Bushfire Hazard Assessment

For the subdivision of
2995 Princes Hwy, Winchelsea

Prepared for:
St Quentin Consulting
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Summary

This Bushfire Hazard Assessment has been prepared to support a planning permit application for a subdivision of >10 lots that is located in a bushfire prone area. While no detailed design of the subdivision is available at this stage, the assessment was undertaken to inform the bushfire risk and management response to reduce this risk to appropriate levels.

Surf Coast Shire requires development applications in a bushfire prone area (not subject to the Bushfire Management Overlay) to address Clause 13.05-1 (Bushfire Planning). This includes preparation of a bushfire site hazard and landscape hazard assessment and implementation of appropriate bushfire protection measures to address the identified bushfire risk.

The site was characterised by open, introduced pasture, with areas of planted trees and shrubs present around the existing dwelling and farm infrastructure. One classifiable vegetation type (Grassland) was recorded within the 150-metre assessment area, with an effective slope of Upslope and Flat Land 0 degrees to the east and west, and Downslope 0 to 5 degrees to the south. The assessment area also included low-threat vegetation that consists of slashed lawn, planted windbreaks, cultivated gardens and non-vegetated areas.

The surrounding landscape was identified as Broader Landscape Type Two. The potential bushfire scenario with the highest probable impact on the site involves grassland vegetation to the west. However, the local road network, Barwon River and agricultural crops would reduce the potential for direct flame contact. Ember attack represents the main bushfire threat to the site under this bushfire scenario.

The bushfire hazard site assessment identified the development is capable of achieving BAL-12.5 defendable space and construction in accordance with Column A of Table 2 to Clause 52.47-3.

The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level, as the subdivision is capable of managing the bushfire risk within the property boundary.
1 Introduction

1.1 Background

Okologie Consulting Pty Ltd was engaged by St Quentin Consulting to prepare a Bushfire Hazard Assessment for the proposed subdivision of a parcel of land at 2995 Princes Hwy, Winchelsea.

Surf Coast Shire requires development applications in bushfire prone areas (not subject to the Bushfire Management Overlay) to address Clause 13.05-1 (Bushfire Planning) (DELWP 2017a). This includes preparation of a bushfire hazard site assessment, landscape hazard assessment and implementation of appropriate bushfire protection measures to address the identified bushfire risk.

The relevant information provided with this application comprises:

- A bushfire hazard site assessment, which calculates the defendable space from the bushfire hazard as informed by the methodology of AS 3959-2009 *Construction of buildings in bushfire prone areas* (Australian Standard 2009).

- A bushfire hazard landscape assessment including a plan that describes the bushfire hazard of the general locality more than 150-metres from the site.

- Review of Clause 13.05 to shows how the development responds to the identified bushfire risk.
2 Site Description

2.1 Site Details

The site comprises a parcel of land at 2995 Princes Highway, Winchelsea (Lot 1 PS613942) and the adjacent Princes Highway road reserve (Figure 1). The site covers approximately 27 hectares and is bound by Princes Highway to the north, and private property to the east, south and west.

The development proposal is for residential subdivision and access to the site is from Princes Highway. The site contains an existing dwelling and farm infrastructure, and has been used for agriculture (cropping, grazing). The site topography is generally flat with low undulating slopes towards the south of the assessment area. The immediate surrounding area comprises predominantly agricultural land, with residential development to the east.

The site located in the Surf Coast Shire municipality and occurs within a bushfire prone area. It is zoned Farming Zone and is not subject to the Bushfire Management Overlay or any environmental overlays under the Surf Coast Planning Scheme (DELWP 2018a).
Figure 1

Site Location
Main Street, Winchelsea
3 Methodology

3.1 Desktop Assessment

The desktop assessment included a review of relevant literature and database information, including:

- State Planning Policy Framework 13.05-1 Bushfire planning (DELWP 2017a).
- Clause 52.47 Planning for Bushfire (DELWP 2017b).
- Clause 44.06 Bushfire Management Overlay (DELWP 2017c).
- Planning Schemes Online for planning information (DELWP 2018a).
- NatureKit for modelled vegetation, topography and bushfire history (DELWP 2018b).
- Planning Advisory Note 68: Bushfire State Planning Policy Amendment VC140 (DELWP 2018c).
- CFA guideline ‘Applying the Bushfire Hazard Landscape Assessment in Bushfire Management’ (CFA 2015).
- Aerial photographs of the site and surrounding areas.

3.2 Bushfire Hazard Site Assessment

A bushfire hazard site assessment was undertaken on 15 March 2018. The assessment involved determining the classifiable vegetation and effective slope within a 150-metre radius of the proposed development using the method described by AS3959-2009 (Australian Standards 2009). The results of the site assessment were used to inform the requirement for defendable space and building construction under Clause 52.47 (DELWP 2017b).

3.3 Vegetation

For the purposes of determining the defendable space and construction requirements under the BMO, classified vegetation is vegetation that constitutes a bushfire hazard within 150 metres of the development in accordance with the classification system of AS 3959-2009 (Australian Standards 2009) and Table 1 or Table 2 of Clause 52.47 (DELWP 2017b). If more than one classified vegetation type is present the ‘worst case scenario’ is applied to determine the BAL (Standards Australia, 2009).

Areas of low-threat vegetation are described as:
• Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
• Low-threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks (Standards Australia 2009).

Modified vegetation refers to vegetation that is different from the other vegetation classifications in AS3959 because it:

• Has been modified, altered or is managed due to urban development, or gardening;
• Has different fuel loads from those assumed in the standard;
• Has limited or no understorey vegetation; or
• Is not low-threat or low-risk vegetation as defined in the standard (DELWP 2017b).

3.4 Topography

The site topography was assessed within the 150-metre assessment area, to determine the effective slope under classified vegetation in accordance with AS 3959-2009 (Australian Standards 2009). For the landscape assessment, the effective slope is determined on worst case rather than an average (CFA 2015).

Topography (or slope) influences the rate of spread and intensity of a bushfire. Fire burns faster uphill as the slope increases so does the speed of the fire and its intensity. As a general rule, for every 10° slope, the fire will double its speed. Fires tend to move more slowly as the slope decreases, and for every 10° of downhill slope, the fire will halve its speed (CFA 2012).

3.5 Bushfire Attack Level

The BAL is calculated by identifying classifiable vegetation type, the effective slope under classifiable vegetation and distances between vegetation (the hazard) and the proposed development. The higher the BAL, the higher the exposure to the effects of flame, radiant heat and ember attack from a bushfire (Plate 1).
3.6 Defendable Space

Defendable space is one of the most effective ways of reducing the impact of bushfire on a building. It comprises an area of land around a building (inner zone and outer zone) where vegetation is modified and managed to reduce the effects of flame contact, radiant heat and embers associated with bushfire (Plate 2) (CFA 2015).

3.7 Construction Standards

Construction requirements for buildings relating to a calculated BAL are prescribed in AS3959-2009 (Standards Australia 2009). Building construction and design can be used to minimise the impacts of ember attack and radiant heat on a building. The materials
and design of a building can be used to prevent the accumulation of debris and entry of embers. Appropriate construction helps the building to withstand the potential exposure from a bushfire as the fire front passes (CFA 2015).

3.8 Bushfire Hazard Landscape Assessment

The bushfire hazard landscape assessment provides information on the bushfire hazard more than 150 metres away from a development site (CFA 2015). The landscape assessment followed CFA guidelines (2015) and included review of aerial photographs to determine the vegetation extent in the broader locality; the proximity of the site to township areas or fire refuges; vegetation and slope, site access, defendable space and construction, local bushfire history and consideration of the likely bushfire scenarios.

3.9 Limitations

The information outlined in this report relies on the accuracy of GIS layers and spatial imagery. To minimise potential errors, the most current available data was obtained from relevant sources. The bushfire hazard within the local area was determined from interpretation of aerial photography, as access to all private property was not available. Determination of vegetation classification was based on relevant standards and guidelines, and vegetation condition and extent observed during the site assessment.
4 Bushfire Hazard Landscape Assessment

4.1 Site and Landscape Context

The site is located on the northern boundary of Winchelsea. Access to the site is via the Princes Highway. The Township of Winchelsea contains a mix of residential and rural development, and is bounded by agricultural land to the north, east, south and west. The nearest neighbourhood safer place is located approximately one kilometre east of the site on Princes Highway service lane (between Hesse Street and Palmer Street). Winchelsea also contains areas of residential parkland and ovals that can provide protection from the impact of extreme fire conditions.

4.2 Vegetation Extent in the Locality

The immediate landscape surrounding the site (within one kilometre) is highly modified and dominated by agricultural grassland that is generally not managed to a minimum fuel condition. Areas of agricultural land area also interspersed with small, isolated patches of native woodland and planted vegetation. The Barwon River intersects the Township of Winchelsea and supports a modified cover of riparian woodland.

4.3 Recent Bushfire History

NatureKit (DEWLP 2018b) contains data on the bushfire history for the local area from 1970. A 123-hectare grassfire occurred to the approximately five kilometres west of the site in 2009, and a 243-hectare grassfire occurred 15 kilometres west of the site in 2014. The 1983 Ash Wednesday bushfire burnt through an extensive area of Wensleydale and the Great Otway National Park 10 kilometres to the southwest of the site. The CFA and DELWP have implemented fuel reduction management for the local area, and prescribed burns have been undertaken in various section of the Great Otway National Park between 1991 and 2018 (DEWLP 2018b) (Figure 2).

4.4 Potential Bushfire Scenario

Bushfire Scenario 1

Grassland vegetation is located to the immediate north/northwest of the site and potential fire runs in this direction extend for more than 10 kilometres (Figure 2). North or northwesterly winds generally associated with high-threat or extreme bushfire conditions could potentially drive a grassfire towards the site from a north or northwest direction. The site is separated from the hazard by the Princes Highway, areas of commercial development and agricultural crops, which reduces the potential
for direct flame contact. Ember attack represents the greatest type of bushfire threat to the site from this bushfire scenario.

**Bushfire Scenario 2**

Grassland vegetation is located to the immediate west/southwest of the site and potential fire runs in this direction extend for more than 10 kilometres (Figure 2). West or southwest winds can result from a northerly wind change during high-threat or extreme bushfire conditions. The change in wind direction can create a new fire front from an established fire. The local road network, Barwon River and agricultural crops would reduce the potential for direct flame contact. Ember attack represents the main bushfire threat to the site under this bushfire scenario.

4.5 **Landscape Type**

The site corresponds to Broader Landscape Type Two as specified in Practice Note 65 (DTPLI 2014) as it meets the following criteria:

- Grassland vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site.
- Bushfire can approach the site from the west/southwest and north/northwest; however, areas to the immediate north consist of low-threat vegetation managed in minimum fuel condition and provide sufficient distance to protect people from direct flame contact or radiant heat. The adjacent township to the east also provides urban areas managed in a minimum fuel condition.
- Access to a designated bushfire shelter place is likely during an extreme bushfire event.
Figure 2
Bushlife Management
Landscape Context
2995 Princes Hwy,
Winchelsea

Legend
- Subject Site
- 150m Assessment Area
- Recent Bushfires from 1970

Potential Bushfire Scenario 1
Fire Run >10km

Potential Bushfire Scenario 2
Fire Run >10km
5 Bushfire Hazard Site Assessment

5.1 Vegetation Assessment

The site was characterised by open, introduced pasture, with areas of planted trees and shrubs present around the existing dwelling and farm infrastructure. One classifiable vegetation type was recorded within the 150-metre assessment area, which met the AS 3959-2009 classification of ‘Grassland’ (Australian Standards 2009). The assessment area also included low-threat vegetation that consists of slashed lawn, planted windbreaks, cultivated gardens and non-vegetated areas (i.e. roads, farm infrastructure) (Figure 3). A description of the vegetation types within the 150-metre assessment area is outlined below.

**Excludable Vegetation**

Areas of low-threat vegetation consisted of slashed lawn, planted windbreaks, cultivated gardens and non-vegetated areas (i.e. roads, farm infrastructure) (Plate 3) (Figure 3).

**Grassland Vegetation**

Areas of open introduced pasture throughout the site and within the 150-metre assessment area meet the AS 3959-2009 classification of Grassland. Grassland vegetation was dominated by exotic pasture species such as Toowoomba Canary-grass *Phalaris aquatica*, Prairie Grass *Bromus catharticus*, Cocksfoot *Dactylis glomerata*, Couch Grass *Cynodon dactylon* and Brown-top Bent *Agrostis capillaris* (Plates 4, 5 and 6).

The effective slope under Grassland vegetation to the north, east and west was ‘Upslope and flat land 0 degrees’, with areas to the to the south classified as ‘Downslope 0 to 5 degrees’ (Figure 3).
Plate 3: Low-threat vegetation northerly aspect

Plate 4: Grassland and low-threat vegetation easterly aspect

Plate 5: Grassland vegetation southerly aspect

Plate 6: Grassland vegetation westerly aspect
Figure 3
Site Hazard Assessment
2995 Princes Hwy, Winchelsea

Legend
- Subject Site
- 150m Assessment
- Grassland
- Low Threat Vegetation
5.2 Bushfire Hazard Site Assessment

The Bushfire Hazard Site Assessment process is used to determine how far away from unmanaged vegetation a building would need to be to receive less than a certain level of radiant heat (e.g. a building constructed to BAL-12.5 has been designed to withstand a radiant heat flux of 12.5 kW/m²). The development BAL also includes consideration of the bushfire hazard landscape assessment to ensure defendable space provides an adequate safety zone around each building (CFA 2015).

The results of the site assessment in conjunction with Table 2 under Clause 52.47-3 were used to determine the appropriate BAL and associated defendable space and construction standard. The highest BAL threat is from Grassland vegetation to the west (immediate adjacent to the property boundary), which is contiguous with unmanaged Grassland vegetation in agricultural land further to the west (Figure 3).

The subdivision is capable of achieving BAL-12.5 defendable space and construction to the north, east, south and west in accordance Column A of Table 2 to Clause 52.47-3 for a subdivision that creates 10 or more lots (Table 1) (Figure 4).

Table 1. Bushfire Hazard Site Assessment Results

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Classified Vegetation</th>
<th>Effective Slope</th>
<th>Distance to Classified Vegetation*</th>
<th>Defendable Space*</th>
<th>BAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>Low-threat</td>
<td>Flat/Upslope</td>
<td>0 metres</td>
<td>Property boundary</td>
<td>12.5</td>
</tr>
<tr>
<td>East</td>
<td>Grassland</td>
<td>Flat/Upslope</td>
<td>0 metres</td>
<td>19 metres</td>
<td>12.5</td>
</tr>
<tr>
<td>South</td>
<td>Grassland</td>
<td>Downslope 0-5 degrees</td>
<td>0 metres</td>
<td>22 metres</td>
<td>12.5</td>
</tr>
<tr>
<td>West</td>
<td>Grassland</td>
<td>Flat/Upslope</td>
<td>0 metres</td>
<td>19 metres</td>
<td>12.5</td>
</tr>
</tbody>
</table>

*Distance from the property boundary; ** Defendable space is to be provided for a distance of 50 metres, or the property boundary whichever is the lesser, for buildings constructed to all bushfire attack levels. The minimum construction standard is BAL 12.5 (DELWP 2017b).
Figure 4
Bushfire Management Plan
2995 Princes Hwy, Winchelsea

Legend
- Subject Site
- 150m Assessment Area
- Defendable Space - BAL 12.5
- Grassland Vegetation
- Low-threat Vegetation

Defendable Space Management
- 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.

Water Supply and Access
- Water hydrants for fire fighting will be specified in the plan of subdivision.
- There are no access design and construction requirements as the length of access is less than 30 metres.

Construction Requirements
- Each dwelling is to be constructed to BAL-12.5 in accordance with AS3959 requirements.

Landscaping
- Any landscaping will conform to the CFA Landscaping for Bushfire Guidelines to reduce the bushfire risk.
6 Clause 13.05-1 Bushfire Planning

6.1 Application Requirements

Clause 13.05-1 (Bushfire Planning) requires development applications in bushfire prone areas to address the objectives and application requirements of this policy at the planning permit application stage. The objective of Clause 13.05 is to strengthen the resilience of settlements and communities and prioritise protection of human life. The relevant application requirements of Clause 13.05-1 are addressed in Table 2.

Table 2. Response to Clause 13.05-1

<table>
<thead>
<tr>
<th>Protection of Human Life</th>
<th>Strategy</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritising the protection of human life over all other policy considerations.</td>
<td>The site occurs within the Winchelsea town boundary and is immediately adjacent to residential development to the east and commercial development to the north. Land use to the west and south is predominantly agricultural. Areas of grassland to the north/northwest and west/southwest of the site represent a bushfire risk to the local area. However, the subdivision is located in an agricultural zone, adjacent to residential development, the local road network, town water supply and existing cleared areas. The bushfire risk to human life can be mitigated to an acceptable level through the layout, siting and design of the subdivision and implementation of bushfire protection measures.</td>
<td></td>
</tr>
</tbody>
</table>

Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire. | The proposed subdivision is located within the Winchelsea town boundary, and immediately adjacent to residential development to the east. Access to the site is via the Princes Hwy, which provides clear and ready access for residents and emergency services. The nearest neighbourhood safer place is located approximately one kilometre east of the site on Princes Highway service lane (between Hesse Street and Palmer Street). | |

Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision-making at all stages of the planning process. | The proposed subdivision will not increase the bushfire risk to the local community or the adjacent area. Implementing bushfire protection measures may assist in reducing the risk to adjacent residential development. | |

Bushfire hazard identification and assessment
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.</td>
<td>The bushfire hazard has been reviewed using the most current available vegetation, topographic and climatic data, GIS layers and spatial imagery.</td>
</tr>
<tr>
<td>Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under that Act.</td>
<td>The area surrounding the subdivision is identified as a bushfire prone area.</td>
</tr>
<tr>
<td>Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard.</td>
<td>The site is located in a modified agricultural area, where the existing vegetation cannot create an extreme bushfire risk.</td>
</tr>
<tr>
<td>Considering and assessing the bushfire hazard on the basis of:</td>
<td>The bushfire hazard landscape assessment has address the bushfire hazard of the locality approximately 20 km from the site (Figure 2). The highest bushfire risk within the broader landscape comprises areas of unmanaged grassland vegetation on agricultural land.</td>
</tr>
<tr>
<td>• Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site.</td>
<td>The local bushfire conditions were addressed within the bushfire hazard landscape assessment (Figure 2). The bushfire risk within the local area comprises areas of unmanaged grassland vegetation on agricultural land; however, local road network, Barwon River and agricultural crops reduce this risk to the subdivision.</td>
</tr>
<tr>
<td>• Local conditions - meaning conditions in the area within approximately 1 kilometre from a site.</td>
<td>The neighbourhood bushfire risk is considered low to the immediate north and east due to the presence of low-threat vegetation and residential development. Areas of unmanaged grassland vegetation on agricultural land occur to the south and west, however, residential development, the local road network and agricultural crops reduce this risk to the subdivision.</td>
</tr>
<tr>
<td>• Neighbourhood conditions - meaning conditions in the area within 400 metres of a site, and the site for the development.</td>
<td></td>
</tr>
<tr>
<td>Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.</td>
<td>Consultation has been undertaken with CFA Fire Safety Officer Phillip Wall (Fire &amp; Emergency Management).</td>
</tr>
<tr>
<td>Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures.</td>
<td>This application has assessed the bushfire risk through preparation of a bushfire hazard site assessment, landscape hazard assessment and a bushfire management statement, which includes appropriate bushfire protection measures.</td>
</tr>
<tr>
<td>Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.</td>
<td>The required BAL 12.5 defendable space and construction for &gt;10 lot subdivision can be met as well as associated bushfire protection measures to reduce this risk to appropriate levels.</td>
</tr>
<tr>
<td>Strategy</td>
<td>Response</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).</td>
<td>The Bushfire Hazard Site Assessment identified the development is capable of achieving BAL-12.5 defendable space and construction in accordance with Column A of Table 2 to Clause 52.47-3.</td>
</tr>
<tr>
<td>Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire.</td>
<td>The nearest neighbourhood safer place is located approximately one kilometre east of the site on Princes Highway service lane (between Hesse Street and Palmer Street).</td>
</tr>
<tr>
<td>Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.</td>
<td>The proposed subdivision will not increase the bushfire risk to the local community or existing community infrastructure. Implementing bushfire protection measures may assist in reducing the risk to adjacent residential development.</td>
</tr>
<tr>
<td>Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.</td>
<td>The subdivision is capable of managing the bushfire risk within the property boundary, as the defendable space can be wholly contained on the subject land. Implementing bushfire protection measures may assist in reducing the overall risk to adjacent residential development.</td>
</tr>
<tr>
<td>Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.</td>
<td>The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level, as the required defendable space vegetation management measures will be implemented with the ongoing use of the land.</td>
</tr>
<tr>
<td>Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.</td>
<td>The development area is located on agricultural land that is considered a low risk location for settlement growth. It occurs within the existing town boundary, is immediately adjacent to residential development and is accessible from the Princes Highway.</td>
</tr>
<tr>
<td>Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2009.</td>
<td>The Bushfire Hazard Site Assessment identified the development is capable of achieving BAL-12.5 defendable space and construction in accordance with Column A of Table 2 to Clause 52.47-3.</td>
</tr>
<tr>
<td>Strategy</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Consider the risk of bushfire to people, property and community infrastructure.</td>
<td>The bushfire risk has been assessed through preparation of a bushfire hazard site assessment, landscape hazard assessment and a bushfire management statement, which includes appropriate bushfire protection measures. The development is capable of achieving BAL-12.5 defendable space and construction, and is capable of managing the bushfire risk within the property boundary, as the defendable space can be wholly contained on the subject land.</td>
</tr>
<tr>
<td>Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.</td>
<td>The required defendable space vegetation management measures will be implemented with the ongoing use of the land (slashing).</td>
</tr>
<tr>
<td>Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.</td>
<td>The site is highly modified as a result of agricultural use and is generally devoid of indigenous vegetation. The development will not result in unacceptable impacts to biodiversity.</td>
</tr>
</tbody>
</table>
7 References


Appendix 1: Defendable Space

Defendable space is provided and is managed in accordance with the following requirements (as specified in Figure 4):

- 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 (DELWP 2017b).
Appendix 2: Access Requirements

The proposed length of the driveways from the road to the subdivision (including gates, bridges and culverts) is less than 30 metres (Figure 4).

The minimum design requirements for the driveway are:

- Curves in driveway 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.

The driveway must:

- Be designed, constructed and maintained for a load limit of at least 15 tonnes and be of all-weather construction.
- Be clear of encroachments at least 4 metres vertically.
- Provide a minimum trafficable width of 3.5 metres and be substantially clear of encroachments for at least 0.5 metres on each side (see Plate 7).

Plate 7: Vehicle clearance requirements (Source: CFA 2012)