Bushfire Protection Assessment

Proposed Emergency Services Facility

Block 45 Section 3, Hume

Forestrack

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DOCUMENT TRACKING

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LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

Template 2.8.1

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Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2009 *Construction of buildings in bushfire-prone areas*
APZ	Asset protection zone
BAL	Bushfire attack level
BC Act	*Biodiversity Conservation Act 2016*
BFPL	Bush fire prone land
BPM	Bushfire protection measures
DA	Development application
ELA	Eco Logical Australia
FDI	Fire danger index
IPA	Inner protection area
NASH	National Association of Steel-framed Housing
PBP	Planning for Bush fire Protection 2019
RFS	NSW Rural Fire Service
TSC Act	*Threatened Species Conservation Act 1995*
VMP	Vegetation Management Plan

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:	Cnr Sheppard Street and Lanyon Drive, Hume
Postcode:	2620
Lot/DP no:	Block 45 Section 3
Local Government Area:	ACT
Current land zoning:	NUZ1: BROADACRE
Type of development proposed:	Infill: Industrial

1.1 Description of proposal

Forestrack commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a Bushfire Protection Assessment (BPA) for a proposed emergency services facility at Block 45 Section 3, Hume (hereafter referred to as the 'subject land').

The proposal consists of the construction of an emergency services facility that will specialise in bushfire response and training across Canberra and Regional NSW including aerial fire suppression, construction of firebreaks and fire access roads and rescue operations. The facility will include two (2) buildings to accommodate offices, maintenance and training facilities, one (1) helicopter pad, storage facilities and associated hardstand/maneuvering areas and car/truck/heavy machinery parking.

This desktop assessment is based on information contained within the site plan (**Figure 1**) and online information from ACTmapi, Google Earth and Nearmap.

1.2 Location

As shown in **Figure 2**, the proposed development is located on the corner of Sheppard Street and Lanyon Drive with existing industrial development to the south and west and undeveloped lands to the north and east.

1.3 Relevant Documentation

In undertaking this bushfire risk assessment, the following has been considered:

- Planning and Development Act 2007;
- Emergencies Act 2004;
- ACT Strategic Bushfire Management Plan 2019 (ACT Government 2019c);
- ACT Bushfire Management Standards 2014 (ACT Government 2014); and
- Australian Standard (AS) 3959:2018 (AS 3959:2018) Construction of buildings in bushfire-prone areas.

1.4 Planning Context

In accordance with the provisions of Schedule 4, of the Planning and Development Act 2007 (P&D Act), the Development is Impact Track Development Assessment due to *"impacts related to matters such as noise, associated hazards relating to the operation of aircraft from the site, as well as potential impacts on surrounding land uses will need to be thoroughly investigated prior to any approval being granted."* Therefore, the proposed development is classified as Impact Track and an Environmental Impact Statement (EIS) is required as part of the Development Application (DA), this BPA will form part of the EIS.

SBMP v4 requires that new commercial/industrial developments in a Bushfire Prone Area to be assessed under AS 3959:2018 'Construction of buildings in bushfire-prone areas' (SA 2018) to determine the Bushfire Attack Level (BAL) and associated standards for bushfire construction. A maximum standard of construction to BAL-29 is required as per SBMP v4 for residential development in new greenfield estates, however there is no specific requirements for commercial/industrial development identified.

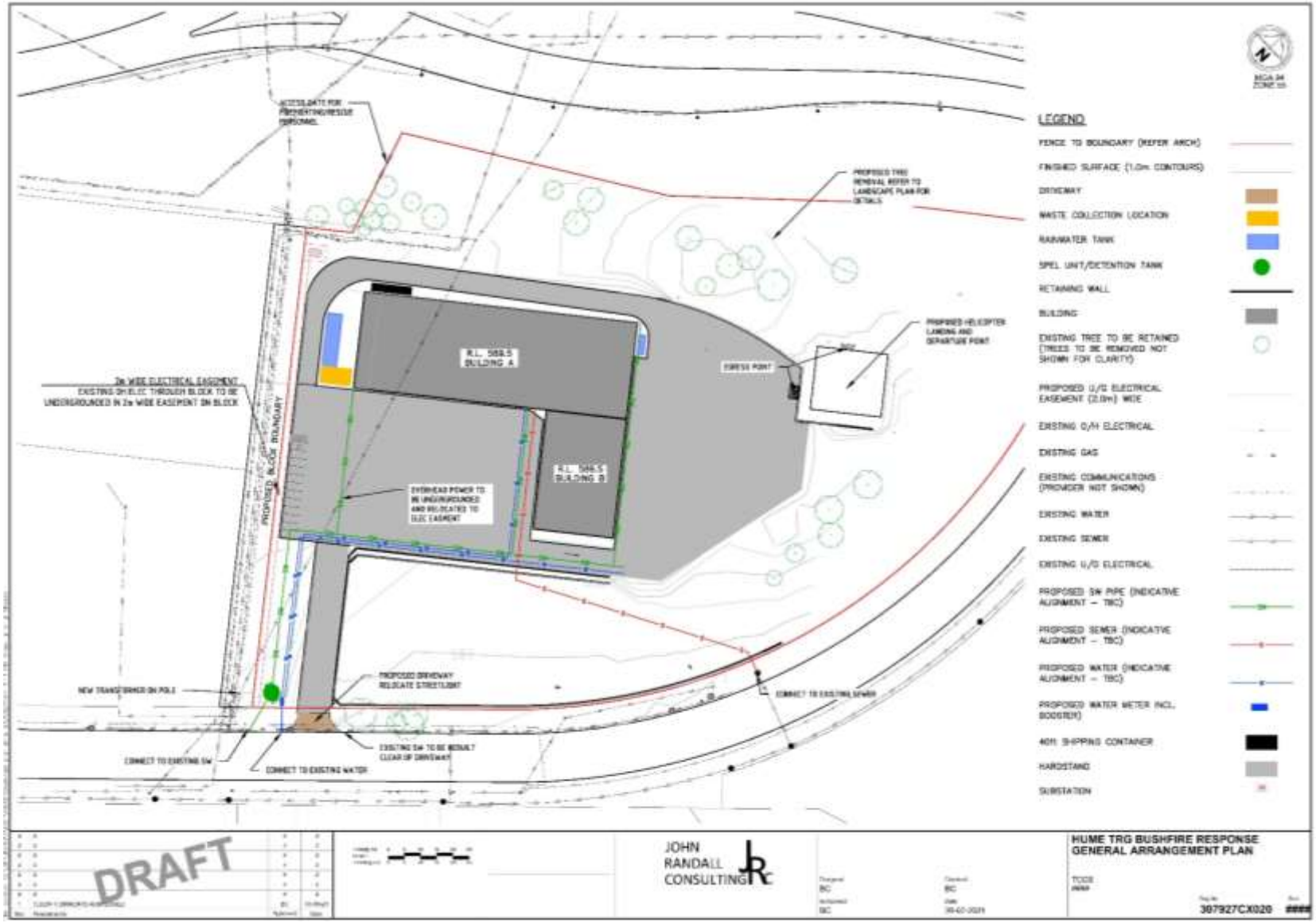


Figure 1: Proposed development layout

Figure 2: Location of Subject Land

2. Bushfire threat assessment

2.1. Assessment Requirements

The subject land is currently mapped as a Bushfire Prone Area by the ACT Emergency Services Agency (ESA) (http://www.actmapi.act.gov.au) and the following assessment is undertaken in accordance with the ACT BMS and Method 1 of AS 3959:2018.

As development progresses within the region, the Bushfire Prone Area map will be reviewed and updated as required to reflect changes in land use, tenure and the removal of bushfire hazards due to development. Future amendments may remove the requirement to comply with bushfire construction measures (i.e. AS 3959:2018).

Determination of Asset Protection Zones (APZ) dimensions is guided by BMS, which defines the measurable outcomes of strategies detailed in the SBMP v4. The two stage process consists of an initial risk assessment matrix (Asset Interface Classification (AIC)) and the APZ determination matrix. The result determines the minimum size of the APZ.

2.2. Asset Interface classification

The initial risk assessment, utilising the AIC matrix, provides a risk ranking used to determine the size of the APZ. The asset interface is classified as either Primary, Secondary or Lee based on the aspect (direction of fire threat) and potential length of fire run towards the asset. **Table 2** shows the AIC matrix.

Table 2: Asset Interface Classification matrix

Length of fire run to asset interface (metres)			
Aspect of fire run	<100	100–350	>350
North-west/north/north-east			Primary
East			Primary

Source: ACT Bushfire Management Standards (2014)

2.3. Vegetation Classification

The vegetation has been assessed in accordance with Clause 2.2.3 of AS 3959:2018. The predominant vegetation class has been assessed for a distance of at least 100 metres out from the boundary of the subject site and the slope class “most significantly affecting fire behaviour having regard for vegetation found (on it)” determined for a distance of at least 100 m in all directions. As shown in **Figure 3** there is no bushfire hazard within 100 m of the proposed development.

The predominant vegetation to the north-west consists of mass exotic amenity plantings (Cootamundra Wattle and Lombardy Poplar). AS 3959-2018 does not have a hazard classification for exotic vegetation however given the planting structure consists mainly of trees >30 m high and >70% canopy cover, it has been classified as ‘forest and woodland’ in accordance with the ACT BMS however is greater than 100 m from the proposed development.

The predominant vegetation to the north, north-east and east consists of native grassland and is classified as ‘grass and open woodland’ in accordance with the ACT BMS however is greater than 100 m from the proposed development.

There is a small strip of unmanaged vegetation between the northern boundary of the subject land and Lanyon Drive. The vegetation is <20 m wide and greater than 20 m from the site and other areas of classified vegetation and has been excluded under Clause 2.2.3.2(d) of AS 3959:2018.

All other areas surrounding the subject site constitute developed or managed lands.

2.4. Slopes

The slope that would most significantly influence fire behaviour was determined over a distance of 100 m within the vegetated areas. This assessment was made by analysing 5 m contour intervals. The slope under then vegetation in the north-west and north falls in the '>0-5 degrees downslope' slope category whilst to the east 'all upslopes and flat land'.

3. Asset Protection zones (APZ)

ACT Maps (ACT Government) (http://www.actmapi.act.gov.au) shows an existing Inner and Outer APZ to the north-west and south-east is in place as shown in **Figure 3**. **Table 3** and **Figure 3** shows the dimensions of the APZ and information on how the APZ is to be provided is included.

The identified Inner APZ is to be maintained as an Inner APZ in perpetuity.

Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	Inner APZ	Outer APZ	Available APZ	Bushfire Attack Level (BAL)	Comments
T1 North-west	Downslope >0 to 5 degrees	Forest	30 m	100 m	≥100 m	BAL-LOW	APZ in place and provided by Inner and Outer APZ, public road infrastructure and building setback.
T2 North	Downslope >0 to 5 degrees	Grassland	N/A	N/A	≥100 m	BAL-LOW	APZ in place and provided by public road infrastructure and building setback.
T3 East	All upslopes and flat land	Grassland	30 m	100 m	≥100 m	BAL-LOW	APZ in place and provided by Inner and Outer APZ, public road infrastructure and building setback.
All other directions	Managed land						

4. Vegetation maintenance

4.1. Inner APZ standards

The ACT BMS Table 4a specifies the fuel management standards for Inner APZ for forest and woodland as maintained at an overall fuel hazard ≤low 3-5 canopy separation or fuel gap to crown, >3 m maintained. In addition, it is recommended the entire site be managed to Inner APZ standards, the following requirements should also apply as applicable:

- 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 ground;
- preference should be given to smooth barked and evergreen trees;
- avoid connective pathways across the ground toward a building;
- small isolated clumps needs to be site specific in design;
- avoid creating fuel ladders (shrubs, bark, dropped branches, leaves etc.);
- select suitable plants (low flammability, avoid dense and elevated fine fuels);
- no plants near vulnerable building components (windows, decks); and
- leaves and vegetation debris should be removed.

4.2. Landscaping

Any proposed landscaping is required to consider bushfire risk in determining location, species, density, extent and ongoing maintenance. This should be incorporated into the development plan so as to avoid increasing future bushfire risks.

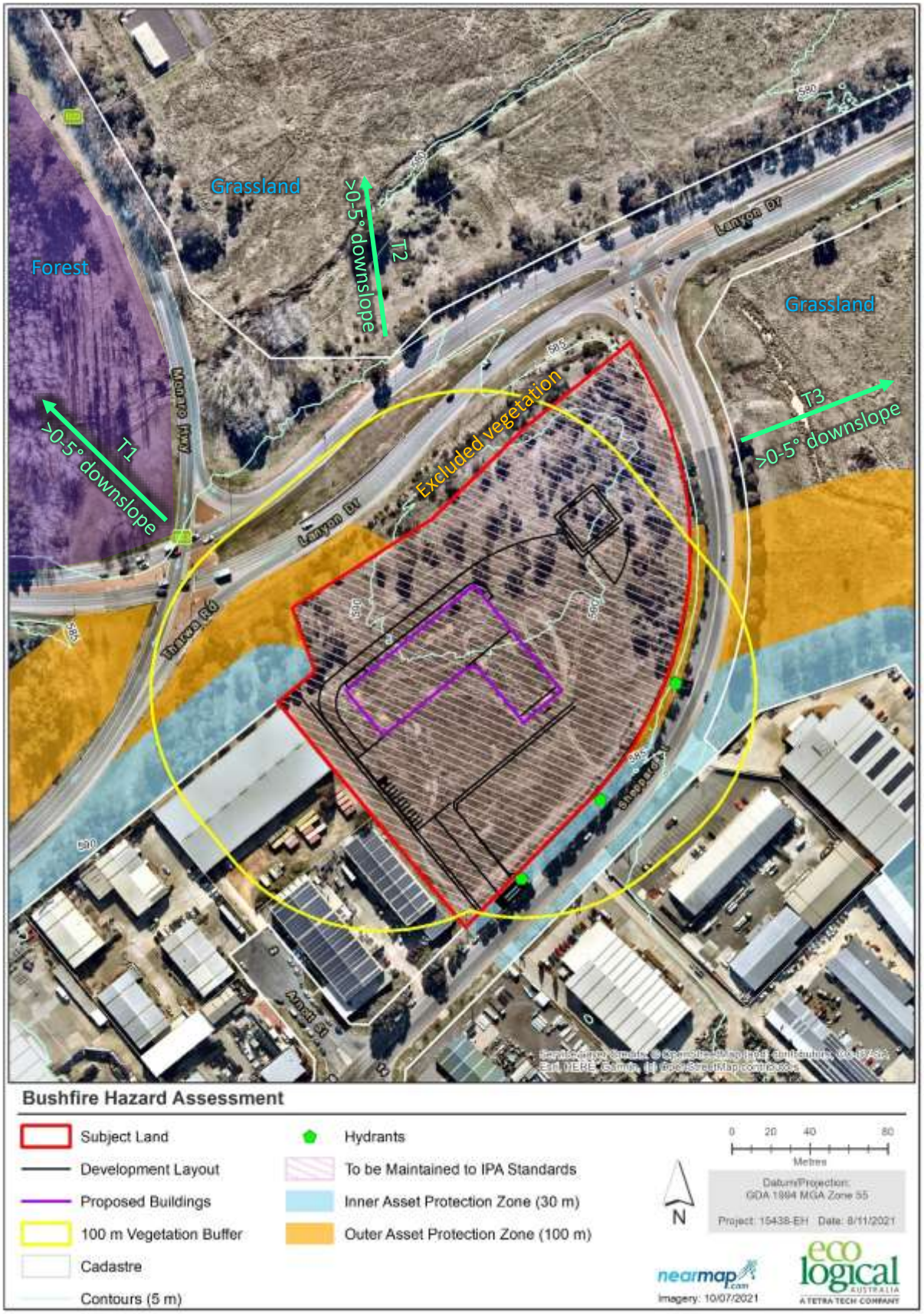


Figure 3: Bushfire hazard assessment

5. Construction standards

The building construction standard is based on the determination of the BAL in accordance with Method 1 of AS 3959:2018 (Standards Australia 2018). The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

The proposed development is exposed to **BAL-LOW**, there is insufficient bushfire threat to warrant the application of specific construction standards. As such, the construction standards in AS 3959-2018 do not apply in this case.

6. Hazard and risk

Forestrack have advised no stockpiles or permanent fuel storage are proposed on site.

Helicopters on site will be refuelled with Jet A from mobile tank under a Fire Management Plan. Whilst there are currently no regulatory standards in ACT for helicopter firefighting appliances the most appropriate fire protection involves foam making equipment such as a Fixed Monitor System (FMS)/oscillating monitor nozzle/s for a concrete helicopter landing site.

The development will provide:

- a fire water point with fire hose located adjacent to the primary helicopter landing site deck access point.
- firefighting appliances suitable for liquid and electrical fires located in the vicinity of the primary access point, including:
- 1 x CO^2 3.5 kg
- 1 x Dry Powder 9.0 kg
- 1 x Foam 90 litres
- 1 x Fire Blanket

All welding activities on site will be undertaken indoors.

7. Utilities

7.1. Gas and electricity

All aboveground gas pipes shall be metal as specified in AS 3959:2018. This can be achieved within the proposed development and meet the Acceptable Solutions of Table 12 in the BMS.

There are no criteria to be addressed for electrical supplies however, they should be underground where possible.

7.2. Water

Requirements for utility services in urban areas are described in BMS (Table 12) and are addressed below in **Table 4**.

Table 4: Performance criteria for water supply

Performance Criteria	Acceptable Solutions	Compliance
Water supplies are easily accessible and located at regular intervals	The Water and Sewerage Network (Design and Maintenance) Code of the *Utilities Act 2000* requires the fire-fighting requirements are able to be met. A deed of agreement exists between Icon and ACTF&R in relation to water supply in the built-up area. This agreement details operative provisions which cover: • Fire Hydrants – general provisions • Flow rates • Fire risk classification and fire hydrant spacings • Fire hydrant testing and maintenance • Fire hydrant system shutdown / isolation • Connection to domestic supplies • Water usage by ACTF&R and ACTRFS • Provision of plans showing location of fire hydrants on the water network • Amendments to water supply standards • The deed of agreement is currently under review by both parties. • Exposed pipes • All aboveground water pipes shall be metal as specified in AS 3959-2018.	Can comply

8. Access and Egress

The subject land is accessed via a proposed two-way driveway off Sheppard Street. Whilst there are no specific access requirements for commercial/industrial development, access has been assessed against Table 7.4a of Planning for Bushfire Protection 2019 (PBP) as detailed in **Table 12**.

9. Aerial access

It is recommended the proposed helicopter landing and departure area will be constructed and maintained to a suitable standard in accordance with Table 11 of SBMP and detailed in **Table 5**.

Table 5: helicopter landing and departure area standard.

Classification	Nominal description
Light	To allow the safe landing of light helicopters (e.g. Jet Rangers, AS350BAs, BK117). These helipads will usually consist of the following three zones:
	Zone A – a rock/grassed/mineral earth area 7 x 7 m with no protrusions such as tree stumps or rocks above 200 cm in height.
	Zone B – an area cleared of trees and tall shrubs for an additional 13 m with no large protrusions such as tree stumps or large rocks above a height of 0.4 m
	Zone C – all tall trees outside of Zone B removed which may obstruct an approach angle of 40 degrees to Zone A, in one or more directions.
Medium	To allow the safe landing of medium-sized helicopters (e.g. Bell 412). These helipads will usually consist of the following three zones:
	Zone A – a rock/grassed/mineral earth area 15 x 15 m with no protrusions such as tree stumps or rocks above 20 cm in height.
	Zone B – an area cleared of trees and tall shrubs for an additional 20 m with no large protrusions such as tree stumps or large rocks above a height of 0.4 m.
	Zone C – All tall trees outside of Zone B removed which may obstruct an approach angle of 40 degrees to Zone A, in one or more directions.

10. Recommendations and conclusion

10.1. Recommendations

The proposed development is required to address bushfire prevention measures identified within this report and summarised below:

Recommendation 1- The proposed development is exposed to BAL-LOW, there is insufficient bushfire threat to warrant the application of specific construction standards. As such, the construction standards in AS 3959-2018 do not apply in this case.

Recommendation 2- The entire site and any proposed landscaping should be managed to Inner APZ standards in perpetuity as detailed in Section 4.

Recommendation 3- Electrical services should be underground;

Recommendation 4- Gas services are to be installed and maintained in accordance with AS 3959;

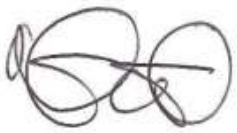
Recommendation 5- Water supply is required to meet the *Utilities Act 2000*;

Recommendation 6- Access and egress to be provided as detailed in Table 12; and

Recommendation 7- Aerial access to be provided as detailed in Table 5;

10.2. Conclusion

In the author's professional opinion, the proposed development can comply with all bushfire planning requirements if the above recommendations are incorporated into the development.



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11. References

ACT Government. 2014. *ACT Bushfire Management Standards 2014 (BMS)* ACT Emergency Services Authority, Canberra.

ACT Government. 2019a. ACTmapi 'Bushfire', http://app.actmapi.act.gov.au/actmapi/index.html?viewer=bushfire

ACT Government. 2019b. ACTmapi 'Significant Species, Vegetation Communities and Registered Trees', http://app.actmapi.act.gov.au/actmapi/index.html?viewer=ssvcrt

ACT Government. 2019c. *ACT Strategic Bushfire Management Plan 2019-2024 (SBMP v4)* ACT Emergency Services Authority, Canberra.

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners* - issued December 2019. Australian Government Publishing Service, Canberra.

Standards Australia (SA). 2018. *Construction of buildings in bushfire-prone areas*, AS 3959:2018, Standards Australia International Ltd, Sydney

Appendix A: Access Standards

Table 6: 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.	Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	**Complies** Buildings will be accessed by a two-way sealed driveway and carpark on the southern elevation. Lanyon Drive provides access to hazard in the north, Sheppard Street provides access to the eastern bushfire hazard.
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 andcauseways 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 [SA 2005a];	**Can comply** The Water and Sewerage Network (Design and Maintenance) Code of the *Utilities Act 2000* and AS 3959-2018.
	There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.	**Not applicable**
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 ofdwellings that are located more than 200 metres from a public through road;	**Not applicable** Access is less than 200 m.
	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 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:	**Not applicable**
	Minimum 4 m carriageway width;	**Complies** Proposed carriageway greater than 4 m.

Performance Criteria	Acceptable Solutions	Compliance notes
	In forest, woodland and heath situations, rural property access 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;	**Not applicable** Property access is less than 200 m.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches;	**Can comply**
	Provide a suitable turning area in accordance with Appendix 3 of PBP;	**Complies** Various turning areas provided within carpark.
	Curves have a minimum inner radius of 6 m 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 6 m;	
	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 (3.5 m), extend for no more than 30 m 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**

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