

# Bushfire Development Report

For Proposed Development of  
Holiday Accommodation Units  
180 Star Of The Glen Rd  
Bonnie Doon, VIC

Prepared by:  
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#### Version Control

Report Version	Name	Date Completed	Comments
1	Hamish MacCallum	28/02/2024	Version 1 (issued to client)
2	Hamish MacCallum	21/05/2024	Version 2 (issued to client)
3	Hamish MacCallum	30/05/2024	Version 3 (issued to client)
4	Hamish MacCallum	20/11/2024	Version 4 (issued to client)
5	Hamish MacCallum	21/05/2025	Version 5 (issued to CFA)



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## 1 Introduction

Phoenix Wildfire has been contacted by Leanne Maxwell, Regional Planning Services, to undertake a bushfire risk assessment for the proposed development of six studio accommodation apartment units, amenities building and ancillary shedding for the purpose of providing holiday accommodation at 180 Star Of The Glen Rd, Bonnie Doon. A separate studio is proposed that will be ancillary to the private residence and not intended for use as part of the accommodation business.

The intention of this report is to demonstrate how the potential development of holiday accommodation units can respond to the bushfire risks in the context of Clause 13.02-1S Bushfire Planning, Clause 44.06 Bushfire Management Overlay (BMO) and associated Clause 53.02 Bushfire Planning in the Mansfield Shire Planning Scheme. The site is within the declared Bushfire Prone Area and is covered by the BMO. As the size and style of accommodation units will result in up to 12 guests on-site when fully occupied, this report will assess the proposed accommodation in accordance with Cl.13.02 'Place of Assembly' and for 'Group Accommodation'.

The overall risk assessment has been undertaken for the site to identify and demonstrate how the proposed development can appropriately mitigate the bushfire risk, and respond to and comply with the applicable bushfire planning and building controls.

This version (V.5) provides further details requested by CFA for further information to confirm the proposed units are certified to BAL-40 construction standards.

### 1.1 Methodology

This report responds to the strategies outlined in Cl 13.02 through the guidance provided in:

- Design Guidelines Settlement Planning at the Bushfire Interface (DELWP, 2020a).
- Local Planning for Bushfire Protection, Planning Practice Note 64 (DELWP, 2015).
- Planning Permit Applications - Bushfire Management Overlay, Technical Guide.
- Bushfire State Planning Policy Amendment VC140, Planning Advisory Note 68.
- AS 3959-2018 Construction of buildings in bushfire prone areas (Standards Australia,2020).



## 2 Study Area Overview

180 Star Of The Glen Rd (hereafter referred to as the study area) is situated 11km to the north of Bonnie Doon, approximately 23km northwest of Mansfield. The study area abuts forest areas to the north, with open farming land primarily to the south. The study area is zoned Rural Living Zone. The site is relatively steep, with the proposed development sitting on a west facing slope overlooking a gully along Star Of The Glen Rd. Forested areas to the north are mostly upslope of the site, characterised by sharp ridges and valleys in the southern region of the Strathbogie Ranges. The forests are typical of the dry foothill forests dominated by Messmate Stringybark forest ecology.

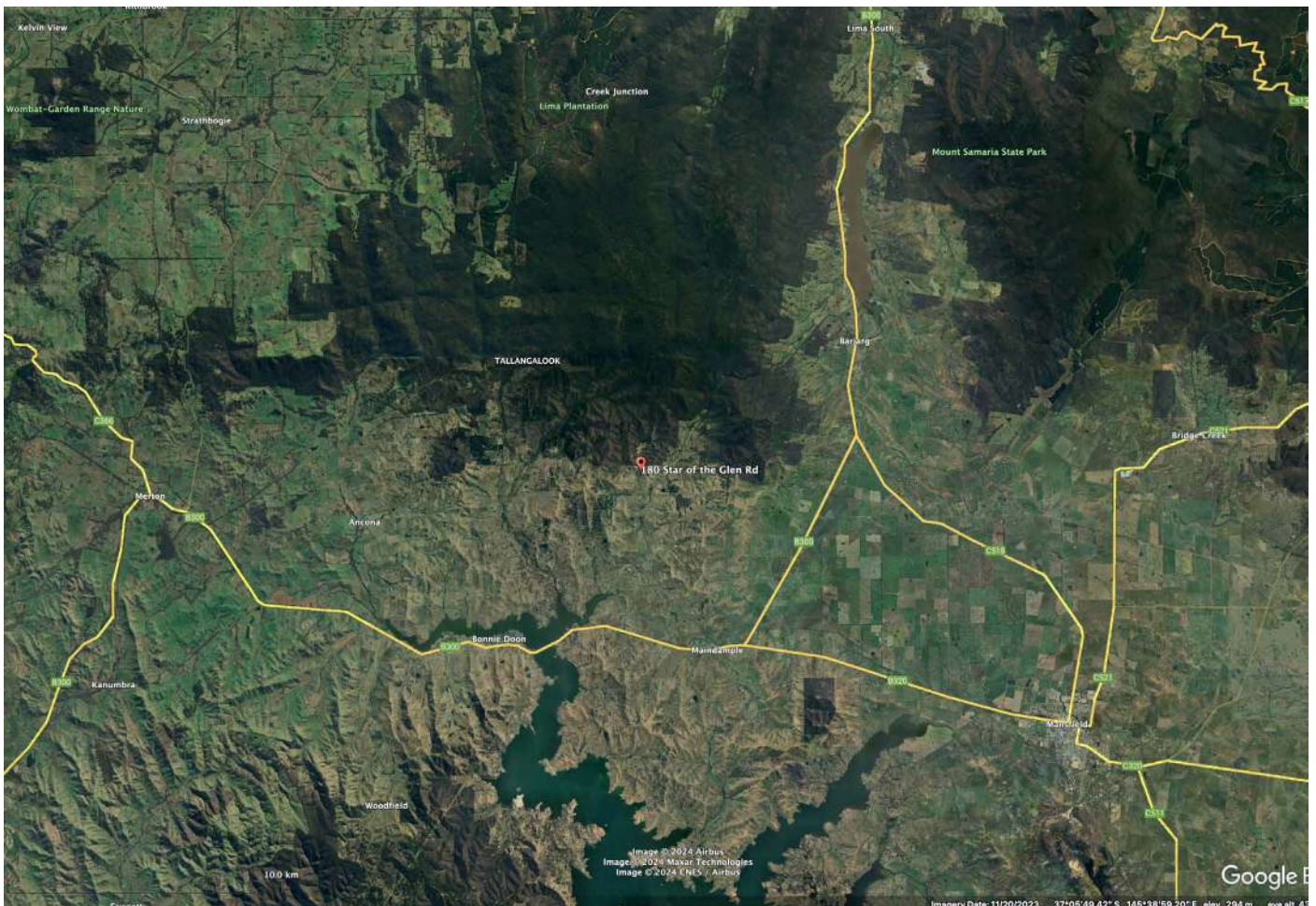


Fig.1 Map showing the study area (Google 2023).

### 2.1 Proposed Development Overview

The proposed development is for provision of 6 holiday accommodation units, a large shed, office and ablution block. Access roads and parking will be provided to each unit and to the shed. A turning circle at the end of the development ensures easy access and parking to each unit. It is expected that the accommodation units will be built to meet the minimum BAL-40 construction standards. A compliance certificate for the proposed units has been provided in the appendix. A separate studio office is proposed that will be ancillary to the private residence and not intended for use as part of the accommodation business. This building will provide an office and consultation room for the client and will not be for further accommodation. The 'meeting space' is an outdoor gathering space with a gazebo viewing area.

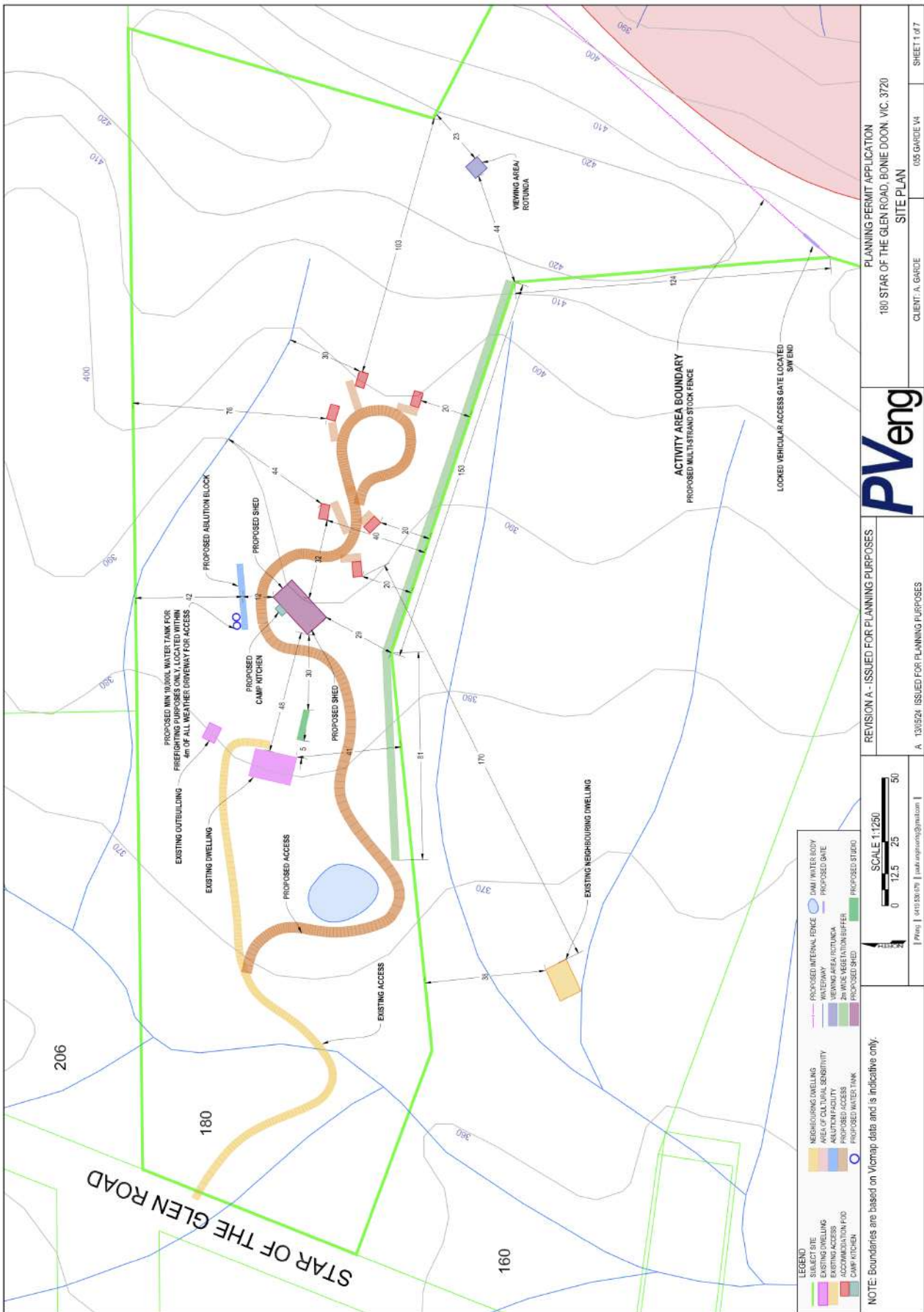


Fig.2 Proposed site plan.



### 3 Bushfire Planning and Building Controls

There are a number of planning and building systems that regulate land use and development to ensure bushfire hazards and risks are appropriately considered and managed. This section outlines the relevant controls relating to this proposal.

#### 3.1 Planning Policy Framework (PPF)

The Planning Policy Framework provides the foundation for how the planning scheme can be used to assess and respond to planning decisions in relation to bushfire hazards. The primary policies that provide the relevant decision making context for bushfire are:

##### 3.1.1 Clause 13.01-1S Natural Hazards and Climate Change

Cl.13.01 'seeks to minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning. It ensures, that hazard assessments, risk assessments, strategic planning and planning applications have regard to all natural hazards and their risks'. (Bushfire Planning Policy, VPA 2023)

The impact of anthropogenic climate change is undisputed and is leading to an increase in fire occurrence and intensity. This trend towards a more bushfire prone landscape is to be considered in the context of population growth to minimise the risk to life, property and community infrastructure.

##### 3.1.2 Clause 13.02-1S Bushfire planning

Cl. 13.02-1S seeks to 'strengthen the resilience of settlements and communities to bushfire through risk based planning that prioritises the protection of human life' The policy applies to all decision making relating to any property:

1. Within the Designated Bushfire Prone Area
2. Subject to the Bushfire Management Overlay
3. Used or developed in a way that would create a bushfire hazard

The Mansfield Planning Scheme outlines the priorities of Cl.13.02 as:

- 'Prioritising the protection of human life over all other policy considerations.
- 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.
- Reducing the vulnerability of communities to bushfire through consideration of bushfire risk in decision-making at all stages of the planning process'

This report responds to the relevant strategies of Cl.13.02 in relation to the development study area in section 6.



### 3.2 Bushfire Management Overlay

The purpose of the Bushfire Management Overlay is:

- To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.
- To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.
- To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.

In the BMO, A permit is required to construct a building or construct or carry out works associated with the following uses:

- Accommodation (including a Dependent person's unit)
- Child care centre
- Education centre
- Hospital
- Industry
- Leisure and Recreation
- Office
- Place of assembly
- Retail premises
- Service station
- Timber production
- Warehouse

The BMO applies to land that may be significantly affected by extreme bushfires and applies to areas of bushfire prone vegetation (except grassland) over 4Ha in size. The BMO extends 150m from areas of bushfire vegetation to provide a buffer where bushfire protection measures are applied to all development.

The study area is subject to the BMO and is considered a place of assembly.



### 3.3 Bushfire Prone Area

Bushfire prone areas are areas that are subject to or likely to be subject to bushfire. All areas within the study area are within the designated bushfire prone area. The Building Regulations 2018 require bushfire construction standards in these areas and these are implemented by the relevant building surveyor as part of the building permit for all class 1, 2 and 3 buildings (mostly residential buildings, as classified by the Building Code of Australia). These construction standards are referred to as bushfire attack levels (BAL).

The minimum Bushfire Attack Level requirement of BAL-12.5 is determined by thorough assessment of the site hazard assessment, or as a planning scheme requirement. The BAL is a measure of a buildings potential to ember attack, radiant heat or direct flame contact.

The study area has been assessed using the methodology outlined in AS 3959-2018 Construction of Buildings in Bushfire Prone Areas.

### 3.4 Other Planning and Building Controls

#### 3.4.1 Clause 71.02-3 Integrated Decision Making

Cl. 71.02 states 'planning and responsible authorities should endeavour to integrate the range of planning policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development for the benefit of present and future generations. However, in bushfire affected areas, planning and responsible authorities must prioritise the protection of human life over all other policy considerations'. (Mansfield Planning Scheme).

#### 3.4.2 Zoning

The study area is in the Rural Living Zone.

#### 3.4.3 Overlays

There are no other overlays aside from the BMO that have any implications for bushfire.



Fig.3 Map detailing the BMO extent over the study area.



## 4 Bushfire Hazard Assessment

Clause 13.02 states that the settlement planning process is required to assess and address 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. The assessment process addresses this by:

- 'Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard'.

Considering and assessing the bushfire hazard on the basis of:

- 'Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;
- Local conditions - meaning conditions within approximately 1 kilometer from a site;
- Neighbourhood conditions - meaning conditions within 400 metres of a site; and
- The site for the development.' (Mansfield Planning Scheme, 2018a).

The site assessment (around 150m of the site boundaries) provides the foundation to determine the BAL construction standards and is based on the classified vegetation and topography within the 150 metres surrounding the study area in all directions.

Although the BPA usually requires a 100m site assessment, larger developments generally require a larger assessment area (150m) within the BPA.

### 4.1 Regional Bushfire Assessment

The *Regional Bushfire Planning Assessment (RBPA) - Hume Region (2012)* provides information on matters relevant to strategic and settlement planning and focuses on the factors considered important by the Victorian Bushfire Royal Commission, including:

- areas where there is a settlement or urban interface with the bushfire hazard

The RBPA does not specifically identify Bonnie Doon, however it describes broader areas of bushfire risk being those in close proximity to remnant vegetation patches, which fits the profile of the study area.



### 4.1.1 Victorian Fire Risk Register

The Victorian Fire Risk Register - Bushfire (VFRR-B) is a process in which representatives from local government, fire services, public land managers, utilities and community groups map assets at risk from bushfire and assess the level of risk to the assets. (VFRR 2023) The risk is assessed by combining the local hazard threat, the site susceptibility, and the likelihood of ignition and spread.

The study area is northeast the existing settlement of Bonnie Doon. Surrounding the study area has been assessed as very high risk, with a medium threat rating, high susceptibility, and with fire spread expected to impact assets. It however indicates there to be a low incidence of ignitions. Ember attack, smoke and radiant heat exposure are likely impacts.

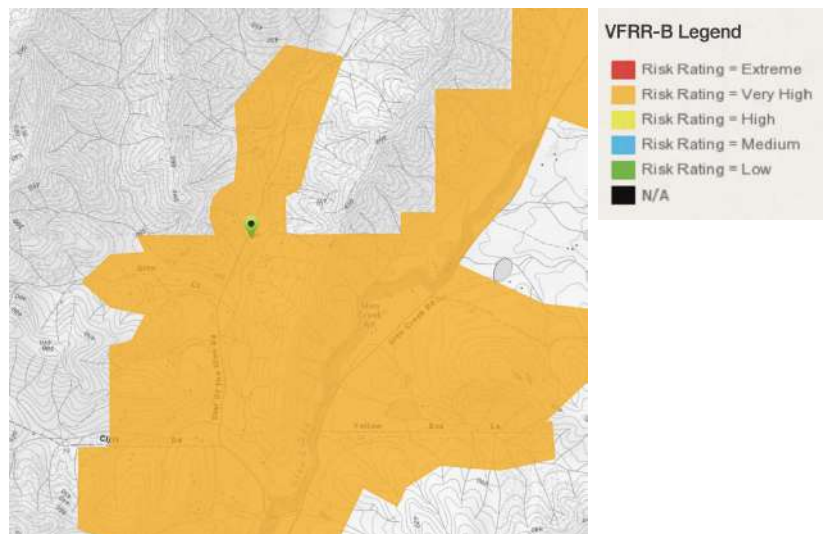


Fig.4 VFRR-B mapping showing the fire risk rating for Star Of The Glen Rd and the study area (green pin) (VFRR-B 2024).

### 4.1.2 Hume Bushfire Management Strategy

The Hume Bushfire Management Strategy (2020) is a joint Forest Fire Management Victoria, CFA, Emergency Management Victoria and Local Government strategic planning document. There is no specific reference to the study area, however the overall risk for this area of the Hume region is varied, with identified areas considered high risk. Property risk is highest around the communities in the valleys and surrounding hilly terrain in the Murrindindi, Alpine, Indigo and Mansfield shires. The study area fits this profile, with a low to intermediate risk of houses lost to bushfire .

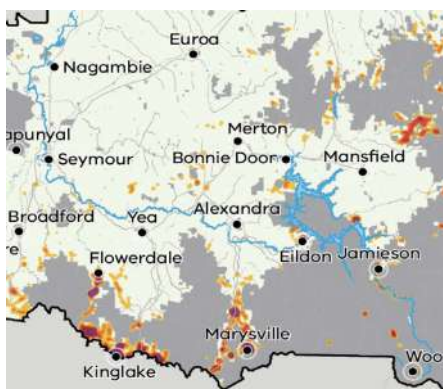


Fig.5 Map showing bushfire risk by houses lost, (Hume Bushfire Management Strategy, 2020)



## 4.2 Broader Landscape Conditions (20km-5km)

The broader landscape surrounding the study area is evaluated out to 20km from the site. The study area sits northwest of Bonnie Doon. The Bonnie Doon township offers areas of vegetation deemed low-threat and suitable as a place of last-resort. Sporting ovals and golf courses offer similar low-threat vegetated areas. Directly to the north there are larger forested areas of the Strathbogie State Forest and the Strathbogie Ranges.

The eastern sector has some forested areas that are separated from the study area by open grasslands and hilly terrain. Most forested bushfire vegetation is upslope of the site, however steep terrain could drive extreme fire conditions over the broader area.

The landscape conditions within 5km of the study area are typically similar to the broader landscape, with predominantly flat land covered with two distinct land types:

- Forest vegetation areas are closest to the north of the study area. Larger expanses of forest (Strathbogie State Forest) to the northwest can develop fire runs of up to 17km before impacting the site. Suppression could be limited and the chance of spotfires would be extremely high, with convection borne embers falling up to 10km ahead of the fire. Backing fire (travelling downslope) would be slow moving but would still generate extreme radiant heat levels.
- Grassland paddocks about the study area to the south. There is a potential for grassfire to impact the site, especially during years with increased drought and high winds. Convection winds from fire in the northern areas could drive grassland fires (starting from spotfires) towards the site. The steep terrain would make the impact from grassland fire severe.

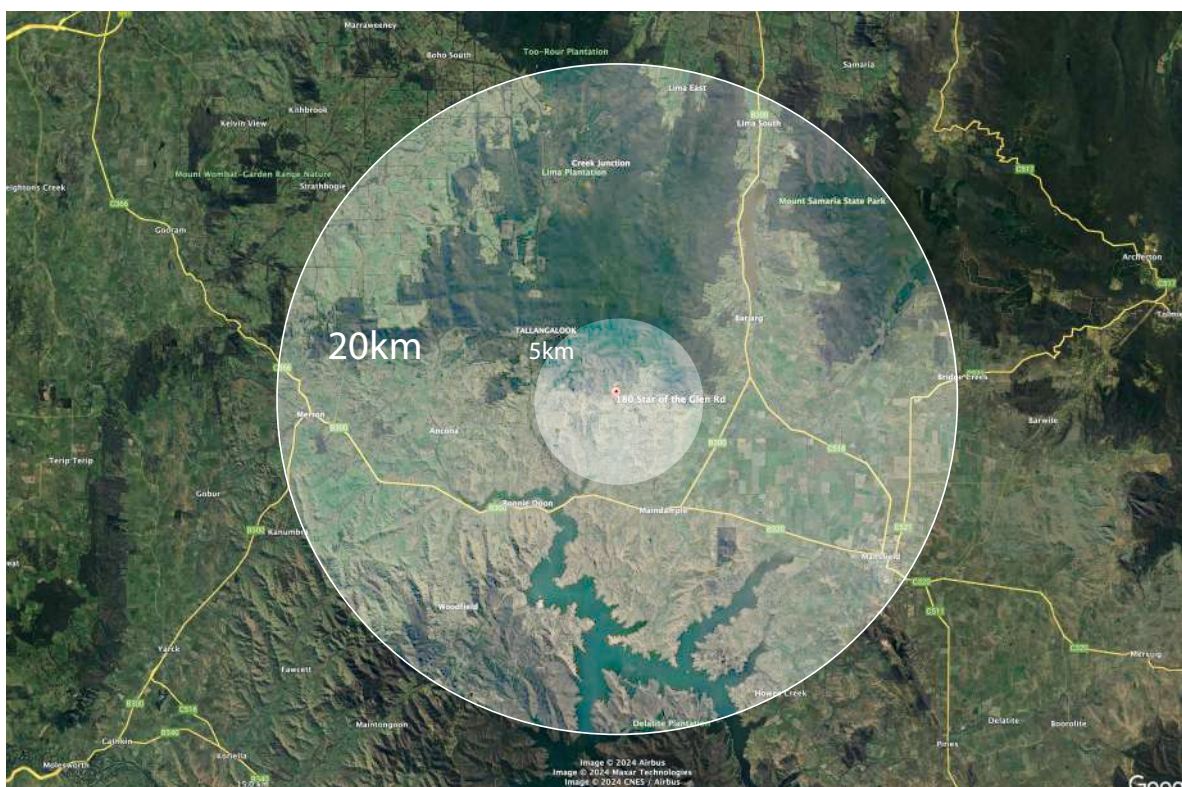
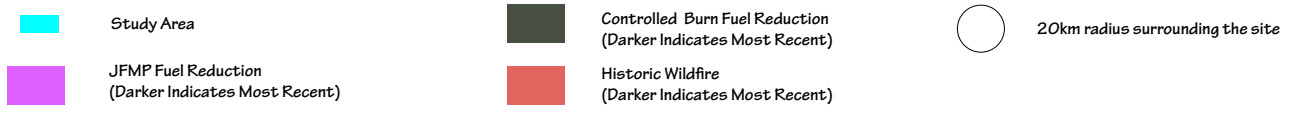
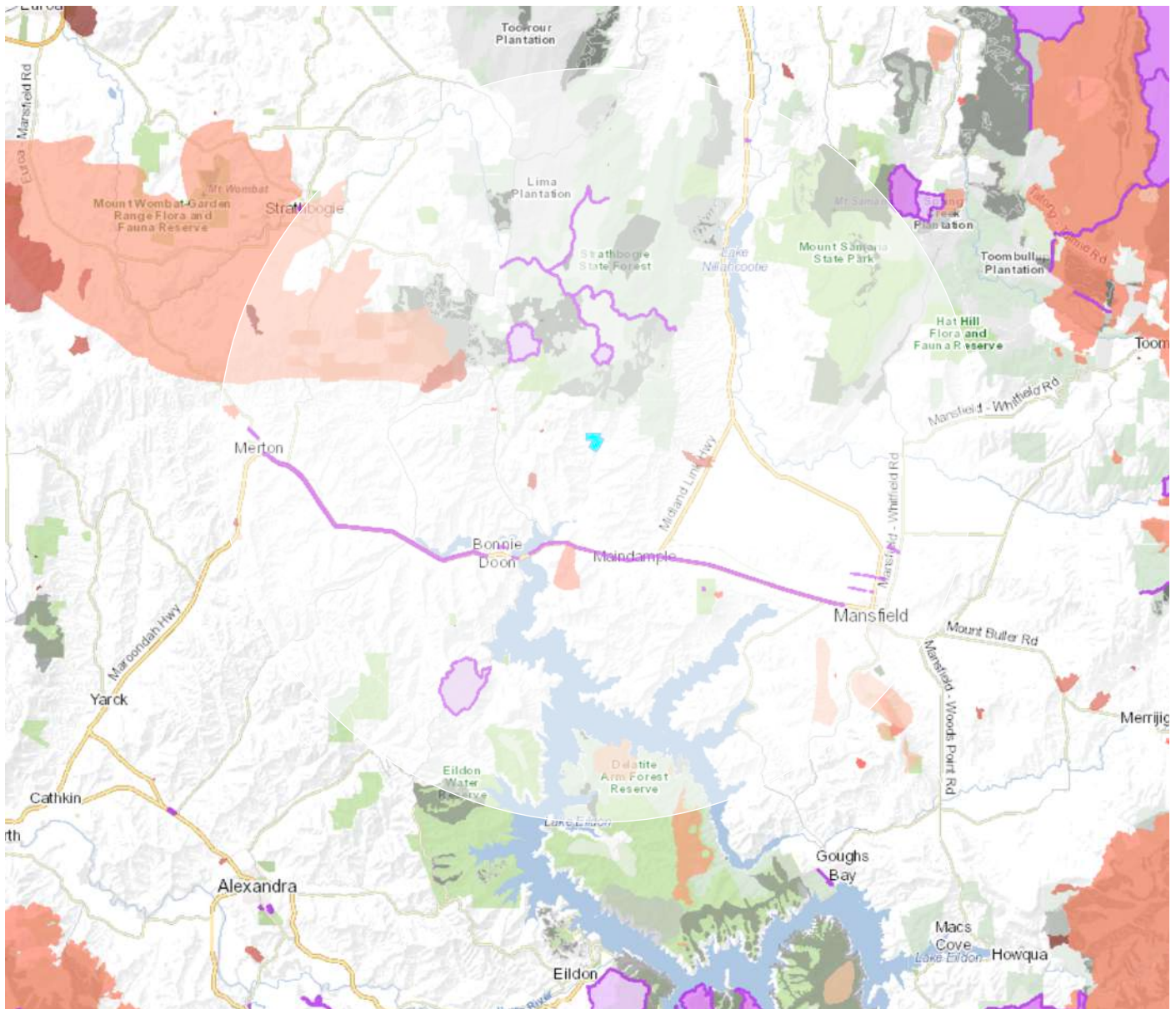


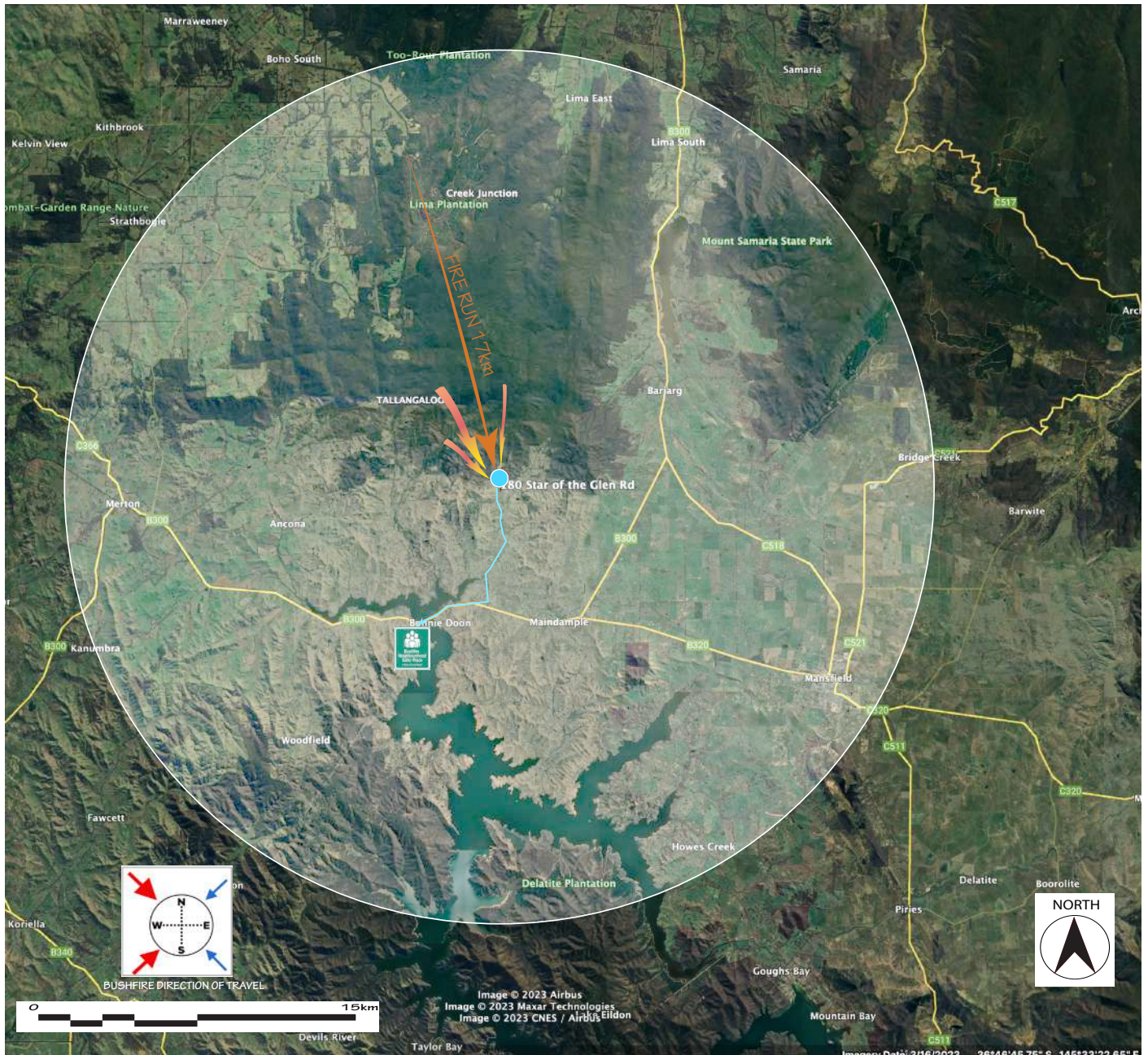
Fig.6 Google Maps image of the broader landscape 20km and 5km surrounding the study area.



LANDSCAPE FIRE HISTORY  
Bonnie Doon  
VIC



Fig.7 Fire history map for the study area. Historic fires during drought years indicate that during drought conditions fire in forested areas is more likely to be uncontrolled and difficult to suppress. Fire in open grassland is infrequent and less severe than drought fuelled forest fire.








-  20km Assessment zone
-  Assessment Site
-  Neighbourhood Place Of Last Resort (Bonnie Doon Recreation Reserve)
-  Route To Place Of Last Resort (19.5km)
-  Fire Run And Ember Attack Potential

Fig.8 Broader Landscape Site Plan, detailing the landscape risks within 20km of the study area.



### 4.3 Neighbourhood and Local Landscape Conditions (400m-1km)

The primary bushfire risk within 1km of the study area is from the forest vegetation.

#### Landscape Risk Typologies

The table below (DELWP Technical Guide *Planning Applications in the Bushfire Management Overlay*, 2017) describes four broader landscape types representing different landscape risk levels to inform consistent decision making based on the overall risk.

The landscape scenario that represents the site is Broader Landscape **Type 3**. The extensive forest to the northwest, north and northeast is tall Messmate stringybark dominated Eucalyptus forest. This type of forest can produce extreme fire behaviour that may result in neighbourhood-scale destruction. Fire can approach the site from multiple aspects. There are few properties in the neighbourhood that are managed in a minimum-fuel condition, and these low-threat areas are limited to landscaped zones around individual households. Access to the nearest Bushfire Place of Last Resort (Bonnie Doon Recreation Reserve) is not guaranteed, with travel on unsealed roads through high-fuel landscapes limiting safe egress. Fire can impact the site from multiple directions. The combination of steep slopes and Messmate Stringybark forests with thick understorey increases the potential for crown fire to occur on extreme days. Although the site has reasonable separation from the forest vegetation, the potential radiant heat flux (RHF) exposure to the site is high. Grassland on steep slopes has the potential to have an extremely fast forward rate of spread and could impact the site very quickly.

Fire in the broader landscape could easily spread through intense spotting from the prevalent Messmate forest. It is likely that the site would be subject to prolonged ember attack before and following the passing of the main fire front. The forested region of Mt Strathbogie and the Strathbogie Ranges to the north and northwest of the site pose a significant landscape risk.

Broader Landscape Type 1	Broader Landscape Type 2	Broader Landscape Type 3	Broader Landscape Type 4
<ul style="list-style-type: none"> <li>• There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation).</li> <li>• Extreme bushfire behaviour is not possible.</li> <li>• The type and extent of vegetation is unlikely to result in neighbourhood-scale destruction of property.</li> <li>• Immediate access is available to a place that provides shelter from bushfire.</li> </ul>	<ul style="list-style-type: none"> <li>• The type and extent of 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.</li> <li>• Bushfire can only approach from one aspect and the site is located in a suburban, township or urban area managed in a minimum fuel condition.</li> <li>• Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.</li> </ul>	<ul style="list-style-type: none"> <li>• The type and extent of 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.</li> <li>• Bushfire can approach from more than one aspect.</li> <li>• The site is located in an area that is not managed in a minimum fuel condition.</li> <li>• Access to an appropriate place that provides shelter from bushfire is not certain.</li> </ul>	<ul style="list-style-type: none"> <li>• The broader landscape presents an extreme risk.</li> <li>• Fires have hours or days to grow and develop before impacting.</li> <li>• Evacuation options are limited or not available.</li> </ul>



#### 4.4 Bushfire Place of Last Resort

A 'Neighbourhood Safer Place' (also known as a 'Bushfire Place of Last Resort' or NSP-BPLR) is a place of last resort when all other bushfire plans have failed. BPLR's are:

- Locations that may provide some protection from direct flame and heat from a fire, but they do not guarantee safety.
- Not an alternative to planning to leave early or to stay and defend your property; they are a place of last resort if all other fire plans have failed.
- An existing location and not a purpose-built, fire-proof structure. It is important to know that many NSP-BPLRs are simply a clearing that provides separation distance from the bushfire hazard (e.g. forest).
- Not to be confused with Community Fire Refuges, Relief Centres, Recovery Centres or Assembly Areas, each of which have a different and specific purpose.
- Not an appropriate destination when leaving the area early.
- Not a place of shelter from other types of emergencies (e.g. to escape rising floodwaters or severe weather events).

The nearest BPLR is Peppin Point Holiday Park, Bonnie Doon. This site is a 20 minute (19.5km) drive in open country, including some unsealed roads.

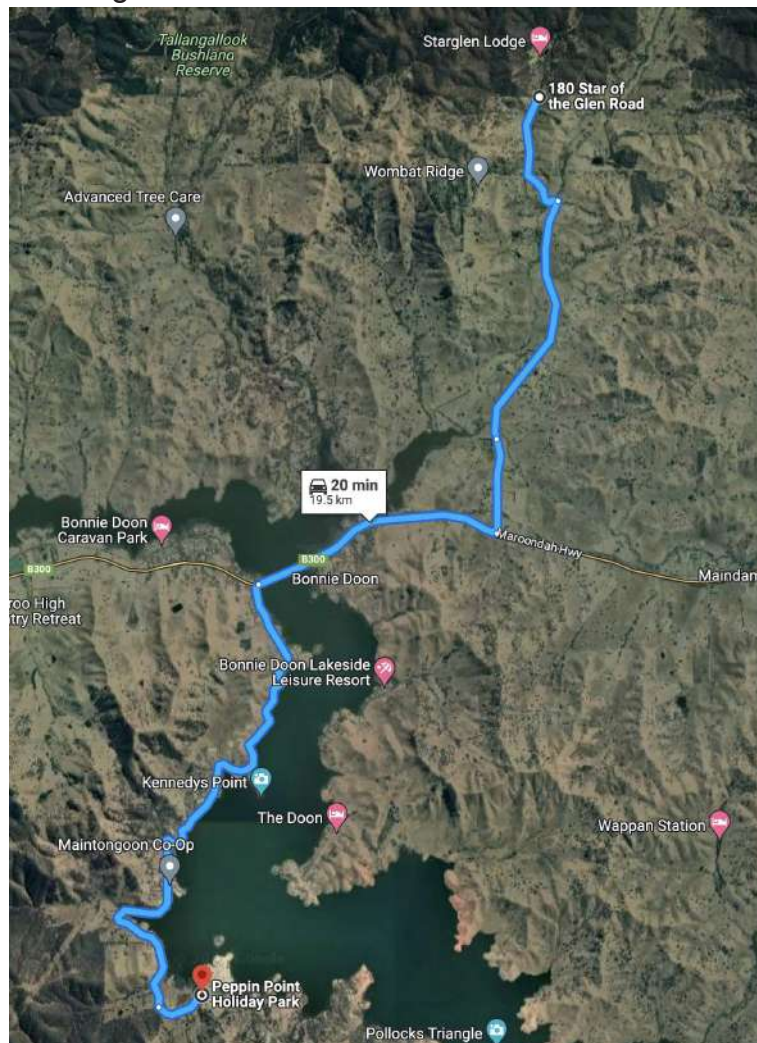
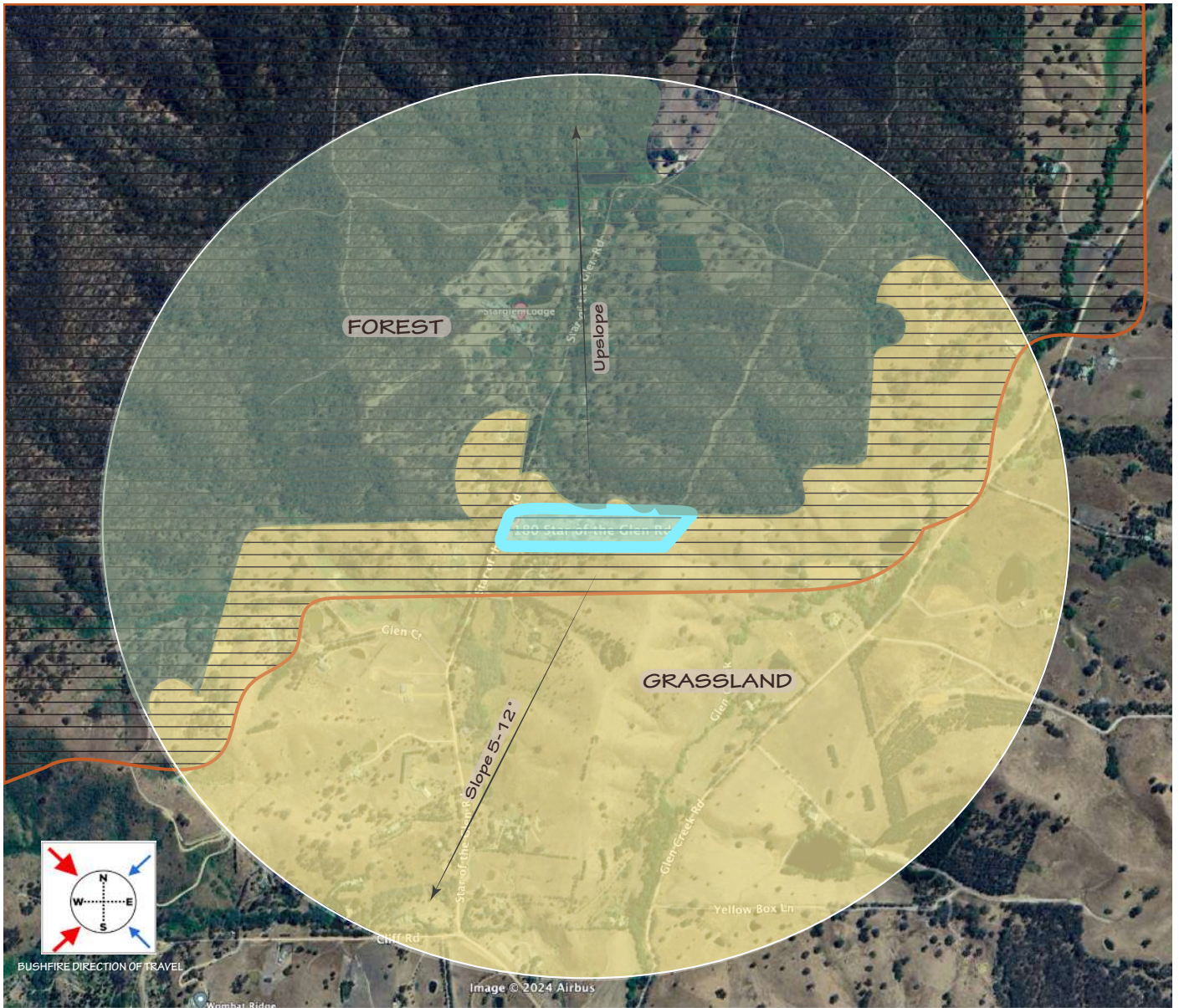


Fig.9 Directions from the study area to the nearest place of last resort.







-  1km Assessment Area
-  Predominant Forest Vegetation within 1km
-  Predominant Grassland Vegetation within 1km
-  BMO Extent
-  Study Area

Fig.10 Broader Landscape Site Plan, detailing the landscape risks within 1km of the study area.



## 4.5 Site Conditions

*Classify the vegetation within 150 metres of the proposed development in accordance with AS3959:2018 Construction of buildings in bushfire prone areas.*

This BMO/BPA Vegetation classification is designed to assist in differentiating between vegetation classes in order to aggregate vegetation communities based on typical fire-behaviour characteristics. These classifications aim to help determine defensible space and construction requirements under the Bushfire Management Overlay (BMO) and AS 3959–2018. This approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No.7 – Native Vegetation) classification system, also referred to as the Specht system (Specht, 1970).

### 4.5.1 Study Area Vegetation Profiles

In accordance with AS 3959-2018 Construction of buildings in bushfire prone areas, the classifiable vegetation types identified within 150m of the study area are as follows:

- **Forest Vegetation:** Characterised by tall Eucalyptus spp. with canopies exceeding 30% cover, moderate to high mid level understorey growth.

The Ecological Vegetation Classification (EVC) for the study area is Grassy Woodland and Valley Grassy Forest, however despite areas being classified as woodland ecology, the overall bushfire vegetation as per AS 3959-2018 is more consistent with 'Forest' vegetation. The variability of the woodland vegetation and high presence of understorey vegetation aligns with Forest Vegetation as per the classifications of AS 3959. The forest vegetation is dominated by Stringybark Messmate Eucalyptus, with high to extreme elevated fuel loads. The forested areas are predominantly upslope of the study area, however a small patch of forested area directly to the northwest with 12° slope could impact the site driven by westerly winds.



*Fig.11 View of forest vegetation in the northwestern sector of the study area.*



- **Grassland Vegetation:** All open grasslands or cropping and pasture where tree cover does not exceed 10% cover.

The grassland within 150m of the study area is typical of pasture grass associated with grazing land. Much of the grassland to the south is up to 12° downslope of the study area. Although regular grazing is keeping fuel loads down, there can be no reasonable assurance that the pasture will be kept in a minimum-fuel condition throughout the fire danger period.



Fig.12 Grassland paddocks to the southwest of the study area.

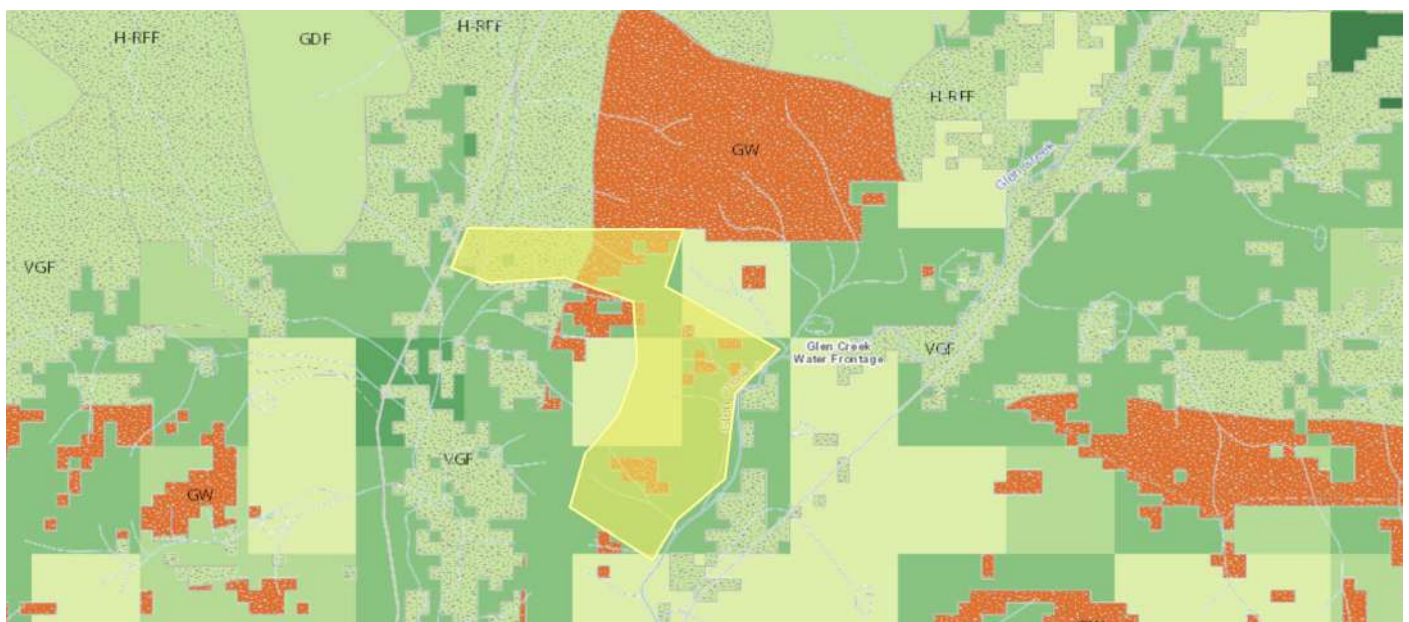


Fig.13 EVC mapping for the surrounding area. GW=Grassy Woodland, VGF=Valley Grassy Forest. The study area is yellow.

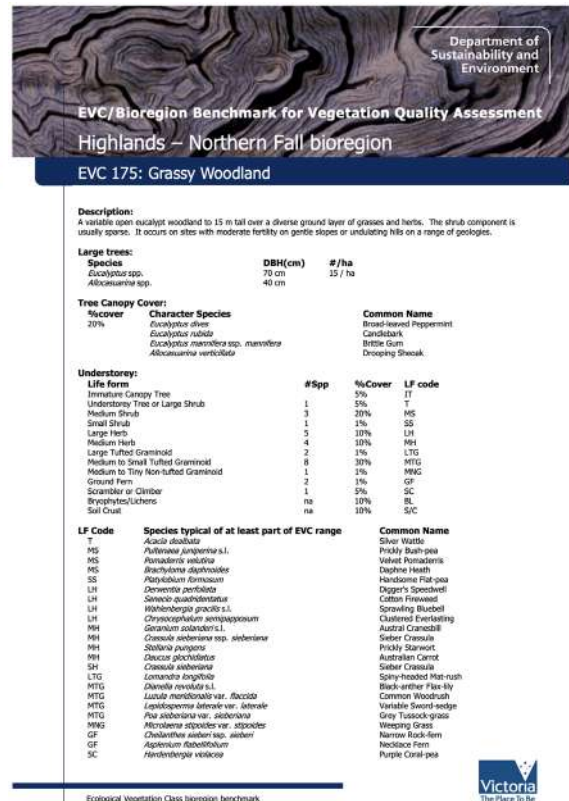
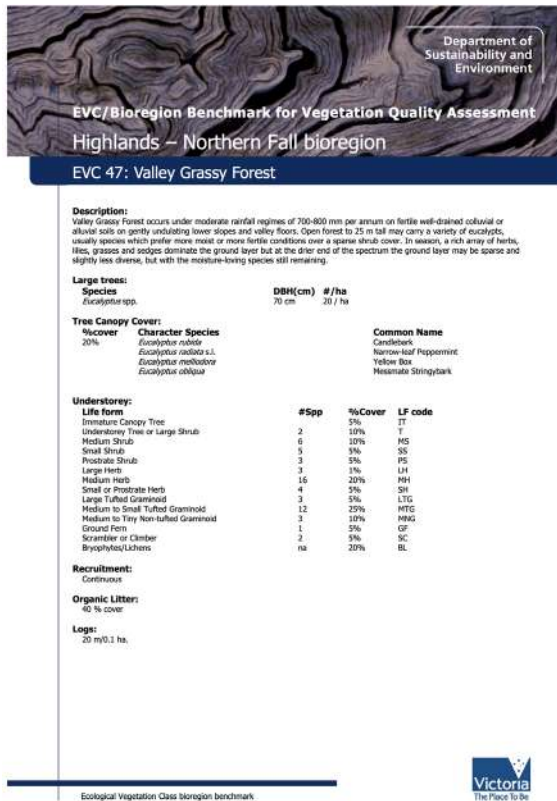


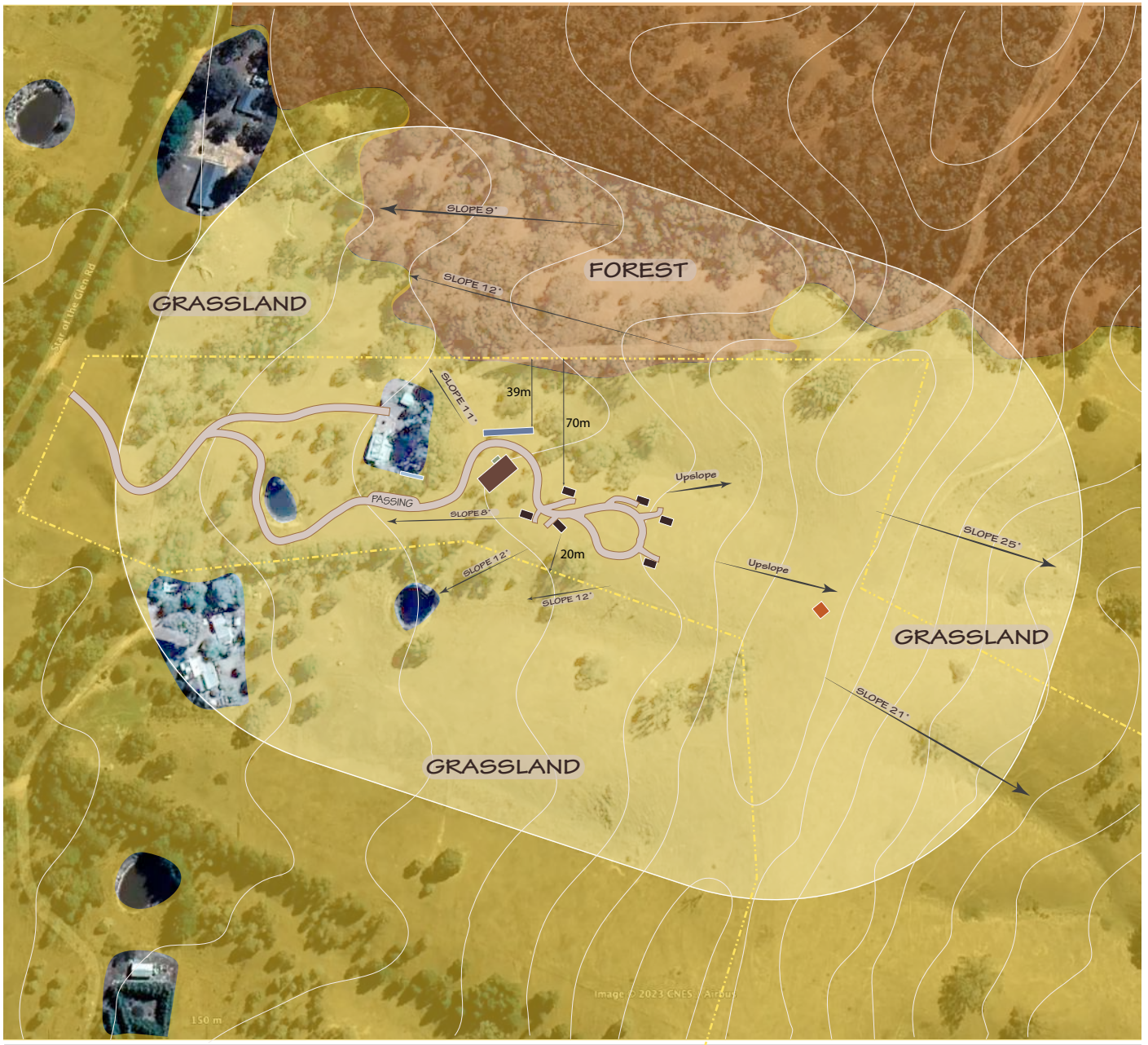
Fig.14 EVC assessment species list for the surrounding area.

### 4.5.2 Study Area Topography Profile.

The study area faces west on a moderate to steep west-facing slope. The north/south ridgeline dissects the property with steep east facing slopes on the lee side. Steep terrain surrounds the site, particularly to the north as the slope increases towards Mount Strathbogie.



Fig.15 10m spacing contour plan for the study area.



- |  |                              |  |                   |  |                      |
|--|------------------------------|--|-------------------|--|----------------------|
|  | 150m Assessment Area         |  | Property Boundary |  | Forest Vegetation    |
|  | Proposed Accommodation Units |  | Proposed Access   |  | Grassland Vegetation |
|  | Proposed Shed (with Kitchen) |  | Proposed Rotunda  |  |                      |
|  | Proposed Ablutions Building  |  | Proposed Office   |  |                      |



150m SITE HAZARD ASSESSMENT  
 180 Star Of The Glen Rd  
 Bonnie Doon



Fig.16 150m Site Hazard Assessment for the study area.



#### 4.5.3 Clause 13.01-1S Natural Hazards and Climate Change

Climate change is expected to increase bushfire severity and behaviour. The link between climate change and bushfires is well-established. Climate change is expected to increase the frequency and severity of bushfire through:

- **Rising Temperatures:** One of the most significant impacts of climate change is the increase in global temperatures. In Australia temperatures have been rising over the past century. According to the State of the Climate report by the Australian Bureau of Meteorology and CSIRO (2020), Australia has experienced an increase in average temperatures, which contributes to more frequent and intense heatwaves.
- **Drier Conditions:** Climate change can lead to decreased rainfall and prolonged droughts. The State of the Climate report also notes that southern Australia, including Victoria, has experienced reduced rainfall, leading to drier conditions, which can make vegetation more susceptible to ignition.
- **Extreme Weather Events:** Climate change is linked to an increase in extreme weather events, including more frequent and severe heatwaves. These conditions create ideal circumstances for bushfires to ignite and spread rapidly. The Intergovernmental Panel on Climate Change (IPCC) reports, such as the *Special Report on Global Warming of 1.5°C* (2018), highlight the increasing frequency and intensity of extreme weather events as a consequence of global warming.
- **Increased Fuel Load:** As vegetation becomes drier and more prone to ignition due to prolonged drought and higher temperatures, it contributes to an increase in fuel load. Dry, combustible vegetation serves as a ready source of fuel for bushfires. The Climate Council's report, *The Facts about Bushfires in Australia* (2020), explains how climate change leads to more fuel available for fires.
- **Longer Bushfire Seasons:** Climate change can extend the bushfire season. The Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) conducted research that indicates an increase in the length of the bushfire season in southern Australia due to climate change.
- **Stronger Winds:** Climate change can also lead to stronger and more erratic winds, which can influence the speed and direction of bushfires. These winds can make fires less predictable and more challenging to control. The Bureau of Meteorology's report on the link between climate change and Australian bushfires highlights the role of strong winds in fire behaviour.

Climate change is expected to increase bushfire severity and behaviour at the site by raising temperatures, reducing rainfall, creating drier conditions, increasing the risk of extreme weather events, prolonging the bushfire season, enhancing fuel availability, and influencing wind patterns. It's important to note that addressing climate change and taking measures to adapt to its impacts are critical steps in mitigating the increased risk of bushfire, especially when development can increase the amount of people present in an area during the bushfire season. The chances for severe fire conditions to impact the site would require development of a comprehensive Bushfire Emergency Plan in conjunction with the prevention measures set out in this report.



#### 4.5.4 Fire Weather Analysis

The Forest Fire Danger Index (FFDI) is a widely used system for assessing the risk of bushfires, particularly in Australia. It provides a numerical representation of the potential for a fire to ignite and spread under specific weather and environmental conditions. The FFDI is a crucial tool for fire management agencies and communities to gauge the likelihood of bushfires and allocate resources accordingly.

The FFDI is based on several key meteorological and environmental factors, including:

- **Temperature:** Higher temperatures increase the likelihood of fires, as they dry out vegetation and make it more susceptible to ignition.
- **Relative Humidity:** Lower humidity levels indicate drier air, which can desiccate vegetation and make it more combustible.
- **Wind Speed:** Strong winds can carry embers and flames, making fires more difficult to control and spreading them faster.
- **Fuel Moisture:** Dry or “cured” vegetation is more flammable, so the moisture content of the fuel plays a significant role in fire danger.
- **Drought Conditions:** Extended periods of drought can contribute to a higher FFDI, as they lead to drier landscapes.

The FFDI combines these factors to produce a single numerical value, which is used to categorize the level of fire danger. A higher FFDI indicates a greater fire risk. The FFDI system helps fire management agencies make decisions on fire bans, resource allocation, and public warnings.

The new Australian Fire Danger Rating System (AFDRS) is an updated and more comprehensive system designed to replace the FFDI. The AFDRS takes into account a broader range of factors and provides more detailed and nuanced information about fire danger. Some key features of the AFDRS include:

- **Improved Data Sources:** The AFDRS incorporates more advanced data sources and technology to provide more accurate and timely information.
- **Expanded Factors:** In addition to the factors considered in the FFDI, the AFDRS takes into account factors like solar radiation, fuel availability, and live fuel moisture content.
- **Enhanced Spatial and Temporal Resolution:** The AFDRS provides fire danger information on a finer scale, which allows for more localized and precise predictions.
- **More Comprehensive Warnings:** The AFDRS includes a broader range of warning categories to better communicate the severity of fire danger to the public.
- **Better Integration with Emergency Services:** The AFDRS aims to improve coordination between fire management agencies and other emergency services.



The transition from the FFDI to the AFDRS reflects a growing understanding of the complex factors that influence bushfire risk and the need for more sophisticated and accurate fire danger assessments. The AFDRS is expected to provide more reliable and timely information to help communities and agencies prepare for and respond to bushfires more effectively.

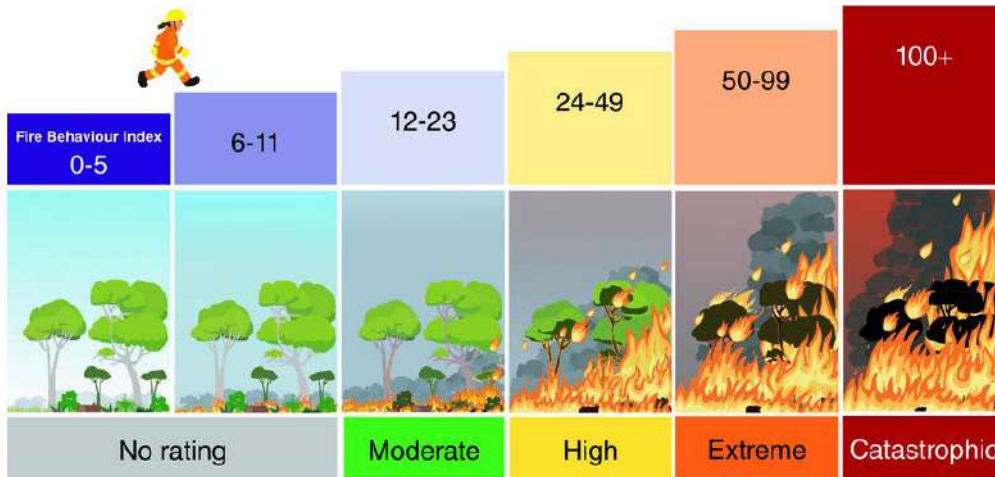


Fig.17. Fire Behaviour Index scaled on the risk matrix from no rating to catastrophic (AFAC, AFDRS 2023)

Fire weather in the Mansfield Shire district can span from October to March, with an average of 7 days with an expected FFDI/FBI 50+, typical of extreme fire conditions that would be unlikely to be easily suppressed. Wind directions are usually from the expected prevailing wind patterns for Victoria, with the predominant fire weather driven by northwesterly winds, and the southwesterly winds associated with the change.

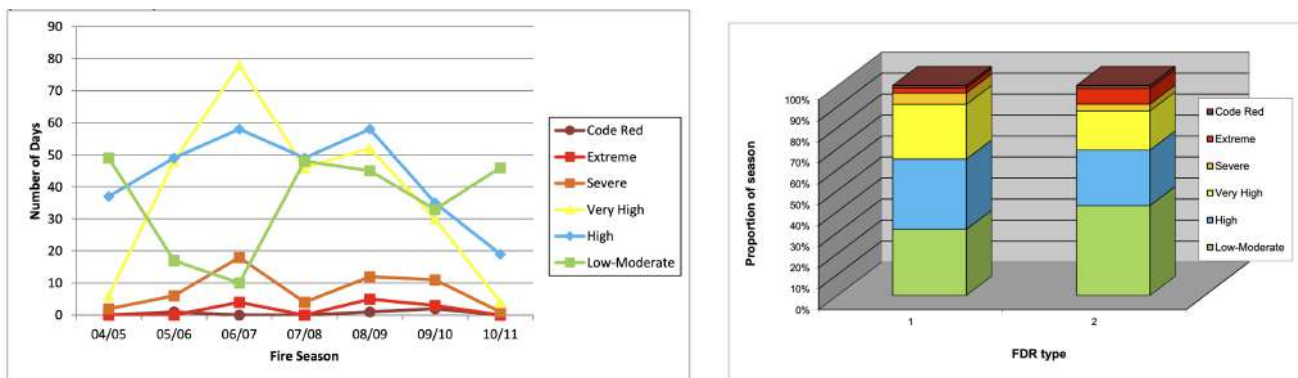
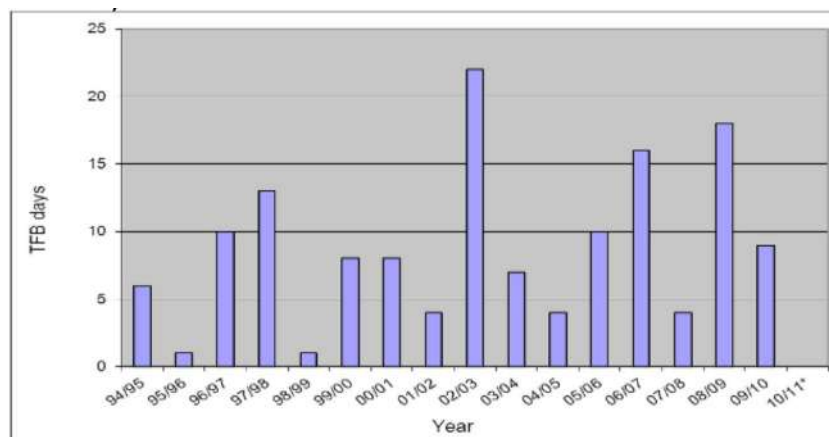


Fig.18. Charts showing frequency and type of fire days over 50+FDI (courtesy, Mansfield Shire Municipal Fire Management Plan, 2017)





## 5 Clause 13.02 Bushfire Planning Strategies

This section outlines more specific responses to the strategies for developments stipulated in Clause 13.02-1S.

### 5.1 Protection of human life Strategies

Give priority to the protection of human life by:

#### **Prioritising the protection of human life over all other policy considerations.**

This report has considered the broader landscape risk and concluded that the overall landscape risk typology for the study area Landscape Type 3. The extent of bushfire vegetation and steep terrain is expected to significantly increase bushfire behaviour in extreme fire conditions. Applying the applicable BAL construction standards and by applying enhanced bushfire protection measures (increased defendable space) commensurate to the localised risk should be combined with a comprehensive Bushfire Emergency Plan (BEP) outlining trigger points for accommodation closure and evacuation procedures to mitigate the bushfire risk.

#### **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 site is a holiday accommodation development, and as such will not have permanent residency. The proposed BEP should define trigger points for the units to be vacated and bookings cancelled.

#### **Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.**

This report provides the framework to consider community resilience to bushfire risk throughout the planning process and has considered all the relevant guidance for planning future settlement.

The proposed development is in keeping with this priority through considering protection measures such as:

- Avoiding development in locations of extreme bushfire risk (Indicated Very High risk on VFRR).
- Avoiding development in areas where planned bushfire protection measures may be incompatible with other environmental objectives (CFA, 2015).



## 5.2 Bushfire Hazard Identification and Assessment Strategies

This report has identified the bushfire hazards for the site and outlined the appropriate risk assessment strategies by:

### **Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.**

This report has used the accepted methodologies of AS 3959-2018 to identify vegetation, topographic and climatic conditions that create a bushfire hazard. Additionally, guidance has been provided by 'Planning Practice Note 64 Local planning for bushfire protection' (DEWLP, 2015), Planning Permit Applications Bushfire Management Overlay, Technical Guide (DEWLP, 2017), Vegetation Classes, Victorian Bushfire Management Overlay (CFA 2014).

Climate and weather data has been taken from The Bureau of Meteorology Climate Statistics.

### **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.**

The extent of the BPA has been mapped in relation to the study area (see Fig 19) based on mapping available through VICPLAN (Version 2.4.4, 2023)

### **Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard.**

The extent of the BMO has been mapped in relation to the subdivision site (see Fig 19) based on mapping available through VICPLAN (Version 2.4.4, 2023)

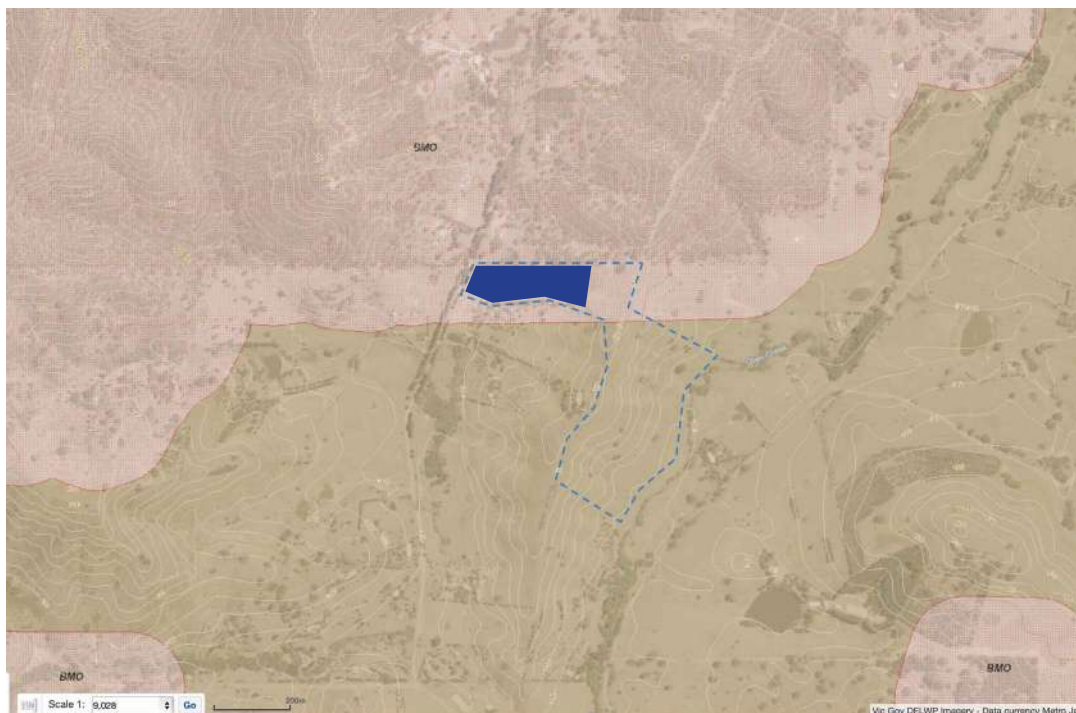


Fig.19 Map showing the extent of the BPA and BMO coverage surrounding the Study Area (blue) (VICPLAN 2023) .



**Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.**

CFA have been consulted during the process of preparing the current development plan. It is expected that further consultation with CFA and other agencies may occur for the study area.

**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.**

The applicable planning and building regulations relevant to the BPA and BMO have been used in conjunction with DELWP advisory and practice notes to apply the appropriate bushfire protection measures in this report. The regional and municipal bushfire plans and the Victorian Bushfire Risk Register have also been considered in the preparation of this report.

**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**

The bushfire risk to the proposed development can be deemed to be acceptably mitigated if the objectives and strategies set out in this report are complied to in accordance with AS 3959-2018 and the building regulations. It is expected that the bushfire hazards that have been identified and the proposed development is able to respond to the risk through implementing the relevant measures within the BPA and where relevant, the BMO. Further to the expectation of the site being a 'place of assembly', a comprehensive BEP will be expected to satisfy the required bushfire protection measures in the operation of a holiday accommodation unit with up to 12 guests.

### **5.3 Settlement and Planning Strategies**

**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 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).**

The proposed holiday accommodation units are not providing permanent population growth, and it is expected that the regulation of occupancy through identifying trigger points for closure and evacuation will result in no increases in population during extreme fire-risk days.

**Ensuring the availability and safe access to areas assessed as BAL-LOW rating under AS 3959-2018 Construction of Buildings in Bushfire Prone Areas (Standards Australia, 2018) where human life can be better protected from the effects of bushfire.**

Providing and implementing the BEP for accommodation park closures and evacuation during extreme fire weather will ensure evacuations to BAL-LOW areas can be achieved in a timely and safe manner.



**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.**

It is not expected that the proposed development will increase bushfire risk to the community.

**Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.**

No alternative low risk development locations have been identified or assessed as part of this study.

**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.**

There will be no increase in risk to the existing and future residents or community infrastructure provided:

- Future buildings are to be set back from the classified vegetation to enable the appropriate BAL construction standards.
- Appropriate access and egress for emergency vehicles is provided to all dwellings.
- Implementing appropriate setbacks from classifiable vegetation and defensible space requirements will ensure there is a net decrease in bushfire risk from unmanaged vegetation.

#### **5.4 Biodiversity and Conservation Value**

**Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are important as areas of biodiversity.**

The site was assessed to determine the existing flora and fauna and its biodiversity values. The site is predominantly introduced grass pasture. Implementing the bushfire protection measures will not impact the biodiversity of the site.



## 5.5 Use and development control in a Bushfire Prone Area

**Clause 13.02 states ‘In a bushfire prone area designated in accordance with regulations made under the Building Act 1993, bushfire risk should be considered when assessing planning applications for the following uses and development:**

- Subdivisions of more than 10 lots.
- Accommodation.
- Child care centre.
- Education centre.
- Emergency services facility.
- Hospital.
- Indoor recreation facility.
- Major sports and recreation facility.
- Place of assembly.
- Any application for development that will result in people congregating in large numbers.’

There are no apparent obstacles to considering any application provided the relevant bushfire hazard assessments implement the appropriate bushfire protection measures to address the identified bushfire risk.

As the proposed business could be regarded as a ‘place of assembly’ (up to 12 guests), it would be necessary to provide the necessary bushfire mitigation strategies to ensure ‘prioritising the protection of human life over all other policy considerations’.

It would be deemed necessary that any future business involving a ‘place of assembly’ operating at the site:

- Provide a comprehensive Bushfire Emergency Plan detailing trigger points for business closure, evacuation procedures and shelter-in-place procedures.
- Adequate access and egress for emergency service vehicles.
- Provide sufficiently close driveway access to accommodation buildings for the safe and timely evacuation of occupants in the event of a bushfire emergency.
- Any proposed structures be built to the relevant BAL construction standards so they can provide the capacity to shelter safely from a bushfire, if evacuation was not possible.

It is regarded that the Bushfire Emergency Plan prepared for the proposed development will address the above considerations.



## 6 Bushfire Management Statement

This section outlines the objectives to meet the bushfire risks determined by the hazard assessment.

### 6.1 53.02-4.1 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.

#### 6.1.1 Approved Measure (AM) 2.1 - Landscape

##### Requirement

- **The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.**

The overall landscape risk to the proposed development is extreme. The nature of the proposed enterprise relies on the presence of up to 12 guests on site at any given time. Provision of suitable shelter-in-place options commensurate to the landscape risk will need to be combined with a comprehensive Bushfire Emergency Management Plan to outline park closures over the nominated Fire Behaviour Index (FBI), and emergency management procedures in the event of a bushfire. It would be expected that occupancy during the appropriate fire danger days combined with the proposed enhanced bushfire protection measures set out in this report will mitigate the bushfire risk to an acceptable level.

The broader landscape risk to the development can be mitigated to an acceptable level by applying the relevant identified approved and unspecified measures in this report by:

- Closing the park when the FDI (FBI) is over 50. (Extreme)
- Managing fuel in a low-threat condition in accordance with defensible space and vegetation management requirements defined in the Unspecified Alternative Measures.
- Increasing the BAL construction standards for the accommodation buildings to reflect the broader landscape risk.
- Provision of a comprehensive Bushfire Emergency Management Plan that outlines procedures for sheltering in a BAL-rated structure.



## 6.1.2 Approved Measure (AM) 2.2 - Siting

### Requirement

A building is sited to ensure the site best achieves the following:

- **The maximum separation distance between the building and the bushfire hazard**

The proposed site maximises the setback from the primary bushfire hazard from the northern sector while ensuring that adequate access for emergency service vehicles is provided and defensible space requirements are achievable. The proposed accommodation units are set back at least 70 metres from the northern forest vegetation and at least 20 metres from the grassland vegetation to the south. This setback gives reasonable room to provide defensible space within the property boundary that is commensurate with the identified risk. Based on Forest vegetation 12° downslope, Column B of table 2, Cl. 53.02-5 would require 64 metres. The nearest proposed accommodation building is able to meet this requirement.

To the south the bushfire hazard is grassland vegetation, 12° downslope from the accommodation units. Based on this, Column B of table 2, Cl. 53.02-5 would require 20 metres of defensible space. The nearest accommodation unit is set back from the grassland vegetation by 20 metres, providing sufficient separation from the grassland vegetation.

### **The buildings are in close proximity to a public road**

The proposed development has been located to access the panoramic views as an essential tourism strategy. There is some space for development on the slope to the west below the existing dwelling, however there are issues with removal of significant trees, wastewater treatment and available space that preclude this location. The most suitable location for development requires the site to be over 200m from Star of the Glen Rd. This increases some risk for safe evacuation from the site in a bushfire emergency. It is recommended the provision of further mitigation measures could offset this risk to ensure guests are able to either evacuate safely or be provided with the capacity to shelter-in-place should evacuation not be possible. Some of the mitigation strategies are as follows:

- The proposed accommodation units will be built to BAL-40 construction standards, whilst meeting the defensible space requirements for BAL-19 (Column B of table 2, Cl. 53.02-5). This increase in BAL construction standards reflects the position of the accommodation in the landscape and ensures the buildings are suitable to provide shelter in a bushfire emergency.
- Defensible space requirements will be increased to ensure minimum possible radiant heat exposure from the bushfire hazards.
- A comprehensive Bushfire Emergency plan will be provided to determine appropriate triggers for safe evacuation before days of elevated risk.
- Evacuation on extreme fire weather days by 9am will ensure timely and safe egress to places of relative safety.



## **Access can be provided to the building for emergency service vehicles**

The existing driveway is suitable for emergency service vehicles but only extends to the existing dwelling. A future driveway will have to meet the requirements of Clause 53.02-4.3 – Water Supply and Access Objectives (see below), including the provision of passing bays, for adequate emergency vehicle access.

## **Approved Measure (AM) 2.3 – Building Design**

### **Requirement**

*A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.*

The proposed accommodation units, studio and ablution building are prefabricated by a company that offer designs built to the required BAL construction levels. Compliance certificates are provided in the appendix that demonstrate the materials used are able to meet BAL-40 requirements. The ablutions building is not for accommodation (ancillary structure) and will not be built to BAL 40 specifications.

The buildings have the following bushfire resilient design features:

- Low roof pitch.
- Minimal re-entrant corners.
- Slab foundations.
- Constructed to higher wind loads.
- Flame resistant external cladding.
- BAL-40 Fire rated internal cladding.



Fig.20 Concept plans for the Studio/Office unit.

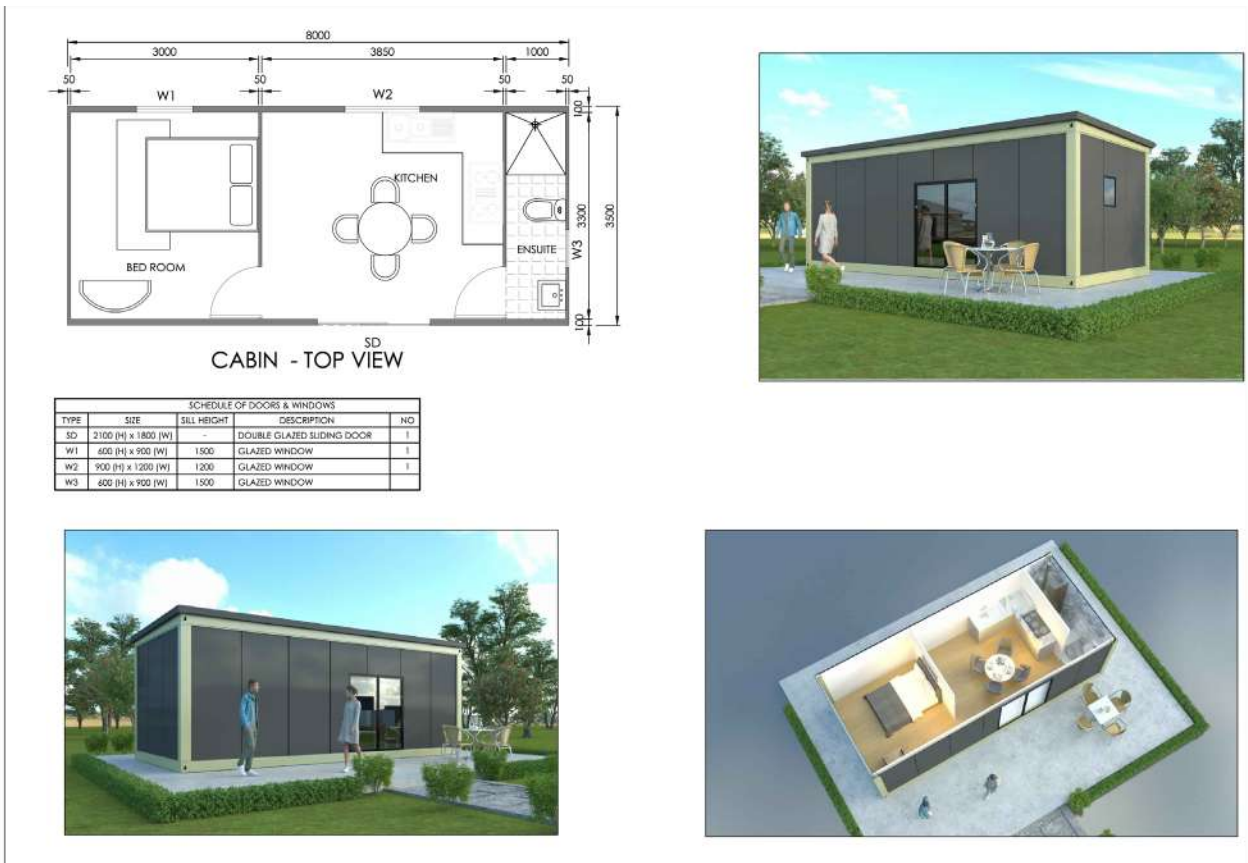


Fig.21 Concept plans for Accommodation units.

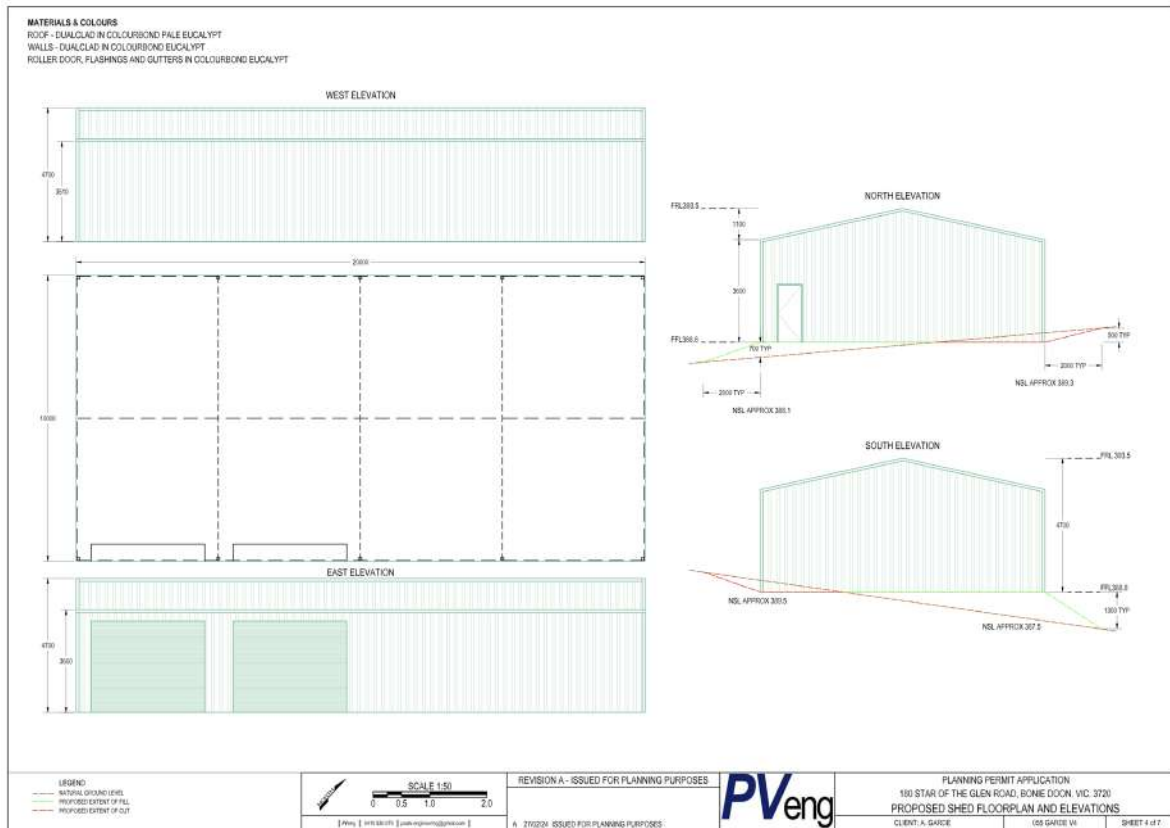


Fig.22 Concept plans for proposed shed.

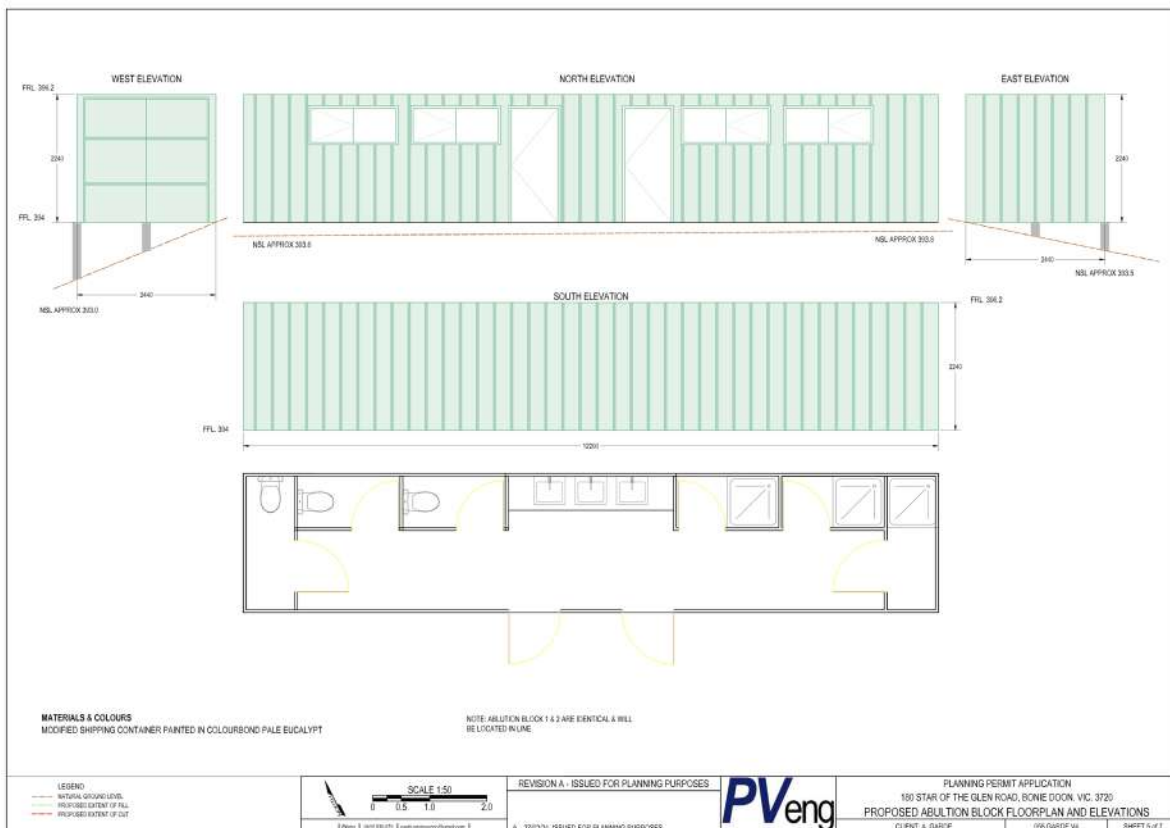


Fig.23 Concept plans for proposed ablutions building.

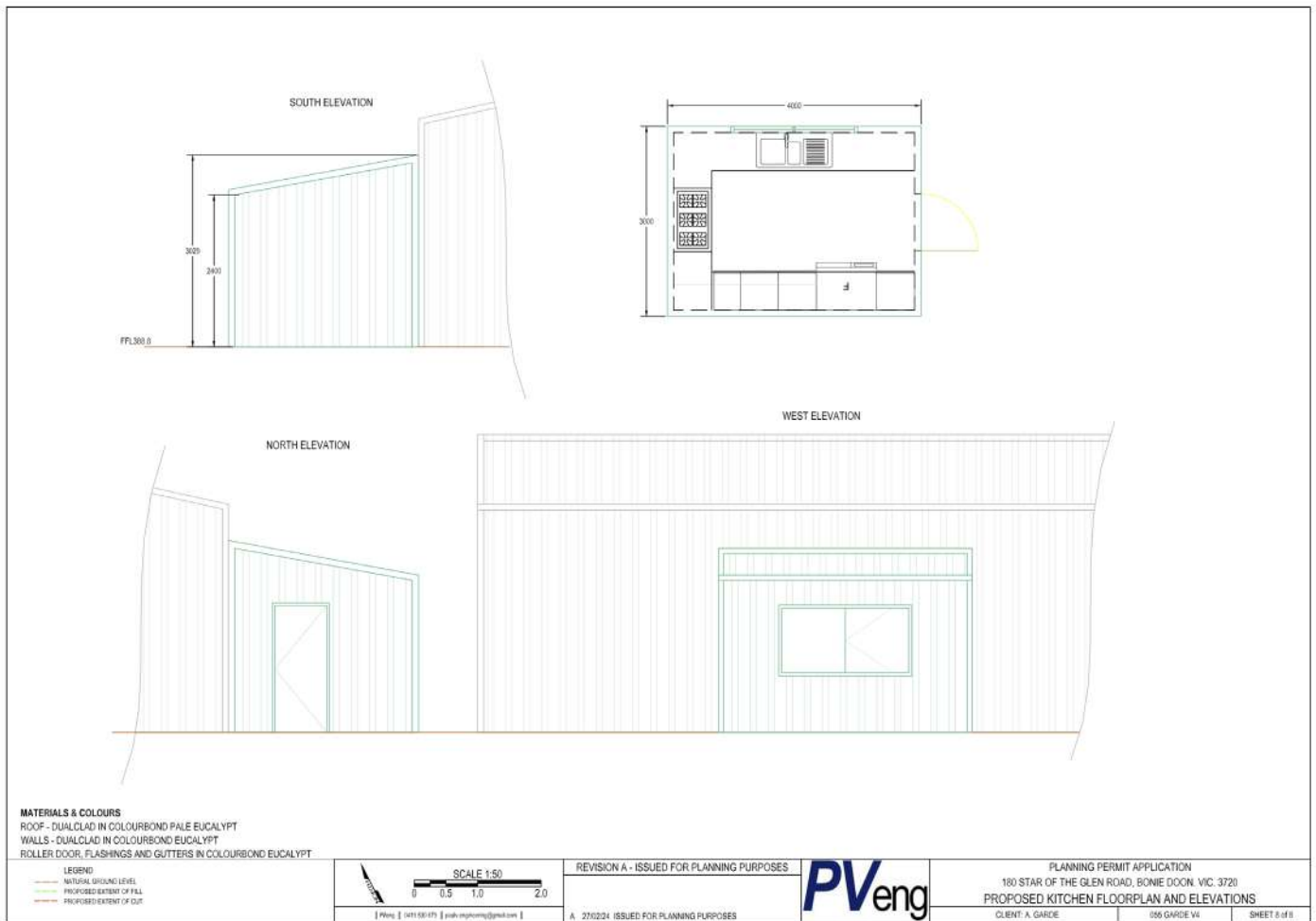


Fig.24 Concept plans for proposed Kitchen building attached to the proposed shed.



## 6.2 53.02-4.2 – Defendable Space and Construction Objective

This section outlines how defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on the building.

### Alternative Measure (Alt.M) 3.6 – Bushfire Construction and Defendable Space- Integrated decision making for development occupied by more vulnerable people

The residential building standard for bushfire protection aims to improve the ability of a building to withstand a bushfire attack. This provides greater protection for the occupants who may be sheltering inside while the fire front passes.

The BAL takes into consideration a number of factors, including the Fire Danger Index, the slope of the land, types of surrounding vegetation and its proximity to any building. (VBA, 2023)

The Alternative Measure has been used to calculate the defendable space as a whole for a number of buildings with differing uses, with regard to providing the minimum requirement based on the bushfire hazard to all buildings, with further enhanced bushfire protection measures provided to buildings used for accommodation, including shelter-in-place (if evacuation was not possible).

#### Requirement:

*A building used for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office, retail premises, service station or warehouse provides the defendable space in accordance with:*

- *Column A, B, C of Table 2 to Clause 53.02-5 and is managed in accordance with Table 6 to Clause 53.02-5 wholly within the title boundaries of the land;*

The nearest habitable structure is set back by 70 metres from the forest bushfire hazard to the north. The southern accommodation units are separated from the grassland vegetation to the south by at least 20 metres.

Applying defendable space in accordance with Column B of Table 2 to Clause 53.02-5 would require 64 metres of defendable space from the forest vegetation and 20 metres defendable space from grassland vegetation to the south.

BAL construction standards and defendable space distances (from Table 2 to Clause 53.02-5)				
Vegetation	Slope	Direction	BAL construction standard	Defendable space distance (m)
Forest	12°	North, West	BAL-19	64m
Grassland	12°	South	BAL-19	20m

Due to the identified landscape risk, providing a higher construction standard (**BAL-40**) will be applied to accommodation buildings to ensure a place of shelter can be provided to all guests during a bushfire emergency.



### All proposed buildings within the Study Area

Buildings within the development area will be provided with defensible space in accordance with Table 2 column B, Clause 53.02. The defensible space distance required is 64 metres, or to the property boundary, whichever is the lesser. The proposed outbuildings (shed and ablutions building) will be required to provide defensible space of 10 metres.

### The Accommodation Buildings and Office will be constructed to the bushfire attack level:

That corresponds to the defensible space provided in accordance with Table 2 to Clause 53.02-5. The accommodation buildings will be constructed to **BAL-40**.

**Table 6 of Clause 53.02-5 - Vegetation management requirement:**

- 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 5m<sup>2</sup> 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.














- |  |   |  |
|--|---|--|
|  Proposed Accommodation Units |  Proposed Office   |  Defendable Space (64m or to the property boundary) |
|  Proposed Shed (with Kitchen) |  Property Boundary |  Static Water Supply (2x 20,000 Litres)             |
|  Proposed Ablutions Building  |  Proposed Access   |  Proposed Rotunda                                   |



Fig.25 Defendable Space Plan for the proposed buildings.



## 7 Water Supply and Access Objectives

- A static water supply will be provided to assist in protecting the property.
- Vehicle access is designed and constructed to enhance safety in the event of a bushfire.

### 7.1 Approved Measure (AM) 4.1 – Water Supply and Access

#### 7.1.1 Water Supply Requirement

The minimum requirement under the Bushfire Management Overlay and other parts of the Victoria Planning Provisions is a 10,000-litre (per dwelling) water supply for firefighting purposes, stored in an above ground water tank constructed of concrete or metal. As the proposed development is for multiple holiday accommodation units, the 10,000 litre per dwelling requirement does not apply.

Water is the primary fire suppression tool and critical to support search and rescue. In areas without reticulated water it may be difficult to secure water, so it is important that an adequate water supply is readily available for firefighting purposes. While 10,000 litres may be sufficient to suppress embers around an individual house from a bushfire, it may not allow firefighters to conduct search and rescue operations or contain a structure fire.

A minimum capacity of 40,000 litres should be provided for firefighting purposes. This would give firefighters approximately 60 minutes of water supply to begin search and rescue and firefighting operations (based on two branches/hoses operating) and provide enough time to respond with extra appliances to supply additional water. Firefighting water can be stored within the same tank as domestic water. However, the outlet for domestic use should be located above the firefighting outlet to ensure the effective capacity of dedicated water for firefighting purposes is provided.

The location of the water tank should be visible from the direction of vehicle approach to the property, or the following signage must be provided pointing to its location.

A **40,000** litre tank must be provided and must:

- Be located within 60 metres of the outer edge of the approved building.
- 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.
- 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).

As the buildings are spread out over the site, a single tank would not reach within 60 metres of the outer edge of every building. It would be reasonable to provide two 20,000 litre tanks in strategic locations so all buildings can be covered.



Department of Environment, Land, Water and Planning

## Water tank requirements

Table 4 of Clause 52.47 sets out the capacity, fittings and access requirements for water supply in the BMO.

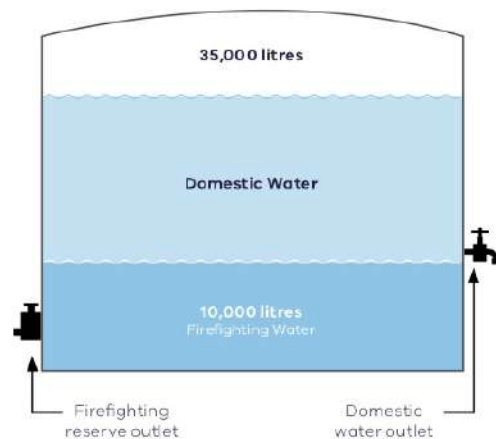
The water supply must:

- 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 material, and
- include a separate outlet for occupant use

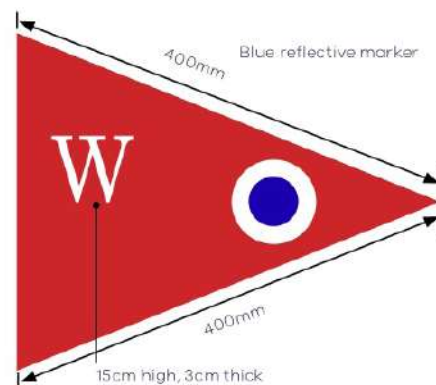
Where a 10,000 litre water supply is required the following fire authority fittings apply:

- the water supply must be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.
- the water supply must 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.
- the water supply must 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).

### Shared water tank



### Water supply identification





### 7.1.2 Access Requirement

A building used for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office, retail premises, service station or warehouse is provided with vehicle access designed and constructed as specified in Table 5 to Clause 53.02-5.

The proposed driveway access is for a compacted gravel surfaced road, approximately 450m in length. The design allows for an average of 14% grade and a minimum 10 metre internal radius for all bends. Refer to the Appendix for full cross sectional layout of the proposed road access.

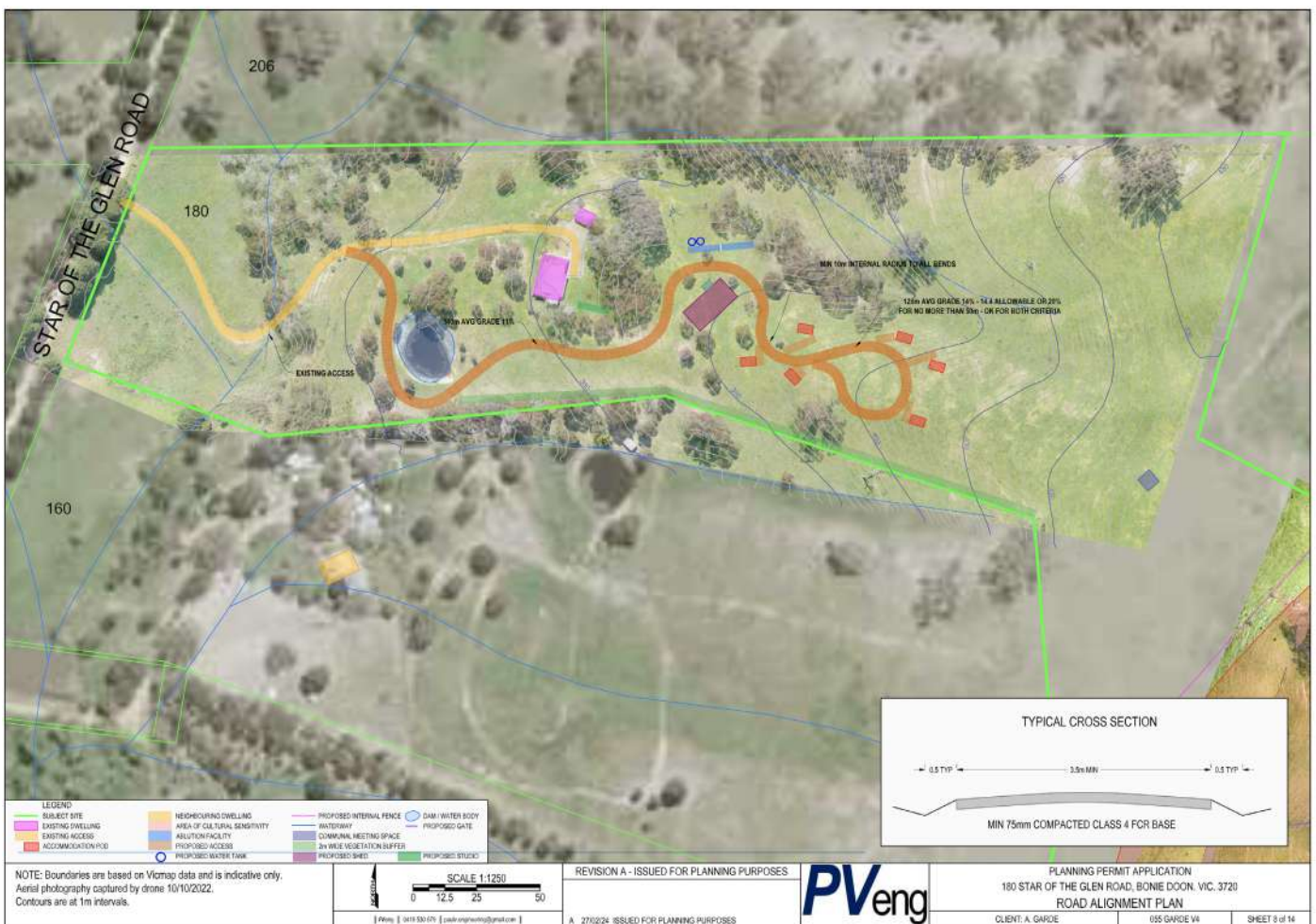


Fig.25 Proposed driveway access for the proposed development.



## Access

Where the length of access is greater than 30 metres the following design and construction requirements apply:

- 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.

### Width



### Dips and gradients



### Encroachments

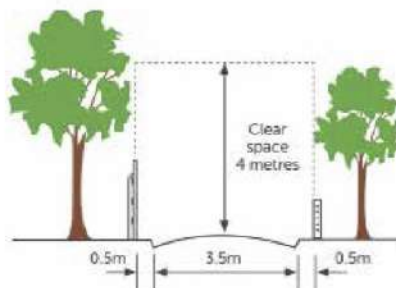


Fig.29 Access requirements (Technical Guide | Planning Permit Applications – Bushfire Management Overlay DELWP 2017)

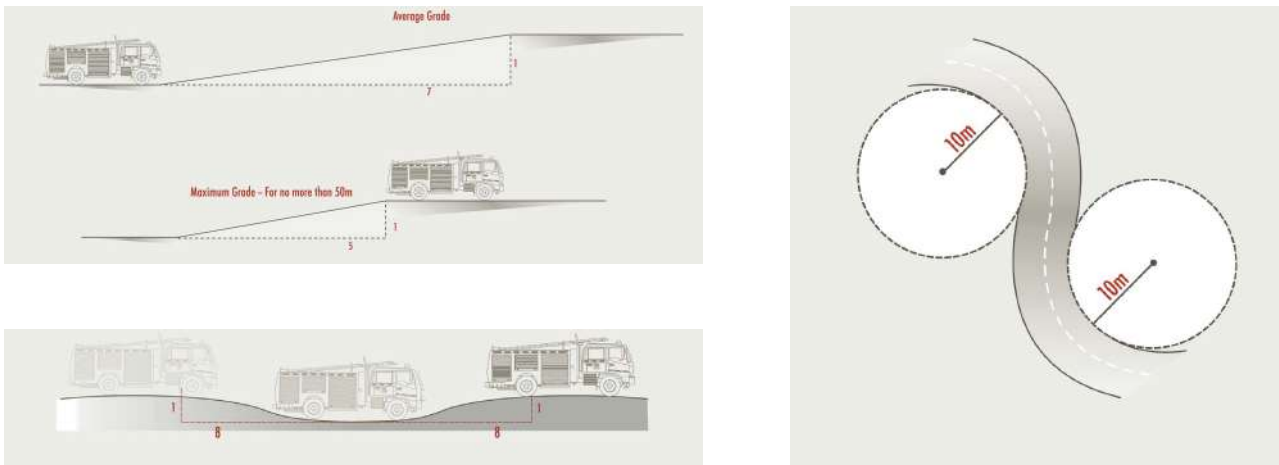


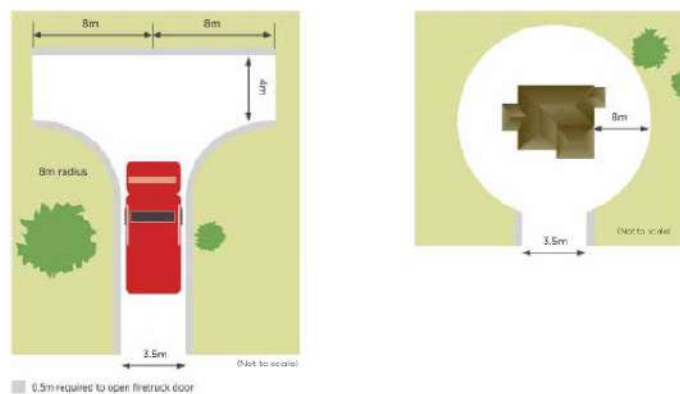
Fig.22 Driveway gradient and radius (CFA 2012)

### Access between 100 metres to 200 metres in length

In addition to the 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.



### Access greater than 200 metres in length

In addition to the 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.

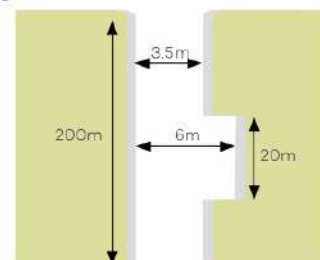


Fig.30 Requirements for access over 200m (Technical Guide | Planning Permit Applications – Bushfire Management Overlay DELWP 2017)



## 8 Conclusion

The proposed holiday accommodation development and ancillary shedding/amenities has been assessed against the relevant bushfire policies contained in the planning scheme.

This report has concluded:

- The proposed development can accommodate the required setbacks to achieve BAL-40 construction standards. This is deemed to be sufficient to mitigate modelled radiant heat flux from the bushfire hazard.
- By providing defensible space from Column B, Table to, Cl. 53.02, the proposed development can effectively reduce the landscape risk and siting by maintaining a defensible space zone of 64 metres, or to the property boundary, whichever is the lesser.
- Can appropriately prioritise the protection of human life and meet the objectives of Clause 13.02 by ensuring the proposed development will provide accommodation that enables reasonable protection from bushfire.
- Can appropriately prioritise the protection of human life and meet the objectives of Clause 13.02 by providing a Bushfire Emergency Plan to ensure guests are evacuated and no bookings taken during the relevant fire weather days identified in the BEP.
- Risk can be deemed to be appropriately mitigated, such that the development can proceed if the objectives and strategies set out in this report are successfully implemented.



## 9 Appendices

### 9.1 Site Photos



*Fig.36 Looking towards the southwest over the site. The site extends along the ridge in the foreground.*



*Fig.37 Looking southwest towards the site.*



*Fig.38 Looking towards the south over the site.*



*Fig.39 Looking southeast over the site.*



*Fig.40 Looking southeast over the site.*



*Fig.41 Looking east over the site.*



*Fig.42 Looking northeast over the site.*



*Fig.43 Looking north over the site.*



*Fig.44 Looking north over the site.*



*Fig.45 Looking northwest over the site.*



*Fig.46 Looking southwest on the site.*



*Fig.47 Looking west from the site.*



*Fig.48 Looking northwest from the eastern end of the site.*



*Fig.49 View to the east from the top ridge.*



*Fig.50 Looking along the east ridge towards the south.*



*Fig.51 Looking southwest from the top ridge (just east of the site).*



*Fig.52 Looking southwest from the site.*



## 9.2 Compliance Certificates



# CERTIFICATE

## Material Fire Test Certificate

**IGNL-7076-16C I01 R00**

DATE OF TEST 20.04.2023  
ISSUE DATE 06.06.2023  
EXPIRY DATE 05.06.2028

AS 1530.8.1 Methods for fire tests on building materials, components and structures  
Part 8.1: Tests on elements of construction for buildings exposed to simulated bushfire attack – Radiant heat and small flaming sources

**SPONSOR**  
Building Products Aust Pty Ltd  
374 Settlement Road  
Thomastown VIC 3074

**TEST BODY**  
Ignis Labs Pty Ltd  
ABN 36 620 256 617  
3 Cooper Place  
Queanbeyan NSW 2620  
Australia  
www.ignislabs.com.au  
(02) 6111 2909  
*Test body is the test location*



**Specimen Name**  
BPAU Anti-Flam Panels

**Specimen Description**  
The test specimen consisted of a steel-lined expanded polystyrene panel with a window located in the centre. The test sponsor described the BPAU Anti-Flam Panel as an insulated panel with a phenolic composite core and having a stated nominal density of 38 kg/m<sup>3</sup>. The panels have a total measured thickness of approximately 50 mm, with the white-painted steel strips having a measured thickness of approximately 0.7 mm.

Ignis Labs was not responsible for the sampling and construction stage. The specimen was sampled and constructed by the test sponsor. The test results apply to the specimens as received.

**Pre-test Conditioning**  
Prior to construction, the components of the wall system were subjected to normal temperatures and humidity. The sample materials were not subjected to any conditioning except for being stored within a dry storage shed prior to installation.

**Test Method**  
The test was performed in accordance with the requirements of AS 1530.8.1-2007 with the purpose of determining the performance of external construction elements when exposed to radiant heat, burning embers and burning debris. Class C test cribs were prepared and used in this test in accordance with Clause 14.2 of AS 1530.8.1-2007. The furnace temperature and radiant panel were controlled so that the average heat flux, measured at the centre of the panel was maintained within the prescribed radiant heat flux limits in accordance with Table 14.2 of AS 1530.8.1-2007.  
The radiant heat source was the furnace for pilot fire-resistance tests of AS 1530.4 which has a nominal size of 1 m x 1 m with a sheet steel closure. The radiant heat flux and the temperature on the exposed face was not measured. The specimen did not have any cavities and as such cavity temperatures could not be measured.

**Observations**  
The ambient temperature of the laboratory at the commencement of the test was 23 °C. The test duration was 60 minutes. At 30 minutes, aluminium angles begin to warp at the top of the specimen and at the top and sides of the rebate. At 3:30 minutes, the internal angle above the crib wrapped. At 21 minutes, flames from the wall panel next to the crib on the exposed face were observed. At 40 minutes, specimen flaming subsided.

**Test Results**

Performance Criteria	Time to failure (min)	Position of failure
Formation of through-gaps greater than 3 mm	No failure	-
Sustained flaming for 10 s on the non-fire side	No failure	-
Flaming on the fire-exposed side at the end of the 60 min test period	No failure	-
Radiant heat flux 365 mm from the non-fire side exceeding 15 kW/m <sup>2</sup>	Not applicable	NA
Mean and maximum temperature rises greater than 140 K and 180 K	No Failure	-
Radiant heat flux 250 mm from the specimen, greater than 3 kW/m <sup>2</sup> between 20 min and 60 min	Not applicable	NA
Mean and maximum temperature of internal faces exceeding 250 °C and 300 °C respectively between 20 min and 60 min after commencement of test	Not Applicable	NA
Extent of flaming exceeding 500 mm limits on decking boards	No failure	-
Crib class	C	Peak heat flux 40 kW/m <sup>2</sup>

**Note:**  
This is a short form of AS 1530.8.1 product BAL40 testing report referenced to IGNL-7076-16R I01R01 BAL40 Test Report 02062023.

  
**Test Supervisor**  
 Darren Laker

  
**Technical Lead**  
 Jessica Ying

Version: IGNL-QF-060-Issue 01 Revision 00

**Disclaimer** This report details methods of construction, the test conditions and the results obtained when the specific element of construction described herein was tested in accordance with test method of AS 1530.8.1. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than those allowed under the field of direct application in the relevant test method, is not covered by this report. The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions. The results only relate to the behaviour of the specimen of the element of the construction under the particular conditions of the test, they are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they necessarily reflect the actual behaviour in fires. Because of the nature of fire hazard property testing and the consequent difficulty in quantifying the uncertainty of measurement of fire hazard properties, it is not possible to provide a stated degree of accuracy of the result.

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Page 1 of 1



**Building Act 1993**

Section 238(1)(a)

**Building Regulations 2018 - Regulation 126**

**CERTIFICATE OF COMPLIANCE FOR PROPOSED BUILDING WORK**

**This certificate is issued to:** Relevant Building Surveyor

**Address:** -

**This certificate is issued in relation to the proposed building work involving:** Portable Steel Frame Cabins

**Nature of proposed building work** Portable Steel Frame Cabins

**Version of BCA applicable to certificate:** NCC 2019, Volume 2

**Building classification:** Class 1a(Dwelling)

**Prescribed class of building work for which this certificate is issued:**  
Design of building work relating to the structural matter.

**Documents setting out the design that is certified by this certificate:**

- 1) Drawings S1 – S10, Rev C; Job No 23-691 - Dated: 22 September 2023 Prepared by ORANIK CONSULTING ENGINEERS (Refer attached)

**Inclusions:**

Items from the referenced plans listed below are covered under the certification:

- Steel framing (including columns, roof beams & floor beams)
- Connections (Steel stumps to Footing, Floor beam to steel stumps, Steel columns to corner bracket)
- Bracing elements (Designed separately for different wind classifications)
- Footings (Depth and specifications)

**Referenced Documents (Viewed Only):**

- 1) BPAU Cabins - plans and elevations.
- 2) Technical datasheet for EPS Insulated sandwich panels used for wall and roof framing.

**The design certified by this certificate complies with the following provisions of Building ACT 1993, Building Regulations 2018 and National Construction Code Volume 2:**

AS/NZS 1170.0-2002, AS/NZS 1170.1-2002, AS/NZS 1170.2:2011 (Relevant Loading Codes)

AS 4055 - 2012 Wind loads for housing

AS 4100 - 1998 Steel Structures

AS 3600 – 2018 Concrete Structures



**ORANIK**  
CONSULTING ENGINEERS

I prepared the design, or part of the design, set out in the documents listed above. I certify that the design set out in the documents listed above complies with the relevant codes and provisions set out above. I believe that I hold the required skills, experience, and knowledge to issue this certificate and can demonstrate this if requested to do so.

Name: **Yashar Nikpayam (MIEAust, CPEng, NER)**  
Endorsed Building Engineer area of Engineering: **Civil Engineer**  
Endorsed Building Engineer Registration Number: **PE 0005071**  
Date of issue of certificate: **02/10/2023**

**Signature:**

**Exclusions and Conditions:**

1. This document is not a site-specific compliance certificate and only confirms the suitability of BPAU cabins for any site with N1-N4 wind classification.
2. The footings specifications provided in the attached drawings are generic. The soil specifications and founding material need to be confirmed by the building inspector in accordance with the information provided in the attached drawings.
3. The provided designs for the bracing elements are for separate wind classifications. They must not be interchanged and adherence to the specified member sizes for respective wind classifications must be ensured.
4. Oranik Pty. Ltd. has not carried out a review with respect to combustibility, fire resistance or fire safety provisions of the external insulation and finishing system, wall panelling, cladding or facade material or any associated fixing system that is to be or that may be applied to this project. Cladding systems must comply with the building code of Australia, the NCC, and relevant Australian standards and any other applicable regulations and test requirements. Oranik Consulting advises that project-specific advice with respect to fitness for purpose and statutory compliance of any proposed cladding materials shall be sought from a suitably qualified and experienced fire services engineer.
5. Walls and roof EPS insulated sandwich panels design do not form part of this certification.
6. This design doesn't provide any confirmation of the adequacy of structure for lifting, transport, and installation.

**ATT:**

*Sheet S1 – S10 prepared by ORANIK Consulting Engineers.*



<b>Sponsor name</b>	Profine GmbH	<b>Document no</b>	FAS220170 SOA1.1
<b>Sponsor address</b>	1 / 11 Business Park Drive, Ravenhall, VIC 3023, Australia		
<b>Issue date</b>	15 December 2022	<b>Expiry date</b>	30 September 2027

**Description of assessed systems**

The assessed systems are Profine PremiDoor 76 sliding door and C70 hinged door with a glazed window system.

The PremiDoor 76 sliding door system consists of a sliding door and a fixed panel. The C70 hinged door and window system consists of a glazed door, two glazed sections and a glazed sash.

The scope of the assessment includes the bushfire performance of the described systems when tested in accordance with AS 1530.8.1:2018.

**Assessed system performance**

The elements of construction described above were assessed by this laboratory on behalf of the report sponsor in accordance with the stated test standard in Table 1 and achieved the results outlined in Table 2. A complete description of the assessed constructions can be found within the referenced assessment report or regulatory information report.

**Table 1 Test standard and assessment report details**

Referenced report	Test standard	Referenced report issue date	Referenced report expiry date
FAS220170 R1.1	AS 1530.8.1:2018	7 September 2022	30 September 2027

**Table 2 Formal assessment summary**

Item	Reference test	Description	Variations	BAL rating
PremiDoor 76 single sliding door system	EWFA 2311500.1	The test assembly consisted of a nominal 2400 mm wide x 2400 mm high PVC framed glazed sliding door system incorporating a 26 mm thick Viridian glazed system in both the sliding door and fixed panel.	<ul style="list-style-type: none"> <li>The applicability of the tested system in accordance with AS 1530.8.1:2018.</li> <li>Increasing the frame dimensions from 70 mm to 76 mm.</li> <li>Replacing the coating on surface 3 with a generic low emissivity (Low-E) coating.</li> </ul>	AA40
C70 hinged door system with a glazed window system	EWFA 2311501.1	The test assembly consisted of a glazed hinged door, two glazed sections and a glazed sash set into a PVC frame. The system was nominally 2400 mm wide x 2400 mm high, incorporating a 26 mm thick Viridian glazed system in all glazed elements.	<ul style="list-style-type: none"> <li>The applicability of the tested system in accordance with AS 1530.8.1:2018.</li> <li>Replacing the coating on surface 3 with a generic low emissivity (Low-E) coating.</li> </ul>	



**Conditions / validity**

- This document is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.
- The RIR (regulatory information report) or the main assessment report must be provided for regulatory requirements and evidence of compliance.
- Reference should be made to the relevant assessment report or regulatory information report to determine the applicability of the test result to a proposed installation. Full details of the constructions and justification for the conclusions given, along with the validity statements, are given in the assessment reports.
- The results of the assessment report may be used to assess bushfire performance, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.
- All work and services carried out by Warringtonfire Australia are subject to and conducted in accordance with our standard terms and conditions. These are available on request or at <https://www.element.com/terms/terms-and-conditions>.

<b>Testing authority</b>	Warringtonfire Australia Pty Ltd	
<b>Address</b>	409-411 Hammond Road, Dandenong South, VIC 3175	
<b>Phone</b>	T: +61 (0)3 9767 1000	
<b>ABN</b>	81 050 241 524	
<b>Email</b>	info.fire.melbourne@warringtonfire.com	
<b>Authorisation</b>	Prepared by:	Reviewed by:
		
	Kimal Wasalathilake	Mahmoud Akl



Venus & Mars Corporation Pty Ltd, T/A: 1800 CABINS

Address: 374 Settlement Rd, Thomastown, Vic 3074

Ph: 1800 CABINS, 1800 222 467

Mobile: 0414 368 350 Kaivan Hosseini

Email: [info@1800cabins.au](mailto:info@1800cabins.au)

ABN: 58 110 063 155

## LETTER OF CERTIFICATION

Date: 06/05/2025

Re: Site Address: 180 Star Of The Glen Road Bonnie Doon 3720  
Group Accommodation & Outbuildings in BMO

This letter is to certify that all the Cabins manufacture by 1800 CABINS are BAL40 compliance.

Material used are as below:

- All The structure is made from Metal of 3.5mm (Rolled in Box format for extra strength)
  - Hot/Deep Galvanised and Powder Coated (for weather and corrosion resistance)
- All the External/Internal, Walls, Ceiling and Roof are made from Insulated Anti-Flam Fire Resistance BAL40 Rated, Group 1 Rated Material Cladding. (Certificates attached)
- All Doors and Windows and frames are Australian manufactured and all compliant to BAL40 in accordance with AS3958-2018. (Certificate attached)

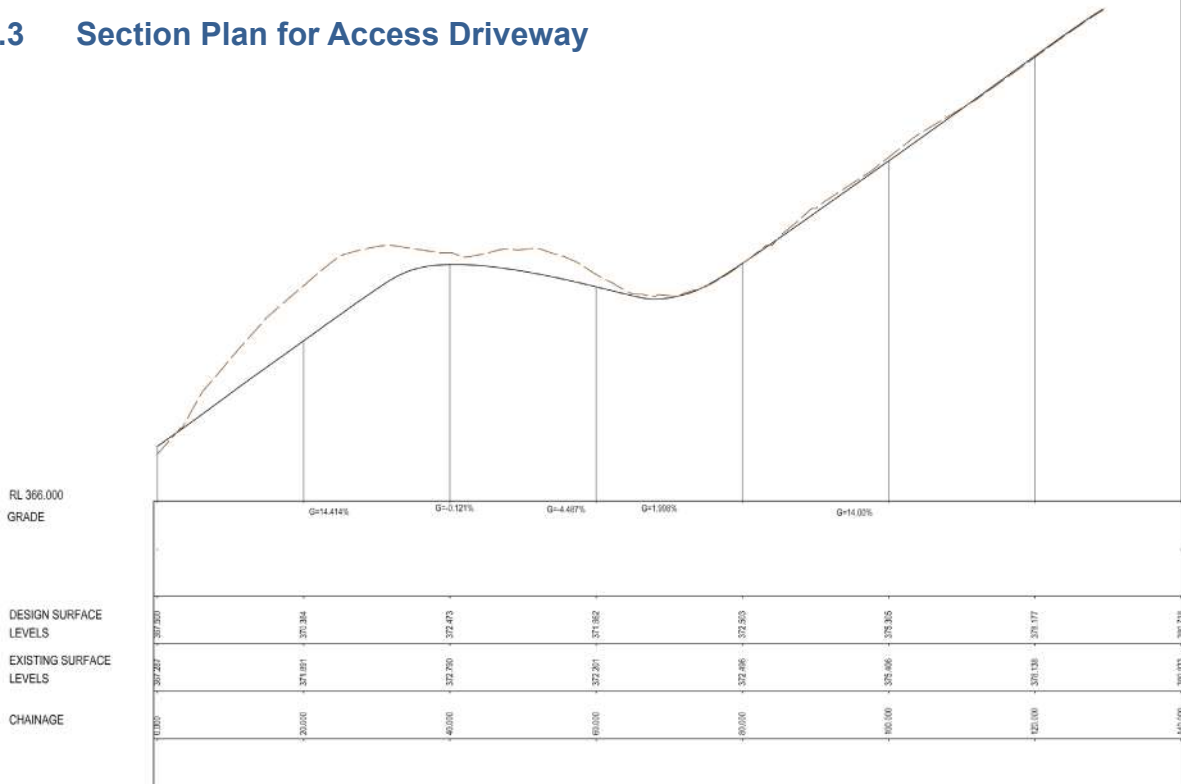
Authorised Signatory

Kaivan Hosseini

Director

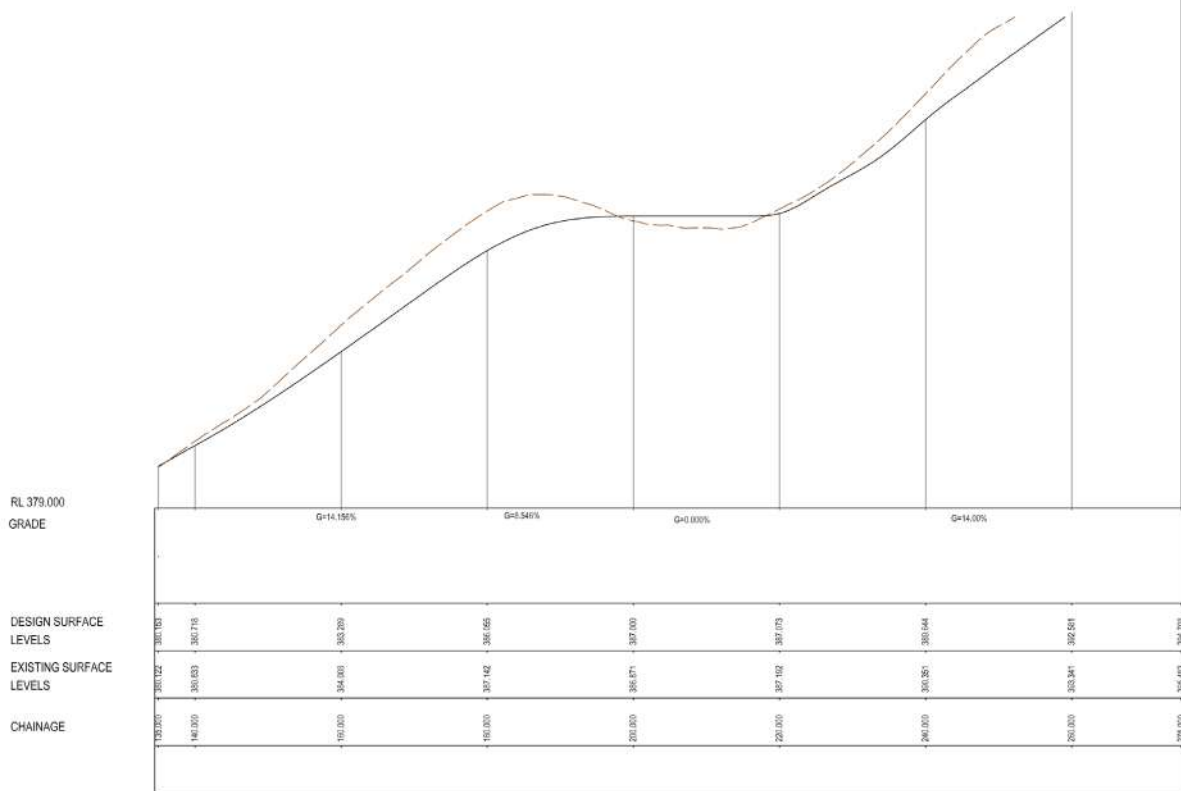


### 9.3 Section Plan for Access Driveway



LONGITUDINAL SECTION - ACCESS DRIVEWAY 1/3  
H 1:500 V 1:100

<p>LEGEND</p> <p>--- NATURAL GROUND LEVEL</p> <p>— PROPOSED CONCRETE</p>	<p>SCALE 1:50</p> <p>0 0.5 1.0 2.0</p>	REVISION A - ISSUED FOR PLANNING PURPOSES		PLANNING PERMIT APPLICATION 180 STAR OF THE GLEN ROAD, BONIE DOON, VIC. 3720 LONGITUDINAL SECTION 1 OF 3		
		<p>CLIENT: A. GARDE</p>		<p>ISS GARDE V4</p>	<p>SHEET 9 of 14</p>	



LONGITUDINAL SECTION - ACCESS DRIVEWAY 2/3  
H 1:500 V 1:100

<p>LEGEND</p> <p>--- NATURAL GROUND LEVEL</p> <p>— PROPOSED CONCRETE</p>	<p>SCALE 1:50</p> <p>0 0.5 1.0 2.0</p>	REVISION A - ISSUED FOR PLANNING PURPOSES		PLANNING PERMIT APPLICATION 180 STAR OF THE GLEN ROAD, BONIE DOON, VIC. 3720 LONGITUDINAL SECTION 2 OF 3		
		<p>CLIENT: A. GARDE</p>		<p>ISS GARDE V4</p>	<p>SHEET 10 of 14</p>	





# Bushfire Development Report for 180 Star Of The Glen Rd, Bonnie Doon

