Bushfire management plan / statement addressing the bushfire protection criteria coversheet

Site address: Mundijong District Structure Plan

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 3 Month July Year 2024

Report author or reviewer: Zac Cockerill

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☑ Level 3 practitioner ☐

If accredited please provide the following.

BPAD accreditation number: 37803 Accreditation expiry: Month August Year 2025

Bushfire management plan version number: Rev 1

Bushfire management plan date: Day 22 Month January Year 2025

If one or more of the following are selected, then these should be automatically referred to DFES	YES	NO
Strategic planning is required to address SPP 3.7 and the Guidelines	☑	☐
The application is a vulnerable land use	☐	☑

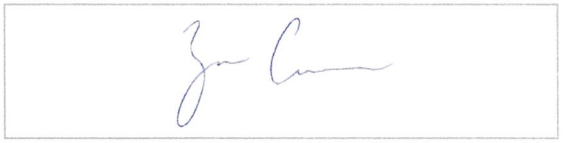
None of the Above ☐

If one or more of the following are selected, and the decision-maker requires input form DFES, then the application can be referred.	YES	NO
The BAL rating has been calculated by a method other than Method 1 as prescribed by AS 3959	☐	☑
An outcomes-based approach has been submitted to demonstrate compliance with the bushfire protection criteria	☐	☑

None of the Above ☑

Note: If a subdivision or development application meets all the acceptable solutions and does not otherwise trigger a referral as listed above, seeking advice from DFES on SPP 3.7 or other matters is at the discretion of the decision-maker.

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer 

Date 1/22/25

Mundijong District Structure Plan

Shire of Serpentine-Jarrahdale

Bushfire Hazard Level Assessment

JBS&G 67162 | 162,076

22 January 2025

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Caring for Country The Journey of JBS&G
Artist: Patrick Caruso, Eastern Arrernte

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Abbreviations

Term	Definition
AS 3959	*Australian Standard 3959-2018 Construction of buildings in bushfire-prone areas* (SA 2018)
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BHL	Bushfire Hazard Level
BLA	Broader Landscape Area
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
CCW	Conservation Category Wetland
DA	Development Application
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DSP	District Structure Plan
EAW	*Emergency Access Way*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
FESA	Fire and Emergency Services Australia
FSAR	Fire Service Access Route
F/US	Flat/upslope
FZ	Flame Zone
Guidelines	*Guidelines for Planning in Bushfire Prone Areas Version 1.4* (WAPC 2021)
ha	hectare
LSP	Local Structure Plan
NCC	National Construction Code (of Australia)
POS	Public Open Space
SA	Standards Australia
SoSJ	Shire of Serpentine-Jarrahdale
SPP 3.7	*State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
TEC	Threatened Ecological Community
WAPC	Western Australian Planning Commission

Executive Summary

This Bushfire Hazard Level (BHL) Assessment has been prepared on behalf of the Shire of Serpentine-Jarrahdale (SoSJ) to support the Mundijong District Structure Plan (DSP) to address WAPC Modification 75 which states:

> *Modification 75: Bushfire Hazard Level Assessment - A Bushfire Hazard Level Assessment is to be prepared for land within the Urban zone of the Metropolitan Region Scheme where located within the MDSP Area and not covered by local structure plans endorsed by the WAPC (or endorsed by the WAPC subject to modifications), to inform future local structure plans and/or structure plan amendments.*

This BHL Assessment has also been prepared in response to areas designated as Bush Fire Prone Area 2 that are located within and external to the site. This BHL Assessment addresses requirements under Policy Measure 7.1 (General measures) of *State Planning Policy 3.7 Bushfire* (SPP3.7) and *Planning for Bushfire Guidelines* (the Guidelines). BHL and Bushfire Attack Level (BAL) assessment methodologies have been adopted from Appendices A.2 and A.3 of the Guidelines respectively in accordance with *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959; SA 2018).

This report provides a strategic level bushfire assessment of the proposed Mundijong DSP (excluding endorsed Local Structure Plan areas) and includes:

- identification of environmental, biodiversity and conservation values that may be impacted by the proposed development or associated bushfire risk mitigation measures
- SoSJ's desktop assessment of the broader landscape
- assessment of the existing pre-development and anticipated post-development vegetation classifications, exclusions and effective slope within the project area and surrounds, supported by site assessment undertaken on 3 July 2024
- results of a pre and post-development BHL assessment to provide a strategic overview of bushfire risk that relates to the existing conditions, as well as the anticipated post-development vegetation hazards within and adjacent to the project area to inform the suitability of land for future stages of planning and development
- results of a post-development Bushfire Attack Level (BAL) contour assessment to provide a high level indication of the potential bushfire risk across the project area in a post-development context
- details of any bushfire hazard issues arising from the above assessments, relevant to the site and proposed development
- compliance assessment to demonstrate future development within the project area can comply with acceptable solutions of Bushfire Protection Criteria 4 (Strategic planning) of the Guidelines.

Results of SoSJ's desktop Broader Landscape Assessment determined that Broader Landscape Type A is applicable to the project area. On this basis, the broader landscape around the project is not considered to present an unacceptable bushfire risk to life, property and infrastructure and therefore, the project area is considered to be developable in accordance with the Mundijong DSP within the framework of SPP3.7, the Guidelines and AS3959. This is sufficient to address Element 1: Location of Bushfire Protection Criteria 4 (BPC4).

Results of the pre-development BHL assessment indicates that based on the existing extent of vegetation and slope, the project area contains land with predominantly Moderate and Extreme BHLs. There are small sections of Low BHL associated with urban built up areas within the Mundijong townsite and Whitby localities.

The post-development BHL assessment indicates that future development areas will primarily be subject to a BHL of Low or Moderate on development completion due to clearing and/or modification of vegetation within the future development areas and containment of native vegetation within existing and future areas of POS (i.e. areas where habitable development is not proposed to occur). This is sufficient to address Element 2: Siting and Design of BPC4.

The post-development BAL contour assessment highlights at a strategic level that future development areas will primarily be subject to BAL–29 or lower on development completion (with majority coverage of BAL-Low) due to clearing and/or modification of vegetation within the future development areas and containment of native vegetation within Multiple Use Corridor/green linkages, Local Open Space and District/Neighbourhood Open Space (i.e. areas where habitable development is not proposed to occur). This provides additional justification to support compliance with Element 2: Siting and Design of BPC4.

Assessment against BPC4 of the Guidelines indicates that the Mundijong DSP meets the acceptable solutions at the strategic planning stage, whilst also providing a framework for compliance to be achieved at future planning stages (e.g. Local Structure Plan, subdivision and Development Application), subject to future preparation of Bushfire Management Plans (BMPs) to accompany future planning applications within the site.

On the basis of the information contained within this BHL Assessment, JBS&G considers the bushfire hazards within and adjacent to the project area and the associated bushfire risks are manageable through application of acceptable solutions outlined in the Guidelines, which will be implemented as required throughout future planning stages. JBS&G considers that on implementation of the proposed management measures, the site will be able to be developed with a manageable level of bushfire risk whilst maintaining full compliance with SPP3.7 and the Guidelines. JBS&G considers this BHL Assessment and the results contained herein adequately respond to the bushfire risks assessed, commensurate with the strategic planning stage, and are sufficient for the purposes of addressing WAPC Modification 75, as well as requirements under Policy Measure 7.1 of SPP3.7.

1. Proposal details

1.1 Background

The Shire of Serpentine-Jarrahdale is located in the southeast metropolitan area of Perth, Western Australia. The Mundijong District Structure Plan (DSP) area is expected to accommodate 58 000 residents by 2050. The DSP aims to guide this future growth and development within Mundijong. The DSP was approved by the Western Australian Planning Commission (WAPC) on 29 August 2023, subject to modifications, specifically Modification 75 which states:

> *Modification 75: Bushfire Hazard Level Assessment - A Bushfire Hazard Level Assessment is to be prepared for land within the Urban zone of the Metropolitan Region Scheme where located within the MDSP Area and not covered by local structure plans endorsed by the WAPC (or endorsed by the WAPC subject to modifications), to inform future local structure plans and/or structure plan amendments.*

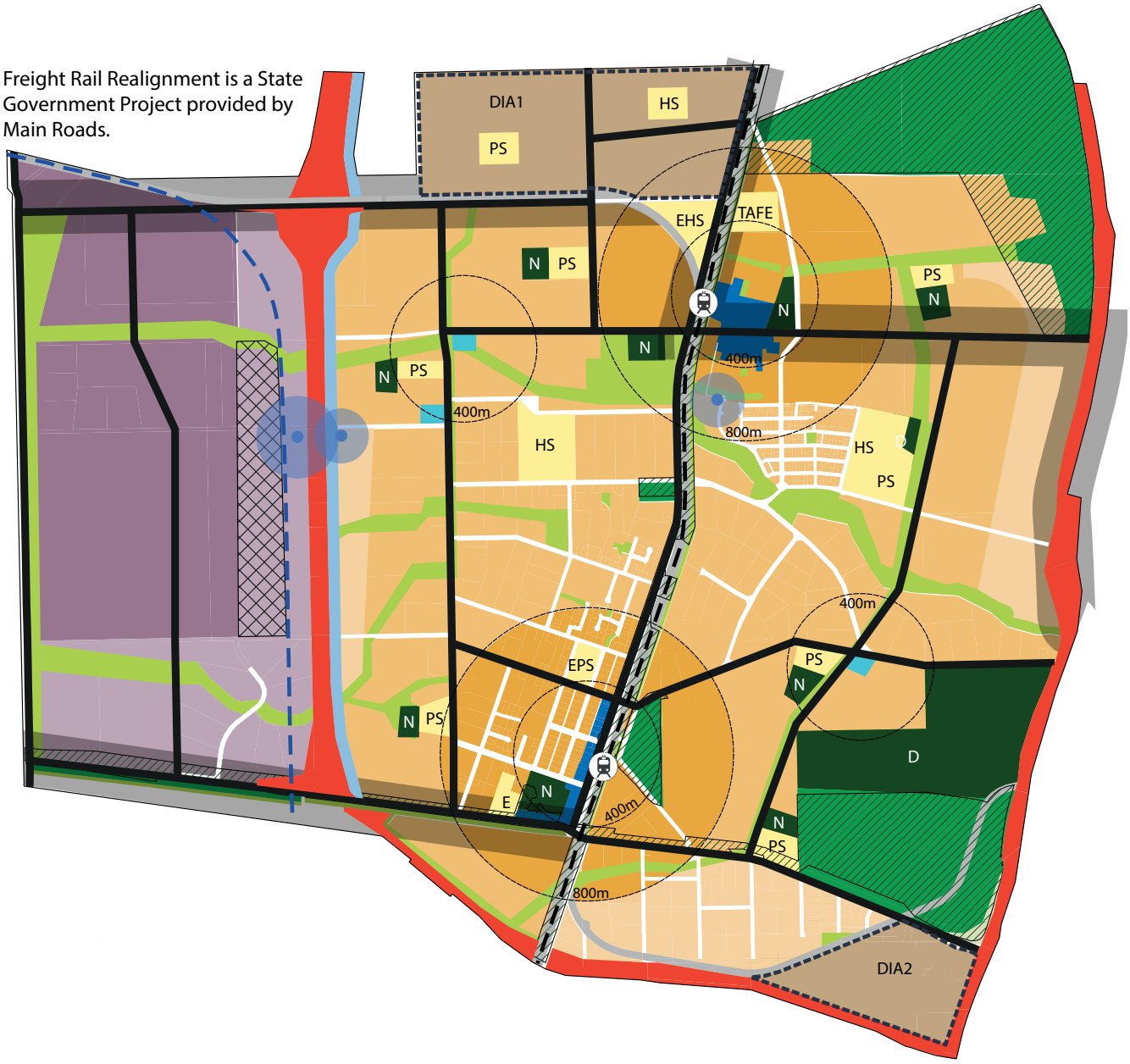
This Bushfire Hazard Level (BHL) Assessment has been prepared to inform and support the proposed Mundijong DSP, as required under Modification 75.

Figure 1 shows the DSP Map, which was approved in 2023 subject to modifications. The DSP identifies the following land uses:

- Residential
- District and Neighbourhood Centres
- Community and Public Purposes land, including multiple existing and proposed high schools, primary schools and a tertiary innovation hub
- Utilities infrastructure and waste water pump stations
- Primary and district distributor road networks
- Rail reserve
- Public Open Space (POS), Reserves and Bush Forever Sites
- District/Neighbourhood Open Space
- Multiple use corridors/Local Open Space.

The Mundijong DSP area, accounting for the WAPC modifications and the exclusions outlined in Section 1.2 of this report, is hereon referred to as the project area.

Figure 1: Mundijong District Structure Plan



1.2 Project area

The project area for the BHL Assessment is defined by the boundaries of the modified Mundijong DSP area, excluding areas covered by approved Local Structure Plans (LSPs). This project site is shown in Plate 1.

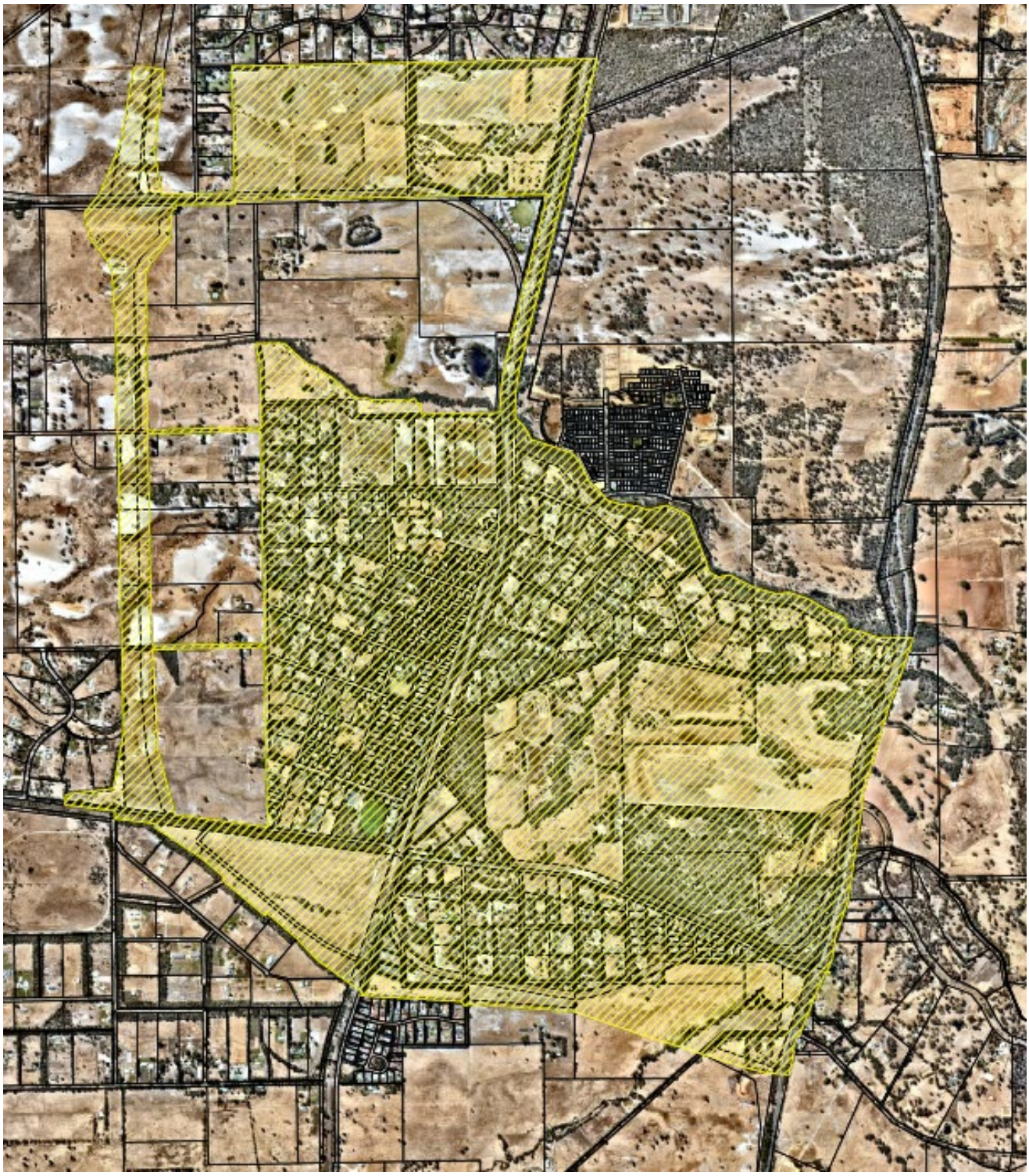


Plate 1: Project area

Approved LSPs which were excluded from the project area are listed below:

- Mundijong Precinct E1 Taylor Road and Adams Street– located central west of the project area
- Mundijong Precinct E2 L50 Cockram Street and L119 Sparkman Road – located southwest of the project area
- Whitby Local Structure Plan– located northeast of the project area
- Mundijong-Whitby Sub-Precinct G1 Local Structure Plan – located north/northeast of the project area.

The project area is approximately 1141 ha and contains the existing Mundijong townsite, rural living lots, agricultural land, road and rail networks and reserves across the localities of Mundijong to the south and west, Cardup to the north and Whitby to the east. The project area is surrounded by the following, as per Figure 2a and Figure 2b:

- Mundijong Road and various rural/rural-residential properties in the Mardella locality to the south
- existing rural-residential properties in the broader Cardup locality to the north
- existing rural properties east of South Western Highway in the broader Whitby locality
- agricultural and rural-residential land adjacent west of Tonkin Highway reserve in the broader Mundijong locality.

1.3 Bushfire prone designation

The majority of the project area is designated as Bush Fire Prone Area 2 on the *Map of Bush Fire Prone Areas* (see Plate 2; OBRM 2024) due to the presence of on-site and adjacent bushfire hazards.

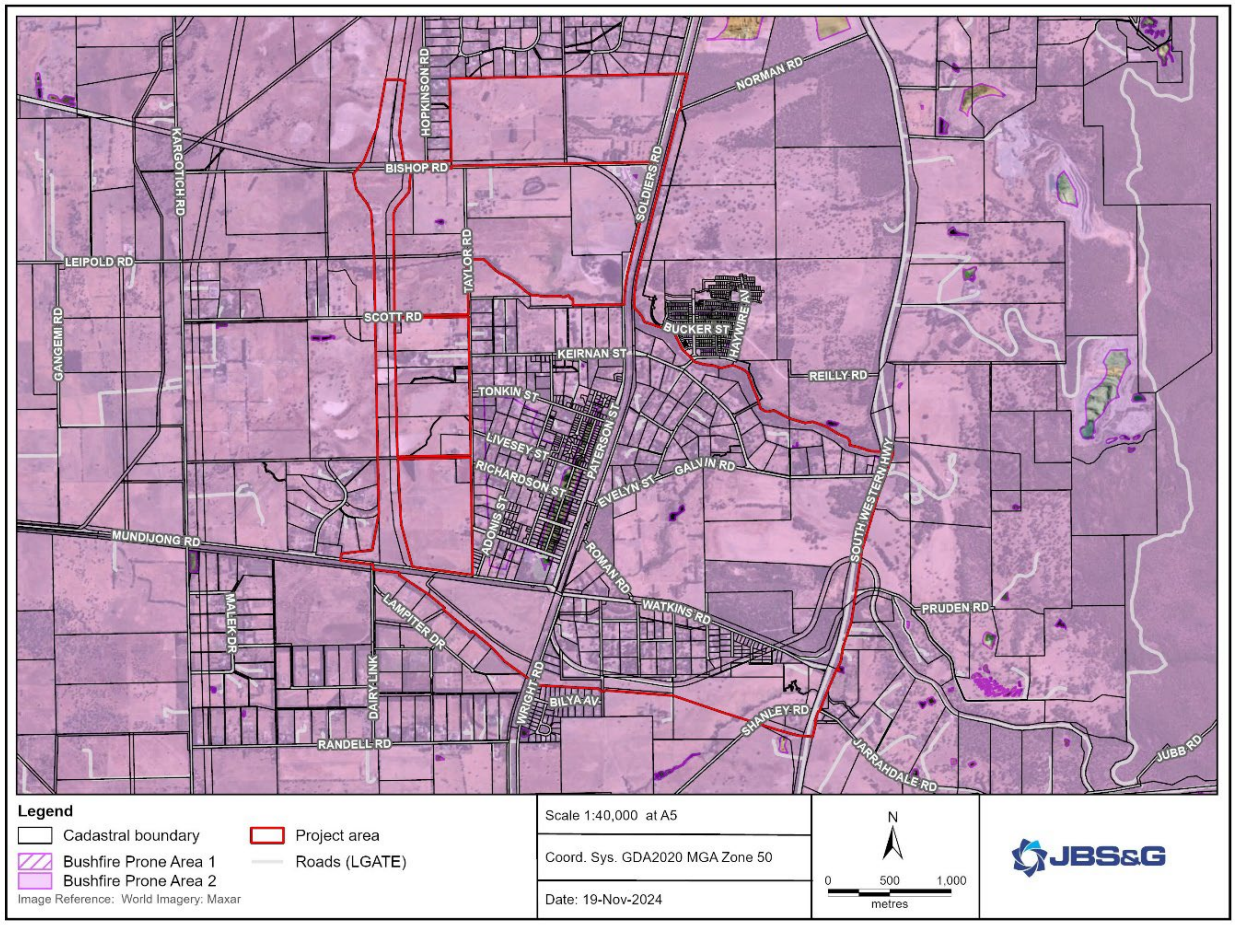


Plate 2: Bushfire prone designation (ORBM 2024)

1.4 Purpose of this report

This BHL Assessment has been prepared to support the Mundijong DSP in response to areas of bushfire prone land that are located within and external to the project area. This BHL Assessment has also been prepared to address WAPC Modification 75, as previously stated.

Preparation of this BHL Assessment addresses requirements under Policy Measure 7.1 (General measures) of *State Planning Policy 3.7 Bushfire* (SPP 3.7; WAPC 2024) and *Planning for Bushfire Guidelines* (the Guidelines; WAPC 2024). BHL and Bushfire Attack Level (BAL) assessment methodologies have been adopted from Appendices A.2 and A.3 of the Guidelines respectively in accordance with *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959; SA 2018).

This report provides a strategic level bushfire assessment of the proposed Mundijong DSP (minus exclusions) and includes:

- identification of environmental, biodiversity and conservation values that may be impacted by the proposed development or associated bushfire risk mitigation measures
- Shire of Serpentine Jarrahdale's (SoSJ's) desktop assessment of the broader landscape
- assessment of the existing pre-development and anticipated post-development vegetation classifications, exclusions and effective slope within the project area and surrounds
- results of a pre and post-development BHL assessment to provide a strategic overview of bushfire risk that relates to the existing conditions, as well as the anticipated post-development vegetation hazards within and adjacent to the project area to inform the suitability of land for future stages of planning and development
- results of a post-development BAL contour assessment to provide a high level indication of the potential bushfire risk across the project area in a post-development context
- details of any bushfire hazard issues arising from the above assessments, relevant to the site and proposed development
- compliance assessment to demonstrate future development within the project area can comply with acceptable solutions of Bushfire Protection Criteria 4 (Strategic planning) of the Guidelines.

1.5 Other plans/reports

Relevant reports known to have been prepared for the project area include:

- Engagement Report (Hames Sharley 2018)
- Environmental Study for Mundijong/Whitby Structure Plan (SMEC 2009)
- District Water Management Strategy (GHD2010)
- Transport Impact Assessment (Cardno 2020)
- Railway Crossing Considerations (GHD 2016)
- Mundijong Whitby Railway Grade Separation (Cardno 2017)
- Wastewater and Non-Drinking Water Strategy (Essential Environmental 2012)
- Activities Centres Background Paper (Taktics4 2010)
- Infrastructure and Services Strategy (Servicing) (SKM 2010)
- West Mundijong Industrial Precinct Bushfire Management Plan (Bushfire Prone Planning 2016).

2. Environmental considerations

2.1 Environmental values

A search of publicly available environmental databases and a review of the environmental study conducted by SMEC (2009) have been undertaken to identify any potential environmental impacts associated with clearing native vegetation within the project area for the purposes of bushfire protection, and to facilitate development of the site in general. Results of this assessment are summarised in Table 1 and depicted in Figure 2a and Figure 2b.

Any environmental impacts resulting from implementation of the Mundijong DSP will be addressed by future proponents under standard State and Federal environmental assessment and referral requirements outlined in the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as required.

Table 1: Summary of environmental values

Environmental value	Present within or adjacent to the project area	Description
Environmentally Sensitive Area (ESA)	Within and adjacent	ESAs are associated with the 11 CCWs, TEC's, three Declared Rare Flora and the 3 Bush Forever areas described below.
Swan Bioplan Regionally Significant Natural Area	No	N/A
Ecological linkages	Within and adjacent	Linkages in a north/south alignment within the rail reserve, east/west alongside Mundijong Road/Watkins Road and surrounding Norman Road are connected via Regional Ecological Linkage (ID: 1). This linkage is associated with Bush Forever sites and CCWs. An east/west Local Ecological Linkage is associated with Manjedal Brook.
Geomorphic Wetlands of the Swan Coastal Plan	Within and adjacent	CCWs are located: • east and west of the rail line by Bishop Road (UFI: 15,462 and 15,463) • west of Soldiers Road and north of Manjedal Brook (UFI: 7,835) • Manjedal Brook around Soldiers Road (UFI: 15,446) • the western portion of Manjedal Brook (UFI: 14,945) • an eastern portion of Manjedal Brook within Manjedal Brook Reserve (UFI:14,445) • within Bella Cumming Reserve (UFI: 14,969) • extending north and south from the centre of Galvin Road (UFI: 15,016) • within the northern portion of Watkins Road Nature Reserve (UFI: 7,998) • within the corner of Wright Road and Watkins Road (UFI: 14,971) • within the rail reserve south of Watkins Road (UFI: 14,985) • within the road reserve along Mundijong Road (UFI: 14,817). Multiple Use Wetlands are located • across the majority of the project area (UFI: 16,021) • adjacent to the north of Manjedal Brook Reserve (UFI: 15,014) • within Bell Cummings Reserve (UFI: 7,842) • between Manjedal Brook and a CCW basin (UFI: 15,447) • north of the eastern portion of Manjedal Brook (UFI: 15,448) • basin north of Manjedal Brook and east of Soldiers Road (UFI:7,834)

Environmental value	Present within or adjacent to the project area	Description
		A Resource Enhancement Wetland (UFI: 15,786) is located within Roman Road Nature Reserve.
Waterways	Within and adjacent	Cardup Brook runs into the northern portion of the project area to the rail reserve from the east. Gingagup Brook runs into northern portion of the rail reserve from the east emerging opposite the Court Grammar School. Manjedal Brook crosses the project area, east from South Western Highway and west towards Kargotich Road. An unnamed brook runs from South Western Highway across Watkins and Wright Roads and out of the project area to the southwest.
TECs listed under the EPBC Act	Within and adjacent	There are State and Federally listed TECs within and adjacent to the project area. All TECs listed within the project area are located within Bush Forever sites (SMEC 2009).
Threatened and priority flora	Within and adjacent	Three Declared Rare Flora and one Priority species have been identified within and adjacent to the project area (SMEC 2009).
Fauna habitat listed under the EPBC Act	Within and adjacent	The project area is mapped as containing and being adjacent to several potential foraging areas, potential breeding areas and roosting sites for the Black Cockatoos. The project area is mapped as containing and being adjacent t, suitable habitat for the Western Ringtail Possum. The project area is mapped as containing and being adjacent to suitable habitat for Quenda, a Priority 4 species.
Threatened and priority fauna	Potentially within and adjacent	There are five mammal and nine bird species listed on the Protected Matters Search Tool as occurring within the project area. A further four birds and two insect species are listed as occurring with a 10 km buffer.
Bush Forever Site	Within and adjacent	The rail reserve running north of Mundijong Road is Bush Forever site (BF 350). Mundijong Road reserve running from, and including, the Watkins Road Nature Reserve to the west is BF 360. The rail reserve running to the south of Mundijong Road is BF 365.
DBCA managed lands and waters	Within	Watkins Road Nature Reserve is located in the southeastern corner of the project area. Roman Road Nature Reserve is towards the south of the project area.
Conservation covenants	None known	N/A
Heritage Areas	Within and adjacent	Aboriginal artefacts/scatter are located: • north of Bishop Road (Place ID: 449) • south of Bishop Road (Place ID: 450) • east of South Western Highway and north of Manjedal Brook (Place ID: 3590)

Environmental value	Present within or adjacent to the project area	Description
		• east of South Western Highway and north of Pruden Road (Place ID: 3591) • Soldiers Road (Place ID: 3648) along with sub surface cultural material • north of Scott Road (Place ID: 18,187) • south of Scott Road (Place ID: 18,188) • Jarrahdale Road, east of South Western Highway (Place ID: 18,191) • other sites include: • south of Manjedal Brook is a lodged site (Place ID: 37,115) • adjacent to Manjedal Brook is a modified tree (Place ID: 37,116) • Medulla Brook (Place ID: 39,599) is a Creation/Dreaming Narrative location. Four sites within the project area are on the State Heritage register and SoSJ Local Heritage Register: • Mundijong Uniting Church (Heritage Place No. 2366) • Mundijong Railway Station (Heritage Place No. 3129) • Whitby Falls Coach House (Heritage Place No. 8605) • Manjedal School (Heritage Place No. 8615) A further 11 sites are on the SoSJ Local Heritage Register only. Watkins Road Nature Reserve is on the Federal Australian Heritage Database.

401000 402000 403000 404000 405000 406000 407000 408000 409000

6430000 6429000 6428000 6427000 6426000 6425000 6424000

KARGOTICH RD
HOPKINSON RD
SOLDIERS RD
PATERSON ST
WRIGHT RD
MUNDIJONG RD
WATKINS RD
SOUTH WESTERN HWY
JARRAHDALE RD

361 354 350 362 360 360 360 365 71 71

Legend

- Project area
- Environmentally Sensitive Areas (DWER - 046)
- Bush Forever site (DPLH - 022)
- Regional ecological linkages

Geomorphic wetlands (DBCA - 019)

- Conservation
- Multiple Use
- Resource Enhancement
- Highway
- Major road

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 12-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:25,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

SITE OVERVIEW

FIGURE 2A

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: World Imagery: Maxar

401000 402000 403000 404000 405000 406000 407000 408000 409000

6430000 6429000 6428000 6427000 6426000 6425000 6424000

KARGOTICH RD
HOPKINSON RD
SOLDIERS RD
SOUTH WESTERN HWY
PATERSON ST
WRIGHT RD
MUNDIJONG RD
WATKINS RD
JARRAHDALE RD

JARRAHDALE STATE FOREST

WATKINS ROAD NATURE RESERVE

449
450
3648
37116
18187
18188
18191

Legend

- Project area
- Black Cockatoo roosting sites buffer (DBCA - 064)
- Carnaby Cockatoo confirmed roosting sites (DBCA - 52)
- Carnaby Cockatoo investigate feeding habitats (DBCA - 057)

Aboriginal heritage places (DPLH-001)

- Registered Site

Legislated lands and waters (DBCA - 011)

- Nature Reserve
- Section 5(1)(h) Reserve
- State Forest
- Highway
- Major road

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 12-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:25,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

SITE OVERVIEW

FIGURE 2B

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: World Imagery: Maxar

2.2 Native vegetation – modification and clearing

The project area currently consists of the Mundijong townsite and surrounding rural residential properties and rural farmland. There are various pockets of existing vegetation, particularly associated with Manjedal Brook, Watkins Road Nature Reserve and Roman Road Nature Reserve, that will be retained as part of the Mundijong DSP. In addition, the Mundijong DSP incorporates a network of green spaces and interconnected linkages throughout Multiple Use Corridors and Local Open Space where existing native vegetation and environmental value will be retained, as depicted in the various post-development bushfire assessment figures (Figure 7, Figure 9 and Figure 10).

This BHL Assessment assumes that any areas of proposed residential, community, public purpose, roads and some POS will be modified to a non-vegetated/low threat managed state as part of the proposed development. This includes provision for residential lots, neighbourhood centres, educational land uses, public roads and some minor active POS, where the current vegetation extent (if present) will be removed to facilitate proposed urban development, as depicted in the various post-development bushfire assessment figures (Figure 7, Figure 9 and Figure 10). The majority of this vegetation modification will be limited to isolated bushland fragments and paddock trees across agricultural land. Future infill development across rural-residential lots will also result in an increase in low threat vegetation. Some clearing may also be required along roadways which are frequently bordered by mature Eucalypts and midstorey shrubs.

2.3 Revegetation / landscape plans

The post-development bushfire assessment figures (Figure 7, Figure 9 and Figure 10) depict a proportion of open space areas aligned with existing environmental values and retained conservation areas such as CCWs, TECs, Declared Rare Flora and Bush Forever sites. This includes nominated Bush Forever, District/Neighbourhood Open Space, Reserves, Multiple Use Corridors/green linkages and Local Open Space.

Confirmation of retained vegetation/revegetation areas, as well as open space areas proposed to be modified to a low threat state through clearing/low threat landscaping treatments, will be crucial in informing compliant development design as planning stages progress, particularly at interfaces with proposed urban/habitable development. In the absence of any detailed POS/landscaping design to prove otherwise, this BHL Assessment adopts a precautionary approach and assumes that these areas will retain their pre-development vegetation classifications as part of proposed development.

Future local structure plan and subdivision stages will determine the exact sizing, locations, and landscape treatments of public open space. Bushfire Management Plans and Landscape Plans are required to be prepared alongside these future planning stages, determining the required vegetation treatments, vegetation classifications, and consequent bushfire risk. Where a POS containing a living stream or vegetated swale is proposed through future planning stages, the Bushfire Management Plan must account for revegetation and landscaping treatments, and must demonstrate the associated bushfire hazard levels.

3. Bushfire assessment results

3.1 Locational suitability and site context

3.1.1 Planning context

The Mundijong DSP site is identified within the state and local planning frameworks as a site intended for urban development. As depicted in Plate 3, the vast majority of the Mundijong DSP site is zoned Urban under the Metropolitan Region Scheme (MRS), and Urban Development under the Shire's Local Planning Scheme No.3 (LPS3). The Perth and Peel at 3.5 Million Sub-Regional Planning Framework also identifies the DSP site as an Urban land use. The Mundijong DSP site has therefore been established as a site intended for urban development throughout the planning framework.

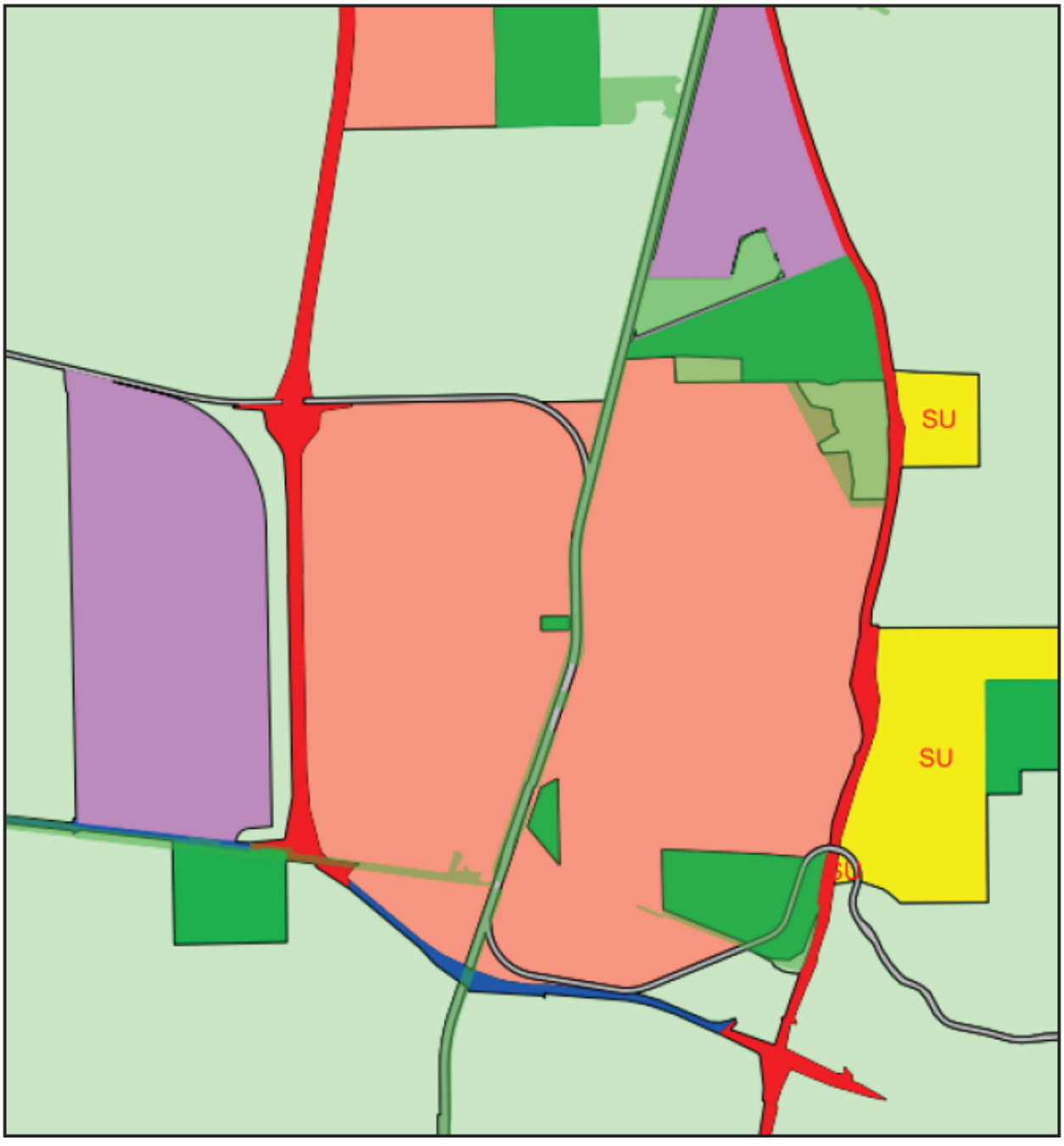


Plate 3: Metropolitan Region Scheme Zoning

3.1.2 Broader landscape assessment

Element 1 of SPP3.7 and the Guidelines requires demonstration of a site's suitability for urban development. According to SPP3.7, the outcome of this Element is to 'avoid broader landscapes which present an unacceptable bushfire risk to life, property and infrastructure'. Consultation between SoSJ and the Department of Planning, Lands and Heritage (DPLH) has confirmed that a formal Broader Landscape Assessment is not required in the circumstance of the Mundijong DSP BHL Assessment. However, SoSJ has conducted a desktop assessment of the Mundijong DSP site's broader landscape, demonstrating the suitability of this site for future urban development. A 2 km buffer has been applied to the DSP site, to assess its broader landscape (Figure 3). Whilst this assessment (refer to Sections 3.1.1–3.1.2 and Figure 3 to Figure 5) has not been undertaken by JBS&G, JBS&G concurs with the assessment results, as outlined in Table 2.

Road network and destinations

Figure 4 demonstrates the road patterns and suitable destinations to the Mundijong DSP site. This figure demonstrates that the entirety of the DSP site is located within a 10 km distance to the centre of Byford, an established urban area. The DSP site is currently connected to its surrounding urban context via a direct, accessible road network. Current direct linkages include Soldiers Road, which is a direct route to the centre of Byford, as well as South Western Highway. There are also two major road linkages traversing the rural-residential land located between Mundijong and Byford, being Kargotich Road and Hopkinson Road. Direct road connections are also provided to the wider Perth Metropolitan Region, for example through Mundijong Road to the west. The DSP identifies a future road network which further strengthens the accessibility of the road network. The DSP identifies the Tonkin Highway extension, which will provide a significant major transport route both north, linking to Thomas Road, and south, linking to South Western Highway, which will further connect Mundijong to the wider Perth Metropolitan Region.

Vegetation patterns

A desktop assessment of vegetation types has been conducted to determine indicative vegetation patterns across the DSP site. As demonstrated by Figure 5, the vast majority of the vegetation within the DSP site (and its 2 km buffer area) is a 'Mosaic pattern'. This mosaic pattern comprises of rural living areas (such as southern Cardup, as well as residential land south of Whitby), cleared urban areas (such as Whitby and the Mundijong town centre), and managed grassland areas in the rural surroundings. There are limited areas which are classified as 'tracts of continuous classified vegetation', mainly located to the east of the DSP site (these risks have been addressed through the BHL Assessment). Furthermore, the site contains several areas over which approved LSPs apply. These approved LSPs are excluded from the project area through the project brief, as well as in accordance with SPP3.7, as these areas are considered as future non-vegetated areas under the Guidelines. As such, an indicative assessment of vegetation patterns shows that the Mundijong DSP site and its immediate surrounds are mainly a mosaic pattern of acceptable vegetation types for urban development.

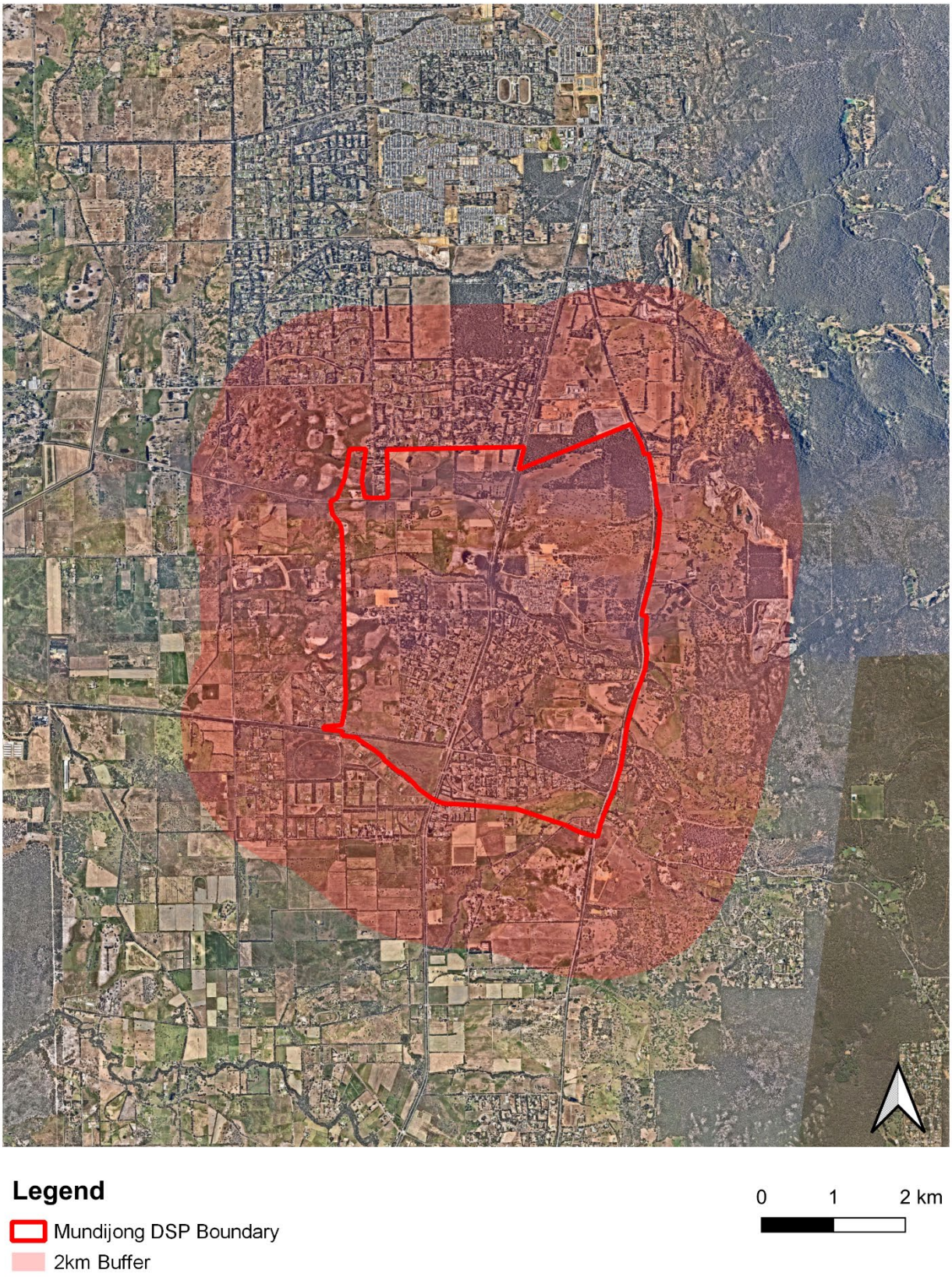


Figure 3: Mundijong District Structure Plan Broader Landscape Assessment Area

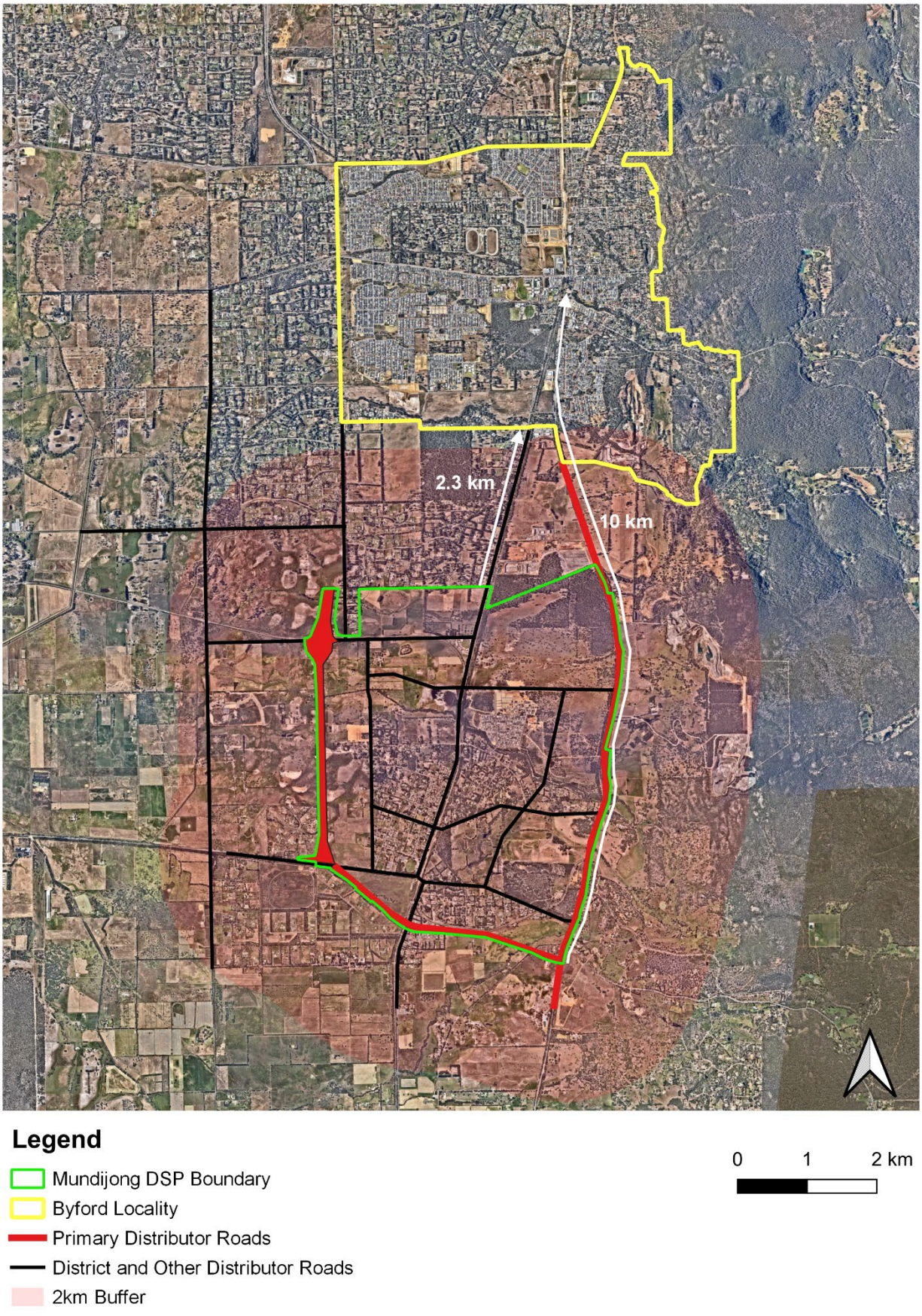


Figure 4: Mundijong District Structure Plan road network

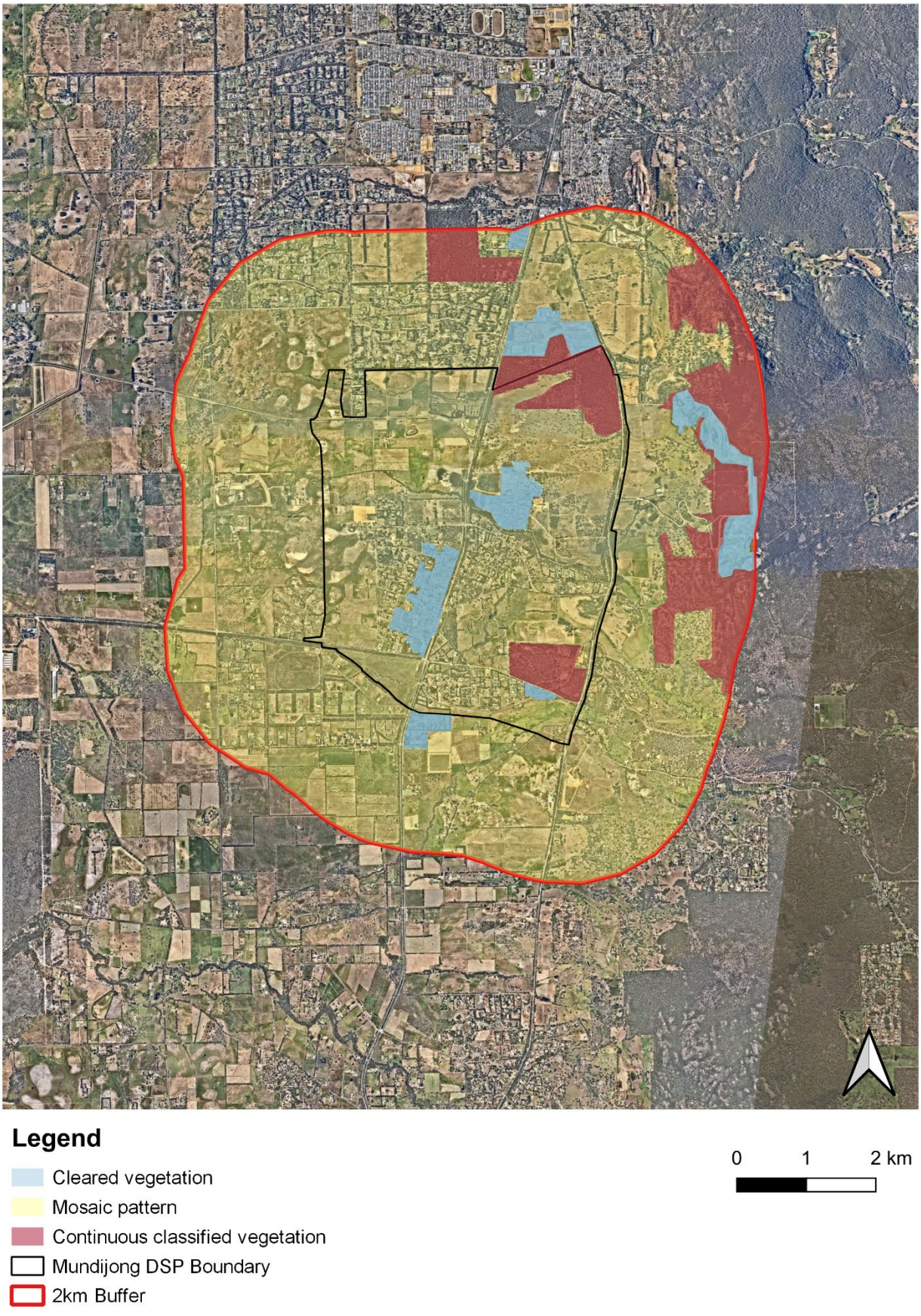


Figure 5: Mundijong District Structure Plan vegetation patterns

Desktop BLA results

Results of the desktop BLA have been derived using the points-based system of Appendix A.1 of the Guidelines, as detailed in Table 2, which indicate that Broader Landscape Type (BLT) A is applicable to the project area. Additional comments are provided in Table 2 for further justification.

Based on the above, the broader landscape around the project is not considered to present an unacceptable bushfire risk to life, property and infrastructure and therefore, the project area is considered to be able to be developed in accordance with the Mundijong DSP within the framework of SPP3.7, the Guidelines and AS3959.

Table 2: Broader Landscape Assessment matrix

CRITERIA	5 POINTS	2 POINTS	1 POINT	MDSP POINTS	MDSP JUSTIFICATION
Proximity of the planning proposal to a suitable destination is:	>10km	1-10km	<1km	2	The entire MDSP site is within a 10km distance to Byford.
The road pattern from the planning proposal to a suitable destination is:	Complex and indirect (cul-de-sacs, and/or multiple intersections)	Mixed road patterns	Simple and/or direct (limited intersections)	2	The road pattern between the MDSP site and Byford is a mixture of direct roads, such as Soldiers Road, South Western Highway and Hopkinson Road with minimal intersections, as well as rural living roads.
The predominant vegetation pattern is:	Large tracts of vegetation (continuous vegetation)	A mosaic pattern of vegetation (e.g. vegetation within rural precincts)	Cleared vegetation (e.g. clearing for residential zoned urban lots)	2	The vast majority of the vegetation pattern within the MDSP site (and its 2km radius) is a mosaic pattern. It comprises of rural living areas, cleared urban areas (such as within Whitby and Mundijong townsite), and large grassland areas (such as its surrounds). There is limited 'large tracts of continuous vegetation'. Furthermore, the MDSP area contains several areas with approved local structure plans under SPP3.7, which are excluded from the BHL study site and can be considered as future non-vegetated area under the Planning for Bushfire Guidelines 2024.
Exposure of the planning proposal to an identified external bushfire hazard (excluding Class G Grassland) is from:	Three or four aspects	Two aspects	From nil or one aspect only	5	A conservative approach has been applied to this assessment criteria as external bushfire hazards include the vegetated areas located to the East of the MDSP site.
TOTAL POINTS				**11 POINTS**	

Total Points	Broader landscape type
0-11 points	Broader landscape type A (BLT A)
12-20 points	Broader landscape type B (BLT B)

BROADER LANDSCAPE TYPE DETERMINED	BLA TYPE A

3.1.3 Predominant fire weather conditions

Predominant bushfire weather conditions are those that occur 95% of the time during the designated bushfire season. For the subject locality, these generally correlate with average February climatic conditions. The predominant winds during the designated bushfire season are from the east in the morning averaging around 18 km/hr and from the southwest in the afternoon averaging around 24 km/hr. Mean February 9am and 3pm relative humidity for Jandakot weather station (approximately 24 km from project area) is approximately 52% and 36% respectively, with the February mean maximum temperature peaking at around 32°C (BOM 2024).

3.1.4 Broader landscape context and bushfire risk profile

The project area is situated in an evolving landscape of urban development at the rural interface and, whilst the on-site and adjacent vegetation extent has the potential to carry bushfire, the majority extent of grassland vegetation with fragmented forest remnants and flat/upslope terrain throughout the broader landscape indicates that potential bushfire behaviour will be manageable in the context of present day urban development and associated design compliance with Guideline acceptable solutions.

Whilst there are significant grassland fire runs external to the site from the south, west and north, JBS&G considers the highest risk bushfire scenario for the proposed Mundijong DSP is from the east opposite South Western Highway in response to the predominant forest fuels on the Darling Scarp and beyond. The forest fire run extends east through the localities of Karrakup, Jarrahdale and Mount Cooke, through to pasture areas of the wheatbelt approximately 45 km east of the project area. On-site remnant vegetation throughout existing rural/rural-residential lots, conservation reserves, road side vegetation and Manjedal Brook provide potential for fire spread and extended fire runs through the project area from the east. Bushfire spread from the east throughout these fuels has the potential to result in elevated bushfire behaviour, particularly under predominant morning fire weather conditions and prevailing easterly winds during summer. The potential impacts on proposed development are expected to be elevated levels of radiant heat and ember attack. Whilst this scenario presents a broader landscape risk to the project area, there are several factors of the landscape that would assist in mitigating this risk, including:

- the significant buffer adjacent east of the project area (i.e. east of South Western Highway) in the form of active rural farming land and rock quarries that buffer the site from the adjacent east forest fire run by up to 1 km in areas
- significant fuel fragmentation and perimeter access provided by South Western Highway
- residual mitigation provided internally to the project area through ongoing and future development of LSP areas, designed and constructed in accordance with SPP3.7, the Guidelines and AS3959.

On this basis, the potential bushfire impacts from the eastern (worst case) bushfire scenario can be adequately mitigated within the framework of SPP3.7 and Guideline compliance.

Bushfire scenarios from the south, west and north will be predominantly wind driven grass fires, with possible brief bursts of elevated fire behaviour through short fire run forest, woodland and scrub fuels located throughout remnant pockets of vegetation within the project area. Whilst these scenarios still pose a bushfire risk to the site, the existing separation and perimeter access provided by Mundijong Road, future Tonkin Highway, Kargotich Road and Bishop Road, plus any residual mitigation provided internally for the project area through a future development design response, will be sufficient to manage the grassland bushfire risk in accordance with SPP3.7 and Guideline requirements.

At a local level, the current rural-residential areas of Whitby situated between Robertson Road to the west, Evelyn Street/Galvin Road/Keirnan Street to the south, South Western Highway to the east and Manjedal Brook to the north, contains the highest bushfire risk within the project area due to the extent of overstory canopy and scrub/grassland fuels present. The degree of land management throughout this area is mixed and there is potential for fire spread and escalation either from ignition external to the site or internal to the site, particularly along Manjedal Brook to the north. Bushfire behaviour has the potential to escalate within this area and presents a real risk to life and property in its current legacy form. The proposed Mundijong DSP identifies this area for future residential development, which would greatly assist in reducing the extent of unmanaged fuels and bushfire risk through the conversion of existing rural-residential properties into residential land. Residential development of this cell should be a priority as part of implementation of the DSP, balanced with environmental objectives such as fauna habitat tree retention. In the interim until this occurs, strict adherence to the SoSJ annual firebreak notice (see Appendix A) is recommended, as well as regular firebreak notice audits to enforce compliance and identify and rectify cases of non-compliance.

The project area is bound by multiple infrastructure corridors in all directions (i.e. Kargotich Road/future Tonkin Highway to the west, Bishop Road/Orton Road to the north, South Western Highway to the east and Mundijong Road/Watkins Road/future Tonkin Highway the south). These infrastructure corridors provide significant fragmentation of bushfire fuels, as well as perimeter access opportunities for the project area to ensure there is sufficient public and emergency vehicular access at external site interfaces. This, combined with the predominant grassland coverage within the project area and surrounding landscape, provides a highly manageable bushfire environment for proposed urban development. Management of site interfaces with adjacent areas of classified vegetation will be a key design requirement as part of future development.

There are four LSPs, either approved or subject to WAPC modifications, as well as the West Mundijong Industrial Area DSP, which will result in low threat/managed landscapes to the north and west of the project area. On completion of development, these areas will provide substantial buffers to adjacent bushfire threats in these directions.

Volunteer Bush Fire Brigades stationed at Mundijong (Mundijong Volunteer Bush Fire Brigade), Oakford (Oakford Volunteer Bushfire Brigade), Byford (Byford Volunteer Bush Fire Brigade) and Serpentine (Serpentine Volunteer Bush Fire Brigade) are expected to provide a best-case emergency suppression response time of 10-20 minutes should a bushfire threaten development within the project area. A career Fire and Rescue Service is also located in Armadale with a response time of around 20 minutes for the project area.

3.2 BHL Assessment

A BHL assessment has been undertaken in accordance with Appendix A.2 of the Guidelines. The assessment methodology categorises land as having a Low, Moderate, or Extreme BHL based on the AS3959 vegetation classification and effective slope. BHLs provide an indication of the potential intensity of a bushfire event associated with vegetation within and adjacent to the project area.

Table 3 lists the three BHLs and their associated characteristics. BHLs have been applied to land within the project area and adjoining 150 m (the assessment area) to assess current (pre-development) bushfire hazard conditions, as well as the anticipated post-development bushfire hazard conditions.

Table 3: Bushfire hazard levels and characteristics

Bushfire hazard level	Characteristics*
Extreme	• Class A Forest • Class B Woodland • Class D Scrub • Any classified vegetation with a greater than 10° slope.
Moderate	• Class C Shrubland • Class E Mallee/Mulga • Class G Grassland, including sown pasture and crops • Vegetation that has a low hazard level, but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.
Low	• Low threat vegetation, which may include mangroves and other saline wetlands, areas of maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks • Managed grassland in a minimal fuel condition, meaning there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example, short-cropped grass to a nominal height of 100 millimetres • Non-vegetated areas, waterways, exposed beaches, roads, footpaths, buildings or rock outcrops.
*Vegetation classification as per AS3959	

3.3 Assessment inputs

3.3.1 Vegetation classification

Classified vegetation and exclusions were assessed within the project area and adjoining 150 m (the assessment area) through on-ground verification on 3 July 2024 in accordance with AS3959. Georeferenced site photos and a brief description of the vegetation classifications and exclusions are contained in Appendix B. The existing pre-development and anticipated post-development vegetation conditions are further described in the following subsections.

3.3.1.1 Pre-development vegetation classification

Existing pre-development vegetation classifications and exclusions observed within the project area and adjoining 150 m are outlined in Table 4 and depicted in Figure 6 (overall site map), with detailed mapping provided in the Appendix C mapbook. Existing pre-development vegetation classifications and exclusions are also summarised in Table 6.

Table 4: Existing pre-development vegetation classifications and exclusions

AS 3959 Vegetation classification/exclusion	Comments
Class A Forest	Areas of dense eucalyptus canopy 10–30 m in height with a three-tiered fuel profile, predominantly along roads, railways tracks, fence lines and creek lines, or retained in conservation areas. There are also small remnant pockets retained across agricultural land, rural residential properties and undeveloped residential lots within the townsite.
Class B Woodland	Sparse trees, 2–30 m in height, dominated by Eucalypts over a grassy understorey. Predominantly located throughout grazed agricultural land with sparse paddock trees.
Class D Scrub	Tall shrubs with a continuous horizontal fuel profile between 2–6 m in height, predominantly found throughout the project area in wetlands, creek/drainage lines, road verges/reserves and railway reserves.
Class G Grassland	Grassland in areas containing unmanaged grass/weeds greater than 100 mm in height at maturity, mainly located within cleared farmland and rural residential lots.
Exclusions 2.2.3.2 (e) & (f) – non-vegetated and low threat areas	Existing non-vegetated areas (i.e. buildings, roads, driveways, footpaths, railway lines, dams, lakes, etc) and low threat managed vegetation (managed gardens, turf, urban streetscapes, managed urban POS, etc).

3.3.1.2 Post-development vegetation classification

The anticipated post-development vegetation classifications and exclusions within the project area and adjoining 150 m, based on the proposed Mundijong DSP and associated assumptions regarding vegetation clearing, modification and retention (as outlined in Sections 2.2 and 2.3), are outlined in Table 5 and depicted in Figure 7 (overall site map), with detailed mapping provided in the Appendix D mapbook. The anticipated post-development vegetation classifications and exclusions are also summarised in Table 7.

Table 5: Anticipated post-development vegetation classification and exclusions

AS 3959 Vegetation classification/exclusion	Comments
Class A Forest	Areas of dense eucalyptus canopy 10–30 m in height with a three-tiered fuel profile, predominantly along roads, railways tracks, fence lines and creek lines, or retained in conservation areas. There are also small remnant pockets retained across agricultural and rural residential properties external to the project area, as well as retention within proposed District/Neighbourhood Open Space, Multiple Use Corridors/green linkages and Local Open Space.
Class B Woodland	Sparse trees, 2–30 m in height, dominated by Eucalypts over a grassy understorey. Predominantly located throughout grazed agricultural land with sparse paddock trees external to the project area, as well as retention within proposed District/Neighbourhood Open Space, Multiple Use Corridors/green linkages and Local Open Space.
Class D Scrub	Tall shrubs with a continuous horizontal fuel profile between 2–6 m in height retained within proposed District/Neighbourhood Open Space, Multiple Use Corridors/green linkages and Local Open Space.
Class G Grassland	Grassland in areas containing unmanaged grass/weeds greater than 100 mm in height at maturity, mainly located within cleared farmland and rural residential lots external to the project area.
Exclusions 2.2.3.2 (e) & (f) – non-vegetated and low threat areas	Existing non-vegetated areas (i.e. buildings, roads, driveways, footpaths, railway lines, dams, lakes, etc) and low threat managed vegetation (managed gardens, turf, urban streetscapes, managed urban POS, etc).
Areas to be modified to a non-vegetated or low threat managed state as part of proposed development	Pre-development areas of Class A forest, Class B woodland, Class D scrub and Class grassland to be cleared/modified to a non-vegetated/low threat managed state throughout the project area to facilitate proposed urban development and associated construction of roads, residential, commercial, mixed-use and education infrastructure, as well as landscaped open space.

3.3.2 Effective slope

Effective slope under classified vegetation was assessed within the assessment area through on-ground verification on 3 July 2024 in accordance with AS3959. Results were cross-referenced with DPIRD 2m contour data and are presented in Table 6 and Appendix C (for pre-development conditions); and Table 7 and Appendix D (for post-development conditions).

The project area is flat and low-lying in the west and gently increases in elevation towards the Darling Scarp in the east. On this basis, effective slope under classified vegetation was assessed to be flat/upslope throughout western and central portions of the assessment area; and downslope at >0–5 degrees throughout central-east sections of the project area. Land east of the project area (i.e. east of South Western Highway) is upslope of the project area as it grades towards the Darling Scarp. A small section of forest vegetation is subject to slopes from downslope at >5–10 to >10–15 degrees near the intersection of Watkins Road and South Western Highway in association with the steep banks of the road verges. A section of grassland downslope at >5–10 degrees was also identified near the intersection of Watkins Road and South Western Highway.

3.3.3 Summary of pre-development inputs

A summary of the pre-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in Table 6.

Table 6: Summary of pre-development vegetation classifications/exclusions and effective slope

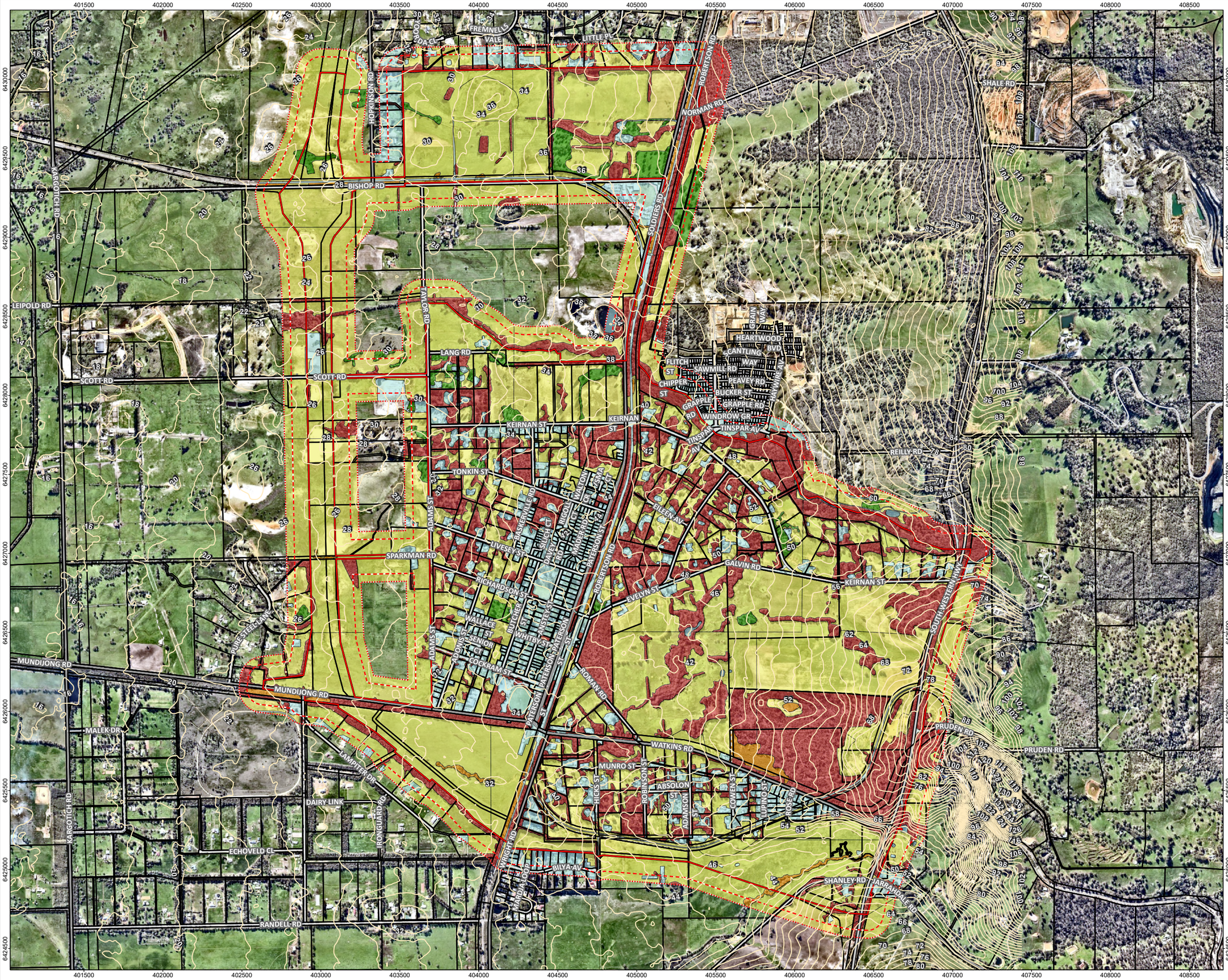
Vegetation plot	Vegetation classification	Effective slope
1	Class A Forest	Downslope >10–15°
2	Class A Forest	Downslope >5–10°
3	Class A Forest	Downslope >0–5°
4	Class A Forest	Flat/upslope (0°)
5	Class B Woodland	Flat/upslope (0°)
6	Class D Scrub	Downslope >0–5°
7	Class D Scrub	Flat/upslope (0°)
8	Class G Grassland	Downslope >5–10°
9	Class G Grassland	Downslope >0–5°
10	Class G Grassland	Flat/upslope (0°)
11	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A

3.3.4 Summary of post-development inputs

A summary of the anticipated post-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in Table 7.

Table 7: Summary of post-development vegetation classifications/exclusions and effective slope

Vegetation plot	Vegetation classification	Effective slope
1	Class A Forest	Downslope >10–15°
2	Class A Forest	Downslope >5–10°
3	Class A Forest	Downslope >0–5°
4	Class A Forest	Flat/upslope (0°)
5	Class B Woodland	Flat/upslope (0°)
6	Class D Scrub	Downslope >0–5°
7	Class D Scrub	Flat/upslope (0°)
8	Class G Grassland	Downslope >5–10°
9	Class G Grassland	Downslope >0–5°
10	Class G Grassland	Flat/upslope (0°)
11	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A
12	Modified - Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A



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Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 29-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:22,000 at A3

0 250 500
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE (OVERALL SITE MAP)

FIGURE 6

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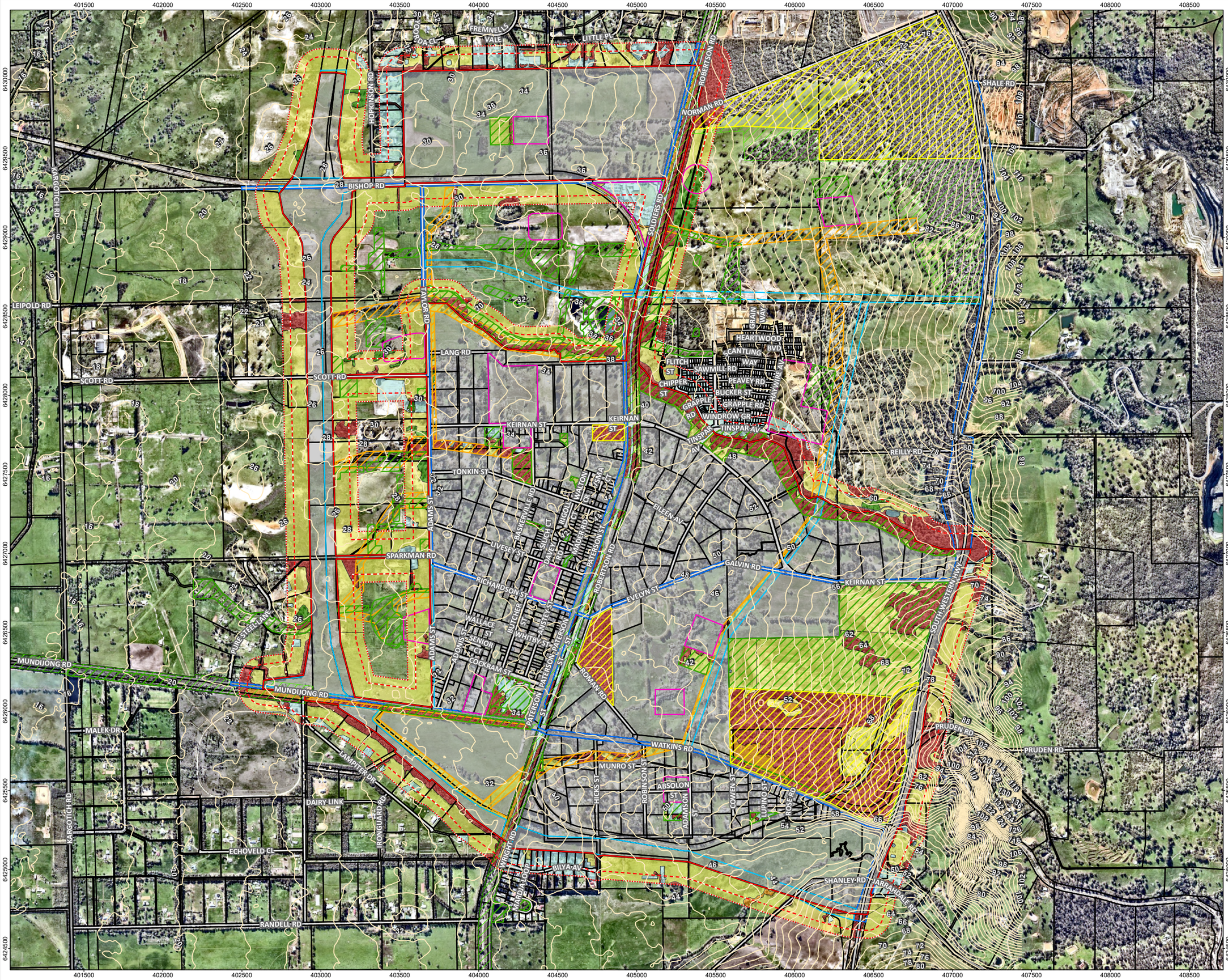

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state

- Highway
- Major road
- Minor road
- Track
- Topographic contours (mAHD)

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0 250 500
metres

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Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE (OVERALL SITE MAP)

FIGURE 7

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3.4 Assessment outputs

3.4.1 BHL assessment results

3.4.1.1 Pre-development results

The existing pre-development BHLs within the project area and adjacent 150 m have been assessed on the basis of the classified vegetation and effective slope discussed in Sections 3.3.1.1 and 3.3.3 (i.e. the current pre-development extent of vegetation and slope within and surrounding the project area). The resulting pre-development BHLs are depicted in Figure 8 (overall site map), with detailed mapping provided in the Appendix E mapbook.

The pre-development BHL assessment indicates that based on the existing extent of vegetation and slope, the project area contains land with predominantly Moderate and Extreme BHLs. There are small sections of Low BHL associated with urban built up areas within the Mundijong townsite and Whitby.

Land that is currently undeveloped is primarily classified as having a Moderate or Extreme BHL due to the existing grassland, scrub, woodland or forest vegetation hazards that have not yet been modified to facilitate future urban development. This is particularly evident throughout the current rural-residential areas of Whitby situated between Robertson Road to the west, Evelyn Street/Galvin Road/Keirnan Street to the south, South Western Highway to the east and Manjedal Brook to the north, which display an increase in Extreme BHL compared to the remainder of the project area due to the extent of overstory canopy and scrub/grassland fuels present. This supports previous observations and statements made in this regard, highlighting the importance of proposed conversion of this area to a low threat urban residential landscape as part of the Mundijong DSP.

3.4.1.2 Post-development results

The anticipated post-development BHLs within the project area and adjacent 150 m have been assigned on the basis of the classified vegetation and effective slope discussed in Sections 3.3.1.2 and 3.3.4 (i.e. the future anticipated extent of vegetation and slope within and surrounding the project area). The resulting post-development BHLs are depicted in Figure 9 (overall site map), with detailed mapping provided in the Appendix F mapbook.

As discussed previously in Sections 2.2 and 2.3, the post-development BHL assessment is based on various assumptions given the final extent of vegetation clearing/modification/retention/revegetation is not known at this high level of planning. These assumptions include:

- any areas of proposed residential, community, public purpose, roads and some POS will be modified to a non-vegetated/low threat managed state as part of the proposed development, including provision for residential lots, neighbourhood centres, educational land uses, public roads and some minor active POS where the current vegetation extent (if present) will be removed to facilitate proposed urban development, consistent with Figure 1
- any areas of Bush Forever, District/Neighbourhood Open Space, Reserves, Multiple Use Corridors/green linkages and Local Open Space will retain their pre-development vegetation classifications as part of proposed development, unless otherwise demonstrated at the Local Structure Plan or subdivision stage.

The post-development BHL assessment indicates that future development areas will primarily be subject to a BHL of Low or Moderate on development completion due to clearing and/or modification of vegetation within the future development areas and containment of native vegetation within existing and future areas of POS (i.e. areas where habitable development is not proposed to occur). This is sufficient to address Element 2: Siting and Design of BPC4.

3.4.2 Post-development Bushfire Attack Level contour assessment results

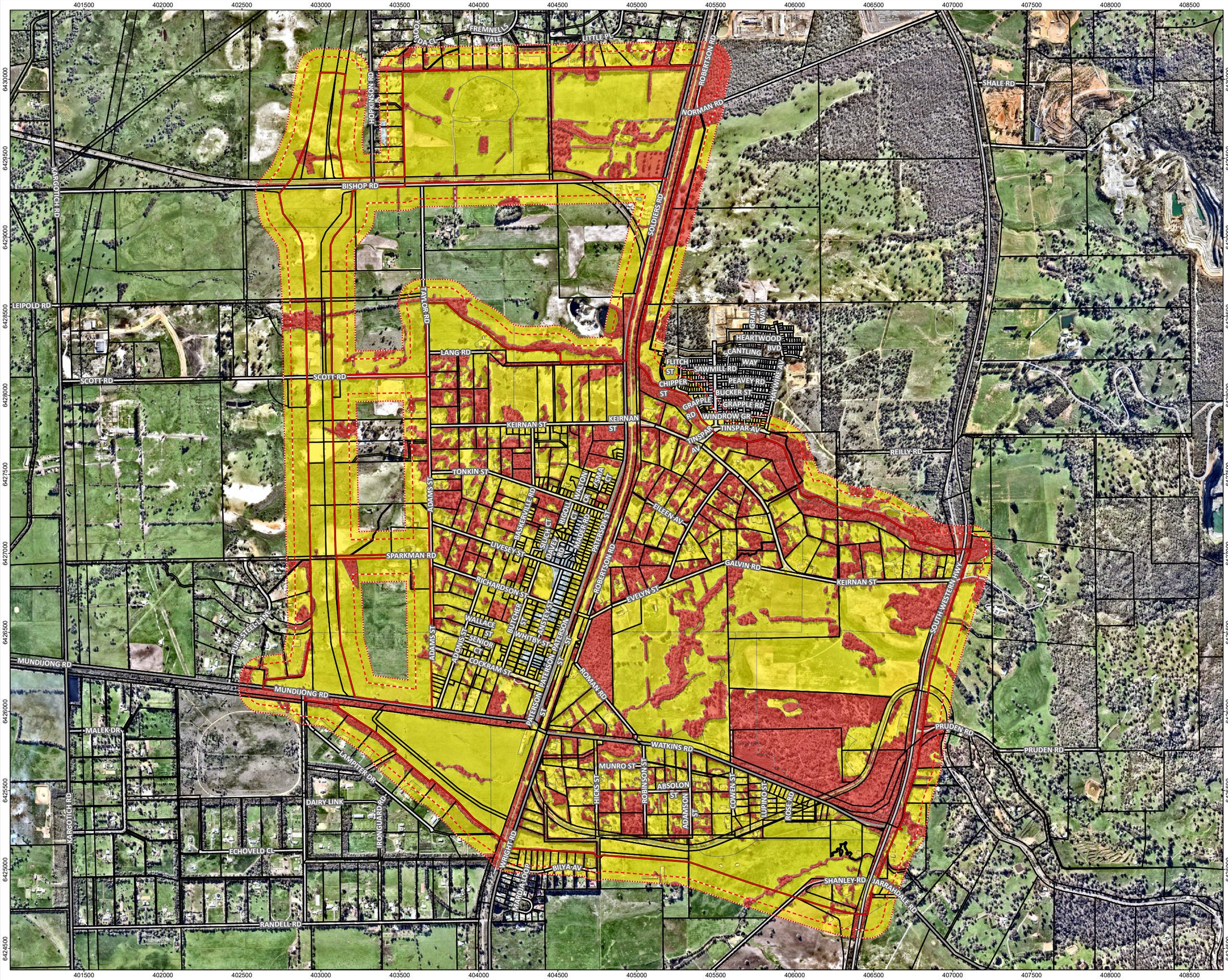
The anticipated post-development BAL contours within the project area and adjacent 150 m have been derived on the basis of the classified vegetation and effective slope discussed in Sections 3.3.1.2 and 3.3.4 (i.e. the future anticipated extent of vegetation and slope within and surrounding the project area). The resulting post-development BAL contours are depicted in Figure 10 (overall site map), with detailed mapping provided in the Appendix G mapbook. The post-development BAL contour assessment is based on the same vegetation assumptions listed in Section 3.4.1.2.

The post-development BAL contour assessment highlights that future development areas will primarily be subject to BAL–29 or lower on development completion due to clearing and/or modification of vegetation within the future development areas and containment of native vegetation within Multiple Use Corridor/green linkages, Local Open Space and District/Neighbourhood Open Space (i.e. areas where habitable development is not proposed to occur).

The post-development BAL contour assessment identifies, at a strategic level, areas subject to BAL–FZ and BAL–40 within the project area that will need to be considered at future planning stages to ensure future habitable development is designed and sited with sufficient separation to achieve BAL-29 or lower in accordance with Element 2: Siting and Design of BPC4. The minimum low threat separation distances from post-development classified vegetation types required for future habitable development to achieve BAL-29 are outlined in Table 8.

Table 8: Minimum separation distances to achieve BAL-29 or lower

Vegetation plot	Vegetation classification	Effective slope	Minimum separation distance to achieve BAL-29
1	Class A Forest	Downslope >10–15°	42 m
2	Class A Forest	Downslope >5–10°	33 m
3	Class A Forest	Downslope >0–5°	27 m
4	Class A Forest	Flat/upslope (0°)	21 m
5	Class B Woodland	Flat/upslope (0°)	14 m
6	Class D Scrub	Downslope >0–5°	15 m
7	Class D Scrub	Flat/upslope (0°)	13 m
8	Class G Grassland	Downslope >5–10°	10 m
9	Class G Grassland	Downslope >0–5°	9 m
10	Class G Grassland	Flat/upslope (0°)	8 m
11	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A
12	Modified - Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A



Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low

- Highway
- Major road
- Minor road
- Track

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Version: A	Date: 29-Nov-2024
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Scale 1:22,000 at A3

0 250 500
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS (OVERALL SITE MAP)

FIGURE 8

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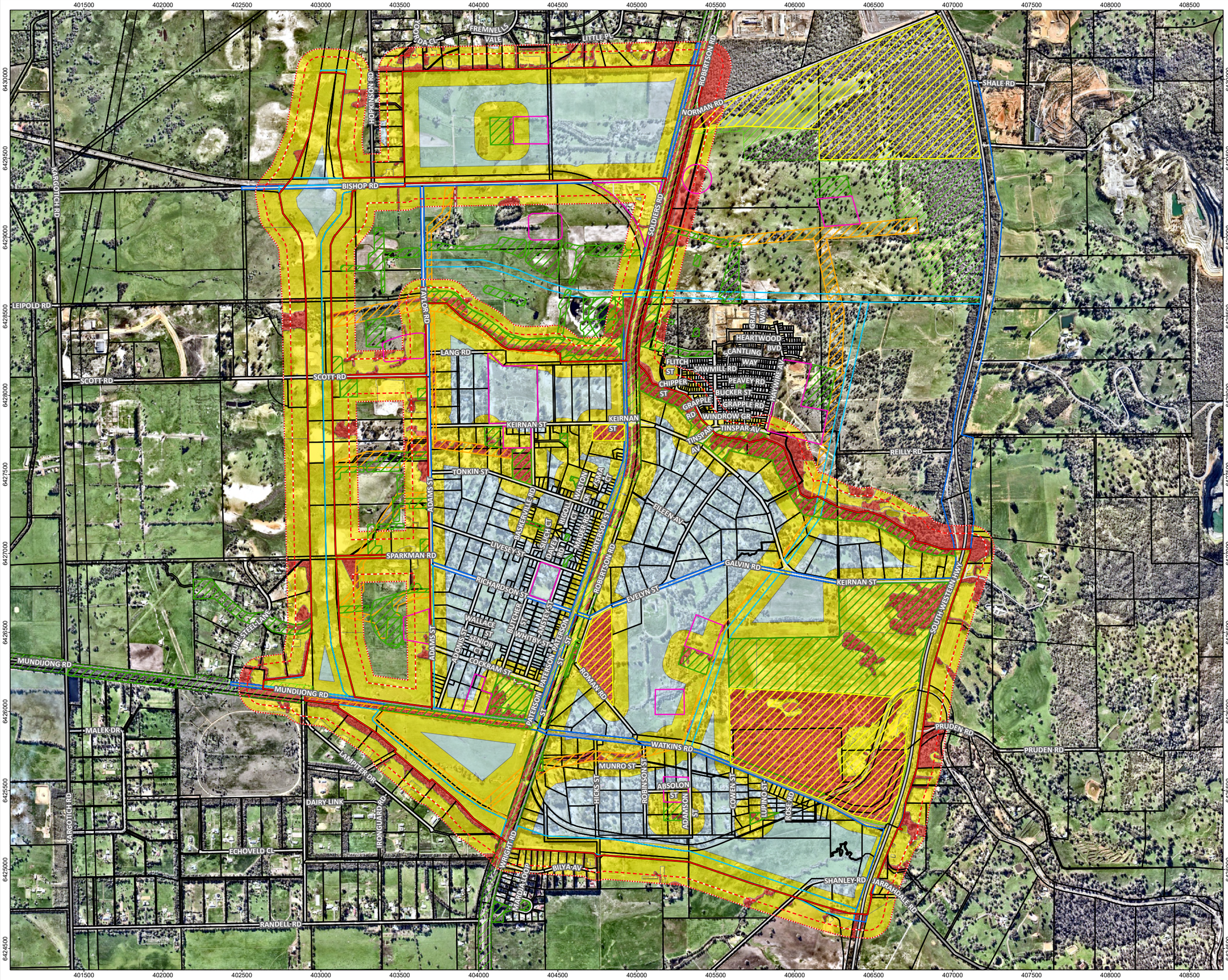

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary (LGATE - 002)
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Bushfire hazard level

- Extreme
- Moderate
- Low

Roads (LGATE - 195)

- Highway
- Major road
- Minor road
- Track

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Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 29-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:22,000 at A3

0 250 500
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS (OVERALL SITE MAP)

FIGURE 9

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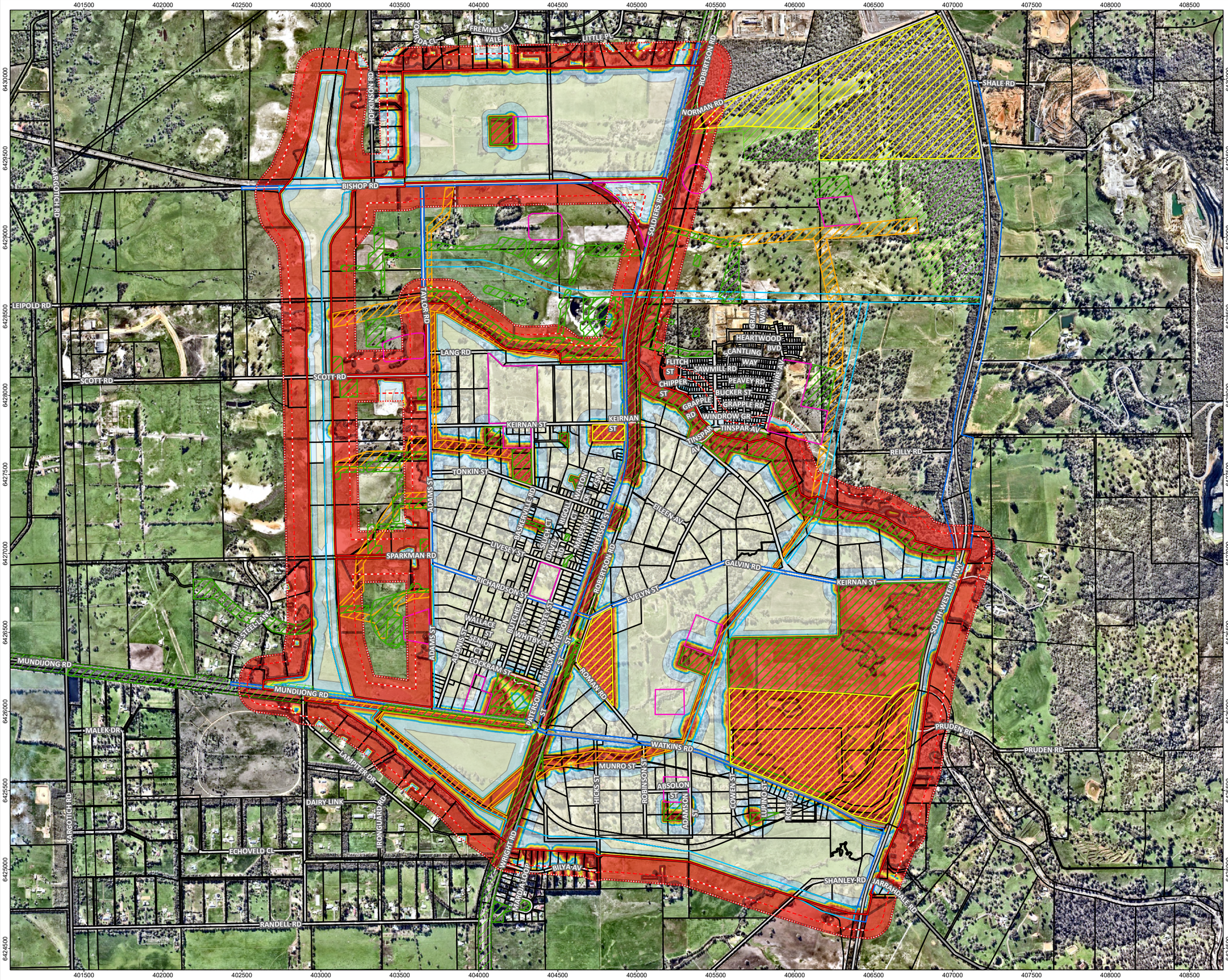

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Highway
- Major road
- Minor road
- Track

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 29-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:22,000 at A3

0 250 500
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP (OVERALL SITE MAP)

FIGURE 10

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4. Identification of bushfire hazard issues

4.1 Bushfire prone status and future planning stage requirements

The project area is located within a designated bushfire prone area (Area 2) and is subject to a BHL above Low and a BAL rating above BAL-Low due to the on-site and surrounding bushfire prone vegetation. This will trigger application of SPP3.7 and the Guidelines at future planning stages and will require preparation of Bushfire Management Plans (BMPs) to accompany future Structure Plan, subdivision and Development Application stages sufficient to address Policy Measure 7.1 (General Measures) of SPP3.7.

4.2 BLA assessment

The highest risk bushfire scenarios were identified as being from forest areas in the broader landscape east of the project area, as well as within the current rural-residential areas of Whitby within the project area. Potential grassland fire from the north, south and west were also identified as possible bushfire scenarios that could impact the site. Notwithstanding, based on mitigation provided in the existing landscape, as well as proposed mitigation achieved through implementation of the Mundijong DSP, the potential bushfire impacts from these scenarios can be adequately mitigated within the framework of SPP3.7 and Guideline compliance. This was supported by results of a desktop BLA assessment undertaken for the project area by SoSJ, which determined that BLT A was applicable, which is sufficient to address Element 1: Location of BPC4.

4.3 BHL and BAL contour assessments

Pre-development BHL assessment identified majority coverage of Moderate and Extreme BHL throughout the project area and surrounds. However, following implementation of the Mundijong DSP, post-development BHL assessment indicated a significant reduction in hazard level within the project area, sufficient to deliver a Low or Moderate BHL throughout all areas of proposed habitable development. This was supported by strategic level post-development BAL contour assessment, which indicated predominant coverage of BAL-Low throughout the project area in recognition of the significant urban development footprint created following implementation of the Mundijong DSP.

A bushfire design response will need to be incorporated at the interface with any post-development classified vegetation that imposes BAL-40/FZ impact, which can be achieved predominantly through a combination of compliant perimeter access, low threat landscaping treatments, Asset Protection Zone (APZ) building setbacks and BAL-rated construction where required to deliver the minimum BAL-29 separation distances outlined in Table 8. Any low threat landscaping treatments and APZ setbacks will need to be designed and established to comply with Clauses 2.2.3.2 (e) and (f) of AS3959 and/or APZ standards of the Guidelines (Appendix H). This is sufficient to address Element 2: Siting and Design of BPC4.

4.4 Refinement of BHL/BAL contour assessments at future planning stages

The post-development BHL and BAL contour assessments are based on the assumptions outlined previously in Sections 2.2 and 2.3. However, following availability of additional development and landscape design detail at future planning stages, these assumptions and the subsequent bushfire assessments will need to be refined as part of future stage BMPs consistent with the available detail.

4.5 Landscape concept plans

Confirmation of any retained vegetation/revegetation areas, as well as open space areas proposed to be modified to a low threat state through clearing/low threat landscaping treatments, will be crucial in informing compliant development design as planning stages progress, particularly at interfaces with proposed urban/habitable development. Landscape concepts/plans will need to be prepared to support future planning stages (i.e. Structure Plan and subdivision) to confirm vegetation classifications/exclusions throughout the open space areas of the site and inform development design responses where required.

4.6 Staging buffer considerations

Future development of the Mundijong DSP and associated clearing will occur on a staged basis; therefore, clearing of low threat staging buffers on adjacent future stages of development will need to be considered to ensure building construction is not unnecessarily inhibited by any temporary vegetation extents located within adjacent development stages yet to be cleared. This can be achieved by ensuring that each approved stage subject to construction is surrounded by a 100 m wide (or other distance confirmed by an accredited bushfire practitioner) on-site cleared or low threat staging buffer prior to development (not including vegetation proposed to be retained). Once the buffers are created, they will need to be maintained on a regular and ongoing basis to achieve a low threat minimal fuel condition in accordance with Clauses 2.2.3.2 (e) and (f) of AS3959 and/or APZ standards of the Guidelines (Appendix H) all year round until such time that the buffer area is developed as part of the next development stage. This will assist in managing the on-site temporary vegetation hazards.

4.7 Access considerations

4.7.1 Multiple access routes and no-through roads

Given the potential bushfire risk to the site, appropriate vehicular access is required to provide sufficient access/egress by residents and visitors, as well as firefighter access to and around the project area.

Examination of the conceptual development design (Figure 1) indicates that future development can be provided with at least two different access routes that lead to multiple suitable destinations.

Permanent emergency access ways (EAWs), which serve the purpose of providing a linkage between public roads, are not expected to be necessary in future subdivision design as the public road network can be designed to ensure through access is achieved for all public roads. Permanent no-through roads are to be avoided in bushfire prone areas of the site; however, any unavoidable permanent no-through roads included in future subdivision design will need to demonstrate compliance with Guideline requirements, including being less than 200 m in length from the nearest intersection where two access routes are available, as well as provisions for appropriate turnarounds.

Future LSP and subdivision stages will need to ensure at least two access routes are provided for all stages of development, which may require construction of access in advance or consideration of temporary compliant EAWs/no-through roads to service a stage until compliant public through roads are completed.

4.7.2 Perimeter access to bushfire hazards

Due to the extent of on-site and adjoining vegetation hazards, perimeter roads are required to provide a defendable space for emergency service personnel, as well as hazard separation between bushfire prone vegetation and habitable development as per technical requirements contained in Appendix I.

The existing public road network provides limited perimeter access at the bushfire hazards surrounding the project area. Perimeter roads should be considered as part of future LSP and subdivision design for the project area to enable a direct fire suppression response as well as providing separation suitable to achieve BAL-29 or lower for any interfacing habitable development. Fire service access routes (FSARs) should be considered at any vegetation interfaces where public road access cannot be provided.

Temporary FSARs may also be required during staged development to ensure firefighters are able to gain access to the site perimeter prior to future subdivision roads being constructed.

Any interface where perimeter roads/FSARs are not sufficient to provide the full separation required to achieve BAL-29, development setbacks may need to be considered to ensure all habitable development is located in areas of BAL-29 or below, as per the minimum BAL-29 separation distances outlined in Table 8.

4.7.3 Population pressure on road network

The proposed development will result in expansion of the existing population, which may put pressure on the existing public road network during a bushfire emergency. To ensure there is no impact to the existing population in relation to traffic management, upgrades to existing roads will occur as a result of implementation of the DSP, in addition to any planned road upgrades by Main Roads WA, and the Tonkin Highway extension which is scheduled to commence mid-2025.

4.7.4 Battle-axe lots

Battle-axe lots are to be avoided in bushfire prone areas; however, any unavoidable battle-axe lots included in future subdivision design will need to demonstrate compliance with Guideline requirements.

4.8 Firebreak notice compliance

Compliance with the SoSJ annual firebreak notice (Appendix A) will be required across the project area currently, throughout the duration of DSP implementation and following development completion. This is particularly important for any balance of subdivision land as development staging progresses, as well as the existing rural-residential/vegetated lots that are not currently subject to any approved LSPs or subdivision applications. Once each stage of development is constructed, individual lot boundary firebreaks are unlikely to be required given the lots will be largely cleared and developed with built form; however, ongoing maintenance of grassland fuels to less than 50 mm in height throughout any un-stocked land will be required.

4.9 Firefighting water supply

Future development within the DSP area will need to be provided with a firefighting water supply that is suitable for the scale of each stage of development. Fire water is anticipated to be provided to the project area via extension of reticulated water supply and hydrants to service the entirety of the development site. The local area is currently provided with a reticulated hydrant system that will need to be extended throughout the development in accordance with the future road networks and Water Corporation design standards. This is sufficient to address Element 4: Water Supply of BPC4.

4.10 Vulnerable and high-risk land uses

Several future education sites are proposed by the conceptual development design and will constitute a 'vulnerable' land use under Section 8 of SPP3.7. There may also be other future vulnerable land uses within the project area, such as childcare facilities and aged care facilities. Future subdivision design will need to consider special evacuation challenges often associated with vulnerable land uses. A detailed Bushfire Emergency Plan will need to be prepared to accompany the BMP at the Development Application stage for any vulnerable land uses situated in a designated bushfire prone area. The proposed school sites are situated in urban nodes of the project area and are therefore expected to be predominantly cleared or managed to a low threat state in accordance with a relevant exclusion under AS 3959 Clause 2.2.3.2.

4.11 NCC provisions for Class 9 buildings

The National Construction Code (NCC 2022) makes bushfire protection provisions for certain Class 9 buildings, including healthcare buildings, residential care buildings and schools. These provisions are outlined in Specification 43 of the NCC and have implications for the siting of buildings of this class, which will need to be taken into consideration at the subdivision planning stage.

5. Assessment against the Bushfire Protection Criteria

5.1 Compliance with Bushfire Protection Criteria 4: Strategic planning

Compliance with Elements 1 – 4 of Bushfire Protection Criteria (BPC) 4: Strategic planning is demonstrated by meeting the acceptable solutions, as detailed in Table 9.

Table 9 Compliance with BPC 4: Strategic planning

Outcomes	Acceptable solutions	Method of compliance	Statement of development compliance	Compliance can be achieved
Element 1: Location				
O1 – Avoid broader landscapes that present an unacceptable bushfire risk to life, property and infrastructure.	**A1.1b Broader Landscape Type A** The subject site is located in an area that is a Broader Landscape Type A. This location satisfies the policy outcome for Element 1: Location and no additional consideration is required.	Acceptable solution	The desktop BLA undertaken by SoSJ indicates that the project area is consistent with BLT A.	✓
	A1.1b Broader Landscape Type B The subject site is located in an area that is a Broader Landscape Type B which presents an unacceptable bushfire risk of a landscape-scale bushfire resulting in impacts to people, property and infrastructure. This location does not satisfy the acceptable solution for Element 1: Location. Where the practitioner considers that further analysis could demonstrate to the decision-maker that the risks can be appropriately managed, and/or mitigated, an outcomes-based approach should be prepared, in accordance with policy measure 7.5 of SPP 3.7. Further explanatory notes are provided in Appendix B.1 of the Guidelines.	N/A	The project area was not assessed to be BLT B.	N/A
Element 2: Siting and design				
O2 – Ensure siting and design solutions: • manage or mitigate the bushfire risk to people, property and infrastructure; and • avoid, or where unavoidable, minimises the clearing of native vegetation.	**A2.1 Siting and design** The areas of the subject site(s) identified for intensification and/or the future development site(s) achieve a pre- or post-development bushfire hazard level of moderate or low	Acceptable solution	The post-development BHL assessment (see Section 3.4.1.2) indicates that all habitable development proposed within the project area will be located in areas of Moderate or Low hazard.	✓
	A2.2 Clearing of native vegetation The strategic planning proposal avoids, or where unavoidable, minimises the clearing of native vegetation.	Acceptable solution	The proposed Mundijong DSP design provides for the retention and enhancement of existing environmental values throughout the significant areas of Bush Forever, District/Neighbourhood Open Space, Reserves, Multiple Use Corridors/green linkages and Local Open Space. This demonstrates sufficient avoidance and retention of native vegetation.	✓
Element 3: Vehicular access				
O3 – Ensure the design and capacity of vehicular access and egress provide: • for efficient and effective evacuation to a suitable destination(s) and/or • as a contingency measure for vulnerable land uses, an on-site shelter, where	**A3.1 Public roads** Public roads, including perimeter roads should meet the technical requirements in Appendix B.3, Table 10.	Acceptable solution	All proposed public roads established as part of the DSP will be required to meet the technical requirements of the Guidelines (refer to Appendix I). This will be confirmed through BMPs prepared for future LSP and subdivision stages of planning.	✓

Outcomes	Acceptable solutions	Method of compliance	Statement of development compliance	Compliance can be achieved
demonstrated appropriate, as a last resort option.	Public road access should be provided in two different directions, to two different suitable destinations; and with an all-weather surface.	Acceptable solution	The project area is linked to a surrounding public road network that provides multiple access routes to suitable destinations, including connections with South Western Highway, Kargotich Road, Mundijong Road/Watkins Road and Bishop Road, which provide access north, south and west. During the development staging, a minimum of two access routes will also need to be provided. Determination of internal road alignments and through access within the project area will be required as part of future BMPs prepared to support future LSP and subdivision stages to ensure that the existing and future road network will provide all occupants with the option of travelling to multiple suitable destinations, including during staging of development.	✓
	A3.3a No-through roads If the public road access to the subject site is via a no-through road which cannot be avoided due to demonstrated site constraints, the public road access is to be a maximum of 200 metres from the proposed lot(s) boundary to an intersection where two-way access is provided. The no-through road may exceed 200 metres if it is demonstrated that an alternative access, including an emergency access way, cannot be provided due to site constraints and the following requirements are met: • the no-through road travels towards a suitable destination; and • the balance of the no-through road that is greater than 200 metres from the subject site is wholly within BAL-LOW, or is within a residential built-out area is within Area 1 (Figure 29).	Acceptable solution	The DSP aims to deliver through roads for all proposed public roads. Any no-through roads that are unavoidable due to demonstrated site constraints, or required to address temporary staged development, must be designed and constructed in compliance with relevant technical requirements of the Guidelines.	✓
	A3.3b No-through roads requirements A no-through road is to meet all the following requirements: • requirements of a public road (Appendix B.3, Table 10, Column 2); and • turn-around area/head (Figure 30).	Acceptable solution	As mentioned above under A3.3a, any no-through roads that are unavoidable due to demonstrated site constraints, or required to address temporary staged development, must be designed and constructed in compliance with relevant technical requirements of the Guidelines.	✓
Element 4: Water supply				
O4 – Ensure that sufficient water is available and accessible for emergency services, to enable people, property and infrastructure to be defended from bushfire.	**A4.1 Water supply** Evidence that a sufficient and accessible reticulated or non-reticulated water supply for bushfire firefighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements in Appendix B4: Water Supply dedicated for bushfire firefighting.	Acceptable solution	Proposed urban development within the project area will be fully serviced by a reticulated mains water supply, comprising a network of hydrants along the internal road network at locations which meet relevant water supply authority and DFES requirements, including the Water Corporation Design Standard DS 63 'Water Reticulation Standard Design and Construction Requirements for Water Reticulation Systems up to DN250'.	✓

6. Responsibilities for implementation and management of the bushfire measures

This BHL Assessment has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. Aside from the preparation of future BMPs to accompany future LSPs, subdivision and/or development applications where appropriate, there are no further items to implement, enforce or review at this strategic stage of the planning process.

Future BMPs prepared for subsequent LSPs, subdivisions and development applications are to meet the relevant commitments outlined in this strategic level BHL Assessment, address the relevant requirements of SPP 3.7 (2024) and demonstrate in detail how the proposed development will incorporate the relevant acceptable solutions of the bushfire protection criteria of the Guidelines. Future BMPs are to include the following detailed information:

- proposed development cell layout for LSPs, lot layout for subdivisions or development layout for Development Applications
- POS landscaping details confirming any low threat or classifiable vegetation throughout District/Neighbourhood Open Space and Multiple Use Corridors/green linkages, Local Open Space and POS areas
- confirmation of the post-development classified vegetation extent, effective slope, exclusions and separation distances
- post development BHL assessment and/or BAL contour assessment for LSPs and detailed BAL contour mapping for subdivisions and DAs demonstrating that proposed habitable development areas will achieve a Low–Moderate BHL and/or ratings of BAL–29 or lower
- width and alignment of compliant APZs if applicable, including any APZ setback requirements for individual lots
- confirmation of how bushfire management will be addressed regarding temporary vegetation/bushfire hazards on adjacent future development stages, including low threat staging buffers or temporary quarantining of lots where required
- vehicular access provisions, including demonstration that a minimum of two access routes will be achieved for each stage of development, including consideration of any temporary compliant access provisions such as no-through roads and EAWs
- provision of perimeter public roads or temporary compliant FSARs around the perimeter of vegetation hazards where required
- reticulated water supply provisions
- future requirements for any identified vulnerable land uses, such as provision of a Bushfire Evacuation Plan at the DA stage for the proposed primary and high school sites
- provisions for notification on Title for any future lots with a rating of BAL-12.5 or greater as a condition of subdivision
- compliance requirements with the annual Shire of Serpentine-Jarrahdale Fire Hazard Reduction Notice (Appendix A)
- assessment against Bushfire Protection Criteria of the Guidelines for the relevant planning stage, demonstrating future compliance is achievable for LSPs, or demonstrating compliance has been achieved for subdivisions/development applications

- proposed audit and compliance program outlining all measures requiring implementation and the appropriate timing and responsibilities for implementation that can be appropriately conditioned as part of subdivision approval.

On the basis of the information contained within this BHL Assessment, JBS&G considers the bushfire hazards within and adjacent to the project area and the associated bushfire risks are readily manageable through application of acceptable solutions outlined in the Guidelines, which will be implemented as required throughout future planning stages. JBS&G considers that on implementation of the proposed management measures, the site will be able to be developed with a manageable level of bushfire risk whilst maintaining full compliance with the Guidelines.

7. Limitations

Scope of services

This report ("the report") has been prepared by JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. JBS&G has also not attempted to determine whether any material matter has been omitted from the data. JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to JBS&G. The making of any assumption does not imply that JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made, including to any third parties, and no liability will be accepted for use or interpretation of this report by any third party.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G or reproduced other than in full, including all attachments as originally provided to the client by JBS&G.

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Appendix A Shire of Serpentine-Jarrahdale Fire Hazard Reduction Notice

Shire of Serpentine Jarrahdale

FIRST AND FINAL NOTICE

Fire Hazard Reduction Notice

COMPLIANCE DUE BY:

1 December 2024

ASSESSMENTS COMMENCE FROM:

1 December 2024

Important: The works outlined below must be completed by 1 December 2024 and maintained in this state up to and including 31 May 2025.

Notice to all owners of land within the Shire of Serpentine Jarrahdale

Pursuant to Section 33 of the ***Bush Fires Act 1954 (WA)***, the Shire of Serpentine Jarrahdale (Shire) gives written notice to act as specified in this notice to land that you own and/or occupy and with respect to any matter which is upon the land that you own and/or occupy within the Shire. Failure or neglect to comply with this notice is an offence and can result in a penalty of up to $5000. The Shire advises that its officers, servants, workmen, contractors, vehicles, machinery, and appliances (as the officers deem fit) may carry out the requisitions of this notice that are not complied with by the date specified above, and any costs and expenses incurred may be recovered from you as the owner and/or occupier of the land.

The table below outlines the requirements of land owners and/or occupiers in the Shire of Serpentine Jarrahdale. Please refer to the column that best describes your land size to view your legal responsibilities.

All land with an area of:	Less than 4,047m2	Between 4047m2 & 25,000m2	Greater than 25,000m2
Fire Breaks Install and maintain mineral earth fire breaks as per fire break specifications.		✓	✓
Driveways Ensure driveways and access ways to all buildings are maintained at a minimum of three (3) metres in width and a vertical clearance height of four (4) metres, with all over hanging vegetation trimmed back to clear access.	✓	✓	✓
Dead Flammable Material Reduce and/or maintain all dead flammable material below eight (8) tonne per hectare.	✓	✓	✓
Slashing Unstocked Land Slash, mow, or trim grasses, to a height no greater than 50mm and remove cutting/swath across the entire property.	✓	✓	✓
Slashing Stocked Land Slash, mow, or trim grasses, to a height no greater than 50mm and remove cutting/swath across the entire property.	✓	✓	
Asset Protection Zone Maintain a fuel-reduced zone around all buildings or assets which extends 20 metres (m) from the outermost point of the building or asset. » Gutters, roofs, and walls of all buildings to be free of flammable matter and maintained. » Fuel load within the 20m zone is reduced and maintained to no more than 2 tonne per hectare. » Trees over 5m in height within the 20m zone to be under pruned up to 2m. » Trees or shrubs within 2m of the asset shall be pruned to a height no greater than 2m and/or pruned away from the asset to a distance no greater than 2m.		✓	✓

Shire of Serpentine Jarrahdale

Shire of Serpentine Jarrahdale
6 Paterson Street
Mundijong, WA 6123

T (08) 9526 1111
E esdepartment@sjshire.wa.gov.au
W www.sjshire.wa.gov.au

ABN 98 924 720 841

Definitions

Fire Break:
A strip of land free of all flammable material with the intention of minimising the spread or extension of a bushfire and provide safe access on the property for emergency vehicles and other firefighting operations.

- Clearance must be **no less than 3 metres wide** and **4 metres in height** inside and along all boundaries (including boundaries adjacent to roads, rail and drain reserves and all public open space reserves).
- Must not be more than 5 metres wide (further width extensions may be considered upon written application for approval to the Shire).
- Maintained and living lawns are acceptable in conjunction with, or in lieu of mineral earth firebreaks, provided that the same width and height requirements for a firebreak are maintained.
- Must have a **corner turning radius of up to 12 metres**.
- Must be a mineral earth break with a continuous trafficable surface for a 4WD vehicle, **be clear of any obstructions and must not terminate in a dead end**.

Fuel Load:
Can be live and dead vegetation that accumulates over time. This Notice refers only to dead vegetation.

Fine fuels include:	Heavy (coarse) fuels include:
Leaf litter, grasses, twigs (up to 6mm diameter), bark etc.	Branches, logs, stumps etc.

- A fuel load depth of 15mm (fine fuels) to the mineral earth is indicative of approximately 8 tonne per hectare. The more fuel load, the higher the flame height and increased fire intensity.
- Mulch piles, stored firewood and burn piles can contribute to fuel loading on land and must be stored safely away from assets, removed from the property, or actioned as directed by a Fire Control Officer.

Fuel Dumps and Depots

Remove all flammable material within 10 metres of fuel dumps, fuel ramps or where fuel drums, whether containing fuel or not, are stored.

Haystacks

Clear and maintain a firebreak completely surrounding any haystack on the land, within 60 metres of the haystack.

Variation to the Fire Hazard Reduction Notice

If you consider it impractical to meet a requirement/s of this Notice, you may apply to the Shire for a variation no later than **1 October 2024**.

Note: A variation is not an exemption but an application to employ other methods of property preparedness to land that you own and/or occupy.

If your application is not granted you must comply with all requirements outlined in the Fire Hazard Reduction Notice 2024/2025. Variation request application forms are available before 1 October 2024 on the Shire's website at:
www.sjshire.wa.gov.au/fem

Emergency Management Plans and Shire Approved Treatment Plans

Where a property is affected by an approved Bushfire Management Plan, property owners must still comply with all requirements in this notice and with any additional requirements outlined within that Plan.

All properties and/or land subject to a Bushfire Management Plan or an approved Bushfire Attack Level assessment (BAL), as a result of subdivision, development application or a Shire approved treatment plan, must comply with the listed requirements in their entirety. Compliance with any additional plans does not constitute compliance with this Notice.

Environmental Conditions

Any property subject to environmental value such as, but not limited to, Threatened Ecological Communities (TEC), Bush Forever sites, Declared Rare Flora and Fauna (DRF) sites, Aboriginal Cultural Heritage sites, etc, should seek further information about what can or cannot be done prior to carrying out requirements under this Notice.

Additional Works

You may be required to carry out further bushfire property preparedness works on your land to reduce any fire hazards considered necessary by a Fire Control Officer. If required, these will be outlined in a 'work order' and sent to the address of the owner.

If you require any further information, please contact the **Shire of Serpentine Jarrahdale Emergency Services Team** on **(08) 9526 1111.**

Paul Martin | Chief Executive Officer

Scan the QR code
for more information on
Fire and Emergency Management.

Shire of Serpentine Jarrahdale

Shire of Serpentine Jarrahdale
6 Paterson Street
Mundijong, WA 6123

T (08) 9526 1111
E esdepartment@sjshire.wa.gov.au
W www.sjshire.wa.gov.au

ABN 98 924 720 841

Appendix B Photos of vegetation plots

Plot 1		
Vegetation classification	**Pre-development**	Class A Forest (Downslope >10–15°)
	Post-development	Class A Forest (Downslope >10–15°) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey	

Photo ID: 1a

Plot 2		
Vegetation classification	**Pre-development**	Class A Forest (Downslope >5–10°)
	Post-development	Class A Forest (Downslope >5–10°) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey	

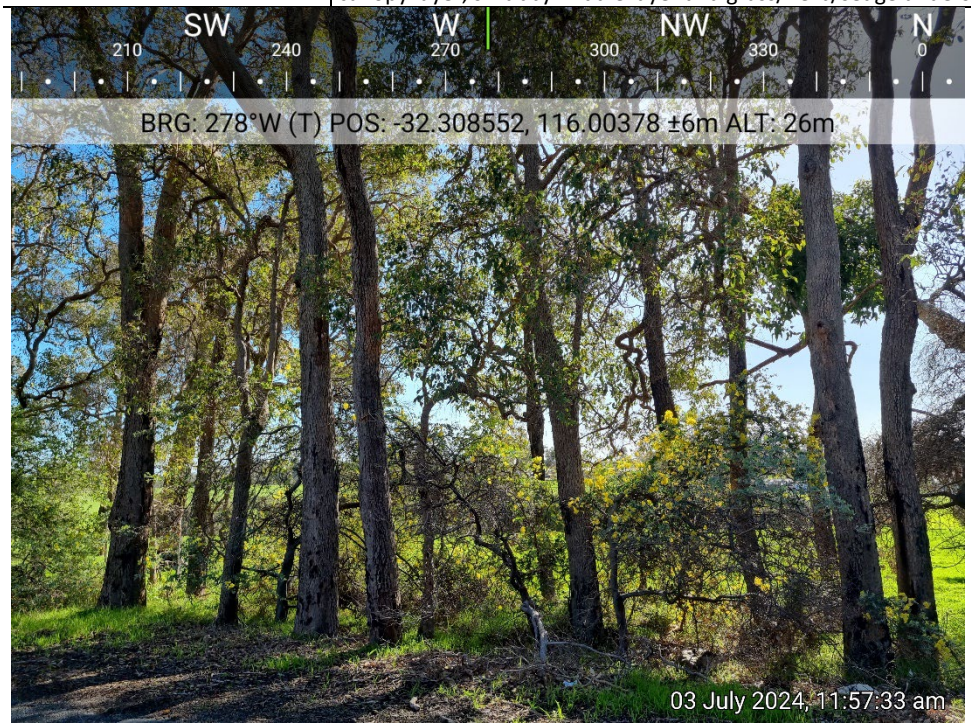


Photo ID: 2a

Plot 3		
Vegetation classification	**Pre-development**	Class A Forest (Downslope >0–5°)
	Post-development	Class A Forest (Downslope >0–5°) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey	

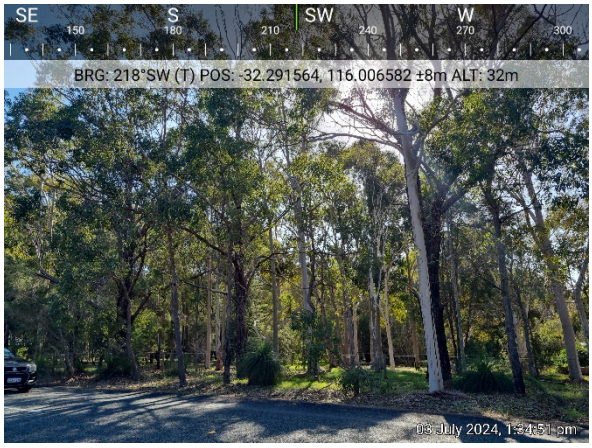


Photo ID: 3a

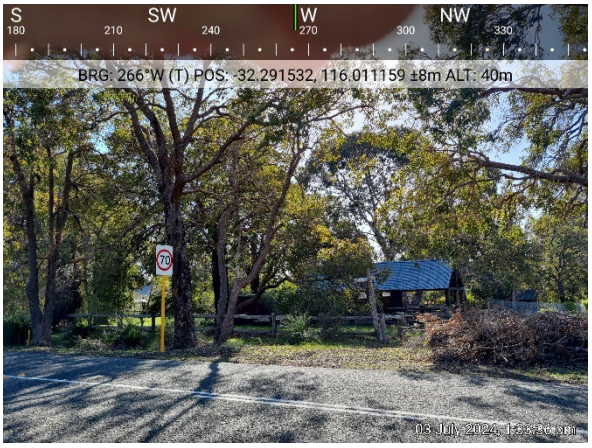


Photo ID: 3b

Photo ID: 3c

Photo ID: 3d (background)

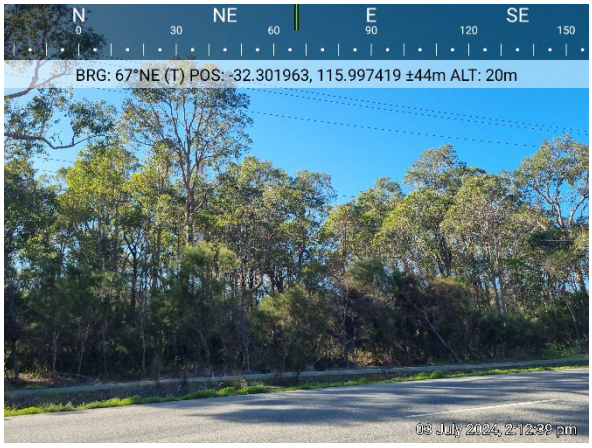


Photo ID: 3e

Photo ID: 3f

Plot 4		
Vegetation classification	**Pre-development**	Class A Forest (Flat/Upslope (0°))
	Post-development	Class A Forest (Flat/Upslope (0°)) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey	

Photo ID: 4a (background)

Photo ID: 4b (left)

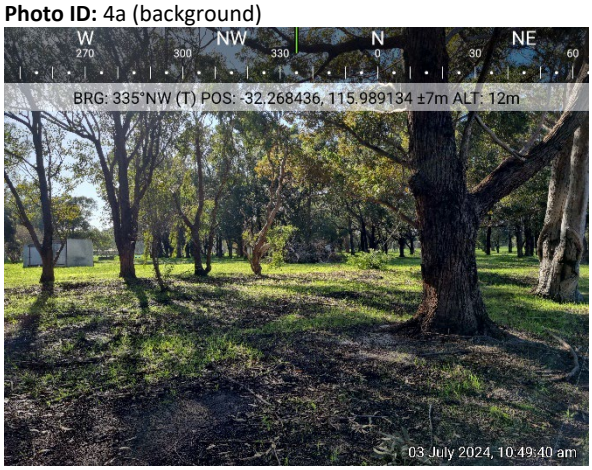


Photo ID: 4c

Photo ID: 4d (background)

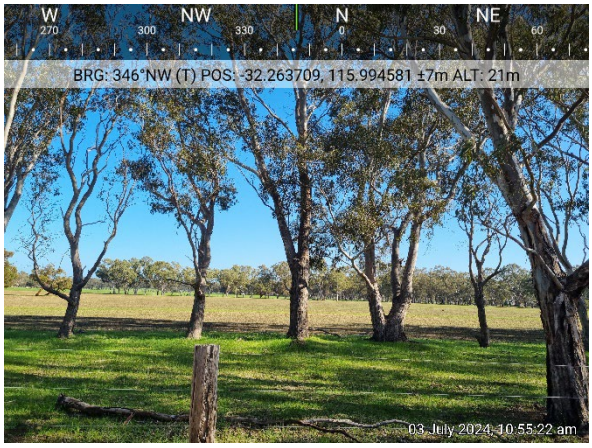


Photo ID: 4e (background)

Photo ID: 4f (roadside)

Plot 4

Photo ID: 4g

Photo ID: 4h

Photo ID: 4i

Photo ID: 4j

Photo ID: 4k

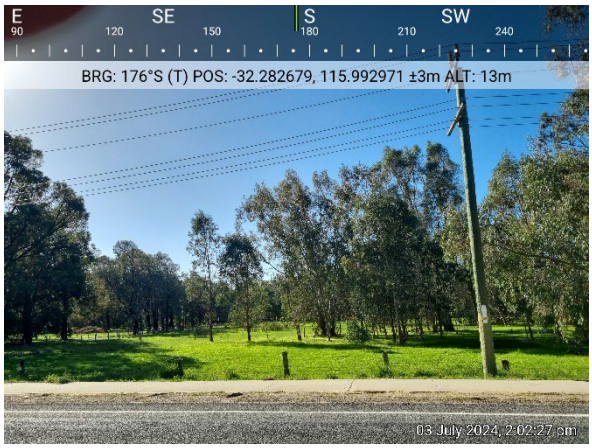


Photo ID: 4l

Plot 4

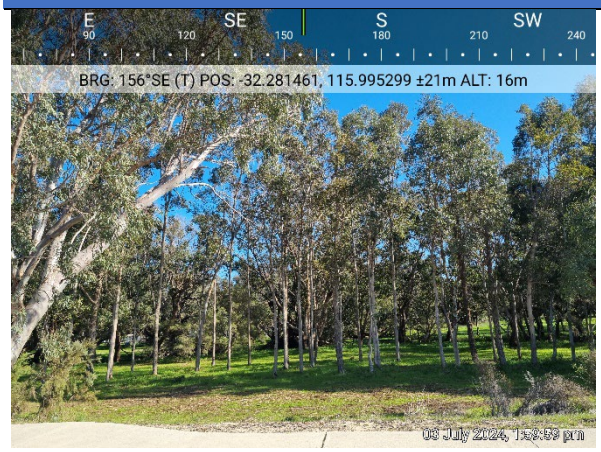


Photo ID: 4m

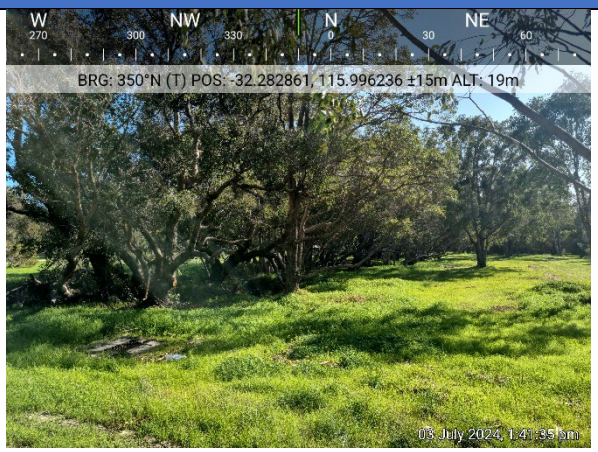


Photo ID: 4n

Photo ID: 4o

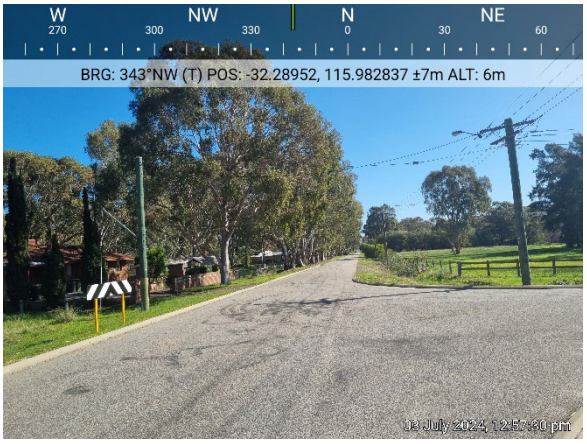


Photo ID: 4p

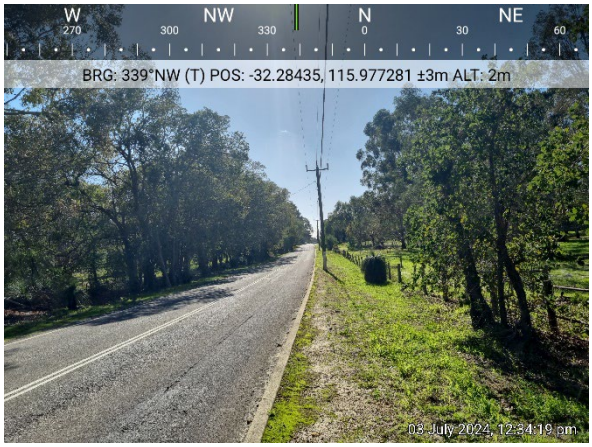


Photo ID: 4q

Photo ID: 4r (background)

Plot 4

Photo ID: 4s

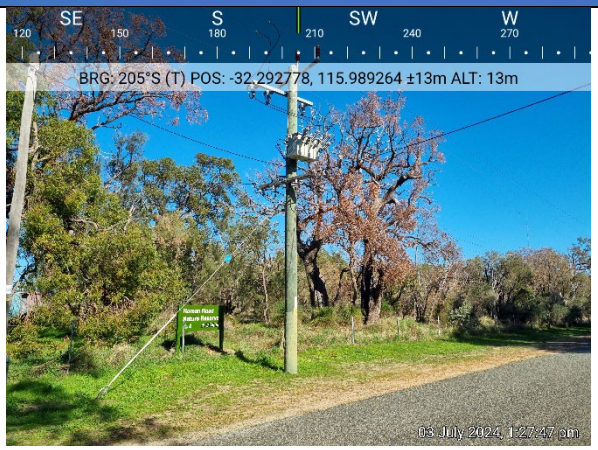


Photo ID: 4t

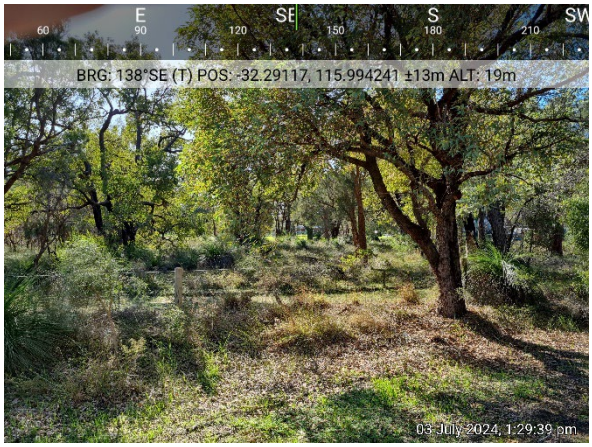


Photo ID: 4u

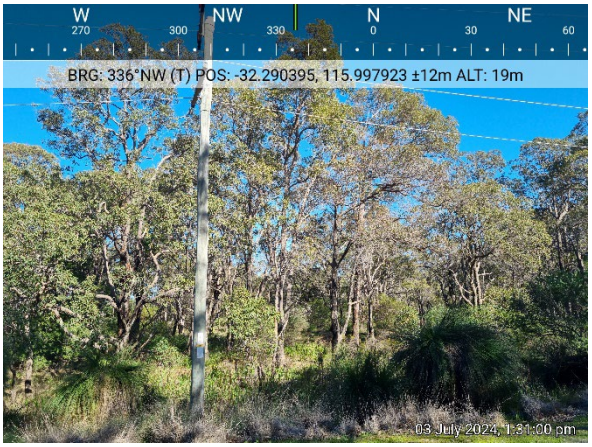


Photo ID: 4v

Photo ID: 4w

Photo ID: 4x

Plot 4

Photo ID: 4y

Photo ID: 4z

Photo ID: 4aa

Photo ID: 4ab

Photo ID: 4ac

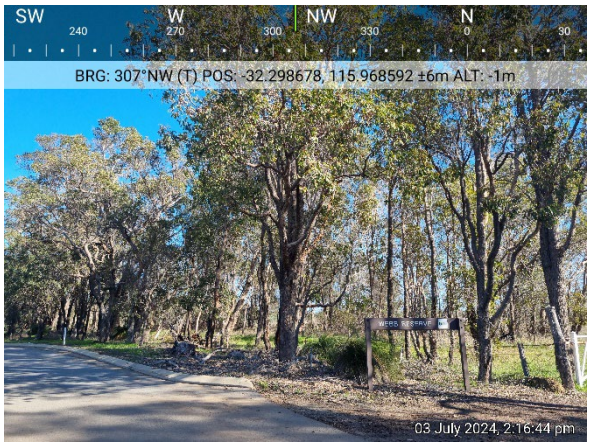


Photo ID: 4ad

Plot 4

Photo ID: 4ae

Photo ID: 4af

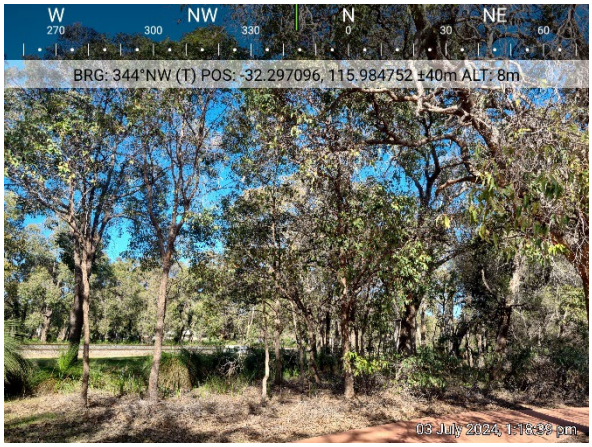
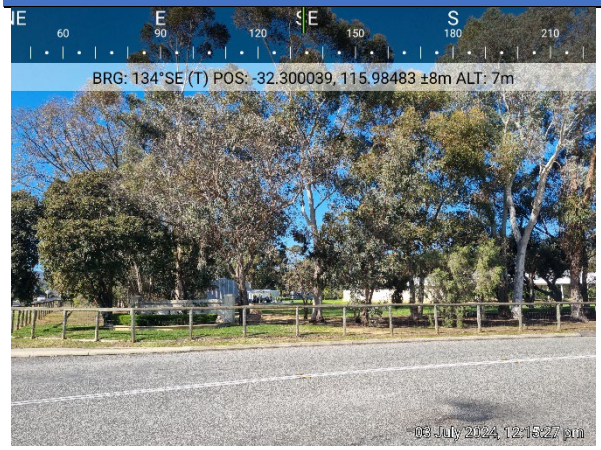
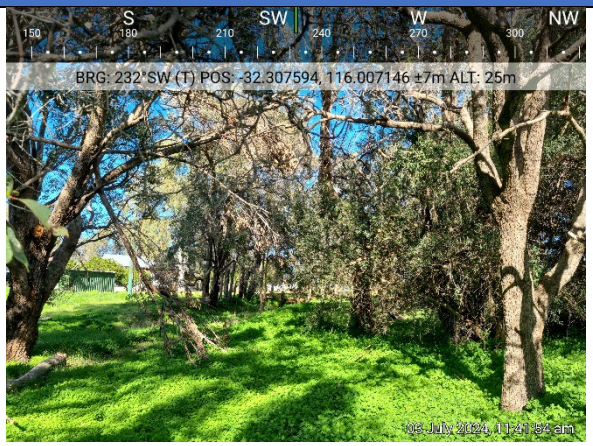


Photo ID: 4ag

Photo ID: 4ah

Photo ID: 4ai

Photo ID: 4aj

Plot 4	
 **Photo ID:** 4ak	 **Photo ID:** 4al

Plot 5		
Vegetation classification	**Pre-development**	Class B Woodland (Flat/Upslope (0°))
	Post-development	Class B Woodland (Flat/Upslope (0°)) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Trees 2-30 m at maturity, dominated by trees with a grassy understorey (lacks shrubby middle layer and deep surface litter)	

Photo ID: 5a

Photo ID: 5b

Photo ID: 5c

Photo ID: 5d

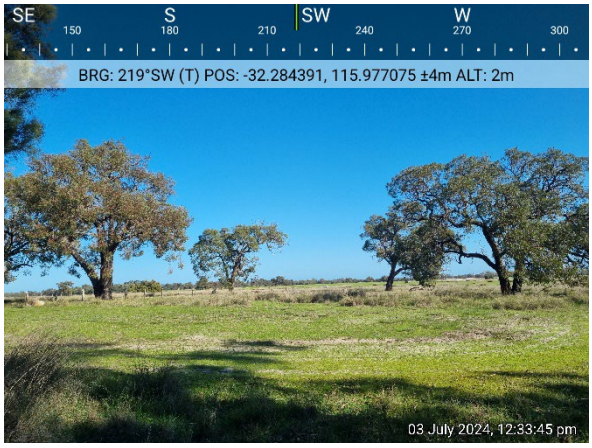


Photo ID: 5e

Plot 7		
Vegetation classification	**Pre-development**	Class D Scrub (Flat/Upslope (0°))
	Post-development	Class D Scrub (Flat/Upslope (0°)) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity	

Photo ID: 7a

Photo ID: 7b

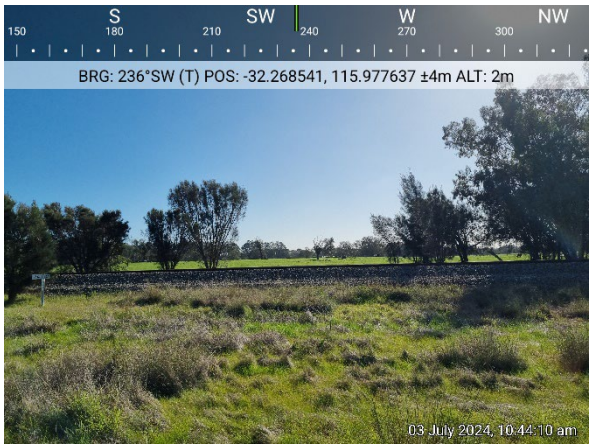


Photo ID: 7c

Photo ID: 7d

Photo ID: 7e

Photo ID: 7f

Plot 7	
 **Photo ID:** 7g	 **Photo ID:** 7h (foreground)
 **Photo ID:** 7i (background)	

Plot 8		
Vegetation classification	**Pre-development**	Class G Grassland (Downslope >5–10°)
	Post-development	Class G Grassland (Downslope >5–10°) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Grassland greater than 100 mm in height at maturity	

Photo ID: 8a

Plot 9		
Vegetation classification	**Pre-development**	Class G Grassland (Downslope >0–5°)
	Post-development	Class G Grassland (Downslope >0–5°) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Grassland greater than 100 mm in height at maturity	

Photo ID: 9a

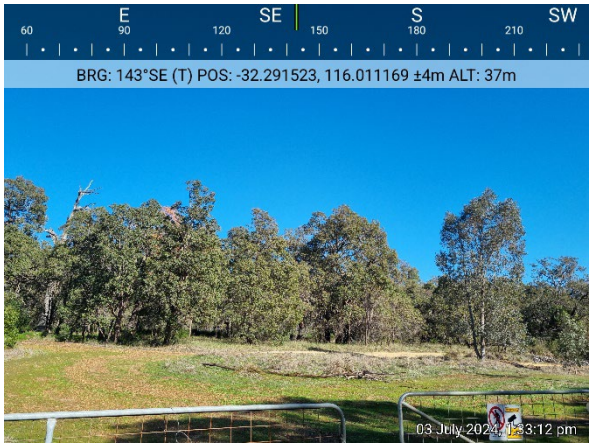


Photo ID: 9b (foreground)

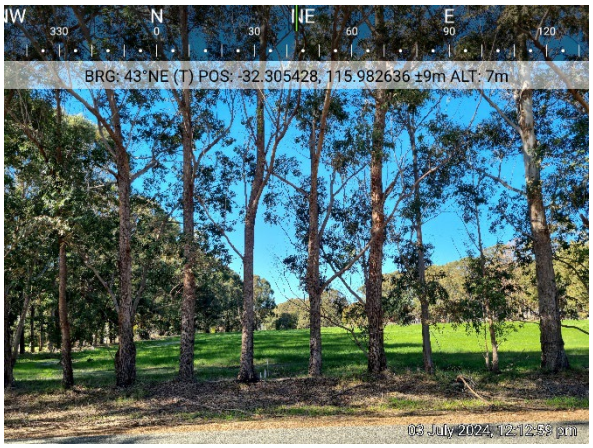


Photo ID: 9c (background)

Photo ID: 9d

Photo ID: 9e

Photo ID: 9f

Plot 9

Photo ID: 9g

Photo ID: 9h **(**background)

Photo ID: 9i

Photo ID: 9j

Plot 10		
Vegetation classification	**Pre-development**	Class G Grassland (Flat/Upslope (0°))
	Post-development	Class G Grassland (Flat/Upslope (0°)) and modified to a non-vegetated and low threat state (Clause 2.2.3.2 [e] and [f])
Description / justification	Grassland greater than 100 mm in height at maturity	

Photo ID: 10a

Photo ID: 10b

Photo ID: 10c

Photo ID: 10d

Photo ID: 10e

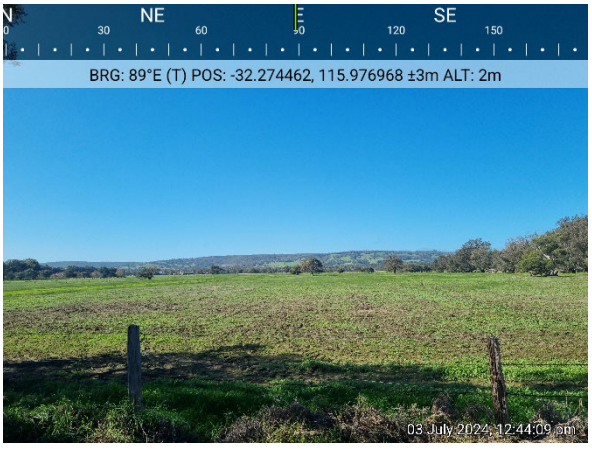


Photo ID: 10f

Plot 10

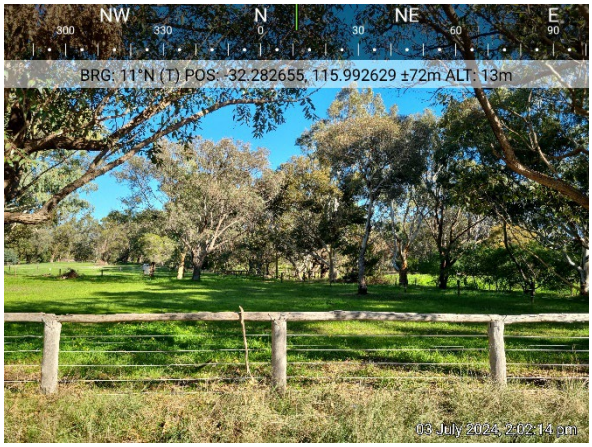


Photo ID: 10g

Photo ID: 10h

Photo ID: 10i

Photo ID: 10j

Photo ID: 10k

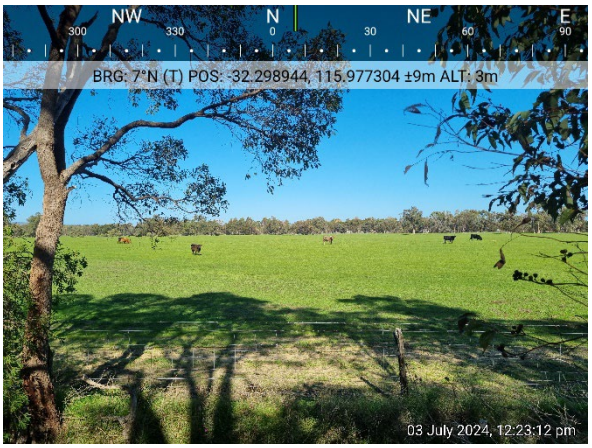


Photo ID: 10l

Plot 10

Photo ID: 10m

Photo ID: 10n

Photo ID: 10o

Photo ID: 10p

Photo ID: 10q

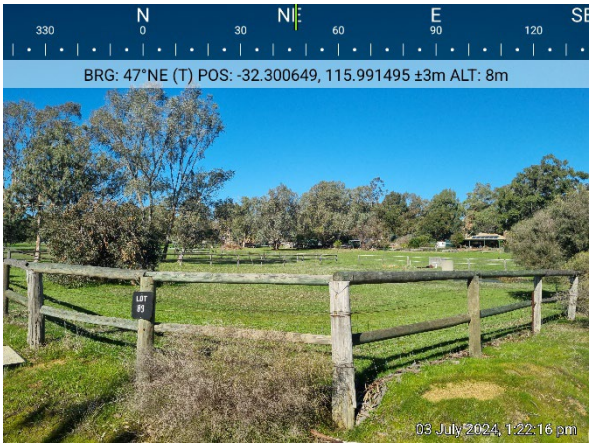


Photo ID: 10r

Plot 10	
 **Photo ID:** 10s	 **Photo ID:** 10t
 **Photo ID:** 10u	

Plot 11		
Vegetation classification	**Pre-development**	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification	Existing non-vegetation areas (i.e. buildings, roads, railway lines, dams, lakes, etc) and low threat managed vegetation (managed gardens, urban streetscapes, managed urban POS, etc)	

Photo ID: 11a

Photo ID: 11b

Photo ID: 11c

Photo ID: 11d

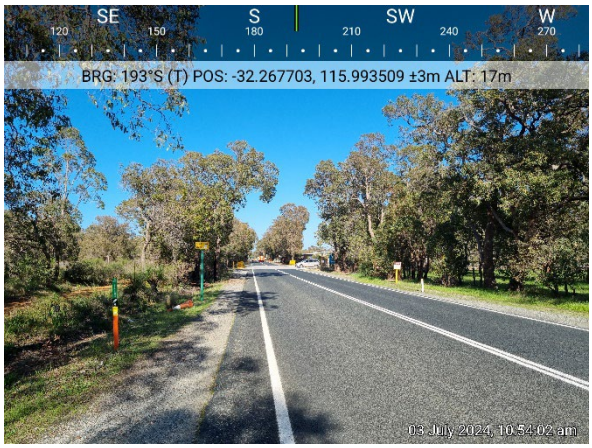


Photo ID: 11e

Photo ID: 11f

Plot 11

Photo ID: 11g

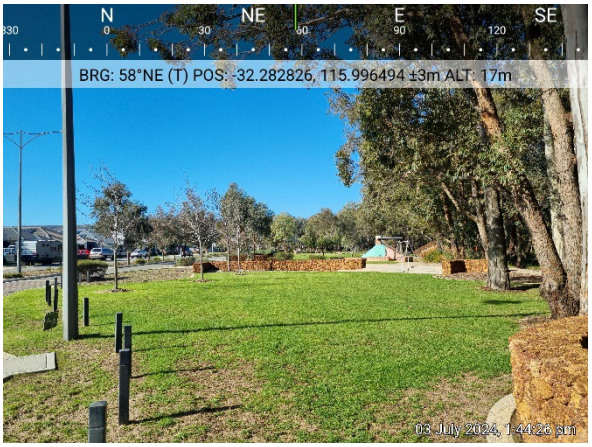


Photo ID: 11h

Photo ID: 11i

Photo ID: 11j

Photo ID: 11k

Photo ID: 11l

Plot 11

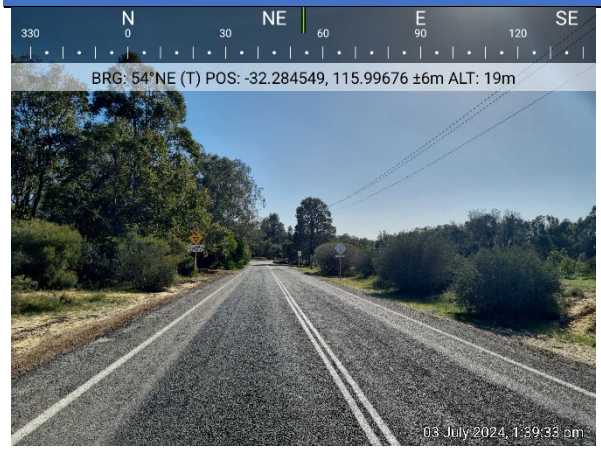


Photo ID: 11m

Photo ID: 11n (background)

Photo ID: 11o

Photo ID: 11p

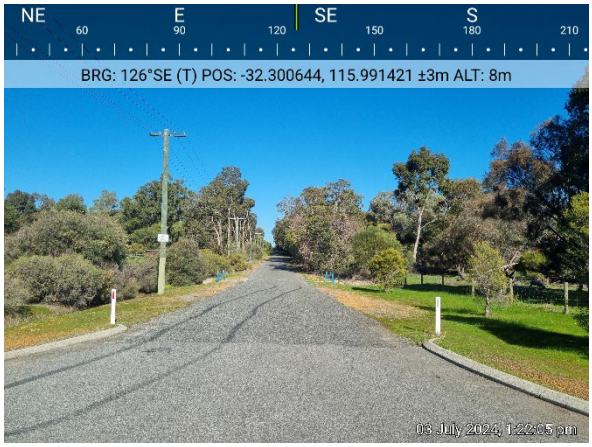
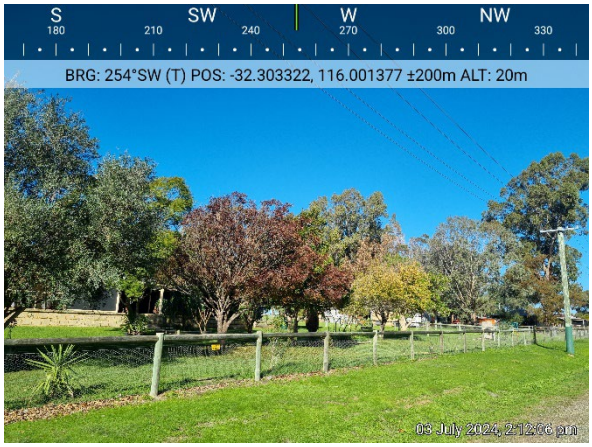
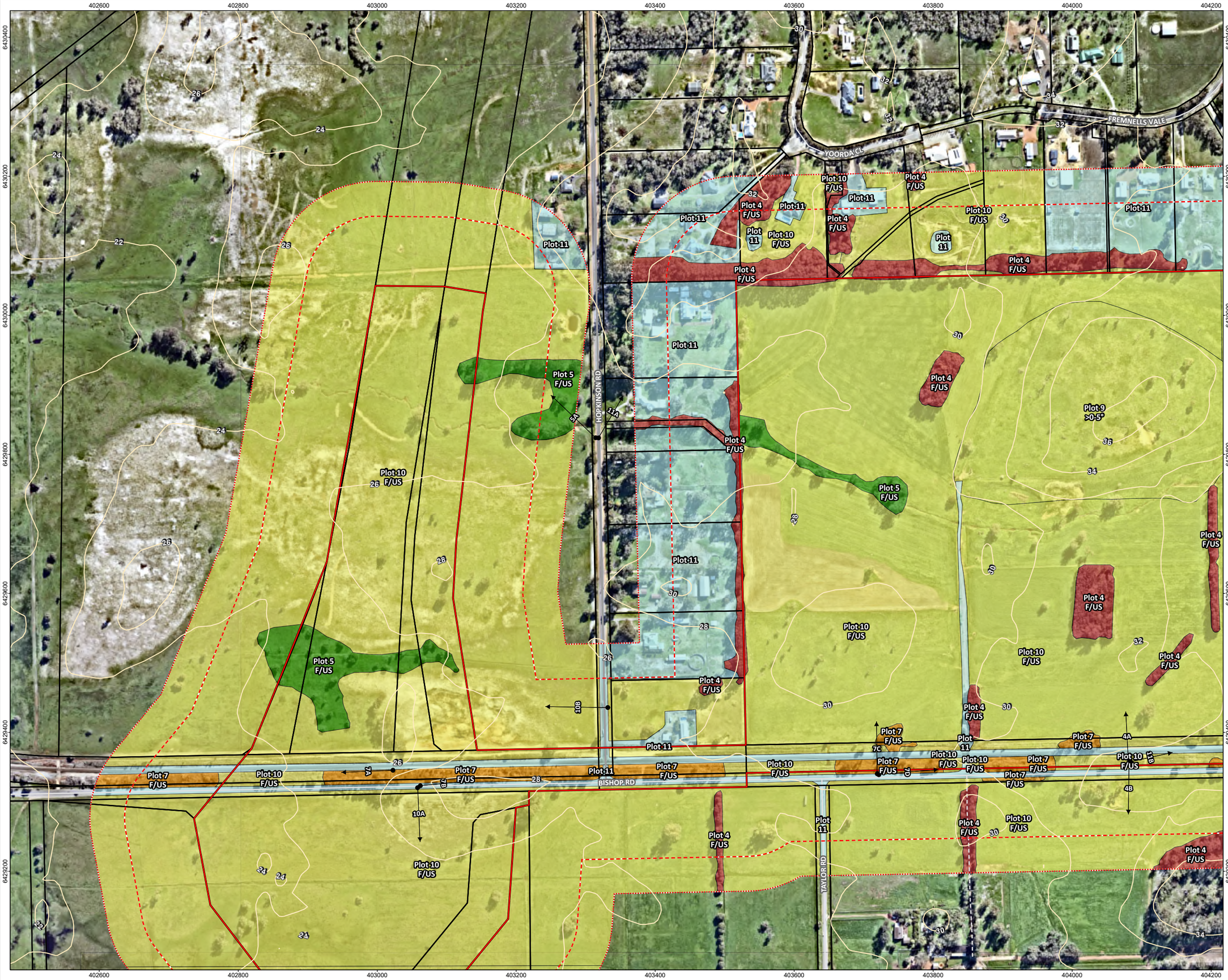


Photo ID: 11q

Photo ID: 11r

Plot 11	
 **Photo ID:** 11s	 **Photo ID:** 11t

Appendix C Pre-development vegetation classification and effective slope mapping

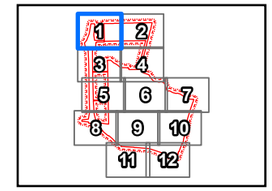


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
VEGETATION CLASSIFICATION
AND EFFECTIVE SLOPE

Map 1 of 12

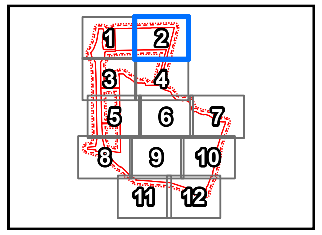
File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG
Scale 1:5,000 at A3	

0 100 200
metres

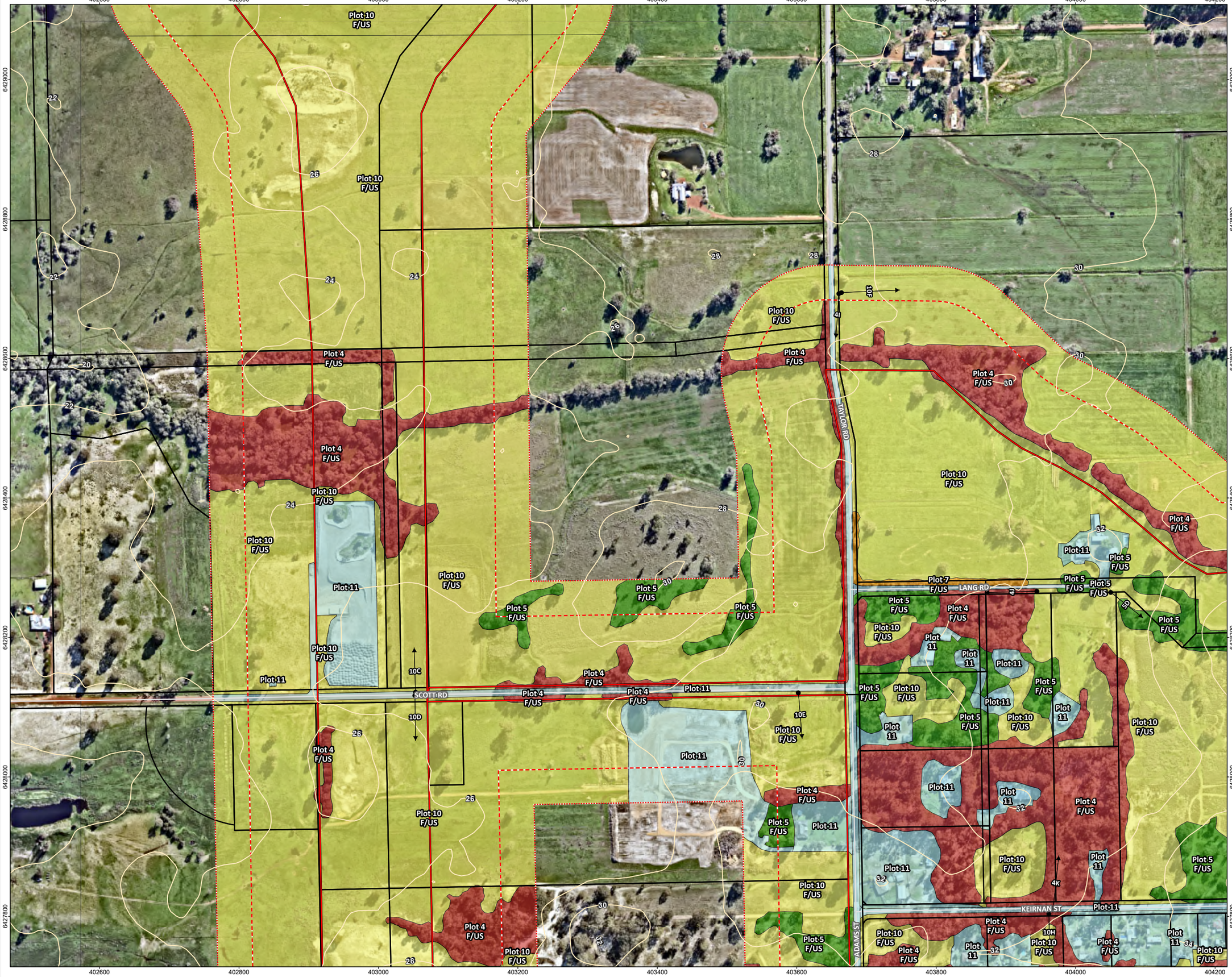
Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 2 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

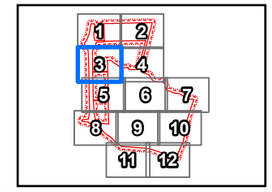


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 19-Nov-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 3 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6429000 6428800 6428600 6428400 6428200 6428000 6427800

Plot 11 Plot 7 F/US Plot 4 F/US Plot 4 F/US Plot 5 F/US Plot 10 F/US Plot 11 Plot 4 F/US Plot 7 F/US Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 11 Plot 7 F/US Plot 7 F/US Plot 11 Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 11 Plot 4 F/US Plot 4 F/US Plot 11 Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US Plot 10 F/US Plot 10 F/US Plot 10 F/US Plot 5 F/US Plot 5 F/US Plot 10 F/US Plot 10 F/US Plot 4 F/US Plot 7 F/US Plot 10 F/US Plot 10 F/US Plot 4 F/US Plot 5 F/US Plot 4 F/US Plot 11 Plot 11 Plot 11 Plot 11 Plot 10 F/US Plot 11 Plot 4 F/US Plot 11 Plot 11 Plot 11 Plot 11 Plot 10 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US Plot 4 F/US

SOLDIERS RD PATERSON ST BASKERVILLE RD KEIRNAN ST KEIRNAN ST KEIRNAN ST KEIRNAN ST HAULBACK BVD GRAIN WAY HEARTWOOD BVD SKIDDER RD GAWLER LANE SCANTLING WAY SAPWOOD GR FLITCH ST SAWMILL RD GLANCER RD SKYLINE BVD PEAVEY RD PEAVEY RD QUILL LANE CHIPPER ST BRIAR RD DRAY LANE BUCKER ST BUTTRESS ST HAYWIRE AV GRAPPLE RD GRAPPLE RD NOTCH LANE WINDROW GR TINSPAR AV TINSPAR AV TINSPAR AV TINSPAR AV

Nearmap

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200 metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 4 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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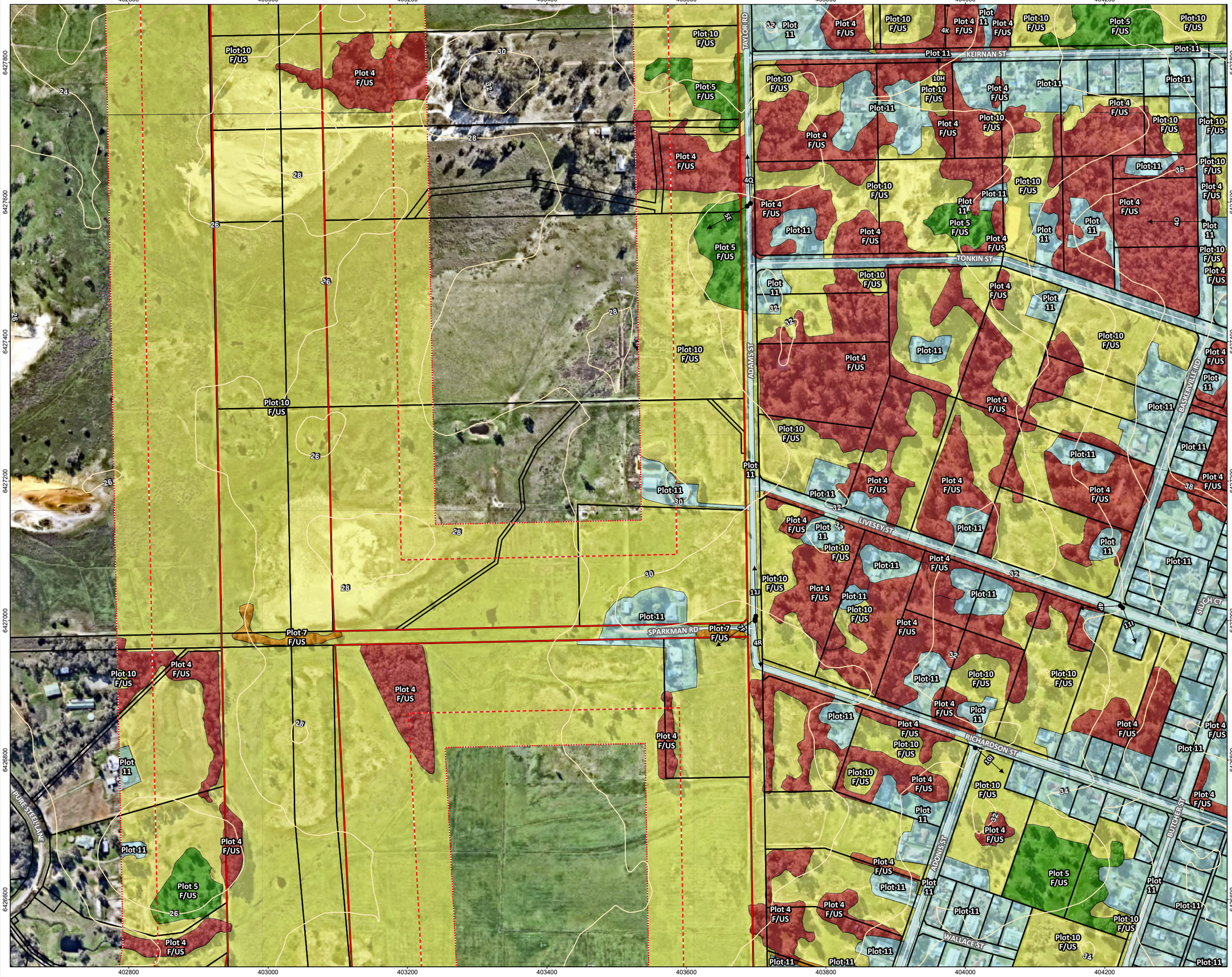

Legend

- Project area
- 100m assessment area
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Vegetation classification

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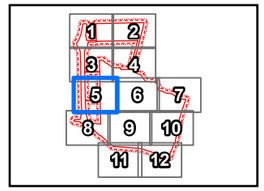
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)

- Photo point directions
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
VEGETATION CLASSIFICATION
AND EFFECTIVE SLOPE

Map 5 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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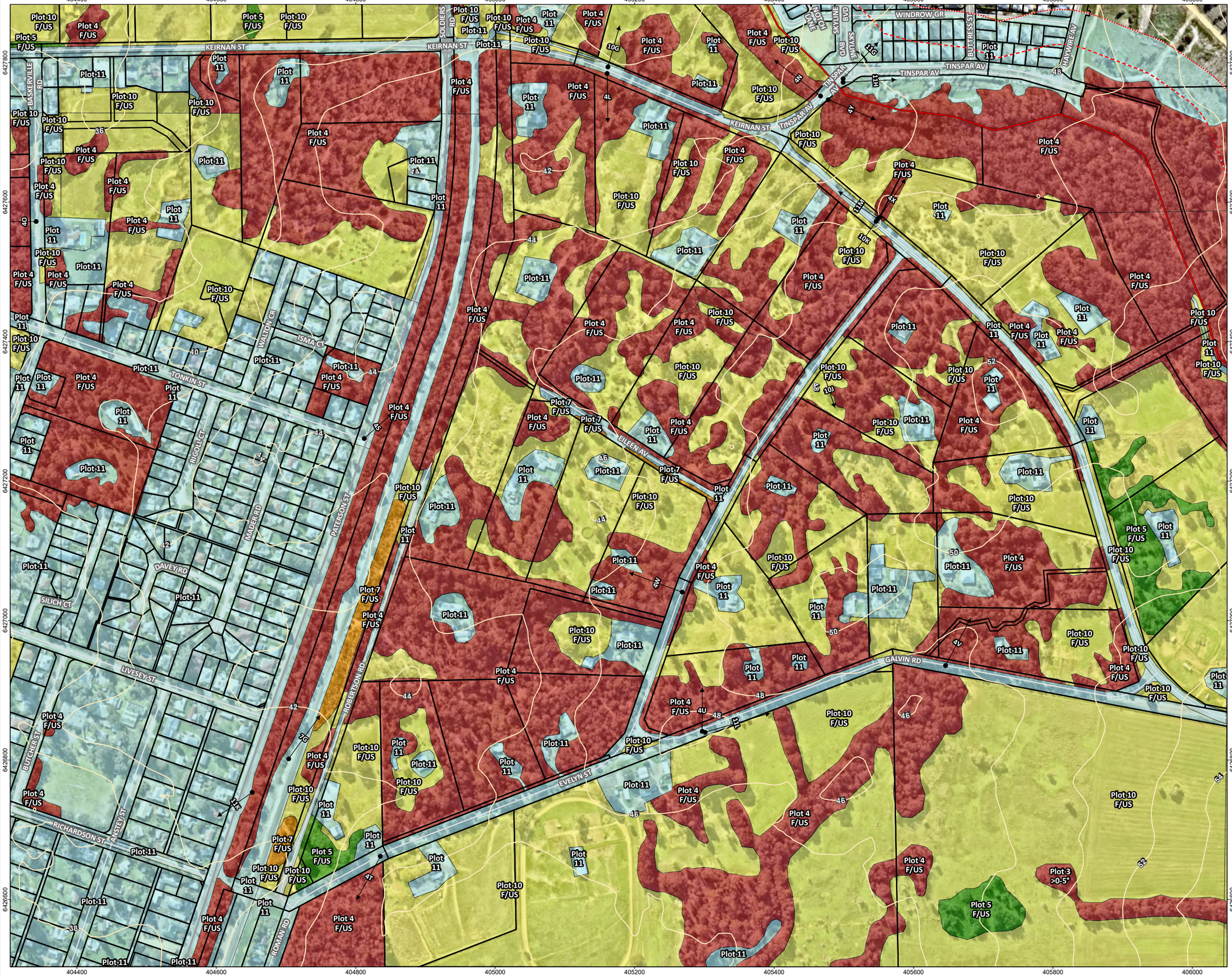

Legend

- Project area
- 100m assessment area
- 150m assessment area
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Vegetation classification

- Class A Forest
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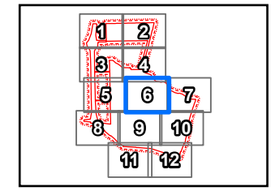
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 6 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

406000 406200 406400 406600 406800 407000 407200 407400 407600

6427800 6427600 6427400 6427200 6427000 6426800 6426600

REILLY RD

KEIRNAN ST

SOUTH WESTERN HWY

3A 3B 3C 9A 9B

Plot 11 Plot 4 F/US Plot 10 F/US Plot 3 >0-5° Plot 5 F/US Plot 9 >0-5°

50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 96

Legend

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- 100m assessment area
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- Cadastral boundary

Vegetation classification

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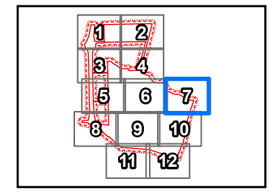
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)

- Photo point directions
- Highway
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 7 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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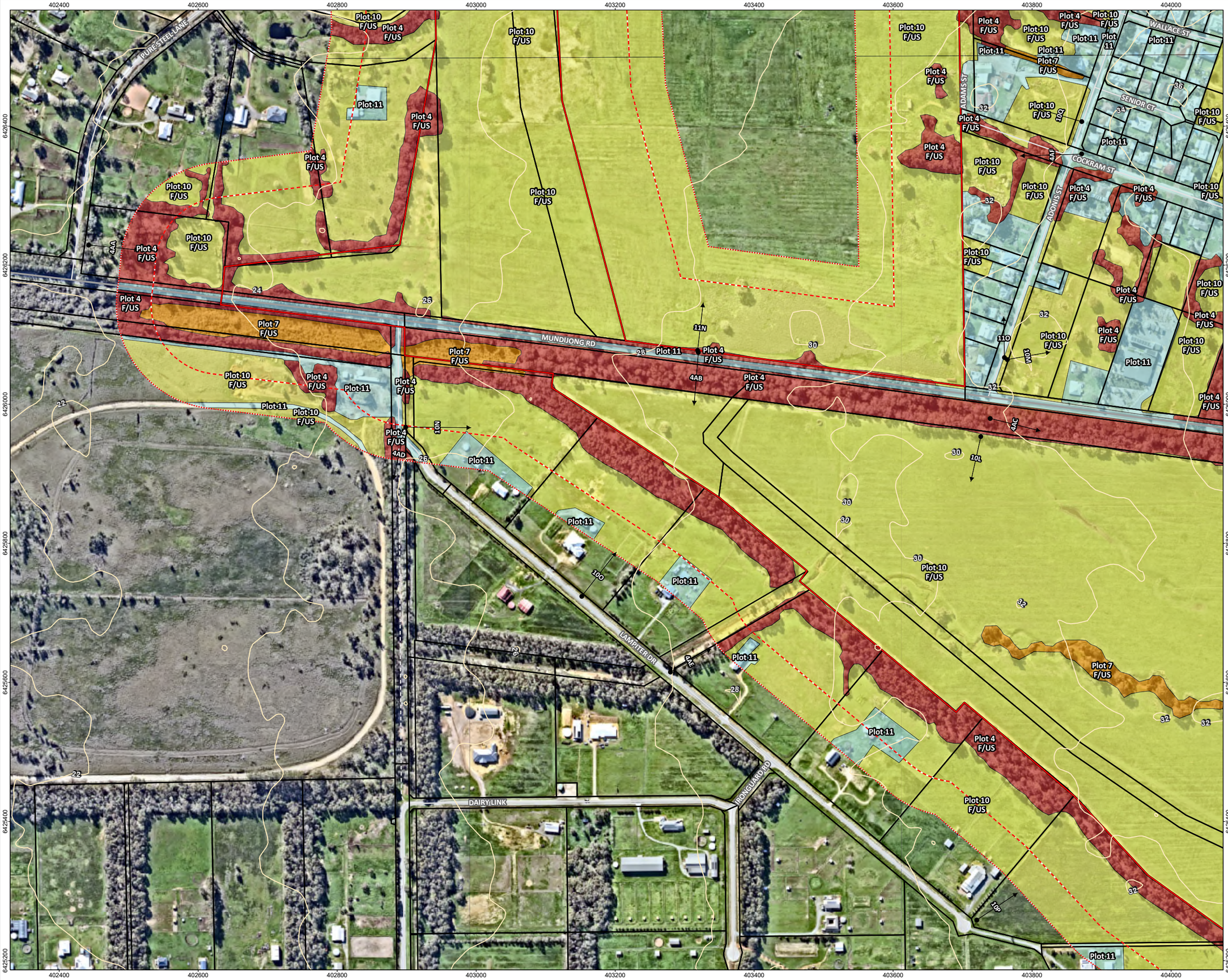

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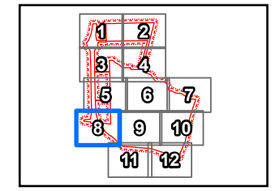
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)

- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
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Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 8 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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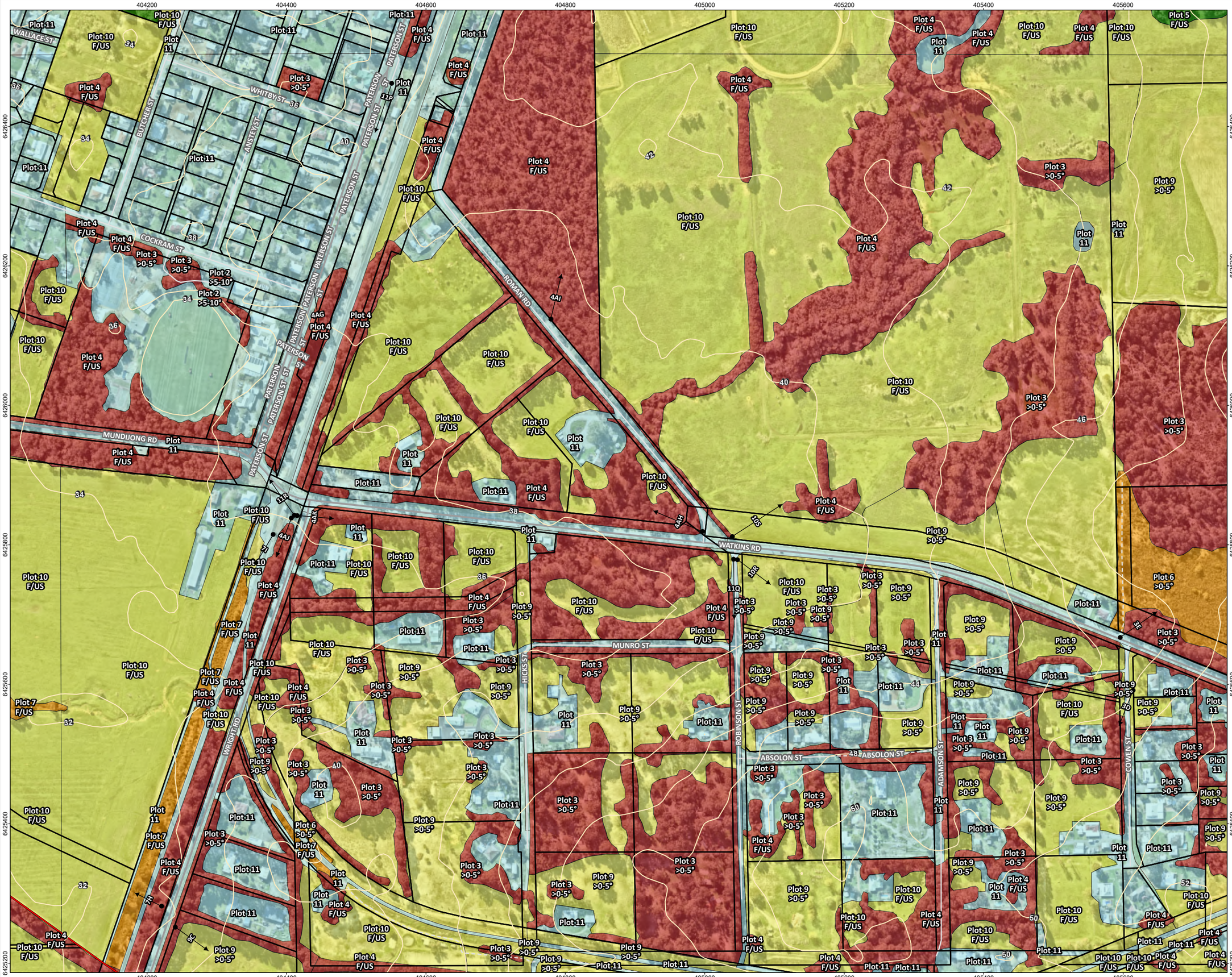

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

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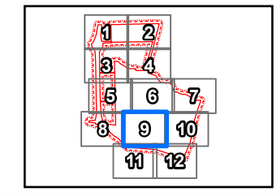
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 9 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
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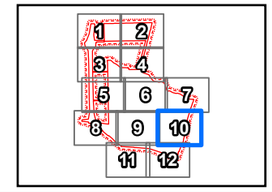
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)

- Photo point directions
- Highway
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 10 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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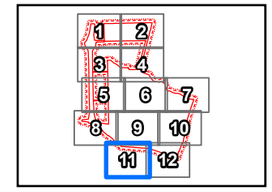
- Clause 2.2.3.2 (e) & (f)
- Photo point directions
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
VEGETATION CLASSIFICATION
AND EFFECTIVE SLOPE

Map 11 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Vegetation classification

- Class A Forest
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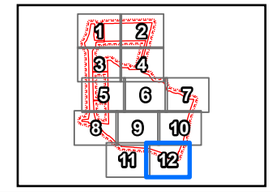
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)

- Photo point directions
- Highway
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 12 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Appendix D Post-development vegetation classification and effective slope mapping

402600 402800 403000 403200 403400 403600 403800 404000 404200

6430400 6430200 6430000 6429800 6429600 6429400 6429200

FREMNELLS VALE
YOORDA CL
HOPKINSON RD
BISHOP RD
TAYLOR RD

Plot 10 F/US
Plot 4 F/US
Plot 11
Plot 5 F/US
Plot 7 F/US
Plot 9 >0-5°
Plot 12

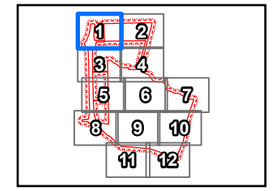
Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state

- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 1 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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404200 404400 404600 404800 405000 405200 405400 405600 405800

6430400 6430200 6430000 6429800 6429600 6429400 6429200

FRENNELLS VALE
LITTLE PL
ROBERTSON RD
SOLDIERS RD
NORMAN RD
BISHOP RD

Plot 4 F/US
Plot 10 F/US
Plot 11
Plot 7 F/US
Plot 12
Plot 9 >0-5°
Plot 5 F/US

34 36 38 40 42 44 46 48 50 52 54 56 32 53 60

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- POS
- Public purpose
- Reserves

Vegetation classification

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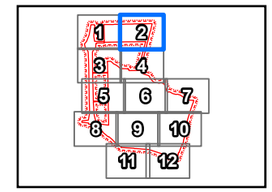
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 2 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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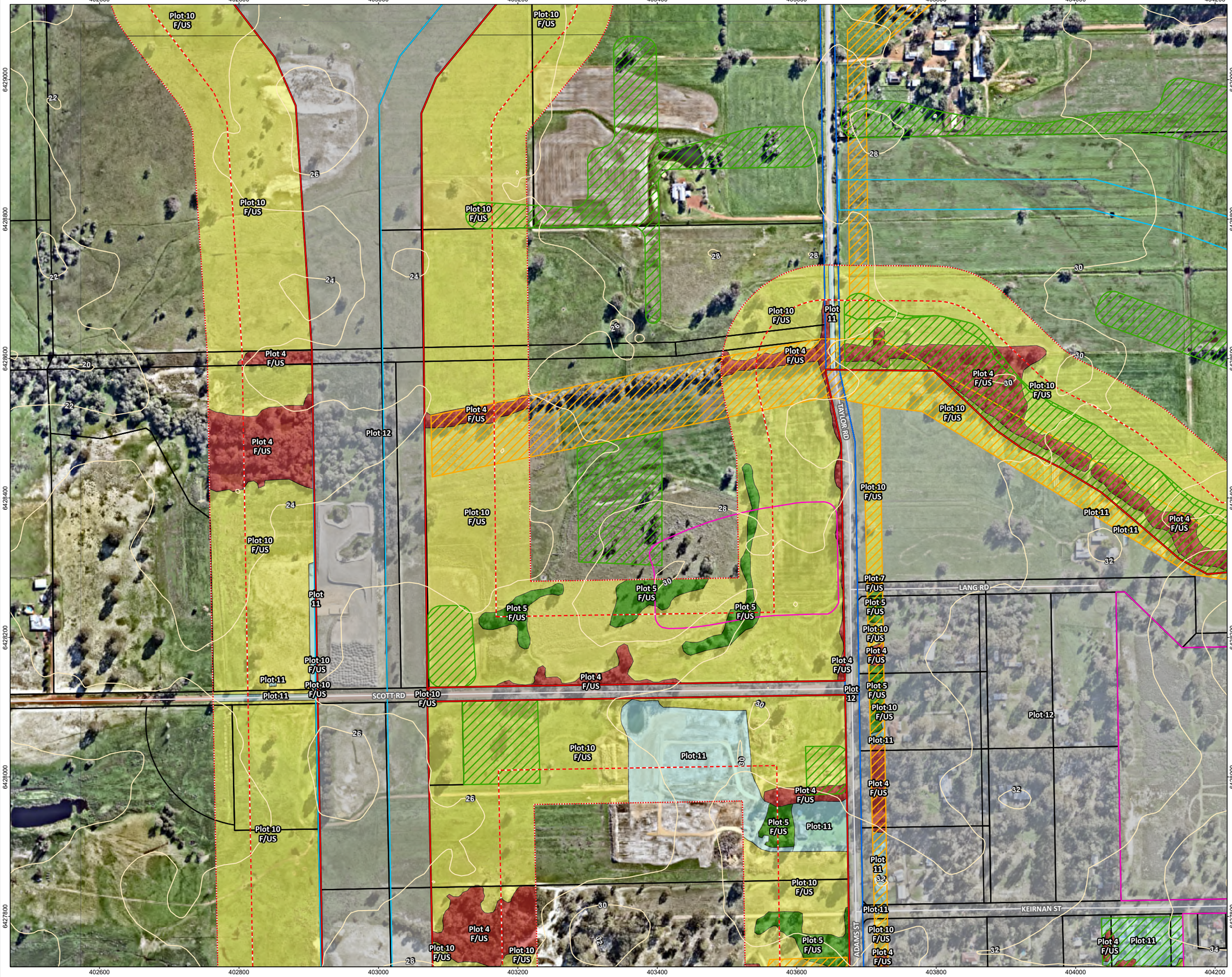

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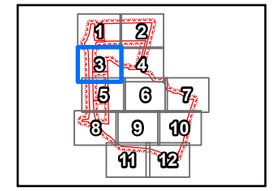

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Version: A	Date: 19-Nov-2024
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Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 3 of 12

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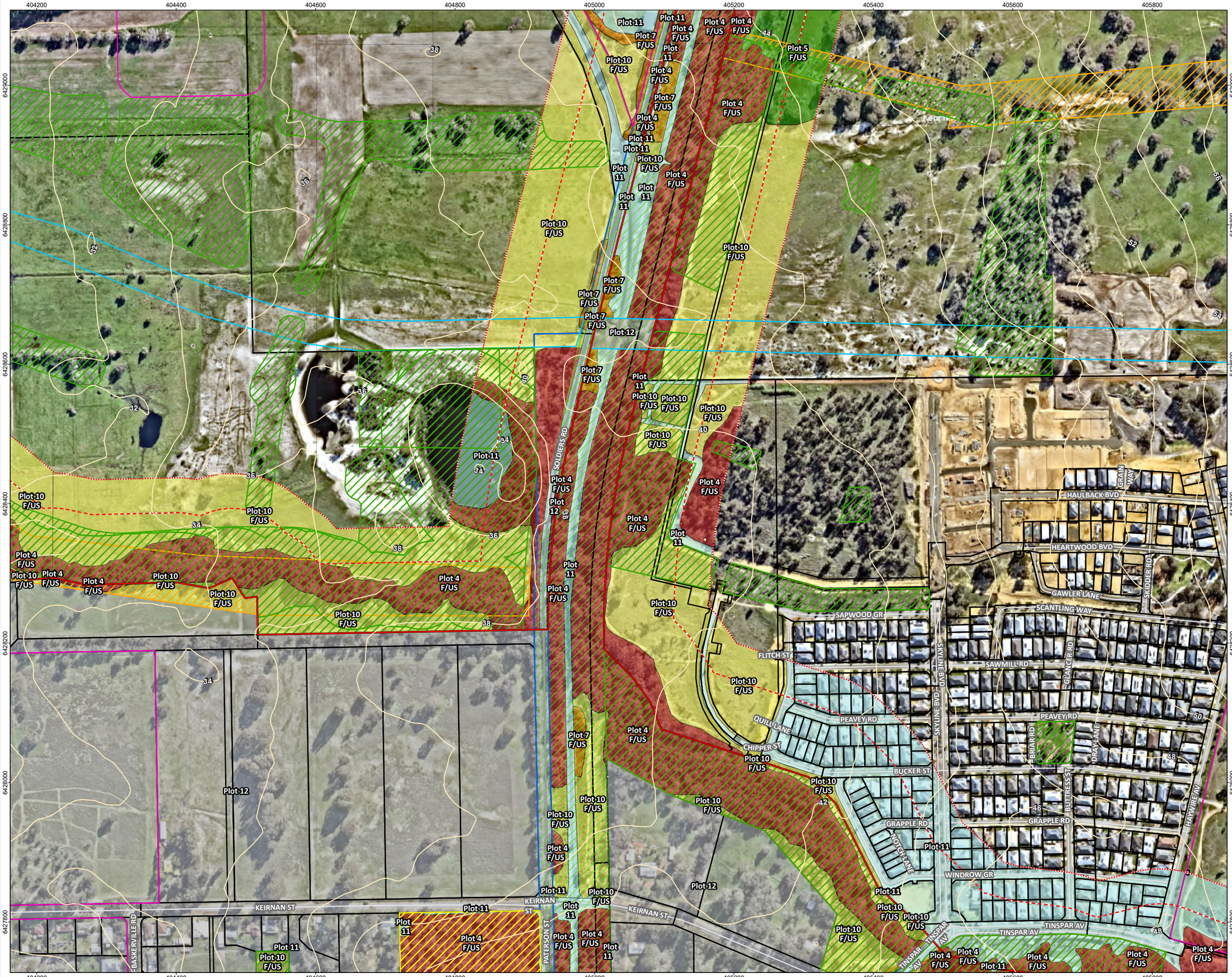

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0 100 200
metres

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Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 4 of 12

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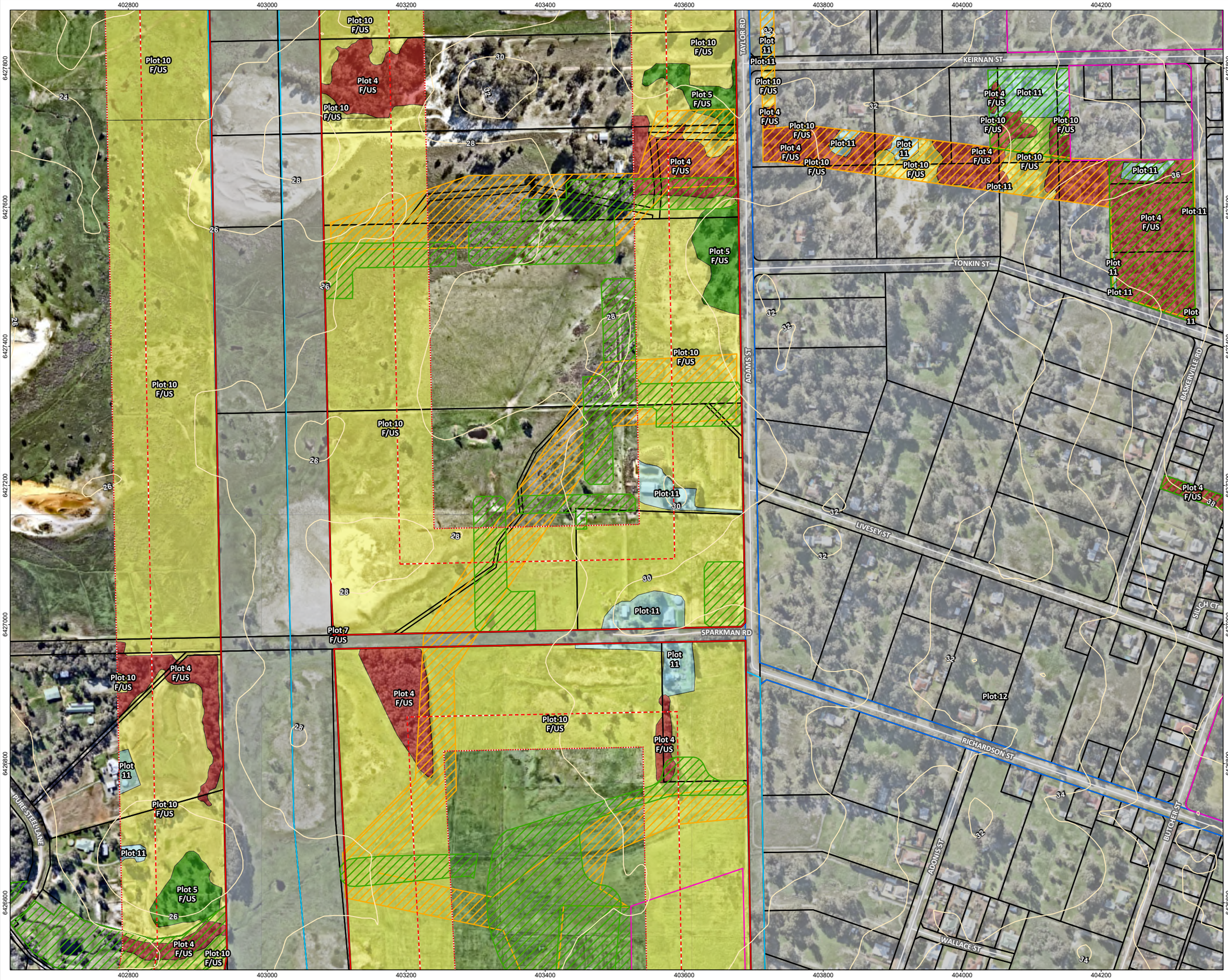

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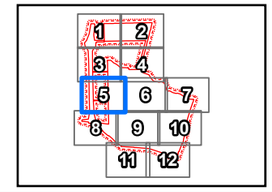
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 5 of 12

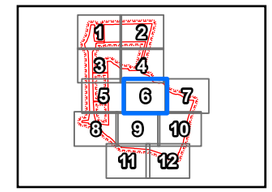
File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Major road
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 6 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

406000 406200 406400 406600 406800 407000 407200 407400 407600

6427800 6427600 6427400 6427200 6427000 6426800 6426600

REILLY RD

KEIRNAN ST

SOUTH WESTERN HWY

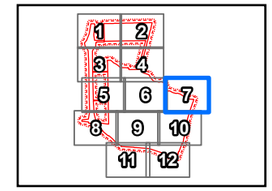
Plot 11 50
Plot 4 F/US
Plot 10 F/US
Plot 3 >0-5°
Plot 5 F/US
Plot 12
Plot 9 >0-5°
90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Vegetation classification

- Class A Forest
- Class B Woodland
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Highway
- Minor road
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 7 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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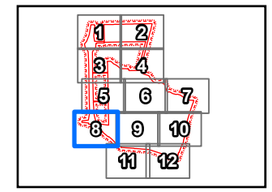
Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Vegetation classification

- Class A Forest
- Class B Woodland
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state

- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 8 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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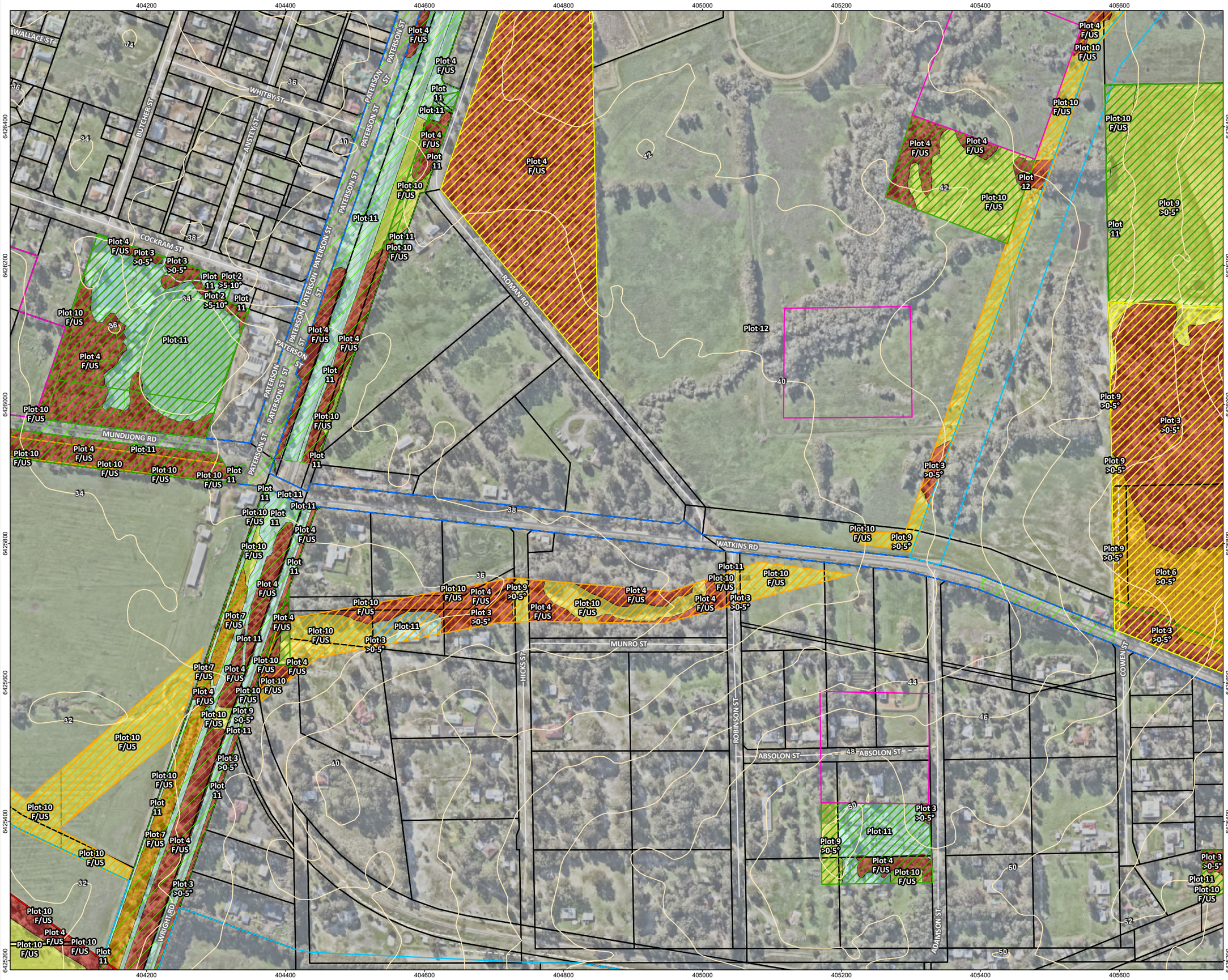


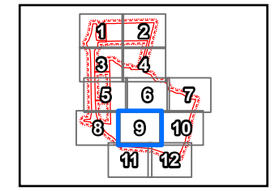
Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Vegetation classification

- Class A Forest
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state

- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 9 of 12

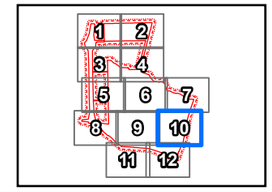
File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Existing roads
- POS
- Reserves

Vegetation classification

- Class A Forest
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Highway
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 19-Nov-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 10 of 12

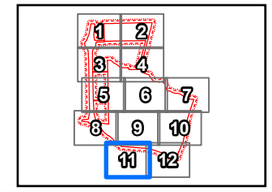
File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Future roads
- POS

Vegetation classification

- Class A Forest
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state
- Major road
- Minor road
- Track
- Topographic contours (mAHD)



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 11 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

405400 405600 405800 406000 406200 406400 406600 406800

6425200 6425000 6424800 6424600 6424400 6424200 6424000

ADAMSON ST
SHANLEY RD
SOUTH WESTERN HWY
JARRAHDALE RD

Plot 12
Plot 9 >0-5°
Plot 11
Plot 4 F/US
Plot 7 F/US
Plot 3 >0-5°
Plot 10 F/US

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Existing roads
- Future roads

Vegetation classification

- Class A Forest
- Class D Scrub
- Class G Grassland
- Clause 2.2.3.2 (e) & (f)
- Area to be modified to non-vegetated and low threat state

- Highway
- Major road
- Minor road
- Track
- Topographic contours (mAHD)

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 19-Nov-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE

Map 12 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Appendix E Pre-development Bushfire Hazard Level mapping

402600 402800 403000 403200 403400 403600 403800 404000 404200

6430400 6430200 6430000 6429800 6429600 6429400 6429200

FREMNELLS VALE

YOORDA CL

HOPKINSON RD

BISHOP RD

TAYLOR RD

PLOT 11

PLOT 4 F/US

PLOT 10 F/US

PLOT 5 F/US

PLOT 7 F/US

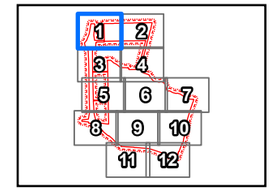
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 24-Sep-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 1 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6430400 6430200 6430000 6429800 6429600 6429400 6429200

GREENWELLS VALE
LITTLE PL
ROBERTSON RD
SOLDIERS RD
NORMAN RD
BISHOP RD

PLOT 4 F/US
PLOT 10 F/US
PLOT 11
PLOT 7 F/US
PLOT 5 F/US
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 2 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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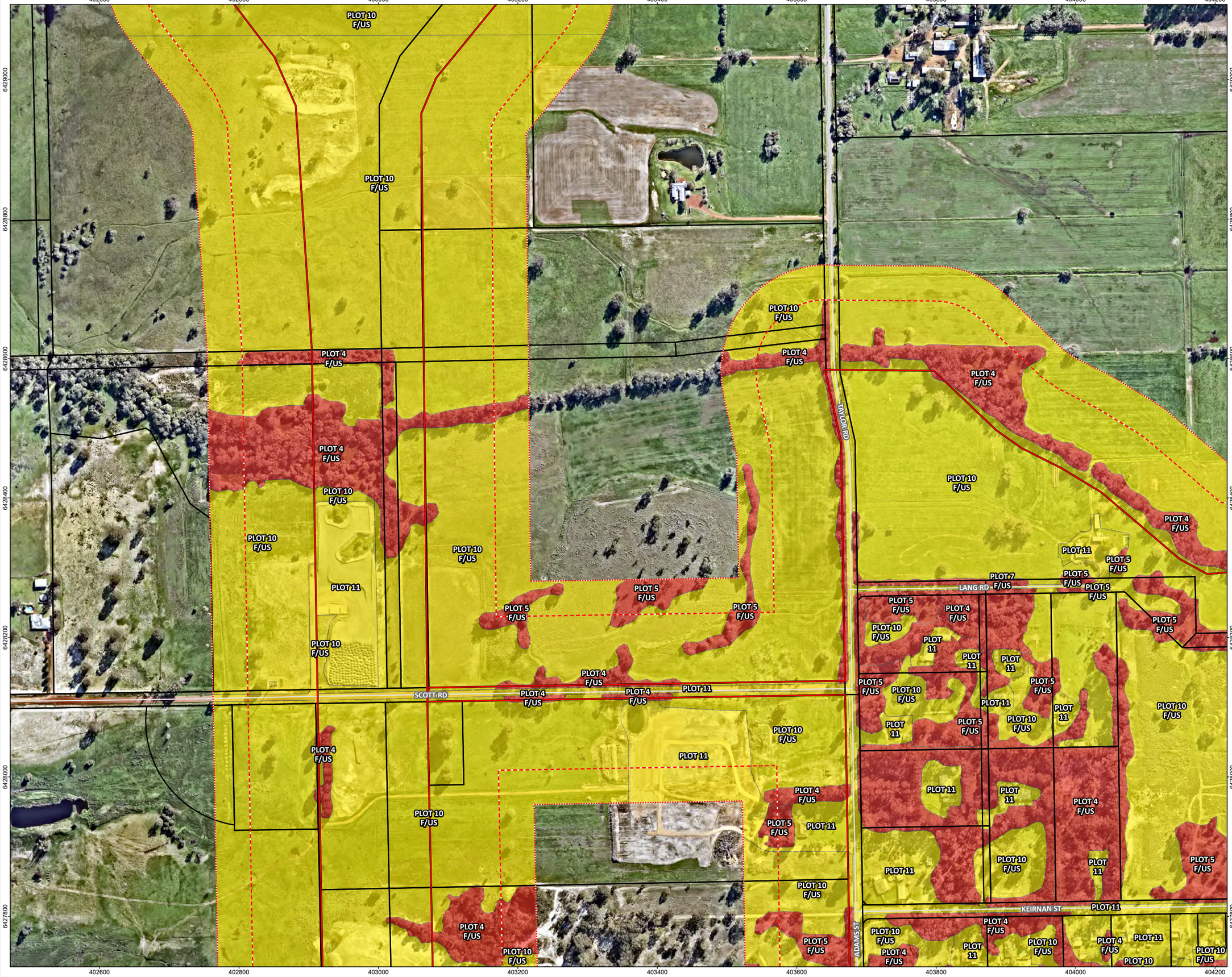
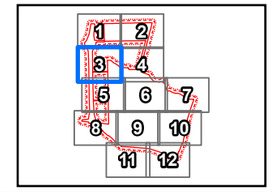


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Minor road
- Track



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

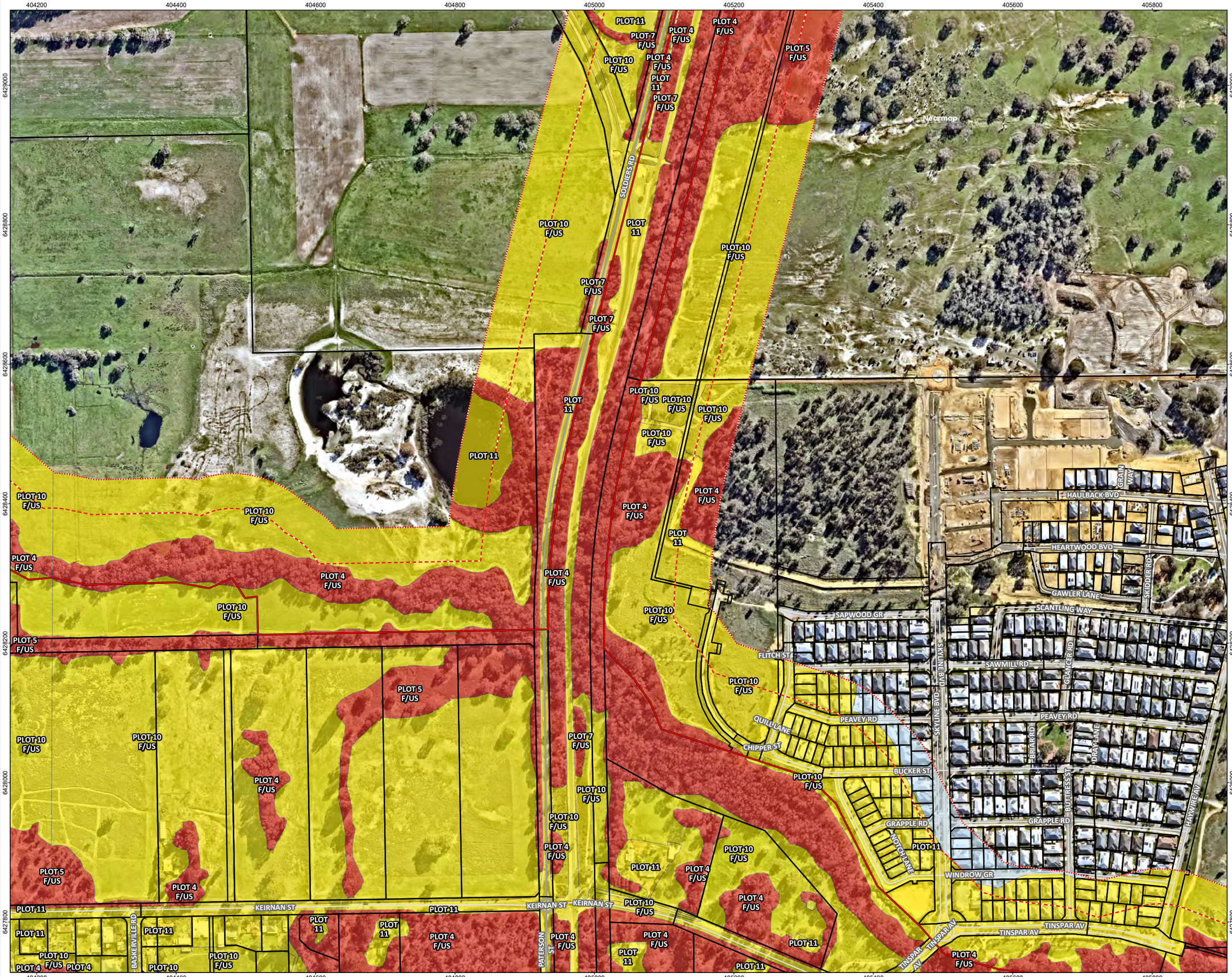
Coord. Sys. GDA2020 MGA Zone 50

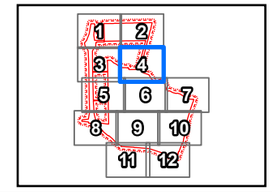
Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 3 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.





Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 4 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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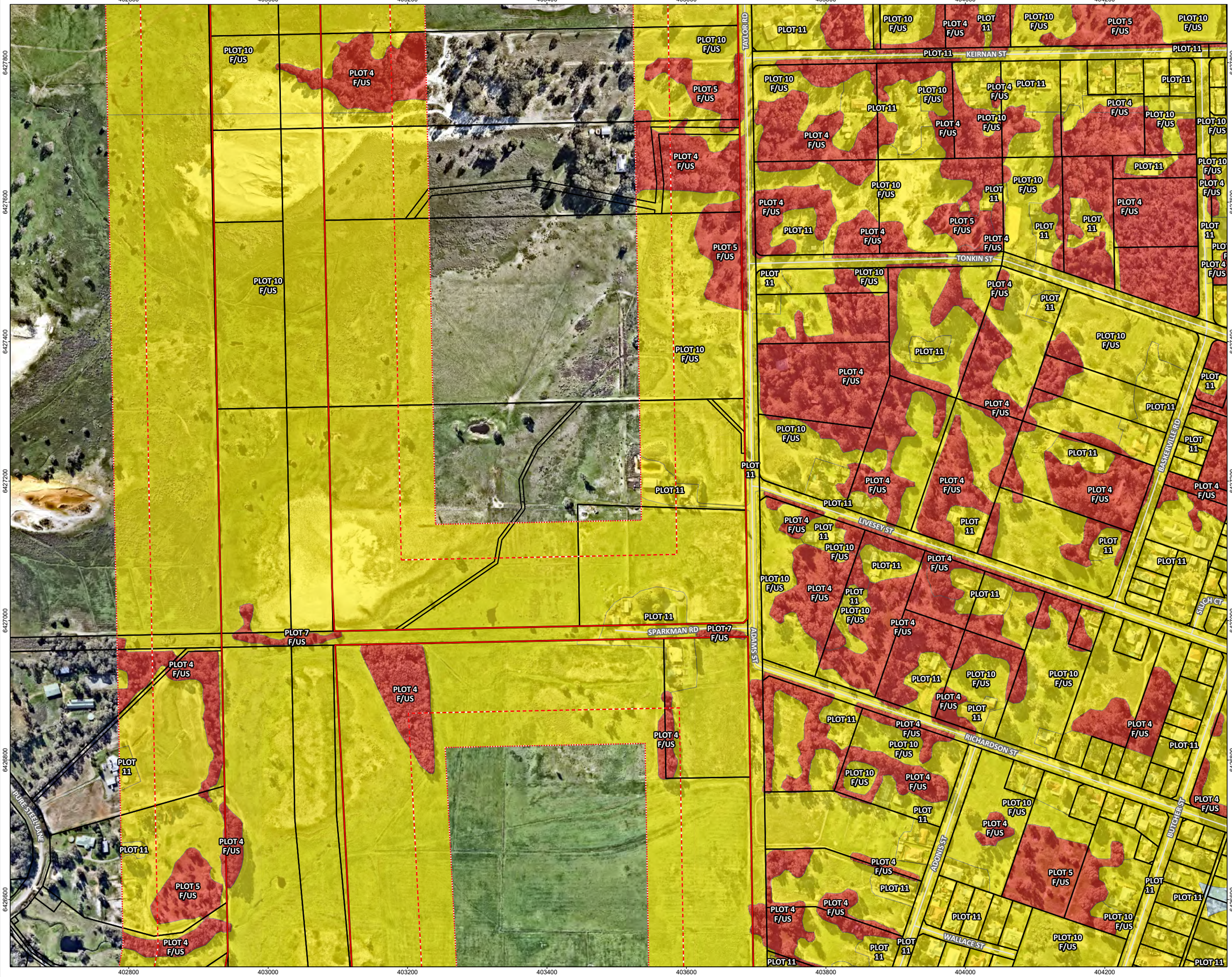
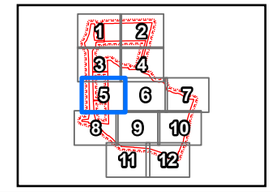


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Minor road



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 5 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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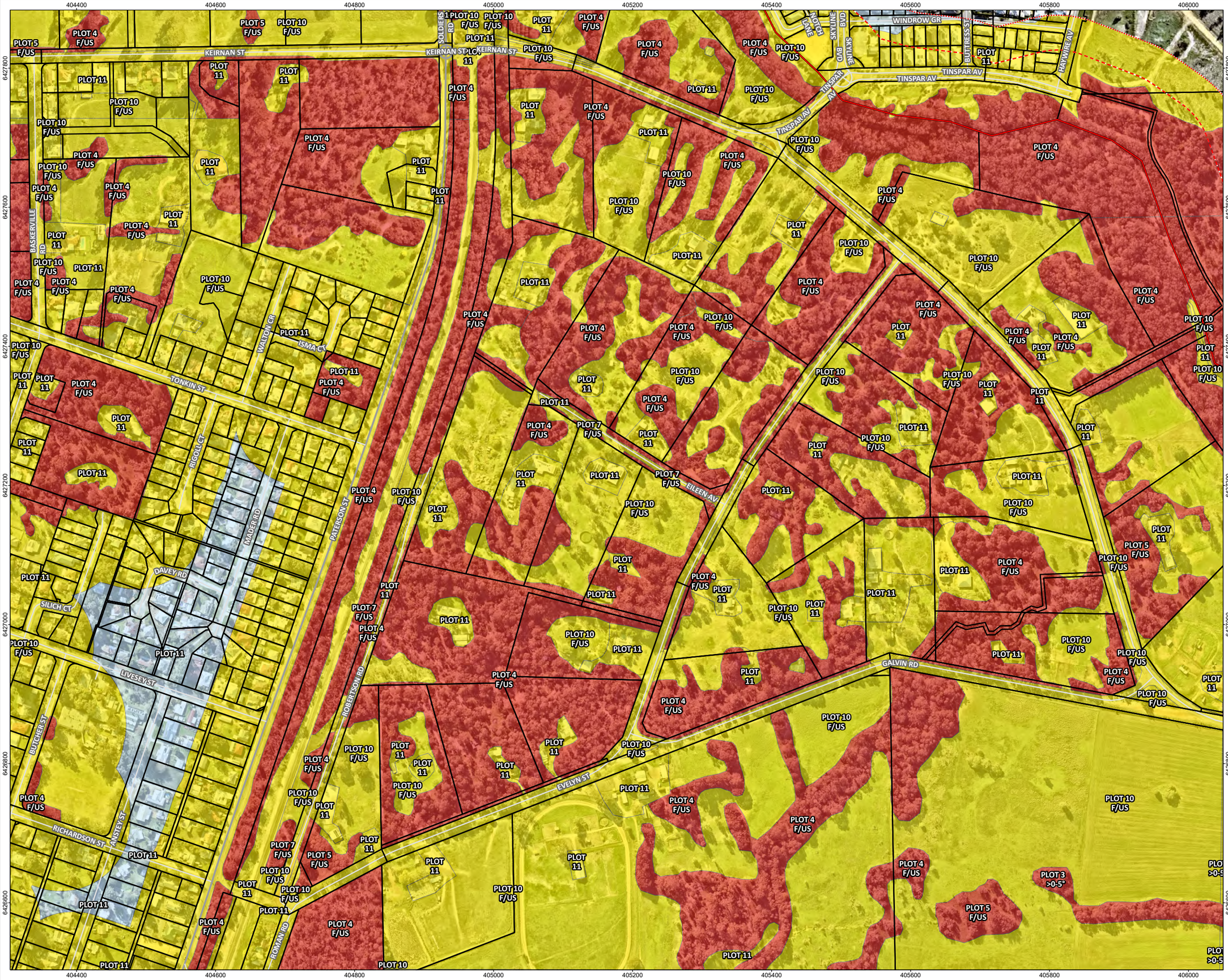
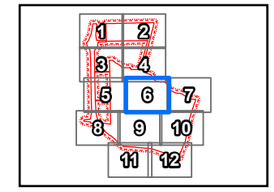


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 6 of 12

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Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

406000 406200 406400 406600 406800 407000 407200 407400 407600

6427800 6427600 6427400 6427200 6427000 6426800 6426600

REILLY RD

KEIRNAN ST

SOUTH WESTERN HWY

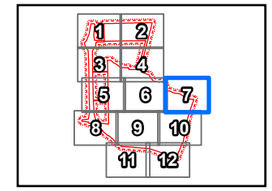
PLOT 11
PLOT 4 F/US
PLOT 10 F/US
PLOT 3 >0-5°
PLOT 5 F/US
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Minor road



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Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

PRE-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 7 of 12

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Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

402400 402600 402800 403000 403200 403400 403600 403800 404000

6426400 6426200 6426000 6425800 6425600 6425400 6425200

PURE STEEL LANE
MUNDIJONG RD
ADAMS ST
ADONIS ST
SENIOR CT
COCKRAM ST
WALLACE ST
LAMPITER DR
IRONGUARD RD
DAIRY LINK

PLOT 4 F/US
PLOT 7 F/US
PLOT 10 F/US
PLOT 11

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 8 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600

6426400 6426200 6426000 6425800 6425600 6425400 6425200

WALLACE ST · BUTCHER ST · WHITBY ST · ANSTEY ST · PATERSON ST · COCKRAM ST · ROMAN RD · MUNDIJONG RD · WRIGHT RD · MUNRO ST · HICKS ST · ROBINSON ST · ADAMSON ST · ABSOLON ST · WATKINS RD · COWEN ST

PLOT 11 · PLOT 10 F/US · PLOT 4 F/US · PLOT 7 F/US · PLOT 9 >0-5° · PLOT 3 >0-5° · PLOT 2 >5-10° · PLOT 6 >0-5° · PLOT 5 F/US

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 9 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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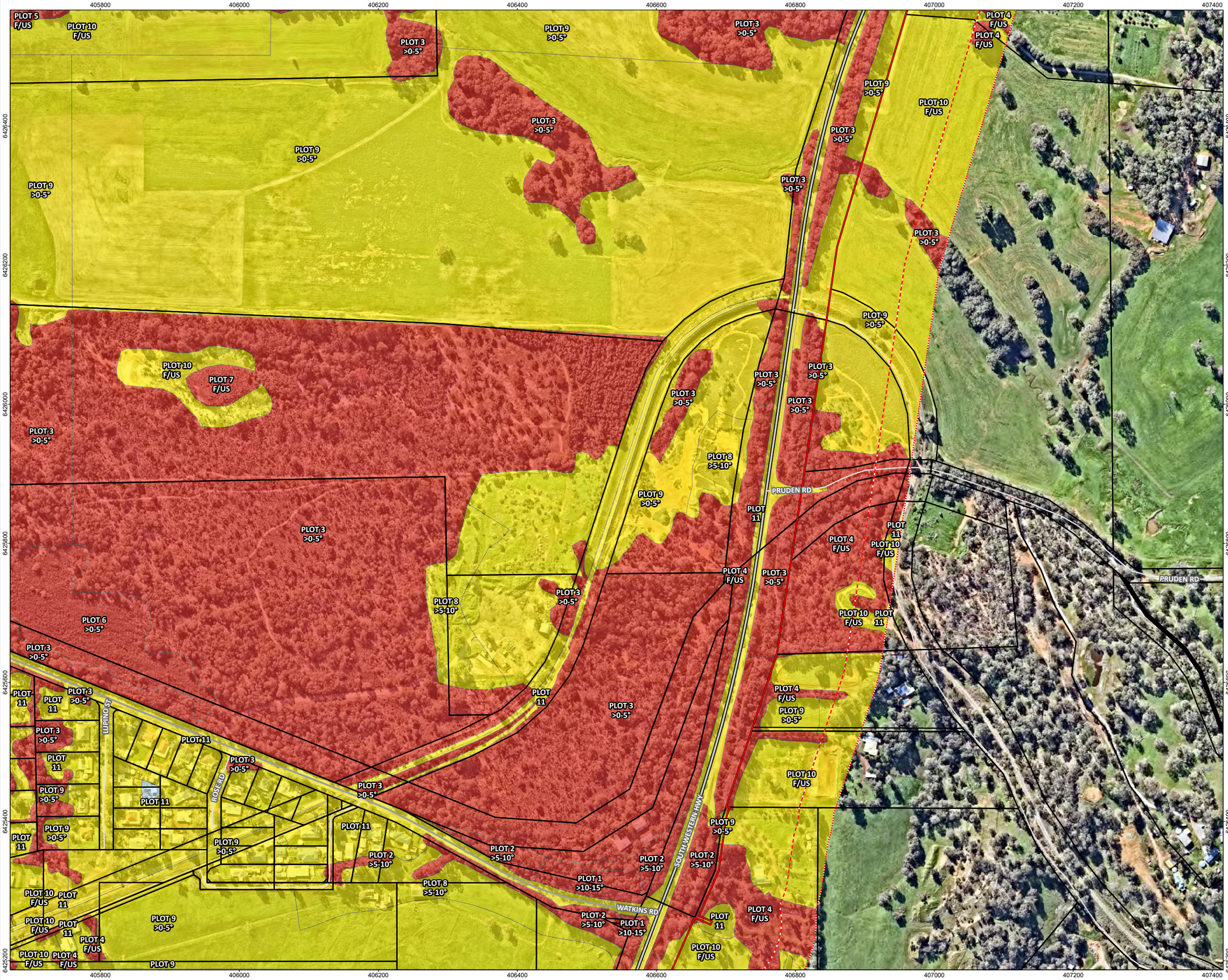
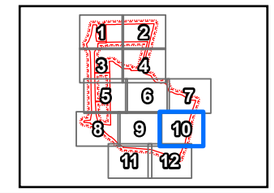


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Major road
- Minor road
- Track



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 10 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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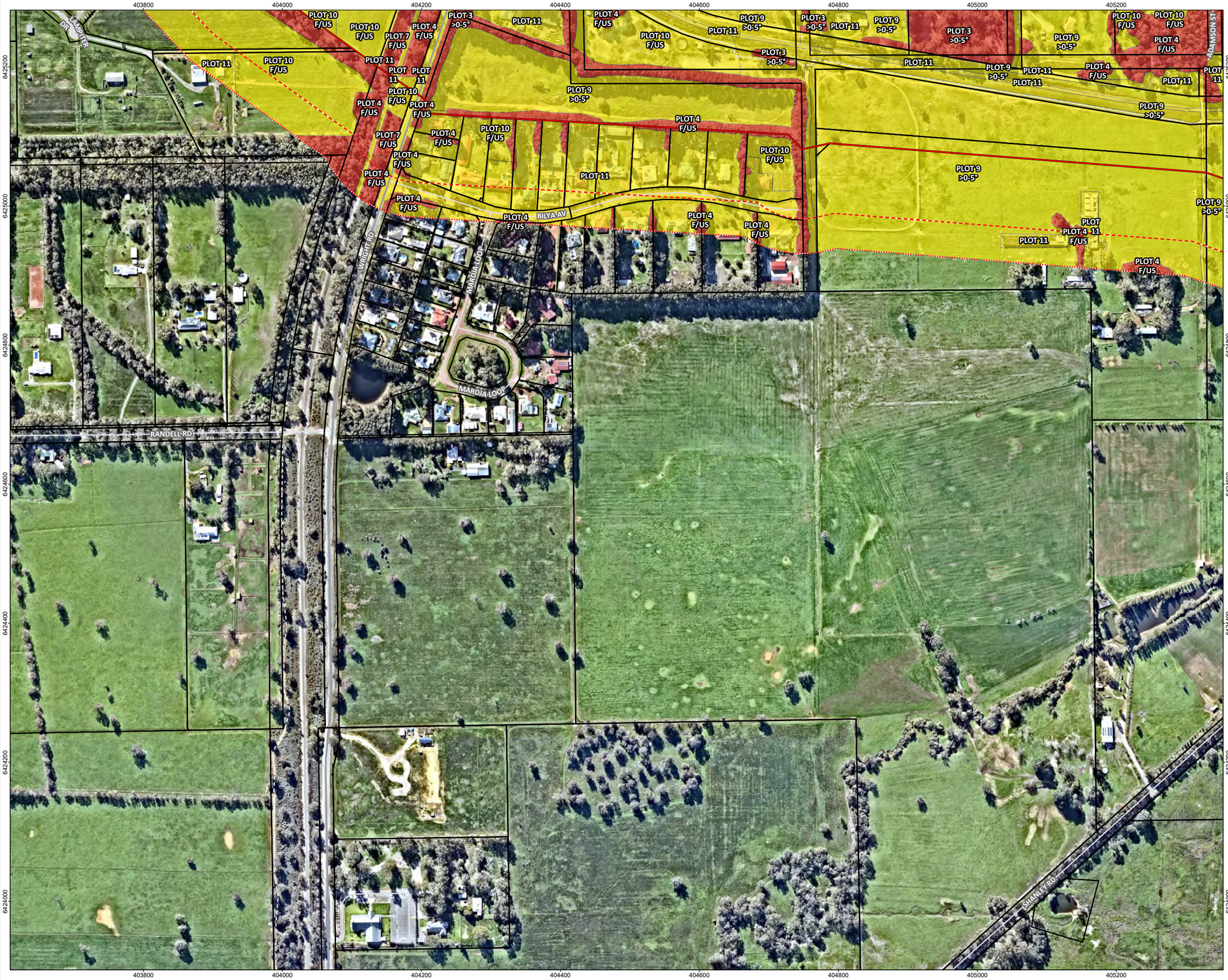
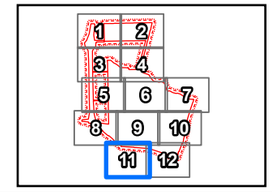


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 11 of 12

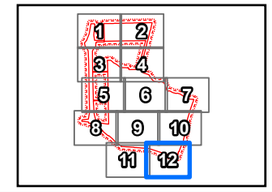
File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

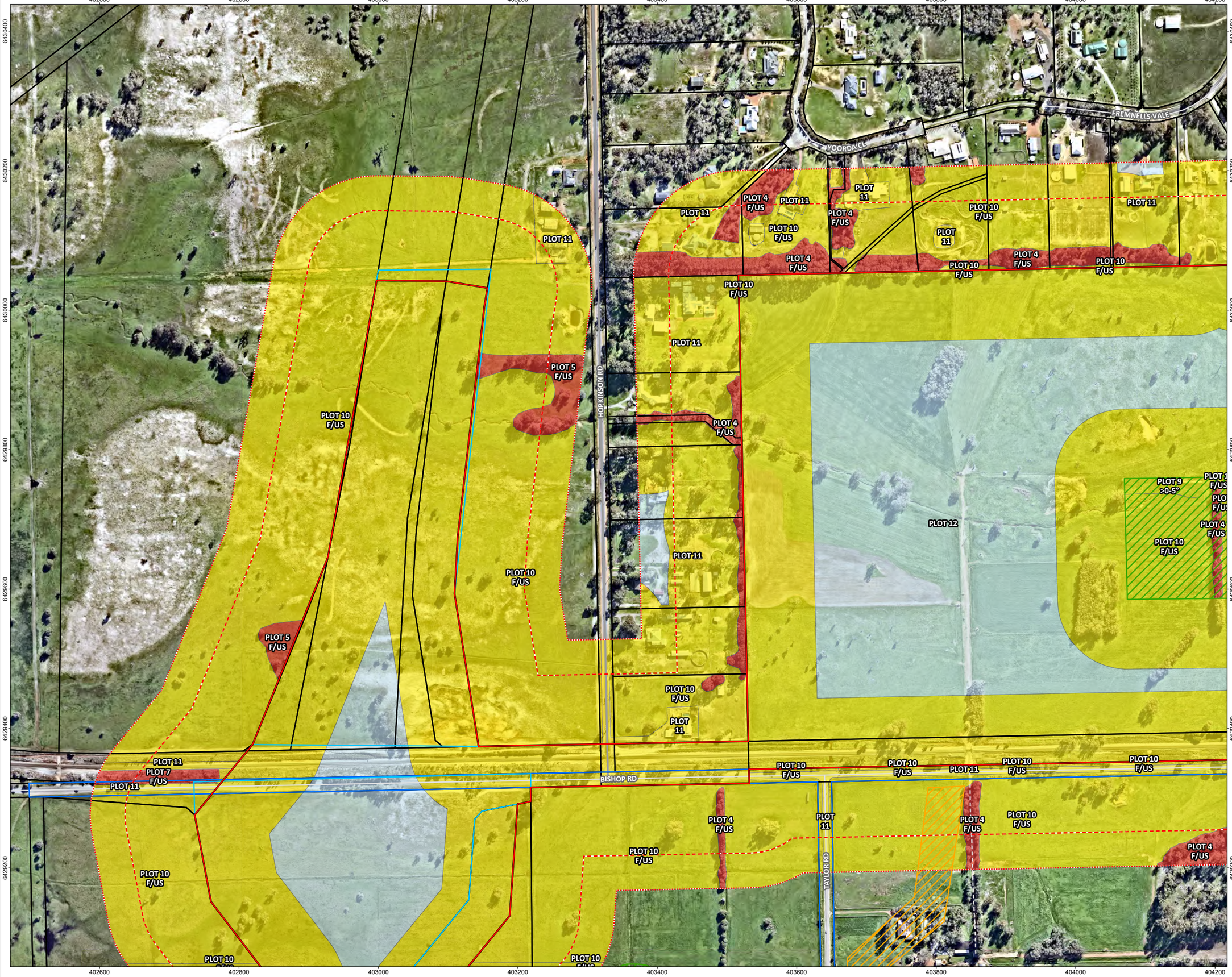
Mundijong DSP Area, Mundijong, WA

PRE-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 12 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Appendix F Post -development Bushfire Hazard Level mapping

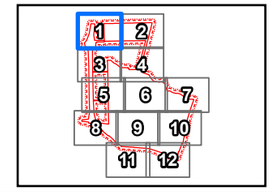


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 1 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6430400 6430200 6430000 6429800 6429600 6429400 6429200

FRENNELS VALE
LITTLE PL
ROBERTSON RD
NORMAN RD
SOLDIERS RD
BISHOP RD

PLOT 4 F/US
PLOT 10 F/US
PLOT 11
PLOT 12
PLOT 7 F/US
PLOT 5 F/US
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- POS
- Public purpose
- Reserves

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 24-Sep-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 2 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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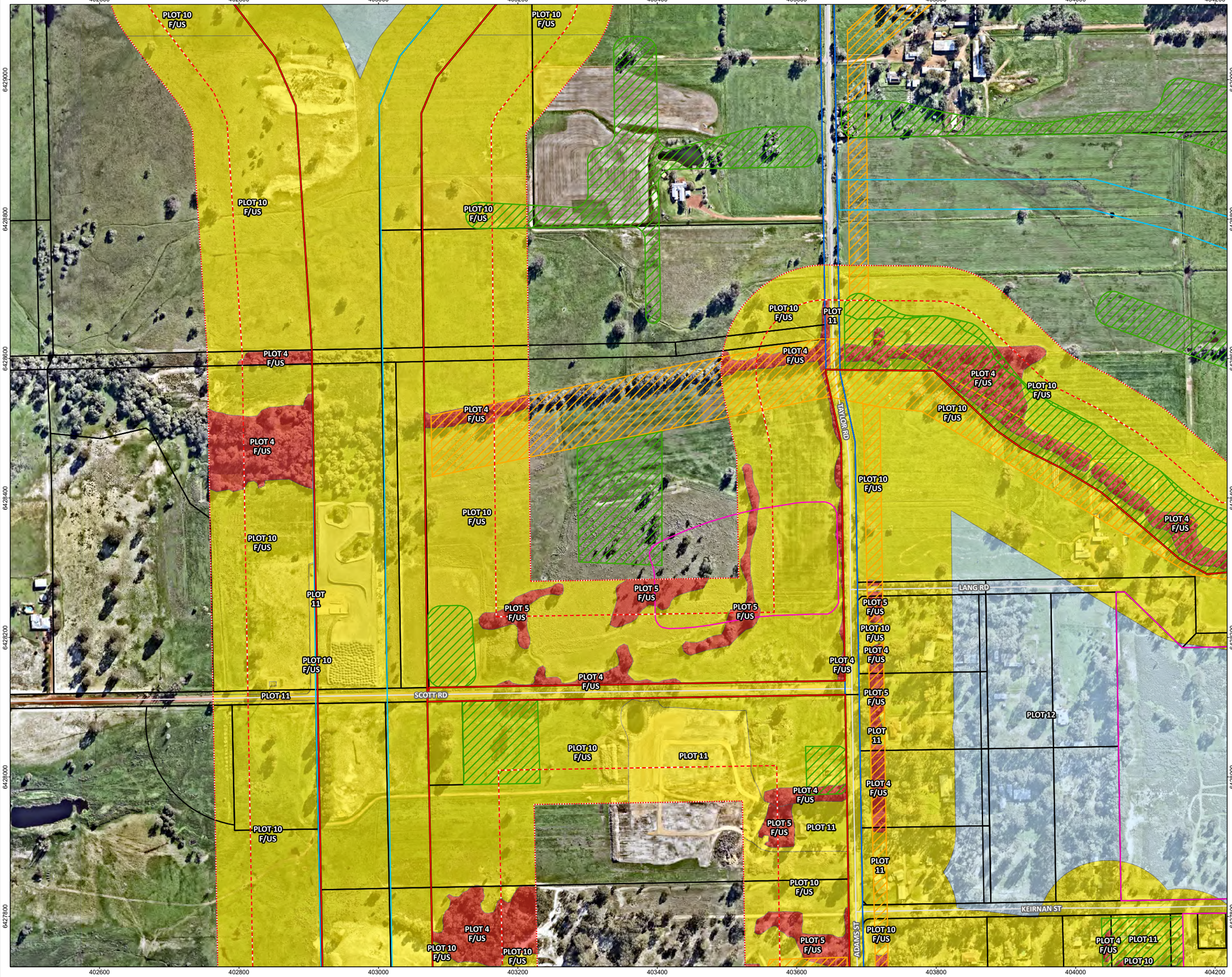
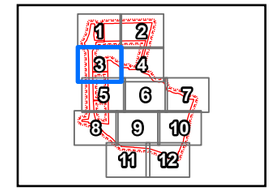


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Bushfire hazard level

- Extreme
- Moderate
- Low
- Minor road
- Track



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 3 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6429000 6428800 6428600 6428400 6428200 6428000 6427800

PLOT 11 PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 7 F/US PLOT 4 F/US PLOT 5 F/US PLOT 10 F/US PLOT 11 PLOT 7 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 11 PLOT 4 F/US PLOT 11 PLOT 11 PLOT 10 F/US PLOT 10 F/US PLOT 7 F/US PLOT 7 F/US PLOT 7 F/US PLOT 12 PLOT 7 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 11 PLOT 10 F/US PLOT 4 F/US PLOT 12 PLOT 4 F/US PLOT 4 F/US PLOT 11 PLOT 11 PLOT 4 F/US PLOT 4 F/US PLOT 10 F/US PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 4 F/US PLOT 10 F/US PLOT 12 PLOT 7 F/US PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 4 F/US PLOT 11 PLOT 11 PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 11 PLOT 10 F/US PLOT 11 PLOT 10 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 10 F/US

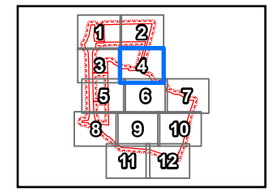
SOLDIERS RD PATERSON ST BASKERVILLE RD KEIRNAN ST KEIRNAN ST KEIRNAN ST HAULBACK BVD HEARTWOOD BVD GAWLER LANE SCANTLING WAY SAPWOOD GR FLITCH ST SAWMILL RD PEAVEY RD QUILL LANE CHIPPER ST BUCKER ST GRAPPLE RD GRAPPLE RD WINDROW GR TINSPAR AV TINSPAR AV TINSPAR AV SKYLINE BVD SKIDDER RD GLANCER RD BRIAR RD DRAY LANE BUTTRESS ST HAYWIRE AV NOTCH LANE GRAIN WAY

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 24-Sep-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

POST-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 4 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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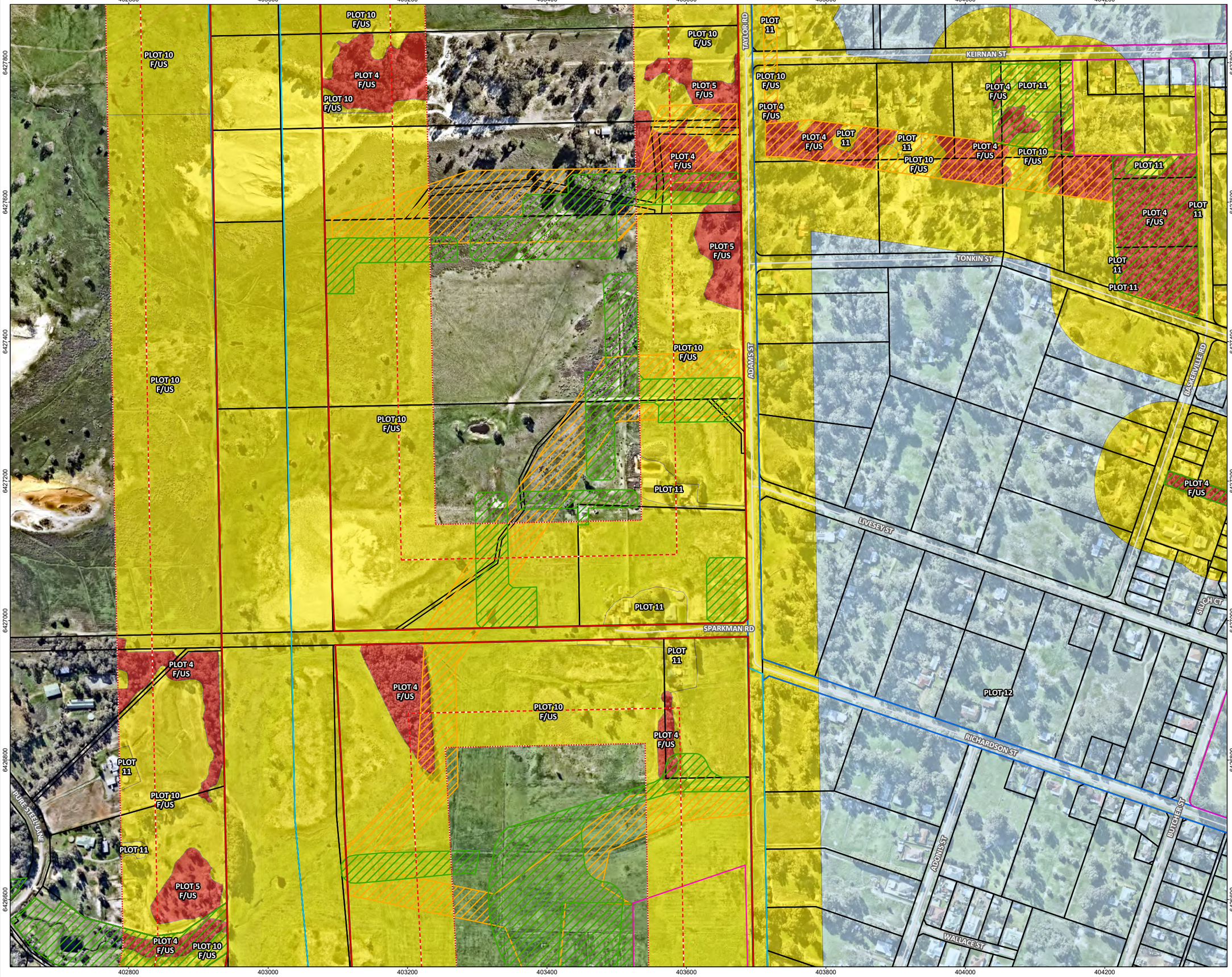
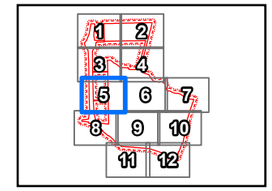


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Bushfire hazard level

- Extreme
- Moderate
- Low
- Minor road



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 5 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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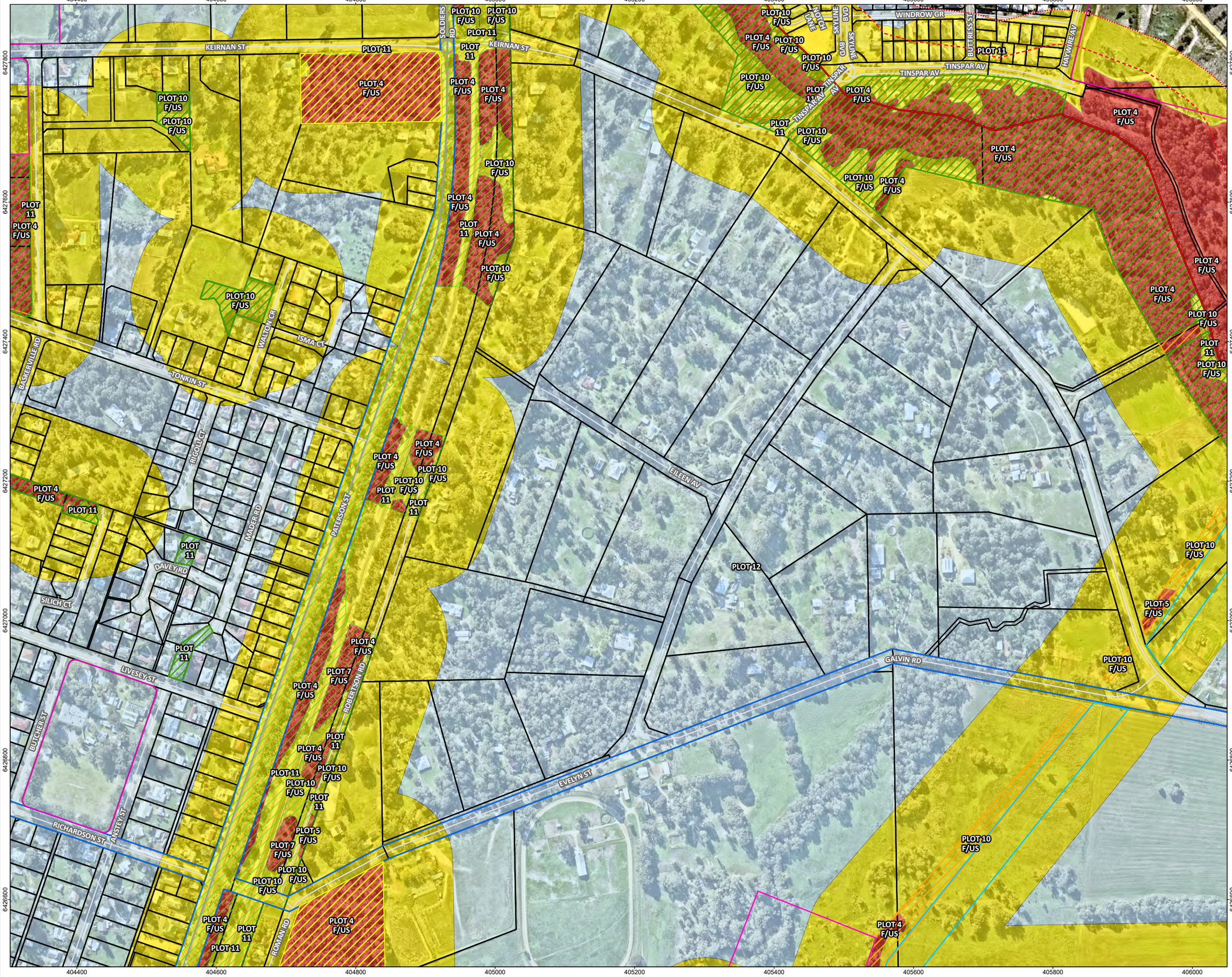
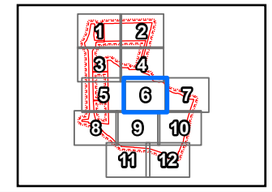


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

POST-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 6 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

406000 406200 406400 406600 406800 407000 407200 407400 407600

6427800 6427600 6427400 6427200 6427000 6426800 6426600

REILLY RD

KEIRNAN ST

SOUTH WESTERN HWY

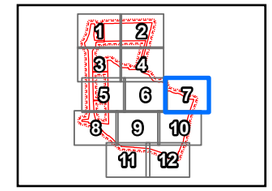
PLOT 11
PLOT 4 F/US
PLOT 10 F/US
PLOT 3 >0-5°
PLOT 5 F/US
PLOT 12
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Minor road



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

POST-DEVELOPMENT
BUSHFIRE HAZARD LEVELS

Map 7 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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402400 402600 402800 403000 403200 403400 403600 403800 404000

6426400 6426200 6426000 6425800 6425600 6425400 6425200

PURE STEEL LANE
MUNDIJONG RD
ADAMS ST
WALLACE ST
SENIOR CT
COCKRAM ST
LAMPITER DR
TRONGUARD RD
DAIRY LINK

PLOT 10 F/US
PLOT 4 F/US
PLOT 11
PLOT 7 F/US
PLOT 12

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 8 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600

6426400 6426200 6426000 6425800 6425600 6425400 6425200

WALLACE ST
BUTCHER ST
ANSTEY ST
WHITBY ST
PATERSON ST
COCKRAM ST
ROMAN RD
MUNDIJONG RD
WATKINS RD
MUNRO ST
HICKS ST
ROBINSON ST
ABSOLON ST
ADAMSON ST
COWEN ST
WRIGHT RD

PLOT 4 F/US
PLOT 10 F/US
PLOT 11
PLOT 3 >0-5°
PLOT 2 >5-10°
PLOT 12
PLOT 9 >0-5°
PLOT 7 F/US
PLOT 6 >0-5°

Legend

- Project area
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- 150m assessment area
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Bushfire hazard level

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1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 9 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Existing roads
- POS
- Reserves

Bushfire hazard level

- Extreme
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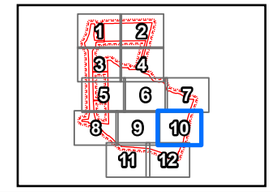
- Highway
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

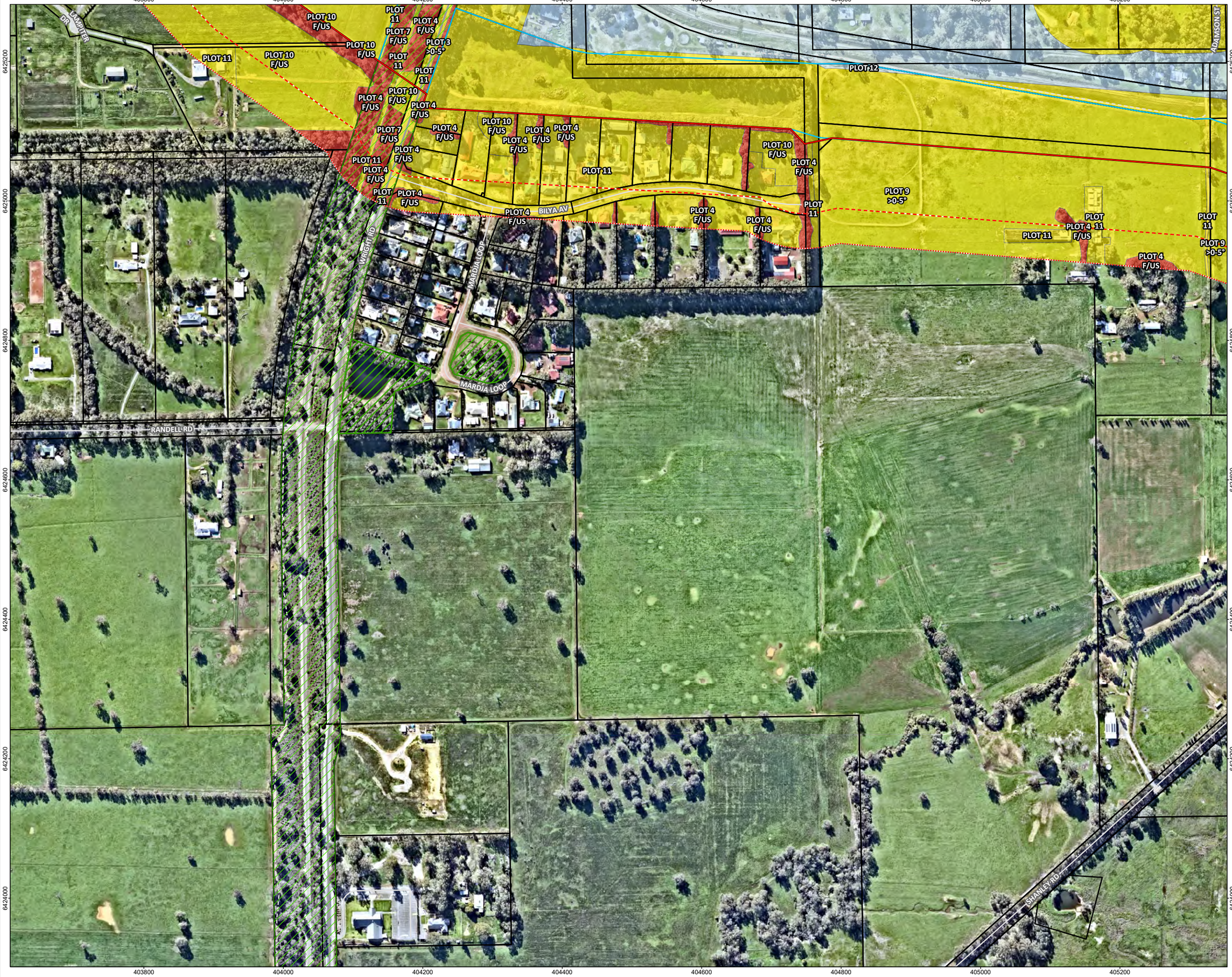
Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 10 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

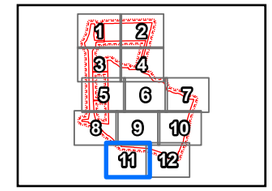


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Bush Forever
- Future roads
- POS

Bushfire hazard level

- Extreme
- Moderate
- Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 11 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

405400 405600 405800 406000 406200 406400 406600 406800

6425200 6425000 6424800 6424600 6424400 6424200 6424000

ADAMSON ST

PLOT 12

PLOT 9 >0-5°

PLOT 11

PLOT 4 F/US

PLOT 9 >0-5°

SHANLEY RD

PLOT 7 F/US

PLOT 9 >0-5°

PLOT 11

PLOT 3 >0-5°

PLOT 3 >0-5°

PLOT 9 >0-5°

PLOT 3 >0-5°

PLOT 11

PLOT 4 F/US

PLOT 10 F/US

PLOT 4 F/US

PLOT 11

SOUTH WESTERN HWY

PLOT 11

PLOT 4 F/US

PLOT 10 F/US

PLOT 4 F/US

PLOT 3 >0-5°

Nearmap

PLOT 11

PLOT 9 >0-5°

PLOT 4 F/US

JARRAHDALE RD

PLOT 11

PLOT 9 >0-5°

PLOT 3 >0-5°

PLOT 10 F/US

PLOT 4 F/US

PLOT 10 F/US

PLOT 4 F/US

PLOT 11

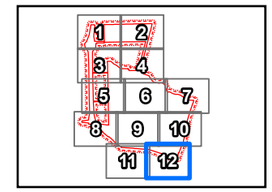
405400 405600 405800 406000 406200 406400 406600 406800

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Existing roads
- Future roads

Bushfire hazard level

- Extreme
- Moderate
- Low
- Highway
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BUSHFIRE HAZARD LEVELS

Map 12 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

Appendix G Post-development BAL Contour mapping

402600 402800 403000 403200 403400 403600 403800 404000 404200

6430400 6430200 6430000 6429800 6429600 6429400 6429200

HOPKINSON RD

YOORDA CL

FREMNELLS VALE

BISHOP RD

TAYLOR RD

PLOT 11

PLOT 4 F/US

PLOT 10 F/US

PLOT 5 F/US

PLOT 7 F/US

PLOT 9 >0-5°

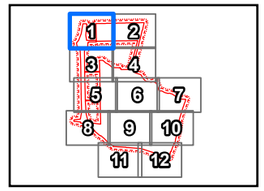
PLOT 12

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 1 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6430400 6430200 6430000 6429800 6429600 6429400 6429200

GRENVILLE VALE

LITTLE PL

ROBERTSON RD

NORMAN RD

SOLDIERS RD

BISHOP RD

PLOT 4 F/US
PLOT 10 F/US
PLOT 11
PLOT 12
PLOT 7 F/US
PLOT 5 F/US
PLOT 9 >0-5°

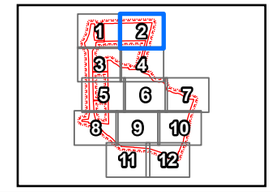
Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- POS
- Public purpose
- Reserves

BAL contours

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

- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 2 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

402600 402800 403000 403200 403400 403600 403800 404000 404200

6429000 6428800 6428600 6428400 6428200 6428000 6427800

PLOT 10 F/US
PLOT 4 F/US
PLOT 5 F/US
PLOT 11
PLOT 12
SCOTT RD
TAYLOR RD
LANG RD
KEIRNAN ST
ADAMS ST

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 3 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600 405800

6429000 6428800 6428600 6428400 6428200 6428000 6427800

PLOT 11 PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 7 F/US PLOT 4 F/US PLOT 10 F/US PLOT 5 F/US PLOT 11 PLOT 7 F/US PLOT 4 F/US PLOT 4 F/US PLOT 11 PLOT 4 F/US PLOT 11 PLOT 11 PLOT 10 F/US PLOT 10 F/US PLOT 7 F/US PLOT 7 F/US PLOT 7 F/US PLOT 12 PLOT 7 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 11 SOLDIERS RD PLOT 12 PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 11 PLOT 11 PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 4 F/US PLOT 10 F/US PLOT 12 PLOT 7 F/US PLOT 4 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 10 F/US PLOT 4 F/US PLOT 11 PLOT 10 F/US PLOT 10 F/US PLOT 11 PLOT 10 F/US PLOT 10 F/US PLOT 11 PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US PLOT 10 F/US PLOT 4 F/US PLOT 4 F/US PLOT 4 F/US

KEIRNAN ST KEIRNAN ST KEIRNAN ST PLOT 11 PLOT 11 PATERSON ST BASKERVILLE RD

HAULBACK BVD GRAIN WAY HEARTWOOD BVD SKIDDER RD GAWLER LANE SCANTLING WAY SAPWOOD GR FLITCH ST SAWMILL RD GLANCER RD SKYLINE BVD PEAVEY RD QUILL LANE CHIPPER ST BRIAR RD DRAY LANE BUCKER ST BUTTRESS ST HAYWIRE AV GRAPPLE RD NOTCH LANE WINDROW GR TINSPAR AV TINSPAR AV TINSPAR AV

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

BAL contours

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

- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200 metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 4 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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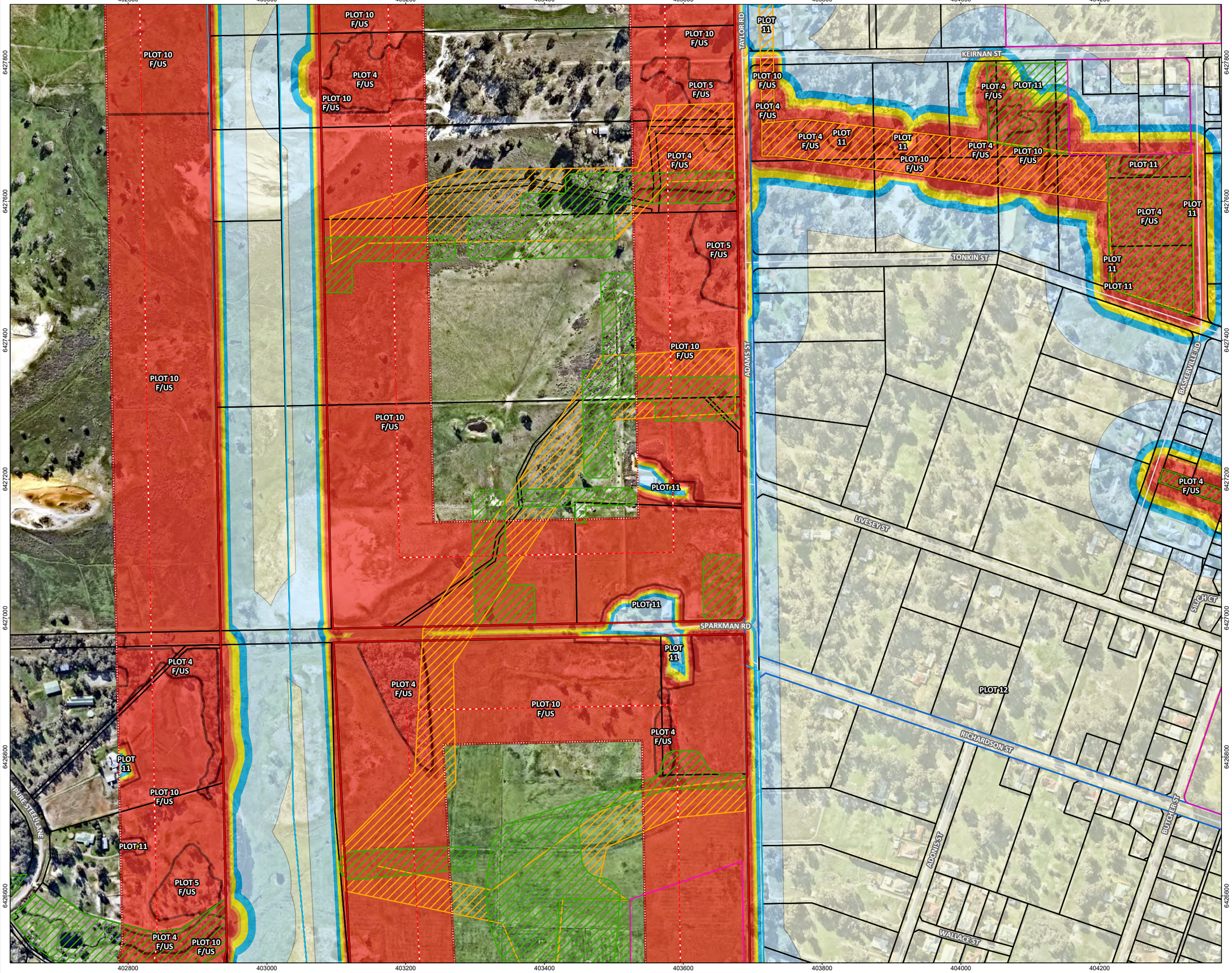
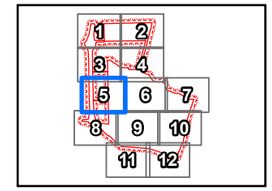


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Minor road



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 5 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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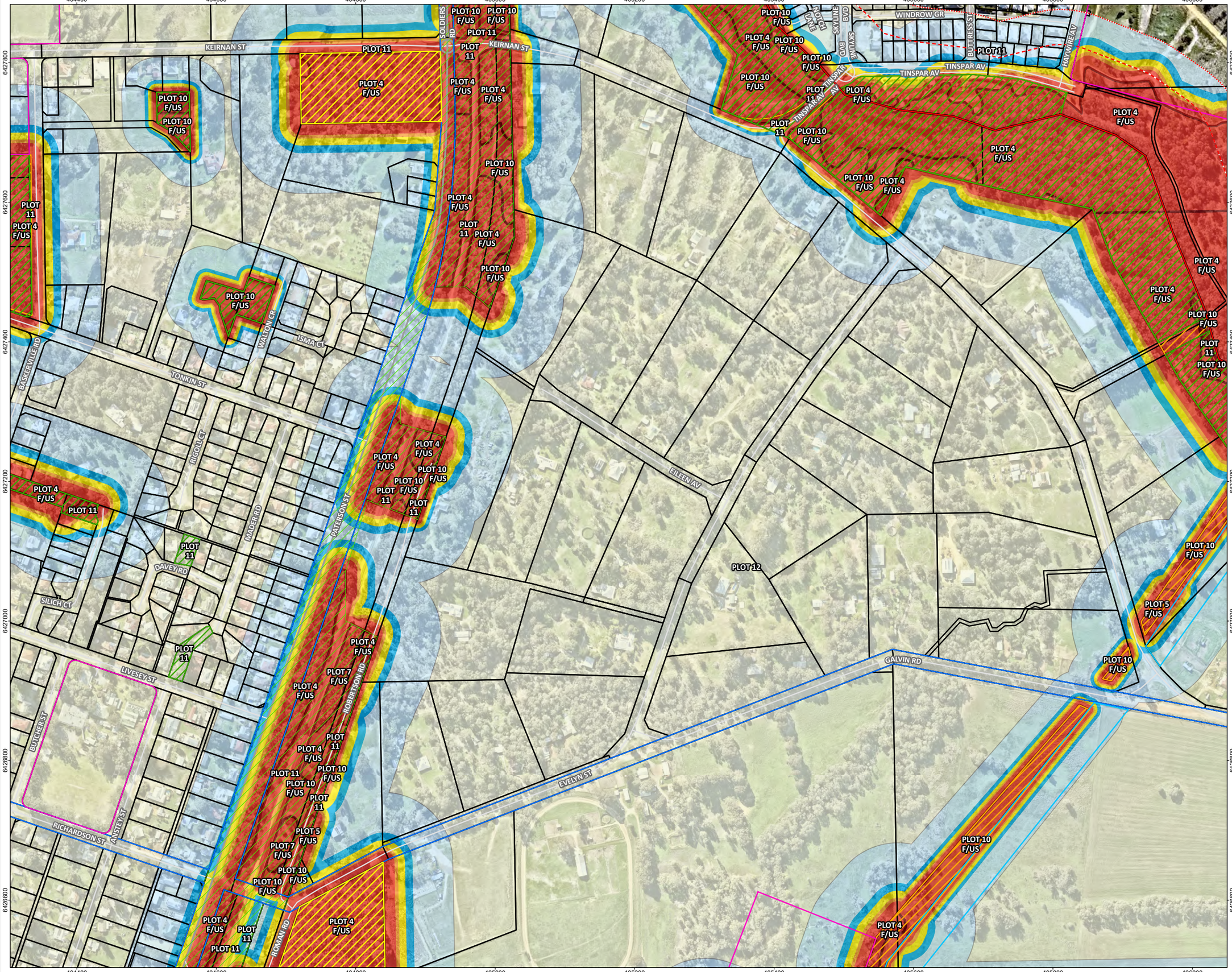
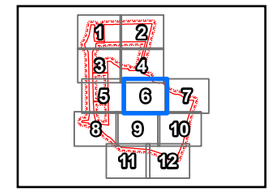


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Major road
- Minor road



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 6 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

406000 406200 406400 406600 406800 407000 407200 407400 407600

6427800 6427600 6427400 6427200 6427000 6426800 6426600

REILLY RD

KEIRNAN ST

SOUTH WESTERN HWY

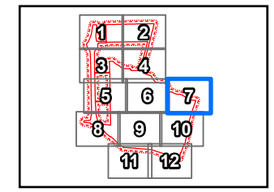
PLOT 11
PLOT 4 F/US
PLOT 10 F/US
PLOT 3 >0-5°
PLOT 5 F/US
PLOT 9 >0-5°
PLOT 12

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Highway
- Minor road



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 24-Sep-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 7 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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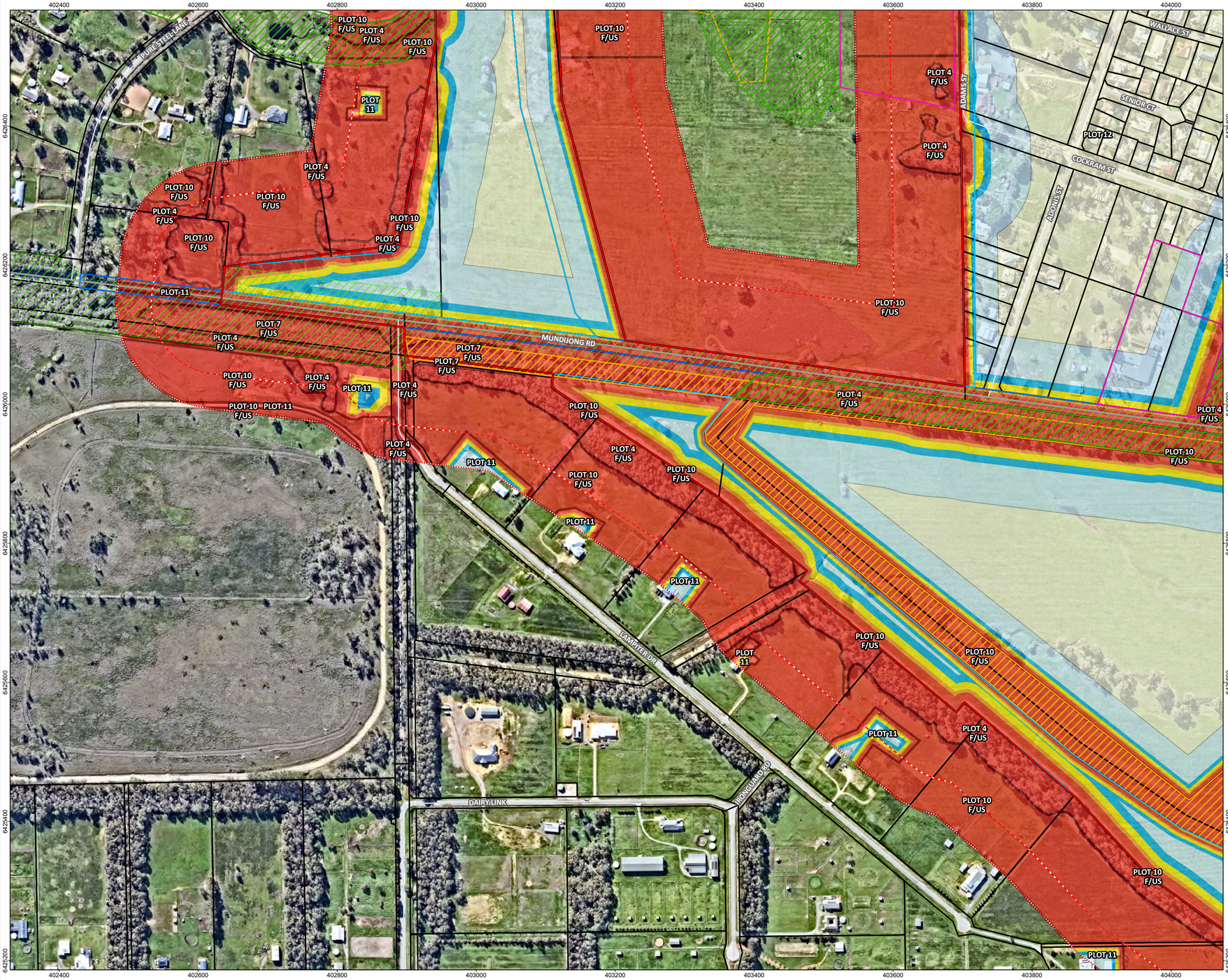
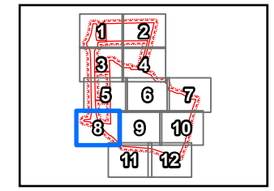


Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A | Date: 24-Sep-2024

Drawn By: jcrute | Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 8 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

404200 404400 404600 404800 405000 405200 405400 405600

6426400 6426200 6426000 6425800 6425600 6425400 6425200

WALLACE ST
WHITBY ST
BUTCHER ST
ANSTEY ST
PATERSON ST
COCKRAM ST
ROMAN RD
MUNDIJONG RD
WATKINS RD
MUNRO ST
HICKS ST
ROBINSON ST
ABSOLON ST
ADAMSON ST
COWEN ST
WRIGHT RD

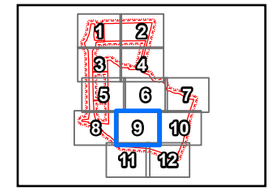
PLOT 2 >5-10°
PLOT 3 >0-5°
PLOT 4 F/US
PLOT 6 >0-5°
PLOT 7 F/US
PLOT 9 >0-5°
PLOT 10 F/US
PLOT 11
PLOT 12

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Corridors/Green Linkages
- Existing roads
- Future roads
- POS
- Public purpose
- Reserves

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area,
Mundijong, WA

POST-DEVELOPMENT
BAL CONTOUR MAP

Map 9 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

405800 406000 406200 406400 406600 406800 407000 407200 407400

6426400 6426200 6426000 6425800 6425600 6425400 6425200

PLOT 9 >0-5°
PLOT 3 >0-5°
PLOT 4 F/US
PLOT 10 F/US
PLOT 7 F/US
PLOT 8 >5-10°
PLOT 6 >0-5°
PLOT 11
PLOT 12
PLOT 2 >5-10°
PLOT 1 >10-15°

QUINDOS
ROSE RD
PRUDEN RD
WATKINS RD
SOUTH WESTERN HWY

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Existing roads
- POS
- Reserves

BAL contours

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

- Highway
- Major road
- Minor road
- Track

1 2 3 4 5 6 7 8 9 10 11 12

JBS&G

Job No: 67162

Client: Shire of Serpentine-Jarrahdale

Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 10 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

403800 404000 404200 404400 404600 404800 405000 405200

6425200 6425000 6424800 6424600 6424400 6424200 6424000

LAMPLIGHTER DR
RANDELL RD
WRIGHT RD
MARDJA LOOP
BILYA AV
ADAMSON ST
SHANLEY RD

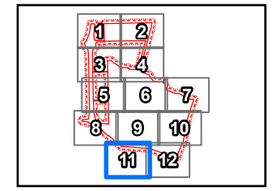
PLOT 10 F/US
PLOT 11
PLOT 4 F/US
PLOT 7 F/US
PLOT 3 >0-5°
PLOT 12
PLOT 9 >0-5°

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Bush Forever
- Future roads
- POS

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Major road
- Minor road
- Track



JBS&G

Job No: 67162	
Client: Shire of Serpentine-Jarrahdale	
Version: A	Date: 24-Sep-2024
Drawn By: jcrute	Checked By: MG

Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 11 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
Image Reference: www.nearmap.com© - Imagery Date: 15. July 2024.

405400 405600 405800 406000 406200 406400 406600 406800

6425200 6425000 6424800 6424600 6424400 6424200 6424000

ADAMSON ST

SHANLEY RD

SOUTH WESTERN HWY

JARRAHDALE RD

Nearmap

PLOT 12

PLOT 9 >0-5°

PLOT 11

PLOT 4 F/US

PLOT 7 F/US

PLOT 3 >0-5°

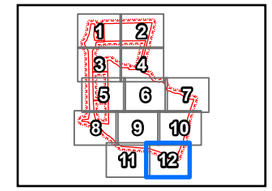
PLOT 10 F/US

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Classified vegetation
- Existing roads
- Future roads

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Highway
- Major road
- Minor road
- Track



JBS&G

Job No: 67162

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Version: A	Date: 24-Sep-2024
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Scale 1:5,000 at A3

0 100 200
metres

Coord. Sys. GDA2020 MGA Zone 50

Mundijong DSP Area, Mundijong, WA

POST-DEVELOPMENT BAL CONTOUR MAP

Map 12 of 12

File Name: C:\Users\jcrute\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Shire of Serpentine Jarrahdale\67162 Mundijong DSP BMP\GIS\02_MapProjects\67162 Mundijong DSP BMP\67162 Mundijong DSP BMP.aprx
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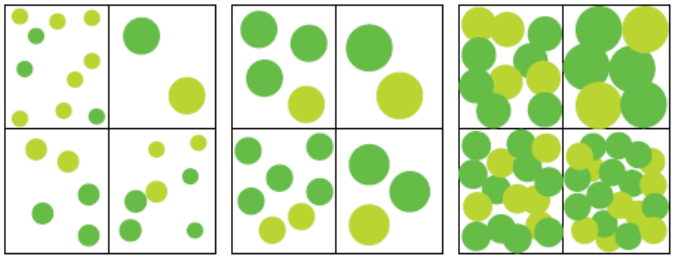
Appendix H Planning for Bushfire Guidelines – Asset Protection Zone standards

Appendix B.2, Table 9: Asset Protection Zones technical requirements	
Object	**Requirement**
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (combustible, dead vegetation matter less than 6 mm in thickness)	• Should be managed and removed on a regular basis to be maintained as low threat vegetation. • Should be maintained at less than two tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* (more than 6 m in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area. • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ. Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps more than five square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground cover* (less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
Grass	• Grass should be maintained at a height of 100 mm or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non- combustible mulches as prescribed above.

Appendix B.2, Table 9: Asset Protection Zones technical requirements	
Object	**Requirement**
Liquid petroleum gas cylinders	• Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

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

Source: *Planning for Bushfire Guidelines (WAPC 2024)*

Appendix I Planning for Bushfire Guidelines – Vehicular access technical requirements

Appendix B.3, Table 10: Vehicular access technical requirements										
	1		2		3		4		5	
Technical requirements	**Perimeter roads**		**Public roads**		**Emergency access way[3]**		**Fire service access route[3]**		**Battle-axe and private driveways[1]**	
Map of Bush Fire Prone Areas designation	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1
Minimum horizontal clearance (m)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (m)	4.5									
Minimum weight capacity (t)	15									
Maximum grade unsealed road[3]	See note 5		See note 5		1:10 (10% or 6°)					
Maximum grade sealed road[3]					1:7 (14.3% or 8°)					
Maximum average grade sealed road					1:10 (10% or 6°)					
Minimum inner radius of road curves (m)					8.5					

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

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

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

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

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

Source: *Planning for Bushfire Guidelines (WAPC 2024)*

Document status

Rev No.	Purpose	Author	Reviewed and approved for Issue	
			Name	Date
Rev A	Draft report for client review	Michelle Gellender	Zac Cockerill (BPAD 37803, Level 2)	29 November 2024
Rev 0	Issued for use: to accompany Mundijong DSP	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	9 December 2024
Rev 1	**Updated to address final Shire comments**	**Zac Cockerill (BPAD 37803, Level 2)**	**Zac Cockerill (BPAD 37803, Level 2)**	**22 January 2025**

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