Preliminary Bushfire Planning Advice

for the construction of the
Point Nepean Research and Education Field Station
at 3880 Point Nepean Road
Portsea VIC 3944

Prepared for the
University of Melbourne and Monash University

July 2021

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Terramatrix project code: UniMelb-2021-01 BMO_P2-Portsea
Report prepared by Terramatrix on behalf of the University of Melbourne and Monash University

Cover: Looking at Badcoe Hall, with Scrub on the dune beyond.

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Approvals

Accountability	Date	Name
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1. Summary of advice

The development proposal is to refurbish the existing Badcoe Hall and construct a new building, to comprise the Point Nepean Research and Education Field Station. Both buildings will contain research and teaching facilities and short-term accommodation.

The construction of the new building triggers the need for a planning permit under the Bushfire Management Overlay (BMO). Refurbishment of Badcoe Hall will also trigger the BMO if the works are deemed to involve more than 50% of the floor area (if the BMO is not triggered it will need to comply with the Building Regulations that apply in a Bushfire Prone Area).

NEW BUILDING

The proposed siting of the new building is problematic for BMO compliance. It is to be located approximately 8m from the Scrub on the dune to the south, which equates to a BAL-FZ construction standard. The maximum BAL permitted for group accommodation, or an educational facility is BAL-29, which requires a 13m setback from the Scrub.

The siting objective of the BMO also requires that development provides the maximum separation distance from the bushfire hazard, which would favour the new building being located between Badcoe Hall and the bay.

The development will need to provide a 20,000 litre static water supply. This could be combined with any water supply required for structural fire protection (e.g. internal sprinklers) but cannot be salt water.

The building will be accessed from Jackson Road and the wider Point Nepean internal road network. It should be confirmed that this constitutes a public road, and that the Point Nepean Research and Education Field Station only needs to provide BMO compliant access from Jackson Road to the building.

Advice regarding each of the applicable Approved and Alternative Measures is provided in Section 4 of this report.

BADCOE HALL

The refurbishment of Badcoe Hall must be designed and constructed to a minimum BAL-12.5 standard.

You should consult your building surveyor as to whether the extent of the refurbishment triggers a requirement to retrofit the entire building to this standard.

2. Introduction

This advice regarding bushfire planning considerations for the proposed development of the Point Nepean Research and Education Field Station at 3880 Point Nepean Road, Portsea VIC 3944 is provided as per Stage One of our quote dated 2021-07-01.

Please note that this advice is not for submission as part of a planning or building permit application and may include items that require a design or management response before our final report can be prepared.

This advice constitutes our professional opinion about the ability of the development to comply with the applicable bushfire planning and building controls. However, irrespective of our findings and your ability to comply with the controls, we cannot guarantee that the responsible fire authority and/or Council will approve the proposed development.

2.1. Development proposal

The development proposal is to refurbish the existing Badcoe Hall and construct a new building, to comprise the Point Nepean Research and Education Field Station. Both buildings will contain research and teaching facilities and short-term accommodation.

2.2. Site details

Address:	3880 Point Nepean Road, Portsea VIC 3944
Local Government Area:	Mornington Peninsula Shire Council
Zone/s	Public Park and Recreation Zone and Schedule (PPRZ)
Overlay/s	Bushfire Management Overlay (BMO) Heritage Overlay – Schedule 165 (HO165) Environmental Significance Overlay – Schedules 24 & 25 (ESO24, ESO25)
Directory reference:	Melway 167 C8
Site assessment date:	14/07/2021
Assessed by:	Jon Boura – Managing Director

3. Site assessment

3.1. Methodology

A site assessment was conducted of vegetation types and effective slopes within a 150m assessment zone around the new building in accordance with the BMO methodology and within 100m around Badcoe Hall in accordance with the AS 3959-2018 methodology. Classified vegetation is vegetation that is deemed hazardous from a bushfire perspective. The 'effective slope' is the slope of land under the classified vegetation that will most significantly influence the bushfire attack on the building.

The combination of vegetation type and effective slope determines the amount of defendable space (or low threat setback) required to achieve each Bushfire Attack Level (BAL) construction standard. In the BMO, defendable space can be created to enable a particular BAL, although at 3880 Point Nepean Road this may not be possible.

The requirements for a static water supply depend on the floor area of the proposed building, with 10,000 litres required per 1,500 square metres up to a maximum of 40,000 litres.

The design and construction requirements for vehicle access to the building depend on the length of access and whether the driveway is required to provide fire authority access to the static water supply.

3.2. Summary of assessment

The site is approximately 41m from the nearest part of the top of the dune. This means that the steep downslope on the far side of the dune is far enough away that it does not determine the BAL and defendable space requirements. Rather, the northern face of the dune (an upslope) is considered the effective slope.

New building

Table 1 – Classified vegetation and effective slope within 150m (BMO assessment).

Direction from building	Vegetation type	Slope class	Distance from building (approx.)
South	Scrub	All upslopes and flat land	8m
North-east	Scrub	All upslopes and flat land	45m

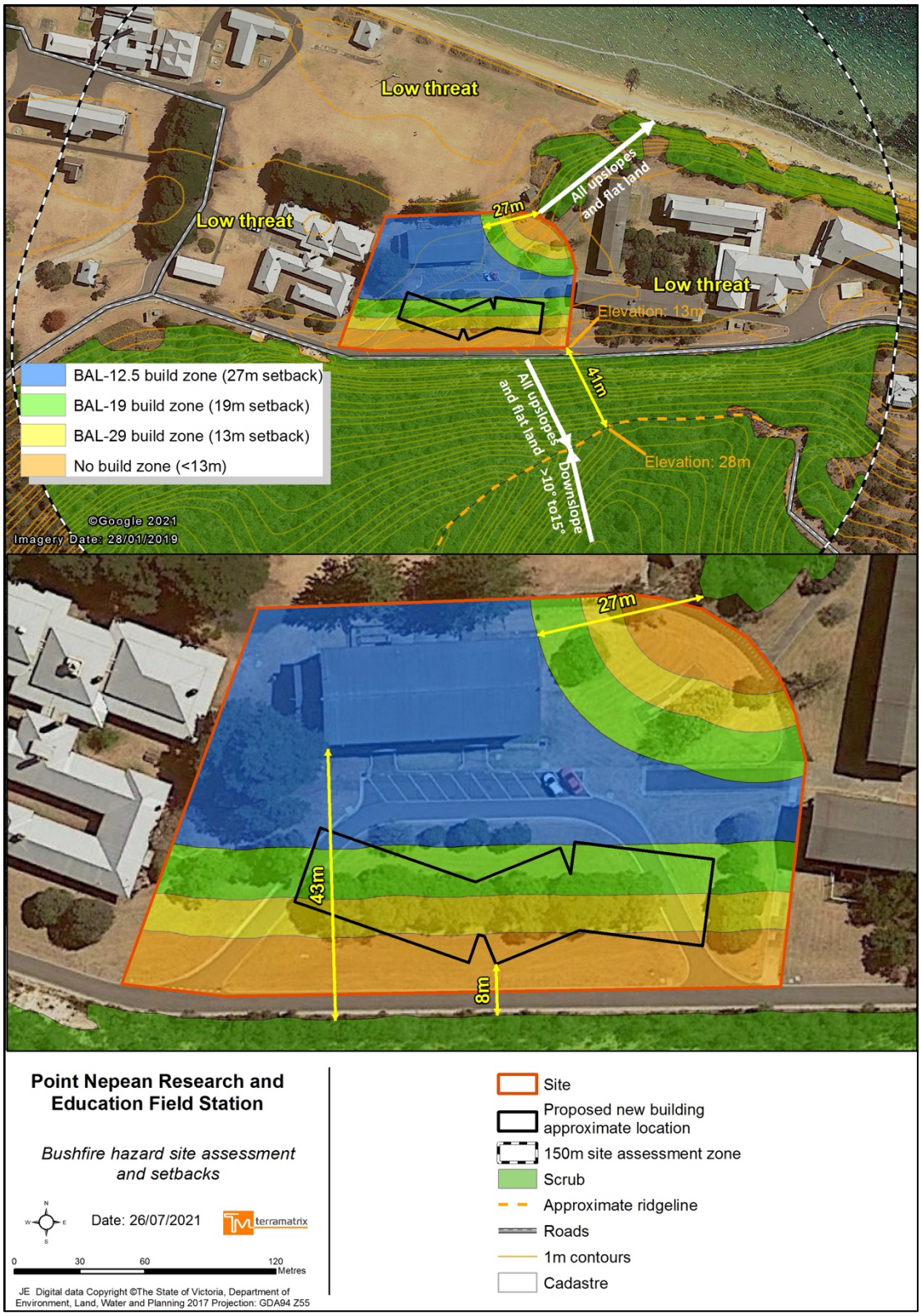
For the purposes of determining the BAL and defendable space, the applicable slope class is 'All upslopes and flat land' in relation to the Scrub to the south and north-east (see Map 1).

Badcoe Hall

Table 2 – Classified vegetation and effective slope within 150m (BMO assessment) (N.b if only a BAL assessment is required the site assessment zone is reduced to 100m, but this does not change the BAL determination).

Direction from building	Vegetation type	Slope class	Distance from building (approx.)
North-east	Scrub	All upslopes and flat land	27m
South	Scrub	All upslopes and flat land	43m

For the purposes of determining the BAL and defendable space, the applicable slope class is 'All upslopes and flat land' in relation to the Scrub to the north-east and south (see Map 1).



Map 1 - Bushfire hazard site assessment and preliminary advice map.

4. BMO compliance

4.1. Landscape, siting and design objectives

Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape.
Development is sited to minimise the risk from bushfire.
Development is sited to provide safe access for vehicles, including emergency vehicles.
Building design minimises vulnerability to bushfire attack.

Measure	Requirement	Does proposal comply?	Compliance options/comments
AM 2.1	The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.	Yes	• Limited potential for major fire development. • Ready egress to low threat suburban areas of Portsea.
AM 2.2	A building is sited to ensure the site best achieves the following: • The maximum separation distance between the building and the bushfire hazard. • The building is in close proximity to a public road. • Access can be provided to the building for emergency service vehicles.	No	**New building** • Is close to the Scrub to the south. • If the 'site' comprises the wider PPRZ land, then the new building could be sited much further from the bushfire hazard, e.g. north of Badcoe Hall. • Siting that achieves BAL-29 construction standard (i.e. 13m setback from Scrub to south – beyond the orange band on Map 1) may be judged acceptable. **Badcoe Hall** • Existing building, siting cannot be altered.

Measure	Requirement	Does proposal comply?	Compliance options/comments
AM 2.3	A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.	No	**New building** • With current siting, the new building will need to be constructed to BAL-FZ. This is not supported for this type of building under the BMO.

4.2. Defendable space and construction objective

Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on buildings.

Measure	Requirement	Does proposal comply?	Compliance options/comments
AM 3.2	A building used for accommodation (other than a dwelling or dependent person's unit), a child care centre, an education centre, a hospital, leisure and recreation or a place of assembly is: • Provided with defendable space in accordance with Table 3 and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land. • Constructed to a bushfire attack level of BAL-12.5.	N/A	**Both buildings** • Table 3 defendable space cannot be provided to the south. • Requires use of AltM 3.6.
AltM 3.6	A building used for accommodation (other than a dwelling or dependent person's unit), a child care centre, an education centre, a hospital, leisure and recreation or a place of assembly may provide defendable space in accordance with Table 2 Columns A, B or C and Table 6 to Clause 53.02-5 where it can be demonstrated that: • An integrated approach to risk management has been adopted that considers:	No	**New building** • The current siting provides only 8m setback from the Scrub to the south, which corresponds with a BAL-FZ construction standard. • Table 2 Column C defendable space equates to 13m defendable space (setback from the Scrub) with BAL-29 construction.

Measure	Requirement	Does proposal comply?	Compliance options/comments
	○ The characteristics of the likely future occupants including their age, mobility and capacity to evacuate during a bushfire emergency. ○ The intended frequency and nature of occupation. ○ The effectiveness of proposed emergency management arrangements, including a mechanism to secure implementation. • Less defendable space and a higher construction standard is appropriate having regard to the bushfire hazard landscape assessment.		**Badcoe Hall** • Table 2 Column A defendable space equates to 27m defendable space (setback from the Scrub) with BAL-12.5 construction. **Both buildings** • Defendable space would need to meet BMO vegetation management standards in all directions (see Appendix 6.1). • Landscaping plans for this area need to comply with these vegetation standards. • A Bushfire Emergency Management Plan could be developed for the facility to the satisfaction of CFA. • The use of AltM 3.6 is considered appropriate to the landscape risk.

4.3. Water supply and access objectives

A static water supply is provided to assist in protecting property.

Vehicle access is designed and constructed to enhance safety in the event of a bushfire.

Measure	Requirement	Does proposal comply?	Compliance options/comments
AM 4.2	A building used for accommodation (other than a dwelling or dependent person's unit), a child care centre, an education centre, a hospital, leisure and recreation or a place of assembly is provided with:	Yes	**Both buildings** • A 20,000 litre static water supply will be required, which can service both buildings.

Measure	Requirement	Does proposal comply?	Compliance options/comments
	• A static water supply for fire fighting and property protection purposes of 10,000 litres per 1,500 square metres of floor space up to 40,000 litres. • Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5. • An integrated approach to risk management that ensures the water supply and access arrangements will be effective based on the characteristics of the likely future occupants including their age, mobility and capacity to evacuate during a bushfire emergency. The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for fire fighting water supplies.	TBD	• If a static water supply is also required for structural fire protection (e.g. internal sprinkler system), CFA typically agree to the water supply for bushfire being provided by the same supply. • Need to determine whether the Point Nepean internal road network constitutes a public road. • If not, CFA should be consulted as to whether the existing internal road system is acceptable, particularly in terms of trafficable width of Jackson Road and requirement for a turning head near the facility.

5. BAL assessment – Badcoe Hall

This section is provided in the event that the refurbishment of Badcoe Hall is determined not to trigger the BMO. The Building Act 1993 and associated Building Regulations 2018, through application of the National Construction Code (NCC), require bushfire protection standards in designated Bushfire Prone Areas, for class 1, 2 and 3 buildings, 'Specific Use Bushfire Protected Buildings' and associated class 10a buildings or decks. The applicable performance requirement in the NCC is:

'A… (applicable building or associated deck)*… that is constructed in a designated bushfire prone area must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the—*

a) potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and

b) intensity of the bushfire attack on the building' (ABCB, 2020).

Compliance with AS 3959-2018 *Construction of buildings in bushfire prone areas* (Standards Australia, 2020) is 'deemed-to-satisfy' the performance requirement.

The nearest classified vegetation influencing the BAL for the refurbishment of Badcoe Hall is the Scrub on an effective slope in the 'All upslopes and flat land (0^{o})' slope class, that is approximately 27m to the north-east of the building.

Based on this assessment, the building must be designed and constructed to a minimum BAL-12.5 standard. This is the lowest BAL applicable in a BPA in Victoria.

You should consult your building surveyor as to whether the extent of the refurbishment triggers a requirement to retrofit the entire building to this standard.

6. Appendices

6.1. Vegetation management requirements

As per Table 6 to Clause 53.02-5:

'Defendable space is provided and is managed in accordance with the following requirements:

- *Grass must be short cropped and maintained during the declared fire danger period.*
- *All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.*
- *Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.*
- *Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.*
- *Shrubs must not be located under the canopy of trees.*
- *Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.*
- *Trees must not overhang or touch any elements of the building.*
- *The canopy of trees must be separated by at least 5 metres.*
- *There must be a clearance of at least 2 metres between the lowest tree branches and ground level.*

Unless specified in a schedule or otherwise agreed in writing to the satisfaction of the relevant fire authority' (Mornington Peninsula Planning Scheme, 2018).

6.2. Water supply requirements

Fire Authority Requirements

'Unless otherwise agreed in writing by the relevant fire authority, the water supply must:

- *Be stored in an above ground water tank constructed of concrete or metal.*
- *Have all fixed above ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.*
- *Include a separate outlet for occupant use.*

Fire authority fittings and access must be provided as follows:

- *Be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.*
- *Be located within 60 metres of the outer edge of the approved building.*
- *The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.*
- *Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting).*

- *Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling)'* (Mornington Peninsula Planning Scheme, 2018).

The water supply may be provided in the same water tank as other water supplies, provided they are separated with different outlets.

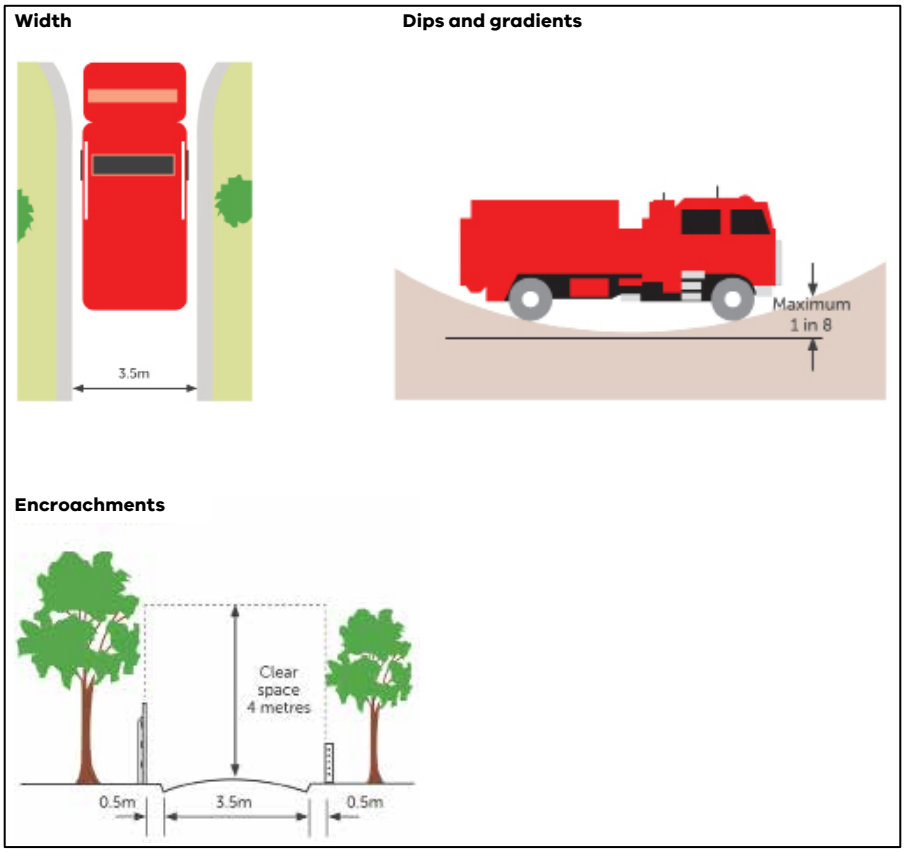
6.3. Access requirements

Driveways less than 30m long have no specific requirements unless access to the water supply outlet is required, in which case the following apply as appropriate.

Access between 30m and 100m in length

Where the length of access is greater than 30 metres the following design and construction requirements apply (*the length of access should be measured from a public road to either the building or the water supply outlet, whichever is longer* (Mornington Peninsula Planning Scheme, 2018).

- Curves must have a minimum inner radius of 10 metres.
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres.
- Dips must have no more than a 1 in 8 (12.5%) (7.1°) entry and exit angle.
- A load limit of at least 15 tonnes and be of all-weather construction.
- Provide a minimum trafficable width of 3.5 metres.
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically.
- A cleared area of 0.5 metres is required to allow for the opening of vehicle doors along driveways.
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.

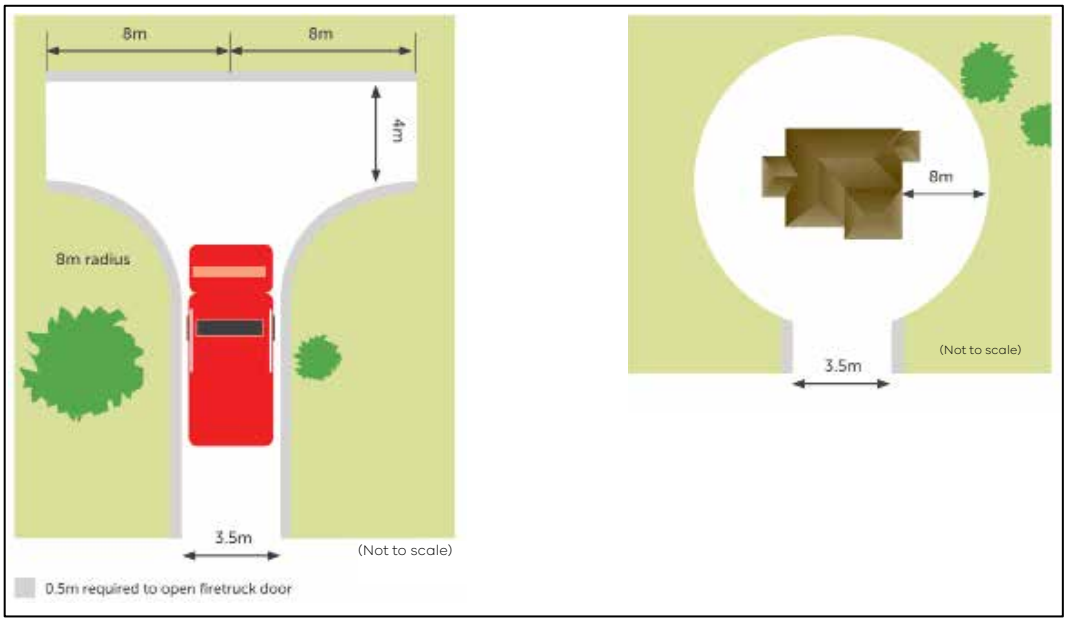


(DELWP, 2017)

Access between 100m and 200m in length

In addition to the 30m-100m requirements above, a turning area for fire fighting vehicles must be provided close to the building by one of the following:

- a turning circle with a minimum radius of 8 metres
- a driveway encircling the dwelling
- other vehicle turning heads such as a T or Y head which meet the specification of Austroad Design for an 8.8 metre service vehicle.

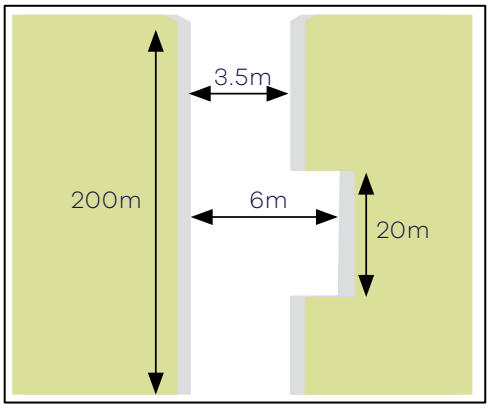


(DELWP, 2017)

Access greater than 200m in length

In addition to the requirements above, passing bays are required at least every 200 metres that are:

- a minimum of 20 metres long
- with a minimum trafficable width of 6 metres.



(DELWP, 2017)

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