residential' zone.

The following report provides supporting background information and justification for the rezoning proposal.

### 2. BACKGROUND

The majority of the Springdale Beach Estate is zoned 'Special Residential' with a 'Tourist' zone located in the south west corner of the property. A Subdivision Guide Plan formed part of the rezoning documentation and is attached overleaf (Figure 2).

The Tourist site had an overall area of 9.4ha, one hectare of which was to be excised and incorporated into the adjoining foreshore reserve.

The site was included in the Schedule of Tourist Zones in Appendix XIII of the Shire's Town Planning Scheme No 3 and included the following permitted uses:

- Single house
- Cottage Industry
- Caretaker's Dwellings
- Holiday Accommodation
- Reception Centre
- Restaurant
- Shop (max 150m<sup>2</sup>)



The following uses could also be permitted if incidental to the predominant use of the land:

- Day Care Centre
- Private Recreation
- Public Amusement

Condition No 4 of the Schedule provides guidance in terms of the density of the holiday accommodation and stipulates that the total density of holiday accommodation shall not exceed 3.33 units per hectare of gross site area.

Following acquisition of the property by LWP Denmark, the property has been progressively developed with Stages 1A, 1B, 2A, 2B, 2C, 2D, 2E, 3A, 3B, 4A and 4B completed and Stages 5A and 5C currently under construction. Refer Figure 3: Subdivision Staging Plan.

The tourist site formed part of the Stage 4 subdivision application and while a portion of the site was excised and ceded to the Shire of Denmark as a foreshore reserve, the tourist lot was not created. A subsequent subdivision application (WAPC Reference 156128) proposed to create the tourist lot but was withdrawn and cancelled on 2 January 2020.

The decision not to create the tourist site was based on the realisation that there had been no interest from potential developers to acquire the site for tourism development. The key reasons for the lack of interest appear to be:

- The site is not located on a strategic tourist route but instead is located at the end of a long cul-de-sac which runs through a residential estate.
- The site is heavily vegetated which restricts the views to the Inlet and requires significant buffers to meet bushfire guidelines.
- Since the site was created, the Boston Brewery has been developed on the opposite side of South Coast Highway. The success of this development which is located on a strategic tourist route, increases the unlikelihood of a signature restaurant being developed on the site.

- The growing residential community on the estate are generally not supportive of a tourist development which will draw significant traffic through their predominantly residential area.
- While Springdale Beach may have historically been a waterfront destination, the presence of seaweed, algae and associated smell detracts from its attraction. At the same time other beachfront destinations such as Ocean Beach and Greens Pool were developing and are now significantly more attractive.

In view of the above, the proponents seek to rezone the site to the Special Residential zone in conformity with the surrounding land use and at the same time remove Tourist Zone (T9) from the Scheme.

In addition, as a consequence of detailed survey, subsequent subdivision approvals and detailed design work, it is necessary to correct some legacy zoning anomalies in the area around portion Lot 9010. This involves:

- Rezoning portion Lots 180, 181, 182 & 184 Beaufortia Gardens from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- Rezoning Lots 193, 194, 195 & 196 Pimelea View from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- Rezoning portion of Beaufortia Gardens and Pimelea View from the Tourist
   (T9) Zone and the Special Residential (SRes6) Zone to Road Reserve;

## Springdale Beach Subdivision Plan



SPRINGDALE BEACH DENMARK

### 3. PREVIOUS STUDIES & UPDATES

The site characteristics have been well documented in a number of reports which include:

- Flora and Fauna Assessment OPUS January 2006
- Land Capability Assessment OPUS 2006
- Site Suitability for On-Site Effluent Disposal (Tourist Site) March 2007
- Foreshore Management Plan OPUS August 2008
- Foreshore Management Plan OPUS November 2014
- Urban Water Management Plan OPUS 2014
- Fire Management Plan Fire Plan WA 2015
- BAL Contour Plan & Bushfire Management Plan Bio Diverse Solutions 2017
- Preliminary Assessment of Proposed Scheme Amendment, Springdale Beach Tourist Zone Site. Land Assessment Pty Ltd - January 2018
- Tree Survey for 'Tourist Lot' DSM 2018
- Indicative Nutrient Inputs, Special Residential compared with Tourism development Land Assessment Pty Ltd - 2020
- Coastal Vulnerability Assessment MP Rogers & Associates 2020

These documents have been reviewed by Aurora Environmental (December 2021), refer Appendix A and together provide a comprehensive assessment of the risks associated with development such as stormwater management, nutrient/sediment management, and vegetation protection and sustainable access to the Inlet foreshore.

### • Urban Water Management Plan

As noted in the Aurora report, the preparation, adoption and implementation of the 2014 Urban Water Management Plan (UWMP) is particularly significant in terms of minimising any impact on the Inlet. It is proposed that this UWMP will be updated as part of the Local Structure Plan (LSP) process. The Shire of Denmark is confident that there is adequate flexibility to accommodate appropriate drainage solutions within the site at the more detailed design phase.

### • Foreshore Environment

Protection of the foreshore environment is acknowledged as being important to the management of Wilson Inlet. Incorporation of steep banks within the foreshore reserve that may be vulnerable to erosion is recommended and management of increased access is needed to ensure protection from the impacts of future development. A Foreshore Management Plan was prepared in consultation with DWER for the area in question in 2014. It has been approved by DWER and addresses the objectives of the Wilson Inlet Foreshores Reserve Management Plan 2008. In addition to a 1-hectare addition to the foreshore reserve shown on the original Subdivision Guide Plan, a further 1.3-hectare extension is proposed which will create a vegetated and managed area adjacent to the Inlet which will vary between 106 metres to 188 metres. This compares with the Wilson Inlet Management Plan recommendation that a 50-metre vegetated foreshore reserve contains all steeply sloping land and no access is provided through the steepest areas.

It is recommended that an addendum to the Foreshore Management Plan be prepared as a condition of subdivision.

### • On-Site Effluent Disposal

As scheme sewer is not available, on-site effluent disposal is proposed within the amendment area. While the site has a fair to low capability for on-site effluent disposal, this does not mean that the identified constraints cannot be addressed. The Site and Soil Evaluation prepared by Aurora Environmental (December 2021), demonstrates how the criteria contained within the Government Sewer Policy (2019) can be met. Refer to Appendix A. Further assessment can be carried out as part of the LSP when the number and size of lots has been further refined.

A combination of initiatives is required to minimise nutrient input into the Wilson Inlet. This includes the management of stormwater, the use of appropriate on-site effluent disposal systems, management of fertilisers applied to lawns, gardens and landscaped areas, retention of vegetation and in particular, a vegetated buffer between the development and the Inlet.

### • Flora and Fauna Assessment

A Flora and Fauna assessment was carried out by Opus in 2006 and has been augmented and updated by Aurora Environmental, December 2021. Refer to Appendix A.

The report notes that the majority of the very good to excellent quality vegetation has been incorporated into the foreshore Reserve and the proposed extension of the foreshore. The Indicative Concept Plan provides for 2000m<sup>2</sup> of very good vegetation to be retained in proposed Lot 13 and a further 3000m<sup>2</sup> of Marri and Peppermint woodland in degraded condition will be required to be cleared to establish the road reserve. Seven large Marri trees which meet the criteria of habitat trees for the three species of Black Cockatoo were identified and will be retained, together with single Peppermint trees (no understorey).

Consideration has been given to further reduce the impact of the clearing for the road reserve and the need to meet bushfire protection measures. The alignment of the proposed road reserve has been adjusted and lot configuration varied. This has involved the removal of one lot in order to provide sufficient cleared area to accommodate building envelopes. The area of the of the foreshore to be ceded has also been increased. Refer Figure 4 - Revised Indicative Concept Plan.

The following photos have been taken along the indicative alignment of the proposed access road where it runs along the northern boundary of the extended foreshore reserve through a mix of cleared land and Peppermint regrowth with either limited or no understorey. More mature and significant trees can be avoided. The proposed route of the road and lot configuration will be subject to further detailed design when the Local Structure Plan is prepared. As noted above, additional land that will be ceded to the foreshore contains the vegetation classed as Very Good to Excellent.



INDICATIVE CONCEPT PLAN Special Residential Lots (min 3000m<sup>2</sup>)

> Pt Lot 9010 Beaufortia Gardens Springdale, Shire of Denmark

## **Revised April 2022**

NB: This plan is indicative only and is subject to the preparation of a Local Structure Plan. Proposed Road alignment, lot numbers, areas and configuration may be varied.

# Figure 4

# PLANING

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Figure 5: Location of where Photos were taken



Photo A

Photo A depicts the proposed access point to the site from Beaufortia Gardens. Low regrowth is evident on the cleared land and Peppermint regrowth is visible in the back ground.



Photos B, C & D depict the Peppermint regrowth through which the road will be constructed. No significant trees will need to be cleared except possibly for the pine tree shown in Photo D

Photo D



Photo C



### Photo E

Photo E depicts the cleared area in the vicinity of the gazebo. The road will pass through this area immediately to the south of the gazebo and will need to negotiate a route through several juvenile Marri trees.



Photo F

Photo F shows the water tank through which the road will be constructed as it turns to the north to link up with Pimelea View.



Photo G



Photo H



Photo I

Photos G, H & I depict the cleared track which runs towards the south west corner of the property. This track will form the fire service access route which will abut the foreshore reserve and then run north along the western boundary of the site. Photo I refers.



**Photo J** Photo J illustrates the cleared area which forms the bulk of the site.



### Photo K

Photo K illustrates the significant Marri trees growing north of the gazebo, which will be retained within the proposed subdivision.



#### Photo L

Photo L depicts a row of more mature Peppermints running parallel with Beaufortia Gardens on the eastern side of the site. The trees will also be retained within the subdivision.

### • Coastal Vulnerability Assessment

In accordance with State Planning Policy 2.6 – The State Coastal Planning Policy (SPP2.6), MP Rogers & Associates have prepared a "First Pass Coastal Hazard Assessment" for the subject land. A copy is attached in Appendix 'B'.

The report assesses the potential risk to the proposed development from being impacted by coastal hazards over the 100 year planning time frame to 2120.

The report concludes that the site avoids impact from coastal erosion over the 100 year planning time frame. The levels of the proposed development are also well above the 500 year ARI water levels plus the allowance for sea level rise to 2120 which was determined to be 2.15m AHD. The development is therefore not considered to be at risk of inundation over the 100 year planning time frame to 2120.

### 4. SERVICE INFRASTRUCTURE

### 4.1 Roads

Access to the site is provided by Beaufortia Gardens which abuts the eastern boundary and runs down to the foreshore reserve. Pimelea View is a short cul-de-sac which abuts a portion of the northern boundary. Both roads have been fully constructed to a bitumen standard. The indicative subdivision proposes a loop road running off Beaufortia Gardens and connects through to Pimelea View.

### 4.2 Potable Water Supply

As the residential estate is serviced by scheme water, all proposed lots will be connected to a reticulated water supply.

### 4.3 Power & Telecommunications

Underground power and telecommunications will be extended from the existing development to service all proposed lots.

### 4.4 Sewerage

As scheme sewer is not available or capable of being extended to service the site, on-site effluent disposal will be utilised. Secondary effluent disposal systems as approved by the Shire of Denmark and WA Health Department will be required. Subject to the preparation of a LSP, the numbers and size of lots will be determined and the Site and Soil Evaluation prepared by Aurora Environmental in December 2021, will be updated/extended as necessary.

### 4.5 Drainage

The 2014 Urban Water Management Plan (UWMP) will be updated as part of the LSP process. As noted in Section 3 above, the Shire of Denmark is confident that the drainage solutions provided in Stage 4 of the estate development can be extended to accommodate the proposed development.

### 4.6 Bushfire Management

In November 2017, Bio Diverse Solutions prepared a BAL Contour Plan and Bushfire Management Statement to support the previously approved Fire Management Plan for Springdale Beach Estate. Copies of these reports are attached in Appendix 'C'.

The BAL contouring indicates that BAL29 or less can apply to the subject land. As a tourism site is classified as a vulnerable use, rezoning to Special Residential Zone will negate the need for an individual Bushfire Management Plan and Bushfire Emergency Evacuation Plan.

The Staging Plan for Stage 4 Development forms part of the approved Fire Management Plan (FMP) and is reproduced below (Figure 6). It recommends that a perimeter Fire Access Way be incorporated into the Tourist Zone Fire Plan.



Figure 6: Stage 4 Staging Plan – Fire Management Plan

In accordance with the FMP, a Fire Access Way has been constructed through to Woodward Heights along the western boundary of the POS area which will provide a second means of emergency access/egress. The Woodward Heights connection through to the rural residential area to the east is currently being constructed and will replace the temporary easement has been provided through the POS area.

Preparation of the LSP will entail the preparation of a more detailed Bushfire Management Plan. The plan will need to take into account the objective of the LSP which will aim to maximise retention of existing remnant vegetation and provide for replanting of cleared areas.

### 5. THE PLANNING CONTEXT

Key Planning documents relevant to this project are Council's Town Planning Scheme No 3, the Local Planning Strategy, the Denmark Tourism Planning Strategy, Stage 1, the WAPC's Planning Bulletin No 83/2013: 'Planning for Tourism', the Government Sewerage Policy, Planning in Bushfire Prone Areas and State Coastal Planning Policy (SPP2.6).

### 5.1 Town Planning Scheme No 3

Under the provisions of the Shire's Town Planning Scheme No 3 (TPS3), the subject land is zoned Tourist and included in the Schedule of Tourist Zones in Appendix XIII. The Schedule specifically designates uses that may be permitted by Council, with all other uses being excluded. Only a single house or caretakers' dwellings are permitted. There is no discretion to allow permanent accommodation as a component of the Tourist zone or as an alternative land use.

### 5.2 Local Planning Strategy

The subject lots are designated as 'Tourist' in the Shire's adopted Local Planning Strategy (2011). The key objective relating to tourism as set out in the Strategy is:

"To encourage ecotourism and facilitate new tourist developments and choices of tourist accommodation types to enhance the Denmark Shire as a destination of choice for visitors."

Associated strategies include:

- the preparation of a Local Tourism Strategy which addresses issues identified in WAPC's Planning Bulletin 83/2011 (now 83/2013): Planning for Tourism;
- to retain the low-key level and natural character of the 'natural environment' tourist sites;
- encourage new tourist developments to employ a sustainable approach with their developments and a desire to establish a tourism industry that supports and enhances the local community, protects its environment and generates economic benefit;
- embrace new tourism attractions which achieve the above objectives as they bring investment and generate economic benefit; and
- to protect the longevity of tourist uses through appropriately zoned sites which contain flexibility for new developments to proceed.

### 5.3 Denmark Tourism Strategy: Stage 1 (2010)

The Stage 1 Strategy provided a preliminary overview of tourism based in the Shire.

Stage 2 intended to provide a fully-fledged tourism strategy with the active involvement of the tourism industry and local community, but has yet to be progressed.

Key points arising from the Stage 1 Strategy were:

- Criteria to inform the identification of areas of tourism significance in the Shire of Denmark and subsequently sites of local significance include:
  - o Tourism routes being Scotsdale Road;
  - Sealed roads;
  - o Access;
  - National, marine and regional parks;
  - o Oceans and rivers
  - o Landmarks;
  - Vistas with viewpoints to Wilson Inlet, the coast and the rural hinterland;
  - o Attractions and amenities;
  - o Access to services and facilities;
  - o Rail Trail;
  - o Bibbulmun Track and Proposed Munda Biddi Track;
  - o Aboriginal Heritage sites; and
  - Cultural heritage sites.
- The need to review existing Scheme and LPS provisions including:
  - o Permissibility of tourism related land uses in zones;
  - Review of definitions to introduce extended range of tourism development definitions with specific reference to length of stay provisions; and
  - Introduce length of stay provisions and land use restrictions on tourist accommodation in tourism zones.

- The need to prepare a LPS which provides a statement of Council's position on permanent residents in tourism developments and addresses the following issues:
  - Potential loss of high value tourism sites to residential use;
  - Establishing a sustainable economic activity;
  - o Impact of tourism use on residential amenity;
  - Assessment of the suitable number of permanent residents in tourism development, based on merits;
  - Site assessment being based on environmental, site amenity and community issues in assessing the number of permanent residential units on-site;
  - Protection of the tourism quality of the site and ensuring that the general character remains that of a tourism development. This is particularly important at sites where the isolation, relative lack of development and natural beauty are recognised as providing a 'point of difference' that may/will increase future tourism; and
  - Acknowledge that permanent residents provide financial stability to tourism operations.

### 5.4 Planning Bulletin 83/2013: Planning for Tourism

This bulletin sets out the policy position of the WAPC to guide decision making by the WAPC and local government for subdivision, development and scheme amendment proposals for tourism purposes. The 2013 Bulletin is a review of the 2007 & 2011 versions. A key outcome of the review was..."*The need for a more strategic and flexible approach to tourism planning to encourage and support investment in the industry.*"

Key objectives of the Planning Bulletin include:

- Highlight the importance of strategic planning for tourism
- Recognise local and regional variations in tourism demand and development pressures and their impacts on the viability of tourism development in assessing tourism proposals.
- Provide guidance on the development of non-tourism uses on tourism sites.
- Provide flexibility in the design and assessment of tourism and mixed-use development.

The policy notes that if a local government does not have an endorsed local planning strategy or local tourism planning strategy, then a scheme amendment proposal should address the matters specified in the Planning Bulletin and Local Planning Manual 2010.

### 5.5 Government Sewerage Policy (2019)

The proposed scheme amendment and associated subdivision and development is required to have regard to the Government Sewerage Policy.

While the policy generally requires connection of new subdivision and development to reticulated sewerage, on-site sewage disposal may be considered as set out in Section 5 of the Policy. A report has been prepared by Land Assessment Pty Ltd which addresses the level of nutrient inputs for the proposed Special Residential lots compared with tourism development and addresses the requirements of the Government Sewerage Policy.

### 5.6 Planning in Bushfire Prone Areas (SPP3.7)

The intent of the Policy is to implement effective, risk-based land use planning and development to preserve life and reduce the impact on property and infrastructure.

A Fire Management Plan (October 2015) has been prepared for the Springdale Beach Estate and a BAL Contour Plan and Bushfire Management Statement was prepared in November 2017 to support the FMP. The latter document provides a detailed BAL Contour Plan for the tourist site.

### 5.7 Coastal Planning Policy (SPP2.6)

As the tourist site abuts the Wilson Inlet which is subject to tidal movement, the proposed rezoning amendment is required to have regard to the Coastal Policy.

An impact assessment for the site has been prepared by M P Rogers & Associates.

### 5.8 Position Statement: Special Residential Zone (May 2021)

This position statement outlines the Western Australian Planning Commission's (WAPC) intent to discontinue the special residential zone in local planning schemes. It also provides general guidance measures for subdivision, use and development in existing special residential zones.

It is anticipated that the Special Residential zone will be discontinued when the existing Town Planning Scheme No. 3 is replaced with a new scheme. In the meantime, the following justification is provided in support of the current proposal to rezone the Tourist Lot to Special Residential.

- Lot sizes proposed will be compatible with those in the surrounding Special Residential area and will be subject to the same development standards and controls.
- There is no detrimental impact from the rezoning on the character and amenity of the adjacent rural areas. Indeed, as there is a reduction in potential landuse intensity with the dezoning from Tourist to Special Residential, there is arguably a beneficial impact to all adjoining and nearby land.
- Special Residential uses meet the opportunities and constraints of the site as well as its
  planning context. This site has access to the appropriate level of infrastructure services as
  well as social services and facilities such as shopping, schooling, medical, rubbish collection
  and the like.
- The Special Residential zoning is not removing productive agricultural land from the estate, nor is it placing unmanageable externalities on adjoining uses.
- While a Public Open Space contribution is not generally required, significant areas of foreshore parkland and POS are provided.

### 6. PROPOSED DEVELOPMENT

Subject to rezoning of the tourist site to the 'Special Residential' zone, development was predicated on the acceptance that the minimum lot size of 3000m<sup>2</sup>, which applies to the Springdale Beach Estate, would also apply to the subject land.

Under the provisions of the Government Sewerage Policy, land which is not connected to a reticulated sewerage service within a "Sewerage Sensitive Area" is required to have a minimum lot size of one Hectare. The associated notes indicate that:

"Land in a Sewerage Sensitive Area that is already zoned for urban use with a residential density coding of R2 to R10 under a Local Planning Scheme or Structure Plan endorsed by the WAPC, may be subdivided in accordance with the existing density coding."

The definition of "Urban" in the Government Sewerage Policy is:

"Land zoned 'urban' or 'urban deferred' in a region scheme and/or land that can be subdivided under a local planning scheme to create lots less than one hectare for residential or commercial uses and has the potential to be subdivided."

In this case the density of tourist accommodation is 3.33 units per hectare.

In view of the above, a report was prepared by Land Assessment to compare the likely nutrient inputs into the subject land from Special Residential development and Tourist development of the site. This document was reviewed by Aurora Environmental in 2021 (Refer Appendix A).

The assessment used the Urban Nutrient Decisions Outcomes tool (UNDO) developed by DWER. It is designed for use by proponents of development in order to assess the nutrient inputs in a consistent and scientifically rigorous manner.

Because ATUs rely on regular maintenance (which may not always be achieved by landowners), the UNDO groups the nutrient output rates for various ATUs into a singular classification with a conservative rate. In order to compare the Special Residential development with the Tourist development, an indicative concept plan was prepared based on the creation of 17 residential lots ranging in size from 3018m<sup>2</sup> to 4760m<sup>2</sup>. It also allowed for an extension of the foreshore reserve of an additional 1.2 hectares. This enabled the vegetated buffer to the Wilson Inlet to be significantly extended and include all the more steeply sloping land and additional areas of remnant vegetation in "excellent condition". The original Indicative Concept Plan (Figure 7) is attached overleaf.

The 17 residential lots were compared with the 30 holiday units, manager's residence, reception centre and restaurant that could be developed under the current Tourist zoning. These uses are designated as "Permitted" uses as opposed to discretionary uses that would also potentially require advertising for public comment. Consequently, it is not unreasonable to anticipate that a relatively intensive tourist development could be developed on the site without even the additional extension of the foreshore reserve as proposed under the residential option. A similar tourist development using on-site effluent disposal and consisting of 24 two storey holiday units, manager's residence and restaurant/shop, has recently been approved by JDAP in a similar coastal location on a 3.3-hectare site. This compares with the subject land which has an area of 8.4 hectares.

The result of the assessment of total nutrient outputs from the two scenarios showed that they would be less under a Special Residential development than under a Tourist development based on the existing scheme zoning and land use conditions. The report concludes that the results lend support to the argument that the GSP's 1ha minimum lot size condition could be relaxed to allow subdivision in accordance with the existing density coding.

It is noted that the UNDO assessment takes into account nutrient inputs relating to fertilizer usage for lawns and gardens and any permitted agricultural pursuits. It assumes that remnant vegetation will be retained except for the land required for house pads. As outlined in Section 3 above, the proposed road reserve will entail clearing of some Peppermint regrowth.

Further refinement of the alignment of the proposed road reserve has been undertaken in order to reduce clearing and additional consideration can be given at the LSP stage of development. With the extension of the foreshore reserve, the remaining subdividable land has largely been cleared.



## Original

INDICATIVE CONCEPT PLAN Special Residential Lots (min 3000m<sup>2</sup>)

> Pt Lot 9010 Beaufortia Gardens Springdale, Shire of Denmark

> > Figure 7

AYTON BAESJOU P L A N N I N G 59 Peels Place ALBANY WA 6330 Ph 9842 2304 Fax 9842 8494 A detailed tree survey of the subject land was undertaken in 2018 which identifies the various tree species. (Refer Figure 8). These were predominantly Marri, Peppermint, Pine and Bluegums. The Pine and Bluegums trees have since been removed and the Marri and Peppermint trees have been retained. Outside of the foreshore reserve, which will be extended, the majority of the Marri and Peppermint trees are located within a parkland cleared setting.

Other key elements of the proposed development are outlined in the Opportunities and Constraints plan (Refer Figure 9).

The Plan includes;

- An extension of the foreshore reserve is addition to the one before which has already been ceded. This will enable all the more steeply sloping land to be protected together with the remnant vegetation in "excellent condition". It will provide a substantial vegetated buffer to the Inlet and ensure effluent disposal systems are set back a minimum distance of 135 metres from the Inlet.
- An indicative alignment of the proposed road reserve shows how it can be developed without removing significant trees. The road will run from Beaufortia Gardens in a westerly direction and abut the expanded foreshore reserve. This will facilitate bushfire management and surveillance of the foreshore reserve. It will then run north to connect up with Pimelea View which in turn connects back to Beaufortia Gardens. The alignment provides sufficient setback from the vegetated reserves to the west to accommodate a 10m wide fire service access route (perimeter road) which runs along the western boundary of the site and a further 30 metre setback which will enable building envelopes to achieve a BAL of 12.5. The fire service access route runs along flat terrain which will facilitate ease of access by fire service vehicles. This arrangement allows for direct access from the dwellings on lots 13 to 17 onto the proposed loop road, should a fire originate in the vegetation to the west.
- An existing gravel track located within the foreshore reserve will be developed as a bike track which will also utilise the fire service access route and connect to Reserve 12232 to the west.
Lot shapes and sizes can be designed to accommodate building pads and associated bushfire setbacks. The preparation of a Landscape Management Plan will provide the opportunity to significantly increase the amount of vegetation on the site with preference given to the use of local indigenous native species in private gardens and minimization of fertilizer/nutrient input.

As the Special Residential provisions for Springdale Beach Estate currently allow for Livestock Grazing to be permitted, it is recommended that the provision be deleted in order to facilitate revegetation and reduce nutrient input.

- Two test pits in the western section of the site proved unsuitable for effluent disposal and more suitable sites further to the east will be identified at the LSP stage of development.
- The proposal to create a loop road through the site connecting to Pimelea View is desirable in order to meet Bushfire Management Guidelines. However, it has the potential to impact on the amenity of the four lots, which currently front onto the existing cul-de-sac, by increasing through traffic. At the detailed stage of subdivision design, it is recommended that traffic management measures are provided which encourage traffic to utilize access and egress to the site from Beaufortia Gardens and that access via Pimelea View is restricted where possible for emergency access/egress only. It is noted that the loop road will also benefit the existing Pimelea View residents in relation to emergency access. Traffic management could be achieved by providing a reduced width carriageway along the northern section of the loop road with associated turning area/traffic calming devices and signage.
- The subdivisional road avoids the steeply sloping land within the proposed foreshore reserve and minimises and impact on the associated vegetation.
- From a fire management perspective, the combination of a public road abutting the steeply sloping and vegetated foreshore reserve, together with a perimeter fire service access road along the western boundary will maximise access for firefighting purposes and ease of access/egress for residents in an emergency.
- The proposed subdivisional road alignment will enable stormwater management to be integrated with the Urban Water Management Plan which was prepared for Stage 4 of the Springdale Beach Estate subdivision.





# OPPORTUNITIES & CONSTRAINTS PLAN

Pt Lot 9010 Beaufortia Gardens Springdale, Shire of Denmark

## Figure 9

## PLANNING

L A IN IN I IN G 59 Peels Place ALBANY WA 6330 Ph 9842 2304 Fax 9842 8494

#### 7. SCHEME PROVISIONS

As the proposed Special Residential area will form part of the overall Springdale Beach Estate, it is logical and desirable that the Special Provisions that apply to the rest of the estate also apply to the proposed addition. However, in order to address the issues and meet the specific objectives relating to the area, additional provisions are proposed together with some rationalisation of the existing provisions. A copy of the existing Special Provisions is attached in Appendix D.

The following modifications are proposed to the Special Residential (SRes6) Zone Special Provisions:

- 1. Delete Livestock Grazing as a potential use within the Special Residential area.
- 2. Preparation of a Local Structure Plan which:
  - Provides for an extension of the foreshore reserve to incorporate the more steeply sloping land and associated remnant vegetation.
  - Identifies an alignment for the proposed subdivisional road which will abut the foreshore reserve and minimises clearance of remnant vegetation.
  - Creates appropriate lot sizes, configuration and lot yield which will provide for building envelope and bushfire management setbacks whilst at the same time maximises retention of significant trees.
  - Consolidate land capability data into a Site and Soil Evaluation to ensure each proposed lot is capable of accommodating on-site effluent disposal in accordance with the Government sewerage Policy 2019.
  - Update the Springdale Beach Estate Urban Water Management Plan 2014 to the satisfaction of the Shire of Denmark and in consultation with the Department of Water and Environmental Regulation (DWER).
  - Provide an addendum to the 2014 Foreshore Management Plan which incorporates the proposed extension of the foreshore reserve to the satisfaction of the Shire of Denmark and in consultation with the DWER.

- Prepare a Landscape Management Plan to the satisfaction of the Shire of Denmark for the balance of the development area, to address the provision of street trees, retention of existing trees, areas for replanting, utilisation of local indigenous native species in domestic gardens and public reserves as a preference, reduction in the uses of fertiliser/nutrient input, mechanisms for implementation and timing, such as Estates covenants and/or Local Development Plans if deemed appropriate.
- Preparation of a Bushfire Management Plan which addresses and responds to the requirements and recommendations of Flora and Fauna Assessment, Foreshore Management Plan and Landscape Management Plan.

#### 8. JUSTIFICATION – TOURIST SITE TO SPECIAL RESIDENTIAL DEVELOPMENT

Tourist development is recognised as being one of the riskiest forms of development and in order to be sustainable it needs to be located on a strategic tourist route with access to a significant tourist attraction.

While Springdale Beach historically may have been a tourist attraction, as evidenced by a few tourist chalets which were located on the subject land, that is no longer the case. The chalets were allowed to fall into disrepair and the beach itself has been detrimentally affected by the build up of seaweed, algae and the associated unpleasant smell. At the same time competing tourist attractions have become far more popular in areas such as Ocean Beach, Greens Pool and the coast line that runs between these sites. Recent scheme amendment requests at Lot 305 Wentworth Road and Lot 3 William Bay Road will expand the range of short stay accommodation and related tourism facilities in the district.

Direct access to a strategic tourist route has also become increasingly important and the current Tourist zone suffers from being located at the end of a long cul de sac that services a residential subdivision. The location of the Boston Brewery opposite the Springdale Beach Estate on South Coast Highway, demonstrates how important the location on a strategic tourist route is to the success of tourist development. Its success will further diminish the likelihood that a restaurant and associated reception centre can be developed on the subject land.

As the Springdale Beach Estate has developed, it is also apparent that the residents are concerned that tourist traffic will be drawn through their residential estate and affect the amenity that they enjoy. The WAPC's Planning for Tourism Bulletin 83/2013 recommends that such a potential conflict should be avoided.

Section 6 of the Tourism Bulletin identifies general location criteria to assist in determining the tourism value of a site. These include;

Accessibility, Uniqueness, Setting, Tourism activities and amenities, Supply of land, Suitability in a land use context, Capability, Size and Function.

#### Accessibility

As already noted, a major failing of the site is its lack of access onto a strategic tourism route. It is not conveniently located and lacks visibility.

#### Uniqueness

While the site is located in proximity to Wilson Inlet, it is not unique in this aspect. There are more attractive and conveniently located tourism sites closer to Denmark town centre and Ocean Beach.

#### Setting

While the site has an aspect and outlook overlooking Wilson Inlet, it is not immediately adjacent to the beach and access is via a steeply sloping track. Views are compromised by foreshore vegetation and the amenity of the beachfront is poor.

#### Tourism activities and amenities

The site does have access to the historic railway dual use path, however, there are no cafes, restaurants or shops in close proximity. A jetty originally provided access to the Inlet but no longer exists and no provision has been made to replace it.

#### Supply of land

The site is not considered to have an element of scarcity in that it may be the only opportunity, or one of a limited number of opportunities to achieve a significant tourism development in the area. There are other more attractive areas available elsewhere along the Denmark coastline.

#### Suitability in a land use context

The site is compromised by being located adjacent to and having its main access through a residential area.

#### Capability

The site is located in a sewerage sensitive area which may be impacted by overly intensive tourism development. The heavily vegetated foreshore and surrounding area creates a fire management issue as tourism development is deemed to be a vulnerable use. Associated clearing to maximise views of the Inlet is also a potential issue.

#### Size

While the site is 8ha in area, its development capacity will be limited by the fact that it is not connected to a reticulated sewer system, is located in a residential and bushfire prone area.

#### Function

The site does not meet a particular accommodation or market need that cannot be better provided for elsewhere in Denmark.

The owner of the tourist site has for many years been unable to attract any interest from a developer to develop the site. It has now become increasingly evident why any interest is unlikely to be forthcoming. Consequently, it is recommended that a more compatible land use would be to develop it for Special Residential lots.

With regards the Local Planning Strategy Objectives and Strategies, the following additional notes are made:

- Without any demand for the site as a tourism venture despite its long-term availability, objectives for local economic benefit, local investment, local employment and the like are not being met (s4.4 Tourism Strategy e & f).
- Without any demand for the site as a tourism venture despite its long-term availability, the objectives of having appropriately zoned land available for new development are not being met (s4.4 Tourism Strategy g).
- The site is not located near a specific identified strategic tourism site (s4.4 Tourism Strategy h).

#### 9. CONCLUSION

The Tourist zone in the south west corner of the Springdale Beach Estate was gazetted almost 20 years ago and prior the WAPC's Planning Bulletin 83/2013 - Planning for Tourism.

While the idea to designate a portion of the Estate for tourist development was based on the fact that limited tourist development had occurred on the site in the past, 'Planning for Tourism' recommends a more strategic and considered approach is required to ensure a quality, sustainable tourism outcome.

This report concludes that portion Lot 9010 does not meet the criterea to guarantee a successful tourism development and requests consideration be given to rezoning the site for Special Residential development.

It is also requested that the prevailing residential density of the Estate be applied to the site in accordance with the guidelines provided in the Government Sewerage Policy.

A comparison of the potential environmental impact of a tourist development on the site with a Special Residential development, assuming the creation of 17 lots with a minimum lot size of 3000m<sup>2</sup>, indicated that the residential option would produce less nutrients. The assessment was based on the Urban Nutrient Decisions Outcomes tool (UNDO) developed by DWER which was designed in order to assess nutrient inputs in a consistent and scientifically rigorous manner. The nutrient output rates used are described as conservative.

However, it is understood that other factors need to be taken into account to minimise any impact on the Wilson Inlet. These include the provision of a vegetation buffer to the Inlet, retention of existing remnant vegetation on the site, replanting of cleared areas with indigenous local species, incorporation of the most steeply sloping land into the foreshore reserve and updating the Urban Water Management Plan for the estate.

Preparation of a Local Structure Plan is recommended which will provide for the Indicative Concept Plan to be refined to address the issues highlighted in this report.

Provision of additional Scheme Provisions are proposed which will provide the Shire of Denmark with the means to ensure key recommendations are implemented.

#### PLANNING AND DEVELOPMENT ACT 2005

#### SHIRE OF DENMARK

#### **TOWN PLANNING SCHEME No. 3**

#### **AMENDMENT No. 149**

The Shire of Denmark under and by virtue of the powers conferred upon it in that behalf by the Planning and Development Act 2005 hereby amends the above town planning scheme by:

- 1. Rezoning portion Lot 9010 Beaufortia Gardens, Hay, Shire of Denmark, from the Tourist (T9) Zone to Special Residential (SRes6) Zone;
- 2. Reserving portion Lot 9010 from Tourist (T9) Zone to the Parks & Recreation Reserve;
- 3. Reserving portion Lot 9010 Beaufortia Gardens, Hay, Shire of Denmark, from the Special Residential (SRes6) Zone to the Parks & Recreation Reserve;
- 4. Rezoning portion Reserve 52123, from the Tourist (T9) Zone to the Parks & Recreation Reserve;
- 5. Rezoning portion Lots 180, 181, 182 & 184 Beaufortia Gardens from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- 6. Rezoning Lots 193, 194, 195 & 196 Pimelea View from the Tourist (T9) Zone to the Special Residential (SRes6) Zone;
- 7. Reserving portion of Beaufortia Gardens, Tassel Place and Pimelea View from the Tourist (T9) Zone and the Special Residential (SRes6) Zone to Road Reserve;
- 8. Delete Tourist Zone (T9) from Appendix XIII;
- 9. Modify Appendix XIV S Res 6 Special Provisions as follows:
  - Delete the words "Livestock Grazing see clause (viii)a)" from the Proposed Uses column.
  - Delete provisions a), b), c) and d) of provision viii) and replace with:

a) Intensive horticulture and grazing of livestock is not permitted;

- 10. Add the following to SRes 6 Special Provisions in Appendix XIV;
  - xii) In addition to the Special Provisions outlined above, for the purpose of subdivision and development of land contained within that area generally bound by Beaufortia Gardens to the east, Wilson Inlet to the south, Pimelea View and Lot 196 to the north, and Reserve 12232 to the west, the following additional provisions shall apply, noting in the event of any conflict these additional provisions will prevail:
    - (a) The Special Residential lots should comply with the requirements of the Government Sewerage Policy 2019 unless further supporting information is provided to demonstrate capability. A lot size of no less than 3000m2 will be considered.
    - (b) In addition to the minimum setback requirements prescribed under provision ii) (a) above, all buildings, site works and retaining walls shall be set back a minimum of 20 metres from the western boundary with Reserve 12232. No further reduction in this setback will be permitted.

- (c) Subdivision of the site shall generally accord with an approved Structure Plan that incorporates the following supporting documents:
  - 1) A site specific Flora and Fauna Assessment.
  - 2) The Springdale Beach Estate Urban Water Management Plan 2014 is to be updated to the satisfaction of the Shire of Denmark and the Department of Water and Environmental Regulation and include reference to consistency with the Wilson Inlet Management Strategy.
  - 3) An addendum to the Site and Soil Evaluation report prepared by Aurora Environmental (December 2021), to inform appropriate lot sizes, configuration, and yield, the proposed method of on-site effluent disposal, building envelopes, remediation works (where applicable) and consistency with the Wilson Inlet Management Strategy, is to be prepared to the satisfaction of the Shire of Denmark, Department of Water and Environmental Regulation and Department of Health.
  - 4) An addendum to the existing Foreshore Management Plan that includes appropriate management conditions consistent with the Wilson Inlet Foreshore Reserve Management Plan 2008 (or its equivalent as amended) and the Wilson Inlet Management Strategy. The addendum is to be prepared to the satisfaction of the Shire of Denmark and the Department of Water and Environmental Regulation to address, amongst other matters:- protection of vegetation and fauna habitat, erosion control, weed management, walkways/ bike paths and access controls, lighting to incorporate dark sky principles as referenced in the WAPC's Position Statement "Dark Sky and Astrotourism" and the "National Light Pollution Guidelines for Wildlife" (as amended), revegetation, setbacks and parking and any other matters appurtenant to or impacting upon the adjacent foreshore area.
  - 5) A Landscape Management Plan shall be prepared to the satisfaction of the Shire of Denmark for the balance of the development area to address the provision of street trees, identification and protection of trees to be retained, areas for replanting, the protection of fauna habitat, a preference for use of locally indigenous native species in domestic gardens and public reserves, fertilizer/ nutrient input, mechanisms for implementation and timing, lighting to incorporate dark sky principles as referenced in the WAPC Position Statement "Dark Sky and Astrotourism" and the National Light Pollution Guidelines for Wildlife (as amended), including consideration of estate covenants and/ or Local Development Plans if deemed appropriate.
  - 6) A Bushfire Management Plan that addresses and responds to the requirements and recommendations of the Flora and Fauna Assessment, Foreshore Management Plan, and Landscape Management Plan.
  - 7) The requirement for preparation of a Construction Management Plan prior to the commencement of subdivision or development site works to the satisfaction of the Shire of Denmark to address such matters as erosion and sediment transport control and dieback control (including land based movement and groundwater movement).
- (d) Where required under an approved Structure Plan, a local development plan is to be prepared for all or part of the structure plan area.
- (e) All buildings, retaining walls and effluent disposal systems are to be contained within an approved building envelope if nominated on an approved Structure Plan.

- (f) Where informed by recommendations contained within a Site and Soil Evaluation report and/ or approved Structure Plan Council may impose conditions at the time of subdivision to address site remediation, fill and compaction of house pads and effluent disposal areas within the defined building envelopes.
- (g) Where identified on an approved Structure Plan, Council may impose conditions at the time of subdivision to require the construction of Strategic Firebreaks/ Fire Service Access Routes and a requirement for registration of such as an easement in gross under Section 195 of the Land Administration Act 1997.
- (h) No clearing of significant trees or endemic vegetation shall be permitted where such vegetation is shown on the approved Structure Plan for retention unless:
  - Such clearing is approved in conjunction with a development application granted by the Shire of Denmark.
  - Trees are diseased or dangerous as confirmed in writing by a qualified arborist and verified by the Shire of Denmark.
  - Such works have been mandated under the Shire of Denmark's Fire Management Notice.

and

11. Amending the Scheme maps accordingly.



SHIRE OF DENMARK TOWN PLANNING SCHEME 3 AMENDMENT NUMBER 149



#### **COUNCIL ADOPTION**

This Complex Amendment was adopted by resolution of the Council of the Shire of Denmark at the Meeting of the Council held on the 21s day of 5ure, 2022.



Shire President

#### COUNCIL RESOLUTION TO ADVERTISE

By resolution of the Council of the Shire of Denmark at the Ordinary Meeting of the Council held on the  $2t \leq t$  day of  $30 \leq 22$ , proceed to advertise this Amendment.





**Shire President** 

chief Executive Officer

#### **COUNCIL RECOMMENDATION**

This Amendment is recommended for approval by resolution of the Shire of Denmark at the Ordinary Meeting of the Council held on the \_\_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_\_ and the Common Seal of the Shire of Denmark was hereunto affixed by the authority of a resolution of the Council in the presence of:

**Shire President** 

**Chief Executive Officer** 

#### WAPC ENDORSEMENT (r.63)

Delegated Under S.16 of the PD Act 2005

Date

**APPROVAL GRANTED** 

**Minister for Planning** 

Date

Appendix A

Review of Previous Studies – Aurora Environmental 2021



Albany 76 Festing Street Albany WA 6330 T 0447 446 343 Perth Dilhorn House 2 Bulwer Street Perth WA 6000 T (+61) 8 9227 2600 F (+61) 8 9227 2699

3 December 2021

Anthony Sutton Executive Director, EPA Services Locked Bag 10 Joondalup WA 6919

Attention: Renee Blandin (renee.blandin@dwer.wa.gov.au)

#### RE: REQUEST FOR MORE INFORMATION: SCHEME AMENDMENT: TOWN PLANNING SCHEME NO 3 AMENDMENT 149 – LOCATION: PORTION OF SPRINGDALE BEACH ESTATE

Thank you for your letter dated 23 September 2021 (Ref: TPS3/SA 149; CMS18010) in which you request additional information in relation to the referral of Town Planning Scheme No 3 Amendment 149 – Location: Portion Of Springdale Beach Estate under section 48A of the *Environmental Protection Act 1986*. The letter is included as Attachment 1.

The EPA Service Unit is concerned that Amendment 149 has the potential to impact on the environmental values of the area, notably Wilson Inlet and its foreshore, which abuts the amendment area.

In responding to the request for information, the proponent has considered the Wilson Inlet Management Strategy 2013 – 2022 and other documentation which has been prepared and approved which applies to Springdale Beach Estate. We are confident that our response reflects:

- Consistency with the key strategic objectives of the strategy for nutrient input into the Wilson Inlet; and
- That there will be maintenance of predevelopment flows and management of water quality to mitigate impact to the foreshore areas and Wilson Inlet.

We can confirm that an Urban Water Management Plan (UWMP) will be prepared for the amendment area which will tie in with the previous UWMP and other sections of the Springdale Beach Estate subdivision.

In this response, we have also examined the amendment area in light of the requirements of the Government Sewerage Policy (2019) and Draft State Planning Policy 2.9 Water Management Planning (2021).

The response is included in Attachment 2.

Request For More Information: Scheme Amendment: Town Planning Scheme No 3 Amendment 149 – Location: Portion Of Springdale Beach Estate

If you have any queries regarding this response, please contact the undersigned on 0447 446 343 or melanie.price@auroraenvironmental.com.au.

For and on behalf of Aurora Environmental

Mulanie Price.

Melanie Price

Principal Environmental Scientist (Director)

#### Attachments

- 1. DWER letter
- 2. Response
- 3. Steep slopes in Foreshore Reserve
- 4. Site and Soil Evaluation Government Sewerage Policy (2019)
- 5. Basic Fauna Assessment

## **APPENDIX 1**

## DWER LETTER REQUESTING ADDITIONAL INFORMATION



Government of Western Australia Department of Water and Environmental Regulation

> Your Ref: TPS3/SA149 Our Ref: CMS18010 Enquiries: Renee Blandin, 6364 6786 Email: renee.blandin@dwer.wa.gov.au

Craig Pursey Manager Sustainable Development Shire of Denmark PO Box 183 DENMARK WA 6333

Email: craig.pursey@denmark.wa.gov.au

Dear Mr Pursey

#### MORE INFORMATION REQUEST SCHEME AMENDMENT: TOWN PLANNING SCHEME NO.3 AMENDMENT 149 LOCATION: PORTION OF SPRINGDALE BEACH ESTATE

Thank you for your referral received 19 May 2021 in relation to the above scheme amendment. The information you have provided is insufficient to enable the Environmental Protection Authority (EPA) to comply with section 48A of the *Environmental Protection Act 1986* (EP Act) in relation to the proposed scheme and consequently does not constitute a valid referral under section 81 of the *Planning and Development Act 2005* (PD Act).

Further information in relation to Amendment 149 sought by the EPA from the Department of Water and Environmental Regulation (DWER) South Coast Region has informed this request for more information.

EPA Services is concerned Amendment 149 has the potential to impact potentially significant environmental values, and that the existing scheme provisions are not sufficient to identify these values or protect and manage potential significant impacts. Accordingly, the following information is requested:

#### **Inland Waters**

The amendment area is located on the Wilson Inlet, a sensitive aquatic environment. It is recommended the *Wilson Inlet Management Strategy 2013-2022* (the Strategy) be considered in the context of the amendment. Further information is requested as to how the amendment:

- is consistent with the key Strategy objectives for nutrient input into the Wilson Inlet,
- will manage maintenance of predevelopment flows and maintenance or improvement of water quality to mitigate impact to downstream foreshore areas and the Wilson Inlet.

It is recommended the amendment demonstrate that the *Springdale Beach Estate Urban Water Management Plan 2014* will be updated to reflect the proposed land use. Consistency of the amendment with current policy should be considered including the *Government Sewerage Policy 2019* (GSP) and *State Planning Policy 2.9 Water Resources*.

Protection of the foreshore environment is important to the management of Wilson Inlet. DWER's Operational Policy 4.3 *Identifying and establishing waterway foreshore areas* (2013) recommends foreshore reserve includes steep banks to protect foreshore areas that are vulnerable to erosion. EPA Services note the indicative concept plan in the amendment report proposes an additional 1.1 ha of foreshore reserve within the area proposed to be rezoned to Special Residential, however this may not entirely capture the foreshore banks.

Increased access to the Springdale Beach Foreshore from future development may result in erosion of the foreshore banks and the spread of dieback. Construction associated with potential future development has the potential to cause erosion downstream.

Information is requested as to demonstrate that an appropriate foreshore width has been provided, and to explain how the amendment will ensure the foreshore area within the proposed area for rezoning will be retained and protected from the impacts of future development. Scheme provisions or modified zoning/reservation may be considered. It is requested that a map is provided showing the proposed foreshore reserve and zoning boundaries overlaying an aerial with topographic contours.

The Springdale Beach Estate Foreshore Management Plan (FMP) was prepared in 2014 for the existing subdivision area to the north of the amendment area, consistent with Western Australian Planning Commission subdivision conditions. Further information is requested as to how the amendment will ensure the FMP is updated to reflect the proposed land use associated with the amendment and is consistent with the *Wilson Inlet Foreshore Reserves Management Plan* (Shire of Denmark 2008). The Shire may consider replacing existing TPS 3 provision iv) i) in Appendix XIV S Res 6. iv) i) with a contemporary version of existing TPS 3 Condition 10 in T9 Appendix XIII.

It is noted onsite effluent disposal is proposed within the amendment area. The provided *Preliminary Assessment of Proposed Scheme Amendment Springdale Beach Tourist Zone Site Denmark* (Land Assessment 2018) outlines that most of the site has a fair to low capability for onsite sewage disposal due to a low ability of the soils to retain nutrients against drainage losses to Wilson Inlet and the presence of restrictive clay and hardpan/rock layers. It is also stated that avoidance of onsite effluent disposal may be required around test pit (TP) 12a and TP 12b. Only one TP (10a) appears to meet the GSP requirements for soil characteristics (permeability and nutrient retention) suitable for onsite effluent disposal.

Total nutrient inputs for the two land use scenarios shown in Table 10 of the *Springdale Beach Development Indicative Nutrient Inputs, Special-Residential compared with Tourism Development* (Land Assessment 2020) report are comparable and do not strongly support an argument that a Special Residential land use will result in lower nutrient inputs than a tourism land use. It is also noted that in Table 3 a land use scenario is assumed of 'no clearing apart from house pad'. Much of the northern portion of the site is already cleared and may result in the development of gardens and livestock grazing is also not prohibited by the scheme, both of which may result in further nutrient application than assumed.

Further information is requested to demonstrate:

- the capability of the amendment area for onsite effluent disposal;
- how the amendment will be consistent with the requirements of GSP including for 1.5m separation of system discharge points to impermeable layers, use of Alternate Treatment Units with secondary treatment systems, determination of disposal field area, and requirements under Schedule 2;
- how the amendment will be consistent with the *Wilson Inlet Management Strategy* in relation to the nutrient output of onsite effluent disposal.

Contemporary scheme provisions may be considered. It would also be useful to provide the estimated nutrient load/kg/ha/year for each proposed dwelling.

#### **Terrestrial Fauna; Flora and Vegetation**

The amendment area contains Jarrah/Marri woodland. This vegetation is potential habitat for the Critically Endangered Western Ringtail Possum and threatened species of black cockatoo. The *Flora and Fauna Assessment 2006* provided with the referral may not reflect the current habitat or presence/absence of threatened species within the amendment area.

Further information is requested to demonstrate how the amendment will identify, protect, and manage terrestrial fauna values and impact to habitat. Scheme provisions or scheme map modifications may be considered; alternatively an updated fauna survey consistent with EPA technical guidance may be provided.

#### Social Surroundings; Terrestrial Fauna

EPA Services note that LPS 3 Appendix 10 T9 Condition for the current Tourist zoning of the amendment area contains Condition 22 regarding light spill. Further information is requested to demonstrate how the amendment will ensure that future development manages light spill that may have an impact on visual amenity and Terrestrial Fauna.

#### Summary

It is requested the Shire provide the above information to demonstrate how the environmental values associated with the amendment will be protected and managed by the scheme amendment. The Shire may also consider updating scheme provisions associated with the amendment to be consistent with contemporary policy and current government agency names where relevant.

It is suggested that following consultation with EPA Services the Shire take any proposed modifications the Amendment 149 text and maps to Council for formal adoption, and then provide the updated Amendment 149 to the EPA.

Your response should be sent by email to <u>registrar@dwer.wa.gov.au</u> addressed to the Executive Director EPA Services and marked for the attention of Renee Blandin; or by post to EPA Services, Department of Water and Environmental Regulation, Locked Bag 10, Joondalup DC, Western Australia 6919. EPA Services requests you provide the additional information by **25 October 2021**.

Please note that the EPA may require additional information from the Shire and other relevant agencies after it has reviewed the requested information.

Upon receipt of sufficient information, as required by section 81 of the PD Act, the EPA will comply with section 48A of the EP Act and advise you accordingly.

If you would like to discuss the information requirements in this letter or would like to arrange a meeting, please contact Renee Blandin on 6364 6786.

Yours sincerely

EXECUTIVE DIRECTOR

23 September 2021

## **ATTACHMENT 2**

## RESPONSE

#### Attachment 2: Response to DWER Request for Additional Information

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
<b>General</b> Update provisions to reflect values and		The existing provisions are adequate for the area being rezoned.
protect or manage potential significant		
impacts		
Inland Waters	Inland Waters: To	The Wilson Inlet Management Strategy recommends that adjacent land use and
The amendment area is located on the Wilson	maintain the	development near the inlet be carefully managed and planned, especially for
Inlet, a sensitive aquatic environment. It is	hydrological regimes	management of impacts on terrestrial and aquatic flora and fauna, water quality
recommended the Wilson Inlet Management	and quality of	(nutrients and sediment loads) and the alteration of natural drainage systems. A
Strategy 2013-2022 (the Strategy) be	groundwater and	key recommendation was to maintain vegetation buffer zones around the
considered in the context of the amendment.	surface water so that	extent of the Inlet's foreshore, with a recommended 50 m vegetated buffer
Further information is requested as to how	environmental	above the high water mark.
the amendment:	values are protected.	The Strategy also states that planning for future infrastructure needs to carefully
• is consistent with the key Strategy		consider all uses of the Inlet including both human and environmental.
objectives for nutrient input into the		Strategies and actions regarding development and infrastructure within and
Wilson Inlet,		adjacent to the Denmark Foreshore Reserves have been outlined in the Wilson
will manage maintenance of		Inlet Foreshore Reserves Management Plan (City of Albany and Shire of
predevelopment flows and maintenance		Denmark) and in the draft Denmark Local Town Planning Strategy (2012).
or improvement of water quality to		The algorithm for the Carlingdale Decel Estate has prevented the following algori
mitigate impact to downstream foreshore		The planning for the Springdale Beach Estate has prepared the following plans
areas and the Wilson Inlet.		to ensure that the social, cultural and environmental values of the wilson inlet
It is recommended the amendment		are protected:
demonstrate that the Springdale Beach Estate		Opus, 2006: Flora and Fauna Assessment Location 1935 South Coast
Urban Water Management Plan 2014 Will be		Highway Denmark WA. Prepared for LWP Property Group.
updated to reflect the proposed land use.		Opus, 2007: Site Suitability for Onsite Effluent Disposal – Location 1935     South Coost Hickway (Tourist Site), Prepared for LMD Preparety Croup
Consistency of the amendment with current		South Coast Highway (Tourist Site). Prepared for LWP Property Group.
Covernment		<ul> <li>Opus, 2014. Foreshore management Plan – Springuale beach Estate,</li> <li>Dopmark, Bronard for LWB Dopmark, Phy Ltd.</li> </ul>
Government		Denimark, Prepared for LWP Denimark Pty Ltd.
Sewerage Policy 2019 (GSP) and State		Opus, 2014. Orban Water Wangement Plan – Springuale Beach Estate     Donmark Lot 0000 South Coact Highway Donmark Propagad for LM/P
Planning Policy 2.9 Water Resources.		Denmark – Lot 9000 South Coast Highway Denmark. Prepared for LWP
		Denmark Ply Lla.

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
Eoreshore Environment		<ul> <li>Tree Survey Lot 9007 'Tourist Lot' Beaufortia Gardens Springdale Beach Denmark to identify introduced tree species vs local native species.</li> <li>FirePlan WA, 2015: Fire management Plan – Springdale Beach Estate – Lot 9000 South Coast Highway, Shire of Denmark.</li> <li>Biodiverse Solutions, 2017: BAL Contour Plan and Bushfire Management Statement.</li> <li>Land Assessment Pty Ltd, 2018: Preliminary Assessment of Proposed Scheme Amendment Springdale Beach Tourist Zone Site, Denmark.</li> <li>MP Rogers and Associates, 2020: Coastal Vulnerability Assessment.</li> <li>Land Assessment Pty Ltd, 2020: Indicative Nutrient Inputs, Special Residential compared with Tourism Development.</li> <li>All these documents contribute on on-ground outcomes that will protect the values of Wilson Inlet and reduce the risks associated with development (e.g. stormwater management, nutrient/ sediment management and sustainable access to the Inlet foreshore.</li> <li>Of particular significance in terms of managing the risks associated with development adjacent to Wilson's Inlet is the preparation, adoption and implementation of the 2014 Urban Water Management Plan which outlines how post development stormwater flows will be attenuated to pre-development levels, with management of water quality for the most frequent 15 mm rainfall events (which make up 95% of stormwater quantity). There is a treatment train in the Springdale Beach Estate which comprises large lot sizes for management of water on each lot (including assimilation capacity of onsite effluent disposal), vegetation and riffles in swales in road reserves to retain sediments and nutrients, rock riffle drop structures to prevent erosion, staging basins and a terminal basin incorporated into POS adjacent to the southern terminus of Beaufortia Gardens Road. Significant effort has been invested in planning and implementation to ensure that water quality entering the Wilson Inlet is high.</li> </ul>
Protection of the foreshore environment is		The foreshore reserve is proposed to be augmented through the rezoning of the Tourist area to Rural Residential with an additional 1.2 has to be coded
important to the management of Wilson Inlat		The foreshore reserve has been significantly enlarged through the subdivision
important to the management of Wilson Inlet.		The foreshore reserve has been significantly enlarged through the subdivision
		process, with a further 1.2 ha of foreshore reserve proposed to be ceded to

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
DWER's Operational Policy 4.3 <i>Identifying and</i> <i>establishing waterway foreshore areas</i> (2013) recommends foreshore reserve includes steep banks to protect foreshore areas that are vulnerable to erosion. EPA Services note the indicative concept plan in the amendment report proposes an additional 1.1 ha of foreshore reserve within the area proposed to be rezoned to Special Residential, however this may not entirely capture the foreshore banks.		create a vegetated and managed area adjacent to Wilsons Inlet (188 m at the western boundary, 144 m at the eastern boundary and a minimum of 106 m in between. Attachment 3 shows that the steepest slopes have been incorporated into the foreshore reserve.
Foreshore Reserve – Access and Steep Slopes Increased access to the Springdale Beach Foreshore from future development may result in erosion of the foreshore banks and the spread of dieback. Construction associated with potential future development has the potential to cause erosion downstream. Information is requested as to demonstrate that an appropriate foreshore width has been provided, and to explain how the amendment will ensure the foreshore area within the proposed area for rezoning will be retained and protected from the impacts of future development. Scheme provisions or modified zoning/reservation may be considered. It is requested that a map is provided showing the proposed foreshore reserve and zoning boundaries overlaying an aerial with topographic contours.		A foreshore management plan has been adopted for the Springdale Beach Foreshore Reserve (Opus, 2014b): Foreshore management Plan – Springdale Beach Estate, Denmark. Prepared for LWP Denmark Pty Ltd. The plan has been approved by DWER and the Shire of Denmark, is consistent with the Wilson Inlet Foreshore Reserves Management Plan 2008 and incorporates actions and strategies to protect the ecology of the area. The plan also considers cultural features and advises on appropriate passive recreation activities. There is not likely to be increased access to Springdale Beach if the Tourist area is zoned Rural Residential because instead of 30 units of tourist accommodation, a restaurant and shops, there will now be 17 residences. This means that the foreshore will be mostly visited by local people rather than a large number of visitors. The foreshore management plan outlines that access will be managed via: • Provision of a car park adjacent to the foreshore reserve. • Access ways are appropriate for pedestrian and emergency access. • Signs interpreting the area have been installed. The current management plan has considered erosion control by closing informal access points and retaining low risk access tracks. There is no access provided in particularly steep areas.

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
		Construction in the residential development area will be subject to Shire of Denmark requirements to prevent erosion and sediment transportation. The management of the additional areas to be ceded can be addressed in either an addendum to the existing foreshore management plan (an updated action table and implementation diagram). Additional scheme provisions are not considered to be the most practical way to ensure ongoing sustainable management of the foreshore reserve. Proposed foreshore boundaries have been overlaid with aerial photography and topography to show that the steep slopes have been captured in the foreshore extension (Attachment 3).
Foreshore Management Plan		As noted above, we suggest that the Foreshore Management Plan is updated via
The Springdale Beach Estate Foreshore Management Plan (FMP) was prepared in 2014 for the existing subdivision area to the		an addendum which will comprise a map showing opportunities and constraints, and treatments integrating with existing foreshore reserve and surrounding areas. This could be a condition of subdivision.
north of the amendment area, consistent with		
Western Australian Planning Commission		(Noting that clauses in DWER query are:
subdivision conditions. Further information is		Existing IPS 3 provision iv) i) in Appendix XIV S Res 6. iv) i):
ensure the EMP is undated to reflect the		Subdivision for the preparation of Foreshore Management Plan/s based on the
proposed land use associated with the		requirements of the Subdivision Guide Plan.
amendment and is consistent with the Wilson		10. A Foreshore Management Plan shall be prepared to the satisfaction of
Inlet Foreshore Reserves Management Plan		Council and the Waters and Rivers Commission to assess and manage the
(Shire of Denmark 2008). The Shire may		relationship and impacts on the foreshore.)
consider replacing existing TPS 3 provision iv)		
i) in Appendix XIV S Res 6. iv) i) with a		
Condition 10 in T9 Appendix XIII		
On Site Effluent Disposal		Soil requirements are a starting point to determine the capability of the land to
It is noted onsite effluent disposal is proposed		support onsite effluent disposal generally (e.g. for primary/ septic tank systems).
within the amendment area. The provided		The GSP (2019) states that areas with constraints might be addressed through
Preliminary Assessment of Proposed Scheme		installation of secondary treatment units and units which remove nutrients. In
Amendment Springdale Beach Tourist Zone		addition, where appropriate, sand pads for irrigation areas can be used. This is a

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
Site Denmark (Land Assessment 2018) outlines that most of the site has a fair to low capability for onsite sewage disposal due to a low ability of the soils to retain nutrients against drainage losses to Wilson Inlet and the presence of restrictive clay and hardpan/rock layers. It is also stated that avoidance of onsite effluent disposal may be required around test pit (TP) 12a and TP 12b. Only one TP (10a) appears to meet the GSP requirements for soil characteristics (permeability and nutrient retention) suitable for onsite effluent disposal.		valid approach to address land capability issues (unless there are extreme constraints that cannot be managed). A summary of GSP requirements and its application to the site is included in Attachment 4.
Nutrient Inputs Total nutrient inputs for the two land use scenarios shown in Table 10 of the Springdale Beach Development Indicative Nutrient Inputs, Special-Residential compared with Tourism Development (Land Assessment 2020) report are comparable and do not strongly support an argument that a Special Residential land use will result in lower nutrient inputs than a tourism land use. It is also noted that in Table 3 a land use scenario is assumed of 'no clearing apart from house pad'. Much of the northern portion of the site is already cleared and may result in the development of gardens and livestock grazing is also not prohibited by the scheme, both of which may result in further nutrient application than assumed.		Nutrient inputs are significantly diminished through use of secondary treatment units with nutrient removal and are recommended in the GSP (2019) and Draft State Planning Policy 2.9 Planning for Water Policy (2021). As stated above, the site has been assessed in terms of GSP (2019). The results are included in Attachment 4.

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
Government Sewerage Policy		Results of the Site and Soil Evaluation against criteria outlined in the GSP (2019)
Further information is requested to		are included in Attachment 4. When compared to the GSP criteria, the following
demonstrate:		applies:
• The capability of the amendment area for		Groundwater was not found during winter testing conditions to a depth
onsite effluent disposal;		of 200 cm below ground level.
How the amendment will be consistent		Four of the test pits had evidence of clay or hard pan layers which would
with the requirements of GSP including		require either a sand pad or identification of an alternative area suitable
for 1.5m separation of system discharge		for irrigation of treated wastewater.
points to impermeable layers, use of		Overall, the eastern half of Amendment area is relatively unconstrained for on-
Alternate Treatment Units with secondary		site effluent disposal if secondary treatment units with nutrient removal are
treatment systems, determination of		utilised. Looking at the test pit characteristics in detail, seven of the 12 test pits
disposal field area, and requirements		(TP10a, TP10b, TP11a, TP11b, TP11c, TP11d and TP12c) meet the criteria for
under Schedule 2;		separation to groundwater of 1.5 m with no contining layer present within 1.5 m
How the amendment will be consistent		BGL. Results from four of the 12 test pits (10c, 10d, 12a and 12b) indicated that
with the <i>Wilson Inlet Management</i>		the locations are hindered by a hardpan or clay layer, creating an effective
of onsite effluent disposal.		duplex soil. One test pit (TP12d) is now included in the foreshore reserve.
Contemporary scheme provisions may be		In order to resolve this issue, we propose that the following apply:
considered. It would also be useful to		<ul> <li>Acknowledgement that these lots will need to incorporate a sand pad</li> </ul>
provide the estimated nutrient		for irrigation (e.g. 1 m for area containing TP12a, 40 cm for TP10c and
load/kg/ha/year for each proposed		TP10d); or
dwelling.		Investigate conditions in other parts of each lot to see if impermeable
		layers are either deeper or not present.
		Land application and wastewater volumes are also discussed in Attachment 4.
		Nutrients Generated by Households
		Secondary treatment systems with nutrient removal are required to treat waste
		water so that the there are phosphorus and nitrogen concentrations
		of less than 1mg/L and 10mg/L respectively. If a household is generating 900
		L/day, this equates to 0.33 kg phosphorus per year and 3.3 kg of nitrogen per
		year. If 17 lots are created, this equates to 5.1 kg phosphorus per year and 56.1

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
		kg nitrogen/ year for the 17 lots. For the total Amendment area of 9.4 ha, this equates to 0.5 kg phosphorus/ ha/ year and 5.96 kg nitrogen/ ha/year
		Wilson Inlet Management Strategy Development around Wilson Inlet is increasing and careful planning is needed to manage nutrient input and sediment loads and prevent erosion. Partly this will be achieved through the retention of a minimum 50 m buffer of vegetation around the Inlet. Other strategies include the reduction of nutrient input through management of stormwater and use of appropriate on-site effluent disposal systems in non-sewer reticulation areas.
<b>Terrestrial Fauna; Flora and Vegetation</b> The amendment area contains Jarrah/Marri woodland. This vegetation is potential habitat for the Critically Endangered Western Ringtail Possum and threatened species of black cockatoo. The <i>Flora and Fauna Assessment 2006</i> provided with the referral may not reflect the current habitat or presence/absence of threatened species within the amendment area. Further information is requested to demonstrate how the amendment will identify, protect, and manage terrestrial fauna values and impact to habitat. Scheme provisions or scheme map modifications may be considered; alternatively an updated fauna survey consistent with EPA technical guidance may be provided.	Flora and Vegetation: To protect flora and vegetation so that biological diversity and ecological integrity are maintained. Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.	<ul> <li>A Flora and Fauna Assessment was carried out for the Springdale Beach area in 2006 by Opus.</li> <li>To augment and update the report to ensure that it addresses EPA Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (2020) the following has been undertaken (Attachment 5): <ul> <li>Desktop review of up to date information;</li> <li>Western Ringtail Possum - Daytime search for dreys and scats, evening spotlighting;</li> <li>Cockatoos: Identification of foraging and roosting and potential habitat trees; and</li> <li>Analysis of trees retained vs ones to be removed in the Amendment area.</li> </ul> </li> <li>All very good to excellent quality vegetation is incorporated into the Foreshore Reserve, other than a 2,000m<sup>2</sup> area in proposed Lot 13 which will be retained. Clearing of approximately 3000m<sup>2</sup> of Marri and Peppermint woodland in degraded condition will be required to establish the road reserve.</li> <li>Seven large Marri trees which meet the criteria of habitat trees for the three species of threatened Black Cockatoo will be retained in proposed Lots 9, 10 and 12. Single peppermint trees (no understory) will be retained in proposed Lots 4, 5, 6, 7, 9, 10 and 12 (pending bushfire protection requirements).</li> </ul>
Social Surroundings; Terrestrial Fauna	Social Surroundings:	Shrouded lighting for street lights will be implemented (suggest as condition of subdivision)
	I O protect social	subalvision).

REQUEST FOR ADDITIONAL INFORMATION	EPA OBJECTIVES	RESPONSE
EPA Services note that LPS 3 Appendix 10 T9	surroundings from	
Condition for the current Tourist zoning of the	significant harm.	
amendment area contains Condition 22	Terrestrial Fauna: To	
regarding light spill. Further information is	protect terrestrial	
requested to demonstrate how the	fauna so that	
amendment will ensure that future	biological diversity	
development manages light spill that may	and ecological	
have an impact on visual amenity and	integrity are	
Terrestrial Fauna.	maintained.	

#### References

Ayton Baesjou (2019) Tree Survey Lot 9007 'Tourist Lot' Beaufortia Gardens Springdale Beach Denmark to identify introduced tree species vs local native species.

Biodiverse Solutions (2017) BAL Contour Plan and Bushfire Management Statement.

FirePlan WA (2015) Fire management Plan – Springdale Beach Estate – Lot 9000 South Coast Highway, Shire of Denmark.

Land Assessment Pty Ltd (2018) Preliminary Assessment of Proposed Scheme Amendment Springdale Beach Tourist Zone Site, Denmark.

Land Assessment Pty Ltd (2020) Indicative Nutrient Inputs, Special Residential compared with Tourism Development.

MP Rogers and Associates (2020) Coastal Vulnerability Assessment.

Opus (2006) Flora and Fauna Assessment Location 1935 South Coast Highway Denmark WA. Prepared for LWP Property Group.

Opus, (2007) Site Suitability for Onsite Effluent Disposal – Location 1935 South Coast Highway (Tourist Site). Prepared for LWP Property Group.

Opus (2014a) Foreshore management Plan – Springdale Beach Estate, Denmark. Prepared for LWP Denmark Pty Ltd.

Opus (2014b) Urban Water Management Plan – Springdale Beach Estate Denmark – Lot 9000 South Coast Highway Denmark. Prepared for LWP Denmark Pty Ltd.

## **ATTACHMENT 3**

**STEEP SLOPES IN FORESHORE RESERVE** 

Proposed Addition to Foreshore Reserve 40 mAHD 30-mAHD 20-mAHD 44m AHD 10 mAHD Springdale Beac

Map showing that steep slopes have been captured in the proposed foreshore reserve

## **ATTACHMENT 4**

## SITE AND SOIL EVALUATION - GOVERNMENT SEWERAGE POLICY (2019)



Perth

76 Festing Street 2 Bulwer Street ALBANY WA 6330

## **ANALYSIS OF AMENDMENT AREA 149 -**SITE AND SOIL EVALUATION AND ASSESSMENT, LOT 9008 BEAUFORTIA GARDENS, SPRINGDALE BEACH ESTATE, SHIRE OF DENMARK



Prepared For:	LWP Group Pty Ltd PO Box 7568 Cloisters Square PERTH GPO WA 6850
Report Number:	AA2020/057
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Author: Melanie Price Associate Environmental Scientist

Julanie Frie

3 December 2021

Signature

Date

Reviewed by: Paul Zuvela Manager -Environmental Impact Assessment



3 December 2021

Signature

Date

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- 2. Subdivision Guide Plan
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- 4. Average Annual Pan Evaporation
- 5. Number of Months During Which Rainfall Exceeds Evaporation
- 6. Soil Types
- 7. Phosphorus Export Risk

#### **TABLES IN TEXT**

- 1. Rainfall: Mean and Median Fore Denmark by Month (mm)
- 2. Requirements of Government Sewerage Policy
- 3. Land Application Areas
- 4. Land Application Area
- 5. Treatment of Slopes

## **ATTACHMENTS**

#### APPENDICES

A. Test Pit Locations

ATU	Aerobic Treatment Unit
AS/NZS	Australian Standards/New Zealand Standards
BGL	Below ground level
Cfu	Coliform forming unit
DLR	Design Loading Rates
DIR	Design Irrigation Rate
DOH	Department of Health
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
Effluent	The liquid discharged from a wastewater treatment unit
Floodplain	The extend of flooding in an area in a one percent (1 in 100) Annual Exceedance Probability flood event for a particular waterway, which includes the floodway and flood fringe areas.
Groundwater	The area of an aquifer in which all pores and fractures are saturated with water. Also known as water in the phreatic zone.
GSP	Government Sewerage Policy 2019
На	Hectare
Ksat	Coefficient of permeability
L	Litre
Land Application Area (LAA)	The unencumbered plan area to which treated sewage from an on-site sewage system is distributed for further in-soil treatment and absorption or evaporation. This area is restricted to the distribution of treated sewage.
Land Application System (Las)	The system used to apply effluent from a wastewater treatment unit into or onto the soil for further in-soil treatment and absorption or evaporation
LG	Local Government
Μ	Metre
On – site wastewater system	A wastewater treatment and disposal or reuse system that receives treats and applies wastewater to a land application area located within the boundaries of the freehold lot or survey strata within which wastewater was generated.
PRI	Phosphorus Retention Index

# LIST OF ABBREVIATIONS AND GLOSSARY

Primary treatment	The separation of suspended material from sewage in septic tanks, primary settling chambers, or other structures (including those which may be used to treat trade waste) before discharge to either a land application area or secondary treatment process. (For example, septic tanks with leach drains).
Priority Areas	The Priority 1, 2, 3 and 3* areas assigned by the Department of Water and Environmental Regulation to guide land use and management decisions.
Public Drinking Water Source Area (PDWSA)	Underground water pollution control areas, catchment areas and water reserves that are constituted under the Metropolitan Water Supply, Sewerage, and Drainage Act 1909 or the Country Areas Water Supply Act 1947.
Reticulated Sewerage	A network of sewers and associated wastewater treatment plant managed by a sewerage service provider.
Secondary treatment	Microbiological digestion and physical settling and filtering processes and decomposition of sewage constituents following primary treatment
Secondary treatment system	A sewage treatment system which produces treated sewage of secondary standard equal to or less than, i.e. 20 mg/L of Biochemical Oxygen Demand (BOD), 30 mg/L of Total suspended solids (TSS) and 10 cfu/100 mL of Escherichia (E) coli (for example, an aerobic treatment unit).
Sewage	Any kind of sewage, faecal matter or urine, and any waste composed wholly or in part of liquid
SSE	Sewage sensitive area
SSE	Site and soil evaluation: An assessment of all relevant constraints and the risks to public health and the environment of an on-site sewage system in accordance with AS/NZS 1547 On-site domestic wastewater management.
SPP 2.9	State Planning Policy 2.9 – Water Resources
Trade waste	Any wastewater, discharged from a business or industry, aside from that which comes from staff amenities or office facilities.
WAPC	The Western Australian Planning Commission
Wastewater	Is consistent to the definition of "sewage", and does not include stormwater, surface water or ground water of a type that is ordinarily drained from land as part of the provision of a drainage service. This includes trade waste.
Water resources	Includes watercourses, waterways and their estuaries, inlets and floodplains, wetlands, groundwater, surface water, stormwater, and drainage. A water resource includes all aspects of the water resource, including water, organisms and other components and ecosystems that contribute to the physical condition and ecological health of the water resource.
WHPZ	Well Head Protection Zone
WWTP	Wastewater treatment plant

## 1 ASSESSMENT SUMMARY

Aurora Environmental has undertaken a Site and Soil Evaluation (SSE) for Lot 9008 Beaufortia Gardens, Springdale Beach Estate (the Amendment area) to assess suitability for onsite wastewater management and to recommend the type of onsite wastewater system for the proposed 17 lot subdivision. Matters relating to land capability and previous land capability assessments were considered in the context of requirements of the *Government Sewerage Policy 2019* (GSP; Government of Western Australia, 2019) and the Draft State Planning Policy (SPP) 2.9 Planning for Water.

The requirements of the GSP for the amendment area can be met. Key points are:

- All separation requirements can be met.
- Testing information from Opus (2007) is considered adequate to record maximum winter groundwater levels and soil types.
- Winter groundwater levels were greater than 1.5 m below ground level, as required in a sewage sensitive area.
- The eastern portion of the amendment area may experience perched water on duplex soils during wetter months. These areas may require sand pads to achieve adequate separation. Alternatively, additional testing by new landowners may assist in identifying areas with adequate clearance (depending on where they propose to locate dwellings within the building envelope).

Installation of secondary treatment units with nutrient removal capacity are recommended due to the proximity to Wilson Inlet (sewage sensitive area).

## 2 SUBJECT LAND DESCRIPTION

### 2.1 SUBJECT LAND DESCRIPTION

The amendment area comprises 53.5525 ha and is part of the Springdale Beach Estate Figure 1. The Amendment area abuts the Wilson Inlet foreshore.

The Amendment area comprises pasture in the north western section and native and planted vegetation in the south east section.

Level of constraint: Nil

Mitigation: None required

#### **FIGURE 1: LOCATION**





#### FIGURE 2: SUBDIVISION GUIDE PLAN

Source: Indicative Concept Plan (Ayton Baesjou Planning).



#### FIGURE 3: AERIAL PHOTOGRAPH AND TOPOGRAPHY

## 2.2 SURROUNDING LAND USES:

Land to the north comprises special residential areas with lot sizes of approximately 0.3 to 0.5 ha. The area to the east comprises a valley (water gaining), native vegetation in Public Open Space (POS) and foreshore reserve. The area immediately to the west comprises crown reserve 12232 (native vegetation).

Level of constraint: Nil

Mitigation: None required

## 2.3 TOPOGRAPHY AND SLOPES

The highest point of the Amendment area is in on the mid western boundary at approximately 46 mAHD (Figure 3). The land slopes down the eastern boundary and southern boundary with a low point of approximately 8 mAHD in the south eastern corner.

The steepest slopes are associated with proposed Lot 7 (18% grade, 1:6 slope). However, there are areas on the lot which are significantly flatter with 10% grade(1:10 slope). Most of the amendment area is gently sloping (less than 8%; 1:12 slope).

## 2.4 CLIMATE

The Denmark area has a Mediterranean climate, characterised by warm, dry summers and cool, wet winters. The long-term mean annual rainfall is 1037.4 mm<sup>1</sup>). Most of the rain falls between May and September (Table 1).

Level of constraint: Nil

Mitigation: None required

## TABLE 1: RAINFALL: MEAN AND MEDIAN FOR DENMARK BY MONTH (MM)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	30.1	25.6	34.4	80.3	133.6	143.9	169.8	137.9	102.9	93.8	58.2	27	1037.4
Median	20	20.3	27.8	75.4	115.1	126.9	165.9	139.1	94.5	88.6	49.8	19	1071.3
2020	47.7	22	53.4	48.2	159.3	145.2	148.2	217.2	138.3				
Source:			Burea	u		of			Meteor	ology			(2021).
http://www.	stru//www.hom.gov.au/icn/noc/adia/waatharData/au/2n_dicn/au/twoadataDCranh&n_strum=000521&n_nocObcCada												

http://www.bom.gov.au/isp/ncc/cdio/weatherData/av?p\_display\_type=dataDGraph&p\_stn\_num=009531&p\_nccObsCode =136&p\_month=13&p\_startYear=2021

## 2.5 EVAPORATION

Annual average evaporation for Denmark is approximately 1400 mm so annual evaporation exceeds rainfall (BOM, 2021<sup>2</sup>). Rainfall exceeds evaporation for approximately 6 months a year.

Level of constraint: Nil.

<sup>&</sup>lt;sup>1</sup> <u>http://www.bom.gov.au/climate/averages/tables/cw\_009500\_All.shtml</u>

<sup>&</sup>lt;sup>2</sup> <u>http://www.bom.gov.au/watl/evaporation/</u>

Mitigation: Other site factors (e.g. soil permeability) mean that 6 months of low evaporation is not a significant constraint.



FIGURE 4: AVERAGE ANNUAL PAN EVAPORATION

Source: BOM (2021) http://www.bom.gov.au/watl/evaporation/



#### FIGURE 5: NUMBER OF MONTHS DURING WHICH RAINFALL EXCEEDS EVAPORATION

Rainfall exceeds evaporation for approximately 6 months per year for Denmark)

#### 2.6 SOILS

Soils represented in the Amendment area include:

- 'Dempster crest phase Kentdale' (254KdDMc): Sands and laterite on elongate crests. 10-30% of map unit has a high to extreme phosphorus export risk. Overall the soil unit has a 'moderate' risk of phosphorus export (Landgate, 2021: Soil landscape land quality – Phosphorus Export Risk (DPIRD-010)).
- 'Minor Valley Slope' (254KdS7h): Slopes of broad valleys in sedimentary rocks; 30 m relief; smooth slopes. Deep sands and iron podzols on slopes; Podzols and yellow duplex soils on floors. 30-50% of map unit has a high to extreme phosphorus export risk. Overall the soil unit has a 'moderate' risk of phosphorus export (Landgate, 2021: Soil landscape land quality – Phosphorus Export Risk (DPIRD-010)).

Level of Constraint: Moderate constraint as in some places, soils are shallow and duplex, potentially with rainwater perching on impervious layers.

Mitigation: Soil characteristics can be managed with secondary treatment unit with nutrient removal and the incorporation of sand pads for subsurface irrigation of treated waste water.

#### FIGURE 6: SOIL TYPES



Source: National Map (2021) Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010); https://www.nationalmap.gov.au/

#### FIGURE 7: PHOSPHORUS EXPORT RISK



Source: National Map (2021) Soil Landscape Mapping – Best Available (DPIRD-027)

## 2.7 CATCHMENT

The subject land is part of the Wilson Inlet catchment.

Level of Constraint: Moderate constraint.

Mitigation: Management of drainage via UWMP treatment train. Use of secondary treatment systems with nutrient removal.

#### 2.8 WATERCOURSES/ WETLANDS

The subject land does not contain any wetlands or watercourses but is adjacent to Wilson Inlet. There is a water gaining area in the valley to the east (150 m) which flows into Wilson Inlet.

Level of Constraint: Low

Mitigation: Compliance with 'Better Urban Water Management' with implementation of an Urban Water Management Plan.

## **3 REQUIREMENTS – GOVERNMENT SEWERAGE POLICY 2019**

The following requirements outline how the Amendment area complies with GSP criteria (Table 2).

#### TABLE 2: REQUIREMENTS OF GOVERNMENT SEWERAGE POLICY

REQUIREMENT		STATUS			
Location/ Land Use					
Sewerage sensitive zone		Yes: within 2 km of Wilson Inlet (selected estuary). Minimum Lot size would usually be required to be 1 ha. However, as the surrounding area supports Lot sizes of between 3,000 and 5,000 m <sup>2</sup> , a minimum of 3,000 m <sup>2</sup> is proposed (as already supported by the Shire of Denmark in referral of the Amendment).			
Public Drinking Water Source	Area	No			
Separation from Water Resource	ces: On-site Efflue	nt Disposal – Primary Treatment			
Resource	Distance Requirement	Comment			
Wellhead protection zone (WHPZ) or on Crown land within a reservoir protection zone	Not to be located within zone	The subject land is not within 100 m of a WHPZ or reservoir.			
High water mark of a reservoir	100 m	The subject land is not within 100 m of a reservoir.			
Bore used for public drinking water supply	100 m	No bores within 100 m			
Private bore used for household/ drinking water purposes	30 m	The subject land is not within 30 m of private bores used for drinking water (Water Information Reporting: <u>http://wir.water.wa.gov.au/Pages/Water-Information-</u> <u>Reporting.aspx</u> )			
Waterway or significant wetland and not within a waterway foreshore area or wetland buffer	100 m for primary treatment. Down to 30 m for secondary treatment with nutrient removal.	The subject land does not contain any water courses or significant wetlands. The Amendment area is adjacent to Wilson Inlet and its foreshore. The closest water course is 150 m to the east, which flows into Wilson Inlet. The closest point to Wilson Inlet from the Amendment area is 110 m (noting that on-site effluent disposal can be place further away – minimum 150 m).			
Drainage system that discharges directly into a waterway or significant wetland without treatment	100 m	There are no drainage systems which directly discharge into a waterway or significant wetland (Wilsons Inlet). All water is treated via a treatment train (approved UWMP) prior to discharge.			
Area subject to inundation and/or flooding in a 10%	Subject to flooding in a	The subject land is not subject to flooding.			

Annual Probability (AEP	Exceedance ) rainfall event	10% AEP rainfall event			
Groundwater	– Vertical separa	ition			
Public drinking area (PDWSA)	water source	2 m	No	No	
Sewage sensitive area (SSA) 1.5 m		1.5 m	The Amendment area is within a sewage sensitive area: as it is within 2 km of Wilson Inlet. Soil profile data, including groundwater levels are included below. All of the locations tested meet the criteria for 1.5 m separation to groundwater (winter testing; Opus, 2007). Due to duplex soils and hardpans in some areas, wastewater irrigation areas will need to be incorporated into sand pads in areas associated with TP10c, TP10d, TP 2a and TP12b. Alternatively, testing may reveal suitable sites available for these lots that do not require sand pads.		
Separation to outside PDWSA	groundwater and SSA:		The	se criteria do not a <sub>l</sub>	pply to the Amendment area.
0.6 m loams and heavy soils					
1 m for gravels					
0.6 m for sand treatment wi removal	s – secondary ith nutrient				
1.5 m for san treatment	ds – primary				
SOIL PROFILE DA	ATA (OPUS 2007)	ASSESSED AGAI	NST G	SSP (2019) REQUIRI	EMENTS
LOCATION TEST PIT	DEPTH OF PROFILE	SOIL DESCRIPTION		WATER TABLE (21 SEPTEMBER 2006)	COMMENT
Test pit location	s are shown in Ap	opendix A.			
10a	Depth to clay or hard pan: > 200 cm	Yellow deep sa Grey silty sand 20 cm, cemen yellow-orange sand to 135 yellow silty sa to 200 + cm	nd;   to ted cm, and	Nil	Groundwater separation meets criteria (1.5 m below ground level (BGL))
10b	Depth to clay or hard pan: > 200 cm	Pale deep sand; Grey silty sand to 30 cm, white silty sand to 180 cm, gravelly silty sand to 200 + cm		Nil	Groundwater separation meets criteria (1.5 m BGL) Permeability test result > 3 m /day (i.e. 'rapidly drained')

10c	Depth to clay or hard pan: 110 cm	Pale deep sand over clay (duplex) Grey silty sand to 40 cm, dark brown gravelly sand (weak pan) to 110 cm, over silty clay to 200 + cm	Nil	Permeability test result > 3 m /day (i.e. 'rapidly drained') for most of soil but likely restriction in subsoil permeability at 110 cm. 'Moderately high' PRI result for gravelly sand. Groundwater separation meets criteria (1.5 m BGL). This area is likely to require a sand pad for irrigation of treated wastewater due to presence of hard pan.
10d	Depth to clay or hard pan: 100 cm to weak hard pan	Pale deep sand over clay (duplex); Grey silty sand to 40 cm, dark brown gravelly sand (weak pan) to 100 cm, over silty clay to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL). Will require sand pad for irrigation area due to hardpan. This TP is associated with proposed lots 10, 11 and 12. Further testing could determine that a suitable irrigation area is present that does not require a sand pad.
11a	Depth to clay or hard pan: > 200 cm	Pale deep sand; Grey silty sand to 25 cm, light grey sand to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL)
11b	Depth to clay or hard pan: 180 cm cm	Pale deep sand – over hardpan; Grey silty sand to 40 cm, white silty sand to 180 cm, orange brown rock (hardpan) to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL)
11c	Depth to clay or hard pan: > 200 cm	Pale deep sand; Grey silty sand to 30 cm, white silty sand to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL)
11d	Depth to clay or hard pan: > 200 cm	Pale deep sand; Grey silty sand to 30 cm, white silty sand to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL)

12a	Depth to clay or hard pan: 50 cm	Pale shallow sand – over hardpan; Grey silty sand to 35 cm, hard cemented yellow- orange sand (hardpan) to 50 cm	Nil	Groundwater separation meets criteria (1.5 m BGL). This area is likely to require a sand pad for irrigation of treated waste water due to the presence of a hard pan. This TP is associated with proposed lots 13 and 14. Further testing could determine that a suitable irrigation area is present without the need for a sand pad.
12b	Depth to clay or hard pan: 10 cm	Semi wet soil – very shallow hardpan; Dark grey wet silty sand to 10 cm, orange brown rock (hardpan) to 30 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL). This area is likely to require a sand pad for irrigation of treated waste water due to the presence of clay/ hardpan. This TP is associated with proposed lots 15 and 14. Further testing could determine that a suitable irrigation area is present without the need for a sand pad.
12c	Depth to clay or hard pan: > 200 cm	Gravelly pale deep sand; Dark grey to grey silty sand to 40 cm, light brown to orange gravelly silty sand (weak pan) to 200 + cm	Nil	Groundwater separation meets criteria (1.5 m BGL). Permeability test result > 3 m/ day (i.e. 'rapidly drained'). 'Very low' PRI result for silty sand layer
12d	Depth to clay or hard pan: 140 cm	Pale deep sand – over clay (effective duplex); Dark grey silty sand to 70 cm, dark brown gravelly sand (weak pan) to 140 cm, over silty clay to 200 + cm	Nil	This area has been incorporated into the foreshore reserve.

#### WASTEWATER VOLUME

WASTEWATE			
Development	: Average 3,00	0 m <sup>2</sup> lots, each with a single re	esidence and on-site effluent disposal
Anticipated Volume	Wastewater	900 L/day Sewage (L) per dwelling	Based on 6 persons in a 5-bedroom house or 150 L per person per day (standard residential dwellings)

Based on: The land application area has been determined using design loading rates, extrapolated from Table L1 *AZ/NZS 1547 On-site domestic wastewater management (Australian Standards, 2012)*.

Application of treated wastewater via subsurface drippers is one of the most practical method of irrigation as it prevents aerosolising wastewater (compared to above ground sprays). Recommendations for application areas of treated wastewater are outlined in Table 3 below.

#### **TABLE 3: LAND APPLICATION AREAS**

#### Land Application Areas

Land application areas for treated wastewater are to be used only for that purpose and should be kept free of any temporary or permanent structures.

Activities within the land application area shall not interfere with the function of the current and future land application system and people should avoid potential contact with effluent residues. Unless allowed for in the design, the land application area) should:

- not be built on or paved in a manner which precludes reasonable access;
- not be subject to vehicular traffic (other than a pedestrian-controlled lawnmower);
- not be subject to regular foot traffic such as pathways and clothesline areas; and
- should be kept in a manner which enables servicing and maintenance of the disposal system.

The size of the land application area has been determined in accordance with the conversion factors prescribed in Table 4 and *AS/NZS 1547 On-site domestic wastewater management* as follows:

1. Estimate hydraulic load (L/day): Occupancy rate (persons) x design loading rate (L/person/day)

2. Calculate land application area (m<sup>2</sup>): Hydraulic load (L/day) x conversion factor from Schedule 2 Table 2 of GSP (2019).

#### **TABLE 4: LAND APPLICATION AREA**

Minimum required land application area treated wastewater disposal							
Soil		Conversion Factor and Square Metres Required					
Category	Soil Texture	Primary Treatment	Area (m²)	Secondary Treatment	Area (m²)		
1	Gravels and sands	0.377	339.3	0.2	180		
2	Sandy loams	0.377	339.3	0.2	180		
3	Loams	0.477	429.3	0.25	225		
4	Clay loam	0.689	620.1	0.286	257.4		
5	Light clays	1.284	1155.6	0.333	299.7		
6	Medium to heavy clays	Special design requirements and distribution		0.5	450		

techniques or soil modification procedures will be		
necessary		

Note: From GSP, 2019. Schedule 2 Table 2. Conversion factors based on a hydraulic load of 1 L/day. Red text indicates attributes which apply to the subject land.

## TABLE 5: TREATMENT OF SLOPES

Slopes	
Gradient of the land application area	Most of the amendment area comprise gently undulating areas that do not exceed one in five (1:5). Areas that do exceed 1:5 slope can be avoided through placement of irrigation areas (e.g. proposed lot 7). Therefore, wastewater application areas do not need to be engineered to prevent run-off.

## 4 DRAFT STATE PLANNING POLICY 2.9 PLANNING FOR WATER

In addition to the GSP (2019), the Draft State Planning Policy (SPP) 2.9 Planning for Water is currently being considered (public comment period). The following summarised the approach to on-site waste water treatment in Draft SPP2.9.

The Draft State Planning Policy 2.9 Planning for Water (2021) states the following:

#### 7.4 Infrastructure and supply

#### Wastewater

j) Proposals for on-site wastewater disposal may be considered where the decision maker is satisfied that:

i. reticulated sewerage is not required in accordance with measure 7.4(I) of this policy;

ii. the highest groundwater level is greater than 0.5m from the natural ground surface for rezoning proposals to create unsewered lots less than 1 hectare in size;

iii. each lot can accommodate on-site wastewater disposal in accordance with AS/NZS 1547:2012 Onsite domestic wastewater management where relevant;

iv. the site requirements for on-site wastewater disposal outlined in the Guidelines can be met; and

v. development will be serviced by an appropriate on-site wastewater system that will manage risk to the environment and public health where relevant.

The Amendment area complies with these requirements.

#### 8.7.5 Onsite wastewater disposal

Where reticulated sewerage is not required in accordance with measure 7.4(j) of SPP 2.9, on-site wastewater disposal may be considered where the responsible authority is satisfied that:

1. Each lot can accommodate on-site sewage disposal in accordance with *AS/NZS 1547 On-Site Domestic Wastewater Management* (Standards Australia/New Zealand Standard, 2012) (AS/NZS 1547). This should generally be provided in the form of a Site and Soil Evaluation (SSE) (refer to section 8.7.6); and

2. The site requirements (as outlined in sections 8.7.7 – 8.7.10) for on-site sewage disposal can be met.

The Amendment area complies with these requirements.

#### 8.7.7 Site Requirements: Lot Size

LOCATION/ LAND USE	MINIMUM LOT SIZE	NOTES/ COMMENT
In sensitive water resource area	One hectare	Note: Land in a sensitive water resource area that is already zoned for urban use with a residential density coding of R2 to R12.5 under a local planning scheme or structure plan endorsed by the WAPC, may be subdivided in accordance with the existing density coding. Where R10 subdivision is proposed, it should be demonstrated that the density coding was assigned with the understanding that reticulated sewerage would not be provided.
		Smaller lots in a sensitive water resource area may be considered for non-residential subdivision on a case-by- case basis where it can be demonstrated that the proposal meets the minimum site requirements and the responsible authority, in consultation with relevant agencies, is satisfied that the proposal is consistent with the objectives of SPP 2.9.
		Comment: The Amendment area is proposed to be rezoned to a similar density to the surrounding Rural Residential zone which is $3,000 - 5,000 \text{ m}^2$ .

Information on compliance should be provided in a water management report and may be in the form of a:

- a) checklist or statement against criteria, and/or
- b) site plans showing (where relevant):

i. existing and proposed buildings, paved surfaces (including driveways, verandas and alfresco areas), private bores and soak wells. This is particularly relevant for infill subdivision where existing dwellings are to be retained;

ii. land application areas. For residential subdivision that provides for single houses, areas should be in accordance with Table F.3 of Appendix F. Where hydraulic loads can be estimated for non-residential subdivision/development or built strata areas should be calculated in accordance with Table F.2 of Appendix F;

iii. setbacks from water resources; and

iv. PDWSAs and protection zones and sensitive water resource areas.

This document has addressed a), b) iii, b) iv.

b) i and ii can be investigated at the subdivision stage.

#### 8.7.9 Site Requirements: Separation from Groundwater

Where the use of fill is proposed to achieve separation distances, proponents may be required to provide additional information to demonstrate that solutions are effective, do not impact on other lots

through water diversion, are not cost prohibitive and will not compromise amenity or landscape values. Where a substantial amount of fill is required, conditions of subdivision may require fill to be provided prior to lots being created or a notification on title.

This requirement can be fulfilled at the subdivision stage.

#### 8.7.11 Type of On-site Treatment System Required

Relevant considerations include:

i. Site and soil conditions.

ii. Potential impact on water resources. Within PDWSAs and sensitive water resource areas, secondary treatment systems with nutrient removal are recommended, particularly where lots are less than one hectare in size or where soils have low capacity to retain nutrients. The systems should meet the criteria for nutrient removal of Table 2.2 of AS1546.3:2017.

However, where these systems are not suited to the proposed land use or there are issues with the availability of maintenance personnel, other site specific solutions should be considered.

iii. Proposed land use. The on-site wastewater system should be designed to accommodate hydraulic loads (including seasonal variation) and composition of wastewater generated (including trade waste where applicable).

iv. The availability of systems and maintenance personnel required to service secondary treatment systems in accordance with certification requirements. This is particularly important in rural and remote areas.

v. Secondary treatment systems should only be required in response to site constraints or to manage specific risks to public health, the environment or water resources.

This document outlines that secondary treatment units with nutrient removal are the most appropriate systems, given the soil types and proximity to Wilson Inlet.

## 5 STATE PLANNING POLICY 2.5 RURAL PLANNING

The State Planning Policy 2.5 Rural Planning states:

#### 6.5.1 Servicing Conditions

For wastewater disposal for rural and rural living subdivisions, WAPC policy is:

On-site wastewater disposal is generally acceptable, subject to the appropriate separation from buildings, watercourses, water bodies and/or drinking water sources being demonstrated.

This document has outlined that separation distances can be met.

## 6 **RECOMMENDATIONS**

The requirements of the GSP and Draft SPP 2.9 Planning for Water for the amendment area can be met. Key points are:

- All separation requirements can be met.
- Testing information from Opus (2007) is considered adequate to record maximum winter groundwater levels and soil types.
- Winter groundwater levels were greater than 1.5 m below ground level, as required in a sewage sensitive area.
- The eastern portion of the amendment area may experience perched water on duplex soils during wetter months. These areas may require sand pads to achieve adequate separation. Alternatively, additional testing by new landowners may assist in identifying areas with adequate clearance (depending on where they propose to locate dwellings within the building envelope).

Installation of secondary treatment units with nutrient removal capacity are recommended due to the proximity to Wilson Inlet (sewage sensitive area).

## 7 REFERENCES

**Department of Agriculture Western Australia (2003).** <u>Evaporation Data for Western Australia.</u> <u>Resource Management Technical Report No. 65.</u>

**DoH, Department of Health, (2001)** Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units.

DoH, Department of Health (2019) Guidance on Site and Soil Evaluation for On-site sewage Management

**Department of Planning, Land and Heritage (2019).** Government Sewerage Policy 2019 <u>https://www.dplh.wa.gov.au/government-sewerage-policy</u>

**Department of Planning, Lands and Heritage (2021).** PlanWA. Policy mapping is available online and can be viewed at <a href="https://espatial.dplh.wa.gov.au/PlanWA/Index.html?viewer=PlanWA">https://espatial.dplh.wa.gov.au/PlanWA/Index.html?viewer=PlanWA</a>.

**Department of Water and Environmental Regulation (2016).** <u>Water quality Protection Note 25: Land</u> use Compatibility Tables for Public Drinking Water Source Areas.

Landgate (2021) Locate V: https://maps.slip.wa.gov.au/landgate/locate/

**Standards Australia (2012)** Australian/ New Zealand Standard - On-site Domestic Wastewater Management (AS/NZS 1547:2012).

Western Australian Planning Commission and Department of Planning, Land and Heritage (2021). Draft State Planning Policy 2.9 – Planning for Water.

# **APPENDIX A**

**Test Pit Locations** 

# Figure 5. Site and Soil Evaluation

# Legend

- Feature 1 (No GW data)
- Feature 2 (duplex soils)
- Feature 3 (deeper sands)

N

INDICATIVE CONCEPT PLAN ALL AREAS AND DIMENSIONS ARE SUBJECT URVE 194 3596m<sup>2</sup> 193 3507m<sup>2</sup> 196 Special Residential Lots 185 3023m<sup>2</sup> (min 3000m<sup>2</sup>) PIMELEA VIEW Pt Lot 9008 Beaufortia Gardens Springdale, Shire of Denmark 184 3078m<sup>2</sup> GrP10a  $\bigcirc$ 2 3130m<sup>2</sup> .179 3042m 3045m<sup>2</sup> TP1060m2 TP10 TASSEL 3085m<sup>2</sup> GP10b ORTIA GPP11a 4 180 3055m² 16 3060m2 3175m<sup>2</sup> 12 G7P11 5 3720m<sup>2</sup> Pt 9008 3060m<sup>2</sup> 181 8.1799ha 7259 × GP12 15 GARDEN GP10d 47.2ha GP12b GP11b 11 10 3260m 9 3230m<sup>2</sup> 8 3445m<sup>2</sup> 182 3350m<sup>2</sup> 3700m2 6 14 3105m<sup>2</sup> 3028m<sup>2</sup> 3455m<sup>2</sup> GPP12c Grp11d TP30 O GPP11c 183 GP12a 4067 BAL 40 Proposed Additional Foreshore Reserve POS Bike Track 306 UCL 2719 0 Reserve 122 8.9ha AYTON BAESIOU PLANNING Google-Earth 59 Peels Place ALBANY WA 6330 WILSON INLET Ph 9842 2304 Fax 9842 200 m Sprincolale Beach

# **ATTACHMENT 5**

**BASIC FAUNA ASSESSMENT** 



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# BASIC FAUNA SURVEY AND TARGETED SURVEY THREATENED BLACK COCKATOOS AND WESTERN RINGTAIL POSSUM, LOT 9008 BEAUFORTIA GARDENS, SPRINGDALE BEACH ESTATE, SHIRE OF DENMARK



Prepared For:	LWP Group Pty Ltd PO Box 7568 Cloisters Square PERTH GPO WA 6850
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3 December 2021

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## ATTACHMENTS

#### LIST OF APPENDICES

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# LIST OF ABBREVIATIONS

AHD	Australian Height Datum
ALA	Atlas of Living Australia
ASS	Acid Sulfate Soil
BAL	Bushfire Attack Level
BGL	Below ground level
BOM	Bureau of Meteorology
DAWE	Department of Water and Environment (Commonwealth)
DEE	Department of Environment and Energy
DER	Department of Environment Regulation
DBCA	Department of Biodiversity, Conservation and Attractions
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
ESA	Environmentally sensitive area
ha	Hectare
km	Kilometre
m	Metre
mm	Millimetres
MNES	Matters of National Environmental Significance
PMST	Protected Matters Search Tool
SPP	State Planning Policy
Spp.	Species

## 1 INTRODUCTION

A basic fauna survey with a targeted survey for Western Ringtail Possum and three species of Black Cockatoo has been undertaken by Aurora Environmental for Lot 9008 Beaufortia Gardens, Springdale Beach Estate (the Amendment area) in accordance with:

- *Technical Guidance Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020) to determine the presence of rare, endangered and/or threatened fauna species.
- Department of Agriculture, Water and Environment (DAWE) guidelines *EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species* (Department of Sustainability, Environment, Water, Population and Communities, 2012).

Prior to the commencement of the field survey, a desktop assessment was undertaken to identify relevant environmental information pertaining to the Amendment area and to assist in survey design. The desktop assessment involved a review of:

- General environmental information (climate, soils, topography) relating to the Amendment area. The Opus (2006) fauna and vegetation report has summarised this information, which is still current.
- A review of literature to assess the potential habitats present on the Amendment area (vegetation). The Opus (2006) fauna and vegetation report has summarised this information, which is still current.
- Existing datasets including previous vegetation mapping of the Amendment area aerial photography, geology, soils and hydrology information to provide background information on the variability of the environment, likely vegetation units, fauna habitats and to identify areas with potential to contain Threatened and Priority listed fauna species. Recent and older aerial photographs were compared to determine the current status of vegetation within the amendment area.
- The Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database for fauna species previously recorded within the Amendment area (DBCA, 2020) (Appendix 1).
- DAWE Protected Matters Search Tool (PMST) to identify communities and species listed under the EPBC Act potentially occurring within the Amendment area (DAWE, 2020) (Appendix 2).
- Atlas of Living Australia Database (Appendix 3).
- Birdlife Database (Appendix 4).
# 2 SUBJECT LAND

The amendment area comprises 53.5525 ha and is part of the Springdale Beach Estate Figure 1. The Amendment area abuts the Wilson Inlet foreshore.

## **FIGURE 1: LOCATION**







Source: Indicative Concept Plan (Ayton Baesjou Planning).



## FIGURE 3: AERIAL PHOTOGRAPH AND TOPOGRAPHY

# **3** DESKTOP ASSESSMENT

A NatureMap database search was undertaken on 29 November 2021 for an area of 3 km<sup>2</sup> around the amendment area (Appendix 1) to ensure adequate identification of species that may be present. However, this includes species associated with habitats not present at the Amendment area. The NatureMap database search return identified 50 bird species previously recorded around the amendment area

In addition, an Atlas of Living Australia database search (ALA, 2021) was undertaken on 29 November 2021 for areas within 2 km of the Amendment area. The search indicated that 9 species of gastropod, 13 species of insect, 5 species of frog, 1 species of reptile and 73 species of birds have been recorded. The results are included in Appendix 3.

## 3.1 CONSERVATION SIGNIFICANT FAUNA

The search tools (NatureMap, ALA and EPBC Act Protected Matters Search Tool) identified the presence of habitat, or potential presence of 22 conservation significant fauna species that could be associated with the Amendment area (Appendices 1, 2 and 3; Table A). Table A excludes those species that are exclusively marine, migratory or where there is no suitable habitat present within the Amendment area.

The extent and habitat requirements of these species are documented below. The field portion of the survey included targeted searches for these species and their habitat as described in Section 4.

Based on the desktop assessment, including consideration of vegetation types, habitat and the range of conservation significant fauna, it was decided that a targeted survey for the following species be conducted:

- Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo
- Calyptorhynchus baudinii Baudin's Cockatoo
- Calyptorhynchus latirostris Carnaby's Cockatoo
- Pseudocheirus occidentalis Western Ringtail Possum

## TABLE A: POTENTIAL CONSERVATION SIGNIFICANT FAUNA SPECIES

SPECIES	STATUS: BIODIVERSITY CONSERVATION Act 2016, WILDLIFE CONSERVATION (SPECIALLY PROTECTED FAUNA) NOTICE 2018	STATUS: EPBC ACT	COMMENT
Calyptorhynchus baudinii (Baudin's Cockatoo)	Endangered	Endangered	Database indicates that the survey area may contain suitable habitat for this species.
Calyptorhynchus latirostris (Carnaby's Cockatoo)	Endangered	Endangered	Database indicates that the survey area may contain suitable habitat for this species.
Calyptorhynchus banksii naso (Forest Red-tailed Black- Cockatoo, Karrak)	Vulnerable	Vulnerable	Database indicates that the survey area may contain suitable habitat for this species.
Falco peregrinus (Peregrine Falcon)	Other specially protected fauna		Species may utilise the area but is unlikely to rely on the survey area as the species forages across a large area.
Calidris canutus (Red Knot)	Endangered	Endangered	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. This habitat is not present in the Amendment area and the species is unlikely to be found there.
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. This habitat is not present in the Amendment area and the species is unlikely to be found there.

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SPECIES	STATUS: BIODIVERSITY CONSERVATION Act 2016, WILDLIFE CONSERVATION (SPECIALLY PROTECTED FAUNA) NOTICE 2018	STATUS: EPBC ACT	COMMENT
Calidris tenuirostris (Great Knot)	Critically Endangered	Critically Endangered	Roosting known to occur in Wilson Inlet. The species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. They are occasionally found on exposed reefs or rock platforms, shorelines with mangrove vegetation, ponds in saltworks, at swamps near the coast, salt lakes and non-tidal lagoons. The Great Knot rarely occurs on inland lakes and swamps. This habitat is not present in the Amendment area and the species is unlikely to be found there.
Charadrius leschenaultia (Greater Sand Plover)	Vulnerable	Vulnerable	The species 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. This habitat is not present in the Amendment area and the species is unlikely to be found there.
Charadrius mongolus (Lesser Sand Plover)	Endangered	Endangered	Roosting known to occur in Wilson Inlet. This species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. This habitat is not present in the Amendment area and the species is unlikely to be found there.
Psophodes nigrogularis subsp. nigrogularis (Western Whipbird (western heath))	Endangered	Endangered	The species is unlikely to utilise the Amendment area as it does not contain 'long unburnt' habitat consistent with 'dense heath-like shrubby thickets' on coastal dunes, and mallee woodland or shrubland with an open upper storey above a dense shrubby understorey.
Falco hypoleucos (Grey Falcon)	Vulnerable	Vulnerable	This species utilizes a wide range of habitats across Australia. It is unlikely that the species relies on the Amendment area as habitat.

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SPECIES	STATUS: BIODIVERSITY CONSERVATION Act 2016, WILDLIFE CONSERVATION (SPECIALLY PROTECTED FAUNA) NOTICE 2018	STATUS: EPBC ACT	COMMENT
Halobaena caerulea (Blue Petrel)		Vulnerable	The species breeds on Macquarie Island and is unlikely to rely on the Amendment area as habitat.
Limosa lapponica menzbieri (Northern Siberian Bar-tailed Godwit)	Critically Endangered	Critically Endangered	Habitat includes mudflats and shores. While Wilson Inlet is nearby, the Amendment area does not support habitat suitable for the species and is therefore not likely to rely on the area.
Pandion haliaetus (Osprey)	Migratory birds protected under an international agreement	Migratory Wetlands Species	Species may fly by but is unlikely to rely on the survey area.
Merops ornatus (Rainbow Bee-eater)		Listed Marine Species	Species possibly in the survey area but is unlikely to rely on it.
Pseudocheirus occidentalis (Western Ringtail Possum)	Critically Endangered	Critically Endangered	Database indicates that the area may contain habitat suitable for this species.
Dasyurus geoffroii (Chuditch, Western Quoll)	Vulnerable	Vulnerable	Database indicates that the area may contain habitat suitable for this species. NatureMaps indicates that there are no recent records for this species in the Denmark area (since 1994). The species is unlikely to rely on the Amendment area.
Parantechinus apicalis (Dibbler)	Endangered	Endangered	Dibblers prefer vegetation with a dense canopy greater than 1 m high which has been unburnt for at least 10 years or more. In some locations, the presence of Proteaceous and Myrtaceous flowering shrubs may also be important. The species is not likely to be found in the Amendment area due to the lack of understorey in the proposed development area.

SPECIES	STATUS: BIODIVERSITY CONSERVATION Act 2016, WILDLIFE CONSERVATION (SPECIALLY PROTECTED FAUNA) NOTICE 2018	STATUS: EPBC ACT	COMMENT
Setonix brachyurus (Quokka)	Vulnerable	Vulnerable	The Quokka is a habitat specialist. In the south of its range, quokkas are strongly linked to complex vegetation structure (minimum of three layers), low densities of woody debris and habitat patchiness (between 0 and 450 m to an alternative vegetation age). The Quokka also has relatively high water requirements, which necessitates close proximity to fresh water throughout the year and the species is often present in riparian and swamp habitat. The Amendment area proposed to be developed does not contain habitat suitable for the species.
Galaxiella nigrostriatal (Blackstriped Dwarf Galaxias)	Endangered	Endangered	This species is not found in Wilson Inlet. The Amendment area does not contain suitable habitat for this species.
Nannoperca pygmaea (Little Pygmy Perch)	Endangered		The survey area does not contain habitat suitable for this species.
Nannatherina balstoni (Balston's Pygmy Perch)	Vulnerable	Vulnerable	The survey area does not contain habitat suitable for this species.

Note: Government Gazette (2018) Wildlife Conservation (Specially Protected Fauna) Notice 2018. Appendix 2: Matters of National Environmental Significance (MNES) report (DAWE, 2021). Conservation Codes for WA are included in Appendix 5. Atlas of Living Australia (2021) <u>https://www.ala.org.au/</u>. Conservation categories for EPBC can be found in Section 178 of the EPBC Act (<u>https://www.legislation.gov.au/Details/C2020C00291</u>). Information regarding habitat types was sourced from DAWE Species Profile and Threats Database: https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

## 3.2 CARNABY'S BLACK COCKATOO

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) is endemic to and widespread in the southwest of Western Australia and occurs mostly in the Wheatbelt (areas with between 300mm and 750mm of rainfall annually) and wetter regions including the Swan Coastal Plain and South Coast (Department of the Environment, DoE, 2018b). It occupies an area between 32,000km<sup>2</sup> and 60, 525km<sup>2</sup> (Department of Parks and Wildlife, DPaW, 2013).

The species' habitat mostly comprises uncleared or remnant native eucalypt woodlands, especially those that contain Salmon Gum (*E. salmonophloia*) and Wandoo, and in shrubland or kwongan heathland dominated by *Hakea*, *Banksia* and *Grevillea* species.

Breeding habitat (or sites) encompasses those areas that contain suitable nest trees within the range of the species. Breeding activity is restricted to eucalypt woodlands mainly in the semi-arid and subhumid interior (records from Three Springs District south to the Stirling Range, west to Cockleshell Gully and east to Manmanning) (DoE, 2021b). Breeding records indicate that this species is currently expanding its breeding range westward and south into the Jarrah-Marri forests of the Darling Scarp and into the Tuart (*E. gomphocephala*) forests of the Swan Coastal Plain, including Yanchep area, Lake Clifton and near Bunbury (DoE, 2021b).

The birds nest in large hollows in tall, living or dead eucalypts, mainly smooth-barked Salmon Gums and Wandoo, although other tree species have also been reported (Department Parks and Wildlife, 2013). Suitable hollows can take from 120–150 years to develop. A map prepared by Department of Agriculture, Water and Environment (DAWE) using modelling techniques (Department of Sustainability, Environment, Water, Population and Communities, 2012) indicates that the Springdale Beach Estate is within the breeding range of the species. However, Birdlife Australia (2018; Plate A) indicates that the birds are not known to breed in the area but may use the area for foraging and roosting in summer months. It is noted by DAWE (Department of Sustainability, Environment, Water, Population and Communities, 2012) that birds may be starting to breed at new locations such as the Jarrah - Marri forests and coastal Tuart forest south of Perth (DPaW, 2013).

During the non-breeding season, when most of the cockatoos migrate to the mid-west coast, Swan Coastal Plain and South Coast (DPaW, 2013), they roost in tall native or introduced eucalypts, and occasionally in Marri and pines. Species known to be used for roosting include Flat-topped Yate (*E. occidentalis*), Salmon Gum, Wandoo, Karri, Blackbutt, Tuart, Blue Gum (*E. globulous*, introduced), *Pinus radiata* and *P. pinaster* (DoE, 2021b).

This species is threatened due to the high level of clearing of native vegetation in the Wheatbelt. Carnaby's black-cockatoos will traverse open space but may not use forage resources isolated from roosting habitat by long stretches of cleared agricultural land. A lack of connectivity between patches is "strongly implicated in the failure of Carnaby's cockatoo to survive in heavily cleared and fragmented rural landscapes" (DoE, 2021b). Corridors with breaks of less than 4 km between other foraging, commuting, breeding and roosting sites are considered important to allow the birds to move between areas.

NatureMaps indicates that this species has been recorded in the Denmark area. The MNES database indicates that the survey area could contain habitat suitable for the species.

#### PLATE A: DISTRIBUTION OF CARNABY'S COCKATOO



Source: http://www.birdlife.org/datazone/speciesfactsheet.php?id=1391

#### 3.3 BAUDIN'S BLACK COCKATOO

Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) is listed as Vulnerable under the *EPBC Act 1999* which means the species is facing a high risk of extinction in the wild (DoE, 2021c).

This Cockatoo is found only in the south-west of Western Australia and generally bounded by the 750mm rainfall isohyet (Albany, Gidgegannup and up to Mundaring and inland to the Stirling Ranges and Boyup Brook). Breeding has been recorded between Nornalup, northward to near Bridgetown, Lowden and Harvey (DoE, 2021c). Habitat comprises heavily forested areas dominated by Marri and other Eucalyptus species (particularly Karri and Jarrah). The distribution of the species comprises 40,000km<sup>2</sup> (DoE, 2021c) as shown in Plate B (Birdlife Australia, 2018).

Baudin's Cockatoo nests in hollows in mature trees such as Marri, Karri, Jarrah and Wandoo in the lower south-west of Western Australia (DoE, 2021b). Breeding has been recorded in the far south of the range, in an area extending from Nornalup northward to near Bridgetown, or sometimes further north to Lowden and Harvey (DoE, 2021c). Baudin's Black-Cockatoo roosts are generally located in the tallest trees in or near riparian environments or permanent water (DoE, 2021c).



#### PLATE B: DISTRIBUTION OF BAUDIN'S BLACK COCKATOO

Source: http://www.birdlife.org/datazone/speciesfactsheet.php?id=1390

Loss of habitat and forest management practices (not maintaining older trees) has previously impacted on the species. While the threat from habitat loss has largely abated in recent times (DoE, 2021c) there has been an ongoing decline in population numbers due to illegal shooting and competition for nesting hollows with feral bees, compounded by a low annual reproductive rate.

NatureMaps indicates that this species has been recorded in the Denmark area. The MNES database indicates that the area could contain habitat suitable for the species.

#### 3.4 FOREST RED-TAILED BLACK-COCKATOO

The Forest Red-Tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) is a sub-species endemic to the south west of Western Australia and has been recorded from Gingin in the north and east to Mt Helena, Christmas Tree Well, West Dale (rarely to Brookton), North Bannister (rarely to Wandering) Mt Saddleback, Kojonup, Rocky Gully, upper King River and east to the Green Range (DoE, 2018c; Plate C). The current distribution is estimated to be 52,198km<sup>2</sup> (DoE, 2021d). The species inhabits dense Jarrah, Karri and Marri forests in areas that receive more than 600mm average rainfall annually (DoE, 2021d).

While there are no definitive maps of breeding areas, studies indicate that this cockatoo generally breeds in Marri, Jarrah, Blackbutt and Bullich (*E. megacarpa*) and Wandoo (DoE, 2021d). Nests are generally large, deep hollows with a broad floor and located high up in large 'veteran' trees. In Marri, the nest hollows of the Forest Red-tailed Black Cockatoo range from 8-14 m above ground, the entrance is 12–41 cm in diameter and the depth is 1-5 m (Department of Environment and Conservation, 2008).



#### PLATE C: DISTRIBUTION OF FOREST RED-TAILED BLACK COCKATOO



Key threats to the Forest Red-tailed Black Cockatoo are habitat loss, nest hollow shortage and competition for available nest hollows from other species, injury or death from the European Honeybee (*Apis mellifera*), illegal shooting and fire (DoE, 2021d).

NatureMaps indicates that this species has been recorded in the Denmark area. The MNES database indicates that the area could contain habitat suitable for the species.

#### 3.5 WESTERN RINGTAIL POSSUM

The Western Ringtail Possum (*Pseudocheirus occidentalis*) (WRP) has a patchy distribution from the Collie River to Two Peoples Bay in Western Australia, occurring most commonly in coastal or near coastal forest (DoE, 2021e). While populations of the species on the south west coast of Western Australia appear to prefer a habitat preference for Peppermint trees (*Agonis flexuosa*) (DoE, 2021e), recent studies indicate that the Albany urban population of WRP have a habitat preference for Sheoak (*Allocasuarina fraseriana*), Marri (*Corymbia calophylla*) and Eucalypt (*Eucalyptus marginata* and *E. staeri*) woodlands (Bader *et al.*, 2019). Habitat use may affect densities due to diet and structural factors (Gilfillan, 2008).

In urban areas possums feed on introduced garden species (DPAW, 2017) and captive animals fed on peppermint leaves show a preference for fresh, young green leaves rather than red leaves (Ellis and Jones, 1992). Jones *et al.* (1994) also found that the highest density populations were near-coastal and associated with abundant Peppermint trees with a high continuity of either the canopy or mid-strata, but that many areas with abundant *A. flexuosa* did not support WRPs.

The most inland population of WRP occurs at Perup. The species has been recorded as far north as Dawesville and as far east as Eucla. In the towns of Busselton and Dunsborough, some urban or developed areas support viable populations. Other populations in urban or semi-urban areas occur at Augusta and Albany (Jones *et al.*, 1994). The post-1995 range of the WRP has been calculated at 7,155km<sup>2</sup> (DoE, 2021e).

Processes threatening the occurrence and geographical extent of the species include clearing and habitat fragmentation, urbanisation, fox and cat predation, harvesting of plantation forests, altered fire regimes, road kill, drought, disease and competition with Brush-tail Possums (DoE, 2021).

NatureMap records indicated that there are no records of WRP in the Springdale Beach Estate or Denmark area (Appendix 1). The MNES database indicates that the area could contain habitat suitable for the species.

# 4 RECONNAISSANCE AND FIELD SURVEY METHODOLOGY

The area of investigation included the Amendment area excluding the proposed Foreshore Reserve (Figure 2). Surveys were undertaken by Melanie Price of Aurora Environmental, an experienced environmental scientist and qualified zoologist with an experienced field assistant.

## 4.1 FAUNA HABITAT ASSESSMENT

A fauna habitat assessment was undertaken to document the type, condition and extent of habitats within the survey area. Vegetation, landform and soils units present at the subject site have been used to define broad fauna habitat types. The following information was recorded:

- Habitat structure (e.g. vegetation type, presence/absence of structural layers such as ground cover and mid storey.
- Presence/absence of refuge including: density of ground covers, fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/boulder piles, and the type and extent of each refuge.
- Presence/absence of waterways including type, extent and habitat quality within any waterway.
- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape.
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area.
- Current land use and disturbance history.
- Evaluation of key habitat features and types identified during the desktop assessment relevant to fauna of conservation significance.
- Evaluation of the likelihood of occurrence of conservation significant fauna within the habitat (based on presence of suitable habitat).
- Vegetation condition based on Keighery (2006, Appendix 6).

A representative photograph of each habitat type.

## 4.2 HABITAT TYPE AND CONDITION

Vegetation in proposed Lot 13 (2000 m<sup>2</sup>) comprises Marri and Sheoak Woodland in 'Very Good' Condition. This area will be retained (pending bushfire protection measures). The balance of the Amendment area contains paddock trees (no understorey) of Marri (*Corymbia calophylla*) and Peppermint (*Agonis flexuosa*). This vegetation will be retained (pending bushfire protection measures). The proposed road reserve contains 3000 m<sup>2</sup> of Marri and Peppermint Woodland (no understorey in degraded condition) which will be cleared for access.

Vegetation types are shown in Plates D, E and F.

#### PLATE D: MARRI PEPPERMINT WOODLAND



Note: 2000 m<sup>2</sup> located on proposed Lot 13. Vegetation is in 'Very Good' Condition.

PLATE E: MARRI & PEPPERMINT - SINGLE TREES



Note: Single Peppermint trees in fore and midground. The vegetation is in 'Degraded' condition. Large Marri in left hand background.

#### PLATE D: MARRI & PEPPERMINT - SINGLE TREES



Note: Vegetation has no understory and is in 'Degraded' Condition. Windrow on right comprises pine trees and blue gums that were removed in 2020.



Note: Green areas - vegetation to be retained. Large Marri (seven trees) proposed to be retained. 3000 m2 of vegetation in proposed road reserve (no understorey) to be removed. 1.2 ha of 'Excellent' condition vegetation to be retained in Foreshore Reserve.

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## 4.3 BLACK COCKATOO HABITAT ASSESSMENT

Habitat used by black cockatoos have been placed into three categories by DAWE (Department Sustainability, Environment, Water, Population and Communities, 2012) as shown in Table B:

- Breeding Habitat;
- Foraging Habitat; and
- Night Roosting Habitat.

A habitat assessment of the Amendment area (excluding the proposed Foreshore Reserve) was carried out on 11 November 2021.

HABITAT	BAUDIN'S	CARNABY'S	FOREST RED-TAILED
Breeding	Generally, in woodland or forest, but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of karri ( <i>Eucalyptus</i> <i>diversicolor</i> ), marri ( <i>Corymbia</i> <i>calophylla</i> ), wandoo ( <i>E.</i> <i>wandoo</i> ) and tuart ( <i>E. gomphocephala</i> ).	Generally, in woodland or forest, but also breeds in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of salmon gum ( <i>E. salmonophloia</i> ), wandoo, tuart, jarrah ( <i>E. marginata</i> ), flooded gum ( <i>E. rudis</i> ), York gum ( <i>E. loxophleba subsp.</i> <i>loxophleba</i> ), powderbark ( <i>E. accedens</i> ), karri and marri.	Generally, in woodland or forest, but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of marri, karri, wandoo, bullich ( <i>E. megacarpa</i> ), blackbutt ( <i>E. patens</i> ), tuart and jarrah.
Night roosting	Generally, in or near riparian environments or other permanent water sources. Jarrah, marri, flooded gum, blackbutt ( <i>E. patens</i> ), tuart, and introduced eucalypts including blue gum ( <i>E. globulus</i> ), and lemon scented gum ( <i>Corymbia</i> <i>citriodora</i> ).	Generally, in or near riparian environments or natural and artificial permanent water sources. Flat-topped yate ( <i>E. occidentalis</i> ), salmon gum, wandoo, marri, karri, blackbutt, tuart, introduced eucalypts (for example blue gum) and introduced pines.	Tall jarrah, marri, blackbutt, tuart and introduced eucalypt trees within or on the edges of forests.

#### TABLE B: HABITATS USED BY BLACK COCKATOOS

Source: Department of Sustainability, Environment, Water, Population and Communities (2012).

#### **Breeding Habitat**

Assessment of black cockatoo breeding habitat involves the identification of all suitable breeding trees species within the survey area that have a diameter at breast height (DBH) of over 50cm. If present, the DBH of each tree is estimated using a pre-made 50 cm gauge. The location of each tree identified as being over the threshold DBH is recorded with a GPS and details on tree species, number and size of hollows (if any) noted. The location of trees observed to contain hollows (of any size/type) are

recorded using a GPS. Target tree species include Marri, Jarrah and Karri or any other endemic *Corymbia/Eucalyptus* species of a suitable size that is present. Peppermints, *Banksia*, Sheoak and Melaleuca tree species (for example) are not assessed as they typically do not develop hollows that are used by black cockatoos.

For the purposes of this survey a tree containing a potential cockatoo nest hollow is 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 that had an entrance greater than about 12cm 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 are examined using binoculars 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 is present.

## 4.3.1 Foraging Habitat

Foraging habitat is described in Table C. The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey is recorded, if present. The nature and extent of potential foraging habitat present is also documented irrespective of the presence of any actual foraging evidence.

HABITAT	BAUDIN'S	CARNABY'S	FOREST RED-TAILED
Foraging	Eucalypt woodlands and forest, and proteaceous woodland and heath. During the breeding season feed primarily on native vegetation, particularly Marri ( <i>Corymbia calophylla</i> ). Outside the breeding season, may feed in fruit orchards (mostly apple and pear, but also persimmon) and tips of <i>Pinus</i> spp.	Native shrubland, kwongan heathland and woodland dominated by proteaceous plant species such as <i>Banksia</i> spp., <i>Hakea</i> spp. and <i>Grevillea</i> spp. Forages in pine plantations ( <i>Pinus</i> spp.), eucalypt woodland and forest that contains foraging species. Also, individual trees and small stands of these species.	Jarrah and Marri woodlands and forest, and edges of Karri ( <i>Eucalyptus diversicolor</i> ) forests including Wandoo ( <i>E.</i> <i>wandoo</i> ) and Blackbutt ( <i>E.</i> <i>patens</i> ), within the range of the subspecies.
Foraging: common food items	Mostly marri (seeds, flowers, nectar and grubs) and proteaceous trees and shrubs. Also other native seeds and introduced fruits; insects and insect larvae; pith of kangaroo paw ( <i>Anigozanthos</i> <i>flavidus</i> ); juice of ripe persimmons; tips of <i>Pinus</i>	Seeds, flowers and nectar of native proteaceous plant species (for example, <i>Banksia</i> spp., <i>Hakea</i> spp. and <i>Grevillea</i> spp), eucalypts and <i>Callistemon</i> . Also seeds of introduced species including <i>Pinus</i> spp., <i>Erodium</i> spp., wild radish, canola, almonds and pecan nuts; insects and insect larvae; occasionally	Mostly seeds of marri and jarrah, also <i>Eucalyptus caesia</i> , illyarrie ( <i>E. erythrocorys</i> ) and some introduced eucalypts such as river red gum ( <i>E. camaldulensis</i> ) and flooded gum ( <i>E. grandis</i> ), <i>Allocasuarina</i> cones, fruits of snottygobble ( <i>Persoonia</i> <i>longifolia</i> ) and mountain marri ( <i>Corymbia haematoxylon</i> ). On

#### TABLE C: FORAGING DESCRIPTION FOR THREE SPECIES OF BLACK COCKATOO

spp. and seeds of apples	flesh and juice of apples and	the Swan Coastal Plain, often
and pears.	persimmons.	feed on introduced cape lilac
		(Melia azedarach).

Source: Department of Sustainability, Environment, Water, Population and Communities, 2012

#### 4.3.2 Night Roosting Habitat

Direct and indirect evidence of black cockatoos roosting within trees on site is noted if observed (e.g. branch clippings, droppings or moulted feathers). This included a dusk survey prior to commencement of the nocturnal WRP survey aimed at observing any actual roosting activity at the time of the survey.

## 4.4 WESTERN RINGTAIL POSSUM SURVEY

## 4.4.1 Daytime Survey

A day time survey was undertaken in the Amendment area (excluding proposed Foreshore Reserve) to locate and record dreys, obvious tree hollows, scats and individual WRPs. The day time surveys involved traversing the survey area on foot.

## 4.4.2 Night Time Survey

A night time/ spotlighting survey was undertaken on 2 December 2021. An experienced zoologist and field assistant surveyed the area for one hour (two people hours).

## 4.4.3 Habitat Assessment

Description and comments on the amount and quality of WRP habitat within the survey area are provided based on observations made during the site surveys.

# 5 SURVEY LIMITATIONS

## 5.1 DESKTOP LIMITATIONS

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species in the area. The records from the DBCA searches of threatened flora and fauna provide more accurate information for the general area. However, some records of collections, sightings or trappings cannot be dated and often misrepresent the current range of threatened species.

Seasonal sampling has not been carried out as part of this fauna assessment. The conclusions presented are based on information from Western Australian and Commonwealth databases, field data and the environmental monitoring carried out over a limited period of time. Therefore, the data and interpreted outcomes are indicative of the environmental conditions on the site at the time of the field assessment, as interpreted by an experienced zoologist. It is recognised that site conditions may change over time.

## 5.2 FIELD SURVEY LIMITATIONS

The EPA (2016a) Technical Guide states flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table D. Based on this assessment, the present survey effort has not been subject to any constraints which affect the thoroughness of the assessment and the conclusions which have been formed.

ASPECT	LIMITATION	COMMENT
Sources of information and availability of contextual information.	Nil	Adequate information is available for the survey area, this includes broad scale (1:250,000) mapping by Beard (1979) and digitised by Shepherd <i>et al.</i> (2002), plus a previous flora, vegetation and fauna survey (Opus, 2006).
Scope (what life forms were sampled etc.)	Nil	Following desktop review, reconnaissance and field surveys targeted conservation significant fauna most likely to be present in the survey area.
Proportion of fauna identified, recorded and/or collected	Minor	The fauna survey was undertaken November 2021 and comprised a reconnaissance and targeted survey. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Cryptic species would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. The fauna assessment was aimed at identifying habitat types and conservation significant terrestrial vertebrate fauna likely to be utilising the survey area. A targeted survey for Black Cockatoo habitat and WRP was undertaken.
Completeness and further work which might be	Nil	Adequate coverage of the survey area was undertaken.

#### TABLE D: FIELD SURVEY LIMITATIONS

ASPECT	LIMITATION	COMMENT
needed (e.g. was the relevant area fully surveyed)		
Mapping reliability	Nil	The vegetation was mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard, 1979) and field data and more detailed vegetation mapping, where available. Data was recorded in the field using hand-held GPS tools. Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The GPS units used for this survey are accurate to within ±5 metres on average. Therefore, the data points consisting of coordinates recorded from the GPS may contain slight inaccuracies.
Timing/weather/ season/cycle	Minor	The fauna survey was conducted during Spring (November 2021). The weather conditions during the field survey were mild with no rain. The survey timing is considered appropriate for the survey conducted.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	The survey area is parkland cleared Marri ( <i>Corymbia calophylla</i> ) and Peppermint ( <i>Agonis flexuosa</i> ). No understorey is present.
Intensity (in retrospect, was the intensity adequate)	Nil	The survey area was sufficiently covered by the zoologist and field assistant during the survey.
Resources	Nil	Adequate resources were employed during the field survey. On 11 November 2021. Three hours were spent undertaking the day time survey.
Access restrictions	Minor	Where possible the survey area was accessed on foot and traversed by vehicle.
Experience levels	Nil	The zoologist who executed the survey is suitably qualified and experienced with a Bachelor of Science (Honours) Zoology from the University of Western Australia

# 6 **RESULTS AND DISCUSSION**

## 6.1 FAUNA HABITAT

Vegetation and fauna habitat in the survey area is shown in Figure 4, comprising 2000 m<sup>2</sup> Marri Peppermint Woodland (Very Good condition) and parkland cleared Marri (*Corymbia calophylla*) and Peppermint (*Agonis flexuosa*) woodland (degraded condition).

## 6.2 BLACK COCKATOO HABITAT ASSESSMENT

## 6.2.1 Black Cockatoo Breeding Habitat

Seven Marri trees meeting the DAWE criteria (Department of Sustainability, Environment, Water, Population and Communities, 2012) as habitat trees were observed in the Amendment area (Figure 3). One of the trees had a large hollow, no hollows suitable for nesting were observed.

Mapping prepared by DBCA indicates that the nearest nesting sites for black cockatoos is in the Stirling Ranges (66 km north-east; Appendix 7).

## 6.2.2 Black Cockatoo Foraging Habitat

When nesting, black cockatoos will generally forage within a 6 - 12 km radius of their nesting site. Following breeding, birds assemble into flocks and move across the landscape searching for food, usually foraging within 6 km of a night roost. Because of this mobility, potential for reduced seed set and flowering due to drought, and the irregular or infrequent flowering and fruiting patterns of many of their food sources, large areas of foraging habitat are required to support black cockatoo populations. Table C indicates the preferred foraging habitat for each cockatoo species.

The vegetation remining in the Amendment area (excluding the proposed Foreshore Reserve) contains few trees (e.g. Marri) which would provide high quality foraging for the three species of black cockatoos. However, the remaining trees can be retained within the Special Residential lots.

A small area (2,000 m<sup>2</sup>) of relatively intact vegetation comprising Jarrah Marri Woodland in the south western portion of the Amendment area provides some Myrtaceous and Proteaceous species (such as Marri (*Corymbia calophylla*), Peppermint (*Agonis flexuosa*), Balga (*Xanthorrhoea species*) Banksia seminuda and Hakea sp. This vegetation is proposed to be retained within the Special Residential area.

While some foraging habitat is present, the area to be rezoned to Special Residential is unlikely to significantly impact the three species of Black Cockatoo to the extent that the species would decline. In addition, there are large areas of foraging habitat in the coastal and inland areas of Denmark and Albany. DBCA mapping indicates that potential feeding areas for Carnaby's Black Cockatoos comprises Jarrah forest inland from the coast (Appendix 7). There are significant areas of Jarrah forest within 15km, including Denmark Catchment State Forest, Mount Lindesay National Park and other potential foraging habitat (Quarram Nature Reserve, William Bay National Park, West Cape Howe National Park and coastal reserves managed by the City of Albany).

#### 6.2.3 Black Cockatoo Roosting Habitat

The trees generally favoured by black cockatoos for roosting are included in Table E.

#### TABLE E: NIGHT ROOSTING HABITAT

BAUDIN'S	CARNABY'S	FOREST RED-TAILED
Generally, in or near riparian environments or other permanent water sources. Jarrah, marri, flooded gum, Blackbutt <i>E. patens</i> , tuart, and introduced eucalypts including blue gum <i>E. globulus</i> , and lemon scented gum <i>Corymbia</i> <i>citriodora</i> .	Generally, in or near riparian environments or natural and artificial permanent water sources. Flat-topped yate <i>E.</i> <i>occidentalis</i> , salmon gum, wandoo, marri, karri, blackbutt, tuart, introduced eucalypts (for example blue gum) and introduced pines.	Tall jarrah, marri, blackbutt, tuart and introduced eucalypt trees within or on the edges of forests.

Source: Department of Sustainability, Environment, Water, Population and Communities, 2012

## **Black Cockatoo Habitat Assessment**

Seven trees met the criteria set by DAWE as potentially suitable for black cockatoos to use as nesting habitat, with a diameter of breast height of greater than 50 cm (Department of Sustainability, Environment, Water, Population and Communities, 2012) (Figure 5; Table F). One of the Marri trees had a large hollow (inhabited by feral bees) and another Marri had an incipient hollow. An incipient hollow is not considered suitable for nesting at the current time but may be suitable at some time in the future.

#### FIGURE 5: MARRI TREES MEETING CRITERIA AS HABITAT TREES



SPECIES	EASTING	NORTHING	COMMENT
2 x Corymbia calophylla	117° 23.181'E	34° 58.014'S	One hollow detected (feral bees)
3 x Corymbia calophylla	117° 23.174'E	34° 58.022'S	No hollows detected
Corymbia calophylla	117° 23.173'E	34° 58.030'S	No hollows detected
Corymbia calophylla	117° 23.182'E	34° 58.044'S	Incipient hollow detected

#### TABLE F: TREES WITH DIAMETER AT BREAST HEIGHT OF GREATER THAN 50 CM

There were no observed traces of Black Cockatoo foraging (chewed trees or fruits). The vegetation is considered to be a low to medium value foraging resource for the black cockatoo species.

The trees generally favoured by black cockatoos for roosting are included in Table E.

Seven tall (greater than 20m) Marri (*Corymbia calophylla*) trees are present in the Amendment area. No evidence of roosting was observed.

A review of available data (National Maps DBCA, 2019; DBCA-064) indicates that there are confirmed roosting sites for Black Cockatoos on the western edge of Wilson Inlet, Mount Shadforth, Lowlands and Hay (Appendix 7). There are no known roost sites mapped for the northern edge of Wilson Inlet. The seven Marri trees are proposed to be retained in the lots.

## 6.3 WESTERN RINGTAIL POSSUM

No traces of WRP were identified in the Amendment area (excluding the proposed Foreshore Reserve), including scats, other evidence such as dreys.

## 6.4 OTHER SPECIES

Other common species which were detected as part of the survey included:

- Australian Magpie (*Gymnorhina tibicen*)
- New Holland Honeyeater (Phylidonyris novaehollandiae);
- Kookaburra (\**Dacelo novaeguineae*).

## 6.5 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally sensitive areas (ESA) are declared in *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, Government Gazette No. 55 and comprise:

- World Heritage properties;
- Areas included on the Register of the National Estate, because of its natural heritage value;
- Ramsar, nationally important and conservation category wetlands and the area within 50 metres of the wetland;
- the area covered by vegetation within 50 metres of Threatened flora;
- the area covered by a threatened ecological community;

- A Bush Forever site;
- A declared World Heritage property;
- An area that is included on the Register of the National Estate (natural heritage value)
- Areas covered by the Environmental Protection (Gnangara Mound Crown Land) Policy 1992;
- Areas covered by the Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002;
- Protected wetlands in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998.*

There are no ESAs within the Amendment area. The closest is Mount Lindsay National Park, 13 km to the north west.

# 7 ENVIRONMENTAL APPROVALS AND MANAGEMENT

This section provides advice on potential environmental approvals and referrals likely to be required, based on the ecological values identified within the survey area.

## 7.1 FEDERAL GOVERNMENT

MNES are factors that are protected under the EPBC Act. Referral to Department of Agriculture, Water and the Environment (DAWE) 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 the 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.

The Amendment is likely to result in the clearing of 3000 m<sup>2</sup> of native vegetation in degraded condition to establish the road reserve.

Ceding the 1.2 ha of excellent quality vegetation into the Foreshore Reserve will increase overall foreshore width and consolidate the best quality vegetation adjacent to Wilson Inlet.

Vegetation protection measures will ensure that Marri and Peppermint trees are retained in lots (where clearing is not required for bushfire protection purposes).

Based on the assessment, survey and application of significant impact guidelines, it is considered that no MNES will be significantly impacted by the proposal, and that referral under the EPBC Act is not required.

Table G shows an assessment of this Project against the criteria listed for the three species of Threatened black cockatoo.

MATTER OF NATIONAL ENVIRONMENTAL SIGNIFICANCE	TRIGGERS FOR REFERRAL	COMMENT AND NEED FOR REFERRAL TO DAWE UNDER EPBC ACT
Listed Threatened Species:	Clearing of any known nesting tree.	No trees with suitable hollows are present in the survey area.
Carnaby's Cockatoo (Endangered) Forest Red-tailed Black Cockatoo (Vulnerable) Baudin's Cockatoo	Clearing or degradation of any part of a vegetation community known to contain breeding habitat.	Seven trees with diameter of greater than 50cm at chest height are present in the survey area. However, none contain hollows suitable for Black Cockatoos.
(Vulnerable)	Clearing of more than 1 ha of quality foraging habitat.	Foraging habitat is present (Banksia, Hakea). Less than a hectare of the subject land is proposed to be cleared (road reserve 3,000 m <sup>2</sup> ).
	Clearing or degradation (including pruning of top canopy) of a known roosting project area.	No known roosting areas have been recorded in the survey area and there were no traces of Black Cockatoos roosting.
	Creating a gap or greater than 4 km between patches of Black Cockatoo habitat breeding, foraging or roosting.	Not applicable.
	Uncertainty: Degradation (such as through altered hydrology or fire regimes) of more than 1 ha of foraging habitat.	Not applicable.

#### TABLE G: ASSESSMENT OF SIGNIFICANCE CRITERIA FOR BLACK COCKATOO

#### 7.2 WESTERN AUSTRALIAN GOVERNMENT

#### 7.2.1 Environmental Protection Authority

Scheme amendments are required to be referred to the EPA under Section 48A of the EP Act. In deciding whether a proposal will be subject to the formal environmental impact assessment process, the EPA considers the environmental significance of any potential impacts that may result from the implementation of the scheme. As this project is unlikely to have significant environmental impacts, it is not likely that the amendment will be formally assessed.

## 7.2.2 Department of Water and Environmental Regulation

Clearing of native vegetation is administered by the Department of Water and Environmental Regulation and requires a clearing permit under Part V of the EP Act, except when a project is assessed under Schedule 6 of the Act. Such exemptions include:

*Clearing in accordance with a subdivision approval given by the responsible authority under the <u>Planning and Development Act 2005</u>, including —* 

(a) clearing for the purposes of any development that is deemed by section 157 of that Act to have been approved by the responsible authority; and

(b) clearing in any building envelope described in the approved plan or diagram.'

Other exemptions are prescribed by regulation in the *Environmental Protection (Clearing Native Vegetation) Regulations 2004* as exempt from needing a clearing permit and not in an ESA.

Exemptions for clearing of native vegetation which may apply to this scheme amendment include:

- Clearing to construct a building (Regulation 5, Item 1)
- Clearing for fence lines (Regulation 5, Item 10)
- Clearing for vehicular tracks (Regulation 5, Item 12)
- Clearing for walking tracks (Regulation 5, Item 13)

Each exemption is subject to conditions, which are summarised in Appendix 8.

Based on the Subdivision Guide Plan in Figure 2, an exemption will apply for clearing undertaken as required under the *Planning and Development Act 2005* (such as conditions of subdivision – road construction and installation of services). In addition, the clearing for vehicular tracks, driveways, fences and (approved) dwellings do not require a permit.

However, should clearing be required for non-exempt purposes, a native vegetation clearing application will need to be lodged. DWER will assess the application against the 'Ten Clearing Principles' to determine whether the clearing is likely to be at variance to 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. The clearing principles are included in Table H with an assessment response based on the environmental assessment described in this document.

CLEARING PRINCIPLE	ASSESSMENT RESPONSE
a) – Native vegetation should not be cleared if it comprises a high level of biological diversity	The Amendment area (excluding the proposed Foreshore Reserve) has a low level of biodiversity, with no understorey in most of the area. One fauna habitat type was recorded in the survey area (Marri Peppermint
	<ul> <li>The desktop survey indicated that the area may support a low number of fauna species. The targeted survey for three species of Black Cockatoos indicated:</li> <li>Breeding habitat is not present.</li> </ul>
	<ul> <li>Foraging habitat is present (low to medium value).</li> <li>Roosting for Black Cockatoos in the Amendment area has not been recorded.</li> <li>The proposed development in line with the Amendment will not significantly impact on the biodiversity values of the area as the proposal includes retention of vegetation and replanting of native species.</li> <li>Clearing is not considered to be at variance with this clearing principle.</li> </ul>

#### TABLE H: ASSESSMENT AGAINST CLEARING PRINCIPLES

# CLEARING PRINCIPLE ASSESSMENT RESPONSE

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	<ul> <li>One fauna habitat type was recorded in the survey area (Marri Peppermint woodland, park land cleared). A search of the <i>NatureMap</i> database (DBCA, 2020) indicates that 50 species of birds have been recorded within 3 km of the Amendment area (Appendix 1 In addition, an Atlas of Living Australia database search (ALA, 2021) was undertaken on 29 November 2021 for areas within 2 km of the Amendment area. The search indicated that 9 species of gastropod, 13 species of insect, 5 species of frog, 1 species of reptile and 73 species of birds have been recorded.</li> <li>The desktop survey indicated that the area may support a moderate range of fauna species, potentially including conservation significant species. The targeted survey for WRP did not indicate that the species is present in the area. The results for the three species of Black Cockatoos indicated:</li> <li>Breeding habitat is not present.</li> <li>Foraging habitat is present (low to medium quality).</li> <li>Roosting for Black Cockatoos at the subject land has not been recorded.</li> <li>The targeted fauna survey indicates that with appropriate management, the proposed development will not significantly impact:</li> <li>Three species of Black Cockatoo; or</li> <li>Western Ringtail Possum;</li> <li>Other native fauna species.</li> </ul>
c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No Threatened flora were detected on the subject land (Opus, 2006). Clearing is not considered to be at variance with this clearing principle.
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	No Threatened or Priority ecological communities were detected on the subject land. Clearing is not considered to be at variance with this clearing principle.
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.	Vegetation comprises Clearing is not at variance with this clearing principle. However, the proposal seeks to retain and enhance vegetation with development located on already cleared areas.
f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated	There are no wetlands or watercourses associated with the subject land. Clearing is not at variance with this clearing principle.

CLEARING PRINCIPLE	ASSESSMENT RESPONSE
with a watercourse or wetland.	
g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The soils on the subject land comprise laterite and sandy gravels. Management techniques will be used to reduce the risk of erosion (e.g. dampening down) which will mitigate the impact of wind erosion from any proposed clearing. Clearing is not considered to be at variance with this clearing principle.
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.	There are no DBCA conservation areas abutting the subject land. The Amendment will augment the existing foreshore Reserve by 2.1 ha and retain vegetation in excellent condition. The clearing is not considered to be at variance with this clearing principle.
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.	There are no wetlands, watercourses or groundwater dependent ecosystems that will be impacted on from clearing associated with the proposal. The scheme amendment and subsequent land use is not likely to impact on groundwater levels or quality as Better Urban Water Management principles will be applied via an Urban Water Management Plan. The clearing is not considered to be at variance with this clearing principle.
j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	The subject land is not associated with a flood plain or area subject to flooding. The clearing is not at variance with this clearing principle.

## 7.3 VEGETATION AND HABITAT PROTECTION

Clearing of native vegetation will be minimised, with existing cleared areas used for dwellings where possible. During construction/ subdivision works, demarcation of vegetation to be retained will assist in protection of the area's current values.

# 8 ENVIRONMENTAL ASSESSMENT

Aurora Environmental has reviewed the EPA's Environmental Factors to identify those factors relevant to development of the subject land. The relevant factors identified include the following:

- Flora and Vegetation; and
- Terrestrial Fauna.

In addition, the above factors, Commonwealth listed Matters of National Environmental Significance (MNES) that are regarded to be relevant to the project area include the following:

- Western Ringtail Possum; and
- Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo.

## 8.1 TERRESTRIAL FAUNA

## 8.1.1 Potential Impacts

The potential impacts to terrestrial fauna arising from development of the subject land can be split into direct and indirect impacts. These include the following:

## **Direct Impact**

- Clearing of fauna habitat and habitat fragmentation; and
- Injury / mortality of fauna during construction or due to vehicle strike post-construction.

## Indirect Impacts

• Habitat degradation via indirect impacts such as unauthorised clearing/entry to surrounding areas, spread of weeds and dieback, dust deposition, changes to local hydrology or increased fire risk during construction.

## 8.1.2 Assessment of Impacts

## 8.1.2.1 Loss of Fauna Habitat

The Amendment indicates that approximately 1.2 ha of Excellent quality Marri Peppermint Woodland will be protected in Foreshore Reserve. 2,000 m<sup>2</sup> of 'Very Good' quality Marri Peppermint Woodland will be retained in proposed Lot 13. 3,000 m<sup>2</sup> of degraded quality Marri Peppermint single trees will be removed to allow for construction of a road. Seven Marri habitat trees will be retained on proposed Lots may need to be cleared. Less clearing could be achieved through fine tuning of the concept design.

## 8.1.2.2 Loss of Native Fauna

Clearing for the construction of the road will result in the removal of 3000 m2 of relatively poor quality habitat. However, the impact is not considered to be significant in light of the vegetation retained in the Foreshore Reserve and on the proposed Lots. The risk of direct loss of fauna species is considered to be low.

## 8.1.2.3 Conservation Significant Fauna Species

The predicted impacts to conservation significant fauna from the loss of habitat for the development of the subject land is discussed below.

#### Three Species of Black Cockatoo

The subject land is within the modelled feeding distribution range for the three threatened species of black cockatoo. The fauna survey indicated that the subject land contains some foraging habitat and that the area buffers the periphery of the Wilson Inlet foreshore.

Seven Marri trees with a diameter at breast height greater than 50 cm were identified as potential habitat trees. One tree appeared to have a large hollow, however its depth was not able to be determined. Inspection of the trees did not reveal any hollows suitable for nesting and there was no sign of roosting.

The Amendment area is not considered to be critical habitat for the three threatened species of black cockatoo due to its small size, lack of breeding and roosting habitat and distance to known roosting and breeding areas. Table 3 of the Black Cockatoo Referral Guidelines (DSEWPaC, 2012) indicate that the clearing of more than 1 ha of quality foraging habitat is regarded as high risk of having a significant impact on the species. The construction of the road is likely to require clearing of 0.3 ha of native vegetation (including some Marri trees suitable for foraging). The proposed clearing is not considered to represent a significant impact to black cockatoo habitat.

## Western Ringtail Possum

While within the know range of WRP, there was no evidence of the species during day time searches and evening spotlighting. There are no historic records of WRP on the northern side of Wilson Inlet. However, should WRP respread to the area, the Amendment design has retained the vegetation most suitable for WRP in the extended Foreshore Reserve (1.2 ha).

#### 8.1.2.4 Indirect Impacts

The proposed development has little to no potential to indirectly impact surrounding areas of fauna habitat. Certain activities and design decisions can lead to degradation of habitat values in adjacent bushland areas. These indirect impacts include:

- Unauthorised clearing or entry into surroundings areas causing loss or degradation of fauna habitat;
- Potential spread of weeds and pathogens such as dieback into surrounding bushland leading to degradation of habitat values;
- Modification to local hydrology potentially causing degradation of fauna habitat; and
- Deposition of dust on surrounding vegetation during construction causing loss or degradation of habitat.

These impacts can be readily managed through implementation of strategies during construction and notification of prospective landowners of vegetation protection (particularly for the 2,000 m2 patch of 'Very Good' quality Marri Peppermint Woodland and the 7 Marri habitat trees.

## 8.1.3 Recommended Mitigation and Management

The avoidance, mitigation and management measures considered during the development of the subject land are outlined below:

- Notification to prospective landowners regarding retention of vegetation.
- The presence of a road between Lots and the Foreshore Reserve will reduce the risk of rubbish and garden waste dumping.
- During subdivision construction measures relevant to the management of fauna will be included:
  - Provision of coordinates for clearing extents to the contractor;
  - Plan for site access, wash down areas (if required), parking areas, drainage and fencing;
  - In field demarcation of clearing extents;
  - Requirement to conduct regular inspections of clearing boundaries and document the clearing activities undertaken;
  - Inclusion of fauna management requirements in site induction training;
  - Weed and pathogen hygiene management measures to prevent the introduction and spread of weeds and dieback;
  - Dust suppression measures to reduce dust emissions;
  - Procedures to manage risk of causing fire during construction;
  - Requirement to restrict vehicles and equipment to the construction footprint; and
  - Requirement for regular inspections of waste management.

#### 8.1.4 Predicted Outcome

#### 8.1.4.1 Significant Residual Impacts

With the implementation of the mitigation measures outlined above, it is considered that all indirect impacts can be managed so that adverse impacts on surrounding fauna habitat can be avoided.

## 8.2 VEGETATION AND HABITAT PROTECTION

Clearing of native vegetation will be minimised through:

- 1.2 ha of Excellent quality vegetation incorporated into the Foreshore Reserve;
- Retention of 2000 m2 of 'Very Good' quality vegetation retained in proposed Lot 13;
- Retention of 7 habitat Marri trees on Lot 9, 10 and 12;
- Clearing to establish road reserve with removal of 'Degraded' quality Marri Peppermint Woodland (no understorey).

# 9 **RECOMMENDATIONS**

The recommendations in Table I can form part of the amendment documentation, if appropriate.

## **TABLE I: RECOMMENDATIONS**

ISSUE	RECOMMENDTATIONS	TIMING
Vegetation Protection	Clearing of native vegetation will be minimised through:	Planning,
	<ul> <li>1.2 ha of Excellent quality vegetation incorporated into the Foreshore Reserve;</li> </ul>	operations.
	• Retention of 2000 m2 of 'Very Good' quality vegetation retained in proposed Lot 13;	
	• Retention of 7 habitat Marri trees on Lot 9, 10 and 12;	
	<ul> <li>Clearing to establish road reserve with removal of 'Degraded' quality Marri Peppermint Woodland (no understorey).</li> </ul>	
Approvals	This assessment indicates that development of the Amendment area is not likely to be a controlled action. Therefore, referral to DAWE under the EPBC Act is not considered to be required.	Planning
	Exemptions may apply for the limited clearing of native vegetation. The landowners will need to consider if exemptions apply and where they do not, apply for a clearing permit under Part V of the <i>Environmental Protection Act 1986</i> .	

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#### **APPENDIX 1**

NatureMap Database



#### **Springdale Beach Amendment Area**

Printed by Guest user on 29/11/2021

Query details : Current Names Only=Yes; Core Datasets Only=Yes; Method='By Rectangle'; Extent=117° 22' 40" E, 117° 24' 02" E, 34° 58' 43" S, 34° 57' 15" S;





Bird 1.

2

## **NatureMap Species Report**

Created By Guest user on 29/11/2021

Current Names Only Yes Core Datasets Only Yes Method 'By Rectangle' Extent 117° 22' 40" E, 117° 24' 02" E, 34° 58' 43" S, 34° 57' 15" S Group By Species Group

Naturalised

Species Group	Species	Records
Bird Briopaid (Mass)	50	98
Dicotyledon	4 29	4 32
Hepatic (Liverwort) Lichen	3	3
Monocotyledon	5	6
TOTAL	93	146

24260 Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)

24261 Acanthiza chrysorrhoa (Yellow-rumped Thornbill)

#### Name ID Species Name

3. 24560 Acanthorhynchus superciliosus (Western Spinebill) 4 24312 Anas gracilis (Grey Teal) 24316 Anas superciliosa (Pacific Black Duck) 5. 24561 Anthochaera carunculata (Red Wattlebird) 6 24353 Artamus cyanopterus (Dusky Woodswallow) 7. Barnardius zonarius 8 25598 Cacomantis flabelliformis (Fan-tailed Cuckoo) 9. 10. 25717 Calyptorhynchus banksii (Red-tailed Black-Cockatoo) 11 24734 Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black т Cockatoo) 12 48400 Calyptorhynchus sp. (white-tailed black cockatoo) т 24321 Chenonetta jubata (Australian Wood Duck, Wood Duck) 13. Chroicocephalus novaehollandiae 14. 15 25568 Coracina novaehollandiae (Black-faced Cuckoo-shrike) 25592 Corvus coronoides (Australian Raven) 16 17. 25595 Cracticus tibicen (Australian Magpie) 24322 Cygnus atratus (Black Swan) 18. 19. 30901 Dacelo novaeguineae (Laughing Kookaburra) Egretta novaehollandiae 20. 21. 47937 Elseyornis melanops (Black-fronted Dotterel) 24652 Eopsaltria georgiana (White-breasted Robin) 22. 25622 Falco cenchroides (Australian Kestrel, Nankeen Kestrel) 23. 24 25624 Falco peregrinus (Peregrine Falcon) s 25. 25727 Fulica atra (Eurasian Coot) 26. 25530 Gerygone fusca (Western Gerygone) 24443 Grallina cyanoleuca (Magpie-lark) 27. 24487 Haematopus longirostris (Pied Oystercatcher) 28. 29. 24293 Haliaeetus leucogaster (White-bellied Sea-Eagle) 24491 Hirundo neoxena (Welcome Swallow) 30 31. 25661 Lichmera indistincta (Brown Honeyeater) 32. 25650 Malurus elegans (Red-winged Fairy-wren)

33. 25654 Malurus splendens (Splendid Fairy-wren) Microcarbo melanoleucos 34. 35. 24738 Neophema elegans (Elegant Parrot) 36. 25681 Pardalotus punctatus (Spotted Pardalote) 37. 24648 Pelecanus conspicillatus (Australian Pelican) 25697 Phalacrocorax carbo (Great Cormorant) 38. 39. 24667 Phalacrocorax sulcirostris (Little Black Cormorant) 40 24409 Phaps chalcoptera (Common Bronzewing) 41. 24596 Phylidonyris novaehollandiae (New Holland Honeyeater)

NatureMap is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.



Conservation Code <sup>1</sup>Endemic To Query

		Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
	42.	24841	Platalea flavipes (Yellow-billed Spoonbill)			
	43.	25720	Platycercus icterotis (Western Rosella)			
	44.		Purpureicephalus spurius			
	45.	48096	Rhipidura albiscapa (Grey Fantail)			
	46.	25614	Rhipidura leucophrys (Willie Wagtail)			
	47.	25534	Sericornis frontalis (White-browed Scrubwren)			
	48.	24331	Tadorna tadornoides (Australian Shelduck, Mountain Duck)			
	49.	24845	Threskiornis spinicollis (Straw-necked Ibis)			
	50.	25765	Zosterops lateralis (Grey-breasted White-eye, Silvereye)			
Druce	noid (M	)				
БГУС	spsia (ivi	055)	Dreutelia officia			
	51.	32327				
	52.	32363	Fissidens curvatus			
	53.	32369	Fissidens tenelius			
	54.	32450	i ricnostomum eckellanum			
Dico	otyledon					
	55.	3363	Acacia hastulata			
	56.	35624	Acacia pentadenia subsp. pentadenia			
	57.	3713	Bossiaea linophylla			
	58.	10861	Callistachys lanceolata (Wonnich)			
	59.	11799	Cassytha racemosa forma racemosa			
	60.	3760	Chorizema reticulatum (Showy Flame Pea)			
	61.	15610	Conospermum caeruleum subsp. caeruleum			
	62.	7444	Dampiera hederacea (Karri Dampiera)			
	63.	7452	Dampiera leptoclada (Slender-shooted Dampiera)			
	64.	7462	Dampiera pedunculata			
	65.	5508	Darwinia citriodora (Lemon-scented Darwinia)			
	66.	3867	Dipogon lignosus (Dolichos Pea)	Y		
	67.	3891	Gastrolobium bilobum (Heart Leaf Poison)			
	68.	3965	Hovea elliptica (Tree Hovea)			
	69.	4028	Jacksonia spinosa			
	70.	4036	Kennedia carinata			
	71.	4037	Kennedia coccinea (Coral Vine)			
	72.	6396	Leucopogon glabellus			
	73.	40941	Leucopogon obovatus subsp. revolutus			
	74.	6454	Leucopogon verticillatus (Tassel Flower)			
	75.	5987	Melaleuca viminea (Mohan)			
	76.	7348	Opercularia hispidula (Hispid Stinkweed)			
	77.	7646	Scaevola striata (Royal Robe)			
	78.	31931	Sphenotoma capitata			
	79.	31951	Sphenotoma parviflora			
	80.	7774	Stylidium piliferum (Common Butterfly Triggerplant)			
	81.	20114	Taxandria fragrans			
	82.	5097	Thomasia rhynchocarpa			
	83.	33438	Trymalium odoratissimum subsp. trifidum			
Hon	atic (Live	arwort)				
nep	84		Anthoceros punctatus			
	85		Chaetophyllopsis whiteleagei			
	86		Riccardia bininnatifida			
	50.					
Lich	en					
	87.	27680	Cladonia floerkeana			
	88.	27850	Megalaria grossa			
Mon	ocotvler	lon				
	89.	197	Amphipogon debilis			
	90.	1407	Anigozanthos flavidus (Tall Kangaroo Paw)			
	91.	17241	Austrostipa hemipogon			
	92.	376	Eragrostis curvula (African Lovegrass)	Y		
	93.	1150	Xyris lanata	·		

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 2 4 - Priority 4 5 - Priority 5

<sup>1</sup> 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.

NatureMap is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.





#### Historic Records of Carnaby's Black Cockatoo

Printed by Guest user on 29/11/2021

Query details : Name=Calyptorhynchus latirostris; Current Names Only=Yes; Core Datasets Only=Yes





#### Historic Records of Baudin's Cockatoo

Printed by Guest user on 29/11/2021

Query details : Name=Calyptorhynchus baudinii; Current Names Only=Yes; Core Datasets Only=Yes





#### Historic Records of Forest Red-tail Black Cockatoo

Printed by Guest user on 29/11/2021

Query details : Common Name=%Forest red-tailed black cockatoo%; Current Names Only=Yes; Core Datasets Only=Yes



https://naturemap.dbca.wa.gov.au/Forms/Map/MapPrintPreview.aspx



#### **Historic Records of Western Ringtail Possum**

Printed by Guest user on 29/11/2021

Query details : Common Name=%western ringtail possum%; Current Names Only=Yes; Core Datasets Only=Yes



https://naturemap.dbca.wa.gov.au/Forms/Map/MapPrintPreview.aspx



#### Historic Records for Dasyurus geoffroii

Printed by Guest user on 29/11/2021 Query details : Name=Dasyurus geoffroii; Current Names Only=Yes; Core Datasets Only=Yes



#### **APPENDIX 2**

Protected Matters Search Tool



# **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: 29-Nov-2021

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:	1
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	65
Listed Migratory Species:	64

#### 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

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 http://www.environment.gov.au/heritage

A <u>permit</u> 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:	5
Commonwealth Heritage Places:	None
Listed Marine Species:	84
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	21
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	12
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

# **Details**

#### Matters of National Environmental Significance

Commonwealth Marine Area Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
EEZ and Territorial Sea	In buffer area only

#### Listed Threatened Ecological Communities

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
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species		[Res	source Information ]
Status of Conservation Dependent and Ex Number is the current name ID.	xtinct are not MNES unde	r the EPBC Act.	
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Endangered	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	In feature area

[Resource Information]

[Resource Information]

occur within area

Calidris tenuirostris Great Knot [862]

**Critically Endangered** Roosting known to In feature area occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 known to occur within area	In feature area
Charadrius mongolus			
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Dasvornis longirostris			
Western Bristlebird [515]	Endangered	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 feature area
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
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	Foraging, feeding or related behaviour	In feature area

likely to occur within area

Vulnerable

Species or species In feature area habitat may occur within area

Halobaena caerulea Blue Petrel [1059]

Falco hypoleucos Grey Falcon [929]

Vulnerable

Species or species habitat may occur within area In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri			
Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area	In feature area
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	Species or species habitat may 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
Pachyntila turtur subantarctica			
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phoehetria fusca			
Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pterodroma mollis			
Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula nereis nereis			
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour 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 feature area

Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black- browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Zanda baudinii listed as Calvptorhvnchus	baudinii		
Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
Zanda latirostris listed as Calvptorhynchu	s 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 nigrostriata			
Blackstriped Dwarf Galaxias, Black- stripe Minnow [88677]	Endangered	Species or species habitat known to 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
Nannonerca nyomaea			
Little Pygmy Perch [88315]	Endangered	Species or species habitat known to occur within area	In buffer area only
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Species or species	In buffer area only

habitat may occur within area

Balaenoptera musculus Blue Whale [36]

Endangered

Species or species In feature area habitat likely to occur within area

Balaenoptera physalus Fin Whale [37]

Vulnerable

Species or species In buffer area only habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Megaptera novaeangliae			
Humpback Whale [38]	Vulnerable	Species or species habitat 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 anicalis			
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 likely to occur within area	In feature area
Setonix brachvurus			
Quokka [229]	Vulnerable	Species or species habitat known 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 brownii			
Brown's Banksia, Feather-leaved Banksia [8277]	Endangered	Species or species habitat may occur	In buffer area only

within area

# Banksia goodiiVulnerableSpecies or species<br/>habitat known to<br/>occur within areaIn buffer area only<br/>habitat known to<br/>occur within areaCaladenia christineae<br/>Christine's Spider Orchid [56716]VulnerableSpecies or species<br/>habitat known to<br/>occur within areaIn buffer area only<br/>habitat known to<br/>occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia harringtoniae		0	
orchid [56786]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calectasia cyanea			
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Commersonia apella			
Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Conostylis misera			
Grass Conostylis [21320]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diuris micrantha			
Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Drakaea micrantha			
Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known 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 buffer area only
Kennedia glabrata			
Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Sphenotoma drummondii			
Mountain Paper-heath [21160]	Endangered	Species or species habitat may occur within area	In buffer area only

Verticordia apecta

#### Hay River Featherflower, Scruffy Verticordia [65545]

## Critically Endangered

Species or species In feature area habitat may occur within area

#### REPTILE

#### Caretta caretta

Loggerhead Turtle [1763]

Endangered

Breeding likely to occur within area

In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Chelonia mydas</u> Green Turtle [1765]	Vulnerable	Species or species habitat may occur	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
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
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 feature area
Listed Migratory Species		[Res	source 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 feature area

Ardenna grisea

Sooty Shearwater [82651]

Species or species In buffer area only habitat may occur within area

Diomedea antipodensis

Antipodean Albatross [64458]

Vulnerable

Foraging, feeding or In buffer area only related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea dabbenena			
Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
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	Foraging, feeding or related behaviour likely to occur within area	In feature area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area	In feature area
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	Species or species habitat may occur within area	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species	In buffer area only

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Species or species In buffer area only habitat likely to occur within area

Thalassarche carteri

Indian Yellow-nosed Albatross [64464]

Vulnerable

Species or species habitat likely to occur In feature area within area

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 feature area
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	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Migratory Marine Species			
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	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	In feature area
		habitat likely to occur within area	
Balaenoptera physalus		habitat likely to occur within area	
Balaenoptera physalus Fin Whale [37]	Vulnerable	habitat likely to occur within area Species or species habitat may occur within area	In buffer area only

Pygmy Right Whale [39]

Foraging, feeding or In buffer area only related behaviour may occur within area

Carcharhinus longimanus Oceanic Whitetip Shark [84108]

Species or species In feature area habitat may occur within area

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 feature area
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
Dermochelvs coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis a	australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
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]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
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	In buffer area only

within area

#### Orcinus orca Killer Whale, Orca [46]

Species or species In feature area habitat may occur within area

Physeter macrocephalus Sperm Whale [59]

Species or species In buffer area only habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
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]		Roosting known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris alba			
Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Endangered	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
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area

Calidris ruficollis

Red-necked Stint [860]

Roosting known to In feature area occur within area

Calidris subminuta Long-toed Stint [861]

Roosting known to In feature area occur within area

Calidris tenuirostris Great Knot [862]

Critically Endangered Roosting known to In feature area occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus			
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Gallinado megala			
Swinhoe's Snipe [864]		Roosting likely to occur within area	In buffer area only
Gallinado stenura			
Pin-tailed Snipe [841]		Roosting known to occur within area	In feature area
<u>Glareola maldivarum</u>			
Oriental Pratincole [840]		Roosting known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa			
Black-tailed Godwit [845]		Roosting known to occur within 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
Numenius minutus			
Little Curlew, Little Whimbrel [848]		Roosting 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

Pluvialis fulva

Pacific Golden Plover [25545]

Pluvialis squatarola Grey Plover [865]

Tringa glareola Wood Sandpiper [829] Roosting known to occur within area In feature area

Roosting known to In feature area occur within area

Roosting known to occur within area In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
<u>Tringa stagnatilis</u> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
<u>Xenus cinereus</u> Terek Sandpiper [59300]		Roosting known to occur within area	In feature area

## Other Matters Protected by the EPBC Act

Commonwealth Lands	[R	esource 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 - [51621]	WA	In buffer area only			
Commonwealth Land - [51614]	WA	In buffer area only			
Commonwealth Land - [51440]	WA	In buffer area only			
Commonwealth Land - [50307]	WA	In buffer area only			
Commonwealth Land - [51396]	WA	In buffer area only			

Listed Marine Species		[ <u>R</u> e	esource Information ]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area



#### Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]

Species or species In feature area habitat likely to occur within area overfly marine area

Foraging, feeding or In feature area related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Ardenna grisea as Puffinus griseus</u>			
Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
Arenaria interpres			
Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
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]		Roosting known to occur within area	In feature area
Calidris alba			
Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Endangered	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
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]		Roosting known to occur within area	In feature area

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#### Calidris subminuta Long-toed Stint [861]

Roosting known to In feature area occur within area overfly marine area

Calidris tenuirostris Great Knot [862]

Critically Endangered Roosting known to In feature area occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus			
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Charadrius ruficapillus			
Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
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 feature area
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
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	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago megala			

#### Swinhoe's Snipe [864]

Roosting likely to In buffer area only occur within area overfly marine area

Roosting known to occur within area

In feature area

overfly marine area

Roosting known to occur within area overfly marine area In feature area

Gallinago stenura Pin-tailed Snipe [841]

Glareola maldivarum Oriental Pratincole [840]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster			
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Halobaena caerulea			
Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Himantopus himantopus			
Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area
Hydroprogne caspia as Sterna caspia			
Caspian Tern [808]		Breeding known to occur within area	In feature area
Larus pacificus			
Pacific Gull [811]		Foraging, feeding or related behaviour 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]		Roosting known to occur within area overfly marine area	In feature area
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	Species or species habitat may occur within area	In buffer area only

Merops ornatus

Rainbow Bee-eater [670]

Motacilla cinerea Grey Wagtail [642] Species or species In feature area habitat may occur within area overfly marine area

Species or species In feature area habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius minutus			
Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only
Onvchoprion anaethetus as Sterna anaet	hetus		
Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Pachyntila turtur			
Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoehetria fusca			
Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pluvialis fulva			
Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Pluvialis squatarola			
Grey Plover [865]		Roosting known to occur within area overfly marine area	In feature area
Pterodroma mollis			
Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Puffinus assimilis

Little Shearwater [59363]

Foraging, feeding or In buffer area only related behaviour known to occur within area

Recurvirostra novaehollandiae Red-necked Avocet [871]

Roosting known to In feature area occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stercorarius skua as Catharacta skua			
Great Skua [823]		Species or species habitat may 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 feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
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	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thinomis cucullatus as Thinomis rubricoll	is		
Hooded Dotterel, Hooded Plover [87735]	<u></u>	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa glareola			
Wood Sandpiper [829]		Roosting known to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank		Species or species	In feature area



Species or species In feature area habitat known to occur within area overfly marine area

Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]

Roosting known to occur within area In feature area overfly marine area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Xenus cinereus</u> Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In feature area
Fish			
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
<u>Campichthys galei</u> Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
<u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside- down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
<u>Leptoichthys fistularius</u> Brushtail Pipefish [66248]		Species or species habitat may occur within area	In feature area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In feature area
<u>Lissocampus runa</u> Javelin Pipefish [66251]		Species or species habitat may occur	In feature area

within area

Maroubra perserrata Sawtooth Pipefish [66252]

Species or species In feature area habitat may occur within area

Nannocampus subosseus

Bonyhead Pipefish, Bony-headed Pipefish [66264] Species or species In feature area habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notiocampus ruber			
Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phycodurus eques			
Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus			
Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris			
Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis			
Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus			
Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra			
Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris			
Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer			
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area

Vanacampus phillipi Port Phillip Pipefish [66284]

Vanacampus poecilolaemus

Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]

Species or species habitat may occur within area In feature area

Species or species habitat may occur In feature area within area



Scientific Name	Threatened Category	Presence Text	Buffer Status
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur- seal [20]		Species or species habitat likely to occur within area	In feature area
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
<u>Chelonia mydas</u> 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		[ Res	source Information
Current Scientific Name Mammal	Status	Type of Presence	Buffer Status
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	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 In feature area habitat likely to occur within area

### Balaenoptera physalus

Fin Whale [37]

Vulnerable

Species or species In buffer area only habitat may occur within area

Berardius arnuxii

Arnoux's Beaked Whale [70]

Species or species In buffer area only habitat may occur within area

Current Scientific Name	Status	Type of Presence	Buffer Status
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
<u>Delphinus delphis</u> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
<u>Feresa attenuata</u> Pygmy Killer Whale [61]		Species or species habitat may occur within area	In buffer area only
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area	In buffer area only
<u>Globicephala melas</u> Long-finned Pilot Whale [59282]		Species or species habitat may occur within area	In buffer area only
<u>Grampus griseus</u> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area	In buffer area only
Kogia sima as Kogia simus Dwarf Sperm Whale [85043]		Species or species habitat may occur within area	In buffer area only

Lagenorhynchus obscurus Dusky Dolphin [43]

Lissodelphis peronii

Southern Right Whale Dolphin [44]

Species or species In buffer area only habitat may occur within area

Species or species In buffer area only habitat may occur within area
Current Scientific Name	Status	Type of Presence	Buffer Status
Megaptera povaeangliae	Oldius		Durier Otatus
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Mesoplodon bowdoini			
Andrew's Beaked Whale [73]		Species or species habitat may occur within area	In buffer area only
Mesoplodon densirostris			
Blainville's Beaked Whale, Dense- beaked Whale [74]		Species or species habitat may occur within area	In buffer area only
Mesoplodon gravi			
Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area	In buffer area only
Mesoplodon hectori			
Hector's Beaked Whale [76]		Species or species habitat may occur within area	In buffer area only
Mesoplodon lavardii			
Strap-toothed Beaked Whale, Strap- toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area	In buffer area only
Mesoplodon mirus			
True's Beaked Whale [54]		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 feature area
Peponocephala electra			
Melon-headed Whale [47]		Species or species habitat may occur within area	In buffer area only

Physeter macrocephalus Sperm Whale [59]

Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin

[52]

Species or species In buffer area only habitat may occur within area

Species or species In buffer area only habitat may occur within area

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops aduncus			
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str.			
Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area
Ziphius cavirostris			
Cuvier's Beaked Whale, Goose-beake Whale [56]	ed	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
McIntosh Road	Nature Reserve	WA	In buffer area only
McLean Road	Nature Reserve	WA	In buffer area only
Mount Lindesay	National Park	WA	In buffer area only
Mount Shadforth	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0017)	Conservation Covenant	WA	In buffer area only
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 (0120A)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0137)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0140)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0142)	Conservation Covenant	WA	In buffer area only

NTWA Bushland covenant (0143)	Conservation Covenant	WA	In buffer area only
Redmond Road	Nature Reserve	WA	In buffer area only
Rudyard Beach	Nature Reserve	WA	In buffer area only
Scotsdale Road	Nature Reserve	WA	In buffer area only
Tennessee North	Nature Reserve	WA	In buffer area only
Unnamed WA15623	5(1)(g) Reserve	WA	In buffer area only

Protected Area Name	Reserve T	Гуре	State	Э	Bu	ffer Status
Unnamed WA27398	5(1)(g) Re	eserve	WA		In	buffer area only
Unnamed WA46405	5(1)(h) Re	eserve	WA		In	buffer area only
West Cape Howe	National F	Park	WA		In	buffer area only
William Bay	National F	Park	WA		In	buffer area only
Regional Forest Agreements				<u>[ Re</u>	<u>sou</u>	rce Information ]
Note that all areas with completed RFA	As have been i	included.				
RFA Name			State	Э	Bu	ffer Status
South West WA RFA			Wes	tern Australia	In	buffer area only
EPBC Act Referrals				<u>[ Re</u>	<u>sou</u>	rce Information ]
Title of referral	Reference	Referral Outc	ome	Assessment Sta	atus	Buffer Status
Not controlled action						
Denmark East Development Precinct (clearing for eastern precinct)	2016/7835	Not Controlled Action	b	Completed		In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	b	Completed		In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	b	Completed		In feature area
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub- basin	2004/1700	Not Controlled Action	b	Completed		In buffer area only
Wind Farm development	2005/2105	Not Controlled Action	b	Completed		In buffer area only
Not controlled action (particular manne	er)					
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Partic Manner)	d ular	Post-Approval		In feature area

Biologically Important Areas			
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna carneipes			
Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur	In buffer area only
Eudyptula minor			
Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
<u>Hydroprogne caspia</u> Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
<u>Sternula nereis</u> Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur	In buffer area only
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur	In buffer area only
<u>Eubalaena australis</u> Southern Right Whale [40]	Calving buffer	Known to occur	In buffer area only
Eubalaena australis Southern Right Whale [40]	Seasonal calving habitat	Known to occur	In buffer area only

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 are 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

### 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

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

### 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
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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Atlas of Living Australia Databases

SPECIES NAME	SCIENTIFIC NAME AUTHORSHIP	VERNACULAR NAME	INVASIVE
Kalotermes hilli	Emerson in Snyder, 1949		
Kalotermes aemulus	Sewell & Gay, 1978		
Coptotermes acinaciformis raffrayi	Wasmann, 1900	Subterranean Termite	
Heterotermes platycephalus	Froggatt, 1897		
Amitermes obeuntis	(Silvestri, 1909)		
Hesperotermes infrequens	(Hill, 1927)		
Nasutitermes exitiosus	(Hill, 1925)		
Occasitermes occasus	(Silvestri, 1909)		
Xylochomitermes occidualis	(Gay, 1971)		
Ctenaphides porcellus	Pascoe, 1870		
Saprinus (Saprinus) laetus	Erichson, 1834		
Melangyna (Austrosyrphus) viridiceps	(Macquart, 1847)		
Apis (Apis) mellifera	Linnaeus, 1758		GRIIS - Global Register of Introduced and Invasive Species - Australia   Non-native species
Litoria adelaidensis	(Gray, 1841)	Slender Tree Frog	
Heleioporus eyrei	(Gray, 1845)	Moaning Frog	
Limnodynastes dorsalis	(Gray, 1841)	Bullfrog	
Crinia glauerti	Loveridge, 1933	Glauert's Froglet	
Crinia georgiana	Tschudi, 1838	Tschudi's Froglet	
Anas (Anas) superciliosa	Gmelin, 1789	Grey duck	
Anas (Nettion) gracilis	Buller, 1869	Grey teal	
Chenonetta jubata	(Latham, 1801)	Maned Duck	
Cygnus (Chenopis) atratus	(Latham, 1790)	Black Swan	
Tadorna (Casarca) tadornoides	(Jardine & Selby, 1828)	Grunter	
Elseyornis melanops	(Vieillot, 1818)	Black-fronted Dotterel	
Haematopus fuliginosus fuliginosus	Gould, 1845	Sooty Oystercatcher	
Haematopus longirostris	Vieillot, 1817	Australian Pied Oystercatcher	
Chroicocephalus novaehollandiae	(Stephens, 1826)	Silver Gull	
Larus (Larus) pacificus georgii	P.P. King, 1826		
Ardea (Ardea) pacifica	Latham, 1801	White-necked Heron	
Egretta novaehollandiae	(Latham, 1790)	White-faced Heron	
Platalea (Platibis) flavipes	Gould, 1838	Yellow-billed Spoonbill	
Threskiornis moluccus	(Cuvier, 1829)	Australian White Ibis	
Threskiornis spinicollis	(Jameson, 1835)	Straw-necked Ibis	
Phaps (Phaps) chalcoptera	(Latham, 1790)	Common Bronzewing	
Dacelo (Dacelo) novaeguineae	(Hermann, 1783)	Kookaburra	GRIIS - Global Register of Introduced and Invasive Species - Australia
Cacomantis (Vidgenia) flabelliformis	(Latham, 1801)	Fan-tailed Cuckoo	
Circus approximans	Peale, 1848	Kahu	
Haliaeetus (Pontoaetus) leucogaster	(Gmelin, 1788)	white-bellied sea-eagle	
Hieraaetus (Hieraaetus) morphnoides	(Gould, 1841)	Little Eagle	
Lophoictinia isura	(Gould, 1838)	Square-tailed Kite	
Falco (Tinnunculus) cenchroides	Vigors & Horsfield, 1827	Nankeen Kestrel	
Falco (Ieracidea) berigora occidentalis	Gould, 1844		
Fulica atra	Linnaeus, 1758	Eurasian Coot	
Porphyrio (Porphyrio) porphyrio melanotus	Temminck, 1820		
Acanthiza (Acanthiza) apicalis	Gould, 1847	Inland Thornbill	
Acanthiza (Geobasileus) chrysorrhoa	(Quoy & Gaimard, 1830)	Yellow-tail	
Acanthiza (Geobasileus) inornata	Gould, 1841	Western Thornbill	
Gerygone fusca	(Gould, 1838)	Western Gerygone	
Sericornis (Sericornis) frontalis	(Vigors & Horsfield, 1827)	White-browed Scrubwren	
Sericornis (Sericornis) frontalis maculatus	Gould, 1847		
Smicrornis brevirostris	(Gould, 1838)	Weebill	
Artamus (Angroyan) cyanopterus	(Latham, 1801)	Dusky Woodswallow	
Gymnorhina tibicen	(Latham, 1801)	Australian Magpie	GRIIS - Global Register of Introduced and Invasive Species - Australia
Gymnorhina tibicen dorsalis	A.J. Campbell, 1895		GRIIS - Global Register of Introduced and Invasive Species - Australia
Coracina (Coracina) novaehollandiae	(Gmelin, 1789)	Black-faced cuckoo-shrike	

SPECIES NAME	SCIENTIFIC NAME AUTHORSHIP	VERNACULAR NAME	INVASIVE
Corvus coronoides	Vigors & Horsfield, 1827	Australian Raven	GRIIS - Global Register of Introduced and Invasive Species - Australia   Non-native
			species   Pest animals
Stagononleura (Zonaeginthus) oculata	(Quoy & Gaimard 1830)	Red-eared Eiretail	list
Hirundo (Hirundo) neoxena	Gould, 1843	Welcome Swallow	
Petrochelidon (Hylochelidon) nigricans	(Vieillot, 1817)	Tree Martin	
Malurus (Malurus) splendens	(Quoy & Gaimard, 1830)	Splendid Fairy-wren	
Malurus (Leggeornis) elegans	Gould, 1837	Red-winged Fairy-wren	
Acanthorhynchus superciliosus	Gould, 1837	Western Spinebill	
Anthochaera (Anthochaera) carunculata	(Shaw, 1790)	Red wattlebird	
Anthochaera (Anellobia) lunulata	Gould, 1838	Western Wattlebird	
Lichmera (Lichmera) indistincta	(Vigors & Horsfield, 1827)	Brown Honeyeater	
Melithreptus (Melithreptus) chloropsis	Gould, 1848		
Phylidonyris (Meliornis) novaehollandiae	(Latham, 1790)	New Holland Honeyeater	
Grallina cyanoleuca	(Latham, 1801)	Magpie-lark	GRIIS - Global Register of Introduced and Invasive Species - Australia
Anthus (Anthus) novaeseelandiae	(Gmelin, 1789)	Australian Pipit	
Pachycephala (Pachycephala) occidentalis	E.P. Ramsay, 1878	Western Whistler	
Pardalotus (Pardalotinus) striatus	(Gmelin, 1789)	Striated Pardalote	
Pardalotus (Pardalotus) punctatus	(Shaw, 1792)	Spotted Pardalote	
Eopsaltria (Quoyornis) georgiana	(Quoy & Gaimard, 1830)	White-breasted Robin	
Rhipidura (Rhipidura) albiscapa	Gould, 1840	Grey Fantail	
Rhipidura (Sauloprocta) leucophrys	(Latham, 1801)		
Zosterops lateralis	(Latham, 1801)	Australian pelican	
Microcarbo melanoleucos	(Vieillot 1817)	Little Pied Cormorant	
Phalacrocorax (Phalacrocorax) sulcirostris	(Prandt 1837)	Little Black Cormorant	
Phalacrocorax (Phalacrocorax) varius	(Gmelin, 1789)	Pied Cormorant	
Phalacrocorax (Phalacrocorax) carbo	(Linnaeus, 1758)	Great Cormorant	
Poliocephalus poliocephalus	(Jardine & Selby, 1827)	Hoary-headed Grebe	
Tachybaptus novaehollandiae	(Stephens, 1826)	Australasian Little Grebe	
Pterodroma (Pterodroma) macroptera macroptera	(A. Smith, 1840)		
Eolophus roseicapilla	(Vieillot, 1817)	Galah	
Barnardius zonarius	(Shaw, 1805)	Australian Ringneck	
Neophema (Neonanodes) elegans	(Gould, 1838)	Elegant Parrot	
Parvipsitta porphyrocephala	(Dietrichsen, 1837)	Purple-crowned Lorikeet	
Platycercus (Violania) icterotis	(Temminck & Kuhl, 1820)	Western Rosella	
Purpureicephalus spurius	(Kuhl, 1820)	Red-capped Parrot	
Eudyptula minor	(J.R. Forster, 1781)	Little Penguin	
Notechis scutatus	(Peters, 1861)	Tiger Snake	GRIIS - Global Register of Introduced and Invasive Species - Australia
Cominella (Josepha) tasmanica	Tenison-Woods, 1876	Tasmanian Buccinum Whelk	
Dentimitrella menkeana	(Reeve, 1859)	Menke's Dove Shell	
Euplica bidentata	(Menke, 1843)		
Conus (Virroconus) dorreensis	PA©ron, 1807	Chocolate-banded Cone	
Hipponix australis	(Lamarck, 1819)	horse hoof limpet	Global Invasive Species Information Network (GISIN)
Bothriembryon (Bothriembryon) kingii	(Gray, 1825)		
Chlorodiloma crinita	(Philippi, 1849)		
Prothalotia pulcherrimus	(Wood, 1828)	Crimson Lip Weed Shell	
Priasianella angasi	Crosse, 1864		
ravolaschia Calocera			
Anthoceros			
Breutelia affinis	(Hook ) Mitt		
Fissidens curvatus	Hornsch.		
Fissidens tenellus	Hook.f. & Wilson		
Trichostomum eckelianum	R.H.Zander		
Lemnoideae	Engl.		
Lomandra brittanii	T.S.Choo		
Thysanotus glaucifolius	Brittan		

SPECIES NAME	SCIENTIFIC NAME AUTHORSHIP	VERNACULAR NAME	INVASIVE
Caladenia brownii	Hopper		
Dampiera	R.Br.		
Dampiera hederacea	R.Br.		
Dampiera leptoclada	Benth.		
Dampiera pedunculata	Raiput & Carolin		
Scaevola			
Scaevola striata	R Br		
Station piliforum			
	N.DI.		
		<b>F</b>	
Anigozanthos flavidus	RedoutA©	Evergreen kangaroo paw	
Anigozanthos preissi	Endl.		
Macrozamia riedlei	(Fisch. ex Gaudich.) C.A.Gardner		
Leucopogon glabellus	R.Br.		
Leucopogon obovatus subsp. revolutus	(R.Br.) Hislop		
Leucopogon verticillatus	R.Br.		
Sphenotoma capitata	(R.Br.) Lindl.		
Sphenotoma parviflora	(F.Muell. ex Benth.) F.Muell.		
Acacia pentadenia subsp. pentadenia			
Acacia hastulata	Sm.		
Acacia saligna	(Labill.) H.L.Wendl.		GRIIS - Global Register
			of Introduced and Invasive Species - Australia
Acacia pentadenia	Lindl.		
Bossiaea linophylla	R.Br.		
Bossiaea dentata	(R.Br.) Benth.		
Callistachys lanceolata	Vent.		GRIIS - Global Register
			of Introduced and Invasive Species - Australia
Chorizema reticulatum	Meisn.		
Dipogon lignosus	(L.) Verdc.	mile-a-minute	GRIIS - Global Register of Introduced and Invasive Species - Australia   Non-native species
Gastrolobium bilobum	R.Br.		
Gompholobium scabrum	Sm.		
Hovea elliptica	(Sm.) DC.		
Jacksonia spinosa	(Labill.) R.Br. ex Sm.		
Kennedia carinata	(Benth.) Van Houtte		
Kennedia coccinea	(Curtis) Vent.		
Sphaerolobium drummondii	Turcz.		
Opercularia hispidula	Endl		
Cassytha racemosa fi racemosa			
Thomasia rhynchocarna	Turcz		
Darwinia citriodora	(Endl.) Benth		
	Maidan		
	Maiden Kessell & C.A.Cardnar		
Kunzea baxteri	(Klotzsch) Schauer		GRIIS - Global Register of Introduced and Invasive Species - Australia
Kunzea recurva	Schauer		
Melaleuca cuticularis	Labill.	Salt Paperbark	
Melaleuca viminea	Lindl.		GRIIS - Global Register of Introduced and Invasive Species - Australia
Taxandria fragrans	(J.R.Wheeler & N.G.Marchant) J.R.Wheeler & N.G.Marchant		
Amphipogon debilis	R.Br.		
Xyris lanata	R.Br.		
Histiopteris incisa	(Thunb.) J.Sm.	Matata	
Adenanthos obovatus	Labill.		
Banksia seminuda	(A.S.George) Rye		
Banksia grandis	Willd.		
Banksia attenuata	R.Br.		
Conospermum caeruleum subsp. caeruleum			
Trymalium odoratissimum subsp. trifidum	(Rye) Kellermann, Rye & K.R.Thiele		
1		l i i i i i i i i i i i i i i i i i i i	1

SPECIES NAME	SCIENTIFIC NAME AUTHORSHIP	VERNACULAR NAME	INVASIVE
Azolla pinnata	R.Br.		GRIIS - Global Register of Introduced and Invasive Species - Australia   Global Invasive Species Information Network (GISIN)
Azolla rubra	R.Br.	Red water fern	GRIIS - Global Register of Introduced and Invasive Species - Australia   Global Invasive Species Information Network (GISIN)
Correa	Andrews		Global Invasive Species Information Network (GISIN)
Fossombronia	Raddi		
Riccardia bipinnatifida	(Colenso) Hewson		
Magnoliopsida	Brongn.		
Cladonia floerkeana	Florke		

Birdlife Database

#### BIRDLIFE AUSTRALIA (SOURCED 30 NOVEMBER 2021)

COMMON NAME	SCIENTIFIC NAME	COUNT	<b>REPORTING RATE</b>
Emu	Dromaius novaehollandiae	9	0.93%
Blue-billed Duck	Oxyura australis	3	0.31%
Pink-eared Duck	Malacorhynchus membranaceus	5	0.52%
Black Swan	Cygnus atratus	467	48.39%
Australian Shelduck	Tadorna tadornoides	238	24.66%
Hardhead	Aythya australis	8	0.83%
Australasian Shoveler	Spatula rhynchotis	50	5.18%
Pacific Black Duck	Anas superciliosa	421	43.63%
Northern Mallard	Anas platyrhynchos	1	0.10%
Grey Teal	Anas gracilis	260	26.94%
Chestnut Teal	Anas castanea	50	5.18%
Musk Duck	Biziura lobata	103	10.67%
Australian Wood Duck	Chenonetta jubata	140	14.51%
Stubble Quail	Coturnix pectoralis	4	0.41%
Brown Quail	Synoicus ypsilophora	8	0.83%
Australasian Grebe	Tachybaptus novaehollandiae	28	2.90%
Hoary-headed Grebe	Poliocephalus poliocephalus	147	15.23%
Great Crested Grebe	Podiceps cristatus	12	1.24%
Rock Dove	Columba livia	1	0.10%
Laughing Dove	Streptopelia senegalensis	1	0.10%
Common Bronzewing	Phaps chalcoptera	136	14.09%
Brush Bronzewing	Phaps elegans	8	0.83%
Crested Pigeon	Ocyphaps lophotes	20	2.07%
Horsfield's Bronze-Cuckoo	Chalcites basalis	6	0.62%
Shining Bronze-Cuckoo	Chalcites lucidus	32	3.32%
Fan-tailed Cuckoo	Cacomantis flabelliformis	30	3.11%
Pallid Cuckoo	Heteroscenes pallidus	2	0.21%
Tawny Frogmouth	Podargus strigoides	6	0.62%
Australian Owlet-nightjar	Aegotheles cristatus	12	1.24%
Buff-banded Rail	Hypotaenidia philippensis	2	0.21%
Baillon's Crake	Zapornia pusilla	1	0.10%
Spotless Crake	Zapornia tabuensis	3	0.31%
Purple Swamphen	Porphyrio porphyrio	12	1.24%
Dusky Moorhen	Gallinula tenebrosa	20	2.07%
Eurasian Coot	Fulica atra	172	17.82%
Australian Pied Oystercatcher	Haematopus longirostris	284	29.43%
Sooty Oystercatcher	Haematopus fuliginosus	36	3.73%
Banded Stilt	Cladorhynchus leucocephalus	126	13.06%
Red-necked Avocet	Recurvirostra novaehollandiae	229	23.73%
Black-winged Stilt	Himantopus leucocephalus	269	27.88%
Grey Plover	Pluvialis squatarola	81	8.39%
Pacific Golden Plover	Pluvialis fulva	25	2.59%
Red-capped Plover	Charadrius ruficapillus	329	34.09%
Double-banded Plover	Charadrius bicinctus	1	0.10%
Lesser Sand Plover	Charadrius mongolus	8	0.83%
Greater Sand Plover	Charadrius leschenaultii	31	3.21%
Hooded Plover	Thinornis cucullatus	17	1.76%

COMMON NAME	SCIENTIFIC NAME	COUNT	REPORTING RATE
Black-fronted Dotterel	Elseyornis melanops	15	1.55%
Banded Lapwing	Vanellus tricolor	1	0.10%
Masked Lapwing	Vanellus miles	2	0.21%
Eastern Curlew	Numenius madagascariensis	4	0.41%
Bar-tailed Godwit	Limosa lapponica	90	9.33%
Black-tailed Godwit	Limosa limosa	36	3.73%
Ruddy Turnstone	Arenaria interpres	7	0.73%
Great Knot	Calidris tenuirostris	46	4.77%
Red Knot	Calidris canutus	28	2.90%
Sharp-tailed Sandpiper	Calidris acuminata	191	19.79%
Curlew Sandpiper	Calidris ferruginea	170	17.62%
Long-toed Stint	Calidris subminuta	7	0.73%
Red-necked Stint	Calidris ruficollis	281	29.12%
Sanderling	Calidris alba	3	0.31%
Pectoral Sandpiper	Calidris melanotos	15	1.55%
Common Sandpiper	Actitis hypoleucos	23	2.38%
Grey-tailed Tattler	Tringa brevipes	1	0.10%
Common Greenshank	Tringa nebularia	340	35.23%
Wood Sandpiper	Tringa glareola	2	0.21%
Marsh Sandpiper	Tringa stagnatilis	16	1.66%
Painted Button-quail	Turnix varius	1	0.10%
Oriental Pratincole	Glareola maldivarum	1	0.10%
Arctic Jaeger	Stercorarius parasiticus	1	0.10%
Silver Gull	Chroicocephalus novaehollandiae	526	54.51%
Pacific Gull	Larus pacificus	32	3.32%
Fairy Tern	Sternula nereis	45	4.66%
Australian Gull-billed Tern	Gelochelidon macrotarsa	1	0.10%
Caspian Tern	Hydroprogne caspia	76	7.88%
Whiskered Tern	Chlidonias hybrida	17	1.76%
Crested Tern	Thalasseus bergii	137	14.20%
Southern Rockhopper Penguin	Eudyptes chrysocome	1	0.10%
Hutton's Shearwater	Puffinus huttoni	1	0.10%
Australian Pelican	Pelecanus conspicillatus	522	54.09%
Nankeen Night-Heron	Nycticorax caledonicus	13	1.35%
Cattle Egret	Bubulcus ibis	1	0.10%
White-necked Heron	Ardea pacifica	13	1.35%
Great Egret	Ardea alba	147	15.23%
White-faced Heron	Egretta novaehollandiae	431	44.66%
Little Egret	Egretta garzetta	6	0.62%
Eastern Reef Egret	Egretta sacra	4	0.41%
Australian White Ibis	Threskiornis moluccus	322	33.37%
Straw-necked Ibis	Threskiornis spinicollis	115	11.92%
Yellow-billed Spoonbill	Platalea flavipes	258	26.74%
Australasian Gannet	Morus serrator	5	0.52%
Little Pied Cormorant	Microcarbo melanoleucos	514	53.26%
Great Cormorant	Phalacrocorax carbo	85	8.81%
Little Black Cormorant	Phalacrocorax sulcirostris	353	36.58%
Pied Cormorant	Phalacrocorax varius	243	25.18%

COMMON NAME	SCIENTIFIC NAME	COUNT	<b>REPORTING RATE</b>
Australasian Darter	Anhinga novaehollandiae	18	1.87%
Osprey	Pandion haliaetus	61	6.32%
Black-shouldered Kite	Elanus axillaris	3	0.31%
Square-tailed Kite	Lophoictinia isura	4	0.41%
Wedge-tailed Eagle	Aquila audax	23	2.38%
Little Eagle	Hieraaetus morphnoides	15	1.55%
Swamp Harrier	Circus approximans	31	3.21%
Brown Goshawk	Accipiter fasciatus	16	1.66%
Collared Sparrowhawk	Accipiter cirrocephalus	10	1.04%
White-bellied Sea-Eagle	Haliaeetus leucogaster	52	5.39%
Whistling Kite	Haliastur sphenurus	52	5.39%
Barn Owl	Tyto alba	2	0.21%
Southern Boobook	Ninox boobook	35	3.63%
Sacred Kingfisher	Todiramphus sanctus	31	3.21%
Laughing Kookaburra	Dacelo novaeguineae	166	17.20%
Nankeen Kestrel	Falco cenchroides	30	3.11%
Australian Hobby	Falco longipennis	5	0.52%
Brown Falcon	Falco berigora	5	0.52%
Peregrine Falcon	Falco peregrinus	7	0.73%
Red-tailed Black-Cockatoo	Calyptorhynchus banksii	39	4.04%
Baudin's Black-Cockatoo	Zanda baudinii	38	3.94%
Carnaby's Black-Cockatoo	Zanda latirostris	28	2.90%
Galah	Eolophus roseicapilla	108	11.19%
Western Corella	Cacatua pastinator	2	0.21%
Little Corella	Cacatua sanguinea	2	0.21%
Regent Parrot	Polytelis anthopeplus	1	0.10%
Mulga Parrot	Psephotellus varius	1	0.10%
Red-capped Parrot	Purpureicephalus spurius	101	10.47%
Western Rosella	Platycercus icterotis	185	19.17%
Australian Ringneck	Barnardius zonarius	204	21.14%
Elegant Parrot	Neophema elegans	19	1.97%
Rock Parrot	Neophema petrophila	6	0.62%
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	77	7.98%
Rufous Treecreeper	Climacteris rufus	8	0.83%
Red-winged Fairy-wren	Malurus elegans	156	16.17%
Splendid Fairy-wren	Malurus splendens	163	16.89%
Southern Emu-wren	Stipiturus malachurus	15	1.55%
Brown Honeyeater	Lichmera indistincta	80	8.29%
New Holland Honeyeater	Phylidonyris novaehollandiae	222	23.01%
White-cheeked Honeyeater	Phylidonyris niger	1	0.10%
Brown-headed Honeyeater	Melithreptus brevirostris	1	0.10%
White-naped Honeyeater	Melithreptus lunatus	120	12.44%
Tawny-crowned Honeyeater	Glyciphila melanops	5	0.52%
Western Spinebill	Acanthorhynchus superciliosus	107	11.09%
White-fronted Chat	Epthianura albifrons	28	2.90%
Western Wattlebird	Anthochaera lunulata	18	1.87%
Red Wattlebird	Anthochaera carunculata	215	22.28%
Singing Honeyeater	Gavicalis virescens	3	0.31%

COMMON NAME	SCIENTIFIC NAME	COUNT	REPORTING RATE
Spotted Pardalote	Pardalotus punctatus	82	8.50%
Striated Pardalote	Pardalotus striatus	49	5.08%
Western Gerygone	Gerygone fusca	92	9.53%
Weebill	Smicrornis brevirostris	5	0.52%
White-browed Scrubwren	Sericornis frontalis	135	13.99%
Yellow-rumped Thornbill	Acanthiza chrysorrhoa	72	7.46%
Inland Thornbill	Acanthiza apicalis	171	17.72%
Western Thornbill	Acanthiza inornata	31	3.21%
White-browed Babbler	Pomatostomus superciliosus	38	3.94%
Varied Sittella	Daphoenositta chrysoptera	8	0.83%
Black-faced Cuckoo-shrike	Coracina novaehollandiae	94	9.74%
White-winged Triller	Lalage tricolor	3	0.31%
Rufous Whistler	Pachycephala rufiventris	15	1.55%
Golden Whistler	Pachycephala pectoralis	160	16.58%
Grey Shrike-thrush	Colluricincla harmonica	93	9.64%
Crested Shrike-tit	Falcunculus frontatus	4	0.41%
Grey Currawong	Strepera versicolor	21	2.18%
Australian Magpie	Gymnorhina tibicen	220	22.80%
Grey Butcherbird	Cracticus torquatus	4	0.41%
Dusky Woodswallow	Artamus cyanopterus	25	2.59%
Black-faced Woodswallow	Artamus cinereus	1	0.10%
Willie Wagtail	Rhipidura leucophrys	93	9.64%
Grey Fantail	Rhipidura fuliginosa	242	25.08%
Australian Raven	Corvus coronoides	218	22.59%
Restless Flycatcher	Myiagra inquieta	2	0.21%
Magpie-lark	Grallina cyanoleuca	89	9.22%
Scarlet Robin	Petroica multicolor	33	3.42%
Jacky Winter	Microeca fascinans	1	0.10%
Western Yellow Robin	Eopsaltria griseogularis	2	0.21%
White-breasted Robin	Quoyornis georgianus	100	10.36%
Red-eared Firetail	Stagonopleura oculata	98	10.16%
Australasian Pipit	Anthus novaeseelandiae	44	4.56%
Rufous Songlark	Cincloramphus mathewsi	1	0.10%
Little Grassbird	Poodytes gramineus	10	1.04%
Australian Reed-Warbler	Acrocephalus australis	2	0.21%
Fairy Martin	Petrochelidon ariel	1	0.10%
Tree Martin	Petrochelidon nigricans	118	12.23%
Welcome Swallow	Hirundo neoxena	80	8.29%
Silvereye	Zosterops lateralis	202	20.93%
Black Duck-Mallard hybrid		4	0.41%
Corella spp		5	0.52%
Crow & Raven spp		1	0.10%
White-tailed Black-Cockatoo spp		47	4.87%
Domestic Goose		1	0.10%
Domestic Duck		12	1.24%
Fairy-wren spp		1	0.10%
Large wader spp		2	0.21%
Medium wader spp		2	0.21%

COMMON NAME	SCIENTIFIC NAME	COUNT	<b>REPORTING RATE</b>
Small wader spp		1	0.10%

Conservation Codes for WA



Department of Biodiversity, Conservation and Attractions



# **CONSERVATION CODES**

### For Western Australian Fauna and Flora

Threatened, Extinct and Specially Protected fauna or flora<sup>1</sup> are species<sup>2</sup> 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 Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the Biodiversity Conservation Act 2016.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

#### T <u>Threatened species</u>

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 that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

*Threatened flora* is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

#### 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. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

#### 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. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

#### 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. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

#### **Extinct species**

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

#### EX 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).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora)* Notice 2018 for extinct flora.

#### 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.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.* 

#### 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).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.* 

#### 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).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.* 

#### P Priority species

Possibly threatened species that do not meet survey criteria, 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 priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes 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.

#### 1 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, e.g. 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 and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

#### 2 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, e.g. 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 and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

#### 3 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. Such species are in need of further survey.

#### 4 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 Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

<sup>1</sup> The definition of flora includes algae, fungi and lichens <sup>2</sup>Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Vegetation Condition Descriptions

Vegetation Condition Scale (	Thackway and Lesslie 2006)						
		Native Vegetation Cover					
					Non-native Vegetation Cover		
Vegetation Cover Class	Type 0 - Naturally bare Areas	Type I Residual Native	Type II Modified Native	Type III Transformed Native	Type IV Replaced Adventive	Type V Replaced Managed	Type VI Removed Vegetation
Criteria	where native vegetation	vegetation community	vegetation community	vegetation community	Native vegetation	Native vegetation	removal
	does not naturally persist	structure, composition, and	structure, composition and	structure, composition and	replacement – species alien	replacement with cultivated	
		regenerative capacity intact -	regenerative capacity intact -	regenerative capacity	to the locality and	vegetation	
		no significant perturbation	perturbed by land use /land	significantly altered by land	spontaneous in occurrence		
		form landuse/land	management practice	use/land management			
		management practice		practice			
Diagnostic Criteria	Natural regenerative	unmodified, structural and	Natural regeneration	Natural regenerative capacity	Regeneration of native	Regeneration of native	Nil or minimal. Vegetation
	capacility unmodified	compositional integrity of	tolerates/endures under past	is limited/at risk under past	vegetation community has	vegetation community lost or	absent or ornamental
		native vegetation is very high	&/or present current land	&/or current land use or land	been suppressed by ongoing	suppressed by intensive land	
			management practices.	management practices.	disturbances of the natural	management. Limited	
			Structure is predominantly	Rehabilitation and	regenerative capacity Limited	potential for restoration.	
			altered but intact e.g. a layer	restoration possible through	potential for restoration.	Dominant structuring species	
			and/growth form and or age	modified land management	Dominant structuring species	of native vegetation	
			classes removed.	practice Dominant	of native vegetation removed	community removed.	
			Composition of vegetation is	structuring species of native	or predominantly cleared or		
			altered but intact	vegetation community	extremely degraded.		
				significantly altered e.g. a			
				layer frequently and			
				repeatedly removed			
Corresponding Keighery		Very good excellent, pristine	Good to very good	Very degraded to	Completely degraded	Completely degraded	
(1994) Condition Scale		,	,	degraded/good	,,	,,	

Thackway, R. and Lesslie, R. (2006) Reporting Vegetation Condition Using the Vegetation Assets, States and Transitions (VAST) Framework. Ecological Management and Restoration. 7, Suppl. 1. S53-S62 Keighery (1994) Keighery, B.J. (1994) Bushland plant survey. A guide to plant community survey for the community. Wildflower Society of WA (Inc.), Nedlands, Western Australia.

DBCA Threatened Fauna Database

Black Cockatoo Breeding Sites (Buffered)



11/30/2021, 1:32:29 PM



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, LANDGATE/SLIP

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### Black Cockatoo Roosting Sites (Buffered)



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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, LANDGATE/SLIP

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**Clearing Permit Exemptions** 

ltem no.	Wording of exemption	Comment / explanation
		Under this item you should note that clearing for a building,
		combined with other exempt clearing activities on the property,
		must not exceed five hectares in a financial year.
		This means that if you clear for any of the following purposes, the
		clearing may not add up to more than five hectares in a financial year.
		Clearing to construct a building (Item 1)
		Clearing to collect firewood (Item 5)
		Clearing to obtain fencing or farming materials (Item 6)
		Clearing for woodwork (Item 7)
		Clearing for fence lines (Item 10)
		Clearing for vehicular tracks (Item 12)
		Clearing for walking tracks (Item 13)
		Clearing isolated trees (Item 19)
		This exemption does not apply in an environmentally sensitive area.

ltem no.	Wording of exemption	Comment / explanation
Regulation 5, Item 8 Clearing for cultural purposes of an Aboriginal person Clearing must be done by: The Aboriginal person.	Clearing for the cultural or spiritual, but not commercial, purposes of an Aboriginal person on land to which the person has a cultural or spiritual connection and a right of access.	This exemption allows clearing of native vegetation for traditional purposes by an Aboriginal person, provided that the Aboriginal person has a spiritual or cultural connection and has a right to access the land in question. An Aboriginal person's cultural or spiritual connection to particular land is determined in accordance with the body of traditions, observances and customs of the particular community or communities to which the Aboriginal person belongs or with which the person identifies. An "Aboriginal person" means a person who is a descendant of one or more of the Aboriginal peoples of Australia, who claims to be an Aboriginal person and who is accepted as such in the community in which he or she lives. This exemption does not allow for commercial use of the native vegetation.
		vegetation. This exemption does not apply in an environmentally sensitive area.

ltem no.	Wording of exemption	Comment / explanation
Item no. Regulation 5, Item 10 Clearing along a fence line - alienated land Clearing must be done by or with the prior authority of: The owner of the property on which the clearing is to take place.	Wording of exemption Clearing of alienated land along a fence line of, or within, a property to the width necessary to provide access to construct or maintain a fence, being clearing which does not, together with all other limited clearing carried out on the property in the financial year in which the clearing takes place, exceed five hectares.	Comment / explanationThis exemption allows an owner to clear a strip of native vegetationon either side of a fence line on private property to provide accessfor fence maintenance or construction."Fence" means a structure that is permanently fixed to the groundfor controlling movement of persons and/or animals."Property" means an area of land that is managed as a singleproperty whether or not it is made up of a number of properties heldunder separate titles.Under this item you should note that clearing along a fence line,combined with other exempt clearing activities on the property, mustnot exceed five hectares in a financial year.This means that if you clear for any of the following purposes, theclearing must not add up to more than five hectares in a financial year.• Clearing to construct a building (Item 1)• Clearing to collect firewood (Item 5)• Clearing for woodwork (Item 7)• Clearing for woodwork (Item 7)• Clearing for ence lines (Item 10)• Clearing for walking tracks (Item 12)• Clearing isolated trees (Item 19)

ltem no.	Wording of exemption	Comment / explanation
Regulation 5, Item 11 Clearing along a fence line Crown land Clearing must be done by or with the prior authority of: The owner of the land on which the clearing is to take place.	<ul> <li>Clearing of Crown land along a fence line to provide access to construct or maintain a fence <ul> <li>(a) between alienated land and Crown land - if the clearing is no more than 1.5 metres from the fence line; or</li> <li>(b) between Crown land and Crown land - if the clearing is no more than 5 metres from the fence line on one side and no more than 1.5 metres from the fence line on the fence line on the other side.</li> </ul> </li> </ul>	<ul> <li>This exemption allows the government agency which has the care, control or management of the land, or a lessee under a lease lawfully granted by the Crown (such as a pastoral lease), to clear to provide access for fence maintenance or construction:</li> <li>(a) between alienated land and Crown land, a strip of native vegetation up to 1.5 metres wide on the Crown land along the fence line (this ltem does not deal with clearing for a fence line on alienated land – see Item 10); or</li> <li>(b) between Crown land and Crown land a strip of native vegetation up to 5 metres on one side and 1.5 metres on the other side.</li> <li>"Fence" means a structure that is permanently fixed to the ground for controlling movement of persons and/or animals.</li> </ul>
<i>Regulation 5, Item 12</i> Clearing for vehicular tracks Clearing must be done by or with the prior authority of:	Clearing to construct a vehicular track on a property, being clearing which does not, together with all other limited clearing carried out on the property in the financial year in which the clearing takes place, exceed five hectares, if – (a) the clearing for the track is no wider than	This exemption allows for clearing of a strip of native vegetation to the extent necessary for an access track. For example, this may be for general access to a property or to farm infrastructure such as a hay shed. There must be at least 100 metres between the track and any other cleared land that can be used for the purpose intended for that track. This may include other cleared areas.

Item no.	Wording of exemption	Comment / explanation
The owner of the property on which the clearing is to take place.	<ul> <li>necessary;</li> <li>(b) there is at least 100 metres between that track and any other cleared land that can be used for the purpose for which the particular track is intended;</li> <li>(c) the vegetation is not in a road reserve; and</li> <li>(d) the vegetation is not riparian vegetation (unless there is no reasonable alternative route and the track is necessary for the commercial activities carried out on the property).</li> </ul>	Construction of vehicle tracks within riparian vegetation is generally not allowed, but where there is no reasonable alternative route, and the track is necessary for the commercial activities of the property, it may pass through riparian vegetation. "Riparian vegetation" means the distinctive vegetation associated with a wetland or watercourse. "Property" means an area of land that is managed as a single property whether or not it is made up of a number of properties held under separate titles. Under this item you should note that clearing for a vehicle track, combined with other exempt clearing activities on the property, must not exceed five hectares in a financial year. This means that if you clear for any of the following purposes, the clearing must not add up to more than five hectares in a financial year. • Clearing to construct a building (Item 1) • Clearing to collect firewood (Item 5) • Clearing for woodwork (Item 7) • Clearing for fence lines (Item 10) • Clearing for vehicular tracks (Item 12) • Clearing for vehicular tracks (Item 13) • Clearing isolated trees (Item 19)

Item no.	Wording of exemption	Comment / explanation
Regulation 5, Item 13 Clearing for walking tracks Clearing must be done by or with the prior	Clearing to construct a walking track on a property, being clearing which does not, together with all other limited clearing carried	This exemption allows clearing for the installation of walking tracks for use by pedestrians. "Property" means an area of land that is managed as a single
authority of: The owner of the property on	clearing takes place, exceed five hectares, if	property whether or not it is made up of a number of properties held under separate titles.
which the clearing is to take place.	<ul> <li>(a) the clearing for the track is no wider than necessary;</li> </ul>	Under this item you should note that clearing for a walking track, combined with other exempt clearing activities on the property, must not exceed five hectares in a financial year.
	(b) the track is used by pedestrians or there is a reasonable expectation that it will be used by pedestrians.	This means that if you clear for any of the following purposes, the clearing must not add up to more than five hectares in a financial year.
		Clearing to construct a building (Item 1)
		Clearing to collect firewood (Item 5)
		Clearing to obtain fencing or farming materials (Item 6)
		Clearing for woodwork (Item 7)
		Clearing for fence lines (Item 10)
		Clearing for vehicular tracks (Item 12)
		Clearing for walking tracks (Item 13)
		Clearing isolated trees (Item 19)
		This exemption does not apply in an environmentally sensitive area.

ltem no.	Wording of exemption	Comment / explanation
<i>Regulation 5, Item 21A</i> A Clearing for a crossover	Clearing that is the result of constructing a crossover from a road to a property adjacent to the road, and any associated sight line areas, if the	This exemption allows for the creation of a crossover between a road and a property, to enable access to that property through the road reserve.
Clearing must be done by or with the authority of: The person with the authority to construct the crossover.	construction is within the scope of the authority to construct the crossover.	"Property" means an area of land that is managed as a single property whether or not it is made up of a number of properties held under separate titles. This exemption does not apply in an environmentally sensitive area.

Appendix B

Coastal Vulnerability Assessment MP Rogers & Assoc - October 2020
mprogers & associates pl ABN 14 062 681 252

consulting engineers specialising in coastal, port and marine projects

Form 001 10/01/14

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*Our reference*: K1830:BST:Letter 20111 Rev 0 *Enquiries:* Ben Turner, direct line: 9254 6625

30 October 2020

Mr Nick Ayton Ayton Baesjou Planning 59 Peels Place ALBANY WA 6330 nick@aytonbaesjou.com.au

Dear Nick

## LOT 9007 SPRINGDALE BEACH ESTATE DENMARK – COASTAL VULNERABILITY ASSESSMENT

We have completed a first pass coastal hazard assessment of the Springdale Beach Estate in accordance with State Planning Policy 2.6 – The State Coastal Planning Policy (SPP2.6).

M P Rogers & Associates Pty Ltd (MRA) previously completed a detailed coastal hazard assessment for Lot 32 Ocean Beach Road, Denmark. For this preliminary review we have modified the previous assessment of potential coastal hazards to be specific to the Springdale Beach Estate location.

The following sections of this report discuss the relevant preliminary coastal hazard allowances for the site.

#### S1 Allowance

MRA has previously assessed records from Albany to determine a representative storm for the south coast, which is estimated to represent the 100 year ARI event in relation to beach erosion, particularly in areas that have a greater exposure from the south east. This storm was experienced in August 1984 and is known to have resulted in severe beach erosion on the south coast. The event was significantly more severe than other observed events and had the largest recorded (since 1943) offshore wave heights from the south through east direction. The storm also resulted in the highest recorded level of erosion along Middleton Beach (approximately 30 m) which has the same south easterly facing aspect as the Wilson Inlet shoreline fronting Lot 9007.

The severe conditions and south easterly direction of the 1984 storm are likely to represent the 100 year ARI conditions for the shoreline fronting Lot 9007. Having a coastal frontage within the Wilson Inlet means that the shoreline fronting Lot 9007 would not be exposed to oceanic conditions. As a result, a local wave hindcast was completed to determine the wave conditions within the Inlet. These wave conditions were applied to the shoreline change model together with a conservative assessment of associated water levels and wind conditions for the site, consistent with the methodology adopted for Lot 32 Ocean Beach Road. The design event was modelled using the SBECH profile change model and an estimate of the potential erosion extent was made. Based on the modelled erosion extent, an S1 Allowance for severe storm erosion of 6 m is considered to be appropriate for the site. The results of the SBEACH modelling are presented in Figure 1.



Figure 1 SBEACH Storm Erosion Simulation Results

#### S2 Allowance

The S2 Allowance for long term shoreline movement was determined using ortho-rectified historical aerial photographs purchased from Landgate. The preliminary assessment used aerial imagery from 2001 and 2020 to represent the longest period of aerial photo coverage readily available in the public domain. Mapping of the shoreline position at each of these timeframes (as presented in Figure 2) found that there was no significant movement of the shoreline over the mapped timeframe. If anything, the shoreline may have experienced a minor accretion trend, though it is difficult to tell with any certainty given the low energy nature of the shoreline. Overall, minimal change of this shoreline would be expected over time given the low energy environment of the Inlet. It is therefore recommended that a 0 m/year S2 Allowance be applied, corresponding to a 0 m allowance for the 100 year timeframe to 2120. This assessment is not uncommon for water bodies such as the Wilson Inlet where there is no significant mechanism for erosion of the shoreline to occur.



Figure 2 Shoreline Movement Plan

#### S3 Allowance

The Department of Transport completed an assessment of the potential increase in sea level that could be experienced on the Western Australian coast in the coming 100 years. This assessment extrapolated work by Hunter (2009) to provide sea level rise values based on the IPCC (2007) A1FI climate change scenario projections to the year 2110. The derived sea level rise scenario was subsequently adopted by the Western Australian Planning Commission (and SPP 2.6) for use in coastal planning along the Western Australian coast. This sea level rise scenario was adopted for this assessment and estimates a rise of 0.9 m to 2110.

SPP2.6 notes that the S3 Allowance for erosion caused by future sea level rise on a sandy coast should be calculated as 100 times the adopted sea level rise value of 0.9 m over a 100-year planning horizon or 90 m.

#### **Total Coastal Erosion Hazard Extent**

Each of the erosion allowances were determined for the 100 year planning timeframe to 2120. A present day scenario was also considered to illustrate the change in the total erosion allowance over the 100 year planning timeframe. The allowances are combined with a 0.2 m/year allowance for uncertainty to create a total erosion allowance for the 100 year planning timeframe as required by SPP2.6. Table 1 summarises the total coastal erosion allowances for the 100 year planning timeframe to 2120.

 Table 1
 Allowance Combinations for Coastal Erosion

Planning Horizon	S1 (m)	S2 (m)	S3 (m)	Uncertainty (m)	Total Erosion Allowance (m)
Present Day (2020)	6	0	0	0	6
2120	6	0	90	20	116

The calculated total erosion allowance over the 100 year planning timeframe is less than the 135 m setback distance between the building envelope of Lot 9007 and the Wilson Inlet as indicated by the concept plan provided by Ayton Baesjou Planning. Lot 9007 would therefore avoid impact from coastal erosion over the 100 year planning timeframe.

#### S4 Inundation Levels

SPP2.6 requires that the S4 Allowance for inundation be taken as the maximum extent of inundation experienced during a water level event with a 0.2% AEP (500 year ARI) plus the appropriate allowance for sea level rise. MRA has previously completed an extreme water level analysis for Albany that is representative of the extreme water levels that could be experienced within the Wilson Inlet. Extreme inundation water levels within the Wilson Inlet are influenced by the sandbar present at the south-western extent and this was assumed to be open and connected with the Southern Ocean for this assessment.

The 500 year ARI water level plus the allowance for sea level rise to 2120 was determined to be 2.15 mAHD. Survey provided by Ayton Baesjou Planning showed that the levels of the proposed Lot 9007 are well above 5 mAHD at the southern most boundary. Lot 9007 is therefore not considered to be at risk of inundation over the 100 year planning timeframe to 2120.

#### **Discussion & Conclusion**

This first pass coastal vulnerability assessment has been completed to inform Ayton Baesjou Planning of potential risk to the proposed development of Lot 9007 from being impacted by coastal hazards over the 100 year planning timeframe to 2120. It has been completed in line with the recommendations of SPP2.6.

The completion of the coastal vulnerability assessment for the shoreline fronting Lot 9007 has shown that the proposed development site avoids impact from coastal erosion over the 100 year planning timeframe. As Lot 9007 is located above the 500 year ARI inundation levels expected at the Wilson Inlet it is not considered to be at risk of inundation over the 100 year planning timeframe to 2120.

We trust this meets your requirements but please don't hesitate to contact us if you want to discuss any aspect.

Yours sincerely

for and on behalf of m p rogers & associates pl Appendix C

Fire Management Plan – FirePlan WA – Oct 2015 BAL Contour Plan & Bushfire Management Statement BioDiverse Solutions - Nov 2017

# FIRE MANAGEMENT PLAN

# SPRINGDALE BEACH ESTATE Lot 9000 South Coast Hwy Shire of Denmark



FirePlan WA October 2015

## Fire Management Plan.

Prepared For

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**Document Status** 

Version	Date	Comment	Review Date
Version 1			
Version 2	April 2015		
Version 3	September 2015		
Version 4	October 2015	Figure 2 Overall Staging Plan updated	29/10/2015

**Disclaimer**: The measures contained in this fire management plan are considered to be minimum standards and they do not guarantee that a building will not be damaged in a bush fire. All surveys, forecasts, projections and recommendations made in this report associated with the project are made in good faith on the basis of information available to FirePlan WA at the time; and achievement of the level of implementation of fire precautions will depend among other things on the actions of the landowners or occupiers over which FirePlan WA has no control. Notwithstanding anything contained therein, FirePlan WA will not, except as the law may require, be liable for any loss or other consequences (whether or not due to the negligence of the consultants, their servants or agents) arising out of the services rendered by the consultants.

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## 1.0 PURPOSE OF THE MANAGEMENT PLAN

The purpose of this Bushfire Management Plan is to review the strategic fire management methods and requirements that are or will be implemented in a staged subdivision and development of the subject land following endorsement of the Subdivision Guide Plan. The aim of the Bushfire Management Plan is to reduce the occurrence of and minimise the impact of bush fires thereby reducing the threat to residents, adjoining landowners, fire fighters and the environment in the event of a fire within or near the development. The measures required by this plan will satisfy the conditions set down in the Planning for Bush Fire Protection Guidelines (PfBFP) 2010.



#### Figure 1 Location of site

#### 2.0 PROPOSED DEVELOPMENT

Following approval and development of Stage 1 of Lot 9000 South Coast Highway, Denmark, the owner of the property proceeded to develop Stage 4 which abuts the southern boundary of Stage 1. FirePlan WA was commissioned to prepare a Fire Management Plan for Stage 4 and to update the overall Fire Plan for the whole estate. This plan sets out the requirements for bush fire mitigation for Stage 4 and the remaining Stages 2, 3, 5 and 6 as shown on Figure 2 overleaf.

Stage 1 has largely been completed with only a few lots remaining to be developed. The majority of Stage 1 has a Low Hazard rating and only lots located in proximity to vegetation will require a BAL assessment prior to a building licence being issued. A pine plantation is located opposite the southern end of Stage 1 and will require housing immediately opposite to also be assessed. It is noted that the Pine Plantation is currently being progressively harvested over the next five years.

Stage 4 has been brought forward to follow Stage 1 and will be followed by Stage 2 which has recently been granted conditional approval.

Stage 4 links with the existing internal road system of Stage 1 to the north providing points of access and egress from the site.

As Stage 1 and 4 effectively create a north south access road without an egress, temporary egress will be provided by way of the unconstructed extension of Beaufortia Gardens which will provide an alternative means of access and egress to South Coast Highway. This route will be upgraded as a Fire Service Access Way until such time as it is constructed as part of Stage 2.

A second means of access and egress to the estate will be provided as part of Stage 6 and will involve the extension of Woodward Heights to the east. This will connect through to the rural residential development on the adjoining property and will provide another access /egress onto South Coast Highway. Figure 2 overleaf, shows the current and future access routes.

The remaining pine trees on the estate will be progressively removed as Stages 2, 3, 5 and 6 proceed, ensuring that no pines remain within 100 metres of a proposed lot within any stage.

As each stage is developed, water supplies for domestic and fire service will be provided from the Water Corporation service and fire hydrants will form part of that network.

At such time as Stages 2, 3, 5 and 6 are developed, the Fire Plan can be reviewed and modified as necessary.



Figure 2 Overall Staging Plan. ALL AREAS AND DIMENSIONS ARE SUBJECT TO SURVEY

Figure 3 below shows the lots to be created in Stage 4 Release 1 and Stage 4 Release 2. As part of construction of Release 1, the PAW will be constructed through to Woodward Heights and will act as a preliminary FSA. As part of the construction of Release 2, a FSA between the proposed lots and the POS to the east will be constructed running from Beaufortia Gardens to Woodward Heights and also a FSA through to the Rail Reserve Access.



#### Figure 3 Staging Plan Stage 4 Development

## 3.0 SITE DETAILS

The subject land is situated within the Shire of Denmark and is located approximately 2 kilometers east of the town site off the South Coast Highway.

All lots with in the proposed development site have slopes of  $0^{0}>5^{0}$  for the purpose of BAL calculations set out in section 6 of this report.

The site is predominantly covered with Group G Sown grassland 2.2.26 (refer to Figure 1 of Planning for Bush Fires Protection Guidelines), with a limited amount of Group B Woodland 2.2.05 below the proposed dwellings along the water's edge and to the east of the lot which will affect construction standards.

The land to the west is covered with Group B Woodland 2.2.05, this land is held as reserve and will affect the BAL rating of lot 196.

The slope for the stage 4 is shown at *figure 4* ranges from  $0^0 > 5^0$  the area near the water with in the lot is  $0^0 > 10^0$ . (slope is calculated for 100 meters in each direction of a dwelling site).

The remaining stages 1, 2, 3, 5 and 6 are to be considered  $0^0 > 5^0$  for the purposes of BAL assessment. All building licenses will require a BAL assessment prior to issue of a building license



#### Figure 4 Slope Map for Stage 4

## 4.0 STATUTORY CONDITIONS

The Western Australian Planning Commission and the Shire of Denmark require the preparation of a 'Bushfire Management Plan' as part of the conditions of subdivision approval. This document has been prepared to satisfy that requirement in accordance with the relevant acceptable solutions detailed in *Planning for Bush Fire Protection Edition 2* 2010.

As fire management strategies may require altering to meet changing climate, weather patterns, environmental and land use needs, landowners/occupiers are advised that provisions of the Bush Fires Act 1954 may still be enforced in addition to this Fire Management Plan.

The Shire of Denmark in conjunction with Landowners will be responsible for initiating a review of this fire management plan as it may see necessary to do so.

#### 5.0 BUSH FIRE HAZARD ASSESSMENT

Bush Fire Hazard Assessment is determined by rating the vegetation type in accordance with Table 1 and Figure 2 of Planning for Bush Fire Protection 2010. It is also based on the underlying assumption that land in Western Australia is predominantly undulating with relatively short, steep inclines. In Planning for Bush Fire Protection (Edition 2 2010) the bush fire hazard assessment methodology identifies 3 three levels low; moderate and extreme.

The Bush Fire Hazard Assessment for the proposed development area is rated "Moderate" (B Woodland Figure 2.2.05) in the areas containing vegetation (with the exception of the Pine Plantation located to the north west of the development area which is rated 'Extreme'), and "Low" (Group G Sown grassland 2.2.26) in the cleared areas.

A map of the hazard rating and vegetation type is shown below at *Figure 5, 6 & 7.* Stage 4 vegetation is down slope of the proposed dwellings and this will be taken into account when setting the BAL levels.

The bush fire hazard assessment is based on the vegetation types and class e.g. (B Woodland Figure 2.2.05) as described in Figure 1 of Planning for Bush Fire Protection. This bush fire assessment does not relate directly to the fuel loading within that vegetation. Fuel loading is described as grass, leaf litter and live vegetation.

The vegetation within and adjoining is similar being Woodland Figure 2.2.05 and Group G Sown grassland 2.2.26 for the development site as shown on the map below.

The Mediterranean climate experienced by this area is such that the majority of rain falls in late autumn through to early spring. This rainfall supports substantial vegetation growth which dries off in Summer/Autumn.

The maps below indicates the hazard rating and vegetation type as per AS 3959.

Figure 5 sample of site vegetation for stage 4





## Figure 6 Vegetation Type Stage 4







## 6.0 BUSH FIRE MITIGATION

In this Section of the Fire Management Plan when complying with the Acceptable Solution detailed in *Planning for Bush Fire Protection Edition 2* 2010 it will be shown as (A2.1) meaning Acceptable Solution 2.1 of the guidelines.

The subdivision has been designed so as to take into account the following fire mitigation measures:-

- Element 1 Location of Development
- Element 2 Vehicle Access
  - Public Roads, Private Driveways and Emergency Access
- Element 3 Water Supplies
- Element 4 Siting of Development

Building Protection Zones, Hazard Separation Zones, Hazard Reduction, Planting of trees & Dwelling Construction Standards

• Element 5 Design of Development

#### 6.1 ELEMENT 1 LOCATION OF DEVELOPMENT

The Bush Fire Hazard Assessment has identified the subject land and adjoining land as having "Low", and "Moderate" bush fire hazard levels. Proposed new buildings are going to be located in areas that are rated as having a "Low" and Moderate bush fire hazard. Building Protection Zones and Hazard Separation zones will be introduced to increase protection around new dwellings which will be constructed to AS 3959. The remaining area of pine plantation within the property will be progressively removed so that no lot is located within 100 metres of the pine trees.

#### 6.2 ELEMENT 2 VEHICLE ACCESS

#### 6.2.1 Internal Road System

The proposed development links the South Coast Highway via Woodward Heights and Beaufortia Gardens with the existing internal road system of the adjoining development to the north out to South Coast Highway to provide two points of access and egress for site. Future development of stage 6 will complete the access to the east via the extension of Woodward Rd to Randall Rd.

All roads within the development will comply with A2.2. see Appendix A

The Culs de Sac comply with the standards set out in PfBFP see Appendix A, A2.3 A2.4 The layout of roads within the stage 4 development are shown at Figure 3

#### 6.2.2 Culs de sac

Two culs de sac off the Beaufortia Gardens internal road will provide access to some lots. Complies with A2.3. Refer to specification in *Appendix A*.

#### 6.2.3 Firebreaks

The developer/owner/occupier of the land will, at all times, comply with the requirements of the Shire of Denmark Firebreak Notice as published annually, in addition to this fire management plan (A2.9).

#### 6.2.4 Fire Service Access Way (FSA) in Public Open Space (POS)

The developer is to install a FSA as shown on Figure 2 to connect the new road to the foreshore to the extension of Woodward Heights, this FSA will be gated at the northern end as per E2.8 and E2.10. A FSA will continue on from the southern end of Beaufortia Gardens to connect to the Rail Reserve Access. This FSA should be gated to the satisfaction of the Shire to restrict public access with a lock to the Shire's fire service standard if required. A car parking area will also be provided at the termination of Beaufortia Gardens.

The Shire of Denmark will be responsible for the ongoing maintenance of the FSA within the POS area on the eastern boundary of Stage 4.

#### 6.3 ELEMENT 3 WATER SUPPLIES

#### 6.3.1 Domestic Water Supply

Reticulated water will be provided to each lot by the developer in accordance with the Water Corp

#### 6.3.2 Water for Fire Fighting

Fire hydrants will be installed along the public road ways to the Water Corporations No 63 Water Reticulation standard by the developer. Reflective road markings identifying the location of fire hydrants will also be installed by the Developer. Complies with acceptable solution A 3.1.

#### 6.3.3 Fire Service

The closest Fire Services to Location 1935 South Coast Highway is the East Denmark Volunteer Bushfire Brigade which is located along East River Road. The brigade shed is 4 kilometres from Location 1935 via bitumen road. This service is backed up by Fire and Rescue volunteer Service from Denmark.

#### 6.4 SITING OF DEVELOPMENT

Parts of proposed site contain vegetation that has a Bush fire hazard of "Moderate" while the remainder of the site is rated "Low". With the installation of Building Protection Zones, Hazard Separation Zones and an increase in Building construction in new buildings in accordance with AS 3959-2009 this complies with the acceptable solution detailed in A4.1 and A4.2.

The minimum distance of 100 metres from vegetation (rated 'Moderate' or 'Extreme') to proposed dwellings may be reduced in compliance with AS 3959.

Under AS 3959 as the distance from the vegetation is reduced, the construction standard must be increased. Table 2.4.3 AS 3959 sets out this relationship and Section 2 of AS 3959 details the methodology of determining the Bushfire Attack Level (BAL).

See Section 6.4.6 for details of BAL Ratings.

#### 6.4.1 Building Protection Zone (BPZ)

The aim of the Building Protection Zones is to reduce the amount of accumulated bush fire fuel and to lower the intensity of the impact of a bush fire by flame contact or radiated heat. The Building Protection Zone is to be installed by the landowner prior to the commencement of new dwelling construction and maintained by the landowner.

Non flammable features such as driveways, paths, vegetable patches, reticulated lawn, or landscaped gardens should form part of Building Protection Zones. Isolated trees and shrubs may be retained within Building Protection Zones. A Building Protection Zone is to be constructed within the Lot around all buildings. Size of BPZ/HSZ is set out in section 6.4.6 Refer to specifications in Appendix B. Building Protection Zones are to be installed and maintained in perpetuity by the landowner. Complies with (A4.3).

All fire breaks and fuel reduction work is to be completed prior to the release of the lots.

#### 6.4.2 Hazard Separation Zone (HSZ)

To provide additional fire protection there must be a physical separation between the buildings and the surrounding vegetation to reduce the impact of bush fires upon the structures within the Building Protection Zone including ember attack. As the occurrence of bush fires in this district may occur and will burn in accordance with the prevailing weather and fuel conditions at the time, it is essential that property owners maintain HSZ on their land to have any degree of safety.

Hazard Separation Zone in addition to the 20m Building Protection Zone is required (refer to Section 6.5). (A4.4).

The developer is to modify fuel loadings on all Lots at the time of subdivision and/or development so as to achieve the requirements of the Building Protection Zone and Hazard Separation Zone prior to the sale of Lots. Landowners are also required to maintain building protection zones and hazard separation zones in perpetuity (i.e. from date of purchase irrespective of whether a dwelling is to be constructed or not) in accordance with this fire management plan.

Removal of bush fire fuels may be carried out by burning or mechanical means preference is for mechanical removal of selected trees and understorey. If burning is used is must be carried out in accordance with the provisions of the Bush Fires Act 1954 and the Shire of Firebreak Notice.

All fuel reduction work is to be completed prior to the release of the lots.

#### 6.4.3 Hazard Reduction Program within the Site

Hazard reduction within the BPZ/HSZ can be achieved by slashing or planned prescribed burning. Bush Fire Fuels outside the BPZ & HSZ within lots are to be maintained to 6-8 tonnes/ha. Property owners have a responsibility to reduce bush fire hazards and maintaining properties annually in preparation for the summer season. The Shire of Denmark can provide advice on appropriate techniques to achieve bush fire hazard reduction for individual properties.

All fire fuel reduction work within the BPZ down to 2 tonnes per hectare is to be completed prior to the release of the lots.

As a guide, property owners should carry-out the following Fire Prevention activities:

Autumn to Winter (May – August)

- Tree pruning remove lower branches; check that power lines are clear.
- Reduce fuel levels around the house clear long grass, leaves, twigs and flammable shrubs.
- Ensure petrol and other flammables are safely stored away from the main dwelling.
- Make sure your fire fighting equipment is in good working condition and serviced where required.
- Make sure all residents are aware of your emergency plan including evacuation routes.

Spring (September – November)

- Move woodpiles and stacked timber away from the main dwelling.
- Keep grass short not to exceed 50mm in height.
- Clean gutters and roof debris.
- Install and maintain firebreaks in accordance with this plan and the firebreak notice.
- Maintain Hazard Separation Zone complies with standard detailed in Section 6.4.2 of this Fire Management Plan

Summer (November – May)

- Water lawns, trees and shrubs near the buildings to keep them green.
- Re-check fire fighting equipment, screens, water supplies and that gutters remain clear.
- Maintain Firebreaks in accordance with the Shire of Denmark Firebreak Notice.
- Maintain Building Protection Zone (annually) to the standard detailed in Section 6.4.1 of this Fire Management Plan

Long Term Precautions

- Ensure firebreaks are prepared in accordance with this fire management plan, the latest Firebreak Notice and any variation to the fire order issued by council.
- Ensure that any planting of wind breaks or trees is in accordance with this fire management plan and will not be detrimental to fire suppression requirements in future years.
- Make sure that the buildings are safe fit 'wire' fly screens and shutters, fill gaps in roof/wall spaces, fit fire screens to evaporative air conditioners and have them operable to provide a water only supply.
- Give consideration to installing external building sprinkler systems with static water supply and 'back-up' power for emergencies.
- Get basic training in fire fighting from your local bush fire brigade or even join your local brigade.
- Join or start a local Bushfire Ready Awareness Group.

#### 6.4.4 Hazard Reduction within the Public Open Space.

The POS is contained within Stages 5 and 6 and hazard reduction will take place at such time as these stages are developed. All fire fuel reduction work is to be completed prior to the release of the lots, down to 8 tonnes per hectare unless stipulated by specific reserve management plans.

Hazard reduction within the POS is the responsibility of the Shire and they will maintain POS in accordance with their own policies.

#### 6.4.5 Planting of Trees and Vegetation

Planting of new trees and shrubs are not permitted within 6 metres of the centre of any firebreak. Trees planted within the BPZ and HSZ must comply with the standard outlined in Section 6.4.1 and 6.4.2 respectively.

Any planting of trees and re-vegetation within the site is to be carried out so as not to increase the fire risk to existing and proposed dwellings/ buildings and also to ensure a safe refuge for residents in the event of bush fires. The BAL ratings of Lots adjoining this re-vegetation will have dwelling construction standards increased as a result of the re-vegetation.

#### 6.4.6 Dwelling Standards

Individual dwellings on all lots shall be designed and built to conform with:

- The Building Code of Australia; and
- AS 3959 Construction of Buildings in a Bushfire Prone Area;

The minimum distance of 100 metres (from vegetation rated 'Moderate' or 'Extreme') may be reduced in compliance with AS 3959. Under AS 3959 as the distance from the vegetation is reduced, the construction standard must be increased. Table 2.4.3 AS 3959 sets out this relationship and Section 2 of AS 3959 details the methodology of determining the Bushfire Attack Level (BAL).

BAL (Bushfire Attack Level) Determination Using Methodology from Section 2.2.1 of current adopted AS 3959- 2009 and Table 2.4.3 will apply to all Lots.

Dwelling BAL's for all lots outside stage 4 are to have a BAL assessment completed having regards to the requirements of AS3959 Building in Bushfire Prone areas prior to the issue of a building license.

Lot 196 is located closest to the Pine plantation to the north west but will not require a BAL greater than BAL19 given the setback distance.

A Lot owner or the Shire of Denmark (at the landowners cost) may request that a Building Site Assessment is carried out by a competent Fire Consultant as part of the Building License Application to confirm the width of the BPZ, HSZ and dwelling construction standard in accordance with the current version of AS 3959 to determine the BAL (Bushfire Attack Level).

Other Public Safety and Community information on Bush Fires is available on the Department of Fire and Emergency Services web site <u>www.dfes.wa.gov.au</u> and the Shire of Denmark website <u>www.denmark.wa.gov.au</u>.

#### BAL for Stage 4 construction standards

All dwellings constructed within stage 4 shown below (Figure 9) will have BPZ/HSZ cleared to the size set out below and constructed to the BAL shown.

There are 2 BAL levels recommended BAL19 setback from dwelling wall 25meters and BAL 12.5 setback 35meters BPZ/HSZ may overlap neighboring sites.





#### BAL for Stages 2, 3 & 4B construction standards

All dwellings constructed within the remaining stages shown in Figure 10, will be constructed to the BAL shown.

#### Figure 10 BAL for Stages 2, 3, 5 & 6 lots.



#### 6.5 DESIGN OF DEVELOPMENT

The development complies with acceptable solutions A4.1, A4.2, A4.3 & A4.4.

All dwellings/buildings will have a BPZ and HSZ installed around each dwelling appropriate to the slope of the Lot as indicated on Figure 9

#### 7.0 SUMMARY

#### 7.1 OVERALL FIRE THREAT

The design of this proposed development and the facilities constructed at the time of development are such that with implementation of this Fire Management Plan, fire threat to persons and property within the subdivision is reduced.

#### 7.2 PROPERTY OWNER'S RESPONSIBILITIES

To maintain the reduced level of risk and threat of fire, the owners/occupiers of lots created by this proposal will be responsible for undertaking, complying and implementing measures protecting their own assets from the threat and risk of bush fire.

- Maintain internal firebreaks clear of flammable material on their property by the dates shown on the Shire of Denmark Firebreak Notice as detailed in Section 6.2 and relevant Appendices.
- Maintain in good order and condition all property fencing and gates ensuring that vegetation does not encroach over the firebreak;
- Ensure all dwellings have Building Protection Zones, Hazard Separation Zones, Hazard Reduction, Dwellings are constructed to AS 3959-2009, planting of trees/shrubs and re-vegetation are implemented and maintained as detailed in Section 6.4.1 & 6.4.2

#### 7.3 DEVELOPER'S RESPONSIBILITIES

To facilitate the creation of the proposed lots, the developer/landowner shall be required to carry out the following works as described below.

- Lodging a 70A 'Notification' on each Certificate of title proposed by this subdivision. The Notification shall alert purchasers of land and successors in Title of the responsibilities of this Fire Management Plan;
- Construction of roads in accordance with A2.2 and Shire of Denmark standards.
- Construction of, FSA as per section 6.2.4

- Planting of trees and vegetation is to be carried out as detailed in Section 6.4.4;
- Install fire Hydrants as detailed in Section 6.3.2.
- Fuel reduction of the under storey of all lots, road reserves and public open spaces to be at least 8 tonnes per hectare generally and 2 tonnes per hectare for lots at hand over unless stipulated by specific reserve management plans.

#### 7.4 SHIRE OF DENMARK RESPONSIBILITIES

The responsibility for compliance with the law rests with individual property owners and occupiers and the following conditions are not intended to unnecessarily transfer some of the responsibilities to the Shire of Denmark The Shire of Denmark shall be responsible for:

- Developing and maintaining District Fire Fighting Facilities;
- Provide advice on appropriate techniques to achieve bush fire hazard reduction for individual properties;
- Maintaining in good order the condition of the district water tanks and the apparatus for firefighting purposes;
- Ensure that dwellings are designed to the appropriate AS 3959 BAL rating at the Building License Application stage.
- Maintain FSA in POS annually.
- Maintain POS in accordance with their own policy for POS

## Appendix A - Access Standards

#### Public Road Standard A2.2

Two different vehicular access routes, both of which connect to the public road network, are available to all residents/the public at all times.

Public roads meet the following requirements:

- minimum trafficable surface: 6 metres
- horizontal clearance: 6 metres
- vertical clearance: 4 metres
- maximum grades: 1 in 8
- maximum grade over <50 metres: 1 in 5
- maximum average grade: 1 in 7
- minimum weight capacity: 15 tonnes
- maximum crossfall: 1 in 33
- curves minimum inner radius: 12 metres

6 metre trafficable surface width does not necessarily mean paving width. It could, for example, Include 4 metre wide paving and 1 metre wide constructed road shoulders.

In special circumstances, where 8 or less lots are being serviced, a public road with a minimum trafficable surface of 4 metres for a maximum distance of 90 metres may be provided subject to the approval of both the local government and DFES.

#### A2.3 Culs-de-sac

(including dead end roads) are generally not encouraged in bush fire prone areas. Where used, however, cul-de-sac standards are to be as follows:

- maximum length: 200 metres (if emergency access is provided between culde-sac heads maximum length can be increased to 600 metres provided no more than 8 lots are serviced)
- minimum trafficable surface: 6 metres
- horizontal clearance: 6 metres
- maximum grades: 1 in 8
- maximum grade over <50 metres: 1 in 5
- maximum average grade: 1 in 7
- minimum weight capacity: 15 tonnes
- maximum crossfall: 1 in 33
- curves minimum inner radius: 12 metres• as per turn around area requirements including 21 metre diameter head.

#### A2.4 Battle axes

- Battle axe access legs meet the following requirements:
- maximum length: 600 metres
- minimum width: 6 metres
- minimum trafficable surface: 4 metres
- horizontal clearance: 6 metres
- vertical clearance: 4 metres
- maximum grades: 1 in 8
- maximum grade over <50 metres: 1 in 5
- maximum average grade: 1 in 7
- minimum weight capacity: 15 tonnes
- maximum crossfall: 1 in 33
- curves minimum inner radius: 12 metres.

#### A2.5 Private Driveways

Constructed private driveways meet the following requirements:

- required where house site is more than 50 metres from a public road
- minimum trafficable surface: 4 metres
- horizontal clearance: 6 metres
- vertical clearance: 4 metres
- maximum grades: 1 in 8
- maximum grade over <50 metres: 1 in 5
- maximum average grade: 1 in 7
- minimum weight capacity: 15 tonnes
- maximum crossfall: 1 in 33
- curves minimum inner radius: 12 metres
- passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of 2 metres (ie the combined width of the passing bay and constructed private driveway to be minimum 6 metres) turn around areas designed to accommodate 3.4 fire appliances and to enable them to turn around safely: every 500 metres and within 50 metres of a house

#### A2.7 Fire Service Access routes

Fire services access routes, providing links between public road networks for fire fighting purposes, meet the following requirements:

- surface: all weather
- dead end: not permitted
- minimum trafficable surface: 6 metres
- horizontal clearance: 6 metres
- vertical clearance: 4 metres
- maximum grades: 1 in 7
- maximum grade over <50 metres: 1 in 4
- maximum average grade: 1 in 5
- minimum weight capacity: 15 tonnes
- maximum crossfall: 1 in 33
- curves minimum inner radius: 12 metres
- turn around areas designed to accommodate 3.4 appliances and to enable them to turn around safely: every 500 metres
- erosion control measures and long term maintenance arrangements in place
- access to public road network: every 1000 metres
- allow for two way traffic.

#### A2.8 Gates

All gates used to restrict traffic on emergency access ways and fire service access routes meet the following requirements:

- minimum width 3.6 metres
- design and construction: to be approved by relevant local government
- emergency access way gates: must not be locked
- fire service access route gates: may be locked but only with a common key that is available to local fire service personnel

#### A2.10 Signs

Signs are erected where emergency access ways and fire services access routes adjoin public roads, and meet the following requirements:

- minimum height above ground: 0.9 metres
- design and construction: to be approved by relevant local government
- lettering height: 100 millimetres
- to display the following wording (as appropriate): 'Fire Service Access No Public Access'.

## Appendix B - Building Protection Zone

Building Protection Zone standards are:-

- Bush Fire fuels to be maintained at or below 2 tonnes per hectare and dry grass must be maintained below a height of 50mm;
- The first 5m around all building is to be cleared of all flammable material. Reticulated gardens may be located in this zone;
- The spacing of trees should be 15-20 metres apart to provide for a separation of 10 metres between crowns;
- Trees are to be under/low pruned, to a height of 2 metres;
- No tall shrub or tree is to be planted within 2 metres of a building including windows;
- There are no tree crowns over hanging the building;
- Shrubs within the building protection zone have no dead material within the plant;
- Trees in the Building protection zone have no dead material within the plant's crown or on the bole (tree trunk)
- Sheds within the Building Protection Zone are to be constructed using non combustible materials (e.g. colourbond iron, brick, limestone);
- Branches, must be removed at least 2 metres back from the eaves of all buildings;
- All leaves, twigs, logs, branches must be periodically removed from within the building protection zone. Annual falls of leaf litter must be raked up and removed or burnt.

## Appendix C - Hazard Separation Zone

Hazard Separation Zone Standards are:-

- Bush fire fuel loadings must be maintained within the Hazard Separation Zone to a maximum maximum of 4-6 tonnes/ha.
- Dry grass is to be slashed to 50 mm in height
- All accumulated litter, twigs, bark of trees, fallen tree branches and logs should be removed from the area on a regular basis prior to and during the Bush Fire Season.

The developer is to modify fuel loadings on all Lots at the time of subdivision and/or development so as to achieve the requirements of the Building Protection Zone and Hazard Separation Zone prior to the sale of Lots. Landowners are also required to maintain building protection zones and hazard separation zones in perpetuity (i.e. from date of purchase irrespective of whether a dwelling is to be constructed or not) in accordance with this fire management plan.

Removal of bush fire fuels may be carried out by burning or mechanical means preference is for mechanical removal of selected trees and understorey. If burning is used is must be carried out in accordance with the provisions of the Bush Fires Act 1954 and the Shire of Denmark Firebreak Notice.

## Appendix D - A3.1Water Supplies for Fire Fighting

The development is provided with a reticulated water supply, together with fire hydrants, in accordance with the specifications of the relevant water supply authority and FESA.

#### Notes to A3.1

Water supply authorities in Western Australia include the Water Corporation, Aqwest and the Busselton Water Board.

The 'Water Corporation's No.63 Water Reticulation Standard' is deemed to be the baseline criteria for developments and should be applied unless local water supply authorities conditions apply.

## FIRE MANAGEMENT PLAN Compliance checklist for performance criteria and acceptable solutions

PROPERTY DETAILS: Lot 9001 South Coast Highway Local Government: Shire of Denmark

#### Element 1: Location

Does the proposal comply with the performance criteria by applying acceptable solution A1.1?	Yes 🗸	No
Element 2: Vehicular Access		
Does the proposal comply with the performance criteria by applying acceptable solution A2.1?	Yes 🗸	No
Does the proposal comply with performance criteria by applying acceptable solution A2.2?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.3?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.4?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.5?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.6?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.7?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.8?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A2.9?	Yes 🗸	No
Shire of Denmark annual Firebreak Notice. Firebreaks in POS.		
Does the proposal comply with the performance criteria by applying acceptable solution A2.10?	Yes 🗸	No

#### Element 3: Water

Does the proposal comply with the performance criteria by applying acceptable solution A3.1?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A3.2?	N/A	
Does the proposal comply with the performance criteria by applying acceptable solution A3.3?	N/A	
Element 4: Siting of Development		
Does the proposal comply with the performance criteria by applying acceptable solution A4.1? BPZ, HSZ installed increase in construction standard	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A4.2?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A4.3?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A4.4?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A4.5?	N/A	
Element 5: Design of Development		
Does the proposal comply with the performance criteria by applying acceptable solution A5.1?	Yes 🗸	No
Does the proposal comply with the performance criteria by applying acceptable solution A5.2?	N/A	

#### Applicant Declaration:

I declare that the information provided is true and correct to the best of my knowledge.

Name of Person Preparing the Fire Management Plan:

by th

Full Name: Tony Moran for FirePlan WA

**Developer:** 

Full Name:

Signature: \_\_\_\_\_

Date: 12/05/14

Date:

# AS 3959 Bushfire Attack Level (BAL) Contour Plan & Bushfire Management Statement

Site Details			
Address:	Stage 3, 5 and Tourist Zone Springdale Beach Development		
Suburb:	Denmark	State:	W.A.
Local Government Area:	Shire of Denmark		
Description of Building Works:	N/A		
Stage of WAPC Planning	WAPC Clearance (Stage 3), Future Construction of Stage 5, and WAPC re-application (Tourist Zone)		

BAL Contour Plan Details				
Report / Job Number:	MSC0166	Report Version:	FINAL	
Assessment Date:	8/11/2017	Report Date:	30/11/2017	
BPAD Practitioner	Kathryn Kinnear	Accreditation No.	BPAD30794	



#### **SECTION 1: Proposal details**

LWP Property Denmark Pty Ltd commissioned Bio Diverse Solutions to prepare a BAL Contour Plan and Bushfire Management Statement to support the previously approved Fire Management Plan for Springdale Beach Estate Denmark.

This BAL Contour Plan and Bushfire Management Statement has been prepared to address/support the following aspects of the estate:

- WAPC title clearances for Stage 3 of WAPC approval No.152491.
- Guide construction periods and address future WAPC title clearances for Stage 5 (WAPC 152491; and
- Assist in re-application of the proposed "Tourist Zone" in the south of the Estate.

The development of Springdale Beach Estate is required to meet the "Acceptable Solutions" of each Element of the bushfire mitigation measures (WAPC, 2017). The proposal will be briefly assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4 and documented in the Bushfire Management Statement (BMS). This will assist in the WAPC subdivision approvals and clearances. The BMS will review and update further information since the approved Fire Management Plan prepared by Fire Plan WA in October 2015.

The subdivision proposals include the following:

- Stage 3 (A, B & C) consists of 34 lots;
- Stage 5 (A, B & C) consists of 31 lots; and
- Tourist Zone (future development area).

Refer to Figure 1 over the page for the Staged Plan of Subdivision and Figure 2 for location plan.

Documents and reports relating to this report include:

- Springdale Beach Estate, Lot 9000 South Coast Highway, Shire of Denmark: Approved Fire Management Plan dated October 2015;
- Vegetation Clearing Plan Mapping supplied to the Shire of Denmark for Springdale Beach Estate (See Appendix A);
- Approved Weed Management Program (Opus, 2014); and
- Scheme Provisions as outlined in the Springdale Beach Special Residential Zone Pt Plantagenet Location 1935 South Coast Highway, Shire of Denmark TPS 3.

This report does not supersede the approved Fire Management Plan (FirePlan WA, 2015), rather acts as an addendum document to update and review the subdivisions under the Guidelines for Planning in Bushfire prone Areas Version 1.2 (2017) and State Planning Policy 3.7.

The subject site is partially located in the WA state wide bushfire prone area mapping, refer to Figure 3.


# Springdale Beach Subdivision Plan



Figure 1: Staged plan of subdivision





Figure 2: Location Plan



Figure 3: State Bushfire Prone Area Mapping



## **SECTION 2 - Vegetation Classification**

All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages.

## COMMENTS ON VEGETATION CLASSIFCATIONS:

- Distances from vegetation were made based on surface fuels to edge of lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS3959-2009) Simplified procedure was used for vegetation classification and assessment process;
- All vegetation was classified within the subject site and within 150m of the lot boundaries to AS3959 Table 2.3; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.





This BAL Plan was Kathryn Kinnear, Bi Accreditation No: B Jurisdiction: Level	prepared by: o Diverse Solutions PAD30794 2 - WA				
BPAD Bushfire Planning & Desl Accedited Practition Level 2		29 Hercules Crescent Albany, WA 6330 Australia Tel: 08 9842 1575 Fax: 08 9842 1575			
Denmark Bonalup Rail A Market Base	East Rive	ap Scale 1:100,000			
Legend					
Subject Site 150m Assessme Developable Ard Bush Fire Prone Cadastre BAL Contours BAL-FZ BAL-40 BAL-29 BAL-19 BAL-19 BAL-12.5 BAL-10W	ent Boundary ea e Areas 2017				
GDA MGA 94 Zone 50 Data Sources					
Aeriai imagery: SLIP Virtual Mosaic WMS Service, Landgate 2017 Cadastre, Relief Contours and Roads: Landgate 2017 IRIS Road Network: Main Roads Western Australia 2017 Overview Map: World Topographic map service, ESRI 2012					
CLIENT Client Name Assessment Street Address Suburb, WA Postcode					
BAL Contour - Tourist Zone					
KK	KK	BT			
FINAL	FILE MSC0166	DATE 28/11/2017			

Appendix D

Existing Shire of Denmark TPS 3 Appendix XIV-Special Residential Zones SRes 6 Special Provisions

### APPENDIX XIV - SPECIAL RESIDENTIAL ZONES (CONT'D)

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS	
SRes 5. PT LOT 942 WARNHAM ROAD SPECIAL RESIDENTIAL ZONE		(xii)	<ul> <li>Roads within the zone shall:</li> <li>i) Be located in a manner which is sympathetic to the topography and minimise visual impact.</li> <li>ii) Be drained underground and kerbed to meet the requirements and specification of Council.</li> </ul>
(Continued)		(xiii) Council may request the Commission to impose a condition at the subdivision stage for th of the lots to Water Corporation reticulated water supply scheme.	
		(xiv)	Council may request the Commission to impose a condition at the subdivision stage for tree planting to be carried out generally in the locations shown on the Subdivision Guideline.
SRes 6. SPRINGDALE BEACH	Rural Residential	i)	a) the minimum lot size should be no less than 3000m <sup>2</sup> .
ZONE	SPECIAL RESIDENTIAL         Permitted Use (P):         a)	a) Subdivision shall generally be in accordance with the Subdivision Guide Plan. The Western Australian Planning Commission may consider minor variations to the Subdivision Guide Plan	
Portion of Plantagenet Location 1935 South Coast Highway, Denmark	Permitted at Council's Discretion (AA):	nitted at Council's Discretion (AA):	however the further breakdown of lots will be contrary to the Scheme.
	Single House Home Occupation Livestock Grazing <i>see clause (viii)a)</i>	ii)	<ul> <li>a) All buildings shall be set back a minimum of:</li> <li>10m from the front boundary.</li> <li>10m from the rear boundary.</li> <li>10m from all other boundaries.</li> </ul>
			b) Notwithstanding (a) above, Council may approve a reduction to the nominated "rear boundary" and "all other boundaries" setback, to a minimum of 5m each, where it is of the opinion that the topography or shape of the lot, or remnant vegetation on it, makes it desirable to alter the setback and that the location of the building will not detract from the amenity of the area or existing or future dwellings on surrounding lots.
			c) On lots allocated "Dwelling Areas" (500m <sup>2</sup> ) on the Subdivision Guide Plan, dwellings shall be confined to the Dwelling Area unless otherwise approved by Council. Such approvals may require additional siteworks to be performed at the landowner's expense.
			d) Council may request the Commission to impose a condition at the time of subdivision for the filling of "Dwelling Areas" as shown on the Subdivision Guide Plan. Filling is to be a minimum of 500mm above groundwater levels determined by geotechnical investigation [Provision c)ix)a)] and shall resolve the land's poor nutrient retention ability and high groundwater pollution potential to the satisfaction of the Waters & Rivers Commission. Batter slopes of "Dwelling Areas" shall be within the range of 1:4 to 1:6.

### APPENDIX XIV - SPECIAL RESIDENTIAL ZONES (CONT'D)

PARTICULARS OF THI	E LAND	PROPOSED USES	SPECIAL PROVISIONS		
SRes 6. SPRINGDALE BEACH SPECIAL RESIDENTIAL ZONE       Rural Residential         Portion of Plantagenet Location 1935 South Coast Highway, Denmark       Permitted Use (P):         (Continued)       Permitted at Council's Discretion (AA):         Single House Home Occupation Livestock Grazing see clause (viii)a)		e)	Subject to Provision c)ii)d), Council may request the Commission to impose a condition at the time of subdivision for the compaction of house pads within the identified "Dwelling Areas". Such house pads shall be certified as capable of accommodating a two storey double brick & tile dwelling and provide for the co-location of an amended soil effluent disposal system within the "Dwelling Area".		
	Single House Home Occupation Livestock Grazing <i>see clause (viii)a)</i>		f)	No development shall be permitted within the Development Exclusion Area as shown on the Subdivision Guide Plan.	
		iii)	a)	Council may request the Commission to impose a condition at the time of subdivision for the provision of Strategic Fire Breaks and other fire safety facilities. Such facilities shall be provided to the satisfaction of Council and the Fire & Emergency Services Authority.	
				b)	Council shall require that individual landowners are responsible for the maintenance of any strategic firebreaks crossing individual lots.
				c)	The clearing of firebreaks other than for strategic firebreak purposes will not be permitted unless for safety reasons to comply with Council and Fire & Emergency Services Authority requirements.
				d)	Low Fuel Areas a minimum of 30m wide shall be provided and maintained around all buildings.
				e)	The subdivider shall make arrangements to the satisfaction of Council to ensure prospective purchasers, in the transfer of lots, are aware of the fire management guidelines of the Homeowners Bushfire Survival manual, the Fire Management Plan and Australian Standard 3959 'Construction of Buildings in Bushfire Prone Areas'.
				f)	In cases where only part of the zone is developed, an interim firebreak system shall be prepared and put in place to the satisfaction of Council and the Fire & emergency Services Authority.
				g)	Council may request the Commission to impose a condition at the time of subdivision for the provision fire hydrants at intervals of 200 metres along subdivisional water mains.
			iv)	a)	No clearing of remnant vegetation shall occur except for:
					<ul> <li>clearing to comply with the requirements of the Bush Fires Act 1954 (as amended);</li> <li>clearing may reasonably be required to construct an approved building and curtilage;</li> <li>trees that are diseased or dangerous;</li> <li>clearing required to establish a low fuel buffer;</li> <li>clearing to gain vehicular access to an approved dwelling or any other clearing which may be approved by the Council.</li> </ul>

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS		
SRes 6. SPRINGDALE BEACH SPECIAL RESIDENTIAL ZONE	Rural Residential Permitted Use (P):		b)	Council may request the Commission to impose a condition at the time of subdivision for the removal of Taylorina or any other declared weeds from Public Open Space, Road Reserves and Private Lots.
Portion of Plantagenet Location 1935 South Coast Highway, Denmark	Permitted at Council's Discretion (AA):		c)	It shall be the responsibility of the landowner to preclude the establishment of invasive weed species on the individual allotments.
(Continued)	Single House Home Occupation Livestock Grazing <i>see clause (viii)a)</i>		d)	Where in the opinion of Council invasive weed species are invading any land within the zone, notice may be served on the owner of the land, requiring immediate eradication of those weed species specified in the notice.
			e)	Where notice has been served on a landowner, Council may also require the land to be stabilised or replanted to its satisfaction within three months of servicing the notice.
			f)	In the event that such action is not undertaken, Council may carry out such works as are deemed necessary, with all costs being borne by the landowner.
			g)	Council may request the Commission to impose a condition at the time of the subdivision for the preparation and implementation of a Public Open Space and Replanting Strategy. Such a strategy shall use local native tree and shrub species and be based on the requirements of the Visual Impact Assessment and the Subdivision Guide Plan so as to ensure a visual screen is obtained. Trees only should be used in road reserves.
			h)	Additional tree/shrub planting may be required as a condition of development approval.
			i)	Council may request the Commission to impose a condition at the time of Subdivision for the preparation of Foreshore Management Plan/s based on the requirements of the Subdivision Guide Plan.
		V)	a)	All buildings constructed within the zone shall be sympathetic to existing landscape elements (landform and vegetation) in terms of their location, scale, height, materials and colour.
			b)	Buildings shall be constructed with roof and external wall materials and colours comprising natural earth or olive green colours. Reflective colours and materials such as zincalume, white and off white tones will not be permitted. Other roof and external wall materials which would, in the opinion of Council, prejudice the landscape amenity of the area, will not be permitted.
			c)	All buildings shall be sited to maximise the natural screening effect of vegetation and topography.

<b>APPENDIX XIV - SPECIAL RES</b>	IDENTIAL ZONES (CONT'D)
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PARTI	CULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS		
SRes 6.	SPRINGDALE BEACH SPECIAL RESIDENTIAL ZONE	Rural Residential Permitted Use (P):		d)	All buildings shall be single storey except where it can be proven to Council that a variation to the height restriction would not adversely affect the visual amenity of surrounding lots as well as the locality.
Portion of Plantagenet Location 1935 South Coast Highway, Denmark	Permitted at Council's Discretion (AA): Single House		e)	Proposals to vary the height restrictions pursuant to (d) above, shall be accompanied by such plans, elevations and sketches as is determined by Council to assess the effect on visual amenity and the natural screening properties of vegetation and topography.	
(Continue	Livestock Grazing see clause (viii)a)	vi)	a)	Council may request the Commission to impose a condition at the time of subdivision for the provision of reticulated water to the lots.	
				b)	Any water tanks shall be coloured an appropriate natural shade of brown or green and shall be suitably screened with vegetation in keeping with the amenity of the area to the satisfaction of Council.
			vii)	No bo utiliseo satisfa	undary fencing shall be constructed of fibre cement or metal sheeting. If boundary fencing is d, it shall be of rural construction such as pine posts/steel posts and 7 strand ringlock to the action of Council.
			viii)	a)	Intensive horticulture is not permitted. The grazing of livestock may be permitted and shall be restricted to fenced pastured areas of the lot. The owner shall be responsible for the erection and maintenance of stock proof fencing to protect remnant vegetation and replanting areas. Animal numbers shall not exceed the stocking rates recommended by Agriculture W.A. The keeping of animals shall not result in the removal or damage of endemic vegetation and trees or result in soil degradation and dust nuisance.
				b)	Where in the opinion of Council the continued presence of animals on any portion of land is likely to contribute, or is contributing to dust nuisance or soil degradation, notice may be served on the owner of the land, requiring immediate removal of those animals specified in the notice.
				c)	Where notice has been served on a landowner in accordance with (b) above the Council may also require the land to be rehabilitated to its satisfaction within three (3) months of serving the notice.
				d)	In the event that such action is not undertaken, Council may carry out such works as are deemed necessary, with all costs being borne by the landowner.
			ix)	a)	Council may request the Commission to impose a condition at the time of subdivision to require the preparation of a Geotechnical Investigation which details soil profiles to a depth of at least 2.0 metres, permeability, winter water table levels and the topography of the land.