



Bushfire Development Report

for the development of
Social and Affordable Housing
at the Cerini Centre
Park Road, Warburton VIC 3799

Report prepared for the
Warburton Advancement League Inc

March 2023

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Terramatrix project code: WarburtonAdvacementLeagueInc-2022-01 CI1302_BMO-Warburton
Report prepared by Terramatrix for the Warburton Advancement League Inc

Cover: Looking up the access road from Park Road.

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Version Control

Version	Date issued	Comments	Issued by
0.1	2023-03-08	Draft to client	Jon Boura
1.0	2023-03-14	Bushfire Development Report (BDR) to client	Jon Boura

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1 Summary

- The development proposal is for 12 social and affordable housing units at the Cerini Centre, Park Road, Warburton VIC 3799.
- The site is located to the north-west of the Warburton Primary School and comprises multiple contiguous titles held variously by Yarra Ranges Shire Council, the Archdiocese of Melbourne and the Department of Education and Training.
- The housing units will be unregistrable moveable dwellings and will comprise a Manufactured Home Estate created under the Caravan Park Regulations.
- A special purpose trust will be established to administer and manage the site.
- The site is in a designated Bushfire Prone Area (BPA) and covered by the Bushfire Management Overlay (BMO).
- The proposal has been assessed against the objective and applicable strategies of Clause 13.02-1S *Bushfire Planning* and the requirements of the BMO at Clauses 44.06 and 53.02
- Warburton is in a very high to extreme bushfire risk landscape, but the site itself is on the southern edge of the township area with good egress to the town centre and Neighbourhood Safer Place.
- The proposed development will comply with the fire protection measures of both the BMO and the *Caravan Park Fire Safety Guidelines* (CFA & MFB, 2012). This includes:
 - Construction of the accommodation units to BAL-29 with commensurate defensible space.
 - Development and implementation of a Vegetation Management Plan covering the entire site to ensure the bushfire hazard posed by the vegetation is managed.
 - Provision of a 45,000L communal static water storage with compliant fire service access and fittings.
 - Provision of hydrants and hose reels connected to the reticulated water supply that will service each accommodation unit.
 - Provision of 2,500L static water supply for each accommodation unit, without a requirement for fire service access and fittings.
 - Emergency vehicle access that complies with the requirements of the BMO and *Caravan Park Fire Safety Guidelines* and includes the provision of a secondary exit onto Park Road.
 - Development and implementation of a Bushfire Emergency Management Plan, including proactive triggers for closure of the site in response to forecast Fire Danger Rating (e.g. Extreme or Catastrophic).
 - Incorporation of the bushfire safety arrangements in the lease agreements of tenants.
 - Establishment of a site management organisation to oversee day-to-day management of the site, including the fire and emergency management arrangements.

2 Introduction

This Bushfire Development Report has been prepared for the Warburton Advancement League Inc., to assess how the proposed development of 12 social and affordable housing units at the Cerini Centre, Park Road, Warburton VIC 3799 can respond to the bushfire risk and the applicable Victorian planning and building controls that relate to bushfire.

The site is located to the north-west of the Warburton Primary School in the upper Yarra Valley (see Figure 1). The property comprises multiple titles as follows:

- 5A Park Road – currently held by Yarra Ranges Shire Council.
- 5B Park Road – currently held by Archdiocese of Melbourne.
- 16 Horners Road (part) – currently held by Department of Education and Training (see Map 3).

The social and affordable housing units will be unregistrable moveable dwellings, and the complex will be a Manufactured Home Estate created under the Caravan Park Regulations. It is intended that a special purpose trust be established to administer and manage the site.

The site is in a designated Bushfire Prone Area (BPA) and is affected by the Bushfire Management Overlay (BMO). BPAs are those areas subject to or likely to be subject to bushfires, as determined by the Minister for Planning. Higher hazard land within a BPA that may be subject to extreme bushfire behaviour is covered by the BMO.

The overall development of the site must respond to the objective and applicable strategies of the Planning Policy Framework (PPF) at Clause 13.02-1S *Bushfire Planning* in the Victoria Planning Provisions (Yarra Ranges Planning Scheme, 2018a). Section 8 of this report provides a detailed response to the applicable strategies.

The proposed development of new accommodation buildings and associated works also trigger the need for a planning permit under the BMO. In accordance with the application requirements of Clause 44.06 *Bushfire Management Overlay* and associated Clause 53.02 *Bushfire Planning* (Yarra Ranges Planning Scheme, 2018b, c), Section 7 of this report includes:

- A Bushfire hazard site assessment, including a plan that describes the bushfire hazard within 150m of the site in accordance with the site assessment methodology of AS 3959-2018 Construction of buildings in bushfire-prone areas and Clause 44.06.
- A Bushfire hazard landscape assessment, including a plan that describes the bushfire hazard of the general locality more than 150m from the site.
- A BMO compliance section, detailing how the development responds to the bushfire risk and the requirements and objectives of Clauses 44.06 and 53.02.

The report also includes a Bushfire Management Plan (BMP).

The report has been prepared in accordance with guidance for the assessment of, and response to, bushfire risk provided in:

- *Bushfire State Planning Policy Amendment VC140*, Planning Advisory Note 68 (DELWP, 2018).
- *Local Planning for Bushfire Protection*, Planning Practice Note 64 (DELWP, 2015).
- *Planning Permit Applications – Bushfire Management Overlay*, Technical Guide (DELWP, 2017a).
- AS 3959-2018 *Construction of buildings in bushfire prone areas* (Standards Australia, 2020).
- Fire authority guidelines for bushfire hazard landscape assessment (CFA, 2022).

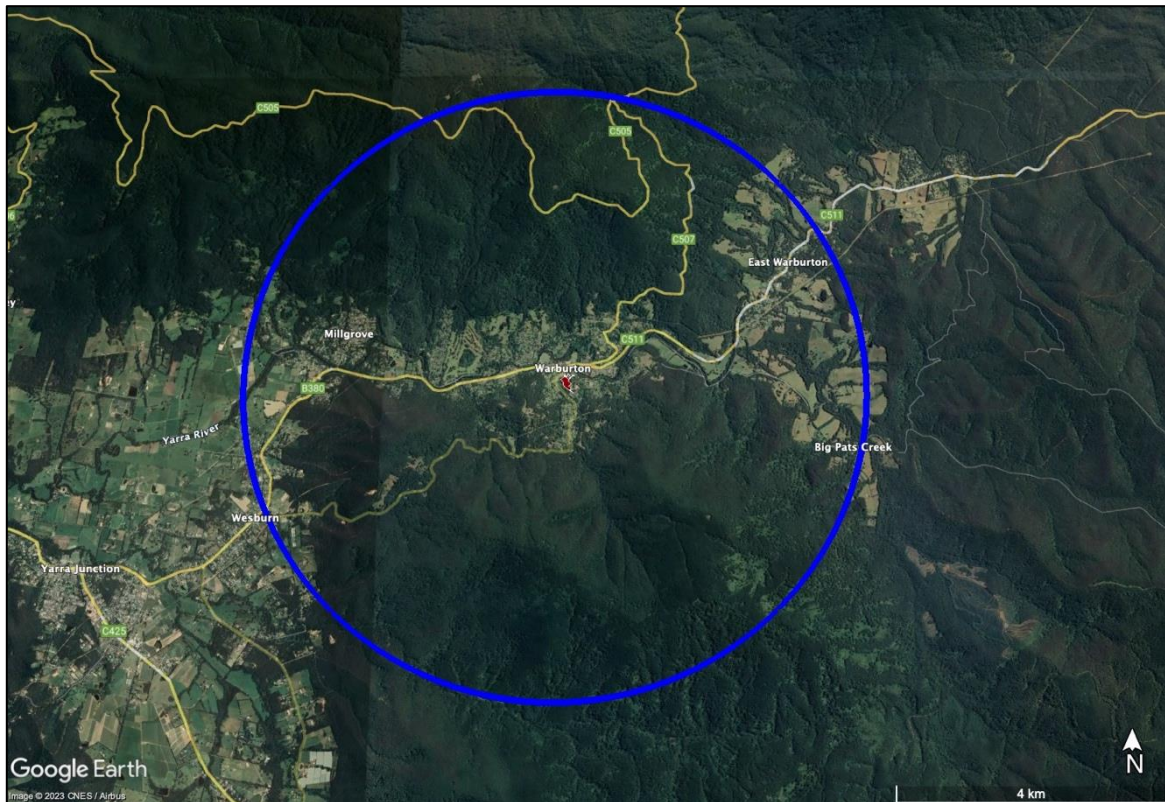


Figure 1 – Location of Park Road, Warburton (site in red fill, 5km buffer in blue outline) (Google Earth imagery date: 2023-02-11).

3 Bushfire planning and building controls

This section summarises the applicable planning and building controls that relate to bushfire. Sections 7, 8, 9 and 10 describe how the proposed development can respond to and comply with the controls.

3.1 Clause 71.02-3 Integrated Decision Making

Clause 71.02-3 states that planning and responsible authorities should endeavour to integrate policies and balance conflicting objectives in favour of net community benefit and sustainable development. However, in bushfire affected areas, the protection of human life must be prioritised over all other policy considerations (Yarra Ranges Planning Scheme, 2022).

3.2 Clause 13.02-1S Bushfire Planning

Clause 13.02-1S has the objective '*To strengthen the resilience of settlements and communities to bushfire through risk based planning that prioritises the protection of human life*' (Yarra Ranges Planning Scheme, 2018a). The policy must be applied to all planning and decision making under the Planning and Environment Act 1987, relating to land which is:

- Within a designated BPA.
- Subject to a BMO.
- Proposed to be used or developed in a way that may create a bushfire hazard.

Clause 13.02-1S requires priority to be given to the protection of human life by:

- *'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'* (Yarra Ranges Planning Scheme, 2018a).

Key strategies are stipulated in Clause 13.02-1S, which require that strategic planning documents, planning scheme amendments and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures. This also applies to planning permit applications for:

- 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.

Development should not be approved 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*' (Yarra Ranges Planning Scheme, 2018a).

This study assesses the hazard and identifies the bushfire protection measures that will be required for the development of social and affordable housing at the Cerini Centre. Section 8 provides a response to the objectives and applicable strategies.

3.3 Bushfire Management Overlay BMO

The site is covered by the BMO. The purposes of the BMO are:

- '*To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- '*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*' (Yarra Ranges Planning Scheme, 2018b).

The BMO largely applies to patches of treed vegetation greater than 4ha in size, where head fire intensity has been modelled to be 30,000kW/m or more. It also extends over land 150m around those areas, based on research into house loss from bushfires which has found that 92% of house loss occurs within 150m of the bushfire hazard (DELWP, 2019).

The BMO requires a planning permit for all subdivision of land, and buildings and works associated with the following uses: accommodation (including a dependent person's unit), education centre, hospital, industry, leisure and recreation, office, place of assembly, retail premises, service station, timber production or warehouse. Some exemptions apply.

An application must be accompanied by:

- A bushfire hazard site assessment, including a plan that describes the bushfire hazard within 150m of the site in accordance with the site assessment methodology of AS 3959-2009 Construction of buildings in bushfire-prone areas and Clause 44.06.
- A bushfire hazard landscape assessment, including a plan that describes the bushfire hazard of the general locality more than 150m from the site.
- A bushfire management statement, detailing how the development responds to the bushfire risk and the requirements and objectives of Clauses 44.06 and 53.02.

Clause 53.02 *Bushfire Planning* applies to BMO applications and contains:

- **Objectives:** An objective describes the outcome that must be achieved in a completed development.
- **Approved measures:** An approved measure meets the objective.
- **Alternative measures:** An alternative measure may be considered where the responsible authority is satisfied that the objective can be met. The responsible authority may consider other unspecified alternative measures.
- **Decision guidelines:** The decision guidelines set out the matters that the responsible authority must consider before deciding on an application, including whether any proposed alternative measure is appropriate (Yarra Ranges Planning Scheme, 2018c).

Sections 4 and 6 of this report includes a bushfire hazard site and landscape assessment in accordance with BMO application requirements. Section 7 comprises a Bushfire Management Statement, identifying how the development can respond to the bushfire risk and comply with the requirements and objectives of Clauses 44.06 and 53.02.

3.4 Bushfire Prone Area

The site and surrounds are designated as bushfire prone. BPAs are those areas subject to or likely to be subject to bushfire, as determined by the Minister for Planning. Those areas of highest bushfire risk within the BPA are designated as BMO areas.

In a BPA, the Building Act 1993 and associated Building Regulations 2018, through application of the National Construction Code (NCC), require bushfire protection standards for class 1, 2 and 3¹ buildings, 'Specific Use Bushfire Protected Buildings'² and associated class 10A buildings³ or decks.

The applicable performance requirement in the NCC is:

'A building that is constructed in a designated bushfire prone area must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the—

- potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and*
- intensity of the bushfire attack on the building'* (ABCB, 2020).

Compliance with AS 3959-2018 *Construction of buildings in bushfire prone areas* (Standards Australia, 2020) is 'deemed-to-satisfy' the performance requirement. For Class 1 buildings and associated Class 10a buildings or decks, the *NASH Standard – Steel Framed Construction in Bushfire Areas* (NASH, 2021) is also deemed to satisfy the requirement.

¹ Class 1, 2 and 3 buildings are defined in the Building Code of Australia (BCA), and are generally those used for residential accommodation, including houses and other dwellings, apartments, hotels and other buildings with a similar function or use.

² Specific Use Bushfire Protected Buildings are defined in the Victorian *Building Regulations 2018*, they generally comprise 'vulnerable' uses and include schools, kindergartens, childcare facilities, aged care facilities and hospitals.

³ Class 10a buildings are defined in the BCA as non-habitable buildings including sheds, carports, and private garages.

In a BPA, applicable buildings must be constructed to a minimum Bushfire Attack Level (BAL)-12.5, or higher, as determined by a site assessment or planning scheme requirement. A BAL is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact.

There are six BALs defined in AS 3959-2018, which range from BAL-LOW, which has no bushfire construction requirements, to BAL-FZ (Flame Zone) where flame contact with a building is expected (see Appendix for an explanation of each BAL).

3.5 Municipal planning strategy

3.5.1 Clause 02.03-3 Environmental risks and amenity

Clause 02-03-3 states one of Council's strategic directions for environmental risks is to '*Discourage additional dwellings, subdivision and other sensitive land use in bushfire prone areas and where the required defensible space would necessitate significant removal of high-quality indigenous vegetation*' (Yarra Ranges Planning Scheme, 2009).

The proposed development proposed is adjacent to existing community infrastructure, including the primary school and child care centre, the presence of which is considered in formal fire and emergency management programs and arrangements at municipal and regional scales.

Terramatrix understand that professional arboricultural advice has been received by the Warburton Advancement League Inc. that the required defensible space can be provided without unacceptable ecological impacts.

3.6 Zoning

The site is zoned Low Density Residential Zone and Schedule (LDRZ).

3.7 Overlays

3.7.1 Bushfire Management Overlay (BMO)

See Section 3.3.

3.7.2 Significant Landscape Overlay - Schedule 22 (SLO 22)

The SLO22 (Yarra Ranges Planning Scheme, 2013) affects the entire site and relates to 'foothills and rural towns'. Warburton is described as:

'Warburton is located in the cleft between steep hillsides. The town's residential areas spread up the hillsides (Donna Buang Range) and along the river flats, sometimes in open pastoral settings, sometimes in forested gullies and sometimes in conventional residential settings with varied lot sizes. The dominance of landscape over buildings and the association of the area with a cottage or chalet style of design are valued characteristics of this unique place' (Yarra Ranges Planning Scheme, 2013).

Decision guidelines include the need to protect or enhance canopy tree coverage, which may be contrary to the requirements of defensible space under the BMO.

4 Bushfire hazard landscape assessment

One of the bushfire hazard identification and assessment strategies in Clause 13.02-1S is to use the best available science to identify the hazard posed by vegetation, topographic and climatic conditions. The basis for the hazard assessment should be:

- *‘Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;*
- *Local conditions - meaning conditions in the area within approximately 1 kilometre from a site;*
- *Neighbourhood conditions - meaning conditions in the area within 400 metres of a site; and*
- *The site for the development’ (Yarra Ranges Planning Scheme, 2018a).*

This section includes a bushfire hazard assessment at:

- The broader landscape scale, for at least 20km around the site (see Figure 1 and Map 1);
- The local and neighbourhood scale extending up to 1km from the site (see Map 2); and
- The site scale, for 150m around the site (see Map 3).

Map 1 is a bushfire hazard landscape assessment plan and Map 3 comprises a bushfire hazard site assessment plan, as specified in the application requirements for Clause 44.06 *Bushfire Management Overlay* (Yarra Ranges Planning Scheme, 2018b).

4.1 Location description and context

The site is in Warburton in the upper Yarra Valley, approximately 65km east of Melbourne. In the surrounding landscape to the north, east and south are large, forested areas of the Yarra Ranges National Park and Yarra State Forest, with the mountains of the Great Dividing Range further to the east.

Warburton is on the Yarra River, with the commercial centre largely on the river flats and residential areas spreading up the hills to the north and south. The Cerini Centre site is on the river flats, along Four Mile Creek which joins the Yarra River to the north-east of the site. The site is flanked by the Warburton Primary School to the south-east and residential properties to the north. To the west is Four Mile Creek, set in a small but steep gully that rises to Lal Lal Avenue.

The main commercial strip along Warburton Highway is less than 200m to the north of the site. The Warburton Neighbourhood Safer Place – Place of Last Resort is at the Warburton Recreation Reserve, approximately 350m from the site.

The local CFA fire station is located at the corner of Warburton Highway and Park Road, approximately 100m from the Park Road entrance to the site.

The main access to the site will be a new driveway to be constructed from Riverside Drive in the north-west. Secondary access will be maintained via the existing track to Park Road in the north-east.

The site has power and reticulated water.

4.2 Landscape risk

Warburton is recognised as an area of very high bushfire risk, due to the large number of people and buildings exposed to large tracts of eucalypt forest, on steep and rugged terrain.

To assist in assessing landscape risk, four 'broader landscape types', representing different landscape risk levels, are described in the DELWP technical guide *Planning Applications Bushfire Management Overlay*. These are intended to streamline decision-making, and support more consistent decisions based on the landscape risk (DELWP, 2017a). The four types range from low risk landscapes where there is little hazardous vegetation beyond 150m of a site and extreme bushfire behaviour is not credible, to extreme risk landscapes with limited or no evacuation options and where fire behaviour could exceed BMO/AS 3959 assumptions (see Table 1).


Within the 1km local assessment area it is considered that the landscape has the closest affinity with Broader Landscape Type 3 (see Table 1). Whilst bushfire behaviour in the wider landscape, generally beyond 1km to the north and south, could exceed BMO design fire assumptions (which is a characteristic of the highest hazard Type 4 landscape), the site is adjacent to the well-established lower threat township area along Warburton Highway and the Yarra River. There is easy egress from the site to the Warburton NSP, 350m to the north.

Warburton has the potential to be impacted upon by a large, landscape scale fire approaching from the north, north-west or south-west, all directions associated with extreme fire weather in Victoria (Long, 2006). Map 1 shows the wider area has an extensive fire history from 1939 to 2014, although the publicly available dataset does not indicate that the site itself has experienced bushfire.

The greatest bushfire threat is considered to come from a fire starting some distance to the north or north-west of Warburton under a Catastrophic Fire Danger Rating, which has the time and space to fully develop prior to impacting the township. In this scenario, the Cerini Centre site is somewhat buffered by the commercial area along Warburton Highway and the Yarra River, and the large low threat area provided by the recreation reserve. There is, however, potential for the entire Warburton township to be impacted by severe ember attack. Given the current level of vegetation within parts of the township, including along Four Mile Creek, it is feasible for moderate intensity spot fires to spread though parts of the residential area, particularly in the absence of effective fire suppression.

A large bushfire to the east of Warburton is also possible, but under credible severe fire weather the fire front would likely be moving away from the township.

Table 1 - Landscape risk typologies (from DELWP, 2017a).

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

4.3 Fire weather

The recently introduced Australian Fire Danger Rating System establishes four fire danger rating categories and a numerical Fire Behaviour Index (FBI) that applies to all fuel types across the country. The Victorian planning and building systems, however, still use the Forest Fire Danger Index (FFDI) and the Grassland Fire Danger Index (GFDI) to represent the level of bushfire threat based on weather (and fuel) conditions. An FFDI 100/GFDI 130 (equivalent to a Catastrophic fire danger rating under the new system) is applied in non-alpine areas of Victoria by the building system, to establish building setback distances from classified vegetation in accordance with AS 3959-2018. The potential fire behaviour and impact for Forest under a Catastrophic fire danger rating is summarised in Table 2.

Note that the benchmark of an FFDI 100 used in the Victorian planning and building systems represents a 'one size fits all' model of extreme fire weather conditions for the state, which has been exceeded during some significant fire events, including at some locations in Victoria on 'Black Saturday' 2009. Therefore, it is important to note that this is not necessarily the *worst-case* conditions for any particular location, including the Warburton valley.

It should also be noted that under various climate change scenarios, the frequency and severity of elevated fire danger days across south-east Australia is forecast to increase (Lucas *et al.*, 2007).

Especially in southern and eastern Australia, since the 1950's there has been an increase in the length of the fire weather season and a greater number of higher risk days associated with climate change (CSIRO/BOM, 2022). The trend of a longer fire season and increased number of dangerous fire weather days is projected to continue. Climate change is contributing to these changes in fire weather including by affecting temperature, relative humidity and associated changes to the fuel moisture content (CSIRO/BOM, 2023).

The Australasian Fire and Emergency Service Authorities Council (AFAC) identify that a failure of building codes and land use planning to adequately adapt to climate change is a significant risk (AFAC, 2018)

Neither the CFA, nor the DTP, have a policy on FFDI recurrence intervals. There is, therefore, no compelling reason to apply a different FFDI/GFDI from the FFDI 100/GFDI 130 threshold used throughout non-Alpine areas of Victoria in the planning and building system⁴.

Table 2 – Australian Fire Danger Ratings – Forest (RFS, 2022).

Fire Behaviour Index	Fire Danger Rating (FDR)	Description of conditions	
		Indicative fire behaviour	Potential for impact
100+	Catastrophic	Fires likely to quickly transition to crowning. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.	70% of house loss has occurred under these conditions. Limited visibility due to smoke and dust. Very high risk to the community related to inappropriate pre-considered plans, inadequate sheltering. Extremely high likelihood of pasture/crop/stock loss together with loss of rural assets such as fencing, machinery and buildings. Very high risk of long term economic and environmental impacts. Extremely strong winds are likely to impact infrastructure (e.g. power lines) with falling trees increasing the likelihood of new ignitions as well as road obstructions and power outages.
50-99	Extreme	Fires likely to quickly transition to crowning. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.	24% of house loss has occurred under these conditions. Limited visibility due to smoke and dust. High risk to the community related to inappropriate pre-considered plans, inadequate sheltering. High likelihood of pasture/crop/stock loss together with loss of rural assets such as fencing, machinery and buildings. Increased risk of long term economic and environmental impacts.

⁴ In alpine areas of Victoria an FFDI 50 applies for determining BALs using Method 1 of AS 3959-2018.

			Strong winds are likely to impact infrastructure (e.g. power lines) and fall trees increasing the likelihood of new ignitions as well as obstructed roads and power outages.
24-49	High	Rapidly spreading fires with potential for development into large burn areas within burning period. Fires typically involving most fuel layers. Short range spotting is prevalent, with possibility of medium range and occasional long-range distance spotting.	6% of house loss has occurred under these conditions. Increased potential for pasture/crop/stock losses as well as rural assets such as fencing, machinery and buildings.
12-23	Moderate	Actively spreading fires typically involving surface, near-surface, elevated and bark fuel layers and occasionally canopy fuels. Low-moderate spotting frequency; isolated medium range spotting can occur.	Unattended or poorly prepared houses and infrastructure may be at risk.
6-11	No rating	Slow spreading fires, typically involving surface and near-surface fuels and sometimes bark and elevated fuels. Spotting is sporadic and limited to short distances.	Community losses are unlikely however unattended or poorly prepared houses and infrastructure may be at risk.
0-5		Fire difficult to ignite and sustain. Fires generally unlikely to spread and likely to self-extinguish.	Community losses are unlikely.

4.4 Regional bushfire risk assessments and plans

4.4.1 Yarra Ranges Municipal Fire Management Plan (MFMP)

The MFMP recognises that the mountainous topography, flammable vegetation, and climatic patterns can combine to create fire hazard conditions within the municipality and that climate change will increase the frequency of severe fire conditions (Yarra Ranges Shire Council, 2022).

Warburton is not specifically addressed in the MFMP.

4.4.2 Metropolitan Bushfire Management Strategy 2020

The Yarra Ranges LGA is covered by the *Metropolitan Bushfire Management Strategy 2020* (DELWP, 2020). It identifies the forested east of the region as being at greatest risk, as settlements are potentially exposed to high intensity forest fires on rugged terrain. The Warburton Valley is described as *'Most towns within the Warburton Valley have large areas of forest to their north and east, with some completely surrounded by forest. Most of the forested areas are Ash forest which cannot be treated by fuel management. The risk is therefore present but cannot be treated. The Warburton Valley has limited access and egress as there is one primary route, the Warburton Highway/Woods Point Road, which is predominantly a two-lane road. Our fire modelling indicates that bushfires which ignite north west of the Warburton Valley have a high likelihood of causing significant house loss'* (DELWP, 2020). Figure 2 shows that the Warburton Valley is identified as one

of the highest bushfire risk locations in the Region based on modelled house loss – this is a measure of both the likelihood of high intensity bushfire and the number of dwellings present.

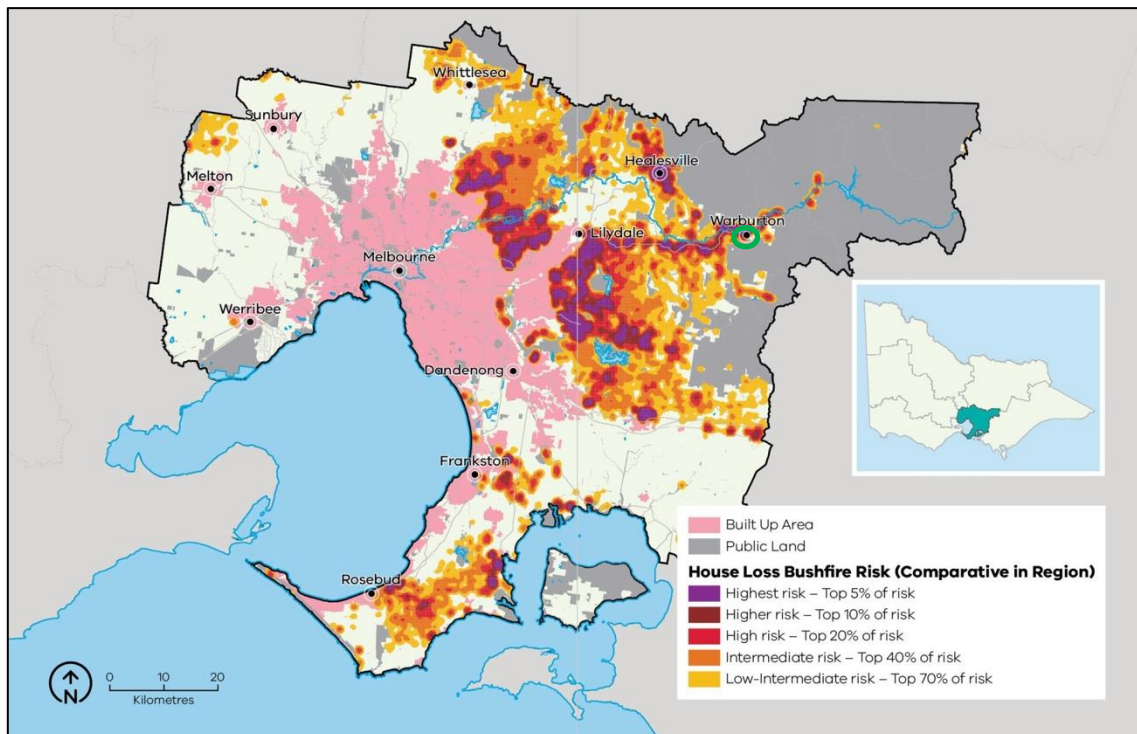


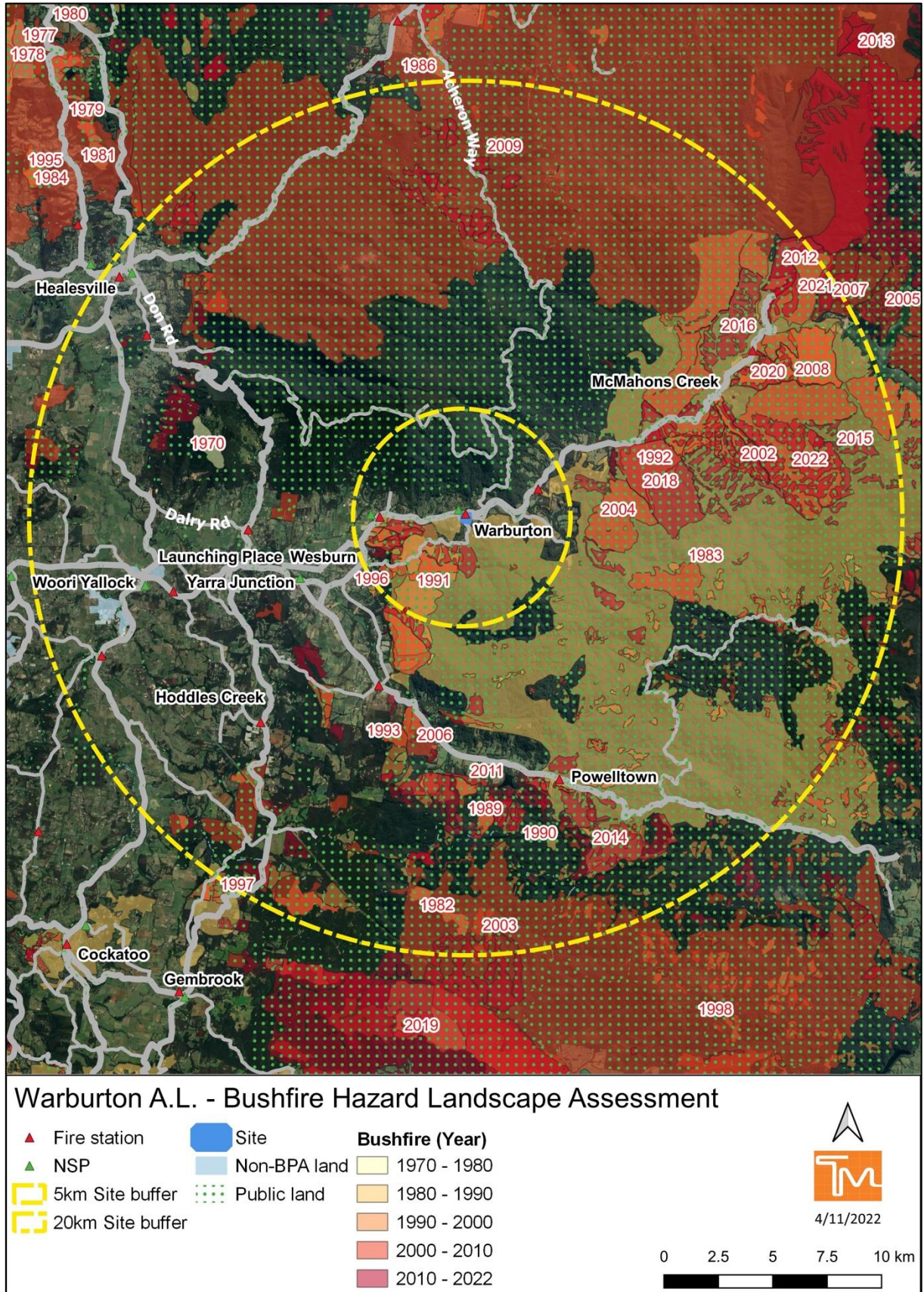
Figure 2 - Modelled bushfire risk to dwellings, Metropolitan Region (DELWP, 2020). Approximate location of the Cerini Centre indicated by green circle.

4.4.3 Regional Bushfire Planning Assessment - Melbourne Metropolitan Region

As part of the response to the 2009 Victorian Bushfires Royal Commission, Regional Bushfire Planning Assessments (RBPAs) were undertaken across six regions that covered the whole of Victoria. The RBPAs provide information about ‘identified areas’ where a range of land use planning matters intersect with a bushfire hazard to influence the level of risk to life and property from bushfire. The RBPAs state that ‘*This information should be addressed as part of strategic land use and settlement planning at the regional, municipal and local levels*’ (DPCD, 2012).

The *Regional Bushfire Planning Assessment – Melbourne Metropolitan Region* covers the Yarra Ranges Shire Council local government area. It identifies the Warburton area as having multiple bushfire matters including:

- *‘Mix of both small and medium-size lots in a bushfire hazard area.*
- *Hazard generated by multiple urban interfaces with Yarra Ranges National Park to the north and Yarra State Forest to the south.*
- *Settlements area serviced by single access roads.*
- *Settlements are located into a bushland environment of significant conservation value’* (DPCD, 2012).



Map 1 - Bushfire hazard landscape assessment plan.

5 Bushfire hazard local and neighbourhood assessment

5.1 Local conditions

The 1km local assessment zone encompasses the settled river flats, with the land beyond sloping up steeply to the north in the Yarra Ranges National Park, to the south in the Yarra State Forest and to the west around Mount Little Joe.

Within the 1km assessment zone, land north of the river is predominantly residential or pasture. The golf course provides a significant low fuel area to the north-west. South of the river, the forest penetrates more deeply into the town, both to the west of the site (Highfield Road/Leila Road area) and to the east (Ferntree Avenue/Brides Parade area).

5.2 Neighbourhood conditions

Within the 400m neighbourhood assessment zone, the land is predominantly 'township', comprising the commercial strip and sporting facilities along the Yarra River to the north, the bus depot and Primary School to the east and south-east, and residential properties in all directions.

Many of the residential properties retain a eucalypt overstorey, whilst less managed vegetation occurs on larger properties and along Four Mile Creek, particularly on the steep slope up to Lal La Avenue.

Towards the outer edge of the 400m assessment zone the land becomes increasingly forested, particularly to the west beyond Leila Road and to the south-east beyond Prospect Avenue.



Warburton A.L. - Bushfire Hazard Neighbourhood and Local Assessment

Site	Fire station	Roads		
150m Site assessment zone	NSP	Highway		2/3/2023
400m Neighbourhood assessment zone	Public land	Arterial		
1km Local assessment zone	Watercourse	Minor road		
	Contours 10m	Track		0 100 200 300 400 m

Map 2 - Bushfire hazard neighbourhood and local assessment plan.

5.3 Existing bushfire risk controls

5.3.1 Fuel management

Much of the public land to the north of Warburton is wet forest which cannot be treated through planned burning. Planned burning is, however, an important tool in the dryer forests to the south.

Figure 3 shows the fire management zoning of public land around Warburton. Zones comprise:

- Asset protection zone – to provide localised protection to human life, property and key assets.
- Bushfire moderation zone – to reduce the speed and intensity of bushfires and achieve ecologically-desirable outcomes where possible.
- Landscape management zone – to reduce overall bushfire hazard at landscape-scale and support ecological resilience and land management objectives.
- Planned burn exclusion zone – to exclude planned burning from areas primarily intolerant to fire (DELWP, 2020).

It can be seen from the map that asset protection zone occurs on Mount Little Joe to the west, and a bushfire moderation zone borders the residential area to the south. The wet forest north of the town, however, is in a planned burn exclusion zone. Mechanical fuel modification is shown as occurring where the public land abuts the norther edge of the town.

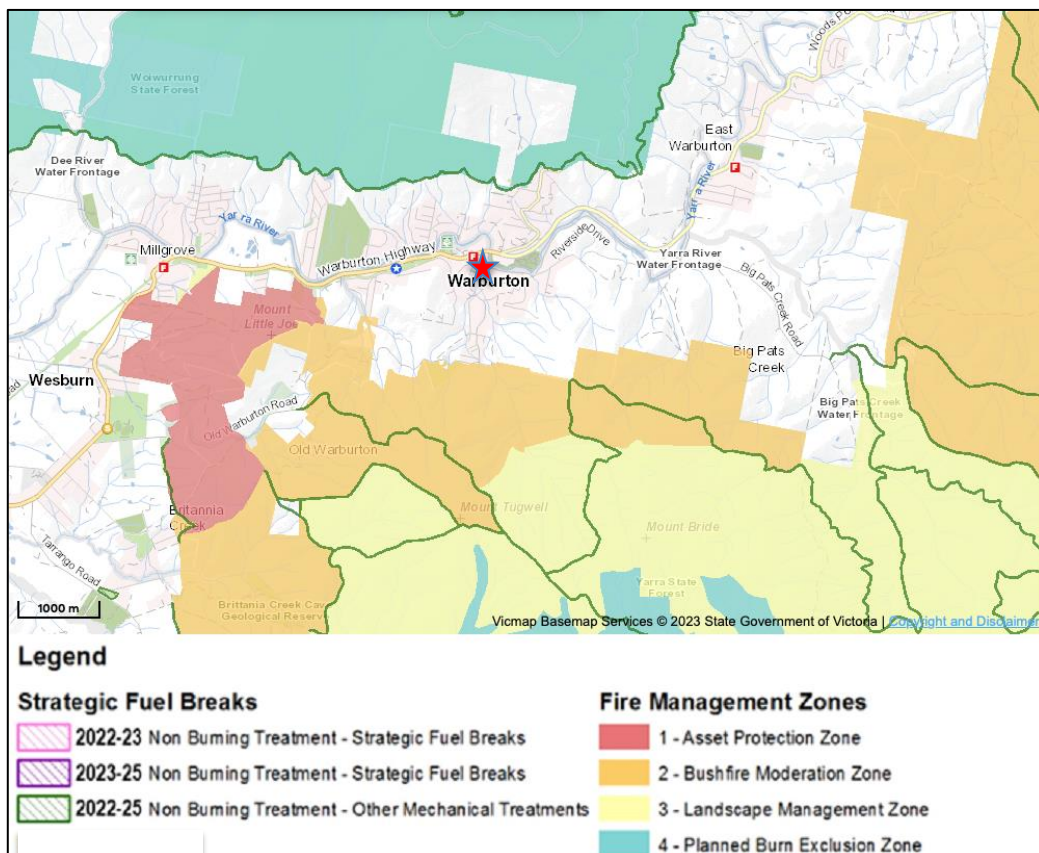


Figure 3 - Fire Management Zones and mechanical works on public land in the vicinity of the site (FFMV, 2023). Approximate location of Cerini Centre indicated by red star.

5.3.2 Neighbourhood Safer Places

There is a Neighbourhood Safer Place at the Warburton Recreation Reserve, which is accessible from the Warburton Highway and approximately 350m north of the site.

5.3.3 Evacuation routes

There is relatively easy egress from the site to the NSP at the Warburton Recreation Reserve although sheltering in the open at the NSP would be challenging and a last resort option only. Evacuation from Warburton itself during the approach of large bushfire would also be potentially dangerous, unless conducted well before the fire's arrival, as all egress routes run through substantial areas of forest. Thus, under elevated Fire Danger Ratings, evacuation of the township may not be safe in the event of a fire in the forest to the north, north-west or south-west of Warburton. Evacuation may be an appropriate response for bushfire further away, such as in the Healesville, Toolangi, Narbethong area to the north or if the fire is to the east of Warburton.

6 Bushfire hazard site assessment

6.1 Vegetation

Vegetation on and within a 150m assessment zone around the site, has been classified in accordance with the BMO/AS 3959-2018 methodology. Classified vegetation is vegetation that is deemed hazardous from a bushfire perspective.

The classification system is not directly analogous to Ecological Vegetation Classes (EVCs) but uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No. 7 - Native Vegetation) classification system. The classification is largely based on the structural characteristics of the vegetation at maturity, but the key determinant should be the likely fire behaviour that it will generate.

6.1.1 Forest

Remnant native vegetation around the site best accords with the Forest group of AS 3959-2018. Forest vegetation comprises areas with trees to 30m high or taller at maturity, typically dominated by eucalypts, with 30–70% foliage cover (may include understorey ranging from rainforest species and tree ferns to sclerophyllous low trees or shrubs). Includes pine and eucalypt plantations (Standards Australia, 2020).

Publicly available Ecological Vegetation Class (EVC) mapping does not identify any extant EVCs in the vicinity of the site, but EVC 18 Riparian Forest (which has a benchmark tree canopy cover of 40% comprising Messmate Stringybark and Manna Gum) and EVC 29 Damp Forest (which has benchmark tree canopy cover of 40% comprising Mountain Grey-gum, Messmate Stringybark and Eurabbie) (DSE, 2004) occur further south along Four Mile Creek.



Figure 4 – Dense understorey in Forest along Four Mile Creek, to the south-west of the proposed development area.



Figure 5 –Forest along Four Mile Creek, to the west of the proposed development area.



Figure 6 – Looking east from Lal Lal Avenue, across the Four Mile Creek gully towards the western boundary of the site.

6.1.2 Modified vegetation

‘Modified vegetation is vegetation that doesn’t fit into the vegetation classifications in AS 3959-2018 (sic) Construction of buildings in bushfire prone areas (the standard) 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’ (Yarra Ranges Planning Scheme, 2018c).*

Modified vegetation may occur where fuel loads are higher than typical residential gardens and therefore the vegetation cannot be excluded as low threat. However, because of the amount of disturbance and modification that has occurred (e.g. reduced or no understorey/surface vegetation) and/or the pattern and configuration of the vegetation (e.g. small, fragmented patches) the fuel load and anticipated fire behaviour is likely to be different from that presumed in the BMO/AS 3959 methodology.

This type of vegetation may not produce a 100m wide fire front moving at a quasi-steady state rate of forward spread, as presumed in the BMO/AS 3959 methodology, but may generate radiant heat and localised flame contact that needs to be fully considered (DELWP, 2017a).

Some areas of the site, where the understorey has been substantially reduced but the tree canopy remains have been classified as Modified vegetation (see Map 3). The presence of modified

vegetation is not, however, an influence on the BAL construction standard or defensible space, due to the proximity of the higher hazard Forest vegetation.

6.1.3 Excluded vegetation and non-vegetated areas

Areas of low threat vegetation and non-vegetated areas can be excluded from classification in accordance with Section 2.2.3.2 of AS 3959-2018, if they meet one or more of the following criteria:

- (a) *'Vegetation of any type that is more than 100m⁵ from the site.*
- (b) *Single areas of vegetation less than 1 ha in area and not within 100m of other areas of vegetation being classified vegetation.*
- (c) *Multiple areas of vegetation less than 0.25ha in area and not within 20m of the site, or each other, or of other areas of vegetation being classified vegetation.*
- (d) *Strips of vegetation less than 20m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or each other, or other areas of vegetation being classified vegetation.*
- (e) *Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.*
- (f) *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks' (Standards Australia, 2020).*

Much of the vegetation on the site itself, the adjacent primary school, Old Convent (a private residence) and adjoining residential properties to the north, largely comprises cultivated gardens, pasture and lawn. This managed landscape features a mixture of exotic shrubs and trees, cultivated gardens, lawns and sporting field. There are also 'non-vegetated areas' including driveways and car parking areas (see Map 3).

⁵ The exclusion distance is 150m in BMO areas.



Figure 7 – The northern entry to the primary school is lined by mature oak trees. The proposed access to the accommodation units will be to the right of these trees.



Figure 8 – Lawn and cultivated garden around the Old Convent.



Figure 9 – Mown lawn and trees in front of the Cerini Centre building (n.b. this building is not part of the development application), showing some characteristics of both low threat and modified vegetation.

6.2 Topography

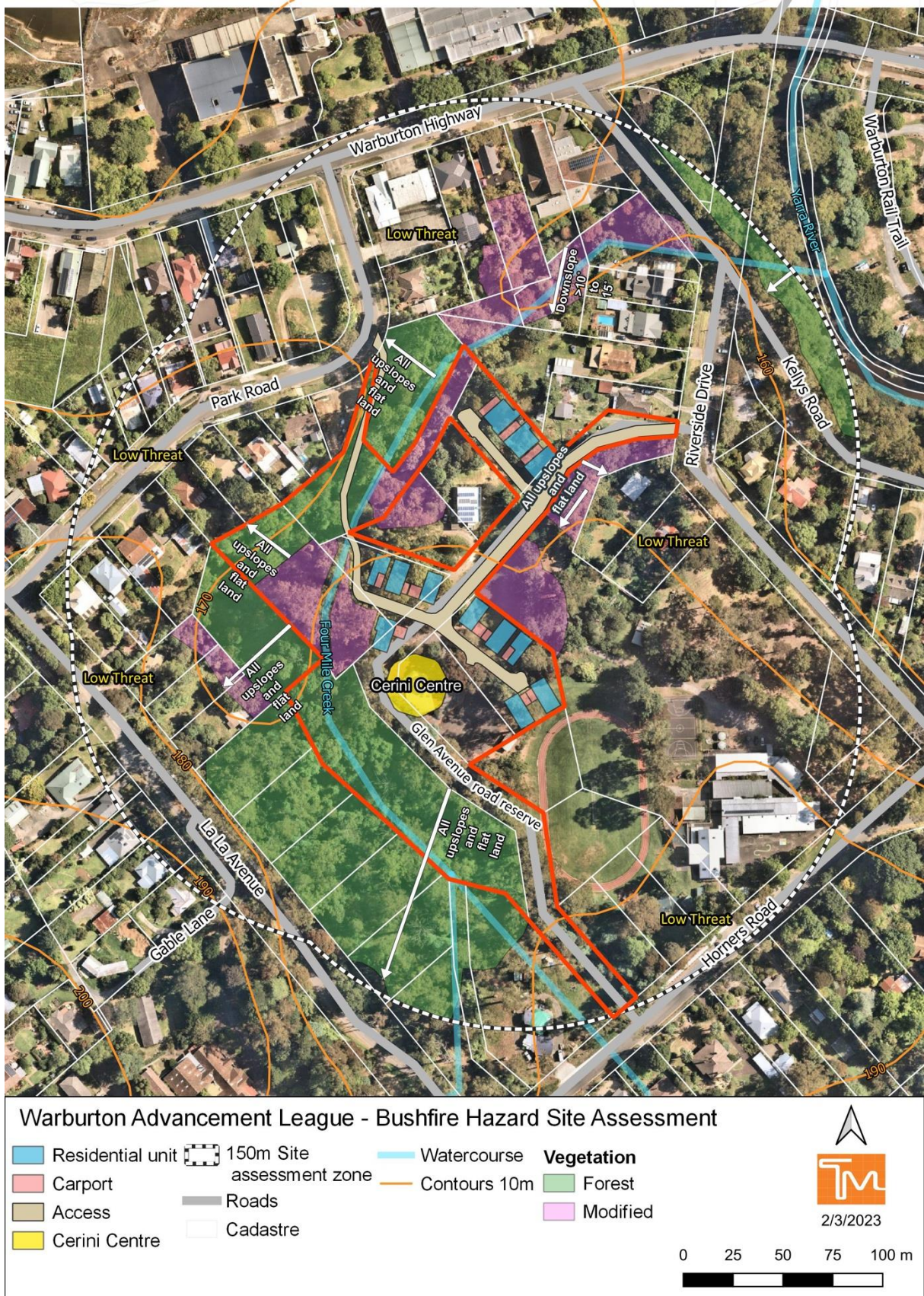
The AS 3959/BMO method requires that the 'effective slope' be identified to determine the BAL and applicable defendable space distances. This is the slope of the land under the classified vegetation⁶ that will most significantly influence the bushfire attack on a building. Two broad types apply:

- Flat and/or Upslope - land that is flat or on which a bushfire will be burning downhill in relation to the development. Fires burning downhill (i.e. on an upslope) will generally be moving more slowly with a reduced intensity.
- Downslope - land under the classified vegetation on which a bushfire will be burning uphill in relation to the development. As the rate of spread of a bushfire burning on a downslope (i.e. burning uphill towards a development) is significantly influenced by increases in slope, downslopes are grouped into five classes in 5° increments from 0° up to 20°.

Land within the 150m assessment zone to the north, east and south is largely upslope of the site (see Map 3). A very short downslope occurs, under Modified vegetation, on the banks of Four Mile Creek to the north, but this is not the determinant of the BAL and defendable space requirements.

For the purposes of determining the BAL and defendable space, the applicable slope class is 'All upslopes and flat land' under the Forest to the north, east and south (see Map 3).

⁶ The slope of the land between the classified vegetation and the building is called the site slope, which in the Method 1 procedure of AS 3959-2018, is assumed to be the same as the effective slope.



Map 3 – Bushfire hazard site assessment plan.

7 Bushfire Management Statement

This section identifies how the proposed development can respond to the bushfire risk and the requirements of Clause 44.06 and associated Clause 53.02 of the Yarra Ranges Planning Scheme. Clause 53.02-4.4 specifies the applicable objectives and the approved measures that are deemed to satisfy the objectives.

7.1 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' (Yarra Ranges Planning Scheme, 2018c).

Compliance with these objectives at Clause 53.02-4.1 can be achieved via the following approved measures.

7.1.1 Approved measure 2.1 Landscape

'The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level' (Yarra Ranges Planning Scheme, 2018c).

As identified in Section 4, the landscape is a very high to extreme bushfire risk. However, whilst a high intensity, landscape scale bushfire could impact Warburton, the speed and intensity of a bushfire approaching the site from the north, west and south-west, will be somewhat moderated by the pattern of development generally within 1km of the site in these directions, due to the areas of low threat or modified vegetation and non-vegetated land, as well as the mosaic of fuel management zones in the Yarra State Forest.

Accordingly, it is proposed that the risk can be mitigated to an acceptable level by implementing a range of bushfire protection measures to comply with the BMO requirements, including appropriate BAL construction standard, commensurate defensible space, provision of a water supply for firefighting, ensuring good access and egress are available for visitors and emergency services and, most importantly, management planning in the form of a Bushfire Emergency Management Plan (BEMP), as is required for caravan parks. The BEMP will be developed to the satisfaction of CFA and its likely contents are described in Section 8.

7.1.2 Approved measure 2.2 Siting

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

- *The maximum separation distance between the building and the bushfire hazard.*
- *The building is in close proximity to a public road.*
- *Access can be provided to the building for emergency service vehicles'* (Yarra Ranges Planning Scheme, 2018c).

The siting is constrained by the Four Mile Creek along the eastern boundary, the presence of the Old Convent (private residence) and the location of the currently unused Cerini Centre building. All accommodation units have, however, been sited such that:

- They can provide Column C (BAL-29) defendable space within the combined property boundaries.
- The defendable space is shared between accommodation units.
- The defendable space utilises reliably low threat areas of the Primary School and adjacent residential properties.
- They can be serviced by a shared driveway, that provides two means of egress (onto Riverside Drive and Park Road).

The internal driveway enables access and egress in compliance with BMO requirements for emergency vehicles and residents and meets the *Caravan Park Fire Safety Guidelines*.

7.1.3 Approved measure 2.3 Design

'A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building' (Yarra Ranges Planning Scheme, 2018c).

The accommodation units are prefabricated buildings rated to a minimum BAL-29 (note some elements would achieve a higher rating). It is a single-storey design, with minimal re-entrant corners, and a simple roof line.

The lease agreement with tenants will prevent additions or alterations to the buildings (such as informal decking) that may reduce their bushfire resistance.

The BAL-29 is a relatively robust BAL offering reasonable resistance to bushfire attack. It is noted that all BAL construction standards above BAL-Low are 'deemed to satisfy' the National Construction Code requirement that applicable buildings be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the:

- 'potential for ignition caused by burning embers, radiant heat or fame generated by a bushfire; and*
- intensity of the bushfire attack on the building'* (ABCB, 2020).

7.2 Defendable space and construction objective

‘Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on buildings’ (Yarra Ranges Planning Scheme, 2018c).

This objective will be met by approved measure (AM) 3.1.

7.2.1 Approved measure 3.1

‘A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person’s unit, industry, office or retail premises is provided with defendable space in accordance with:

- *Table 2 Columns A, B or C and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land; or*
- *If there are significant siting constraints, Table 2 Column D and Table 6 to Clause 53.02-5.*

The building is constructed to the bushfire attack level that corresponds to the defendable space provided in accordance with Table 2 to Clause 53.02-5’ (Yarra Ranges Planning Scheme, 2018c).

Each unit will provide a defendable space setback from the Forest in accordance with Table 2 Column C to Clause 53.02-5, which equates to a BAL-29 construction standard and 25m of defendable space.

Table 3 – Applied BAL construction standard and defendable space distance (from Table 2 to Clause 53.02-5).

Vegetation	Slope class	BAL construction standard	Defendable space distance (m)
Forest	All upslopes and flat land	BAL-29	25

The defendable space on the property can meet the vegetation management requirements stipulated in Table 6 at Clause 53.02-5, as detailed in Appendix A of this report. This is detailed in the Bushfire Management Plan provided as Map 3. The requirement to maintain defendable space (and other BMO requirements) will be included in the lease agreements of tenants.

In addition, a Vegetation Management Plan for the entire site will be developed to the satisfaction of the responsible authority and CFA. This plan will document how the fuel load across the site will be reduced, largely through the removal and ongoing management of environmental weeds.

The management of vegetation on the site will increase the bushfire safety of the Primary School, child care centre and nearby residential properties.

7.2.2 Alternative measure 3.3

'Adjoining land may be included as defensible space where there is a reasonable assurance that the land will remain or continue to be managed in that condition as part of the defensible space' (Yarra Ranges Planning Scheme, 2018c).

It is reasonable to assume the overlap of defensible space onto the Primary School grounds and the Old Convent will be managed near or in a low threat state consistent with the objective of providing defensible space.

7.3 Water supply and access objectives

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

Vehicle access is designed and constructed to enhance safety in the event of a bushfire' (Yarra Ranges Planning Scheme, 2018c).

These objectives can be met via approved measure 4.1.

7.3.1 Approved measure 4.1

'A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person's unit, industry, office or retail premises is provided with:

- *A static water supply for firefighting and property protection purposes specified in Table 4 to Clause 53.02-5.*
- *Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.*

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for firefighting water supplies' (Yarra Ranges Planning Scheme, 2018c).

Water

It is proposed that a central static water supply of 45,000L be provided on site, with BMO compliant fire service access and fittings.

In recognition of this communal supply, it is proposed that each unit will also be provided with a 2,500L tank, without a requirement for fire service fittings or access.

The reticulated water main will be extended from Riverside Drive. Fire hydrants and hose reels connected to the reticulated water supply will provide coverage to each unit, in accordance with the requirements of the *Caravan Park Fire Safety Guidelines* (CFA & MFB, 2012) (i.e. hydrant within 120m of the rear of each unit and a hose reel within 36m of the rear of each unit).

Access

Emergency vehicle access will be provided to all accommodation units. The communal driveway from Riverside Drive to each unit will meet the requirements of the BMO and of the *Caravan Park Fire Safety Guidelines* (CFA & MFB, 2012).

The central communal driveway from Riverside Drive to the Cerini Centre will have a trafficable width of 6.5m. The secondary 'arms' providing access to the units will have a trafficable width of 5.5m, with turning points at each end that comply with Prescriptive Provision 2 Fire Vehicle Access under the *Caravan Park Fire Safety Guidelines* (CFA, 2012). The various 'T' intersections within the internal road network provide additional informal turning points.

The existing Cerini Centre driveway will provide a second egress route (to Park Road) and will be maintained to BMO driveway standards.

7.4 Bushfire Management Plan

Map 4 following, comprises a Bushfire Management Plan (BMP), detailing the required bushfire protection measures for the development.



Map 4 - Bushfire Management Plan.

Construction Standard

The accommodation units must be designed and constructed to a minimum BAL-29 standard.

Water Supply

The reticulated water main is to be extended from Riverside Drive to provide hydrant and hose reel coverage of the proposed accommodation units, as shown on Map 4.

A communal static water supply of a minimum 45,000L must be provided in accordance with the following requirements:

- Be stored in an above ground water tank/s constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for fire fighting purposes made of corrosive resistant metal.
- Include a separate outlet for site occupant use.
- Be readily identifiable from the building or appropriate identification signage to the satisfaction of the CFA.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank/s must be within 4m of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling).

In addition, each accommodation unit must provide a minimum of 2,500L of effective water supply for fire fighting purposes in accordance with the following requirements:

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

Vehicle Access

Vehicle access to each accommodation unit and the communal water supply outlet must be provided in accordance with the following requirements:

- All-weather construction.
- A load limit of at least 15 tonnes.
- 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.
- 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 grade 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 per cent) (7.1 degrees) entry and exit angle.

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.

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.

Defendable Space Management

Defendable space must be provided for a distance of 25m around each accommodation unit (or to the property boundary, whichever is the lesser distance) and be managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5m² in area and must be separated by at least 5m.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5m.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

In addition, a Vegetation Management Plan must be developed for the remainder of the site to demonstrate how fuel loads will be reduced through the removal and ongoing management of vegetation, to the satisfaction of the responsible authority.

8 Caravan Park Fire Safety Guidelines

Terramatrix are informed the social and affordable housing units will be unregistrable moveable dwellings, and the complex will be a Manufactured Home Estate created under the Caravan Park Regulations. The site is, therefore, required to address fire safety in accordance with Regulations 20 and 21 of the *Residential Tenancies (Caravan Parks and Moveable Dwellings Registration and Standards) Regulations 2010* (and Sections 518B and 518C of the Act).

The requirements of the Act can be met through meeting the six objectives of the *Caravan Park Fire Safety Guidelines* (CFA & MFB, 2012). This can be achieved through meeting the performance measures, prescriptive provisions or a combination of both (DELWP, 2017b).

The six objectives are:

- O1 Provision and maintenance of access – adequate access must be provided and maintained within caravan parks to the degree necessary for firefighters, between and around any structure, and fire vehicles, including pumpers and tankers.
- O2 Prevention of fire spread – adequate separation distance must be provided and maintained between and around any structure to prevent fire spread so that occupants can safely evacuate and the potential for fire spread to multiple structures is reduced.
- O3 Provision and maintenance of firefighting equipment – appropriate firefighting equipment must be provided and maintained to enable occupants to undertake an initial fire attack and the fire service to fight the fire as necessary.
- O4 Identification and management of fire hazards – potential fire hazards must be identified, minimised and maintained safely.
- O5 Development and implementation of emergency management plans – site-specific emergency management plans must be developed and maintained to reflect the assessed risk.
- O6 Compliance with legislative requirements – the relevant legislative requirements, as amended from time to time, must be met (CFA & MFB, 2012).

We understand that the objectives will be met by complying with the prescriptive provisions.

9 Bushfire Emergency Management Plan

A BEMP will be developed to the satisfaction of the responsible authority and CFA prior to the accommodation units being occupied. A summary of the structure of the BEMP is provided below.

The BEMP will include:

Premises details

- Describe property and business details.
- Identify the purpose of the BEMP stating that the plan outlines procedures for:
 - Closure of premises on any day with a Fire Danger Rating of (nominated FDR such as Catastrophic).
 - Evacuation (evacuation from the site to a designated safer off-site location).

Review of the BEMP

- Outline that the plan must be reviewed and updated annually prior to the commencement of the declared Fire Danger Period.
- Include a version control table.

Roles & Responsibilities

- Detail the staff responsibilities for implementing the emergency procedures in the event of a bushfire. This must include assigning responsibility for the:
 - Management and oversight of emergency procedures.
 - Training of employees/residents in emergency procedures.
 - Accounting for all persons during the emergency procedures.

Emergency contact details

- Outline organisation/position/contact details for emergency services personnel.

Bushfire monitoring procedures

- Details the use of radio, internet and social networks that will assist in monitoring potential threats during the Fire Danger Period.
- Describe and show (include a map) the area to be monitored for potential bushfire activity (i.e. within nominated distance of the site).

Action Statements – trigger points for action

- Prior to the Fire Danger Period
 - Describe on-site training sessions and fire equipment checks
 - Identify maintenance of bushfire mitigation measures such as vegetation management (including implementation of mitigation measures required by any endorsed Bushfire Management Plan)

- Closure of site during forecast FDR days (e.g. Catastrophic)
 - Outline notification procedures and details of site closure (including timing of closure).
- Evacuation
 - Identify triggers for evacuation from site. For example, when evacuation is recommended by emergency services.
 - Details of the location/s of the offsite emergency assembly location.
 - Transport arrangements for residents including details such as:
 - Number of residents requiring assistance to evacuate.
 - Estimated travel time to destination.

Actions after the bushfire emergency event

10 Clause 13.02-1S Bushfire Planning

The applicable strategies stipulated in Clause 13.02-1S are detailed in the following sub-sections, and a summary response is provided about how the proposed development responds to the strategies.

10.1 Protection of human life strategies

Priority must be given to the protection of human life.

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

Whilst the site is in a very high to extreme bushfire risk location, the protection of human life can be prioritised by:

- The accommodation units meeting the applicable BMO requirements, including construction to a robust BAL-29 standard with commensurate defensible space enhanced by further vegetation management across the site, a static and reticulated water supply and emergency service access.
- The entire site being subject to a Vegetation Management Plan that ensures bushfire hazard does not increase over time.
- The site complying with the prescriptive provisions of the *Caravan Park Fire Safety Guidelines*, including firefighter access and water supply.
- Development of a Bushfire Emergency Management Plan to the satisfaction of CFA, that includes arrangements for proactive closure of the site in response to forecast Fire Danger Ratings.
- Creation of a formal site management organisation with responsibility to implement and maintain the bushfire protection measures.

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

This report provides the basis for incorporating bushfire risk into decision making associated with planning for development of the social and affordable housing.

CFA have been consulted during the planning process and their advice incorporated in the development proposal where practicable.

10.2 Bushfire hazard identification and assessment strategies

The bushfire hazard must be identified, and an appropriate risk assessment be undertaken.

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

This report identifies the hazard in accordance with the commonly accepted methodologies AS 3959/BMO methodology and, as appropriate, additional guidance provided in *Planning Practice Note*

64 Local planning for bushfire protection (DEWLP, 2015) and Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140 (DEWLP, 2018).

The type and extent of (hazardous) vegetation within, and up to 400m around, the site has been identified and classified based on the anticipated long-term state of the vegetation, EVC mapping, aerial imagery, site assessment, published guidance on vegetation assessment for bushfire purposes and experience with the fuel hazard posed by the vegetation types that occur within the region.

GIS analysis of publicly available contour data for the area was undertaken to determine slopes, extending to 400m around the site.

In relation to climatic conditions and fire weather, the AS 3959 default FFDI 100/GFDI 130 benchmark used in the Victorian planning and building system has been applied.

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 BPA coverage has been considered, based on the most recent BPA mapping for the area.

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

The site is covered by the BMO. This reflects statewide BMO mapping introduced into the Yarra Ranges Planning Scheme by amendment GC13, which was gazetted on 3rd October 2017.

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 in the area within approximately 1 kilometre from a site.**
- **Neighbourhood conditions - meaning conditions in the area within 400 metres of a site.**
- **The site for the development.**

The hazard has been assessed and described at the site, neighbourhood and local scale.

At the site scale, the assessment follows the BMO methodology of classifying vegetation and topography within 150m of a building or site, and for this study extending out to 400m around the site.

At the broader landscape scale a 20km, 10km and 1km radius of the site has been applied in accordance with guidance about assessing risk for planning scheme amendments in the Planning Advisory Note 68 (DEWLP, 2018) and Planning Practice Note 64 (DELWP, 2015).

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

The CFA have been consulted during the planning process, a joint site meeting conducted, and their advice incorporated in the development proposal where practicable.

CFA suggested that the defensible space not include the slope down to Four Mile Creek to the east on the grounds that vegetation on the slope may be difficult and may have an unacceptable impact on the riparian vegetation. Exclusion of the slope from the area available for defensible space would have significantly reduced the area available for the siting of units, requiring three units to be re-located, which would be difficult to achieve given the size and shape of the site. It should also be noted that retention of classified vegetation on the downslope to the creek would increase the defensible space distance from 25m to 39m, which would further reduce the capacity of the site.

The Warburton Advancement League Inc. have informed Terramatrix that the vegetation assessment of the site indicated that this area could be managed as defensible space without unacceptable ecological impacts.

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.

DTP advisory and practice notes, Clause 13.02-1S, Clause 44.06, Clause 53.02 and the building regulations invoked by the BPA coverage, specify the general requirements and standards for assessing the risk. These have been used in this report as appropriate and bushfire protection measures have been identified commensurate with the risk. Relevant regional bushfire plans have been identified, reviewed and incorporated into this assessment as appropriate.

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 risk can be deemed to be acceptably mitigated such that development can proceed if the objectives and strategies of Clause 13.02-1S are successfully implemented as identified in this report, including compliance with the BMO and the *Caravan Park Fire Safety Guidelines*, and the implementation of an approved Bushfire Emergency Management Plan.

10.3 Settlement planning strategies

The proposed development does not comprise settlement planning and therefore these strategies are not applicable. They are listed in this section, but no response is provided.

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).

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.

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.

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.

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.

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

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.

10.4 Areas of high biodiversity 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 of high biodiversity conservation value.

The proposed development is responsive to the biodiversity conservation values of the site and surrounding landscape. There are no apparent unacceptable biodiversity impacts associated with the findings of this bushfire assessment.

The site is not covered by a Vegetation Protection Overlay or Environmental Significance Overlay under the Yarra Ranges Planning Scheme and the NatureKit interactive mapper does not identify vegetation of any Ecological Vegetation Class occurring on site (DEECA, 2023).

Siting of the accommodation units has been informed by an arboriculture report, which assessed the impact of the creation of the proposed defensible space.

10.5 Use and development control in a Bushfire Prone Area

Clause 13.02-1S requires that *'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'*(Yarra Ranges Planning Scheme, 2018a).

It further states that:

'When assessing a planning permit application for the above uses and development:

- *Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts'* (Yarra Ranges Planning Scheme, 2018a).

In the BMO, it is noted that in accordance with Planning Advisory Note 68, if a planning permit is required for the use or development under Clause 44.06 *Bushfire Management Overlay*, then the use and development control strategy is addressed through the relevant application requirements and decision guidelines in Clause 53.02 (DELWP, 2018). A response to the Clause 53.02 requirements is provided as the Bushfire Management Statement in Section 7.

11 Conclusion

This report has assessed the bushfire hazard in and around the Cerini Centre, in accordance with Clause 13.02-1S, Clause 44.06 and Clause 53.02 in the Yarra Ranges Planning Scheme. Additional guidance has been incorporated where appropriate, as provided in *Planning Practice Note 64 Local planning for bushfire protection* (DEWLP, 2015), *Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140* (DEWLP, 2018) and the DELWP technical guide *Planning Permit Applications Bushfire Management Overlay* (DELWP, 2017).

The site is a designated BPA and covered by the BMO. Warburton is in a very high to extreme bushfire risk landscape (Broader Landscape Type 3 or 4), but the site itself is on the edge of the township area, with good egress to the town centre and NSP (approximately 350m to the north) via the Warburton Highway.

The proposed development will comply with the fire protection measures of both the BMO and the *Caravan Park Fire Safety Guidelines*. This includes:

- Construction of the accommodation units to BAL-29 with commensurate defensible space.
- Development and implementation of a Vegetation Management Plan covering the entire site to ensure the bushfire hazard is minimised in the ongoing management of the whole site.
- Provision of a 45,000L communal water storage with compliant fire service access and fittings.
- Provision of hydrants and hose reels connected to the existing reticulated water supply that will service each accommodation unit.
- Provision of a 2,500L static water supply for each accommodation unit (without a requirement for fire service access or fittings).
- Emergency vehicle access that complies with the requirements of the BMO and *Caravan Park Fire Safety Guidelines* and includes the provision of a secondary exit onto Park Road.
- Development and implementation of a Bushfire Emergency Management Plan, including proactive triggers for closure of the site in response to forecast Fire Danger Rating.
- Incorporation of the bushfire safety arrangements in the lease agreements of tenants.
- Establishment of a site management organisation to oversee day-to-day management of the site.

Given the complexity of the site, some details of the Bushfire Emergency Management Plan will require ongoing consultation with CFA during the development process.

12 Appendix: BALs explained

Bushfire Attack Level (BAL)	Risk Level	Construction elements are expected to be exposed to...	Comment
BAL-Low	VERY LOW: There is insufficient risk to warrant any specific construction requirements but there is still some risk.	No specification.	At 4kW/m ² pain to humans after 10 to 20 seconds exposure. Critical conditions at 10kW/m ² and pain to humans after 3 seconds. Considered to be life threatening within 1 minute exposure in protective equipment.
BAL-12.5	LOW: There is risk of ember attack.	A radiant heat flux not greater than 12.5 kW/m ²	At 12.5kW/m ² standard float glass could fail and some timbers can ignite with prolonged exposure and piloted ignition.
BAL-19	MODERATE: There is a risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to radiant heat.	A radiant heat flux not greater than 19 kW/m ²	At 19kW/m ² screened float glass could fail.
BAL-29	HIGH: There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.	A radiant heat flux not greater than 29 kW/m ²	At 29kW/m ² ignition of most timbers without piloted ignition after 3 minutes exposure. Toughened glass could fail.
BAL-40	VERY HIGH: There is a much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.	A radiant heat flux not greater than 40 kW/m ²	At 42kW/m ² ignition of cotton fabric after 5 seconds exposure (without piloted ignition).
BAL- FZ (i.e. Flame Zone)	EXTREME: There is an extremely high risk of ember attack and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.	A radiant heat flux greater than 40 kW/m ²	At 45kW/m ² ignition of timber in 20 seconds (without piloted ignition).

Source: derived from AS 3959-2018 (Standards Australia, 2020).

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