

Bushfire Assessment

Proposed second dwelling (to create a detached dual occupancy)

Lot 41 DP226785
9 Tropic Gardens Drive, Smiths Lake

November 2024
Final (Rev0)

Prepared for
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Project: 24165

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1. INTRODUCTION

This bushfire assessment has been prepared in relation to the proposed erection of a second dwelling (to create a detached dual occupancy) on land at Lot 41 DP226785, 9 Tropic Gardens Drive, Smiths Lake.

The land within the site and surrounds is mapped as bushfire prone land for the purposes of Section 10.3 of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

As the land within the site is mapped as bushfire prone land, the purpose of this Bushfire Assessment is to assist in the planning process, to identify the proximity of the proposed development to any potential bushfire threat and to determine what, if any, level of construction is required in accordance with the RFS guideline entitled *Planning for Bush Fire Protection 2019* (PBP 2019).

The proposal is considered an increase in residential density for the purposes of PBP. Section 8.2.1 (Increased residential densities) of PBP provides that, while an increase in residential density does not necessarily require a subdivision approval, the same principles and criteria associated with subdivisions in bush fire prone areas will apply. This includes:

- ensuring an APZ based on a radiant heat threshold of 29kW/m² for any new dwellings, along with suitable provision for construction, access, water and landscaping; and
- where there is an existing dwelling within the subject site and a second building can otherwise comply with the provisions of this document, it may be necessary to upgrade the existing dwelling to provide (for example) improved ember protection.

2. PROPOSED DEVELOPMENT

The proposed development is for the construction of a second dwelling (to create a detached dual occupancy) on land at Lot 41 DP226785, 9 Tropic Gardens Drive, Smiths Lake and is shown on drawings by Joycon (Project 3657), Proposed Secondary Dwelling (Plot date: 29.9.2024).

The second dwelling will be sited approximately 18 metres north from the existing dwelling on the land and will (upon construction) result in two detached dwellings on the land. The second dwelling is to be setback 31 metres from the rear (northern/north-western) boundary of the land.

An extract of the site plan is at Figure 2.1.

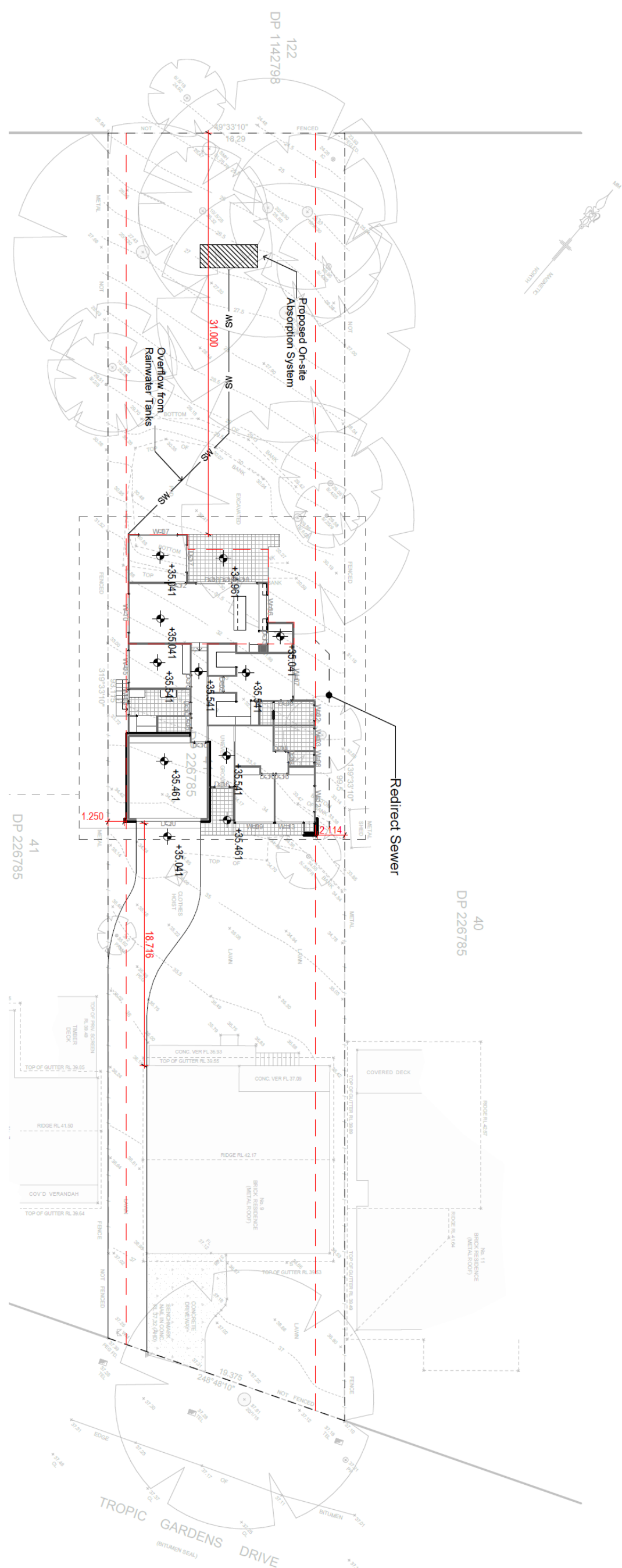


Figure 2.1: Site plan extract
(Source: Joycon). Not to scale. North approx to top right of page.

3. SITE DESCRIPTION

The site comprises land described as Lot 41 DP226785, 9 Tropic Gardens Drive, Smiths Lake.

The site is in the Mid-Coast Local Government Area and the relevant local environmental plan applying to the land is *Great Lakes Local Environmental Plan 2014* (LEP). The land is zoned RU5 (Village) under the LEP.

The site has an area of approximately 1,745m² and is on the northern side of Tropic Gardens Drive, opposite the intersection of Tropic Gardens Drive with Hibiscus Crescent. The site contains an existing dwelling in the southern part of the site.

The land within the site slopes down in a northerly direction from the front (southern) boundary towards the rear (northern/north-western) boundary with Lot 122 DP 1142798. The levels of the land range between around 37 metres AHD in the south-eastern (front) part of the site to about 24 metres AHD in the northern/rear corner of the site.

Adjoining land to the north-east and south-west of the site contains existing residential dwellings. Residential dwellings also occupy land to the south of the site, on the opposite side of Tropic Gardens Drive.

The nearest area of potential bushfire hazard vegetation is on land to the north/north-west of the site, within Lot 122 DP 1142798. Lot 122 has an area of approximately 38.9 hectares and contains dense forest vegetation throughout.

The following photographs show the existing condition of the land on and around the site.



Photo 3.1: Looking north from within the site, showing forest vegetation on the land within Lot 122 to north/north-west.



Photo 3.2: Condition of land in the northern part of the residential allotment to the west/south-west of the site, 7 Tropic Gardens Drive.



Photo 3.3: Condition of land in the northern part of the residential allotment to the east/north-east of the site, 9 Tropic Gardens Drive.

3.1 Vegetation Classification

The nearest vegetation likely to present a potential bushfire hazard to the development is on the adjoining land (Lot 122 DP 1142798) to the north/north-west of the site. The vegetation in Lot 122 is classified as a *forest* formation (Keith, 2004) and is the predominant vegetation type occurring within 140 metres of the site.

3.2 Slope assessment

The assessment of effective slope has been undertaken in accordance with the methodology in Sections A1.4 and A1.5 of PBP. The assessment of slope was undertaken via analysis of 1 metre Resolution Digital Elevation Model and through field analysis using a hand-held inclinometer and range finder.

For the purposes of this assessment, the slope of land most likely to influence bushfire behaviour in relation to the proposed dwelling site is >5-10° downslope to the north/north-west under forest vegetation within Lot 122.

4. BUSHFIRE ASSESSMENT

4.1 Assessment of Bushfire Attack Levels

The proposed second dwelling is a Class 1a building for the purposes of the *National Construction Code: Volume 2 – Building Code of Australia* (NCC/BCA).

Appendix 1 of PBP provides the methods for determining the Bushfire Attack Level (BAL).

The site is in the North Coast fire (weather) area and the applicable Fire Danger Index (FDI) is FDI 80 for the purposes of assessment.

This assessment is subject to continuing maintenance of land within the site as an APZ, to the standard of an Inner Protection Area (IPA). The assessment is also subject to continuing maintenance of land within the adjoining residential allotments to the east/north-east and west/south-west of the site as an APZ/IPA, as is the case at present.

Based on the siting of the proposed second dwelling, the nearest potential bushfire hazard vegetation (forest) to the proposed building will be ≥ 31 metres to the north/north-west, in the adjoining part of Lot 122 DP 1142798.

Given the above, the highest assessed BAL for the proposed second dwelling, as per Table A1.12.6 (Determination of BAL, FFDI 80 – residential development) of PBP, is BAL-29.

Construction requirements for BAL-29 apply subject to *AS3959-2018: Construction of Buildings in Bushfire Prone Areas* (subject to the provisions of Section 7.5.2 of PBP) or the NASH Standard – *Steel Framed Construction in Bushfire Areas* (2021).

According to Section A1.8 (Shielding) of PBP 2019, where an elevation is shielded from direct radiant heat arising from bushfire attack, then the construction requirements for that elevation may be able to be reduced to the next lower BAL. A similar provision is in Section 3.5 of AS 3959-2018.

Applying Section A1.8 of PBP, consideration can be given to construction of the south-facing elevation of the proposed second dwelling being reduced by one level of construction to BAL-19.

4.2 Existing Dwellings

As described in Section 8.2.1 of PBP, where there is an existing dwelling within the subject site and a second building can otherwise comply with the provisions of PBP, it may be necessary to upgrade the existing dwelling.

It is apparent that the existing dwelling on the land was constructed prior to 2002 and incorporates no bushfire resisting construction for the purposes of AS3959-2018.

Consideration is to be given to upgrading the existing dwelling for ember protection as follows:

- Enclosing or covering openings with a corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture of 2mm. Where applicable, this includes the openable portion of windows, vents, weepholes and eaves (but excludes roof tile spaces).
- Installation of weather strips, draught excluders or draught seals at the base of side hung external doors as per AS 3959.
- Enclosure of subfloor space(s), including openings and/or doors for sub-floor access.

4.3 Performance Criteria

The proposed development is for erection of a second dwelling (to create a dual occupancy) on the land and is an increase in residential density for the purposes of Section 8.2.1 of PBP.

As described in PBP, while an increase in residential density does not necessarily involve subdivision, the same principles and criteria (in Chapter 5 of PBP) associated with subdivisions in bushfire prone areas will apply.

Table 4.1 considers the proposal in relation to the relevant performance criteria in Chapter 5 (Residential Subdivisions) of PBP.

Table 4.1: Performance criteria (Re: Table 5.3(a)-(c)) of PBP

PERFORMANCE CRITERIA	RELATIONSHIP OF PROPOSAL TO ACCEPTABLE SOLUTIONS
ASSET PROTECTION ZONES	
<i>Potential building footprints must not be exposed to radiant heat levels exceeding 29kW/m² on each proposed lot.</i>	<p>The assessment is subject to continuing maintenance of land within the site as an APZ, to the standard of an Inner Protection Area (IPA). The assessment is also subject to continuing maintenance of land within the adjoining residential allotments to the east/north-east and west/south-west of the site as an APZ/IPA, as is the case at present.</p> <p>The highest assessed BAL for the proposed second dwelling, as per Table A1.12.6 (Determination of BAL, FFDI 80 – residential development) of PBP is BAL-29 (radiant heat levels ≤29kW/m²).</p>
<i>APZs are managed and maintained to prevent the spread of a fire towards the building.</i>	<p>Land within site (and adjoining residential properties to either side) is currently maintained in a condition consistent with an APZ/IPA.</p> <p>Recommendations include the ongoing maintenance of land within the site as an APZ, to the standard of an IPA, as per Appendix 4 of PBP.</p>
<i>The APZ is provided in perpetuity.</i>	<p>Land within the site (and adjoining residential properties to either side) is currently maintained in a condition consistent with an APZ/IPA. There are no apparent issues with that maintenance continuing in perpetuity.</p>
<i>APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.</i>	<p>APZ maintenance is practical.</p> <p>Land within the site (and adjoining residential properties to either side) is currently maintained in a condition consistent with an APZ/IPA.</p>
ACCESS	
<i>Firefighting vehicles are provided with safe, all-weather access to structures.</i>	<p>Access to the proposed second dwelling will be via a driveway extending north from Tropic Gardens Drive through the area between the western elevation of the existing dwelling and the western/south-western side boundary. While smaller fire fighting vehicles are likely to be able to access the southern elevation of the second dwelling via this driveway, firefighters will need to access the rear of the site on foot if necessary.</p>

PERFORMANCE CRITERIA	RELATIONSHIP OF PROPOSAL TO ACCEPTABLE SOLUTIONS
<i>The capacity of access roads is adequate for firefighting vehicles.</i>	Tropic Gardens Drive has apparent capacity to carry fully loaded firefighting vehicles.
<i>There is appropriate access to water supply.</i>	Reticulated water is available to the site. The nearest hydrant is in the road reserve to the south of the site, at the north-western corner at the intersection of Tropic Gardens Drive with Hibiscus Crescent.
<i>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.</i>	No new access roads proposed.
<i>Firefighting vehicles can access the dwelling and exit the property safely.</i>	As per the first row under 'Access' in this table.
WATER SUPPLIES	
<i>Adequate water supplies are provided for firefighting purposes.</i>	Reticulated water is available to the site. The nearest hydrant is in the road reserve to the south of the site, at the north-western corner at the intersection of Tropic Gardens Drive with Hibiscus Crescent.
<ul style="list-style-type: none"> ➤ <i>Water supplies are located at regular intervals; and</i> ➤ <i>The water supply is accessible and reliable for firefighting operations.</i> 	As above.
<i>Flows and pressure are appropriate.</i>	No information is available as flows and pressure.
<i>The integrity of the water supply is maintained.</i>	All above-ground water service pipes are to be metal, including and up to any taps.
ELECTRICITY SERVICES	
<i>Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.</i>	Where practical, any new power lines from the existing public infrastructure to the second dwelling are to be underground.
GAS SERVICES	
<i>Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.</i>	Any gas installation(s) is to be consistent with the relevant acceptable solutions of PBP.
LANDSCAPING	
<i>Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.</i>	Any landscaping (if proposed within APZs) is to be in accordance with Appendix 4 of PBP.

5. CONCLUSION & RECOMMENDATIONS

The proposed development involves construction of a second dwelling (to create a detached dual occupancy) on land at Lot 41 DP226785, 9 Tropic Gardens Drive, Smiths Lake.

The proposed development involves increased residential density for the purposes of Section 8.2.1 of PBP. As per Section 8.2.1 of PBP:

- The proposed second dwelling has been considered in relation to the relevant performance criteria for residential subdivision as contained in Section 5 of PBP.
- consideration is to be given to upgrading the existing dwelling in the southern part of the land to improve, for example, ember protection measures.

The highest assessed Bushfire Attack Level for the proposed second dwelling is BAL-29.

The following recommendations are made in relation to the bushfire protection measures for the proposed erection of a second dwelling (to create a detached dual occupancy) on land at Lot 41 DP226785, 9 Tropic Gardens Drive, Smiths Lake:

- a) Land within the site is to (continue to) be maintained as an Asset Protection Zone (APZ) for the purposes of Planning for Bush Fire Protection 2019 (PBP) in perpetuity.
- b) APZs are to (continue to) be maintained in accordance with the requirements of an Inner Protection Area (IPA) as described in Appendix 4, Section A4.1.1 of *Planning for Bush Fire Protection 2019* (PBP) and any grassy vegetation within the IPA is to be maintained to a height <100mm. A clear area of low-cut lawn or pavement is to be maintained immediately around the existing and proposed dwellings.
- c) Construction of the proposed second dwelling is to comply with the construction requirements for BAL-29 as per AS3959-2018: *Construction of Buildings in Bushfire Prone Areas* (subject to the provisions of Section 7.5.2 of PBP) or the NASH Standard – *Steel Framed Construction in Bushfire Areas* (2021).
- d) Applying Section A1.8 of PBP, consideration may be given to construction of the south-facing elevation of the proposed second dwelling being reduced by one level of construction to meet the requirements for BAL-19 as per AS3959-2018: *Construction of Buildings in Bushfire Prone Areas* (subject to the provisions of Section 7.5.2 of PBP) or the NASH Standard – *Steel Framed Construction in Bushfire Areas* (2021).

- e) Consideration is to be given to upgrading the existing dwelling on the land to improve ember protection as follows:
 - (i) enclosing or covering openings with a corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture of 2mm. Where applicable this includes the openable portion of the windows, vents, weepholes and eaves, but does not include roof tile spaces.
 - (ii) Installing weather strips, draught excluders or draught seals at the base of side hung external doors as per AS 3959.
 - (iii) Enclosure of any subfloor space.
- f) All above-ground water service pipes external to the proposed building are to be metal, including and up to any taps.
- g) Where bottled gas is proposed:
 - (i) It is to be installed and maintained in accordance with AS 1596 and the requirements of relevant authorities.
 - (ii) All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.
 - (iii) If gas cylinders need to be kept close to the building, the release valves are to be directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion.
 - (iv) Connections to and from gas cylinders are to be metal.
- h) Where possible, any new electricity supply lines to service the proposed second dwelling are to be installed underground from the existing public infrastructure.
- i) Occupants are advised to prepare a Bush Fire Survival Plan which is revised annually prior to the bush fire season. A *Guide to Making a Bush Fire Survival Plan* has been developed by the NSW RFS to assist residents in the preparation of their plan and can be found at the NSW RFS website - www.rfs.nsw.gov.au. On days of catastrophic fire weather, the NSW RFS recommends leaving early as the only safe option.

NOTES & DISCLAIMER:

1. *This assessment relates only to the development described in Section 2 of this assessment.*
2. *This assessment has been based on bushfire protection guidelines as outlined in the document entitled Planning for Bush Fire Protection 2019 (PBP).*
3. *Notwithstanding the precautions recommended, it should always be remembered that bushfires burn under a range of conditions and an element of risk, no matter how small, always remains.*
4. *This assessment does not imply or infer any approval for the removal and/or thinning of vegetation for Asset Protection or other purposes. It is the responsibility of the client/landowner to obtain all necessary approvals in this regard.*

6. REFERENCES

NSW Rural Fire Service (2019)

Planning for Bush Fire Protection 2019

Standards Australia (2018)

AS 3959-2018 Construction of buildings in bushfire-prone areas