Bushfire Hazard Assessment

Lot 104 DP751388, James Creek Road
Residential Subdivision

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Prepared for: MPD Investments

Bushfire Disclaimer

This report in no way suggests or guarantees that a bushfire or grass fire will not occur at the Project Site and / or impact the proposed development. Furthermore, the measures recommended in this report do not guarantee that loss of life, injury and / or property damage will not occur during a bushfire or grass fire event. The severity and impact of a bushfire or grass fire event can be influenced by matters such as vegetation management, human behaviour and extreme weather conditions.

This report advises on matters published by the NSW Rural Fire Service in the guideline Planning for Bushfire Protection 2019 and other advice available from that organisation. Due consideration has been given to site conditions, the nature of the proposed development and to appropriate legislation and documentation available at the time of writing. The report is therefore current at the time of writing only.

Certification

	Name	Signature	Date
Prepared by	Kale Hardie-Porter		05/07/2024
Reviewed by	Paul Creenaune BPAD – Level 3 (58899)		05/07/2024

UPR	Description	Issued By	Date Issued
3204-1172	Version 1	Paul Creenaune	08/07/2024

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Executive Summary

This Bushfire Hazard Assessment has been prepared to support a Development Application (DA) to Clarence Valley Council for the proposed subdivision of Lot 104 DP 751388 James Creek Road, James Creek.

Clarence Valley Council's bushfire prone land mapping does not identify the site as being bushfire prone, however vegetation on adjoining land has been inaccurately mapped and assessed as a potential bushfire risk to the site. On the direction of the NSW Rural Fire Service, a bushfire assessment report is required in accordance with Planning for Bush Fire Protection 2019.

The Bushfire Hazard Assessment has taken into consideration the proposed development layout, the vegetation creating a bushfire hazard, the effective slope and Fire Danger Index for the site in accordance with Planning for Bush Fire Protection 2019 (PBP 2019). The Bushfire Hazard Assessment demonstrates that the recommended bushfire protection measures are available and can be implemented to facilitate the proposed development in accordance with the requirements of PBP 2019.

The proposed development is regarded as Integrated Development under Section 4.46 of the *Environmental Planning and Assessment Act 1979*.

The following table provides a summary of the recommendations for each bushfire protection measure outlined in Chapter 5 of PBP 2019.

Bushfire Protection Measure	Recommendation
Asset Protection Zones	■ The proposed residential lots and associated road reserves are to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019. ■ Where the asset protection zones extends over an adjacent open space lot, a restriction-to-use is to be included over the relevant lot requiring the asset protection zone to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019. ■ Any residue lot created through staged construction of the development is to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019 until such time as the land is developed. ■ A temporary restriction-to-use is to be included over proposed Lot 290 requiring a 23 m wide asset protection zone along the western boundary of Lot 279 and Lots 216-226 and the northern boundary of Lot 226 and Lots 279-289 to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019. The temporary APZ may be extinguished upon further development of Lot 290. ■ A Vegetation Management Plan is to be prepared for areas of proposed revegetation (recreational parklands and bio-retention basins) and is to include a requirement for perimeter planting to be set back sufficiently to ensure that the canopy of perimeter plantings do not overhang the public road at maturity or intrude into adjacent asset protection zones.

Landscaping	■ Landscaping is to comply with Appendix 4 of PBP 2019. ■ Any new fencing is to comply with Section 7.6 of Planning for Bushfire Protection 2019.
Access	■ Access is to be provided in accordance with Table 5.3b of Planning for Bush Fire Protection 2019.
Services - Water, Electricity and Gas	■ Water, electricity and gas services are to comply with Table 5.3c of Planning for Bush Fire Protection 2019.

1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by MPD Investments to prepare a Bushfire Hazard Assessment for the proposed subdivision of Lot 104 DP 751388 James Creek Road, James Creek, referred to herein as 'the site'.

This Bushfire Hazard Assessment will accompany the Statement of Environmental Effects that informs the development application (DA) lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to Clarence Valley Council (CVC).

This report serves to:

- identify the proposed development and site characteristics;
- determine and assess the bushfire threat; and
- recommend appropriate bushfire protection measures in accordance with PBP 2019 to minimise the impact of bushfire on the development.

1.2 Background

GeoLINK was previously engaged by MPD Investments to provide preliminary bushfire hazard assessment advice based on the conceptual design for the proposed development despite the site not being mapped by Clarence Valley Council's (CVC) bushfire prone land mapping (BPL). Given the size and scale of the proposed development and proximity of adjacent forest vegetation, CVC referred the matter to the NSW RFS for advice under the provisions of Section 4.15 of the *Environmental Planning and Assessment Act 1979*. The NSW RFS responded on the 7 June 2024 with the following advice:

1. A Bushfire Assessment Report is to be provided. The site and most of the surrounding lands accommodate bushfire-prone vegetation regardless of the mapping;

2. No perimeter road is provided to the "Balance Area", Lot 290 from the residential Lots. The Statement of Environmental Effects identifies this Lot to be left in its current state to remove the development from the stormwater drainage concerns in this area. Proposed Lot 290 is considered unmanaged land.

3. The management of the Open Spaces on proposed Lots 227 and 278 raises concern. Are the Lots to be dedicated to the Council and how are these to be managed lands in perpetuity? Especially as these Lots are adjacent to unmanaged vegetation.

4. The Stormwater Detention basin in the southwest of the site will provide a continuation of vegetation right up to the boundary with Lot 235. Lot 235 will need to accommodate an appropriate Asset Protection Zone. The current proposal does not comply with Planning for Bush Fire Protection.

5. A BAL Plan is to be provided for the development.

The request for information from the NSW RFS detailed above can be viewed in full in **Appendix A**. Chapter 3 of this report addresses these points which have been incorporated into the relevant bushfire protection measures for the overall design.

1.3 Legislative Framework

The assessment contained in this report has been prepared with regard to:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)*;*
- Environmental Planning and Assessment Regulation 2021;
- *Rural Fires Act 1997;*
- Rural Fires Regulation 2022;
- Australian Standard 3959:2018 'Construction of Buildings in Bushfire Prone Areas';
- NASH Standard 'Steel Framed Construction in Bushfire Areas (2021)'; and
- Planning for Bushfire Protection (PBP) 2019.

The *Rural Fires Act 1997* and the EP&A Act institute a framework for environmental planning and assessment to consider bushfire hazard issues.

Section 100B of the *Rural Fires Act 1997* establishes that a 'Bush Fire Safety Authority' (BFSA) is required for *a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes.* The site is not mapped bushfire prone land however, CVC was advised by NSW RFS that a BFSA is required due to adjacent vegetation which was inaccurately mapped and assessed as a potential bushfire risk to the site (refer to **Section 3.1**).

This report does not include an assessment of any threatened species or threatened ecological community under the *Biodiversity Conservation Act 2016*, or any Aboriginal object or place within the meaning of the *National Parks and Wildlife Act 1974*. Refer to the Statement of Environmental Effects for further information.

1.4 Bushfire Prone Land

Clarence Valley Council's bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in accordance with the NSW Rural Fire Service (RFS) Guideline to Bushfire Prone Land Mapping. Lot 104 DP 751388 is not mapped as bushfire prone land.

As discussed in **Section 1.2**, a consent authority can refer a development application to the NSW Rural Fire Service under the provisions of EP&A Act Section 4.15, even where it is not mapped as bushfire prone land. On this occasion, CVC sought advice from the NSW Rural Fire Service which confirmed that surrounding vegetation, including to the north of the site on Lot 8 DP 1093910, could present a potential hazard in the event of a bushfire emergency. The land to the south is considered managed land. The bush fire prone land mapping for the site and immediate surrounds is shown in **Illustration 1.1**.

LEGEND

- The site
- Cadastre
- Vegetation category 1
- Vegetation Buffer

0 200 Metres

Bushfire Prone Land - Illustration 1.1

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Bushfire Hazard Assessment - Lot 104 DP751388, James Creek Road
3204-1183

Information shown is for illustrative purposes only
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Source of base data: Google Earth
Date: 5/07/2024

2. Background

2.1 Location and Description

Lot 104 DP 751388 (the site) is rectangular in shape and has an area of approximately 33 ha. It is situated mid-way along James Creek Road in James Creek and is located in the Clarence Valley local government area, approximately 4.7 km north-east of Maclean central business district (refer to **Illustration 2.1**). The site is bounded by James Creek Road to the east and Austons Lane to the south, with large rural lots to the north and west.

Table 2.1 provides a quick reference for the location and description details of the site.

Table 2.1 Site Detail Summary

Site Details	
Lot / DP	Lot 104 DP751388
Street Address	James Creek Road, James Creek
Elevation	5m to 21m AHD
Site Area	33 ha
Clarence Valley Local Environmental Plan 2011 Zoning	Zone R1 – General Residential Zone R3 - Medium Density Residential Zone E1 – Local Centre
Fire Weather District	North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Clarence Valley Office (Ulmarra)
Development Type	Staged residential subdivision and associated works, including low density residential lots, business and childcare lots, a residue lot, and construction of supporting infrastructure.

The lot to the north (Lot 8 DP1093910) is densely vegetated along the entire boundary of the site. Approximately 650 m further to the west flows James Creek and approximately 1.3 km to the east flows Palmers Channel. Both waterways flow north, discharging into the Clarence River approximately 1.7 km north of the site.

The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing. The site is largely void of native vegetation and comprises predominantly pastures for cattle grazing.

The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3 to 5 degrees.

Refer to **Illustration 2.2** for site and surrounding locality features.

0 1 Km

Site Locality - Illustration 2.1

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3204-1183

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Drawn by: AB Checked by: RE Reviewed by: KHP
Source of base data: OpenStreet Map
Date: 05/07/2024

LEGEND

- The site
- Cadastre
- Dry Sclerophyll Forests (Shrubby sub-formation)
- Forested Wetlands
- Freshwater Wetlands
- Rainforests
- Site layout
- Contours at 10m intervals
- Watercourse

0 150 Metres

Site Analysis - Illustration 2.2

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3204-1183

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Source of base data: Google Earth
Date: 5/07/2024

2.2 Zoning and Land Use

The site is predominantly zoned R1 General Residential, with a portion zoned R3 Medium Density Residential. There is also a small area approximately 2,100 m² zoned E1 Local Centre.

The site sits on a large property within a largely rural context, with large lot residential development present in the broader locality. Surrounding land is mostly rural in character and comprises grazing land, cropping and horticulture, and interspersed rural dwellings/ hobby farms, with a notable large lot residential development area directly to the south.

Photographs of the site's interface with James Creek Road and photos internal to the site are shown in **Plates 2.1** to **2.4**.

Plate 2.1 Subject site (on left) interface with James Creek Road – looking north

Source: Google Street view Dec 2023)

Plate 2.2 Subject site (on right) interface with James Creek Road – looking south

Source: Google Street view Dec 2023)

Plate 2.3 Subject site: Cleared land proposed to be developed and adjacent northern vegetation

Plate 2.4 Subject site: Cleared land proposed to be developed and adjacent northern vegetation

2.3 Proposed Development

The Proposal is for subdivision of the site and associated development, including an internal access road that would connect to James Creek Road. The Proposal involves:

- Creation of 290 lots comprising of 280 residential lots, one commercial lot, one childcare centre lot, five open space lots and three drainage reserves plus one large residue lot. Residential lots are offset by 50 m from the northern, eastern, and western boundaries, plus an additional 23 m on the eastern boundary which is provided by the James Creek Road reserve. Lots along the southern boundary are offset from adjacent large lot residential land by approximately 25 m by the road reserve of Austons Lane, including a 5 m dedication of land to Council for this road reserve.
- Construction of infrastructure provisions (including service installations/ connections and road construction).
- The development would be staged chronologically across the five stages (Stage 1A, 1B, 2, 3 and 4) as depicted in **Figure 1.1**, subject to detailed design and sub-stages.

Access for all proposed lots will be via an intersection to James Creek Road. The internal road network comprises a symmetric layout of through roads, including a main ring road and several smaller loop roads.

Refer to **Appendix A** for the proposed residential subdivision and concept design.

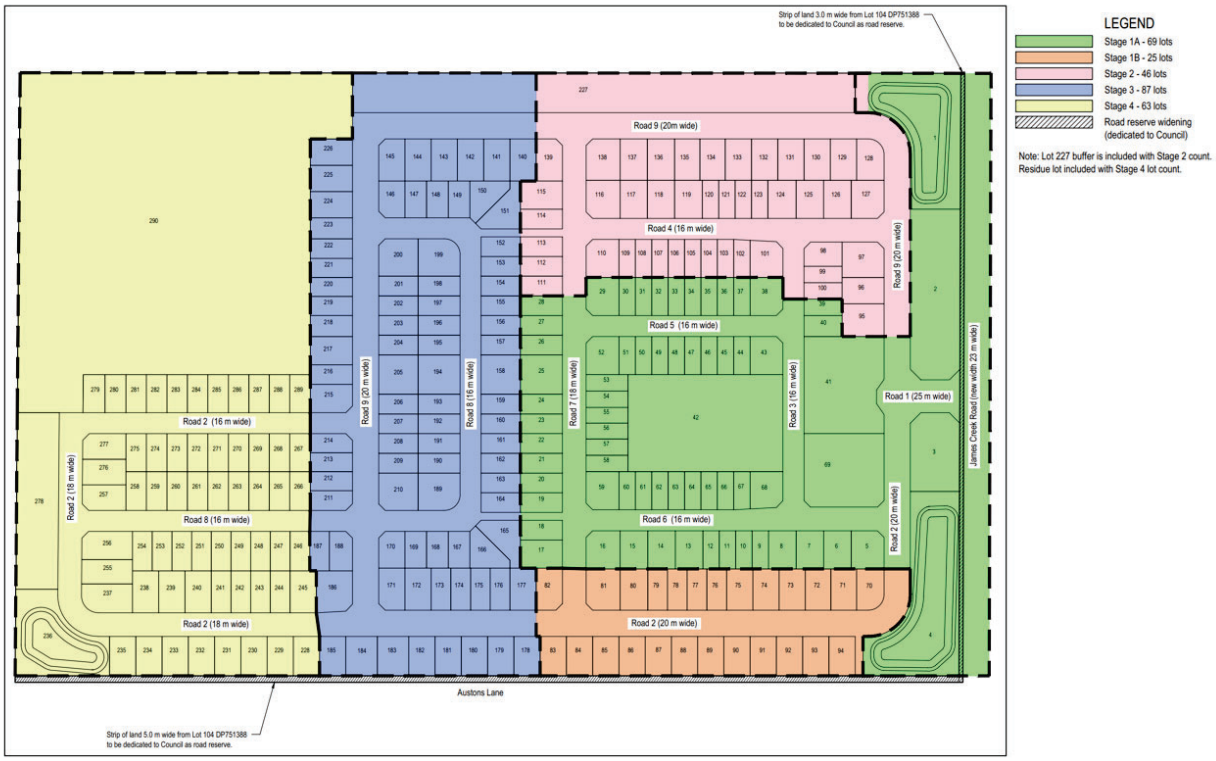

Figure 1.1 Proposed Subdivision Staging and Layout

3. Bushfire Hazard Assessment

3.1 Vegetation

The site has been highly modified and disturbed from previous broadscale clearing, sugar cane production, ongoing grazing, and slashing. Native vegetation is very sparse and limited tree cover is subject to grazing and slashing disturbance.

The site comprises highly disturbed improved pasture dominated by the introduced species such as Kikuyu (*Cenchrus clandestinum*) and Whiskey Grass (*Andropogon virginicus*). Other common agricultural grasses and herbs include Vasey Grass (*Paspalum urvillei*) and Annual Ragweed (*Ambrosia artemisiifolia*).

Woody vegetation within the site is limited to a small group of trees in the north-east corner of the site and a line of scattered mixed mature eucalypts along the western and southern boundary. Typical species include Grey Ironbark (*Eucalyptus siderophloia*), Grey Gum (*Eucalyptus propinqua*), Grafton Stringybark (*Eucalyptus tindaliae*), Pink Bloodwood (*Corymbia intermedia*), Tallowwood (*Eucalyptus microcorys*), and Swamp Box (*Lophostemon suaveolens*). No midstorey occurs and native groundcover is very sparse to absent.

Adjacent forest vegetation to the north and south-west is mapped as *Northern Lowland Scribbly Gum-Bloodwood Forest* (North Coast Dry Sclerophyll Forests). Vegetation to the east of the site which is separated by James Creek Road is mapped as *Clarence Lowland Smudgy Apple Banksia Forest* (Freshwater Wetlands).

The proposal includes three (3) bio-retention basins and open space/ vegetated parklands located on the northern, eastern and south-western periphery of the site (refer to Landscape Plans in **Appendix C**). A Vegetation Management Plan (VMP) will be prepared as a condition of consent in order to appropriately manage and maintain these areas in perpetuity.

Vegetation surrounding the site of the proposed lots has been assessed in terms of potential bushfire hazard over a distance of 140 m, using the formation classes provided within Figure A1.2 of PBP 2019. The dominant vegetation formation in each relevant direction of the proposed subdivision is outlined in **Table 3.1**.

Table 3.1 Vegetation Formation

Direction	Predominant Vegetation Formation
North	Forest
North-east	Grassland*
East	Forest
South	Managed Land
South-east	Grassland*
West	Grassland*/ Forest
North-west	Grassland

* Proposed bio-retention basins which are to be managed under a VMP have been assessed to provide similar fuel load to that of grasslands.

Plate 3.1 Vegetated land adjoining the northern boundary interface

Plate 3.2 Large Lot Residential Land/ Development to the South

Plate 3.3 Rural land to the west (partly forested section)

Plate 3.4 Rural land to the west (edge of forested area opening to grazing land beyond)

Plate 3.5 Open western interface to cattle grazing land

Plate 3.6 Scattered trees along western boundary with grazing of cattle beyond

3.2 Slope

The effective slope is the slope of the land beneath the vegetation assessed as being a hazard that will have the greatest influence on bushfire behaviour in relation to the development. The effective slope for the proposal has been assessed over 100 m in each relevant direction.

The effective slope in relation to the development is outlined in **Table 3.2**.

Table 3.2 Effective Slope

Direction	Effective Slope
North	>0°-5°
North-east	Upslope/ flat
East	Upslope/ flat
South	n/a
South-east	Upslope/ flat
West	>0°-5°
North-west	>0°-5°

3.3 Fire Weather District

Clarence Vally Council local government area is located within the 'Far North Coast' fire weather district, with a Fire Danger Index (FDI) of 80.

4. Bushfire Protection Measures

4.1 Asset Protection Zones

PBP 2019 describes an asset protection zone (APZ) as a fuel reduced area surrounding a built asset or structure. The APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

The minimum required APZs for residential subdivisions are based on a radiant heat threshold of 29 kW/m^2 and have been determined in accordance with Table A1.12.3 and the methodology outlined in Appendix A1.1 of PBP 2019, using the relevant vegetation formation, effective slope and FDI relative to the nominated building area on each proposed lot.

For this assessment, the purpose of defining APZs at subdivision stage is to demonstrate that minimum APZs (refer to **Table 4.1**) can be accommodated for the indicative building envelope within each proposed allotment. Actual building envelope position and associated APZs can be refined at dwelling DA stage.

Table 4.1 Proposed Asset Protection Zones – Residential (29 kW/m^2)

Direction	Vegetation Formation	Effective Slope	Proposed APZ
North	Forest	>0-5°	25 m
North-east	Grassland	Upslope/ flat	10 m
East	Forest	Upslope/ flat	20 m
South	Managed Land	–	–
South-east	Grassland	Upslope/ flat	10 m
West	Grassland	Upslope/ flat	10 m
	Forest	>0°-5°	25 m
North-west	Grassland	>0°-5°	23 m*

PBP 2019 acknowledges that often an indefinite time lag can occur between one or more stages of development which can result in persons and property being unprotected in the event of a bushfire. A development site that is vegetated but is to be developed and sold in stages will require the creation of APZs that need to be maintained sequentially until the final phase of development is completed to afford each stage of the development the appropriate level of bushfire protection. Therefore, in staged developments, APZs need to be provided during all stages, and provisions included that ensure ongoing maintenance is undertaken until such time as land is developed. If an easement or covenant is established for the purpose of an APZ it can be extinguished when a bushfire hazard is permanently removed (i.e. when development occurs). The responsibility for the maintenance of APZs at each stage of development must be clearly defined within the easement or covenant.

Given the proposal is to be developed in four stages and is situated within highly disturbed agricultural lands, the whole development footprint can be maintained to inner protection area (IPA) standards. This is to occur prior to the construction of each stage to ensure temporary hazards in the form of unmanaged grassland onsite does not eventuate, thus reducing the threat to those exposed dwellings located on the fringe of each development stage.

At the completion of development, proposed Lot 290 will remain open space and could be developed further (subject to separate Council approval). Therefore, the risk of grassfires to dwellings located on the eastern and southern boundary of Lot 290 could occur should this lot be left unmanaged. A 23 m APZ is recommended to allow dwellings on Lots 215-226 and 279-289 to be constructed to minimum bushfire attack level of BAL-12.5. In order to achieve this, Lot 290 will require an easement under s.88B of the *Conveyancing Act 1919* to provide:

- surety of APZs and the correct management prescriptions; and
- that management occurs in a binding legal agreement in perpetuity (or until the land is developed).

Detailed survey plans will be provided for the APZ by a suitably qualified surveyor. The easement may be extinguished upon future development of Lot 290.

Proposed Lot 227 is to be designated recreational parkland. Given this location borders the northern footprint of the site and is adjacent to establish forest to the north, this APZ in this area is to be landscaped and managed to Inner Protection Area (IPA) standards (refer to **Appendix D**).

The positioning of the proposed childcare facility has also been taken into account, with the necessary APZ requirements as per Special Fire Protection Purpose (SFPP) type developments (i.e. maximum radiant heat exposure of 10 kW/m^2 - Table A1.12.1 of PBP 2019). The nominated location of this facility is sufficiently separated from the identified hazard vegetation to the East/ South-east and would meet SFPP APZ requirements (refer to **Table 4.2**).

Table 4.2 Proposed Asset Protection Zones – SFPP (radiant heat threshold of 10 kW/m^2)

Direction	Vegetation Formation	Effective Slope	Proposed APZ
North	–	–	
North-east	–	–	
East	Forest	Upslope/ flat	67 m
South	–	–	–
South-east	Grassland	Upslope/ flat	36 m
West	–	–	
North-west	–	–	

All APZs can be provided within the site (refer to **Illustration 4.1** and **4.2**).

APZs should consist of open areas with minimal fuel at ground level that could be set alight by bushfire. Some trees and shrubs are permissible within the APZ, provided crown separation can be achieved and vegetation does not overhang buildings. In addition, no combustible materials (e.g. wood piles, flammable building materials) should be stored in the APZ (refer to **Appendix D**).

LEGEND

- The site
- Cadastre
- Asset protection zone
- Watercourse
- Site layout

0 100 Metres

Asset Protection Zones - Residential Subdivision - Illustration 4.1

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LEGEND

- The site
- Cadastre
- Asset protection zone
- Watercourse
- Site layout

0 100 Metres

Asset Protection Zones - SFPP Development - Illustration 4.2

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Table 4.2 outlines the extent to which the proposed APZs comply with the performance criteria and acceptable solution requirements of Table 5.3a of PBP 2019.

Table 4.3 APZ Compliance with PBP 2019

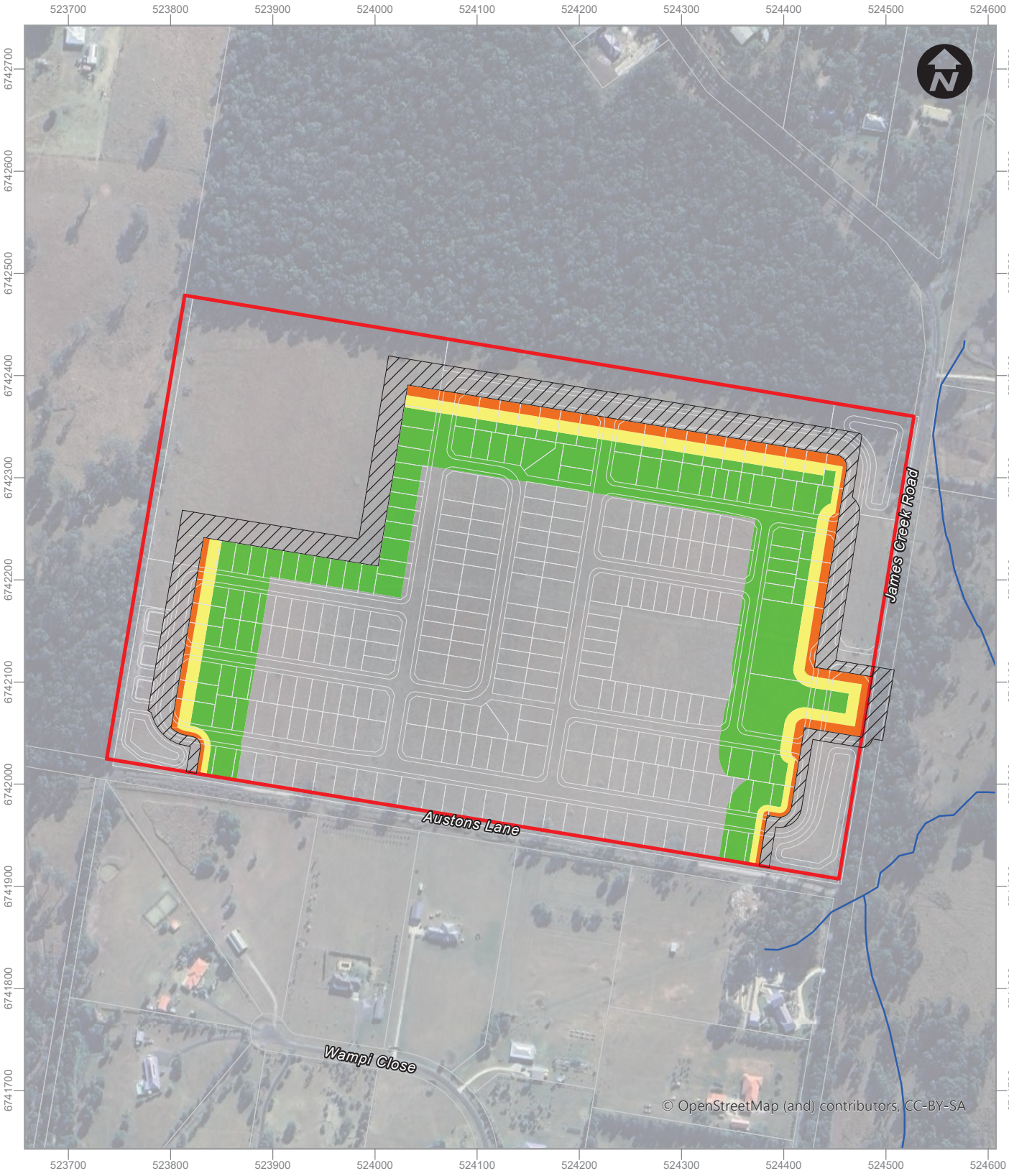
Performance Criteria	Acceptable Solution	Application
Asset Protection Zones		
Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 on each proposed lot.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 based on the FFDI.	Complies. APZ have been determined in accordance with Table A1.12.3 of PBP 2019.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	Can comply. APZs are to be managed in accordance with Appendix 4 of PBP 2019.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies. All APZs can be accommodated within the boundaries of the site.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	Complies. All APZs are located on land with a slope less than 18 degrees.

4.2 Construction Standards

The standard of building construction required to provide bushfire protection is based on the Bushfire Attack Levels (BAL). The BAL is used to describe the level of potential bushfire attack on a property (ember attack, radiant heat and direct flame contact) and is based on radiant heat flux exposure thresholds (expressed in kilowatts per metre squared – kW/m^2), as described in Table A1.7 of PBP 2019.

BALs are determined in accordance with PBP 2019 - Table A1.12.6 and the corresponding construction requirements are contained in Australian Standard AS3959-2018: 'Construction of Buildings in bushfire prone areas' or NASH Standard 'Steel framed construction in bushfire areas' (2021).

As requested by the NSW RFS (**Section 1.2**), **Illustration 4.3** delineates the various BAL's (minimum of BAL-29 through to BAL 12.5) that is applicable to the site / subdivision layout based on the identified hazards in **Table 3.1**. Individual lots subject to BALs can refine the construction requirements at dwelling DA stage. The BAL plan in **Illustration 4.3** is indicative only and should not be relied upon for individual dwelling site assessments.



LEGEND

- The site
- Cadastre
- Asset protection zone
- BAL 12.5
- BAL 19
- BAL 29
- Watercourse
- Site layout

0 100 Metres

Bushfire Attack Levels - Illustration 4.3

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4.3 Landscaping

Place Design Group has prepared a detailed Landscape Design Plan for the proposed subdivision (refer to **Appendix C**). Areas along the northern, eastern and southern perimeter of the site (around the detention basins and recreational parklands), are proposed to be revegetated as part of the development. A Vegetation Management Plan will be prepared for these areas, as outlined in **Section 4.1**.

Proposed landscaping in the APZs will comply with landscaping requirements in accordance with Appendix 4 of PBP 2019. Some trees and shrubs are permissible within the APZ, provided crown separation can be achieved and vegetation does not overhang buildings. In addition, no combustible materials (e.g. wood piles, flammable building materials) should be stored in the APZ.

Table 4.3 assesses compliance with the performance criteria and acceptable solutions of Table 5.3a of PBP 2019 relating to landscaping.

Table 4.4 Landscaping Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Landscaping		
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4.	Can comply. Landscaping within the APZs is to be managed in accordance with Appendix 4 of PBP 2019.
	Fencing is constructed in accordance with Section 7.6 of PBP 2019.	Can comply. Any proposed fencing associated with future dwellings is to be constructed in accordance with Section 7.6 of PBP 2019 (non-combustible material if within 6 m of a building; otherwise hardwood or non-combustible material).

4.4 Access

Access for all proposed lots will be via an intersection to James Creek Road. The internal road network comprises a symmetric layout of through roads, including a main ring road and several smaller loop roads.

In accordance with Section 45 of the Rural Fire Regulation 2022, it is noted that James Creek Road and the broader road network (i.e. Yamba Road) are through roads with the capacity to handle increased volumes of traffic when a bushfire emergency occurs.

Table 4.4 outlines the extent to which the proposed subdivision access complies with the relevant acceptable solution requirements of Table 5.3b of PBP 2019.

Table 4.5 Access Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Access (General Requirements)		
Firefighting vehicles are provided with safe, all-weather access to structures	Property access roads are two-wheel drive, all-weather roads.	All residential lots have access via public roads
	Perimeter roads are provided for residential subdivisions of three or more allotments.	Perimeter roads are provided along the northern, western and eastern boundaries which are at the bushland interface.
	Subdivisions of three or more allotments have more than one access in and out of the development.	**Does not Comply** The proposed subdivision layout has a single access road that intersects with James Creek Road. This is situated approximately 260 m south of the forest vegetation located along the northern boundary of the site. This vegetation, due to its size and composition, is considered the greatest fire hazard to the site. Therefore, it is considered that in the event of a bushfire emergency, access / egress into the site in addition to the internal road network (symmetric layout of through roads), provides firefighting vehicles with safe access to all future structures. An emergency access is provided onto James Creek Road between proposed Lots 3 and 4 for use in the event that the main access road becomes blocked.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Can comply.
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	Road grades do not exceed 15^0.
	All roads are through roads.	Complies.
	Dead end roads are not recommended, but if unavoidable, are not more than 200m in length, incorporate a minimum 12m outer radius	All roads are through roads.

Performance Criteria	Acceptable Solution	Application
	turning circle, and are clearly sign posted as a dead end.	
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	Can comply.
	Where access / egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	N/A Access / egress into the site from James Creek Road does not traverse through forest, woodland or heath vegetation.
	One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes),	Can comply.
	Bridges and causeways are to clearly indicate load rating.	N/A
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	Can comply.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	Can comply. Subject to engineering design.
	There is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.	N/A
Perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and	Are two-way sealed roads.	Can comply.
	Minimum 8 m carriageway width kerb to kerb.	The proposed perimeter roads have a minimum 8 m carriageway width.
	Parking is provided outside of the carriageway width.	Can comply. Subject to engineering design.
	Hydrants are located clear of parking areas.	Can comply. Subject to engineering design.
	Are through roads, and these are linked to the internal road system	The proposed layout complies.

Performance Criteria	Acceptable Solution	Application
emergency management on the interface.	at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of 6m.	Can comply. Subject to engineering design.
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	Road grades do not exceed 15^0.
	The road crossfall does not exceed 3 degrees.	Can comply. Subject to engineering design.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	Can comply.
Non-perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 m carriageway width kerb to kerb.	The proposed layout complies.
	Parking is provided outside of the carriageway width.	Can comply. Subject to engineering design.
	Hydrants are located clear of parking areas.	Can comply. Subject to engineering design.
	Roads are through roads, and these are linked to the internal road system at an interval of no greater then 500 m.	The proposed layout complies.
	Curves of roads have a minimum inner radius of six metres.	Can comply. Subject to engineering design.
	The road crossfall does not exceed 3 degrees.	Can comply. Subject to engineering design.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	Can comply.
Property Access		
Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply:	All proposed residential lots have access via public roads that will incorporate hydrants at regular intervals. No specific property access requirements apply.

Performance Criteria	Acceptable Solution	Application
	Minimum 4 m carriageway width;	N/A
	In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m, at the passing bay;	
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	
	Provide a suitable turning area in accordance with Appendix 3;	
	Curves have a minimum inner radius of 6 m and are minimal in number to allow for rapid access and egress;	
	The minimum distance between inner and outer curves is 6m;	
	The crossfall is not more than 10 degrees;	
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	
	A development comprising more than three dwellings has formalised access by dedication of a road and not by right of way	
	Note: Some short constrictions in the access may be accepted where they are not less than 3.5 m wide, extend for no more than 30 m and where the obstruction cannot be reasonably avoided or removed.	

4.5 Services – Water, Electricity and Gas

The proposed subdivision will be serviced by a reticulated water supply, with existing mains to be extended along James Creek Road and through the site. This will also include the installation of hydrants within the site.

Electricity services within the subdivision will be provided underground. Gas will not be provided as part of the subdivision.

Bottled gas is not proposed at this stage and will be assessed at dwelling construction stage for the respective lots.

Table 4.5 outlines the extent to which the water, electricity and gas services comply with the relevant acceptable solution requirements of Table 5.3c of PBP 2019.

Table 4.6 Water, Electricity and Gas Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Water Supplies		
An adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	A reticulated water supply is to be provided.
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	N/A
	Static water supplies shall comply with Table 5.3d.	N/A
Water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations.	Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2021.	Can comply. Subject to engineering design.
	Hydrants are not located within any road carriageway.	Can comply. Subject to engineering design.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Can comply. Subject to engineering design.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	Can comply.
The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	Can comply.
	Above ground water storage tanks shall be of concrete or metal.	N/A.
Electricity Services		
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	Can comply.
	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline	N/A

Performance Criteria	Acceptable Solution	Application
	for Managing Vegetation Near Power Lines.	
Gas Services		
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014, the requirements of relevant authorities, and metal piping is used;	N/A
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;	
	Connections to and from gas cylinders are metal;	
	Polymer-sheathed flexible gas supply lines are not used; and	
	Above-ground gas service pipes are metal, including and up to any outlets.	

5. Recommendations and Conclusion

5.1 Recommendations

It is recommended that the following bushfire protection measures are applied to the proposed development and be included in the consent by Clarence Valley Council:

- The proposed residential lots and associated road reserves are to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019.
- Where the asset protection zones extends over an adjacent open space lot, a restriction-to-use is to be included over the relevant lot requiring the asset protection zone to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019.
- Any residue lot created through staged construction of the development is to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019 until such time as the land is developed.
- A temporary restriction-to-use is to be included over proposed Lot 290 requiring a 23 m wide asset protection zone along the western boundary of Lot 279 and Lots 216-226 and the northern boundary of Lot 226 and Lots 279-289 to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019. The temporary APZ may be extinguished upon further development of Lot 290.
- A Vegetation Management Plan is to be prepared for areas of proposed revegetation (recreational parklands and bio-retention basins) and is to include a requirement for perimeter planting to be set back sufficiently to ensure that the canopy of perimeter plantings do not overhang the public road at maturity or intrude into adjacent asset protection zones.
- Landscaping is to comply with Appendix 4 of PBP 2019.
- Any new fencing is to comply with Section 7.6 of Planning for Bushfire Protection 2019.
- Access is to be provided in accordance with Table 5.3b of Planning for Bush Fire Protection 2019.
- Water, electricity and gas services are to comply with Table 5.3c of Planning for Bush Fire Protection 2019.

5.2 Conclusion

This Bushfire Hazard Assessment has taken into consideration the proposed development, existing vegetation, effective slope and FDI detailed within PBP 2019. Adequate and appropriate bushfire protection measures are available and can be implemented to facilitate the proposed subdivision of Lot 104 DP 751388 James Creek Road, James Creek. The proposal conforms with the standards, performance criteria and intent of measures outlined in PBP 2019 and complies with Section 100B of the *Rural Fires Act 1997*.

It is therefore recommended that the proposed development is approved and conditioned in accordance with the recommendations provided within this assessment.

Kale Hardie-Porter
Environmental/ Bushfire Planner

References

Australian Building Codes Board [ABCB] (2019*). The Building Code of Australia*, ABCB Canberra, Volume 2.

Keith, D., (2004). *Ocean Shores to Desert Dunes*, Department of Environment and Conservation, Hurstville.

NSW Rural Fire Service [RFS] (2019). *Planning for Bush Fire Protection.* NSW Rural Fire Service and Department of Planning, Sydney.

Standards Australia (2018). *Construction of buildings in bushfire-prone areas, AS 3959*. Standards Australia International Ltd, Sydney.

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Appendix A

NSW RFS Request for Information

RFS

NSW GOVERNMENT

Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Your reference: (CNR-64953) DA2023/0759
Our reference: DA20240602002247-Original-1

ATTENTION: James Hamilton

Date: Friday 7 June 2024

Dear Sir/Madam,

Development Application
s4.15 – Other – Subdivision
JAMES CREEK ROAD JAMES CREEK NSW 2463, 104//DP751388

I refer to your correspondence dated 30/05/2024 seeking advice regarding bush fire protection for the above Development Application.

The New South Wales Rural Fire Service (NSW RFS) has reviewed the information provided and advises the following:

1. A Bushfire Assessment Report is to be provided. The site and most of the surrounding lands accommodate bushfire-prone vegetation regardless of the mapping.

2. No perimeter road is provided to the "Balance Area", Lot 290 from the residential Lots. The Statement of Environmental Effects identifies this Lot to be left in its current state to remove the development from the stormwater drainage concerns in this area. Proposed Lot 290 is considered unmanaged land.

3. The management of the Open Spaces on proposed Lots 227 and 278 raises concern. Are the Lots to be dedicated to the Council and how are these to be managed lands in perpetuity? Especially as these Lots are adjacent to unmanaged vegetation.

4. The Stormwater Detention basin in the southwest of the site will provide a continuation of vegetation right up to the boundary with Lot 235. Lot 235 will need to accommodate an appropriate Asset Protection Zone. The current proposal does not comply with Planning for Bush Fire Protection.

5. A BAL Plan is to be provided for the development.

If additional information is not received within 21 days the application will be refused on the basis of Requested Information not provided. A formal request for re-assessment would be required after this time.

For any queries regarding this correspondence, please contact Wayne Sketchley on 1300 NSW RFS.

Yours sincerely,

Postal address

NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address

NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

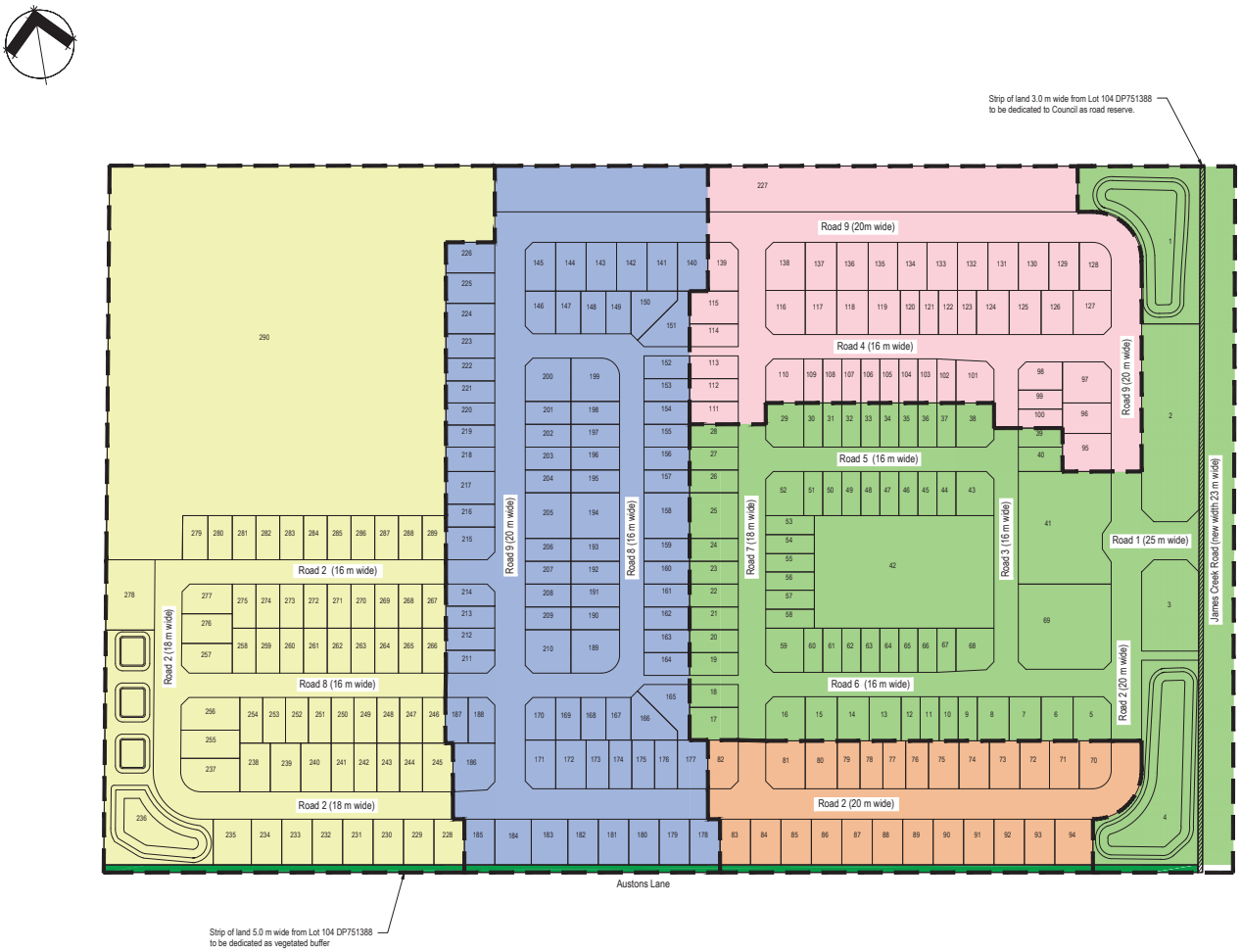
RFS

NSW GOVERNMENT

Alan Bawden
Supervisor Development Assessment & Plan
Built & Natural Environment

Appendix B

Subdivision Concept Design Plans



LEGEND

- Stage 1A - 69 lots
- Stage 1B - 25 lots
- Stage 2 - 46 lots
- Stage 3 - 87 lots
- Stage 4 - 63 lots
- Road reserve widening (dedicated to Council)

Note: Lot 227 buffer is included with Stage 2 count. Residue lot included with Stage 4 lot count.

Note:
1. Stages shown are indicatively only, and construction / release will be undertaken in sub-stages to be determined during detailed design.

DEVELOPMENT APPLICATION

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E	Lot layout updated	4/07/2024	JLC	JLC	JLC
D	Extent of works updated	3/05/2024	JLC	MVE	MVE
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

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Project Title
The Village at James Creek

Client
MPD Investments Pty Ltd

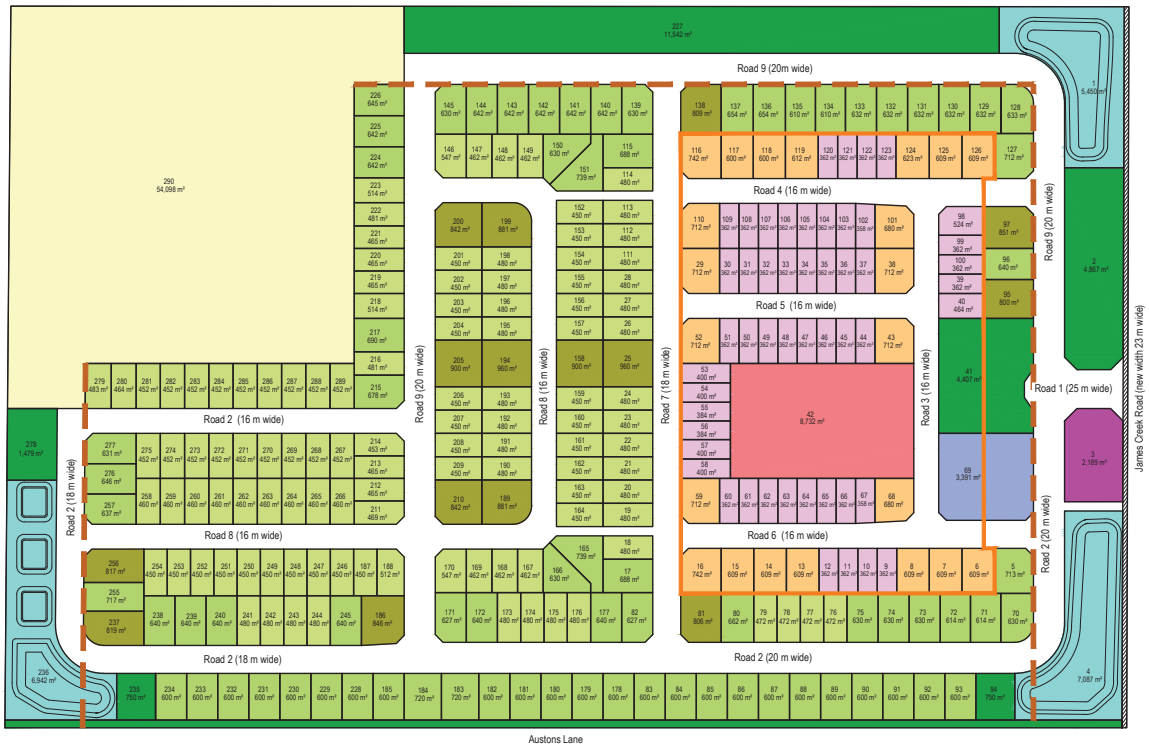
Designed	JLC	Drawn	JLC
Approved	MVE	Date	8/10/2021

Scale
metres 0 12.5 25 37.5 50 62.5

Drawing Title
Staging Plan

3204-1174

Drawing Number: 3204/C110
Revision: E



LEGEND

Residential R1 Zone

	>450 m²	113 Lots
	>600 m²	76 Lots
	>800 m²	15 Lots

Residential R3 Zone

	>350 m²	51 Lots
	>600 m²	22 Lots
	R3 medium density	1 Lot
	Total residential lots	***278 Lots***

Other

	Balance Lot	1 Lot
	Drainage reserve	3 Lots
	Open space	6 Lots
	Childcare centre	1 Lot
	Commercial centre	1 Lot
	50 m offset to rural land	
	Proposed R3 Zone	
	Road reserve widening (dedicated to Council)	

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Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Areas

3204-1174

Drawing Number 3204/C111

Revision E

Note:
1. Duplicate dimensions are removed for clarity.
2. Dimensions shown are indicative only, subject to final setout by registered surveyor.

DEVELOPMENT APPLICATION

Rev	Description	Date	Des.	Dwn.	App.
E	Lot layout updated	4/07/2024	JLC	JLC	JLC
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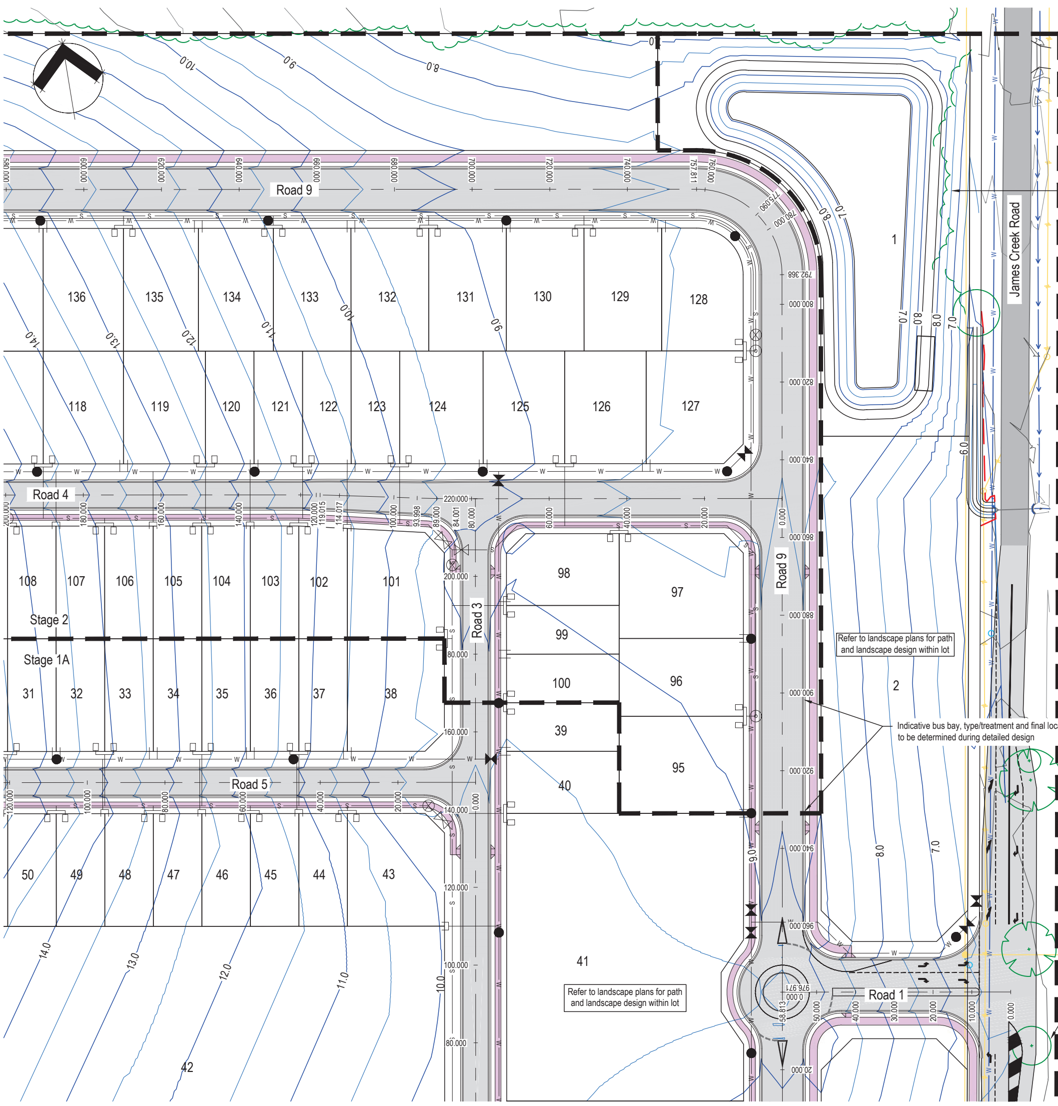
Scale
metres 0 12.5 25 37.5 50 62.5

Drawing Title
Lot Layout
and Lot Dimensions
3204-1174

Drawing Number	Revision
3204/C112	E



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

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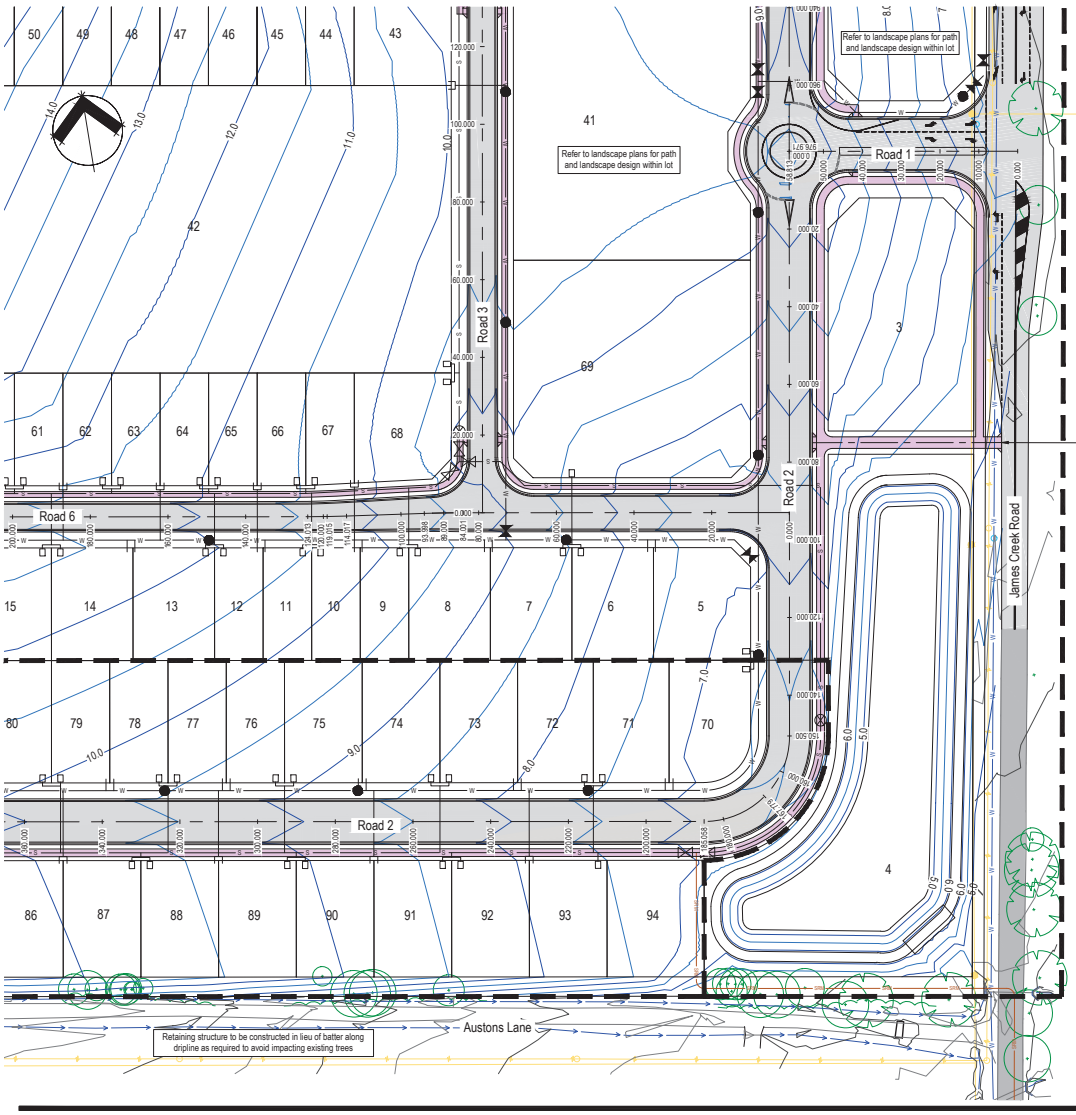
Scale metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 1 of 5

3204-1175

Drawing Number 3204/C121 *Revision* E



Section of path to be widened to 3.0 m wide and to double as an emergency access. Concrete to be thickened to allow for vehicle traffic. Add control measures to allow pedestrians and cyclists to move through this area whilst restricting vehicle access to Council specifications.

LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
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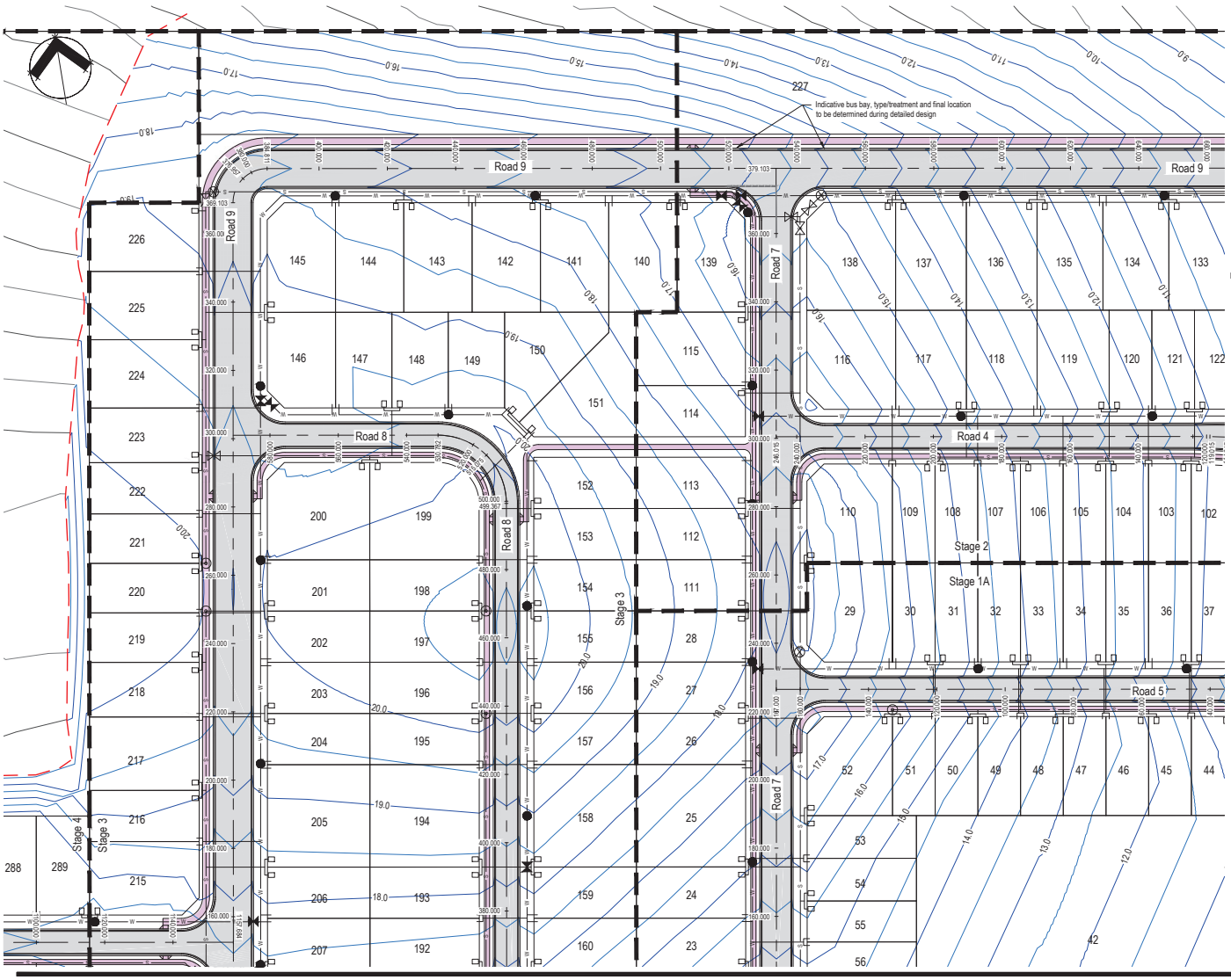
Designed	JLC	Drawn	JLC
Approved	MVE	Date	8/10/2021

Scale
metres 0 5 10 15 20 25

Drawing Title
Design Layout
Sheet 2 of 5

3204-1175

Drawing Number: 3204/C122
Revision: E



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
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- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

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Designed	JLC	Drawn	JLC
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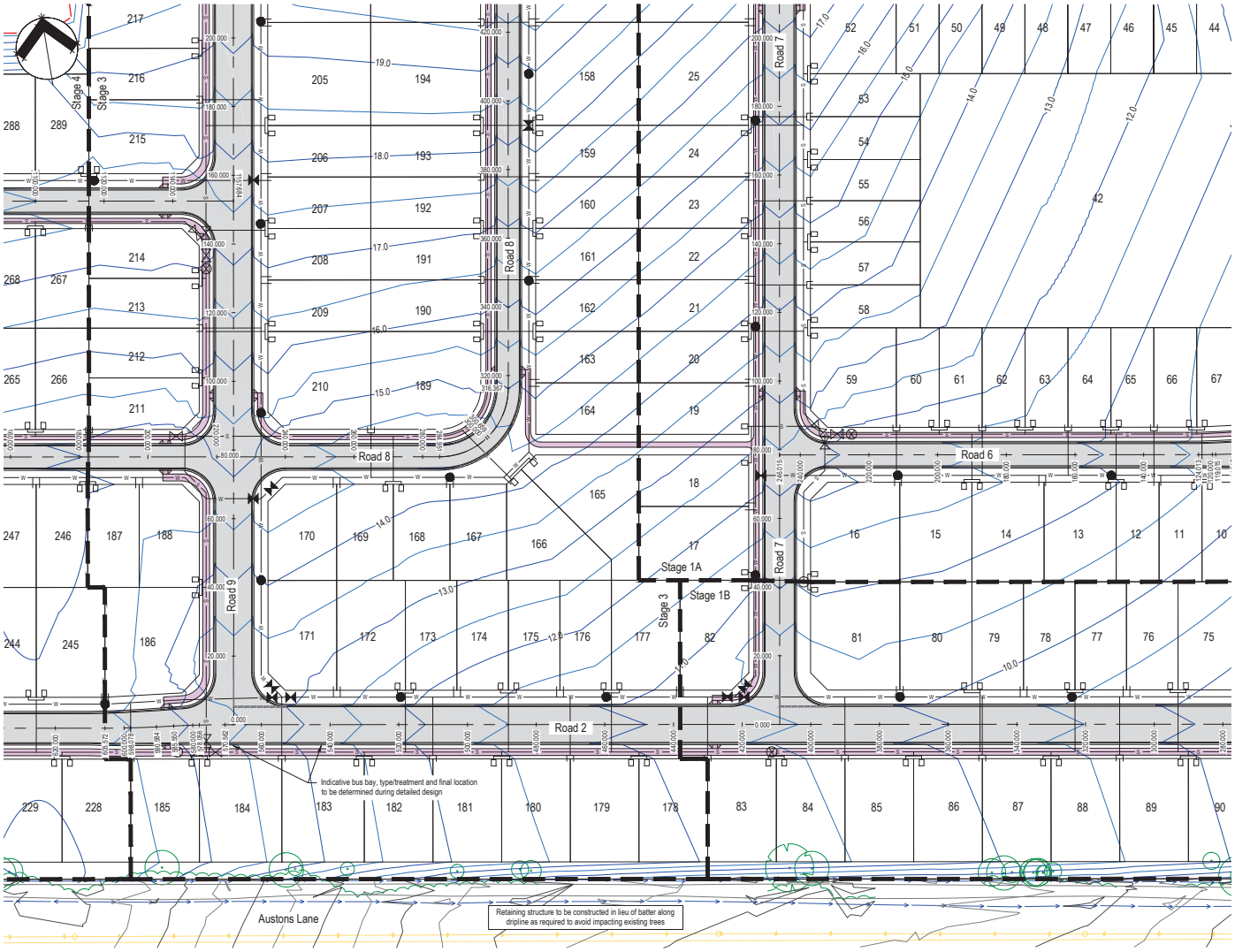
Scale
metres 0 5 10 15 20 25

Drawing Title
Design Layout
Sheet 3 of 5

3204-1175

Drawing Number: 3204/C123
Revision: E



LEGEND (Existing)

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- Tree line
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- Swale
- Road

LEGEND (Design)

- Road
- Footpath
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- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

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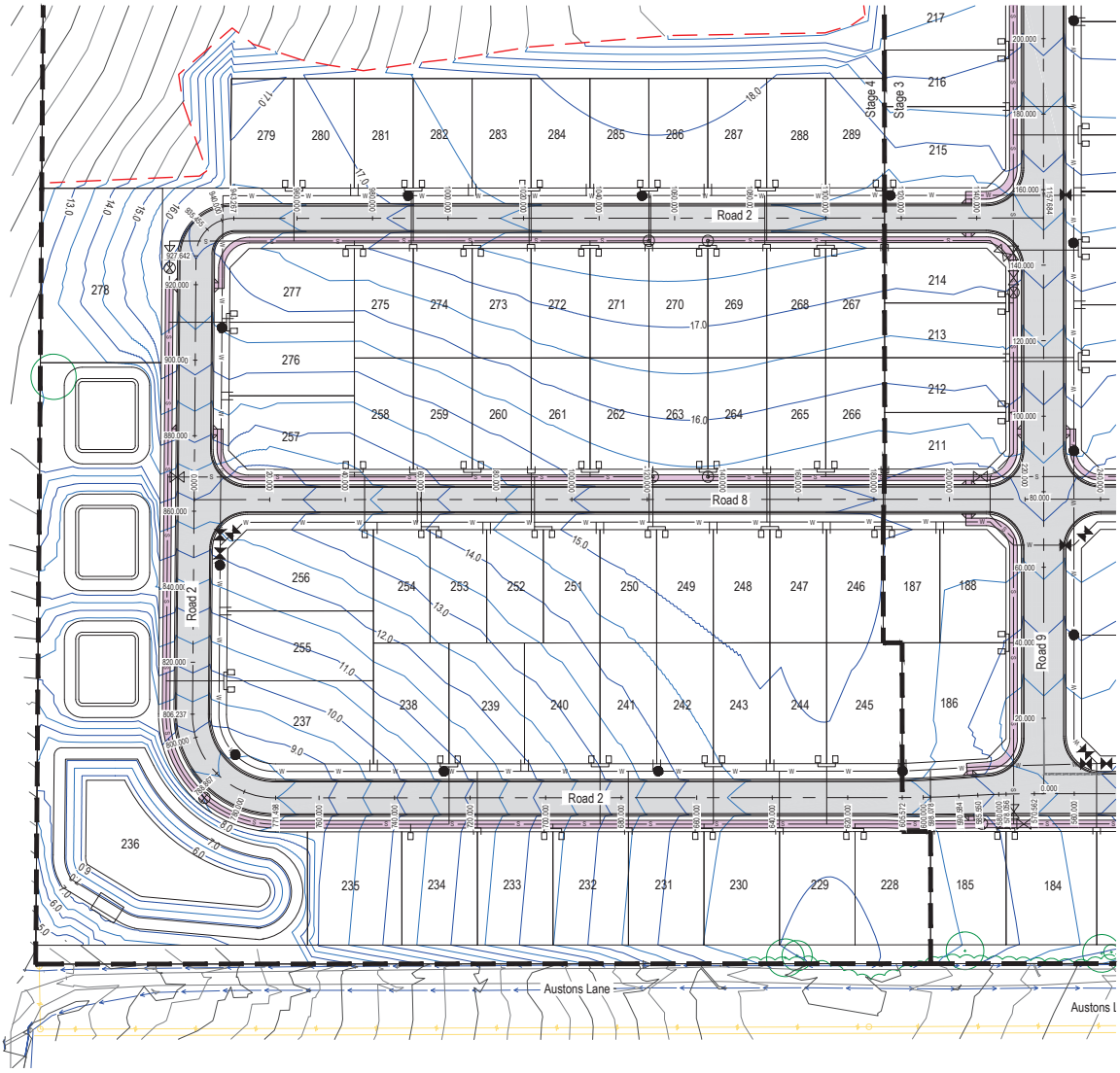
Designed	JLC	Drawn	JLC
Approved	MVE	Date	8/10/2021

Scale
metres 0 5 10 15 20 25

Drawing Title
Design Layout
Sheet 4 of 5

3204-1175

Drawing Number: 3204/C124
Revision: E



LEGEND (Existing)

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- Tree line
- Fire hydrant
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- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

DEVELOPMENT APPLICATION

Rev	Description	Date	Des.	Dwn.	App.
E	Lot layout updated	4/07/2024	JLC	JLC	JLC
D	Extent of works updated	3/05/2024	JLC	MVE	MVE
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B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

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The Village at James Creek

Client
MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC
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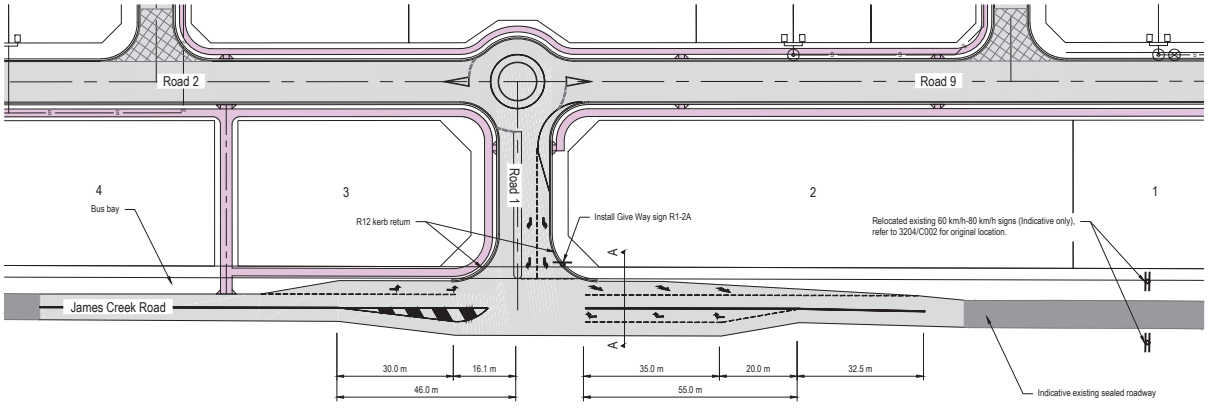
Scale
metres 0 5 10 15 20 25

Drawing Title
Design Layout
Sheet 5 of 5

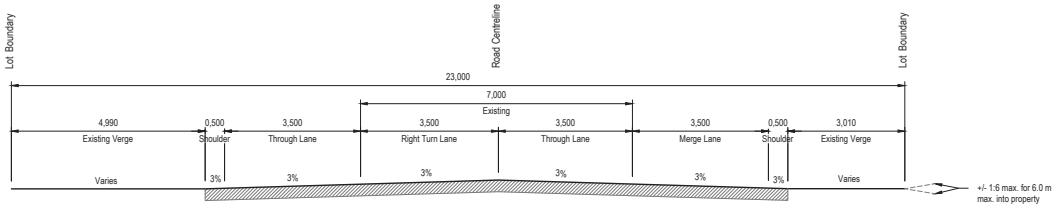
3204-1175

Drawing Number: 3204/C125
Revision: E



Turning Concept Stage 1

Note: All lane widths to be minimum 3.5m wide.



Section A-A

23.0 m wide Road Reserve

James Creek Road

Road Network Characteristics					
Road	Road Reserve (m)	Carriageway Width (m)	Verge Width LHS (m)	Verge Width RHS (m)	Path Width (m)
1	25.0	13.5	7.0	4.5	2.0
2 (Ch 0.000 - Ch 570.000)	20.0	11.0	4.5	4.5	2.0
2 (Ch 570.000 - Ch 930.000)	18.0	9.0	4.5	4.5	1.5
2 (Ch 930.000 - Ch 976.971)	16.0	7.0	4.5	4.5	1.5
3	16.0	7.0	4.5	4.5	1.5
4 (Ch 0.000 - Ch 80.000)	18.0	9.0	4.5	4.5	1.5
4 (Ch 80.000 - Ch 246.015)	16.0	7.0	4.5	4.5	1.5
5	16.0	7.0	4.5	4.5	1.5
6 (Ch 0.000 - Ch 80.000)	18.0	9.0	4.5	4.5	1.5
6 (Ch 80.000 - Ch 246.015)	16.0	7.0	4.5	4.5	1.5
7	18.0	9.0	4.5	4.5	1.5
8	16.0	7.0	4.5	4.5	1.5
9	20.0	11.0	4.5	4.5	2.0

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Scale

metres 0 5 10 15 20 25

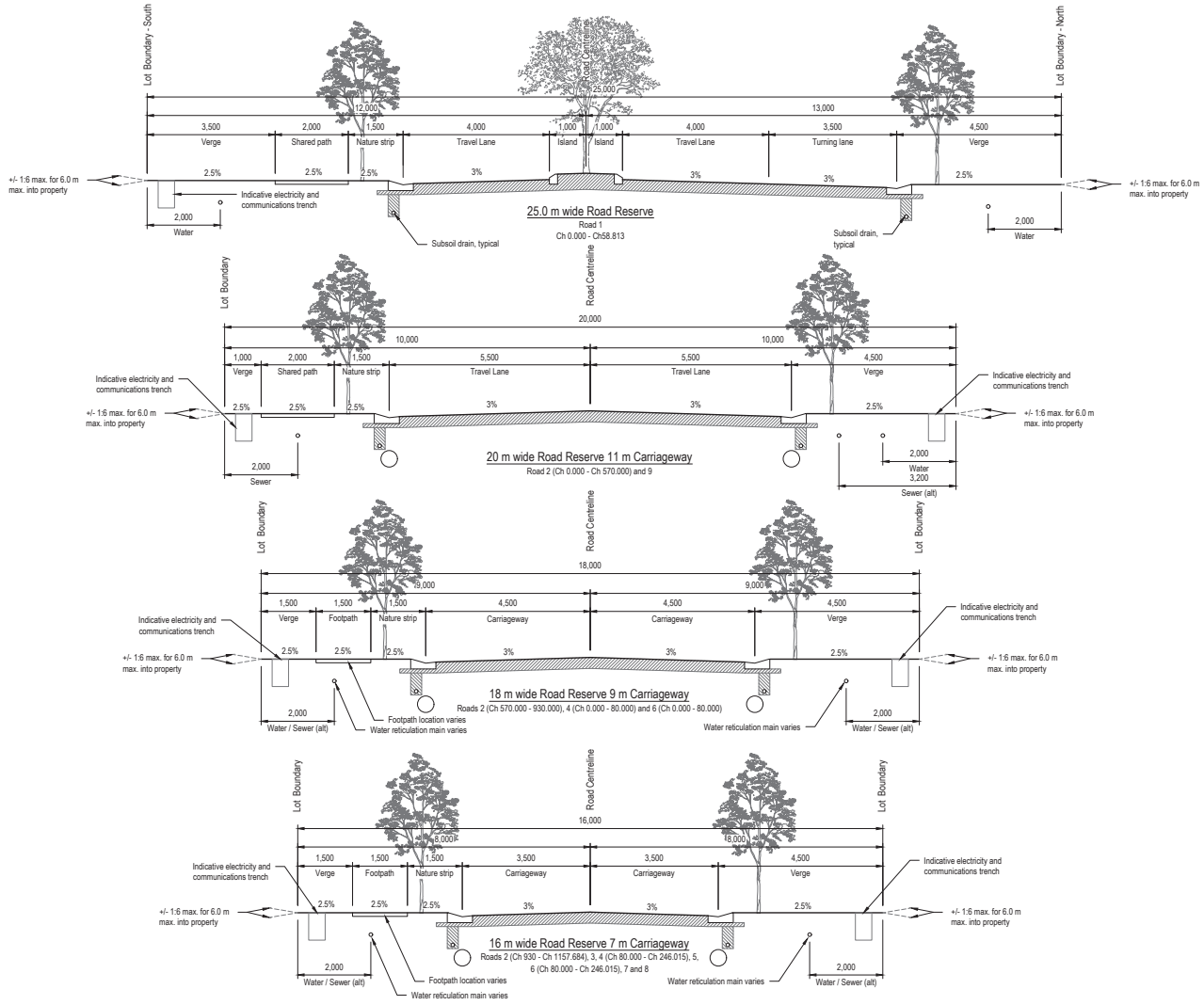
Drawing Title

James Creek Road Intersection Detail and Typical Road Section

3204-1175

Drawing Number: 3204/C127

Revision: E



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Approved	MVE	Date	8/10/2021
Scale			

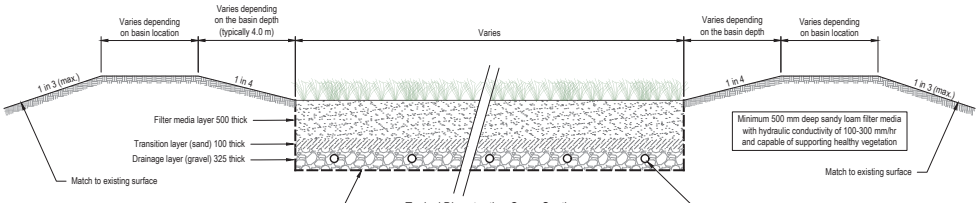
metres 0 0.5 1.0 1.5 2.0 2.5

Drawing Title
Typical Road Sections

3204-1175

Drawing Number
3204/C128

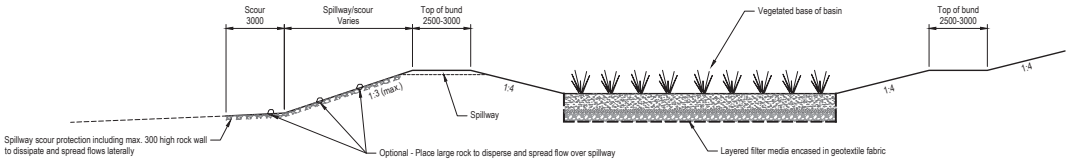
Revision
E



Typical Bio-retention Cross Section

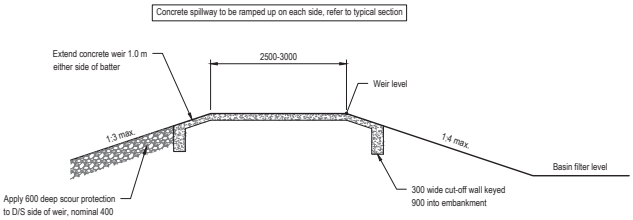
Not to Scale

Note: All dimensions in millimetres unless noted otherwise



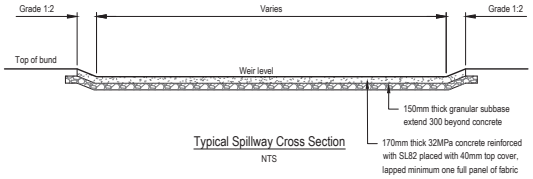
Typical Basin Section - Basins 2 (NE), 3 (SE) and 4 (SW)

NTS



Typical Weir Longitudinal Section

NTS



Typical Spillway Cross Section

NTS

DEVELOPMENT APPLICATION

Rev	Description	Date	Des.	Dwn.	App.
E	Lot layout updated	4/07/2024	JLC	JLC	JLC
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Approved	MVE	Date	8/10/2021

Checked MVE

Scale

metres Not To Scale

Drawing Title

Typical Details

3204-1179

Drawing Number 3204/C165

Revision E

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	Dwn.	App.
E	Lot layout updated	4/07/2024	JLC	JLC	JLC
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Scale

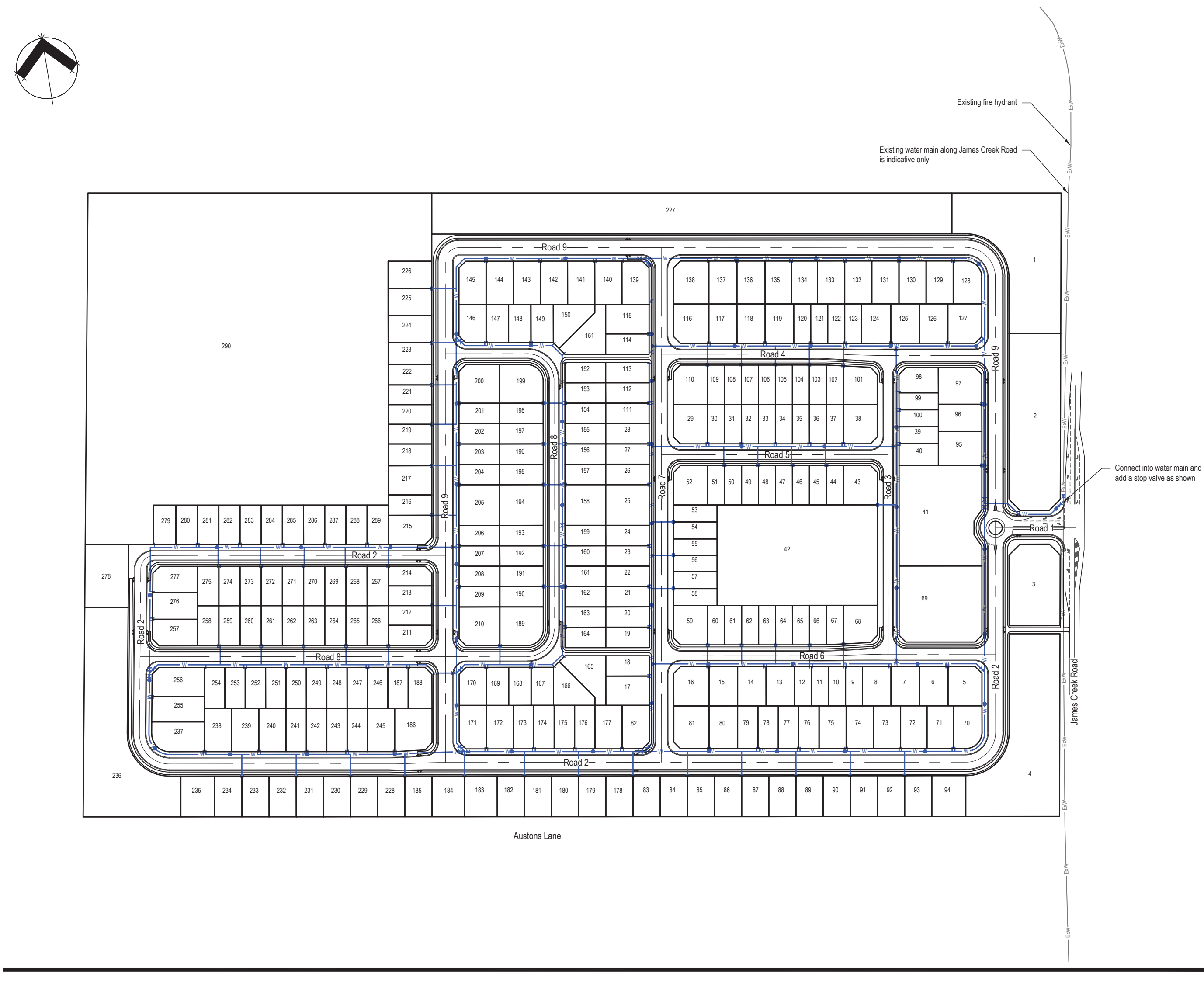
metres 0 20 40 60 80 100

Drawing Title

Water Overall Layout

3204-1181

Drawing Number	*Revision*
3204/C180	E



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Approved MVE	Date 8/10/2021	

Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Water Reticulation Layout

3204-1181

Drawing Number 3204/C181 *Revision* E

Appendix C

Landscape Plans

The Village at James Creek

Statement of Landscape Intent

Prepared For:
MPD Investments Pty Ltd

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China
South East Asia

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Project	The Village at James Creek
Report title	Statement of Landscape Intent
Document number	230219
Prepared for	MPD Investments Pty Ltd
Authors	Naomi Cole
Revision number	I
Revision issue date	17 May 2024
Approved	Peter Bell, Clint Wood
Reason for revision	Development Application

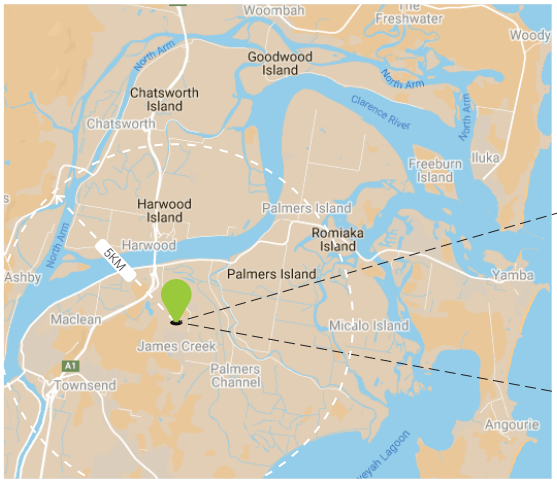
CONTENTS

01

SITE CONTEXT

SITE CONTEXT

1.1 Location



James Creek

1.2 Site Photos

01 *View from James Creek Road*

02 *View from James Creek Road*

Key Plan

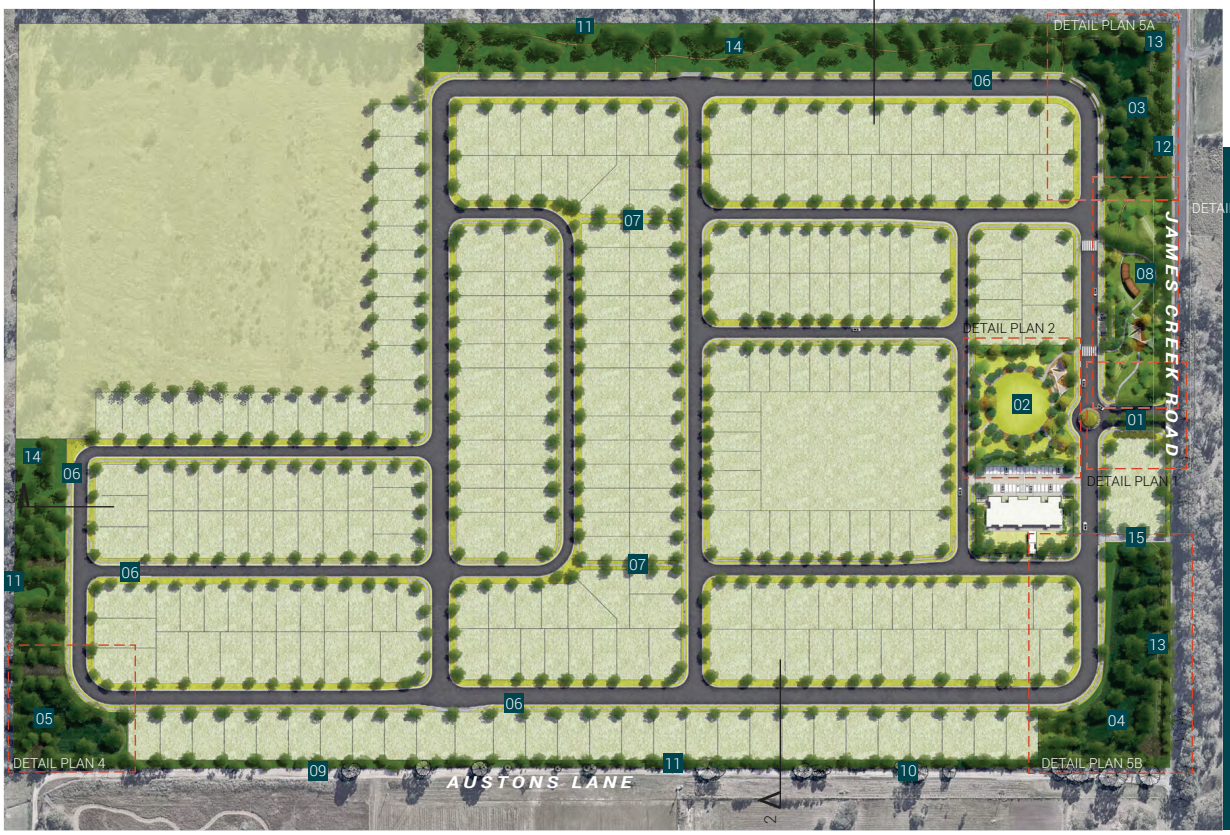
03 *View from James Creek Road*

04 *View from Austons Lane*

02

OVERALL LANDSCAPE DESIGN

2.1 Landscape Masterplan



LEGEND

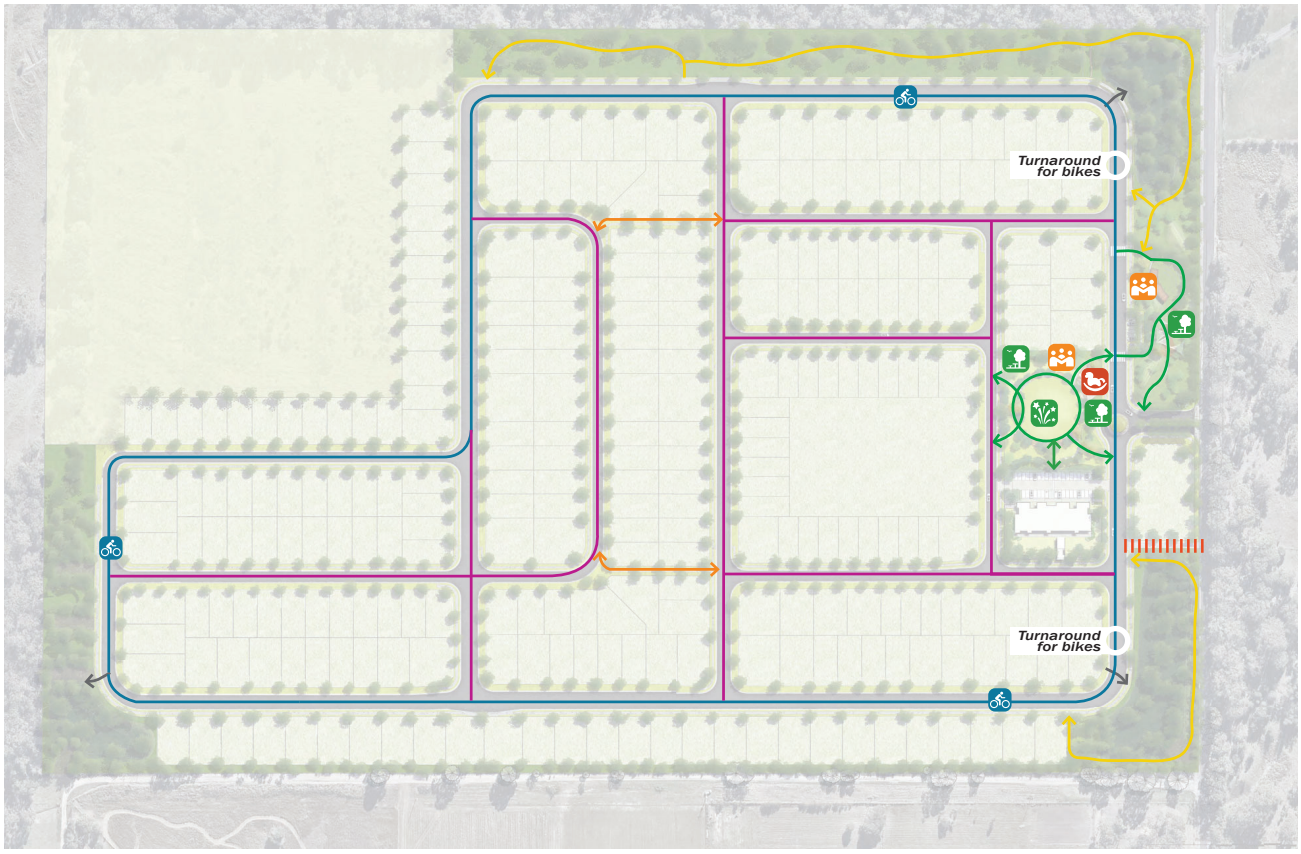
1. Entry boulevard
2. Village Green and Playground
3. Northeast park & basin
4. Southeast park & basin
5. Southwest park & basin
6. Perimeter community loop for bike & pedestrian recreation
7. Pedestrian linkage between lots. 1500mm high pool fence to adjacent lots
8. Entry Park with Community Facilities
9. Planting batter to Austons Lane
10. Existing trees to be retained
11. Fencing on boundary
12. Feature fencing on road frontage
13. Informal path around basins
14. Landscape planning in this area should be to the requirements in accordance with the Planning for Bushfire Protection (2019 Appendix A section 4.1.1)
15. Emergency linkage from development through to James Creek Road

N

0 50 100 150M

SCALE 1:2500 @ A3

2.2 Circulation & Recreational Analysis



Legend

- Perimeter shared path for pedestrian & bike
- Community footpath
- Informal footpath
- Pedestrian linkage between lots
- Parkland path
- Gated Maintenance Access to Bio-basin
- Emergency linkage
- Community open space
- Playground
- Village green
  Event lawn
- Seating & rest

N

0 50 100 150M

SCALE 1:2500 @ A3

03

DETAIL DESIGN

3.1 Detail Plan 1 - Entrance

01 Planted entry with boulevard trees

02 Pedestrian crossing linking parks and lots

03 Central island with low level planting to maintain sightlines

04 Planted mounding to frame entry view
Opportunity for low level entry feature/ signage

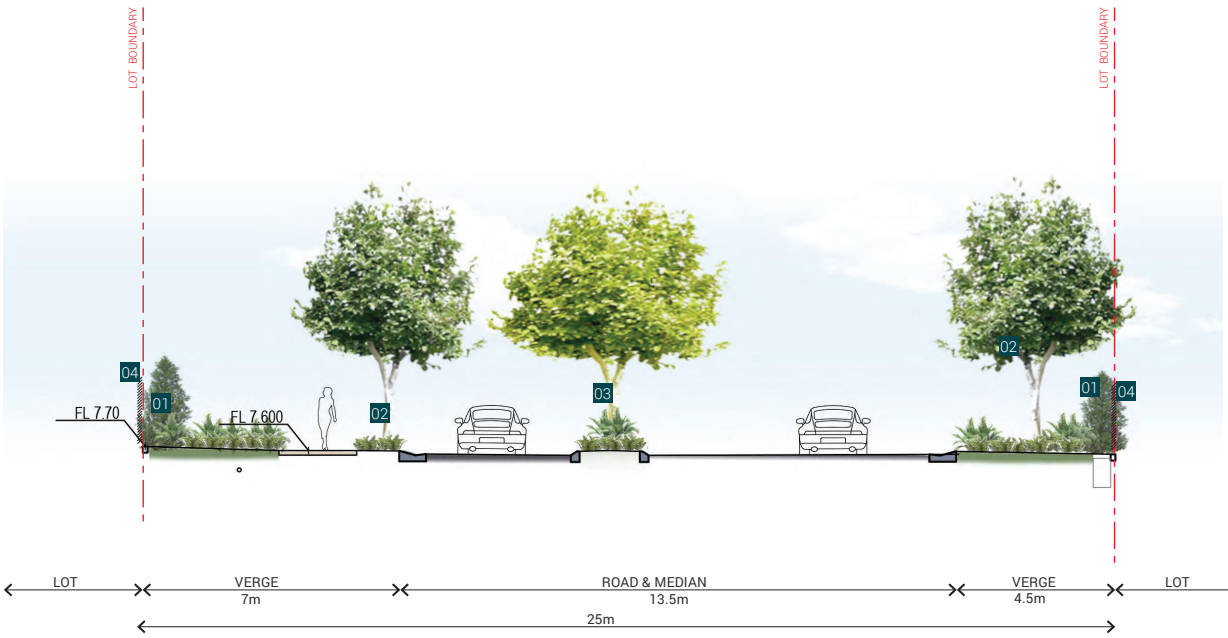
05 Shared path for pedestrian & bike recreation

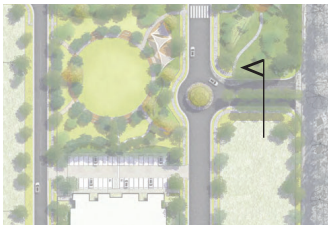
06 Shade tree and low planting in roundabout to maintain sightlines

SCALE 1:750 @ A3

3.2 Detail Plan 1 - Entrance Section

Note:
Refer engineering drawings for detailed information





Key Plan

01 Buffer planting
02 Street tree in planter
03 Median with feature boulevard tree
04 Estate fence within lots

0 1 2 3 4 5M
SCALE 1:100 @ A3

DETAIL DESIGN

3.3 Detail Plan 2 - Village Green

01 *Village green*

02 *Seating under feature trees*

03 *Playground*
Under shade

04 *Swings*

05 *Spinner Bowl / Carousel*

06 *Exercise Station*

3.4 Detail Plan 3 - Entry Parkland

01 *Parking to be provided to AS2890*

02 *Entry feature to entry corner*

03 *Grassed mounding*

04 *Shade over BBQ/ Rest Area*

05 *Community facility*
Refer separate page

06 *Opportunity for informal gathering area/ amphitheatre*

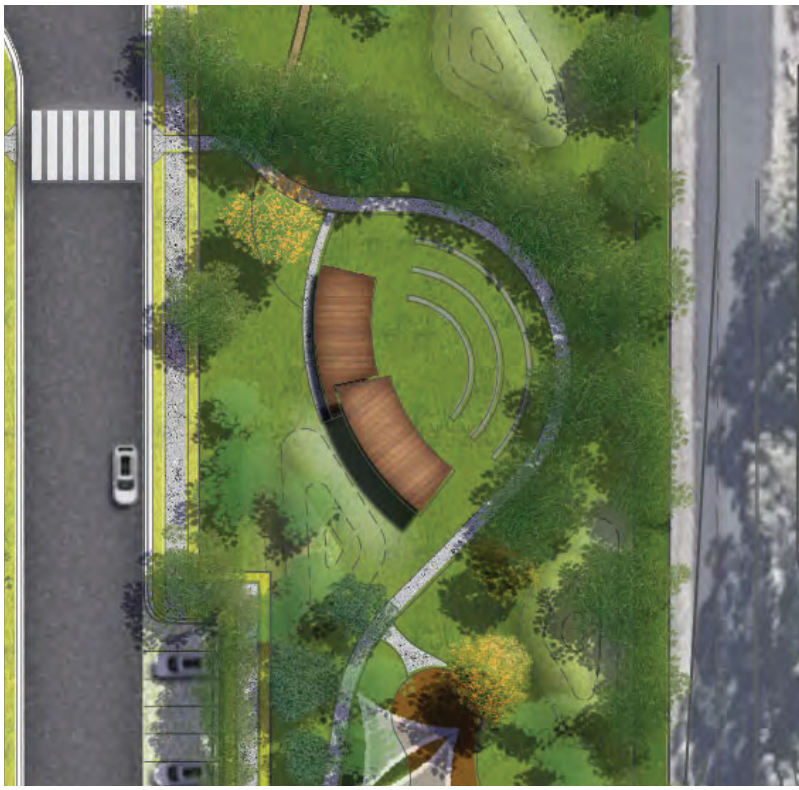
DETAIL DESIGN

3.5 Community Facilities Character Images

A central feature of the entry park design is the inclusion of a large open structure that can accomodate smaller individual groups as well as large community gatherings.

The structure will be open sided with fixed furniture, with roof enclosure that will provide shade and weather protection.

It will be designed to be a flexible space catering to the estate residents as well as the broader community beyond the site.



3.6 Detail Plan 4 - Southwest Bio basin

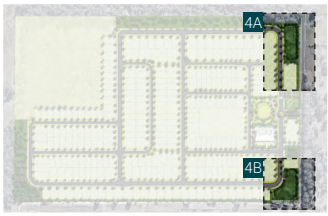
4A ***Southwest park***

SCALE 1:1000 @ A3

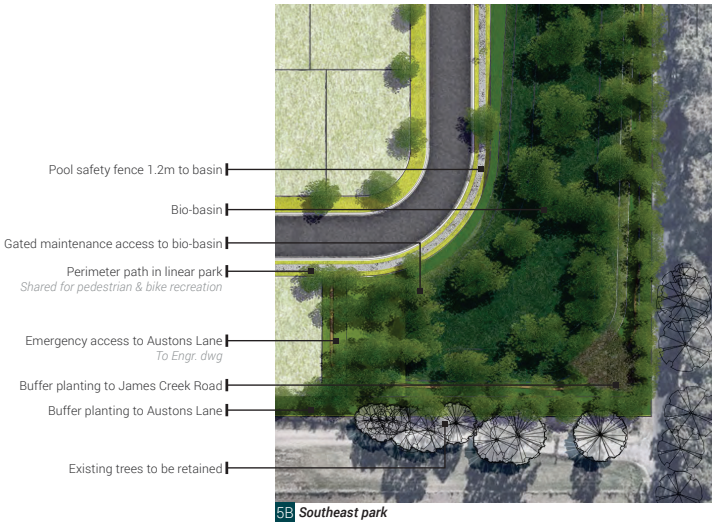
Key Plan

3.7 Detail Plans 5 - Eastern Bio basins

5A ***Northeast park***



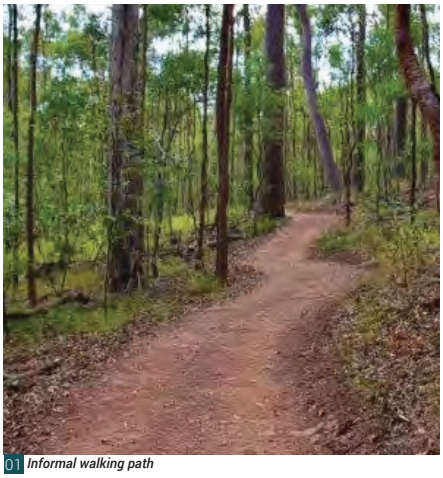
Key Plan



5B ***Southeast park***

SCALE 1:1000 @ A3

3.8 Bio Basin Character Images



01 *Informal walking path*

02 *Bio Basin*

03 *Community lawn*

3.9 Fences


1.8m High mesh fence to rural neighbouring properties
Good neighbour fence to Auston's Lane
Feature fence to James Creek Road
Feature fence to childcare centre

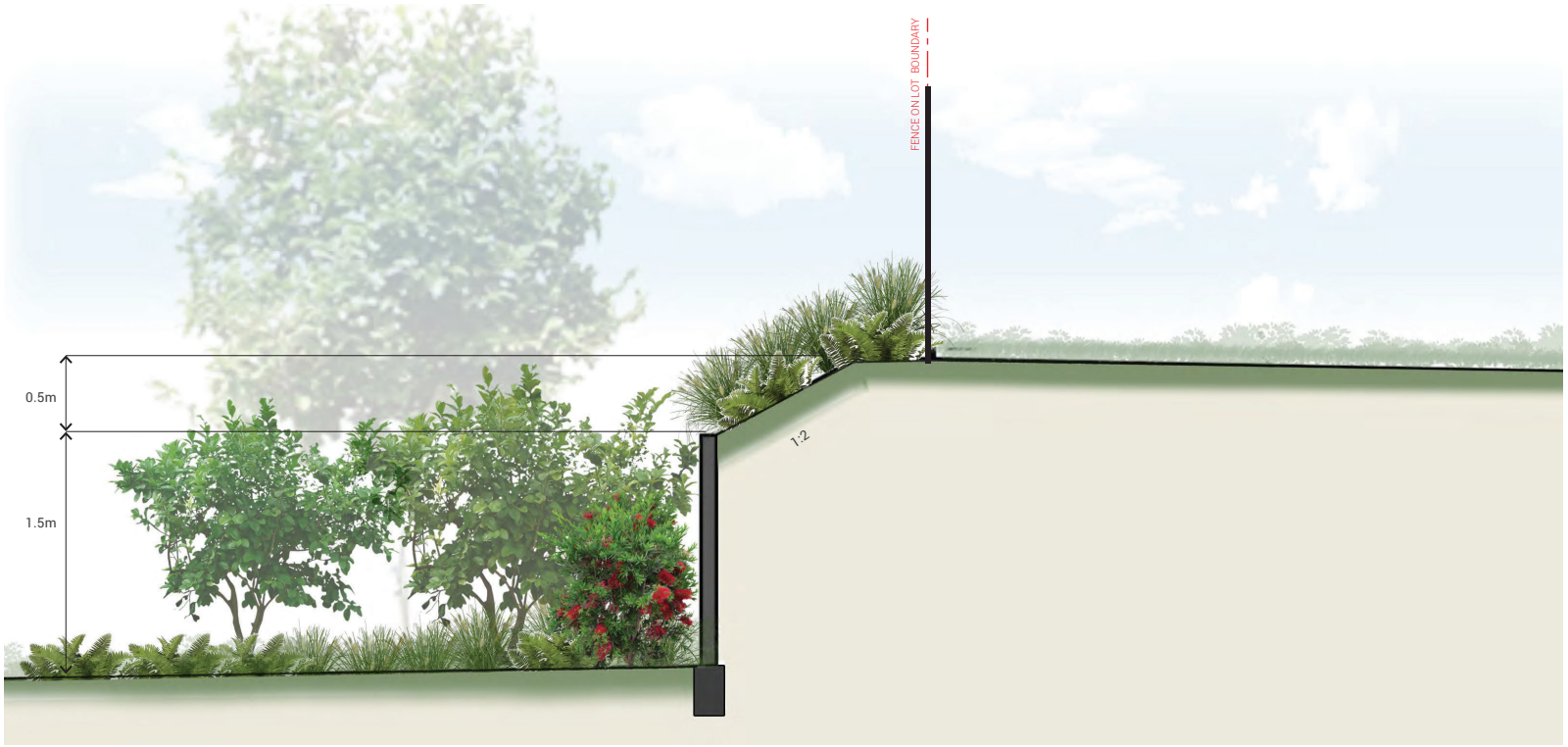
3.10 Retaining Walls - Plan

Maximum retaining locations within lots

Refer typical section

3.11 Retaining Walls - Typical Section

Note:
Refer engineering drawings for detailed information



0 2.5 5 7.5 10 12.5M
SCALE 1:25 @ A3

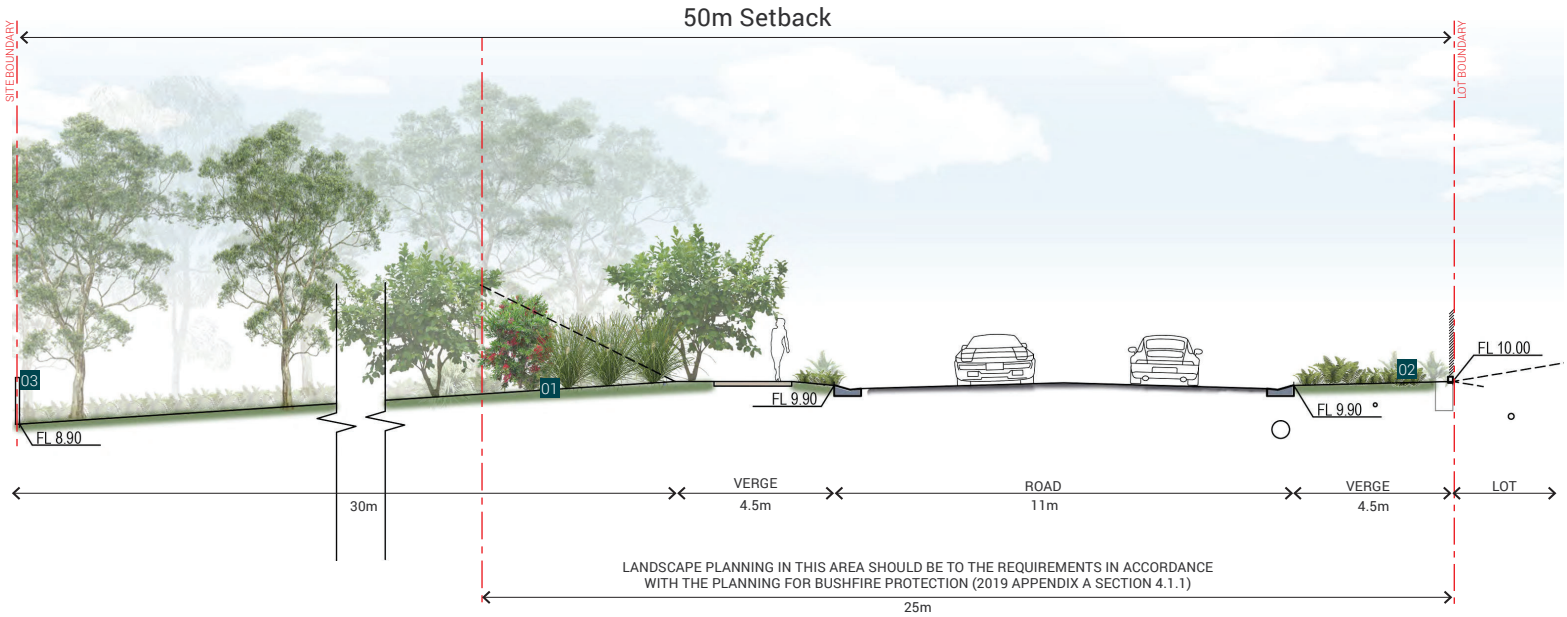
04

SECTIONS

SECTIONS

4.1 Section 1 - Northern Boundary

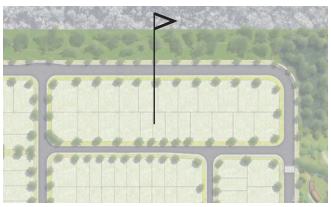
Note:
Refer engineering drawings for detailed information



01 Batter into existing surface

02 Street tree and footpath

03 1.8m PVC coated chain mess fence to site boundary within planting

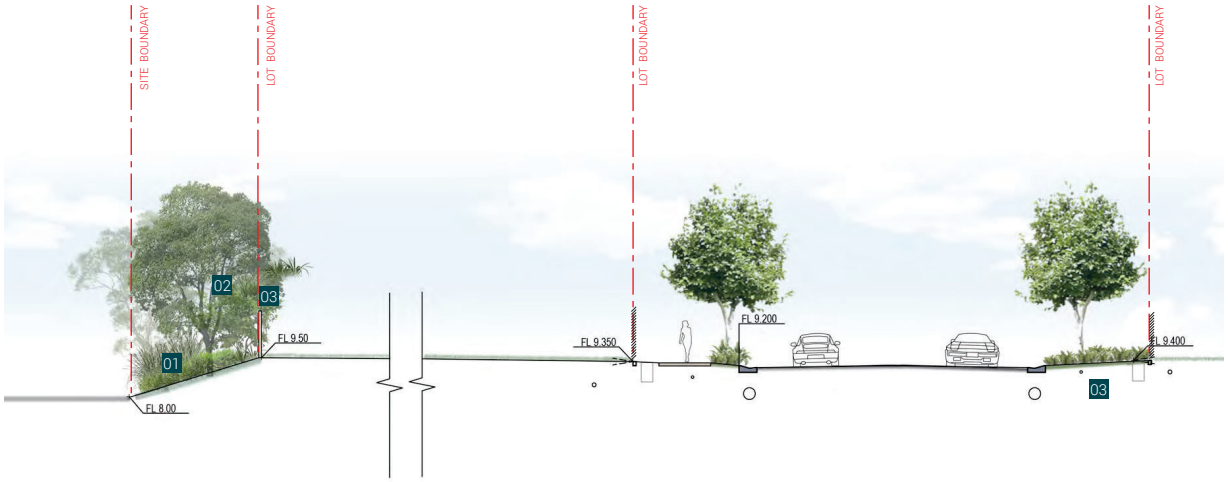


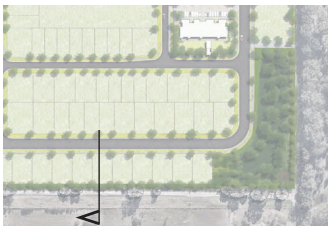
Key Plan

0 1 2 3 4 5M
SCALE 1:100 @ A3

4.2 Section 2 - Southern Boundary

Note:
Refer engineering drawings for detailed information





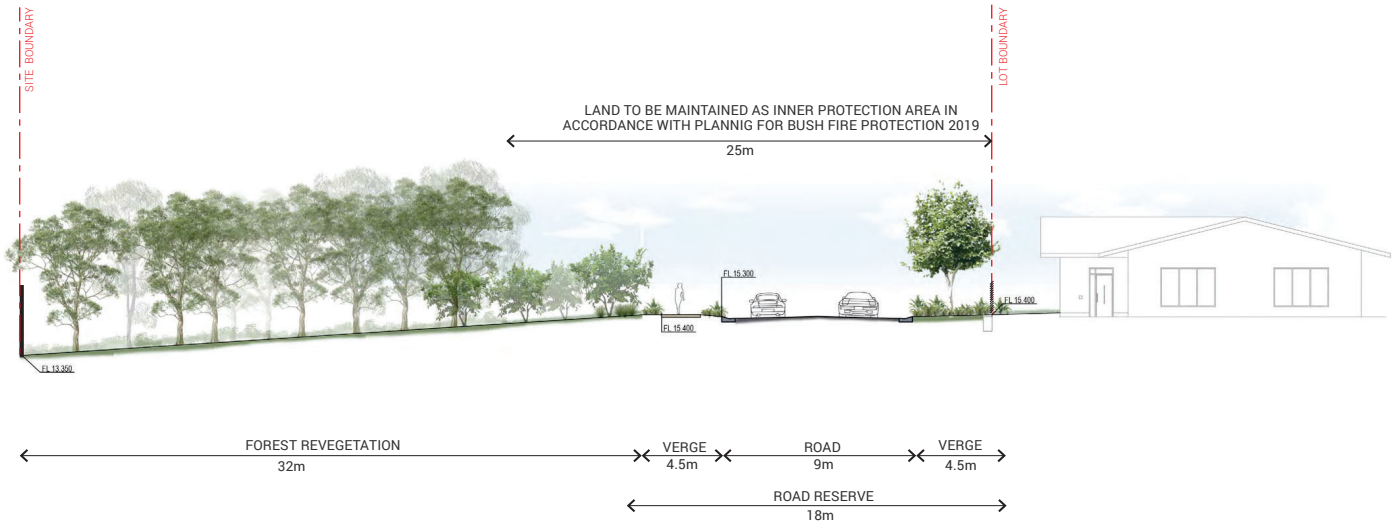
Key Plan

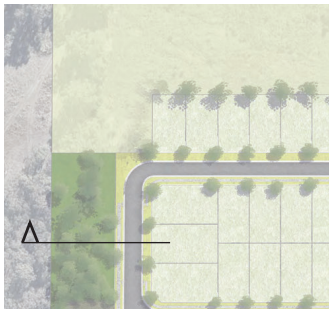
01	Batter to existing road with native planting species
02	Screening trees and layered planting
03	Good neighbour fence to lot boundary
04	Street tree and footpath

SCALE 1:150 @ A3

4.3 Section 3 - Western Boundary

Note:
Refer engineering drawings for detailed information





Key Plan

0 2 4 6 8 10M
SCALE 1:200 @ A3

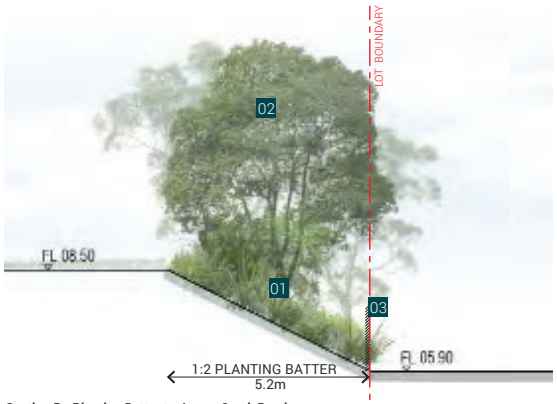
SECTIONS

4.4 Planting Batter to Austons Lane & James Creek Road

Note:
Refer engineering drawings for detailed information

Section A - Planting Batter to Austons Lane

Elevation A - Planting Batter to Austons Lane



Section B - Planting Batter to James Creek Road

01 Planting batter with low maintenance native planting species

02 Screening tree

03 1.8m high open metal good neighbour fence

04 Existing trees to be retained
Individual treatment may be required

0 1 2 3 4 5M
SCALE 1:100 @ A3

05

PLANTING

5.1 Planting Palette - Street

TREES

Botanical Name	Common Name
Cupaniopsis anacardioides	Tuckeroo
Tristaniopsis laurina	Kanooka Gum
Waterhousea floribunda	Weeping Lilly Pilly

Tristaniopsis laurina
Kanooka Gum

Waterhousea floribunda
Weeping Lilly Pilly

Cupaniopsis anacardioides
Tuckeroo

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Acmena smithii 'Allyn Magic'	Allyn Magic
Callistemon viminalis 'little john'	Little John
Crinum pedunculatum	Swamp lily
Dianella caerulea	Blue Flax Lily
Lomandra hystrix 'Katie Belles'	Katie Belles
Lomandra longifolia 'Nyalla'	*Nyalla*
Myoporum ellipticum	Coastal Boobialla
Syzygium australe	Brush cherry
Westringia hybrid 'Blue Gem'	Blue Gem
Westringia fruticosa 'Mundi'	Mundi

Acmena smithii 'Allyn Magic'
Allyn Magic

Syzygium australe
Brush cherry

Callistemon viminalis 'little john'
Little John

Westringia fruticosa 'Mundi'
Mundi

Westringia hybrid 'Blue Gem'
Blue Gem

Dianella caerulea
Blue Flax Lily

Lomandra longifolia 'Nyalla'
Nyalla

Lomandra hystrix 'Katie Belles'
Katie Belles

Crinum pedunculatum
Swamp lily

Myoporum ellipticum
Coastal Boobialla

5.2 Planting Palette - Park Trees

TREES

Botanical Name	Common Name
Corymbia citriodora	Spotted Gum
Ficus brachypoda	Edible fig
Ficus microcarpa	Indian Laurel Fig
Leptospermum petersonii	Lemon-scented Tea Tree
Lophostemon confertus	Queenland Brush Box
Syzygium oleosum	Blue Lilly Pilly
Tristaniopsis laurina	Kanooka Gum

Corymbia citriodora
Spotted Gum

Ficus brachypoda
Edible fig

Ficus microcarpa
Indian Laurel Fig

Tristaniopsis laurina
Kanooka Gum

Syzygium oleosum
Blue Lilly Pilly

Leptospermum petersonii
Lemon-scented Tea Tree

Lophostemon confertus
Queenland Brush Box

5.3 Planting Palette - Park Shrub & Groundcover

Botanical Name	Common Name
Austromyrtus dulcis	Midgen berry
Banksia robur	Swamp Banksia
Callistemon viminalis 'little john'	Little John
Hovea longifolia	Hovea purple bush pea
Leptospermum 'Pink Cascade'	Pink Cascade
Leptospermum polygalifolium	Tea Tree
Lomandra hystrix 'Katie Belles'	Katie Belles
Syzygium australe	Brush cherry
Westringia hybrid 'Blue Gem'	Blue Gem

SHRUB & GROUNDCOVER

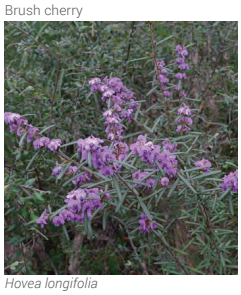
Syzygium australe
Brush cherry

Banksia robur
Swamp Banksia

Callistemon viminalis 'little john'
Little John

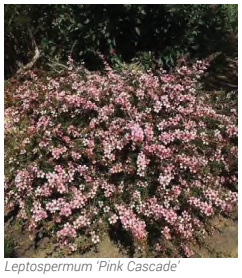
Lomandra hystrix 'Katie Belles'
Katie Belles

Westringia hybrid 'Blue Gem'
Blue Gem



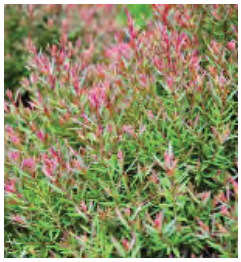
Hovea longifolia
Hovea purple bush pea

Leptospermum polygalifolium
Tea Tree



Leptospermum 'Pink Cascade'
Pink Cascade

Austromyrtus dulcis
Midgen berry



Melaleuca linariifolia
Claret Tops

5.4 Planting Palette - Southern Batter to Austons Lane

TREES

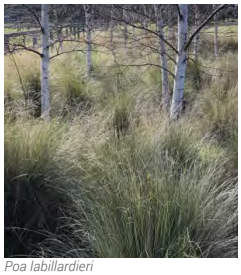
Botanical Name	Common Name
Eucalyptus populnea	Poplar Box

Eucalyptus populnea
Poplar Box

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Grevillea rosemarinifolia 'Crimson Villea'	Crimson Villea
Lomandra fluviatilis 'Shara'	Shara
Lomandra labill 'Evergreen Baby'	Evergreen Baby
Lomandra multiflora 'Frilly Lace'	Frilly Lace
*Pennisetum alopecuroides*Common	Swamp Foxtail Grass
Poa labillardieri	Common Tussock-grass

Grevillea rosemarinifolia 'Crimson Villea'
Crimson Villea



Poa labillardieri
Common Tussock-grass

Pennisetum alopecuroides
Common Swamp Foxtail Grass

Lomandra fluviatilis 'Shara'
Shara

Lomandra labill 'Evergreen Baby'
Evergreen Baby

Lomandra multiflora 'Frilly Lace'
Frilly Lace

Grevillea
'Bronze rambler'

5.5 Planting Palette - Bio Basin

TREES

Botanical Name	Common Name
Melaleuca linariifolia	Paperbark

Melaleuca linariifolia
Paperbark

SHRUB & GROUNDCOVER

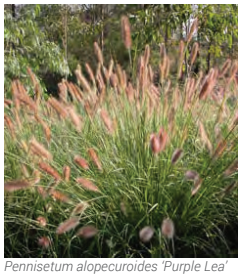
Botanical Name	Common Name
Baloskion tetraphyllum	tassel rope-rush
Dianella longifolia var longifolia	Pale Flax-lily
Lomandra hystrix 'Katie Belles'	Katie Belles
Lomandra longifolia 'Katrinus Deluxe'	Katrinus Deluxe
Pennisetum alopecuroides 'Purple Lea'	Purple Lea
Lomandra fluviatilis 'Shara'	Shara
Banksia robur	Swamp Banksia
Carex appressa	Tall Sedge
Carex fascicularis	Tassel Sedge
Ficinia nodosa	Knobby Club Rush

Baloskion tetraphyllum
tassel rope-rush

Dianella longifolia var longifolia
Pale Flax-lily

Lomandra hystrix 'Katie Belles'
Katie Belles

Lomandra longifolia 'Katrinus Deluxe'
Katrinus Deluxe



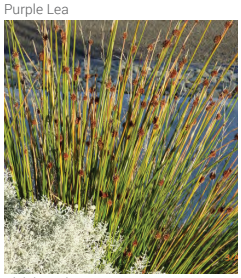
Pennisetum alopecuroides 'Purple Lea'
Purple Lea

Lomandra fluviatilis 'Shara'
Shara

Banksia robur
Swamp Banksia

Carex appressa
Tall Sedge

Carex fascicularis
Tassel Sedge



Ficinia nodosa
Knobby Club Rush

5.6 Planting Palette - Bushfire Protection Zone Trees

TREES

Botanical Name	Common Name
Acacia decurrens	Black Wattle
Brachychiton populneus	Kurrajong
Corymbia maculata	Spotted gum
Cupaniopsis anacardioides	Tuckeroo
Elaeocarpus eumundi	Eumundi quandong
Fraxinus griffithii	Griffith's Ash
Gleditsia triacanthos 'Sunburst'	Sunburst Honeylocust
Lagerstroemia indica	Crepe myrtle
Magnolia grandiflora 'Teddy bear'	Bull Bay Magnolia

Acacia decurrens
Black Wattle

Brachychiton populneus
Kurrajong

Corymbia citriodora
Spotted Gum

Cupaniopsis anacardioides
Tuckeroo

Elaeocarpus eumundi
Eumundi quandong

Fraxinus griffithii
Griffith's Ash

Gleditsia triacanthos 'Sunburst'
Sunburst Honeylocust

Lagerstroemia indica
Crepe myrtle

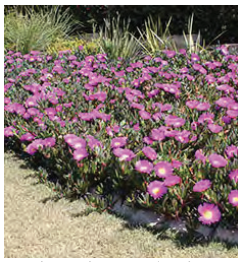
Magnolia grandiflora 'Teddy bear'
Bull Bay Magnolia

5.7 Planting Palette - Bushfire Protection Zone Shrub & Groundcover

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Acacia acinacea	Gold Dust Wattle
Carpobrotus glaucescens 'Aussie rambler'	Pigface
Casuarina glauca 'Freefall'	Groundcover sheoak
Liriope muscari 'Evergreen Giant'	Lilyturf
Lomandra longifolia 'Nyalla'	Spiny Headed Mat Rush
Leptospermum polygalifolium	Tea Tree
Lomandra hystrix 'Katie Belles'	Katie Belles
Lomandra longifolia 'Katrinus deluxe	Spiny Headed Mat Rush
Myoporum parvifolium	Creeping boobialla
Syzygium australe	Lilly Pilly

Acacia acinacea
Gold Dust Wattle



Carpobrotus glaucescens 'Aussie rambler'
Pigface

Casuarina glauca 'Freefall'
Groundcover sheoak

Liriope muscari 'Evergreen Giant'
Lilyturf

Lomandra longifolia 'Nyalla'
Spiny Headed Mat Rush

Leptospermum polygalifolium
Tea Tree

Lomandra hystrix 'Katie Belles'
Katie Belles

Lomandra longifolia 'Katrinus deluxe
Spiny Headed Mat Rush

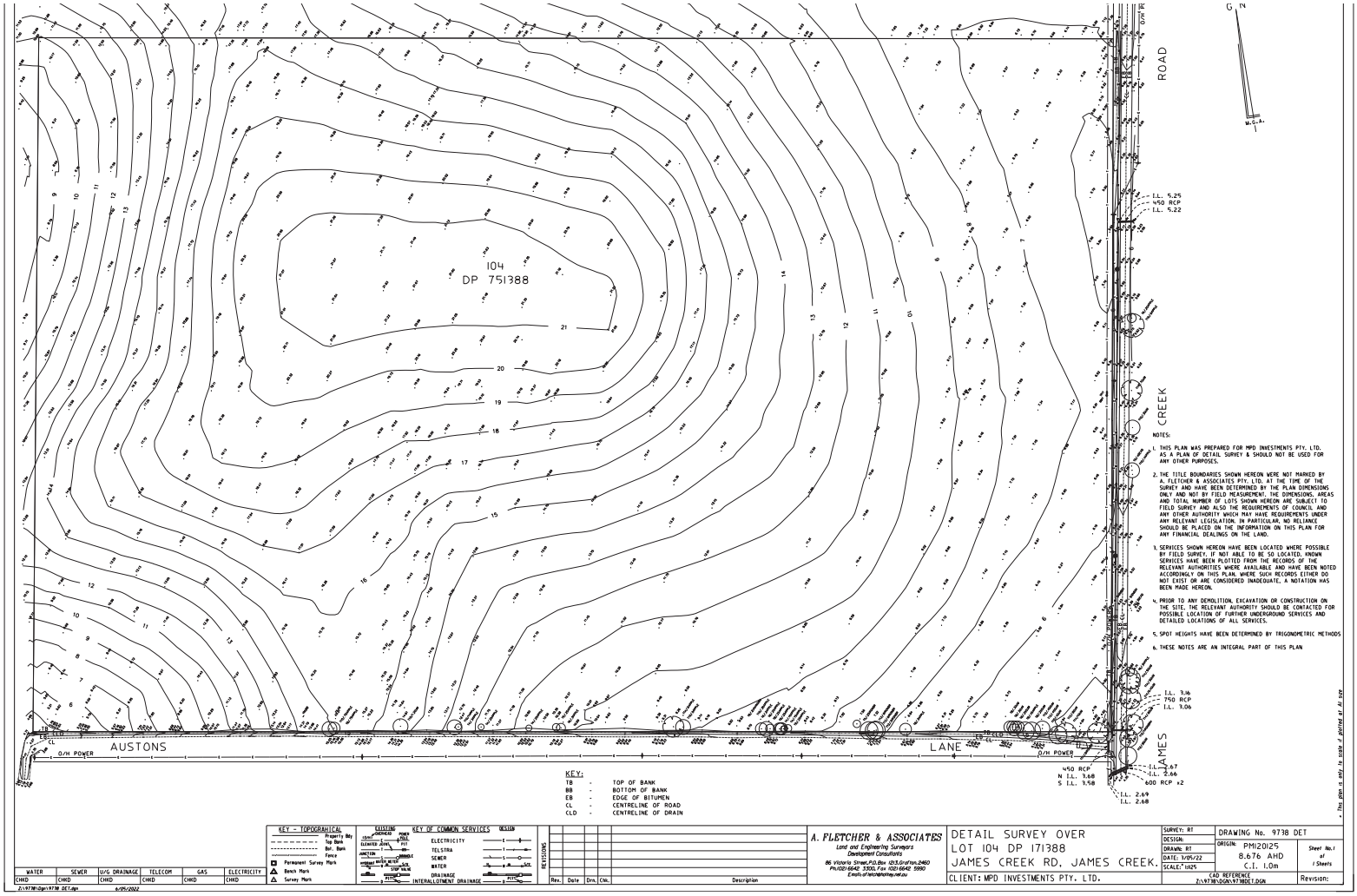
Myoporum parvifolium
Creeping boobialla

Syzygium australe
Lilly Pilly

06

APPENDIX

6.1 Site Survey




place
design
group.

Appendix D

APZ Standards (PBP 2019 Extract)

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.