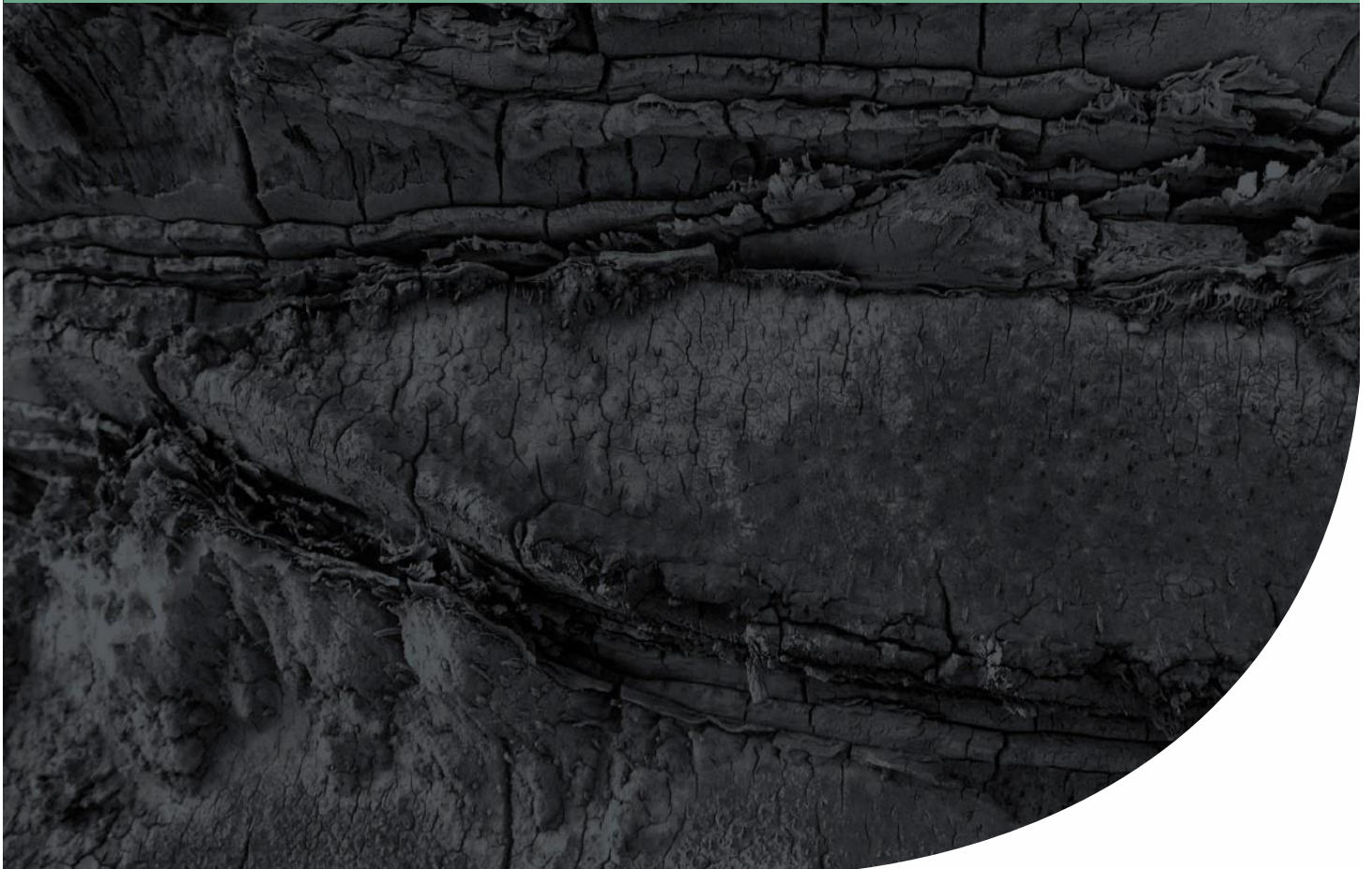


Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River

Project No: EP21-062(09)

**Prepared for Margaret River Development Partnership
May 2024**



Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



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This document has been prepared primarily to consider the layout of development and/or the appropriate building construction standards applicable to development, where relevant. The measures outlined are considered to be prudent minimum standards only based on the standards prescribed by the relevant authorities. The level of bushfire risk mitigation achieved will depend upon the actions of the landowner or occupiers of the land and is not the responsibility of the author. The relevant local government and fire authority (i.e. Department of Fire and Emergency Services or local bushfire brigade) should be approached for guidance on preparing for and responding to a bushfire.

Notwithstanding the precautions recommended in this document, it should always be remembered that bushfires burn under a wide range of conditions which can be unpredictable. An element of risk, no matter how small, will always remain. The objective of the Australian Standard AS 3959:2018 is to “prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire” (Standards Australia 2018). Building to the standards outlined in AS 3959 does not guarantee a building will survive a bushfire or that lives will not be threatened by the effects of bushfire attack.

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Executive Summary

The Margaret River Development Partnership (the proponent) are progressing a structure plan over Lot 9000, Bussell Highway, Margaret River (herein referred to as 'the site') to facilitate future residential development. The site is approximately 67 hectares (ha) in size and is currently zoned 'General Agriculture' under the *Shire of Augusta Margaret River Local Planning Scheme No. 1*. A scheme amendment to rezone the site to 'Future Development' was recently progressed by the Shire of Augusta Margaret River and is in the final stages of endorsement by the Western Australian Planning Commission. The site is bounded by Andrews Way and Brookfield Estate immediately to the north, Darch Road and private rural residential landholdings to the east, Perimeter Road to the south and Bussell Highway to the west. Surrounding land to the north, east-southeast and west of the site are identified for residential and industrial development as part of the Leeuwin Naturaliste Sub-regional Planning Strategy and the Margaret River East District Structure Plan, as well as the Brookfield Estate Structure Plan and the Margaret River Industrial Area Structure Plan.

The site is located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2021). The identification of a site within an area declared as bushfire prone necessitates further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

The purpose of this BMP is to assess the bushfire hazards, both within and nearby the site, and identify the 'management' strategies required to ensure the development of the land is consistent with the intent of SPP 3.7 - *to preserve life and reduce the impact of bushfire on property and infrastructure*. This BMP has followed the requirements of SPP 3.7 to identify bushfire risk and the bushfire protection measures that will make the land suitable for its intended purpose. As part of this, a Bushfire Attack Level (BAL) assessment involving the classification and condition of vegetation within 150 m of the site has been undertaken.

As part of assessing the long-term bushfire risk to the site, vegetation classifications have been detailed for the post-development scenario (in accordance with AS 3959) in order to inform a Bushfire Attack Level (BAL) assessment. The following bushfire hazards were identified as applicable to the site following residential development and include hazards internal and external to the site:

- Forest (Class A) vegetation, within the road reserves adjacent to the northern (Andrews Way), western (Bussell Highway), southern (Perimeter Road) and eastern boundaries (Darch Road) of the site.
- Grassland (Class G) vegetation further north, east, west and south of the site, associated with existing cleared agricultural land. Some management of paddock grasses is evident (grasses generally less than 100 mm in height), however has been identified as unmanaged for the purposes of this assessment.
- Public open space (POS) areas within the site have been assumed to largely be composed of classified woodland (Class B) or grassland (Class G) vegetation based on the proposed landscape

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approach. This is to support introduction of mountain bike and walking trails within the site, within a more natural landscape. The site is currently identified as grassland (as per the Bushfire Hazard Level Assessment (Emerge Associates 2021a)) and will therefore include the reintroduction of Eucalypts or similar trees to create a woodland classification. While some management of fuel load is likely to occur (and may meet low threat), for the purposes of the BMP it has been assumed that these areas will be a bushfire hazard.

Compliance Assessment

The outcomes of this BMP demonstrate that as development progresses, it will be possible for an acceptable solution to be adopted for each of the applicable bushfire protection criteria outlined in the Guidelines. This includes:

- **Location:** The proposed development is at a higher order strategic planning stage, namely structure planning, and as part of this, road layout and proposed development cells are generally shown. Accordingly, a BAL contour plan has been prepared for the site and shows that, on completion, development cells have sufficient area to accommodate habitable buildings that achieve BAL-29 or less.
- **Siting and Design:** The site accommodates a suitable asset protection zone (APZ) for all proposed lots through a mix of public road reserves, areas of managed public open space and in-lot setbacks. This has considered portions of the POS areas being classified vegetation and a higher classification than the current pre-development environment. The majority of lots are able to achieve BAL-29 or less. Due to the proximity of classified vegetation, particularly associated with existing vegetation within Andrews Way and Darch Road or proposed planting near the R40 cell in the central portion of the site, BAL-FZ and BAL-40 extend into the development cells. There is sufficient area available in these cells to accommodate a setback within the lot/lots to achieve BAL-29 or less. For upslope/flat forest vegetation, a 21 m setback is required. This will be addressed at the subdivision stage, as part of determining lot layout.
Vehicular Access: existing public roads occur along all boundaries of the site, with Andrews Way (and Brookfield Estate) to the north, Darch Road to the east, Perimeter Road to the south and Bussell Highway to the west. The site has access to Andrews Way, which provides access to the north and west, and Bussell Highway, which is a major regional connector providing egress to the north and south. Margaret River townsite is approximately 2.8 km to the north and is considered a suitable destination. Internally, the majority of the development cells include perimeter public roads, providing an interface to proposed lots and proposed woodland and grassland planting to be introduced as part of development. Where there is no perimeter road, appropriate asset protection zones will be accommodated through the POS or in-lot setbacks. As part of meeting *Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy* and the *Rural Hamlet Design Guidelines*, a hamlet approach has been taken and means a number of internal roads that loop back on themselves would be considered 'no through roads' and exceed 200 m in length. However, the use of emergency access ways (EAWs) will connect the development cells to gazetted public roads and provide for multiple access options, demonstrating compliance with the acceptable solution.
- **Water:** the development will be provided with a permanent and reticulated water supply to support onsite firefighting requirements.

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The management/mitigation measures to be implemented through the future development of the site have been outlined as part of this BMP, demonstrating that the acceptable solutions and/or intent of each element can be met. Consideration of the recommendations in this BMP should be adopted as part of the subdivision stage and can be addressed through the provision of a BMP or a Bushfire Statement.

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Appendix A

Structure plan

Appendix B

Bushfire Hazard Level Assessment (Emerge Associates 2021b)

Appendix C

Landscape Masterplan

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List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
ESA	Environmentally sensitive area
FDI	Fire Danger Index
FZ	Flame Zone
TEC	Threatened ecological community

Table A2: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
OBRM	Office of Bushfire Risk Management
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – Legislation and policies

Legislation	
Guidelines	<i>Guidelines for Planning in Bushfire Prone Areas version 1.4</i> (DPLH & WAPC 2021)
SPP 3.7	<i>State Planning Policy 3.7 Planning in Bushfire Prone Areas</i> (WAPC 2015)

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Table A4: Abbreviations – Planning and building terms

Planning and building terms	
LPS	Local Planning Scheme
NCC	National Construction Code

Table A4: Abbreviations – units of measurement

Units of measurement	
cm	centimetre
ha	hectare
m	metre
m ²	square metre
m AHD	m in relation to the Australian height datum
mm	millimetre

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1 Introduction

1.1 Background

The Margaret River Development Partnership (the proponent) are progressing a structure plan over Lot 9000, Bussell Highway, Margaret River (herein referred to as 'the site') to facilitate future residential development. The proposed structure plan layout is provided in **Appendix A**. The site is approximately 67 hectares (ha) in size and is bounded by Andrews Way and Brookfield estate to the north, Bussell Highway to the west, the Perimeter Road to the south and Darch Road and rural residential landholdings to the east, as shown in **Figure 1**.

The site is located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2021), as shown in **Plate 1**. The identification of a site within an area declared as bushfire prone necessitates a further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

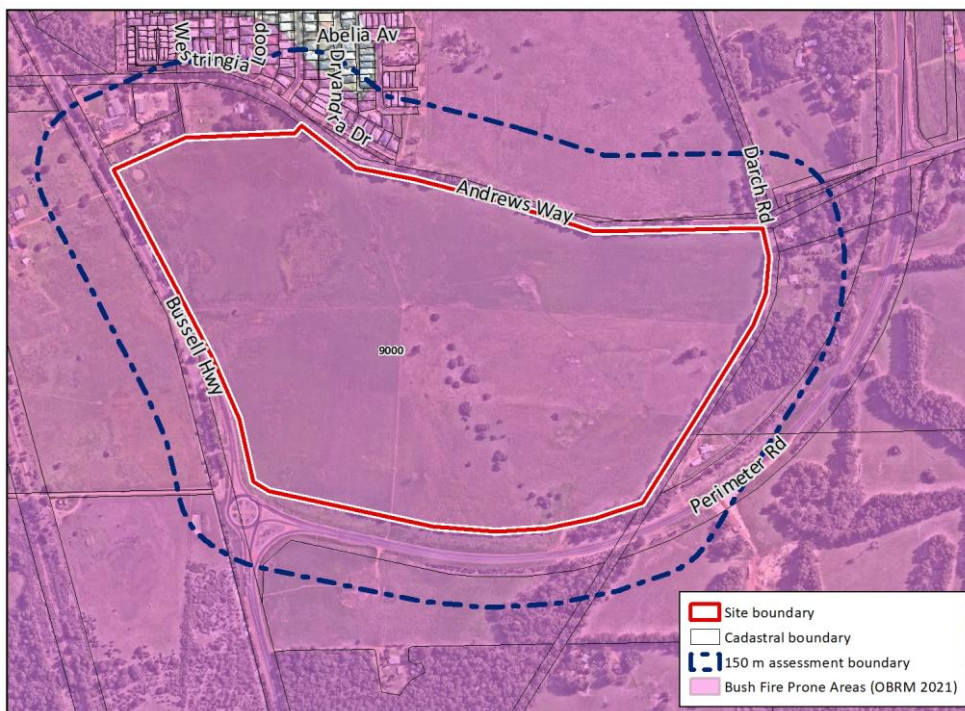


Plate 1: Areas within and surrounding the site identified as 'bushfire prone areas' (as indicated in purple) under the state-wide Map of Bush Fire Prone Areas (OBRM 2021).

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The purpose of SPP 3.7 and its policy intent is to preserve life and reduce the impact of bushfire on property and infrastructure through effective risk-based land use planning. Importantly, it is risk-based, requiring a methodical approach to identify and evaluate the hazards and provide the treatments to ameliorate these hazards to an acceptable level. SPP 3.7 requires that the determining authority give consideration to the precautionary principle (clause 6.11 in SPP 3.7), and they must be satisfied that the potential for significant adverse impacts can be adequately reduced or managed. In particular:

SPP 3.7 does not require that there be no increase at all in the threat of bushfire to people property or infrastructure. Rather, as is seen in clause 2 of SPP 3.7, the intention of the policy is to 'implement effective, risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure'. (emphasis added) ¹

1.2 Aim of this report

The purpose of this BMP is to assess bushfire hazards both within the site and nearby and demonstrate that the threat posed by any identified hazards can be appropriately mitigated and managed. This BMP has been prepared to support the proposed structure plan for the site and addresses the requirements of SPP 3.7 (WAPC 2015), the Guidelines (DPLH & WAPC 2021) and AS 3959 (Standards Australia 2018). The document includes:

- Overview of the proposed development (**Section 1.4**)
- An assessment of the existing classified vegetation in the vicinity of the site (within 150 m) and consideration of bushfire hazards that will exist in the post development scenario (**Section 3**).
- Commentary on how the future development can achieve the bushfire protection criteria outlined within the Guidelines including an indication of Bushfire Attack Level (BAL) ratings likely to be applicable to future dwellings (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (**Section 6**).

It includes consideration of the *Bushfire Hazard Level Assessment* (Emerge Associates 2021a) prepared to support the recent scheme amendment for the site. The outcomes of the hazard level assessment are included in **Appendix B**.

1.3 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a BMP:

- *Bush Fires Act 1954*
- *Fire and Emergency Services Act 1998*
- *Planning and Development Act 2005* and associated regulations
- *Building Act 2011* and associated regulations
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (DPLH & WAPC 2021)
- *Australian Standard AS 3959 – 2018 Construction of buildings in bushfire prone areas* (Standards Australia 2018)

¹ Harmanis Holdings No. 2 Pty Ltd and Western Australian Planning Commission [2019] WASAT 43 (Harmanis).

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1.4 Description of the proposed development

The site is proposed to be developed for residential purposes, with the proposed structure plan (Hex Design Planning 2022) provided in **Appendix A**. It is proposed to include

- Residential lots of varying density from R10 to R40, including an R40 area within the southern portion of the site, intended to support a lifestyle village;
- Areas of public open space (POS), with a number of these proposed to be revegetated to support the introduction of mountain bike and walking trails;
- A primary school and shared oval; and
- An interconnected public road network.

The proposed structure plan has been designed in consideration of the Shire of Augusta Margaret River *Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy* (Shire of Augusta Margaret River 2011) and the *Rural Hamlet Design Guidelines* (Shire of Augusta Margaret River 2009), which is based on providing community-orientated hamlets² separated by extensive green space areas, that provide for ecological restoration and integration with the surrounding landscape.

1.5 Description of land characteristics

The site has predominantly been cleared of all native vegetation, with the exception of scattered paddock trees present in the central and southern portions of the site.

The site and surroundings are generally flat, with the eastern and north-western portions of the site being slightly lower lying and showing evidence of water pooling during periods of inundation. A review of the available topographic contours (DPIRD 2020) indicates the site is highest in the north-western and south-western portions of the site, being between 94 m Australian height datum (m AHD) and 96 m AHD, decreasing to 90 m AHD in the eastern portion of the site. This is shown in **Figure 1**.

The site is located within a broader area characterised by a mix of residential and agricultural land uses. The land uses surrounding the site include:

- Andrews Way and the existing residential developments of Brookfield Estate and Rapids Landing Estate to the north, or areas to be developed for residential purposes.
- Darch Road to the east, with Darch Brook and private rural residential landholdings further to the east.
- Perimeter Road to the south and land to be developed for industrial uses to the east-southeast.
- Bussell Highway and cleared agricultural land to the west.

² A 'hamlet' is defined as community orientated development separated by open land and/or conservation reserves as per the Shire of Augusta Margaret River *Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy* Shire of Augusta Margaret River 2011, *Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy*, Margaret River, Western Australia.

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2 Environmental Considerations

In accordance with the *Bushfire Management Plan – BAL Contour* template prepared by the Department of Planning, Lands and Heritage (2018), this BMP has considered whether there are any environmental values that may require specific consideration through either protection, retention or revegetation. To support this, a review of publicly available databases has been undertaken, with particular reference to the Shared Location Information Platform (SLIP) databases, and also consideration of the *Environmental Assessment Report* (Emerge Associates 2021b) prepared to support the scheme amendment and *Environmental Assessment and Management Strategy* (Emerge Associates 2022) prepared to support the structure plan. A summary of the values relevant to the site and bushfire management has been provided in **Table 1**.

The majority of the site has been cleared of native vegetation historically and is mostly pasture grasses with scattered mature trees. The site does not contain any environmental values of conservation significance.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases)

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Conservation category wetlands and buffer (Geomorphic wetlands, Leeuwin-Naturaliste Ridge and Donnybrook to Nannup (DBCA-043))	No	A review of the wetland dataset applicable to the site indicates that a wetland feature occurs within the eastern portion of the site. This area has a 'floodplain' designation and appears to directly connect with a 'Palusvale' feature associated with Darch Brook adjacent to the eastern boundary of the site. This floodplain feature will be managed through the urban water management process and is not required to be protected or have a buffer applied.
RAMSAR wetlands (DBCA-010)	No	No RAMSAR wetlands are identified within the mapping as occurring within the site or in close proximity.
Waterways (DWER-031)	No	No waterways, as mapped by the Department of Water and Environmental Regulation (DWER), are within or adjacent to the site. However, the Shire of Augusta Margaret River has identified a waterway to the east of the site, namely Darch Brook which is a tributary of Margaret River. Existing surface water flows within the site will be managed through the urban water management process and is not anticipated that a foreshore buffer will be required within the site, particularly given the site is separated from Darch Brook by Darch Road.
Threatened and priority flora (DBCA-036)	No	The site is completely cleared of remnant native vegetation, apart from scattered paddock trees, and is composed of non-native paddock grasses. It is highly unlikely threatened or priority flora found in the region would occur within the site.
Threatened and priority fauna (DBCA-037)	No	Due to historical clearing and lack of native vegetation, the site has limited natural values, apart from scattered paddock trees through the centre of the site (which are proposed to be retained in POS and/or as part of the lifestyle village (R40 area)). The scattered trees within the site are unlikely to provide habitat for any threatened or priority fauna species.

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Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases) (continued)

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Threatened ecological communities (DBCA-038)	No	As the site is primarily comprised of paddock grasses and sparse paddock trees and has been historically grazed for agricultural purposes (and still is), no threatened or priority ecological communities are likely to be present within the site.
Clearing regulations – Environmentally Sensitive Areas (DWER-046)	No	Not applicable. No environmentally sensitive areas (ESA) are identified within the site.
Acid Sulfate Soils (DWER-055)	Yes	Regional mapping published by the DWER identifies that the south-eastern portion of the site has a 'moderate to low risk' of acid sulfate soils (ASS) occurring within 3 m of the natural soil surface, whilst the remainder of the site has a low risk of ASS occurring within 3 m of the natural soil surface. ASS is not considered to pose a significant constraint to development within the site and will have no implications with regard to managing bushfire risk.
Aboriginal heritage (DPLH-001)	Potentially	One 'Other Heritage Place' (Place ID: 4494) is identified within the eastern portion of the site and is associated with a ceremonial ground. However, it is described as 'stored data/not a site' pursuant to the <i>Aboriginal Heritage Act 1972</i> . No specific protection or consideration of this site is required as part of the development process. A 'Registered' Aboriginal heritage site associated with the Mythological <i>Waugal</i> (Place ID: 4495) has been mapped approximately 580 m to the north of the site, associated with Darch Brook.
Non-indigenous heritage (DPLH-090)	No	Not applicable. No registered non-indigenous heritage sites were identified within or nearby to the site.

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2.1 Native vegetation – modification and clearing

As outlined above, the majority of the site has been historically cleared and now comprises non-native paddock grasses, with the exception of a small stand of paddock trees (*Agonis flexuosa*) within the central to south-eastern portion of the site. Opportunities to retain individual *Agonis flexuosa* trees within the R40 development cell (proposed to support a lifestyle village or similar) will be available, and therefore the individual paddock trees are likely to remain in streetscapes or in shared facility areas. This will be confirmed as part of future detailed design but will not affect the bushfire hazards assumed for the site.

With regard to bushfire management, clearing of vegetation will be largely limited to the removal of paddock grasses, and removal or vegetation in road reserves to create road connections. Areas of additional planting are proposed within the site and may be undertaken on mass ahead of development and therefore may require modification at the time of future subdivision.

Clearing/vegetation modification to enable the relevant siting and access requirements of the Guidelines to be achieved would be associated with:

- Future lots.
- Public open space (POS).
- Asset protection zones (APZs).
- Public roads.
- Water infrastructure.

Where clearing of native vegetation is undertaken in accordance with a subdivision approval under the *Planning and Development Act 2005*, it is exempt from requiring a clearing permit under Schedule 6 of the *Environmental Protection Act 1986* (EP Act). Additionally, a clearing permit will not be required where other exemptions pursuant to Schedule 6 of the EP Act exist, such as Section 33 of the *Bush Fires Act 1954*, or the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (where outside an ESA), such as those associated with a building licence or constructing a cross-over. Where portions of the site are within an ESA, the regulation exemptions would not be applicable.

Purposely planted native vegetation species by the proponent (as may occur to support early establishment of new planting within the site) is unlikely to be considered 'native vegetation' in accordance with the EP Act, and therefore a valid clearing permit or exemption is unlikely to be required if this planting is required to be modified to support subdivision.

2.2 Revegetation and landscape plans

As outlined above, as part of the extensive POS network proposed within the site (in accordance with the *Local Planning Policy 14 – Margaret River Development Investigation Areas Design and Development Policy* (Shire of Augusta Margaret River 2011) and the *Rural Hamlet Design Guidelines* (Shire of Augusta Margaret River 2009)), the proponent is proposing to undertake planting and design within large portions of the site to achieve a woodland classification (as per AS 3959). This is based on overstorey species over grass/low planting and occasional shrubs. These areas are shown in the current landscape plan, provided in **Appendix C**. While it is anticipated that the POS areas within the site will be maintained and could achieve low threat in accordance with Section 2.2.3.2 of AS

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3959, the majority of areas of POS have been assumed to be a bushfire hazard with a vegetation classification applied (and outlined further below). No specific management would be required to maintain these classifications given planting would be undertaken to meet these classifications.

Within the POS areas, areas of the green space network have been assumed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959 and are associated with small areas required to be managed as part of asset protection zones for future lots, or due to their function which supports active recreation (e.g., the shared oval). The specific design and approach will be detailed as part of subsequent stages of the planning and development process, but is likely to include activities such as:

- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Regular mowing/slashing of grass to less than 100 mm in height.
- Regular removal of built-up dead material and weeds (such as fallen branches, leaf litter etc.)
- Re-application of surface cover, such as mulch or other non-flammable materials as required.
- Irrigation of grass and garden beds (where required).

3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered both in context to the site and potential impacts upon the site using AS 3959 and the Guidelines.

The objective of AS 3959 is to reduce the risk of ignition and loss of a building to bushfire. It provides a consistent method for determining a radiant heat level (radiant heat flux) as a primary consideration of bushfire attack. AS 3959 measures the Bushfire Attack Level (BAL) as the radiant heat level (kW/m^2) over a distance of 100 m. AS 3959 also prescribes deemed-to-satisfy construction responses that can resist the determined radiant heat level at a given distance from the fire. It is based on six BAL ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

3.1 Assessment inputs

A BAL assessment was undertaken in accordance with Method 1 of AS 3959. Vegetation classifications and effective slope relevant to the assessment have been detailed below and shown in **Figure 2**. A BAL Contour Plan has been prepared based on the assumed developed condition of the site in accordance with Appendix Three of the Guidelines and is discussed further below and is shown in **Figure 3**. The site has been subject to a number of site visits, including 6 July 2021 and a subsequent visit on 16 November 2022 to confirm previous classifications.

3.1.1 Assumptions

The BAL assessment is based on the following assumptions:

- **Designated FDI:** 80
- **Flame temperature:** 1090 K
- **Vegetation classification:** Forest (Class A), woodland (Class B) and grassland (Class G) (**Figure 2**)
- **Effective slope beneath classified vegetation:** Flat/upslope, downslope $>0-5^\circ$ (**Figure 2**)
- **Setback distances:** as per Table 2.5 in AS 3959 with the relevant distances used to inform the BAL contour plan summarised in **Table 3** and the BAL contour plan shown in **Figure 3**
- Future lots, public roads and some areas of POS (associated with asset protection zones and the school oval) will involve the permanent removal/modification of classified vegetation, with these areas maintained to achieve low threat in accordance with Section 2.2.3.2 of AS 3959.
- The majority of the POS areas will be planted to achieve a woodland or grassland classification and have been assumed to be a bushfire hazard for the purpose of this BMP (see **Figure 2**).
- Areas of low threat vegetation outside the site will continue to be managed and/or considered to achieve low threat (in accordance with Section 2.2.3.2 of AS 3959) based on existing maintenance regimes, and/or as per the Shire of Augusta-Margaret River Fire Break Notice.
- Classified vegetation that has been identified outside of the proponent's landholdings has been assumed to remain in its current state and will therefore continue to be a bushfire hazard to development within the site.
- Areas of grassland can include up to 10% foliage cover from shrubs and trees, per AS 3959.

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3.1.2 Vegetation Classification

All vegetation within 150 m of the site was classified in accordance with Clause 2.2.3 of AS 3959. Each distinguishable vegetation plot is described in **Table 2** and shown in **Figure 2**. The assignment of the vegetation classification (or exclusions) is a conservative assessment of the vegetation with consideration of the fuel layers of different vegetation types, which can be broken down into five segments as illustrated in **Plate 2** below.

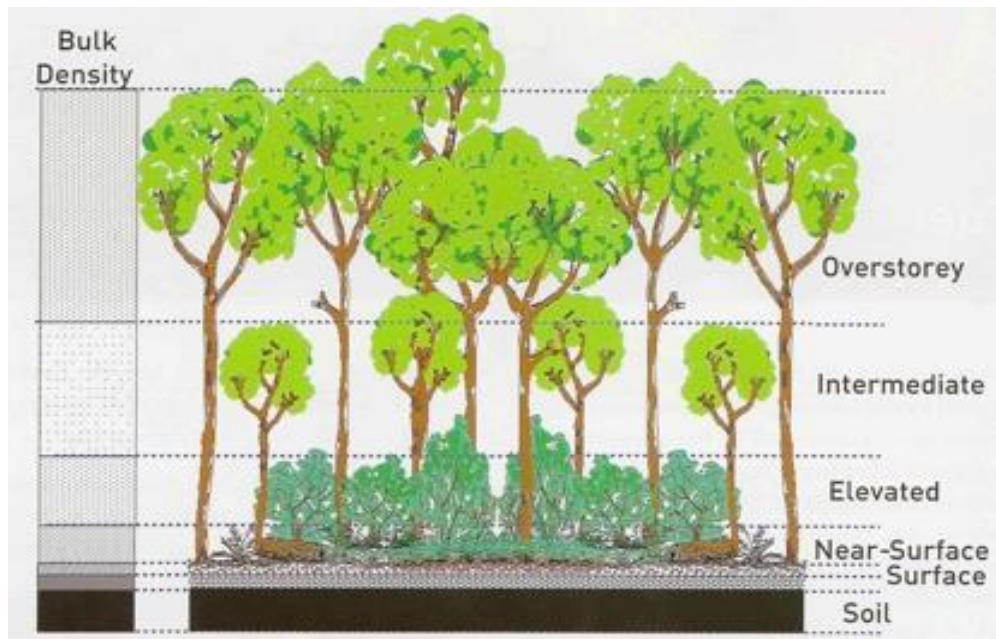


Plate 2: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

Not all vegetation is a classified bushfire risk. Vegetation and ground surfaces that are exempt from classification as a potential hazard are identified as a low threat under Section 2.2.3.2 of AS 3959. Low threat vegetation includes the following:

- a) *Vegetation of any type that is more than 100 m from the site.*
- b) *Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.*
- c) *Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified.*
- d) *Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.*
- e) *Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings, and rocky outcrops.*
- f) *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves, and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and wind breaks.*

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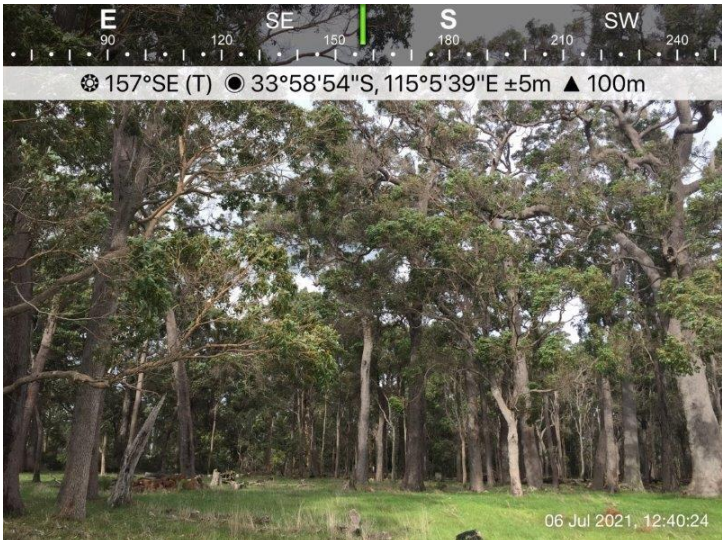


Table 2: AS 3959 Vegetation Classification (refer to Figure 2)

Photo ID:	1	Plot:	1	<p>197°S (T) ● 33°58'45"S, 115°5'13"E ±5m ▲ 100m</p> <p>06 Jul 2021, 13:33:16</p>
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified east of the site associated with roadside rest area along Bussell Highway. The narrow band of vegetation has a multi-tiered fuel structure, with an overstory of <i>Agonis flexuosa</i> over non-native grasses. Whilst trees are in proximity to powerlines and therefore should be subject to maintenance this area has been conservatively assessed as forest.</p>				
Photo ID:	2	Plot:	1	<p>17°N (T) ● 33°58'45"S, 115°5'12"E ±5m ▲ 101m</p> <p>06 Jul 2021, 13:33:23</p>
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified east of the site associated with the road verge along Bussell Highway. The narrow band of vegetation has a multi-tiered fuel structure, with an overstory of <i>Eucalyptus/Corymbia</i> species over non-native grasses. Canopy trees reach between 20 -30 m in height with a foliage cover in excess of 30%.</p>				
Photo ID:	3	Plot:	1	<p>121°SE (T) ● 33°58'35"S, 115°5'9"E ±5m ▲ 95m</p> <p>06 Jul 2021, 13:39:10</p>
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>As per above, areas of forest vegetation have been identified east of the site associated with the road verge along Bussell Highway. The narrow band of vegetation has a multi-tiered fuel structure, with an overstory of <i>Eucalyptus/Corymbia</i> species over non-native grasses. Canopy trees reach between 20 -30 m in height with a foliage cover in excess of 30%.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	4	Plot:	2	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
Photo ID:	5	Plot:	3	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Revegetation planting has been identified south of the site, associated with the Perimeter Road reserve. The narrow band of vegetation has a multi-tiered fuel structure, with Eucalypts observed and likely to be the predominant vegetation form over shrub and species and grass. The Eucalypts currently reach 5 m in height with a foliage cover in excess of 30%, however the vegetation classification of forest is based on the ultimate vegetation height.</p>				
<p>Areas of forest vegetation have been identified south of the site associated with a neighbouring landholding south of Perimeter Road. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over shrubs and non-native grasses. The canopy trees reach between 25-30 m in height with a foliage cover in excess of 30%.</p>				
Photo ID:	6	Plot:	4	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified south of the site associated with Perimeter Road reserve. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over shrubs and non-native grasses. Recruitment of new species that will be variable fuel structures was visible. The canopy trees reach between 25-30 m in height with a foliage cover in excess of 30%.</p>				
<p>Areas of forest vegetation have been identified south of the site associated with Perimeter Road reserve. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over shrubs and non-native grasses. The canopy trees reach between 25-30 m in height with a foliage cover in excess of 30%.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	7	Plot:	4	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified south-east of the site associated with Perimeter Road reserve. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over shrubs and non-native grasses. Canopy trees reach 30 m in height with a foliage cover in excess of 30%.</p>				
Photo ID:	8	Plot:	4	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified east of the site associated with remnant vegetation within the Darch Road reserve. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over scattered shrubs and non-native grasses. Canopy trees reach 30 m in height with a foliage cover in excess of 30%.</p>				
Photo ID:	9	Plot:	5	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified east of the site associated with existing vegetation along Andrews Way and within neighbouring landholdings. The vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over occasional shrubs, non-native grasses and weeds (<i>Watsonia</i> spp.). Canopy trees reach up to 30 m in height with a foliage cover in excess of 30%.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

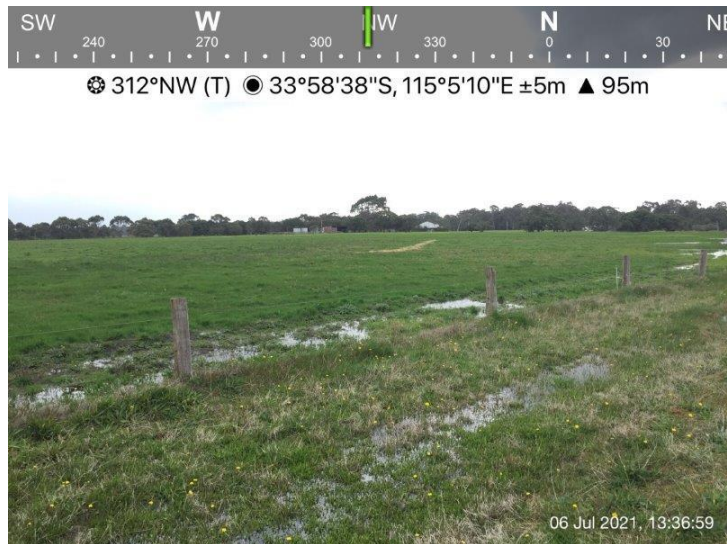
Photo ID:	10	Plot:	6	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified north of the site associated with narrow strips of vegetation within the Andrews Way road reserve. The narrow band of vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over occasional shrubs, non-native grasses and weeds (<i>Watsonia</i> spp.). Canopy trees reach between 20 -30 m in height with a foliage cover in excess of 30%.</p>				
Photo ID:	11	Plot:	6	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
<p>Areas of forest vegetation have been identified north of the site associated with narrow strips of vegetation within the Andrews Way road reserve. The narrow band of vegetation has a multi-tiered fuel structure, with an overstory of Eucalyptus/Corymbia species over occasional shrubs, non-native grasses and weeds (<i>Watsonia</i> spp.). Canopy trees reach between 20-30 m in height with a foliage cover in excess of 30%.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	12	Plot:	6
Vegetation Classification or Exclusion Clause			
Class A - Forest			
Description / Justification for Classification			
<p>Areas of forest vegetation have been identified north of the site associated with a planted road verge along Andrews Way. The band of vegetation has a multi-tiered fuel structure, dominated by <i>Agonis flexuosa</i> and scattered <i>Corymbia calophylla</i> reaching up to 25 m in height and a foliage cover in excess of 30%. While it appears to be subject to some management, particularly the vegetation within Brookfield Estate, it has been identified as a bushfire hazard for the purposes of this assessment.</p>			
Photo ID:	13	Plot:	7
Vegetation Classification or Exclusion Clause			
Class G – Grassland			
Description / Justification for Classification			
<p>Areas of grassland vegetation have been identified east of the site and Bussell Highway. This area contains mixed paddock grasses greater than 100 mm in height. The area is subject to some seasonal management however the management regime for the vegetation is unknown, therefore for the purposes of this BMP it is assumed to remain a hazard.</p>			
Photo ID:	14	Plot:	8
Vegetation Classification or Exclusion Clause			
Class G – Grassland			
Description / Justification for Classification			
<p>Areas of grassland vegetation have been identified south of the site associated with the Perimeter Road verge. This area contains mixed paddock grasses greater than 100 mm in height. The area is subject to some seasonal management, however the management regime for the vegetation is unknown, therefore for the purposes of this BMP it is assumed to remain a hazard.</p>			



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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	15	Plot:	9	
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland vegetation have been identified south of the site and the Perimeter Road. This area contains mixed paddock grasses greater than 100 mm in height. The area is subject to some seasonal management however the management regime for the vegetation is unknown, therefore for the purposes of this BMP it is assumed to remain a hazard.</p>				
Photo ID:	16	Plot:	11	
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland vegetation have been identified south-east of the site and Perimeter Road. This area contains mixed paddock grasses greater than 100 mm in height. The management regime for the vegetation is unknown, therefore for the purposes of this BMP it is assumed to remain a hazard.</p>				
Photo ID:	17	Plot:	10	
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland vegetation (shown in midground) have been identified east of the site and Darch Road. This area contains mixed paddock grasses greater than 100 mm in height. The management regime for the vegetation is unknown, therefore for the purposes of this BMP it is assumed to remain a hazard.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	18	Plot:	12	
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland vegetation have been identified north of the site and Andrews Way. Portions to the north are currently undergoing subdivision works to support residential development in accordance with the strategic planning for the area (Shire of Augusta Margaret River 2015), and are likely to be developed ahead of residential development within the site. For the purposes of this BMP, this vegetation is assumed to remain a hazard given the specific timing for full completion is currently unknown.</p>				
Photo ID:	19	Plot:	12	
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland have been identified north of the site, associated with a neighbouring landholding. Grasses within this area appear to be subject to some seasonal management however, for the purposes of this BMP the area has been assumed to be unmanaged and remain a hazard.</p>				
Vegetation Classification or Exclusion Clause				
Class G – Grassland				
Description / Justification for Classification				
<p>Areas of grassland have been identified north of the site, associated with a neighbouring landholding. Grasses within this area appear to be subject to some seasonal management however, for the purposes of this BMP the area has been assumed to be unmanaged and remain a hazard.</p>				
Photo ID:	20	Plot:	13	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
<p>Existing non-vegetated areas have been identified north of the site associated with the existing Brookfield Estate. It is noted that some of these areas contain managed grass or garden beds being managed in a low threat state. For ease of reference and distinction these low-threat areas have been excluded as non-vegetated as they form a minor part of the existing developed areas.</p>				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
<p>Existing non-vegetated areas have been identified north of the site associated with the existing Brookfield Estate. It is noted that some of these areas contain managed grass or garden beds being managed in a low threat state. For ease of reference and distinction these low-threat areas have been excluded as non-vegetated as they form a minor part of the existing developed areas.</p>				
Photo ID:	20	Plot:	13	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
<p>Existing non-vegetated areas have been identified north of the site associated with the existing Brookfield Estate. It is noted that some of these areas contain managed grass or garden beds being managed in a low threat state. For ease of reference and distinction these low-threat areas have been excluded as non-vegetated as they form a minor part of the existing developed areas.</p>				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	21	Plot:	13	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2 (e)				
Description / Justification for Classification				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
Areas associated with existing non-vegetated areas have been identified to the north of the site and are associated with a commercial area and associated parking. It is noted that some of these areas contain managed established grass or garden beds being managed in a low threat state. For ease of reference and distinction these existing low-threat areas have been excluded as non-vegetated as they form a minor part of the existing developed areas.				
Photo ID:	22	Plot:	13	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(e)				
Description / Justification for Classification				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
Road pavement associated with existing regional roads (including Bussell Highway and Perimeter Road) and local roads (Andrews Way) have been excluded as non-vegetated.				
Photo ID:	23	Plot:	14	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
Areas of vegetation managed to a low threat state have been identified north of the site within a neighbouring landholding residential lot and the commercial development and is associated with grasses, gardens and road verge.				

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Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)

Photo ID:	24	Plot:	14	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
<p>Areas of vegetation managed to a low threat state have been identified north of the site within a part of the Bussell Highway road verge and neighbouring landholdings. This area is associated with well managed grasses, gardens and road verge and has been excluded in accordance with exclusion 2.2.3.2(f).</p>				
Photo ID:	25	Plot:	14	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2(f)				
Description / Justification for Classification				
<p>Areas of vegetation managed to a low threat state (in midground of photo) have been identified east of the site within neighbouring landholdings. This area is associated with well managed grasses, gardens and road verge and has been excluded in accordance with exclusion 2.2.3.2(f).</p>				
Photo ID:	26	Plot:	14	
Vegetation Classification or Exclusion Clause				
Exclusion 2.2.3.2 (f)				
Description / Justification for Classification				
<p>Areas of vegetation managed to a low threat state have been identified east of the site within neighbouring landholdings. This area is associated with well managed grasses, gardens and road verge and has been excluded in accordance with exclusion 2.2.3.2(f).</p>				

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3.2 Assessment outputs

The vegetation classifications determined in **Section 3.1** are summarised in **Table 3** (and **Figure 2**) and incorporate the known changes to vegetation post-development, including the introduction of classified woodland and grassland vegetation within future POS areas. The resultant BALs are shown in **Figure 3**.

BAL ratings are based on the minimum distances outlined in Table 2.5 of AS 3959, with the relevant distances summarised in **Table 4** for ease of reference.

Table 3: Summary of the assumed post-development vegetation classification and associated effective slope within the site and 150 m in accordance with Table 2.5 (AS 3959)

Plot	Applied vegetation classification	Effective slope
1	Class A - Forest	Flat/upslope
2	Class A - Forest	Flat/upslope
3	Class A - Forest	Flat/upslope
4	Class A - Forest	Flat/upslope
5	Class A - Forest	Downslope >0-5°
6	Class A - Forest	Flat/upslope
7	Class G - Grassland	Flat/upslope
8	Class G - Grassland	Flat/upslope
9	Class G - Grassland	Flat/upslope
10	Class G - Grassland	Flat/upslope
11	Class G - Grassland	Downslope >0-5°
12	Class G - Grassland	Flat/upslope
13	Exclusion 2.2.3.2(e) – existing non-vegetated areas surrounding the site	N/A
14	Exclusion 2.2.3.2(f) - existing areas managed to low threat surrounding the site.	N/A
15	Class B – Woodland – associated with future POS areas within the site, assumed to be unmanaged.	Flat/upslope
16	Class G - Grassland – associated with future POS areas within the site, assumed to be unmanaged.	Flat/upslope
17	Exclusion 2.2.3.2(e) – future non-vegetated areas, associated with residential lots, the primary school and public roads within the site	N/A
18	Exclusion 2.2.3.2(f) – associated with portions of the POS areas within the site proposed to be managed due to future use (e.g., oval) or function.	N/A

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The BAL assessment completed for the site indicates that the majority of areas proposed for residential development (and therefore future habitable buildings) can achieve BAL-29 or less based on the proposed structure plan, as shown in **Figure 3**. Portions of the residential development cells (particularly along Darch Road and Andrews Way) are shown as having portions of the cell subject to BAL-40 and/or BAL-FZ. There is sufficient area within the cells to accommodate habitable buildings within BAL-29 or below using in-lot setbacks. This will be able to be addressed in detail as part of future subdivision planning and design.

Table 4: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment

Plot number (see Figure 2)	Vegetation classification (see Figure 2)	Effective slope (see Figure 2)	Distance to vegetation (from Table 2.5 of AS 3959)	BAL rating (see Figure 3)
Plot 1 – Plot 4 and Plot 6	Forest (Class A)	Flat/upslope	< 16 m	BAL-FZ
			16 - < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 5	Forest (Class A)	Downslope >0-5	< 20 m	BAL-FZ
			20 - < 27 m	BAL-40
			27 - < 37 m	BAL-29
			37 - < 50 m	BAL-19
			50 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 7 – Plot 10, Plot 12 and Plot 16	Grassland (Class G)	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 11	Grassland (Class G)	Downslope >0-5	< 7 m	BAL-FZ
			7 - < 9 m	BAL-40
			9 - < 14 m	BAL-29
			14 - < 20 m	BAL-19
			20 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

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Table 4: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment (continued)

Plot number (see Figure 2)	Vegetation classification (see Figure 2)	Effective slope (see Figure 2)	Distance to vegetation (from Table 2.5 of AS 3959)	BAL rating (see Figure 3)
Plot 15	Woodland (Class B)	Flat/upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

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4 Identification of Bushfire Hazard Issues

From a bushfire hazard management perspective, based on the requirements of SPP 3.7 and the Guidelines, the key issues that are likely to require management and/or consideration as part of future development within the site include:

- Provision of appropriate separation distance from bushfire hazards to ensure a BAL rating of BAL-29 or less can be achieved at future habitable buildings. This includes consideration of the POS design and likely inclusion of classified woodland (Class B) and grassland (Class G) vegetation.
- Ensuring that site access is designed and constructed to ensure safe access and egress to at least two different destinations. This will include the use of emergency access ways (EAWs) to ensure multiple access routes are provided for the hamlet-style development within the southern half of the site.
- Ensuring that where specified, POS areas within the site are designed, implemented and managed to achieve low threat standards and meet asset protection zones requirements.
- Ensuring the provision of water for firefighting purposes, in the form a reticulated scheme and associated fire hydrants.
- Ensuring that vulnerable occupants are provided for in the event of a bushfire emergency.

4.1 Permanent Hazards

As part of future development within the site, it has been assumed that the majority of the POS network within the site will be a bushfire hazard, as part of the proposed landscaping approach for the project. The majority of the site is located adjacent to areas of classified vegetation to the north, south, east and west. This vegetation is not under the control of the proponent and is therefore not able to be modified by the landholder. Classified vegetation that will be relevant for future residential development within the site includes:

- Class A – Forest vegetation, associated with existing vegetation within the surrounding road reserves on all perimeters of the site and rural residential properties further east and south.
- Class B – Woodland vegetation, associated with proposed POS planting of overstorey tree species at a higher density (<30% foliage cover) over grass/occasional shrubs and is assumed to be unmanaged.
- Class G – Grassland vegetation, associated with existing unmanaged paddock areas and road verges surrounding all boundaries of the site, and future unmanaged portions of the proposed POS areas that will be composed of grasses/sedges within occasional trees and shrubs.

It is noted that vegetation within the surrounding road reserves consists of narrow strips (as outlined) of mature trees over predominantly weeds and pasture grasses, and it may be possible that these areas could be more representative of a woodland classification. This will be considered further as part of subdivision.

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4.2 Temporary Hazards

Land to the north of Andrews Way (within Brookfield Estate) is currently undergoing subdivision works, and existing grassland hazards are likely to be removed permanently as development progresses. These areas of grassland, identified as hazard for this BMP given the timing for completion of all works is not known, will be further considered as part of the subdivision process for the site.

As part of staged development within the site, temporary grassland or woodland hazards may be present based on existing vegetation within the site or forward planting that may occur across the site to support the proposed landscape approach. Where vegetation is not proposed for long-term retention within POS areas, BAL ratings from temporary hazards can be mitigated. This can be achieved if a minimum 50 m-wide area for grassland and 100 m area for woodland is managed around each stage (where within the proponent's landholding). Where this approach is undertaken, vegetation will need to be managed by the proponent until residential development in those areas progresses.

4.3 Vulnerable Land Use

The definition of a vulnerable land use is where occupants are less able to respond in an emergency. The types of land use considered vulnerable was expanded in the most recent version of the Guidelines and includes *“facilities that, due to the building design or use, or the number of people accommodated, are likely to present evacuation challenges.”* The identification of a land use as a vulnerable use is at the discretion of the decision maker in the event of a proposed development being lodged for planning approval.

The site contains a proposed primary school in the northern portion of the site, which in accordance with SPP 3.7 and the Guidelines, would be considered a vulnerable land use. In accordance with Clause 6.6.1 of SPP 3.7, a BMP needs to demonstrate appropriate consideration has been provided for separation from bushfire hazards and emergency evacuation. This is considered further in **Section 5.1.4**.

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5 Assessment Against the Bushfire Protection Criteria

This BMP provides an outline of the mitigation strategies that will ensure that as the development progresses within the site, an acceptable solution can be adopted for each of the bushfire protection criteria detailed within Appendix Four of the Guidelines. The applicable bushfire protection criteria identified in the Guidelines and addressed as part of this BMP are:

- Element 1: Location of the development
- Element 2: Siting and design of the development
- Element 3: Vehicular access
- Element 4: Water supply.

As part of future development, it is likely that an ‘acceptable solution’ will be able to address the intent of all four bushfire protection criteria. A summary of how this can be achieved and an associated compliance statement for each has been provided in **Table 5**.

Table 5: Assessment against the bushfire protection criteria from the Guidelines

Bushfire protection criteria	Proposed bushfire management strategies
Element 1: Location	
A1.1 Development location	<p>Once development is progressed the majority of future residential areas will be located to achieve BAL-29 or less. Small portions of the proposed residential development cells are subject to BAL-40 and BAL-FZ, however there is sufficient area to accommodate habitable buildings within BAL-29 or below using in-lot setbacks, and this can be addressed as part of the future planning processes. Consideration of achieving BAL-29 or less for development is addressed under Element 2 further below.</p> <p>The proposal complies with A1.1.</p>
Element 2: Siting and design	
A2.1 Asset Protection Zone	<p>All proposed development areas that are intended to support habitable buildings are able to achieve an asset protection zone (APZ) with sufficient separation from classified vegetation to achieve BAL-29 or below. Separation from permanent bushfire hazards is provided within the structure plan through the strategic placement of public roads and portions of managed public open space (as shown in Figure 4) and provision of deeper lots at subdivision to accommodate in-lot setbacks. Overall, the development cells within the site are suitability sized, in combination with the public road network and the POS areas, to accommodate the minimum separation distances (outlined in Table 4 and shown in Figure 3).</p> <p>The school site is sufficiently sized to enable future habitable buildings to be located to achieve BAL-29 or less. The narrow strips of forest vegetation within Andrews Way are assumed to remain in the future. A maximum 21 m setback from the northern boundary would be required to achieve BAL-29. The majority of the school site will be subject to BAL-12.5 or BAL-LOW as show in Figure 3.</p> <p>The proposal complies with A2.1.</p>

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



Table 5: Assessment against the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Proposed bushfire management strategies
Element 3: Vehicular access	
A3.1 Public roads	Surrounding public roads (i.e. Perimeter Road, Bussell Highway, Andrews Way) and all new internal public roads can and will be able to comply with the minimum standards outlined in Appendix Four of the Guidelines (DPLH & WAPC 2021) (refer to Plate 3 further below). The structure plan indicates road reserves within the site will likely vary between 6 m and 15 m wide (depending upon the road type), meeting neighbourhood connectors and access street requirements, as per the IPWEA guidelines. (DPLH 2017) Therefore, the proposal complies with A3.1.
A3.2a Multiple access routes.	<p>The proposed structure plan provides for a new internal road network within the site that will connect to the existing public road network. Egress options includes Andrews Way to the north, which connects to Brookfield Estate and Bussell Highway; and a second direct connection west to Bussell Highway which provides egress north toward Margaret River townsite and south of the site (see Figure 4).</p> <p>Within the southern half of the site, and more broadly to achieve the requirements of the Shire of Augusta Margaret River <i>Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy</i> (Shire of Augusta Margaret River 2011) and the <i>Rural Hamlet Design Guidelines</i> (Shire of Augusta Margaret River 2009), a number of hamlets are proposed which only have one road in and out from each cell (but connect to the broader interconnected road network within the site). These cells would be considered no through roads, however through the use of two emergency access ways connecting the cells across the POS areas and to Darch Road, multiple access within each cell can be achieved. This is considered further below. The proposed development can comply with A3.2a.</p>
A3.2b Emergency access way	As outlined, in order to meet the requirements of the Shire of Augusta Margaret River <i>Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy</i> and the <i>Rural Hamlet Design Guidelines</i> , which requires development to include hamlet/village style development surrounded by extensive green spaces, emergency access ways (EAWs) are required to enable multiple access routes from the southern development cells and still meet the local policy requirements. Three (3) EAWs are proposed in the southeast and southwest portion of the site providing emergency connection between the southern cells and Darch Road (external to the site). The EAWs are to connect to gazetted public roads, including within the lifestyle village, and thereby provide an additional egress option. These EAWs will be less than 500 m in length and will provide a through connection to other gazetted public roads and meet the requirements outlined in Plate 3 . Indicative EAWs are shown in Figure 4 and will be addressed further at subdivision. The proposed development complies with A3.2b.

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



Table 5: Assessment against the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Proposed bushfire management strategies
Element 3: Vehicular access (continued)	
A3.3 Through-roads	<p>As outlined above, the three development cells within the southern portion of the site would be 'no through roads'; given the interconnected road loops back on itself. Through the use of EAWs (described above), the southern development cells can achieve access to multiple destinations and would not be no-through roads.</p> <p>Outside of the loop road considerations, a number of permanent no-through roads are proposed within the site to enable efficient development across the site and compliance with the Shire of Augusta Margaret River <i>Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy and the Rural Hamlet Design Guidelines</i>. The no-through road locations are shown in Figure 4. All no-through roads are generally less than 200 m in length to a road that provides two-way access (when the emergency access way is considered) and will be able to provide appropriate turn around areas at subdivision.</p> <p>Assessing the access for the subdivision has required balancing the requirements of the Guidelines with the Shire's policies and guidelines. If the proposed no-through roads are considered an unacceptable risk then this can be addressed during the subdivision design stage. However, by virtue of the proposed future development, the no-through roads will be within a residential built-out area, and as described above, the road network provides multiple access routes to more than one suitable destination.</p> <p>As part of subdivision, where no through roads are proposed, these will need to comply with the minimum requirements outlined in Appendix Four of the Guidelines, including provision of an appropriate turn-around area. Where temporary no-through-roads are required at any of staged development, these should also comply with Appendix Four of the Guidelines or agreed with the Shire of Augusta Margaret River. The proposal is able to comply with A3.3</p>
A3.4a Perimeter roads	<p>The structure plan indicates the majority of the residential development cells will be serviced by a perimeter road (see Appendix A), interfacing between proposed lots and areas of POS or external hazards (see Figure 4). The POS areas will be a mix of managed areas, and areas proposed to achieve a woodland or grassland classification. To meet the Shire of Augusta Margaret River <i>Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy and the Rural Hamlet Design Guidelines</i>, the development cells (hamlets) are surrounded by extensive green areas. Development areas proposed adjacent to Andrews Way and Darch Road, may be located adjacent to narrow strips of classified vegetation within the road verge, however Andrews Way and Darch Road provide perimeter access to the development cells. No other road access is required. The proposed development complies with A3.4a.</p>
A3.4b Fire service access route	<p>No fire service access route is proposed or required to achieve compliance with any other criterion.</p>
A3.5 Battle-axe access legs	<p>Not applicable. No battle-axe access is indicated at this stage of the planning process. As part of the future subdivision of the site, while battle-axe access legs should be avoided where possible within designated bushfire prone areas, if proposed as part of future development, their inclusion will need to be justified and will need to address the minimum standards outlined in Appendix Four of the Guidelines which includes technical requirements in Table 6 (reproduced in Plate 3).</p>
A3.6 Private driveway longer than 70 metres	<p>In accordance with Appendix Four of the Guidelines, this criterion is not a relevant consideration for a structure plan. Based on the density of the proposed residential development and proposed development cells, private driveways longer than 70 m are unlikely to be required. If future dwellings require private driveways longer than 70 m they will need to comply with the requirements of the Guidelines, including Table 6 of the Guidelines.</p>

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



Table 5: Assessment against the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Proposed bushfire management strategies
Element 4: Water	
A4.1 Identification of future water supply	The proposed development is located in an area that is to be serviced by a reticulated water supply. The reticulated water supply network will be extended to the site from the existing Brookfield Estate to the north. The proposed development is able to comply with A4.1
A4.2 Provision of water for firefighting purposes	Not applicable at this stage in the process. As outlined, the proposed development will be serviced by reticulated water supply and hydrant connections in accordance with the specifications of the Water Corporation.

Table 6: Vehicular access technical requirements

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.

Plate 3: Excerpt of Table 6 from The Guidelines

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



5.1 Additional management strategies

5.1.1 Future approval considerations

A BAL assessment has been prepared for the site to demonstrate that best practice management strategies can be adopted through future planning and implementation stages to ameliorate the bushfire hazards (i.e., habitable buildings can be located in areas of BAL-29 or less) that would otherwise impact upon its future development. This has included consideration of the introduction of woodland and grassland vegetation within the extensive POS network.

It is likely a BMP, or as a minimum a bushfire statement, will be required to support future subdivision for the site, to detail how the proposed development layout has or will address the bushfire protection criteria based on the recommendations outlined within this BMP, as well as to determine the likely BAL ratings applicable to the future lots based on hazards applicable to that stage of development.

Where proposed to be constructed and within a designated bushfire prone area, future Class 1, 2, 3 and 10a buildings in an area subject to a BAL rating of BAL-12.5 or higher will need to satisfy higher construction standards in accordance with the National Construction Code (NCC) (i.e., AS 3959 or the National Association for Steel-framed Housing (NASH) Standard).

5.1.2 Landscape management

5.1.2.1 Within the site

Public open space

As outlined in previous sections of the BMP, the POS areas within the site will be a mix of replanted areas that have been assumed to be classified vegetation, namely woodland (Class B) and grassland (Class G), and small pockets of managed low threat areas. These are shown in **Figure 2** and **Figure 4**, and also indicated in **Appendix C**.

The areas assumed to be classified vegetation will be designed to achieve those classifications, with forward planting of tree species likely to occur within the site ahead of subdivision. No ongoing management to achieve low threat in accordance with Section 2.2.3.2 of AS 3959 has been assumed in these areas.

For the portions of the POS areas identified to achieve low threat vegetation in accordance with Section 2.2.3.2 of AS 3959 (as shown in **Figure 4**, and associated with APZs and active recreation areas), the detailed design of these areas will be determined in collaboration with the Shire of Augusta Margaret River as part of the standard development process. Management may include:

- Clearing/modification of existing vegetation.
- Irrigation of grass and garden beds (where required).
- Regular maintenance including removal of weeds and dead material.
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Application of ground covers such as mulch or non-flammable materials.
- Regularly mowing/slashing of grass to less than 100mm in height.

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



The proponent will be responsible for the initial maintenance of these areas and following handover the Shire of Augusta Margaret River will be responsible for the long-term maintenance of the POS areas to achieve a low threat standard.

5.1.2.2 Surrounding the site

Within the public road reserves

Areas of existing road reserves and public open space will continue to be maintained by the Shire of Augusta Margaret River and or Main Roads Western Australia in accordance with the existing maintenance regimes.

Within private landholdings

The private landholdings surrounding the site are assumed to be managed by the applicable landowners in accordance with the Shire of Augusta Margaret River Firebreak Notice in perpetuity and/or in accordance with existing maintenance regimes. All other vegetation will remain in its existing condition for the foreseeable future. It is noted that land to the north is undergoing subdivision works and this will likely change the bushfire risk applicable to the site as part of future subdivision processes.

5.1.3 Shire of Augusta Margaret River Firebreak Notice

The Shire of Augusta Margaret River releases a Firebreak Notice on an annual basis to provide a framework for bushfire management within the shire. The Shire of Augusta Margaret River are able to enforce this notice in accordance with Section 33 of the *Bush Fires Act 1954*. In addition, Section 33 1(b) also provides the shire with additional power to direct landowners to undertake works to remedy conditions conducive to the outbreak or spread of bushfire.

Following development for residential purposes, all lots will be required to comply with the Firebreak Notice, which includes (or as updated):

- Removal of all hazardous material from the whole of the land except living trees. In the area remaining, vegetation is to be maintained to a height no greater than 10 centimetres; this includes piles of timber, branches and other vegetation.
- Tree branches shall be removed or pruned to ensure a clear separation of at least 2 metres from the eaves of all buildings and 4 metres above the top of the roof. Branches that may fall on the house must also be removed.

In addition, all lots subject to an approved bushfire management plan through subdivision will be required to comply with that plan. Based on this BMP, and similar provisions applying, all future lots will need to be managed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959.

5.1.4 Vulnerable or high-risk land uses

As discussed in **Section 4.3**, a primary school is proposed in the north-eastern portion of the site, and in accordance with SPP 3.7 and the Guidelines would be considered a vulnerable land use. The BMP demonstrates appropriate consideration has been provided for separation from bushfire hazards and emergency evacuation. Emergency evacuation is able to be addressed through the proposed public

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



road network, which provides for egress to multiple destinations as shown in **Figure 4**. The school is surrounded by three roads (existing Andrews Way and two proposed roads) and a co-located oval. Separation from bushfire hazards can be achieved as sufficient area is available within the lot that will ensure habitable school buildings/structures are able to be subject to BAL-29 or less, as shown in **Figure 3**.

If the primary school is in an area subject to BAL rating equal to or exceeding BAL-12.5 at the time it is developed, a bushfire management plan and emergency evacuation plan will need to be prepared to support the development application. No other consideration in accordance with policy measure 6.6 is required to support the structure plan.

5.1.5 Public education and preparedness

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. The DFES website (<https://www.dfes.wa.gov.au/bushfire/prepare/>) provides a range of materials to help the community prepare for and survive the bushfire season.

The Shire of Augusta Margaret River provides bushfire safety advice to residents available from their website (<https://www.amrshire.wa.gov.au/residents-community/fire-and-emergency-managment>). Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high risk areas in addition that that provided in this BMP.

In the case of a bushfire in the area, advice would be provided to residents by DFES, Department of Biodiversity Conservation and Attractions (DBCA) and/or the Shire of Augusta Margaret River on any specific recommendations with regard to responding to the bushfire, including evacuation if required. However, it is highly recommended that future residents make themselves aware of their responsibilities with regard to preparing for and responding to a potential bushfire that may impact them, their family and property, regardless of the BAL rating their properties are subject to.

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



6 Responsibilities for Implementation and Management of Bushfire Measures

Table 6 outlines the future responsibilities of the proponent (developer) and the Shire of Augusta Margaret River associated with implementing the proposed structure plan with reference to future mitigation measures to be accommodated as part of subdivision.

Table 6: Responsibilities for the implementation of this BMP

Proponent – to support structure plan and future subdivision		
No.	Implementation and Management actions	Timing
1	Make a copy of the BMP available to relevant decision makers to support consideration of the structure plan.	To support the structure plan approval process
2	<p>Where applicable, as part of the subdivision process, make spatial provisions for:</p> <ul style="list-style-type: none"> • A suitable public road network that provides egress to at least two different destinations and meets the technical requirements of Appendix Four of the Guidelines and the associated Table 6 (or as otherwise determined by a bushfire consultant and relevant approval authority). This includes making provision for emergency access ways that connect to gazetted public roads where these are required to enable compliance with Shire of Augusta Margaret River <i>Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy</i> and the <i>Rural Hamlet Design Guidelines</i>. • Where possible, avoid no through roads and battle-axe lots as part of the spatial layout. If these are proposed as part of future development, these will need to be justified from a planning/development perspective and be consistent with the minimum requirements outlined in Appendix Four of the Guidelines (or as otherwise determined by a bushfire consultant and relevant approval authority). This includes provision of suitable turn-around areas. • Ensure future habitable buildings are able to be located in an area subject to BAL-29 or less. The minimum separation distances between habitable buildings and classified vegetation to achieve BAL-29 should be in accordance with Table 3 in this BMP or as specified in subsequent BAL assessments. These separation distances can be accommodated by locating public roads and/or managed POS between the habitable building/s and classified vegetation and/or ensuring proposed residential lots are adequately sized to ensure in-lot setbacks can be accommodated to achieve BAL-29 at the future dwelling. • Provide a water supply dedicated to firefighting purposes in the form of a reticulated network of water hydrants. Alternatively, in consultation with the Shire of Augusta Margaret River this could also be addressed through a strategically located static water supply (i.e., water tank). 	To support future subdivision
3	Following approval of the structure plan, if required prepare a BMP or bushfire statement in accordance with SPP 3.7, the Guidelines and AS 3959 to support subdivision within portions of the site that are designated as bushfire prone areas under the <i>Map of Bush Fire Prone Areas</i> . The BMP should consider the proposed spatial layout of the development.	To support future subdivision

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



Table 6: Responsibilities for the implementation of this BMP (continued)

Shire of Augusta Margaret River		
No.	Management action	Timing
1	Maintaining fuel loads in existing public road reserves and public open space (under their management) to appropriate standards to minimise fuel loads.	Ongoing, as required
2	Monitoring vegetation fuel loads in private landholdings against the requirements of the Shire's Firebreak and Hazard Reduction Notice (and/or existing maintenance regimes outlined in this BMP) and liaising with relevant stakeholders to maintain fuel loads at minimal/appropriate fuel levels, in accordance with the Shire's responsibilities under the <i>Bush Fires Act 1954</i> .	Ongoing, as required.

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



7 Applicant Declaration

7.1 Accreditation

This assessment has been prepared by Emerge Associates who have been providing bushfire risk management advice for more than 10 years, undertaking detailed bushfire assessments (and associated approvals) to support the land use development industry. Emerge Associates have a number of team members who have undertaken Bushfire Planning and Design (BPAD) Level 1 and Level 2 training and are Fire Protection Association of Australia (FPAA) accredited practitioners.

Anthony Rowe is a FPAA Level 3 BPAD accredited practitioner (BPAD No. 36690) in accordance with clause 6.12 of the Guidelines.

7.2 Declaration

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

Reviewer signature:

A handwritten signature in black ink, appearing to read "Anthony Rowe", written over a light grey dotted grid background.

Name: Anthony Rowe

Company: Emerge Associates/Envision Bushfire Planning

Date: 29/05/2024

BPAD Accreditation: BPAD No. 36690

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



8 References

8.1 General references

The references listed below have been considered as part of preparing this document.

Department of Primary Industries and Regional Development (DPIRD) 2020, *Contours 2 m and 10 m (DPIRD-072)*, Perth.

DPLH 2017, *Local Government Guidelines for Subdivisional Development* Perth, Western Australia.

Department of Planning, Lands and Heritage, and Western Australian Planning Commission, (DPLH & WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4*, Perth, Western Australia.

Emerge Associates 2021a, *Bushfire Hazard Level Assessment - Lot 9000 Bussell Highway, Margaret River*, EP21-062(06)--004 BFM, 1.

Emerge Associates 2021b, *Environmental Assessment - Lot 9000 Bussell Hwy, Margaret River*, EP21-062(05)--03, Version 1.

Emerge Associates 2022, *Environmental Assessment and Management Strategy - Lot 9000 Bussell Highway, Margaret River*, EP21-062(08)--013 DVB, 1.

Gould, J., McCaw, W., Cheney, N., Ellis, P. and Matthews, S. 2007, *Field Guide: Fuel Assessment and Fire Behaviour Prediction in Dry Eucalypt Forest*, CSIRO and Department of Environment and Conservation, Perth, Western Australia.

Office of Bushfire Risk Management (OBRM) 2021, *Map of Bush Fire Prone Areas*, Landgate, <https://maps.slip.wa.gov.au/landgate/bushfireprone/>.

Shire of Augusta Margaret River 2009, *Rural Hamlet Design Guildines* Margaret River, Western Australia

Shire of Augusta Margaret River 2011, *Local Planning Policy 14 - Margaret River Development Investigation Areas Design and Development Policy*, Margaret River, Western Australia.

Shire of Augusta Margaret River 2015, *The East Margaret River District Structure Plan*, Margaret River, Western Australia.

Standards Australia 2018, *AS 3959:2018 Construction of buildings in bushfire-prone areas*, Sydney.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Perth.

Bushfire Management Plan

Lot 9000 Bussell Highway, Margaret River



8.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 8.1**, with access date information provided in **Table R-1**.

Table R 1 Access dates for online references

Reference	Date accessed	Website or dataset name
(OBRM 2021)	21 November 2022	Map of bushfire prone areas

Figures

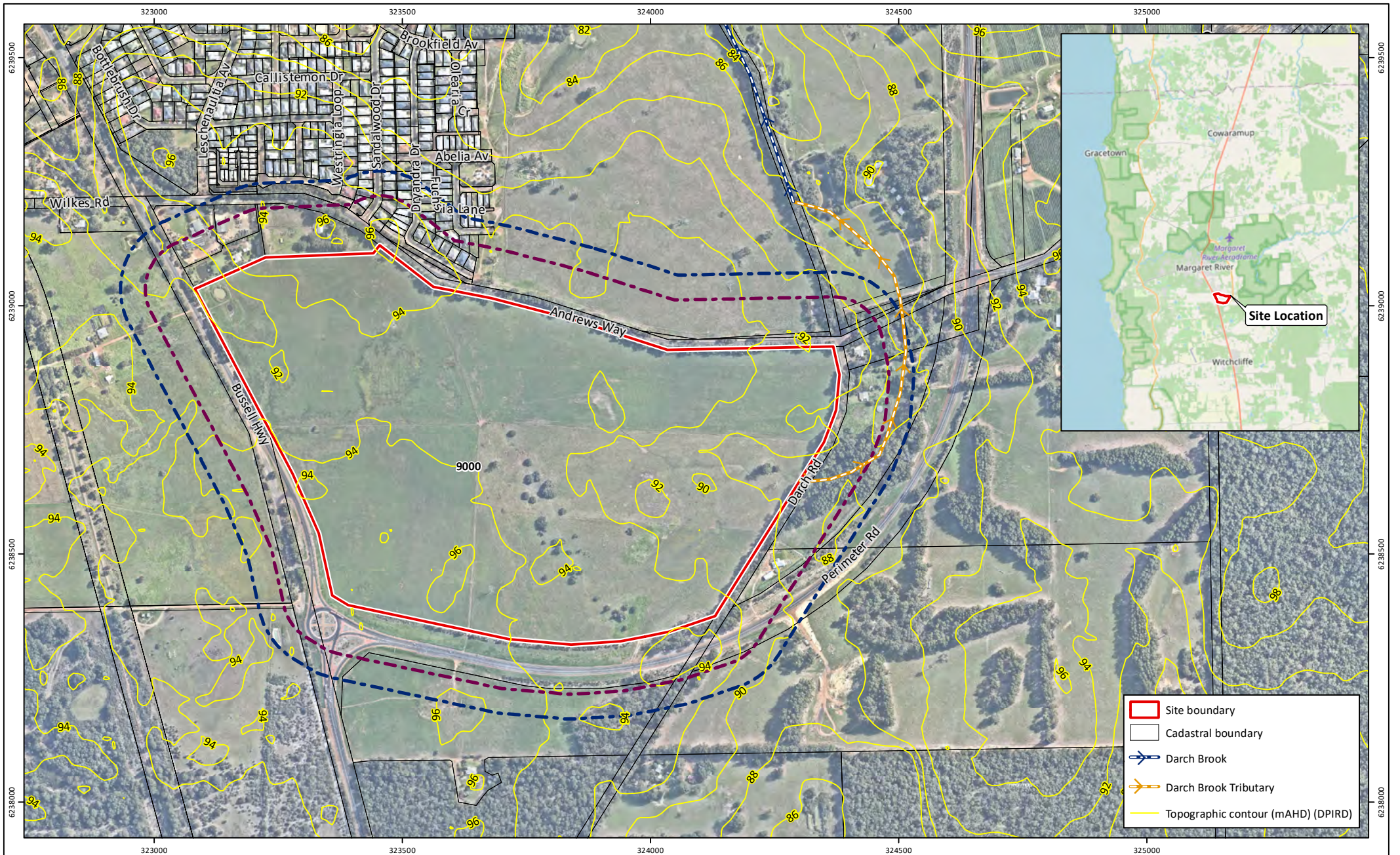


Figure 1: Site Location and Topographic Contours

Figure 2: AS 3959 Vegetation Classifications and Effective Slope

Figure 3: Bushfire Attack Level Contour Plan

Figure 4: Spatial Representation of Bushfire Management Strategies



- Site boundary
- Cadastral boundary
- Darch Brook
- Darch Brook Tributary
- Topographic contour (mAHD) (DPIRD)

Figure 1: Site Location and Topographic Contours

Project: Bushfire Management Plan
 Lot 9000 Bussell Highway, Margaret River

Client: Margaret River Development Partnership

Plan Number:
 EP21-062(09)-F35

Drawn: GAR
Date: 08/12/2022

Checked: DVB
Approved: KK
Date: 15/12/2022



0 200 400
 Metres

Scale: 1:10,000@A4
 GDA 1994 MGA Zone 50



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
 ©Landgate (2021). Nearmap Imagery date: 20/03/2021

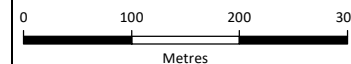


Figure 2: AS 3959 Vegetation Classification and Effective Slope

Project: Bushfire Management Plan
 Lot 9000 Bussell Highway, Margaret River

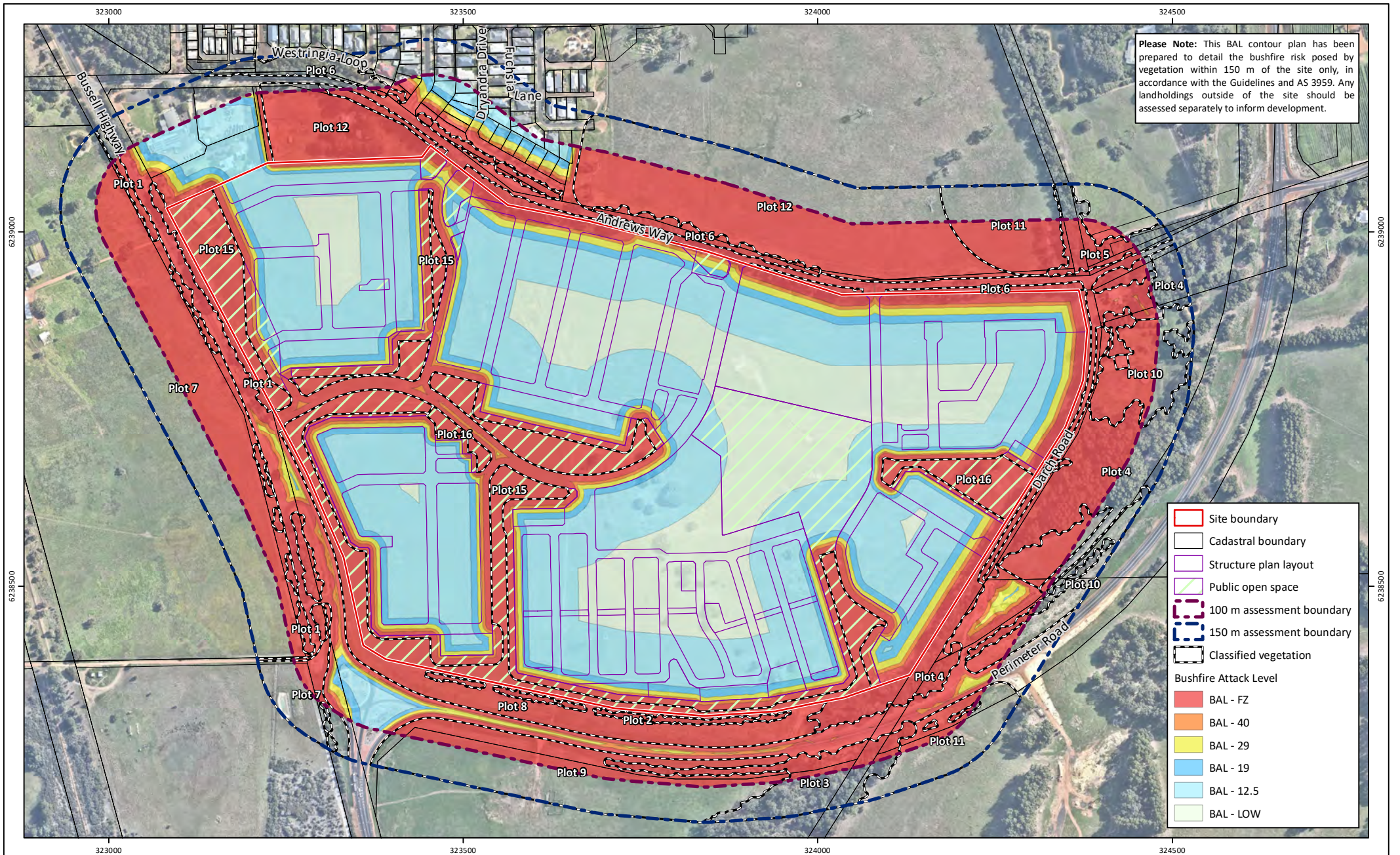
Client: Margaret River Development Partnership

Plan Number: EP21-062(09)--F36a
Drawn: GAR
Date: 14/05/2024
Checked: KK
Approved: KK
Date: 24/05/2024



Scale: 1:7,000@A4
 GDA 1994 MGA Zone 50



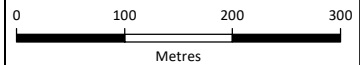


Please Note: This BAL contour plan has been prepared to detail the bushfire risk posed by vegetation within 150 m of the site only, in accordance with the Guidelines and AS 3959. Any landholdings outside of the site should be assessed separately to inform development.

Figure 3: Bushfire Attack Level Contour Plan

Project: Bushfire Management Plan
 Lot 9000 Bussell Highway, Margaret River
Client: Margaret River Development Partnership

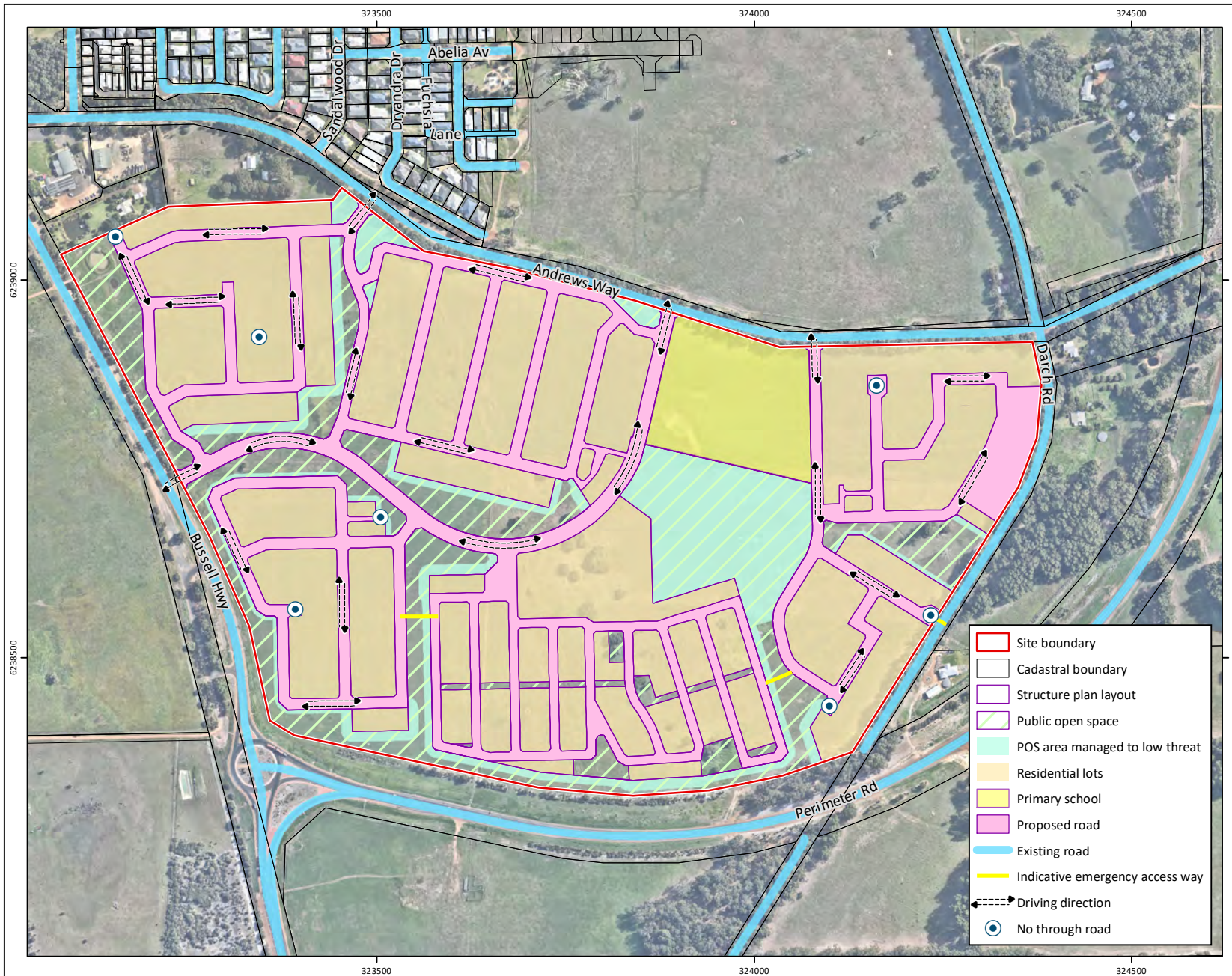
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 EP21-062(09)--F37a
Drawn: GAR
Date: 14/05/2024
Checked: KK
Approved: KK
Date: 24/05/2024



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 GDA 1994 MGA Zone 50



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Asset protection zones (APZs)
 All habitable buildings must achieve BAL-29 or less. Asset protection zones will be required around future habitable buildings to achieve BAL-29 or lower. These will be installed within areas of managed public open space/public road reserves or within lots (e.g. as carparks, drive ways, manicured lawn/gardens etc). The asset protection zone should be designed and managed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959.

Building construction requirements
 Where designated bushfire prone, future Class 1, 2, 3 and associated 10a buildings will need to be constructed in accordance with BAL ratings determined in accordance with AS 3959.

Vehicle access

- All future lots will achieve a minimum two different access routes. As part of future subdivision, road connections, or use of emergency access ways (EAWs) will be required to link the development cells within the southern portion of the site and provide for multiple access routes.
- All roads will achieve the public road requirements as per A3.2 of Appendix Four of the Guidelines, unless agreed otherwise with the Shire of Margaret River.
- Any no-through roads (including temporary no-through roads as part of staged development) are to meet the requirements of Appendix Four of the Guidelines, including:
 - Will be a maximum length of 200 m, unless the exemptions in Appendix Four of the Guidelines apply.
 - Will achieve the public road requirements as per A3.2 of Appendix Four of the Guidelines, unless agreed otherwise with the Shire of August Margaret River.
 - The turnaround areas will achieve the dimensions outlined in Figure 24 of Appendix Four of the Guidelines, or as agreed.

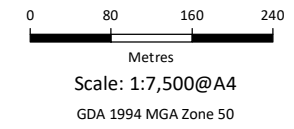
Water supply
 The development will be serviced by a reticulated water supply and a network of hydrants.

Figure 4: Spatial Representation of Bushfire Management Strategies

Project: Bushfire Management Plan
 Lot 9000 Bussell Highway, Margaret River

Client: Margaret River Development Partnership

Plan Number: EP21-062(09)-F38a
Drawn: GAR
Date: 14/05/2024
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Approved: KK
Date: 24/05/2024



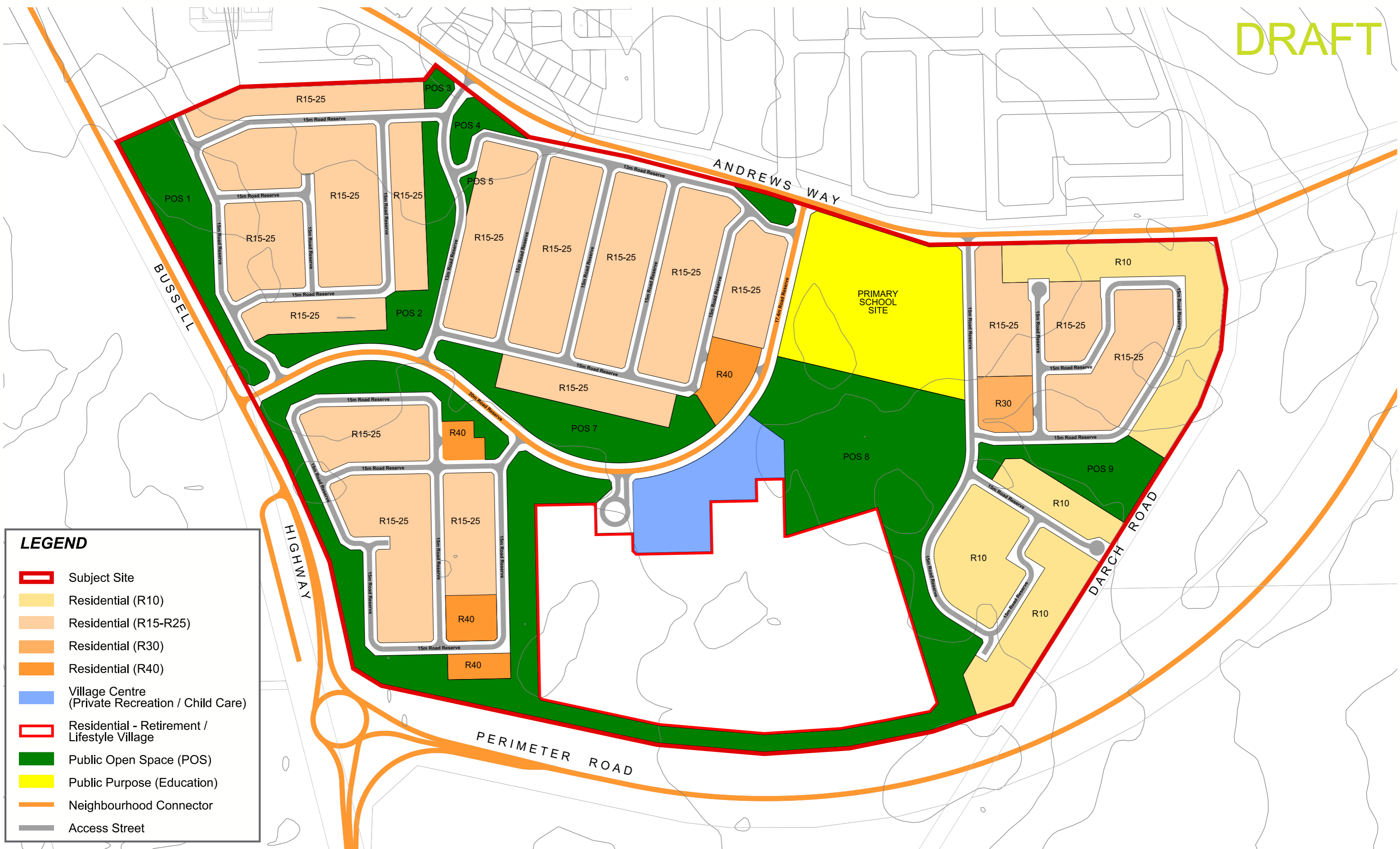
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Appendix A

Structure plan





LEGEND

- Subject Site
- Residential (R10)
- Residential (R15-R25)
- Residential (R30)
- Residential (R40)
- Village Centre (Private Recreation / Child Care)
- Residential - Retirement / Lifestyle Village
- Public Open Space (POS)
- Public Purpose (Education)
- Neighbourhood Connector
- Access Street

NOTE
All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

STRUCTURE PLAN
Bussell Highway and Perimeter Rd, Shire of Augusta Margaret River



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 M +61 438 000 235
 E sheldon@hexdesignplanning.com.au

Appendix B

Bushfire Hazard Level Assessment (Emerge Associates 2021b)



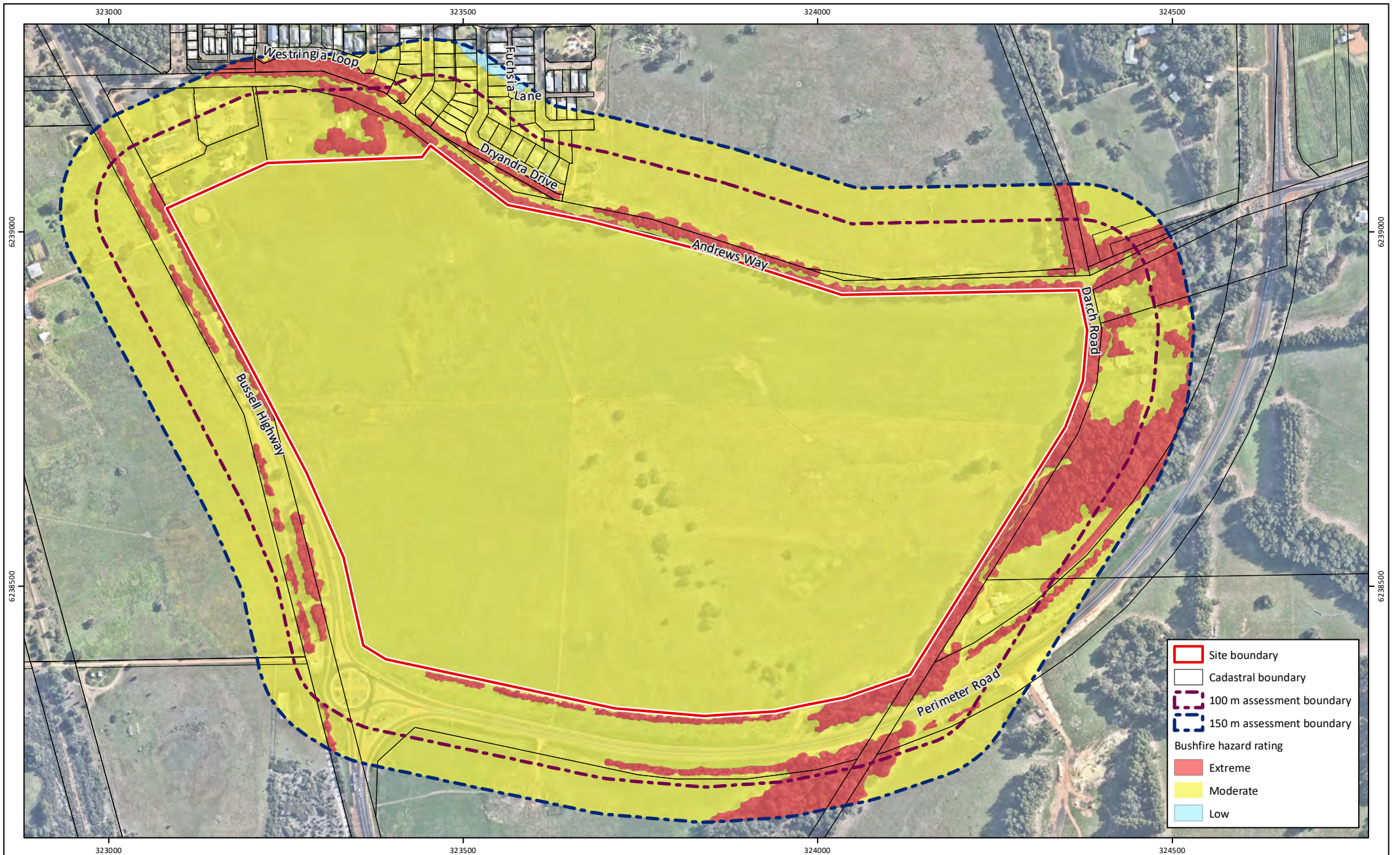


Figure 3: Bushfire Hazard Level Assessment

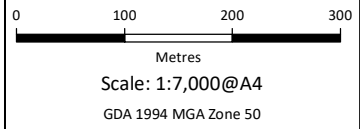
Project: Bushfire Hazard Level Assessment
 Lot 9000 Bussell Highway, Margaret River

Client: Margaret River Development Partnership

Plan Number:
 EP21-062(06)--F13

Drawn: GAR
Date: 13/07/2021

Checked: BFM
Approved: KK
Date: 21/07/2021



	Site boundary
	Cadastral boundary
	100 m assessment boundary
	150 m assessment boundary
Bushfire hazard rating	
	Extreme
	Moderate
	Low



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
 ©Landgate (2021). Nearmap Imagery date: 20/03/2021

Appendix C

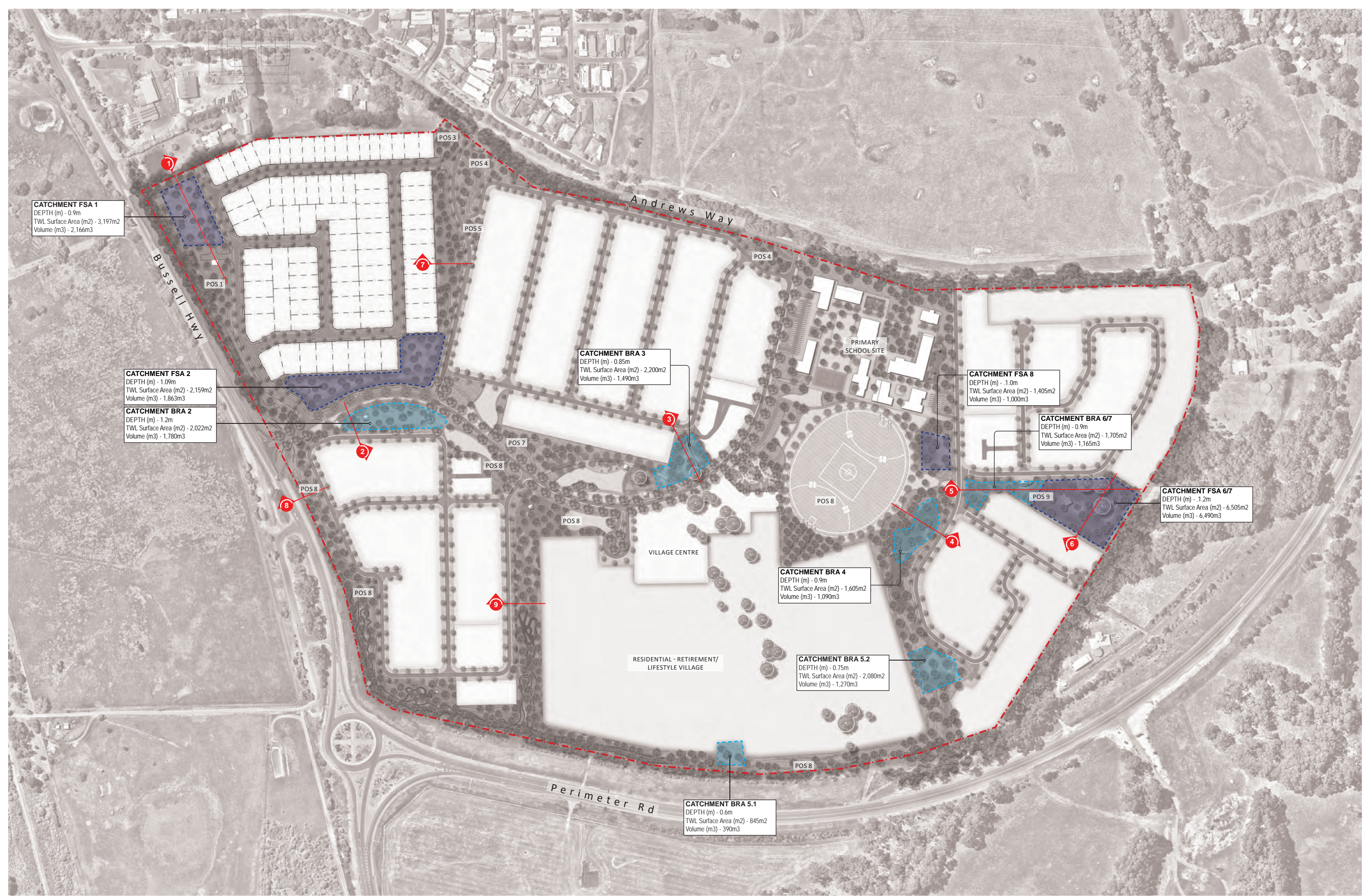
Landscape Masterplan





- LEGEND**
- 01 ENTRY STATEMENT & FEATURE LANDSCAPING/ARTWORK
 - 02 DRAINAGE BASIN
 - 03 TIMBER BOARDWALK & SHELTER TO DRAINAGE BASIN
 - 04 GRAVEL TRAILS/NATURAL TRACKS WITHIN WOODLAND PLANTING
 - 05 EXISTING TREES TO BE RETAINED & PROTECTED PENDING LEVELS & DRAINAGE
 - 06 ARBORS WITH CLIMBING PLANTS
 - 07 POTENTIAL "GATEWAY TO MARGS" SIGNAGE BY LOCAL COUNCIL
 - 08 LARGE FEATURE NATURE PLAYGROUND & PARKOUR/ NINJA WARRIOR WITH SHADE STRUCTURES & PICNIC FACILITIES
 - 09 LARGE MARKET / COMMUNITY GATHERING SPACE WITH FLEXIBILITY FOR POP UP MARKET SPACES
 - 10 COMMUNITY GARDEN SPACE
 - 11 MOUNDED LANDSCAPED AREAS
 - 12 TIMBER BOARDWALK
 - 13 KARRI TREES BOULEVARD (WOODLAND PLANTING)
 - 14 CARPARKING TO SPORTS OVAL
 - 15 SHARED PLAYING FIELDS
 - 16 PATH CONNECTION FROM ESTATE TO DARCH ROAD PATH NETWORK
 - 17 DIRT BMX BIKE TRACKS
 - 18 COMMUNITY ORCHARD OPERATED VIA A PEPPERCORN LEASE AGREEMENT WITH COUNCIL OVER LAND LEASE
 - 19 SOLAR FARM (INVESTIGATION) OPERATED VIA A PEPPERCORN LEASE AGREEMENT (LAND LEASE) WITH COUNCIL OVER POS
 - 20 ADVENTURE PLAYGROUND
 - 21 SEWER PUMP STATION

- LEGEND**
- EXTENT OF WORKS
 - FOOTPATH NETWORK
 - TURF
 - TURF TO PLAYING FIELDS
 - GARDEN PLANTING
 - WOODLAND PLANTING
 - PROPOSED STREET TREES
 - DRAINAGE BASINS
 - TIMBER BOARDWALK
 - CRUSHED GRAVEL PATHS/ TRACKS
 - DIRT BMX BIKE TRACKS
 - FEATURE TREES
 - FEATURE TREES TO MAIN ENTRY ROAD
 - EXISTING TREES
 - INDICATIVE EMERGENCY ACCESS WAY
 - SOLAR FARM (INVESTIGATION)



CATCHMENT FSA 1
 DEPTH (m) - 0.9m
 TWL Surface Area (m2) - 3,197m2
 Volume (m3) - 2,166m3

CATCHMENT FSA 2
 DEPTH (m) - 1.09m
 TWL Surface Area (m2) - 2,159m2
 Volume (m3) - 1,863m3

CATCHMENT BRA 2
 DEPTH (m) - 1.2m
 TWL Surface Area (m2) - 2,022m2
 Volume (m3) - 1,780m3

CATCHMENT BRA 3
 DEPTH (m) - 0.85m
 TWL Surface Area (m2) - 2,200m2
 Volume (m3) - 1,490m3

CATCHMENT FSA 8
 DEPTH (m) - 1.0m
 TWL Surface Area (m2) - 1,405m2
 Volume (m3) - 1,000m3

CATCHMENT BRA 6/7
 DEPTH (m) - 0.9m
 TWL Surface Area (m2) - 1,705m2
 Volume (m3) - 1,165m3

CATCHMENT FSA 6/7
 DEPTH (m) - 1.2m
 TWL Surface Area (m2) - 6,505m2
 Volume (m3) - 6,490m3

CATCHMENT BRA 4
 DEPTH (m) - 0.9m
 TWL Surface Area (m2) - 1,605m2
 Volume (m3) - 1,090m3

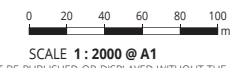
CATCHMENT BRA 5.2
 DEPTH (m) - 0.75m
 TWL Surface Area (m2) - 2,080m2
 Volume (m3) - 1,270m3

CATCHMENT BRA 5.1
 DEPTH (m) - 0.6m
 TWL Surface Area (m2) - 845m2
 Volume (m3) - 390m3



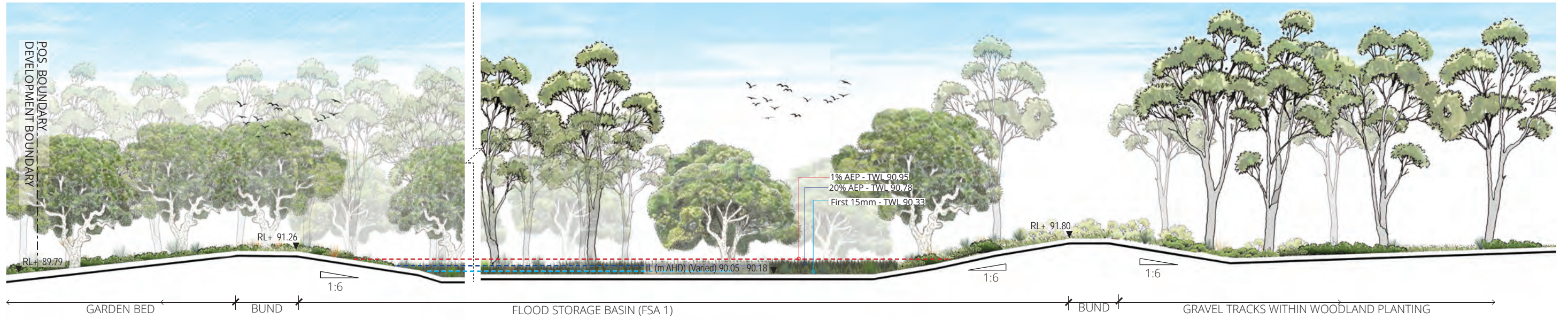
ARBOUR MARGARET RIVER
 DRAINAGE PLAN

DWG MARG-02
 REV E
 DATE MAY-2024

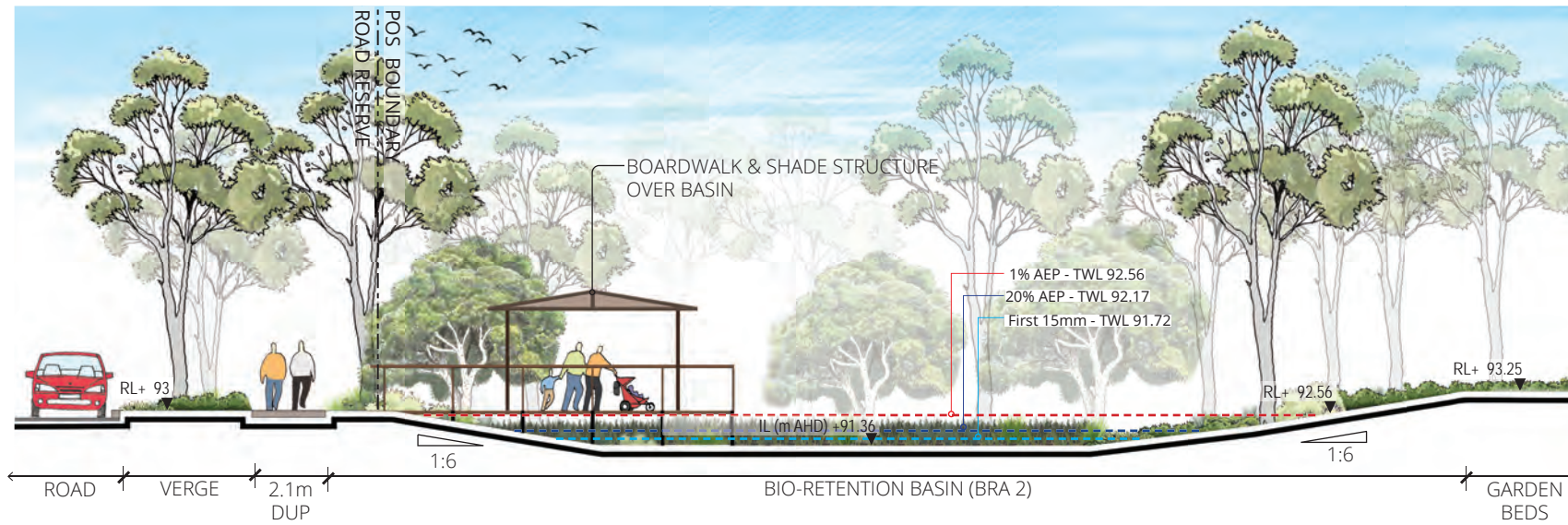


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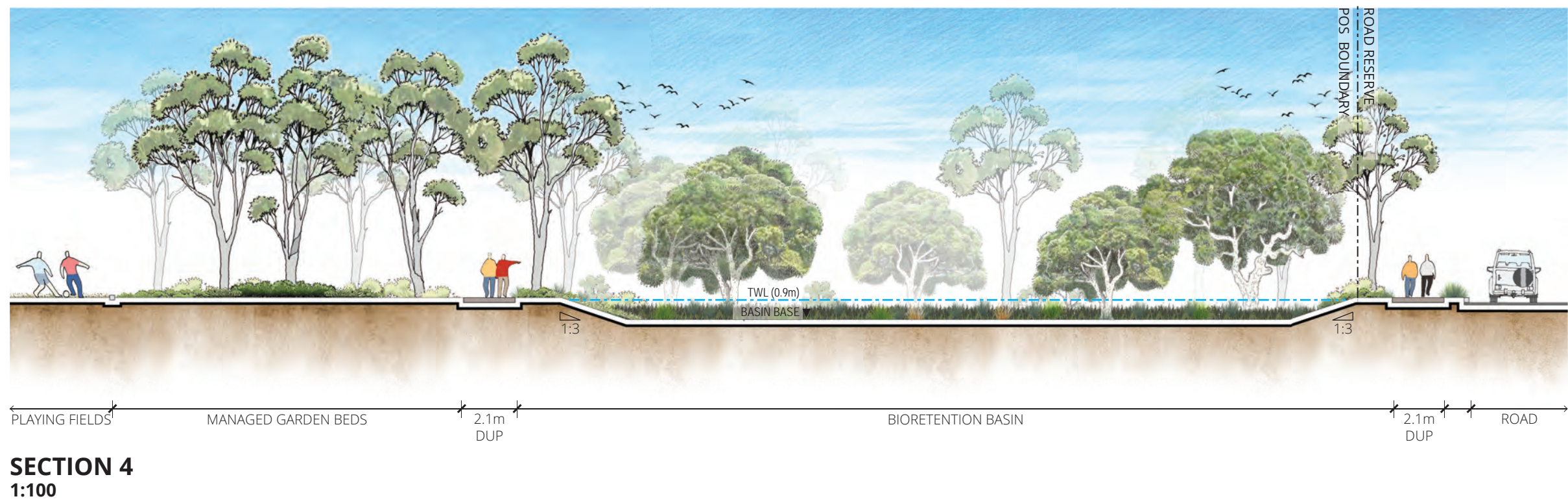
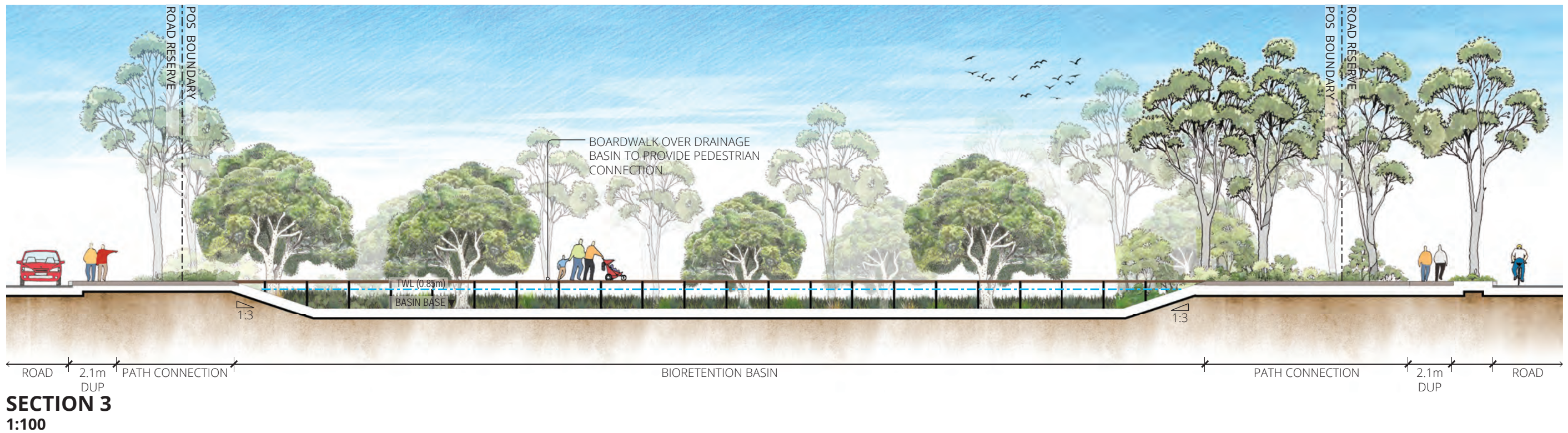


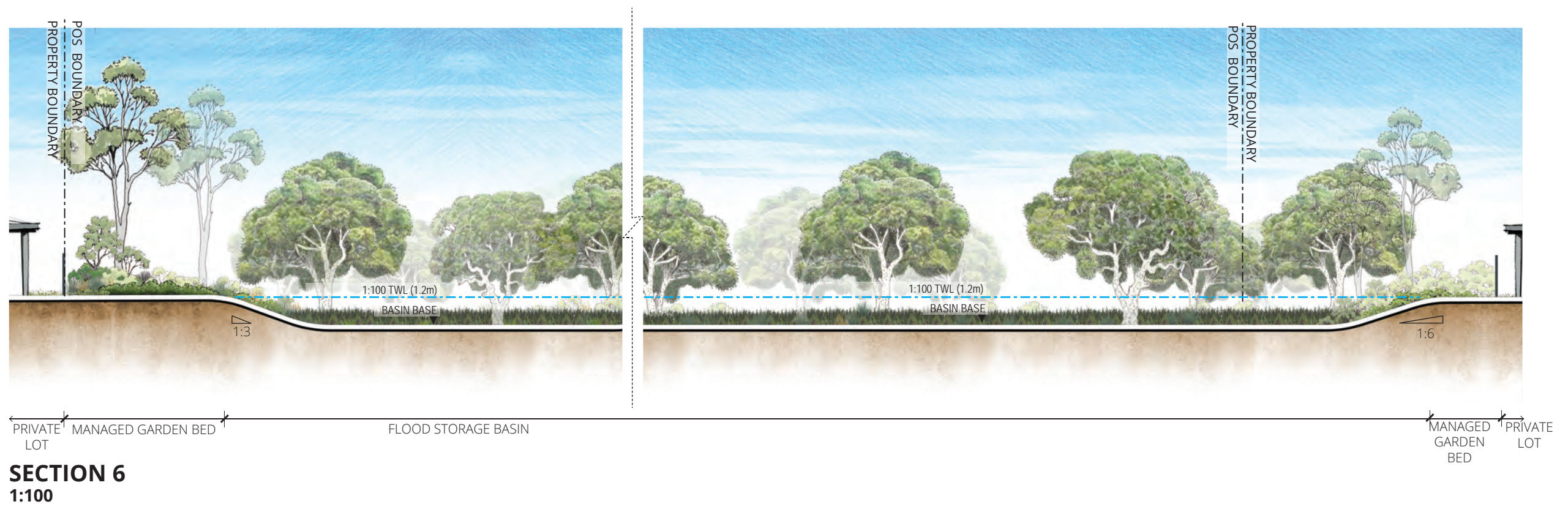
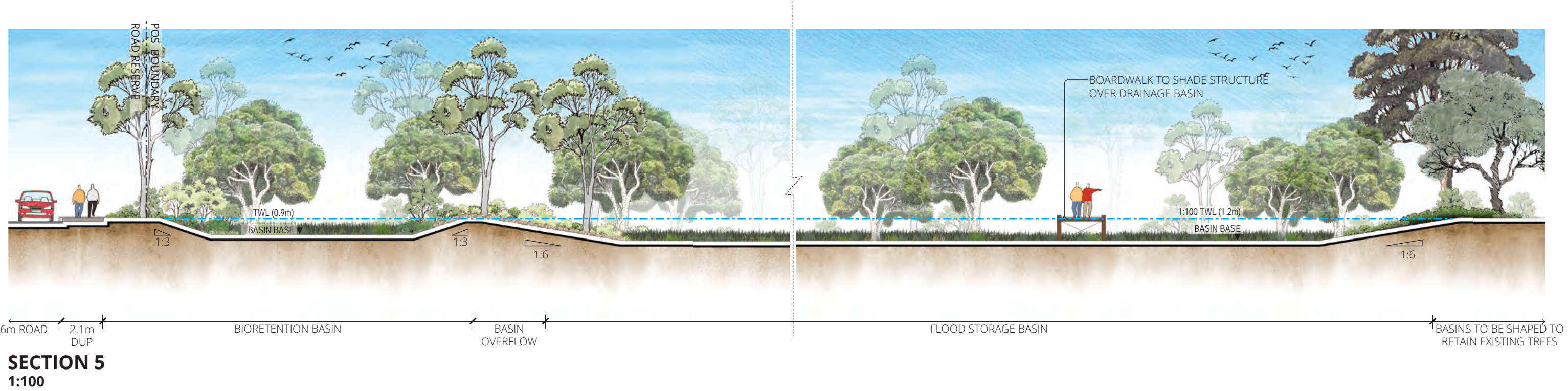
SECTION 1
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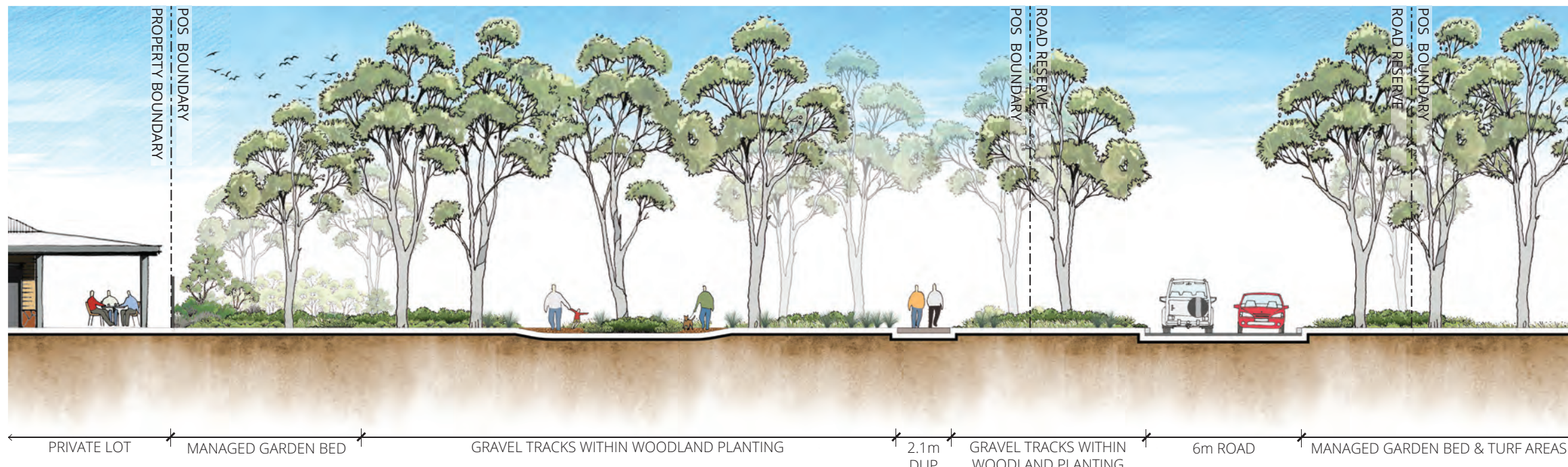


SECTION 2
1:100



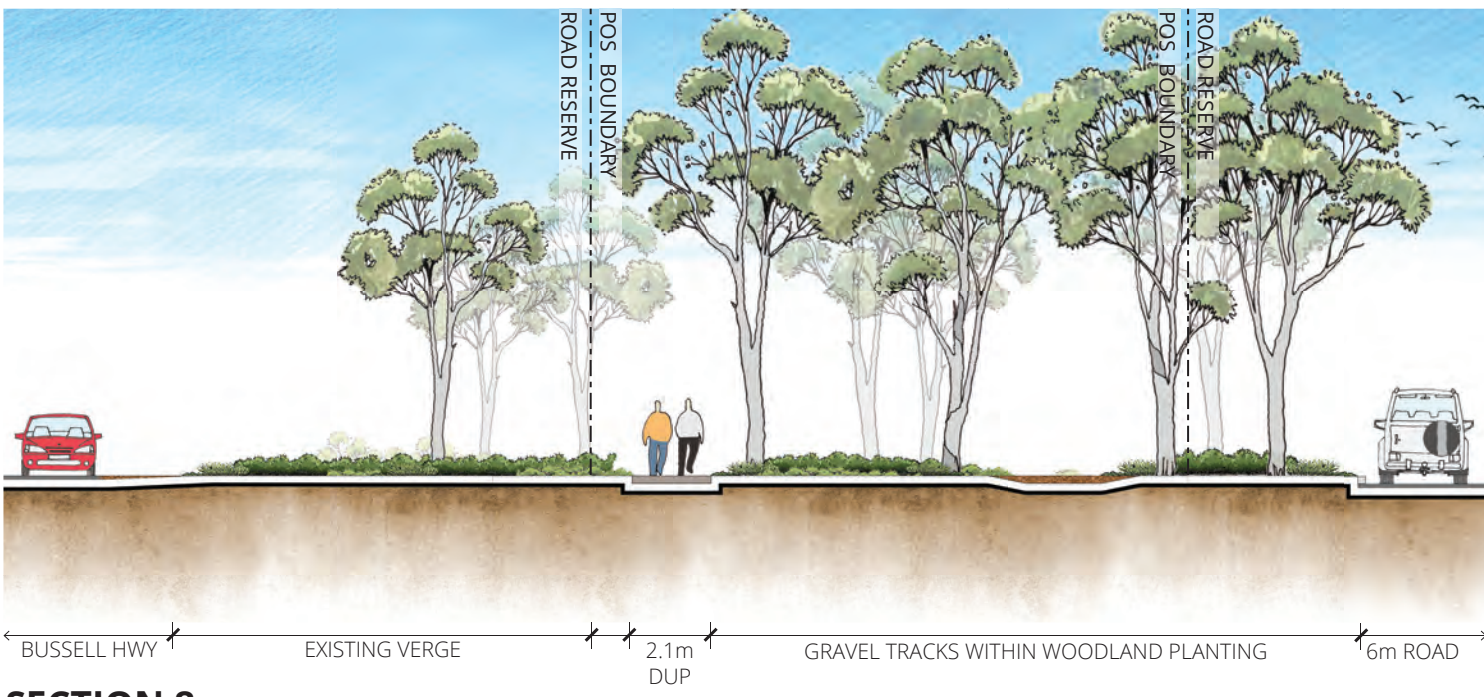






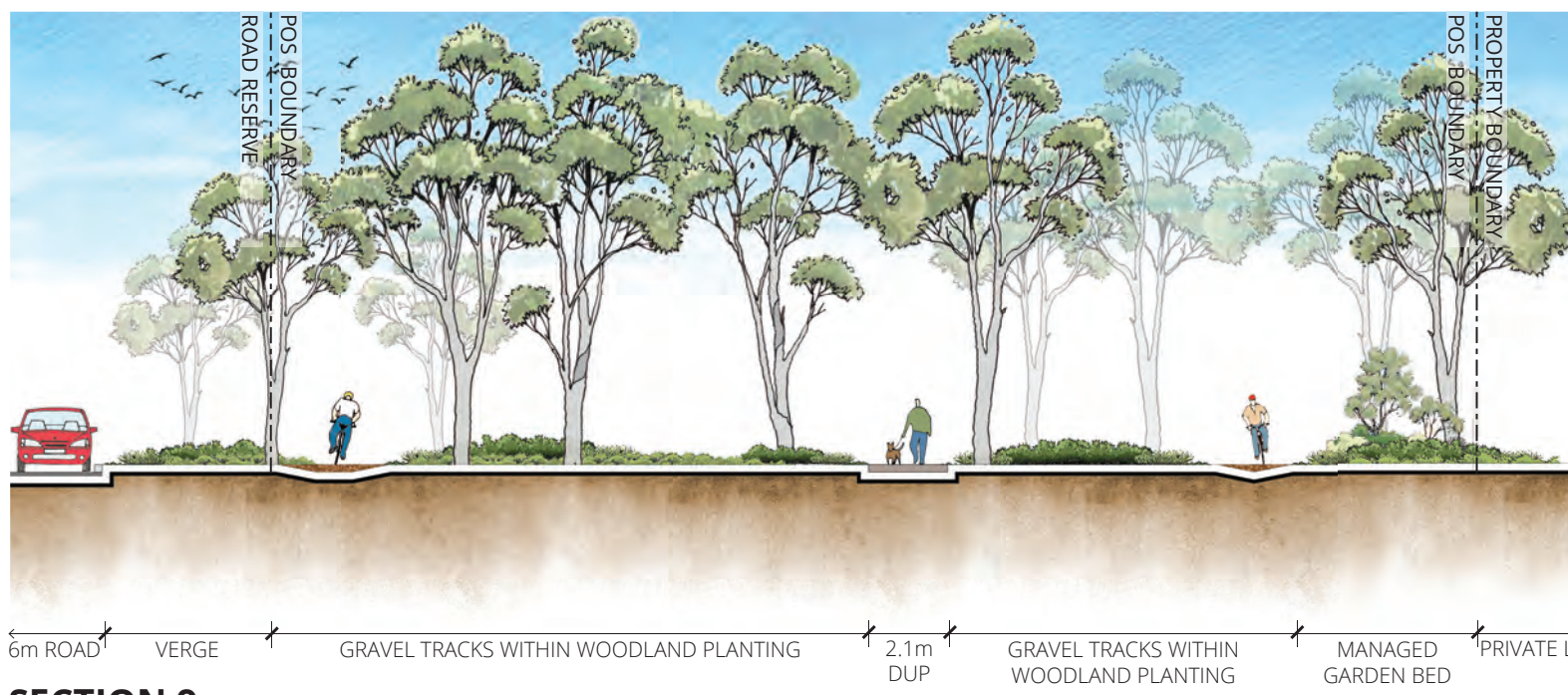
SECTION 7
1:100

PRIVATE LOT | MANAGED GARDEN BED | GRAVEL TRACKS WITHIN WOODLAND PLANTING | 2.1m DUP | GRAVEL TRACKS WITHIN WOODLAND PLANTING | 6m ROAD | MANAGED GARDEN BED & TURF AREAS



SECTION 8
1:100

BUSSELL HWY | EXISTING VERGE | 2.1m DUP | GRAVEL TRACKS WITHIN WOODLAND PLANTING | 6m ROAD



SECTION 9
1:100

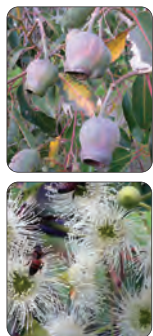
6m ROAD | VERGE | GRAVEL TRACKS WITHIN WOODLAND PLANTING | 2.1m DUP | GRAVEL TRACKS WITHIN WOODLAND PLANTING | MANAGED GARDEN BED | PRIVATE LOT



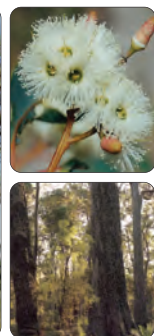
TREE SPECIES



CORYMBIA CALOPHYLLA 'MARRI'



EUCALYPTUS MARGINATA 'JARRAH'



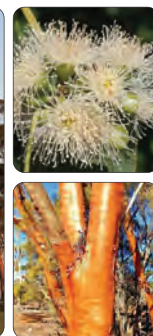
AGONIS FLEXUOSA 'WA PEPPERMINT'



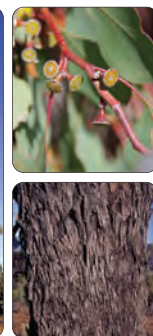
EUCALYPTUS DIVERSICOLOR 'KARRI'



EUCALYPTUS SALMONOPHLOIA 'SALMON GUM'



EUCALYPTUS CLELANDIORUM 'CLELAND'S BLACKBUTT'



ARBOUR MARGARET RIVER
STREET TREE MASTERPLAN



DWG MARG-07
REV E
DATE MAY-2024

0 20 40 60 80 100 m
SCALE 1:2000 @ A1

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FOOTPATH NETWORK



DIRT JUMP BMX TRACK



ARBORS WITH PLANTING SPECIES



NATURE PLAYGROUND



COMMUNITY OPEN SPACE



ORNAMENTAL PLANTING



COMMUNITY MARKET SPACE



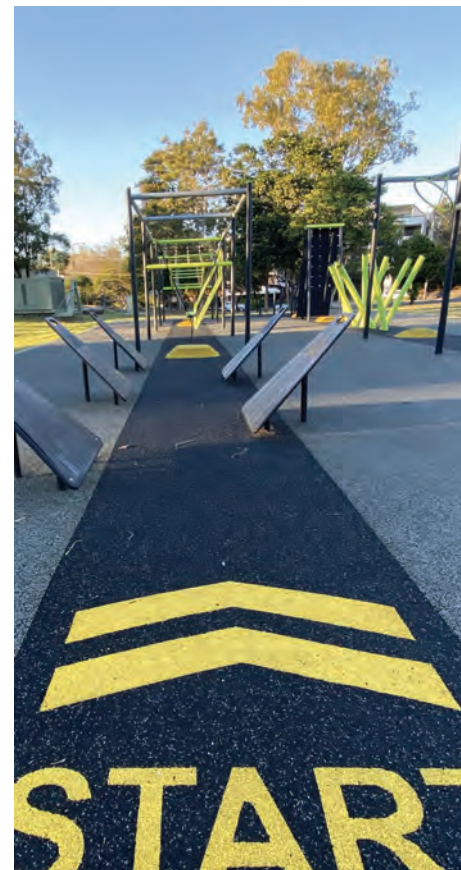
TIMBER BOARDWALK AND DECK TO DRAINAGE BASIN



COMMUNITY GARDEN



TURF MOUNDING



PARKOUR / NINJA WARRIOR COURSE



KARRI TREE BOULEVARD



SPORTS OVAL

