

BLACKASH

BUSHFIRE CONSULTING

Bushfire Assessment Report

for

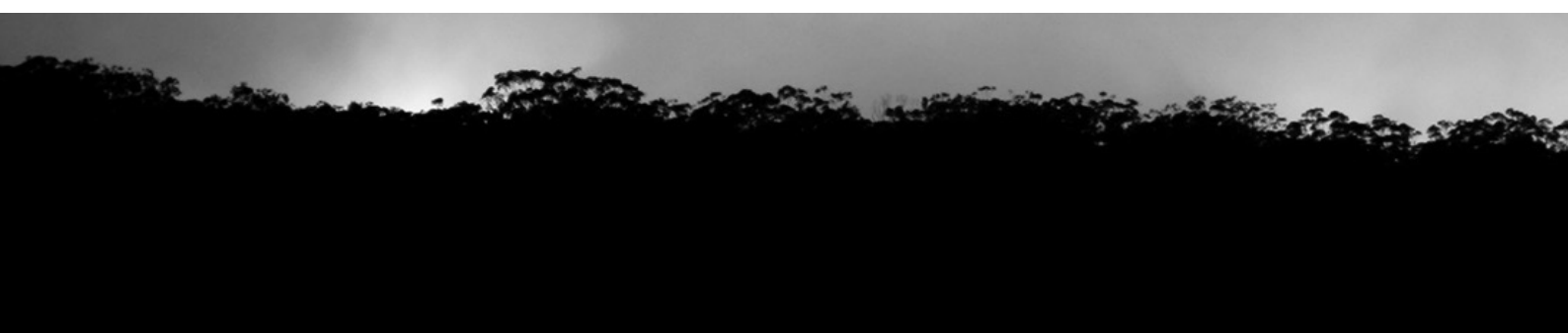
Stages 1A and 1B - Subdivision and Stage 2 bulk earthworks Chain-O-Ponds Road & The Northern Road Mulgoa NSW

Prepared for

Mirvac Homes (NSW) Pty Limited

Version **1.5**

11 July 2024



Document Tracking

Project Name:	Stages 1A and 1B - Subdivision and Stage 2 bulk earthworks Chain-O-Ponds Road & The Northern Road Mulgoa NSW
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Site details	Stages 1A and 1B - Subdivision and bulk earthworks Chain-O-Ponds Road & The Northern Road Mulgoa NSW Lots 1, 2, 3, 4 & 5 DP 29081, Lots 2, 3 & 7 DP 1240361 and Lots 27, 28, 29 and 30 DP 244610.
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Document Control

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BlackAsh Bushfire Consulting

Fire Protection Association of Australia BPAD Level 3BPD-PA 16373

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Glossary of Terms

APZ	Asset protection zone
AS2419	<i>Australian Standard – Fire hydrant installations</i>
AS3745	<i>Australian Standard – Planning for emergencies in facilities</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2018</i>
BAL	<i>Bushfire attack level</i>
BCA	<i>Building Code of Australia</i>
BSA	Bushfire safety authority
EPA Act	<i>Environmental Planning & Assessment Act 1979</i>
FDI	Fire danger index
ha	Hectare
m	Metres
PBP	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act 1997</i>

1. Introduction

Mirvac Homes (NSW) PTY Limited commissioned Blackash Bushfire Consulting (Blackash) to provide a Bushfire Assessment Report to support a development application for Stages 1A and 1B - Subdivision and Stage 2 bulk earthworks on Chain-O-Ponds Road and the Northern Road, Mulgoa (the site) which is legally known as Lots 1, 2, 3, 4 & 5 DP 29081, Lots 2, 3 & 7 DP 1240361 and Lots 27, 28, 29 and 30 DP 244610 (Figure 1).

The site forms part of the Glenmore Park Stage 3 (GP3) Urban Release Area that was rezoned in June 2023 which will be developed in stages as per the Landuse Zoning Plan (Figure 2) and the sitewide Masterplan (Figure 3), Staging Plan (Figure 4) and Landscape Plan (Figure 5).

This development application will be provided to Penrith City Council under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and is for:

- bulk earthworks across Stages 1 and 2 (Figure 6)
- residential subdivision of Stage 1 to create 216 lots (Figure 6) as follows:
 - Stage 1A - ~~126~~ 120 lots
 - Stage 1B - ~~102~~ 96 lots
- Stormwater management works and embellishment of the east-west riparian corridor.

The site is on Bush Fire Prone Land and will trigger the integrated development referrals to the NSW Rural Fire Service (RFS) and require a Bushfire Safety Authority (BSA). The bulk earth works do not require a BSA, however, as it is part of the same application, the BSA should cover this aspect. The proposed bulk earthworks within Stage 2 are intended to facilitate the progressive subdivision and development of the land.

The proposed subdivision does not include construction of any dwellings, as the proposed lots are to be created to facilitate future development. Applications for buildings will be subject to further applications in the future.

This report will demonstrate that the works are straight forward and can comply with *Planning for Bushfire Protection 2019* (PBP). Links are to be provided with subsequent stages associated with residential subdivision to ensure alignment between the different DAs and to ensure bushfire provisions are understood and reflected in subsequent DAs to meet RFS requirements.

The RFS issued comments to the Planning Proposal on 9th June 2021 (RFS ref: SPI20210514000067), superseded by comments on 21 July 2022 (RFS ref: SPI20220708000070) which are reflected in this proposal.

This assessment has been prepared by Lew Short, Principal Blackash Bushfire Consulting (FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the RFS as qualified in bushfire risk assessment and have been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.

No performance-based assessment has been completed as part of this application. The proposal has been designed to comply with the acceptable solutions within PBP. A summary of the proposal is at Table 1.

A site inspection was completed by Lew Short on 30 August 2023.

[This report has been updated with Track Changes to clarify asset protection zone requirements. To assist with visibility of changes in the document, track changes has been used. This functionality allows all users to see specific changes, ensuring transparency. It aids in maintaining a clear history of modifications, making it easier to review and approve updates. This visibility is crucial for maintaining the integrity of the document and facilitating efficient change management. Updates are in **Blue** for new or updated information or **Red** for deletions in the document.](#)

[The main change in the document is updating Figure 10 for the asset protection zones which was called up in the RFS Bushfire Safety Authority dated 31 January 2024 for the creation of a temporary APZ so as not to unnecessarily burden future Lots with increased construction costs when adjoining Stages of land would be developed in the future, thus reducing or removing the Bushfire Attack Level on a building.](#)

[Figure 11 and 12 from the previous revision of this report have been deleted. An updated Figure 10 has been provided that shows the extent of APZs that provides no or minimal BALs on future buildings within the development application. No other changes are made in the report. The BALs within the development will be determined in a subsequent application.](#)

2. Summary

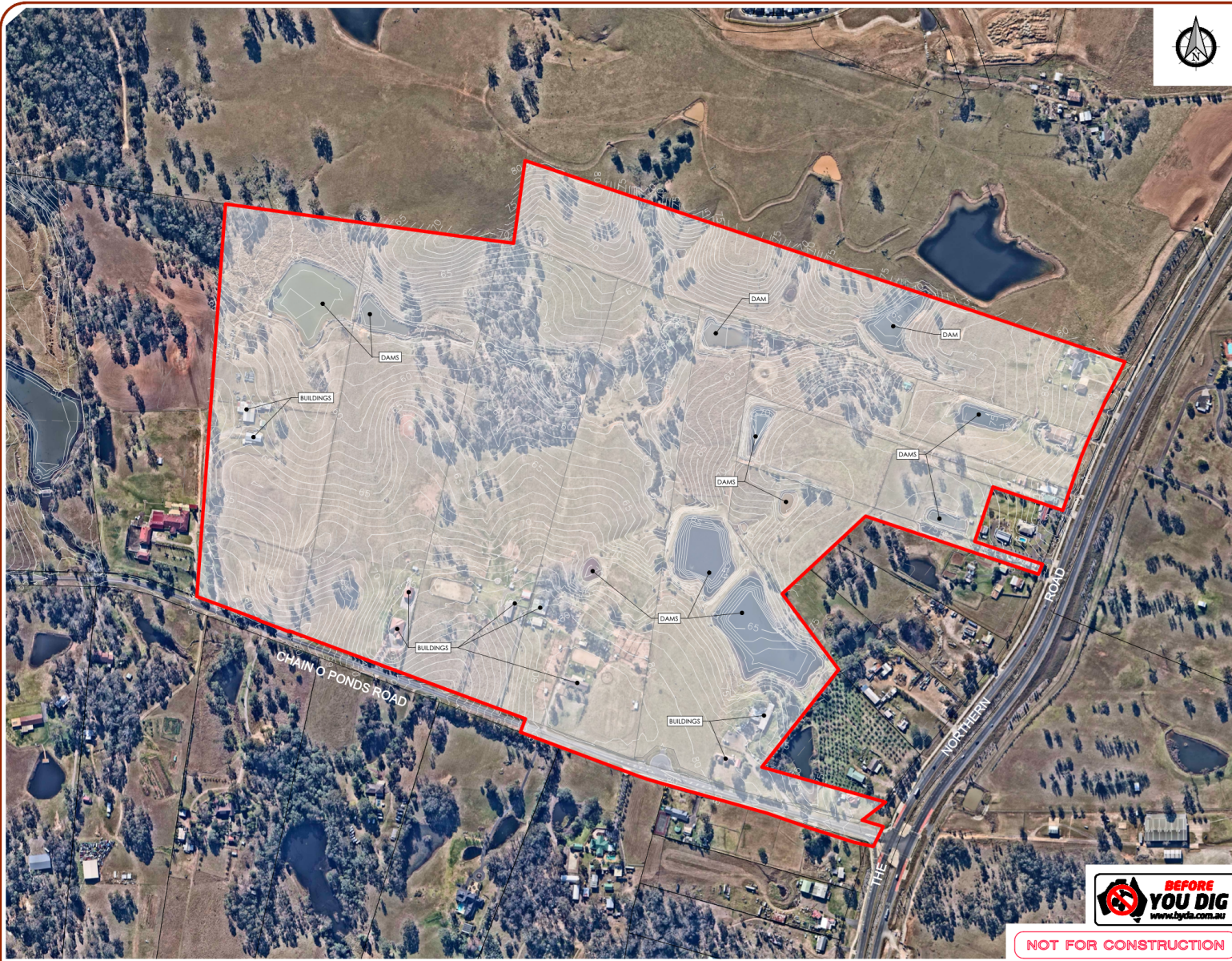
A summary of the key assessment requirements for the RFS is provided in Table 1.

Table 1

Can this proposal comply with AS3959, 2019 addendum to Appendix 3 of PBP?	YES
What is the recommended level of construction as per AS3959?	Not required at this stage as the DA is for I subdivision and bulk earth works only. No dwellings are proposed.
Does this development comply with the requirements of PBP?	YES
Does this development comply with the Aims and Objectives of PBP?	YES
Is referral to the NSW RFS required?	Yes
Are any performance solutions provided.	No. Acceptable solutions have been used.
APZ	YES
Access Internal Roads	YES
Access Public Roads	YES
Services	YES
Emergency and Evacuation Planning	Can be achieved

300070-DA-S1-004

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 Produced By: Steven Jomarré Plot Date: 25/10/23 4:03:34PM. Cad File: S:\300070\DA\ANNEXES\PLANNING\DA1\STAGE 1\300070-DA-S1-004.DWG



LEGEND

- DA BOUNDARY
- EXISTING BOUNDARY
- NATURAL CONTOURS



NOT FOR CONSTRUCTION

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	25.10.23	INITIAL ISSUE	SZ	CM	DATUM: GDA2020 MGA56 CONTOUR INTERVAL: 1.0m	AS 1:2000	

- project management
- civil engineering
- infrastructure
- superintendency
- social impact
- town planning
- surveying
- development feasibility
- visualisation
- urban design

drawing title:
**OVERALL SITE
 NATURAL SURFACE
 PLAN**

location: CHAIN O PONDS ROAD,
 MULGOA

council: PENRITH CITY COUNCIL

dwg ref: 300070-DA-S1-004

client:

central coast office ph: (02) 4325 4300
 hunter office ph: (02) 4978 5100
 sydney office ph: (02) 8046 7411

www.adwjohnson.com.au

working beyond expectations

Figure 1 The site

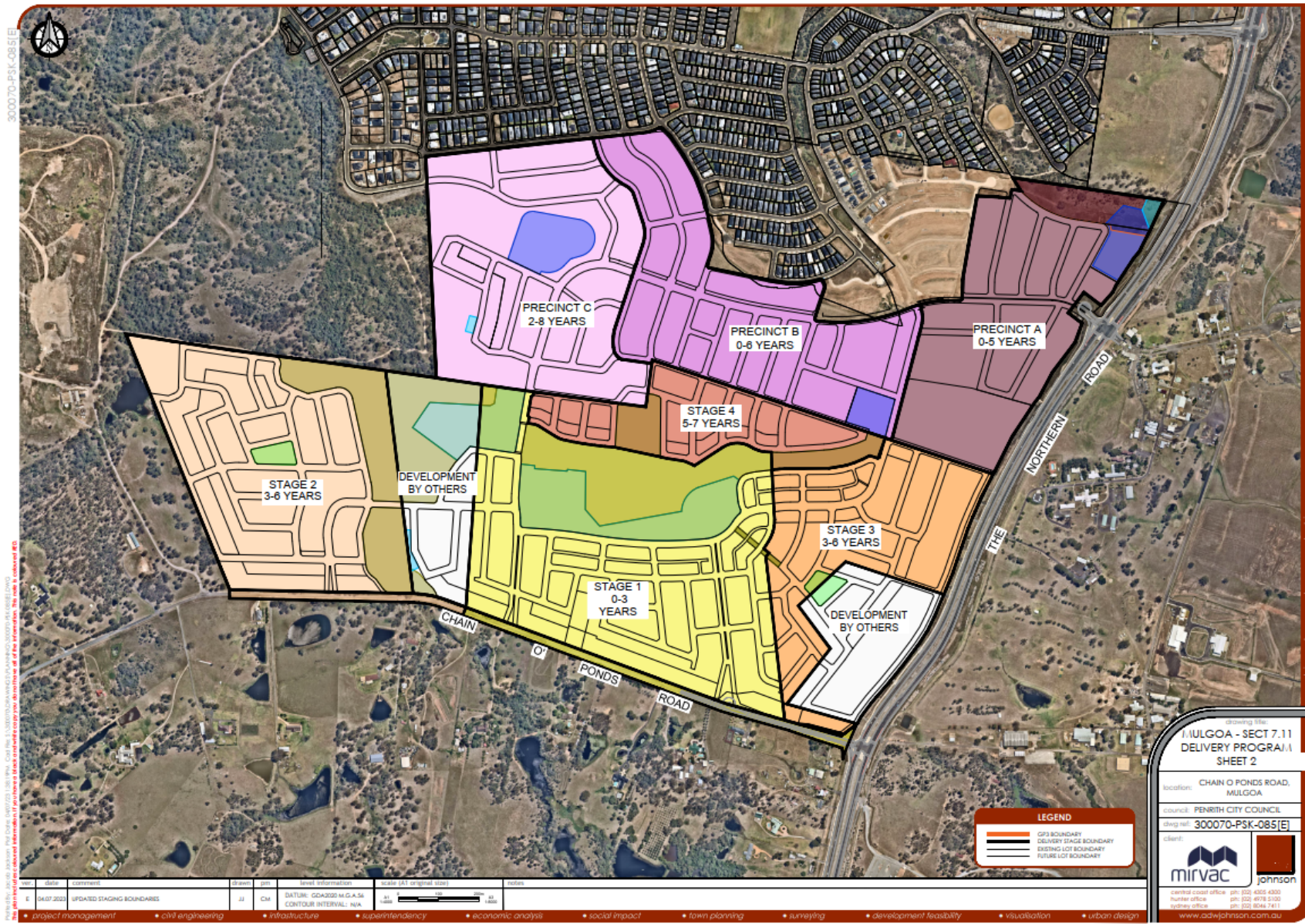


Figure 3 Sitewide Masterplan and Delivery Plan

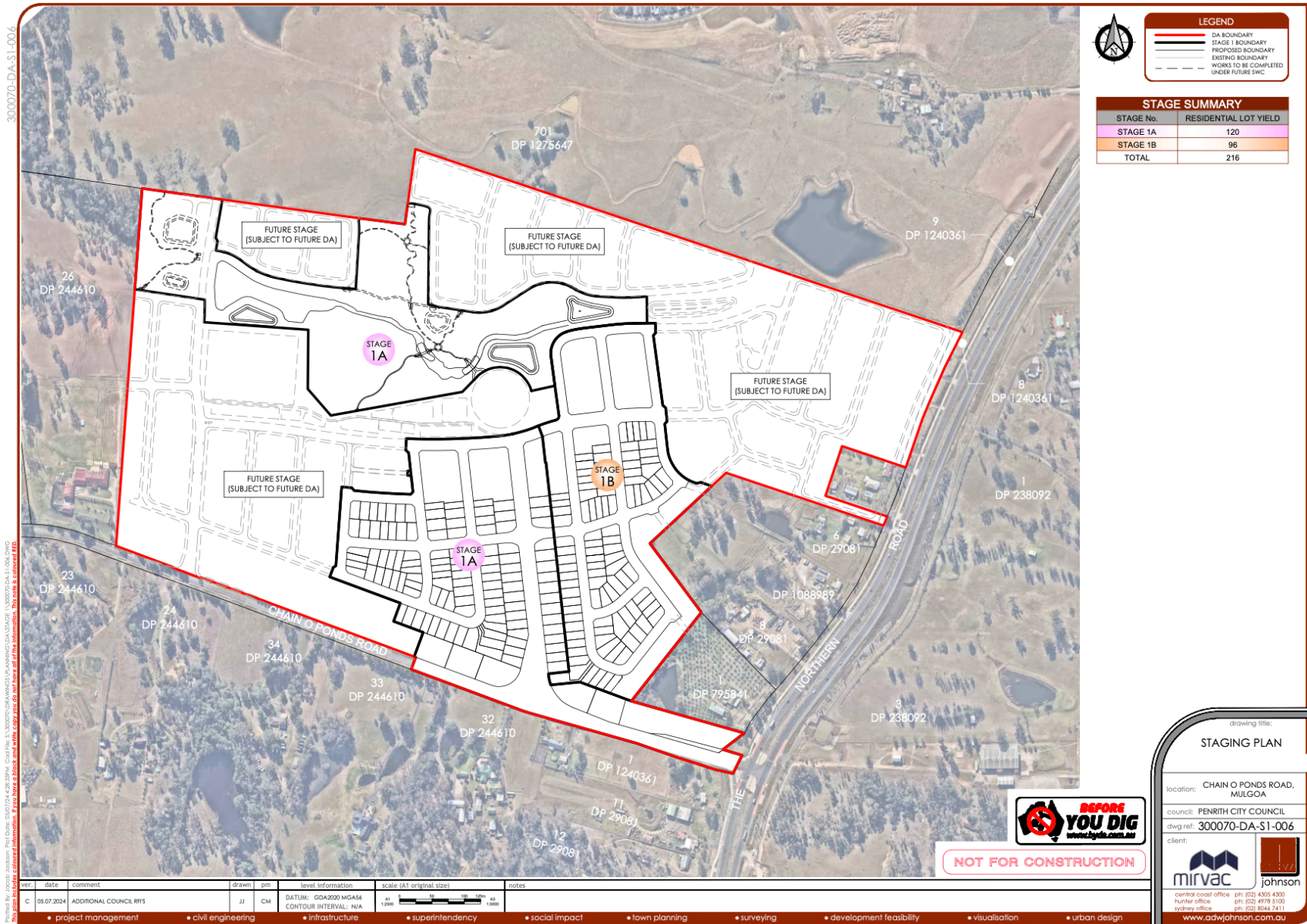


Figure 4 Staging Plan

MASTERPLAN



LEGEND

- Stage boundary
- · - · - Extent of works

KEY

- D1 District Park 1
- D2 District Park 2
- D3 District Park 3
- D4 District Park 4
- L1 Local Park 1
- L2 Local Park 2
- L3 Local Park 3
- LIN1 Linear Park 1
- LIN2 Linear Park 2
- LIN3 Linear Park 3
- LIN4 Linear Park 4


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 landscape architecture
 environmental & urban design

PROJECT
GLENMORE PARK STAGE 3
SECTION 7.11 SUBMISSION
 CLIENT
MIRVAC / VIANELLO

DRAWING
MASTERPLAN

DRAWING NO. DATE DRAWN DATE
CP-2109-000 A **08.12.2022**
ju / jc

Scale
 0 30 60 120 150 300m
 1:4000(A1)
 1:8000(A3)

A/CN: 164 245 514 A/BN: 99 164 245 514
 THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT
 CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS. COPYRIGHT
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Figure 5 Landscape Plan – Public Domain and Open Space Strategy

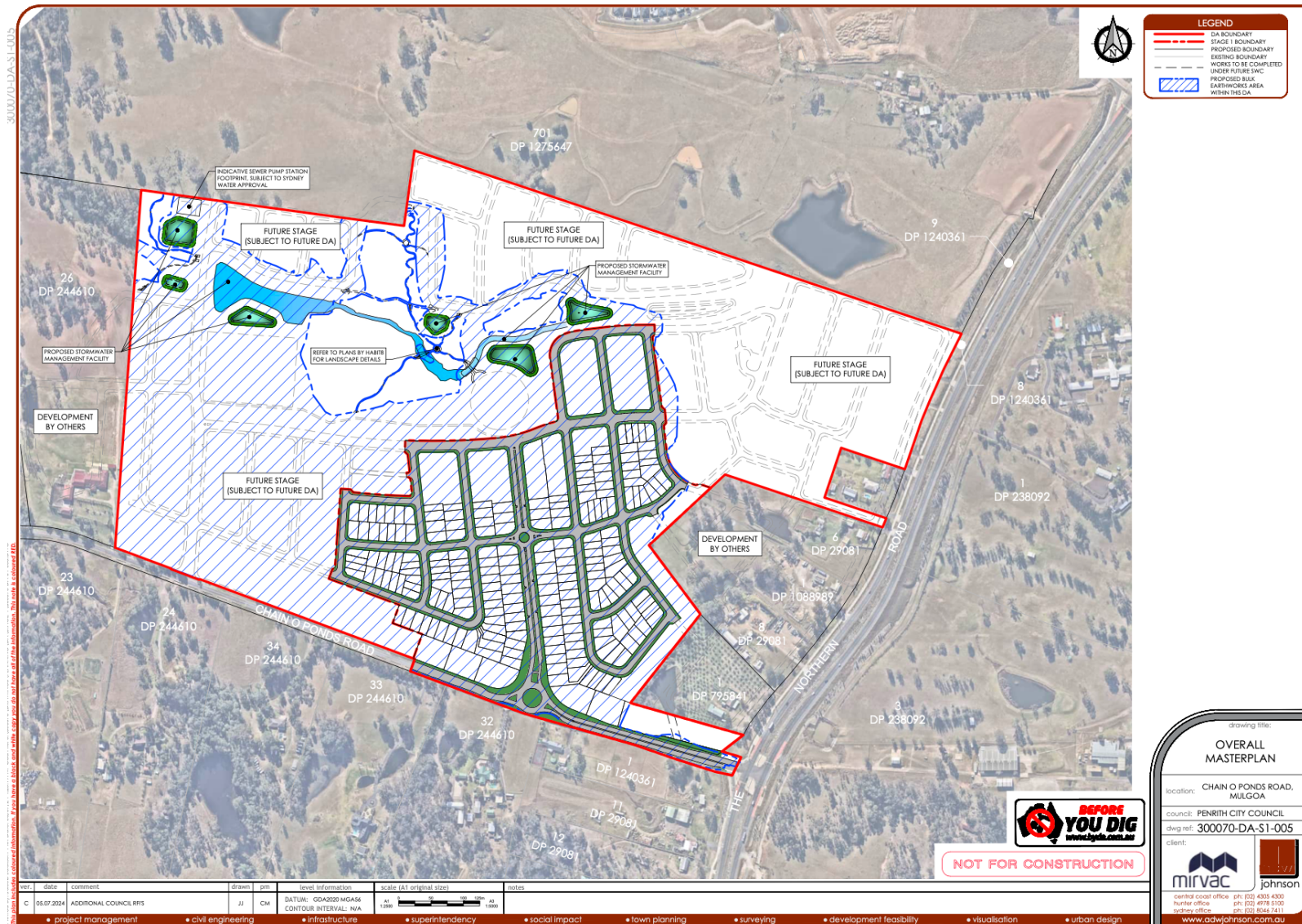


Figure 6 This DA Bulk Earth Works & Subdivision

3. Site Description & Proposal

3.1. Site Description and Background

The site forms part of the GP3 Urban Release Area and is approximately 75 hectares in size and is bounded by The Northern Road to the east, Chain-O-Ponds Road to the south, private rural-residential allotments to the west and the GP3 Urban Release Area, including a conservation area, to the north.

The site is cleared agricultural land with some retained trees and vegetation within sections of the gully to the centre of the site (Appendix 2 site photos).

The site is within the GP3 Urban Release Area which is an area that is rapidly developing and removing the bushfire risk. It was rezoned in June 2023 for a total of 2,330 residential dwellings, a 5,000m² mixed use local centre, primary school, public recreation facilities and environmental conservation areas. The release area is predominately controlled by two developers, one being Mirvac and will be progressively developed generally in accordance with the staging plan over an eight year period (Figure 3).

The landscape masterplan (Figure 5) forms part of the Public Domain and Open Space Strategy endorsed by Council, which has been incorporated into the Section 7.11 Contributions Plan for the site, also endorsed by Council. It identifies the location of District Parks, Local Parks and Linear Parks throughout the site. District parks will be developed with active and passive facilities, including sports fields, sports courts and playgrounds, while linear parks will be embellished for environmental conservation purposes.

3.2. The Proposal

This development application is for Stage 1 and 2 within the 75 ha Mirvac site and includes:

- bulk earthworks across Stages 1 and 2
- residential subdivision of Stage 1 to create ~~228~~ 216 lots as follows:
 - Stage 1A - ~~126~~ 120 lots
 - Stage 1B - ~~102~~ 96 lots
- Stormwater management works and embellishment of the east-west riparian corridor.

The site will be developed in stages over a number of years (Figure 3), with subdivision of Stage 2 and construction of District Park 4 subject to separate development applications. As the site is under common ownership and management, a series of APZs will be provided out from the proposed residential areas so as not to burden future houses with unnecessary cost through the provision of Bushfire Attack Levels above BAL 12.5. Some areas within the site will be greater than 100m from

unmanaged vegetation and will not require construction standards in accordance with the Australian Standard for Construction of Buildings in Bushfire Prone Areas 2018 (AS3959). This has been undertaken to comply with the requirements of PBP and the National Construction Code (NCC) and to ensure that housing affordability is provided to future owners.

The road layout and hierarchy has been designed to link into existing public roads and will tie in with adjoining areas being developed (see Figure 3).

4. Legislative Framework

The application is for residential subdivision and bulk earthworks. Section 100B of the RF Act states:

The Commissioner may issue a bush fire safety authority for:

- (a) a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes, or*
- (b) development of bush fire prone land for a special fire protection purpose.*

As the application will create additional residential entitlements, integrated referral to the RFS is required under section 4.46 of the EPA Act 1979.

PBP provides guidelines for use once an area has been identified and zoned for development. Its primary purpose is to assist with the development of bushfire prone land. A key principle of developing in bushfire prone areas is to assess bushfire risk and to ensure that future development is capable of complying with PBP. As such, our assessment has been completed against the subdivision requirements of PBP to ensure that this and future applications under s.100B of the RF Act can be issued with a Bushfire Safety Authority (BFSA).

This Bushfire Assessment Report has been completed in accordance with the *Rural Fires Regulation*.

5. Bushfire Prone Land

The site is identified as 'bushfire prone land' (Figure 7) for the purposes of Section 10.3 of the EPA Act and the legislative requirements for new development on bushfire prone lands are applicable.

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (BFPL) is land that has been identified by council, which can support a bushfire or is likely to be subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

The site is affected by Category 2 Bush Fire Prone Land. The RFS Bushfire Prone Land Mapping Guidelines 2015 (Mapping Guidelines) identifies Category 2 land as presenting a low bushfire risk, stating (Mapping Guidelines p. 11):

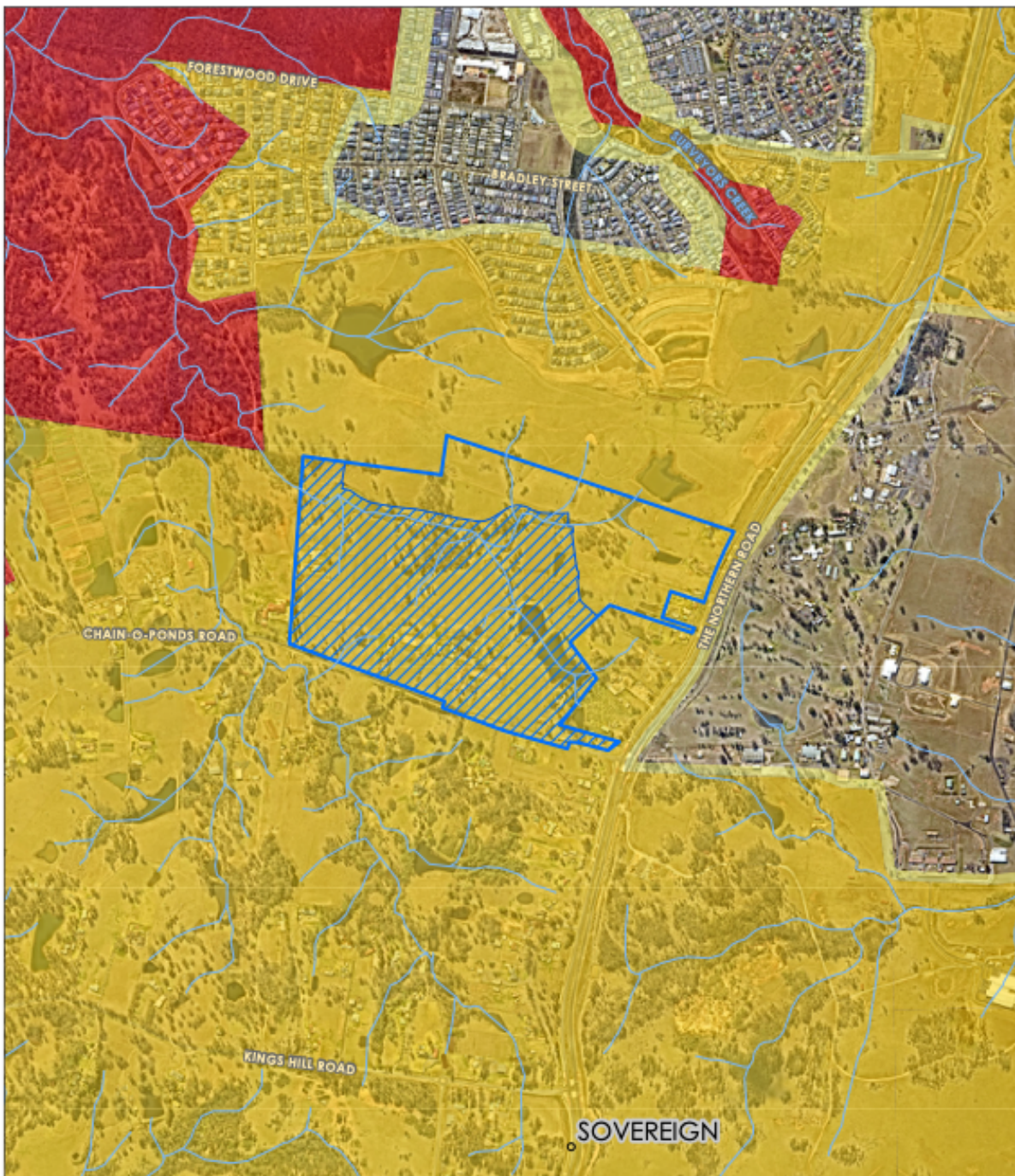
Vegetation Category 2

Vegetation Category 2 is considered to be a lower bush fire risk than Category 1 and Category 3 but higher than the excluded areas. It is represented as light orange on a bush fire prone land map and will be given a 30 metre buffer. This vegetation category has lower combustibility and/or limited potential fire size due to the vegetation area shape and size, land geography and management practices. Vegetation Category 2 consists of:

- Rainforests.
- Lower risk vegetation parcels. These vegetation parcels represent a lower bush fire risk to surrounding development and consist of:
 - Remnant vegetation;
 - Land with ongoing land management practices that actively reduces bush fire risk. These areas must be subject to a plan of management or similar that demonstrates that the risk of bush fire is offset by strategies that reduce bush fire risk; AND include:
 - Discrete urban reserve/s;
 - Parcels that are isolated from larger uninterrupted tracts of vegetation and known fire
 - paths;
 - Shapes and topographies which do not permit significant upslope fire runs towards development;
 - Suitable access and adequate infrastructure to support suppression by firefighters;

- *Vegetation that represents a lower likelihood of ignitions because the vegetation is surrounded by development in such a way that an ignition in any part of the vegetation has a higher likelihood of detection.*

Blackash agrees with the designation of the site as Category 2 land which present a low bushfire risk within the site. It is expected that as the site and surrounding areas develop, the Bushfire Prone Land Map will require updating by Council and the RFS to reflect the removal of land that could support a bushfire.



Legend

-  Watercourse
-  Subject Land
-  Proposed Bulk Earthworks Area
-  Vegetation Category 1
-  Vegetation Category 2
-  Vegetation Category 3

Bushfire Prone Land

-  Vegetation Buffer

N
DKGIS
Date: 19/10/2023
0 250 500
Meters
Coordinate System: GDA2020 MGA Zone 56
Imagery: © Nearmap

Figure 7 Bushfire Prone Land

6. Bushfire Threat Assessment

6.1. Methodology

PBP provides a methodology to determine the bushfire threat and commensurate size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation. For new residential subdivision, APZ requirements are based on keeping radiant heat levels at new buildings below 29kW/m².

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP. This assessment is based on the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2019)
- Council Bushfire Prone Land Map
- Aerial mapping
- Detailed GIS analysis
- Site inspection by Lew Short 30 August 2023

The methodology used in this assessment is in accordance with PBP and is outlined in the following sections.

6.2. Bushfire Hazard

An assessment of the Bushfire Prone Land is necessary to determine the application of bushfire protection measures such as APZ locations and future building construction levels. The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site and which determine the planning and building response of PBP.

6.3. Vegetation Assessment

The RF Regulation requires a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in PBP.

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate and our assessment is based on the vegetation that will “most significantly affecting fire behaviour.”

The vegetation within the site is Category 2 Bushfire Prone Land which is a lower bush fire risk than Category 1 and Category 3 areas. The existing vegetation on site is shown in Figure 8. This will be modified to provide to reflect the Landscape Plan (Figure 5).

The Cumberland Plain Conservation Plan (Figure 9) shows areas of high biodiversity value within the site. These areas will be retained and enhanced as per Figure 4, albeit with some works required for the provision of stormwater and other infrastructure. A separate Biodiversity Development Assessment Report (BDAR) has been provided by Cumberland Ecology to examine the impacts of the project on the biodiversity values of the study area. The BDAR has been prepared in accordance with the 2020 version of the BAM using the streamlined assessment module for small areas.

As part of the bulk earth works, the vegetation outside the of Linear Park 1 and the Biodiversity Values areas will be reshaped to facilitate the use of the land. This will involve moving, excavating, or reshaping large quantities of soil, rock, or other materials within the site. This will include cut and fill, excavation, land grading, land clearing and the creation of the landform to facilitate the future stages of development within the site. As a result, the retained vegetation within the grazing areas will be removed. The form will provide dirt that will be subsequently for future development. This reshaped areas will become managed land in accordance with PBP.

6.4. Slopes Influencing Bushfire Behavior

The RF Reg requires an assessment of the slope of the land on and surrounding the property out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint.

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100 m transect measured outwards from the development boundary or the existing/ proposed buildings. Figure 8 shows the slopes affecting the site. However, the bulk earth works will significantly reshape the site and change the slopes of the land.

6.5. Fire Weather

The fire weather is dictated by PBP and assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds. The site has a Fire Danger Index (FDI) of 100 as per PBP.

6.6. Bushfire Attack Levels & APZ

PBP promotes detailed site analysis to minimise the potential for bushfire attack. An appropriate combination of Bushfire Protection Measures (BPM), commencing with an APZ, is to be provided to satisfy the specific objectives and the general aim and objectives of PBP.

The APZ ensures that buildings are separated from the hazard and is designed to minimize the presence of fuels, which could become involved in a fire. The APZ standards are designed to ensure that future buildings can conform to the deemed-to-satisfy arrangements under the National Construction Code (NCC).

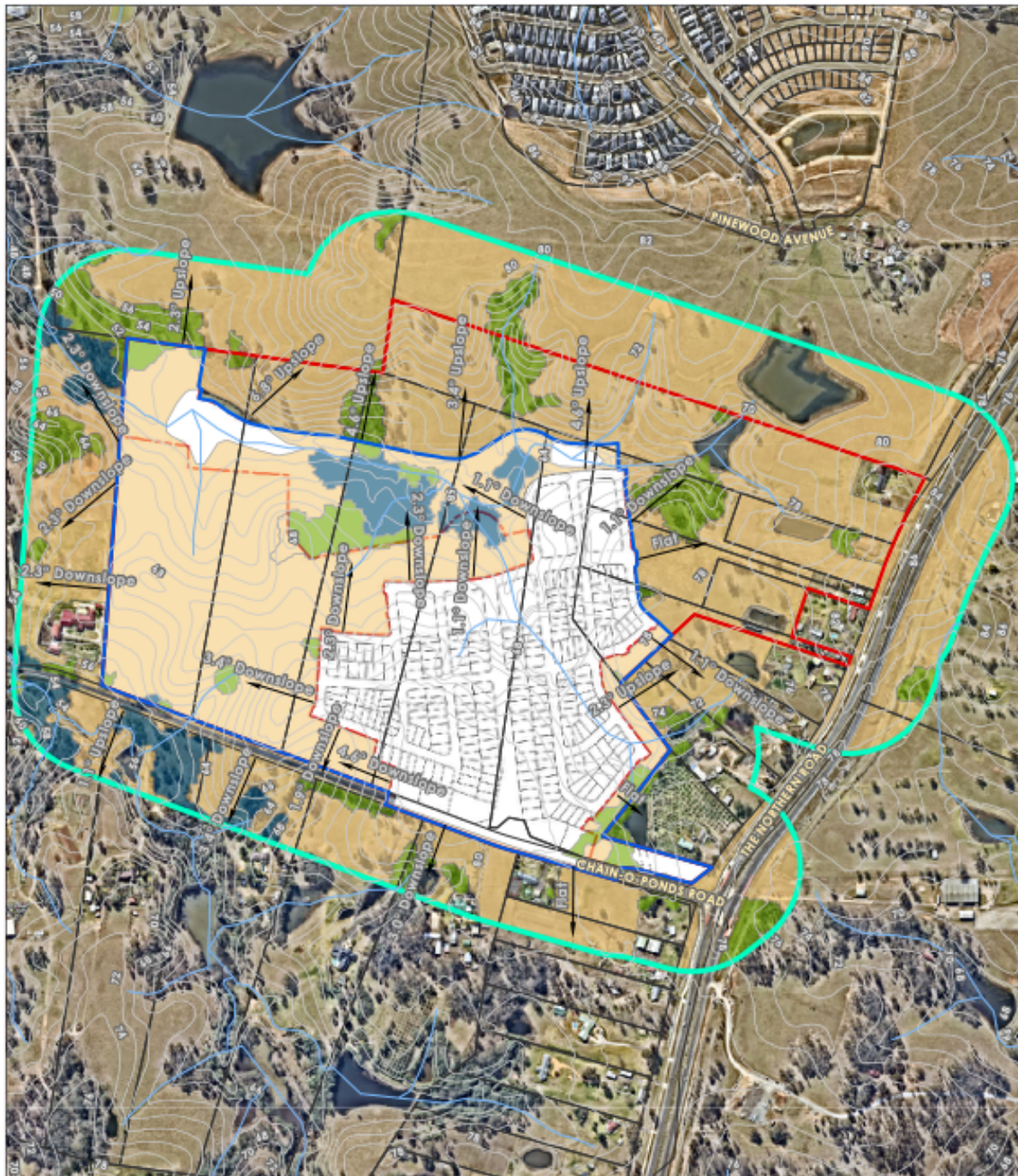
The bulk earth works will significantly reshape the site and change the slopes of the land. As a result, the retained vegetation within the grazing areas will be removed. The form will provide dirt that will be subsequently stabilised for future development. These reshaped areas will become managed land in accordance with PBP and will not represent a bushfire hazard.

The site will be staged over a number of years (Figure 3). As the site is under common ownership and management, a series of APZs will be provided out from the proposed residential areas so as not to burden future houses with unnecessary cost through the provision of Bushfire Attack Levels above BAL 12.5. As a result of the bulk earth works, the land is managed and will be managed by Mirvac in accordance with the APZ requirements. As a result, some areas within the site will be greater than 100m from unmanaged vegetation and will not require construction standards in accordance with the AS3959. This has been undertaken to comply with the requirements of PBP and the NCC) and to ensure that housing affordability is provided to future owners.

Figure 10 shows the APZs such that the subdivided lots can be developed with BAL 12.5 or lower. All APZs have been contained within the site and are under common ownership of Mirvac. APZs will be extinguished as future stages are brought online, thus removing any potential bushfire threat and reducing BAL requirements for future houses.

Figure 11 shows the required APZ distances out from the proposed lots which are contained the proposed roads. APZs will be able to be provided to the future building footprints that meet PBP and AS3959.

It is proposed to provide a series of APZs such that the subdivided lots can be developed with BAL-12.5 or lower (Figure 12). All APZs have been contained within the site and are under common ownership of Mirvac. APZs will be extinguished as future stages are brought online, thus removing any potential bushfire threat and reducing BAL requirements for future houses.



Legend

- Watercourse
 - Contour - 2m
 - Works Area
 - Subject Land
 - Cadastre
 - Vegetation Assessment Buffer
- Vegetation Class**
- Coastal Floodplain Wetlands
 - Coastal Valley Grassy Woodlands
 - Grassland

N

DKGIS

Date: 20/10/2023

0 200 400

Meters

Coordinate System: GDA2020 MGA Zone 56

Imagery: © Nearmap

Figure 8 Vegetation and Slope

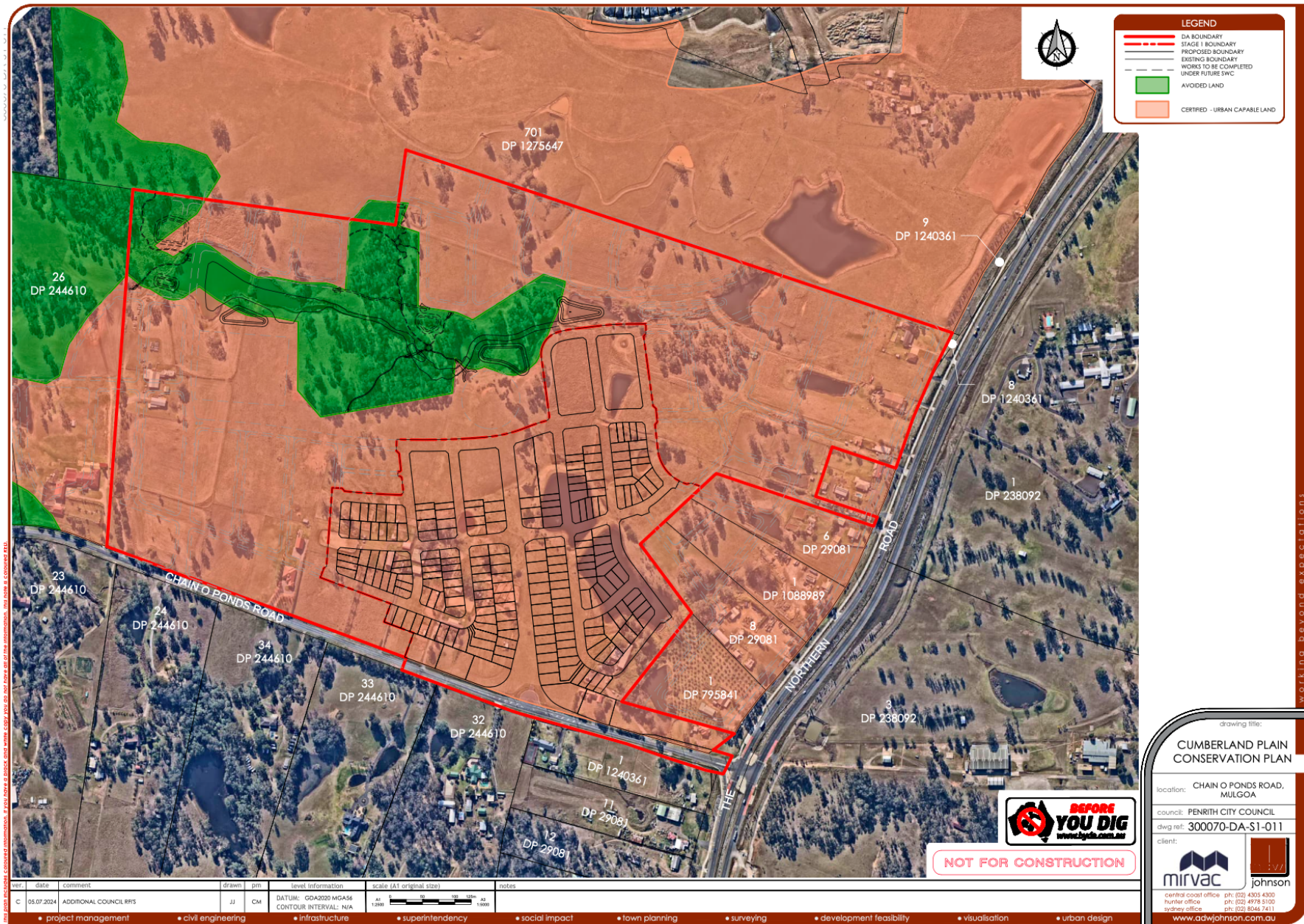


Figure 9 Biodiversity Map Overlay

~~Figure 10 Asset Protection Zones In~~

~~Figure 11 Asset Protection Zones Out~~

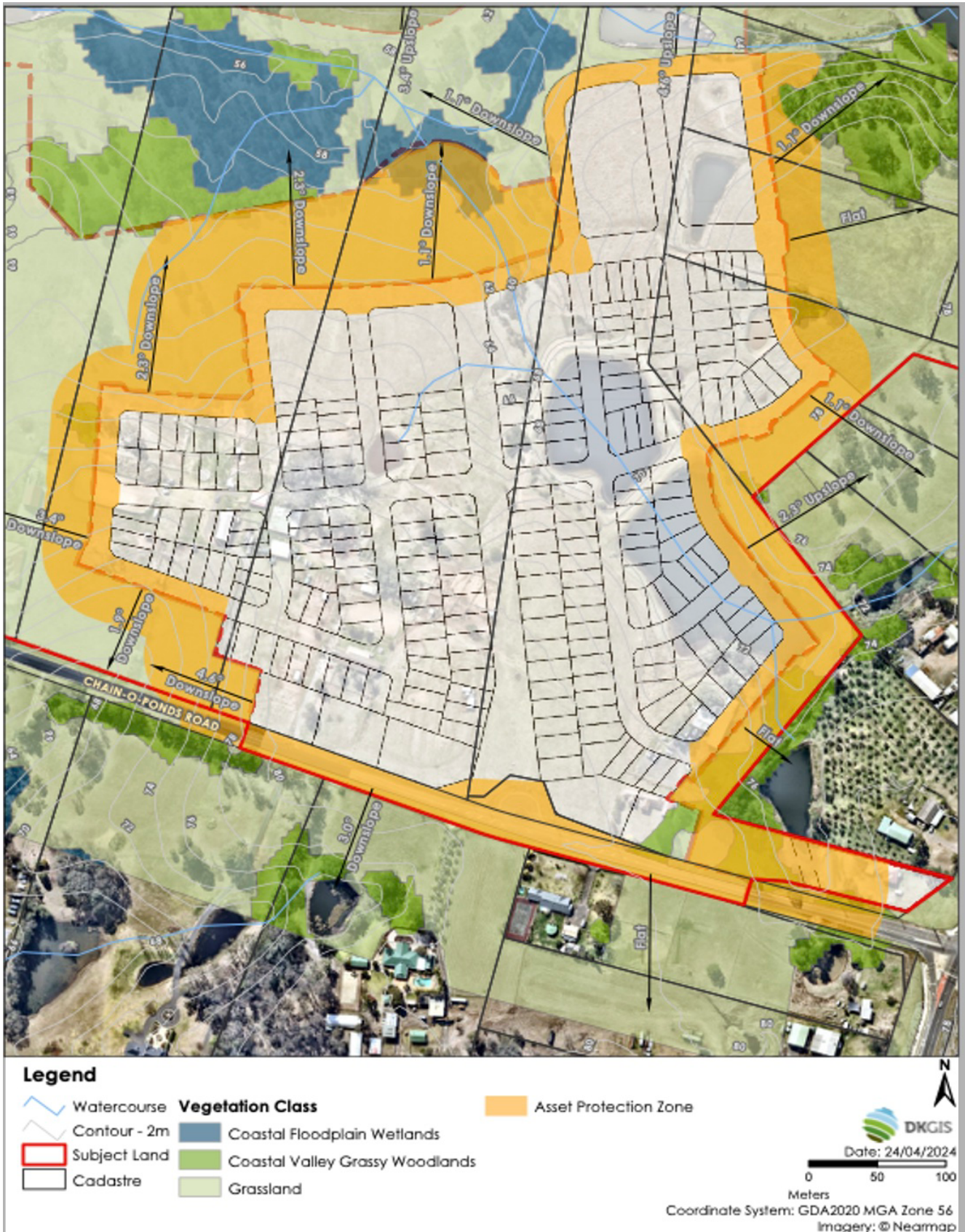


Figure 10 Bushfire Attack Level - APZ Extent to BAL 12.5

7. Management of the Land as an APZ

An APZ is a buffer zone between a bushfire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack.

The appropriate APZ is based on vegetation type, slope and levels of construction. The APZ can include existing roads, other buildings and managed properties. Future management within the site meets the requirements for an APZ. The site has been and continues to be extensively managed to mitigate the risk of bushfires.

Land required as a temporary APZ to provide BAL 12.5 setbacks is shown at Figure 10. APZ's from retained vegetation will be managed in accordance with the Inner and Outer Protection Areas standards within PBP for APZs.

8. Water Supplies

The future fire hydrant flows, pressures and installations (spacing, design and sizing) will comply with the relevant clauses of Australian Standard AS 2419.1:2005 and will not be located on any road carriageway. Detailed plans will be provided with subsequent applications.

9. Gas and electrical supplies

Detailed plans will be provided with subsequent applications. Electricity supply will comply with PBP. No gas services is proposed within the site. This complies with PBP.

10. Access

The subject site has street frontage to Chain-O-Ponds Road. The proposed internal road system will provide multiple future connection points to Chain-O-Ponds Road and the Glenmore Park Release Area north, which then connects to The Northern Road.

Planning for Bush Fire Protection addresses design considerations for internal roads (public roads) for properties determined to be bushfire prone in section 4.1.3 (1). Perimeter roads and through roads are the preferred design option.

The proposed Masterplan includes perimeter roads adjacent the identified bushfire hazards and utilises through roads throughout the design therefore satisfying the preferred design option.

PBP affords significant weight to the provision of access in new subdivisions. The key requirement is that *the design of access roads shall enable safe access and egress for residents attempting to leave the area at the same time that emergency service personnel are arriving to undertake firefighting operations* (PBP p. 29).

PBP states that (p. 29):

In a bushfire prone area, the purpose of the road system is to:

- *provide firefighters with access to structures, allowing more efficient use of firefighting resources;*
- *provide evacuation routes for firefighters and the public; and*
- *provide access to areas of bush fire hazard for firefighting and hazard mitigation purposes.*

Roads shall provide sufficient width and other dimensions to ensure safe unobstructed access and allow firefighting crews to operate equipment around the vehicle. Road width is defined as the trafficable width from kerb to kerb or the inside edge of the table drain.

The proposal provides access in accordance with the acceptable solutions of PBP. The road hierarchy (Figure 9) has been designed to facilitate access to retained vegetation areas for fire fighters and the orderly evacuation of civilians from the site if this is required. The road layout has been designed to provide multiple access options for both emergency services and civilians.

While access is provided to facilitate evacuation from the site, fundamentally, most parts of the site will comply with PBP with minimal bushfire risk, providing safe separation from potential bushfire prone areas and resilient buildings which would not need to be evacuated, meaning that these areas don't need to be evacuated in typical situations (i.e. Fire Behaviour Rating below Catastrophic), thereby reducing the road carrying capacity. As a result, the road carrying capacity does not need to be as extensive or designed for full scale evacuation of the site but rather for emergency situations (i.e. Catastrophic Fire Danger). However, the site has been designed and the road hierarchy provides compliance with PBP.

The main collector roads provide access for fire fighting vehicles and civilian traffic which is unencumbered, including:

- Entry Boulevard (Chain of Ponds Road) two lanes of traffic each way (6m each way) with carriageway 12m with parking, providing 3.5m travel lane in each direction.
- Collector Road (adjacent to development on both sides) one lane of traffic each way (3.5m each way) with carriageway 12m and parking either side of the road. This provides internal egress for civilian traffic.
- Collector Road (adjacent to bushfire hazard/ active District park) with one lane of traffic each way of 4m with carriageway of 8m
- Collector Road (adjacent to bushfire hazard/ passive District park/ Linear park) with one lane of traffic each way with carriageway of 8m

Cross sections of the roads are provided at Figures ~~10, 11 and~~ 12, 13 & 14. Minor local roads provide one lane of traffic each way and 8m carriageway. Figure ~~11~~ 13 provides a CAD drawing with a car and MR fire appliance using the road. Minor local perimeter roads adjacent to bushfire hazards provides two options (Option A and Option B) with no parking on one side of the road to maintain a clear 8m carriageway,

The perimeter roads adjacent to hazard areas provide a two-way road with 4m wide travel lanes each way and a 2.5m parking area. The CAD drawings show a Medium Rigid (MR) fire appliance using the road while other cars can pass in the opposite direction.

Emergency access is enhanced with the proposed design, whereby the main collector roads run north south out of the development and into Chain of Ponds Road which provides links into The Northern Road to the east.

These road requirements, when implemented and maintained, contribute to the overall effectiveness and safety of bushfire car evacuation, enabling the timely and orderly movement of people away from the impacted areas.

Access complies with PBP.

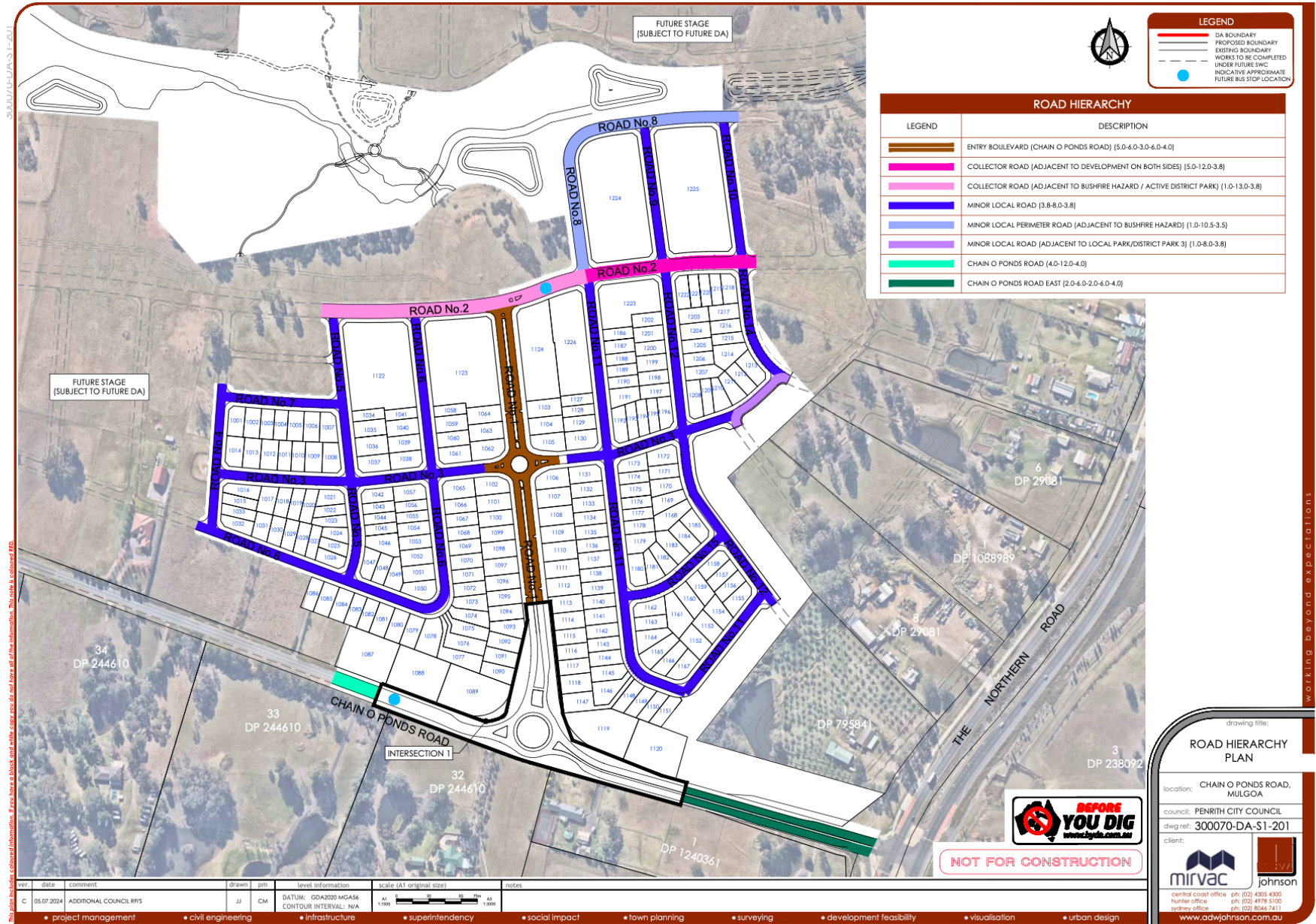
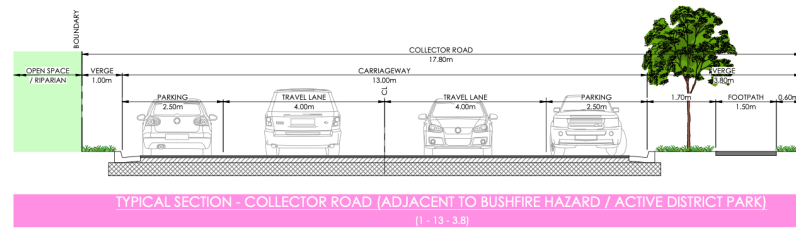
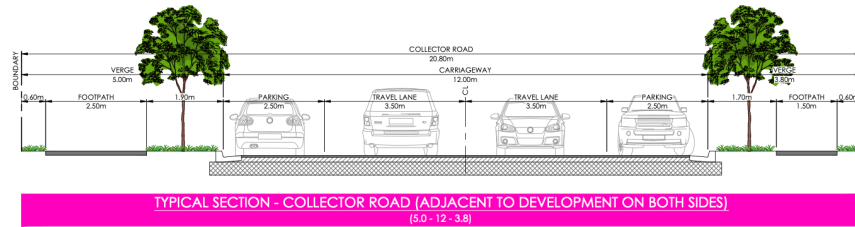
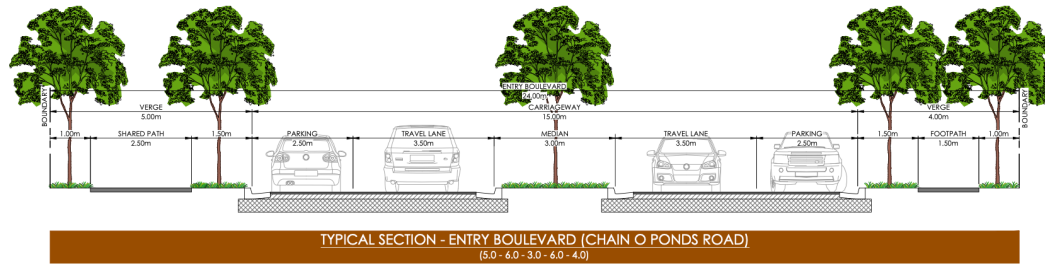


Figure 11 Road Hierarchy Plan

300070-DA-S1-211



Prepared By: Steven Zammit | Proj Date: 25/10/23 | 423-949PM | Cad Ref: U300070-DA-S1-211-DWG | Plan No: U300070-DA-S1-211-DWG | Drawing Title: TYPICAL ROAD CROSS SECTIONS | Location: CHAIN O PONDS ROAD, MULGOA | Scale: A1 1:100 | Date: 25/10/23 | Author: Steven Zammit | Checker: Steven Zammit | Status: FOR CONSTRUCTION | This sheet is coloured PDF.



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ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	25.10.23	INITIAL ISSUE	SE	CM	DATUM: GDA2020 MGA56 CONTOUR INTERVAL: N/A	A1 1:100	

• project management • civil engineering • infrastructure • superintendency • social impact • town planning • surveying • development feasibility • visualisation • urban design

drawing title:
TYPICAL ROAD CROSS SECTIONS SHEET 1

location: CHAIN O PONDS ROAD, MULGOA

council: PENRITH CITY COUNCIL

dwg ref: 300070-DA-S1-211

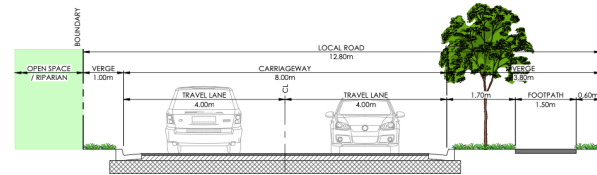
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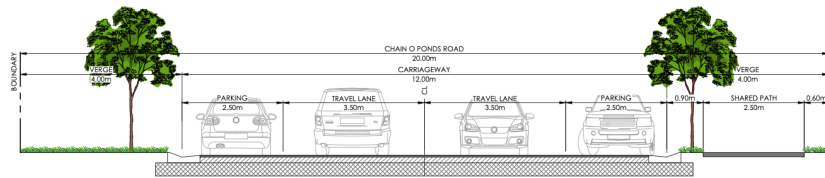
WORKING BEYOND EXPECTATIONS

Figure 12 Typical Road Sections

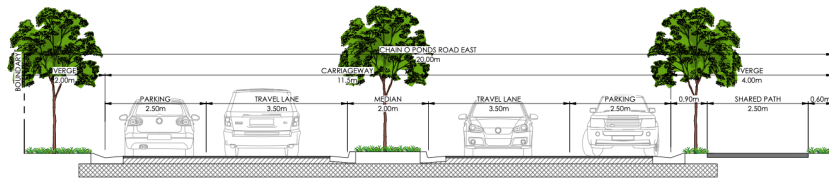
300070-DA-S1-213



TYPICAL SECTION - MINOR LOCAL ROAD (ADJACENT TO LOCAL PARK/DISTRICT PARK 3)
(1.0 - 8 - 3.8)



TYPICAL SECTION - CHAIN O PONDS ROAD
(4.0 - 12 - 4.0)



TYPICAL SECTION - CHAIN O PONDS ROAD EAST
(2.0 - 6.0 - 2.0 - 6.0 - 4.0)

Prepared by: Steven Zammit; Proj Date: 25/10/23 4:45:07PM; Cad Ref: 3000070-DA-S1-213; Planning Stage: 300070-DA-S1-213.DWG
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A	25.10.23	INITIAL ISSUE	SZ	CM	DATUM: GDA2020 MGA56 CONTOUR INTERVAL: N/A	A1 1:500 A2 1:100 A3 1:500	

• project management • civil engineering • infrastructure • superintendency • social impact • town planning • surveying • development feasibility • visualisation • urban design

drawing title:
TYPICAL ROAD CROSS SECTIONS SHEET 3

location: CHAIN O PONDS ROAD, MULGOA

council: PENRITH CITY COUNCIL

dwg ref: 300070-DA-S1-213

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working beyond expectations

Figure 14 Typical Road Sections

11. Significant Environmental Features

See Section 12.

12. Threatened Species

A separate Biodiversity Development Assessment Report (BDAR) has been provided by Cumberland Ecology to examine the impacts of the project on the biodiversity values of the study area. The BDAR has been prepared in accordance with the 2020 version of the BAM using the streamlined assessment module for small areas. The BDAR concludes (p. 83) that:

To facilitate the project, a total of 3.07 ha of land within the subject land will be directly impacted, of which 0.09 ha conforms to CPW, 0.52 ha conforms to RFEF, and 0.05 ha conforms to PCT 3962. The remaining areas within the subject land comprises approximately 1.51 ha of exotic grassland and wetland, and 0.9 ha comprised of existing dams. A total of 6.28 ha of native vegetation within the study area will be avoided and retained, of which 0.97 ha conforms to CPW, 3.31 ha conforms to RFEF, and 0.11 ha conforms to PCT 3962. The remaining areas of land to be avoided within the study area comprises approximately 1.82 ha of exotic grassland, vegetation and wetland. All areas to be avoided and retained will be managed and revegetated, where required, under the direction of the VMP prepared by Cumberland Ecology (Cumberland Ecology 2023a).

*The BAM sets a standard that will result in a no net loss of biodiversity values where the impacts on biodiversity values are avoided, minimised and mitigated, and all residual impacts are offset by retirement of the required number of biodiversity credits. The project has sought to avoid impacts to biodiversity values, and a suite of mitigation measures will be implemented for the project including weed management, delineation of clearing limits, tree protection measures, pre-clearance surveys, clearing protocols, and sedimentation control measures. The ecosystem credit liability of the project has been calculated as 3 for CPW, 18 for RFEF and 1 for PCT 3962, and the species credit liability has been calculated as 6 for the Swift Parrot (*Lathamus discolor*). With the implementation of the proposed mitigation measures and the offsetting described, it is considered that the impacts of this project on biodiversity will be limited and can be appropriately managed.*

13. Aboriginal Objects or Places

Artefact Heritage has prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) to examine the impacts on Aboriginal sites within the site. The ACHAR found (p. 34)

- *the study area contains Aboriginal artefacts on the ground surface and has potential to retain intact subsurface archaeological deposits*
- *The currently proposed plans will directly impact all six sites resulting in total harm*
- *Where sites cannot be avoided, archaeological test excavation should be undertaken to confirm the presence and extent of Aboriginal objects and gather enough information to assess the scientific significance of the site.*
- *Where harm to Aboriginal objects is found to be unavoidable, an application for an area based AHIP, covering the whole study area should be submitted to Heritage NSW to authorise harm to Aboriginal objects through the proposed works. An AHIP application must include a copy of the Development Consent. No ground disturbing works should occur until the approved AHIP is issued. An area based AHIP is recommended to assist with unexpected finds, should they occur during project works.*

14. Assessment Against the Aim and Objective of PBP

The RF Reg requires an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of PBP.

All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. Table 2 shows the compliance with PBP.

Table 2 Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.	Yes	Landscaping, defensible space, access and egress, emergency risk management and construction standards can be provided for the bulk earth works and subdivision that are in accordance with the requirements of PBP and the aims of PBP have been achieved.
Objectives	Meets Criteria	Comment
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	The maximum exposure to a bushfire for the area where the development is proposed is BAL 12.5.
Provide for defensible space to be located around buildings.	Yes	Not Applicable as the application is for bulk earth works and subdivision only at this stage.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.	Yes	Not Applicable as the application is for bulk earth works and subdivision only at this stage. However, an asset protection zone commensurate with the BAL 29 is provided.
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to public roads, and access and egress for emergency vehicles and evacuation is adequate.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.	Yes	APZs will be maintained by Mirvac throughout the Stages of development.
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	Not Applicable as the application is for bulk earth works and utilities will be provided prior to the subdivision of the first residential lot.

15. Recommendations

The following recommendations are made for the bushfire protection measures for the site.

1. Temporary asset protection zones are to be provided to BAL 12.5 as identified within Figure 10 of this report. The temporary APZs are managed until the next stages of work are undertaken and the land is managed land in accordance with *Planning for Bushfire Protection 2019*.
2. APZs will be managed to Inner and Outer Protection Area distances in accordance with Planning for Bushfire Protection 2019 Table A1.12.4.
3. The Road hierarchy is accepted as meeting the requirements of *Planning for Bushfire Protection 2019* and provides access within Figure 11 and Cross Sections at Figures 12, 13 and 14. Subsequent stages will link in with adjoining roads providing a network that provides safe operational and emergency management access.
4. Water and services are provided in accordance with Planning for Bushfire Protection 2019.

16. Conclusion

The proposal is on designated bushfire prone land buffer and the legislative requirements for development in bushfire prone areas are applicable. This assessment has been completed having regard to section 117(2) of the *Environmental Planning and Assessment Act 1979* and *Planning for Bushfire Protection 2019*.

The proposed bulk earth works and the subdivision is able to meet *Planning for Bushfire Protection 2019*. The proposed development can achieve the minimum setback to achieve APZs of BAL 29 with land managed as a result of the bulk earth works in accordance with AS3959 and has been designed to meet the Bushfire Protection Requirements of *Planning for Bushfire Protection 2019*. Larger APZs will be provided such that houses will meet BAL 12.5 requirements.

This Report is a Bush Fire Hazard Assessment that provides the required information to assist Council in determining the ability of the Development Application to meet *Planning for Bushfire Protection 2019*. This report has demonstrated that an appropriate combination of bushfire protection measures and compliance with PBP 2019 can be achieved to support the development application.

This bushfire assessment demonstrates that the subject land is capable of accommodating future development and associated land use with appropriate bushfire protection measures. In the author's professional opinion, the Development Application provides opportunity for future development to comply with *Planning for Bush Fire Protection 2019*.



Lew Short | Principal

BlackAsh Bushfire Consulting

B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)

Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373

Appendix 1 References

Australian Building Codes Board *Building Code of Australia Volumes 1&2*

Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'

Councils of Standards Australia AS3959 (2018) – *Australian Standard Construction of buildings in bushfire-prone areas*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change




NSW Rural Fire Service (2015) *Guide for Bushfire Prone Land Mapping*

NSW Rural Fire Service (RFS). 2019 *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Australian Government Publishing Service, Canberra

NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer

NSW Government (1997) *Rural Fires Act*. NSW Government Printer

Appendix 2 Site Photos

Photo No.	Photograph taken during site inspection 30 August 2023 by Lew Short	Note
1		Looking to the north west within the site showing the cleared and managed grazing land and existing house
2		Looking to the north within the site showing the fall of the site to the gully with cleared and managed grazing land.
3		Looking to the north west within the site showing the cleared and managed grazing land and remnant vegetation within the gully. This will be retained and enhanced as per the landscape plan (Figure 4)