

A stylized topographic map with grey contour lines is positioned on the left side of the page, extending from the top to the bottom. The lines represent elevation changes, with some circular peaks and elongated ridges.

Bushfire Protection Assessment

Direct Factory Outlet

Eastern Creek Quarter Stage 3

Frasers Property Australia

DOCUMENT TRACKING

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Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2018 <i>Construction of buildings in bushfire prone areas</i>
APZ	Asset protection zone
BAL	Bushfire attack level
BFPL	Bush fire prone land
BPM	Bushfire protection measures
DA	Development application
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
FDI	Fire danger index
IPA	Inner protection area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
OPA	Outer protection area
PBP	Planning for Bush fire Protection
RFS	NSW Rural Fire Service

1. Property and proposal

Table 1 identifies the subject property and outlines the type of development proposed.

Table 1: Subject site and development proposal summary

Street address:	16 Church Street, Eastern Creek 141 Rooty Hill Road, South Eastern Creek
Postcode:	2766
Lot/DP no:	Lot 1 and 2 DP 1258787 Lot 1, 3 and 4 Section B DP 8681 Lot 3 DP 830836
Local Government Area:	Blacktown City Council
Fire Danger Index (FDI)	100
Type of development proposed:	Industrial / Commercial

1.1 Introduction

This bushfire protection assessment has been prepared for Frasers Property Australia to support a State Significant Development Application (SSDA) submitted to the Department of Planning, Industry and Environment (DPIE) relating to Lot 3 of the Eastern Creek Quarter Site at Rooty Hill Road South, Eastern Creek. The application seeks Concept Plan approval for the staged construction of a new retail outlet centre at Lot 3 with supporting food and beverage tenancies, and ancillary entertainment and recreation usages.

This report addresses the following items of the Secretary's Environmental Assessment Requirements (SEARs):

- **13. Bushfire**

The EIS must include a bush fire report in accordance with the requirements of Planning for Bushfire Protection 2019 prepared by a suitably qualified person, that addresses the level of hazard posed to future development, identification and provision of asset protections zones, provision for access and water supply for firefighting purposes and provision of appropriate landscaping.

1.2 The Site

The 34 ha Eastern Creek Quarter site is situated to the north of the Great Western Highway between Rooty Hill Road South and the M7 Motorway. Church Street marks the site's northern boundary. The site forms part of the Western Sydney Parklands and is located within the Blacktown Local Government Area. It is located approximately 1.5 km south-east of Rooty Hill Station.

This SSDA relates to Lot 3 of the ECQ site, which is the final lot proposed to be developed. It is located in the northern part of the site and has an area of approximately 7.29 ha (refer to **Figure 1** below).



Figure 1: Site location

Source: Nearmap

1.3 Overview of the proposed development

The proposed SSDA seeks Concept Plan approval for a new retail outlet centre at Lot 3 of the Eastern Creek Quarter site. The Concept Plan will establish the following framework to guide the future detailed design of the Lot 3 development:

- Land uses, including retail (factory outlet), food and drink premises, amusement centre and indoor recreation facility;
- Building footprints, including basement, with a maximum height of 12 m;
- A maximum GFA of 39,500 m² at Lot 3 which will be staged as follows:
 - Phase A: 29,500 m²
 - Phase B: 10,000 m²

- Upgrade of Church Street for vehicular access, including traffic signals at the Church Street/Rooty Hill Road South intersection;
- Modifications to the Cable Place/Rooty Hill Road South/Site Access intersection; and
- Modifications to the Francis Street/Eastern Road/Rooty Hill Road South intersection.
- It is also proposed to seek consent for a series of early works including:
- Removal of up to 0.73 ha of Cumberland Plains Woodlands (CPW) in the south west corner of the site;
- Bulk earthworks within Lot 3; and
- Extension of the internal access road to connect to the basement car park.

The proposed outlet centre at Lot 3 will necessitate the inclusion of conditions of consent which requires the modification of SSD 5175 (the existing Concept Plan for the broader ECQ site) to amend the overall allocation of GFA and associated uses, relevant Concept Plans and the existing Design Guidelines.

This report is based on the Concept Plan prepared by i2C, shown at **Figure 2** below.

The subject land is on land classified as bush fire prone on the Blacktown City Council (the Council's) Bush Fire Prone Land (BFPL) maps¹.

This bushfire protection assessment was prepared by ELA Bushfire Consultant Natalie South, with quality assurance from Bruce Horkings (FPAA BPAD Level 3 Certified Practitioner No. BPAD29962-L3). Bruce is recognised by the NSW Rural Fire Service as a qualified bushfire consultant in bushfire risk assessment.

¹ <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

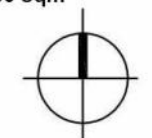


Figure 2: Development Layout

1.4 Assessment process

The proposal was assessed in accord with Section 8.3.1 and 8.3.10 ‘*Planning for Bush fire Protection*’ (RFS 2019), herein referred to as PBP. Chapter 7 of PBP has been utilised as a guide in developing relevant bushfire protection measures (BPM) commensurate with the bushfire risk to the site.

This assessment is based on the following information sources:

- Background documentation provided by Frasers Property;
- Information contained within the site plan from i2C dated 10 December 2020 (Reference 2018-217); and
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Nearmaps and the NSW Government Planning Portal).

As the proposal does not include residential subdivision or special fire protection purpose (SFPP) developments (as defined by Section 100B of the *Rural Fires Act 1997*), the infill provisions of PBP relating to commercial and industrial development will apply to future buildings. PBP identifies the following specific provisions for Class 5-8 (as defined by the National Construction Code (NCC)) that require addressing for this type of development.

As stated within Section 8.3.1 of PBP, NCC Class 5 to 8 buildings (which include offices, factories, warehouses and other commercial or industrial facilities) do not have specific bushfire performance requirements under the NCC and as such building construction standards under AS 3959 ‘Construction of buildings in bushfire-prone areas’ (Standards Australia 2018) and NASH Standard: Steel Framed Construction in Bushfire Areas 2014 (NASH 2014) do not apply as a set of deemed to satisfy provisions. The general fire safety constructions provisions within the NCC are taken as acceptable solutions but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning, and landscaping/vegetation management.

The objectives of PBP for this type of development are:

- to provide safe access to/from the public road system for firefighters providing property protection during a bushfire and for occupant egress for evacuation;
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- to provide adequate services of water for the protection of buildings during and after the passage of bushfire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and
- provide for the storage of hazardous materials away from the hazard wherever possible.

Table 2 identifies the bushfire protection measures assessed and whether an acceptable or performance solution is being proposed.

Table 2: Summary of bushfire protection measures assessed

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.3
Landscaping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7
Electrical services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.8
Gas services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.9
Emergency Planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.11

1.5 Significant environmental features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has been undertaken as part of this development proposal and addressed in a separate report (add ref to report and reference section).

The impact footprint of the bushfire protection measures (e.g. Asset Protection Zone (APZ)) is identified within this report and therefore capable of being assessed by suitably qualified persons as required. Blacktown City Council are the determining authorities for this development; they will assess more thoroughly any potential environmental issues.

1.6 Aboriginal cultural heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

The impact footprint of the bushfire protection measures (e.g. APZ) is clearly identified within this report and therefore capable of being assessed by suitably qualified persons as required. Blacktown City Council & Cumberland City Council are the determining authorities for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

2. Bushfire hazard assessment

2.1 Process

The assessment methodology set out in Appendix 1 of PBP has been utilised in this assessment to determine the required APZ and Construction requirements.

Figure 3 and **Table 3** show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the development from various directions.

2.2 Vegetation assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation has been determined from the Department of Planning, Industry and Environment (DPIE 2013) vegetation maps and Vegetation Management Plan (VMP) prepared by Eco Logical Australia (ELA 2018).

2.3 Slope assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation. The effective slope has been determined from 2 m contour data.

2.4 Summary of assessment

As shown in **Figure 3**, the bushfire prone vegetation affecting the proposed development is located to the north and east.

The vegetation to the north is *Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion* which falls within the Coastal Valley Grassy Woodlands vegetation class (Keith 2004) and classified as 'woodland' by PBP. The effective slope under the bushfire hazard falls within the PBP slope category of 'all upslopes and flat land'.

The land to the east is subject to a VMP (ELA 2018) and will be revegetated to a mix of Shale Plains Woodland and Alluvial Woodland. Shale Plains Woodland is the predominant vegetation and falls within the Coastal Grassy Woodland formation (Keith 2004) and classified 'woodland' in accord with PBP. As shown in **Figure 3**, the VMP area contains drainage basins, channels and swales. The drainage basins and channels are to be revegetated with native sedges and rushes consistent with a Freshwater Wetland vegetation community and classified accordingly under PBP, the swales are to be planted with native grassland species and are classified as 'grassland under PBP. The effective slope under the bushfire hazard falls into the PBP slope category of 'all upslopes and flat land'.

As shown in **Figure 3**, there is a stormwater detention basin to be constructed between the development boundary and the freshwater wetland. The detention basin will be designed and landscaped to perform as a raingarden planted with mainly aquatic species therefore not considered a bushfire hazard.

A public road reserve (Beggs Road) abuts the south-eastern corner of the subject land. This road reserve is currently managed by Western Sydney Parklands Trust until the time it is dedicated to Council.

In all other directions the land is developed and considered 'managed land'.

Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	PBP required APZ (BAL-29)	Proposed APZ	Bushfire Attack Level (BAL)	Comments
1 (North-west)	>0° to 5° downslope	Woodland	16 m	≥16 m	BAL-29	Existing APZ provided by Church Street.
2 (North)	>0° to 5° downslope	Woodland	16 m	≥16 m	BAL-29	As above.
3 (North-east)	>0° to 5° downslope	Woodland	16 m	≥12 m	BAL-40	APZ provided within development site.
4 (East)	All upslope and flat land	Freshwater Wetland	5 m	≥7 m	BAL-29	As above.
5 (South-east)	All upslope and flat land	Woodland	12 m	≥9 to 12 m	BAL-40	APZ provided within development site and future Beggs Road extension.
All other directions			Managed land			

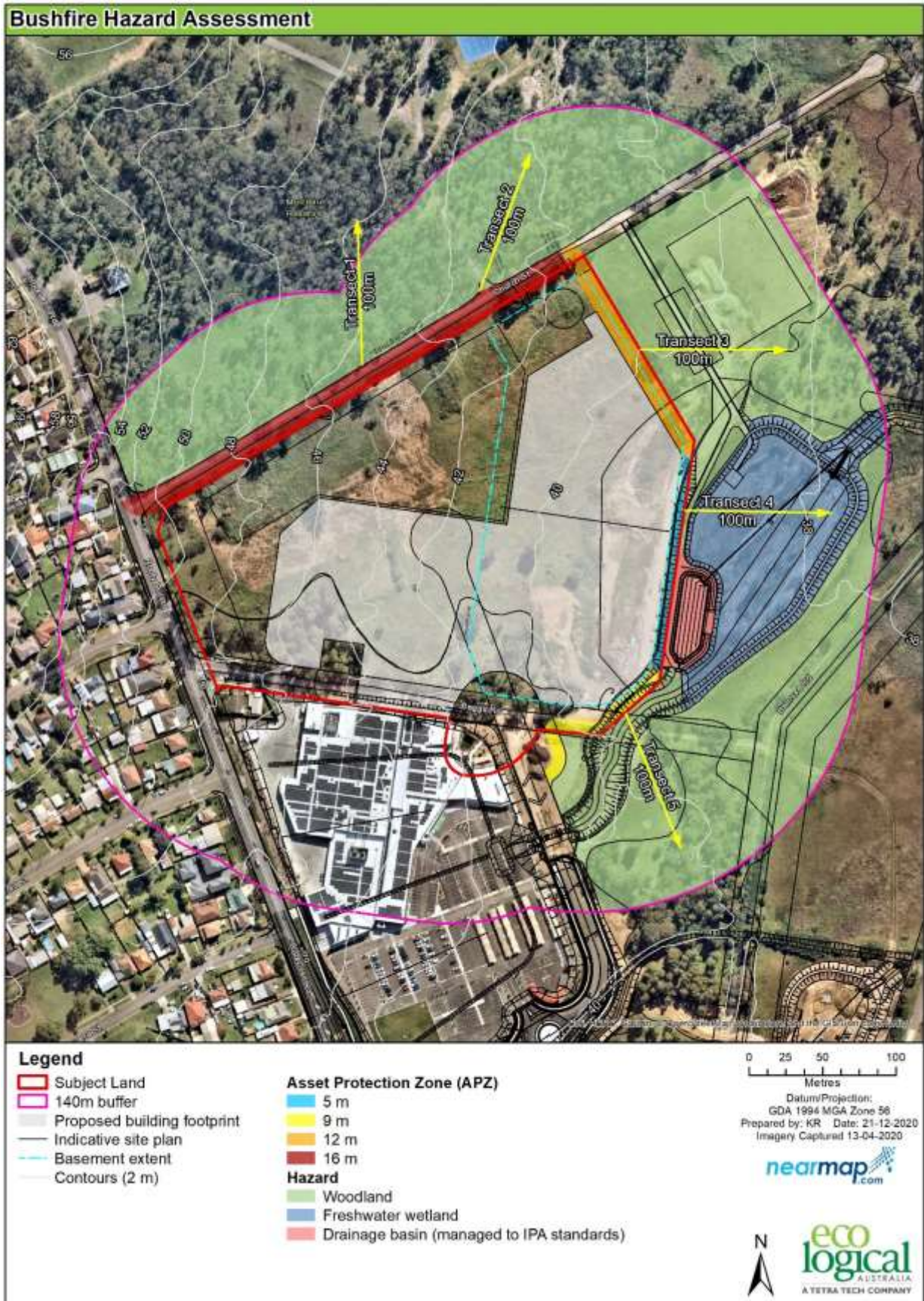


Figure 3: Bushfire hazard assessment

3. Bushfire protection measures

3.1 Specific aim and objectives for Industrial/commercial development

Below is the Aim of PBP and the Specific Objectives for industrial/commercial development and a comment on how they are achieved. As directed in section 8.3.10 of PBP, the bushfire protection measures identified in Chapter 7 (of PBP) have been used as the baseline (where applicable), and either the acceptable solution or performance criteria has been achieved:

- **Aim** - The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.
 - The proposed development complies with the aim of PBP by achieving the specific objectives for industrial / commercial development and for Class 5-8 buildings identified below.
- **Specific Objective 1** - afford buildings and their occupants protection from exposure to a bush fire;
 - Building provides defensible space by adequate APZ and perimeter access as shown in **Figure 2** and **Figure 3**. All roads link to a public road network and comply with Section 7 of PBP providing safe evacuation routes for occupants.
- **Specific Objective 2** - provide for a defensible space to be located around buildings;
 - Defensible space is provided to proposed building by way of perimeter access/road and APZ as shown in **Figure 2** and **3**.
- **Specific Objective 3** - provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
 - Building has suitable defensible space between hazard and buildings as well as perimeter access to allow emergency service personal an adequate operational area for prevention of fire spread.
- **Specific Objective 4** - ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
 - The development has direct access to the public road system (Church Street in north, Beggs in South) affording safe operational access/egress to emergency services as shown in **Figure 2, Figure 3** and demonstrated further in Section 3.6 meeting the specific objectives under Section 3.2.
- **Specific Objective 5** - provide for ongoing management and maintenance of BPMs; and
 - The entire development will be managed as an IPA as per the specifications outlined in Appendix A.
- **Specific Objective 6** - ensure that utility services are adequate to meet the needs of firefighters.
 - The development is capable of complying with the acceptable solutions for utilities under Section 7 of PBP (Section 3.7 – 3.9) and specific objective 3 in Section 3.2.

3.2 Specific objectives for Class 5-8 buildings

Below are the Specific Objectives for Class 5-8 buildings and a comment on how they are achieved.

- **Specific Objective 1** - provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.
 - As shown in **Figure 2** and **Figure 3** and demonstrated further in Section 3.6 of this report, the proposed development has direct access to the public road system providing safe access/egress for both firefighters and occupants.
- **Specific Objective 2** - provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.
 - An emergency plan meeting requirements of the Work Health safety Regulation 2017 and relevant legislation is to be prepared for the building prior to Occupation Certificate (refer Section 3.11).
- **Specific Objective 3** - provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.
 - The proposed development will be serviced by reticulated water and building has additional dedicated sprinkler water supply. Electricity to the development is underground and complies with PBP. Supply of gas (if any) will be installed and maintained in accordance with Section 3.9 of this report.
- **Specific Objective 4** - provide for the storage of hazardous materials away from the hazard wherever possible.
 - The building will be required to store any hazardous materials (if any) in accordance with the relevant safety guidelines and safety data sheets.

3.3 Asset Protection Zones

Table 3 shows the dimensions of the available APZ and where relevant, information on how the APZ is to be provided is included. The distances of the APZ is also shown on **Figure 3**.

An APZ shall be established over the entire subject land and be maintained in perpetuity as an Inner Protection Area (IPA) as detailed in **Appendix A**.

The compliance of the proposed APZ with regards to Section 7.4 of PBP, is detailed in **Table 4**.

The National Construction Standard (NCC) does not capture bushfire for this type of development, instead the specific objectives in PBP apply (Section 3.1 and 3.2).

Table 4: APZ requirements and compliance (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
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.	Complies with acceptable solutions and performance criteria: BAL-29 construction; and BAL-40 construction (achieves PBP specific objectives (refer Section 3.2)

Performance Criteria	Acceptable Solutions	Compliance Notes
		Defensible space is provided to development by way of perimeter access/road as shown in Figure 2 and 3 .
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 APZ to be managed in accordance with PBP. Fuel management specifications provided in Appendix A .
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies with acceptable solutions and performance solution APZ located partially within development site and existing public road (Church Street).
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	Complies APZ is not located on slopes greater than 18°.

3.4 Landscaping

The compliance of the proposed landscaping with regards to Section 7.4 of PBP is detailed in **Table 5**.

Table 5: Landscaping requirements and compliance (adopted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions.	Compliance with the NSW RFS 'asset protection zone standards' (see Appendix 4 of PBP);	Can comply To be managed in accordance with PBP. Fuel management specifications provided in Appendix A
	A clear area of low-cut lawn or pavement is maintained adjacent to the house;	Can comply
	Fencing and retaining walls are constructed in accordance with section 7.6; and	Can comply Specification detailed in Section 3.5.4 of this report
	Trees and shrubs are planted such that: the branches will not overhang the roof; the tree canopy is not continuous; and if proposed, a windbreak is located on the elevation from which fires are likely to approach.	Can comply

3.5 Construction standards

The building construction standard for proposed development is based on determination of the Bushfire Attack Level (BAL) in accordance with PBP and then applying the appropriate construction specifications based on this rating and the selected standard for construction in bushfire prone areas.

The compliance of the proposed construction of the building with regards to Section 7.4 of PBP is detailed in **Table 6**.

Table 6: Construction requirements (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	BAL is determined in accordance with Tables A1.12.5 to A1.12.7 of PBP.	Complies BAL determined using Table A1.12.5 of PBP.
	Construction provided in accordance with the National Construction Code (NCC) and as modified Section 7.5 of PBP.	Can comply Construction in accordance with AS 3959 or NASH standard as modified by Section 7.5 of PBP is required and NCC general fire safety provisions and ember protection upgrades
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with Section 7.6 of PBP.	Can comply Specification detailed in Section 3.5.4 of this report.
Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with Section 8.3.2 of PBP.	Not applicable No Class 10a structures proposed as part of this DA.

3.5.1 Bushfire Attack Level (BAL)

The building construction standard is based on the determination of the BAL in accordance with Appendix 1 of PBP. The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

The proposal is exposed to a combination of **BAL-40** and **BAL-29** as identified in **Table 3** below.

As the northern and western elevations of the building is exposed to \leq BAL-29 the NCC general fire safety provisions and ember protection upgrades (as noted in Section 3.5.2) are considered appropriate for industrial/commercial construction. This is based on discussions with RFS (pers comm Adam Small). Ember protection upgrades are detailed in Section 3.5.2.

3.5.2 Construction requirements

The Deemed to Satisfy (DtS) provisions of the NCC for construction requirements for buildings in designated bush fire prone areas are specified in:

- AS 3959:2018 Construction of buildings in bushfire prone areas (SA 2018); and
- NASH Standard: Steel Framed Construction in Bushfire Areas 2014 (NASH 2014).

Construction shall comply with Sections 3 and the below identified sections of AS 3959:2018 (SA 2018) or NASH Standard 1.7.14 (NASH 2014) as appropriate:

- Roof and sub floor= BAL-40 (Section 8);
- Eastern and southern elevation = BAL-40 (Section 8); and
- Northern and western elevation = NCC fire safety provisions and identified ember protection upgrades (Section 3.5.2).

3.5.3 NCC fire safety provisions and ember protection upgrades

The following ember protection upgrades are recommended:

- The roof/wall junctions are to be sealed/screened with aluminium, steel or bronze mesh with a minimum aperture size of 2 mm;
- All openable portions of windows to be screened with aluminium, steel or bronze mesh with a minimum aperture size of 2 mm;
- The base of side-hung external doors shall be fitted with draught excluders/draught seals/weather strips;
- Gutters should be fitted with non-combustible gutter guard to prevent the build-up of combustible material;
- The rollers doors shall be protected with suitable weather strips/draught excluders/draught seals or brushes (**Figure 4**). If fitted with guide tracks no edge gap protection required; and
- Roller shutter doors with ventilation slots shall be protected with non-combustible mesh with 2 mm aperture.

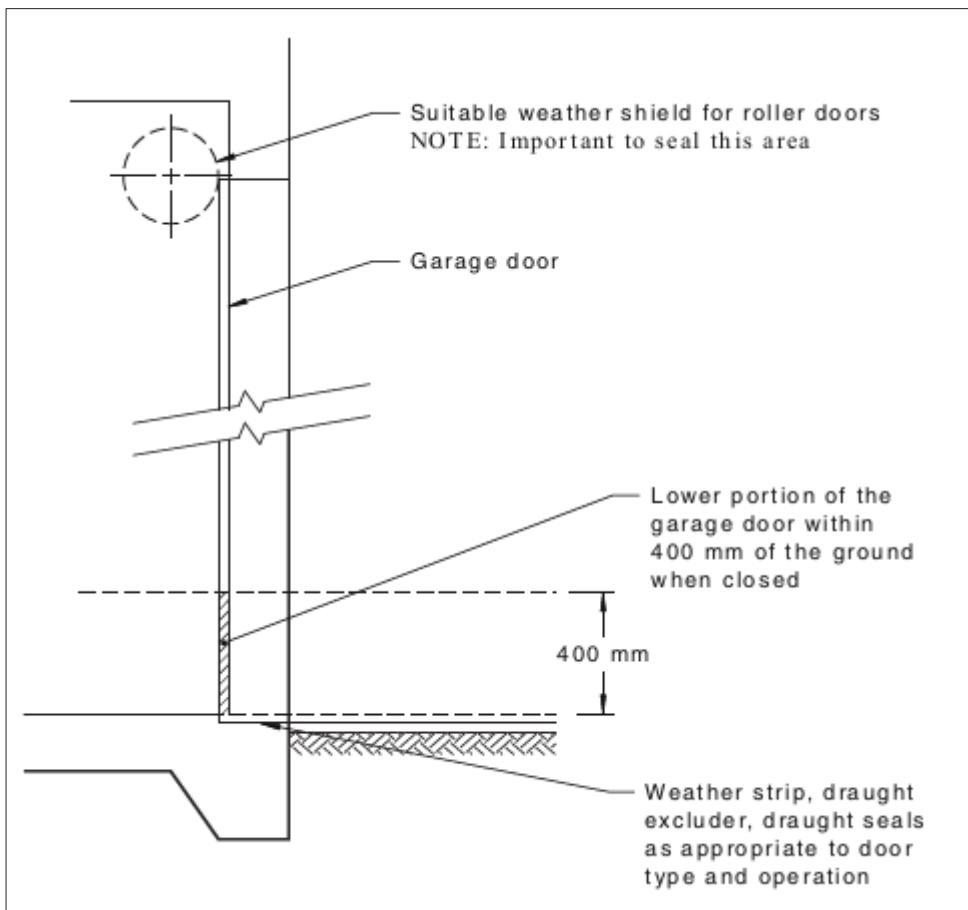


Figure 4: Roller shutter door installation (SA 2018)

3.5.4 Fences and gates

To comply with Section 7.6 of PBP, all fencing and gates are to be constructed of hardwood or non-combustible material. Where fencing is within 6 m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

3.6 Access

Access to the proposed development will be via two entries off Church Street in the north with a separate point of exit as shown in **Figure 2**. A separate access is provided for the loading bay off Beggs Road in the south.

The compliance of the proposed property access with regard to Section 7.4 of PBP is detailed in **Table 7**.

Table 7: Property access requirements (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Property access roads are two-wheel drive, all weather roads	Complies Multiple access roads throughout the site are two-wheel drive, all weather roads.
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), bridges and causeways are to clearly indicate load rating.	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 7.4a of PBP.
There is appropriate access to water supply.	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; 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 Note applicable - Static water supply not proposed.
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;	Complies Access road has 2 entries and 1 exit from Church Street.
	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. In circumstances where this cannot occur, the following requirements apply:	Not applicable
	Minimum 4m carriageway width;	Complies
	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;	Not applicable
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	Can comply

Performance Criteria	Acceptable Solutions	Compliance notes
	Provide a suitable turning area in accordance with Appendix 3 of PBP;	Complies Development provides various turning areas within the carparking as well as a turning circle at the end of Church Street.
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 7.4a of PBP.
	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;	
	A development comprising more than three dwellings has access by dedication of a road and not by right of way.	Not Applicable
	Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), 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.	Not Applicable

3.7 Water supplies

The compliance of the proposed water supply with regards to Section 7.4 of PBP is detailed in **Table 8**.

Table 8: Water supply requirements (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development where available; A static water supply is provided where no reticulated water is available.	Complies Proposal serviced by a reticulated water.
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1 (SA 2005); Hydrants are not located within any road carriageway; and Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 5.3c and Table 5.3d of PBP.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1 (SA 2005).	
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps; and	

3.8 Electricity services

The compliance of the proposed supply of electricity services with regards to Section 7.4 of PBP is detailed in **Table 9**.

Table 9: Requirements for the supply of Electricity services (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground;	Complies The existing electricity supply to the subject land is underground.
	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), 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 ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016).	Not applicable

3.9 Gas services

The compliance of the proposed supply of gas services (reticulated) with regards to Section 7.4 of PBP is detailed in **Table 10**.

Table 10: Requirements for the supply of gas services (adapted from Table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 – The Storage and handling of LP gas, the requirements of relevant authorities, and metal piping is used; All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side; Connections to and from gas cylinders are metal; Polymer-sheathed flexible gas supply lines are not used; and Above-ground gas service pipes are metal, including and up to any outlets.	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 7.4a of PBP.

3.10 Staged development

The proposed development will be constructed in a staged manner as detailed below (**Figure 2**):

- Phase A: GFA 29,500 m²
- Phase B: GFA 10,000 m²

It is the responsibility of the proponent to implement the identified bushfire protection measures to each stage as identified in this assessment. Implementation of these measures may be temporary in nature (i.e. APZ, fire trails, turning areas) until future stages are developed.

3.11 Emergency and Evacuation Planning

Due to the nature and use of the proposed development and surrounding existing development an emergency plan meeting requirements of the Work Health safety Regulation 2017, relevant legislation and building requirement of the NCC is considered suitable and commensurate to risk for this development.

Recommend emergency plan incorporate bushfire considerations.

4. Conclusion

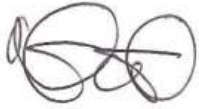
The proposed development complies with the aim and objectives of *Planning for Bush Fire Protection 2019* in accordance with Section 4.14 of the *Environmental Planning and Assessment Act 1979*.

Table 11: Development Bushfire Protection Solutions and Recommendations

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	An APZ is to be established over the entire subject land and maintained in perpetuity as an IPA as detailed in Appendix A. APZ dimensions are detailed in Table 3 and shown in Figure 3 . Identified APZ to be maintained in perpetuity to the specifications detailed in Appendix A .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.3
Landscaping	Any future landscaping meets the requirements of PBP listed in Appendix A .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Construction standard	The proposed development is to be constructed to the following BAL rating based on the construction specifications detailed in either AS 3959-2018 or the NASH standard: <ul style="list-style-type: none"> Roof and sub floor= BAL-40 (Section 8); Eastern and southern elevation = BAL-40 (Section 8); and Northern and western elevation = NCC general fire safety provisions and ember protection upgrades (Section 3.5.2). 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Access	Access to meet standards summarised in Table 7 .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Water supply	Reticulated water supply to meet PBP acceptable solution summarised in Table 8 .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7
Electricity service	Electricity supply to meet PBP acceptable solution summarised in Table 9 .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.8
Gas service	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.9
Emergency and Evacuation Planning	Emergency plan meeting requirements of the Work Health safety Regulation 2017 and relevant legislation is to be prepared for the development. Recommend emergency plan incorporate bushfire considerations.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.11

5. Recommendations

The proposal will be able to satisfy Section 8.3.1 and 8.3.10 and the aims and objectives of PBP for non-habitable development.



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Appendix A - Asset protection zone and landscaping standards

The following APZ management specifications in **Table 12** apply to the APZs specified in **Table 3** and shown in **Figure 3**. These APZ management specifications should be considered for any landscaping and ongoing management within the subject land.

The APZs identified in **Table 3** are to be maintained in perpetuity and management undertaken on an annual basis (as a minimum) and prior to the commencement of the fire season.

Further details on APZ implementation and management can be found on the NSW RFS website (<https://www.rfs.nsw.gov.au/resources/publications>).

Table 12: APZ management specifications

Vegetation Strata	Inner Protection Area (IPA)
Trees	<p>Tree canopy cover should be less than 15% at maturity;</p> <p>Trees (at maturity) should not touch or overhang the building;</p> <p>Lower limbs should be removed up to a height of 2 m above ground;</p> <p>Canopies should be separated by 2 to 5 m; and</p> <p>Preference should be given to smooth barked and evergreen trees.</p>
Shrubs	<p>Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;</p> <p>Shrubs should not be located under trees;</p> <p>Shrubs should not form more than 10% ground cover; and</p> <p>Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</p>
Grass	<p>Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and</p> <p>Leaves and vegetation debris should be removed.</p>

