

Bushfire Hazard Assessment

Residential Subdivision

Northview Estate

Queen Street, Muswellbrook

Prepared for
Tindale Property

27 November 2024

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Document Tracking

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1. Introduction

Blackash Bushfire Consulting has been engaged by Tindale Property to assess the proposed Stage 6 and 7 of the Northview Estate subdivision at 6 Queen Street, Muswellbrook (the site) which, legally known as Lot 2 DP1281309 (see Figure 1) which is legally known as Lot 446/-/DP1278895 (the site). Stage 6 and 7 are the final stages of the development which ties in with earlier approved (Stage 4 and 5) residential subdivision to the south (Figure 1).

Stage 6 and 7 is currently vacant agricultural and located on the outskirts of Muswellbrook in an area that is rapidly expanding with residential development. Rural cleared land for grazing is to the north and east of the site. The site is accessed to the north off the proposed extension of Queen Street and to the east from a proposed extension of Sepoy Crescent.

The site is on designated Bushfire Prone Land and the proposal must comply with the NSW Rural Fire Service (RFS) document *Planning for Bushfire Protection 2019* (PBP). The proposed development is identified as integrated development under Section 4.46 of the *Environmental Planning and Assessment Act 1979* (EPA Act) for Section 100B of the *Rural Fires Act 1997* (RF Act) which requires referral to the Rural Fire Service (RFS) relevant to the proposed subdivision of bush fire prone land.

A Bushfire Vegetation Management Plan (BVMP) has been prepared by Blackash Bushfire Consulting on behalf of Tindale Property in conjunction with the development of 4 Sandy Creek Road, Muswellbrook Lot 98 DP 1181251 (ie Stage 4, 5 and 6 of Northview Estate) which is attached separately and has been accepted by Council for the management of the narrow riparian corridor.

This assessment has been prepared by Lew Short, Director Blackash Bushfire Consulting. Lew is a person who is recognised by the NSW RFS as a qualified consultant in bush fire risk assessment (FPAA BPAD-Level 3 Certified Practitioner No. BPAD16373). Site inspection completed by Lew Short on 22 October 2022.

2. Proposed Development

The proponent seeks to complete stages 6 and 7 (Figure 2) of the subdivision of Northview Estate, Muswellbrook. Stage 6 and 7 are connected to Stage 4 and 5 (approved and being built) by a connecting perimeter road on the eastern side of the narrow riparian corridor separating Stage 4 and 5 from Stage 6.

The proposal seeks to subdivide lot 446 DP1278895 into 58 residential lots, comprising:

- 35 lots zoned R1 - General Residential
- 23 lots zoned R5 - Large Lot Residential.

The subdivision will include the following works:

- Removal of vegetation
- Bulk Earthworks and lot regrading
- Construction of internal roads
- Creation of asset protection zones
- Site landscaping
- Stormwater infrastructure
- Connection to required utilities including sewer, water, stormwater, telecommunications, and power
- Creation of necessary easements.

A variety of lot sizes are proposed to allow for a variety of housing types across the site, as follows:

- Within the R1 General Residential zone, proposed lot sizes range between 700m²- 1,630m² (Figure 3)
- Within the R5 Large Lot Residential zone, proposed lot sizes range between 4000m²- 6ha (Figure 4).

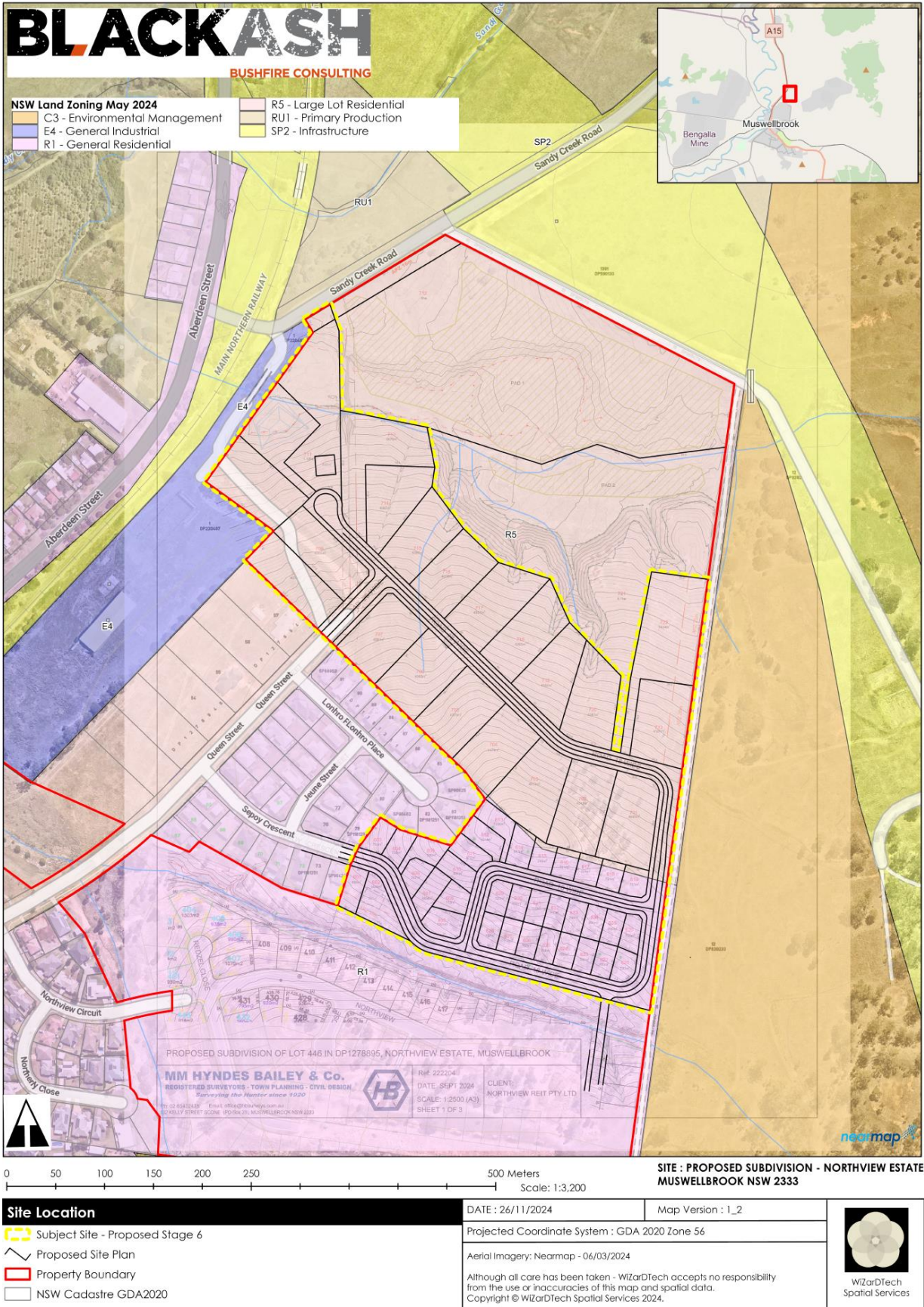
3. Legislative Framework

Development on land that is identified as being bushfire prone must comply with the NSW RFS document *Planning for Bushfire Protection* (PBP) under s.4.46 of the *Environmental Planning and Assessment Act, 1997* (EPA Act). ^{[1][2]}

A residential subdivision development is categorised as Integrated Development, under s.4.46 of the EPA Act. Integrated development requires development consent from Council and General Terms of Approval from the NSW RFS. Any development applications for such a purpose must obtain a Bush Fire Safety Authority (BFSA) from the Commissioner of the NSW RFS in accordance with Section 100B of the RF Act.

A BFSA authorises development to the extent that it complies with PBP including standards regarding setbacks, provision of water supply and other measures in combination considered by the Commissioner necessary to protect persons, property or the environment from danger that may arise from a bushfire.

As a new residential subdivision, the application needs to be able to justify that the proposal can achieve a worst-case Bushfire Attack Level (BAL) of a maximum of BAL-29. This can be achieved.



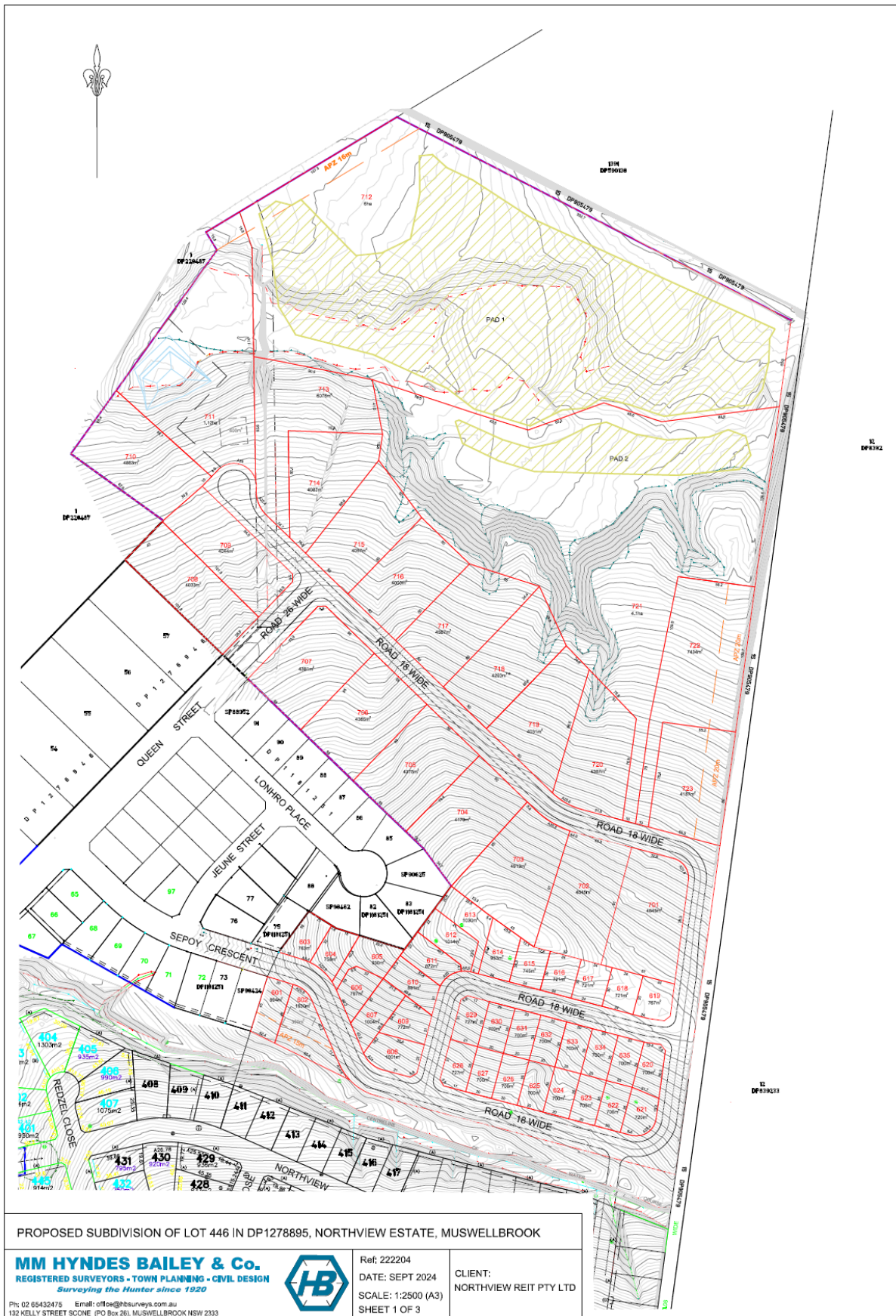


Figure 2 Site Plan

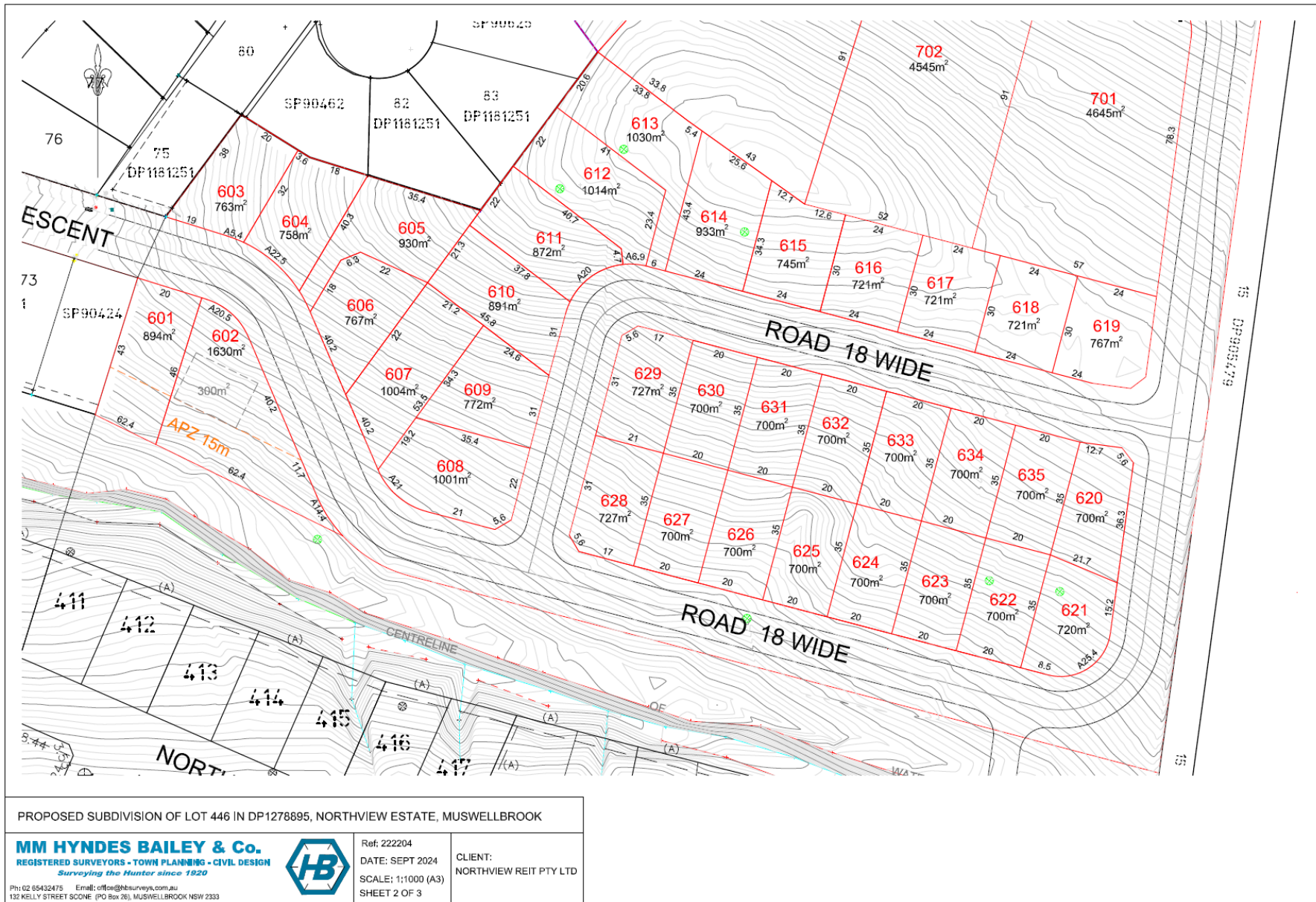


Figure 3 Site Plan South

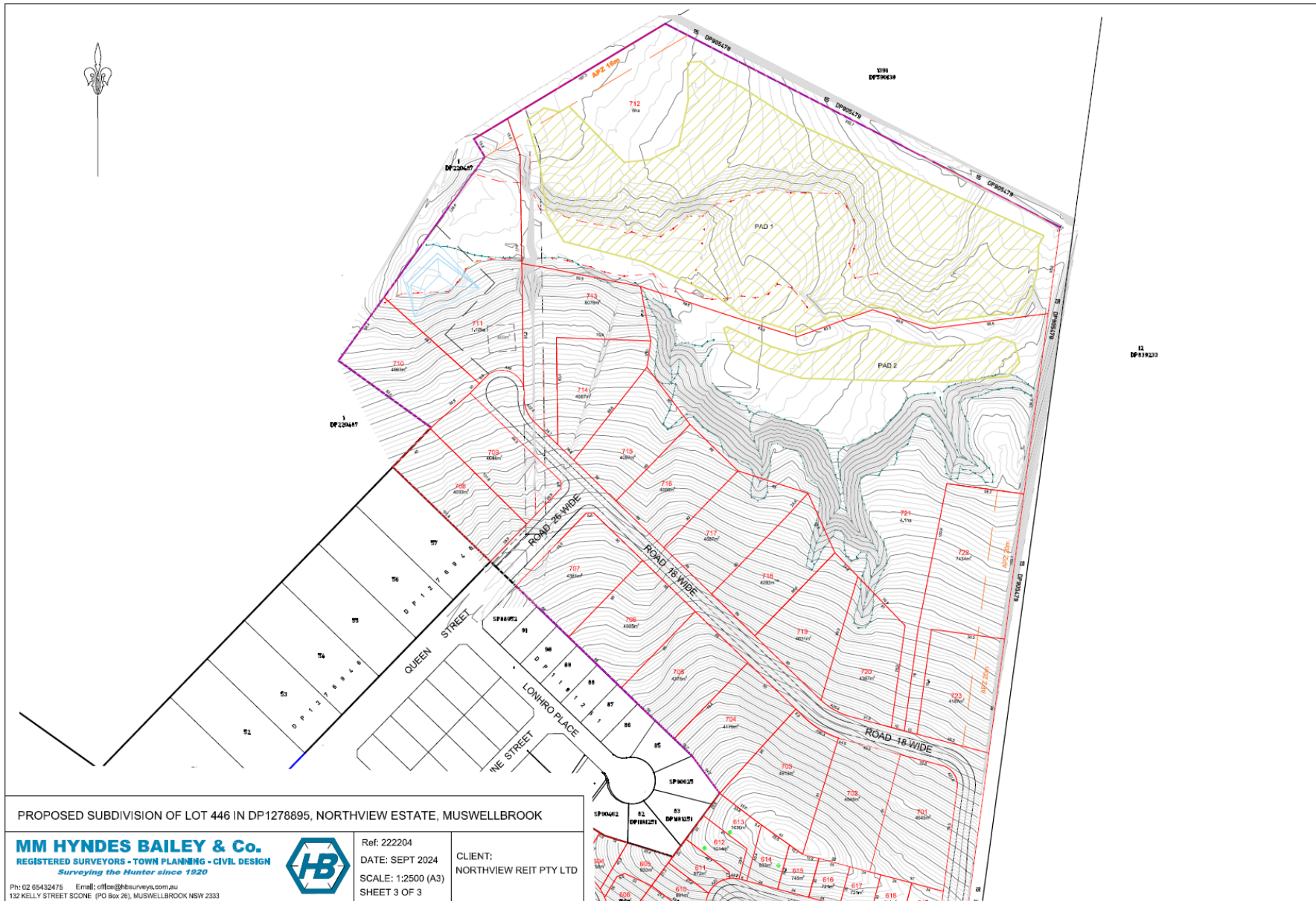


Figure 4 Site Plan North

4. Bushfire Prone Land Mapping

The site is identified as 'bush fire prone land' (see Figure 5) for the purposes of Section 10.3 of the EPA Act and the legislative requirements for building on bushfire prone lands are applicable.

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

The site has Category 3 BFPL which consists of grassland with some remnant scattered trees.

The site is designated Bushfire Prone Land, consisting of Category 3 land within the site (grassland and low threat vegetation) and associated 30m buffer (Figure 5). This is an accurate reflection of the grassland hazard within the site and external to the site. The narrow band of remnant vegetation within the riparian corridor on the southern part of Stage 6 is within an area that had previously been considered a riparian area by Council and would be revegetated and managed as a riparian area.

5. Zoning

The site is zoned R1 General Residential and R5 Large Lot Residential (Figure 1).

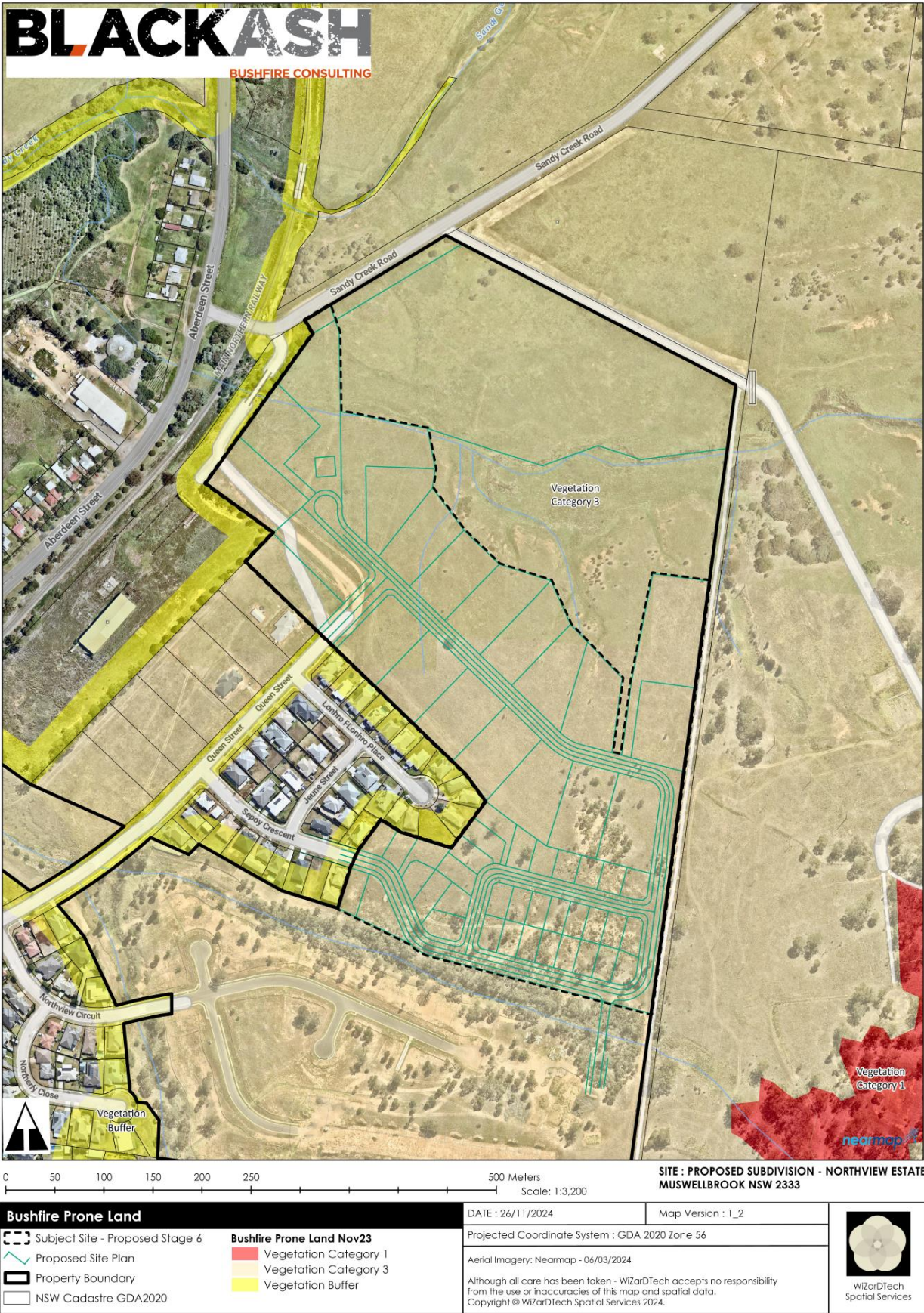


Figure 5 Bushfire Prone Land Mapping

6. Bushfire Threat Assessment

6.1. Methodology

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

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

- Planning for Bush Fire Protection (NSW RFS, 2019);
- Council Bushfire Prone Land Map;
- Aerial mapping;
- Site inspection and;
- Detailed GIS and site analysis.

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (APZ) locations and dimensions and future building construction requirements in accordance with AS3959. The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site, and which determine the building response of PBP.

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

6.2. Fire Danger District

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

6.3. Vegetation Assessment

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

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

The site (Figure 7) is currently managed grassland which is not classified and a small remnant patch of Central Hunter Ironbark Grassy Woodland from the NSW PCT Vegetation data base. The adjoining to the north and east is cleared for agricultural purposes (grazing) and is not classified but is considered grassland for assessment purposes. Three small patches of Central Hunter Ironbark Grassy Woodland are to the north east of the site. However, these patches are isolated and only contain a small number of remnant trees. The mid story has been removed and the ground story is agricultural land. These patches are considered grassland for assessment purposes.

The predominant vegetation affecting the site is grassland.

6.4. Slopes Influencing Bushfire Behavior

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

The effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP. The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope). The site and surrounds are gently undulating with slopes ranging from 3.3° and 5.5° upslope in the north to 6.4° downslope to 2.8° downslope to the east. See Figure 7.

The narrow riparian corridor has some steeper slopes due to gully erosion (see Figure 7 and Figure 8). For assessment purposes the slope has been determined as 0-5° downslope and 5-10° downslope (see inset on Figure 7). This is an over assessment of the slope as it does not consider the steep upslopes on the southern side of the riparian corridor.

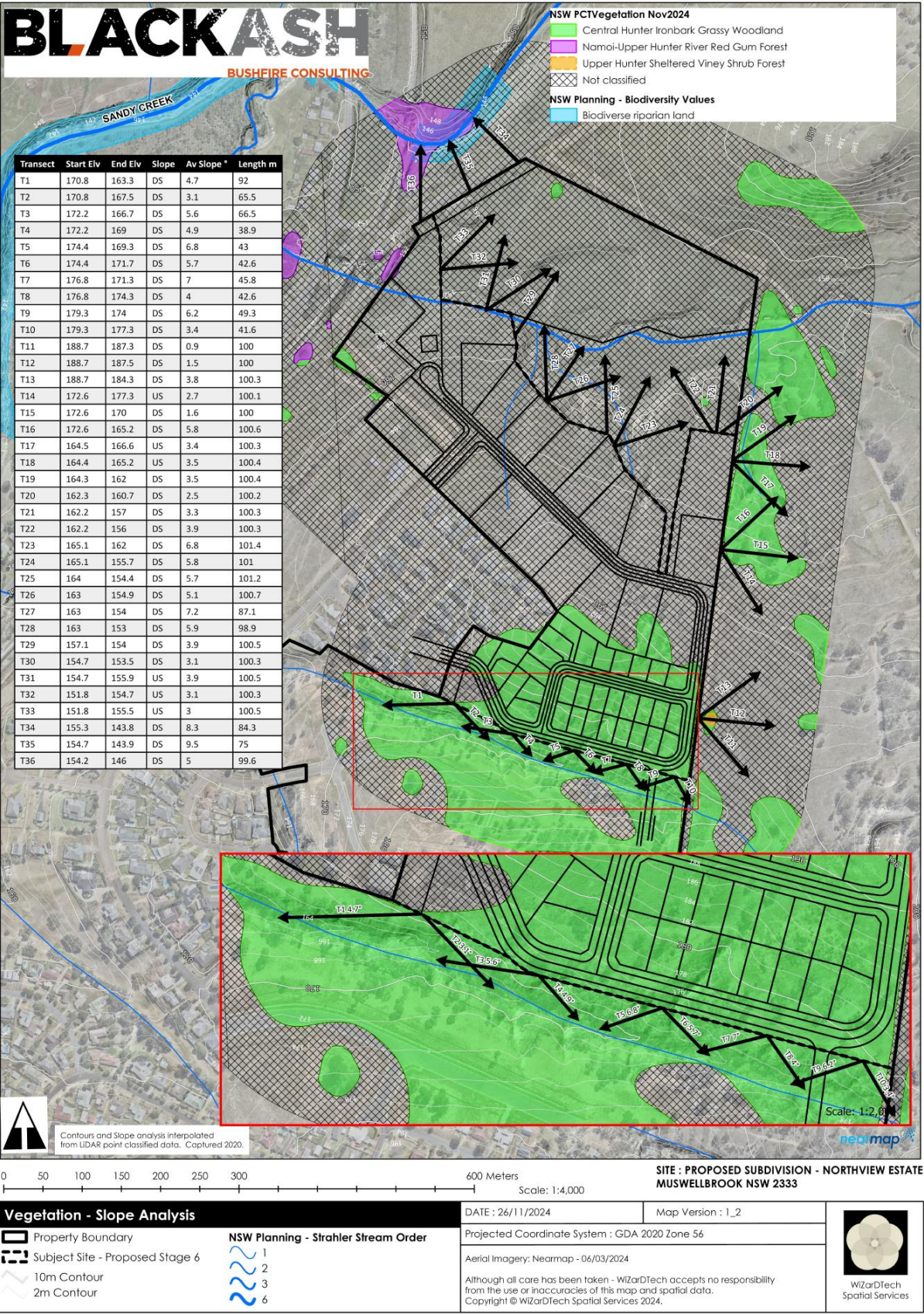


Figure 6 Vegetation and Slope

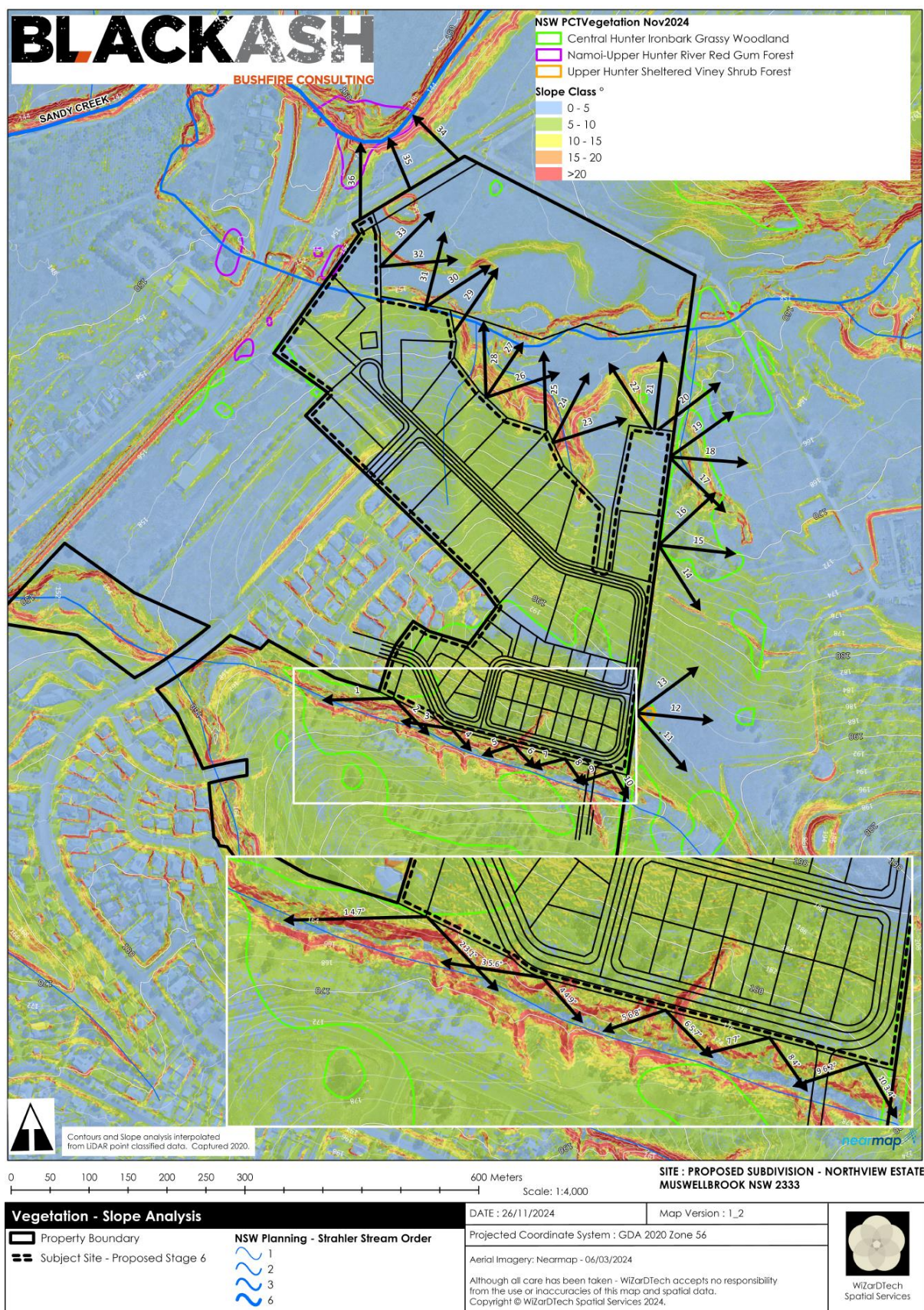


Figure 7 Detailed Slope Map

7. Bushfire Protection Measures

PBP recognises the unique attributes of residential development and promotes detailed site analysis and the application of a combination of bushfire protection measures (BPMs) to achieve an acceptable outcome.

The BPMs work in combination to provide a suite of measures that meet the aim and objective and Section 6 of PBP. The BPMs are shown in Figure 9.

Appropriate combinations depend upon geographic location and site circumstances.

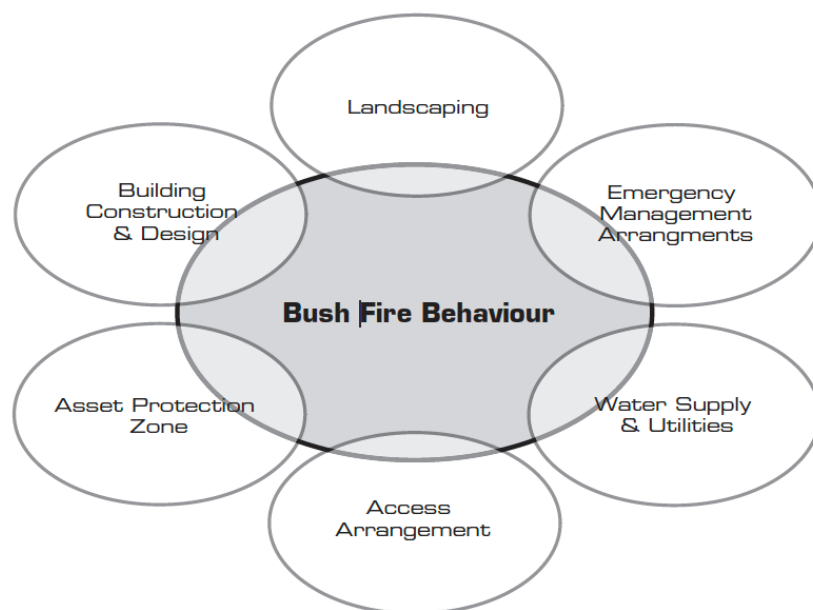


Figure 8 Bushfire Protection Measures in Combination (source PBP 2019 p. 26).

7.1. Asset Protection Zones

For proposed new residential subdivision, PBP requires that a minimum separation is provided in the form of Asset Protection Zones (APZ). The APZ is a fuel-reduced, physical separation between buildings and bushfire hazards. For residential developments, APZ requirements are based on keeping radiant heat levels at buildings below 29kW/m² as the maximum exposure on all sides of the building.

APZs have been provided to the edge of the sites incorporating the perimeter roads to the east and south of the site, demonstrating that the blocks are of sufficient size to accommodate a future houses at BAL 29 (Figure 10). APZs are provided within the large rural lifestyle lots (Lots 712 – 723). Lot 712 has a perimeter APZ and the Lot is of sufficient size to accommodate an APZ for a future house. Lot 721 is of sufficient size to accommodate an APZ for a future house.

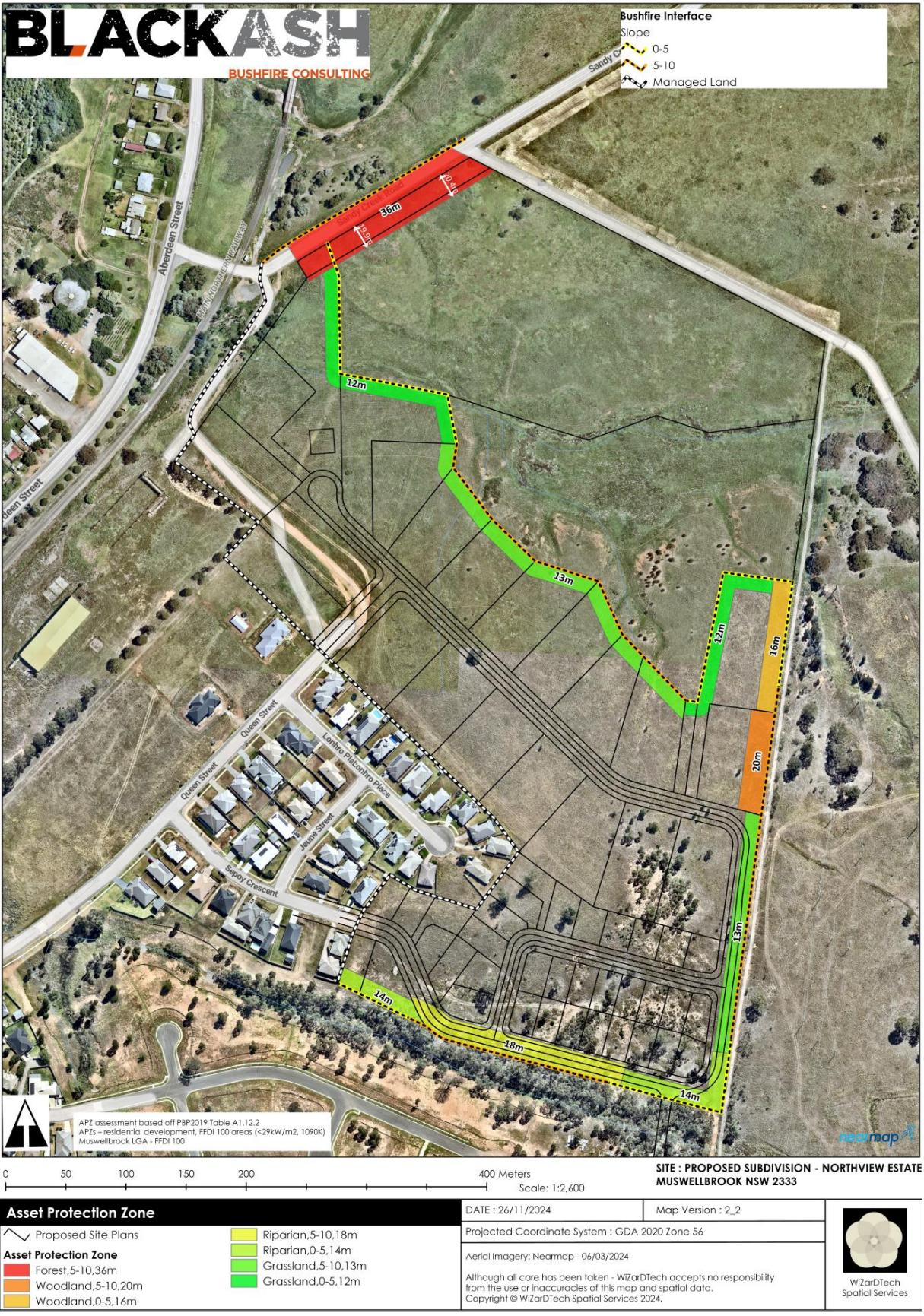


Figure 9 Acceptable Solution APZs

7.2. Bushfire Attack Levels

The Bushfire Attack Levels (BAL) is a means of measuring the ability of a building to withstand attack from bushfire. The form of bushfire attack and the severity will vary according to the conditions (FDI, vegetation, slope and setback) on the site.

The BAL assesses the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per square metre, which is the basis for establishing the requirements for construction to improve protection of a building from potential attack by a bushfire, as defined in *Australian Standard AS 3959-2009 Construction of buildings in bushfire-prone areas* (AS 3959-2018).

The BAL ratings are used as the basis for establishing the requirements for construction to improve protection of a proposed building from potential bushfire attack. Detailed BAL determination will be undertaken as part of the individual building DAs, but all lots can achieve BAL-29 or less.

7.3. Water Supplies

The Site will be adequately serviced by a reticulated water supply, with hydrants located at regular intervals along Tasman Street and the proposed internal road which comply with AS2419 and PBP.

This complies with PBP.

7.4. Gas and electrical supplies

Electricity supply to the area is underground and any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008).

This complies with PBP.

7.5. Access

All proposed lots have direct access to either the proposed internal road or existing public road network.

Access to the site is via the existing Queen Street, Sepoy Crescent and an internal linking point from Northview Circuit to the south. This provides more than one access in and out of the development. As the northern lots are for rural residential development, there is not a requirement within PBP to provide a perimeter road.

A perimeter road is provided to the east and south of the site that is within a 20m wide road reserve and is 11m wide kerb to kerb (Figure 10). Road 1 is an internal road with an 18m wide road corridor and 9m kerb to kerb (Figure 10). The extension of Queen Street into the site is within a 26m wide road corridor and the road is 13.5m wide kerb to kerb (Figure 11). The linking road to the north of the site is within a 18m wide corridor with a 9m kerb to kerb (Figure 11). The road widths exceed the requirements of PBP.

In accordance with PBP, the large rural lifestyle lots (Lots 712 – 723) do not have perimeter roads. Sandy Creek Road is to the north west of the site which provides two way perimeter access bordering the site. A sealed laneway is located to the immediate north of the site which provides access for the electricity substation at 20-24 Sandy Creek Road Muswellbrook (Lot 11/-/DP839233) and an existing property access track is along the western boundary of 20-24 Sandy Creek Road Muswellbrook. Lot 721 and Lot 712 are larger lifestyle lots. Lot 712 will have direct access to Sandy Creek Road.

The extensive gully erosion within the site and the irregular pattern of the gully to the north makes it unfeasible to provide a perimeter road within the site to Lots 713 – 722. The internal access arrangements provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

This complies with PBP.

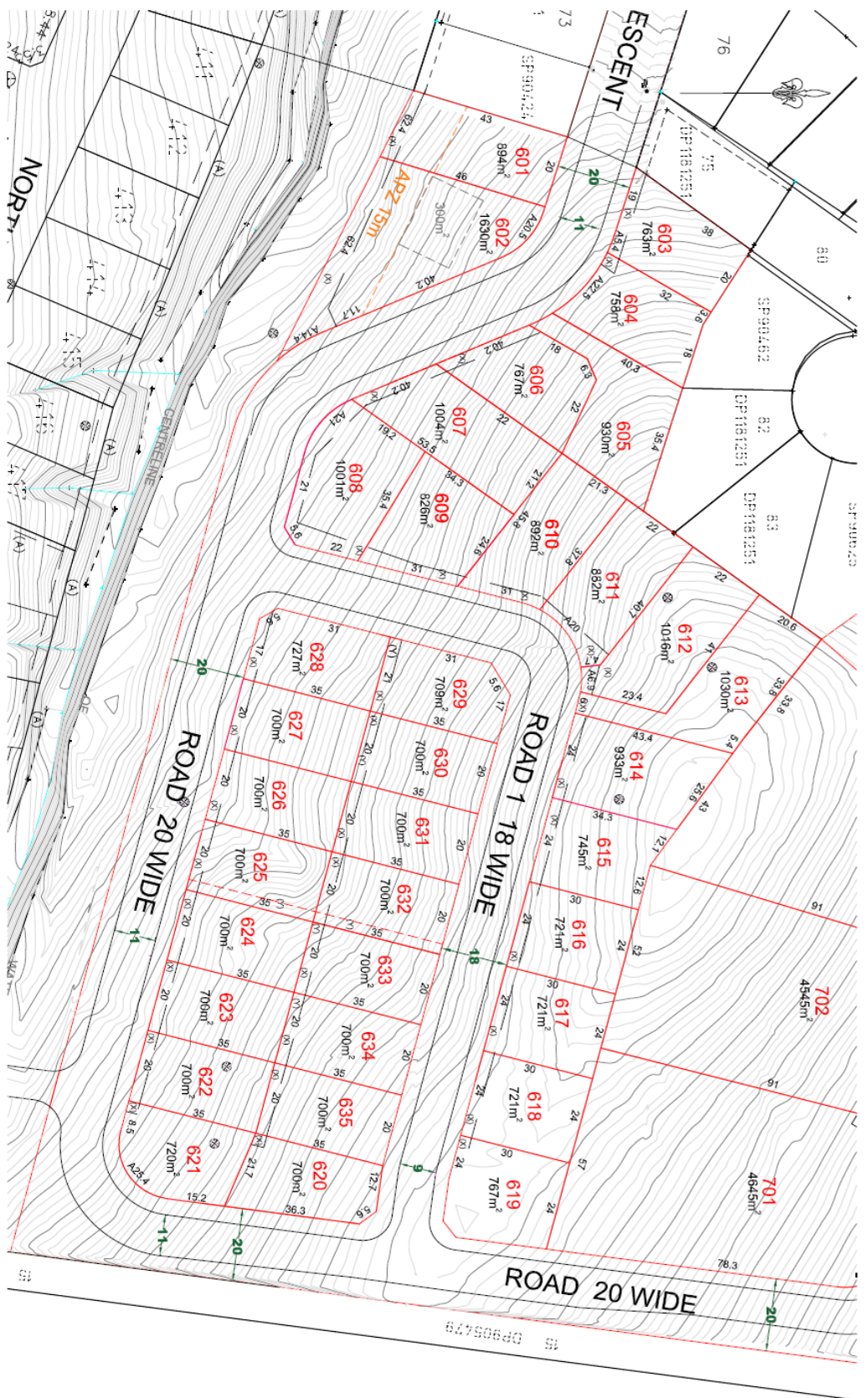


Figure 10 Road Widths



8. Recommendations

The following recommendation has been made within this report to ensure the proposed development is compliant with Section 100B of the *Rural Fires Act 1997* and *Planning for Bush Fire Protection 2019*:

Recommendation 1: The entire site shall be managed as an Inner Protection Area in accordance with the NSW RFS *Standards for Asset Protection Zones* and *Planning for Bush Fire Protection 2019*.

Recommendation 2: The proposed roads must comply with the non-perimeter road requirements of section 5.3.2b of *Planning for Bush Fire Protection 2019*.

Recommendation 3: Water, electricity and gas supplies through the proposed development must comply with section 5.3.3 of PBP 2019.

9. Conclusion

This assessment has demonstrated that the proposed subdivision can comply with *Planning for Bush Fire Protection 2019*. The proposed lots and existing dwellings are provided the minimum APZ requirements for 29kW/m².

In the authors professional opinion, the bushfire protection measures demonstrated in this report comply with the aim and objectives of *Planning for Bush Fire Protection 2019* and allow for the issue of a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.



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Appendix 1: References

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

Councils of Standards Australia AS2419 (200) – *Fire Hydrant Installations*

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

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

NSW Rural Fire Service (2019). *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Draft for Public Exhibition

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