

31 January 2024
Ref No.: 4791-1001

Scott Pearson
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PO Box 1138
Lismore NSW 2480
Via email: SMcDonald@ndc.com.au

Dear Scott,

Preliminary Bushfire Hazard Assessment – Clothiers Creek Road, Bogangar

This report presents the results of a Preliminary Bushfire Hazard Assessment for a proposed rezoning for the purpose of residential development at Lot 1 DP 818394, Clothiers Creek Road, Bogangar. The property is currently vacant land, zoned 7(l) Environmental Protection (Habitat) under the former Tweed Local Environmental Plan 2000.

This report includes an assessment of the site in accordance with Planning for Bush Fire Protection (PBP) 2019 to determine the extent of the bushfire hazard and to identify appropriate asset protection zones (APZ) and bushfire attack level (BAL) requirements for future residential development. This report does not assess the extent of compliance for the full suite of bushfire protection measures such as landscaping, access and services (water, power etc). This will need to be undertaken in the detailed Bushfire Hazard Assessment prepared to accompany the Planning Proposal for rezoning and Statement of Environmental Effects (SEE) that informs the development application (DA) lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the proposed development.

1. Bushfire Prone Land Mapping

Tweed Shire Council's (TSC) bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the EP&A Act and in accordance with the NSW Rural Fire Service (RFS) '*Guideline to Bushfire Prone Land Mapping*'.

TSC's bushfire prone land mapping indicates that the site is mapped as containing predominately Vegetation Category 1 with a smaller portion of Vegetation Category 3 in the northern half of the site (refer to **Illustration 1.1**).



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|--|--|
| Site boundary | Vegetation category 1 |
| Cadastre | Vegetation category 3 |
| | Vegetation buffer |

0 40 Metres



2. Legislative Framework

The *Rural Fires Act 1997* and the EP&A Act establish a framework for environmental planning and assessment to consider bushfire hazard issues. The assessment contained in this preliminary bushfire assessment has been prepared with regard to:

- *Environmental Planning and Assessment Act 1979* (EP&A Act);
- Environmental Planning and Assessment Regulation 2021;
- *Rural Fires Act 1997*;
- Australian Standard 3959:2018 'Construction of Buildings in Bushfire Prone Areas';
- Building Code of Australia (Volume 2); and
- Planning for Bush Fire Protection (PBP) 2019.

Direction 4.3 Planning for Bushfire Protection, issued by the Minister for Planning under Section 9.1(2) of the EP&A Act and Chapter 4 of PBP 2019 must be considered with respect to the proposed rezoning of the site.

If the proposed rezoning is successful, then future residential development is regarded as infill development and can be approved by Council under Section 4.14 of the EP&A Act.

3. Vegetation

The site contains vegetation mapped as the following Plant Community Types:

- PCT 3252 - Northern Hinterland Grey Gum-Mahogany Grassy Forest.
- PCT 4004 - Northern Melaleuca quinquenervia Swamp Forest.
- PCT 3232 - Far North Coastal Hills Blackbutt-Ironbark Forest.
- PCT 3148 - Far North Brush Box-Walnut Wet Forest.

More broadly, the vegetation mapping indicates that most of the site is mapped as Wet Sclerophyll Forests (Grassy sub-formation), with a smaller portion of Forested Wetlands in the north of the site adjacent to Clothiers Creek Road. Site investigations were conducted on 24 January 2024 to assess the site-specific vegetation formations in detail.

A large portion of the site is included in the Biodiversity Values Map (refer to **Illustration 3.1**). It is preferable to locate a building envelope and associated APZs outside of the Biodiversity Value mapped area in order to avoid triggering the requirement for a Biodiversity Development Assessment Report (BDAR). An indicative building envelope has been nominated.

There is a gate and driveway providing access from Clothiers Creek Road in the north-east part of the road frontage. There are two access tracks, one along the eastern boundary to the top of the hill, and the other cutting more centrally through the site before linking to the adjacent property to the south. Old cattle yards are located in the north-west corner of the site, indicating the land has previously been used for grazing. A dam is located in the north-east portion of the site.

Vegetation within and surrounding the site has been assessed in terms of potential bushfire hazard over a distance of 140 m from the indicative building envelope using the formation classes provided within Figure A1.2 of PBP 2019.

The northern portion of the site has a flat to undulating topography and contains a thick grassed understory beneath scattered Eucalyptus trees with crowns rarely touching. This has been assessed as Grassy Woodland. There is a strip of denser vegetation lining Clothiers Creek Road which is consistent with Wet Sclerophyll Forest. As the topography rises to the south of the site the Eucalyptus trees grow closer together, with a sparse understory of grasses and some regrowth.

This has been assessed as Dry Sclerophyll Forest. There is a cleared grassy area approximately 18 m x 30 m on the peak in the south-east corner of the site.

The properties to the east and west contain Wet Sclerophyll Forest with densely vegetated lower, mid-storey and canopy layers.



Plate 3.1 View south-west from northern part of the site, containing Grassy Woodland. Dam in foreground



Plate 3.2 Old cattle yards in north-west corner of the site.



Plate 3.3 View north across Grassy Woodlands to Wet Sclerophyll Forest lining Clothiers Creek Road



Plate 3.4 View north along access track. Indicative building envelope to the right



Plate 3.5 Clearing on top of the peak in the southern portion of the site



Plate 3.6 View north through Dry Sclerophyll Forest towards Grassy Woodland at the bottom of the slope



Plate 3.7 Wet Sclerophyll Forest within the adjacent property to the west

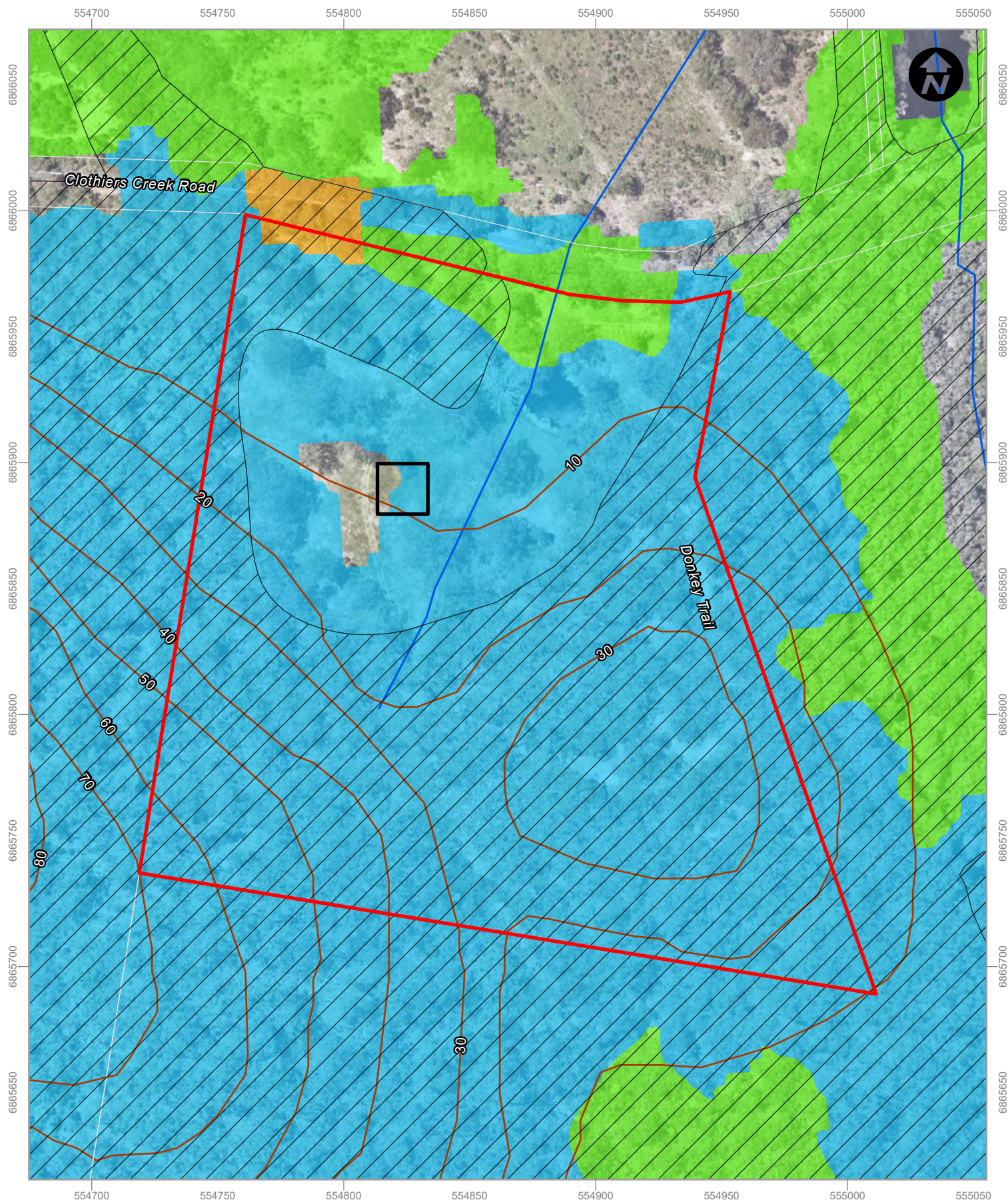


Plate 3.8 Wet Sclerophyll Forest within the adjacent property to the east

The dominant vegetation formation in each relevant direction is outlined in **Table 3.1**.

Table 3.1 Vegetation Formation

Aspect	Vegetation Formation
North	Grassy Woodland, Forest
East	Grassy Woodland, Forest
South	Grassy Woodland, Forest
West	Grassy Woodland, Forest



LEGEND

- | | | |
|--|---|---|
| Site boundary | Dry Sclerophyll Forests (Shrubby sub-formation) | Indicative building envelope |
| Cadastre | Forested Wetlands | Contours at 10m intervals |
| Biodiversity value | Wet Sclerophyll Forests (Grassy sub-formation) | ~ Watercourse |

0 40 Metres

Site Analysis - Illustration 3.1



4. Slope

The effective slope is the slope of the land beneath the vegetation assessed as being a hazard that will have the greatest influence on bushfire behaviour in relation to the development. The effective slope of the proposal has been assessed over 100 m in each relevant direction from the indicative building envelope. The effective slope is outlined in **Table 4.1**.

Table 4.1 Effective Slope

Aspect	Effective Slope
North	>0 – 5°
East	Upslope/ flat
South	Upslope/ flat
West	Upslope/ flat

5. Fire Weather District

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

6. Asset Protection Zones

An asset protection zone (APZ) is a fuel-reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and an asset. The relevant vegetation formation, effective slope and FDI are used to determine the required APZ. Minimum APZs are determined in accordance with PBP 2019 - Table A1.12.3.

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

Table 6.1 outlines the minimum APZ required for BAL 29 based on the existing vegetation classification. The APZs have been determined based on a nominated building envelope (refer to **Illustration 6.1**).

If the building envelope is located elsewhere within the northern third of the site containing Grassy Woodland, the same or similar APZ distances will apply.

Table 6.1 Minimum APZ for the Proposed Dwelling

Aspect	Vegetation Formation	Effective Slope	Minimum APZ (BAL 29)
North	Grassy Woodland	>0 – 5°	13 m
East	Forest	Upslope/ flat	20 m
South	Forest	Upslope/ flat	20 m
West	Forest	Upslope/ flat	20 m

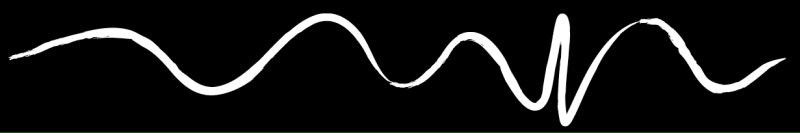
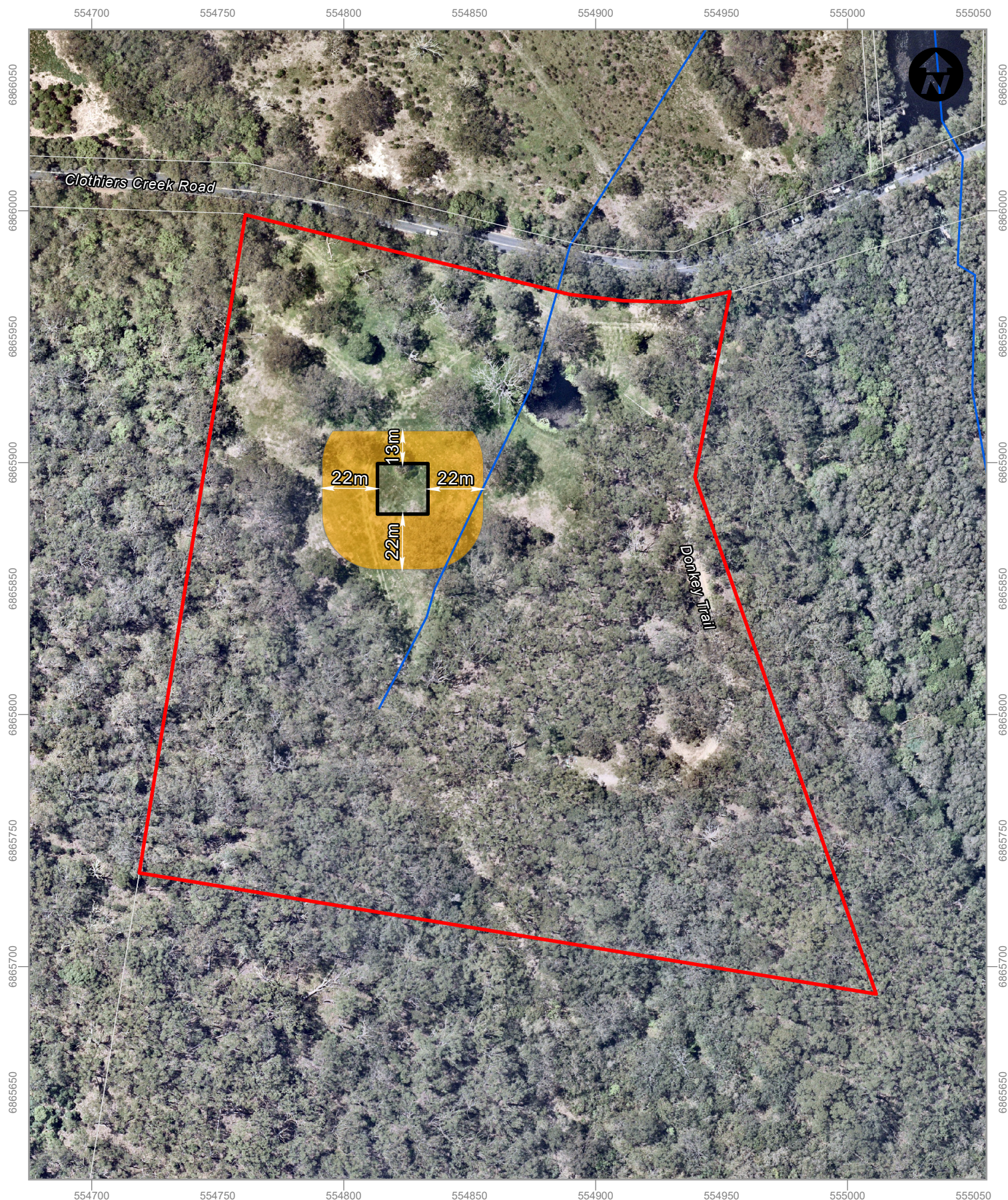


Illustration 6.1 shows the minimum APZ requirements based on existing vegetation classification. APZs are required to be managed as an Inner Protection Area (IPA) in accordance with the requirements of Appendix 4 of PBP 2019. A copy of the PBP 2019 requirements are included in **Appendix A**.

Table 6.2 outlines the extent to which the proposed APZs comply with the performance criteria and acceptable solution requirements of Table 7.4a of PBP 2019.

Table 6.2 APZ Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
APZs are provided commensurate with the construction of the building and a defensible space is provided.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.	Can comply.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	Can comply.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	Complies.



LEGEND

- ▬ Site boundary
- ▬ Asset protection zone (APZ)
- ▬ Cadastre
- ▬ Watercourse
- Indicative building envelope

0 40 Metres

Asset Protection Zone - Illustration 6.1

7. Landscaping

Landscaping is required to comply with PBP 2019 Appendix 4 (refer to **Appendix A**).

In order to minimise the risk of bushfire attack, the ground cover and mid-storey vegetation in existing managed areas of the site outside of the APZ should continue to be managed (excluding biodiversity value mapped land).

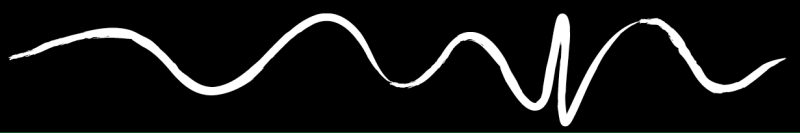
8. Access

Access to the proposed future dwelling will be via Clothiers Creek Road.

Table 8.1 outlines the requirements for access in Table 7.4a of PBP 2019 and the extent to which the proposal complies.

Table 8.1 Access Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Property access roads are two-wheel drive, all-weather roads.	Can comply.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes),	N/A. No bridges or causeways are likely to be required.
	Bridges and causeways are to clearly indicate load rating.	
There is appropriate access to water supply.	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021;	N/A. Reticulated water supply is not available to the site.
	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Can comply.
Firefighting vehicles can access the dwelling and exit the property safely	At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road;	N/A. A building envelope can be accommodated less than 200 m from Clothiers Creek Road.
	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of	N/A. The site is not within an urban area.



Performance Criteria	Acceptable Solution	Application
	the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply:	
	Minimum 4m carriageway width;	Can comply.
	In forest, woodland and heath situations, rural property roads have passing bays every 200 m that are 20 m long by 2 m wide, making a minimum trafficable width of 6 m, at the passing bay;	N/A. The northern portion of the site adjacent to Clothiers Creek Road contains Grassy Woodland, however a building envelope can be accommodated less than 200 m from Clothiers Creek Road.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches;	Can comply.
	Property access must provide a suitable turning area in accordance with Appendix 3;	Can comply.
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;	Can comply.
	The minimum distance between inner and outer curves is 6m;	Can comply.
	The crossfall is not more than 10 degrees;	Complies.
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	Can comply.
	A development comprising more than three dwellings has formalised access by dedication of a road and not by right of way	N/A.
	Note: Some short constrictions in the access may be accepted where they are not less than 3.5 m wide, extend for no more than 30 m and where the obstruction cannot be reasonably avoided or removed.	Can comply.



9. Services

As the site is not connected to a reticulated water supply, in accordance with Table 5.3d of PBP 2019, a minimum 20,000 litre fire fighting water supply is required. The fire fighting water supply must consist of a metal or concrete tanks and be installed in accordance with PBP 2019. Electricity and gas services are also to meet the requirements stipulated in Table 5.3c of PBP 2019.

10. Strategic Planning

Direction 4.3 Planning for Bushfire Protection, issued by the Minister for Planning under Section 9.1(2) of the EP&A Act, must be considered with respect to the proposed rezoning of the site. The Direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land.

Chapter 4 of PBP 2019 outlines the strategic planning principles and specific matters to be considered at rezoning stage to ensure that future land uses are in appropriate locations to minimise the risk to life and property from bushfire attack.

While this report does not assess the extent of compliance with Direction 4.3 and Chapter 4 of PBP 2019, the above assessment does demonstrate that a dwelling envelope could be accommodated on the site in accordance with the acceptable solution requirements of PBP 2019.

11. Conclusion

This Bushfire Hazard Assessment has taken into consideration the proposed development, existing vegetation, effective slope and FDI detailed within Planning for Bush Fire Protection 2019. Adequate and appropriate bushfire protection measures are available and can be implemented to facilitate future residential development within the indicative building envelope. The proposal conforms with the standards, performance criteria and intent of measures outlined in Planning for Bush Fire Protection 2019.

If the building envelope is located elsewhere within the northern third of the site containing Grassy Woodland, similar APZ distances will apply. However, an assessment of the full suite of bushfire protection measures will be required to accompany the Planning Proposal for rezoning and the Statement of Environmental Effects (SEE) that informs the development application (DA) to be approved by Council under Section 4.14 of the EP&A Act for the proposed development.

I trust this information suits your requirements. Please contact me if you require further information or wish to complete any further assessment of the site.

Yours sincerely
GeoLINK

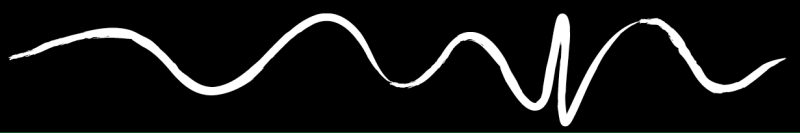


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Appendix A

PBP 2019 Appendix 4 Extract

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

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

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

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

A4.1 Asset Protection Zones

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

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

An APZ provides:

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

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

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

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

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

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

A4.1.1 Inner Protection Areas (IPAs)

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

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

When establishing and maintaining an IPA the following requirements apply:

Trees

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

Shrubs

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

Grass

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

A4.1.2 Outer Protection Areas (OPAs)

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

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

When establishing and maintaining an OPA the following requirements apply:

Trees

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

Shrubs

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

Grass

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

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

Figure A4.1

Typical Inner and Outer Protection Areas.

