

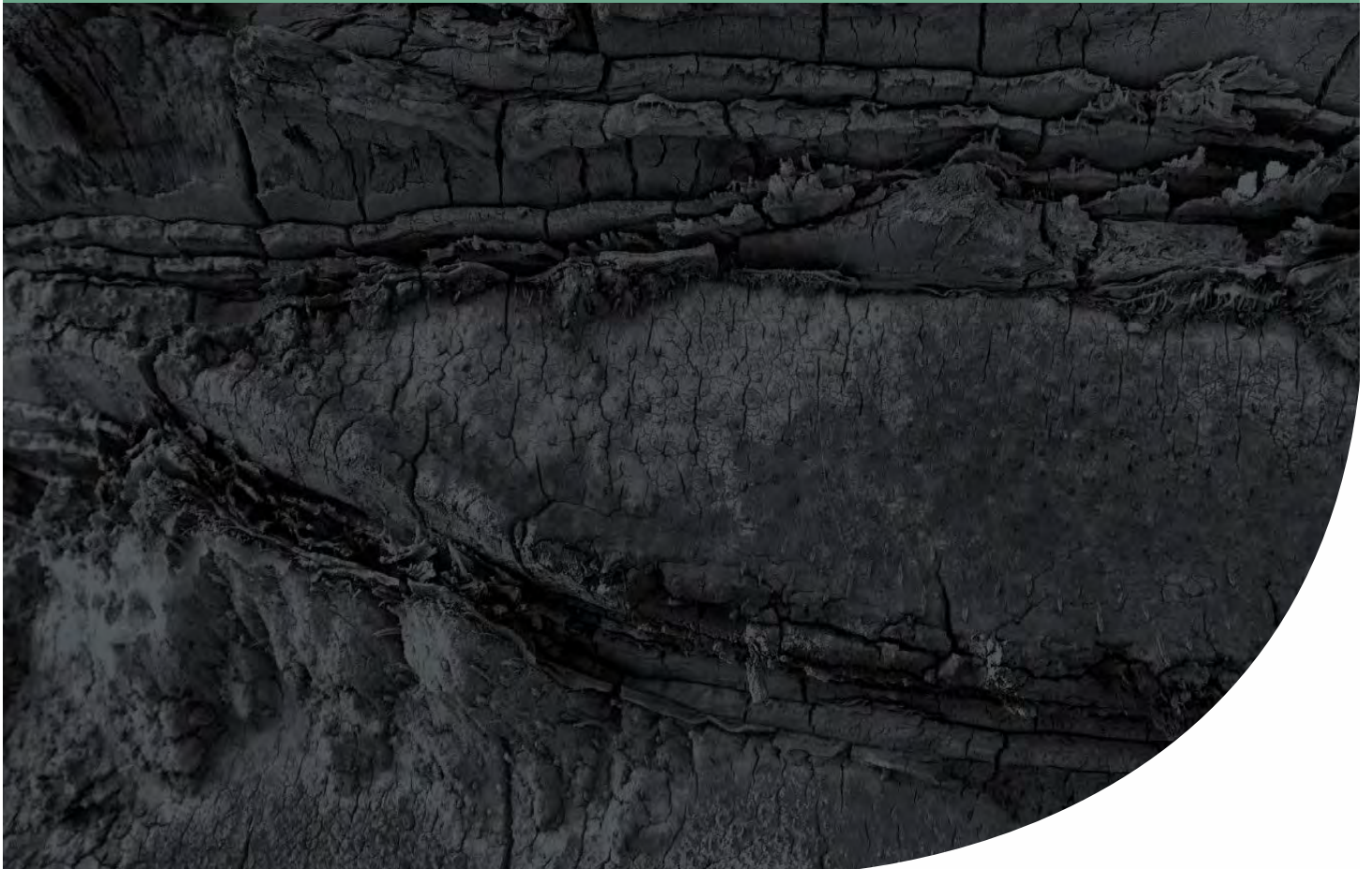
Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009

Cranwood Crescent, Viveash

Project No: EP19-105(60)

**Prepared for Hesperia Pty Ltd
April 2025**



Bushfire Management Plan

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Document Control

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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

Hesperia Pty Ltd (the proponent) is proposing a subdivision amendment for Lot 9009 Cranwood Crescent, Viveash in the City of Swan (herein referred to as 'the site'). This amendment relates to the previously approved subdivisions (Western Australia Planning Commission (WAPC) approvals 164437 and 200609) applicable to the site (the approved subdivisions). The amendment largely aligns with the previous approvals, with primary revisions occurring in the north-east of the site where a number of approved residential lots are now proposed to be converted to lots for a childcare centre and educational facility. The previous subdivision area has been considered holistically as part of the proposed change and is reflected in this Bushfire Management Plan (BMP).

The site is 10.7 hectares (ha) in area and is located approximately 17 km north-east of the Perth Central Business District. It is bounded by existing residential subdivision (WAPC reference 158848) and Eveline Road to the north, the Midland Brick – Middle Swan brickworks facility to the north-east (proposed for residential development in accordance with the recent scheme amendment), Jack Williamson Park to the east, and Cranwood Crescent and existing urban development to the south and west.

The site conditions are largely cleared as earth works are currently underway in line with the current approved subdivision for the site. Approximately 5.40 ha of the site was formerly part of the Midland Brick – Middle Swan brickworks facility (now only located to the north-east of the site) and was utilised as a brick storage area. The site is now zoned 'Urban' under the Metropolitan Region Scheme and 'Residential development' under the *City of Swan Local Planning Scheme No.17*.

A significant portion of the site is located within 'Area 2' (designated bushfire prone) on the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2024) and as a result *State Planning Policy 3.7 Bushfire* (SPP 3.7) (WAPC 2024b) applies.

The identification of the site as such requires further assessment of the bushfire risk in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the required risk treatments through compliance of the proposal with the policy measures described in the *Planning for Bushfire Guidelines - For the implementation of State Planning Policy 3.7 Bushfire* (the Guidelines)(WAPC 2024a).

The policy intent for SPP 3.7 is:

"to implement effective, risk-based land use planning and development which in the first instance avoids the bushfire risk, but where unavoidable, manages and/or mitigates the risk to people, property and infrastructure to an acceptable level. The preservation of life and the management of bushfire impact are paramount."

The proposed subdivision amendment is largely in accordance with the existing approved subdivisions for the site, with the proposal to be assessed by the outcomes applicable to Bushfire Protection Criteria 5 in the Guidelines. Of note, a Broader Landscape Assessment is not required. This is because the subdivision amendment is for areas previously assessed and largely following the

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previously approved subdivisions for the site, which was already assessed against SPP 3.7 in 2024, determining the location as suitable.

This BMP has followed the Department of Planning Lands and Heritage (DPLH) *Bushfire Management Plan Manual November 2024 - Bushfire Management Plan Structure Plans and Subdivisions*. Accordingly, it provides a Bushfire Attack Level (BAL) assessment involving the classification of vegetation and effective slope in accordance with AS 3959, extending 150 m from the site in accordance with the Guidelines.

The following bushfire hazards were identified as applicable to the site following development:

- **Forest (Class A) Vegetation:** Forest (Class A) vegetation to the south-east (north of Muriel Street), which is associated with Blackadder Creek and a foreshore area.
- **Woodland (Class B) Vegetation:** Woodland (Class B) vegetation will occur adjacent to the eastern boundary, associated with a future planted drainage basin.
- **Grassland (Class G) Vegetation:** Grassland (Class G) vegetation adjacent to the eastern boundary, associated with future vegetated swale abutting retained forest vegetation associated with Blackadder Creek and a foreshore area.

To assess the long-term bushfire risk to the site, vegetation classifications for the post-development scenario have been detailed in accordance with AS 3959. Vegetation within the site will be entirely cleared or converted to non-vegetated (exclusion 2.2.3.2(e)) or low threat vegetation (exclusion 2.2.3.2(f)). The road reserves will be installed by the proponent and maintained by the City in a low threat condition, following Section 2.2.3.2 (e) or (f) of AS 3959. Nature strips associated with road reserves can remain low threat without management, in line with AS 3959 Section 2.2.3.2 (f).

Areas identified as low threat external to the site are assumed to continue being managed according to existing subdivision approvals and/or land management practices. Additionally, the northern portion of Jack Williamson Park will be managed to achieve a low threat standard (exclusion 2.2.3.2(f)), along with the vegetated drainage basin running the length of the site's eastern boundary. This methodology has been confirmed through extensive discussions with the City of Swan, which are detailed throughout the report.

Compliance Assessment

The bushfire protection criteria (BPC) provided in the Guidelines represent the risk treatment acceptable solutions applicable to achieving the intent and outcomes listed in SPP 3.7. The BPC are divided into five criteria with each having four elements aligning to an outcome. In this instance, the relevant criteria (category) are *Criteria 5: Structure plans and subdivision applications*. Compliance with each element (as a risk treatment) is required to demonstrate to the decision maker that the risk is within an acceptable level, either by compliance with the acceptable solution or by an outcome (alternate solution).

This BMP demonstrates that compliance with the acceptable solution at each element in BCP 5 can be achieved and is summarised below:

- **Element 1 Location:** The site has been identified as being within an 'Area 2' bushfire prone area under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire

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Risk Management (OBRM 2024). Consequently, an assessment against Element 1 was necessary. However, the site is currently subject to approved subdivisions (WAPC 164437 and 200609), which were most recently assessed against SPP 3.7 in 2024. The proposed subdivision amendment does not change considerations of bushfire risk previously considered. In line with A1.2 of the Guidelines, an assessment of the broader landscape is not required as it has already been considered as part of a previously approved planning document for an area assessed under SPP 3.7.

- **Element 2 Siting and design:** The BAL assessment conducted as part of the BMP indicates that all lots can support habitable buildings achieving BAL-29 or less, with most lots within the site achieving BAL-12.5 or BAL-LOW. However, several future lots (181-184 and 263-268) are in close proximity to classifiable vegetation, resulting in BAL-40 and BAL-FZ incursions in the front of the lots (and is the same as the previously approved subdivision). For these lots, a 9.1 m-wide front lot setback is required to enable habitable buildings to achieve BAL-29. The lots are deep enough to support this. An asset protection zone (APZ) for all lots is provided through the low threat (AS 3959) management of residential lots and the provision of managed road reserves (e.g., the road pavement and road verge adjacent to residential lots). Ultimately, the proposed amendment only seeks minor variations from the approved subdivisions for the site and does not result in increased levels of BAL impacts compared to those previously assessed nor does it reduce accessibility within the site.
- **Element 3 Vehicular access:** All proposed public roads within the site will meet the minimum technical requirements for public roads compliant with the Guidelines. The proposed subdivision will provide multiple access and egress points onto the existing Eveline Road and Surrey Way to the north and Cranwood Crescent to the west and south. Eveline Road provides access to multiple destinations, including to the east of the site onto Great Northern Highway, with Cranwood Crescent providing access to the south onto Muriel Street. All roads are through roads. As part of the staged subdivision of the site, it is possible that temporary no-through roads may be required. Where required, these will be less than 200 m in length and will meet the requirements of the Guidelines, including the provision of suitable turning areas, or if longer than 200 m, will meet the exceptions and/or include the provision of a temporary emergency access way. Ultimately, the proposed amendment only seeks minor variations to the approved subdivisions for the site and does not result in increased levels of BAL impacts or reduced accessibility within the site.
- **Element 4 Water:** The development will be provided with a permanent and reticulated water supply to support onsite firefighting requirements. The existing reticulated scheme in the surrounds will be extended into the site and hydrants will be installed as per Water Corporation requirements.

The management/mitigation measures to be implemented through the proposed subdivision amendment and development of the site have been outlined as part of this BMP. It demonstrates the policy objectives and policy outcomes prescribed in SPP 3.7 can be achieved.

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Appendix B

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Landscape Interface Plan

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Abbreviation Tables

Table A1: Abbreviations – General terms

General terms	
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
CCW	Conservation category wetland
ESA	Environmentally sensitive area
FDI	Fire Danger Index
UFI	Unique feature identifier
BPC	Bushfire Protection Criteria

Table A2: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DWER	Department of Water and Environmental Regulation
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	
AS 3959	<i>Australian Standard 3959:2018 Construction of buildings in bushfire prone areas</i>
Guidelines	<i>Planning for Bushfire Guidelines - For the implementation of State Planning Policy 3.7 Bushfire (WAPC 2024a)</i>
SPP 3.7	<i>State Planning Policy 3.7 Bushfire (WAPC 2024b)</i>

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Table A4: Abbreviations – Planning and building terms

Planning and building terms	
LPS	Local Planning Scheme

Table A4: Abbreviations – units of measurement

Units of measurement	
ha	Hectare
m	Metre
m AHD	m in relation to the Australian height datum

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1 Introduction

1.1 Background

Hesperia Pty Ltd (the proponent) is proposing a subdivision amendment for Lot 9009 Cranwood Crescent, Viveash in the City of Swan (herein referred to as 'the site'). This amendment relates to the previously approved subdivisions (Western Australia Planning Commission (WAPC) approvals 164437 and 200609) applicable to the site (the approved subdivisions). The amendment largely aligns with the previous approvals and the approved *Rivermark Area 3 Local Structure Plan* (the approved structure plan), with primary revisions occurring in the north-east of the site where a number of approved residential lots are now proposed to be consolidated to form lots for a childcare centre and an educational facility. The proposed subdivision plan is provided in **Appendix A** with the approved structure plan shown in **Appendix B**.

The site is 10.7 hectares (ha) in area and is located approximately 17 km north-east of the Perth Central Business District. It is bounded by existing residential subdivision (WAPC reference 158848) and Eveline Road to the north, the Midland Brick – Middle Swan brickworks facility to the north-east (proposed for residential development in accordance with the recent scheme amendment), Jack Williamson Park to the east, and Cranwood Crescent and existing urban development to the south and west, as shown in **Figure 1**. Approximately 5.40 ha of the site was formerly part of the Midland Brick – Middle Swan brickworks facility (now only located to the north-east of the site) and was utilised as a brick storage area.

The site is largely located within 'Area 2' (designated bushfire prone) on the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2024), as shown in **Plate 1**. The identification of the site within 'Area 2' 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 Bushfire* (SPP 3.7) (WAPC 2024b) and the *Planning for Bushfire Guidelines - For the implementation of State Planning Policy 3.7 Bushfire* (the Guidelines) (WAPC 2024a).

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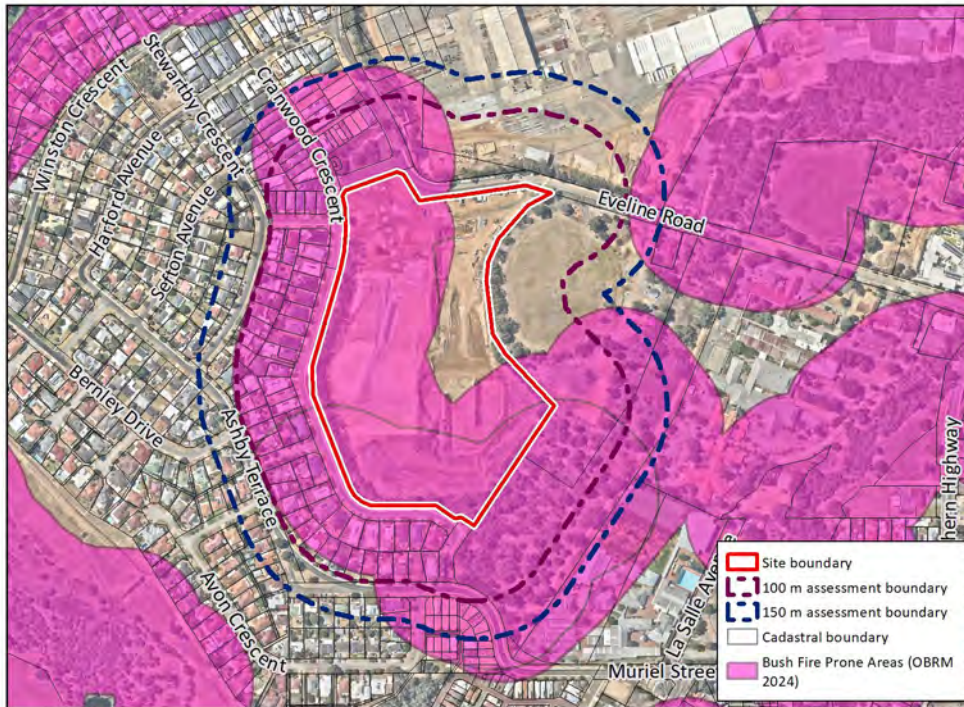


Plate 1: Areas within and surrounding the site, identified as Area 2 'designated bushfire prone' (under the state-wide Map of Bush Fire Prone Areas (OBRM 2024)), is indicated in purple

1.2 Aim of this report

The purpose of this Bushfire Management Plan (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 in accordance with SPP 3.7 (WAPC 2024b), the Guidelines (WAPC 2024a) and AS 3959 (Standards Australia 2018). The document includes:

- 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 development can satisfy *Bushfire Protection Criteria (BCP) 5: Structure Plans and subdivision applications* outlined within the Guidelines including an indication of Bushfire Attack Level (BAL) ratings likely to be applicable to future habitable buildings (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (see **Section 6**).

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1.3 Statutory policy and framework

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

- *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 Bushfire (WAPC 2024b)*
- *Planning for Bushfire Guidelines – For the implementation of State Planning Policy 3.7 Bushfire (WAPC 2024a)*
- *Australian Standard AS 3959 – 2018 Construction of buildings in bushfire prone areas (Standards Australia 2018)*

1.4 Description of the proposed development

The site is proposed to be developed for residential purposes, according to the amended subdivision plan provided in **Appendix A**. As outlined, this amendment largely aligns with the previous subdivision approvals. Development within the site is proposed to include:

- 140 residential lots varying from 275 m² to 1403 m²;
- A lot for a future child care centre;
- A lot for an educational facility; and
- An interconnected public road network.

Development within the site will be consistent with the approved Rivermark Area 3 Local Structure Plan provided in **Appendix B**. It is also consistent with the 'Urban' zoning of the site under the *Metropolitan Region Scheme* and 'Residential development' zoning under the *City of Swan Local Planning Scheme No.17*, as shown in **Plate 2**.

No public open space areas are proposed as part of this subdivision given existing public open space areas adjacent to the site, including Jack Williamson Park to the east which will be redeveloped as part of implementing the broader structure plan.

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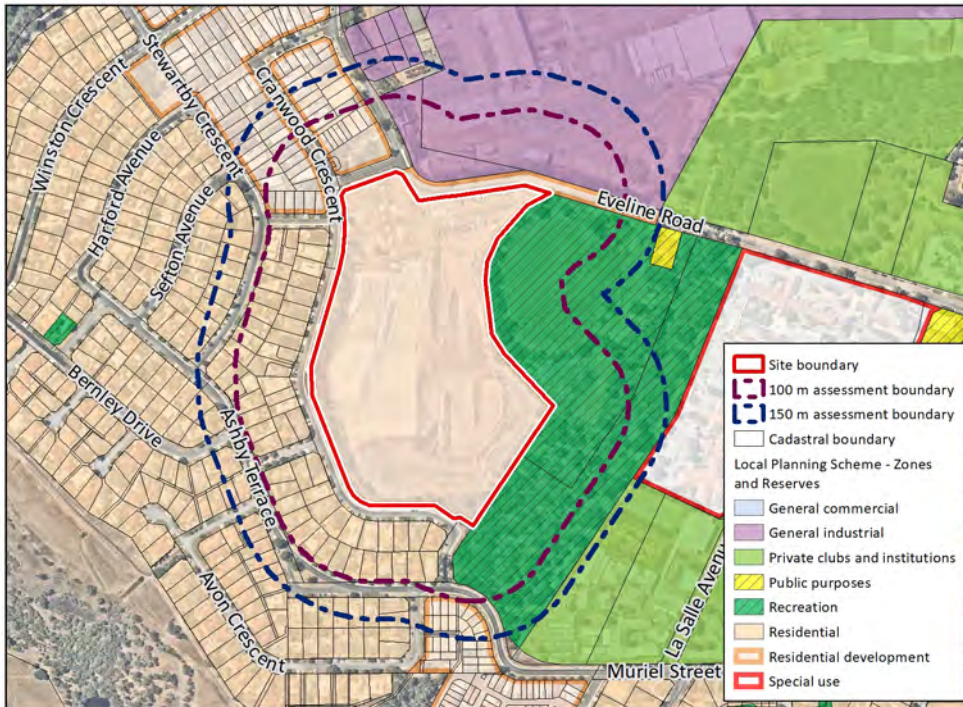


Plate 2: Local Planning Scheme Zoning, in and surrounding the site.

1.5 Description of land characteristics

A review of historical aerial imagery indicates that the majority of the site has been cleared of remnant native vegetation since 1953, with the exception of a patch of remnant vegetation adjacent to the southern site boundary. The remainder of the site comprises cleared areas that were historically part of the Midland Brick – Middle Swan brickworks facility and have subsequently been subject to initial earthworks as part of supporting approved subdivision activities. Additional tree planting has occurred along Eveline Road to the north of the site and around the perimeter of Jack Williamson Park in more recent years.

Publicly available topographical contours (Landgate 2025) indicate that the topography across the site varies between 8 m AHD within the central portion of the site to 14 m AHD along the south-western boundary, as shown in **Figure 1**. Notwithstanding this, it is noted that the site is currently undergoing earthworks in association with implementing subdivision activities across the site.

From a broader context perspective, and as outlined previously, the site is bounded by an existing residential subdivision (WAPC reference 158848) and Eveline Road to the north, the Midland Brick facility to the north-east, Jack Williamson Park to the east, and Cranwood Crescent and existing urban development to the south and west.

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2 Environmental Considerations

In accordance with the *Bushfire Management Plan (BMP) Manual* (DPLH and WAPC 2024), this BMP has considered whether there are any environmental values that may require specific consideration through either protection, retention, or revegetation. It is based on the features relevant to the location of the site. To support this, a review of publicly available databases has been undertaken, with particular reference to the Shared Location Information Platform (SLIP) databases and investigations undertaken to support the approved structure plan and previous subdivision phases. A summary of the results has been provided in **Table 1**.

It is noted that the site has been significantly disturbed in accordance with the works associated with the previously approved subdivisions for the land. Consequently, minimal areas of environmental value remain within the site boundary, and the amended subdivision does not propose disturbances beyond what was previously approved.

Table 1: Summary of potential environmental considerations that may be associated with the site.

Key environmental feature:	Yes / no / potentially occurring within the site	If yes / potentially, describe the value that may be impacted
Conservation category wetlands and buffer (Geomorphic wetlands Swan Coastal Plain) (DBCA-019)	No	No geomorphic wetlands are mapped as occurring within the site. The Swan River, a conservation category wetland (CCW) (UFI# 14,356), occurs approximately 450 m to the north of the site however no buffers from this feature are relevant to the site.
Waterways (DWER-031)	No	No natural waterways are identified within the site. The Swan River occurs approximately 450 m to the north of the site. Blackadder Creek occurs 75 m to the east of the site.
RAMSAR wetlands (DBCA-010)	No	Not applicable. No RAMSAR wetlands were identified within the site.
Threatened and priority flora (DBCA-036)	No	A flora and vegetation assessment completed by Emerge Associates (2020b) determined that the majority of the site does not provide suitable habitat for threatened or priority flora, due to the high level of historical disturbance. No threatened or priority flora were recorded within the site during the field study and the site has been subsequently cleared.
Threatened and priority fauna (DBCA-037)	Potentially	A fauna survey completed by Emerge Associates (2020a), determined that the site contains fauna habitat for a number of threatened and priority species. No listed conservation-significant species were directly or indirectly (from secondary evidence) recorded during the field survey. The likelihood that the site would provide important habitat for these species is low, as the majority of habitat within the site is in relatively poor condition and limited in extent. Trees have been identified for retention, but other vegetation has subsequently been cleared.
Threatened Ecological Communities (TECs) (DBCA-038)	No	The flora and vegetation assessment completed by Emerge Associates (2020b) did not identify any threatened or priority ecological communities within the site, nor was it considered likely for any to occur within the site due to the high level of historical disturbance. The site has been subsequently cleared of vegetation.

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Table 1: Summary of potential environmental considerations that may be associated with the site. (continued)

Key environmental feature:	Yes / no / potentially occurring within the site	If yes / potentially, describe the value that may be impacted
Bush Forever areas (DPLH-019)	No	No Bush Forever Sites are located within the site. Bush Forever Site 302 'Swan River and Jane Brook, Ashfield to Upper Swan' is located approximately 430 m to the north of the site which extends further to the east and west of the site, associated with the Swan River.
Clearing regulations – Environmentally Sensitive Areas (ESAs) (DWER-046)	No	No ESAs occur within the site. One large ESA is located to the north of the site following the general orientation of the Swan River watercourse. The ESA appears to be associated with the CCW 'Swan River Estuary' (UFI 14,356) which extends over 53.96 ha to the north, east and west of the site. It is not a relevant consideration for the site.
DBCA controlled lands or waters (DBCA-011)	No	Not applicable. No DBCA controlled lands or waters are identified within the site.
Swan Bioplan Regionally Significant Natural Areas 2010 (DWER-070)	No	Not applicable.

2.1 Native vegetation – modification and clearing

A large portion of the site is non-vegetated due to historic land uses and recent subdivision works. The proposed subdivision amendment relates to the consolidation of internal lots and roads to form two larger lots and does not alter the proposed native vegetation clearing in or associated with the site as assumed under the previously approved subdivision. Numerous existing planted and naturally regrown trees in the western portion of the site have been identified as having amenity and environmental values and have been assigned a 'high' retention value. Consequently, opportunities to retain some of this vegetation within the proposed landscape residential lots have been considered as part of the structure plan and subsequent subdivision.

All existing trees within the landscape residential lots in the western and southern portion of the site will form part of the proposed lot areas and will be managed to a low threat standard in accordance with AS 3959. This may include tree thinning and pruning, removal of understorey vegetation (predominantly weedy grasses) and removal of some individual trees where these have been identified as a safety risk (due to the health of trees) for future residents.

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 the *Environmental Protection Act 1986* or Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (where outside an ESA) exist, such as those associated with Section 33 of the *Bush Fires Act 1954* or a building licence respectively.

It is noted that the land subject to being cleared to allow for residential development has not changed from the assumptions applied to the current approved subdivision applying to the site.

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2.2 Revegetation and landscape plans

There are no public open space areas proposed as part of the subdivision of the site.

Similar to the previously approved subdivisions for the site, no revegetation is proposed as part of the amended subdivision. Landscaping within the site and to the east, including the future vegetated drainage swale and drainage basin associated with Jack Williamson Park, will be carried out as per the previous approval discussions and the agreement with the City of Swan on December 5th, 2024. These discussions confirmed that the northern portion of the adjacent parkland and future drainage basin/swale area will be managed to a low threat state in perpetuity following the completion of the subdivision.

A drainage basin will be installed adjacent to the eastern site boundary within the Jack Williamson Park, with a vegetated swale sitting adjacent to the drainage basin within the proposed eastern road reserve (shown in **Appendix C**). Based on the vegetation planting for the vegetated drainage basin/swale to effectively treat stormwater and provide line of sight between the street and footpath, low growing reeds and sedges as well as sparse trees that would ultimately comprise less than 10% foliage cover will be utilised. The drainage basin will include a mix of existing and proposed trees with a similar understorey to the vegetated drainage basin. The proponent has entered into an agreement with the City of Swan that the existing oval and associated future vegetated drainage basin will be developed or upgraded to achieve low threat in accordance with clause 2.2.3.2(f) by the proponent. Jack Williamson Park to the east of the site will be subject to landscaping as part of future development stages outside the site and will continue to achieve low threat.

Retained vegetation within the site, such as individual mature trees in the landscape residential lots, will be managed to a low threat condition in accordance with clause 2.2.3.2 of AS 3959. Landscape treatments that are proposed will be associated with future residential gardens and verge planting within road reserves. These will be able to achieve low threat in accordance with Section 2.2.3.2 of AS 3959, based on standard treatments for urban areas and the requirements of the City of Swan Fire Hazard Reduction Notice.

Management of residential lots and managed verges is likely to include:

- Irrigation of grass and garden beds (where required).
- Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.)
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Application of ground/surface covers such as mulch or non-flammable materials as required.
- Regular mowing/slashing of grass to less than 50 mm in height.

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3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered with regard to the potential impact 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 BAL as the radiant heat level (kW/m²) 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.

A BAL contour plan has been prepared in accordance with Appendix A.3 of the Guidelines and Method 1 of AS 3959 to determine the BAL ratings likely to be applicable to future buildings. This has been based on the vegetation classifications and the effective slope under the vegetation (post-development scenario).

3.1 Assessment inputs

Vegetation classifications and effective slope have been detailed in **Table 2** and **Figure 2** (post-development) and a site assessment was completed on 27 March 2025 (with the site and/or surrounds assessed regularly since 2019).

3.1.1 Inputs and assumptions

The BAL assessment is based on the following inputs and assumptions:

- **Designated Fire Danger Index (FDI):** 80
- **Flame temperature:** 1090 K
- **Effective slope beneath classified vegetation:** flat/upslope, downslope 0-5 (see **Figure 2**)
- The site will be developed and managed to be largely clear of vegetation and excluded as non-vegetated in accordance with 2.2.3.2 (e) of AS 3959, or where landscaping associated with road verges and future residential gardens is present, this will be implemented and managed to achieve low threat in accordance with 2.2.3.2 (f) (unless otherwise stated).
- 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 the completion of the subdivision process, agreements with the City and/or the existing maintenance regimes.
- Areas of grassland can include up to 10% foliage cover from shrubs and trees, as per AS 3959.
- Jack Williamson Park to the east of the site will be subject to landscaping as part of future development stages under the structure plan. The proponent has discussed with the City of Swan (December 5th, 2024) that the existing oval and adjoining vegetated drainage basin will be implemented/upgraded to achieve low threat in accordance with clause 2.2.3.2(f).

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3.1.2 Vegetation classification

All vegetation within 150 m of the site was classified in accordance with Section 2.2.3 of AS 3959. The assignment of vegetation classifications is based on an assessment of vegetation structure, including consideration of the various fuel layers of different vegetation types, as outlined in **Plate 3**. Each distinguishable vegetation plot is described in **Table 2** and shown in **Figure 2**.

Not all vegetation is classified as a 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.*



Plate 3: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

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Table 2: AS 3959 vegetation classifications (refer to Figure 2)

Photo ID:	1	Plot:	1	
Vegetation classification or exclusion clause (and effective slope)				
Class A - Forest (downslope 0-5)				
Description / Justification for Classification				
<p>Forest (Class A) vegetation has been identified immediately to the south of the site. This area comprises trees reaching heights of 10 – 15 metres, with more than 30% foliage cover. The understorey is primarily composed of juvenile trees and shrubs. This vegetation is part of a reserve for Blackadder Creek and is assumed to remain unmanaged from a bushfire perspective and will continue to be a long-term hazard.</p>				
Photo ID:	2	Plot:	1	
Vegetation classification or exclusion clause (and effective slope)				
Class A - Forest (downslope 0-5)				
Description / Justification for Classification				
<p>Forest (Class A) vegetation has been identified immediately to the south of the site. This area comprises trees reaching heights of 10 – 15 metres, with more than 30% foliage cover. The understorey is primarily composed of juvenile trees and shrubs. This vegetation is part of a reserve for Blackadder Creek and is assumed to remain unmanaged from a bushfire perspective and will continue to be a long-term hazard.</p>				
Photo ID:	3	Plot:	1	
Vegetation classification or exclusion clause (and effective slope)				
Class A - Forest (downslope 0-5)				
Description / Justification for Classification				
<p>Forest (Class A) vegetation has been identified immediately to the east of the site. This area comprises trees reaching heights of 10 – 15 metres, with more than 30% foliage cover. The understorey is primarily composed of juvenile trees and shrubs. This vegetation is part of a reserve for Blackadder Creek and is assumed to remain unmanaged from a bushfire perspective and will continue to be a long-term hazard.</p>				

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Table 2: AS 3959 vegetation classifications (refer to **Figure 2**)(continued)

Photo ID:	4	Plot:	2	
Vegetation classification or exclusion clause (and effective slope)				
Class A - Forest (flat/upslope)				
Description / Justification for Classification				
<p>Forest (Class A) vegetation has been identified immediately to the east of the site. This area comprises trees reaching heights of 10 – 15 metres, with more than 30% foliage cover. The understorey is primarily composed of juvenile trees and shrub. This vegetation will remain unmanaged (as part of the Blackadder Creek reserve) and is anticipated to experience regrowth into forest vegetation, continuing to be a long-term hazard.</p>				
Photo ID:	5	Plot:	3/4	
Vegetation classification or exclusion clause (and effective slope)				
Class B - Woodland (flat/upslope)				
Description / Justification for Classification				
<p>Forest (Class A) vegetation has been identified immediately to the east of the site, comprising trees 10-15 metres tall with over 30% foliage cover. The understorey mainly consists of juvenile trees and shrubs. This vegetation will form part of the future drainage basin area and will require maintenance to ensure its functionality, as agreed with the City of Swan. Based on the required understorey management, this vegetation will be woodland (Class B) in the future.</p>				
Photo ID:	6	Plot:	7	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (e) non-vegetated				
Description / Justification for Classification				
<p>Non-vegetated areas internal to the site are currently undergoing earthworks in line with the approved subdivisions and engineering drawings. These areas consist of bare mineral earth and have been excluded in accordance with Clause 2.2.3.2 (e). They will form future lots which will also be excluded as low threat in the long-term.</p>				

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Table 2: AS 3959 vegetation classifications (refer to **Figure 2**)(continued)

Photo ID:	7	Plot:	7	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (e) non-vegetated				
Description / Justification for Classification				
<p>Non-vegetated areas internal to the site are currently undergoing earthworks in line with the approved subdivisions and engineering drawings. These areas consist of bare mineral earth and have been excluded in accordance with Clause 2.2.3.2 (e). They will form future lots which will also be excluded as low threat in the long-term.</p>				
Photo ID:	8	Plot:	7	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (e) non-vegetated				
Description / Justification for Classification				
<p>Non-vegetated areas internal to the site are currently undergoing earthworks in line with the approved subdivisions and engineering drawings. These areas consist of bare mineral earth and have been excluded in accordance with Clause 2.2.3.2 (e). They will form future lots which will also be excluded as low threat in the long-term.</p>				
Photo ID:	9	Plot:	7	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (e) non-vegetated				
Description / Justification for Classification				
<p>Non-vegetated areas (lots and roads) identified to the west of the site, which have been excluded in accordance with Clause 2.2.3.2 (e). While residential gardens are present and would be excluded as low threat (f0 for ease for reference these have been shown as non-vegetated, as part of lots. Cranwood Crescent features a sealed bitumen road, and to the left of the image, a row of retained trees exists, making up part of Plot 5 within the site.</p>				

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Table 2: AS 3959 vegetation classifications (refer to **Figure 2**)(continued)

Photo ID:	10	Plot:	6/7	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (e&f) non-vegetated or low-threat vegetation				
Description / Justification for Classification				
<p>Non-vegetated areas (lots and roads) identified to the north of the site, have been excluded in accordance with Clause 2.2.3.2 (e). Eveline Road features a bitumenised road surface, with low-threat vegetation existing to the left and right of the road.</p>				
Photo ID:	11	Plot:	6	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (f) low-threat vegetation				
Description / Justification for Classification				
<p>A row of trees in the western portion of the site will be classified as exclusion 2.2.3.2 (f) low-threat vegetation. These trees will be managed with a maintained understorey and pruned branches below 2 metres. They will form part of the future residential gardens ensuring long-term management as low threat.</p>				
Photo ID:	12	Plot:	6	
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (f) low-threat vegetation				
Description / Justification for Classification				
<p>A row of trees to the north of Eveline Road has been identified as exclusion 2.2.3.2 (f) low-threat vegetation. This classification is due to the maintained understorey, which consists of mulching. The mulching helps to suppress the growth of shrubs and other vegetation to ensure low-threat classification is ongoing. This area is subject to ongoing management as part of the road reserve.</p>				

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Table 2: AS 3959 vegetation classifications (refer to **Figure 2**)(continued)

Photo ID:	13	Plot:	6	<div style="text-align: center;">North</div> <div style="text-align: center;">📍 8°N (T) • -31.875658, 116.003485 ±3m ▲ -19m</div>  <div style="text-align: right; font-size: small;">19-105 3 27 Mar 2025, 3:25:52 pm</div>
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (f) low-threat vegetation				
Description / Justification for Classification				
Jack Williamson Park oval achieves low-threat (regular mowing) in accordance with clause 2.2.3.2(f) and will be upgraded as part of the subdivision within the site, as per the agreement between the proponent and the City of Swan. The oval area will consist of manicured lawn at completion.				
Photo ID:	14	Plot:	6	<div style="text-align: center;">South</div> <div style="text-align: center;">📍 203°S (T) • -31.873914, 116.003746 ±5m ▲ -25m</div>  <div style="text-align: right; font-size: small;">19-105 3 27 Mar 2025, 3:38:06 pm</div>
Vegetation classification or exclusion clause (and effective slope)				
Exclusion 2.2.3.2 (f) low-threat vegetation				
Description / Justification for Classification				
Drainage swales to be constructed adjacent to the eastern site boundary (next to Jack Williamson Park) will be planted and managed to ensure they achieve exclusion 2.2.3.2 (f) low-threat vegetation. This classification as low-threat vegetation has been confirmed through discussions with the City of Swan. Image 14 shows the northern edge of the swale, which will be implemented along its entire alignment.				

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3.2 Assessment outputs

The vegetation classifications determined in **Section 3.1** are summarised in **Table 3** and shown in **Figure 2** and incorporate the known changes to vegetation post-development within the site and the determined effective slope.

Table 3: AS 3959 vegetation classification and effective slope applicable to the site

Plot	Applied vegetation classification	Effective slope
1	Class A – Forest	Downslope 0-5
2	Class A – Forest	Flat/upslope
3	Class B – Woodland	Downslope 0-5
4	Class B – Woodland	Flat/upslope
5	Class G - Grassland	Flat/upslope
6	Exclusion 2.2.3.2(f)	Not applicable
7	Exclusion 2.2.3.2(e)	Not applicable

The resultant BAL ratings for the site are shown in **Figure 3**. The BAL ratings are based on the minimum distances outlined in Table 2.5 of AS 3959 for the applicable vegetation classifications and effective slope. The relevant setback distances for the BAL ratings from AS 3959 have been summarised for ease of reference in **Table 4**.

As per the previous subdivision approvals, the BAL assessment indicates that lots abutting permanent hazards will be able to support habitable buildings achieving BAL-29 or less. The majority of the lots (and therefore future habitable buildings) on the site will be subject to BAL-12.5 or below. For lots where BAL-40 and BAL-FZ encroach, sufficient area has been provided as part of the lot design to ensure that detailed design can avoid siting habitable buildings within BAL-40/FZ areas. A 9.1 m-wide setback would be required at the front of lots (and is per the previous subdivision approval).

It is noted that the area of the site to which this amendment applies (northeast corner of site) is subject entirely to 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.

Plot number (Figure 3)	Vegetation classification (Figure 3)	Effective slope (Figure 4)	Distance to vegetation (from Table 2.5 of AS 3959)	BAL rating (Figure 5)
1	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
2	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
3	Woodland (Class B)	Downslope 0-5°	< 13 m	BAL-FZ
			13 - < 17 m	BAL-40
			17 - < 25 m	BAL-29
			25 - < 35 m	BAL-19
			35 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
4	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
5	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

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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 development within the site are the same as those identified as part of the previously approved subdivisions. Therefore the bushfire hazard issues relevant do not differ greatly and include:

- Provision of appropriate separation from bushfire hazards within and surrounding the site (to the east and south), to ensure a BAL rating of BAL-29 or less can be achieved at future habitable buildings (built form). In particular, lots within the south-eastern portion of the site will require front lot setbacks in addition to the separation provided by the road interface.
- Ensuring that the site has access to a road network that supports egress to multiple destinations and that temporary no-through roads due to staging of development (where required) are either less than 200 m long with suitable turn-around areas or are provided with temporary emergency access ways.
- Ensuring that site landscaping is designed and implemented to achieve the outlined vegetation classification (Drainage basin and northern portion of the vegetated swale to be low-threat vegetation).
- Ensuring that the provision of water for firefighting is sufficient and accessible by firefighting services.

4.1 Permanent hazards

The site is located adjacent to areas of classified vegetation to the east and southeast, which are associated with areas of reserve (associated with Blackadder Creek) and its partially managed interface (woodland), and the southern portion of the vegetated swale that directly abuts areas of reserve to the southeast. These areas will not be managed to achieve low-threat and are assumed to remain bushfire hazards in the long term. The permanent classified vegetation affecting development within the site and influencing BAL ratings includes:

- **Forest (Class A) vegetation:** has been identified to the south-east of the site (north of Muriel Street), associated with Blackadder Creek and a foreshore area.
- **Woodland (Class B) vegetation:** will occur adjacent to the eastern boundary of the site, associated with vegetation being modified as part of implementing a managed interface with the forest to the southeast of the site, as agreed with the City of Swan.
- **Grassland (Class G) vegetation:** will be present adjacent to the south eastern boundary, associated with the future vegetated swale abutting retained forest vegetation linked to Blackadder Creek reserve.

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4.2 Vulnerable land use

The definition of vulnerable land use as outlined in SPP 3.7 is a land use which *“is designed to accommodate people who are less physically or mentally able and likely to present evacuation challenges; and/or due to the building design or use, or the number of people accommodated, likely to present evacuation challenges; and or involves visitors who are unfamiliar with the surroundings”* (WAPC 2024b). This generally includes (but is not limited to) schools, hospitals, aged care facilities and similar.

As part of this subdivision application, two future vulnerable uses are being accommodated within the northeast portion of the site (the change from the current approved subdivision), namely a childcare centre and an educational facility. The placement of lots for these vulnerable uses has been strategically planned to avoid permanent hazards to the southeast of the site, ensuring they are within an area subject to BAL-LOW and away from any significant future bushfire threats. Additionally, they are located on through road access routes (east, south, and west) to facilitate evacuation.

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5 Assessment Against the Bushfire Protection Criteria

5.1 Bushfire protection criteria

The bushfire protection criteria provided in the Guidelines represent the risk treatments applicable to achieving the intent and the objectives listed in SPP 3.7. The bushfire protection criteria vary depending upon the stage of the planning process and development type and are divided into four subsystems (elements). Each subsystem is provided with an outcome, or an acceptable solution method (predetermined solution). Compliance with each subsystem (as a risk treatment) is required to demonstrate to the decision-maker that the risk is within acceptance.

The bushfire protection criteria identified in the Guidelines and addressed as part of this BMP are:

- Element 1: Location
- Element 2: Siting and design
- Element 3: Vehicular access
- Element 4: Water supply

Bushfire Protection Criteria 5 (BCP 5): Structure plans and subdivision applications has been considered for the proposed subdivision of the site. The assessment demonstrates that the subdivision and future development can achieve the objectives of SPP 3.7 and addresses BCP 5 through acceptable solutions detailed in the Guidelines, as summarised in **Table 5**.

Table 5: Assessment against Bushfire Protection Criteria 5: Structure plans and subdivision applications

Bushfire protection criteria 5	Proposed bushfire management strategies
Element 1: Location	
A1.1a Broader Landscape Type	<p>The site has been identified as being within an 'Area 2' bushfire prone area under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2024). Consequently, an assessment against Element 1 is necessary. However, the site is subject to approved subdivisions (WAPC 164437 and 200609), with the most recent approval assessed against SPP 3.7 in 2024. The subdivision considered as part of this BMP is not significantly different to the previous proposal, with lots consolidated rather than further subdivided. In line with A1.2 of the Guidelines, an assessment of the broader landscape is not required as it has already been considered as part of a previously approved planning document for an area assessed under SPP 3.7.</p> <p>The proposal complies with A1.1a.</p>
Element 2: Siting and design	
A2.1 Siting and design	<p>As previously discussed, the proposed subdivision does not involve significant changes to the subdivision layout and is a consolidation of previous residential lots to support two new vulnerable land use lots within the northeast portion of the site, both entirely sited within BAL-LOW. The BAL assessment undertaken as part of the BMP indicates that all lots can support habitable buildings achieving BAL-29 or less. This is achieved through low-threat features (as per Section 2.2.3.2 of AS 3959) located near the lots, either through the management of residential lots, the provision of managed road reserves (existing and proposed) and management of external public open space areas.</p> <p><i>(continued below)</i></p>

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Table 5: Assessment against Bushfire Protection Criteria 5: Structure plans and subdivision applications (continued)

Bushfire protection criteria 5	Proposed bushfire management strategies
Element 2: Siting and design (continued)	
A2.1 Siting and design (continued)	<p>A number of lots adjacent to the south-eastern boundary of the site (adjacent to the reserve for Blackadder Creek) are subject to BAL-FZ and BAL-40 (a total 9.1 m incursion, as indicated in Figure 4). This as per the existing subdivision approval. The proposed lots in this location are suitably sized to accommodate the required front lot setback, enabling future habitable buildings to achieve BAL-29 or less.</p> <p>All other lots achieve BAL-19, BAL-12.5 or BAL-LOW.</p> <p>The proposal complies with A2.1.</p>
A2.2 Asset Protection Zone (APZ)	<p>All lots are required to be managed to a low-threat condition with a minimum Asset Protection Zone (APZ) equivalent to enable BAL-29 to be achieved at the habitable building. While APZs are typically contained within a lot, they can also include areas external to a lot that achieve low-threat in accordance with Section 2.2.3.2 of AS 3959. This is common for this density of residential development, where the APZ may extend outside a single lot, such as into managed road reserves or public open space areas.</p> <p>As outlined, several lots adjacent to the south-eastern boundary of the site (next to the reserve for Blackadder Creek) will be subject to BAL-FZ and BAL-40 (total 9.1 m incursion, as indicated in Figure 4). The proposed lots in this location are suitably sized to accommodate the required front lot setback (which will form part of the APZ), enabling future habitable buildings to achieve BAL-29 or less.</p> <p>The proposal can comply with A2.2.</p>
A2.3 Clearing of native vegetation	<p>The proposed subdivision does propose clearing in excess of what was previously approved under WAPC 164437 and 200609 for the site. The entirety of the site is currently undergoing earthworks associated with implementing these subdivisions and associated approved engineering drawings, with the majority of the site consisting of bare mineral earth. Therefore, the proposal largely aligns with the previously approved clearing limits and does not introduce additional impacts on native vegetation. Residential lifestyle lots are still proposed where existing trees will be retained where safe to do so from a tree health perspective. It is noted that as part of implementing the adjacent drainage basin and woodland interface with Blackadder Creek reserve minor alterations to clearing may occur but will be limited to understorey species. The land subject to being cleared has not changed significantly from the assumptions applied to the approved structure plan.</p> <p>The proposal complies with A2.3.</p>
Element 3: Vehicular access	
A3.1 Public roads	<p>All public road reserves within the site are consistent with the previously approved subdivision for the site and will meet the minimum technical requirements for public roads, compliant with local government standards and Table 10, Column 2 of Appendix B.3 in the Guidelines (Plate 4 below).</p> <p>The proposal complies with A3.1.</p>
A3.2 Access routes	<p>The proposed subdivision will provide multiple access and egress points onto the existing Eveline Road and Surrey Way to the north and Cranwood Crescent to the west and south, in accordance with the approved subdivisions and structure plan. Eveline Road and Cranwood Crescent provide multiple connections to different destinations, including onto Great Northern Highway to the east and Muriel Street to the south, providing connections to the broader Middle Swan and Midland areas. The road network is shown in Figure 4. The proposal complies with A3.2.</p>

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Table 5: Assessment against Bushfire Protection Criteria 5: Structure plans and subdivision applications (continued)

Bushfire protection criteria 5	Proposed bushfire management strategies
Element 3: Vehicular access (continued)	
A3.3a No-through roads	<p>The proposed road network associated with the structure plan and this subdivision consists entirely of through roads, compliant with A3.3. This network part of this subdivision application is not significantly altered from the currently approved subdivision.</p> <p>As development within the site may be undertaken in stages, temporary no-through roads may be necessary. These temporary roads must comply with Appendix B.3 of the Guidelines, discussed below.</p> <p>The proposal can comply with A3.3a.</p>
A3.3b No-through road requirements	<p>No no-through roads are proposed as part of the broader subdivision at completion.</p> <p>However, if temporary no-through roads are required due to the staging of development they must be less than 200 meters in length and developed in accordance with the minimum technical standards for a public road as detailed in Table 10, Column 2 of Appendix B.3 of the Guidelines of as agreed with the City of Swan (Plate 4) and adhering to the turn-around area/head standards outlined in Figure 30 of the Guidelines.</p> <p>The proposal complies with A3.3b.</p>
A3.4 Emergency access way	<p>Not applicable given the proposal is compliant with A3.2 and A3.3a.</p> <p>As part of staged development, temporary emergency access ways may be required to ensure access to two different destinations and/or to address temporary no-through roads longer than 200 m. Emergency access ways should comply with the requirements of Appendix B.3 Table 10 column 3 of the Guidelines (Plate 4 below) or as agreed with the City of Swan.</p> <p>The proposal complies with A3.4.</p>
A3.5a Perimeter roads	<p>A perimeter road meeting the requirements in Appendix B.3 of the Guidelines (Table 10, Column 1) has been provided between the proposed lots and classified vegetation identified to the east and southeast of the site, compliant with A3.5a.</p> <p>The proposal complies with A3.5a.</p>
A3.5b Fire service access route	<p>No fire service access route is proposed or required to achieve compliance as the proposal complies with A3.5a. Therefore A3.5b is not applicable.</p>
A3.6 Battle-axe access legs	<p>No battle-axe legs are proposed and therefore A3.6 is not applicable.</p>
Element 4: Water	
A4.1 Water supply for structure plans	<p>A4.1 is not applicable to the subdivision stage.</p>
A4.2 Water supply for subdivision applications	<p>The site is located in a reticulated water supply area. Hydrants exist along Cranwood Crescent and Eveline Road within 200 m of the site. As the reticulated water scheme is extended to support subdivision within the site, additional hydrants will be installed in accordance with water authority requirements .</p> <p>The proposal complies with A4.2.</p>

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Table 5: Assessment against Bushfire Protection Criteria 5: Structure plans and subdivision applications (continued)

Bushfire protection criteria 5	Proposed bushfire management strategies
Element 4: Water (continued)	
A4.3 Water supply for existing habitable building(s)	Not applicable to the site. There are no existing habitable buildings within the site. The proposal complies with A4.3 .

Table 10: Vehicular access technical requirements

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

Notes:

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

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

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

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

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

Plate 4: Excerpt of Table 10 from Appendix B.3 of The Guidelines outlining vehicle access requirements

5.2 Additional management strategies

5.2.1 Future approval considerations

The BAL assessment in this BMP assesses the potential bushfire risk posed to future habitable buildings within the site, based on the assumptions outlined in **Section 3**.

No lots will be titled that cannot provide a development site (building) that achieves BAL-29 or less. Following the creation of lot titles, a building licence will be required before the dwelling construction can commence.

Future Class 1, 2, 3, 9 and 10a buildings designated bushfire prone and within an area subject to a BAL rating of BAL-12.5 or higher, will need to satisfy construction standards in accordance with the National Construction Code (NCC) (e.g., AS 3959 or the National Association for Steel-framed Housing).

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



5.2.2 Vegetation management

5.2.2.1 Within the site

All lots, once created, are required to be managed by the relevant landowner to a minimal fuel condition and achieve low threat as per Section 2.2.3.2 of AS 3959, in accordance with this BMP and the City of Swan Fire Hazard Reduction Notice (as published).

Road reserves (pavement areas and verges adjacent to lots) will be managed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959 and will be the responsibility of the proponent initially, and following handover, will be the responsibility of the City of Swan (and landowners for adjacent road verges).

Nature strips (verges) within public road reserves are excluded pursuant to clause 2.2.3.2(f) of AS 3959, where they are listed as a type of use/vegetation that can be excluded. Specific management is not required.

5.2.2.2 Surrounding the site

Where indicated as a low threat in **Figure 2**, it is assumed that areas surrounding the site will be managed by the applicable landowners/land managers in accordance with existing maintenance regimes and where relevant the City of Swan Fire Hazard Reduction Notice (as published). This assumption also applies to the adjacent road reserves.

The drainage basin and Jack Williamson Oval to the east of the site (which will be the responsibility of the City of Swan following handover) are assumed to be excludable as low threat vegetation following extensive discussion with the City of Swan.

Where indicated as classified vegetation in **Figure 2**, areas have been assumed to remain a bushfire hazard in the long-term.

5.2.3 City of Swan Firebreak Hazard Reduction Notice

The City of Swan releases a Firebreak Notice on an annual basis to provide a framework for bushfire management within the City. The City of Swan is 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 City with additional power to direct landowners to undertake works to remedy conditions conducive to the outbreak or spread of bushfire

Future landowners should refer to the *City of Swan Firebreak Notice*, to determine the measures required for compliance.

5.2.4 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.

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



The City of Swan provides bushfire safety advice to residents available from their website <https://www.swan.wa.gov.au/Services-support/Emergency-management/Fire/Fire-breaks-hazard-reduction>. Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high-risk areas in addition to that provided in this BMP.

In the case of a bushfire in the area, advice would be provided to residents by DFES, the Department of Biodiversity Conservation and Attractions (DBCA) and/or the City of Swan on any specific recommendations with regard to responding to the bushfire, including evacuation if required.

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



6 Responsibilities for Implementation and Management of Bushfire Measures

Table 6 outlines the future responsibilities of the proponent/developer to be undertaken to support the clearance of titles. These items will be certified by a bushfire consultant.

Table 6: Responsibilities for the implementation of this BMP prior to issue of titles

Developer/landowner	
No.	Implementation action
1	<p>Unless identified for retention or revegetation, ensure any existing classified vegetation in the site achieves low threat in accordance with Section 2.2.3.2 of AS 3959. Additionally, ensure that each lot is maintained as low threat in accordance with Section 2.2.3.2 (e) or (f) of AS 3959 until the lot is sold. Management should include where present/applicable (but is not limited to):</p> <ul style="list-style-type: none"> • Maintaining non-vegetated surfaces • Irrigation of grass and garden beds (where required) • Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.) • Low pruning of trees. • Application of ground/surface covers such as mulch or non-flammable materials as required. • Regular mowing/slashing of grass to less than 100 mm in height
2	<p>Install the public roads to the standards outlined in Appendix B.3 of the Guidelines or as agreed with the City of Swan. Public road reserves should be designed and maintained to achieve low threat in accordance with Section 2.2.3.2 of AS 3959.</p>
3	<p>As part of implementing subdivision, two access routes must be provided at all times other than:</p> <ul style="list-style-type: none"> • Temporary no-through roads that meet the requirements of the Guidelines (less than 200 m in length) with suitable turning heads. • If emergency access ways are required temporarily to provide two access routes during staging, they must be provided in accordance with the minimum technical requirements of Appendix B.3 Table 10 of the Guidelines.
4	<p>Reticulated water supply and hydrants are to be installed as per standard water authority requirements unless otherwise agreed.</p>

Table 7 outlines the future responsibilities of the proponent, future landowners and the City of Swan associated with implementing this BMP with reference to ongoing bushfire risk mitigation measures for existing land uses (through compliance with the City's Fire Hazard Reduction Notice) or future mitigation measures to be accommodated as part of the development process but not necessarily for title clearances. These responsibilities will need to be considered as part of the subsequent development and implementation process.

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



Table 7: Responsibilities for the implementation of this BMP during development (building construction) and ongoing

Developer/landowner	
No.	Implementation action
1	<p>Ongoing management of the site (including temporary management areas) to achieve low threat as specified in Table 6, Item 1 to support the creation of titles.</p> <p>As part of the development works, the areas of road reserves and future lots within the site should be designed and implemented to achieve a low threat standard in accordance with Section 2.2.3.2 of AS 3959. Additionally, where applicable to the east of the site the proponent will ensure the adjacent drainage basin and Jack Williamson Oval are designed and implemented to achieve a low threat standard in accordance with Section 2.2.3.2 of AS 3959. Where present, mature trees can be retained. Ongoing management is likely to include (but is not limited to):</p> <ul style="list-style-type: none"> • Irrigation of grass and garden beds (where required) • Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.) • Low pruning of trees. • Application of ground/surface covers such as mulch or non-flammable materials as required. • Regular mowing/slashing of grass to less than 100 mm in height <p>Maintenance will be the responsibility of the proponent until handover to the City of Swan (for road reserves and the eastern drainage basin and Jack Williamson Oval).</p>
Property (lot) owners (includes the developer until the lot is sold and ownership transfers)	
No.	Implementation action
1	Maintain the lot to a low threat standard in accordance with Section 2.2.3.2 (e) and (f) of AS 3959.
2	Habitable buildings are to be constructed in areas subject to BAL-29 or less, as per Figure 4 or as per a BAL assessment in accordance with AS 3959.
City of Swan	
No.	Management action
1	Maintaining fuel loads in existing public road reserves and public open space (under their management) to appropriate standards to minimise fuel loads.
2	Monitoring vegetation fuel loads in private landholdings against the requirements of the City's Bushfire Risk 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 City's responsibilities under the <i>Bush Fires Act 1954</i> .
3	<p>The City of Swan shall manage the adjacent drainage basin and Jack Williamson Oval by maintaining the lot to a low threat standard. This will be done in accordance with Section 2.2.3.2 (e) and (f) of AS 3959. Ongoing management is likely to include (but is not limited to):</p> <ul style="list-style-type: none"> • Irrigation of grass and garden beds (where required) • Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.) • Low pruning of trees. • Application of ground/surface covers such as mulch or non-flammable materials as required. • Regular mowing/slashing of grass to less than 100 mm in height
Water Corporation	
No.	Management action
1	Ensure water hydrants are maintained and accessible to fire services at all times.

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



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 9.10 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 horizontal line.

Name: Anthony Rowe

Company: Emerge Associates/Envision Bushfire Planning

Date: 010/04/2025

BPAD Accreditation: BPAD No. 36690

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



8 References

8.1 General references

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

Department of Biodiversity, Conservation and Attractions (DBCA) 2017, *Ramsar Sites (DBCA-010)*.

Department of Biodiversity, Conservation and Attractions (DBCA) 2022, *Threatened Ecological Communities (DBCA-038)*, Perth, Western Australia
<<https://catalogue.data.wa.gov.au/dataset/threatened-ecological-communities>>.

DPLH and WAPC 2024, *Bushfire Management Plan (BMP) Manual*, Planning.wa.gov.au.

Department of Water and Environmental Regulation (DWER) 2021, *Clearing Regulations - Environmentally Sensitive Areas (DWER-046)*,
<<https://catalogue.data.wa.gov.au/dataset/clearing-regulations-environmentally-sensitive-areas-dwer-046>>.

Emerge Associates 2020a, *Technical Memorandum - Fauna Assessment Part Lots 23 Winston Crescent and 73 Eveline Road, Middle Swan*, EP19-105(26)--036 RAW, Version 1.

Emerge Associates 2020b, *Technical Memorandum - Flora and Vegetation Assessment Part Lots 23 Winston Crescent and 73 Eveline Road, Middle Swan*, EP19-105(07)--035 RAW, Version 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) 2024, *Map of Bush Fire Prone Areas*, Landgate, <https://maps.slip.wa.gov.au/landgate/bushfireprone/>.

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

Western Australian Planning Commission (WAPC) 2024a, *Planning for Bushfire Guidelines*, Western Australia.

Western Australian Planning Commission (WAPC) 2024b, *State Planning Policy 3.7 Busfire*, Western Australia.

Bushfire Management Plan

Area 3 Middle Swan Brickworks – Lot 9009 Cranwood Crescent, Viveash



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
Landgate 2025	20/3/2025	https://map-viewer-plus.app.landgate.wa.gov.au/index.html
(OBRM 2024)	20/3/2025	Bush Fire Prone Areas
(DBCA 2017)	20/3/2025	Ramsar Sites
(DBCA 2022)	20/3/2025	Threatened ecological communities
(DWER 2021)	20/3/2025	Environmentally Sensitive Areas

Figures



Figure 1: Site Location and Topographic Contours

Figure 2: AS 3959 Vegetation Classification and Effective Slope

Figure 3: Bushfire Attack Level Contour Plan

Figure 4: Spatial Representation of Bushfire Management Strategies

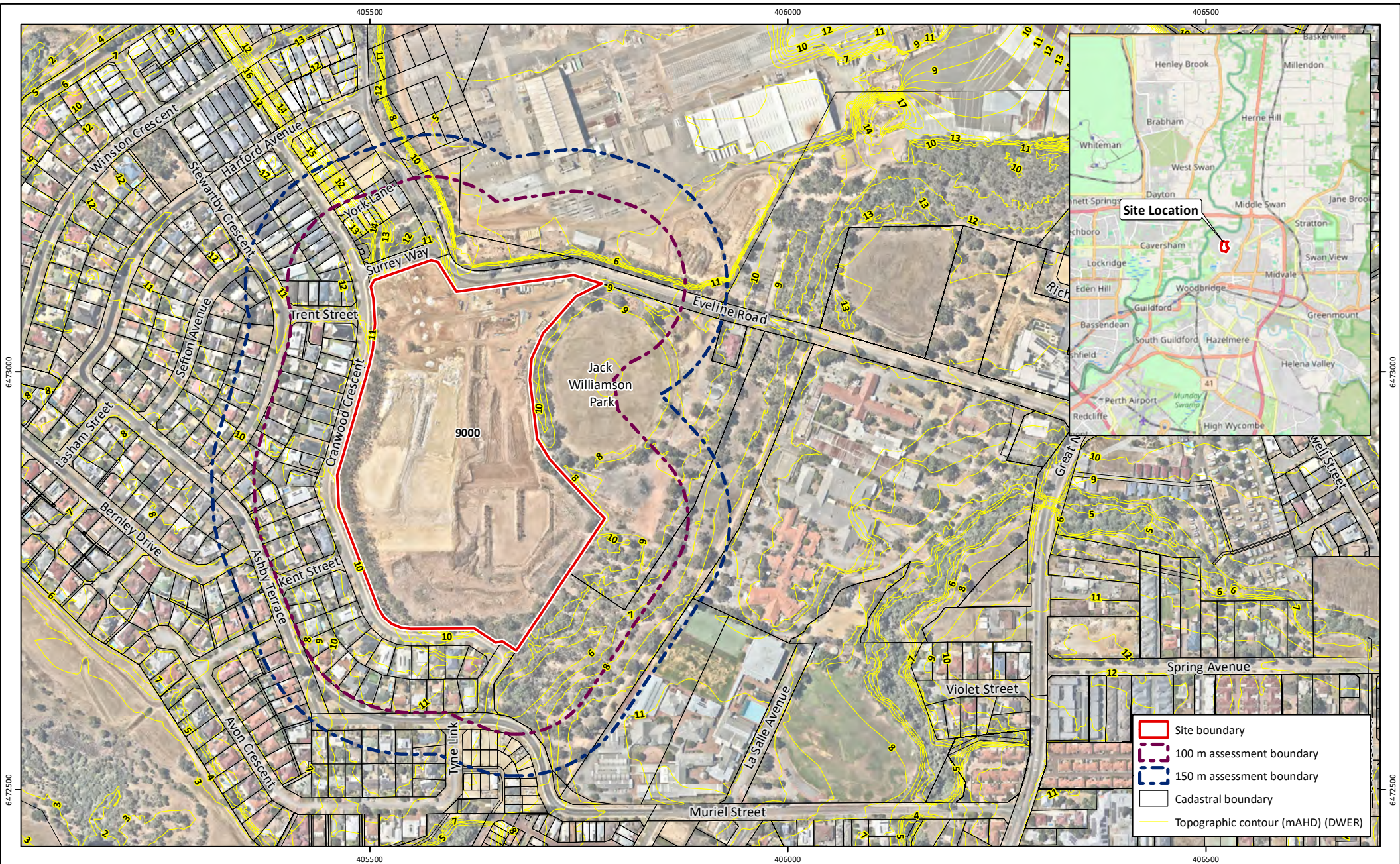
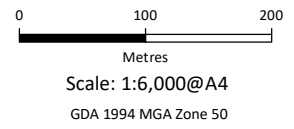


Figure 1: Site Location and Topographic Contours

Project: Bushfire Management Plan
 Area 3 Middle Swan Brickworks - Lot 9009 Cranwood Crescent, Viveash
Client: Hesperia Pty Ltd

Plan Number:
 EP19-105(60)-F402
Drawn: WJC
Date: 25/03/2025
Checked: CPW
Approved: AJR
Date: 10/04/2025



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
 ©Landgate (2025). Nearmap Imagery date: 01/02/2025

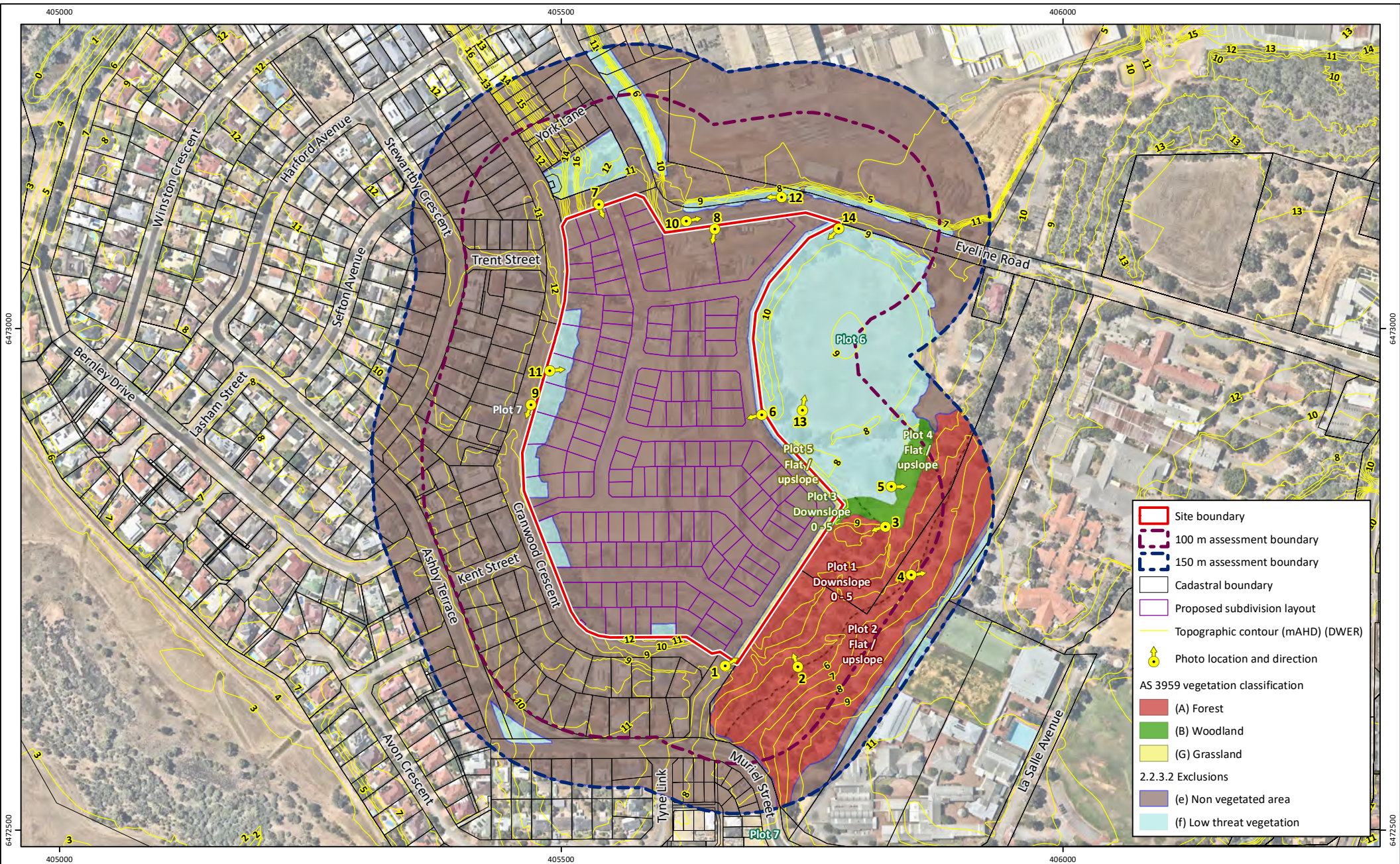
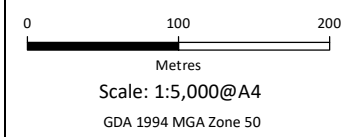


Figure 2: AS 3959 Vegetation Classification and Effective Slope

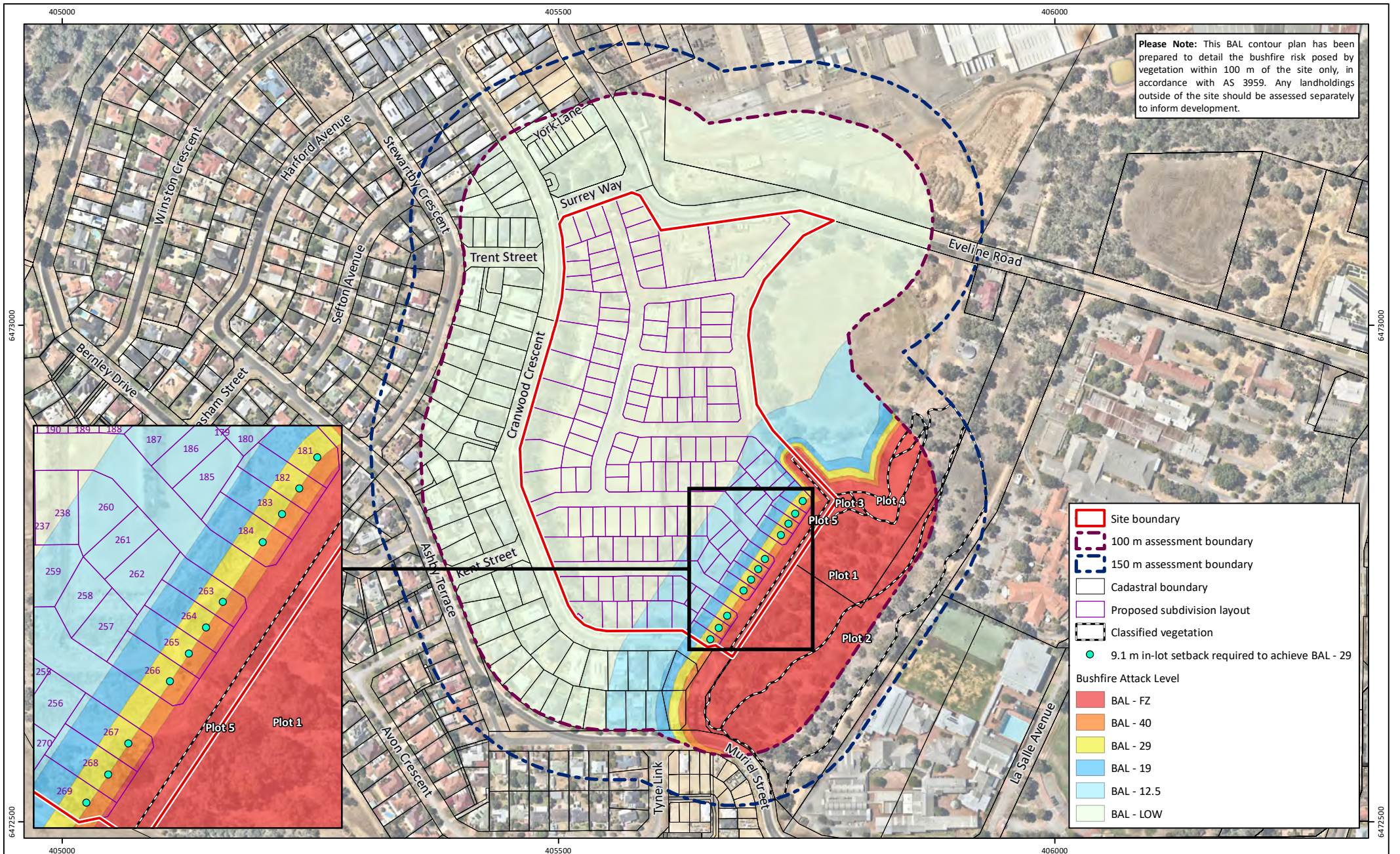
Project: Bushfire Management Plan
 Area 3 Middle Swan Brickworks - Lot 9009 Cranwood Crescent, Viveash

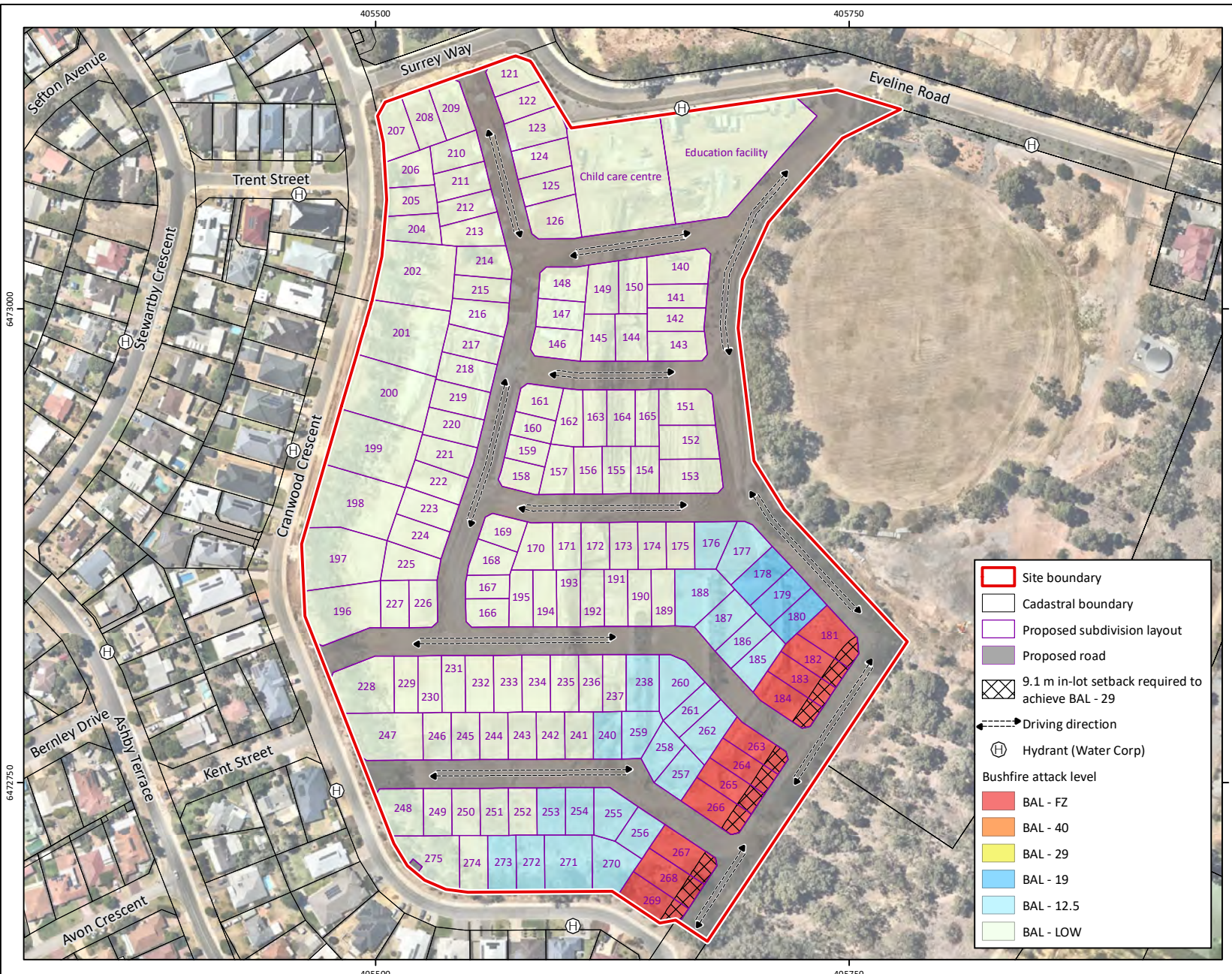
Client: Hesperia Pty Ltd

Plan Number: EP19-105(60)-F403
Drawn: WJC
Date: 25/03/2025
Checked: CPW
Approved: AJR
Date: 10/04/2025



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
 ©Landgate (2025). Nearmap Imagery date: 01/02/2025





Development Location

All new buildings are to be located in an area that can achieve BAL-29 or less.

Asset Protection Zone

The site is to be managed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959. This will be the responsibility of the proponent until lots are sold and until management of road reserves is handed over to the City of Swan. After this it will be the responsibility of the lot owners and the City, respectively.

Vehicle Access

All future development will be able to achieve multiple access routes upon completion of development. Where required as part of stage development, temporary no through roads are to meet the requirements of Appendix B.3 of the Guidelines including:

- A maximum length of 200 m, unless agreed otherwise with the City.
- Meet public road requirements as per Appendix B.3 in the Guidelines.
- Meet the turnaround dimensions as outlined in Figure 30 of Appendix B.3 of the Guidelines.

Water Supply

The development will be serviced by a network of existing and future reticulated water hydrants.

Figure 4: Spatial Representation of Bushfire Management Strategies

Project: Bushfire Management Plan
Area 3 Middle Swan Brickworks - Lot 9009 Cranwood Crescent, Viveash
Client: Hesperia Pty Ltd

Plan Number: EP19-105(60)--F405
Drawn: WJC
Date: 26/03/2025
Checked: CPW
Approved: AJR
Date: 10/04/2025



0 50 100
Metres
Scale: 1:3,000@A4
GDA 1994 MGA Zone 50



Appendix A

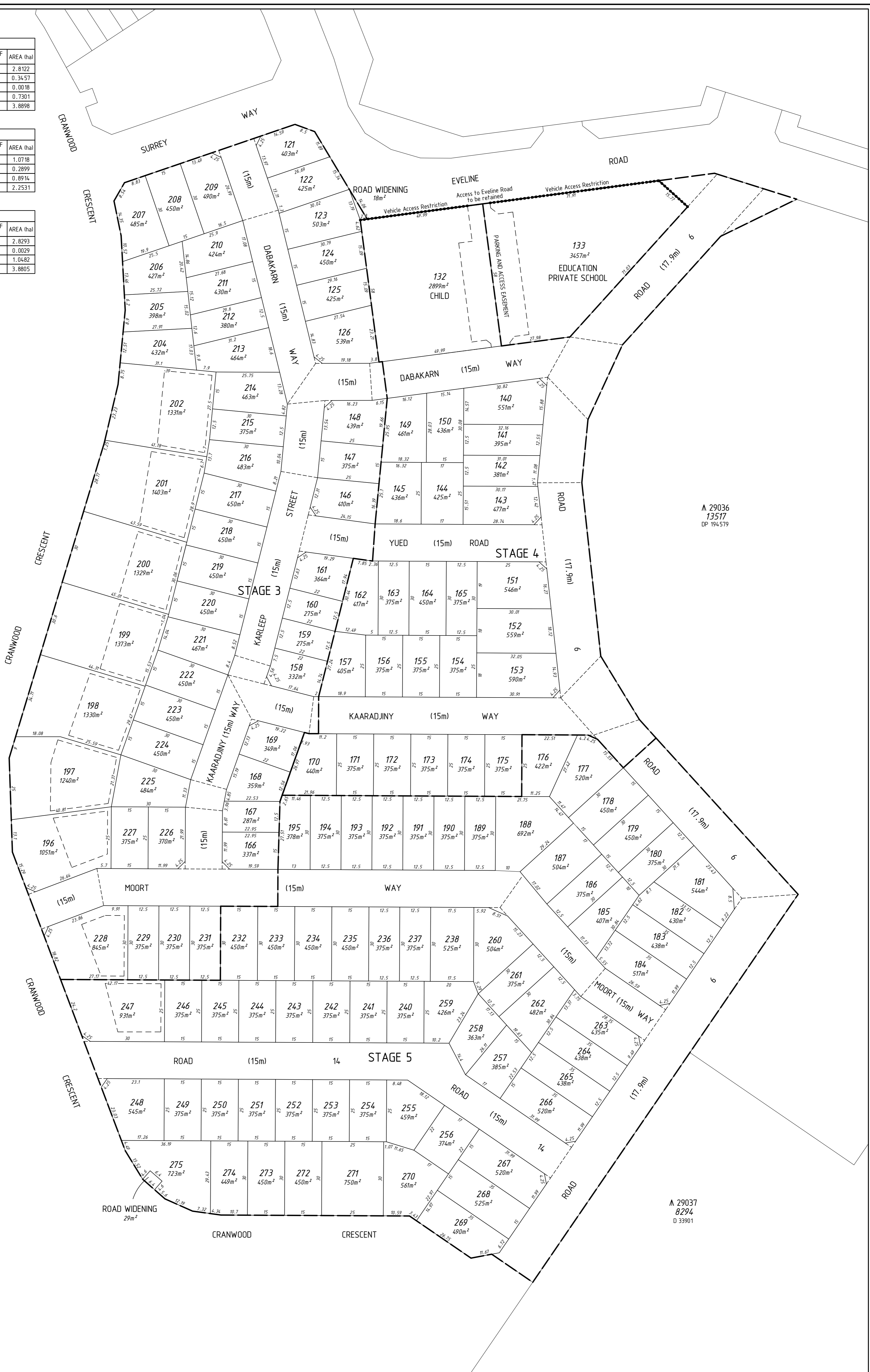
Subdivision Plan



STAGE 3 STATISTICS			
PARCEL TYPE	MAP SYMBOL	NUMBER OF PARCELS	AREA (ha)
Traditional Lots		52	2.8122
Education Facility	EDUCATION	1	0.3457
Road Widening	ROAD WIDENING	1	0.0018
Roads (inc. truncations)			0.7301
STAGE TOTAL		53	3.8898

STAGE 4 STATISTICS			
PARCEL TYPE	MAP SYMBOL	NUMBER OF PARCELS	AREA (ha)
Traditional Lots		25	1.0718
Child Care Centre	CHILD	1	0.2899
Roads (inc. truncations)			0.8914
STAGE TOTAL		26	2.2531

STAGE 5 STATISTICS			
PARCEL TYPE	MAP SYMBOL	NUMBER OF PARCELS	AREA (ha)
Traditional Lots		63	2.8293
Road Widening	ROAD WIDENING	1	0.0029
Roads (inc. truncations)			1.0482
STAGE TOTAL		63	3.8805

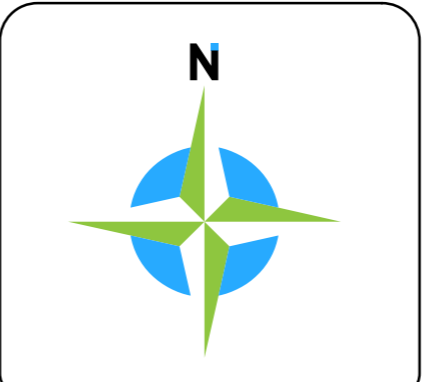


A 29036
13517
DP 194579

A 29037
8294
D 33901

Ver.	Description	Drawn	Date	Checked
0	Amend boundary between lots 237 & 238	AMJ	17/03/2025	TAV
N	Add stage 3 approved road names	TAV	18/02/2025	TAV
M	Delete lot 239. Revise lots 188, 189, 232, 234, 235, 237 & 238 and stages 3-5. Move lots 132, 270-275 into Stage 4	TAV	18/02/2025	TAV
L	Amend Lots 132, 133, 191-195 and added building envelopes to Lots 196-202, 228 & 247	WHD	18/11/2024	TAV
K	Amend Lots 199 & 200, Amend Stage 3-5 boundaries	WHD	18/11/2024	TAV
J	Add vehicle access restriction to Lots 132 & 133, amend layout for Lots 196-200	GCY	26/09/2024	TAV
I	Remove lots 127-132 and replace with lot 132 (Child Care Centre)	TAV	20/09/2024	TAV
H	Add approved road names	AFL	04/09/2024	TAV
G	Add school site. Revise lots 123-133, 140-142, 238-240, 254-274. Add lot 275 and remove lots 134-139	TAV	9/08/2024	TAV

FILES	
map\G093 - Plan093	
Control Register:- 100427	
File Name:- 100427pr-0930.dgn	



RIVERMARK
AREA 3
Middle Swan

CLIENT:
HESPERIA

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons wishing to utilise this data should satisfy themselves of this plan currency by contacting the M&N Nolan Group.

Project Mgr: Trevor Veen Datum PG594

100427 - 093 - 0

Number Number Version

SCALE 1: 750 @ A1 - 1: 1500 @ A3

ALL DISTANCES ARE IN METRES

For a true to scale reproduction of this plan, plot it to A1 with the Pacing Scaling set to None.

PLANNER'S DESIGN SOURCE for Rev L
Planner - Studio CPN
Received date- 22/01/2025
File name- 21-742 SU3

ENGINEER'S DESIGN SOURCE for Rev
Engineer -
Received date-
Data purpose-

All areas and dimensions depicted on this plan are subject to survey and Landgate registration. All cadastral information external to the stage/s which forms the subject of this plan are not guaranteed and are supplied as a guide only.



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info@mngsurvey.com.au
www.mngsurvey.com.au

Offices in: Perth | Melbourne | Kimberley | South West WA

Project Mgr: Trevor Veen Datum PG594

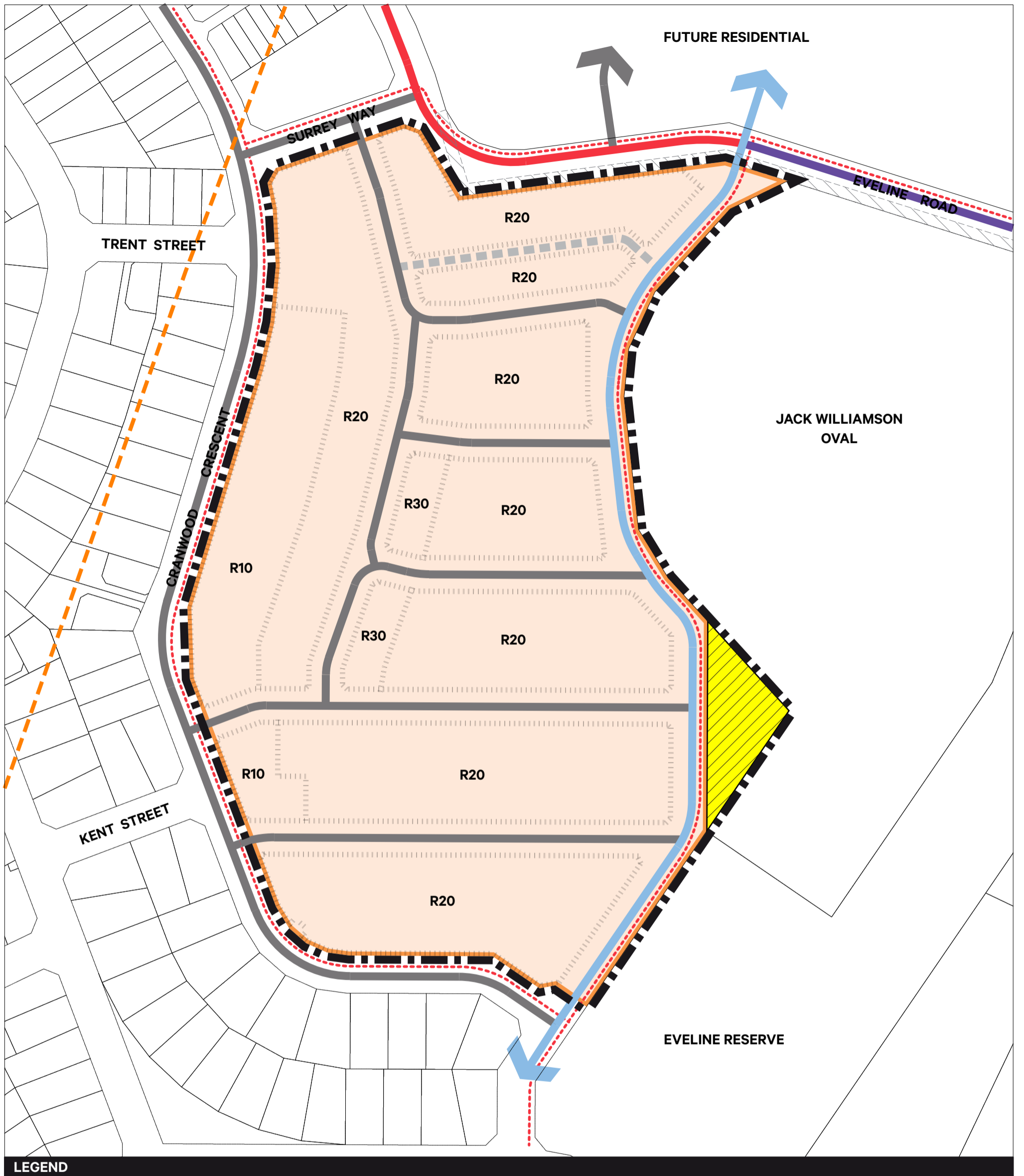
100427 - 093 - 0

Number Number Version

Appendix B

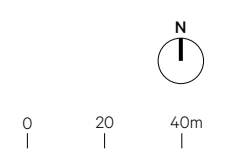
Approved Structure Plan





LEGEND		
Local Structure Plan Boundary	NEIGHBOURHOOD AND KEY ACCESS STREETS	LOCAL ACCESS STREETS (Indicative and subject to change)
LOCAL SCHEME ZONES	Neighbourhood Connector A	Access Street D
Residential Development	Neighbourhood Connector B	Laneway
LOCAL SCHEME RESERVES	Access Street C	OTHER
Public Purposes - Drainage		Gas Pipeline Easement
		ANEF 20-25
		R20 Residential Density
		Shared Path

Area 3 Local Structure Plan
 Lot 9000 Eveline Road, Viveash



Date: 27 Feb 2024
 File: 21-742 ST1 1
 Revision: A
 B
 C
 D

Scale: 1:2000 @ A3
 Staff: LC CW
 Initial issue 24.05.22
 Amended 04.05.23
 Amended 21.11.23
 Amended 27.02.24

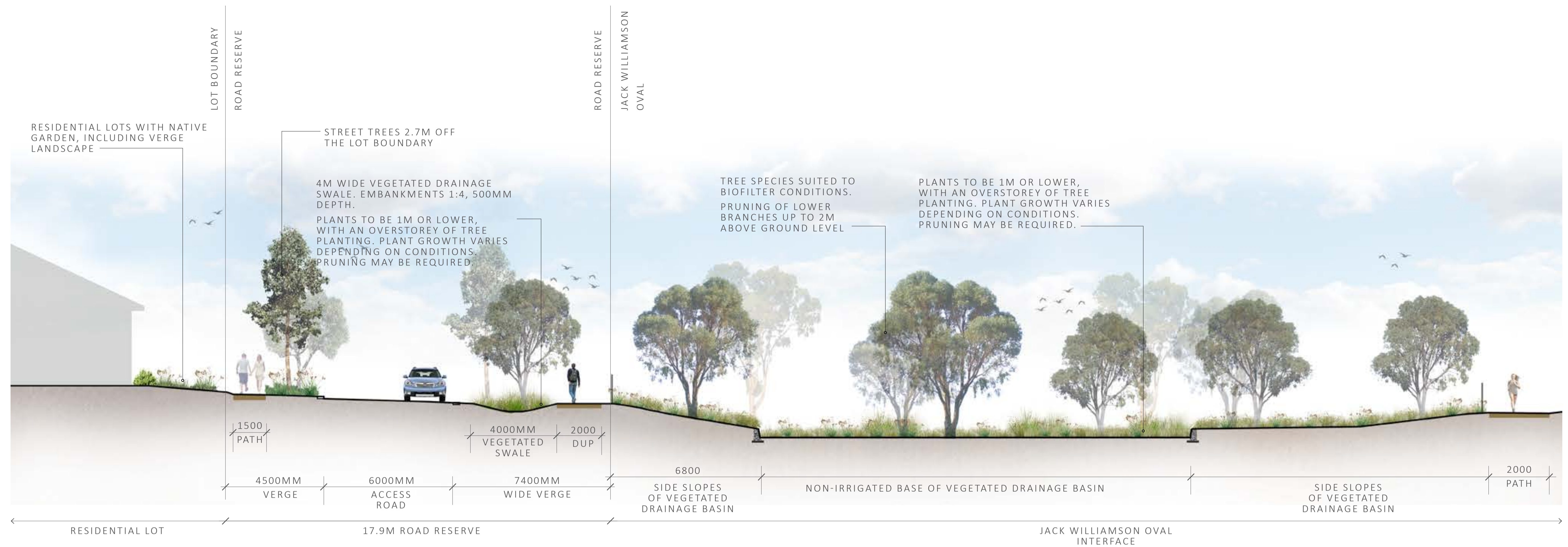
Checked: MR



Appendix C

Landscape Interface Plan





SECTION A-A

SPECIES SELECTION

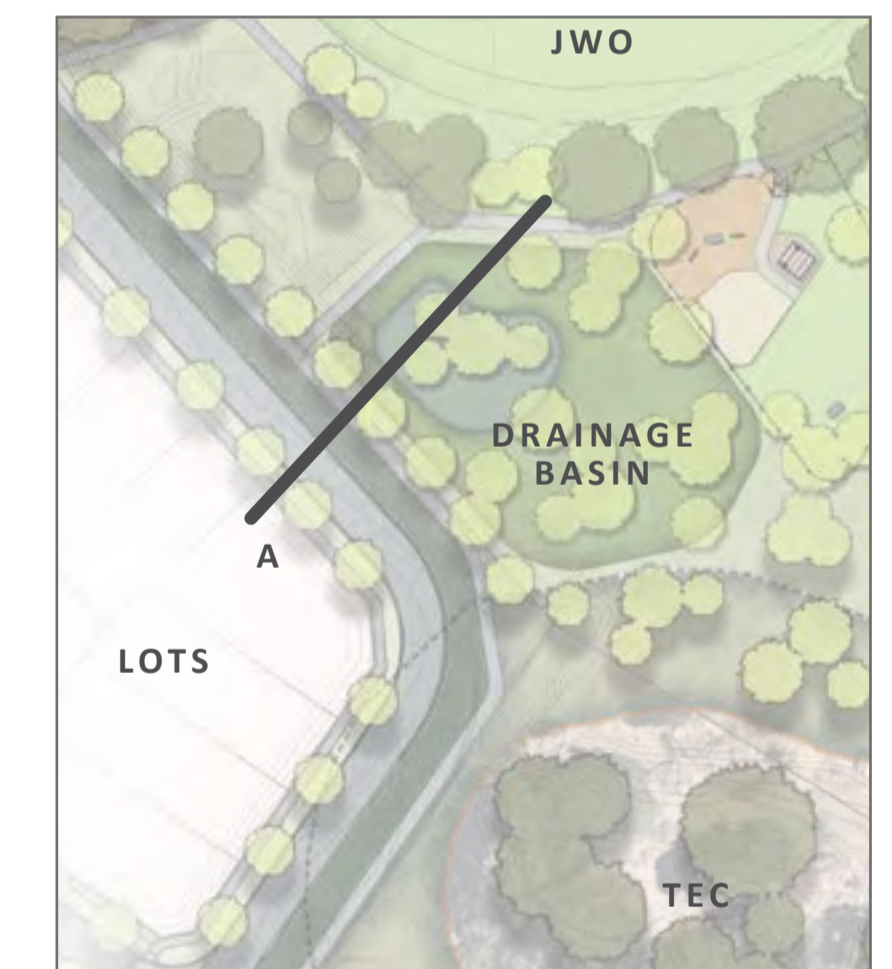
VEGETATED DRAINAGE BASIN SPECIES @ 3 OR 4 PER SQ.M	
BASE OF DRAINAGE BASIN	SIDE SLOPES OF DRAINAGE BASIN
ANIGOZANTHOS HUMILIS	CONOSTYLIS ACULEATA
BEAUFORTIA ELEGANS	DIANELLA REVOLUTA
CAREX APPRESSA	LOMANDRA LONGIGOLIA
CONOSTYLIS ACULEATA	ORTHROSANTHUS LAXUS
DAMPIERA LINEEARIS	PATTERSONIA OCCIDENTALIS
POA POIFORMIS	POA POIFORMIS
SCAEVOLA LANCEOLATA	

VEGETATED SWALE SPECIES @ 3/SQ.M
CONOSTYLIS ACULEATA
DIANELLA REVOLUTA
LOMANDRA LONGIGOLIA
ORTHROSANTHUS LAXUS
PATTERSONIA OCCIDENTALIS
POA POIFORMIS

NOTE: THE ABOVE SPECIES LISTS ARE SUBJECT TO CITY OF SWAN APPROVAL AND AVAILABILITY AT THE TIME OF PLANTING.

TREE SPECIES

TREE SPECIES
EUCALYPTUS RUDIS
MELELEUCA CUTICULARIS
MELALEUCA PREISSIANA
AGONIS FLEXUOSA
BANKSIA LITTORALIS



KEY PLAN