Shire of Denmark
Town Planning Scheme No. 3
Scheme Amendment No. 154

Lot 1 (No. 23) Riverbend Lane, Scotsdale

Prepared by Edge Planning & Property for Cultura Foundation Inc.

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November 2023

PLANNING AND DEVELOPMENT ACT 2005
RESOLUTION DECIDING TO AMEND A TOWN PLANNING SCHEME

SHIRE OF DENMARK TOWN PLANNING SCHEME No. 3

AMENDMENT No. 154

RESOLVED that the local government in pursuance of Section 75 of the *Planning and Development Act 2005*, amend the above Town Planning Scheme by:

1. Replacing 'Pt Lot, 613 Scotsdale Road, Denmark' with 'Lot 110 on Plan 21633 (No. 222) Scotsdale Road, Scotsdale' and add 'and Lot 1 on Diagram 87539 (No. 23) Riverbend Lane, Scotsdale' in Additional Use Site No. 12 (A12) in the second column (Particulars of the Land) in Appendix 2 Schedule of Additional Use Sites.

2. Amending the Scheme Map accordingly.

3. Amending the conditions of Additional Use No. 12 to remove condition 1 and renumbering the conditions accordingly.

The Amendment is standard under the provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015* for the following reasons:

A) The amendment would have minimal impact on land in the scheme area that is not the subject of the amendment.
B) The amendment does not result in any significant environmental, social, economic or governance impacts on land in the scheme area.

Dated this 21st day of November 2023

CHIEF EXECUTIVE OFFICER

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PROPOSAL TO AMEND A TOWN PLANNING SCHEME		
1.	**LOCAL GOVERNMENT:**	Shire of Denmark
2.	**DESCRIPTION OF LOCAL PLANING SCHEME:**	Town Planning Scheme No. 3
3.	**TYPE OF SCHEME:**	District Scheme
4.	**SERIAL NUMBER OF AMENDMENT:**	154
5.	**PROPOSAL:**	1. Replacing 'Pt Lot, 613 Scotsdale Road, Denmark' with 'Lot 110 on Plan 21633 (No. 222) Scotsdale Road, Scotsdale' and adding 'and Lot 1 on Diagram 87539 (No. 23) Riverbend Lane, Scotsdale' in Additional Use Site No. 12 (A12) in the second column (Particulars of the Land) in Appendix 2 Schedule of Additional Use Sites. 2. Amending the Scheme Map accordingly. 3. Amending the conditions of Additional Use No. 12 to remove condition 1 and renumbering the conditions accordingly.

1. INTRODUCTION

The Shire of Denmark seeks the support of the Western Australian Planning Commission (WAPC) and the approval of the Hon. Minister for Planning to add Lot 1 (No. 23) Riverbend Lane, Scotsdale (the 'site') within Additional Use No. 12 to facilitate expanding the Golden Hill Steiner School (educational establishment).

The purpose of this report and associated plans are to explain and set out the planning merits of the Amendment. More detailed planning and investigations will occur at the Subdivision Application, Development Application and at the Building Permit stages.

The site is shown in **Attachment 1**. Based on its location, characteristics and context, the site is suitable for an expanded educational establishment. **Attachment 2** shows that the site has convenient access to the Denmark townsite.

2. BACKGROUND

2.1 Property Address and Cadastral Details

Cadastral details for the site are summarised below in **Table 1**:

Table 1 – Cadastral Details	
Lot and address	Lot 1 Riverbend Lane, Scotsdale
Diagram	37539
Volume/Folio	2023/688
Area	5.96ha
Owner	Shire of Denmark

2.2 Regional Context

The site is situated in the Shire of Denmark. The Denmark townsite is located approximately 414 kilometres south-east of Perth and 50km west of Albany. Denmark is a sub-regional centre in the Great Southern and provides a range of services and facilities to residents and visitors.

The town adjoins the Denmark River and is within the Wilson Inlet catchment.

2.3 Local Context

The site is located at the northern edge of the Denmark townsite and is located approximately 1.75 km north of the Denmark town centre (see **Attachment 2**). The site is located on the north-eastern corner of the Riverbend Lane and Scotsdale Road intersection. **Attachment 3** shows the Opportunities and Constraints Plan which also outlines the site's context. The site adjoins and is generally surrounded by a school and residential development. There is also considerable recreation uses nearby along with tourist development.

The Golden Hill Steiner School is located at Lot 110 Scotsdale Road which adjoins Lot 1 Riverbend Lane to the north.

2.4 Physical Characteristics

The site is outlined in **Attachment 1** and has the following characteristics and features:

- It is generally cleared and contains remnant vegetation in the southern and eastern sections;
- It has a gentle gradient, having an elevation of between approximately 5 and 16 metres AHD (Australian Height Datum);
- It contains a single house constructed around 1940. The site is used for rural living purposes;
- There are no natural surface water or drainage features;
- It is not on the Department of Water and Environmental Regulation's Contaminated Site Database; and
- The property is bordered by Scotsdale Brook on its eastern boundary.

The site's physical features present minimal constraints to the Amendment.

2.5 Services

The site is provided with standard 'hard' infrastructure including reticulated (scheme) water, power, telecommunications, drainage and sealed roads. Vehicular access is from both Scotsdale Road and Riverbend Lane. The site is remote from the reticulated sewerage system.

2.6 Heritage

There is no registered Aboriginal heritage site on the subject land area as set out on the Department of Planning, Lands and Heritage Affairs heritage inquiry system. While noting this, land developers have an obligation under the *Aboriginal Culture Heritage Act 2021* to protect places and objects in Western Australia that are important to Aboriginal people because of the connections to their culture.

Additionally, the site does not contain any structure or place of non-indigenous heritage significance on the *Shire of Denmark Heritage Survey* or on the Shire's Heritage List.

2.7 Council Resolution

The Council at its Ordinary Meeting on 20 December 2022 resolved -

'That with respect to No. 23 (Lot 1) Riverbend Lane, Council:

1. NOTES the submission received in support of the disposal.
2. AUTHORISE the Chief Executive Officer to enter into a contract to dispose (sell) the property to Cultura Incorporated for $900,000 (ex GST) subject to the following conditions prior to settlement:
   a) Western Australian Planning Commission approves a revised structure plan providing a minimum of 2,500sq.m of the lot allocated for educational purposes.
   b) The Minister for Planning approves a Scheme Amendment providing a minimum of 2,500sq.m of the lot allocated for educational purposes.
   c) Cultura Incorporated to draft and cover all costs for planning documents required for a) and b).
3. REQUEST the Chief Executive officer to include the sale in the revised Long Term Financial Plan and draft 2023/24 Municipal Budget.'

The report to Council set out that there is no longer a requirement for a second bridge crossing near the site.

The report outlined the 2011 Local Planning Strategy (LPS) identifies the potential need for an additional bridge over the Denmark River to provide alternative access in an emergency. In 2017/2018, detailed investigations were undertaken, which concluded that current access (via South Coast Highway and alternatively via Churchill Road) was sufficient for the foreseeable future. While acknowledging that it is relevant to reassess this potential need periodically, the draft 2022 LPS endorsed by Council in September 2022 notes that:

- Based on anticipated traffic and freight volumes, an additional bridge is unlikely to be required during the life of this Strategy.
- It is, therefore, not appropriate to identify the location for the purposes of a future bridge at this time.
- As a means of supplementing the regional road network, the State should lead any potential future investigations into a new bridge.
- Further improvements to the existing road network may provide more cost-effective outcomes in the short to medium term.

Based on the above, the land parcel is not deemed strategically important and is therefore suitable for sale.

2.8 Cultura Foundation Incorporated

Cultura Foundation Inc. is a not-for-profit, incorporated body whose board is comprised of founding members of Golden Hill Steiner School. Their purpose is to fund anthroposophical initiatives in Denmark, of which the school is one. Anthroposophy is the philosophy upon which a Steiner education is based. Cultura Foundation Inc. remains at-arms-length from the school and its operations and provides philanthropic support. It is proposed that Cultura Foundation Inc. will purchase the site with a view to transferring ownership to the Golden Hill Steiner School once the lots have been subdivided and appropriate zoning and other relevant planning approvals are in place for the school to operate.

3. PLANNING FRAMEWORK

3.1 Overview

This section outlines how the Amendment suitably addresses relevant planning policies, strategies, plans and the *Shire of Denmark Town Planning Scheme No. 3*. In summary, the Amendment is consistent with the State, regional and local planning framework.

3.2 State Planning Framework

The following strategies and policies are of relevance to the Amendment:

- *State Planning Strategy 2050* - sets a broad strategic plan for Western Australia built on sustained growth and prosperity. The Strategy supports educational and associated facilities and supports developing strong and resilient regions. An objective is 'To encourage active lifestyles, community interaction and betterment' (page 96) and it includes an aspiration of supporting 'More regional educational infrastructure through greater use of technology and e-learning'. The Amendment is consistent with the Strategy given it promotes education services and is located near an established sub-regional centre;
- *State Planning Policy 1 State Planning Framework Policy* - identifies that the primary aim of planning is to provide for the sustainable use and development of land;
- *State Planning Policy 2 Environment and Natural Resources;*
- *State Planning Policy 2.5 Rural Planning* - the objectives seek to protect rural land from incompatible uses, to promote regional development through provision of ongoing economic opportunities on rural land, to promote sustainable settlement in, and adjacent to, existing urban areas, to protect and improve environmental and landscape assets and to minimise

land use conflicts. The Policy supports opportunities for employment and diversification of economic activity related to primary production in rural areas. Previous versions of the Policy have been applied in the Shire's Local Planning Strategy and the associated Town Planning Scheme No. 3, through the Special Rural zoning;

- *State Planning Policy No. 2.9 Water Resources* - development is required to adopt water sensitive urban design principles;
- *State Planning Policy No. 3 – Urban Growth and Settlement*: relevant policy objectives include to build on existing communities with established local and regional economies, concentrate investment in the improvement of services and infrastructure and enhance the quality of life in those communities;
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* - the site is within a Bushfire Prone Area as shown at https://maps.slip.wa.gov.au/landgate/bushfireprone/;
- *State Planning Policy 5.4 Road and Rail Noise* - the site is not within the 'trigger' area;
- *State Planning Policy 7.0 Design of Built Environment;* and
- *Guidelines for Planning in Bushfire Prone Areas* - further details relating to bushfire management are set out in section 5.10 and in **Attachment 4**.

3.3 Regional Planning Framework

3.3.1 Great Southern Regional Planning and Infrastructure Framework

The Framework identifies Denmark as a sub-regional centre and a focus for growth, services and facilities. The Framework supports a diverse economic base, supports commercial development in appropriate locations and supports enhanced health services.

3.3.2 Lower Great Southern Strategy

The Strategy notes there will be increased education demands and a need for improved facilities and support services.

3.3.3 Great Southern Regional Investment Blueprint

The Blueprint establishes priorities for economic development and growth of the Great Southern region and provides an analysis of local, regional, national and global factors influencing the region. A strategic economic growth plan and proposed transformational projects are set out. The Blueprint also supports growing the region's population, promoting new educational facilities, development in key centres and a vibrant economy.

3.4 Local Planning Framework

3.4.1 Shire of Denmark Local Planning Strategy (2011)

Strategy Plan 2 of the Local Planning Strategy identifies the site as 'Rural Residential' (**Attachment 5**).

The Strategy supports growing and diversifying the economy and encouraging enhanced educational facilities.

An objective of the Strategy, at section 4.5 is to 'provide a variety of educational options.' The Strategy further identifies strategies to achieve this objective as follows 'To identify and secure additional school sites through rezoning and structure plan process.'

3.4.2 Draft Shire of Denmark Local Planning Strategy

The draft LPS supports the expansion of the Golden Hill Steiner School as outlined in **Attachment 6**. Page 111 of the draft LPS outlines the proposal to extend the 'educational establishment' use over Lot 1 Riverbend Lane. Page 111 in part states 'Should the school be able to acquire Lot 1 (or portion), the Strategy supports the use of this site for an Educational Establishment. Access and other relevant planning issues may be resolved at the development application stage.'

The identification of the site for educational establishment in the draft LPS means the proposal is 'seriously entertained'.

3.4.3 Shire of Denmark Town Planning Scheme No. 3

The *Shire of Denmark Town Planning Scheme No. 3* (TPS3) currently zones Lot 1 (No. 23) Riverbend Lane, Scotsdale as 'Special Rural (SR15)'.

Attachment 7 sets out provisions relating to the site and proposal including from Special Rural Zone No. 15 (Golden Hill Special Rural Zone). A number of provisions relate to Special Rural (SR15) with some of the most applicable being the following:

(i) Subdivision of Special Rural Zone No. 15 is to be generally in accordance with Plan of subdivision (Plan No. A94-17-1) dated May 1995 as signed by the Shire Clerk.

(iii) The minimum lot size shall be 1 hectare.

(v) (f) All buildings shall be constructed in accordance with Australian Standard 3959-1991 "Construction of Buildings in Bushfire Prone Areas".

(vii) (c) The subdivider shall prepare a Foreshore Management Plan for Scotsdale Brook, dealing with stormwater drainage, erosion control and clearing and development within the Scotsdale Brook Foreshore.

(d) The subdivider shall prepare a stormwater drainage plan that addresses the drainage requirements of the site and addresses impacts on local water regimes.

(e) Building envelopes shall be located outside the 50 metre Creek line setback as shown on the Subdivision Guide Plan.

(viii)(a) All buildings constructed within the zone shall be sympathetic to existing landscape elements (namely landform and vegetation) in terms of their location, scale, height, building materials and colour.

The Golden Hill Steiner School is located at No. 222 Scotsdale Road, within the SR15 zoning. There is an additional use for 'educational establishment', listed as A12 in TPS3 that allows the land use. However, this additional use of educational establishment does not apply to Lot 1 (No. 23) Riverbend Lane.

Additional use No. 12 (A12) provisions are outlined in **Attachment 7**.

Appendix 1 defines educational establishment.

Appendix 6 – Parking Standards requires 2 parking spaces per secondary school classroom.

In order for the Golden Hill Steiner School to expand the school onto a portion of Lot 1 Riverbend Lane, a scheme amendment to extend the additional use classification across Lot 1 is required. Approval of the Amendment will then enable a Development Application to be considered for an educational establishment largely based on the Master Plan (**Attachment 8**).

3.4.4 Subdivision Guide Plan

The Subdivision Guide Plan referred to in Special Rural Zone No. 15 (SR15) is provided in **Attachment 9**. This plan shows the site as having potential to be subdivided into three special rural (rural residential) lots (potential Lots 10, 11 and 12) which are all around 2 hectares in area.

Potential Lot 10 is the western most lot located on the corner of Riverbend Lane and Scotsdale Road and has an area of 2 hectares. Potential Lot 11 is the central lot and has an area of 2 hectares (contains the existing dwelling), while potential Lot 12 is the eastern most lot and adjoins Scotsdale Brook. The land area of Lot 12 is 1.92 hectares. All potential lots have frontage to Riverbend Lane.

Provision (iii) of SR15 states that a minimum lot size of 1 hectare is required.

Based on the approved Subdivision Guide Plan, the site could potentially be subdivided into three (3) lots subject to WAPC approval.

While noting the Subdivision Guide Plan, Cultura Foundation Inc. on behalf of the Golden Hill Steiner School, have arranged a Master Plan (see **Attachment 8**).

The Master Plan shows 2 rural residential lots (both 1 hectare in area) plus 3.96 hectares allocated for school expansion.

3.4.5 Local Planning Policies

The Council has endorsed several Local Planning Policies, however the current adopted policies are not relevant to the Amendment. At the Development Application stage, relevant policies include signs and public art.

3.4.6 Shire of Denmark Strategic Community Plan (Our Future 2023)

The Strategic Community Plan sets the community's vision for the future and it is the principal strategic guide for the Council's future planning and activities. The plan supports growth and progress locally and regionally. The Council seeks to promote sustainable development and to support enhanced community services.

The vision is 'A vibrant coastal community, connected to the environment, living the village lifestyle.'

A community priority relevant to the Amendment is 'Services and facilities for youth'.

3.5 Planning Framework Implications for the Amendment

Common themes of the planning framework and their implications for the Amendment include:

- Supporting enhanced community/education services;
- Supporting sustainable growth in Denmark which is a designated sub-regional centre;
- Addressing servicing including on-site wastewater design;
- Addressing traffic safety;
- Addressing bushfire risks and servicing;
- Addressing land use compatibility and amenity; and
- Ensuring future buildings are sensitively located and designed.

Based on the above, extending Additional Use No. 12 (A12) for educational establishment purposes over Lot 1 Riverbend Lane is consistent with the planning framework and consistent with the principles of orderly and proper planning.

4. AMENDMENT PROPOSAL

4.1 Overview

The Golden Hill Steiner School seek to grow the school and offer a secondary schooling option (years 7 to 12), in addition to the primary school (kindy to year 6) currently in operation. The school requires access to the adjoining land, Lot 1 Riverbend Lane, to achieve this growth objective.

The intent of the Amendment is to extend Additional Use No. 12 (A12) to enable educational establishment on Lot 1 Riverbend Lane. The base zoning of 'Special Rural' within SR15 will remain over Lot 1 Riverbend Lane.

The proposed additional use of educational establishment over Lot 1 Riverbend Lane will provide a flexible approach to land use planning on the site. By supporting educational establishment as an additional use, there is an opportunity for development to be undertaken for educational establishment (generally based on the Master Plan) plus special rural (rural residential) subdivision/development.

The expansion of the Golden Hill Steiner School will assist to accommodate growing education demands in Denmark.

Future development and uses on the site will be subject to gaining necessary approvals from the Shire including development approval.

4.2 Master Plan and Design Considerations

In support of the Amendment, a Master Plan is provided in **Attachment 8** which conceptually shows how the site could be

developed. In addition to the existing development and uses, the proposal is to:

- Cluster new buildings with generous setbacks to Scotsdale Road and Riverbend Lane;
- Provide significant parking areas including for bus parking;
- Retain but reconfigure two crossovers to Scotsdale Road based on the Traffic Impact Assessment (**Attachment 10**). This will assist to promote safety for road users travelling on Scotsdale Road;
- Provide internal accessways to service the site and provide convenient carparking and loading areas;
- Limit vehicle access to/from Scotsdale Road for the school expansion (no vehicle access will occur from Riverbend Lane for the school expansion);
- Provide a generous amount of open space including an oval; and
- Upgrade landscaping and replanting.

The Master Plan will be refined at the Development Application stage.

The Master Plan is intended to be progressed following approval of the Amendment. The intent is to extend the Golden Hill Steiner School and to co-ordinate with existing development.

In terms of design considerations, proposed building materials will be sympathetic to and complement the site's setting. The Golden Hills Steiner School currently have and propose an environmentally friendly development which is serviced by a combination of off-grid sustainable power (likely solar) and connection to the grid power supply with progression to full off-grid as technology allows. The development will also use an alternative treatment unit(s) for on-site wastewater disposal.

4.3 Local Development Plan

The extension of Additional Use A12 over Lot 1 Riverbend Lane was initially proposed to be progressed with the preparation of a Local Development Plan to address TPS3 requirements. Based on WAPC advice, a Local Development Plan is not considered necessary for the school expansion. Instead, the Master Plan will provide a non-statutory guide for future Development Applications.

5. PLANNING CONSIDERATIONS AND PLANNING JUSTIFICATION

5.1 Overview

This section brings together an assessment of the site's attributes, the site's context and the planning framework in considering key planning matters and justifying the Amendment.

5.2 Appropriate Location for Educational Establishment

The site is an appropriate location for an educational establishment (expanded Golden Hill Steiner School) for reasons including:

- The Golden Hill Steiner School adjoins the Amendment site with the school having operated for decades;
- It is consistent with the planning framework including the draft Local Planning Strategy and Community Strategic Plan;
- It adjoins the townsite and is located approximately 1.75 km from the town centre;
- It is a generous sized property (5.96 hectares);
- The locality contains a mix of land uses;
- The Master Plan respects the site's context and features;
- The development footprint is cleared;
- The site has modest environmental assets and future development will create manageable environmental impacts.
- It can be appropriately serviced including on-site wastewater disposal (see **Attachment 11**);
- The site has high levels of accessibility in Denmark;
- Traffic impacts can readily be accommodated on Scotsdale Road as evidenced by the Traffic Impact Assessment;
- Parking and vehicle manoeuvring will be contained on-site;
- Bushfire protection measures comply with *Guidelines for Planning for Bushfire*

as set out in the Bushfire Management Plan (**Attachment 4**);
- The site is not subject to heritage constraints;
- The site is attractive and has a pleasant outlook. The mix of rural/forest settings make it desirable and suitable for educational purposes;
- Expanding the school will benefit Denmark and the district through having convenient access to expanded educational facilities;
- The Golden Hills Steiner School provides an important service to Denmark and the Great Southern and will enhance educational opportunities for the area's youth; and
- The development will provide various benefits to the district and the local community.

The Amendment proposes to extend the educational establishment use over Lot 1 Riverbend Lane. The Amendment site is appropriately located, considerate of its context and it addresses site opportunities and constraints.

The additional use of educational establishment (over Lot 1 Riverbend Lane) represents a good planning outcome.

Accordingly, the site is both suitable and capable of accommodating educational establishment purposes.

5.3 Compatibility with Adjoining and Nearby Land Uses

Based on the Master Plan (see **Attachment 8**), the proposed educational establishment on Lot 1 Riverbend Lane has carefully considered its context, neighbouring properties, design and servicing.

The proposed expanded Golden Hill Steiner School will be compatible with adjoining and nearby land uses/development (see **Attachment 3**). This is evidenced through effective management of students at the long established Golden Hill Steiner School. There will be minimal risk of land use conflict associated with the educational establishment use. It is also noted:

- The site is well buffered from residential properties to the south;
- There will be effective management of students with associated registration from the Department of Education;
- The school intends to be a 'good neighbour' including effective management of noise from students;
- The educational establishment will operate during the daytime, so will not cause disturbance to regular sleep patterns;
- Significant vegetation will buffer noise while there will be no school traffic on Riverbend Lane;
- There is a mix of land uses in the locality which suggests there is overall community acceptance of non-residential uses;
- All car parking will be contained on-site;
- The site is currently zoned Special Rural; and
- The development will maintain the existing character and amenity of the area.

Accordingly, the zoning will complement and not conflict with adjoining and nearby land uses. The proposed extension of Additional Use No. 12 (A12) represents a logical and sound planning outcome for the site.

5.4 Environmental Impact

The Amendment will create minimal environmental impacts. For instance:

- The development footprint has been previously cleared of native vegetation;
- Existing mature trees will be retained where possible and additional trees and landscaping are proposed;
- There are appropriate buffers to sensitive land uses;
- There will be manageable noise (which will occur in daylight hours);
- The proposed development is expected to produce minimal noise impacts. While noting this, any development is required to address the *Environmental Protection (Noise) Regulations 1997*. There are opportunities to reduce noise impacts

through carefully locating and orientating development and promoting revegetation;
- The site can accommodate on-site sewage (refer to **Attachment 11** and section 5.5);
- Stormwater can be effectively managed;
- The site is appropriately serviced;
- Dust can be effectively managed;
- The site is not within the 'trigger' area associated with *State Planning Policy 5.4 Road and Rail Noise;* and
- It is not a contaminated site.

5.5 Sewage disposal

Reticulated sewerage is not available to this site.

The property is within a sewerage sensitive area as outlined at https://espatial.dplh.wa.gov.au/PlanWA/Index.html?viewer=PlanWA.

A Site and Soil Evaluation (SSE) has been prepared by Aurora Environmental which is provided in **Attachment 11**. The SSE incorporates late winter testing, laboratory testing, photographic recording, logging of soil types and measuring the water table.

The SSE concludes that the proposed educational establishment will comply with the *Government Sewerage Policy*.

Investigation pits were excavated to ascertain the level of site capability for effluent disposal. The majority of the pits returned generally favourable results. Additionally:

- The site is generous in size (5.96 hectares). The on-site sewage disposal systems will be well separated from watercourses;
- The on-site sewage system will be located over 100 metres from Scotsdale Brook;
- The soils have appropriate capability for onsite effluent disposal; and
- There is a need to obtain an on-site wastewater disposal approval from the Shire and the Department of Health.

Any system connected to a building, other than a single dwelling, which produces more than 540 litres of waste per day is required to be approved by, and designed to the satisfaction of the Department of Health and the local government.

5.6 Stormwater management

The site is not classified as a flood prone area.

The landowner/operator is required to appropriately manage stormwater to the satisfaction of the local government. Development is required to ensure that stormwater is designed to ensure that post development run-off rates are no greater than pre-development run-off rates. This is expected to adopt a water sensitive design that seeks to detain, slow down and treat peak flows that especially addresses 'first flush' runoff treatment.

It is expected that:

- Stormwater will be managed through rainwater tanks, soakwells/bunding and swales;
- All stormwater from roofed and impervious areas will be collected and disposed of on-site other than in major storm events;
- Some clean fill will be added to assist in redirecting drainage flows;
- There is limited potential for erosion given the site is gently sloping;
- For major rainfall events, overflow drainage will flow towards Scotsdale Brook;
- The development will harvest the stormwater from the buildings for reuse within their operations. Additionally, there are various opportunities for other water sensitive initiatives such as utilising water-efficient fixtures and fittings and encouraging water wise practices; and
- The development will create manageable stormwater management implications and there is the opportunity to revegetate where appropriate.

It is proposed to prepare and implement a stormwater management plan as a

condition of development approval. The plan will demonstrate the site can appropriately accommodate the stormwater generated by the development in the context of site features and the amount of impervious/hardstand proposed.

5.7 Noise

The potential noise impacts are considered to be modest noting the location of the school buildings. Additionally, the hours of operation (during daylight hours), retaining mature trees and proposed replanting assist to act as a buffer will assist to limit noise impacts.

5.8 Recycling and Waste Management

It is expected that waste management will be addressed via a development condition to prepare and implement a Waste Management Plan.

5.9 Landscape Impact and Enhancement

The site and area are characterised by its high landscape qualities including the undulating countryside and the mix of rural, rural living uses and native vegetation. Scotsdale Road is a recognised key tourist route.

The site has filtered views from Scotsdale Road due to the native vegetation in the road reserve.

The Golden Hills Steiner School recognises the importance of maintaining a high-quality landscape. The Golden Hills Steiner School recognises there is merit in retaining most trees on the Scotsdale Road and Riverbend Lane frontage and which border the property to enhance amenity.

As set out in the Master Plan, proposed development will be clustered. There are opportunities for replanting which will further enhance the site's landscape character.

The proposal seeks to implement a high standard of design aesthetic.

The Golden Hills Steiner School proposes to plant a number of trees and shrubs on the property to improve the appearance of the site while still addressing bushfire attack level (BAL) ratings. The intention of the landscaping is to assist in enhancing the site's appearance, particularly when viewed from Scotsdale Road.

The proposal is a modest scale considering the size of the property and will not impact the amenity of the surrounding area. Development has been sited on the cleared areas of the site and will be low-key. Development will be partially screened by existing vegetation in the Scotsdale Road reserve, proposed planting as well as being constructed of materials, colours and finishes that will ensure it complements the forest palette. The planning rules for the site are outlined in **Attachment 7**.

The Amendment will have manageable impacts on the landscape values of Scotsdale Road.

It is recognised that the Shire may require the preparation and implementation of a landscape plan as a condition of development approval.

5.10 Managing Bushfire Risks

All of the site is within a Bushfire Prone Area as outlined at https://maps.slip.wa.gov.au/landgate/bushfireprone.

Bio Diverse Solutions have prepared a Bushfire Management Plan (BMP) to support the Amendment (see **Attachment 4**). In summary, the BMP concludes the proposal addresses *State Planning Policy 3.7 Planning in Bushfire Prone Areas* and the *Guidelines for Planning in Bushfire Prone Areas*. The BMP sets out the proposal is consistent with the acceptable solutions for Elements 1, 2, 3 and 4 of the Guidelines.

Bio Diverse Solutions set out that most of the property can readily achieve BAL-29 or below, however there are legacy constraints near the existing dwelling on Riverbend Lane. Bio Diverse Solutions have outlined a works program to achieve BAL-

29. It is suggested this works program is formalised as a condition of development approval.

The WA Planning Commission's *Guidelines for Planning in Bushfire Prone Areas* classifies education centres as a 'vulnerable land use'.

A Bushfire Emergency Evacuation Plan will be required to be prepared at the Development Application stage as part of an expanded school. This will require an assessment of risks, options along with evacuation procedures. The plan would be required to be periodically reviewed to ensure it remains current.

5.11 Servicing

The site is already appropriately serviced. It is not envisaged that upgrading of services is required to facilitate the Amendment. Other sections outline the approach to future servicing.

5.12 Vehicular Access and Car Parking

The site adjoins Scotsdale Road and Riverbend Lane. All vehicular access, for the expanded school, is proposed to be limited to/from Scotsdale Road. There will be no vehicular school traffic to/from Riverbend Lane.

The development adjoins the sealed Scotsdale Road.

The Traffic Impact Assessment from Stantec (**Attachment 10**) concludes the proposed development will create manageable traffic generation. The Traffic Impact Assessment sets out:

- The educational establishment will have manageable impacts on the surrounding road network, including on traffic flow, and can be accommodated in adjacent roads and intersections;
- Scotsdale Road and the nearby road network and intersections have sufficient capacity to address traffic generation from the proposed development;
- There are appropriate sight distances from crossovers on Scotsdale Road in both directions;
- Golden Hills Steiner School also encourages 'kiss and ride' to be undertaken on-site to minimise the impacts on the road network and adjacent residents. Parents will be advised of the parking management guidelines; and
- The site is located on the edge of the townsite and is highly accessible. There are accordingly various opportunities to promote walking and cycling to/from the site given its location. This is facilitated through the dual use path on Scotsdale Road which connects the site to the Denmark town centre. There is considerable space on the site for bicycle parking.

Stantec outline anticipated parking requirements for the expanded educational establishment based on the Master Plan. Sufficient on-site car parking bays will meet the parking demands of the educational establishment. Accordingly, all parking associated with the educational establishment will be contained on-site.

As outlined in **Attachment 8**, the Master Plan shows generous vehicle parking areas. Sufficient car parking for student drop-off and pickup, and staff can be provided on site. The final number of carparking bays and associated design will be determined and set by the Shire through the development approval.

5.13 Foreshore Reserve

It is understood a Foreshore Management Plan was prepared decades ago at the subdivision stage.

5.14 Supporting the Local Community and Economy

As previously outlined, the proposed extension of Additional Use No. 12 (A12) over Lot 1 Riverbend Lane is consistent with the planning framework. Approval and implementation of the Amendment will assist to provide enhanced educational services to Denmark. Additionally, it will have various community and economic

benefits. This includes supporting local employment, assisting in a more sustainable local economy and adding to The potential to offer secondary education, by expanding the Golden Hill Steiner School, provides a range of schooling options that will improve Denmark's overall viability, vitality and prosperity as a sub-regional centre.

educational outcomes for the community and the social benefits that accompany it. The Amendment will facilitate positive social and economic outcomes for the community.

5.15 Planning Justification

The planning justification for the Amendment is summarised below in **Table 2**:

Table 2 – Summarised Planning Justification

Strategic	Land Use Planning	Environment, Landscape and Heritage	Transport and Servicing	Economic and Community
The Amendment is consistent with the State, regional and local planning framework including that it promotes enhanced education and community services and economic development. Future development will reinforce Denmark as a sub-regional centre.	The site is well located for an educational establishment including it is compatible with adjoining and nearby uses. The site is suitable and capable for an educational establishment. Development will be effectively controlled through TPS3 provisions. The Master Plan will provide a co-ordinated approach with existing and proposed development.	The site contains modest environmental assets and will not create adverse environmental impacts. There are modest landscape impacts and there are opportunities to introduce revegetation and landscaping to enhance the area's amenity. The site has filtered views from Scotsdale Road. Bushfire protection measures comply with *Guidelines for Planning in Bushfire Prone Areas*. A range of measures will be adopted to lower bushfire risks. There are no heritage constraints nor is it located in a public drinking water source area.	Traffic impacts of the proposed development can readily be accommodated on Scotsdale Road. There will be no school traffic on Riverbend Lane. Car parking will be contained on-site. The site is appropriately serviced. Safe vehicular access can be achieved between the site and Scotsdale Road.	It will enhance education services in Denmark. It will promote job creation and assist to diversify and grow the local economy. The proposal will assist to enhance Denmark through adding to its overall viability, vitality and prosperity and adding to the range of services that can be provided.

In view of the above, the Amendment is consistent with the planning framework and the principles of orderly and proper planning.

6. CONCLUSION

This report confirms that the Amendment is consistent with the planning framework, it respects the local context and the site is suitable to extend Additional Use No. 12 (A12) for educational establishment over Lot 1 Riverbend Lane.

The support of the WAPC and the Hon. Minister for Planning is requested to approve the Amendment by extending the Additional Use No. 12 (A12) of educational establishment to Lot 1 (No. 23) Riverbend Lane, Scotsdale.

PLANNING AND DEVELOPMENT ACT 2005

SHIRE OF DENMARK

TOWN PLANNING SCHEME No. 3

AMENDMENT No. 154

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:

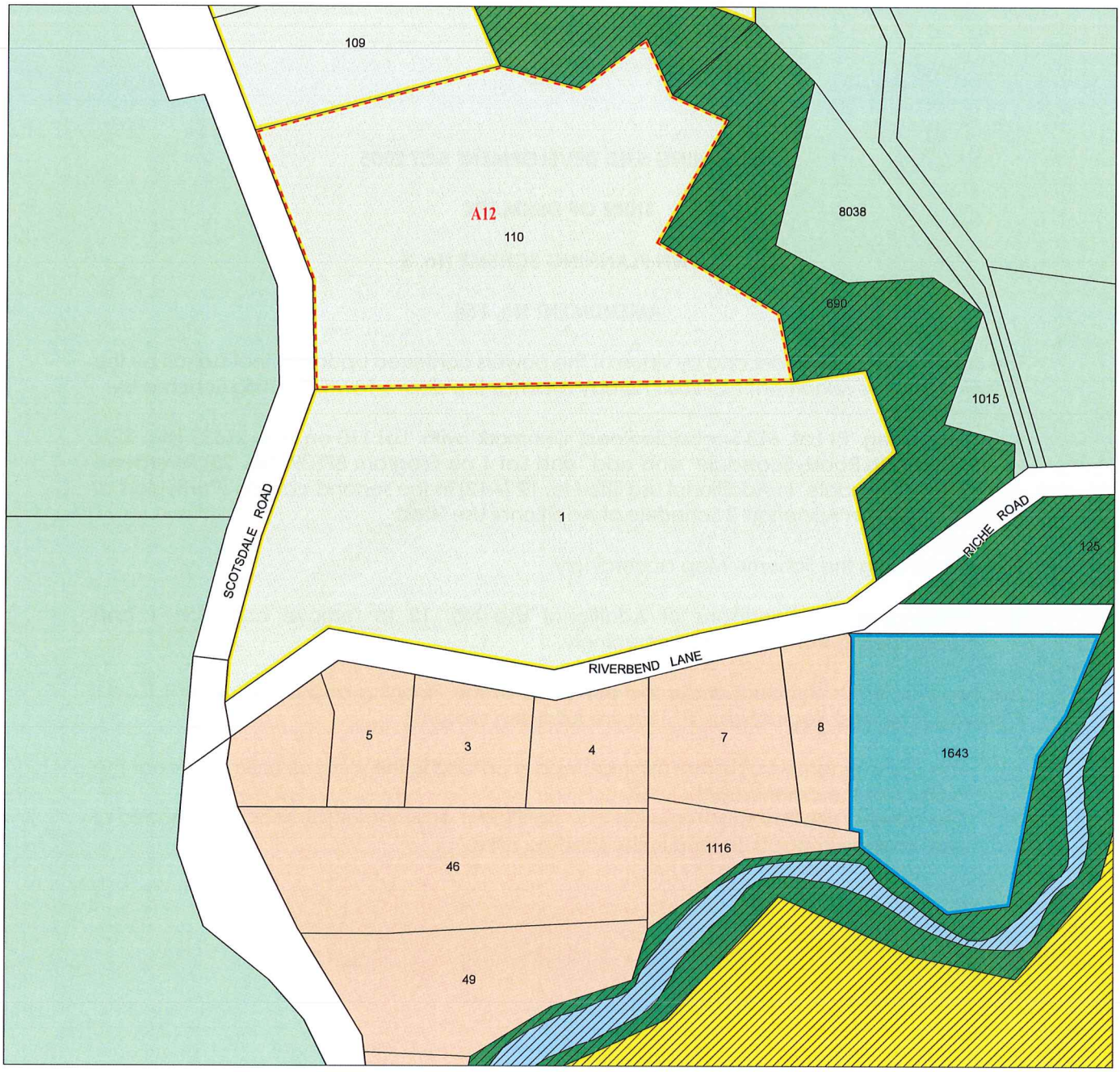
1. Replacing 'Pt Lot, 613 Scotsdale Road, Denmark' with 'Lot 110 on Plan 21633 (No. 222) Scotsdale Road, Scotsdale' and add 'and Lot 1 on Diagram 87539 (No. 23) Riverbend Lane, Scotsdale' in Additional Use Site No. 12 (A12) in the second column (Particulars of the Land) in Appendix 2 Schedule of Additional Use Sites.

2. Amending the Scheme Map accordingly.

3. Amending the conditions of Additional Use No. 12 to remove condition 1 and renumbering the conditions accordingly.

The Amendment is standard under the provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015* for the following reasons:

A) The amendment would have minimal impact on land in the scheme area that is not the subject of the amendment.
B) The amendment does not result in any significant environmental, social, economic or governance impacts on land in the scheme area.



EXISTING SCHEME MAP

Legend

- Cadastre with Lot number
- Tourist

LPS Zones

- Residential
- Rural
- Special rural

LPS Reserves

- Drainage and waterbodies
- Parks and recreation
- Public use

Department of Planning, Lands and Heritage

GOVERNMENT OF WESTERN AUSTRALIA

Produced by Data Analytics,
Department of Planning, Lands and Heritage, Perth WA
Base Information supplied by Western Australian
Land Information Authority SLIP 1096-2018-1

Shire of Denmark

Town Planning Scheme No. 3

Amendment No. 154

N

0 25 50 75 100

metres

PROPOSED SCHEME AMENDMENT MAP

Legend

Cadastre with Lot number

Zones and Reserves Amendments - Additional uses (A)

Additional uses

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Shire of Denmark

Town Planning Scheme No. 3

Amendment No. 154

N

0 25 50 75 100

metres

COUNCIL ADOPTION FOR ADVERTISING

Adopted for advertising by resolution of the Council of the Shire of Denmark at the Ordinary Meeting of the Council held on the ...21st November 2023.....

.....

SHIRE PRESIDENT

.....

CHIEF EXECUTIVE OFFICER

COUNCIL RECOMMENDED/SUBMITTED FOR APPROVAL

This Standard Amendment was supported for submission to the Minister for Planning for approval by resolution of the Shire of Denmark at the Ordinary Meeting of the Council held on the ....30th APRIL 2024..... 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:

COMMON SEAL

SHIRE OF DENMARK

.....

SHIRE PRESIDENT

.....

CHIEF EXECUTIVE OFFICER

WAPC RECOMMENDED/SUBMITTED FOR APPROVAL

.....

DELEGATED UNDER S.16 OF THE
PLANNING AND DEVELOPMENT ACT 2005

DATE.....8/8/2024.....

APPROVAL GRANTED

.....

MINISTER FOR PLANNING
S.87 OF THE *PLANNING AND DEVELOPMENT ACT 2005*

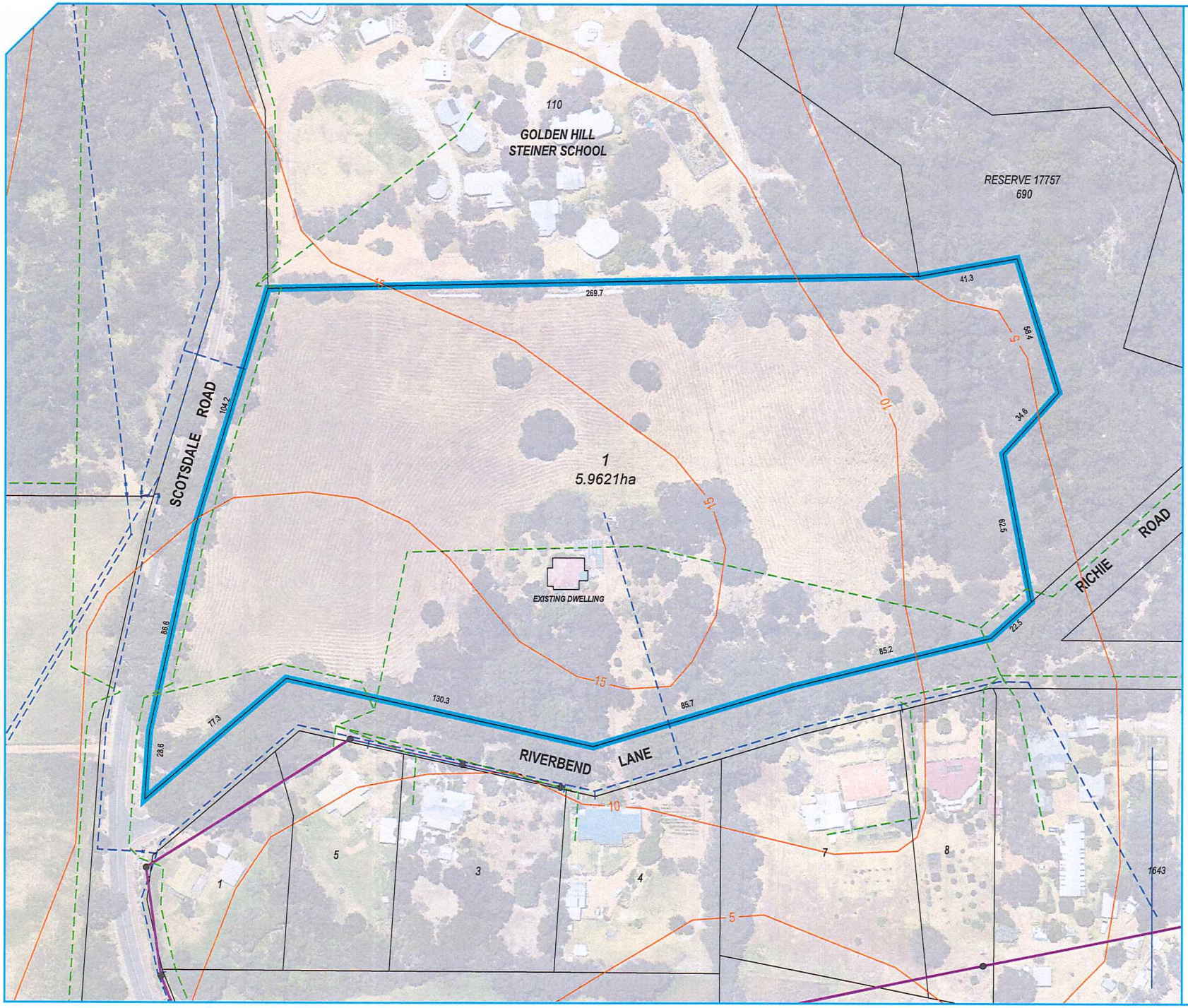
It is hereby certified that this is a true copy of the ~~Scheme~~/Amendment, final approval to which was endorsed by the Minister for Planning on 24/9/2024

DATE.....

Certified by .....

Officer of the Commission Duty authorised pursuant to Section 24 of the Planning and Development Act 2005 and Regulation 32(3) Scheme and Regulation 63(3) (Amendment) of the Planning and Development (Local Planning Scheme) Regulations 2015.

ATTACHMENT 1



AMENDMENT SITE PLAN

Lot 1 (House No. 23)
Riverbend Lane
Scotsdale
Shire of Denmark

LEGEND

- Amendment Site
- Existing Lot Detail
- Contours (5m)
- Existing u/ground water pipe
- Existing u/ground comms cable
- Power Pole
- Distribution Overhead Cable Low voltage (<1kV)
- Distribution Overhead Cable High voltage (1kV - 33kV)

NORTH

100m

1:1,500 @ A3

0m

AERIAL SOURCE: LANDGATE

REV	DESCRIPTION	YYMMDD
B	LOT NUMBER	231018
A	AMENDMENT SITE	230504

edge PLANNING & PROPERTY
Edge Planning & Property
134 Hare Street, Mount Clarence
ALBANY WA 6330
E: steve@edgeplanning.com.au
M: 0409 107 326

DRAWING NUMBER EP 230501 01 REV B

ATTACHMENT 2

LOCATION PLAN

Lot 1 (House No. 23)
Riverbend Lane
Scotsdale

Subject Land

NORTH

SCALE 1:20,000
SHEET A4

0 500m

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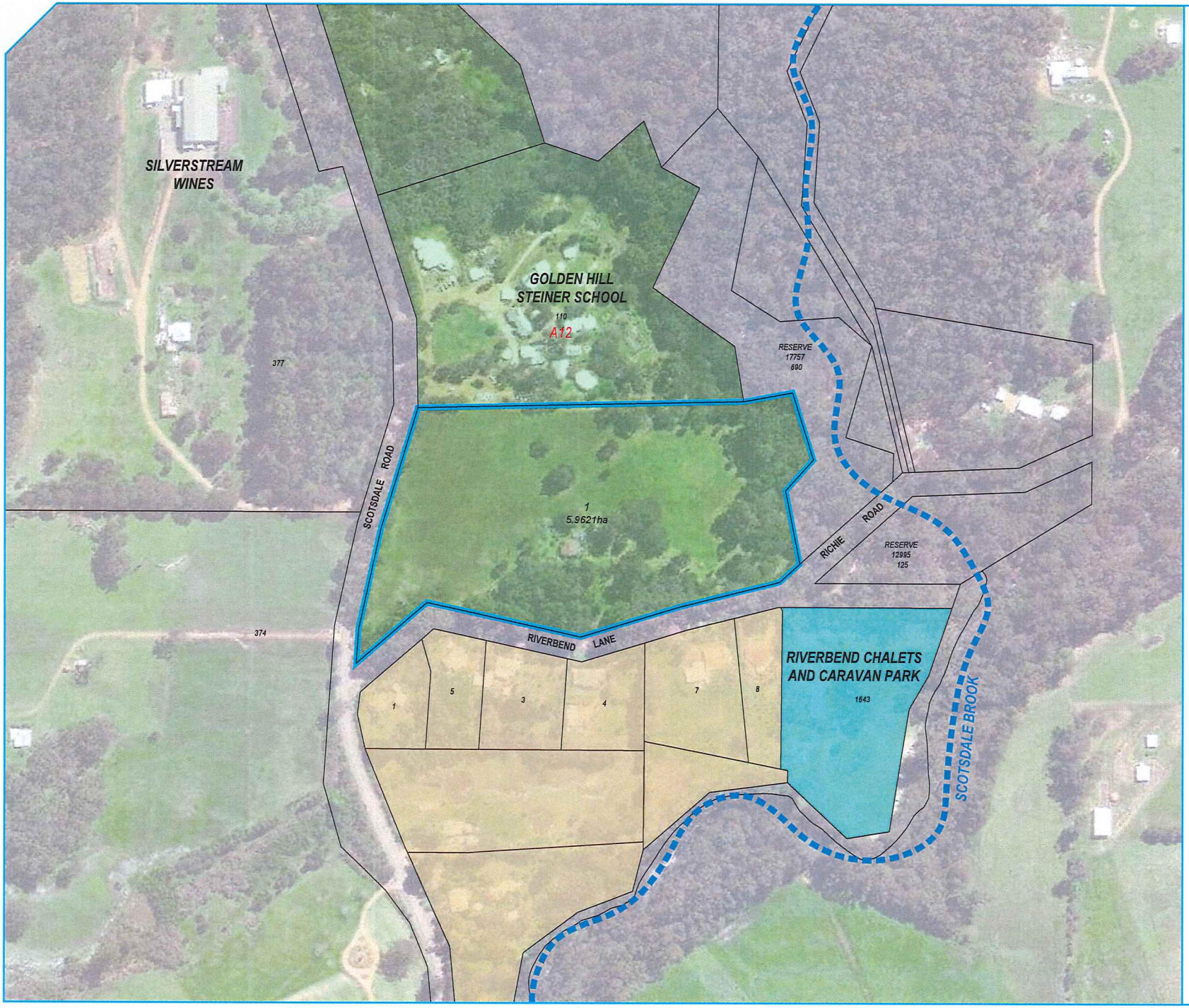
ATTACHMENT 3



OPPORTUNITIES AND CONSTRAINTS PLAN

Lot 1 (House No. 23)
Riverbend Lane
Scotsdale
Shire of Denmark

LEGEND

- Amendment Site
- Existing Lot Detail

LOCAL SCHEME ZONES

- Special Rural
- Residential
- Tourist
- A12 Additional Uses

AERIAL SOURCE: GOOGLE EARTH

REV	DESCRIPTION	YYMMDD
B	LOT NUMBER	231018
A	OPPS AND CONS	230504

edge PLANNING & PROPERTY
Edge Planning & Property
134 Hare Street, Mount Clarence
ALBANY WA 6330
E: steve@edgeplanning.com.au
M: 0409 107 336

DRAWING NUMBER EP 230503 03 REV B

Issued for design intent only. All areas and dimensions are subject to detail design + survey.

NORTH

100m

1:3,000 @ A3

0m

ATTACHMENT 4

FPA AUSTRALIA | Fire Protection Association Australia | Life. Property. Environment.

BPAD Bushfire Planning & Design

Bushfire Management Plan Coversheet

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

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 1 (No. 23) Riverbend Lane

Suburb: Scotsdale **State:** WA **P/code:** 6333

Local government area: Shire of Denmark

Description of the planning proposal: Scheme amendment to extend Additional Use (A12) over No. 23 Riverbend Lane

BMP Plan / Reference Number: EPP0016 **Version:** 1.0 **Date of Issue:** 11/10/2020

Client / Business Name: Edge Planning and Property

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☒	☐
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☐	☒
Vulnerable land-use	☒	☐

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

This proposal is for a scheme amendment to extend additional use (A12) over No. 23 Riverbend Lane

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

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Jason Benson	Level 2	BPAD37893	01/07/2024
Company		**Contact No.**	
Bio Diverse Solutions		9842 1575	

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

Signature of Practitioner  **Date** 11/10/2023

BAL CONTOUR PLAN & BUSHFIRE MANAGEMENT PLAN (BMP)

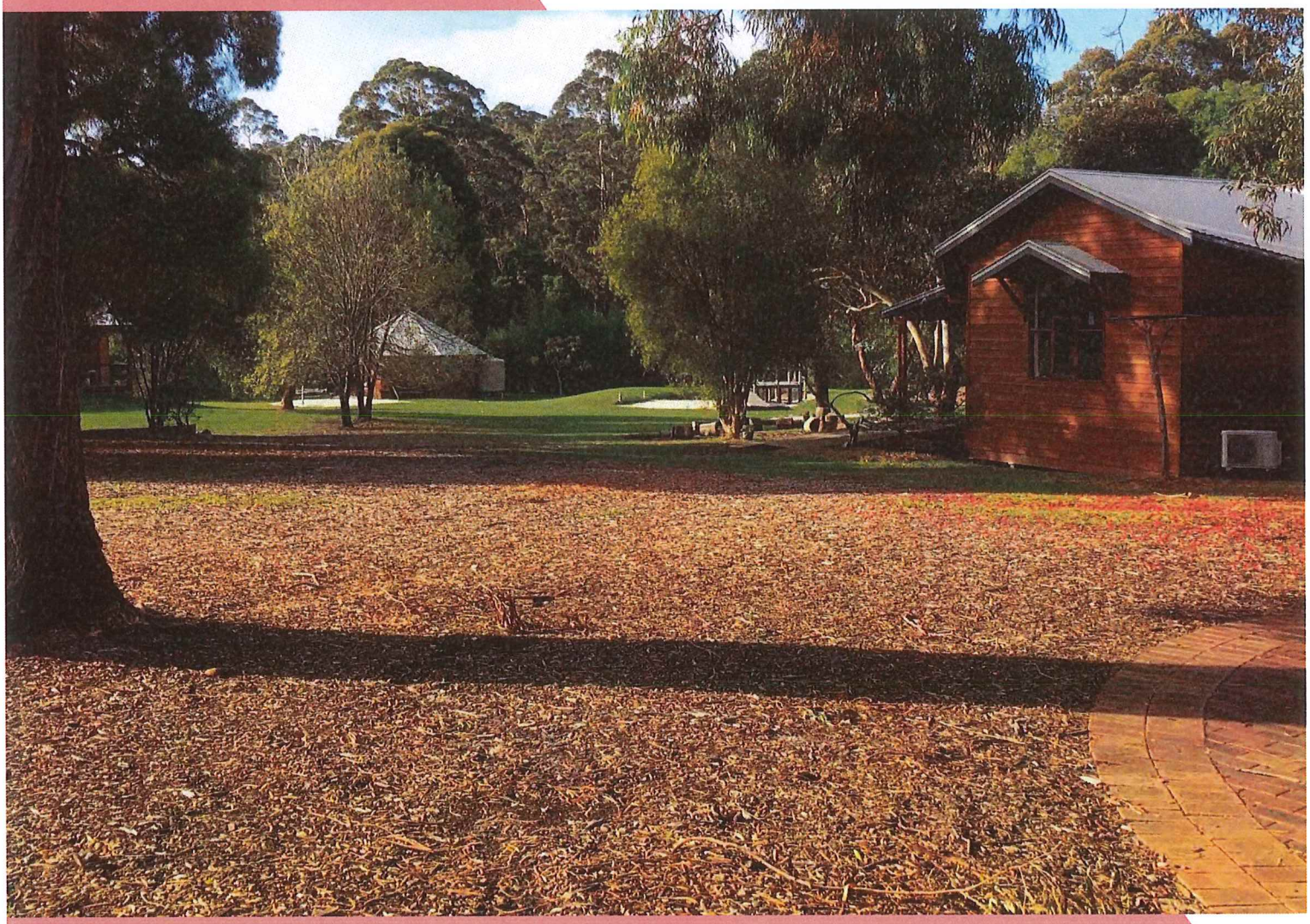
BIO DIVERSE SOLUTIONS

Lot 1 (No. 23) Riverbend Lane

Scotsdale WA 6333

Final v2

11/10/2023



BUSHFIRE | ENVIRONMENTAL | WATER | GIS

Site Details					
Address:	Lot 1 (No. 23) Riverbend Lane				
Suburb:	Scotsdale	**State:**	W.A.	**Postcode**	6333
Local Government Area:	Shire of Denmark				
Description of Building Works:	Scheme amendment to extend Additional Use (A12) over No. 23 Riverbend Lane				
Stage of WAPC Planning	Scheme Amendment				

BAL Contour Plan Details			
Report / Job Number:	EPP0016	**Report Version:**	Final v2
Assessment Date:	17 April 2023	**Report Date:**	11 October 2023
BPAD Practitioner	Melanie Haymont (Level 1)	**Accreditation No.**	BPAD 58389
BPAD Practitioner	Jason Benson (Level 2)	**Accreditation No.**	BPAD 37893

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1. Introduction

Edge Planning & Property commissioned Bio Diverse Solutions (Bushfire Consultants) to prepare a Bushfire Attack Level (BAL) Contour Plan and Bushfire Management Plan (BMP) to support Scheme Amendment No. 154. The scheme amendment proposes to extend Additional Use (A12) over Lot 1 (No. 23) Riverbend Lane, Scotsdale (the subject site), within the Shire of Denmark (SoD) to enable the additional use of 'educational establishment' in the future. Given the subject site is already zoned 'Special Rural,' the focus of the BMP is on the school expansion rather than the creation of the rural residential (special rural) lots (minimum size of 1ha). The Bushfire Management Plan (BMP) has been developed to assess the proposal to ensure it is consistent with the current and endorsed 'Guidelines for Planning in Bushfire Prone Areas Version (WAPC, 2021, Vers 1.4)' and 'State Planning Policy 3.7 (WAPC, 2015).

1.1 Location

The subject site is located to the north-northeast of Denmark in the municipality of the Scotsdale, as shown in Figure 1.

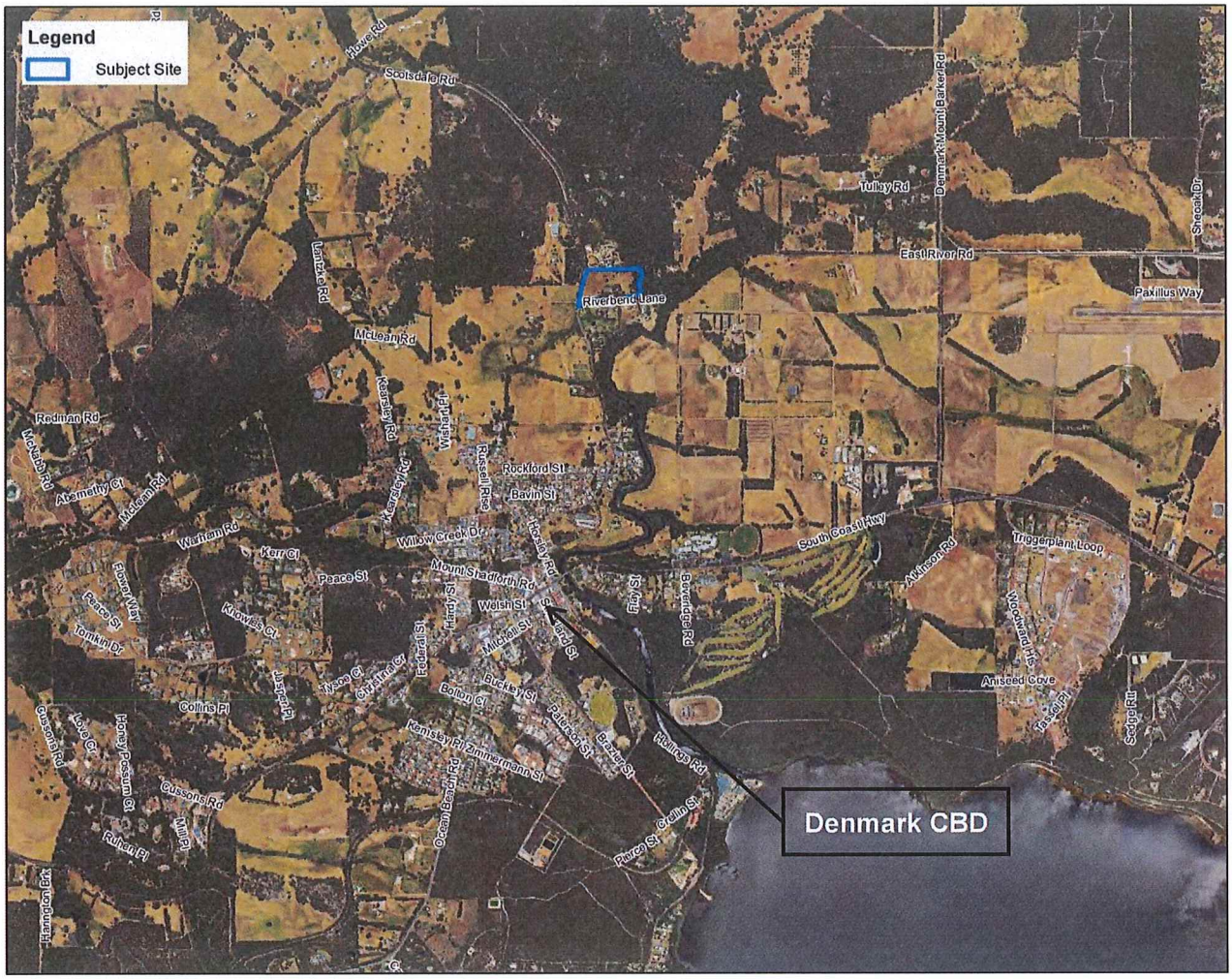


Figure 1: Location mapping of the subject site.

1.2 Development Proposal

The purpose of this report is to support Scheme Amendment No. 154. The scheme amendment proposes to extend additional use (A12) over No. 23 Riverbend Lane to enable the additional use of 'educational establishment' over the subject site.

See Figure 2, proposed scheme amendment.

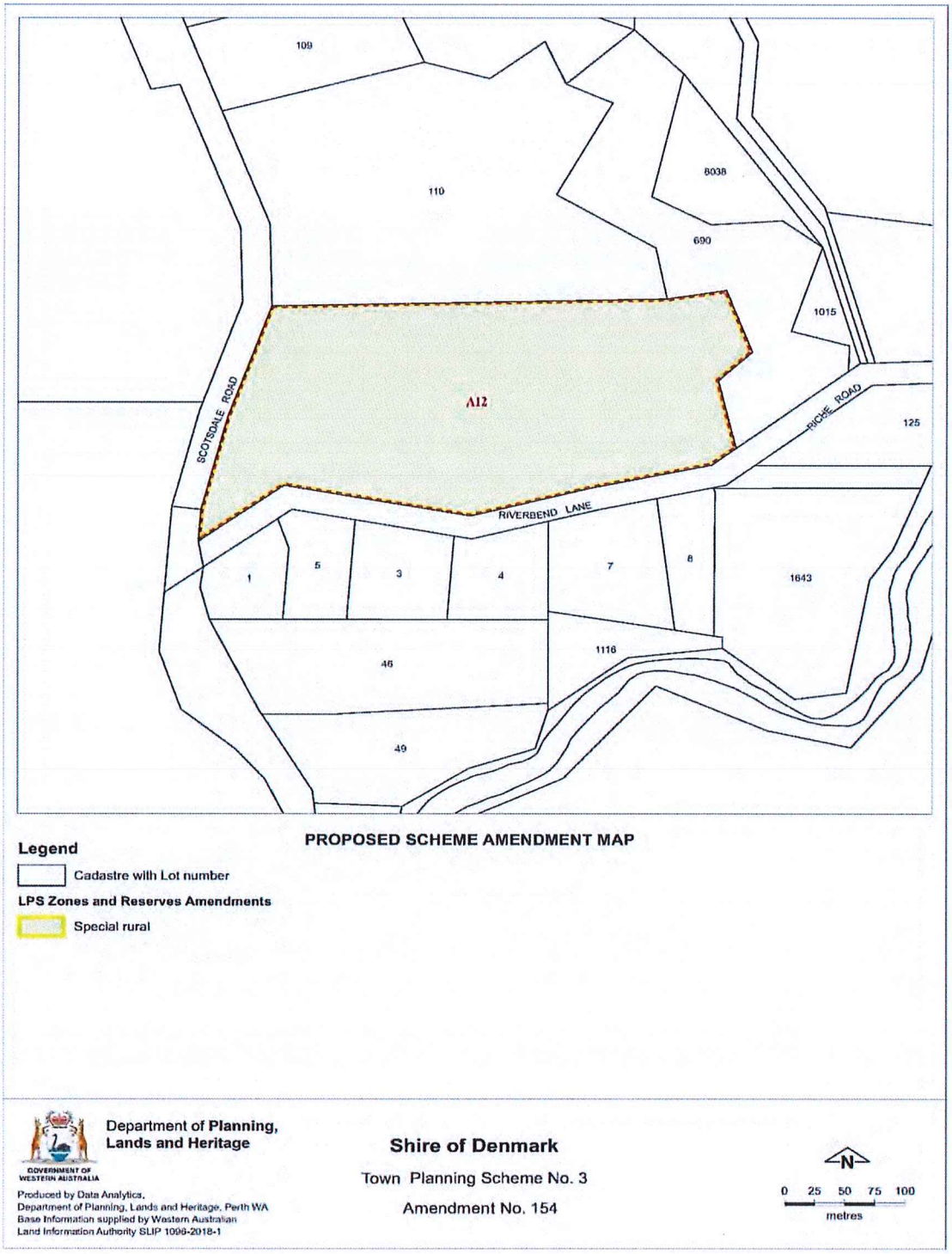


Figure 2: Proposed Scheme Amendment

The subject site is zoned as Special Rural under the Shire of Denmark's Local Planning Scheme (No. 3). The publicly released Bushfire Prone Area Mapping (OBRM, 2021) shows that the subject site is located within a Bushfire Prone Area (within 100m of >1ha of bushfire prone vegetation) and as such is subject to a planning assessment of the bushfire risks. Bushfire Prone Area Mapping (OBRM, 2021) is shown in Figure 3

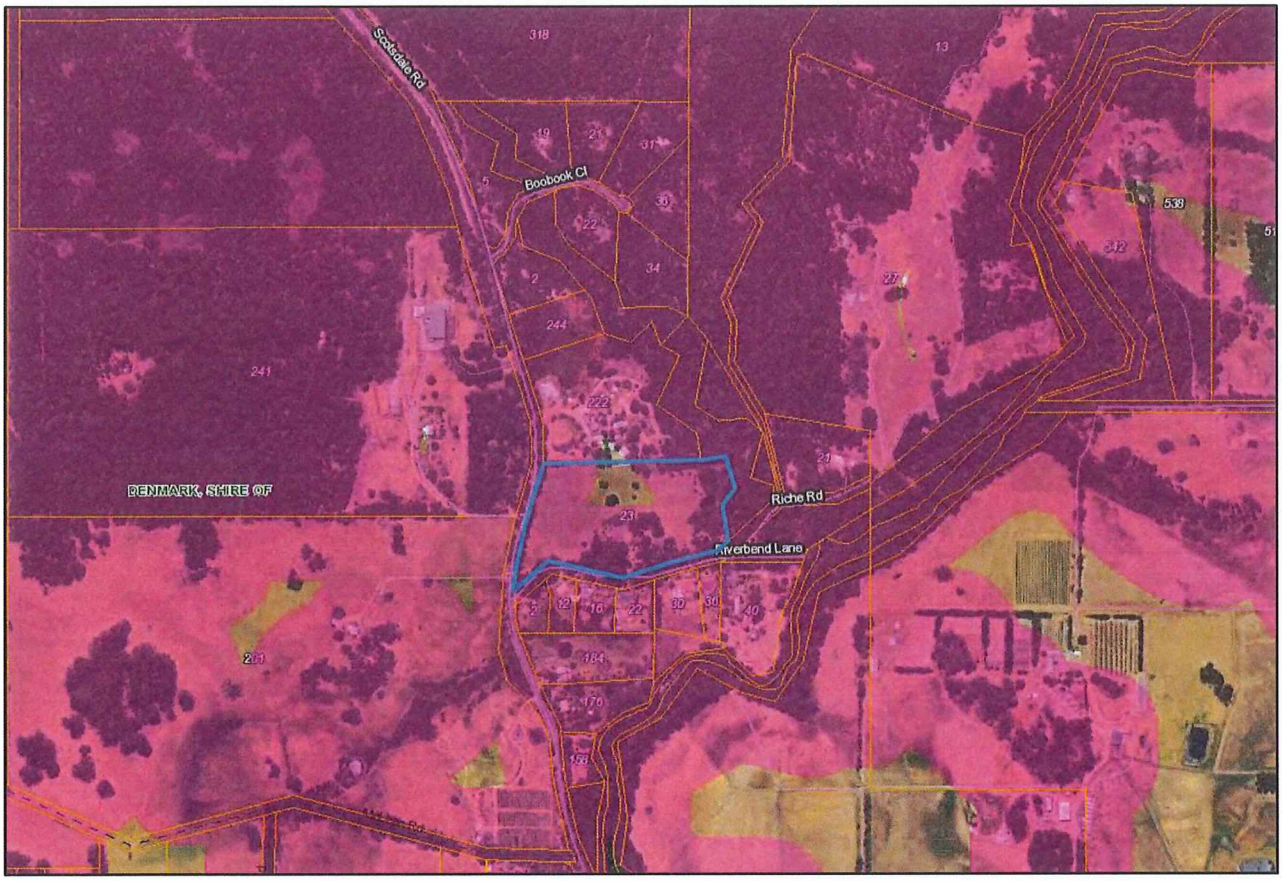


Figure 3: Map of Bushfire Prone Areas and relevance to subject site (OBRM, 2021).

This document and the recommendations contained within are aligned to the following policy and guidelines:

- *Planning and Development Act 2005*;
- *Planning and Development (Local Planning Scheme) Regulations 2015;*
- State Planning Policy (SPP) 3.7 Planning in Bushfire Prone Areas 2015 (WAPC, 2015);
- Guidelines for Planning in Bushfire Prone Areas (WAPC, 2021, vers 1.4);
- *Building Act 2011;*
- *Building Regulations 2012;*
- Building code of Australia (National Construction Code) (NCC, n.d.);
- *Fire and Emergency Services Act 1998.*
- AS3959-2018 "Construction of Buildings in Bushfire Prone Areas" current and endorsed standards;
- *Bushfires Act 1954*; and
- SoD Fire Management Notice (SoD, 2023/24).

2 Environmental Considerations

2.1 Native Vegetation – Modification and Clearing

This BMP utilises the assumption that the future lots can be maintained in a low fuel state as per the WAPC Asset Protection Zone (APZ) Standards, Schedule 1 (refer to Appendix B). Internal grassland vegetation is to be modified via management strategies of slashing and mowing to enable Asset Protection Zone (APZ) Standards to prevail over the site. Refer to the assumptions on the Vegetation Classes mapping Figure 4. The majority of the site is cleared paddocks with some forest areas associated with the Denmark River and Scotsdale Brook in the east of the proposed development. The subject site has undergone previous disturbances related to the historical land use of agriculture. The removal of native vegetation is not planned as part of this proposal. Strategies to manage existing low fuel areas for the developer and future landowners is outlined in Section 5.2 of this report.

2.2 Review of the Environmental Data Sets (Landgate SLIP)

A review of the environmental data sets (Landgate SLIP) as identified in the Department of Planning Lands and Heritage BMP Template for a complex development application, does not identify that any regulated (restricted) vegetation will be affected by the proposal, see Table 1 Environment Dataset Review.

Table 1: Environmental Dataset Review.

Dataset	Impact on Proposal	Comment
Conservation category wetlands and buffer	Located Nearby	Scotsdale Brook to the east of the proposed Rezoning.
RAMSAR wetlands	No	
Threatened and priority flora	Unaware	Site is modified, if vegetation removal is to occur in remnant vegetation a flora survey is recommended.
Threatened Ecological Communities	No	
Bush Forever areas 2000	No	
Clearing regulations –Environmentally Sensitive Areas	No	
Swan Bioplan Regionally Significant Natural Areas 2010	No	
Conservation Covenants Western Australia	Unaware	

Note: Relevant checks have been completed, this proposal is unlikely to impact any of the sites mentioned above. The management strategies contained in this BMP, assume that environmental approval will be achieved or clearing permit exemptions will apply. It is recommended that the proponent seeks specific advice in relation to the clearing of any native vegetation that is proposed as part of this development. Clearing of native vegetation may utilise an exemption under the EP act through the WAPC process. It is advised that the proponent seek further advice from an Environmental Consultant or the WA Department of Biodiversity, Conservation and Attractions (DBCA) on the condition and species contained within the development area and any requirement for referral of the proposal.

2.3 Revegetation or Landscaping

There is currently no revegetation/landscaping known for the development site and any future landscaping in the site will be done so as to not negatively impact the BAL rating. An accredited Level 2 Bushfire Practitioner is to review and approve any further planting within the site to ascertain if the actions increase the future bushfire risk in the development.

3 Bushfire Assessment Results

The bushfire assessment for this site has followed the Bushfire Attack Level (BAL) Assessment and WAPC Planning in Bushfire Prone Areas Guidelines (Vers 1.4, 2021).

3.1 Assessment Inputs

Bushfire Assessment inputs for the site has been calculated using the Method 1 BAL Assessment procedure as outlined in AS3959-2018. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes;
- Effective Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

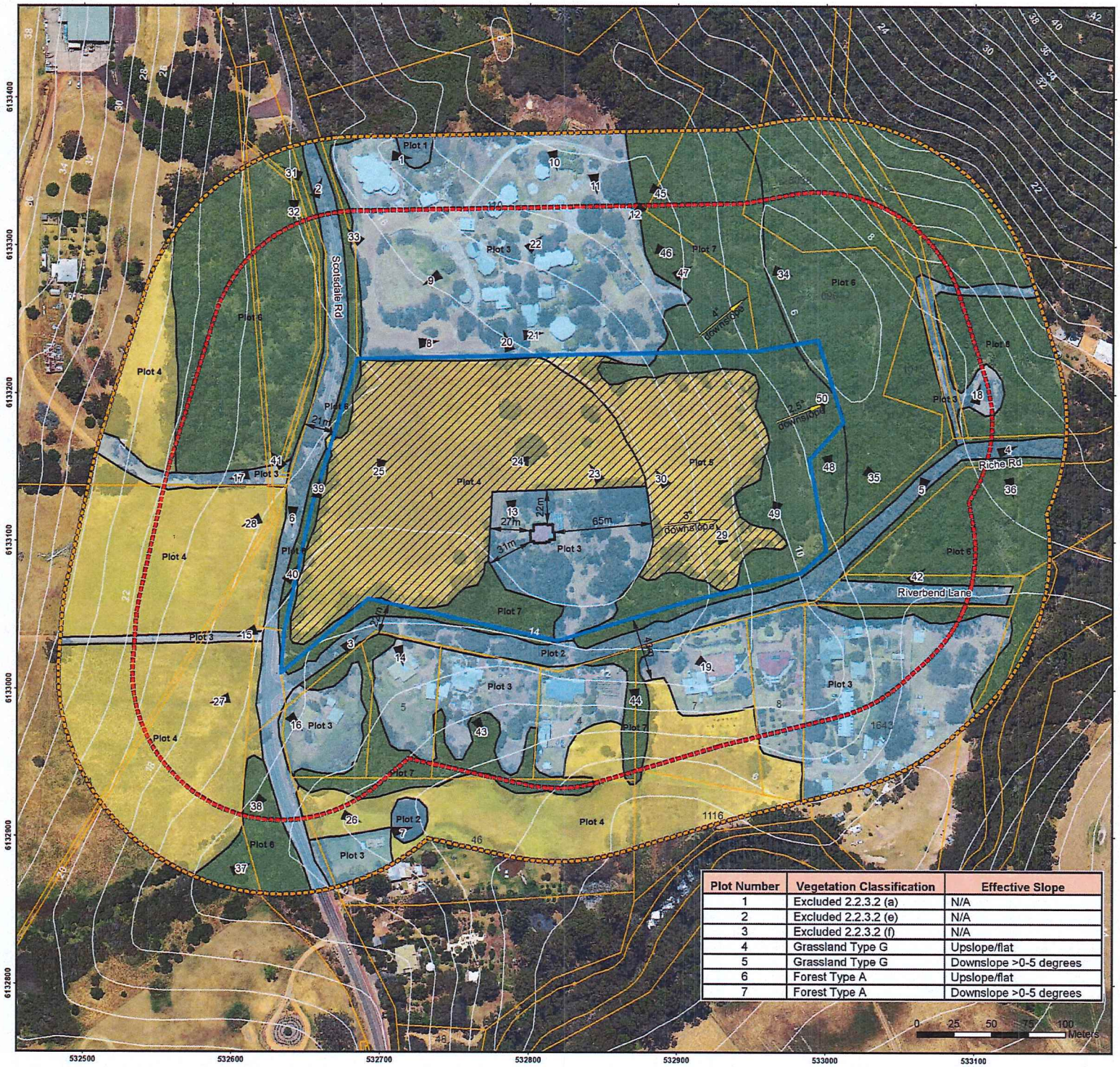
3.1.1 Vegetation Classification

Site assessment occurred on the 17th April 2023 by Melanie Haymont (BPAD 58389). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages and shown on the Vegetation Classes Map on the following pages.

A summary of the Plot data assessed as per Clause 2.2.3 of AS 3959-2018 is provided below in Table 2, detailed plot data is provided in Appendix A.

Table 2: Vegetation Classification Table (in accordance with AS 3959-2018) of the subject site.

Plot Number	Vegetation Type	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Grassland Type G	Upslope/flat
5	Grassland Type G	Downslope >0-5 degrees
6	Forest Type A	Upslope/flat
7	Forest Type A	Downslope >0-5 degrees



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Grassland Type G	Upslope/flat
5	Grassland Type G	Downslope >0-5 degrees
6	Forest Type A	Upslope/flat
7	Forest Type A	Downslope >0-5 degrees

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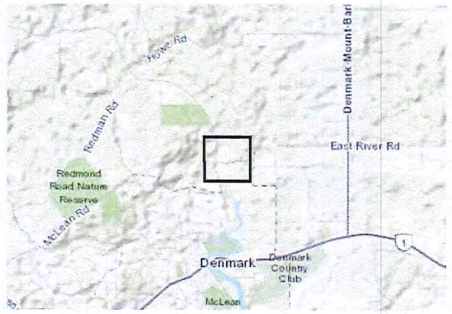
BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS



Overview Map Scale 1:100,000

Legend

- Subject Site
- Existing Dwelling
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 2m Contours
- Separation Distance
- Slopes Degrees
- Photo Point
- Future Low Fuel
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Grassland Type G
- Excluded 2.2.3.2

Scale
1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Steve Edge Planning
Lot 1 (No. 23) Riverbend Lane
Scotsdale, WA 6333

Figure 4: Vegetation Classes

BAL Assessor	QA Check	Drawn by
MEH	JRB	GSK
STATUS	**FILE**	**DATE**
FINAL	EPP0016	26/09/2023

3.2 Assessment Outputs

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposal in accordance with AS3959-2018 methodology. The BAL rating gives an indication of the level of bushfire attack (i.e., the radiant heat flux) that may be received on the subject site and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL.

The assessed BAL ratings for the subdivision are depicted as BAL contours, as shown on Figure 5 and Table 3.

Table 3: AS3959 Indicative BAL Rating within the subject site.

Plot number/s	Vegetation Classification	Effective Slope	Highest BAL rating impacting the lot	Achievable BAL rating within the lot
4	Grassland Type G	Upslope/flat	BAL-FZ	BAL-29, BAL-19 and BAL-12.5 can prevail
5	Grassland Type G	Downslope >0-5 degrees	BAL-FZ	BAL-29, BAL-19 and BAL-12.5 can prevail
6	Forest Type A	Upslope/flat	BAL-FZ	BAL-29, BAL-19 and BAL-12.5 can prevail
7	Forest Type A	Downslope >0-5 degrees	BAL-FZ	BAL-29, BAL-19 and BAL-12.5 can prevail

Assumptions/comments on BAL Contour Plan:

- Method 1 (AS3959-2018) Simplified procedure was used for vegetation classification and BAL Assessment process;
- The BAL Contour Plan was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD-37893);
- The BAL Contour Map (Figure 5) has been prepared in accordance with Department of Planning (WAPC) Guidelines for Planning in Bushfire Prone Areas (Version 1.4; WAPC, 2021);
- The vegetation within the subject site (part of Plot 4 Grassland upslope/flat and Plot 5 Grassland 0-5 degrees) has been excluded as this vegetation will be modified to a low threat state, standing trees to remain;
- The existing house within the subject site is currently subject to a BAL rating of BAL-29, see Figure 5 BAL Contour Map;
- Subdivision and assumptions contained within the BAL Contour Plan is based on the proposed scheme amendment supplied by the client (Figure 2); and
- Subject site is located in a Bushfire Prone Area, see Figure 3 (OBRM, 2021).

Note on internal grassland areas

The subject site contains significant areas of internal grasslands which are mapped as bushfire hazards (refer to Figure 4 Vegetation Classes Map). For practical purposes and to assist in identifying areas of 'least risk', the internal grasslands within the subject site (part of Plot 4 Grassland upslope/flat and Plot 5 Grassland 0-5 degrees) has been excluded from the BAL contour mapping. Setback distances as per AS3959-2018 for each BAL rating are indicated on Figure 5 BAL Contour Plan. When the final placement of proposed infrastructure is known, APZ areas are to apply as per the allocated BAL for the proposed lots.

Plot 4 – Grassland Upslope/flat

8-<12m for BAL-29

12-<17m for BAL-19

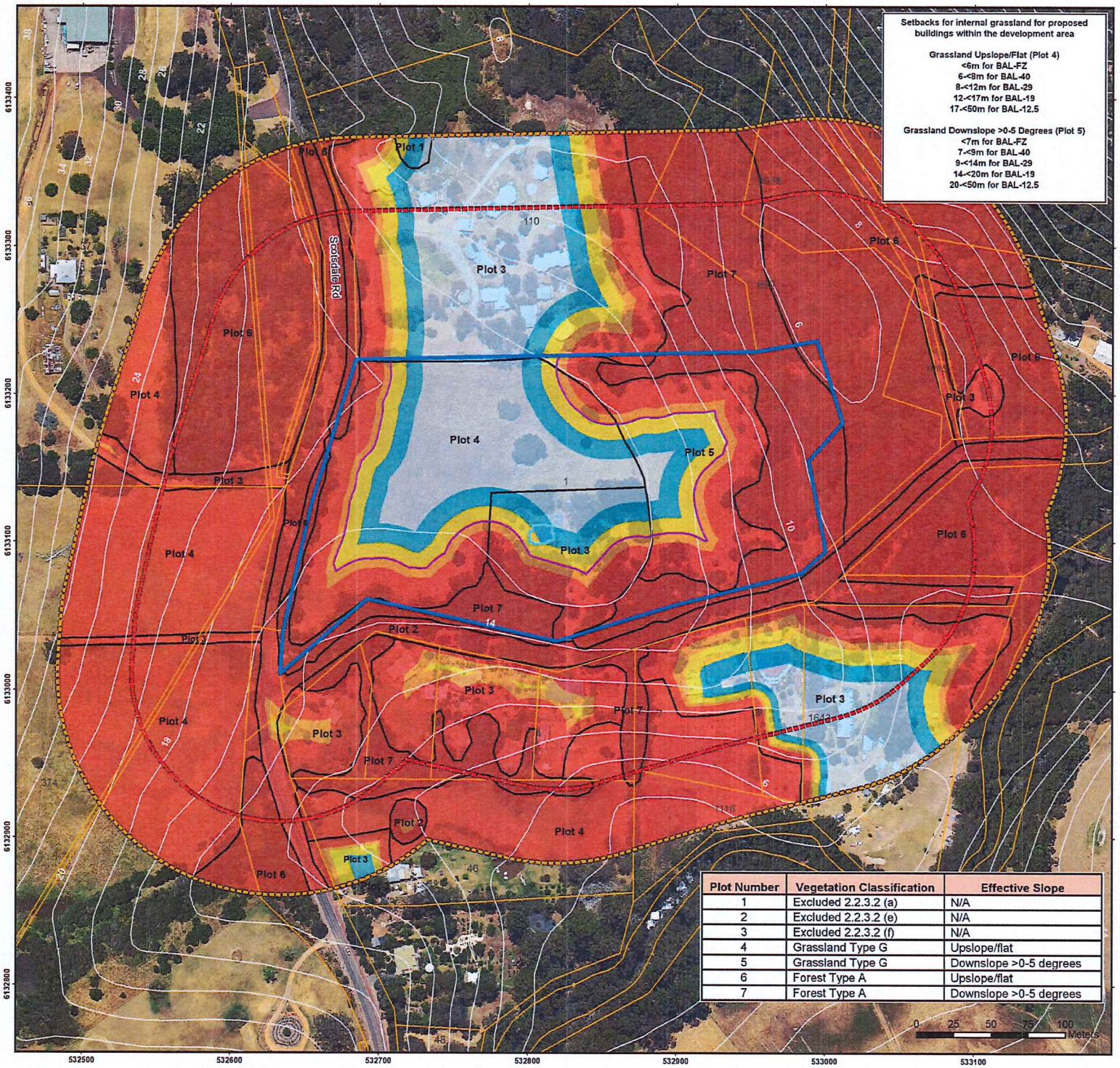
17-<50m for BAL-12.5

Plot 5 – Grassland Downslope >0-5 degrees

9-<14m for BAL-29

14-<20m for BAL-19

20-<50m for BAL-12.5



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Grassland Type G	Upslope/flat
5	Grassland Type G	Downslope >0-5 degrees
6	Forest Type A	Upslope/flat
7	Forest Type A	Downslope >0-5 degrees

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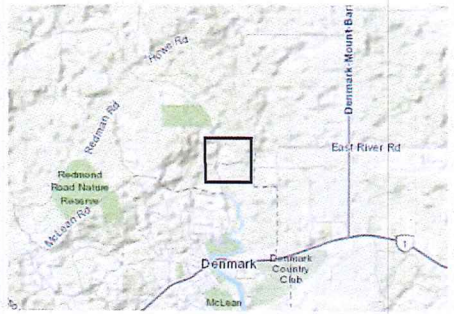
BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS



Overview Map Scale 1:100,000

Legend

- Subject Site
- Existing Dwelling
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 2m Contours
- Developable Area (BAL-29)
- Vegetation/Plot Boundary

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5

Scale
1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Steve Edge Planning
Lot 1 (No. 23) Riverbend Lane
Scotsdale, WA 6333

Figure 5: BAL Contour Map

BAL Assessor	QA Check	Drawn by
MEH	JRB	GSK
STATUS	**FILE**	**DATE**
FINAL	EPP0016	28/09/2023

4 Identification of Bushfire Hazard Issues

4.1 Bushfire Hazard Level

The identified bushfire risks associated with the subject site is the continuous vegetation to the north, east, south, and west of the subject site. These areas present as predominantly Forest Type A which are defined as Extreme Bushfire Hazard Level (BHL). Under hot, dry, and unstable conditions (Extreme to Catastrophic bushfire weather) the subject site is most at risk from bushfire from these directions.

To the north and south of the subject site lies developed areas. To the south is managed rural residential and to the north lies the existing Golden Hill Steiner School which is predominately low fuel, presenting a Low BHL. Internal to the site and external in the south and southwest are large areas of paddock/pasture (Grassland Type G), if left unmanaged this grassland vegetation poses a moderate BHL to the subject site.

The existing house in the south of the subject site has an established APZ area and is currently impacted by a BAL rating of BAL-29. Refer to the BAL Contour Plan Figure 5.

4.2 Landscape Risk

Analysis of the vegetation types and corresponding bushfire fuels (to AS3959-2018) outlines the vegetation to the north, northwest, northeast, and eastern tracts of vegetation as the highest risk of fire run into the subject site, due to weather patterns associated with high Fire Danger Rating (FDR) periods. The eastern flank of the subject site is heavily vegetated along the Scotsdale Brook, although not exposed to the most extreme fire weather over the high threat period, these creek lines and river systems prove challenging in terms of response from an access perspective. These vegetation areas present as Forest Type A and is classified as Extreme BHL and present extreme risks to the subject site. Modified agricultural landscapes exist to the south and southwest which have a lower intensity of bushfire and pose a medium risk of fire run into the subject site. All future developments within the subject site should be in BAL-29, BAL-19, and BAL-12 zones.

4.3 Access

The subject site is accessed from Scotsdale Road which is a public road providing two-way access both north and south of the subject site. There is a minor road (Riverbend Lane) to the south of the subject site, this becomes a gravel road and connects with Riche Road in the east. Riverbend Lane and Riche Road and part of a dead-end road. The existing house is located on Riverbend Road and is approximately 215m from a point where two-way access is available. This is a legacy issue, with the house being approved under previous planning approvals. As the lot layout is not known at this time, all future development associated with the expansion of the school will be to/from Scotsdale Road to be compliant to the WAPC guidelines.

All access to and from the site is to the north and south along the existing established road network (Scotsdale Road) access north maybe compromised on a northwest, north or north easterly bushfire run and more extensive extreme (landscape) bushfire risks occur in the landscape. Intense bushfires can arise from unstable atmospheric conditions (unstable atmospheres in the south coast are produced by mid-level disturbances in the interior of the SW of WA) giving rise to hot, dry and unstable conditions (Severe to Catastrophic bushfire weather) and generally produce wind directs from the northeast, north and north west. This development is proposed on the northern area of the Denmark townsite and safe escape and refuge is recommended to the southwest to Denmark townsite away from the bushfire risks located in landscape to the north and east of the subject site. Refer to Figure 6 Access and Water mapping.

4.4 Water Supply

A reticulated water supply is currently available to the site. The nearest Water Corporation WA (WCWA) standard hydrant is located adjacent to the subject site on Riverbend Lane and to the west on Scotsdale Road. The reticulated network is presently extended into the property (noted via WCWA signs in the subject site paddock) and will be available to the proposed scheme amendment and any future development. This meets the current acceptable solutions of the guidelines.

Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

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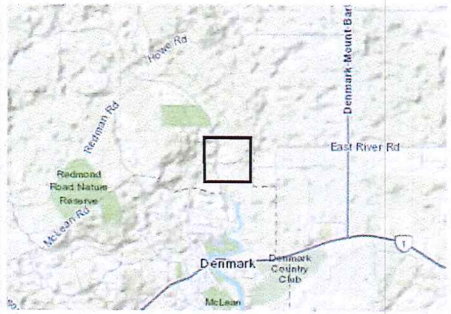

Overview Map Scale 1:100,000

Legend

- Subject Site
- Cadastre
- W — Water Point
- Public Access Routes

Scale
1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Steve Edge Planning
Lot 1 (No. 23) Riverbend Lane
Scotsdale, WA 6333

Figure 6: Access and Water Map

BAL Assessor	*QA Check*	*Drawn by*
MEH	JRB	GSK
STATUS	*FILE*	*DATE*
FINAL	EPP0016	09/08/2023

5 Assessment against the Bushfire Protection Criteria

5.1 Compliance Table

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2021, Vers 1.4) outlines bushfire protection criteria which strategic planning proposals are assessed for compliance. The bushfire protection criteria (Appendix 4, WAPC, 2021, Vers 1.4) are performance-based criteria utilised to assess bushfire risk management measures and they outline four elements, being:

- Element 1: Location;
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access; and
- Element 4: Water.

The subject site and the Scheme amendment proposal has been assessed and are required to meet the "Acceptable Solutions" of each element of the bushfire mitigation measures (WAPC, 2021). The proposal has been assessed against all elements of the bushfire protection criteria and found to be compliant, refer to Table 4.

Table 4: Bushfire protection criteria applicable to the subject site

Element	Acceptable Solution	Applicable or not Yes/No	Proposal meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant As per SPP.3.7 and the Guidelines for Planning in Bushfire Prone Areas, the rezoning and subsequent development can achieve a BAL rating of BAL-29 or lower, see Figure 5 BAL Contour Map. The existing dwelling has a BAL rating of BAL-29 which is compliant to the acceptable solutions. Proposal meets Acceptable Solution A1.1.
Element 2 – Siting and Design	A2.1 Asset Protection Zone (APZ)	Yes	Compliant APZ 's are to apply to any future development commensurate with BAL 29 or less. The APZ's can be contained within the subject lot boundary. Internal to the site large trees >50cm DBH are to be retained and maintained in a low fuel state. Any future landscaping is to conform to Schedule 1 WAPC APZ standards (WAPC, 2021, Vers 1.4). Refer to the standard Appendix B and further information Section 5.2 of this report. It is recommended that an accredited Bushfire Practitioner reviews the landscape concept plan to ensure any plantings will not impact the BAL rating over future building. Proposal meets Acceptable Solution A2.1.
Element 3 – Vehicular Access	A3.1 Public Roads	Yes	Compliant Access to the proposed rezoning is via the public road of Scotsdale Road. The road reserve is presently 20m wide with a current trafficable surface of 6m wide. Proposal meets Acceptable Solution A3.1
	A3.2a multiple access routes	Yes	Compliant The site is currently accessed via Scotsdale Road to the west which provides two-way access to the north and south. Scotsdale Road also links to the greater road network to the south. The road network provides safe access and egress to two different destinations. As sealed public roads, they will be available to all residents and the public at all times and under all weather conditions. Refer to the Figure 6 Access and Water Map. As the lot layout is not known at this time, all future development associated with the expansion of the school will be to/from Scotsdale Road to be compliant to the WAPC guidelines. Proposal meets Acceptable Solution A3.2a.
	A3.2b Emergency Access Ways	No	No emergency access ways are proposed. Not assessed to A3.2b.

Table 4 cont.

Element	Acceptable Solution	Applicable or Not Yes/No	Proposal meets Acceptable Solution
Element 3 – Vehicular Access cont.	A3.3 Through Roads	No	No through roads are not planned as part of this proposal and all future development will have direct access onto Scotsdale Road which along with the existing public road network provides safe access to two different destinations. Refer to the Figure 6 Access and Water Map. Not assessed to A3.3.
	A3.4a Perimeter roads	No	No perimeter roads are proposed. Not assessed to A3.4a.
	A3.4b Fire Service Access Ways	No	No Fire Service Access Ways are proposed. Not assessed to A3.4b.
	A3.5 Battle axe access legs	No	Battle axe legs are not recommended in bushfire prone areas. No battle axe legs are to be proposed. Not assessed to A3.5.
	A3.6 Private driveways	No	Not addressed in at this stage of planning, to be actioned in subsequent planning stages (Planning approval) when the final location of future building has been established, see section 5.2.1 for driveway access standards. Not assessed to A3.6.
Element 4 – Water	A4.1 Identification of future water supply	Yes	Compliant. The subject site is currently located in a reticulated area, the nearest hydrants are located adjacent to the on Scotsdale Road and River Bend Lane, meeting the Acceptable Solution. Proposal meets Acceptable Solution A4.1.
	A4.2 Provision of water for firefighting supply	Yes	Compliant. Reticulated water can be provided to school expansion, with the reticulated water already connected through the subject site along Scotsdale Road and River Bend Lane. If fire hydrants are to be installed in the future road reserve. These must be installed to WCWA standards installed in accordance with the Water Corporation's No. 63 Water Reticulation Standard (WC, 2016) Proposal meets Acceptable Solution A4.2.

5.2 Other Bushfire Mitigation Measures

The bushfire risk assessment (Section 4.0) has outlined the extreme bushfire risks for the site the future development of new facilities. The following section outlines additional measures to assist in mitigating the bushfire risk for the proposed development.

5.2.1 Vehicle access standards

Any driveway access construction associated with the future development will need to comply with the following vehicular access standards (Figure 7 and Figure 8)

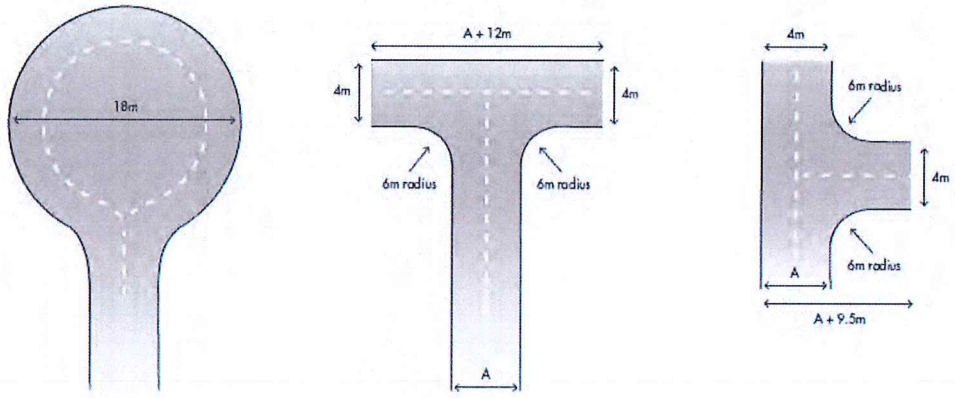

Figure 7: Turn Around Standards (WAPC, 2021)

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

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

Figure 8: Vehicular access technical requirements (WAPC, 2021)

5.2.2 Minimise Ignition Sources

There is little control of offsite ignition sources, however the following is recommended to be undertaken by the landowner.

Prior to the bushfire season (October) the following activities are undertaken:

- Mowing, slashing and brush cutting (noting illegal to do so on designated total fire ban days);
- Maintenance of road access into and out of the site;
- Sub-contractors are aware of their obligations through contractual requirements.

During the summer bushfire season (1st December to 30th April inclusive as designated in the fire control notice) maintenance activities internal to the site should be planned and risk assessed prior to commencement. This includes but not limited to:

- Mowing, slashing and brush cutting (noting illegal to do so on designated total fire ban days);
- Welding, grinding and hot works (not undertaken on designated total fire ban days);
- Temporary waste disposal areas and green waste dumps – ensure piles are not exceeding 1.5m high and have bare mineral earth surrounding (min of 10m); and
- A water tender (min of 200L) fast attack unit is on site during the fire season (any site construction activities).

The Site Construction manager (during development/ construction phases) in consultation with developer are responsible for safety in construction activities during the bushfire season and are to ensure safety of the site and adjacent properties at all times from potential ignition sources.

5.2.3 Fuel Reduction and APZ Management

Ongoing fuel reduction by landowners to ensure their allocated BAL applies through mechanical slashing and mowing will be required to be undertaken regularly to ensure all internal grasses are maintained. Buildings are to be inspected regularly for build-up of wind-borne debris and leaf accumulation in gutters and at penetrations to buildings (doors, windows, etc). The lot owner is to be responsible for implementation of the maintenance schedule to maintain their BAL and general bushfire preparedness which should generally reflect the following actions, refer to Table 5.

Table 5: Maintenance schedule - landowners

Frequency	*Activity*
Weekly **(During fire season operations and prior to bushfire event)** **Also refer to Schedule 1, Appendix B**	Check all buildings for wind borne debris build up and remove.
	Check gutters are free from vegetation or over hanging branches.
	Trimming and removing dead plants or leaf litter.
	Pruning climbing vegetation (such as vines) on a trellis, to ensure it does not connect to a building, particularly near windows and doors.
	Check outdoor objects around buildings (see list below).
	Raking and cleaning underfloor spaces (if applicable).
Monthly	Mowing, slashing and maintaining grasses, more frequent during spring and autumn growth periods.

Frequency	*Activity*
	Whipper snipper/grass cutter around all buildings.
	Check no combustible materials are store near buildings or penetrations of buildings (windows doors etc), includes but not limited to – gas bottles, fences stored combustible material, vines, plants etc.
	Ensure weeds or woody material is not encroaching into the APZ area around buildings (20m minimum), attend to any dead material through trimming and pruning, raking and removing to green waste.
	Any material from pre fire season preparation is either disposed to green waste or burn in piles away for the buildings with a 10m mineral earth break around the pile.

Prior to a bushfire event best practice recommends that objects within the APZ are moved away from the building prior to any bushfire event. Objects may include, but are not limited to:

- Door mats
- Outdoor furniture
- Potted plants
- Shade sails or umbrellas
- Plastic garbage bins
- Firewood stacks
- Flammable sculptures
- Playground equipment and children's toys.

These should always be considered in the proximity to buildings and stored appropriately when not in attendance at site. Consider any replanting or landscaping refer to the Country Fire Authority's Landscaping for Bushfire: Garden Design and Plant Selection (CFA, 2022) – Plant Selection Key or aim for plants within the APZ that have the following characteristics:

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

Also refer to Schedule 1, Appendix B of this report.

5.2.4 Barrier Fencing

In November 2010, the Australian Bushfire CRC issued a "Fire Note" (Bushfire CRC, 2010), which outlined the potential for residential fencing systems to act as a barrier against radiant heat, burning debris and flame impingement during

bushfire. The research aimed to observe, record, measure and compare the performance of commercial fencing of Colourbond steel and timber (treated softwood and hardwood).

The findings of the research found that:

"*.. Colourbond steel fencing panels do not ignite and contribute significant heat release during cone calorimeter exposure"* (exposure to heat)

".. Colourbond steel (fencing) had the best performance as a non-combustible material. It maintained structural; integrity as a heat barrier under all experimental exposure conditions, and it did not spread flame laterally and contribute to fire intensity during exposure"

It is also noted that non-combustible fences are recommended by WAPC (2021, Vers 1.4), through APZ standards: Fences and sheds within the APZ are constructed using non-combustible materials e.g., colourbond iron, brick, limestone, metal post and wire. The developer will be encouraged to build Colourbond or non-combustible fences where applicable.

5.2.5 Evaporative Air Conditioners

Evaporative air conditioning units can catch fire as a result of embers from bushfires entering the unit. These embers can then spread quickly through the home causing rapid destruction. It can be difficult for fire-fighters to put out a fire in the roof spaces of homes.

It is also recommended that the future property owners:

- Ensure that suitable external ember screens are placed on roof top mounted evaporative air conditioners compliant with AS3959-2018 (current and endorsed standards) and that the screens are checked annually; and
- Maintain evaporative air conditioners regularly as per DFES recommendations, refer to the DFES website for further details: http://www.dfes.wa.gov.au

5.2.6 Individual fire plan

The school will update their Bushfire Emergency Evacuation Plan (BEEP), as they need to make a commitment to develop a bushfire survival plan detailing preparations and actions to take if a bushfire threatens. By compiling information as outlined above, the landowner can be prepared for their response in a bushfire emergency. landowners should not rely on emergency personnel to attend their property and thus it is stressed to prepare an individual bushfire emergency plan regarding their intentions and property. This Bushfire Management Plan is not an individual bushfire emergency plan or a BEEP More information can be gained from the DFES website (s):

www.dfes./wa.gov.au

www.emergency.wa.gov.au

Figure 9: DFES emergency access plan home page (DFES, 2022).

The DFES FDR ratings and warning systems are shown below in Figure 10.

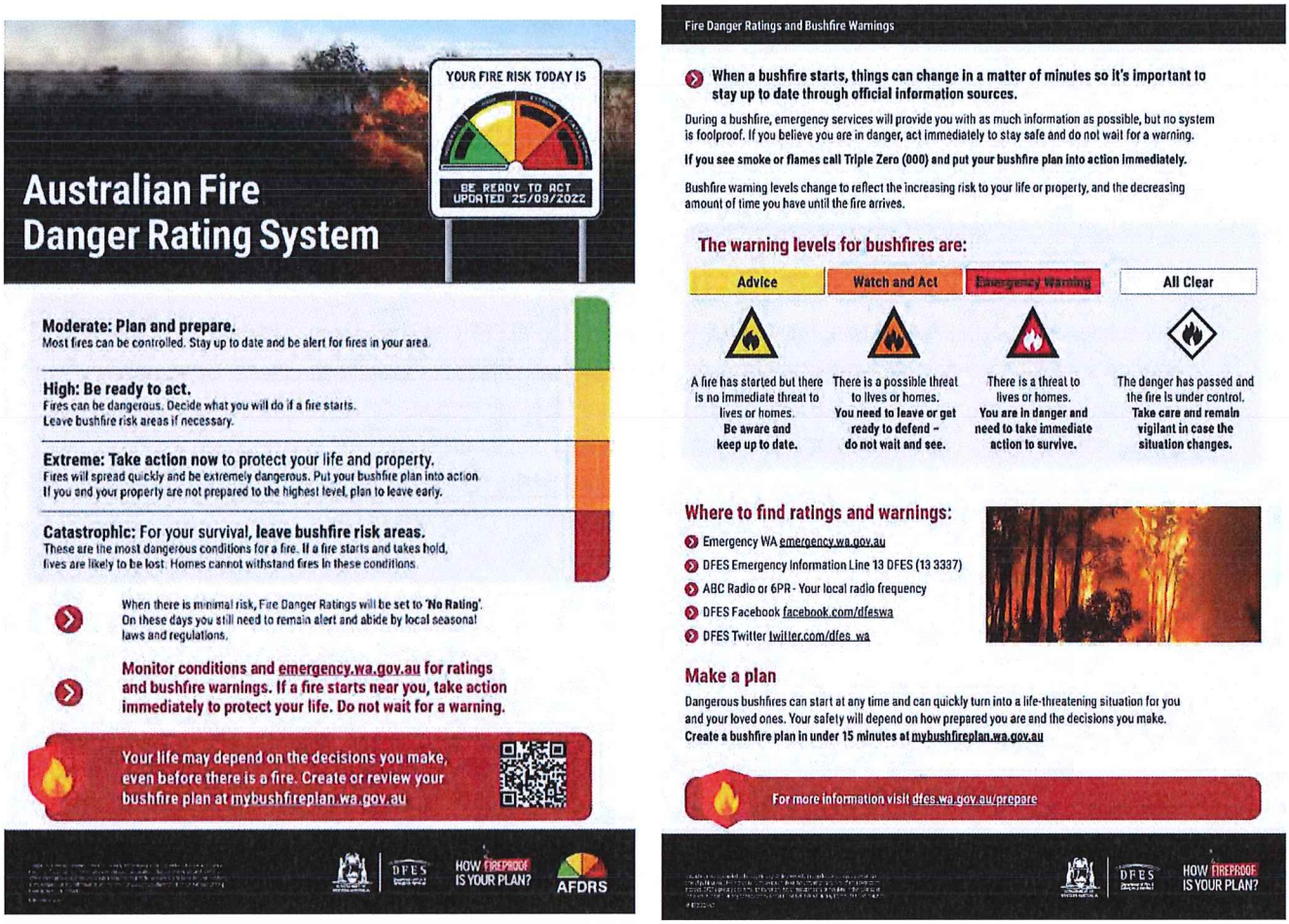

Figure 10: DFES Warning Systems (DFES, 2022).

6 Implementation Actions

The responsibilities of the developer(s), Landowners and local government are shown in Table 6 and 8.

6.1 Developer's Responsibility

It is recommended the developer be responsible for the following:

Table 6: Implementation actions current land owner/developer.

Developer		
No	**Implementation Action**	**Development Stages**
1	Planning approval may be conditioned with the requirement to make appropriate notifications (on the certificates of title and the deposited plan), of the existence of this Bushfire Management Plan and that the land is within a designated bushfire prone area. A Notification, pursuant to Section 165 of the Planning and Development Act 2005 may be required to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factors. Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows: •This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements apply to development on this land'.	**Development Approval**
2	Any future habitable buildings to be constructed to AS3959-2018 at building/development approval stages.	**Development Stage**
3	Establish/maintain low fuel areas to the standard stated in this BMP and their allocated certified BAL, see Schedule 1 Standards for APZ's (Appendix B; WAPC, 2021, Vers 1.4).	**Development Stage**
4	Maintain fire breaks and bushfire fuel load in accordance with the current SoD Fire Management Notice and Schedule 1 Standards for APZs (See Appendix B).	**Development Application Stages**
5	A driveway cross over to be designated/ installed for access into the lots at the development application stages, to the minimum technical standards as required by current and endorsed WAPC guidelines. To be demonstrated to SoD at planning approval/building approval stages.	**Development Stage**
6	Ensure that any future access as part of the development application process is to be complaint with the Guidelines, it is recommended all access should be directly onto Scotsdale Road.	**Development Application Stages**
7	Ensure that the future development application meets the guidelines for planning in bushfire prone areas and the Water Corporation's No. 63 Water Reticulation Standard (WC, 2016) requirements.	**Development Application Stages**
8	Ensure a BMP and Bushfire Emergency Evacuation Plan (BEEP) are prepared to support the development application for the school extension.	**Development Application**

6.2 Local Government Responsibility

It is recommended the local government be responsible for the following:

Table 7: Implementation actions, Shire of Denmark

SoD		
No	**Implementation Action**	**Stage of approval**
1	Request BAL certification at Building Approval stages on any proposed habitable buildings. Buildings to be located in BAL-29, BAL-19 and BAL-12.5 zones. Increased construction standards to BAL and AS3959-2018 applies to buildings located in the WA bushfire Prone Area Mapping (OBRM, 2021).	**Development and Building Approval**
2	Ensure future vehicle access and turn around standards are achieved as per Figure 7 and 8.	**Development application Stages**
3	Ensure all buildings and their respective driveways conform at DA stages to the current and endorsed WAPC guidelines technical standards which apply to driveway construction.	**Development Approval**
4	Monitor landowner compliance with this Bushfire Management Plan and the annual SoD Fire Management Notice.	**Ongoing**

7 Disclaimer

The recommendations and measures contained in this assessment report are based on the information available at the time of writing following the instructions of the regulatory authorities and following the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2021, vers 1.4), and applying best practise as described by Fire Protection Association Australia. These are considered the minimum standards required to balance the protection of the dwellings and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire, people injured, or fatalities occur either at the site or while evacuating. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed development are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the bushfire consultant has no control. Notwithstanding anything contained within, the consultant/s will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the bushfire consultant) arising out of the services rendered by the consultant.

AS3959-2018 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959-2018) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather condition.

Building to AS3959-2018 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself (AS3959, 2018).

8 Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level (s) stated in this document have been prepared in accordance with the requirements of AS 3959-2018 and the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2021, Vers 1.4).

SIGNED, ASSESSOR: ..... DATE: 11/10/2023

Jason Benson, Bio Diverse Solutions

Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD37893)

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

9 Revision Record

Revision	Prepared By	Summary	Reviewed By	Date
Draft Id 8/08/2023	Melanie Haymont	Internal QA review	Leanne Shilton	8/08/2023
Draft Id 26/09/2023	Melanie Haymont	Internal Technical review	Kathryn Kinnear	26/09/2023
Final Id 26/09/2023	Jason Benson and Melanie Haymont	Final issued to client.	Melanie Haymont	27/09/2023
Final v2 11/10/2023	Melanie Haymont	Client reviewed version issued to client	Melanie Haymont	11/10/2023

10 References

AS3959-2018 Australian Standard, *Construction of buildings in bushfire-prone areas*, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

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11 Appendices

Appendix: A: Vegetation Classifications to AS3959-2018

Appendix: B: Schedule 1 - WAPC Asset Protection Zone (APZ) standards to apply

Appendix C: Shire of Denmark Fire Management Notice 2023/24

Appendix A

Vegetation Classification to AS3959-2018

Vegetation classification to AS3959-2018

Site Details			
Address:	Lot 1, No. 23 Riverbend Lane,		
Suburb:	Scotsdale	**State:**	W.A.
Local Government Area:	Shire of Denmark		
Stage of WAPC Planning	Strategic Level Proposal (Rezoning)		

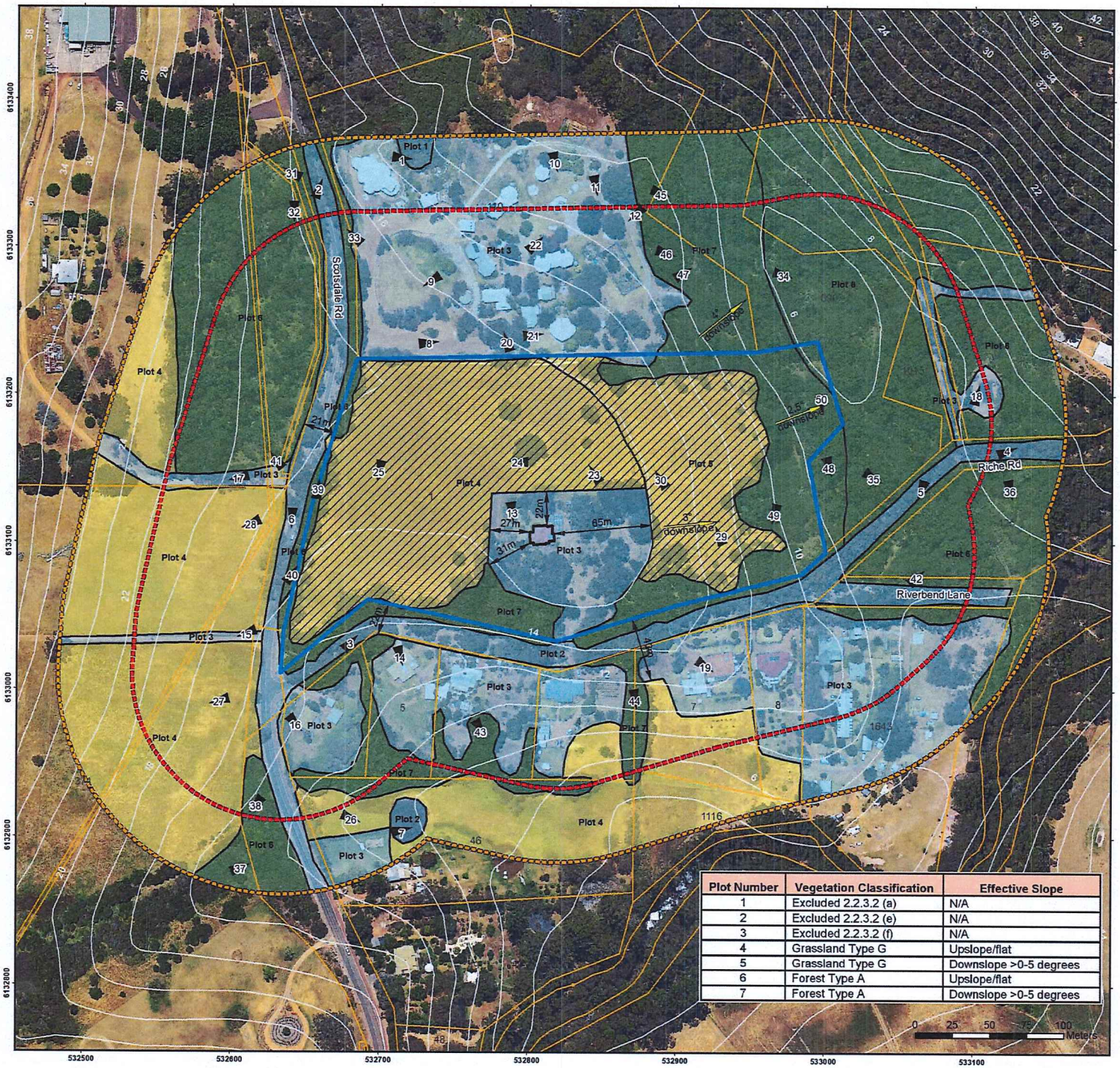
BMP Plan Details			
Report / Job Number:	EPP0016	**Report Version:**	Final
Assessment Date:	17 April 2023	**Report Date:**	21 August 2023
BPAD Practitioner	Melanie Haymont	**Accreditation No.**	BPAD 58389

Vegetation Classification

Site assessment occurred on the 17 April 2023 by Melanie Haymont (BPAD 58389). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages and shown on the Vegetation Classes Map Page 3.

Table 1: Vegetation Classification Table (in accordance with AS 3959-2018) of the subject site

Plot Number	Vegetation Classification	Slope (Table 2.4.3)
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Grassland Type G	Upslope/flat
5	Grassland Type G	Downslope >0-5 degrees
6	Forest Type A	Upslope/flat
7	Forest Type A	Downslope >0-5 degrees



Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (e)	N/A
3	Excluded 2.2.3.2 (f)	N/A
4	Grassland Type G	Upslope/flat
5	Grassland Type G	Downslope >0-5 degrees
6	Forest Type A	Upslope/flat
7	Forest Type A	Downslope >0-5 degrees

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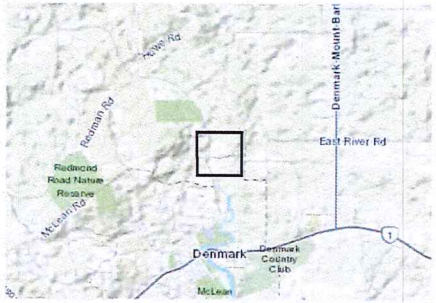
BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS



Overview Map Scale 1:100,000

Legend

- Subject Site
- Existing Dwelling
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 2m Contours
- Separation Distance
- Slopes Degrees
- Photo Point
- Future Low Fuel
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Grassland Type G
- Excluded 2.2.3.2

Scale
1:2,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Steve Edge Planning
Lot 1 (No. 23) Riverbend Lane
Scotsdale, WA 6333

Vegetation Classes

BAL Assessor	QA Check	Drawn by
MEH	JRB	GSK
STATUS	**FILE**	**DATE**
FINAL	EPP0016	26/09/2023

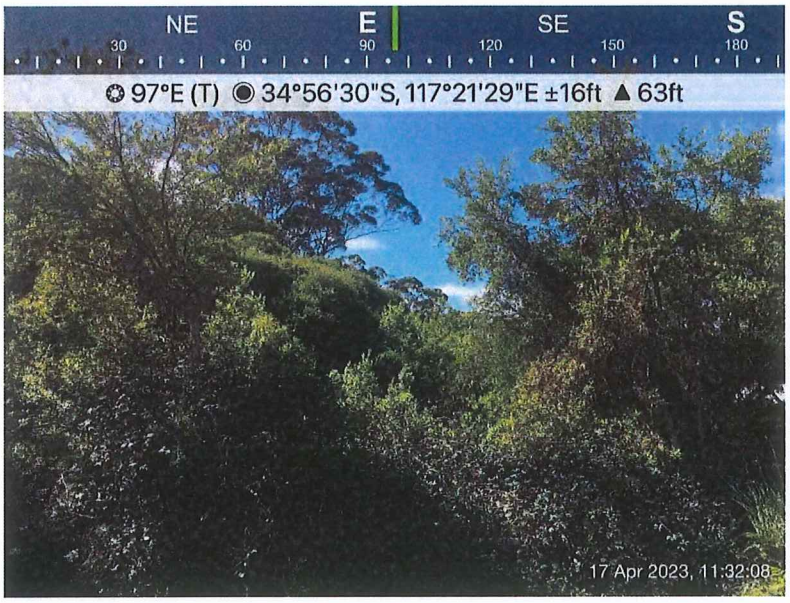
Plot	1	Classification or Exclusion Clause	Excludable - 2.2.3.2(a) >100m from site
			**Location:** External in adjacent lot to the north of the subject site. **Separation Distance:** >100m. **Description:** Areas of classified vegetation >100m from the subject site. Excluded as per AS3959 exclusion clause 2.2.3.2 (a).

Photo Id 1: View to the east towards vegetation, located >100m to the north of the subject site.

Plot	2	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Location:** Northwest, west, south, and southeast to the subject site. **Description:** Roads, dams and other non-vegetated areas. As per exclusion clause 2.2.3.2 (e) of AS3959-2018.

Photo Id 2: View to the north-northeast along Scotsdale Road, located to the northwest of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Additional Photo of Plot 2.**

Photo Id 3: View to the north along River Bend Lane, located to the south of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Additional Photo of Plot 2.**

Photo Id 4: View facing east-northeast along Riche Road, located to the east of the subject site.

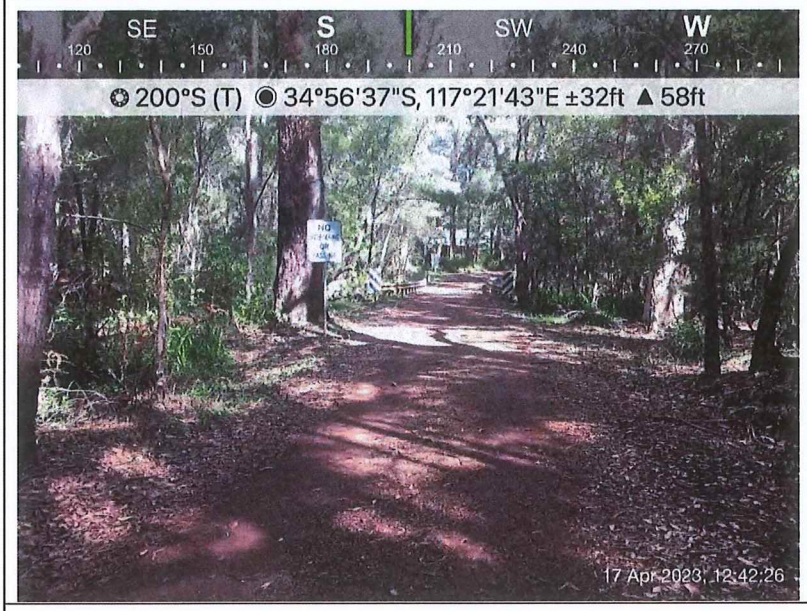
Plot	2 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Additional Photo of Plot 2.**

Photo Id 5: View facing south-southwest along Riche Road, located to the east of the subject site.

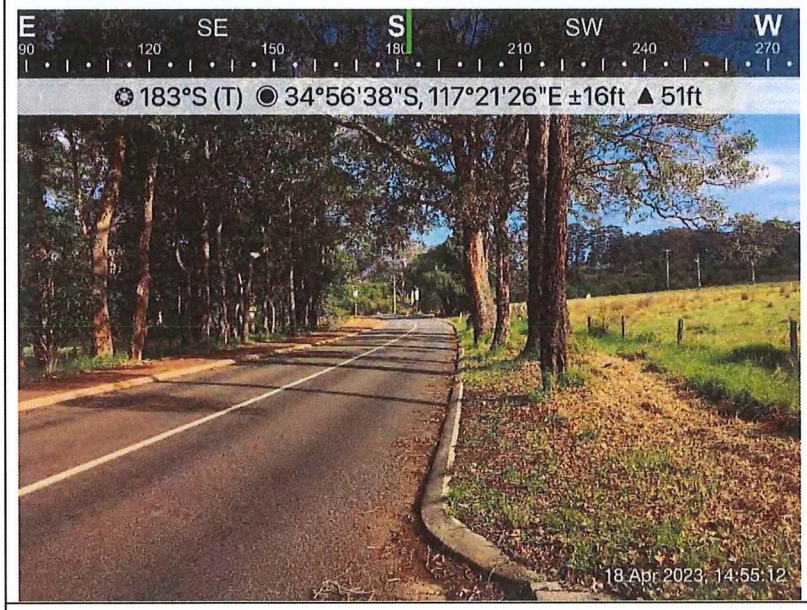
Plot	2 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Additional Photo of Plot 2.** **Note:** photo was taken on a different day to the original site assessment

Photo Id 6: View to the south along Scotsdale Road, located to the west of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(e) Non Vegetated Areas
			**Additional Photo of Plot 2.** **Note:** Photo taken at a distance due to private property access.
Photo Id 7: View facing east-northeast towards a dam located, to the south of the subject site. Note: Photo taken at a distance due to access			
Plot	**3**	**Classification or Exclusion Clause**	**Excludable - 2.2.3.2(f) Low Threat Vegetation**
			**Location:** North south, east, west and internal to the subject site. **Description:** Maintained gardens and lawns in APZ areas surrounding existing buildings, and firebreaks. Excluded as per AS3959 exclusion clause 2.2.3.2 (f). **Available fuel loading:** <2 t/ha.
Photo Id 8: View facing east towards carpark buildings and landscaping, located to the north adjacent to the subject site			

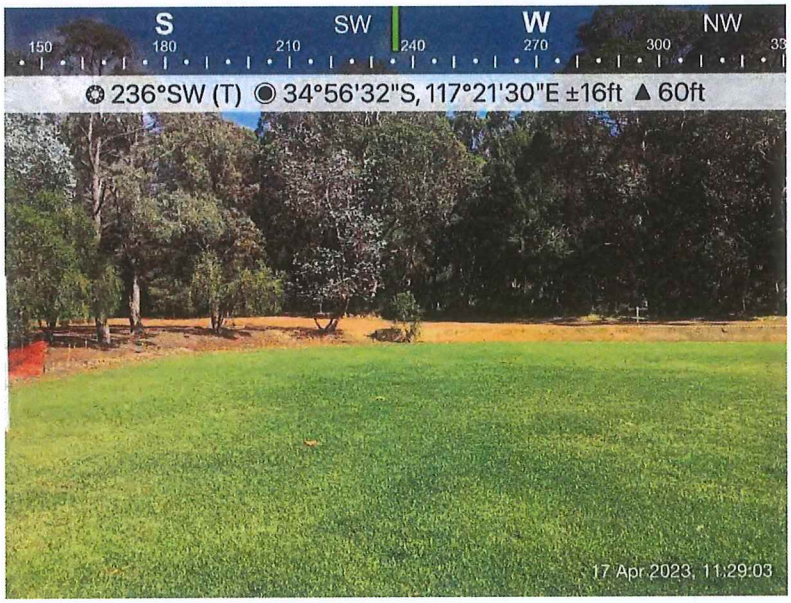
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 9: View facing southwest towards the oval and landscaping, located on the existing school site to the north of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 10: View to the south-southeast towards the playground area, located on the existing school site to the north of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 11: View to the south-southeast towards the playground area and landscaping, located on the existing school site to the north of the subject site.

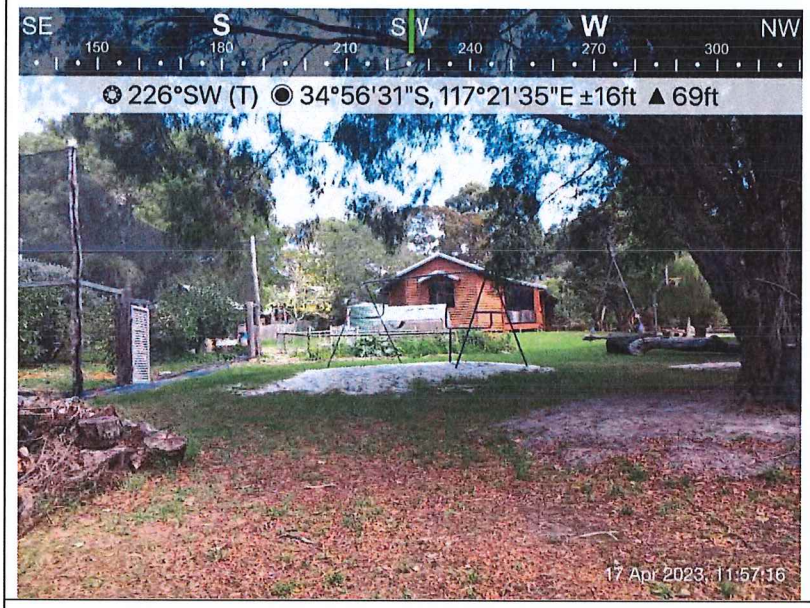
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 12: View to the southwest of playground, buildings, and landscaping, located on the existing school site to the north of the subject site.

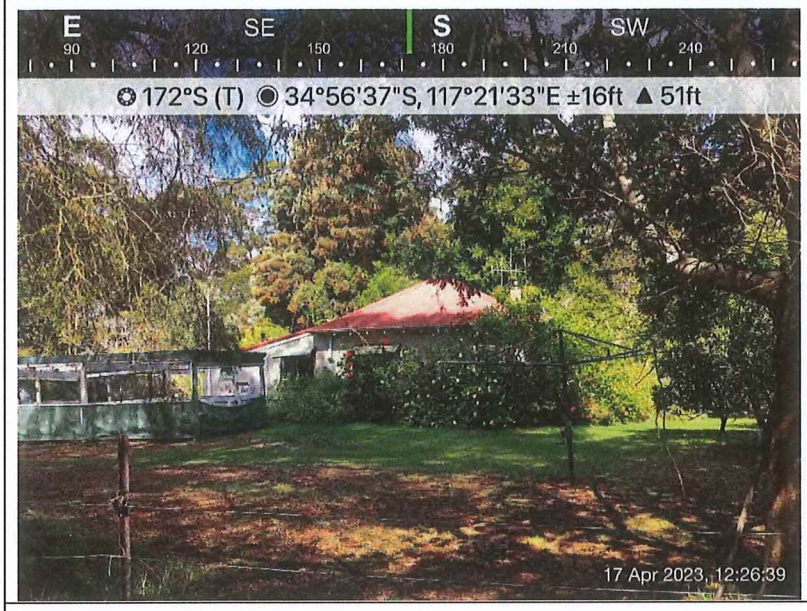
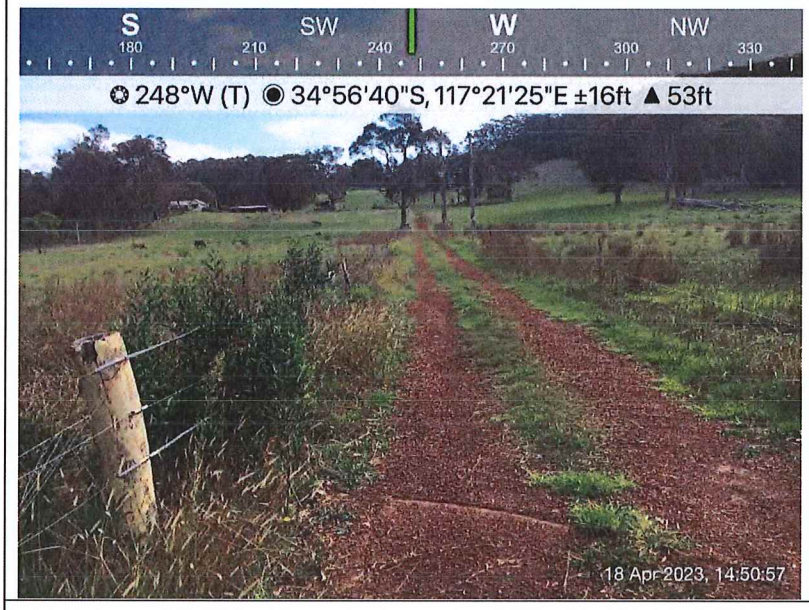
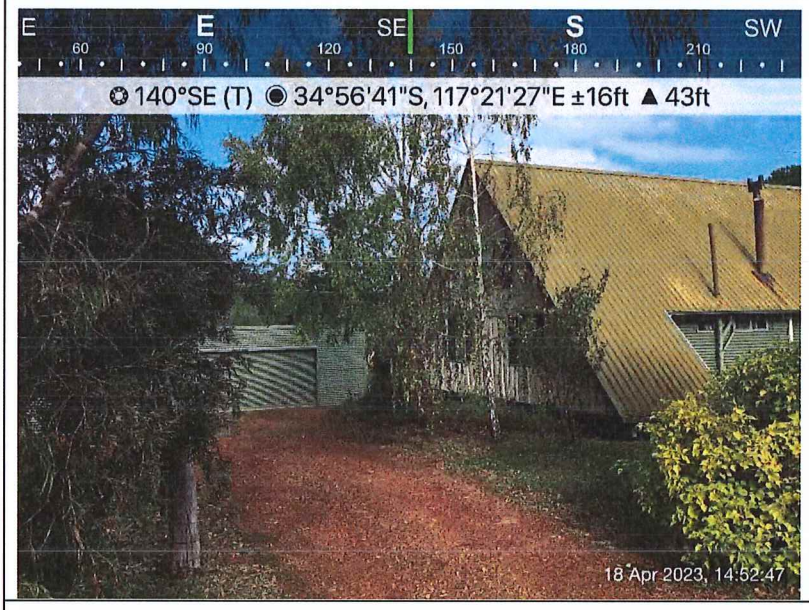
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 13: View to the south towards an existing residence with associated APZ, located internally of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 14: View to the south-southeast towards an existing residence and associated APZ, located to the south of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**
Photo Id 15: View to the west-southwest along a driveway, located to the west of the subject site.			
Plot	**3 cont.**	**Classification or Exclusion Clause**	**Excludable - 2.2.3.2(f) Low Threat Vegetation**
			**Additional Photo of Plot 3.**
Photo Id 16: View to the southeast towards an existing residence and associated APZ, located to the south of the subject site.			

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 17: View to the west-southwest along a driveway, located to the northwest of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 18: View to the north-northeast along a driveway, located to the east of the subject site.

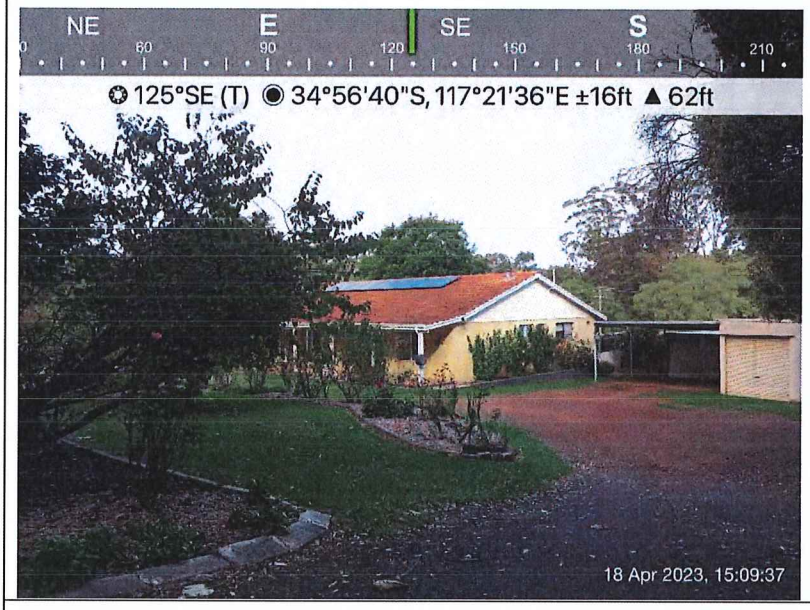
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 19: View to the east-southeast towards an existing residence and associated APZ, located to the south of the subject site.

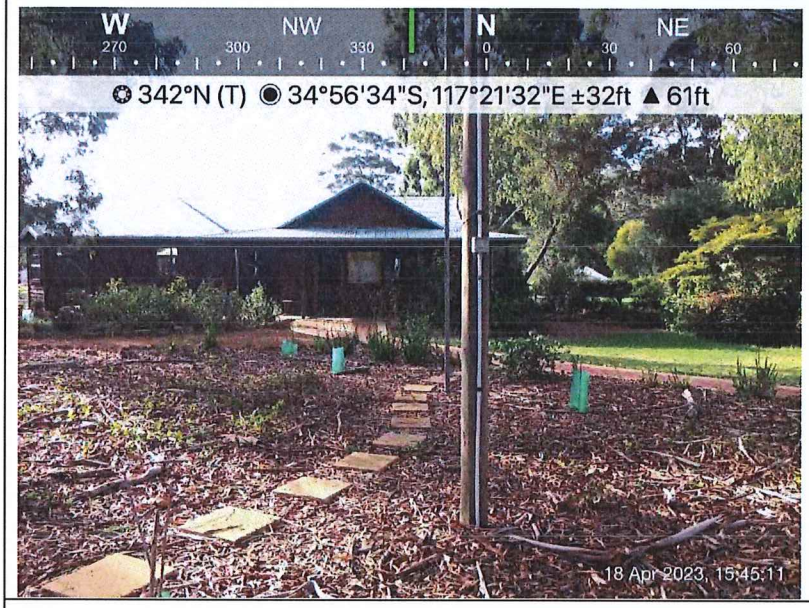
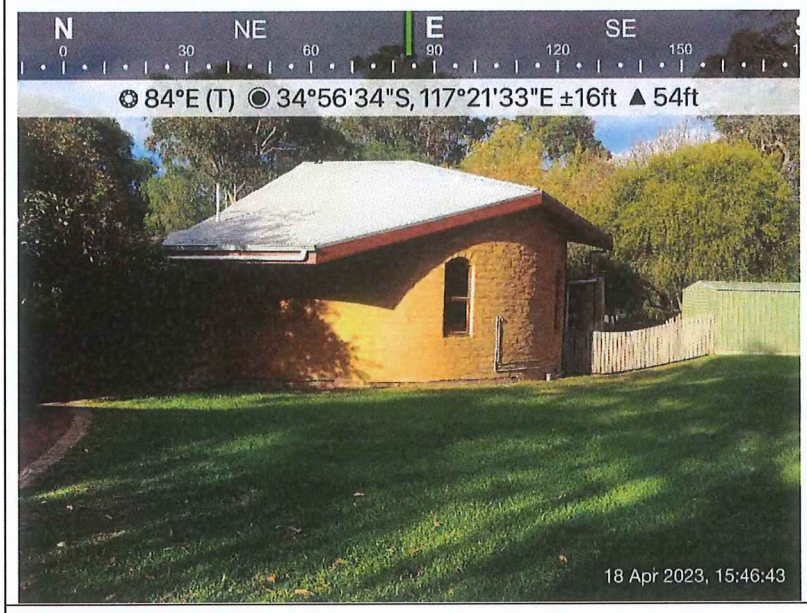
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation
			**Additional Photo of Plot 3.**

Photo Id 20: View to the north-northwest towards an existing school building and associated APZ, located to the north of the subject site.

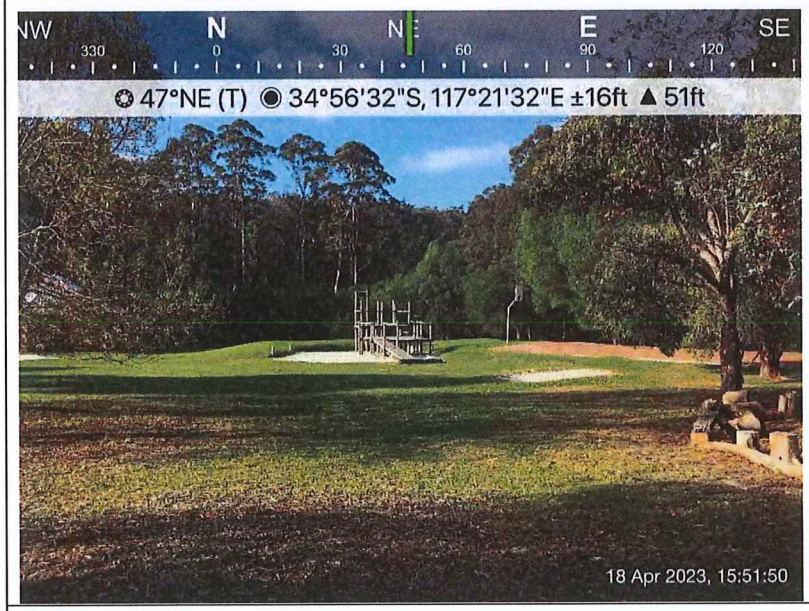
Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation



Additional Photo of Plot 3.

Photo Id 21: View facing the east towards buildings and landscaping, located on the existing school site to the north of the subject site.

Plot	3 cont.	Classification or Exclusion Clause	Excludable - 2.2.3.2(f) Low Threat Vegetation



Additional Photo of Plot 3.

Photo Id 22: View to the northeast towards landscaping and playground, located on the existing school site to the north of the subject site.

Plot	4	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Location:** Northwest, south, southwest, and internal of the subject site. **Separation Distance:** 0m. **Description:** Partially grazed mixed grasses and weeds. **Average vegetation height:** 100-300mm. **Vegetation Coverage:** <10% Trees. **Available fuel loading:** 4.5t/ha. **Effective slope:** Upslope/flat.

Photo Id 23: View facing north-northwest towards grassland vegetation, located internally of the subject site.

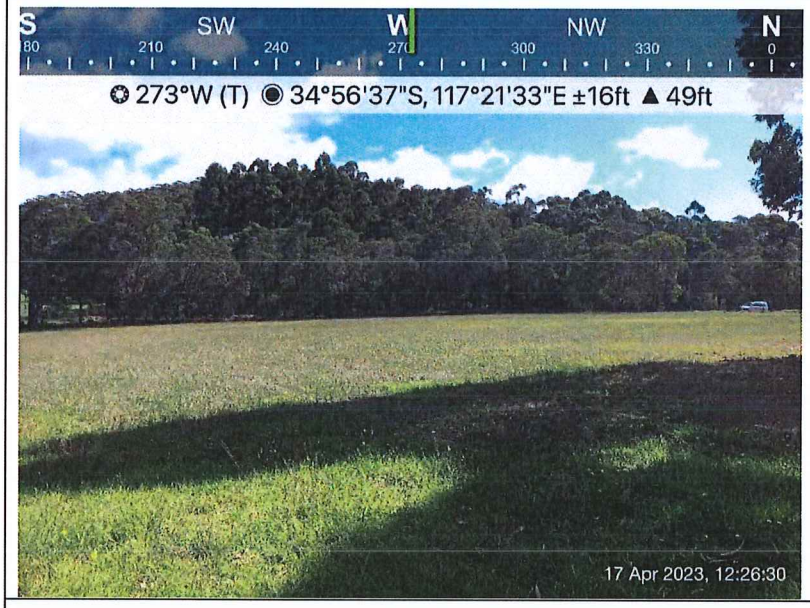
Plot	4 cont.	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 4**

Photo Id 24: View facing west towards grassland vegetation, located internally of the subject site.

Plot	4	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 4.**
Photo Id 25: View facing south towards grassland vegetation, located internally of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 4.**
Photo Id 26: View facing east-southeast towards grassland vegetation, located to the south of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 4**

Photo Id 27: View facing west-southwest towards grassland vegetation, located to the southwest of the subject site.

Plot	4 cont.	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 4**

Photo Id 28: View facing west-southwest towards grassland vegetation, located to the west of the subject site

Plot	5	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Location:** Internal of the subject site. **Separation Distance:** 0m. **Description:** Partially grazed mixed grasses and weeds. **Average vegetation height:** 100-300mm. **Vegetation Coverage:** <10% Trees. **Available fuel loading:** 4.5t/ha. **Effective slope:** Downslope >0-5 degrees.

Photo Id 29. View to the west north-northwest towards grassland vegetation, located internally in the east of the subject site.

Plot	5 cont.	Classification or Exclusion Clause	Class G Grassland – Sown pasture G-26
			**Additional Photo of Plot 5.**

Photo Id 30: View facing northwest towards grassland vegetation, located internally in the east of the subject site.

Plot	6	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Location:** Northwest, east, southeast south west, northwest and internal of the subject site. **Separation Distance:** 0m. **Description:** Forest vegetation consisting of mixed Karri, Jarrah, Marri and Peppermint trees. Dense canopy cover with multilayered understorey of Acacia, Tea Tree, sedges and rushes. **Average vegetation height:** 6-25m. **Vegetation Coverage:** 30-70% foliage cover. **Available fuel loading**: 25-35t/ha. **Effective slope:** Upslope/flat.

Photo Id 31: View facing west-northwest towards forest vegetation, located to the northwest of the subject site.

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**

Photo Id 32: View facing south towards forest vegetation, located to the northwest of the subject site.

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**

Photo Id 33: View facing northwest towards forest vegetation, to the northwest of the south of the subject site.

Note: Error in photo direction.

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**

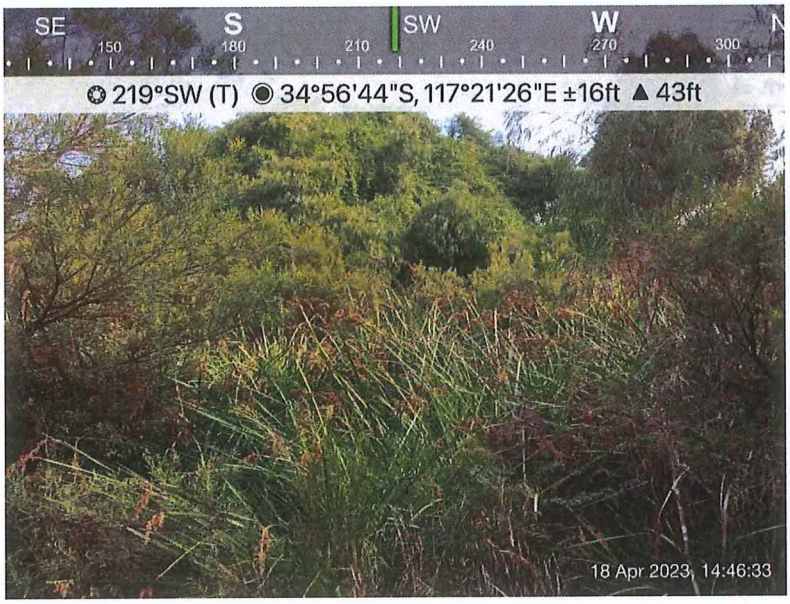
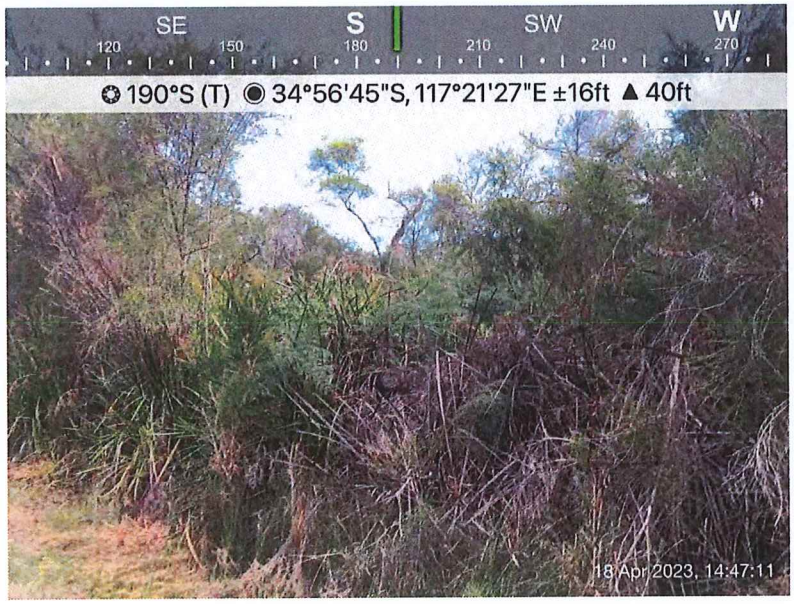
Photo Id 34: View facing east-southeast towards forest vegetation, located to the north of the subject site.

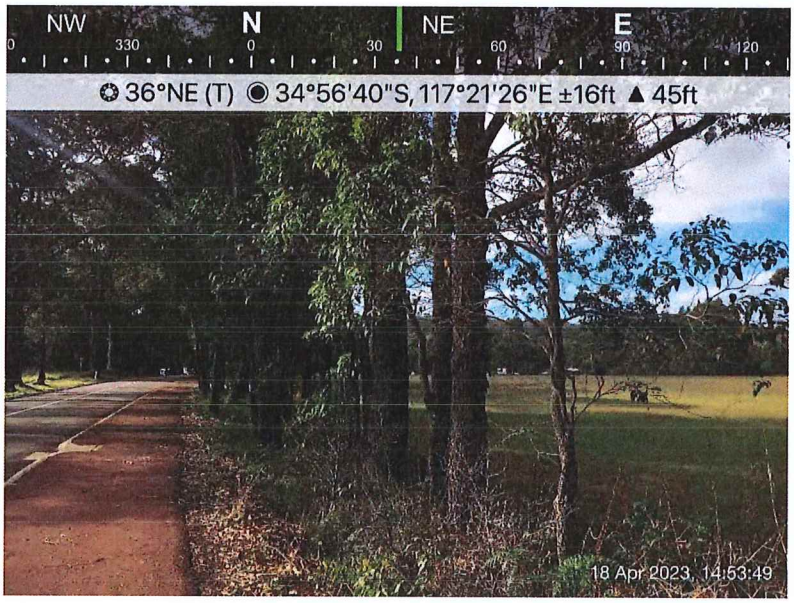
Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**

Photo Id 35: View facing east-southeast towards forest vegetation, located on the adjacent lot to the east of the subject site.

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**

Photo Id 36: View facing south-southeast towards forest vegetation, located to the east of the subject site.

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**
Photo Id 37: View facing southwest towards forest vegetation, located to the southwest of the subject site.			
Plot	**6 cont.**	**Classification or Exclusion Clause**	**Class A Forest - Open forest A-03**
			**Additional Photo of Plot 6.**
Photo Id 38: View facing south towards forest vegetation, located to the southwest of the subject. site. *Note: foreground of site presents as scrub, majority of site presents as forest, access was restricted due to private property.*			

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**
Photo Id 39: View facing northeast towards forest vegetation, located on the road verge to the west of the subject site.			

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**
Photo Id 40: View facing northwest towards forest vegetation, located in the Scotsdale Road reserve to the west of the subject site.			

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**
Photo Id 41: View facing northeast towards forest vegetation, located to the west of the subject site.			

Plot	6 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 6.**
Photo Id 42: View facing northeast towards forest vegetation, located to the southeast of the subject site. *Note: error in photo location.*			

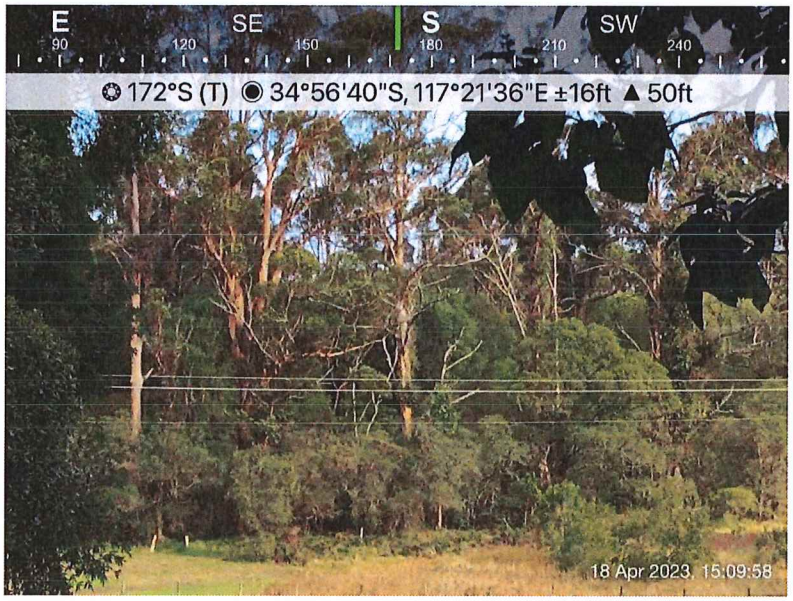
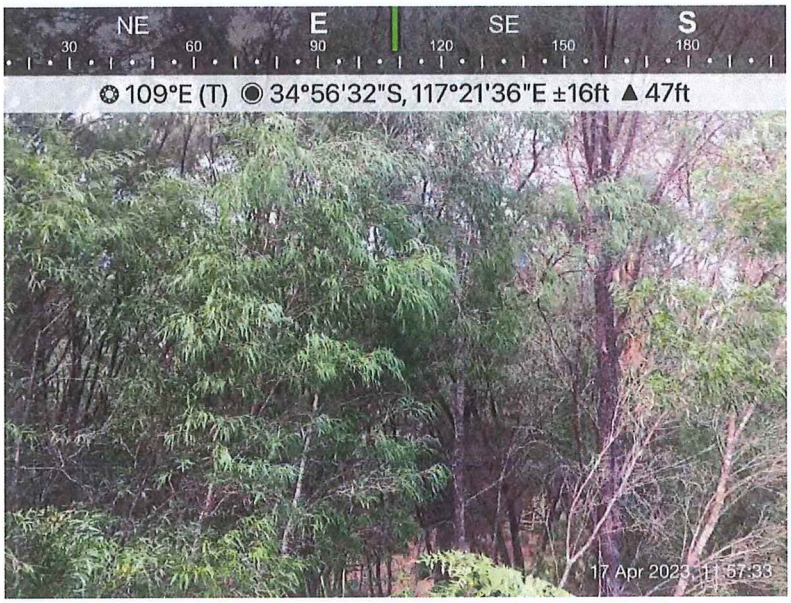
Plot	7	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Location:** North, south, east and internal to the subject site. **Separation Distance:** 0m. **Description:** Forest vegetation consisting of mixed Karri, Jarrah, Marri and Peppermint trees. Dense canopy cover with multilayered understorey of Acacia, Tea Tree, sedges and rushes. **Average vegetation height:** 6-10m. **Vegetation Coverage:** 30-70% foliage cover. **Available fuel loading**: 25-35t/ha. **Effective slope:** Downslope >0-5 degrees.

Photo Id 43: View facing south towards forest vegetation, located to the south of the subject site.

Note: photo taken at a distance due to private property access restrictions.

Plot	7	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**

Photo Id 44: View facing east-southeast towards forest vegetation, located to the south of the subject site.

Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**
Photo Id 45: View facing east-southeast through forest vegetation, located to the north of the subject site.			

Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**
Photo Id 46: View facing east-northeast towards forest vegetation, located to the north of the subject site.			

Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**

Photo Id 47: View facing northeast towards forest vegetation located to the east of the subject site.

Note: Error in photo direction.

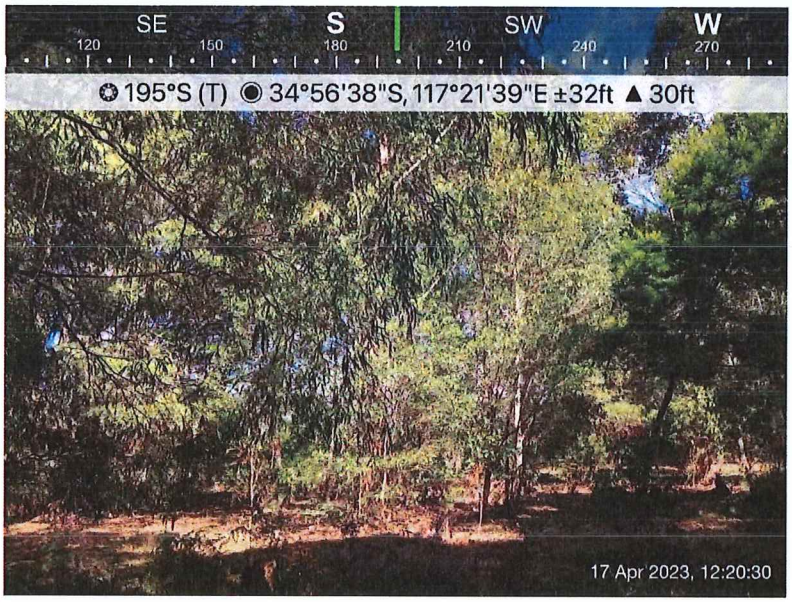
Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.** .

Photo Id 48: View facing south-southwest towards forest vegetation, located adjacent to the subject site in the east.

Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**

Photo Id 49: View facing south towards forest vegetation, located internally in the southeast of the subject site.

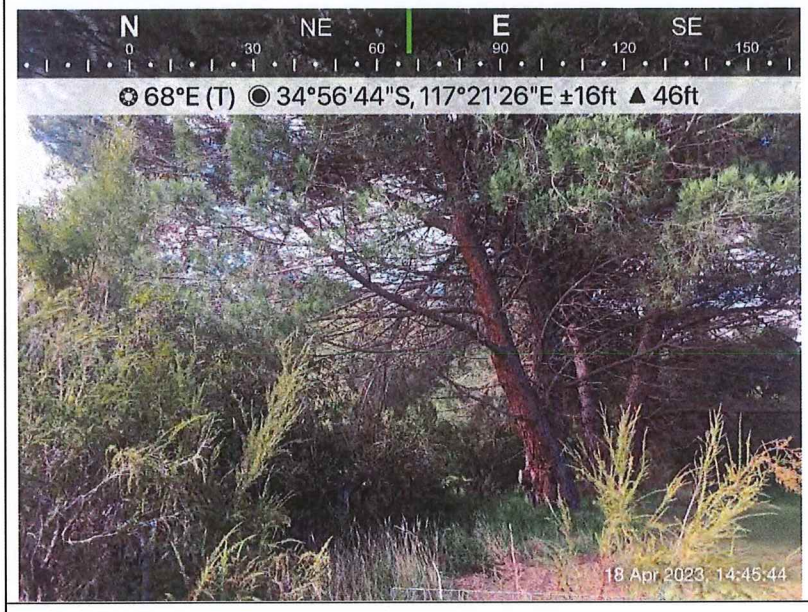
Plot	7 cont.	Classification or Exclusion Clause	Class A Forest - Open forest A-03
			**Additional Photo of Plot 7.**

Photo Id 50: View facing east-northeast towards forest vegetation, located internally in the northeast of the subject site

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 (AS3959-2018) Simplified procedure was used for vegetation classification 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.

CERTIFICATION

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2018.

SIGNED, ASSESSOR: ..... DATE: 21/08/2023

Melanie Haymont, Bio Diverse Solutions
Accredited Level 1 BAL Assessor (Accreditation No: BPAD-58389)

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

REVISION RECORD

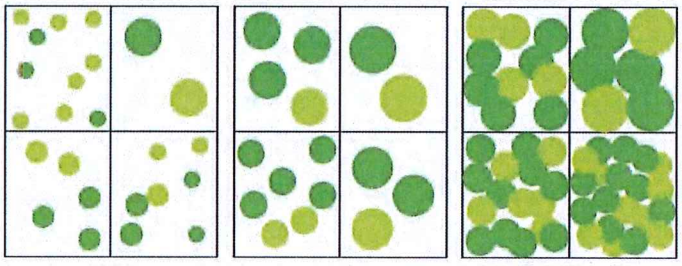
Revision	Prepared By	Summary	Reviewed By	Date
Draft Id	Melanie Haymont	Internal Review	Leanne Shilton	21/08/2023
Final Id	Melanie Haymont	Final Issued to Client	Melanie Haymont	**26/09/2023**

Appendix B

Schedule 1 WAPC Asset Protection Zone (APZ) standards to apply

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

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

Appendix C

SoD Fire Management Notice 2023/24

FIREBREAK AND FUEL MANAGEMENT NOTICE 2023/2024

Section 33 Bush Fires Act 1954

REPORT ALL FIRES DIAL 000

www.emergency.wa.gov.au

FIRST AND FINAL NOTICE

To owners and occupiers of land within the Shire of Denmark.

All residents are required to comply with this notice. If the requirements of this notice are not completed to the satisfaction of an Authorised Officer, an on the spot fine of **$250** will be issued. Failure to comply with this notice may result in a penalty of up to $5000.

Maintenance Period

1 December 2023 – 30 April 2024

You MUST remain fire compliant for this period.

Variations Due

1 October 2023

Compliance Inspections Commence

1 December 2023

Shire of Denmark contractors may enter the property and carry out any works required by this notice at expense of the owner/occupier.

Burning Periods

*Permit required for standing bush 1 Oct – 14 Nov 2023

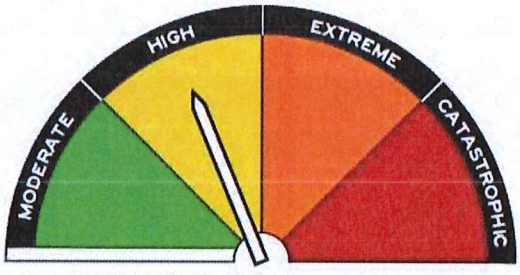
DATES YOU MUST REMEMBER	
Unrestricted*	1 May 2023 – 31 Oct 2023
Restricted	1 Nov 2023 – 15 Dec 2023
PROHIBITED	16 Dec 2023 – 29 Feb 2024
Restricted	1 March 2024 – 30 April 2024
Unrestricted	1 May 2024 – 31 October 2024
Dates subject to change. www.emergency.wa.gov.au	
No Burning if Fire Danger is High or above	

Contact your local Fire Control Officer (see page 10) for information on how to obtain a Permit to Burn during restricted periods. No permits will be issued for properties under 2000sqm.

A Total Fire Ban may be declared at any time, imposing further conditions to mitigate the threat of bushfire. Find out more at www.emergency.wa.gov.au

Fire Danger Ratings

Australian Fire Danger Rating System



MODERATE
Plan and prepare.

HIGH
Be ready to act.

EXTREME
Take action now to protect life and property.

CATASTROPHIC
For your survival, leave bushfire risk areas.

Property Maintenance Responsibilities Introduction

This document lists your LEGAL RESPONSIBILITIES to address the bushfire hazards at your property.

This is for your safety, and for the safety of our bushfire volunteers and broader community. *It is your responsibility to make sure you understand what is required and act accordingly.*

In addition to the contents of this notice, there are aids available to help you educate yourself about your responsibilities.

- **Scan the QR code below** or enter www.denmark.wa.gov.au/fire in your browser address bar to access a series of short videos explaining some of the various requirements.

- **Book a Ranger**: contact Ranger Services to make an appointment to talk through the notice.
- Follow or join a **Bushfire Ready** group. Find out more, visit www.yourdenmark.wa.gov.au/be-bush-fire-ready

Compliance inspections occur throughout the Shire of Denmark from 1 December 2023 to 30 April 2024.

Your property may be inspected by an Authorised Officer more than once. Your property MUST remain compliant throughout the entire maintenance period.

FINES APPLY.

Property Maintenance Responsibilities

Landowners/occupiers must address hazards as applicable to the size of the property.

Total land area less than 5000m2 must have:

- **MAINTAINED ASSET PROTECTION ZONE/S**
- **VEHICULAR ACCESS**
- **SLASHED, MOWED** or **TRIMMED GRASS** and **GROUNDCOVER**. These may not exceed 100mm.
- **MAINTAINED DEAD FLAMMABLE MATERIAL** below 2t per hectare or 5t per hectare in predominately Karri bush areas ONLY.

Total land area 5000m2 or more must have:

- **MAINTAINED ASSET PROTECTION ZONE/S**
- **LOW FUEL BOUNDARY ACCESS (LFBA)** Additional LFBA required to compartmentalise bushland areas exceeding 40ha.
- **VEHICULAR ACCESS**
- **MAINTAINED DEAD FLAMMABLE MATERIAL** below 8t per hectare natural bush or 15t per hectare in predominately Karri bush areas. *(Rural zoned land exempt.)*
- **GRASSLAND and GROUNDCOVER** to be maintained to a max height of 100mm unless justified to the satisfaction of an Authorised Officer within an actively managed agricultural pursuit.

If it is considered impractical to meet the requirements of this notice, **contact Ranger Services for information on how to apply for a VARIATION.** A written application must be submitted to the Shire of Denmark by no later than 1 October 2023. If permission for a variation is not granted, you must comply with the requirements in this notice.

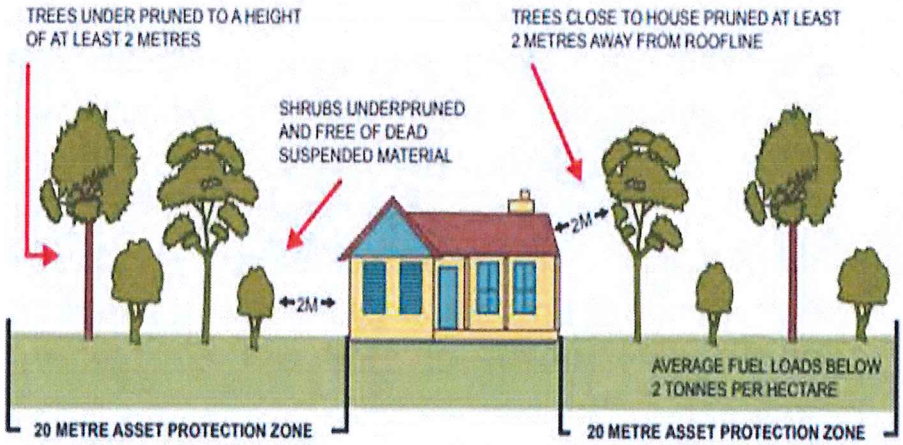
Additional Responsibilities

Some properties may be subject to specific fire mitigation requirements contained in the Denmark Town Planning Scheme, a subdivision guide plan (structure plan) or an approved Bush Fire Management Plan.

- **STRATEGIC FIRE ACCESS ROUTES** must meet approved Town Planning Scheme provisions or the requirements of an adopted Subdivision Guide plan. If such a route is located on your property, maintenance is your responsibility.
- **PLANTATIONS** must be maintained to meet Plantation Fire Protection guidelines developed by the Department of Fire and Emergency Services.
- **FUEL and CHEMICAL STORAGE** must be surrounded by a *Low Fuel Boundary* that extends 10m from the outermost point of the storage structure, whether containing fuel or not.
- **HAYSTACKS, WOOD, or STOCKPILED FLAMMABLE MATERIAL** must be surrounded by a *Low Fuel Boundary* of 4m wide.
- **POWER INFRASTRUCTURE** must be surrounded by a maintained *Low Fuel Boundary* 1m wide.
- **TELECOMMUNICATION INFRASTRUCTURE (PERMANENT OR PORTABLE)** must be surrounded by a *Low Fuel Boundary* (LFB) or Low Fuel Corridor (LFC).
  - **Building Envelope** LFB 5m wide around the external perimeter
  - **Guy Runs** LFC 10m wide (5m either side) and 4m around base.
  - **Wave Guide Runs** LFC 3m wide (1.4m either side)
- **Solar Panels** LFB 3m wide
- **Water Tanks** LFB 5m wide

Definitions

Asset Protection Zone (APZ) A low fuel area immediately surrounding a building which must extend 20m, measured from any external wall, supporting post or column. On sloping ground, the distance increases at least 1m for every degree in slope on the sides of the building that are exposed to downslope where natural vegetation exists.



APZ standards are:

- **Clean Gutters** flammable matter removed from all gutters, roofs, and walls.
- **Fine Fuel Load** combustible dead vegetation matter less than 7mm thick and maintained at an average of 2t per hectare.
- **Trees (> 5m high)** trunks at maturity should be a minimum distance of 6m from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2m above the group and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5m apart to not form a continuous canopy.
- **Shrubs (0.5m – 5m high)** should not be located under trees or within 3m of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10m. Shrubs greater than 5m high are treated as trees.
- **Ground Covers (<0.5m high)** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2m of a structure, but 3m from windows or doors if greater than 100mm high. Ground covers greater than 0.5m high are treated as shrubs.

Definitions (continued)

Low Fuel Boundary Access (LFBA) A trafficable portion of land cleared of all trees, shrubs, grass, and other combustible material, providing a 'fuel-free' area as close as practical to the internal perimeter of the property, meeting the definition of *vehicular access* (below). A LFBA must not terminate, lead to a dead-end, have tight bends or be without safe egress routes.

Low Fuel Boundary A maintained area directly around a structure or hazard that has been cleared of all combustible material likely to fuel a fire.

Vehicular Access Includes driveways longer than 50m which must allow for the safe travel of emergency vehicles and include a turn-around area. Technical requirements are trafficable surface 4m, overall 6m wide and 4.5m minimum vertical clearance.

Trafficable An unimpeded route (may be ploughed, cultivated, mulched, sprayed or otherwise clear) accessible to four-wheel drive fire vehicles.

Fuel Load Any combustible material deemed by an Authorised Officer as likely to fuel a fire. A litter depth of 5cm is indicative of approximately 2.5t per hectare, 15cm is approximately 8t per hectare. Managed vegetation such as lawns, mulch and gardens may be deemed by the Authorised Officer as exempt from classification as 'fuel load'.

Standing Bush All types of bushlands, forest, and scrub areas, including bushes, stubble, rushes, and undergrowth.

CLEARING OF NATIVE VEGETATION

Penalties apply for unauthorised clearing. Clearing activities that are outside of the minimum requirements outlined in this notice may require a clearing permit. Refer to the **Department of Water and Environmental Regulation** for more information.
Also, contact **Department of Planning, Land and Heritage** and **Environmental Protection Authority** to check any requirements.

Camp and Cooking Fires

The lighting of outdoor fires for the purpose of camping or cooking is **not permitted during the Prohibited OR Restricted Burning Period,** except for the following exemption when the Fire Danger Rating is **MODERATE OR BELOW.**

Within 20m of a permanent residence (must be a building approved by the Shire and NOT temporary accommodation, caravan, or temporary shed). There must be a 3m radius clear of combustible material and it must be contained within one of the options below:

- A purpose-built structure of brick or rocks and mortar.
- A purpose-built steel container recognisable as a properly constructed barbecue.
- A fire pit structure, suitable for a campfire or cooking fire, that has a maximum diameter of 1m and a minimum depth of 30cm

Fires must be always attended, and you must have the ability and means to extinguish the fire close at hand.

Alternatives to Burning

There are ways you can manage the fuel load at your property:

Composting	Ploughing	Mulching
Grazing	Slashing	Grading

Deposit your excess green waste at the Denmark Waste Management Reuse Facility.

You must maintain your property for the duration of the *maintenance period (1 Dec 2023 – 30 April 2024)*.

Consider how varying seasonal conditions may impact the fuel load at your property.

For more information, please visit the Shire of Denmark's Bushfire FAQ webpage.

BECOME A BUSHFIRE VOLUNTEER

Your local brigade needs you. Contact the Fire Control Officer in your area or visit the Shire of Denmark website for details on volunteering.

Local Volunteer Fire Control Officers

Carmarthen
CRAIG HUGHES
0407 223 297

East Denmark
CHRIS HOARE
0447 482 244

Harewood
CHRIS HUDSON
0467 819 912

Hazelvale
ALEX WILLIAMS
0417 188 843

Kordabup
CRAIG LILLEY
0417 746 848

Mt Lindesay
MURRAY BROOKER
0429 094 136

Nornalup
IAN COULSON
0402 764 712

Ocean Beach
GRAHAM DIXON
0412 920 069

Owingup
PAUL MONCRIEFF
0413 117 192

Peaceful Bay
VACANT
(Contact Hazelvale)

Scotsdale/Shadforth
GEOFF BOWLEY
0429 875 850

Somerset Hill
GAVIN BUTLER
0437 972 053

Tingledale
BRIAN VIGUS
0417 188 158

William Bay
BLAIR DARVILL
0427 333 664

Denmark Town
DARIN HOCKLEY
0417 968 776

GRANT WILSON
0487 119 195

Fire Control Officers

Chief Bush Fire Control Officer
LEZ BAINES 0428 788 008
Deputy Chief Bush Fire Control Officer
NIGEL MARSH 0408 956 133
Senior Fire Control Officer
SHANE HOWLETT 0412 013 860
Community Emergency Services Manager
MARK GUERIN 0428 913 937
Ranger Services
(08) 9848 0300

FOR FIRES & EMERGENCIES DIAL 000

You are responsible for your own FIRE PROTECTION

EMERGENCY ALERTS & IMPORTANT INFORMATION

- ABC LOCAL RADIO (630AM and 558AM)
- www.emergency.wa.gov.au
- www.abc.net.au/radio/greatsouthern/live
- www.dfes.wa.gov.au
- www.dfes.wa.gov.au/totalfirebans
- www.bom.gov.au/wa/warnings

More information can be found at
www.denmark.wa.gov.au

Sign up to the **Shire of Denmark SMS Alert System** to receive important community notices. Visit
www.denmark.wa.gov.au/subscribe

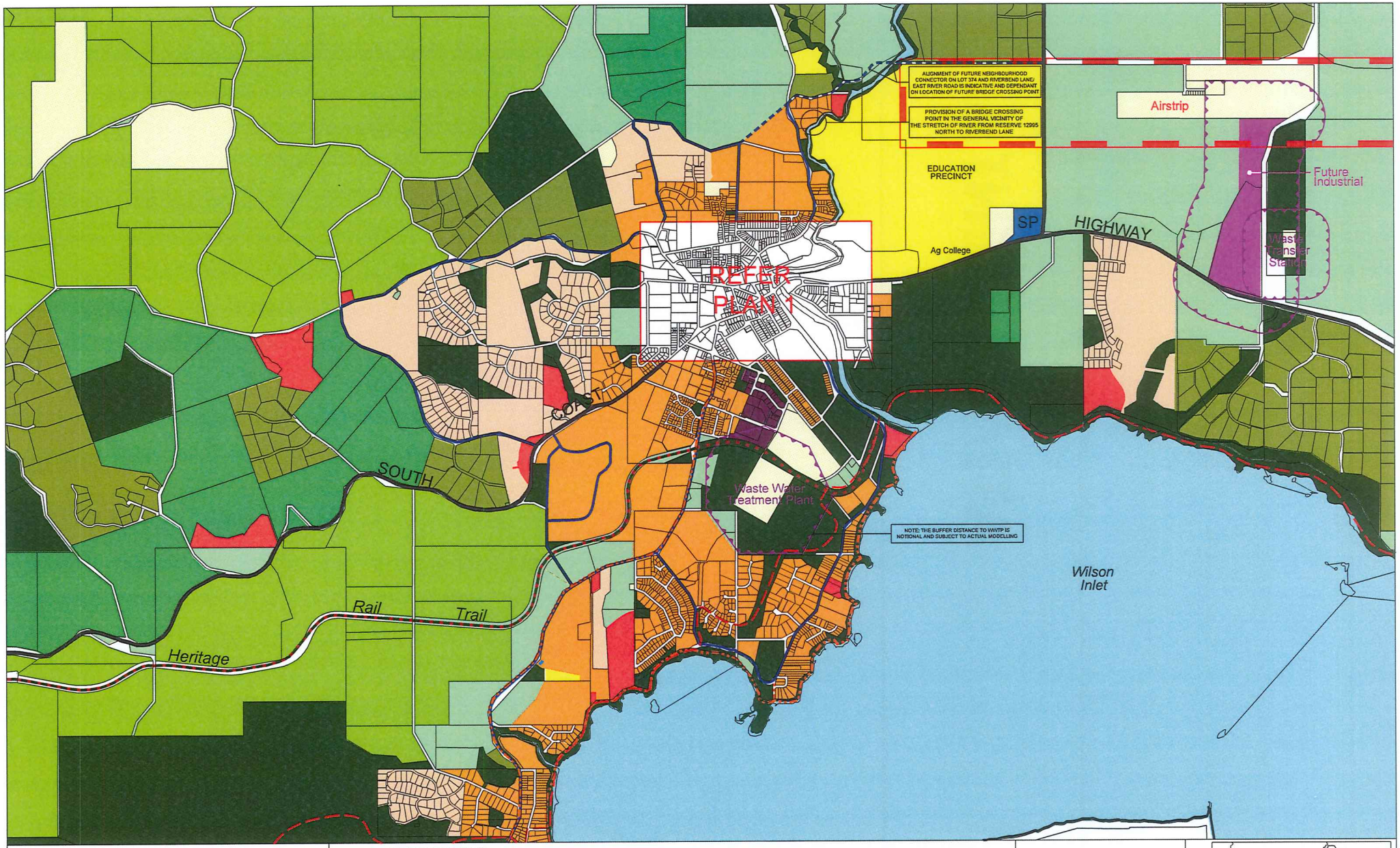
Be Prepared – Join a local Bushfire Ready Group
fireready@denmark.wa.gov.au 0429 094 136

BUSHFIRE READY

For clarification of this notice, contact Ranger Services (08) 9848 0300 or enquiries@denmark.wa.gov.au

Authorised by
Ceinwen Gearon,
Shire President

ATTACHMENT 5



SHIRE OF DENMARK LOCAL PLANNING STRATEGY URBAN AREA - PLAN 2

0km 500m 1000m

1:30 000 @ A3

LEGEND

LAND USE DESIGNATIONS

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

NOTE: PLAN 2 TO BE READ IN CONJUNCTION WITH LOCAL PLANNING STRATEGY TEXT

Adopted by resolution of the Shire of Denmark at the Special Meeting of Council held on the 4th day of October 2011.

Endorsed by the Western Australian Planning Commission on the 22nd day of May 2012.

PLAN 2 OF 3

ATTACHMENT 6

3.4 Infrastructure

3.4.1 Community Facilities

The local community is serviced by a wide range of community facilities and infrastructure that support social and cultural pursuits. These facilities play a key role in the delivery of community services by the Shire, State Government, not-for-profit organisations and local community groups. This Strategy examines and builds upon the aspirations of our community as expressed during preliminary consultation and within the Strategic Community Plan, identifying spatial outcomes and opportunities, including the arrangement of community facilities and services.

This Strategy plays a significant role in the provision of community facilities and servicing infrastructure, including:

- Identifying community facility requirements, planning for and facilitating the acquisition of land and supporting the collection of financial contributions for equitable cost sharing.
- Incorporating major community initiatives identified in the Strategic Community Plan, providing a mechanism to support land use change, and informing the direction of community facilities provision from a land use planning perspective.
- Identifying changes to zoning to facilitate the development of community facilities and servicing infrastructure.

It is relevant to consider any shifts in the demand for, provision of and potential upgrades to community facilities that may be anticipated within the lifetime of this Strategy and whether any changes to the planning framework are necessary to enable these. The Strategy may also inform later decisions on the development of community facilities through other strategic objectives, such as promoting the primacy and consolidation of the Denmark Town Centre.

Existing demographic trends may inform the provision of community facilities, with services designed to respond to the needs of retirees and families in particular; however, community facilities may also be an enabler of desired trends, including an intention to support the retention of young adults within the community.

3.4.1.1 Education

The district is currently serviced by three primary schools (Denmark Primary School, Golden Hill Steiner School and Kwoorabup Nature School) and two secondary schools (Denmark Senior High School & Denmark Agricultural College), with Golden Hill Steiner School proposing secondary from 2023 (refer Map 5). A small number of students commute into and out of the Shire to access schooling options in neighbouring local government areas.

Comparatively, Denmark has a competitive advantage through the existence of a range of high quality schooling options. While this ably services the existing community, acknowledging and fostering this advantage supports Denmark in attracting new families. Education also sustains a significant workforce within the community.

Tertiary education opportunities are provided via the Denmark campus of Southern Regional TAFE and through the Great Southern Universities Centre and University of Western Australia campuses in Albany.

This Strategy acknowledges the continued growth and development of educational campuses within the Shire to support families, encourage the retention of young adults within our community, and provide opportunities for life-long learning.

This Strategy also promotes further investigation into opportunities to co-locate community facilities with school campuses, acknowledging that this may provide improved facilities for schools and the wider community through the efficient use of public funds.

Projected Growth

Growth in school enrolments has varied year to year between 2016 and 2021, with primary school enrolments increasing slightly overall during this time (refer Section 7.2, Part 2).

The Shire has also experienced consistent growth in the number of school age persons over the past 20 years (refer Section 7.2, Part 2). Growth within this age group was substantially lower than the pace of overall population growth before 2011, equally paced between 2011 and 2016, and ahead between 2016 and 2021.

This suggests that an increase in the number of families is a demographic change within the Shire.

The population projections of this Strategy suggest, assuming the same proportions in each age group as at 2021, that the Shire could potentially have between 238 and 326 additional school students by 2036 (refer Section 7.2, Part 2). This could be expected to include between 116 and 160 additional primary school students and between 122 and 166 additional high school students.

Second State Primary School

Based on the projections detailed above, it is highly unlikely that a second state primary school site will be required during the 15-year outlook of this Strategy. This Strategy identifies land for urban expansion that may ultimately support an additional 3,000 residents, of which approximately 520 are estimated to be aged 5-17 years. This could potentially result in an additional 250-260 students in primary education.

As this is unlikely to require the development of a second state primary school the Shire will continue to work with the Department of Education and private school providers to ensure that expansion of existing schools can occur appropriately.

The 2011 LPS identified portions of Lot 214 on P052368 (#267) Ocean Beach Road and Lot 32 on D062910 (#15) Little River Road for a future state primary school site. The majority of this site sits on Lot 214. The Strategy notes the constraints to the development of this site due to current sewage infrastructure requirements and indicates a willingness to consider alternative land uses, which may necessitate investigation into an alternative location for a second state primary school, as required, in consultation with the Department for Education.

Golden Hill Steiner School

The Golden Hill Steiner School is located at Lot 110 on P021633 (#222) Scotsdale Road, a site zoned Special Rural (15) in TPS3 with Additional Use (12) providing for 'Educational Establishment' as a permitted land use. Golden Hill Steiner School has made a submission to the Shire regarding the potential to offer secondary education by expanding their campus into adjoining Lot 1 on D087539 (#23) Riverbend Lane, which is also zoned Special Rural but does not currently have any additional use rights.

Should the School be able to acquire Lot 1 (or portion), the Strategy supports the use of this site for an Educational Establishment. Access and other relevant planning issues may be resolved at the development application stage.

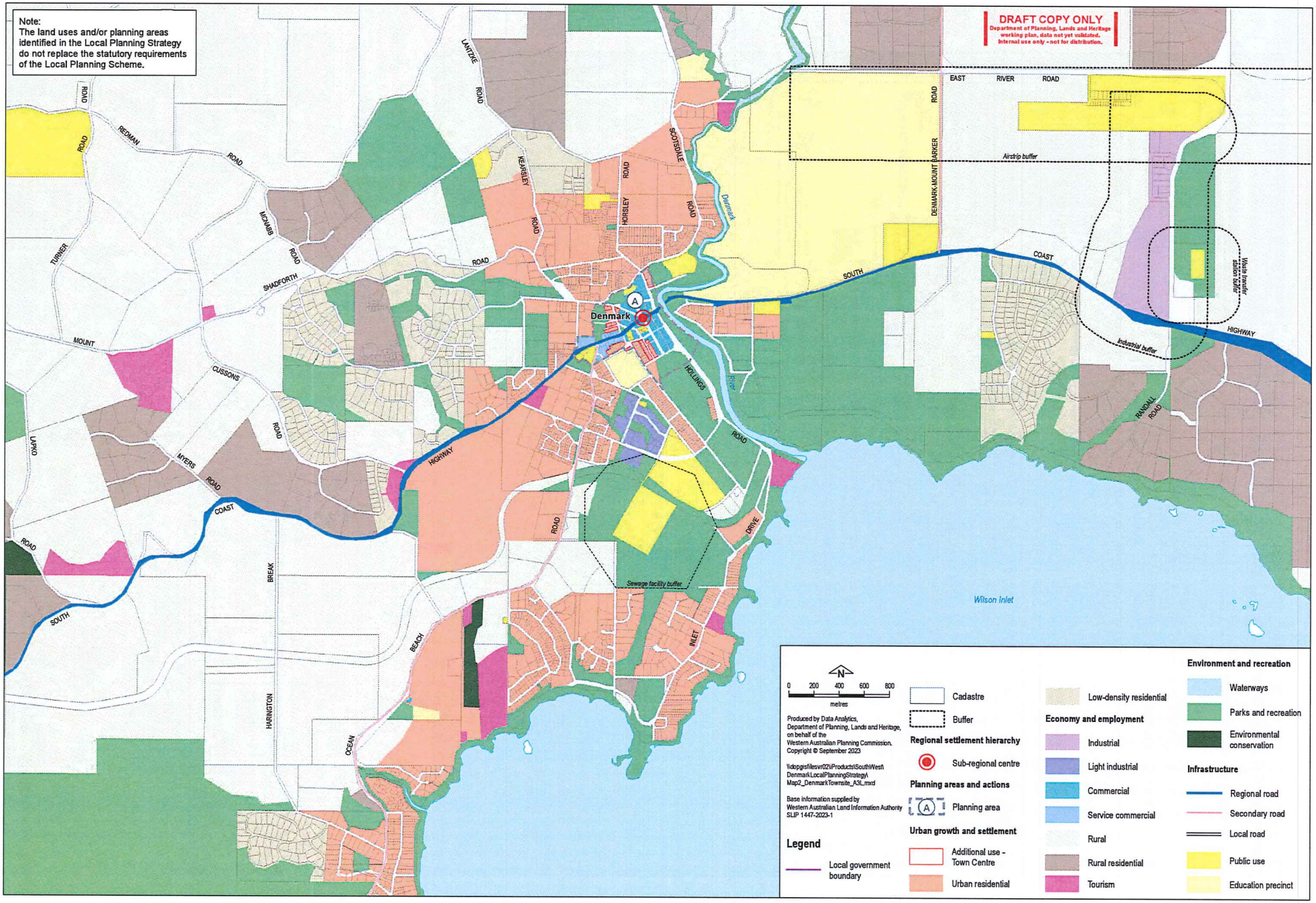
Kwoorabup Nature School

The Kwoorabup Nature School is located at Lot 952 on P039348 (#2) Inlet Drive, within the Denmark Railway Station Reserve (Reserve number 30277). This site is located in close proximity to the Denmark River, Wilson Inlet, wetlands and areas of native forest, providing the school with a nature based setting that is accessible from the Denmark town centre.

The reserve also contains the facilities of the Denmark Machinery Restoration Group, Denmark Lions Club and Denmark Men's Shed, as well as a number of heritage railway features. The co-location of multiple community and educational organisations on this reserve strengthens community connections, and encourages the collaboration and sharing of knowledge between users of the site.

Strategies & Actions – Community Facilities

1. Acknowledge the importance of high-quality community facilities and services in supporting well-being, promoting healthy lifestyles and developing social capital.
    a. Promote the development of precincts where community facilities and services are accessible, co-located and the shared use of infrastructure is supported.
    b. Ensure that planning for community facilities considers population growth as well as demographic and social change occurring within the community.
    c. Consider the preparation of a Development Contributions Plan to support the collection of financial contribution from land development for new and expanded community facilities.
2. Continue to consult with State Government, not-for-profit and other community organisations to ensure that the local planning framework enables the development of community facilities and services.
    a. Based on compatibility with existing land use and the surrounding zoning, replace the designation of Reserve – Public Use on sites owned by community organisations to the relevant zone that more appropriately reflects the surrounding land use, while also accommodating the existing use.
    b. Support the relocation of the Denmark Volunteer Fire and Rescue Service and Denmark State Emergency Service by supporting land tenure changes and zoning as Reserve – Emergency Services.
    c. Identify Lot 300 on P046811 (#832) South Coast Highway for the Shire's works depot, zone Lot 300 as a Reserve with an appropriate designation in the new Local Planning Scheme and seek a land swap with the State to enable the development of the current depot site for service commercial land.
    d. In order to meet community expectations and demand, consider proposals to amend the local planning framework where social and health services are provided.
3. Continue to consult with the Department of Education and private school providers to enable the continued development of the education as a local service and a competitive advantage for our community.
    a. Investigate opportunities for the co-location of sport, recreation and community facilities with the Denmark Senior High School and WA College of Agriculture, Denmark.
    b. Assess the potential long term need for a second State primary school and availability of a suitable site at the next review of the Strategy.
    c. Support the extension of Additional Use 12 over Lot 1 (#23) Riverbend Lane (or portion) if required to enable the expansion of Golden Hill Steiner School.
    d. Change the purpose of the Denmark Railway Station Reserve (Reserve number 30277) at Lot 952 on P039348 (#2) Inlet Drive to Public Purpose



Shire of Denmark Local Planning Strategy – Denmark Townsite and Surrounds

ATTACHMENT 7

5.3.2 No more than two single houses shall be permitted on any lot in the Rural Zone, unless the written approval of Council is granted. Approval will not be granted if, in the opinion of Council, the use is deemed to conflict with Rural Multiple Occupancy zoning.

5.3.3 Where Residential development is proposed in conjunction with other development in the Commercial Zone, Council shall determine the appropriate density code to apply for development requirement purposes.

5.3.4 No provision of the Residential Planning Codes shall prevent the approval of a single house on a lot created prior to the Gazettal Date of the Scheme in the Residential Zone.

5.3.5 In areas with dual or split codings such as R5/15, R10/20 and R2.5/20 or similar as marked in the Scheme Maps, the development standards of the lower density code shall apply, except that Council may permit development to the higher coding relevant to that land subject to:

a) the development being connected to the reticulated sewerage system;
AMD 85 GG 3/9/04

b) the development is of a high standard in terms of design and aesthetics and with the aim of minimizing visual impacts of the development where land being adjacent to a foreshore reserve; *AMD 85 GG 3/9/04*

c) in areas consisting of large landholdings or several landholdings, the development being consistent with a conceptual structure plan that has been adopted by Council;

d) that conceptual structure plan for the overall area should address issues such as protection of significant stands of remnant vegetation, overall road connectivity, drainage infrastructure, public open space, dual use paths, protection of wetland areas through water sensitive design principles, adjacent land uses, amenity and variety in lot sizes; and

e) in determining the extent of the conceptual structure plan area Council will have consideration for the following matters: street pattern, existing lot layout, extent of the split R Coding, existing development, physical features, servicing infrastructure and so on.

5.3.6 a) Where a local Structure Plan has been adopted by Council and endorsed by the Western Australian Planning Commission for Urban Settlement Unit/s as contained within the Local Planning Strategy, it shall be used to guide subdivision and development within that area.
AMD 98 GG 20/3/09; AMD 119 GG 6/8/13

b) Where an adopted Local Structure Plan nominates an area as being suitable for development at a higher residential density than that shown on the Scheme Maps, a Detailed Area Plan shall be required to be prepared demonstrating high quality urban design principles. On Council's adoption of a Detailed Area Plan, a copy of the plan shall be forwarded to the Western Australian Planning Commission for its endorsement. *AMD 98 GG 20/3/09; AMD 119 GG 6/8/13*

5.3.7 ~~Ancillary Accommodation~~ *AMD 85 GG 3/9/04; AMD 119 GG 6/8/13*
DELETED BY AMD 150 GG 12/11/2021

5.3.8 ~~Portions of Lots 671 and 672 Zimmermann Street~~. *DELETED BY AMD 76 GG 24/5/02*

5.4 SPECIAL RURAL ZONE PROVISIONS

5.4.1 The Scheme provisions for a specific Special Rural Zone shall include a Plan of Subdivision which shall form part of the Scheme and future subdivision within any specific area shall be in accordance with the approved Plan of Subdivision, and a description of the land together with any special provisions relating to the land shall be set forth in Appendix 6.

The Plan of Subdivision shall show amongst other things as the Council may require:

a) the proposed ultimate subdivision including lot sizes and dimensions;

b) areas to be set aside for public open space, pedestrian accessways, bridle paths and community facilities;

c) any physical features to be conserved, including building envelopes, means of access to building envelopes and areas for vegetation preservation or tree planting;

d) the proposed staging of the development if relevant;

e) strategic fire breaks and location of fire fighting facilities; and

f) contours, water and natural drainage courses.

5.4.2 Subdivision of land within a Special Rural Zone shall be in accordance with the Plan of Subdivision. Minor amendments to the Plan of Subdivision that do not reduce general lot sizes may be permitted subject to approval of the WA Planning Commission.
AMD 85 GG 3/9/04

5.4.3 All buildings within the Special Rural Zone shall be constructed within building envelopes shown on the Subdivision Guide Plan. Council may approve minor variations to the building envelope provided the variation will have no adverse impact on the amenity or environment of the area.

5.4.4 No development in the Special Rural Zone shall take place within 30 metres of a natural watercourse or waterbody without the approval of the Council.

5.5 RURAL - MULTIPLE OCCUPANCY ZONE PROVISIONS

5.5.1 The development of any land included in the Rural - Multiple Occupancy Zone shall be in accordance with an approved plan showing:

a) the location of all existing structures, contours, vegetation cover, water and natural drainage courses;

b) the location of all proposed building areas, internal road layout, services and firebreaks;

c) details of the proposal including a description of the land uses proposed, the staging of the proposal, the ultimate population, all services to be provided and a bushfire management plan.

5.5.2 In addition to such other provisions of the Scheme as may affect it, any land included in the Rural - Multiple Occupancy Zone shall be subject to any special provisions listed against it in Appendix 8. *AMD 85 GG 3/9/04*

5.6 DOMESTIC WATER SUPPLIES

No dwelling house shall be constructed in the Scheme Area unless it is connected to the Water Corporation reticulated supply or to an approved supply of potable water or a roof catchment water tank having a capacity of 92,000 litres is incorporated into the approved plan.
AMD 85 GG 3/9/04

5.7 USE OF SETBACKS

The setback areas within any zone shall not be used for any purpose other than one or more of the following:

(a) a means of access;

Day Care Centre	means land and buildings used for the daily or occasional care of children in accordance with the *Child Welfare (Care Centres) Regulations, 1968* (as amended).
Development	shall have the same meaning given to it in and for the purposes of the Act and for the purposes of this Scheme shall include clearing of more than 0.5ha of remnant vegetation.
Detailed Area Plan/s (DAP/s) *AMD 98 GG 20/3/09*	means design guidelines that are prepared by subdivision proponents for all lots below 350m^2 and for other lots as appropriate, and which address matters raised in the relevant requirements of Element 3 Lot Layout of the Western Australian Planning Commission's "Liveable Neighbourhoods" document. WAPC Approval may be given to the subdivision subject to approval of the DAP/s.
District	means the Municipal District of the Shire of Denmark.
Drive-in Theatre	means land and buildings used to make provision for an audience to view the entertainment while seated in motor vehicles.
Dry Cleaning Premises	means land and buildings used for the cleaning of garments and other fabrics by chemical processes.
Educational Establishment	means a school, college, university, technical institute, academy or other educational centre, but does not include a reformatory.
Extractive Industry	means an industry which involves: (a) the extraction of sand, gravel, clay, turf, soil, rock, stone, minerals, or similar substance from the land, and also the storage, treatment or manufacture of products from those materials when carried out on the land from which any of those materials is extracted or on land adjacent thereto; or (b) the production of salt by the evaporation of sea water.
Façade	means the exposed faces of a building towards roads or open spaces or the frontal outwards appearance of the building.
Factory Unit Building	means an industrial building designed, used or adapted for use as two or more separately occupied production or storage areas.
Family Care Centre	means land and buildings used for the purpose of a Family Care Centre as defined in the *Child Welfare (Care Centres) Regulations, 1968* (as amended).
Fast Food Outlet	means land and buildings used for the preparation, sale and serving of food to customers in a form ready to be eaten without further preparation, primarily off the premises.
Feedlot Farming	means the use of land for the holding of livestock at high densities while being conditioned for sale.
Fuel Depot	means land and buildings used for the storage and sale in bulk of solid, liquid or gaseous fuel, but does not include a service station.

APPENDIX II - SCHEDULE OF ADDITIONAL USE SITES (Cont'd)

A11	Lot 659 Scotsdale Road, Denmark (Cont'd)	Emu Farm Tourist Facility	▪ drainage management; and ▪ prevention of nutrient loss to waterways; Emu's shall be housed and managed in accordance with the site management plan.
A12	Pt Lot, 613 Scotsdale Road, Denmark	Educational Establishment	When considering an application for Planning consent for educational facilities, Council may impose conditions relating to: 1. Development of educational facilities to be in accordance with Approved Development Plan GHS Plan No. 1, or any variation thereto, to the satisfaction of Council. 2. The connection of all buildings to the Water Authority of western Australian reticulated water supply network. 3. On site effluent disposal to be in accordance with the Health Department of WA and Council requirements. 4. Suitable fire control measures being undertaken to the satisfaction of Council. 5. Access/egress points along Scotsdale Road to be to the satisfaction of the Council. 6. Compliance with Council's By-laws relating to signs. 7. Meeting the Shire's Health and Building requirements as required under the relevant legislation.
A13	Denmark Estate Lot 521		1. Maximum of eight (8) chalets as depicted on the Development Plan No. 95/2/1 or variation thereto, subject to Council approval. 2. All existing vegetation to be retained other than in areas for chalet and associated development depicted on Plan No. 95/2/1 to satisfaction of Council. 3. All on-site effluent disposal systems shall be located no closer than 100 metres horizontal separation from the watercourse on Development Plan (No. 95/2/1). If an on-site effluent disposal system cannot achieve a 100 metre horizontal separation from a watercourse on the Development Plan, then Council will require as a condition of building approval that an approved alternative system be used to the specification of the health Department of WA to be located no closer than 50 metres horizontal separation from the watercourse as defined on the Development Plan.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
13. MCNABB ROAD SPECIAL RURAL ZONE (Cont'd) Denmark Estate Lot 345 McNabb Road (Cont'd)	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Keeping of Stock in accordance with special provision "(vii)" below. Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(viii) All buildings constructed within the zone shall be sympathetic to existing landscape elements (namely ;landform, and vegetation) in terms of their design, materials and colour. Zincalume and other coloured external wall and roof materials which would not, in the opinion of Council, blend in with the rural landscape of the area, will not be permitted. (ix) A surveyors plan (pre-calculated drawing) shall be lodged with Council prior to the clearance of Diagrams of Survey and show Tree Preservation Areas, Strategic Firebreaks, Tree Planting/Conservation Areas, roads and drains as proposed and as required by Council for approval. (x) Council may request the commission impose a condition requiring the implementation of a system of stormwater disposal to the satisfaction of Council which prevents water erosion and runoff problems from occurring on and off the subject land, as a condition of subdivision. (xi) No dams or impedance to water flow will be permitted within the Treeplanting/Conservation Area as shown on the Subdivision Guide Plan. (xii) The subdivider shall distribute to lot purchasers an information sheet which outlines measures owners can take to ensure that impacts of pets (particularly cats) on the adjacent Conservation of Flora and Fauna Reserve are minimised.
15. GOLDEN HILL SPECIAL RURAL ZONE Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(i) Subdivision of Special Rural Zone No. 15 is to be generally in accordance with Plan of subdivision (Plan No. A94-17-1) dated May 1995 as signed by the Shire Clerk. (ii) Notwithstanding (i) above, the Western Australian Planning Commission may approve a minor variation to the subdivisional design, but further breakdown of the lots so created shall be deemed contrary to the provisions of the Scheme. (iii) The minimum lot size shall be 1 hectare. (iv) (a) All buildings and effluent disposal systems shall be located within the defined Building Envelope of no larger than 3000m2, located onsite by agreement between Council and individual landowners.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.		(v) (a) Council may request the Commission to impose a condition at the time of subdivision requiring strategic fire breaks, as nominated on the Plan of Subdivision, to be constructed by the developer to standard approved by Council and the Bush Fires Board. Such strategic breaks are to avoid erosion impacts and include a provision to require unlocked gates where such breaks and emergency access legs cross fence lines. (b) Council shall require that individual landowners are responsible for the maintenance of a strategic firebreak where it crosses the landowner's lot. (c) The clearing of firebreaks other than for strategic firebreak purposes will not be permitted unless for safety reasons to comply with Council and Bush Fires Board requirements. (d) Low fuel zones will be established and maintained around all buildings to the satisfaction of Council. (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. (f) All buildings shall be constructed in accordance with Australian Standard 3959-1991 "Construction of Buildings in Bushfire Prone Areas". (vi) (a) Where land is devoid of vegetation or it is determined that erosion has occurred as a result of the development of private property, Council may require the landowner to development erosion control measures in accordance with the requirements and specifications of Council in the interests of preventing further land degradation. (b) In the event that provision (a) above is not complied with, Council may carry out appropriate action to eliminate adverse affect. any expenses incurred by Council in carrying out such action shall be borne by the landowner.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.		(vii) (a) To assist in the retention of existing vegetation cover and preserve and enhance the visual character of the zone, the erection of boundary fencing shall not be permitted within the Tree Preservation Area as shown on the Subdivision Guide Plan. (b) The keeping of stock and/or the carrying out of agricultural activities shall be subject to the issue of Planning Consent and shall be limited to substantially cleared and pastured areas of Special Rural Zone Area 15. Stocking rates shall be to Council's satisfaction and shall not exceed the stocking rate guidelines produced by Agriculture Western Australia. (c) The subdivider shall prepare a Foreshore Management Plan for Scotsadale Brook, dealing with stormwater drainage, erosion control and clearing and development within the Scotsdale Brook Foreshore. (d) The subdivider shall prepare a stormwater drainage plan that addresses the drainage requirements of the site and addresses impacts on local water regimes. (e) Building envelopes shall be located outside the 50 metre Creekline setback as shown on the Subdivision Guide Plan. (viii) (a) All buildings constructed within the zone shall be sympathetic to existing landscape elements (namely landform and vegetation) in terms of their location, scale, height, building materials and colour. (b) Buildings shall be constructed of roof and external wall materials comprising natural earth or olive green colours. Zincalume or other similar cladding 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 residential 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 the locality. (d) All buildings shall be sited to maximise the natural screening effect of vegetation and topography.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark. (Continued)	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(e) Proposals to vary the height restrictions pursuant to (c) above shall be accompanied by such plans, elevations and sketches as is determined by the Council to assess the affect on the visual amenity and the natural screening effect of vegetation and topography or any proposed landscaping to be provided. (ix) Council may request the Commission to impose a condition at the time of subdivision that requires on-site effluent disposal systems are to be constructed and maintained by individual landowner. (x) Council may request the Commission to impose a condition at the time of subdivision that requires power supply to be located underground within the road reserve and where connection is made to individual lots. (xi) Driveways shall be constructed and sited to Council's satisfaction so as to avoid erosion problems. (xii) Council may request the Commission to impose a condition at the time of subdivision that requires all lots to be connected to reticulated water supply. (xiii) (a) Council and the Bush Fires Board may request the Commission to impose a condition, at the time of subdivision that requires fire hydrants to be provided by the subdivider at intervals of no less than 200 metres along East River Road, Scotsdale and the subdivisional road. (b) Emergency access from the internal subdivisional road shall be constructed and maintained to a standard suitable for access by two wheel drive vehicles.
16. Cussons Road Special Rural Zone Denmark Pt Lot 401 Cussons Road, Denmark	Rural Residential Permitted Use (P): Residential Dwelling House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	i) The minimum lot size should be no less than 2 hectares. Subdivision shall generally be in accordance with the Subdivision Guide Plan (Plan No. 93/99/2) as signed by the Chief Executive Officer. ii) No dwelling shall be constructed or approved for construction unless a minimum of 92,000 litre water storage tank and an approved method of effluent disposal has been incorporated into the approved plans, and no dwelling shall be considered fit for human habitation unless such supply of water and method of effluent disposal has been installed and is operating.

APPENDIX XI - PARKING STANDARDS

LAND USE	PARKING SPACES
1. Boarding Houses	1 per Bed
2. Caravan Park	1 per Bay plus Employees plus 20 visitor bays.
3. Consulting Rooms	First Consultant 4 bays. Additional Consultants 4 bays each.
4. Day Care Centres, Pre-Schools, Kindergartens	1 per 5 children
5. Educational Establishments	Primary 1.25 per classroom. Secondary 2 per classroom.
6. Funeral Parlours	6 bays
7. Hospitals	1 per 5 beds plus Employees
8. Industry	1 per 100m^2 gla (1) or 2 per unit
9. Hotels	1 per unit plus 1 per 5m^2 public area
10. Motels	1 per unit plus 1 per 4 persons public restaurant
11. Clubs	1 per 4 persons
12. Offices and Commercial Premises	1 per 40m^2 gla (1)
13. Places of Public Assembly and Entertainment	1 per 4 persons
14. Restaurants	1 per 4 persons
15. Retail Shops	1 per 40m^2 gla (1)
16. Service Stations	1.5 per service bay plus 1 per Employee
17. Taverns	1 per 5m^2 public area
18. Warehouses	1 per 100m^2 gla (1)

(1) Gross Leasable Area

ATTACHMENT 8

Golden Hill Steiner School

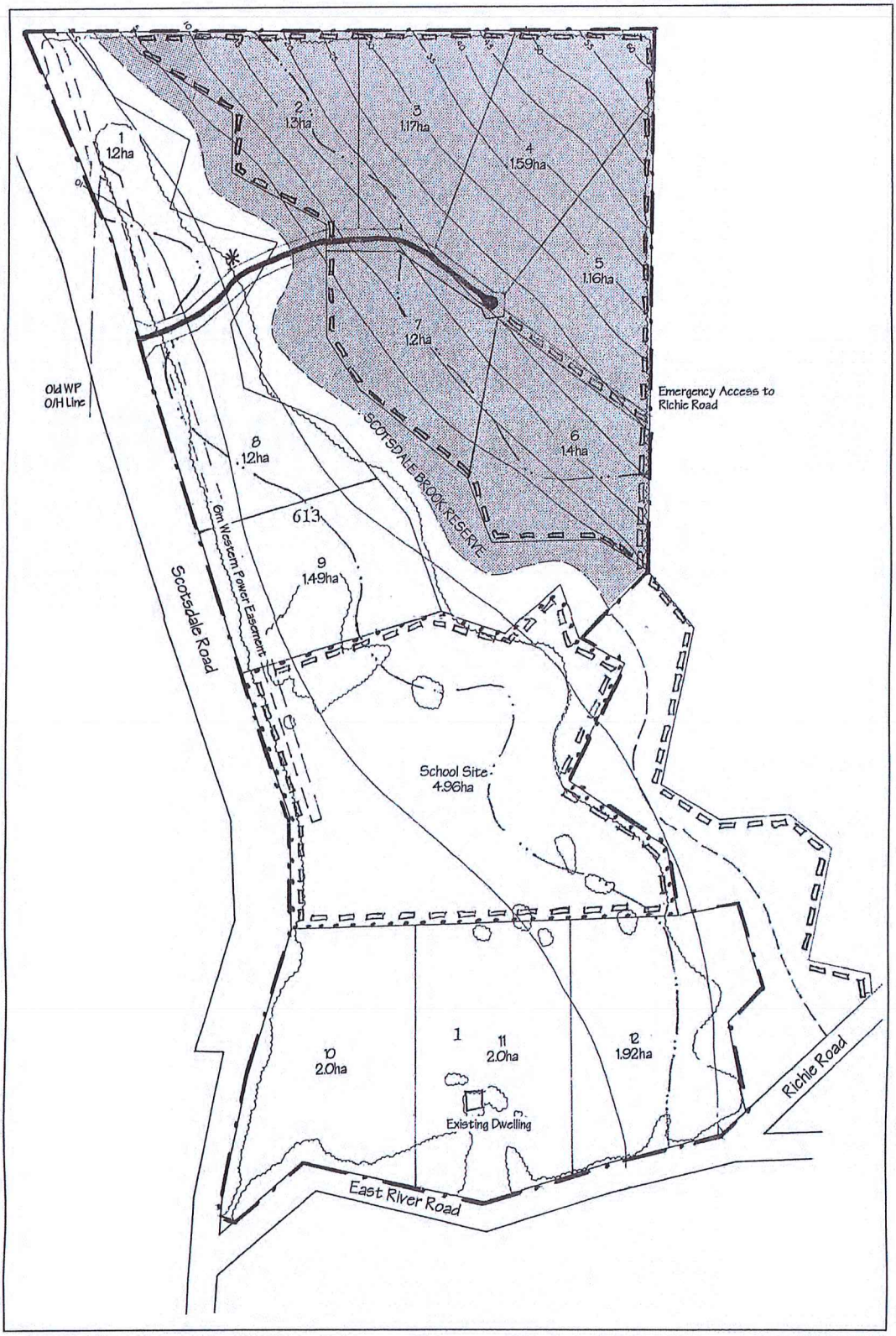
1:1000 @ A1 0 50m
1:2000 @ A3 0 100m

MASTER PLAN
2116 Steiner School Master Plan
222 Scotsdale Road, Scotsdale WA 6333

sk.04	rev
26/09/2023	L

PTX ARCHITECTS

ATTACHMENT 9



NOTES:

1. Building Envelopes to be a maximum 3000m2 in area. Effluent system location to be determined on site in consultation with Council.
2. All dimensions are subject to survey.
3. 16m Road reserve with 6m carriageway.
4. Roofing and external wall materials of all buildings shall be finished in natural earth or vegetation colours.

Adopted by Resolution of the Council of the Shire of Denmark at the Full Council Meeting held on the 23rd day of MAY 19 95

Shire Clerk

Figure 2.

Subdivision Guide Plan

Pt Lot 613 Scotsdale Road & Lot 1 East River Road Denmark

1:3000

A94-17-1

AYTON, TAYLOR & BURRELL
11 DUKE STREET
ALBANY WA 6330

- 10m wide Strategic Fire Break & Emergency Access
- 50m Creekline Setback
- Subject Land
- Existing Vegetation
- Tree Preservation Area
- Additional Use Boundary
- Standpipe & 25 000l Water Tank Facility (Position to be determined)

ATTACHMENT 10

Stantec

Golden Hill Steiner School

Transport Impact Assessment

Prepared for: Cultura Foundation Inc

Ref: 300304693 | Date: 20 October 2023

Revision

Revision	Date	Comment	Prepared By	Approved By
A	5 October 2023	Final	NP/AB	EH/RJC
B	20 October 2023	Final	NP/AB	EH/RJC

For and on behalf of

Stantec Australia Pty Ltd

Ground Floor, 226 Adelaide Terrace, Perth WA 6000

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

CONTENTS

TRANSPORT IMPACT ASSESSMENT

Golden Hill Steiner School

Appendices

Appendix B. Site Masterplan

1. Introduction

Stantec was commissioned by Cultura Foundation Inc. Cultura, on behalf of the Golden Hill Steiner School to prepare a Transport Impact Assessment (TIA) for the proposed expansion of Golden Hill Steiner School in the Shire of Denmark, WA. The site is located on Scotsdale Road.

This report has been prepared per the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines: Volume 4 – Individual Developments (2016)*, with the associated checklist included in Appendix A.

Currently, Golden Hill Steiner School has a capacity of 103 students and 24 staff members. The purpose of this TIA is to assess the proposed expansion of Golden Hill Steiner School, which will expand the capacity to around 300 students and 50 staff members in future years.

This report focuses on traffic access and the safety of the proposed school driveway.

2. Existing Site Context

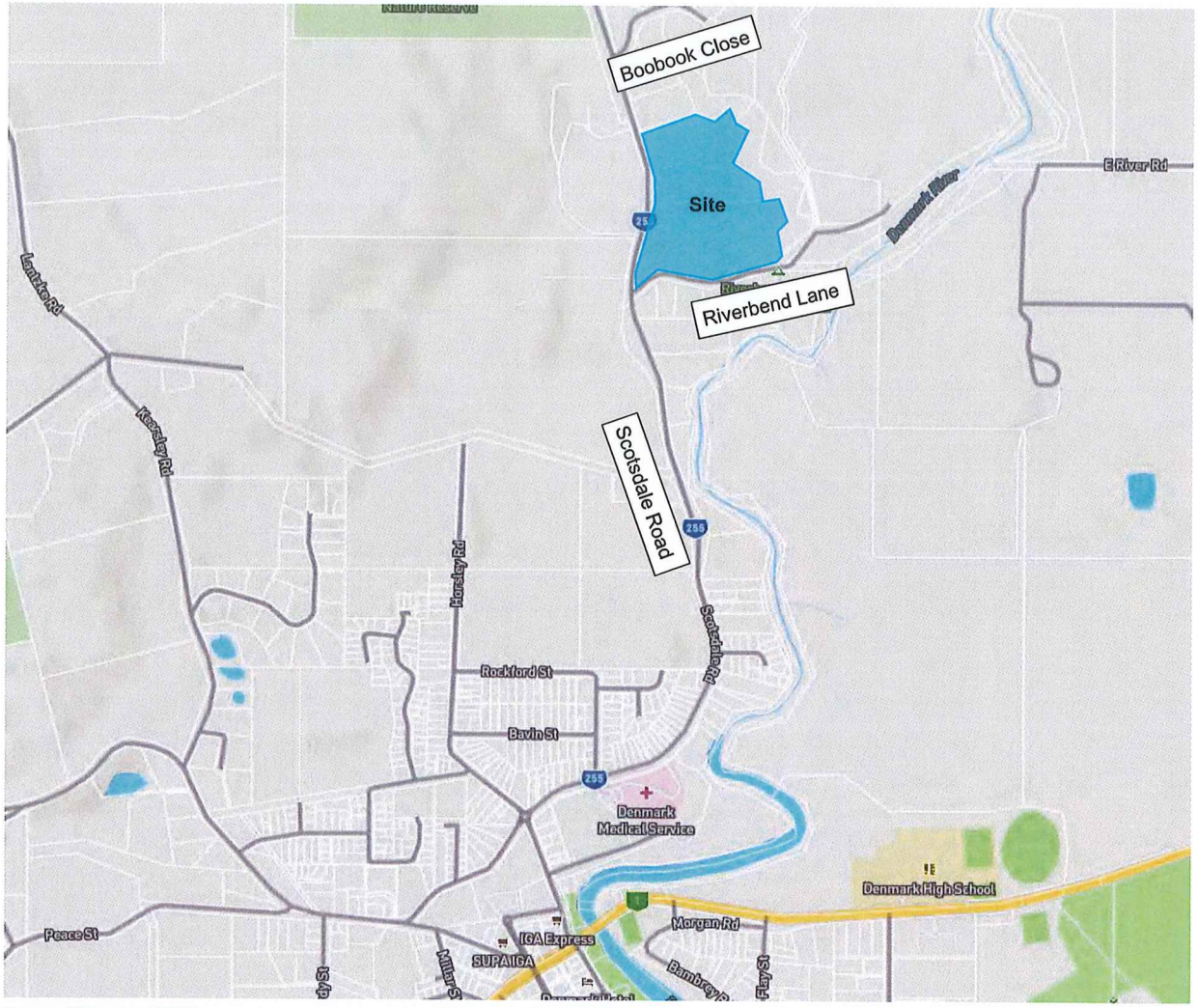
2.1 Existing Site Location

The site is located on Scotsdale Road which serves as an access road to the school facility. The site is bounded by Scotsdale Road to the west and surrounded by rural residential and woodlands.

The surrounding area mostly consists of undeveloped rural lots with the Denmark townsite located approximately 2km south of the Site.

An aerial image of the site is shown in **Figure 2.1**.

Figure 2.1 – Site Location



Source: Metromap (2023)

2.2 Existing Site and Surrounding Land Use

The Golden Hill Steiner School is a private school that provides quality education for primary and high school students.

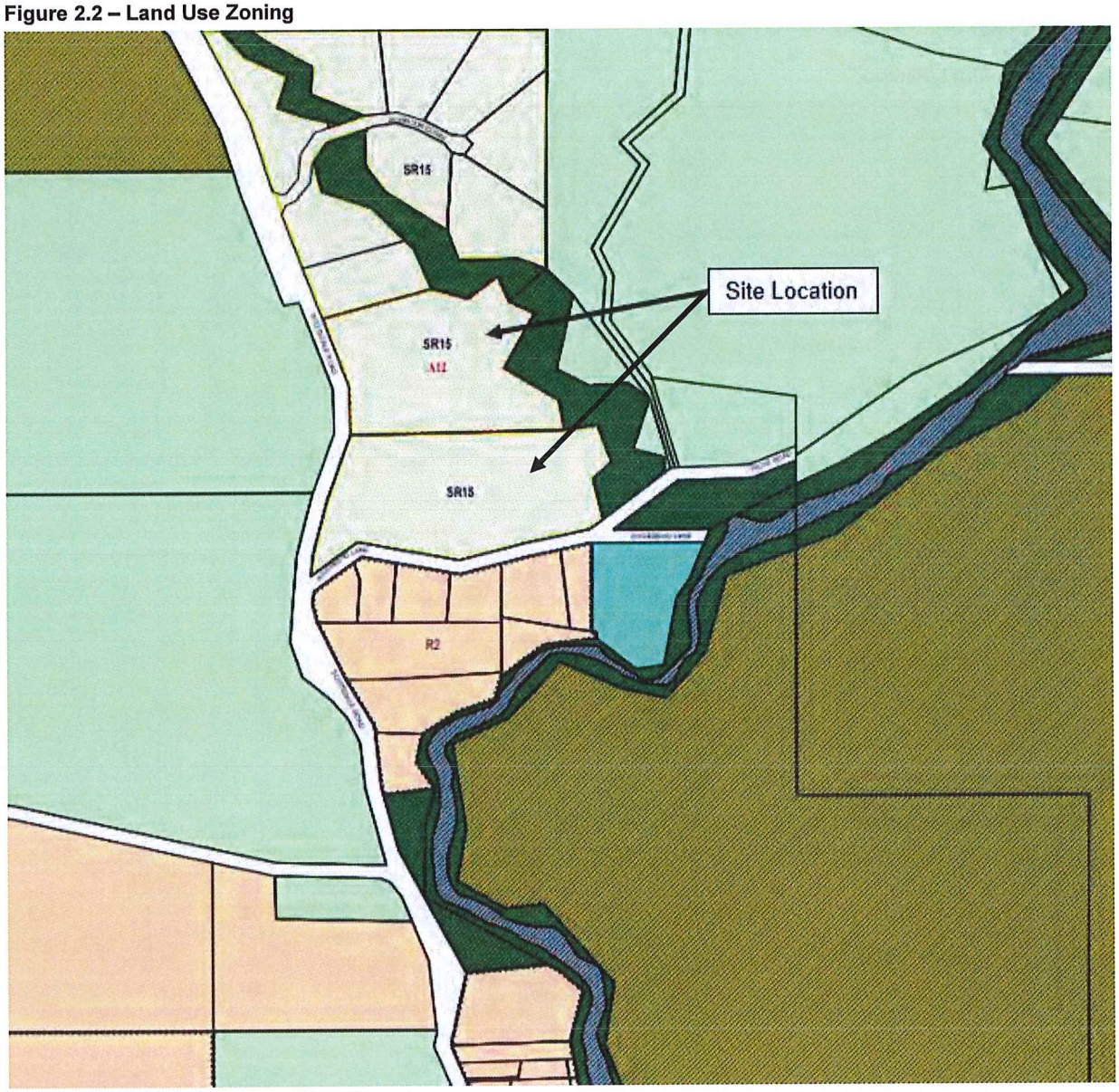
The site is currently zoned as an "Special Rural (SR15) with additional uses (A12)" under the Local Planning Scheme No.3 for Shire of Denmark, as shown in **Figure 2.2**. The permitted uses are summarised in **Table 2.1**.

Table 2.1 – Permitted Uses within the Site

Zoning	Permitted Land Uses
Special Rural	Rural Residential (Single House) Home Occupation (at the Council's discretion) Holiday Accommodation (at the Council's discretion)
Additional Uses	Educational Establishment

The nearby surrounding area contains a mix of residential, public use, rural and special rural zones.

Figure 2.2 – Land Use Zoning



Source: Local Planning Scheme No.3 - Shire of Denmark

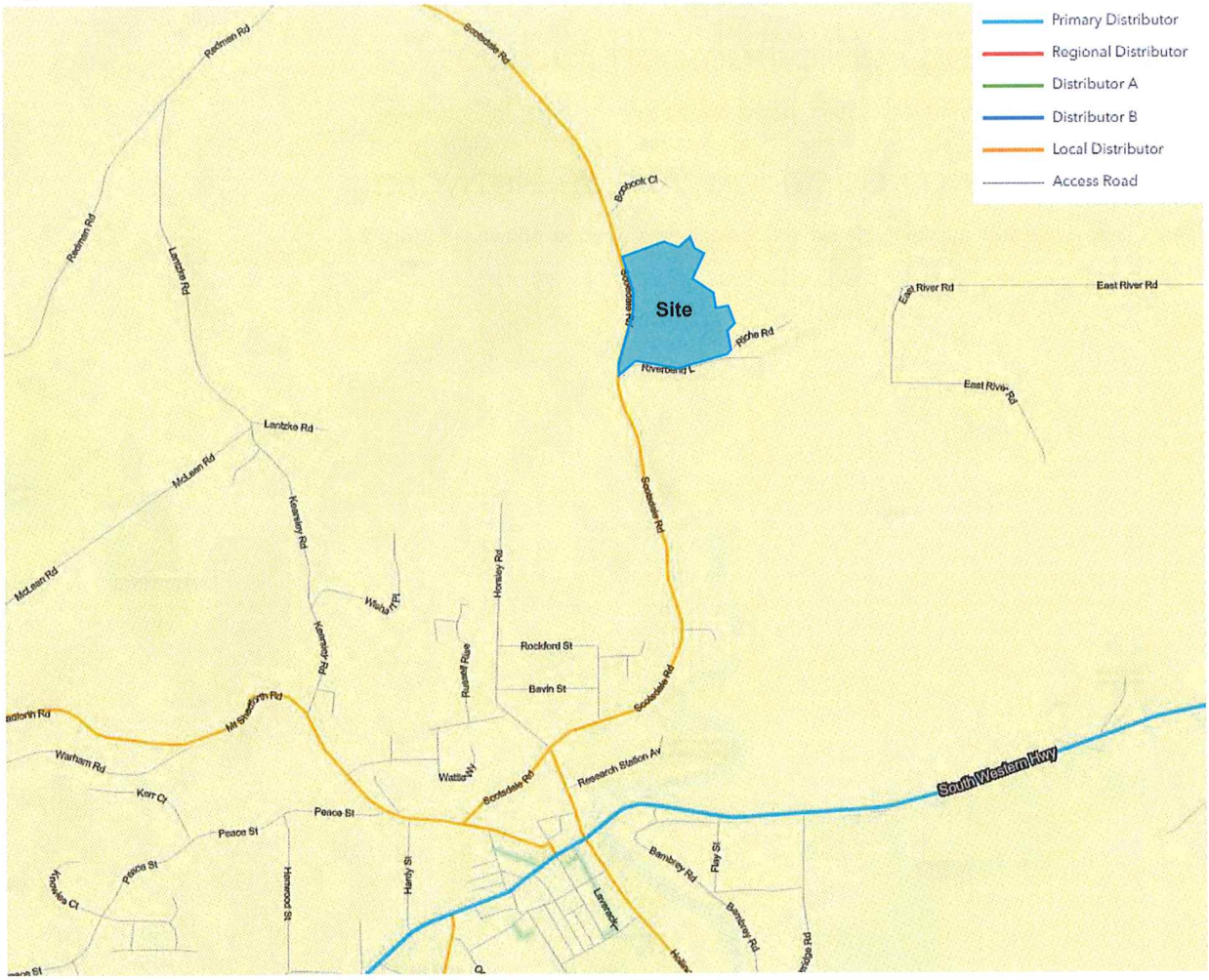
2.3 Existing Road Network

The layout and classification of the roads surrounding the site are presented in **Figure 2.3**.

Primary Distributors (light blue): Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.

- **Regional Distributors (red):** Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- **District Distributor A (green):** These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- **District Distributor B (dark blue):** Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside the adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- **Local Distributors (orange):** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by the Local Governments.
- **Access Roads (grey):** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by the Local government.

Figure 2.3 – Existing Road Network



Source: Main Roads Mapping Information Centre (2023)

Information related to the existing transport characteristics is summarised in **Table 2.2**. Scotsdale Road is also part of the local RAV Network for vehicles up to RAV 4.

Table 2.2 – Existing Road Network

Road Hierarchy			Road Network			
	Road Hierarchy	Jurisdiction	No. of Traffic Lanes	No. of Footpaths	Width (m)	Posted Speed (km/h)
Scotsdale Road	Local Distributor	Local Govt.	2 lanes	0	7.5	70

2.4 Existing Traffic Volumes

Existing traffic volumes were sourced from the Shire of Denmark and summarised in **Table 2.3**. The peak AM and PM hours occur between 8:00 – 9:00 AM and 2:00 – 3:00 PM respectively.

Table 2.3 – Existing Site Traffic

Road Name	Date	Average Two-way AM Peak Traffic Volume	Average Two-way PM Peak Traffic Volume
Scotsdale Road (South of Riverbend Lane)	2020	154	130

Source: Shire of Denmark

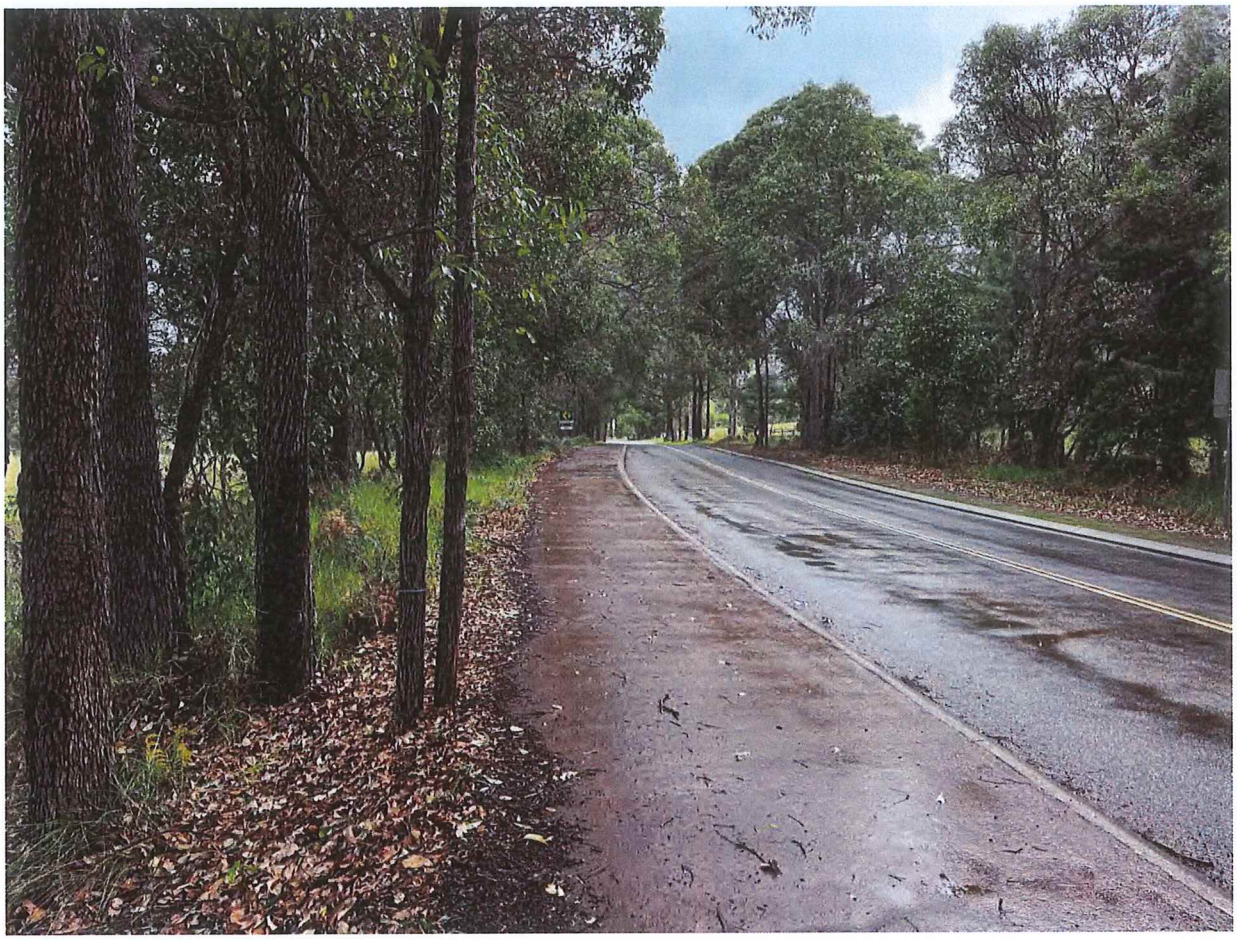
2.5 Existing Public Transport Facilities

There is no public transport facility near the school facility.

2.6 Existing Pedestrian / Cycle Networks

There is dual use path adjoining the school on Scotsdale Road as shown in **Figure 2.4**.

Figure 2.4 – Existing Dual Use Path along Scotsdale Road



2.7 Existing Site Access

The site currently has separate entry and exit points from Scotsdale Road as shown in **Figure 2.5**.

Figure 2.5 – Existing Site Access

2.8 Crash Assessment

A review of the Main Roads WA Reporting Centre for crash data along Scotsdale Road was undertaken for the past five years and no crashes were recorded to have occurred near the site location.

3. Development Proposal

3.1 Proposed Land Use

The Golden Hill Steiner School current accommodates 103 students and 24 staff members. The school plans to expand the on-site facilities to accommodate up to 300 primary and secondary students and a total of 50 staff members in the future. The proposed layout of the school is shown in **Figure 3.1** including a summary of the proposed staging in **Table 3.2**.

Figure 3.1 – Proposed Development Plan

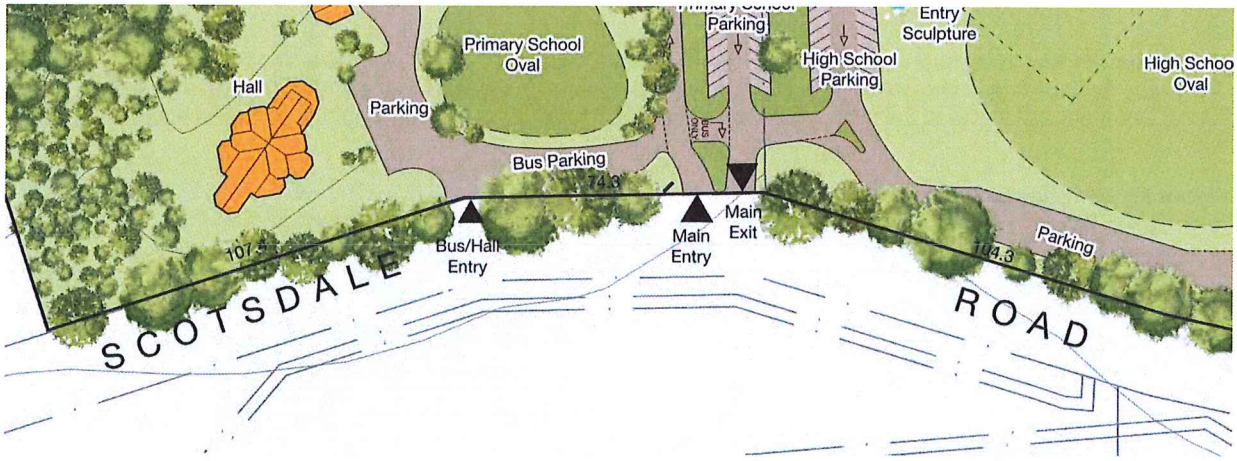
Source: PTX Architects

3.2 Proposed Site Access

The existing access locations was considered to be the most optimal in terms of sight visibility which is reflected in the proposed access arrangement. No additional vehicle access points are proposed on the school frontage onto Scotsdale Road or Riverbend Road.

A separate entry for the main school traffic and buses/hall traffic is proposed (refer to **Figure 3.2**) to reduce the risk of conflicts between vehicles heading to the school pick-up/drop-off area and arriving buses. To ensure that the access and egress movements are appropriately managed, signage and linemarking should be provided indicate where the entry and exit points are and the vehicle circulation internally.

Figure 3.2 – Proposed Access Arrangement



3.3 Parking

The parking requirements for the Site is based on the Shire of Denmark's Local Planning Scheme No. 3 summarised in **Table 3.1** below.

Table 3.1 – Parking Requirements

Land Use	Parking Rate	Number of Classrooms	Parking Requirements
Educational Establishments	Primary 1.25 per classroom. Secondary 2 per classroom.	7 primary school classrooms (Existing) 11 secondary classrooms (Proposed)	9 bays 22 bays
Total			**31 bays**

Note that the parking arrangement illustrated in the masterplan is only indicative with further details to be provided in in the detailed planning/design stages.

Table 3.2 – Indicative Masterplan Staging

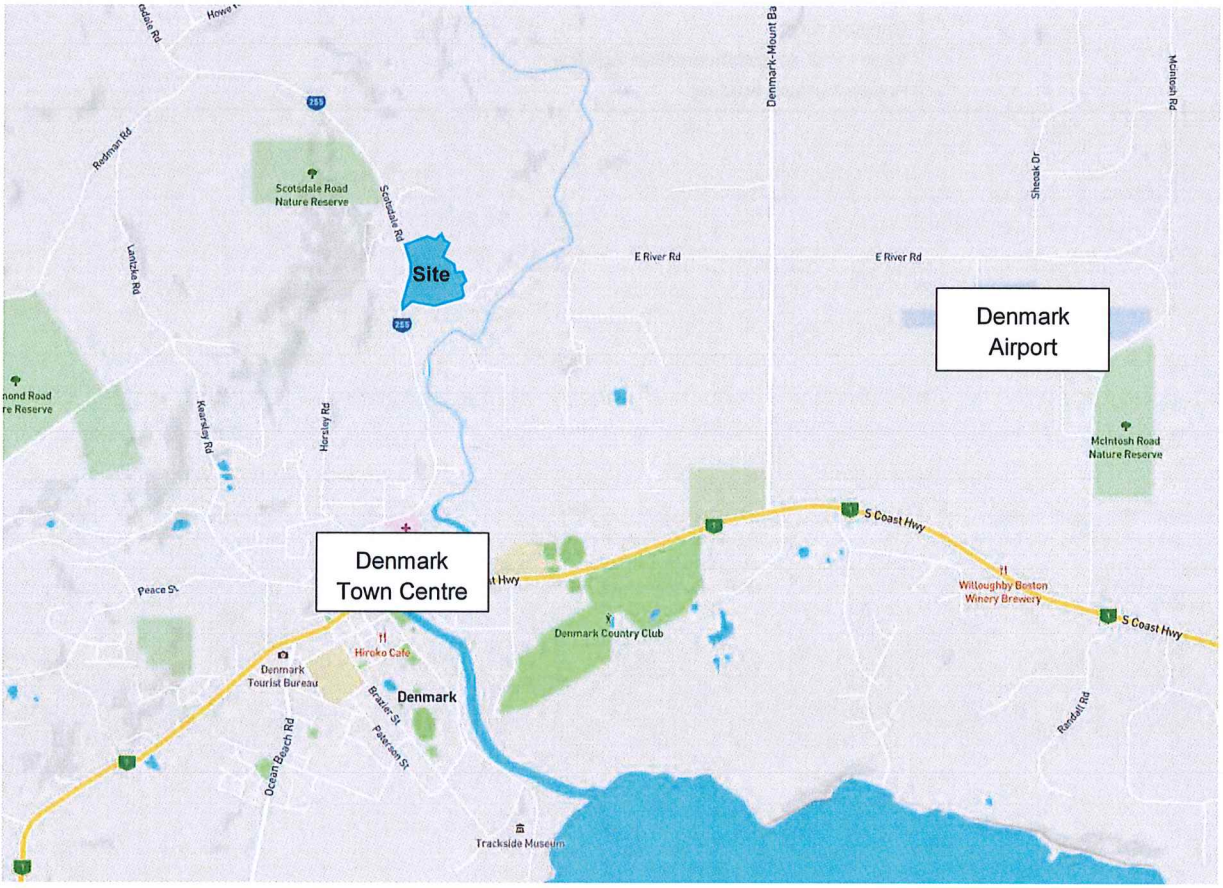
Stage	Facilities Proposed
1	Year 7/8, maths building Woodwork/metalworks building
2	Year 9/10, science building Toilet block
3	Music/language building Art/sculpture/craft building Home economics building Café/canteen building Admin/library building Covered court Year 11/12, english/humanities building Future multiuse building

4. Integration with Surrounding Area

4.1 Surrounding Attractors / Generators

Denmark is a small rural town where the majority of the population lives close to the ocean and around the town centre. The surrounding area attracts a multitude of tourists from around the state and country, especially during the holiday seasons. Most attractions in the area are located to the south and around Denmark town centre. The proposed development is expected to attract the majority of students and staff from the south of the site. The site location with respect to the major landmarks in the Shire of Denmark is illustrated in **Figure 4.1**.

Figure 4.1 – Existing Surrounding Attractors and Generators



Source: Metrotmap (2023)

5. Analysis of Transport Network

5.1 Assessment Years and Time Period

The peak hours observed are 8:00 – 9:00 AM for the morning and 2:00 PM – 3:00 PM for the afternoon peak hour respectively. The following scenarios have been analysed as part of this assessment:

- Scenario 1 – 2023 traffic with existing school traffic
- Scenario 2 – 2033 traffic with the proposed expansion of school

5.2 Background (Non-Development) Traffic Growth Assumptions

The following background traffic growth assumptions were assumed for this assessment:

- 5% background traffic growth for the 2020 (data year) to 2023 (existing year) time period.
- 2% background traffic growth rate for the 2023 (existing/opening year) to 2033 (10 years post-opening) time period.

5.3 Development Traffic Generation

The trip generation rates for the school are taken from the Western Australian Planning Commission (WAPC) Transport Assessment Guidelines – Volume 5 – Technical Guidance and are summarised in **Table 5.1**.

The resulting estimated trip generation for the proposed expansion is summarised in **Table 5.2**.

Table 5.1 – Adopted Trip Rate and Directional Distribution

Land Use	Source	AM Peak		PM Peak	
		Arrival	Departure	Arrival	Departure
School	WAPC	0.5 trips per students	0.5 trips per students	0.5 trips per students	0.5 trips per students

Table 5.2 – Site Trip Generation

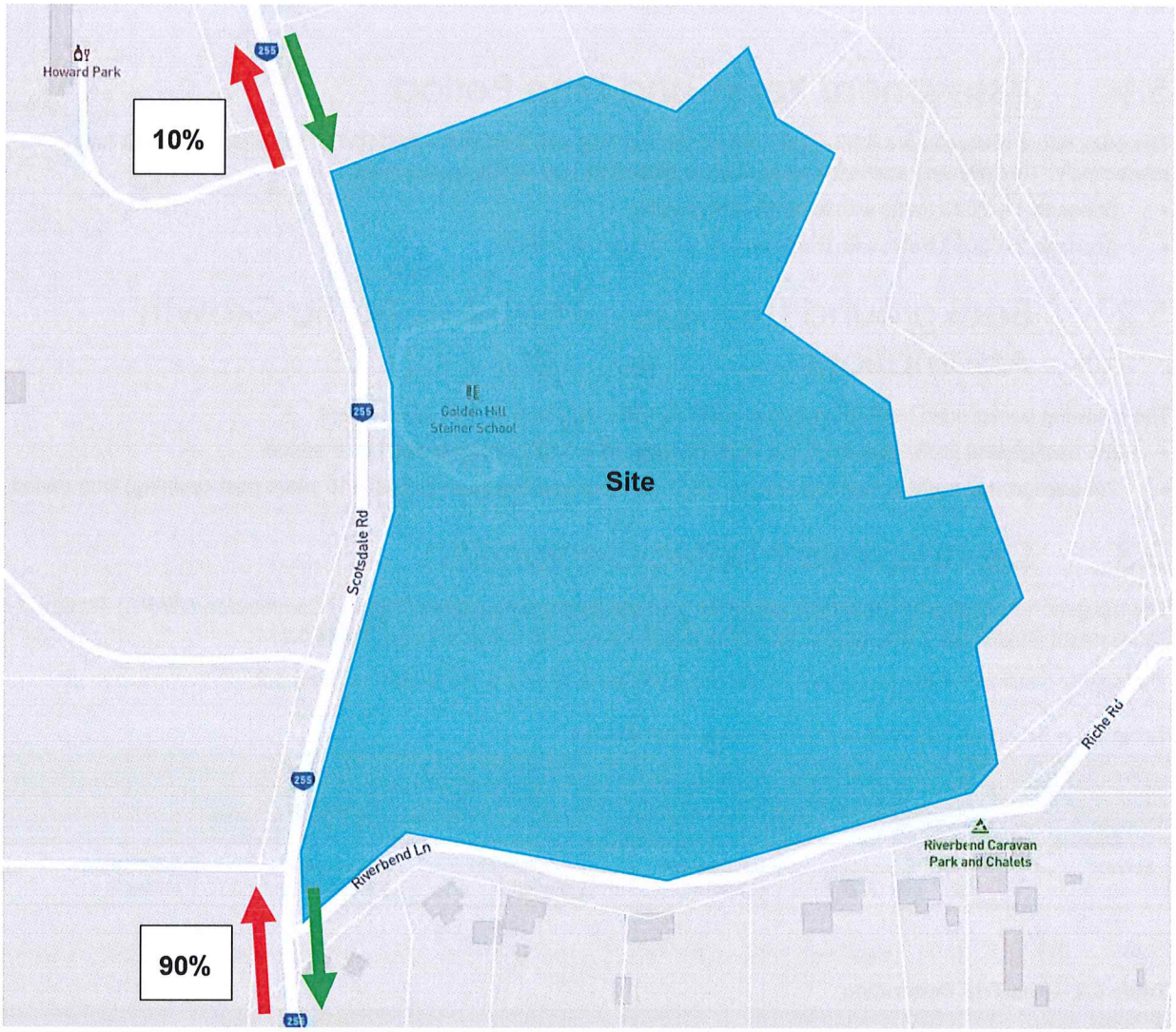
Land Use	AM Peak		PM Peak	
	Arrival	Departure	Arrival	Departure
School (existing for 103 students)	52	52	52	52
School (future for 300 students)	150	150	150	150

The proposed school expansion will generate an additional 196 vehicle trips in both the AM and PM peak periods.

5.4 Development Traffic Distribution

As the majority of residents live to the south near the town centre, the development traffic is expected to come mainly from the south of the site using Scotsdale Road. It is assumed that only a small fraction (10%) of school traffic will come from the north side of the site as the area to the north is relatively undeveloped. The expected trip distribution for the school is shown in **Figure 5.1**.

Figure 5.1 – Traffic Distribution



5.5 Total Traffic Volumes

The traffic volumes for the school driveway at the intersection of Scotsdale Road are summarised in **Figure 5.2** to **Figure 5.5**.

Figure 5.2 – Total 2023 Traffic Volumes – AM Peak

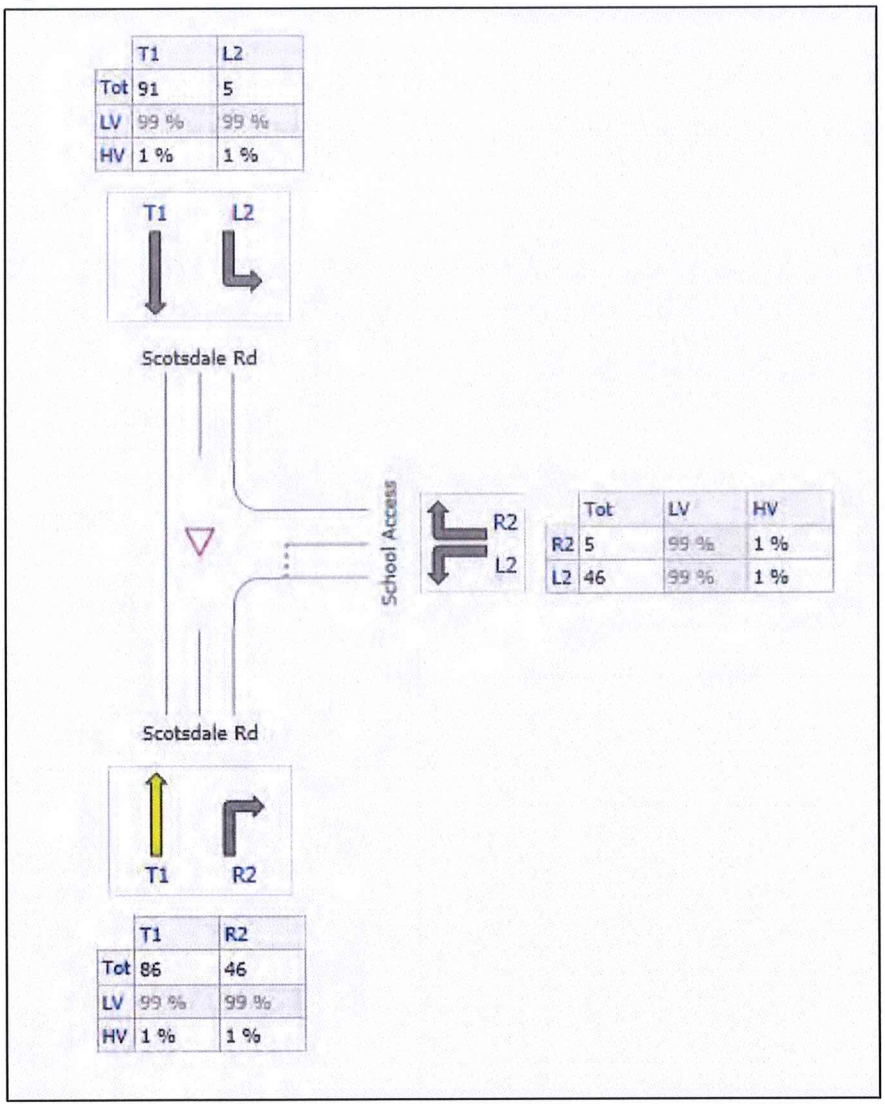


Figure 5.3 – Total 2023 Traffic Volumes – PM Peak

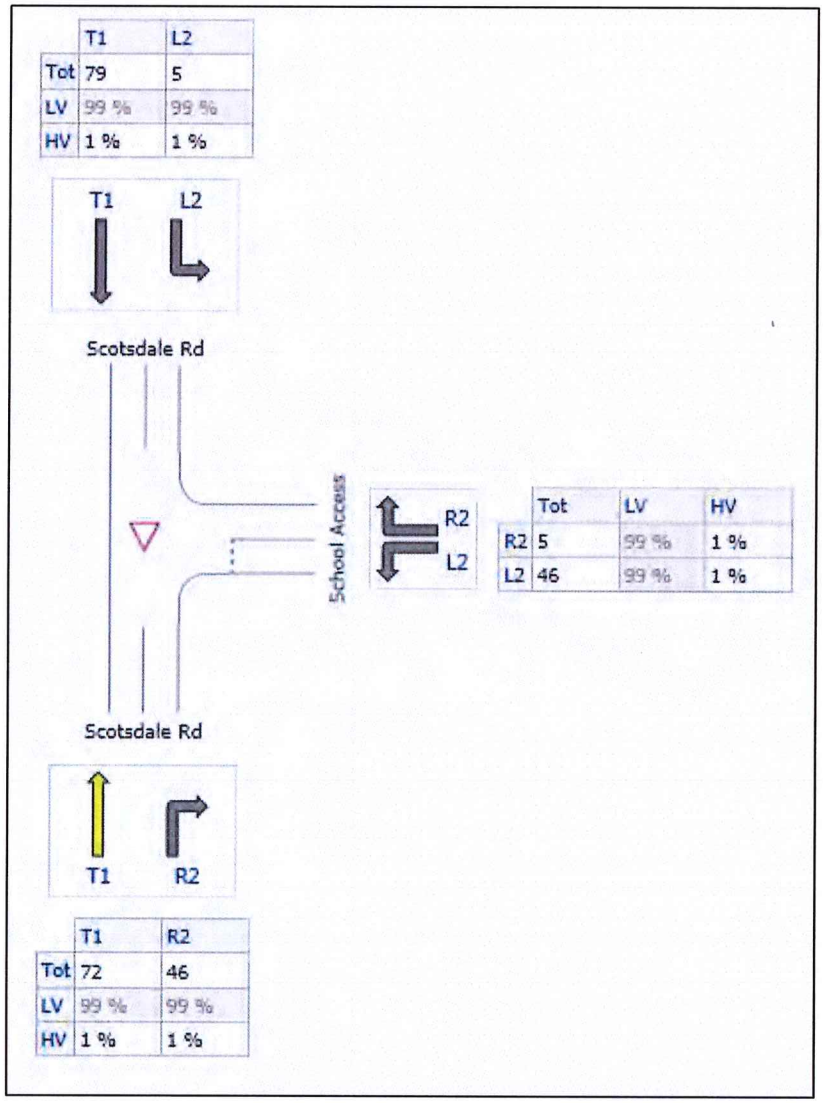


Figure 5.4 – Total 2033 Traffic Volumes – AM Peak

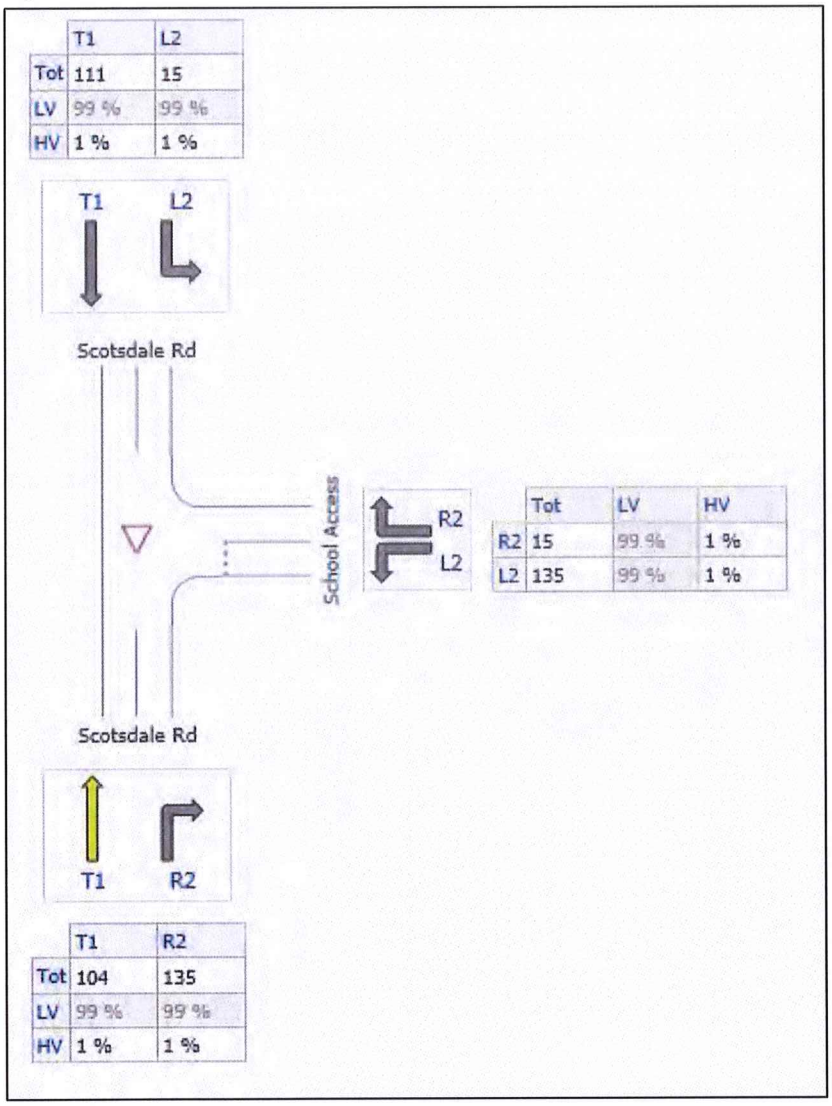
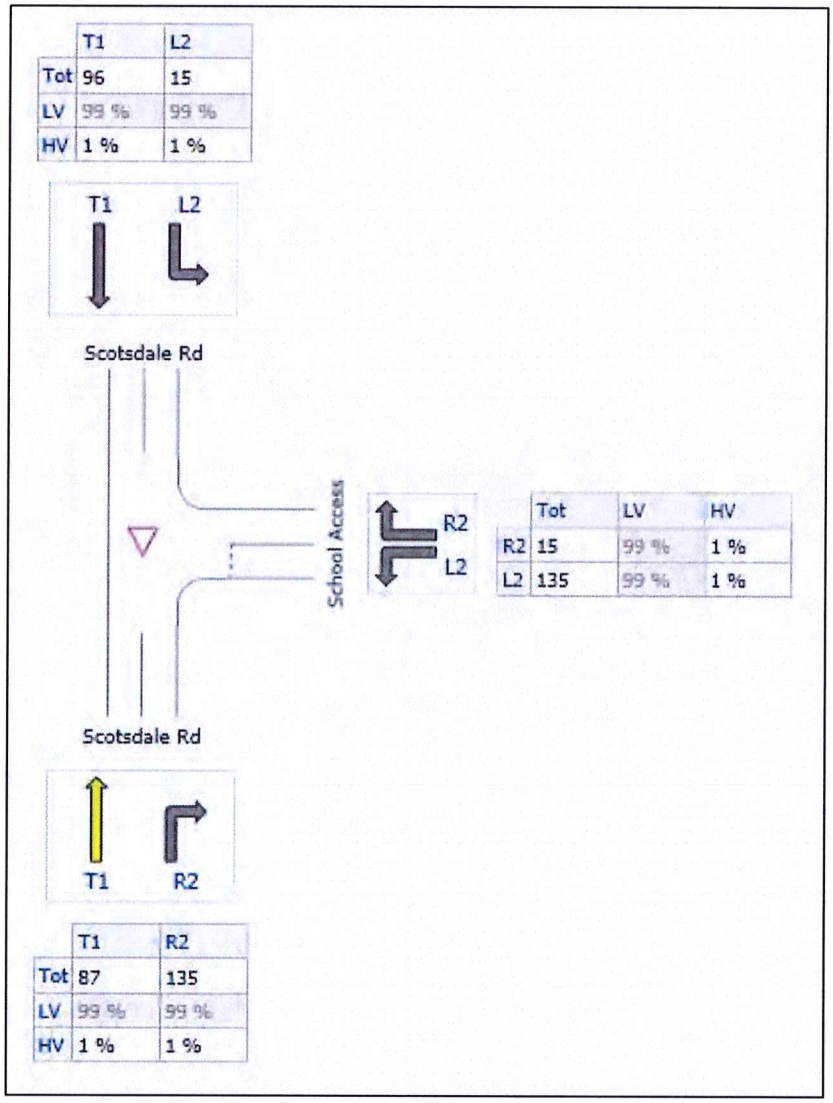


Figure 5.5 – Total 2033 Traffic Volumes – PM Peak



5.6 Intersection Performance

SIDRA analysis was undertaken at the School Driveway and Scotsdale Road intersection to estimate the impact of the school expansion generated traffic on the surrounding transport network for the opening year and 10-year horizon scenarios.

Only the main school access has been assessed as this will serve as the main entry point for the majority of traffic travelling to and from the school.

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue Lengths. These characteristics are defined as follows:

- Degree of Saturation (DOS): is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The DOS for an un-signalized intersection is considered critical where DOS > 0.80;
- 95th percentile Queue: is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- Average Delay: is the average of all travel time delays for vehicles through the intersection; and
- Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 5.3**.

Table 5.3 – Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	25-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

5.6.1 School Driveway Intersection at Scotsdale Road

The following presents the results of the analysis of the School Driveway and Scotsdale Road intersection for the opening year and 2033 scenarios. The SIDRA layout of the intersection is shown in **Figure 5.6**, and analysis results are shown in **Table 5.4** and **Table 5.5**. The SIDRA model result suggests the intersection will operate satisfactorily in both the 2023 and 2033 scenarios.

Figure 5.6 – Scotsdale Road / School Access - SIDRA Intersection Layout

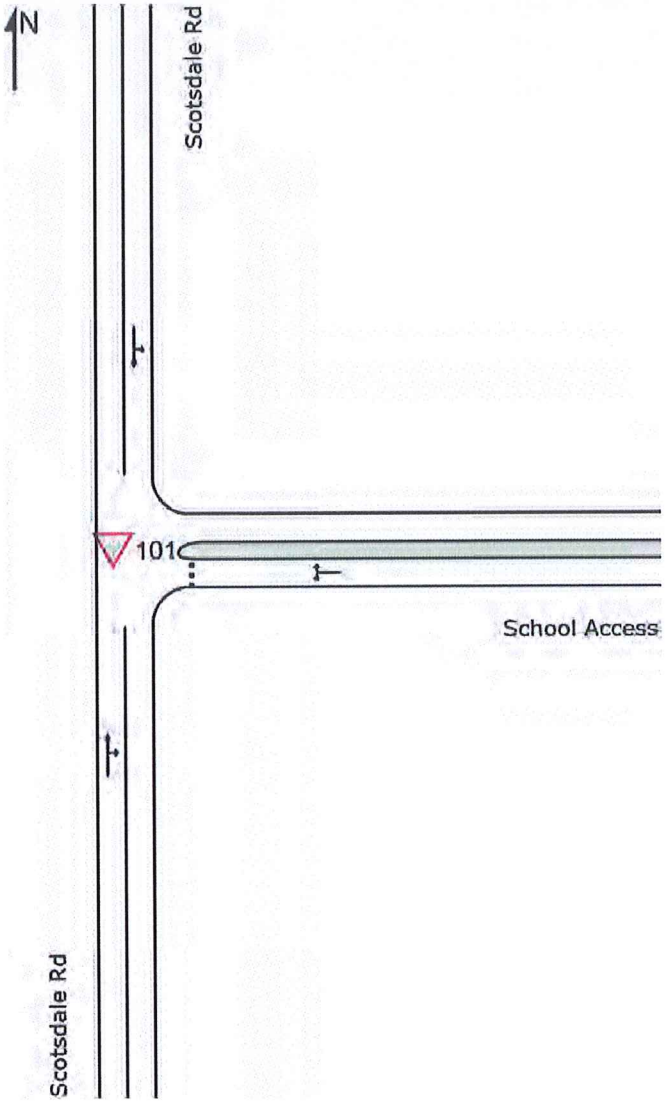


Table 5.4 – Scotsdale Road / School Access - SIDRA Result for 2023 Scenario

Intersection Approach		AM Peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South: Scotsdale Road	T	0.077	0	A	1.9	0.069	0	A	1.8
	R	0.077	6.1	A	1.9	0.069	6	A	1.8
West: Access Road	L	0.037	5.8	A	1	0.037	5.8	A	1
	R	0.037	6.3	A	1	0.037	6.2	A	1
North: Scotsdale Road	L	0.052	5.6	A	0.0	0.046	5.6	A	0.0
	T	0.052	0.0	A	0.0	0.046	0.0	A	0.0
All vehicles		**0.077**	**2.2**	**A**	**1.9**	**0.069**	**2.4**	**A**	**1.8**

Table 5.5 – Scotsdale Road / School Access - SIDRA Result for 2033 Scenario

Intersection Approach		AM Peak				PM Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South: Scotsdale Road	T	0.147	0	A	5	0.137	0.0	A	4.7
	R	0.147	6.2	A	5	0.137	6.1	A	4.7
West: Access Road	L	0.114	5.9	A	3.3	0.112	5.9	A	3.3
	R	0.114	7.1	A	3.3	0.112	6.9	A	3.3
North: Scotsdale Road	L	0.069	5.6	A	0	0.061	5.6	A	0.0
	T	0.069	0.0	A	0	0.061	0.0	A	0.0
All vehicles		**0.147**	**3.6**	**A**	**4.7**	**0.137**	**3.7**	**A**	**4.7**

The results of the SIDRA assessment shows that the school access will operate at an acceptable level of service for both scenarios with. All movements are operating at free flow conditions with minimal queuing. From an operational standpoint, no additional upgrades are required at the proposed access locations.

6. Conclusions and Summary

This Transport Impact Assessment outlines the transport aspects of the school expansion focusing on traffic operations, and access safety.

The following is a summary of the school expansion and the resultant impact on the surrounding traffic conditions:

- The school will accommodate around 300 students including primary and secondary students and 50 staff members.
- The school is estimated to result in an additional 196 trips during both the AM and PM peak hours with future demand.
- The access to the development is provided from Scotsdale Road and SIDRA analysis shows that the access intersection is performing at a satisfactory level of service and will continue to operate at LOS A in the 2033 future assessment year.
- There have been no crashes within the surrounding area of the Site within the last 5 years.
- Overall, the traffic impacts associated with the school expansion will be minimal on the external transport network.

Appendices

We design with community in mind

Appendix A. WAPC Checklist

Item	Provided	Comments / Proposals
Introduction/Background		
name of applicant and consultant	Section 1	
development location and context	Section 1	
brief description of development proposal	Section 1	
key issues	N/A	
Background information	Section 2	
Existing situation		
existing site uses (if any)	Section 2	
existing parking and demand (if appropriate)	N/A	
existing access arrangements	Section 2	
existing site traffic	Section 2	
surrounding land uses	Section 2	
surrounding road network	Section 2	
traffic management on frontage roads	Section 2	
traffic flows on surrounding roads (usually am and pm peak hours)	Section 2	
traffic flows at major intersections (usually am and pm peak hours)	Section 5	
operation of surrounding intersections	Section 5	
existing pedestrian/cycle networks	Section 2	
existing public transport services surrounding the development	Section 2	
Crash data	Section 2	
Development proposal		
regional context	Section 2	
proposed land uses	Section 3	
table of land uses and quantities	Section 3	
access arrangements	Section 3	
parking provision	N/A	
end of trip facilities	N/A	
any specific issues	N/A	
road network	N/A	
intersection layouts and controls	N/A	

pedestrian/cycle networks and crossing facilities	N/A	
public transport services	N/A	
Integration with surrounding area		
surrounding major attractors/generators	Section 4	
committed developments and transport proposals	Section 4	
proposed changes to land uses within 1200 metres	Section 4	
travel desire lines from development to these attractors/generators	N/A	
adequacy of existing transport networks	N/A	
deficiencies in existing transport networks	N/A	
remedial measures to address deficiencies	N/A	
Analysis of transport networks		
assessment years	Section 5	
time periods	Section 5	
development generated traffic	Section 5	
distribution of generated traffic	Section 5	
parking supply & demand	Section 5	
base and "with development" traffic flows	Section 5	
analysis of development accesses	Section 5	
impact on surrounding roads	Section 5	
impact on intersections	Section 5	
impact on neighbouring areas	Section 5	
road safety	Section 2	
public transport access	Section 4	
pedestrian access / amenity	N/A	
cycle access / amenity	N/A	
analysis of pedestrian / cycle networks	N/A	
safe walk/cycle to school (for residential and school site developments only)	N/A	
Traffic management plan (where appropriate)	N/A	

Appendix B. Site Masterplan

Golden Hill Steiner School

1:1000 @ A1 0 50m
1:2000 @ A3 0 100m

MASTER PLAN
2116 Steiner School Master Plan
222 Scotsdale Road, Scotsdale WA 6333

sk.04	rev
26/09/2023	L

PTX ARCHITECTS

Stantec

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ATTACHMENT 11

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SITE AND SOIL EVALUATION - 23 RIVERBEND LANE, SCOTSDALE, WESTERN AUSTRALIA SHIRE OF DENMARK

Prepared For:	Cultura Foundation Inc. 80 Hovea Road SCOTSDALE WA 6333
Report Number:	AA2023/110
Report Version:	V4
Report Date:	20 October 2023

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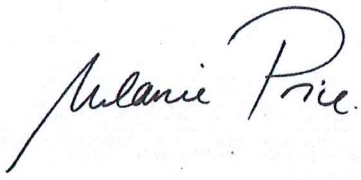
Report No: AA2023/110

Author:	Paul Clifton Senior Environmental Scientist		20 October 2023
		Signature	Date
Reviewed by:	Melanie Price Principal Environmental Scientist		20 October 2023
		Signature	Date

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CUL-AP00614_SSE_001_pc_V4.docx	V4	20 October 2023	Cultura Foundation Inc.	PC

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LIST OF ABBREVIATIONS AND GLOSSARY

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
Ha	Hectare
K_{SAT}	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
m	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

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 in Public Drinking Water Source Areas.
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
SSA	Sewage sensitive area as defined in Government Sewerage Policy 2019
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 with 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 completed a Site Soil Evaluation (SSE) for 23 (Lot 1) Riverbend Lane, Scotsdale in the Shire of Denmark (Figure 1, the Site). The purpose of the investigation was to assess the Site's suitability for onsite wastewater management and to recommend the type of onsite wastewater system.

The landowners propose to subdivide the six-hectare lot into two, one hectare lots, with the balance of the land (4 ha) to be incorporated into the Golden Hill Steiner School (222 Scotsdale Road Scotsdale, Figure 1).

Matters relating to land capability have been considered in the context of requirements of the:

- *Health (Miscellaneous Provisions) Act 1911;*
- *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974;*
- Government Sewerage Policy 2019 (GSP; Government of Western Australia, 2019); and
- Draft State Planning Policy (SPP) 2.9 Planning for Water.

The desktop assessment indicated that the requirements outlined in the GSP for on-site effluent disposal for the proposed expansion of the Golden Hill Steiner School and residential lot can be met.

Key points include:

- The soil type has a low to medium risk of water logging and has a low to high ability to sorb phosphorus;
- The Site is in a sewerage sensitive area due to its proximity to Wilson Inlet;
- The eastern portion of the Site is falls within the separation buffer of Scotsdale Brook;
- While Denmark has relatively wet winters, evaporation exceeds rainfall over the entire year; and
- Land application areas of 257 m^2 will be required for the residential lots and approximately 2,700m^2 will be required for the expansion of the Golden Hill Steiner School.

Due to the Site being in a sewerage sensitive area, with a relatively high groundwater table and soils with a low ability to sorb phosphorus, secondary treatment units with nutrient removal and substrata or subsurface irrigation are recommended for the proposed development.

This assessment suggests areas where irrigation of treated wastewater may be suitable to allow for adequate setbacks from Scotsdale Brook. The potential for the use of raised irrigation beds to ensure adequate separation to groundwater is also considered.

In addition, liaison with the West Australian Department of Health will be required as the school component of on-site effluent disposal will requirement the preparation of a recycled wastewater management plan.

2 BACKGROUND

Cultura Foundation Inc (Cultura) on behalf of the Golden Hill Steiner School (the School), has been contracted to transfer ownership of 23 Riverbend Lane from the Shire of Denmark. Figure 1 illustrates the location of the Site.

The acquisition seeks to facilitate the expansion of the Steiner School to accommodate students from Year 1 to Year 12. This will be achieved through rezoning and potentially subdividing the Site as outlined in the Steiner School Masterplan (PTX Architects, 2021).

There are currently 90 primary aged and 13 secondary aged students attending the School, with 27 staff. Historically, the School has been focused on primary students but there are now plans to include a High School. This would include a Year 7 in 2023, Year 8 in 2024, Year 9 in 2025 and Year 10 in 2026. Incorporation of classes up to Year 12 would be included in subsequent years.

The School is proposing to increase the school population with 187 additional students and 23 extra full and part time staff. To assist with the development, Cultura may seek to subdivide the southeast section of Lot 1 (23) Riverbend Lane to create two new, one-hectare special rural lots with the balance of the area (4ha) to cater for the school expansion.

An existing dwelling exists on one of the special rural lots, which will be retained.

FIGURE 1: SUBJECT LAND AND GOLDEN HILL STEINER SCHOOL

Source: Landgate (2023) Locate V5 https://maps.slip.wa.gov.au/landgate/locate/

Reticulated sewer is not available to the site. The GSP states that an SSE is required to determine suitability for on-site effluent disposal.

2.1 SCOPE

The scope of this assessment included the review of publicly available information and assessment of on-site landform, soil and groundwater to characterise the subject land with respect to the ability of the site to support on-site effluent disposal and advise which system(s) would be appropriate, as outlined in:

- Government Sewerage Policy (GSP; Government of Western Australia, 2019);
- Guidance on Site and Soil Evaluation for On-site Sewage Management (Department of Health, 2019); and
- Australian/New Zealand Standard - On-site Domestic Wastewater Management (Standards Australia, AS/NZS 1547:2012).

2.2 EVALUATOR'S QUALIFICATIONS, EXPERIENCE AND PROFESSIONAL INDEMNITY

2.2.1 Qualifications

This site and soil evaluation was compiled by Paul Clifton, Senior Environmental Scientist of Aurora Environmental. The report has been reviewed by Melanie Price, Principal Environmental Scientist of Aurora Environmental.

Paul has a Bachelor of Environmental Science and Master of Environmental Health. Melanie has a Bachelor of Science (Zoology, Botany and Microbiology) with Honours (University of Western Australia) and a Post Graduate Diploma in Environmental Impact Assessment from Murdoch University.

2.2.2 Experience

Paul has over 15 years' experience in the interpretation of site, soil, and climate conditions, undertaking water balances, approval of selected designed appropriate wastewater treatment systems, disposal and reuse options and other relevant skills.

Melanie has over 20 years of experience in the interpretation of site, soil and climate conditions, undertaking water balances, selection and design of appropriate wastewater treatment systems, disposal and reuse options and other relevant skills.

Professional indemnity

Aurora holds professional indemnity insurance for the purposes of environmental consulting.

3 DESKTOP ASSESSMENT

Key characteristics have been assessed to define the capability of the Site to assimilate wastewater. A risk management approach has been taken to ensure that environmental and public health constraints can be mitigated and the siting, design and performance of systems are appropriately managed.

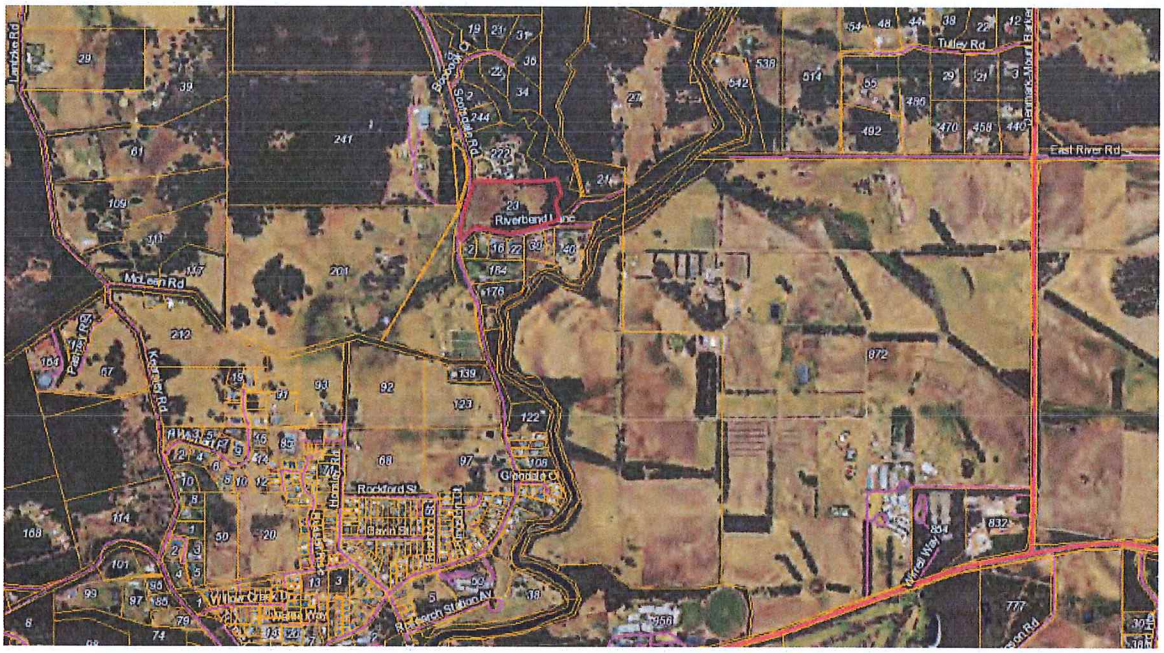
3.1 SITE DESCRIPTION

The Site (Figure 2) is 1.7 km north of the Denmark townsite and is south of the Golden Hill Steiner School. A visual site inspection was undertaken on 21 April 2023 and field work conducted on 31 August 2023. Site photographs are contained in Appendix 1.

The area is subject to a Masterplan (PTX Architects, 2021) which outlines the subdivision of the Site into three Lots (Appendix 2). The subdivision area is parkland cleared with pasture which falls away to the Scotsdale Brook to the east of the Site. Four hectares will be used to expand the Golden Hill Steiner School. Two lots (1 ha each) will be used for rural residential purposes.

The Site is zoned 'Special Rural' under the Shire of Denmark Local Planning Scheme No. 3. A diagram and the scheme provisions are included in Appendix 3.

FIGURE 2: LOCATION OF LOT 23 RIVERBEND LANE, SCOTSDALE



Source: Landgate (2023) Locate V5 https://maps.slip.wa.gov.au/landgate/locate/

3.2 SURROUNDING LAND USES:

The Site is in the Golden Hill Special Rural Zone (Appendix 3). Land to the north of the Site is zoned 'Special Rural' with lot sizes between 1.4 and 1.8 ha. The lot immediately to the north, Lot 110 Scotsdale Road, is the current location of the Steiner school (4.9539 ha). Land to the east comprises Reserve 17757 and contains the Scotsdale Brook. Land to the west is zoned 'Rural' with lots over 40 ha. Land south of Riverbend Lane is zoned 'Residential' with Lots between 0.5 ha and 1.7 ha or Tourist with the Riverbend Caravan Park and Chalets just to the southeast of the Site.

3.3 TOPOGRAPHY

The highest point of the Site is in the north-western area at approximately 18 mAHD (Figure 3). The land slopes down to the lowest point of 6 mAHD on the north-eastern boundary. The Site is relatively flat with the eastern portion having a gentle slope and an easterly aspect.

FIGURE 3: TOPOGRAPHY

Source: Landgate (2023) Terrain 2 & 10 metre contours (DPIRD-072 & DPIRD073)
https://maps.slip.wa.gov.au/landgate/locate/

3.4 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 [1]. Most of the rain falls between May and September (Table 1).

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

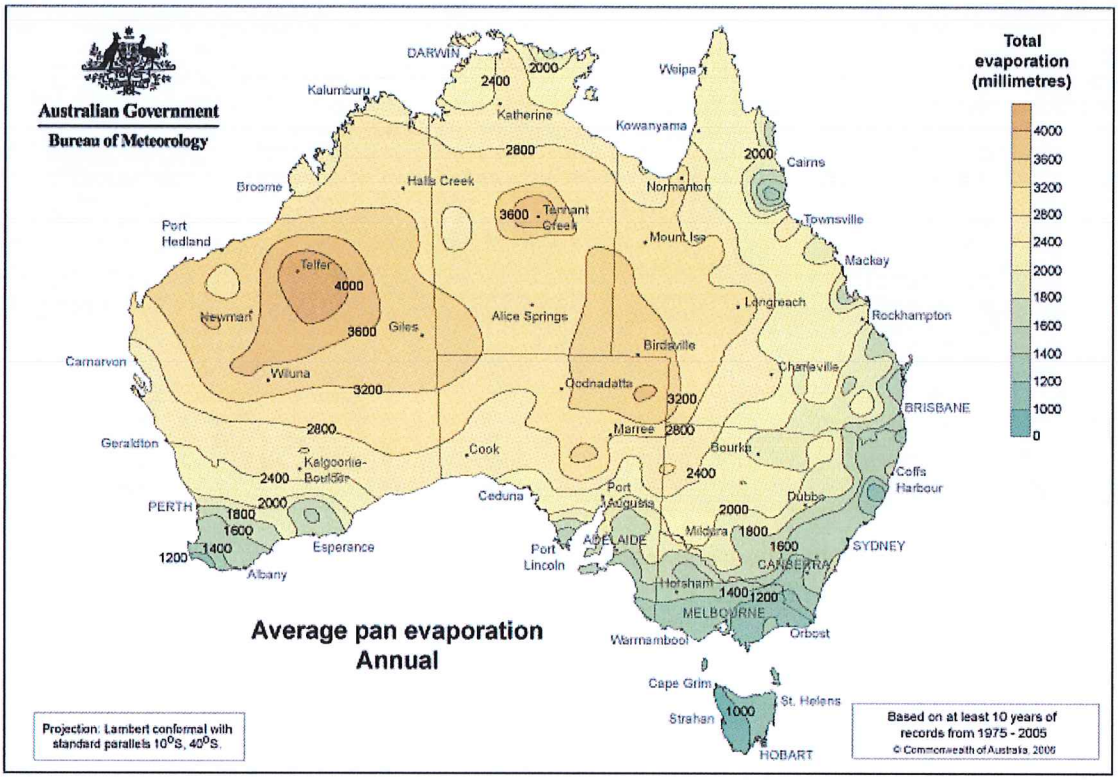
Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	27.9	26.9	47.9	77.4	127.9	152.6	169.2	148.1	117.1	94.1	52.9	35.0
Median	20.2	18.1	38.7	68.3	118.6	144.9	164.9	144.2	108.7	86.4	48.2	27.7
2022	12.4	18.1	60.1	107.5	106.7	130.2	80.1	127.5	60.4	135.3		

Source: Bureau of Meteorology (2023).
http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_display_type=dataDGraph&p_stn_num=009531&p_nccObsCode=136&p_month=13&p_startYear=2022

3.5 EVAPORATION

Annual average evaporation for Denmark is approximately 1400 mm (Figure 4) so annual evaporation exceeds rainfall (BOM, 2023[2]). Rainfall exceeds evaporation for approximately 6 months a year (Figure 5).

FIGURE 4: AVERAGE ANNUAL PAN EVAPORATION



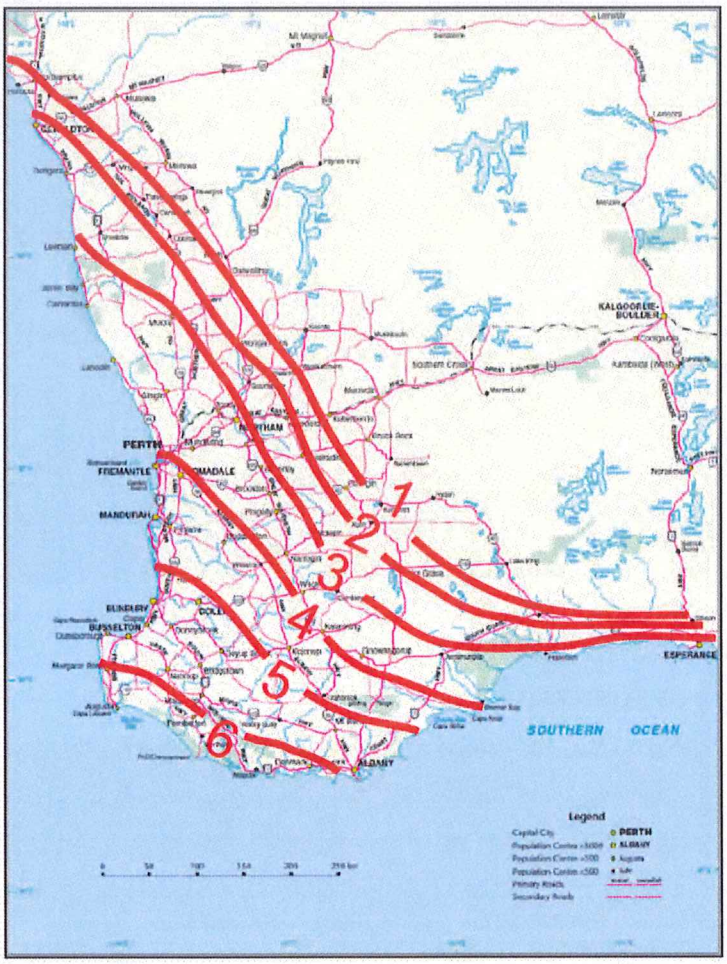
Source: BOM (2023) http://www.bom.gov.au/watl/evaporation/

[1] http://www.bom.gov.au/climate/averages/tables/cw_009500_All.shtml
[2] http://www.bom.gov.au/watl/evaporation/

Level of constraint for on-site effluent disposal: While rainfall exceeds evaporation for six months of the year, other management options such as adequate irrigation areas and depth to groundwater are more significant factors.

Mitigation: Other management and site factors (e.g., size of irrigation area and presence of sand pads (if required) means that 6 months of lower evaporation is not a significant constraint.

FIGURE 5: NUMBER OF MONTHS DURING WHICH RAINFALL EXCEEDS EVAPORATION



3.6 SOILS

The soil type represented at the Site (Figure 6; Soil Landscape Mapping - Best Available (DPIRD-027)) is:

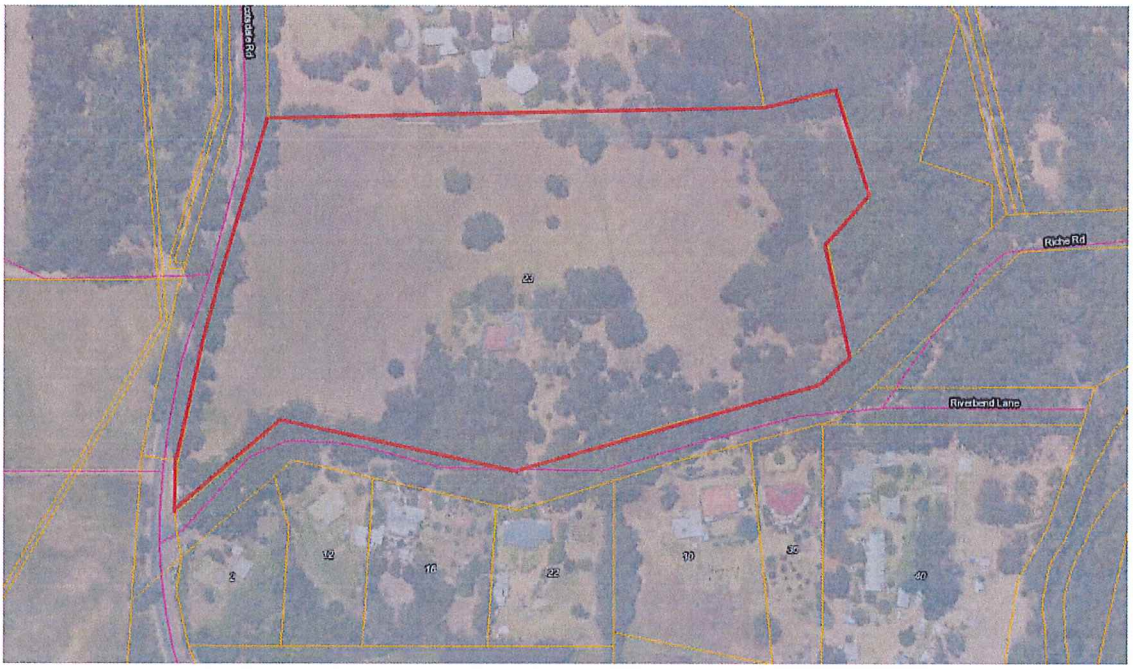
- Major Valleys V3 subsystem Walpole (254WhV3): Valleys in granitic areas; 20m relief; rocky slopes; terrace. Yellow duplex soils on slopes; Deep sands on terrace;
- Up to 3 % of this soil mapping unit has a moderate to very high water logging risk; and
- 30 – 50% of this mapping unit has a high to extreme phosphorus export risk (Figure 7).

Vegetation on the Site consists of parkland cleared Eucalyptus species including Jarrah, Marri, and Karri with a shrub understory.

Level of constraint for on-site effluent disposal – Soils: Low to moderate constraint due to water logging risk and moderate to high risk related to low ability to sorb phosphorus.

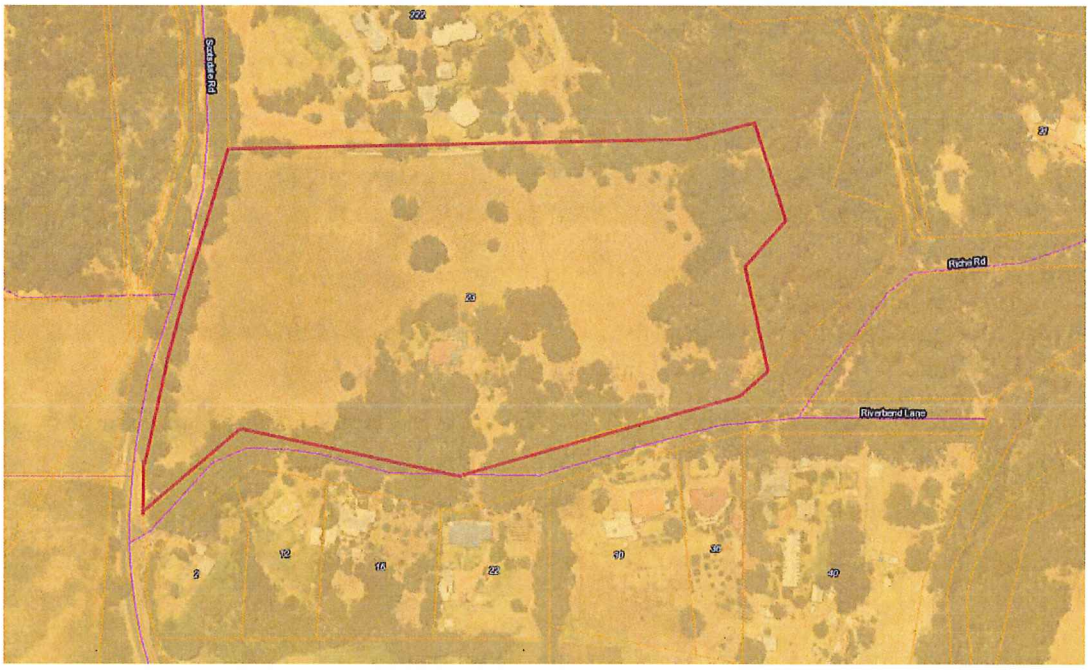
Mitigation: Use of secondary effluent treatment system with nutrient removal.

FIGURE 6: SOIL TYPES



Source: Landgate (2023) Soil Landscape – Soil Landscape Mapping Best Available (DPIRD-027); https://maps.slip.wa.gov.au/landgate/locate/

FIGURE 7: PHOSPHORUS EXPORT RISK



Source: Landgate (2023) Soil Landscape Mapping – Phosphorus Export Risk (DPIRD-010)

3.7 CATCHMENT

The Site is part of the Wilson Inlet catchment and within 2 kilometres of the inlet. Wilson Inlet is a specified inlet/estuary under the GSP and is classified as a 'sewerage sensitive area' (Figure 8).

Level of constraint for on-site effluent disposal: Moderate constraint.

Mitigation: Use of secondary effluent treatment systems with nutrient removal.

FIGURE 8: WILSON INLET CATCHMENT SEWERAGE SENSITIVE AREA

Source: Landgate (2023) Government Sewerage Policy – Polygon (DPLH-062)

3.8 WATERCOURSES/ WETLANDS

The Site does not contain any identifiable wetlands or watercourses but is adjacent to Scotsdale Brook, a tributary of Denmark River that ultimately discharges into Wilson Inlet.

The Site is not within a flood prone area (Figure 9).

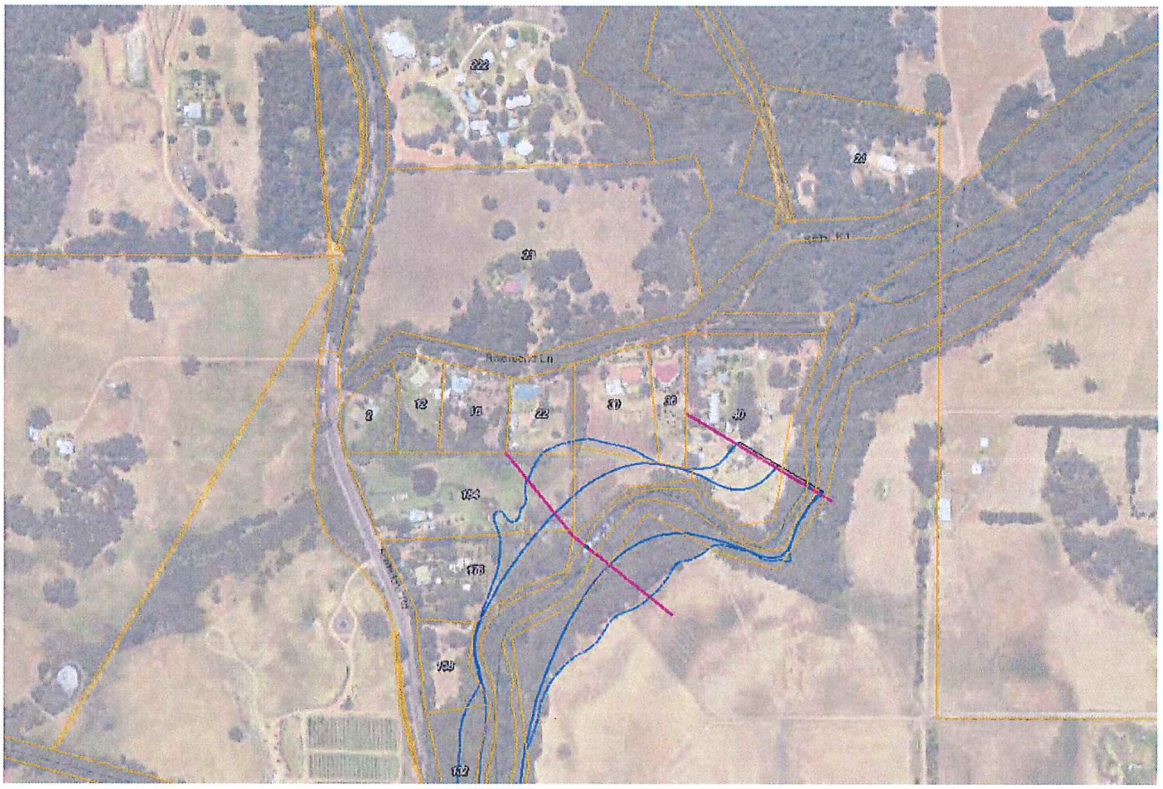
Level of Constraint: Low if irrigation areas can be set back 100 m from Scotsdale Brook.

Mitigation: Set back irrigation areas from Scotsdale Brook.

FIGURE 9: SETBACK APPROXIMATELY 100 M FROM SCOTSDALE BROOK

Source: Landgate (2023) Hydrography Linear (Hierarchy) (DWER-031);

FIGURE 10: AREAS PRONE TO FLOODING – DENMARK RIVER



Source: Landgate (2023) Hydrography Linear (Hierarchy) (DWER-031); FPM Location of Cross Sections (DWER-022); FPRM Flood Level Contours (m AHD) DWER (018); FPM 1 in 100 (1%) AEP Flood and Flood Fringe Line (DWER - 015)

3.9 GROUNDWATER

The Site is not located within a proclaimed Groundwater Area.

From an onsite effluent disposal system perspective, the Golden Hill Steiner School (immediately to the north of the Site) has approval for the installation of four on-site effluent disposal systems. The leach drains have been installed according to the ground conditions of the disposal area. Refer to Appendix 4 for Approval details. From the desktop survey it would appear that the two properties have similar soil and ground conditions.

Depth to groundwater has been established through a site investigation and assessment. See Section 4 Site Soil Assessment for the results and evaluation of site investigations.

4 SITE SOIL ASSESSMENT

Site investigations associated with this soil assessment were conducted on the 31 August 2023. Groundwater heights were measured on 26th September 2023.

4.1 SOIL PROFILE

Test pits were located on each of the proposed lots and areas identified as being locations of disposal fields. The piezometer locations are illustrated in Figure 11. Table 2 describes the location of each of the test locations in relation to the proposed subdivision.

FIGURE 11: PIEZOMETER LOCATIONS

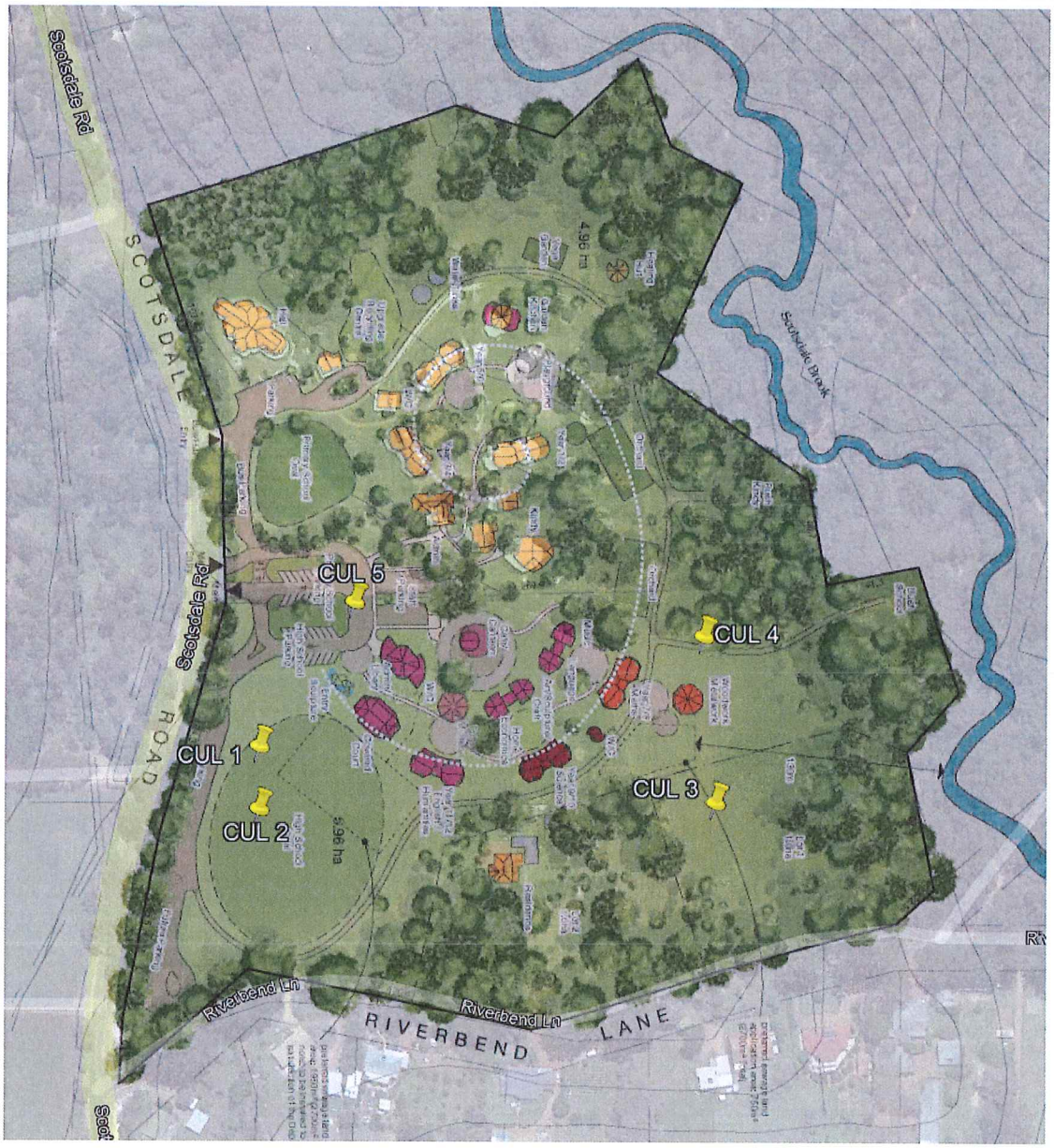


TABLE 2: PEIZOMETER LOCATION - SUBDIVISION LOT

TEST LOCATION	SUBDIVISIONAL LOT
CUL 1	Steiner School Site
CUL 2	Steiner School Site
CUL 3	Lot 1
CUL 4	Steiner School Site
CUL 5	Steiner School Site

Test pits were dug using a mechanical digger and upon the completion of the soil investigations, immediately filled.

Table 3 provides soil profile descriptions, full soil logs for each of the test pits is provided in Appendix 7. Generally, the site was typified with a shallow fine loamy sand over a saturated clay horizon. These areas tended to be on the flatter area of the subject land. The second soil profile identified was a fine sand topsoil over a loamy sand with small gravelly pebbles. These areas were found on the eastern slopes of the subject land and outside of the 100m separation buffer to Scotsdale Brook.

TABLE 3: SOIL PROFILE DESCRIPTION

TEST LOCATION	TEST DEPTH (m)	NORTHING (S)	EASTING	REASON FOR TERMINATION	DEPTH TO CLAY OR HARDPAN (m)	STRATIGRAPHY
CUL 1	1.5	34.94363	117.35808	Target Depth	0.15	Loamy sand over clay
CUL 2	1.5	34.94400	117.35803	Target Depth	0.22	Loam sand over clay
CUL 3	1.5	34.94397	117.36027	Target Depth	0.9	Sand over clayey loam
CUL 4	1.5	34.94323	117.36038	Target Depth	0.9	Sand over clayey loam
CUL 5	1.5	34.94306	117.35849	Target Depth	0.3	Sand over clay

4.2 PHOSPHORUS RETENTION INDEX

The Department of Health (DoH) published a *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units* (DoH, 2001) which specifies that surface and subsurface irrigation disposal areas need to contain soils with PRI values greater than 20. If soil PRI is less than 20, then high-PRI amended irrigation areas or a nutrient removing system are recommended.

Soil samples were taken at sample locations CUL 1, CUL 2 and CUL 3 from both the topsoil horizon and the horizon immediately below. The topsoil horizon was labelled A, the underlying horizon B. Samples

were sent was sent to CSBP Laboratories (Australasian Soil and Plant Analysis Council accredited) for analysis. Results are shown in Table 4 with Laboratory Certificates being provided in Appendix 9.

PRI results ranged from 47.3 to in excess of 1000. This indicates that the soils across the subject land have a low to high ability to sorb phosphorus.

TABLE 4: PHOSPHORUS RETENTION INDEX RESULTS

LOCATION	PRI
CUL 1 – A	<1000
CUL 1 – B	190.5
CUL 2 – A	780.0
CUL 2 – B	132.7
CUL 3 – A	47.3
CUL 3 - B	625.2

4.3 GROUNDWATER

Table 5 provides a description of soil profiles of each of the test pits and information as to whether groundwater was intercepted as apart of these investigations.

During the digging of the test pits at CUL 1, CUL 2, CUL 5 sections of the soil profile were wet-saturated. A wet sand layer overlaid a saturated clay which occurred between 150 mm to 200 mm below ground level. These locations were typically flat.

Piezometers were installed using a mechanical augur to an approximate depth of 1500 mm. Slotted 50 mm PVC pipe was installed, labelled and capped to prevent any rain from entering the monitoring well.

CUL 3 and CUL 4 were located lower in the landscape but did not have a saturated component of the soil profile.

Installed piezometers were monitored for standing groundwater levels on 26 September 2023.

The standing water levels in the piezometers of CUL 1, CUL 2 and CUL 5 were due to the saturated clay layer and groundwater seeping into the piezometer. Groundwater across the area appeared to be consistently within 0.3 – 0.4 m below ground level.

Soils associated with CUL 3 and 4 had groundwater at 1.5 m below ground level.

TABLE 5: GROUNDWATER LEVELS

TEST LOCATION	TEST DEPTH (m)	NORTHING (S)	EASTING	REASON FOR TERMINATION	DEPTH to GROUNDWATER (m)	STRATIGRAPHY
CUL 1	1.5	34.94363	117.35808	Target Depth	0.3	

TEST LOCATION	TEST DEPTH (m)	NORTHING (S)	EASTING	REASON FOR TERMINATION	DEPTH to GROUNDWATER (m)	STRATIGRAPHY
CUL 2	1.5	34.94400	117.35803	Target Depth	0.3	Sand over clay
CUL 3	1.5	34.94397	117.36027	Target Depth	Not encountered	Sand over clayey loam
CUL 4	1.5	34.94323	117.36038	Target Depth	1.5	Sand over clayey loam
CUL 5	1.5	34.94306	117.35849	Target Depth	0.4	Sand over clay

4.4 SOIL PERMEABILITY, DRAINAGE CLASSIFICATION AND DESIGN LOADING RATES

Permeability investigations were undertaken on 31 August 2023.

Infiltration testing was undertaken to determine the permeability of the soil to a depth of 0.5m BGL or where refusal was met.

A CL26100 well permeameter which is designed to meet the requirements set out in AS/NZS 1547:2012 (Standards Australia, 2012) was used for the investigation. This method is a constant head test, whereby water that infiltrates an unlined test hole is replenished at the same rate from a reservoir, keeping the level of water in the hole constant (i.e. constant head). Field records are taken to measure the loss of water from the reservoir over time, which are then used to calculate the coefficient of permeability (K_{SAT}) for the soil profile. Test holes were created using a hand auger. The KSAT results and interpreted soil categories are summarised in Table 6, with calculations shown in Appendix 9.

Based on infiltration testing results, the calculated K_{SAT} values for Lots within the Subject Land ranged from between 0.06 and 0.84 m/day. Hence across the Site, the permeability was low ranged from 'Low permeability' to 'Medium Permeability'. Based on field observations and permeability, the soils at the site fall into Soil Categories 3 and 4. (Table 6; Standards Australia, 2012). This permeability rating is adequate for on-site effluent disposal.

The Australian Standard AS/NZS 1547:2012 (Standards Australia, 2012) provides guidelines on recommended Design Loading Rates (DLR) for disposal of wastewater to land via irrigation. The DLR is based on the identified soil characteristics at the site, including soil permeability as summarised in Table 7 . Table 7 shows that the soil category present on site is suitable for irrigation of treated wastewater. The exact specifications for irrigation will ultimately depend on the volume of wastewater to be treated.

TABLE 6: CALCULATED K_{SAT} VALUES AND DRAINAGE CLASSIFICATION

LOCATION	K_{SAT} (M/DAY)	SOIL CATEGORY*	SOIL TEXTURE	SOIL STRUCTURE	PERMEABILITY
CUL 1	0.06	4	Clay Loam	Massive	Low Permeability
CUL 2	0.15	4	Clay Loam	Massive	Low Permeability

TABLE 6: CALCULATED K_{SAT} VALUES AND DRAINAGE CLASSIFICATION

LOCATION	K_{SAT} (M/DAY)	SOIL CATEGORY*	SOIL TEXTURE	SOIL STRUCTURE	PERMEABILITY
CUL 3	0.84	4	Clay Loam	High Moderate Structured	Low Permeability
CUL 4	0.22	4	Clay Loam	High Moderate Structured	Low Permeability
CUL 5	0.18	4	Clay Loam	Massive	Low Permeability

Soil Category as per AS 1547:2012.

TABLE 7: RECOMMENDED DESIGN LOADING RATES

SOIL CATEGORY	TEXTURE/ STRUCTURE	INDICATIVE PERMEABILITY	DISPOSAL METHOD – DESIGN IRRIGATION LOCATING RATE (DIR/DLR) (MM/ DAY)		
			TRENCHES AND BEDS		
			PRIMARY TREATED EFFUENT CONSERVATIVE/ MAXIMUM	SECONDARY TREATED EFFLUENT	DRIP IRRIGATION
3	Loams	0.5 – 1.5	10/15	30	4
4	Clay Loams	0.12 – 0.5	6/10	20	3.5

Soil Category as per AS 1547:2012 (Table 5.2)

4.5 CONSTRAINTS AND RISK ASSESSMENT

Defining and assessing the key characteristics of the site and soils assists in defining the capability of the area to assimilate treated wastewater. Table 8 provides a description of the key characteristics that have been assessed as part of the SSE investigations.

If a level of constraint is identified, but adequate mitigation measures can be undertaken to minimise the risk from onsite wastewater system to public health and the environment, then on-site effluent disposal is considered acceptable.

This risk management approach ensures that the environmental and public health constraints related to poor onsite wastewater system performance are mitigated, and the siting, design and performance of the system are appropriately managed.

As outlined in Table 3, examination of site characteristics, level of constraints and mitigation suggests that the subject land can support on-site effluent disposal.

The following definitions are used in Table 8 to describe the level of constraint.

Level of Constraint (Low, Moderate or High) is determined by undertaking a risk assessment of site characteristics. Level of constraint is described as follows:

Nil or Low: *If all constraints are 'low', standard designs are generally satisfactory and no mitigation measures are required.*

Moderate: *For each 'moderate' constraint an appropriate mitigation measure or design modification over and above that of a standard design, is outlined.*

High: *A 'high' constraint might prove an impediment to successful on-site wastewater management, or alternatively will require more advanced mitigation measures in the design to permit compliant on-site wastewater management.*

TABLE 8: KEY SITE CHARACTERISTICS, LEVEL OF CONSTRAINT AND MITIGATION

SITE CHARACTERISTICS	INVESTIGATIONS AND REPORTING	LEVEL OF CONSTRAINT	MITIGATION MEASURES
Exposure	The subject land has high exposure to sun, low shade, good ventilation. It is relatively flat with a slight slope falling away to Scotsdale Brook on the eastern boundary. The eastern part of the Site has an eastern aspect. There is not likely to be a constraint with respect to evapotranspiration of wastewater.	Nil	None required
Vegetation	Native vegetation has predominantly been parkland cleared for rural pursuits within the Subject land. There are stands of remnant vegetation on the southern and eastern boundary of the subject Land.	Nil	None required.
Landform and Drainage	Landform spreads rainfall runoff and limits concentration or ponding of runoff is optimal for a Land Application Area (LAA). Subsurface drainage can be determined by the presence of mottled colours in the soil profile, which indicates waterlogging.	Moderate: slight mottling occurred in the clays. Some ponding of rainfall evident in wheel ruts and low permeability. The landform is conducive to infiltration vs ponding of water if application rate appropriate	None required
Fill (imported)	Uniform fill with no signs of salinity or acid sulphate soil contamination has favourable hydraulic and plant supporting qualities; conversely, poor quality fill material is not appropriate for effluent application. Good quality imported fill may overcome localised deficiencies in the natural soil landscape.	Nil	None required
Surface Gravel and Rock Outcrops	The higher the proportion of gravel and/or rock outcrops, the less volume of soil is available for effluent absorption, and increased difficulty in installation. The subject land comprises of a shallow topsoil over loamy clay and clays at variable depth.	Nil	None Required
Erosion Potential	The subject land has grassed covered slopes. To enable development, vegetated surface will be removed creating short flow paths with low erosion potential.	Nil. Low erosion potential if pasture/	None required

				ground cover is retained	
Horizontal Setback Distances	When siting an on-site wastewater system, adequate setbacks should be provided for the LAA. Setback from Scotsdale Brook impact on the Subject Land.			Nil. There is adequate room for required horizontal setbacks	None required
Available Land Application Area	Within the available area, the most appropriate site for LAA should be selected using the SSE criteria. The winter field & soil investigations have identified areas as potential LAAs.			Nil.	None required
CHARACTERISTIC	**LEVEL OF CONSTRAINT**			**ASSESSED LEVEL OF CONSTRAINT FOR SITE**	
	NIL OR LOW	**MODERATE**	**HIGH**		
General Characteristics					
Climate (difference between average annual rainfall and average pan evaporation, mm/year)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	High. Rainfall is more than evaporation for approximately 6 months per year. Rainfall is more than evaporation for approximately 5.5 months per year. However, as infiltration at this site is not a constraint, this factor is not considered significant.	
Exposure to sun and wind	Full sun and/or high wind or minimal shading and North / North-East / North-West aspect	Dappled light East / West / South-East / South-West aspect	Limited patches of light and little wind to heavily shaded all day and South aspect	Nil. This factor is not considered to be a significant constraint.	
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake Turf or pasture	Limited variety of vegetation	Sparse vegetation or no vegetation, dense forest with little understory	Nil. There is a combination of pasture/ grassed areas and native vegetation.	
Landslip (or landslip potential)	Nil	Low to moderate	High or Severe	Nil.	
Slope Form (affects water shedding ability)	Hill crests, convex or divergent side-slopes and plains	Straight side-slopes and foot slopes	Floodplains, concave or convergent side-slopes and incised channels	Nil. Predominantly the Site is flat, falling away to Scotsdale Brook in the eastern area.	
Site Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in	Nil.	

		Moist soil but no standing water in soil pit.	pit; water ponding on surface	
Slope gradient (%):				
(a) for absorption trenches and beds	<5%	5-15%	>15%	Nil. Less than 5%
(b) for surface/ subsurface irrigation	<10%	10-20%	>20%	Nil.
CHARACTERISTIC	**LEVEL OF CONSTRAINT**			**ASSESSED LEVEL OF CONSTRAINT FOR SITE**
	NIL OR LOW	**MODERATE**	**HIGH**	
Erosion (or potential for erosion)	Nil or Low	Moderate	Severe	Nil or low if areas cleared of vegetation are stabilised via plantings, turf, or native vegetation.
Fill (imported)	No fill at present or fill is proposed, good quality topsoil or minimal fill required	Moderate coverage and good quality fill	Extensive poor-quality fill and variable quality fill	Nil
Flooding	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Nil. Less than 1 in 100 years.
Proximity to water resources	>100m	<100m but reduced setback may be supported (refer to Section 5.2.2 of the GSP)	<100m and reduced setback is not supported (refer to Section 5.2.2 of the GSP)	Nil.
Land area available for LAA	Exceeds the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Meets the minimum required LAA size of AS1547 or Schedule 2 of the GSP	Insufficient area available for LAA as per AS1547 or Schedule 2 of the GSP	Nil. Sufficient area available for LAA.
Rock outcrops (% of surface)	<10%	10-20%	>20%	Nil. No rock outcrops evident.
Soil profile characteristics				
Soil permeability Category (AS1547)	2 and 3	4 and 5	1 and 6	Moderate. Soil categories 4 across the Subject Land
Profile depth	>2 m	2.0 m -1.0 m	< 1.0 m	Nil: Soil profile greater than 2m

Hardpan or bedrock	>1.5 m	1.5 m – 0.6 m Special design requirements and distribution techniques or soil modification will be necessary, depends on quality of treated wastewater and type of LAS	<0.6 m	Nil: No rock outcrops detected.
Presence of mottling	None		Extensive	Nil. Mottling observed that tended to be in clays occurring below laterite
Course fragments	< 10%	10-40%	>40%	Nil. No Course fragments observed
Phosphorus adsorption (mg/kg)	>500	200-500	<200	High: Variable PRI ability across site, ranging from 47.3 to in excess of 1000.

5 GOVERNMENT SEWERAGE POLICY

Table 9 outlines requirements of the GSP (2019) and indicates how the Site complies with GSP criteria.

TABLE 9: 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 is required to be 1 ha.
Public Drinking Water Source Area		No
Separation from Water Resources: On-site Effluent 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 of the subject land.
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: http://wir.water.wa.gov.au/Pages/Water-Information-Reporting.aspx)
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 with DWER approval.	The subject land does not contain any water courses or significant wetlands. Scotsdale Brook is 30 m to the east of the Site. The closest point to Wilson Inlet from the Site is 3km. Subject site is such to allow onsite effluent disposal system to be sited 100m away from the resource.
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, significant wetland, or selected inlet estuary (Wilson Inlet). Scotsdale Brook is approximately 100 m to the east of the subject land.
Area subject to inundation and/or flooding in a 10% Annual Exceedance Probability (AEP) rainfall event	Subject to flooding in a 10% AEP rainfall event	The subject land is not subject to flooding.
Groundwater – Vertical separation (discharge point of onsite effluent disposal systems)		
Public drinking water source area (PDWSA)	2 m	Does not apply

Sewage sensitive area (SSA)	1.5 m	The Site is within a sewage sensitive area: Wilson Inlet. Depth to groundwater is yet to be determined. See Appendix 5 for separation requirements between the point of discharge and highest known groundwater.
Separation to groundwater outside PDWSA and SSA: 0.6 m loams and heavy soils 1 m for gravels 0.6 m for sands – secondary treatment with nutrient removal 1.5 m for sands – primary treatment		These criteria do not apply to the subject land.
Slopes		
Gradient of the land application area. Slopes greater than 1:5 require and engineering solution.		The Subject land is relatively flat with a gentle slope moving toward Scotsdale Brook. The slope does not exceed one in five (1:5). Therefore, wastewater application areas do not need to be engineered to prevent run-off.

5.1 WASTEWATER VOLUME

Development of the Site will comprise a school and the potential for two additional Rural Residential lots. One of the proposed lots has an existing dwelling (with existing on-site effluent disposal system).

The West Australian Department of Health (DOH, 2021) have produced a fact sheet to be read in conjunction with Regulation 29 of the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974* which outlines likely volumes of wastewater generated by residential and non-residential uses such as schools (Table 5).

The DOH also predicts that a single residence is likely to generate 900L/day of wastewater.

The Golden Hill Steiner School's student population is currently 113 with 27 staff. Wastewater generated by the current school will continue to be treated on Lot 110 Scotsdale Road.

Based on the proposal there will be an additional 187 students and 23 staff. Based on 210 people, the school is likely to generate approximately 9,450 L/day of wastewater (Table 10).

TABLE 10: WASTEWATER VOLUMES

WASTEWATER VOLUME		
Development: Lots, each with a single residence and on-site effluent disposal		
Anticipated Wastewater Volume	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)
Development School (Day)		

School Day	9,450 L/ Day Sewerage	Based on an additional 210 persons (full time equivalents) producing 45L /day / person
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).* Source: DOH, 2021: Supplement to Regulation 29 and Schedule 9 - Wastewater system loading rates. https://www.health.wa.gov.au/articles/s_t/supplement-to-regulation-29-and-schedule-9-wastewater-system-loading-rates		

Application of treated wastewater via subsurface/substrata drippers is one of the most practical methods of irrigation as it prevents aerosolising wastewater (compared to above ground sprays). Care must be taken to ensure that land application areas meet the requirements outlined in Table 11.

TABLE 11: 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; • must not be surface irrigated on areas such as lawns or areas used for recreational purposes unless approved by the Chief Health Officer (CHO); 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 6, 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^2): Hydraulic load (L/day) x conversion factor from Schedule 2 Table 2 of GSP (2019).

Based on the site investigations, a clay loam has been used to determine the LAA for the proposed development. This takes into account information for the current onsite effluent disposal systems which service the existing Steiner school and is consistent with the Site's soil mapping.

TABLE 12: CONVERSION FACTORS TO CALCULATE MINIMUM LAND APPLICATION AREAS FOR SUBDIVISION / DEVELOPMENT (USING A HYDRAULIC LOAD OF 1 L/Day)

Soil Category	Soil Texture	Primary Treatment	Secondary Treatment
1	Gravels and sands	0.377	0.2
2	Sandy loams	0.377	0.2
3	Loams	0.477	0.25
4	Clay loam	0.689	0.286
5	Light clays	1.284	0.333
6	Medium to heavy clays	Special design requirements and distribution techniques or soil modification procedures will be necessary	0.5

Recommendations for application areas of treated wastewater generated from a residence are outlined in Table 13. The new residence will require a 257 m^2 irrigation area.

TABLE 13: MINIMUM LAA FOR RESIDENTIAL DEVELOPMENT

Minimum Required Land Application Area Treated Wastewater Disposal – Residential Development			
Soil Category	Soil Texture	Conversion Factors	
		Secondary Treatment (Leach Drains) m^2	Secondary Treatment m^2
1	Gravels and sands	339	180
2	Sandy loams	339	180
3	Loams	429	250
4	Clay loam	620	257
5	Light clays	1,156	300
6	Medium to heavy clays	Special design requirements and distribution techniques or soil modification procedures will be necessary	450

Table 14 provides the minimum required land application area for treated wastewater disposal for Non-Residential development (i.e. School element of the proposal). For wastewater disposal, both a leach drain and irrigation area calculation has been provided. Secondary treatment with disposal via leach drains will require in the order of 6,511 m^2 while secondary treatment with an irrigation will require approximately 2,702 m^2.

TABLE 14: LAA FOR TREATED WASTWATER DISPOSAL NON—RESIDENTIAL DEVELOPMENT

Minimum Required Land Application Area Treated Wastewater Disposal – Non- Residential Development			
Soil Category	Soil Texture	Conversion Factors	
		Secondary Treatment (Leach Drains) m^2	Secondary Treatment m^2
1	Gravels and sands	3,562	1,890
2	Sandy loams	3,562	1,890
3	Loams	4,507	2,362
4	Clay loam	6,511	2,702
5	Light clays	12,133	3,146
6	Medium to heavy clays	Special design requirements and distribution techniques or soil modification procedures will be necessary	4,725

Appendix 6 provides information of suitable plant species that maybe planted on wastewater disposal irrigation areas. (DoH, 2001)

Where recycled water is used to irrigate playing fields, i.e., school oval, approval from the West Australian Department of Health to operate a recycling water scheme is required. It should be noted that wastewater from the school will have to be disposed of within this Lot and not Lot 3 as shown in Appendix 2.

Figure 12 identifies potential LAAs for both the Steiner School and Lot 1. The locations of the LAAs take into account the technical detail determined in the site soil evaluation, master plan and presume use of secondary treatment systems with either subsurface or substrata irrigation. The LAAs identified indicate general, not specific areas.

For the school site, two LAAs have been identified. One could comprise of part of the oval and grassed areas. Should this area be developed for the LAA, fill will be required to achieve the 1.5m separation required between the effluent disposal point and the highest known groundwater. Field investigations determined that this may be in the order of 1.2 m of fill required to achieve this separation. An alternative LAA for the school site with less environmental constraints is shown the orange shaded area.

A LAA for Lot 1 has also been identified and shaded green.

FIGURE 12: POTENTIAL LAND APPLICATION AREAS

6 STATE PLANNING POLICY 2.9 PLANNING FOR WATER

In addition to the GSP (2019), the existing *State Planning Policy (SPP) 2.9 Planning for Water* (SPP2.9) is being reviewed and currently in draft. The following summarises the approach to on-site wastewater treatment in the Draft SPP2.9.

The Draft SPP2.9 (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(l) of this policy;*
- *ii. the highest groundwater level is greater than 0.5 m 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 On-site 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 proposed expansion of the Golden Hill Steiner School and residential lot subdivision 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.*
3. *Development will be serviced by an appropriate onsite wastewater system that will manage risk to the environment and public health.*

The Site 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 subject land is proposed to be developed with Lots ranging in size from 1 ha to 4.96 ha.

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. Planning for Water Guidelines – for the Implementation of State Planning Policy 2.9 Planning for water.

   iii. setbacks from water resources; and

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

This document has addressed a), b)(iii) and b)(iv). b) i and ii can be investigated at the development and subdivision stages.

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.

The status of this requirement can be fulfilled at the development and subdivision stages.

8.7.11 Type of On-site Treatment System Required

Relevant considerations include:

- Site and soil conditions;
- 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;
- 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);
- 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; and
- 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 onsite effluent can be accommodated on the subject land. Secondary treatment systems with nutrient retention are recommended.

APPENDIX 1: SITE PHOTOGRAPHS

PHOTOGRAPHIC REPORT

Project Name: Site Soil Evaluation – Phase 1 **23 Riverbend Lane Scotsdale Shire of Denmark**	**Topic: Site Photographs**
	Project Code:CUL
	Officer: Paul Clifton
	Date: 21/04/2023

Picture 1

Comments Southerly view looking across Subject Land from Scotsdale Road

Picture 2

Comments Northerly View looking across Subject Land from Scotsdale Road

Picture 3

Comments Southerly view of Subject Land from School Carpark

Picture 4

Comments Southerly view of Subject Land from School Carpark

PHOTOGRAPHIC REPORT

Project Name: Site Soil Evaluation – Phase 1 **23 Riverbend Lane Scotsdale Shire of Denmark**	**Topic: Site Photographs**
	Project Code:CUL
	Officer: Paul Clifton
	Date: 21/04/2023

Picture 5

Comments Southeasterly view of Subject Land from School Carpark

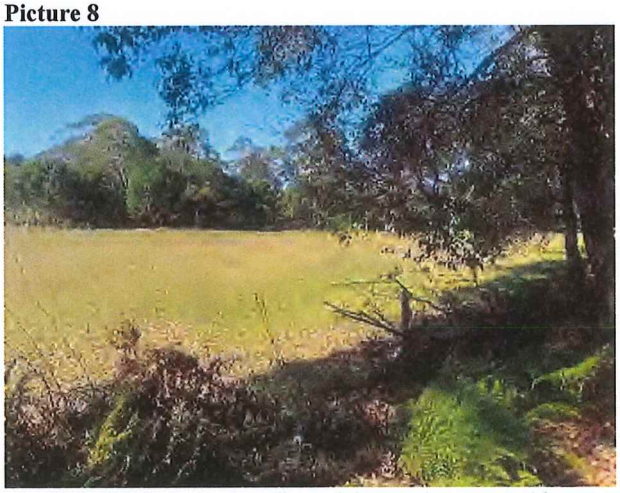
Picture 6

Comments Eastern Boundary of the Subject Land, trees within Scotsdale Road Reserve.

Picture 7

Comments Westerly from Scotsdale Road across Subject Land.

Picture 8



Comments Westerly from Scotsdale Road across Subject Land.

APPENDIX 2: PROPOSED SUBDIVISION

1 Master Plan

1:1000 @ A1

1:2000 @ A3

MASTER PLAN

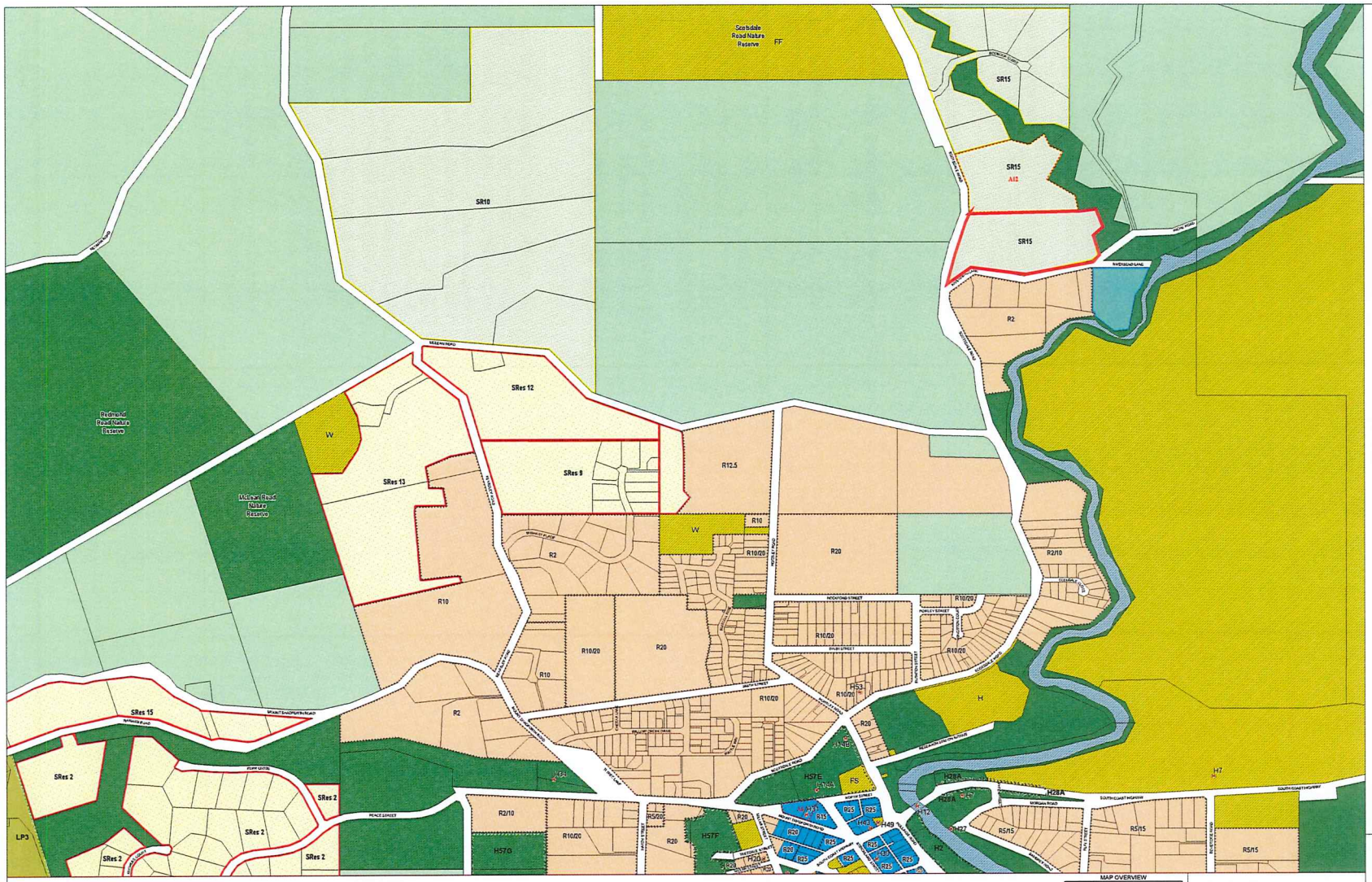
2116 Steiner School Master Plan

222 Scotsdale Road, Scotsdale WA 6333

sk.04	rev
09/11/2022	G

PTX ARCHITECTS

APPENDIX 3: LOCAL PLANNING SCHEME



LEGEND

LOCAL SCHEME RESERVES

- Drainage and Waterbodies
- Parks and Recreation
- Public Use
- AL Public Use : Aerial Landing Ground
- FS Public Use : Fire Station
- FF Public Use : Flora and Fauna
- F Public Use : Forest
- G Public Use : Gravel
- H Public Use : Hospital Site
- PS Public Use : Primary School
- S Public Use : School Site
- T Public Use : Timber
- W Public Use : Water Supply
- WB Public Use : William Bay National Park
- WEF Public Use : Wind Energy Facility

LOCAL SCHEME ZONES

- Commercial
- General Industry
- Industrial
- Landscape Protection
- Professional Office
- Residential
- Rural
- Rural Multiple Occupancy
- Special Residential
- Special Rural
- Special Use
- Tourist

OTHER CATEGORIES

(see scheme text for additional information)

- Scheme Area Boundary
- Local Government Boundary
- R20 R Codes
- A1 Additional Uses
- SRes1 Special Residential Area
- SR1 Special Rural Area
- SU1 Special Use Area
- H2 District Heritage Boundary
- LP1 Landscape Protection Area
- R1 Rural Multiple Occupancy Zone
- T1 Tourist Area
- C Place of Heritage Value
- No Zone
- Waterbodies

VERSION No 1

Shire of Denmark

Town Planning Scheme No. 3

(District Scheme)

Department of Planning, Lands and Heritage

Produced by GeoSpatial Planning Support, Department of Planning, Lands and Heritage.

Base Information Supplied by the Western Australian Land Information Authority, LI 862-2016-1

Shire of Denmark

Town Planning Scheme No. 3

(District Scheme)

N

0 100 200 300 400

metres

MAP OVERVIEW

Authorised: T.Servaas

Plot Date: 27 July 2015

G.Gazette: 25 March 1994

Town Planning Scheme Map No. 9 of 13

MAP: Denmark Townsite North

Shire of Denmark

Town Planning Scheme No. 3

(District Scheme)

APPENDIX II - SCHEDULE OF ADDITIONAL USE SITES (Cont'd)

A11	Lot 659 Scotsdale Road, Denmark (Cont'd)	Emu Farm Tourist Facility	• drainage management; and • prevention of nutrient loss to waterways; Emu's shall be housed and managed in accordance with the site management plan.
A12	Pt Lot, 613 Scotsdale Road, Denmark	Educational Establishment	When considering an application for Planning consent for educational facilities, Council may impose conditions relating to: 1. Development of educational facilities to be in accordance with Approved Development Plan GHS Plan No. 1, or any variation thereto, to the satisfaction of Council. 2. The connection of all buildings to the Water Authority of western Australian reticulated water supply network. 3. On site effluent disposal to be in accordance with the Health Department of WA and Council requirements. 4. Suitable fire control measures being undertaken to the satisfaction of Council. 5. Access/egress points along Scotsdale Road to be to the satisfaction of the Council. 6. Compliance with Council's By-laws relating to signs. 7. Meeting the Shire's Health and Building requirements as required under the relevant legislation.
A13	Denmark Estate Lot 521		1. Maximum of eight (8) chalets as depicted on the Development Plan No. 95/2/1 or variation thereto, subject to Council approval. 2. All existing vegetation to be retained other than in areas for chalet and associated development depicted on Plan No. 95/2/1 to satisfaction of Council. 3. All on-site effluent disposal systems shall be located no closer than 100 metres horizontal separation from the watercourse on Development Plan (No. 95/2/1). If an on-site effluent disposal system cannot achieve a 100 metre horizontal separation from a watercourse on the Development Plan, then Council will require as a condition of building approval that an approved alternative system be used to the specification of the health Department of WA to be located no closer than 50 metres horizontal separation from the watercourse as defined on the Development Plan.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
13. MCNABB ROAD SPECIAL RURAL ZONE (Cont'd) Denmark Estate Lot 345 McNabb Road (Cont'd)	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Keeping of Stock in accordance with special provision "(vii)" below. Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(viii) All buildings constructed within the zone shall be sympathetic to existing landscape elements (namely :landform, and vegetation) in terms of their design, materials and colour. Zincalume and other coloured external wall and roof materials which would not, in the opinion of Council, blend in with the rural landscape of the area, will not be permitted. (ix) A surveyors plan (pre-calculated drawing) shall be lodged with Council prior to the clearance of Diagrams of Survey and show Tree Preservation Areas, Strategic Firebreaks, Tree Planting/Conservation Areas, roads and drains as proposed and as required by Council for approval. (x) Council may request the commission impose a condition requiring the implementation of a system of stormwater disposal to the satisfaction of Council which prevents water erosion and runoff problems from occurring on and off the subject land, as a condition of subdivision. (xi) No dams or impedance to water flow will be permitted within the Treeplanting/Conservation Area as shown on the Subdivision Guide Plan. (xii) The subdivider shall distribute to lot purchasers an information sheet which outlines measures owners can take to ensure that impacts of pets (particularly cats) on the adjacent Conservation of Flora and Fauna Reserve are minimised.
15. GOLDEN HILL SPECIAL RURAL ZONE Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(i) Subdivision of Special Rural Zone No. 15 is to be generally in accordance with Plan of subdivision (Plan No. A94-17-1) cated May 1995 as signed by the Shire Clerk. (ii) Notwithstanding (i) above, the Western Australian Planning Commission may approve a minor variation to the subdivisional design, but further breakdown of the lots so created shall be deemed contrary to the provisions of the Scheme. (iii) The minimum lot size shall be 1 hectare. (iv) (a) All buildings and effluent disposal systems shall be located within the defined Building Envelope of no larger than 3000m2, located onsite by agreement between Council and individual landowners.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.		(v) (a) Council may request the Commission to impose a condition at the time of subdivision requiring strategic fire breaks, as nominated on the Plan of Subdivision, to be constructed by the developer to standard approved by Council and the Bush Fires Board. Such strategic breaks are to avoid erosion impacts and include a provision to require unlocked gates where such breaks and emergency access legs cross fence lines. (b) Council shall require that individual landowners are responsible for the maintenance of a strategic firebreak where it crosses the landowner's lot. (c) The clearing of firebreaks other than for strategic firebreak purposes will not be permitted unless for safety reasons to comply with Council and Bush Fires Board requirements. (d) Low fuel zones will be established and maintained around all buildings to the satisfaction of Council. (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. (f) All buildings shall be constructed in accordance with Australian Standard 3959-1991 "Construction of Buildings in Bushfire Prone Areas". (vi) (a) Where land is devoid of vegetation or it is determined that erosion has occurred as a result of the development of private property, Council may require the landowner to development erosion control measures in accordance with the requirements and specifications of Council in the interests of preventing further land degradation. (b) In the event that provision (a) above is not complied with, Council may carry out appropriate action to eliminate adverse affect. any expenses incurred by Council in carrying out such action shall be borne by the landowner.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark.		(vii) (a) To assist in the retention of existing vegetation cover and preserve and enhance the visual character of the zone, the erection of boundary fencing shall not be permitted within the Tree Preservation Area as shown on the Subdivision Guide Plan. (b) The keeping of stock and/or the carrying out of agricultural activities shall be subject to the issue of Planning Consent and shall be limited to substantially cleared and pastured areas of Special Rural Zone Area 15. Stocking rates shall be to Council's satisfaction and shall not exceed the stocking rate guidelines produced by Agriculture Western Australia. (c) The subdivider shall prepare a Foreshore Management Plan for Scotsdale Brook, dealing with stormwater drainage, erosion control and clearing and development within the Scotsdale Brook Foreshore. (d) The subdivider shall prepare a stormwater drainage plan that addresses the drainage requirements of the site and addresses impacts on local water regimes. (e) Building envelopes shall be located outside the 50 metre Creekline setback as shown on the Subdivision Guide Plan. (viii) (a) All buildings constructed within the zone shall be sympathetic to existing landscape elements (namely landform and vegetation) in terms of their location, scale, height, building materials and colour. (b) Buildings shall be constructed of roof and external wall materials comprising natural earth or olive green colours. Zincalume or other similar cladding 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 residential 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 the locality. (d) All buildings shall be sited to maximise the natural screening effect of vegetation and topography.

PROVISIONS RELATING TO SPECIFIED AREAS

PARTICULARS OF THE LAND	PROPOSED USES	SPECIAL PROVISIONS
15. GOLDEN HILL SPECIAL RURAL ZONE (Cont'd) Lot 1 East River Road and Part Lot 613 Scotsdale Road Denmark. (Continued)	Rural Residential Permitted Use (P): Single House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	(e) Proposals to vary the height restrictions pursuant to (c) above shall be accompanied by such plans, elevations and sketches as is determined by the Council to assess the affect on the visual amenity and the natural screening effect of vegetation and topography or any proposed landscaping to be provided. (ix) Council may request the Commission to impose a condition at the time of subdivision that requires on-site effluent disposal systems are to be constructed and maintained by individual landowner. (x) Council may request the Commission to impose a condition at the time of subdivision that requires power supply to be located underground within the road reserve and where connection is made to individual lots. (xi) Driveways shall be constructed and sited to Council's satisfaction so as to avoid erosion problems. (xii) Council may request the Commission to impose a condition at the time of subdivision that requires all lots to be connected to reticulated water supply. (xiii) (a) Council and the Bush Fires Board may request the Commission to impose a condition, at the time of subdivision that requires fire hydrants to be provided by the subdivider at intervals of no less than 200 metres along East River Road, Scotsdale and the subdivisional road. (b) Emergency access from the internal subdivisional road shall be constructed and maintained to a standard suitable for access by two wheel drive vehicles.
16. Cussons Road Special Rural Zone Denmark Pt Lot 401 Cussons Road, Denmark	Rural Residential Permitted Use (P): Residential Dwelling House Permitted at Council's Discretion (AA): Home Occupation Holiday Accommodation on the basis it is limited to accommodation which is solely within the dwelling.	i) The minimum lot size should be no less than 2 hectares. Subdivision shall generally be in accordance with the Subdivision Guide Plan (Plan No. 93/99/2) as signed by the Chief Executive Officer. ii) No dwelling shall be constructed or approved for construction unless a minimum of 92,000 litre water storage tank and an approved method of effluent disposal has been incorporated into the approved plans, and no dwelling shall be considered fit for human habitation unless such supply of water and method of effluent disposal has been installed and is operating.

APPENDIX 4: ONSITE EFFLUENT DISPOSAL SYSTEMS APPROVALS

SCOTS 3539

HEALTH DEPARTMENT OF WA OFFICE USE

Approval No. 2311/96

Receipt No. 1842

Dimensions

Circular	Rectangular
A 1520 mm	A..... m..... mm
B 1220 mm	B..... m..... mm
C 1065 mm	C..... m..... mm
	D..... m..... mm

Official Stamp

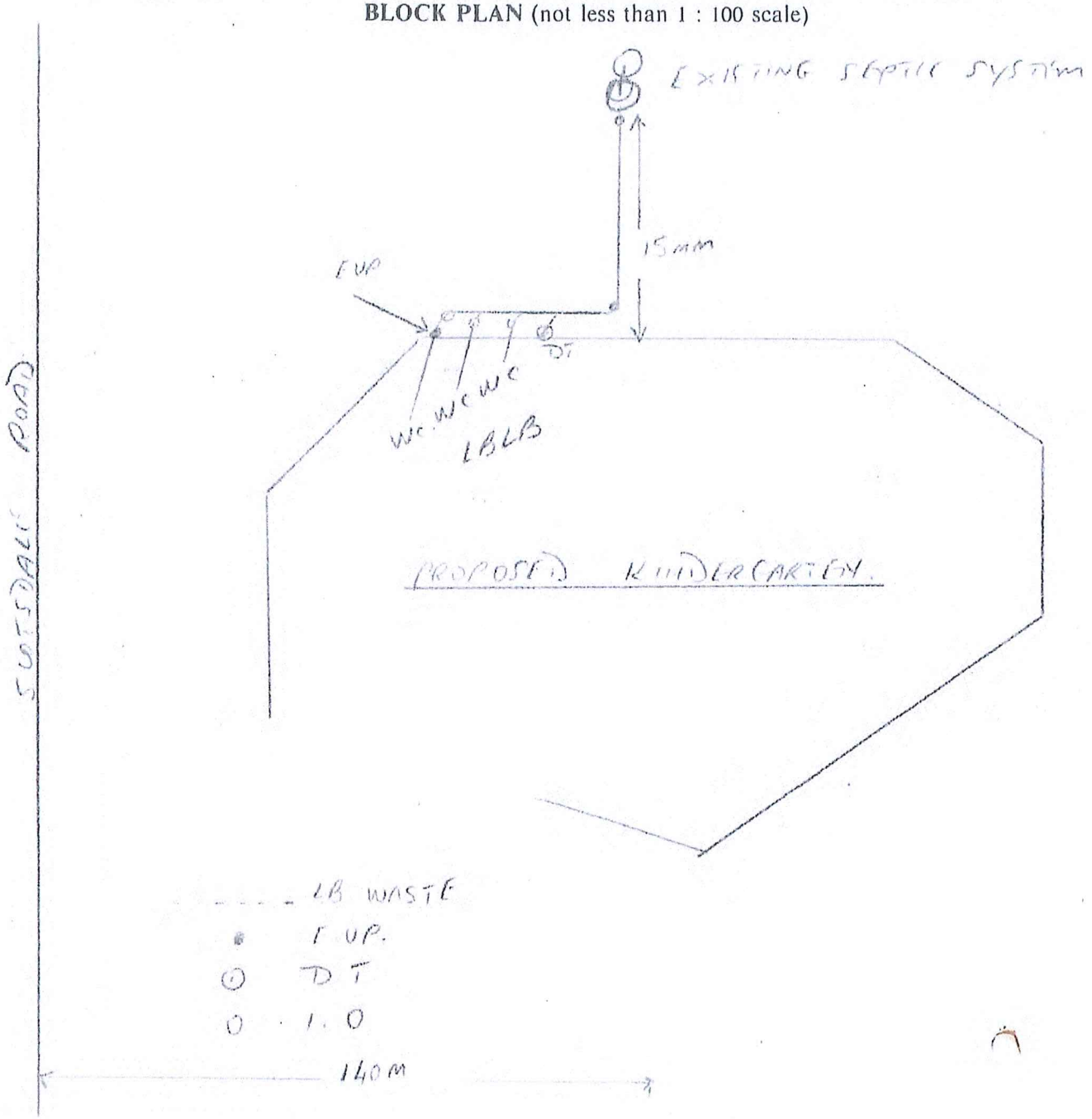
HEALTH DEPARTMENT APPROVED 03 JUL 1996 EDPH OF W.A.

LOCATION AND OWNER (To be completed by Applicant)

NAME (Block Letters) GOLDEN HILL STEINER SCHOOL

LOT No. 25, 613 STREET SOUTSDALE Town DENMARK

BLOCK PLAN (not less than 1 : 100 scale)



LOCAL AUTHORITY'S COPY

RECOMMENDATIONS TO THE EXECUTIVE DIRECTOR, PUBLIC HEALTH

(To be completed by the Local Authority)

RECOMMENDED—(Conditions) NOT RECOMMENDED—(Reasons)

1. Contact Council's Environmental Health Officer upon completion to arrange for inspection, testing and approval.
2. Septic tanks to be filled with water 24 hours before testing.
3. Leach drain ends to be exposed for inspection.
4. Leach drains to be located 30m (min) horizontally from water course.
5. Leach drains to be located 1.2m clear of the highest known ground-water table level.
6. Diverter cap to be located at finished ground level.
7. Septic tanks and leach drains to be located 1.2m and 1.8m, respectively, from boundaries and buildings.

LOCATION—(e.g. 3rd lot on the left south of Brown Street) 4th lot on Right from East River Road

NATURE OF SOIL—(e.g. clay, sand, gravel, loam, etc.) Gravel/Loam

WATER SUPPLY—Source of Supply and if permanent Private Supply

TYPE OF DISPOSAL AND DIMENSIONS— Into existing system.

NOTES:

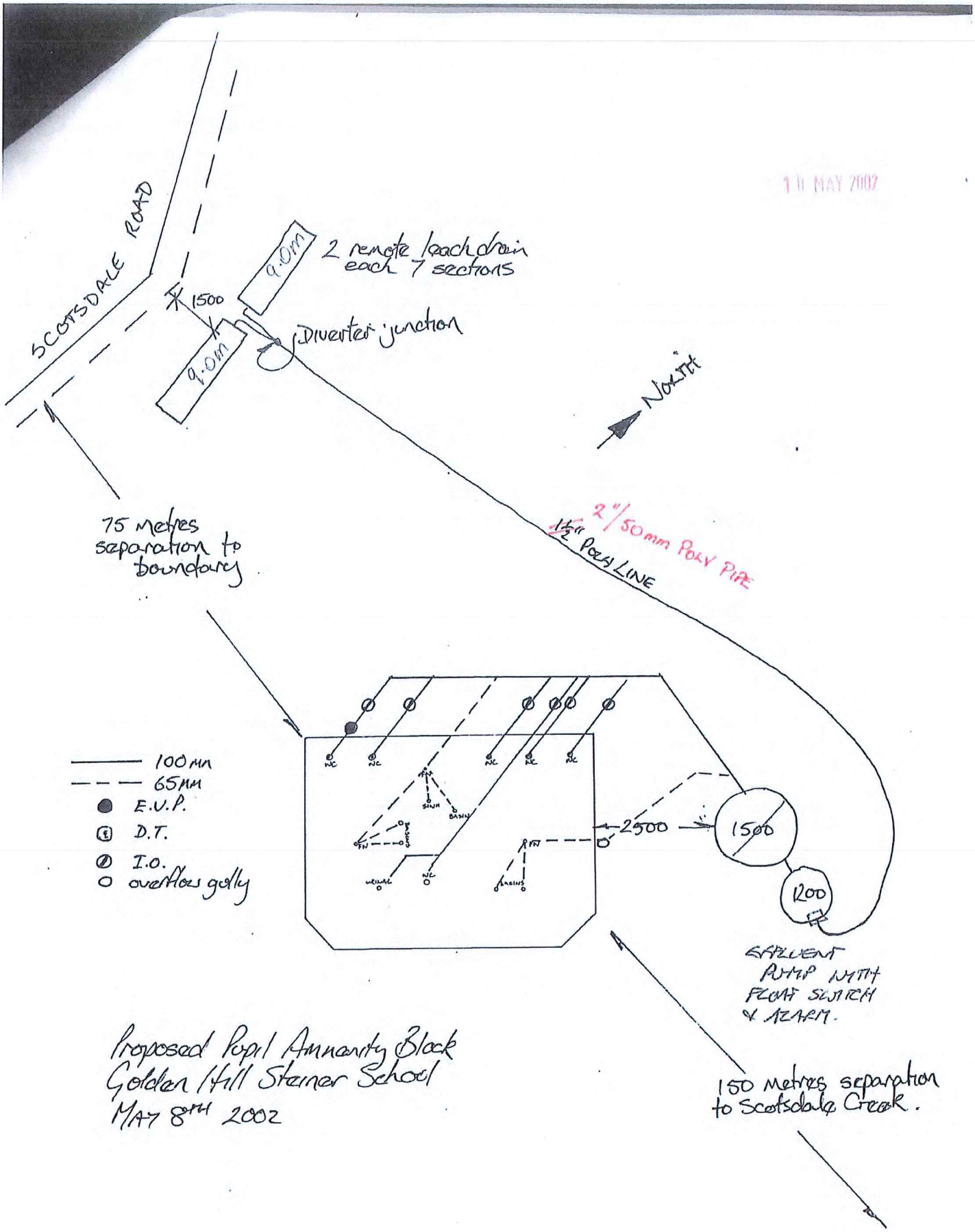
1. Septic tanks, leach drains, waste lines and sanitary fixtures to be installed by a licenced plumber.
2. Leach drains to be backfilled with screened stone and clean sand 450mm each side and covered with "geo-cloth" or similar.

ENVIRONMENTAL HEALTH OFFICER _____

LOCAL AUTHORITY DENMARK SHIRE COUNCIL DATE 26/6/96

HEALTH DEPARTMENT OF WA RECOMMENDATIONS

Date 03 JULY 1996 ENVIRONMENTAL HEALTH OFFICER _____



Proposed Pupil Amenity Block
Golden Hill Steiner School
MAY 8TH 2002

Approval No: H94 / 02

Receipt No: _____

HEALTH ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF EFFLUENT AND LIQUID WASTE) REGULATIONS 1974

(Reg4(3)(a))

APPROVAL TO CONSTRUCT OR INSTALL AN APPARATUS FOR THE TREATMENT OF SEWAGE

Approval is hereby granted to the Applicant **Chris Robins Re: Steiner School**

Postal Address **RMB 999 Scotsdale Road, Denmark WA 6333**
to construct or install the apparatus for the treatment of sewage located at:

Street **Scotsdale Road**

Lot or Pt. Lot No. 100 / 613 House No. _____ Shire of Denmark.

The apparatus shall be installed in accordance with the approved plans (attached) and the conditions of approval listed below, however, the system location and elevation has been granted, subject to limited site assessment and **shall be confirmed on-site with Councils EHO, following excavation of disposal field prior to installation.**

Type of disposal System and Dimensions: **1 x 1520mm diam Primary Tank with Baffle + 1 x 1220 Secondary Tank with Submersible Pump, to 2 x 9.0 metre leach drains with diverter, via a 50 mm diam poly pipe.**

Standard Conditions of Approval:

1. All plumbing works prior to the entry into the septic tank by licensed plumbers only
2. Septic tanks to be filled with water 24 hours before testing.
3. Leach drain ends to be exposed for inspection.
4. Leach drains to be located 30m (min) horizontally from water course.
5. Leach drains to be located 1.2m clear of the highest known ground-water table level.
6. Diverter cap to be located at finished ground level.
7. Septic tanks and leach drains to be located 1.2m and 1.8m, respectively, from boundaries and buildings.
8. Leach drains to be backfilled with clean sand 450mm each side and covered with "hydronet" or similar**(NOT GEO-FABRIC).**
9. All storm-water to be diverted away from disposal field

Other Conditions: **An approved audible / visual failure warning system must be installed with the electrically operated sewerage pump.**

The person who completes the construction or installation of the apparatus shall notify the Shire of Denmark Environmental Health Officer on Phone No. (08) 98481106 to arrange an inspection prior to the drains and plumbing lines being covered and obtain a permit to use the apparatus.

All works shall be left open and available for appropriate checking and testing.

It is an offence under section 107(4) of the Health Act 1911 to use an apparatus before it has been inspected and a permit to use the apparatus issued.

DELEGATE OF SHIRE OF DENMARK: _____ DATE: 10/5/02

APPENDIX 1

Shire of Denmark

Office: South Coast Highway
Postal Address: P.O. Box 183
Denmark 6333
Phone: (08) 98480300
Fax: (08) 98481985

Approval No: 7652
Assessment No: A3224

HEALTH ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF EFFLUENT AND LIQUID WASTE) REGULATIONS 1974 (Reg 4 (3)(a))

APPROVAL TO CONSTRUCT OR INSTALL AN APPARATUS FOR THE TREATMENT OF SEWAGE

Approval is hereby granted to the Applicant: **Bernie Malatzky**

To construct or install the apparatus for the treatment of sewage at:

Street: **East River Road** Town or Suburb: **Denmark**
Lot or Pt. Lot No: **110** Location:
House No: **222**
Local Government: **Shire of Denmark**

The apparatus shall be installed in accordance with the approved plans (attached) and the conditions of approval listed below.

Type of Disposal System and Dimensions:

1. **1520mm septic tank with baffle and 1 x semi inverted concete leach drain or equivelent length of alternative product.**

Other Conditions:

1. Installation to be completed by a licensed plumber.
2. An as constructed diagram to be submitted within 10 days of completion.
3. Effluent disposal field not to be located in a trafficable area.
4. French drains to be covered with "hydronet" or similar material, **(NOT GEO-FABRIC)**

The person who completes the construction or installation of the apparatus shall notify **Robert Ohle** on Telephone No: **9848 0300** to arrange an inspection and obtain a permit to use the apparatus.

All works shall be left open and available for appropriate checking and testing. It is an offence under section 107(4) of the Health Act 1911 to use an apparatus before it has been inspected and a permit to use the apparatus issued.

DELEGATE OF LOCAL GOVERNMENT: **Robert Ohle** Date: **17/04/2014**

SHIRE OF DENMARK
HEALTH
APPROVED
Environmental Health Officer
Date

A3224
BP 8793

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Plumbers Licensing Board

CERTIFICATE OF COMPLIANCE

Plumbers Licensing and Plumbing Standards Regulations 2000

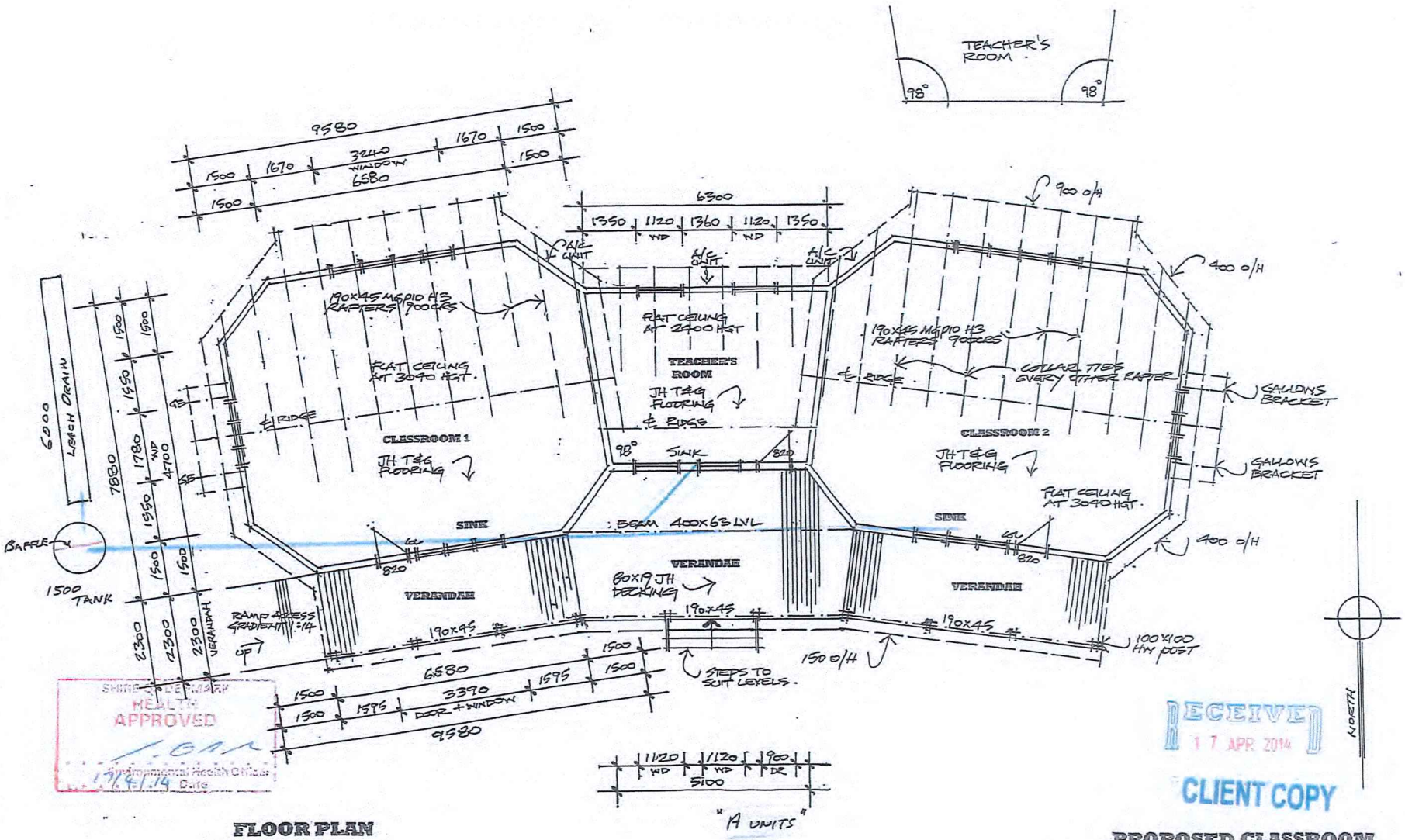
Notice Number
P69576

I WISH TO GIVE NOTICE THAT AT THE ADDRESS BELOW I HAVE CARRIED OUT THE PLUMBING WORK AS FOLLOWS:	
Description of Installation: Commercial	
Type of Work Cold Water Plumbing, Hot Water Plumbing, Major Drainage Plumbing, Water Heater	**Description of Work** Installation
Estimated Commencement Date: 22/05/2020	**Estimated Completion Date:** 29/05/2020
Completion Date: 29/05/2020	
Work Description Plumbing work to new addition to the existing Administration Building	
Work Status: Work completed	

PROPERTY DETAILS	
Installation Address LOT 110 222 Scotsdale Rd SCOTSDALE 6333 unknown, Golden Hill Steiner School, 222 Scotsdale Road, SCOTSDALE WA 6333	
Owner / Occupier Name Golden Hill Steiner School Denmark (9848 1811, bursar@goldenhill.wa.edu.au)	**Builder/Client Name** Colab Constructions (0404 012 323, adam@colabco.com.au)

I CERTIFY THAT THE PLUMBING WORK DETAILED ABOVE HAS BEEN COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE *PLUMBERS LICENSING AND PLUMBING STANDARDS REGULATIONS 2000* AND THAT ALL TESTS REQUIRED HAVE BEEN CARRIED OUT.	
Licensed Plumbing Contractor / Permit Holder MERVYN HOCKLEY (PL1927)	**Date Submitted** 30/05/2020

BA2062161
Shire of Denmark
04 JUN 2020
TCSO ✓
PBS ✓
PHO ✓



SHIRE OF DENMARK
HEALTH
APPROVED
Environmental Health Officer
17/4/14 Date

RECEIVED
17 APR 2014

CLIENT COPY

FLOOR PLAN
Scale : 1 : 100

NOTES :
Builder must in all areas of the work match existing finishes, profiles, sizes, materials,and generally harmonize and conform with the existing classrooms already in use, unless otherwise instructed by the owner.

PROPOSED CLASSROOM
GOLDEN HILL STEINER SCHOOL
SCOTSDALE ROAD
DENMARK W.A. 6333

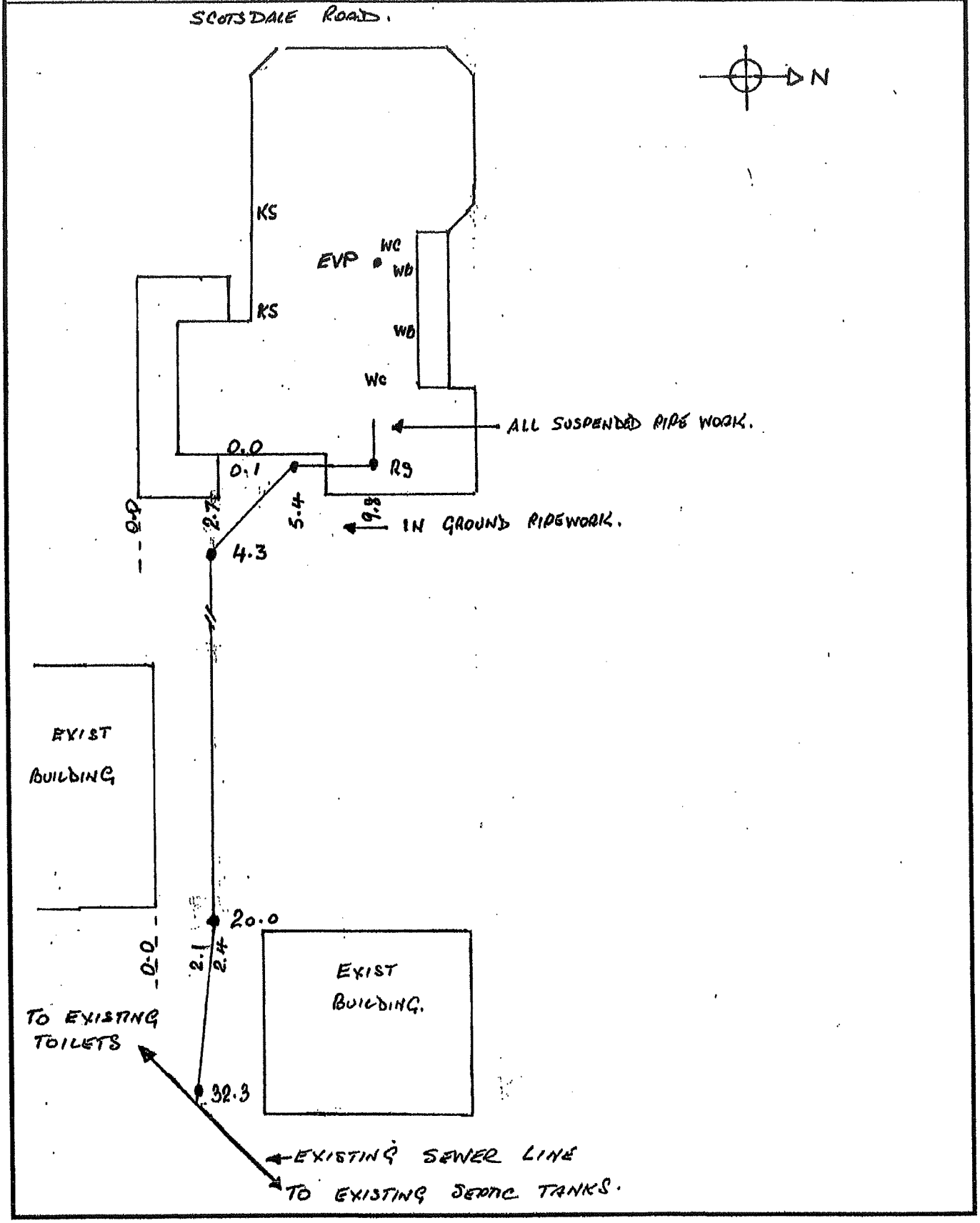
Date : September 2013
Designer : Hugh V Wilson Mobile : 0488053525
P.O. Box 489 Hamilton Hill W.A. 6963

Government of Western Australia
Department of Mines, Industry Regulation and Safety
Building and Energy

DRAINAGE PLUMBING DIAGRAM

Please print clearly using a black ink or ball point pen.
Please complete in accordance with the 'Drainage Plumbing Diagram Guidelines'.

Lot	110	Strata Lot		Unit		Street No	222	Certificate No	P69576
Street Name	Scotsdale Road							Plumber	MERVYN HOCKLEY (PL1927)
Suburb	Denmark WA			Postcode	6333			Owner	Golden Hill Steiner School Denmark
Building Name	unknown							Diagram Date	26-05-2020



APPENDIX 1

Shire of Denmark

Office: South Coast Highway
Postal Address: P.O. Box 183
Denmark 6333
Phone: (08) 98480300
Fax: (08) 98481985

Approval No: 117/2009
Assessment No: A3224

HEALTH ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF EFFLUENT AND LIQUID WASTE) REGULATIONS 1974 (Reg 4 (3)(a))

APPROVAL TO CONSTRUCT OR INSTALL AN APPARATUS FOR THE TREATMENT OF SEWAGE

Approval is hereby granted to the Applicant: **Bernie Malatzky**

To construct or install the apparatus for the treatment of sewage at:

Street: **Scotsdale Rd** Town or Suburb: **Scottsdale - Mount Shadforth**
Lot or Pt. Lot No: **613** Location:
House No: **222**
Local Government: **Shire of Denmark**

The apparatus shall be installed in accordance with the approved plans (attached) and the conditions of approval listed below.

Type of Disposal System and Dimensions:

1. **3000 & 1820 litre septic tanks a 1200mm pump pit, a diverter and 2 x 18m fully inverted concrete leach drains**

Other Conditions:

1. Installation to be completed by a licensed plumber.
2. An as constructed diagram to be submitted within 10 days of completion.
3. Effluent disposal field not to be located in a trafficable area.
4. Leach drains to be covered with "hydronet" or similar material, **(NOT GEO-FABRIC)**

The person who completes the construction or installation of the apparatus shall notify **Gregg Harwood** on Telephone No: **98480300** to arrange an inspection and obtain a permit to use the apparatus.

All works shall be left open and available for appropriate checking and testing.
It is an offence under section 107(4) of the Health Act 1911 to use an apparatus before it has been inspected and a permit to use the apparatus issued.

DELEGATE OF LOCAL GOVERNMENT: Gregg Harwood Date: 12/9/2010

BL 6757

HEALTH ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF EFFLUENT AND LIQUID WASTE) REGULATIONS 1974
(Regs 4 & 4A)

APPLICATION TO CONSTRUCT OR INSTALL AN APPARATUS FOR THE TREATMENT OF SEWAGE

1. APPLICATION DETAILS

THE APPLICANT MUST COMPLETE IN FULL SECTIONS 1-6.

SEE INFORMATION FOR APPLICANTS PAGE 3 (please tick as appropriate)

- ☐ APPLICATION TO LOCAL GOVERNMENT (INCLUDING 2 COPIES OF PLANS)
- ☐ APPLICATION TO EXECUTIVE DIRECTOR PUBLIC HEALTH (INCLUDING 3 COPIES OF PLANS AND ACCOMPANIED BY A REPORT FROM LOCAL GOVERNMENT)

2. LOCATION OF INSTALLATION

STREET SCOTSDALE TOWN OR SUBURB DENMARK

LOT OR PT. LOT NO. 613 HOUSE NO. 222

NEAREST CROSS ROAD OR PERMANENT LAND MARK: EAST RIVER ROAD

LOCAL GOVERNMENT (City/Town/Shire Council): DENMARK

3. OWNER/APPLICANT DETAILS

OWNER'S NAME GOLDEN HILL STEINER SCHOOL

APPLICANT'S NAME BERNIE MALATZKY

APPLICANT'S POSTAL ADDRESS: PO BOX 230

DENMARK POSTCODE: 6333 PHONE NO 98483038

4. PREMISES DETAILS (please tick as appropriate)

PREMISES DESCRIPTION:

NEW ☒ EXISTING ☐ SINGLE DWELLING ☐ MULTIPLE DWELLING ☐ COMMERCIAL ☐ INDUSTRIAL ☐

OTHER ☒ PLEASE SPECIFY SCHOOL HALL

NUMBER OF PERSONS ON PREMISES: ____ NUMBER OF BEDROOMS ____ SPA ☐ YES ☐ NO VOLUME ____ LITRES

NON-RESIDENTIAL PREMISES (expected daily wastewater volume): ____ Litres/day

WATER SUPPLY TO PREMISES: RETICULATED MAINS WATER ☒ BORE ☐

OTHER ☐ PLEASE SPECIFY ____

5. SYSTEM DETAILS (please tick as appropriate)

TYPE OF APPARATUS: SEPTIC TANK ☒ AEROBIC TREATMENT UNIT ☐

OTHER ☐ PLEASE SPECIFY 1/3000 4/T 1/1600 1/1200

DISPOSAL SYSTEM: LEACH DRAIN ☒ 2/18000. SOAK WELL ☐ SURFACE IRRIGATION ☐ SUB-SOIL IRRIGATION ☐

OTHER ☐ PLEASE SPECIFY ____

ALTERNATING SYSTEM ☐ NON-ALTERNATING SYSTEM ☐

24 AUG 2010

6. DECLARATION AND SIGNATURE OF APPLICANT

I hereby apply as the owner, or the person authorised to act on behalf of the owner, for approval to construct or install the apparatus as referred to above. I have attached _____ copies of a site plan, (see attached information sheet for requirements for plans) showing the location of the apparatus and all relevant dimensions and site detail, including distances from boundaries and water supplies/source.

Also attached (if required) is a local government report for an application to the Executive Director Public Health.

Applicants Signature: _____ Date: 18 AUGUST 2010

Please print name: BERNIE MALATZKY

LOCAL GOVERNMENT OFFICE USE

7. SITE CONDITIONS

NATURE OF SOIL: SAND ☒ GRAVEL ☐ LOAM ☐ CLAY ☐

OTHER ☐ SPECIFY _____

DEPTH FROM NATURAL GROUND LEVEL TO HIGHEST KNOWN PERMANENT/SEASONAL OR TIDAL WATER TABLE (mm) _____

DISTANCE FROM NATURAL WATER BODIES _____ METRES

WILL THE APPARATUS BE INSTALLED IN ANY OF THE FOLLOWING LOCATIONS:

WITHIN 30 M OF A WELL, BORE, WATERCOURSE, DAM INTENDED TO BE USED FOR HUMAN CONSUMPTION ☐ YES ☒ NO

IN AN AREA LIKELY TO BE SUBJECT TO FLOODING OR INUNDATION IN A 1:10 YEAR RETURN EVENT. ☐ YES ☒ NO

IF YES TO ANY OF THE ABOVE, COURSE OF ACTION TAKEN _____

8. CONDITIONS OF APPROVAL

TYPE OF DISPOSAL SYSTEM AND DIMENSIONS: _____

_____

_____

_____

OTHER CONDITIONS: _____

_____

_____

_____

_____

9. APPROVAL

☐ APPROVED (subject to above conditions)

☐ REFUSED (reasons for refusal attached)

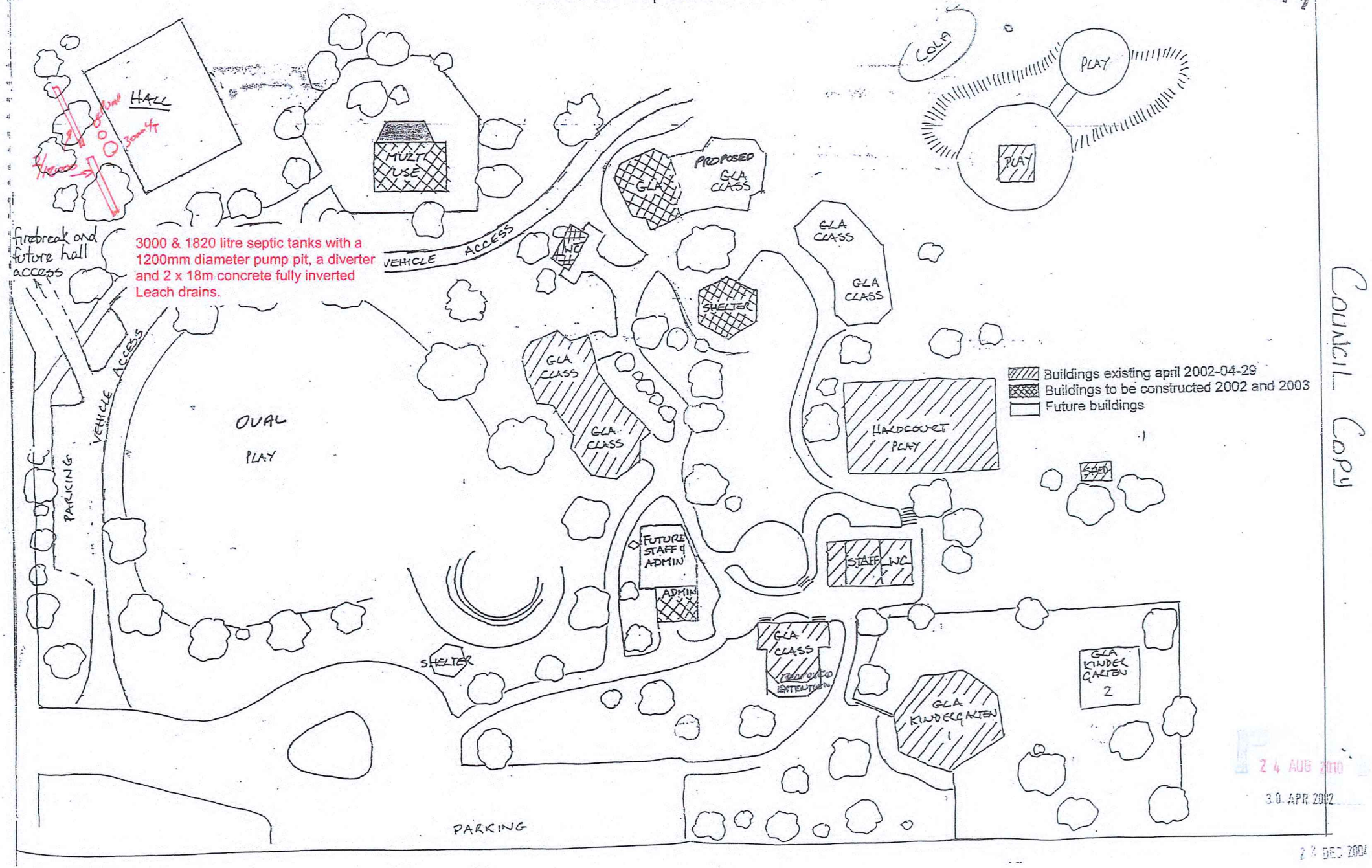
DELEGATE OF LOCAL GOVERNMENT: _____

LOCAL GOVERNMENT: _____ DATE: _____

RECEIPT NO. _____ APPROVAL NO. _____ FEE: _____

24 AUG 2010

Golden Hill Steiner School
Site Development Plan



APPENDIX 5: HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS

HORIZONTAL AND VERTICAL SETBACK DISTANCES

Site Feature	Setback Distance (m)
Horizontal setback distances	
Treatment tanks to buildings, property boundaries, driveways, paths and other tanks	1.2
Trenches, beds and soak wells to boundary, building, tanks and other land application systems	1.8
Trenches, beds and soak wells to trafficable areas	1.2
Any land application system to wells, stream, private bores or underground source of water intended for human consumption	30
Trenches, beds and soak wells to subsoil drainage or open drainage channel (as per Section 5.2.2 of the GSP a separation of 100m is required if there is discharge into a waterway or significant wetland without treatment of the discharge)	6.0
Spray Irrigation: • Boundaries, buildings, driveways etc. • Sub-soil and open drain • Swimming pool • Treatment tanks	 1.8 6.0 3.0 1.2
Subsurface Dripper: • Boundaries, buildings, treatment tanks, driveways etc. • Sub-soil and open drain • Swimming pool • Garden bore	 0.5 3.0 2.0 10.0
On-site wastewater system to water resources	100
On-site wastewater system must not be located within any area subject to inundation and/or flooding in a 10 per cent Annual Exceedance Probability (AEP) rainfall event	
Vertical setback distances	
Discharge point of the on-site wastewater system to the highest known groundwater level: • PDWSA • Sensitive water resource areas • All other areas - o Sands o Gravels o Loams and heavy soils o Hardpan or bedrock (depends on quality of treated wastewater and type of land application system)	 2.0 1.5 1.5 1.0 0.6 0.6-1.5

APPENDIX 6: SUITABLE PLANT SPECIES FOR IRRIGATION AREAS

APPENDIX I

SUGGESTED GUIDE OF SUITABLE PLANTS FOR THE SURFACE IRRIGATION DISPOSAL AREA

BOTANICAL NAME	COMMON NAME	APPROXIMATE HEIGHT IN METRES
TREES		
Agonis flexuosa	'Willow Myrtle'	5 - 6 m
Acacia baileyana	'Cootamundra Wattle'	3 - 5 m
Banksia spp.		
Casuarina glauca	'Swamp Oak'	6 - 12 m
Casuarina stricta	'Drooping Sheoake'	3 - 5 m
Casuarina cunninghamiana	'River Sheoake'	6 - 10 m
Callistemon viminalis	'Red Bottlebrush'	3 - 6 m
Callistemon salignus	'White Bottlebrush'	3 - 6 m
Eucalyptus grandis	'Flooded Gum'	10 - 20 m
Eucalyptus camaldulensis	'River Red Gum'	15 - 20 m
Eucalyptus cosmophylla	'Cup Gum;	5 - 6 m
Fiscus spp.		
Hakea spp.		
Hymenosproum flavem	'Native Frangipani	3 - 6 m
Leptosporum laevigatum	'Coast Tea Tree'	5 - 6 m
Melaleuca armillaris	'Bracelet Honey myrtle'	3 - 4 m
Melaleuca quinquenervia	'Broad Paperbark'	5 - 7 m
Melaleuca nesophila	'Western Tea Myrtle'	2 - 4 m
Pittosporum spp.		
Syzgium paniculatum	'Bush Cherry'	8 - 10 m
Tristania laurina	'Kanuka'	3 - 5 m
SHRUBS		
Abelia x grandiflora	'Abelia'	2 - 3 m
Acacia floribunda	'Gossamer Wattle'	2 - 4 m
Acacia longifolia	'Swallow Wattle'	2 - 4 m
Acacia ileaphylla	'Flinders Range Wattle'	2 - 4 m
Cotoneaster spp.		
Cortaderia selloana	'Pampas Grass'	2 - 3 m
Cyperus alternifolius	'Umbrella Grass'	0.5 - 1 m
Cyperus papyrus	'Papyrus'	1 - 2 m
Cassia spp.		
Chamelaucium uncinatum	'Geraldton Wax'	2 - 4 m
Dryandra Formosa		1 - 3 m
Eremophila spp.		
Grevillia spp.		1 - 3 m
Hebe spp.	'Veronica'	0.5 - 1 m
Iris pseudacorus	'Yellow Flag Iris'	0.5 - 1 m
Nerium oleander	'Oleander'	2 - 3 m
Melaleuca decussata	'Cross Leafed Honey Myrtle	1 - 2 m
Phormium tenax	'New Zealand Flax'	2 - 2.5 m

BOTANICAL NAME	COMMON NAME	APPROXIMATE HEIGHT IN METRES
CLIMBERS		
Bougainvillea spp.		
Clematis spp.		
Hardenbergia violacea	'Purple Coral Pea'	
Hibbertia scandens	'Snake Vine'	
Jasminum grandiflorum		
Jasminum polyanthum		
Jasminum officinale	'Connom Jasmin'	
Kennedia rubicunda	'Dusky Coral Pea'	
Lonicera japonica	'Japanese Honeysuckle'	
Passiflora spp.	'Passion Flower'	
Vitis coignetiae	'Glory Vine'	
PERENNIALS		
Aster novi-belgii	'Perennial Aster'	
Canna		
Chrysanthemum frutescens	'Marguerite Daisy'	
Chrysanthemum maximum	'Shasta Daisy'	
Gazania ringens	'Black eyed Susan	
Impatiens spp.		
Salvia uliginosa	'Bog Salvia'	
Viola spp.		

This list is only intended to provide a selection of trees, shrubs and other plants, which may be considered suitable for the surface irrigation disposal area.

However, because of wide climatic and soil variations it is essential that further investigations be made with your local plant nursery before finalising your plant choice to suit your particular locality and site conditions.

APPENDIX 7: SOIL LOGS

Soil Sampling (Validation) Field Log

Aurora environmental

Sheet of

CLIENT:	Cultura Foundation	DATE:	31/08/2023
PROJECT/PHASE:	Phase 2- Site Soil Evaluation	METHOD:	Mecahnical Excavation
LOCATION:	CUL 1	WEATHER:	Fine, cool & Sunny
JOB NUMBER:	CUL-AP00614 - SSE	STORAGE:	
LANDSCAPE:	Cleared Paddock	SCIENTIST:	Paul Clifton
Total Depth of Hole (m):	1.5	Depth to Water (mbgl):	
QA/QC Sample IDs:			

SOIL PROFILE			SOIL DATA			
DESCRIPTION (Colour, texture, Soil Type)	LOCATION (wall/floor)	DEPTH (mbgl)	SAMPLE ID	PID ppm	Staining (Y/N)	Odour (Y/N)
Dark brown fibrous loam saturated		0 - 0.150	CUL 1A			
Light brown clayey loam with small pebbles and grit. Orange mottle evident. Saturated		0.150 - 0.600	CUL 1B			
White powdery damp clay. Orange mottling evident.		0.600 - 1.500				
During excavation no seepage evident in side walls of pits, no groundwater encountered.						
Depth to groundwater measures occurred on 26 September						

SKETCH

E:
N:

Soil Sampling (Validation)
Field Log

Sheet of

CLIENT:	Cultura Foundation	DATE:	31/08/2023
PROJECT/PHASE:	Phase 2- Site Soil Evaluation	METHOD:	Mechanical Excavation
LOCATION:	CUL 2	WEATHER:	Fine, cool & Sunny
JOB NUMBER:	CUL-AP00614 - SSE	STORAGE:	
LANDSCAPE:	Cleared Paddock	SCIENTIST:	Paul Clifton

Total Depth of Hole (m): 1.5 Depth to Water (mbgl):

QA/QC Sample IDs:

SOIL PROFILE			SOIL DATA			
DESCRIPTION (Colour, texture, Soil Type)	LOCATION (wall/floor)	DEPTH (mbgl)	SAMPLE ID	PID ppm	Staining (Y/N)	Odour (Y/N)
Dark brown loam. Saturated		0 - 0.22	CUL 2A			
Fine saturated light brown/grey loam clay		0.22 - 0.5	CUL 2B			
Course light orange clayey sand, with darker orange/brown mottle. Saturated		0.5 - 0.8				
White clay orange/red mottle wet to saturated		0.8 - 1.5				
During excavation no seepage evident in side walls of pits, no groundwater encountered.						
Depth to groundwater measures occurred on 26 September						

SKETCH

E:
N:

Soil Sampling (Validation)
Field Log

Aurora environmental

Sheet of

CLIENT:	Cultura Foundation	DATE:	31/08/2023
PROJECT/PHASE:	Phase 2- Site Soil Evaluation	METHOD:	Mechanical Excavation
LOCATION:	CUL 3	WEATHER:	Fine, cool & Sunny
JOB NUMBER:	CUL-AP00614 - SSE	STORAGE:	
LANDSCAPE:	Cleared Paddock	SCIENTIST:	Paul Clifton
Total Depth of Hole (m):	1.5	Depth to Water (mbgl):	
QA/QC Sample IDs:			

SOIL PROFILE			SOIL DATA			
DESCRIPTION (Colour, texture, Soil Type)	LOCATION (wall/floor)	DEPTH (mbgl)	SAMPLE ID	PID ppm	Staining (Y/N)	Odour (Y/N)
Dark grey fine sand. Fibrous roots. Damp		0 - 0.09	CUL 3A			
Orange brown gravelly sandy loam. Damp		0.09 - 0.4	CUL 3B			
Orange clayey loam, well compacted with yellow and reich brown mottle/veins. Damp		0.4 - 0.7				
White/cream with red and orange mottle powdery fine clayey loam		0.7 - 1.50				
During excavation no seepage evident in side walls of pits, no groundwater encountered.						
Depth to groundwater measures occurred on 26 September						

SKETCH

E:
N:

Soil Sampling (Validation)
Field Log

Aurora environmental

Sheet of

CLIENT:	Cultura Foundation	DATE:	31/08/2023
PROJECT/PHASE:	Phase 2- Site Soil Evaluation	METHOD:	Mechanical Excavation
LOCATION:	CUL 4	WEATHER:	Fine, cool & Sunny
JOB NUMBER:	CUL-AP00614 - SSE	STORAGE:	
LANDSCAPE:	Cleared Paddock	SCIENTIST:	Paul Clifton
Total Depth of Hole (m):	1.5	Depth to Water (mbgl):	
QA/QC Sample IDs:			

SOIL PROFILE			SOIL DATA			
DESCRIPTION (Colour, texture, Soil Type)	LOCATION (wall/floor)	DEPTH (mbgl)	SAMPLE ID	PID ppm	Staining (Y/N)	Odour (Y/N)
Dark grey find sand, fibrous roots evident. Damp		0 - 0.25				
Orange brown gravelly loam sand		0.25 - 0.5				
Orange powdery loamy clay damp and well compacted		0.5 - 0.8				
White clay powdery orange/red mottle		0.8 - 1.5				
During excavation no seepage evident in side walls of pits, no groundwater encountered.						
Depth to groundwater measures occurred on 26 September						

SKETCH

E:
N:

Soil Sampling (Validation) Field Log

Aurora environmental

Sheet of

CLIENT:	Cultura Foundation	DATE:	31/08/2023
PROJECT/PHASE:	Phase 2- Site Soil Evaluation	METHOD:	Mechanical Excavation
LOCATION:	CUL 5	WEATHER:	Fine, cool & Sunny
JOB NUMBER:	CUL-AP00614 - SSE	STORAGE:	
LANDSCAPE:	Cleared Paddock	SCIENTIST:	Paul Clifton
Total Depth of Hole (m):	1.5	Depth to Water (mbgl):	
QA/QC Sample IDs:			

SOIL PROFILE			SOIL DATA			
DESCRIPTION (Colour, texture, Soil Type)	LOCATION (wall/floor)	DEPTH (mbgl)	SAMPLE ID	PID ppm	Staining (Y/N)	Odour (Y/N)
Dark grey fibrous loam saturated		0 - 0.1				
Light brown clayey loam with small pebbles and grit. Orange mottle evident. Saturated		0.1 - 0.5				
Wet orange loamy clay red mottling at depth		0.5 - 0.8				
White powdery damp clay. Orange mottling evident.		0.8 - 1.5				
During excavation no seepage evident in side walls of pits, no groundwater encountered.						
Depth to groundwater measures occurred on 26 September						

SKETCH

E:
N:

APPENDIX 8: CSBP SOIL AND PLANT LABORATORY CHAIN OF CUSTODY & ANALYSIS RESULTS

REQUEST FORM
SOIL ANALYSIS

CSBP

Lab use only

Date Received | Lab Number | Particle Size | Dispersion (keep sample) | Saturated Paste (SP%) | LOI (keep sample) | Moisture content (keep sample) | Manure/compost

Customer Details

Aurora Environmental
Customer Trading Name

CSBP Account Number

Paul Clifton
Contact Name

0407332144
Contact Phone

CUL2023
Purchase Order/Quote Number

paul.clifton@auroraenvironmental.com.au
Email

37508285316
Customer ABN

76 Festing St, Albany WA
Postal Address

6330
Postcode

Select Your Tests

Please tick all tests required ✔ (for current prices and Terms and Conditions visit csbplab.com.au)

6
Total number of samples submitted

Packages

Choose one of the following soil testing packages (please tick) ✔

- ○ Standard: Phosphorus (Colwell), Potassium (Colwell), Sulfur (KCl 40), Organic Carbon (Walkley Black), Nitrate Nitrogen, Ammonium Nitrogen, Electrical Conductivity, pH (Water), pH ($CaCl_2$)
- ○ Comprehensive: As Standard plus Boron, Trace elements (DTPA) - Copper, Zinc, Manganese, Iron, Exchangeable Cations - Calcium, Magnesium, Sodium, Potassium, Aluminium
- ○ Standard plus PBI: As Standard plus Phosphorus Buffering Index (PBI)
- ○ Comprehensive plus PBI: As Comprehensive plus Phosphorus Buffering Index (PBI)

Combine and Save

Select one or more of these five key tests – the more you pick, the lower the cost per test (please tick) ✔

- ○ Nitrate Nitrogen and Ammonium Nitrogen
- ○ Organic Carbon (Walkley Black)
- ○ Sulfur (KCl 40)
- ○ pH (Water and $CaCl_2$) and Electrical Conductivity
- ○ Phosphorus and Potassium (Colwell)

Individual Tests

Customise your selection from the choices below (please tick) ✔

- ○ Aluminium ($CaCl_2$)
- ○ Boron
- ○ Calcium Carbonate percentage (%)
- ○ Chloride
- ○ Cobalt
- ○ Dispersion
- ○ Exchangeable Acidity/Aluminium
- ○ Exchangeable Cations in Water (Calcium, Magnesium, Sodium, Potassium
- ○ Exchangeable Cations with pre-wash (Calcium, Magnesium, Sodium, Potassium)
- ○ Exchangeable Cations without pre-wash (Calcium, Magnesium, Sodium, Potassium, Aluminium)
- ○ ECEC Calculation
- ○ ESP % Calculation
- ○ Fizz
- ○ Heavy Metals (Cd, Mo, Co, Se, Pb, Cr, As)
- ○ Iron and Aluminium (reactive, Oxalate)
- ○ Moisture Content
- ○ Molybdenum
- ○ Nitrate Nitrogen and Ammonium Nitrogen
- ○ Organic Carbon (Walkley Black)
- ○ Particle Size (Mid Infra-Red Method)
- ○ Particle Size (Wet Chemistry Method)
- ○ pH (Water, $CaCl_2$) and Electrical Conductivity
- ● Phosphorus Retention Index
- ○ Phosphorus & Potassium (Colwell)
- ○ Phosphorus (Bray I)
- ○ Phosphorus (Bray II)
- ○ Phosphorus (BSES, Acid)
- ○ Phosphorus (DGT)
- ○ Phosphorus (Olsen)
- ○ Phosphorus Buffering Index - includes Phosphorus & Potassium (Colwell)
- ○ Phosphorus Total (Kjeldajl)
- ○ Potassium (Nitric)
- ○ Potassium (Skene)
- ○ Saturated Paste (Electrical Conductivity)
- ○ Saturated Paste and Exchangeable Cations (Electrical Conductivity)
- ○ Saturated Paste and Exchangeable Cations and Carbonates (Electrical Conductivity)
- ○ Silicon ($CaCl_2$)
- ○ Sulfur (MCP)
- ○ Total Carbon (Leco)
- ○ Total Nitrogen (Leco)
- ○ Total Organic Carbon (Heanes)
- ○ Total Organic Carbon (Acid Wash)
- ○ Total Organic Matter (Loss on ignition)
- ○ Trace Elements (DTPA) - Copper, Zinc, Manganese, Iron
- ○ Trace Elements (EDTA) - Copper, Zinc, Manganese, Iron
- ○ Zinc (HCl)
- ○ Other

CSBP Lab. Extract Value.

CSBP Lab | 2 Altona Street | Bibra Lake WA 6163 | T (08) 9424 4500 | E [illegible]@csbp.com.au | W csbplab.com.au

EST.1971 -32.095 / 115.802

Sample Information

Please fill out details for each sample (if you prefer, attach your own spreadsheet in Excel format and attach to this request form).

Lab use only		Sample Details		
Number	Batch No.	Sample ID	Code	Name
1		CUL1 - A		
2		CUL1 - B		
3		CUL2 - A		
4		CUL2 - B		
5		CUL3 - A		
6		CUL3 - B		
7				
8				
9				
10				
11				
12				
13				
14				
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18				
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20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Please send your samples to:

CSBP Laboratory
2 Altona Street
Bibra Lake WA 6163

Payment:
Payment can by made by Credit Card (please contact CSBP Lab on 08 9434 4600), Cheque (please make payable to CSBP Limited, crossed 'not negotiable'), BPAY or EFT. Subject to our Terms and Conditions.

Privacy note: CSBP collects your personal information on this form for the purposes of provision of our products and services to you, for updating our customer databases and for marketing purposes. Should you wish for us not to use your personal information for marketing purposes please notify us upon returning your form. If you choose not to provide the personal information requested on this form then we will not be able to process your orders for our products or services. We may disclose this personal information to our related bodies corporate and agents, to your representatives and to entities to which you have consented to the disclosure of your personal information, to the distributors and carriers of our products and services and to other people from which we have collected your personal information in relation to the products and services that we provide you. We may also collect personal information about you (such as product orders) relating to this matter from third parties including our product distributors, agents and transportation contractors. Our Privacy Policy (available at https://csbp.com.au/privacy) contains information about how you may access personal information we hold about you, seek the correction of such information, complain about a breach of the Australian Privacy Principles, and how we will deal with such a complaint.

CSBP Lab. Extract Value.

CSBP Lab | 2 Altona Street | Bibra Lake WA 6163 | T 08 9434 4600 | E analysis@csbp.com.au | W csbplab.com.au

Analysis Results

CSBP Soil and Plant Laboratory

86486
Aurora Environmental (Albany)

Lab No	1ALS23167	1ALS23168	1ALS23169	1ALS23170	1ALS23171	1ALS23172
Name	CUL1 - A	CUL1 - B	CUL2 - A	CUL2 - B	CUL3 - A	CUL3 - B
Code	28/09/23	28/09/23	28/09/23	28/09/23	28/09/23	28/09/23
Customer	Aurora Environmental	Aurora Environmental	Aurora Environmental	Aurora Environmental	Aurora Environmental	Aurora Environmental
Depth	0-10	0-10	0-10	0-10	0-10	0-10
Phosphorus Retention Index	> 1000.0	190.5	780.0	132.7	47.3	625.2

CSBP Lab. Extract Value.

APPENDIX 9: PERMEABILITY CALCULATIONS

Job No.:	CUL-AP00614		
Site:	Lot 1 Riverbend Lane Scotsdale		
Location ID:	CUL 1	**Northing:**	117.3581
Operator:	Paul C.	**Easting:**	34.94363
Date:	31/08/2023	**Slope:**	Flat

Elevation approximately m AHD

Vegetation: Pasture

Soil structure:	**Depth (mm)**	**Soil Description**
	500	0
	0	0
	0	0
	0	0

Average time to fall 10cm:	947.37	sec
Depth of water in hole:	50	cm
Diameter of test hole:	8	cm
Depth to impermeable layer:	0	cm
Diameter of water reservoir:	6	cm
Diameter of air inlet tube:	0.8	cm

The method of calculation is taken from AS 1547:2000 On-site Domestic Wastewater Management

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left[\left(\frac{r}{H^2}\right)+0.25\right]} + \frac{r}{H}\right]}{2\pi H^2}$$

where

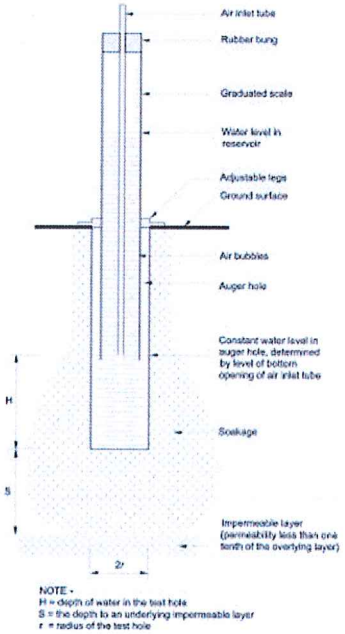
K_{sat} = saturated hydraulic conductivity of the soil in cm/min

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation

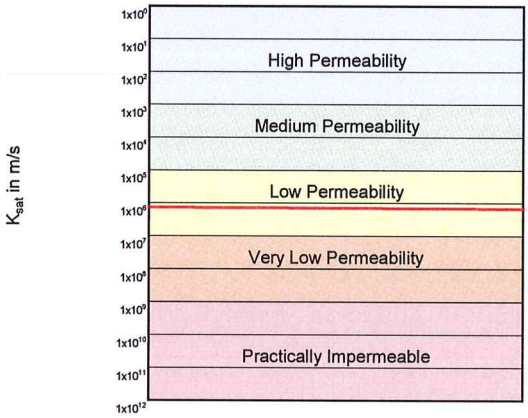
Q = rate of loss of water from the reservoir in cm^3/min

H = depth of water in the test hole in cm

r = radius of the test hole in cm



Rate of water loss		**Saturated hydraulic conductivity**	
Q=	0.0003 L/sec	K_{sat}=	0.00 cm/min
Q=	17.6 cm^3/min	K_{sat}=	0.06 m/day
		K_{sat}=	6.93E-07 m/sec



Job No.: CUL-AP00614
Site: Lot 1 (25) Riverbend Lane, Scotsdale
Location ID: CUL 2 **Northing:** 117.358
Operator: Paul Clifton **Easting:** 34.944 S
Date: 31/08/2023 **Slope:** 0
Elevation approximately m AHD
Vegetation: Pasture, some reeds

Soil structure:	**Depth (mm)**	**Soil Description**
	500 mm	0
	0	0
	0	0
	0	0

Average time to fall 10cm:	377.78	sec
Depth of water in hole:	50	cm
Diameter of test hole:	8	cm
Depth to impermeable layer:	0	cm
Diameter of water reservoir:	6	cm
Diameter of air inlet tube:	0.8	cm

The method of calculation is taken from AS 1547:2000 On-site Domestic Wastewater Management

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H^2}\right)+0.25}\right] + \frac{r}{H}}{2\pi H^2}$$

where

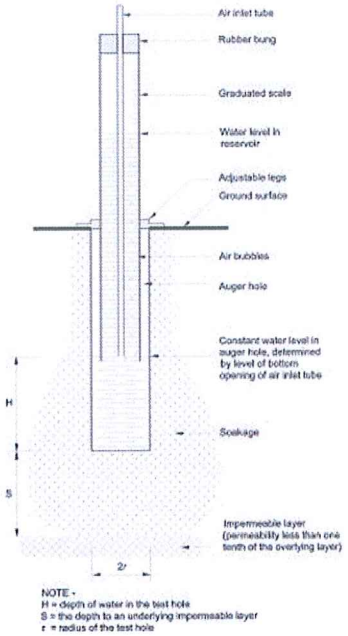
K_{sat} = saturated hydraulic conductivity of the soil in cm/min

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation

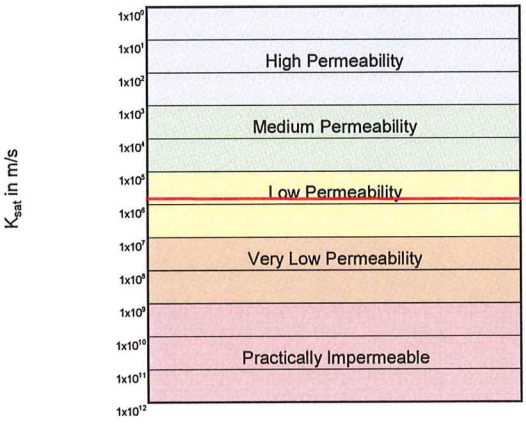
Q = rate of loss of water from the reservoir in cm^3/min

H = depth of water in the test hole in cm

r = radius of the test hole in cm



Rate of water loss		**Saturated hydraulic conductivity**	
Q=	0.0007 L/sec	K_{sat}=	0.01 cm/min
Q=	44.1 cm^3/min	K_{sat}=	0.15 m/day
		K_{sat}=	1.74E-06 m/sec



Job No.: CUL-AP00614
Site: Lot 1 (25) Riverbend Lane, Scotsdale
Location ID: CUL 3 **Northing:** 117.3603
Operator: Paul Clifton **Easting:** 34.94397 S
Date: 31/08/2023 **Slope:** Geltle slope to falling to the east
Elevation approximately m AHD
Vegetation: Pasture

Soil structure:	**Depth (mm)**	**Soil Description**
	500	0
	0	0
	0	0
	0	0

Average time to fall 10cm:	67.67	sec
Depth of water in hole:	50	cm
Diameter of test hole:	8	cm
Depth to impermeable layer:	0	cm
Diameter of water reservoir:	6	cm
Diameter of air inlet tube:	0.8	cm

The method of calculation is taken from AS 1547:2000 On-site Domestic Wastewater Management

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left\{\left(\frac{r}{H^2}\right)+0.25\right\}} + \frac{r}{H}\right]}{2\pi H^2}$$

where

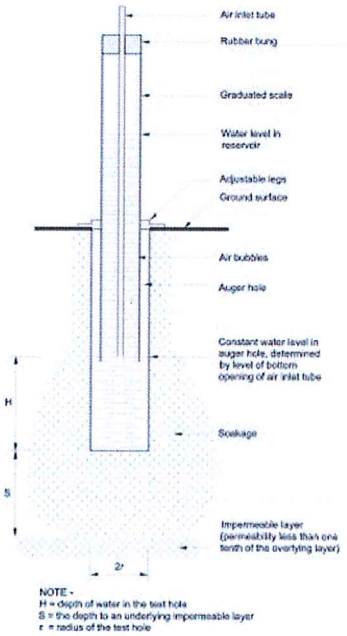
K_{sat} = saturated hydraulic conductivity of the soil in cm/min

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation

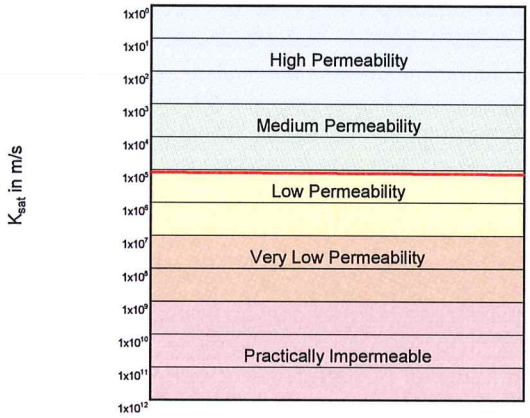
Q = rate of loss of water from the reservoir in cm^3/min

H = depth of water in the test hole in cm

r = radius of the test hole in cm



Rate of water loss		**Saturated hydraulic conductivity**	
Q=	0.0041 L/sec	K_{sat}=	0.06 cm/min
Q=	246.2 cm^3/min	K_{sat}=	0.84 m/day
		K_{sat}=	9.71E-06 m/sec



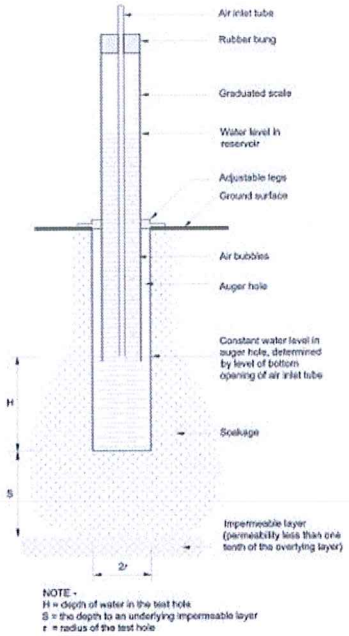
Job No.: CUL-AP00614
Site: Lot 1 (25) Riverbend Lane, Scotsdale
Location ID: CUL 4 **Northing:** 117.3604
Operator: Paul C **Easting:** 34.94323 S
Date: 31/08/2023 **Slope:** Gentle slope falling to the east
Elevation approximately m AHD
Vegetation: Pasture

Soil structure:	**Depth (mm)**	**Soil Description**
	500 mm	0
	0	0
	0	0
	0	0

Average time to fall 10cm: 261.54 sec

Depth of water in hole: 50 cm
Diameter of test hole: 8 cm
Depth to impermeable layer: 0 cm

Diameter of water reservoir: 6 cm
Diameter of air inlet tube: 0.8 cm



The method of calculation is taken from AS 1547:2000 On-site Domestic Wastewater Management

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left\{\left(\frac{r}{H^2}\right)+0.25\right\}} + \frac{r}{H}\right]}{2\pi H^2}$$

where

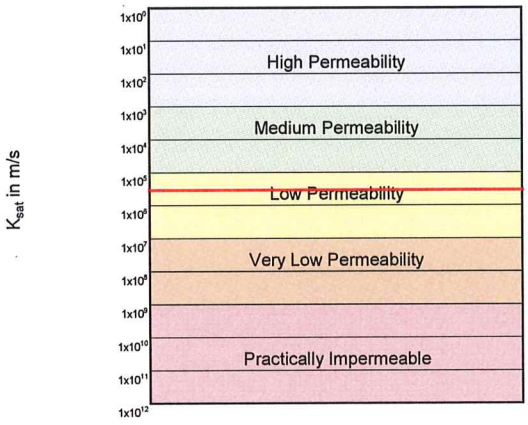
K_{sat} = saturated hydraulic conductivity of the soil in cm/min
4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation
Q = rate of loss of water from the reservoir in cm^3/min
H = depth of water in the test hole in cm
r = radius of the test hole in cm

Rate of water loss

Q= 0.0011 L/sec
Q= 63.7 cm^3/min

Saturated hydraulic conductivity

K_{sat}= 0.02 cm/min
K_{sat}= 0.22 m/day
K_{sat}= 2.51E-06 m/sec



Job No.: CUL-AP00614
Site: Lot 1 (25) Riverbend Lane, Scotsdale
Location ID: CUL 5 **Northing:** 117.3585
Operator: Paul Clifton **Easting:** 34.94306 S
Date: 31/08/2023 **Slope:** Flat
Elevation approximately m AHD
Vegetation: Pasture

Soil structure:	**Depth (mm)**	**Soil Description**
	500	0
	0	0
	0	0
	0	0

Average time to fall 10cm: 321.43 sec

Depth of water in hole: 50 cm
Diameter of test hole: 8 cm
Depth to impermeable layer: 0 cm

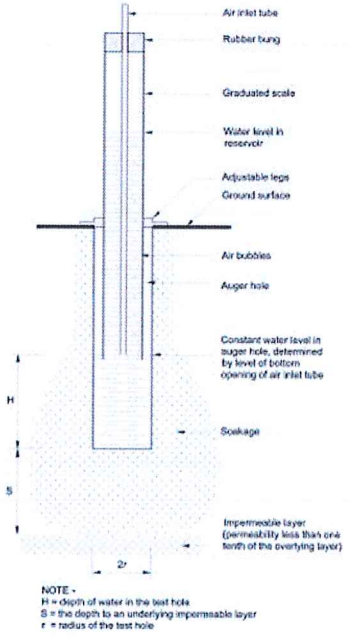
Diameter of water reservoir: 6 cm
Diameter of air inlet tube: 0.8 cm

The method of calculation is taken from AS 1547:2000 On-site Domestic Wastewater Management

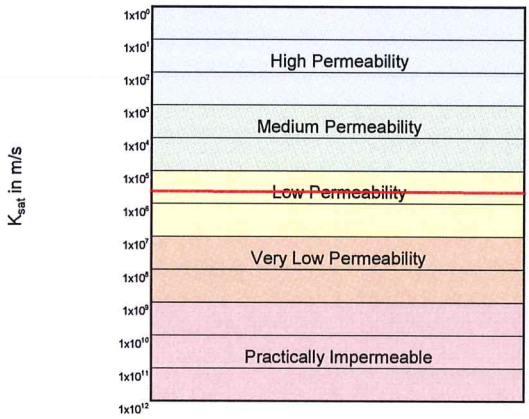
$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left\{\left(\frac{r}{H^2}\right)+0.25\right\}} + \frac{r}{H}\right]}{2\pi H^2}$$

where

K_{sat} = saturated hydraulic conductivity of the soil in cm/min
4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation
Q = rate of loss of water from the reservoir in cm^3/min
H = depth of water in the test hole in cm
r = radius of the test hole in cm



Rate of water loss		**Saturated hydraulic conductivity**	
Q=	0.0009 L/sec	K_{sat}=	0.01 cm/min
Q=	51.8 cm^3/min	K_{sat}=	0.18 m/day
		K_{sat}=	2.04E-06 m/sec



7 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.

8 CONCLUSION AND RECOMMENDATIONS

The requirements of the GSP and *SPP 2.9 Planning for Water* (draft) can be met on 23 (Lot 1) Riverbend Lane Scotsdale.

Key considerations are:

- Separation requirements of the GSP can be met in situ or by implementing strategies such as installation of sand pads at the time development occurs;
- Subject land comprises soil profiles:
    - Sand over clay
    - Sand over loamy clay
- Groundwater was encountered between 0.3 – 0.4 m below ground level at CUL 1, CUL 2, CUL 5. Groundwater was encountered at 1.5 m at CUL 4 and not encountered at CUL 3.
- Soils of CUL 1, CUL2, and CUL5 have a medium risk of water logging, whilst Soils of CUL 3 and CUL 4 have a low risk of waterlogging.
- Phosphorus retention index analysis determined that soils of the subject land have a low to high ability to sorb phosphorus.
- Soils of the subject land had a low permeability ranging between 0.006 t0 0.84 metres per day.
- The Site is in a sewerage sensitive area due to its proximity to Wilson Inlet.
- The eastern portion of the Site adjoins the reserve for Scotsdale Brook.
- While Denmark has relatively wet winters, evaporation exceeds rainfall over the entire year.

It is recommended that secondary treatment units with nutrient retention and substrata or subsurface irrigation are installed on the subject land.

In addition, liaison with the West Australian Department of Health will be required as the school component of on-site effluent disposal will requirement the preparation of a recycled wastewater management plan.

9 REFERENCES

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