



Bushfire Threat Assessment

Huntlee New Town – Stage 1 S4.55 Modification 21

Prepared for

Huntlee Pty Ltd

Final V3 / June 2023

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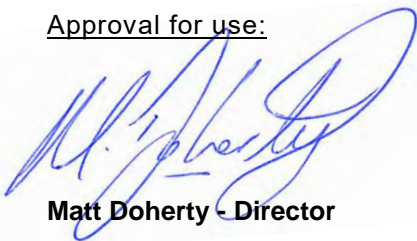
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Matt Doherty - Director

28 June 2023

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EXECUTIVE SUMMARY

MJD Environmental has been engaged by Huntlee Pty Ltd, to prepare a Bushfire Threat Assessment (BTA) to accompany S4.55 Modification (MOD 21) to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development, North Rothbury, NSW.

This assessment has considered and assessed the bushfire hazard and associated potential threats relevant to the proposal, and to outline the minimum mitigative measures which would be required in accordance with *Planning for Bush Fire Protection 2019* (PBP), as adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2020*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adhered to the methodology and procedures outlined in PBP (2019) via assessment of acceptable solutions as outlined in Chapter 5 of PBP (2019).

This assessment has been made based on the bushfire hazards in and around the site at the time of inspection and production (June 2022).

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2019).

Asset Protection Zones

A variable APZ of 24m to 29m is required from the northern Huntlee concept approval boundary for uses that trigger residential APZ setbacks. In the case of a SFPP increased setbacks in accordance with PBP (2019) shall apply.

- A 14m APZ is required from riparian zones to be retained within the Huntlee development area.
- A temporary APZ shall be established -
 - 100m to the west of MOD 21 bushfire boundary within future Huntlee development areas;
 - to 100m south from the MOD 21 bushfire boundary to be established within future Huntlee development areas.
 - To the *Persoonia pauciflora* buffer and maintained until such time that clearing of this area occurs.
- The development of MOD 21 will occur in a staged fashion. A temporary APZ of 100m or to the Huntlee boundary is required between active or completed development stages and future development areas.
- All lands within the development area including Open space outside the nominated riparian corridors will be managed as an APZ.
- Future dwellings within the site must have due regard to the specific considerations to required BAL as detailed in Chapter 3, Section 3.2 of this report.

Access

- Access for the subdivision design shall comply with the requirements of Table 5.3b and Appendix 3 of PBP (2019)
- All access within the subdivision is generally consistent with the Huntlee Concept Approval where the site will have multiple ingress and egress routes that will ultimately connect to Wine Country Drive. The proposed public perimeter roads and internal roads comply with RFS requirements for access listed in terms of surface, vertical clearance, horizontal width, grades, and minimum curve radius.

Services – Water supply, Gas and Electricity

- Services for the subdivision design shall comply with the requirements of Table 5.3c the PBP (2019).
 - The Site will be connected to the reticulated water and recycled supply.
 - The site will be connected to power from the existing service available within Huntlee. This shall be extended and augmented within the site.
 - Any future gas connection will be installed in accordance with the provisions of PBP (2019).
- Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005.

Landscaping and Fuel Management

- Careful consideration of future site landscaping, fencing and ongoing fuel management must occur to minimise the potential impact of bushfire on the Site; and
- Ongoing fuel management across the Site as part of the maintenance regime should give due consideration to Appendix 4 Asset Protection Zone Requirements of PBP (2019) which provides guidance on maintenance activities to assist in achieving the landscape principles.

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GLOSSARY OF TERMS AND ABBREVIATIONS

Term/ Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419-2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAR	Bushfire Assessment Report
BCA	Building Code of Australia
BC Act	Biodiversity Conservation Act 2016
BMP	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
LLS Act	Local Land Services Act 2013
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2019)	Planning for Bushfire Protection 2019
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
TSC Act	NSW Threatened Species Conservation Act 1995 (as repealed)

1 Introduction

MJD Environmental has been engaged by Huntlee Pty Ltd, to prepare a Bushfire Threat Assessment (BTA) to accompany S4.55 Modification (MOD 21) to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development, North Rothbury, NSW (**Figure 1**).

Stage 1 of the planning approval (MP10_0137) for Huntlee was granted by the Planning and Assessment Commission (PAC) on 24 April 2013. The approval for Stage 1 of the development comprises residential subdivision of 1,473 lots, 14 superlots, a primary school allotment and the creation of drainage and open space reserves, site preparation works and internal and external road works. The stage 1 works have substantially commenced.

The assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the proposal, and to outline the minimum mitigative measures which would be required in accordance with *Planning for Bush Fire Protection 2019* (PBP), as adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2020*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adhered to the methodology and procedures outlined in PBP (2019) via assessment of acceptable solutions as outlined in Chapter 5 of PBP (2019).

This assessment has been made based on the bushfire hazards in and around the site at the time of inspection and production (June 2022).

1.1 Description of Proposal

The proposed S4.55 modification (MOD 21) to the Stage 1 Project Approval development consent comprises:

- Extension of the Stage 1 Project boundary to the west to create additional allotments within substage TC6, including;
 - Extension of the Town Centre boundary to include commercial lots;
 - Adjustment to the existing school allotments to accommodate the additional commercial lots;
 - Subdivision of new residential allotments within substage TC6;
- Creation of new roads and connecting infrastructure;
- New open space areas; and
- Future allotment for a Local Water Centre

Refer to **Appendix A** for a plan of the proposal.

1.2 Site Context

Huntlee, in its regional context is shown in **Figure 1** below and is located to the south of the town of Branxton in the Hunter Valley of NSW. The Huntlee site straddles Wine Country Drive, which links Cessnock with the New England Highway and Hunter Expressway. Within the overall Huntlee site, the proposed urban area is bounded to the north and east by the Main North Railway and Hunter Expressway corridor, to the south by the village of North Rothbury and to the west by the Black Creek and floodplain. Other adjoining uses include vineyards, rural residential development and general agriculture.



Figure 1 Huntlee Regional Context

The stage 1 site relates to the first residential Village located to the east and north of the existing village of North Rothbury and includes the first 50.5 ha of the Town Centre area and the Wine Country Drive large lot residential area (120 lots). The Stage 1 area in the context of the overall Huntlee development framework is shown in **Figure 2** below.

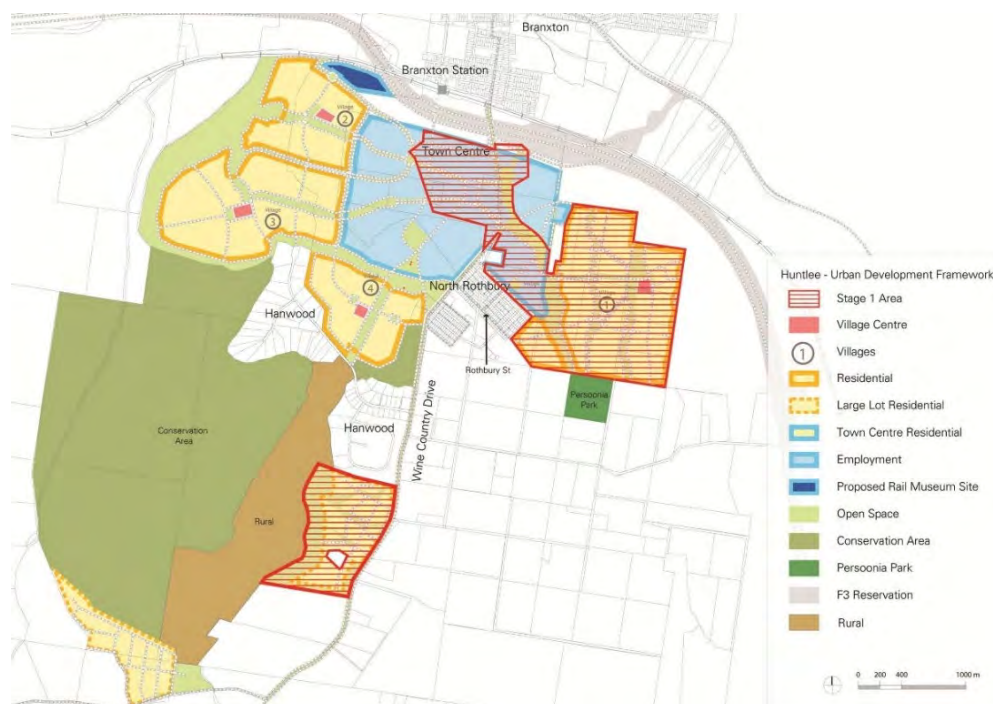


Figure 2 Stage 1 Project Application areas

1.3 Background

The Huntlee New Town development was Gazetted as a State Significant Site (SSS) with an amendment to Schedule 3 of State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP) on 31 December 2010.

The key parameters of the overall Huntlee SSS development framework are:

- Up to 5600 dwellings in residential zones of varying sizes covering up to 612 hectares;
- Employment lands totalling up to 200 hectares, including a mixed use town centre with up to 1,700 residential dwellings;
- Large lot residential development covering up to 93 hectares to achieve 200 lots;
- The provision of associated infrastructure including upgrades to roads, sewerage and water infrastructure and the dedication of land for education, health services, community facilities and utilities;
- Dedication of 780 hectares of conservation land within Huntlee;
- Dedication of Persoonia Park (17 hectares); and
- Dedication of up to 4988 hectares of conservation land elsewhere within the Lower Hunter Region.

The SEPP amendment established land use zoning and development controls for Huntlee and required the preparation of a Development Control Plan (DCP) to further articulate design, landscape and infrastructure principles and controls. The Development Control Plan will communicate the planning, design and environmental objectives and controls against which the consent authority will assess applications for future development stages for Huntlee.

The following provides a summary of pertinent documentation with regard to bushfire matters relevant to the Stage 1 approval.

- 1) The Huntlee New Town development was Gazetted as a State Significant Site (SSS) with an amendment to Schedule 3 of State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP) on 31 December 2010.
- 2) A Part 3A Project Application Environmental Assessment Report for Stage 1 of the Huntlee New Town development was approved by the NSW Planning Assessment Commission on 24th April 2013 (MP10_0137). The site is situated within the approved Stage 1 residential area of the Huntlee New Town development.
- 3) The Stage 1 Project Application was informed by a Bushfire Threat Assessment prepared by HDB (January 2011).
- 4) A revised Bushfire Threat Assessment for Lot 12 DP729973, Lot 36 DP755211 and Lot 37 DP755211 Huntlee Residential Development, Stage 2-5 Eastern Precinct was prepared by RPS (2015). This assessment accompanied 75W Modification 3 to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development. The RPS (2015) BTA was assessed and approved by the NSW RFS. As such it is recognised as prevailing over the HDB (2011) BTA prepared for the Stage 1 approval.
- 5) A revised Bushfire Threat Assessment was prepared by MJD Environmental (2017) to accompany 75W Modification (MOD 8) to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development.

Note: The MOD 8 BTA was assessed and approved by the NSW RFS. The current report reflects a revised subdivision pattern for the subject land and all other assessment elements and results remain concurrent. As such it is recognised as prevailing over the HDB (2011) BTA prepared for the Stage 1 approval.

- 6) A revised Bushfire Threat Assessment was prepared by MJD Environmental (2018) to accompany 75W Modification (MOD 9) to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development.

The report was titled 'Bushfire Threat Assessment for Huntlee New Town – Stage 1 S4.55 Modification [MOD 9]. Final V2 / 28 August 2018. Prepared by MJD Environmental for Huntlee'. This report was prepared with due regard to *Planning for Bushfire Protection 2006* to determine APZ and Australian Standard AS3959-2009 *Construction of Buildings in Bushfire Prone Areas* to determine BAL.

Note: This report has been assessed and approved by the NSW RFS initially on 30 October 2018 (ref: D18/659) again on 25 March 2019 (ref: D18/659 DA18021911844 AS) and finally on 5 March 2020 (ref: DA20191119001106-Original-1). As such it is recognised as prevailing over the HDB (2011) BTA prepared for the Stage 1 approval.

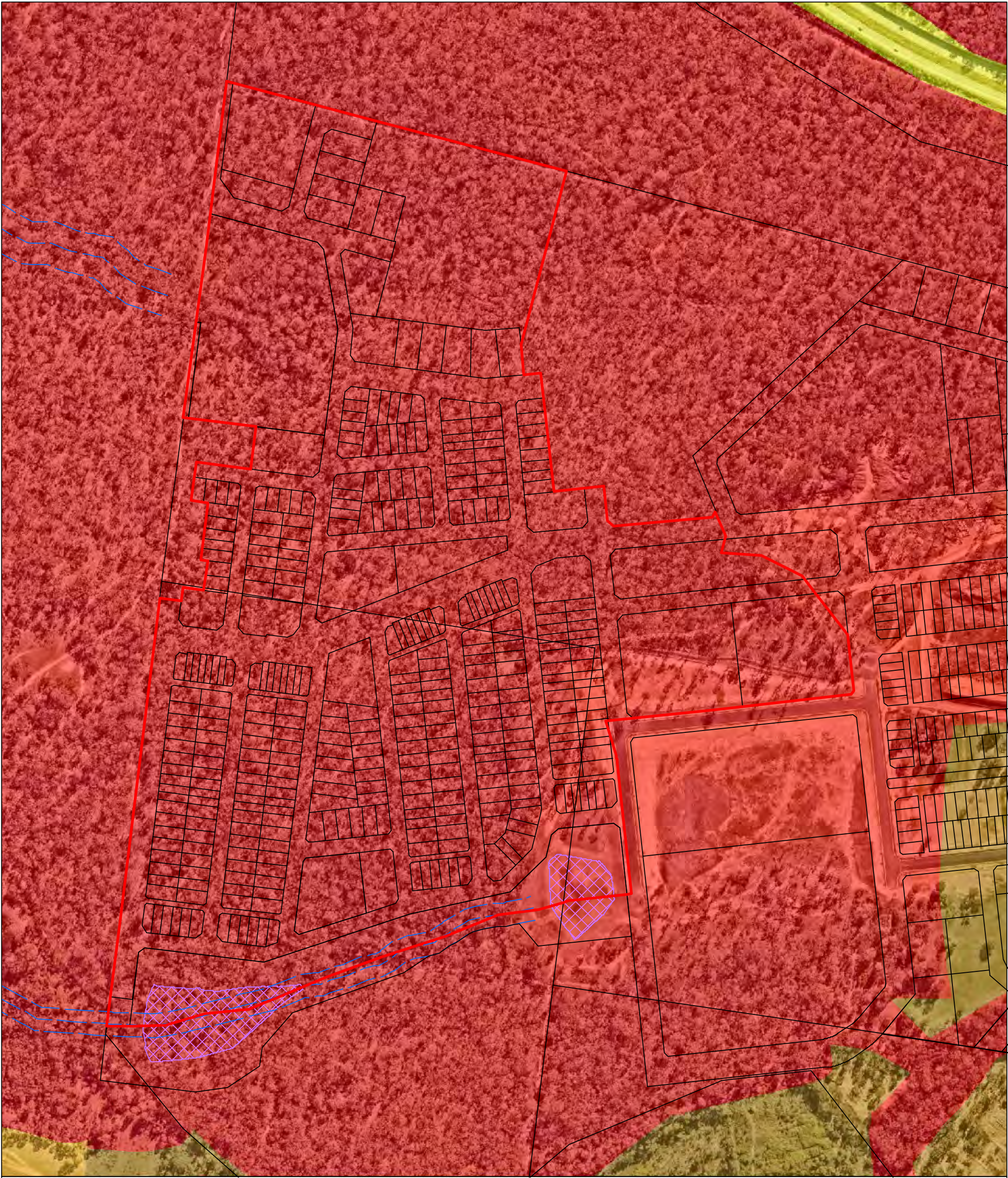
The approval instrument was amended to reflect the NSW RFS MOD 9 approval in Conditions C15, E11 and E12 as extracted in **Appendix B**.

The site lies within a geographical area with a Fire Danger Index (FDI) rating of 100. Extreme bushfire weather is therefore associated with long periods of drought, high temperatures, low humidity and gusty often north-westerly winds. The site is classified Vegetation Category 1 on the Bushfire Prone Land Map (DPE 2022). Refer to **Figure 3** below.

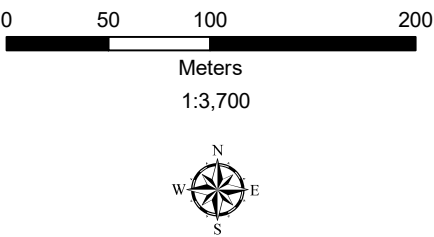
1.4 Aims & Objectives

This BAR addresses the aims and objectives of PBP 2019, being:

- Afford buildings and their occupants protection from exposure to a bushfire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
- Provide for ongoing management and maintenance of bushfire protection measures; and
- Ensure that utility services are adequate to meet the needs of firefighters.



HUNTLEE MOD 21, NORTH ROTHBURY
FIGURE 3: BUSHFIRE PRONE LAND MAP



- Legend**

 - Creekline
 - MOD21 Bushfire Boundary
 - Basin
- Bush Fire Prone Vegetation**

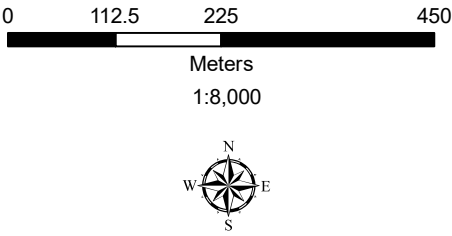
 - Category 1
 - Category 2
 - Category 3
 - BFPV Buffer



Aerial: NearMap (2023) | Data: MJD Environmental, Daly Smith (2023), NSW Spatial Services (2020) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/06/2023 | Version 1 | GIS\16015 - Huntlee, Branxton\5. GIS\16015_MOD21_20220628.mxd | This plan should not be relied upon for critical design



HUNTLEE MOD 21, NORTH ROTHBURY
FIGURE 4: SITE LOCATION MOD 21



- Legend**
- Creekline
 - MOD21 Bushfire Boundary
 - Basin
 - Cadastral Boundaries



Aerial: NearMap (2023) | Data: MJD Environmental, Daly Smith (2023), NSW Spatial Services (2020) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/06/2023 | Version 1 | GIS\16015 - Huntlee, Branxton\5. GIS\16015_MOD21_20220628.mxd | This plan should not be relied upon for critical design

2 Bushfire Hazard Analysis

2.1 Vegetation Assessment

Methodology

The vegetation in and around the Site, to a distance of 140m, has been assessed in accordance with PBP 2019. This assessment has been made via a combination of:

- aerial photo interpretation;
- on-site vegetation classification; and
- reference to regional community vegetation mapping.

These vegetation communities have been classified for bushfire purposes into structure and formation using the system adopted by Keith (2004) and using Figure A1.2 of PBP (2019) with due regard to Appendix 1 of PBP (2019).

Vegetation Classification

Vegetation classification has been presented in **Table 1** below and **Figure 5**.

Table 1 Vegetation Classification

Direction	Description	Vegetation Classification
External		
Transect 1 North	▪ Vegetation covering lands not owned or controlled by Huntlee	Forest
Transect 2 North	▪ Vegetation covering lands not owned or controlled by Huntlee	Forest
Transect 3 West	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 4 West	▪ Riparian vegetation to be retained as part of future development	Riparian
Transect 5 West	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 6 West	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 7 West	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 8 South	▪ Riparian vegetation to be retained as part of future development	Riparian
Transect 9 South	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 10 South	▪ Riparian vegetation to be retained as part of future development	Riparian
Transect 11 South	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
Transect 12 South	▪ Riparian vegetation to be retained as part of future development	Riparian
Transect 13 South	▪ Unmanaged area of vegetation in future development land owned/controlled by Huntlee	Forest
East	▪ Huntlee Stage 1 approval area containing areas of public open space and retail Lots	No Hazard / Forest (approved under MOD 9 to be cleared and/or managed as temporary APZ)

Direction	Description	Vegetation Classification
	<ul style="list-style-type: none"> Unmanaged area of vegetation in future development land owned/controlled by Huntlee 	
Transect 14	<ul style="list-style-type: none"> Temporary <i>Persoonia pauciflora</i> retention zone containing unmanaged area of vegetation in future development land owned/controlled by Huntlee 	Forest
Transect 15	<ul style="list-style-type: none"> Temporary <i>Persoonia pauciflora</i> retention zone containing unmanaged area of vegetation in future development land owned/controlled by Huntlee 	Forest
Transect 16	<ul style="list-style-type: none"> Unmanaged area of vegetation in future development land owned/controlled by Huntlee 	Forest

2.2 Slope Assessment

Methodology

In accordance with PBP (2019), an assessment of the slope throughout the site (where a hazard is to remain) and for a distance of 100m around the site in the hazard direction. Both the average slope and maximum slopes were considered to determine the level of gradient which will most significantly influence fire behaviour on the site. The slope transect was categorised within the slope classification under PBP (2019) Appendix A1.4.

Slope assessment was assisted by:

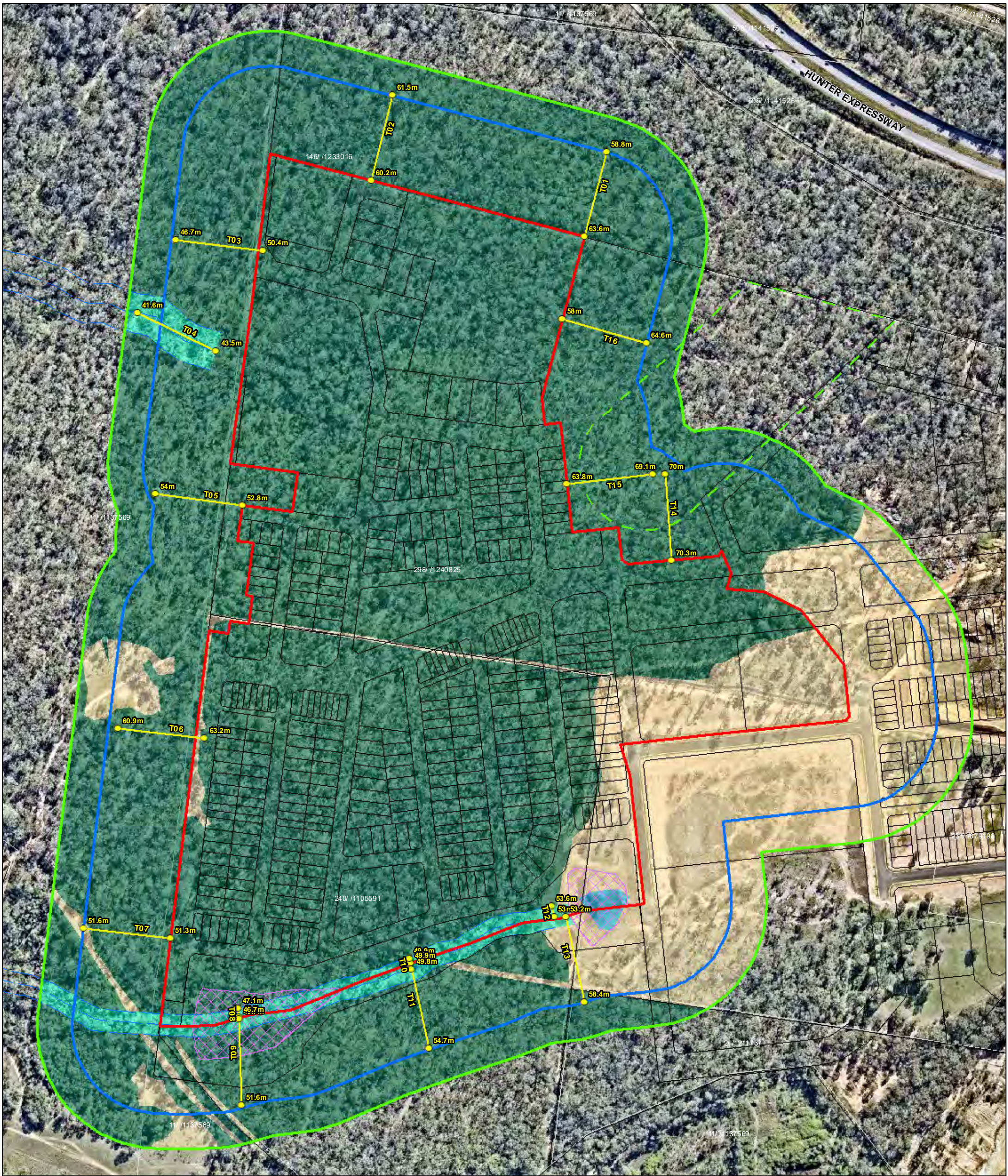
- Preparation of elevation model based on Digital Elevation Model data; and
- Preparation of slope assessment based on NSW 1m contours.

Effective Slope

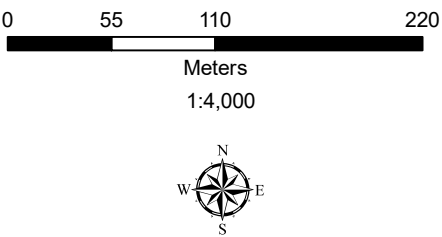
The slope class under the bushfire hazards identified in **Section 2.1** is presented in **Table 2** below and **Figure 5**.

Table 2 Slope Class

Direction	Vegetation Classification	Slope Class
Transect 1 North	Forest	0-5° Downslope
Transect 2 North	Forest	Upslope
Transect 3 West	Forest	0-5° Downslope
Transect 4 West	Riparian	0-5° Downslope
Transect 5 West	Forest	Upslope
Transect 6 West	Forest	0-5° Downslope
Transect 7 West	Forest	Upslope
Transect 8 South	Riparian	0-5° Downslope
Transect 9 South	Forest	Upslope
Transect 10 South	Riparian	0-5° Downslope
Transect 11 South	Forest	Upslope
Transect 12 South	Riparian	0-5° Downslope
Transect 13 South	Forest	Upslope
Transect 14 East	Forest	0-5° Downslope
Transect 15 East	Forest	Upslope
Transect 16 East	Forest	Upslope



HUNTLEE MOD 21, NORTH ROTHBURY
FIGURE 5: VEGETATION AND SLOPE CLASSIFICATION



- Legend**

 - Creekline
 - Elevation
 - Transect
 - MOD21 Bushfire Boundary
 - Slope Classification Buffer (100m)
 - Vegetation Classification Buffer (140m)
 - 105216 northern pop 150m corridor 220813_region
 - Basin
- Vegetation**

 - Forest
 - Riparian
 - Dam
 - Cleared Land

Cadastral Boundaries



Aerial: NearMap (2023) | Data: MJD Environmental, Daly Smith (2023), NSW Spatial Services (2020) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/06/2023 | Version 1 | GIS\16015 - Huntlee, Branxton\5. GIS\16015_MOD21_20220628.mxd | This plan should not be relied upon for critical design

3 Bushfire Protection Measures

PBP sets out a suite of BPMs and criteria that require consideration and assessment for applicable proposals on bushfire prone land in order to provide an adequate level of protection to new developments.

The measures required to be assessed are listed below and discussed throughout this chapter:

- Asset Protection Zones (APZ)
- Bushfire Attack Levels (BAL)
- Access
- Services – Water supply, Gas and Electricity
- Landscaping and Fuel Management
- Emergency Management

3.1 Asset Protection Zone

An APZ is a buffer zone between the hazard and buildings that is progressively managed to minimise bushfire hazard (fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack) PBP (2019), in order to mitigate risk to life and asset.

An APZ can include the following:

- Lawns;
- discontinuous gardens;
- swimming pools;
- driveways;
- detached garages;
- open space / parkland;
- car parking; and
- cycleway and formed walkways.

The site lies within the Cessnock LGA and therefore is assessed under an FFDI (Forest Fire Danger Index) rating of 100. As per Table A1.12.2 within PBP (2019), the acceptable solution setbacks have been calculated based on the bushfire hazard analysis presented in Chapter 2. Refer to **Table 3** detailing the acceptable solution residential development APZ setbacks. Acceptable solution APZ for residential development is detailed in **Figure 6**.

Note

- 1) APZ is not strictly required for any commercial development in the Town Centre extension area pending independent assessment of the development type.
- 2) If a development type that triggers SFPP provisions set out within Chapter 6 of PBP 2019 is proposed in the MOD 21 area, independent assessment will be required and APZ will to meet the acceptable solution setbacks detailed in Table A1.12.1 of PBP (2019).

Table 3 Required APZ (PBP 2019)

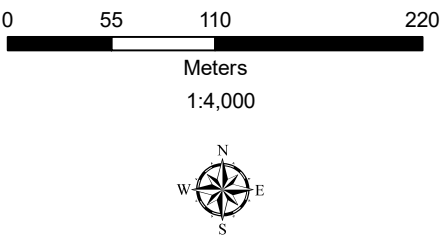
Direction	Vegetation Classification	Slope Class	Required APZ (Table A1.12.2 PBP 2019)	APZ Provided
External				
Transect 1 North	Forest	0-5° Downslope	29m	29m
Transect 2 North	Forest	Upslope	24m	24m
Transect 3 West	Forest	0-5° Downslope	29m	Temporary APZ of 100m to be established within future Huntlee Development area.
Transect 4 West	Riparian	0-5° Downslope	14m	
Transect 5 West	Forest	Upslope	24m	
Transect 6 West	Forest	0-5° Downslope	29m	
Transect 7 West	Forest	Upslope	24m	Vegetation within Riparian Zone corridor to be retained with required 14m APZ provided.
Transect 8 South	Riparian	0-5° Downslope	14m	Temporary APZ to 100m from MOD 21 bushfire boundary to be established within future Huntlee Development area.
Transect 9 South	Forest	Upslope	24m	
Transect 10 South	Riparian	0-5° Downslope	14m	
Transect 11 South	Forest	Upslope	24m	
Transect 12 South	Riparian	0-5° Downslope	14m	Vegetation within Riparian Zone corridor to be retained with required 14m APZ provided.
Transect 13 South	Forest	Upslope	24m	
Transect 14	Forest	0-5° Downslope	29m	Temporary APZ of 24m to be established within future Huntlee Development area and maintained until such time Persoonia buffer cleared.
Transect 15	Forest	Upslope	24m	
Transect 16	Forest	Upslope	24m	

A variable APZ of 24m to 29m is required from the northern Huntlee concept approval boundary for uses that trigger residential APZ setbacks. In the case of a SFPP increased setbacks in accordance with PBP (2019) shall apply.

The development of MOD 21 will occur in a staged fashion. As such a temporary APZ of 100m or to the Huntlee boundary will be established between active or completed development stages and future development areas.



HUNTLEE MOD 21, NORTH ROTHBURY
FIGURE 6: APZ MAP (ACCEPTABLE SOLUTIONS RESIDENTIAL DEVELOPMENTS PBP 2019)



- Legend**
- Creekline
 - MOD21 Bushfire Boundary
 - 105216 northern pop 150m corridor 220813_region
 - Basin
 - 100m Temporary Asset Protection Zone
 - Required Asset Protection Zone (PBP 2019)
 - Cadastral Boundaries



Aerial: NearMap (2023) | Data: MJD Environmental, Daly Smith (2023), NSW Spatial Services (2020) | Datum/Projection: GDA 1994 MGA Zone 56 | Date: 27/06/2023 | Version 1 | GIS\16015 - Huntlee, Branxton\5. GIS\16015_MOD21_20220628.mxd | This plan should not be relied upon for critical design

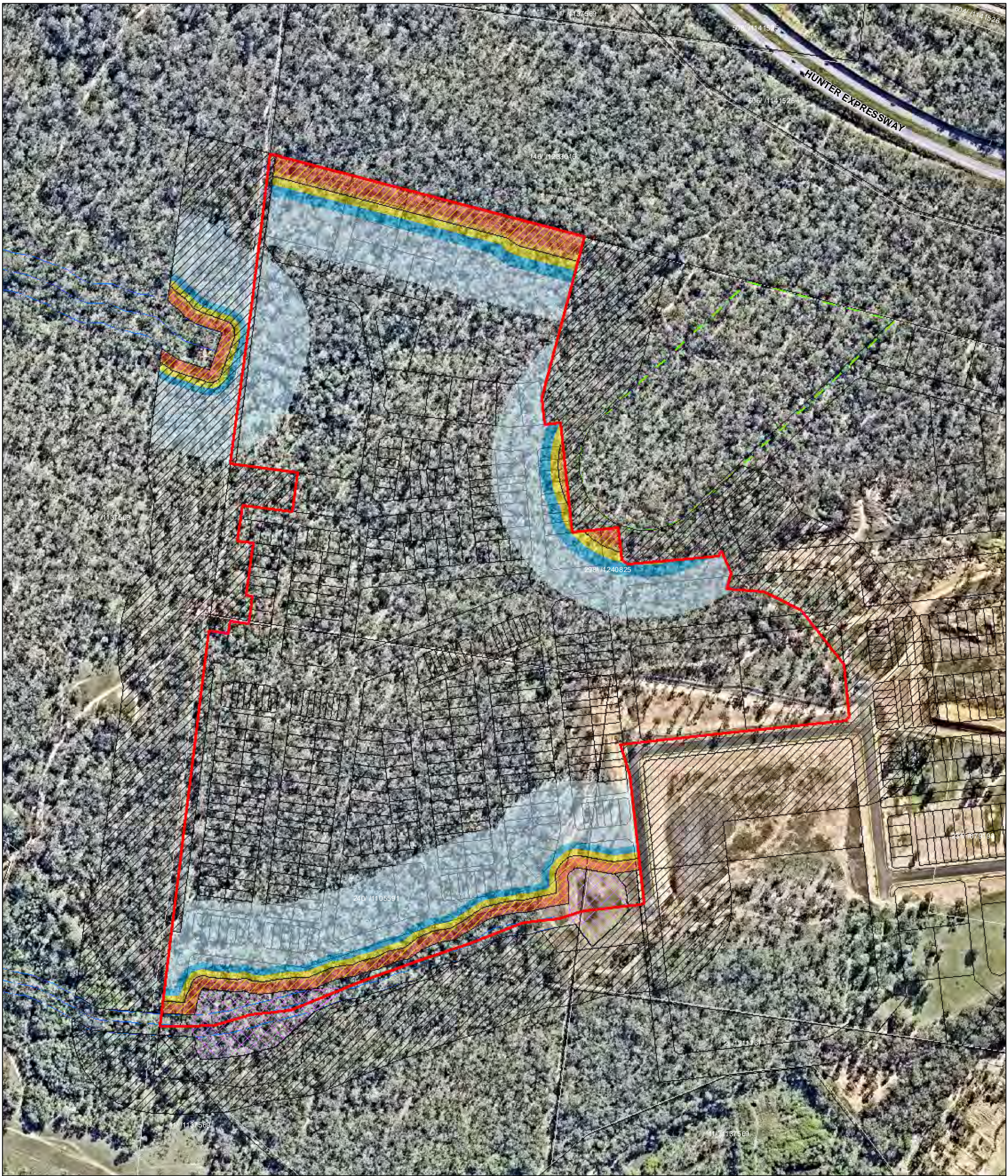
3.2 Determining BAL

By considering the bushfire hazard analysis outcomes presented in Chapter 2, Table A1.12.5 of Appendix 1 of PBP (2019) was applied to the vegetation classification and slope analysis to calculate BAL for residential development based on separation from the hazard for the site. Refer to **Table 4** and **Figure 7**.

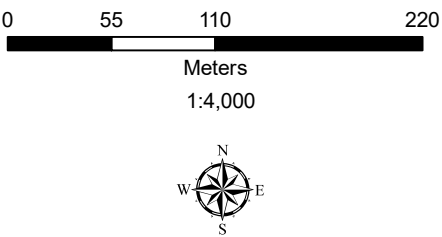
Table 4 Required BAL (PBP 2019)

Direction	Vegetation Classification	Slope Class	Required APZ (Table A1.12.2 PBP 2019)	APZ Provided	Separation Distance	BAL
Transect 1 North	Forest	0-5° Downslope	29m	29m	<22m 22-<29m 29-<40m 40-<54m 54-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 2 North	Forest	Upslope	24m	24m	<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 3 West	Forest	0-5° Downslope	29m	Temporary APZ of 100m to be established within future Huntlee Development area. Vegetation within Riparian Zone corridor to be retained with required 14m APZ provided.	<22m 22-<29m 29-<40m 40-<54m 54-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 4 West	Riparian	0-5° Downslope	14m		<11m 11-<14m 14-<21m 21-<29m 29-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 5 West	Forest	Upslope	24m		<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 6 West	Forest	0-5° Downslope	29m		<22m 22-<29m 29-<40m 40-<54m 54-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 7 West	Forest	Upslope	24m		<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 8 South	Riparian	0-5° Downslope	14m	Temporary APZ to 100m from MOD 21 bushfire boundary to be established within future Huntlee	<11m 11-<14m 14-<21m 21-<29m 29-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low

Direction	Vegetation Classification	Slope Class	Required APZ (Table A1.12.2 PBP 2019)	APZ Provided	Separation Distance	BAL
Transect 9 South	Forest	Upslope	24m	Development area. Vegetation within Riparian Zone corridor to be retained with required 14m APZ provided.	<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 10 South	Riparian	0-5° Downslope	14m		<11m 11-<14m 14-<21m 21-<29m 29-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 11 South	Forest	Upslope	24m		<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 12 South	Riparian	0-5° Downslope	14m		<11m 11-<14m 14-<21m 21-<29m 29-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 13 South	Forest	Upslope	24m		<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 14	Forest	0-5° Downslope	29m		Temporary APZ of 24m to be established within future Huntlee Development area and maintained until such time Persoonia buffer cleared.	<22m 22-<29m 29-<40m 40-<54m 54-<100m >100m
Transect 15	Forest	Upslope	24m	<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m		BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low
Transect 16	Forest	Upslope	24m	<18m 18-<24m 24-<33m 33-<45m 45-<100m >100m		BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low



HUNTLEE MOD 21, NORTH ROTHBURY
FIGURE 7: BAL MAP (ACCEPTABLE SOLUTIONS RESIDENTIAL DEVELOPMENTS PBP 2019)



- Legend**
- Creekline
 - MOD21 Bushfire Boundary
 - 105216 northern pop 150m corridor 220813_region
 - Basin
 - 100m Temporary Asset Protection Zone
 - Required Asset Protection Zone (PBP 2019)
 - Cadastral Boundaries

- Required Bushfire Attack Levels**
- PBP 2019**
- BAL-FZ
 - BAL-40
 - BAL-29
 - BAL-19
 - BAL-12.5

3.3 Access

In the event of a serious bushfire threat to the proposed development, it will be essential to ensure that adequate ingress/ egress and the provision of defendable space are afforded in the subdivision design with due regard to the requirements of Table 5.3b and Appendix 3 of PBP (2019).

All access within the subdivision is generally consistent with the Huntlee Concept Approval where the site will have multiple ingress and egress routes that will ultimately connect to Wine Country Drive. The proposed public perimeter roads and internal roads comply with RFS requirements for access listed in terms of surface, vertical clearance, horizontal width, grades, and minimum curve radius.

Refer to **Appendix A** for Site Plan showing access.

The following summarises the requirements of Table 5.3b, and Appendix 3 of PBP (2019). Deviations from the above acceptable solutions for access may be considered (depending on the situation) through a performance-based assessment.

Table 5 Acceptable solutions for access (PBP 2019)

Performance Criteria	Acceptable Solutions
The intent may be achieved where:	
General Requirements <ul style="list-style-type: none"> Firefighting vehicles are provided with safe, all-weather access to structures. 	<ul style="list-style-type: none"> property access roads are two-wheel drive, all weather roads; perimeter roads are provided for residential subdivisions of three or more allotments; subdivisions of three or more allotments have more than one access in and out of the development; traffic management devices are constructed to not prohibit access by emergency services vehicles; maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; all roads are through roads; dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.
<ul style="list-style-type: none"> the capacity of access roads is adequate for firefighting vehicles. 	<ul style="list-style-type: none"> the capacity of perimeter and non-perimeter road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/ causeways are to clearly indicate load rating.
<ul style="list-style-type: none"> there is appropriate access to water supply. 	<ul style="list-style-type: none"> hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and

Performance Criteria	Acceptable Solutions										
	<ul style="list-style-type: none"> there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available. 										
Perimeter access roads <ul style="list-style-type: none"> Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface. 	<ul style="list-style-type: none"> are two-way sealed roads; minimum 8m carriageway width kerb to kerb; parking is provided outside of the carriageway width; hydrants are located clear of parking areas; are through roads, and these are linked to the internal road system at an interval of no greater than 500m; curves of roads have a minimum inner radius of 6m; the maximum grade road is 15 degrees and average grade of not more than 10 degrees; the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. 										
Non-perimeter access roads <ul style="list-style-type: none"> Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating. 	<ul style="list-style-type: none"> minimum 5.5m carriageway width kerb to kerb; minimum 5.5m carriageway width kerb to kerb; parking is provided outside of the carriageway width; hydrants are located clear of parking areas; roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; curves of roads have a minimum inner radius of 6m; the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. 										
Property Access Firefighting vehicles can access the dwelling and exit the property safely.	<ul style="list-style-type: none"> There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles. <p>In circumstances where this cannot occur, the following requirements apply:</p> <ul style="list-style-type: none"> minimum 4m carriageway width; in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; provide a suitable turning area in accordance with Appendix 3; <table border="1"> <thead> <tr> <th>Curve radius (inside edge in metres)</th><th>Swept path (metres width)</th></tr> </thead> <tbody> <tr> <td>< 40</td><td>4.0</td></tr> <tr> <td>40 - 69</td><td>3.0</td></tr> <tr> <td>70 - 100</td><td>2.7</td></tr> <tr> <td>> 100</td><td>2.5</td></tr> </tbody> </table>	Curve radius (inside edge in metres)	Swept path (metres width)	< 40	4.0	40 - 69	3.0	70 - 100	2.7	> 100	2.5
Curve radius (inside edge in metres)	Swept path (metres width)										
< 40	4.0										
40 - 69	3.0										
70 - 100	2.7										
> 100	2.5										

Performance Criteria	Acceptable Solutions
	<div data-bbox="754 241 1469 947"> </div> <ul style="list-style-type: none"> curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; the minimum distance between inner and outer curves is 6m; the crossfall is not more than 10 degrees; maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and a development comprising more than three dwellings has access by dedication of a road and not by right of way. <p><i>Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.</i></p>

3.4 Services – Water, Electricity, Gas

The Site is to be developed in accordance with Table 5.3c the PBP (2019) acceptable solutions for services listed in **Table 6**.

The proposal is able to satisfy these requirements given:

- The Site will be connected to the reticulated water and recycled supply.
- The site will be connected to power from the existing service available within Huntlee. This shall be extended and augmented within the site.
- Any future gas connection will be installed in accordance with the provisions of PBP (2019).
- Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005.

Table 6 Acceptable solutions for services (PBP 2019)

Performance Criteria	Acceptable Solutions										
The intent may be achieved where:											
<ul style="list-style-type: none"> ▪ adequate water supplies are provided for firefighting purposes 	<ul style="list-style-type: none"> ▪ reticulated water is to be provided to the development, where available ▪ a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and ▪ static water supplies shall comply with Table 5.3d <table border="1"> <thead> <tr> <th>Development Type</th><th>Water Requirements</th></tr> </thead> <tbody> <tr> <td>Residential lots (<1000m²)</td><td>5,000L/lot</td></tr> <tr> <td>Rural-residential lots (1000-10,000m²)</td><td>10,000L/lot</td></tr> <tr> <td>Large rural/lifestyle lots (>10,000m²)</td><td>20,000L/lot</td></tr> <tr> <td>Multi-dwelling housing (including dual occupancies)</td><td>5,000L/dwelling</td></tr> </tbody> </table> 	Development Type	Water Requirements	Residential lots (<1000m ²)	5,000L/lot	Rural-residential lots (1000-10,000m ²)	10,000L/lot	Large rural/lifestyle lots (>10,000m ²)	20,000L/lot	Multi-dwelling housing (including dual occupancies)	5,000L/dwelling
Development Type	Water Requirements										
Residential lots (<1000m ²)	5,000L/lot										
Rural-residential lots (1000-10,000m ²)	10,000L/lot										
Large rural/lifestyle lots (>10,000m ²)	20,000L/lot										
Multi-dwelling housing (including dual occupancies)	5,000L/dwelling										
<ul style="list-style-type: none"> ▪ water supplies are located at regular intervals; and ▪ the water supply is accessible and reliable for firefighting operations. 	<ul style="list-style-type: none"> ▪ fire hydrant spacing, design and sizing complies with AS 2419.1 – 2005. ▪ hydrants are not located within any road carriageway ▪ all above ground water and gas service pipes external to the building are metal, including and up to any taps 										
<ul style="list-style-type: none"> ▪ flows and pressure are appropriate 	<ul style="list-style-type: none"> ▪ fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005 										
<ul style="list-style-type: none"> ▪ the integrity of the water supply is maintained. 	<ul style="list-style-type: none"> ▪ all above-ground water service pipes are metal, including and up to any taps; and ▪ above-ground water storage tanks shall be of concrete or metal. 										
Electricity Services <ul style="list-style-type: none"> ▪ location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings 	<ul style="list-style-type: none"> ▪ where practicable, electrical transmission lines are underground. ▪ where overhead electrical transmission lines are proposed: 										

Performance Criteria	Acceptable Solutions
	<ul style="list-style-type: none"> ○ lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and ○ no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 <i>Guideline for Managing Vegetation Near Power Lines</i>.
Gas services <ul style="list-style-type: none"> ▪ location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings 	<ul style="list-style-type: none"> ▪ reticulated or bottled gas is installed and maintained in accordance with AS/NZ 1596:2014 – <i>The storage and handling of LP Gas</i>, and the requirements of relevant authorities. Metal piping is to be used. ▪ all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. ▪ Above-ground gas service pipes are metal, including and up to any outlets. ▪ Connections to and from gas cylinders are metal. ▪ polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

3.5 Landscaping & Fuel Management

All future landscaping on the site should be designed and managed to minimise impact of bushfire based on the principles set out in PBP (2019) being:

- Prevent flame contact / direct ignition on the dwelling;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant heat; and
- Reduce wind speed.

In this manner, consideration should be given to species selection, planting location, flammability and size at maturity to ensure discontinuous canopy/ structure both vertically and horizontally to ensure the above principles are met.

Ongoing fuel management across the site as part of the maintenance regime should comply with the NSW RFS 'Asset protection zone standards' and *Appendix 4 - Asset Protection Zone Requirements* of PBP (2019) which provides guidance on maintenance activities to assist in achieving the landscape principles.

Fencing and gates are to be constructed in accordance with PBP (2019) section 7.6 as follows:

Fences and gates in bush fire prone areas may play a significant role in the vulnerability of structures during bush fires. In this regard, all fences in bush fire prone areas should be made of either hardwood or non-combustible material.

However, in circumstances where the fence is within 6m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

3.6 Emergency Management

Any fire within the site would be attended in the first instance by the Cessnock branch of the NSW Fire Brigade and/or the Rothbury and North Rothbury Rural Fire Brigade.

To assist emergency response from the NSW RFS and/or NSW Fire and Rescue, site access is to comply with the provisions set out in PBP (2019) and all tanks including connection points be readily accessible and clearly marked. If pumps are to be made available, they must be regularly maintained and in good working order.

4 Conclusion & Recommendations

MJD Environmental has been engaged by Huntlee Pty Ltd, to prepare a Bushfire Threat Assessment (BTA) to accompany S4.55 Modification (MOD 21) to Stage 1 of Major Project (MP10_0137) for the Huntlee New Town Residential development, North Rothbury, NSW.

This assessment has considered and assessed the bushfire hazard and associated potential threats relevant to the proposal, and to outline the minimum mitigative measures which would be required in accordance with *Planning for Bush Fire Protection 2019* (PBP), as adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2020*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adhered to the methodology and procedures outlined in PBP (2019) via assessment of acceptable solutions as outlined in Chapter 5 of PBP (2019).

This assessment has been made based on the bushfire hazards in and around the site at the time of inspection and production (June 2022).

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2019).

Asset Protection Zones

A variable APZ of 24m to 29m is required from the northern Huntlee concept approval boundary for uses that trigger residential APZ setbacks. In the case of a SFPP increased setbacks in accordance with PBP (2019) shall apply.

- A 14m APZ is required from riparian zones to be retained within the Huntlee development area.
- A temporary APZ shall be established -
 - 100m to the west of MOD 21 bushfire boundary within future Huntlee development areas;
 - to 100m south from the MOD 21 bushfire boundary to be established within future Huntlee development areas.
 - To the *Persoonia pauciflora* buffer and maintained until such time that clearing of this area occurs.
- The development of MOD 21 will occur in a staged fashion. A temporary APZ of 100m or to the Huntlee boundary is required between active or completed development stages and future development areas.
- All lands within the development area including Open space outside the nominated riparian corridors will be managed as an APZ.
- Future dwellings within the site must have due regard to the specific considerations to required BAL as detailed in Chapter 3, Section 3.2 of this report.

Access

- Access for the subdivision design shall comply with the requirements of Table 5.3b and Appendix 3 of PBP (2019)
- All access within the subdivision is generally consistent with the Huntlee Concept Approval where the site will have multiple ingress and egress routes that will ultimately connect to Wine Country Drive. The proposed public perimeter roads and internal roads comply with RFS requirements for access listed in terms of surface, vertical clearance, horizontal width, grades, and minimum curve radius.

Services – Water supply, Gas and Electricity

- Services for the subdivision design shall comply with the requirements of Table 5.3c the PBP (2019).
 - The Site will be connected to the reticulated water and recycled supply.
 - The site will be connected to power from the existing service available within Huntlee. This shall be extended and augmented within the site.
 - Any future gas connection will be installed in accordance with the provisions of PBP (2019).
- Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005.

Landscaping and Fuel Management

- Careful consideration of future site landscaping, fencing and ongoing fuel management must occur to minimise the potential impact of bushfire on the Site; and
- Ongoing fuel management across the Site as part of the maintenance regime should give due consideration to Appendix 4 Asset Protection Zone Requirements of PBP (2019) which provides guidance on maintenance activities to assist in achieving the landscape principles.

5 Bibliography

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Appendix A Plan of Proposal

Appendix B

Approval instrument bushfire conditions (per MOD 9)

C15. Bushfire Protection

The proponent shall comply with the following requirements of the NSW Rural Fire Service:

- a) During construction of each sub-stage and until the next **stage or** sub-stage has begun, temporary concentric APZs shall be required to be provided around each release area where they face a fire hazard. Details of temporary APZs to be provided to the satisfaction of the Certifying Authority prior to issue of each sub stage construction certificate.
- b) Public road access, provision of services, landscaping and open space and future development are to comply with the Rural Fire Service's "Planning for Bushfire Protection 2006."
- c) For all perimeter lots directly adjoining the site boundary (i.e. where no perimeter road is provided), no dwellings shall be constructed within the APZ.

E11. Bushfire Protection

The proponent shall comply with and implement the recommended mitigation measures outlined in the bushfire assessment documents to the satisfaction of the Certifying Authority:

- a) 'Bushfire Threat Assessment - Huntlee Residential Development – Stage 10' prepared by RPS (Ver. 1 / March 2016), prior to the release of a subdivision certificate for the lots approved under MOD 5 within sub-stage 3.
- b) 'Bushfire Threat Assessment - Huntlee New Town – Stage 1 75W Modification' prepared by MJD Environmental Pty Limited (Version V2 / 28/04/2017), prior to the release of a subdivision certificate for the lots approved under MOD 8
- c) Bushfire correspondence prepared by MJD Environmental Pty Limited (ref 16015 RFS RFI Huntlee MOD 10 26/03/2019) prior to the release of the subdivision certificate for the lots approved under MOD 10
- d) **'Bushfire Threat Assessment – Huntlee New Town – Stage 1 75W Modification 9' prepared by MJD Environmental Pty Limited (Final / August 2018), prior to the release of the subdivision certificate for the lots approved under MOD 9**

The plan of subdivision and Section 88B instrument shall establish the following restrictive covenants:

- i. on all residential lots requiring the maintenance of the designated Asset Protection Zone in accordance with the requirements of Planning for Bushfire Protection 2006,
- ii. on all perimeter lots directly adjoining the site boundary (i.e. where no perimeter road is provided), no dwellings shall be constructed within the APZ.

The Rural Fire Service shall have the benefit of these covenants and having sole authority to release vary or modify these covenants.

E12. Bushfire Access Earthworks

- a) Access to all bushfire affected lots shall be provided in accordance with the design specifications set out in section 4.1.3 of Planning for Bushfire Protection 2006 (or any subsequent version).
- b) Services shall be provided in accordance with section 4.1.3 of Planning for Bushfire Protection 2006 (or any subsequent version). If a water hydrant is not provided within 70 metres of the building envelope, a 5000 litre static water supply must be provided.