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Bushfire Development Report

for 89 Ross Watt Road,
Gisborne VIC 3437

Report prepared for
ID Ross Watt Road Pty Ltd

January 2023

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Cover image: Looking south-west over the site from Ross Watt Road.

Accountability

Stage	Date completed	Name	Title
Site assessment	2021-08-04	John Eastwood	Analyst
Analysis & report preparation	2021-08-10	John Eastwood	Analyst
Peer review	2021-08-11	Jon Boura	Managing Director

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Contents

1 Introduction

This Bushfire Development Report has been prepared for ID Ross Watt Road Pty Ltd, to assess how future development of a masterplanned residential community at 89 Ross Watt Road, Gisborne VIC 3437 can respond to the bushfire risk and the applicable Victorian planning and building controls that relate to bushfire, in particular the objective and applicable strategies of the Planning Policy Framework (PPF) at Clause 13.02-1S *Bushfire planning* in the Victoria Planning Provisions (Macedon Ranges Planning Scheme, 2018a) and the requirements of the Building Regulations.

The site comprises approximately 88ha of vacant land and is in a designated Bushfire Prone Area (BPA). BPAs are those areas subject to or likely to be subject to bushfires, as determined by the Minister for Planning. The site is immediately to the north-west of the township of Gisborne and forms part of the eastern limit of the *Gisborne Futures - Draft Structure Plan 2020* study area (Macedon Ranges Shire Council, 2020a), which ends at the Rosslynne Reservoir. The Draft Structure Plan indicates that the areas to the north and west of the site will not change from their current pastoral nature. Land to the south and east of the site is largely residential, with little or no bushfire hazard.

Higher hazard land within a BPA that may be subject to extreme bushfire behaviour is covered by the Bushfire Management Overlay (BMO); however, no part of the site is affected by the BMO and the closest BMO areas are approximately 200m to the west.

This report assesses the bushfire hazard and identifies how the proposed development can appropriately mitigate any bushfire risk and respond to and comply with the applicable bushfire planning and building controls. These are:

- Clause 13.02-1S *Bushfire planning*, which is the State planning policy for bushfire. The development proposal needs to show that it meets the objective and strategies of the policy in relation to the protection of human life.
- The Building Act 1993 and associated Building Regulations 2018, require bushfire protection standards in designated BPAs, for class 1, 2 and 3 buildings, 'Specific Use Bushfire Protected Buildings' and associated class 10a buildings or decks being constructed in designated BPAs.

This 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[1] (DELWP, 2017); and
- AS 3959-2018 *Construction of buildings in bushfire prone areas* (Standards Australia, 2020).

[1] Although the site is not in the BMO, DELWP's BMO technical guide provides useful descriptors and guidance for assessing the bushfire risk at the landscape scale, as discussed in Section 3.3.

2 Proposed development

The development proposal is for a subdivision and subsequent residential development comprising multiple residential lots, with the Jacksons Creek escarpment and open space corridor reserve in the south-western part of the site abutting one of the two proposed drainages reserves. Residential development will extend to the east and north of the escarpment corridor, with public open space and the second drainage reserve on the eastern boundary. The development area will be provided with an internal road network that will connect to Ross Watt Road to the north-east and Swinburne Avenue to the east.

The development area occupies most of the site and extends southwards from Ross Watt Road and to the west of Swinburne Avenue. It is bounded to the west by a disused quarry that may in the future form part of the wider residential area. Beyond the quarry, and on the Jackson Creek, the Rosslynne Reservoir is fringed with minor areas of bushland. Farming land abuts the site's north-western boundary (see Figure 1). As no rezoning is proposed, the Settlement Planning strategies of Clause 13.02-1S are considered not to apply.

Figure 1 – Looking north over Jacksons Creek and the site (in yellow)(Google Earth, 2021).

3 Bushfire planning and building controls

This section summarises the applicable planning and building controls that relate to bushfire. Section 6 describes how planning and design of the site can respond to and comply with the controls.

3.1 Clause 13.01-1S Natural hazards and climate change

The objective of this Clause is to minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning. Strategies to achieve the objective are:

- '*Consider the risks associated with climate change in planning and management decision making processes.*
- *Identify at risk areas using the best available data and climate change science.*
- *Integrate strategic land use planning with emergency management decision making.*
- *Direct population growth and development to low risk locations.*
- *Develop adaptation response strategies for existing settlements in risk areas to accommodate change over time.*
- *Ensure planning controls allow for risk mitigation or risk adaptation strategies to be implemented.*
- *Site and design development to minimise risk to life, property, the natural environment and community infrastructure from natural hazards*' (Macedon Ranges Planning Scheme, 2022).

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 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).

This Clause supports the adoption of a precautionary approach to the identification and mitigation of bushfire risk.

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*' (Macedon 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; or
- 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'* (Macedon 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; and
- 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*' (Macedon Ranges Planning Scheme, 2018a).

This study assesses the hazard and identifies the bushfire protection measures that will be required for future development of 89 Ross Watt Road. It is considered that development of the site can appropriately prioritise the protection of human life and meet the objective and relevant strategies of Clause 13.02-1S, by appropriate subdivision layout and design, including ensuring future dwellings will be constructed to an appropriate BAL.

Analysis of how the development can respond to the objective and applicable strategies in Clause 13.02-1S is provided in Section 6.2.

3.3 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 (Macedon Ranges Planning Scheme, 2022).

3.4 Local Planning Policy Framework (LPPF[2])

3.4.1 Clause 21.06 Environmental Risks

Clause 21.06 in the Macedon Ranges Municipal Strategic Statement (MSS) provides local content to support Clause 13 of the Planning Policy Framework. Clause 21.06-3 *Bushfire* identifies that the Macedon Ranges Shire is at high risk of bushfire, including in grassland areas (Macedon Ranges Planning Scheme, 2021). Clause 21.06-3 has two Objectives, with associated strategies.

Objective 1
To prioritise fire risk in planning decisions, avoid increasing bushfire risk and minimise exposure of people to bushfire risk.

Strategies
Strategy 1.1 *Prioritise fire risk as a critical consideration.*
Strategy 1.2 *Use a risk management framework when considering fire risk.*

Objective 2
To ensure that where development opportunities already exist, development in rural areas and on the fringes of urban areas is sited and designed to minimise risk from bushfire.

Strategies
Strategy 2.1 *Direct residential development opportunities to parts of settlements where the threat to people and property from fire is limited.*
Strategy 2.2 *Ensure development is sited to avoid steep slopes, highly vegetated areas and other areas identified as being at high risk from bushfire.*
Strategy 2.3 *Ensure access to properties in areas considered to be at high risk from bushfire is sited and designed to provide for safe egress and ingress of residents and emergency vehicles.*

It is considered that the analysis in this report, and the implementation of existing planning and building controls that relate to bushfire, will facilitate an appropriate risk mitigation response for 89

[2] It is noted that the LPPF will be translated into the PPF as the Municipal Planning Strategy, as proposed by VC148 (DELWP, 2018b). However, at the time of preparing this report the LPPF and MSS are components of the Macedon Ranges Planning Scheme.

Ross Watt Road in accordance with these strategies and, therefore, future development will be able to meet the objectives of Clause 21.06-3.

3.5 Bushfire Prone Area (BPA)

The development Stages are in a BPA (see Figure 2, and Maps 1 and 2 for coverage of the 'Non-BPA' areas). 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.

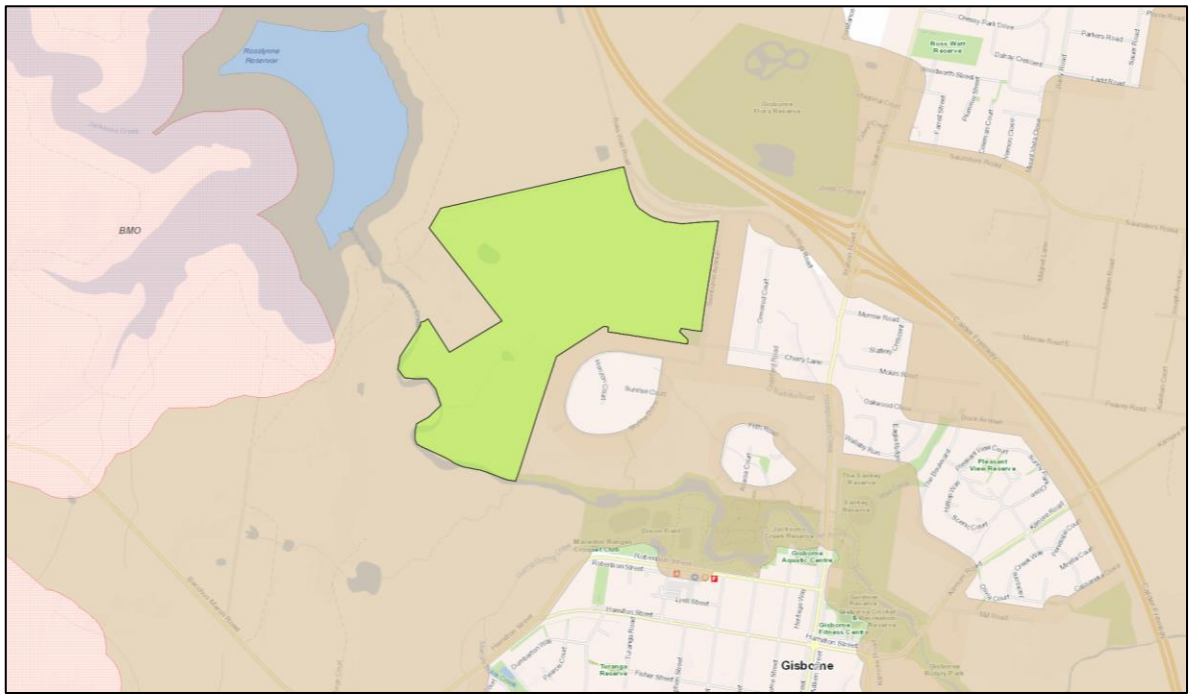

Figure 2 - BPA (brown shading) and BMO coverage (pink shading) around Ross Watt Road site (light green shading). Unshaded areas are not in the BPA.

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 3[3] buildings, 'Specific Use Bushfire Protected Buildings'[4] and associated class 10A buildings[5] 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 —*

[3] 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.

[4] 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.

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

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

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

Compliance with AS 3959-2018 *Construction of buildings in bushfire prone areas* or, for Class 1 buildings and associated Class10a buildings or decks, the *NASH Standard – Steel Framed Construction in Bushfire Areas* is 'deemed-to-satisfy' the performance requirement (ABCB, 2020).

The Victorian Building Regulations (2018) require that applicable buildings 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 3959-2019, 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 1 at Section 8).

There are no obstacles to future development of 89 Ross Watt Road complying with the applicable strategies at Clause 13.02-1S and the building regulations invoked by the BPA coverage (see Section 6).

3.6 Other controls

3.6.1 Zoning

89 Ross Watt Road is in the General Residential Zone to which Schedule 1 applies (GRZ1). The GRZ1 has no bushfire planning implications for the site.

3.6.2 Overlays

The site is subject to the Development Contributions Plan Overlay and Schedule 2 (DCPO2) and the Development Plan Overlay and Schedule 4 (DPO4). The western fringe of the site in the Jackson Creek corridor is subject to the Land Subject to Inundation Overlay and Schedule (LSIO), although this is well removed from the development area.

None of the overlays or schedule have implications regarding bushfire.

3.7 Regional bushfire risk assessments and plans

Macedon Ranges Municipal Fire Management Plan (MFMP)

The Municipal Fire Management Plan is aligned with the state level priorities of reducing the number and the severity of bushfires and structure fires and creating a more fire educated and resilient community. The Macedon Ranges MFMP aligns closely with previous strategic bushfire planning strategies objectives and vision for fire management and is anticipated to be updated to current

strategic policies. The municipal fire management planning process is currently under review by Emergency Management Victoria.

The MFMP does not identify any specific fire protection measures undertaken in the area of Ross Watt Road (Macedon Ranges Shire Council, 2020b).

Safer Together – Strategic Bushfire Management Planning

Strategic bushfire management planning is about bringing together land and fire managers, communities and stakeholders to develop a common understanding of bushfire risk and determine strategies and actions to reduce that risk. This planning is informed by world-leading, bushfire behaviour modelling and research into community values that can be affected by bushfires. It brings together multiple perspectives to set agreed objectives for regional bushfire management (DELWP, 2020).

Strategic bushfire management planning is jointly delivered by Forest Fire Management Victoria (FFMVic), Country Fire Authority (CFA), Emergency Management Victoria (EMV), and local government in consultation with communities (DELWP, 2020). Fuel management focused strategies have been developed for six regions, with region specific strategies applied in response to the identified bushfire risk (see Figure 3 and Figure 4). 89 Ross Watt Road is in the Loddon Mallee region.

The Gisborne area is in a Bushfire Risk Engagement Area, which identifies where managing bushfire fuels is most effective in reducing risk but is not considered to be a key area that requires further analysis and more in-depth planning. The lower identified risk to the site (Figure 3), coupled with the management actions in the area (Figure 4) contribute to development of the site being appropriate to the level of bushfire risk.

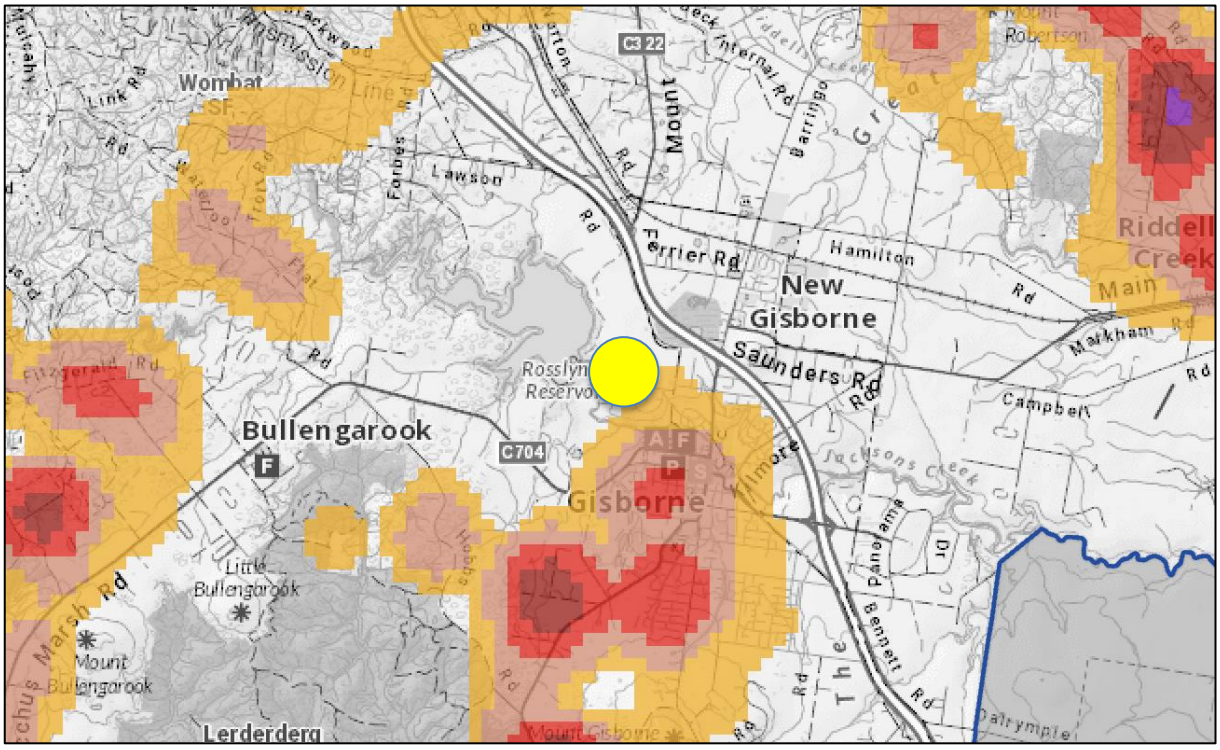

Figure 3 – Risk of house loss (orange is low-intermediate risk, purple the highest risk) with site location indicated by yellow circle (FFMV, 2021).

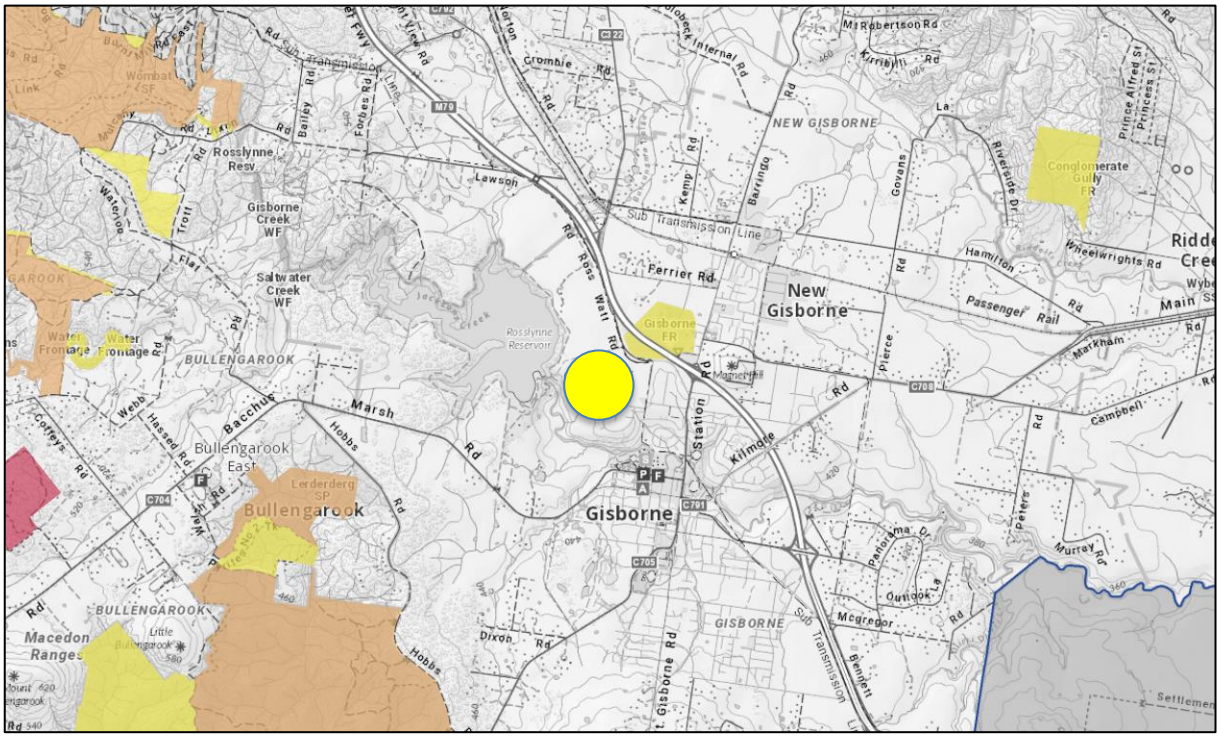

Figure 4 – FFMV fuel management strategy with site location indicated by yellow circle (see Table 1).

Table 1 – Legend to Figure 4.

Fire Management Zone	Legend colour	Aim
Asset Protection Zone (APZ)		To provide the highest level of localised protection to human life, property, critical infrastructure, the economy and high value community assets. Reduces radiant heat and ember attack through planned burning, mowing slashing or vegetation removal.
Bushfire Moderation Zone		To develop fuel- reduced areas of sufficient width and continuity to reduce the speed and intensity of bushfires. BMZ also aims to provide areas which assist in making bushfire suppression safer and more effective and in improving access and egress. Reduces speed and intensity of bushfires. Supports APZs and protects nearby assets, particularly from ember spotting.
Landscape Management Zone		Management objectives are varied and include fuel reduction and ecological outcomes. Hazard reduction may be undertaken to supplement APZ and BMZ activities, only where deemed necessary by a risk-based approach. Treatments may be undertaken for the active management of ecosystem function and for the management of flora and fauna species. Burning (or absence of burning) will be used to ecosystem resilience across the landscape. Planned burning will be used to reduce overall fuel and bushfire hazard, ecological resilience and particular landscape values.
Planned Burn Exclusion		Exclusion of planned burning from areas intolerant to fire.

4 Bushfire hazard 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'* (Macedon Ranges Planning Scheme, 2018a).

This section includes a bushfire assessment at:

- The wider landscape scale, for at least 20km around the site (see Map 1);
- The local landscape scale extending up to 1km from the site and the neighbourhood scale up to 400m around the site boundary, to identify any risk arising around the site beyond the 100m BAL assessment zone (see Map 2); and
- The site scale, for 100m around the site and future residential areas, to determine likely future BALs (see Map 3).

Note that the current BPA coverage invokes AS 3959-2018, which requires a site assessment of the vegetation and topography up to 100m around a building, for the purposes of determining the applicable BAL construction standard for that building (Standards Australia, 2020).

4.1 Landscape assessment

4.1.1 Landscape – to 20km

The development site at 89 Ross Watt Road is approximately 45 kilometres from the Melbourne CBD, immediately to the north-west of Gisborne and 200m south-west of the Calder Highway. Sunbury and Melbourne Airport are to the south-east (see Map 2).

The landscape within 20km is characterised by three main land types:

- Predominantly flat or undulating pastoral land, dissected by a number of river and creek valleys and gorges, to the north and to the east and south of the site beyond the Gisborne township.
- Hilly forested areas associated with the Lerderderg State Park and Wombat State Forest to the west, north and south-west, dominating close to half of the 20km assessment zone. The site is separated from these areas by distance and the presence of Rosslynne Reservoir and parts of the New Gisborne and Macedon townships, with the forest around Rosslynne Reservoir being the closest, less than 1km to the west.
- Established urban areas, comprising the township of Gisborne immediately adjacent to the south-east and, further afield, the expanding townships of New Gisborne and Macedon.

The designated BPA generally covers rural and/or undeveloped land within the 20km landscape assessment zone (see Figure 2. Map 1 shows the extent of non-BPA land). The BMO covers large areas of treed vegetation to the south-west, west (approximately 200m from the site), north and more distantly, the north-east.

Ross Watt Road provides access from the northern part of the site to the Calder Freeway to the east and to Gisborne via the local road network.

There is an extensive fire history within 20km (see Map 1). Large fires, including within the last decade, have burnt in all directions around the site, with the site approached by fire in the 1980-1985 period.

In Victoria, the most likely bushfire scenarios for a large landscape fire are an approach from those directions typically associated with the direction of the wind on severe, or higher, fire danger days i.e. approach of bushfire from the north, north-west, west or south-west (Long, 2006).

The site could potentially be affected by a large and fast-moving grassfire from the north, west or south-west, although the presence of Rosslynne Reservoir to the north-west would act to limit the approach of fire from that direction.

4.1.2 Local – to 1km and Neighbourhood – to 400m

Within the 1km local assessment zone, the landscape to the north and south-west is dominated by pastoral use, with Rosslynne Reservoir and associated bushland in the north-west quarter. To the south-east, and across Jacksons Creek to the south, residential development creates low threat urban areas that are largely outside of the BPA. To the north-east, a large wetland bisected by the Calder Freeway creates an area of Grassland. Small and fragmented urban areas, rural residential properties and the Jacksons Creek corridor make up the balance of the 1km local assessment zone (see Map 3). Within 400m, the neighbourhood scale bushfire risk to the site is largely consistent with that for 1km.

4.1.3 Landscape risk

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, 2017). Whilst no part of the site is covered by the BMO, the landscape types provide a useful description of landscape risk.

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 AS 3959-2018 assumptions (see Table 2).

The development site and surrounding landscape accords with Broader Landscape Type 2.

Table 2 - Landscape risk typologies (from DELWP, 2017).

Broader Landscape Type 1	Broader Landscape Type 2	Broader Landscape Type 3	Broader Landscape Type 4
• *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.*	• *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.*	• *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.*	• *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.*
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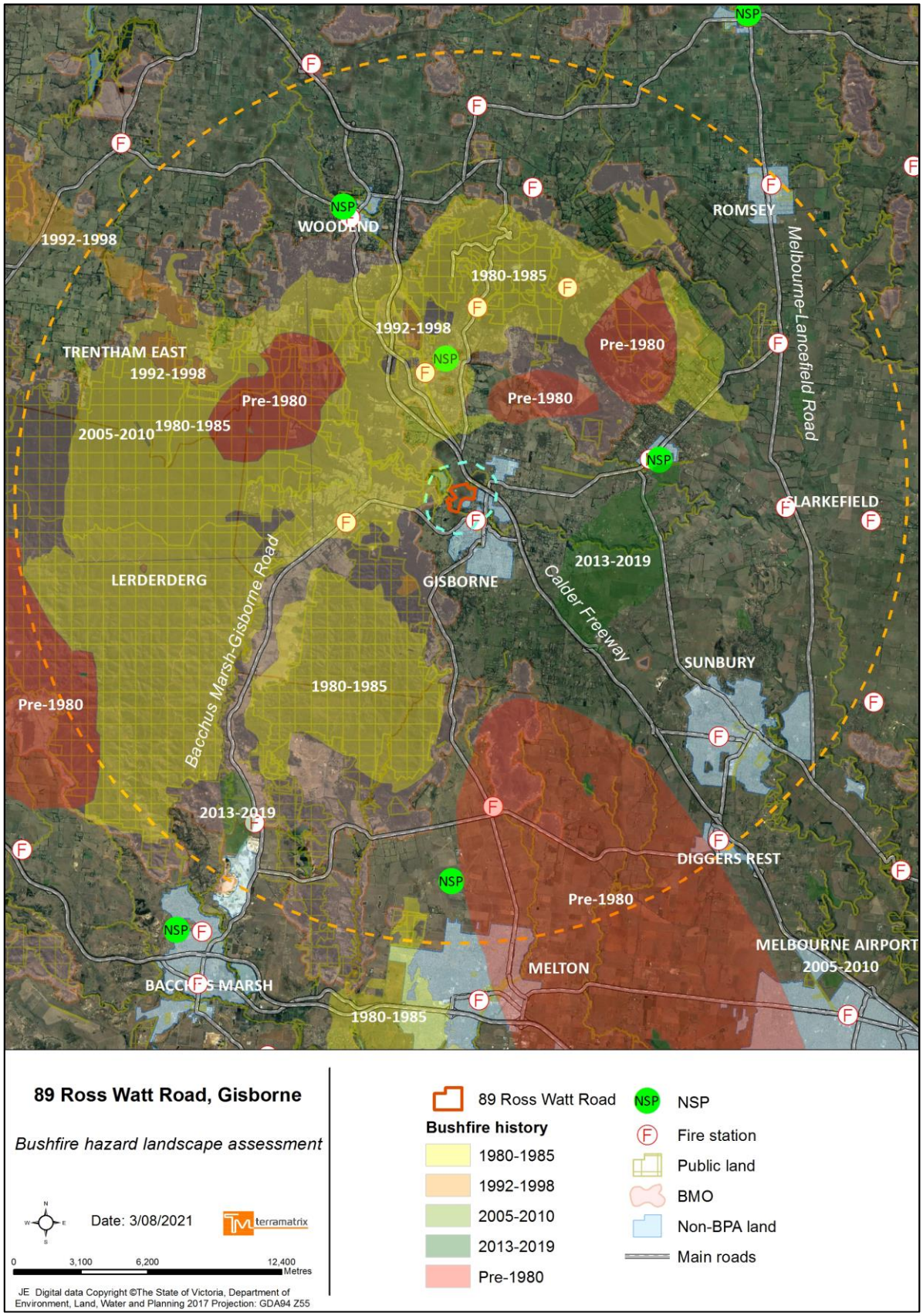
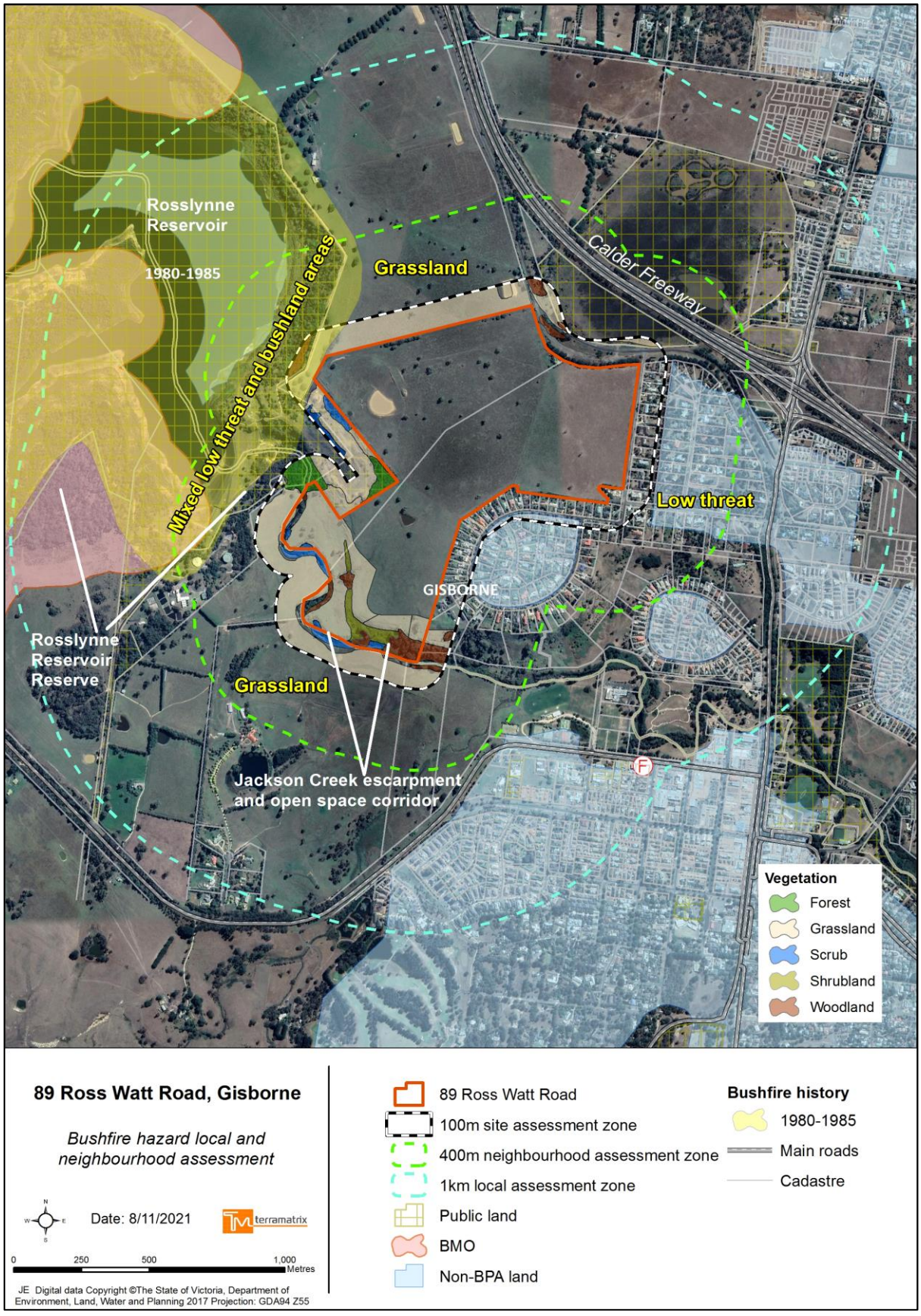


Map 1 - Bushfire hazard landscape assessment plan.



Map 2 - Bushfire hazard assessment plan - local and neighbourhood landscape.

4.1.4 Fire weather

The Victorian planning and building systems 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 recently introduced Australian Fire Danger Rating 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 Grassland under a Catastrophic fire danger rating is summarised in Table 3.

Note that the benchmark of an FFDI 100 represents a 'one size fits all' model of extreme fire weather conditions for the state, but which has been exceeded during some significant fire events, including in Victoria on 'Black Saturday' 2009. Therefore, it is important to note that this is not necessarily the *worst-case* conditions for any location, including the study area.

In southern Australia, since the 1950s there has been an increase in the length of the fire weather season and an increase in extreme fire weather. It is projected that there will be further increase in the number of dangerous fire weather days and a longer fire season for southern and eastern Australia (CSIRO/BOM, 2022a). There is a 'high confidence' that climate change will result in a harsher fire weather climate for the Southern Slopes Victoria West sub-region that the study area is in, with 'high' or 'very high' confidence that there will be more hot days and warm spells and less rainfall (CSIRO/BMO, 2022b).

Currently the CFA and DELWP have no published policy on FFDI/GFDI recurrence intervals. There is, therefore, no compelling rationale for applying a different FFDI/GFDI from the 'default' FFDI 100/GFDI 130 threshold currently used throughout non-Alpine areas of Victoria in the planning and building system.

Table 3 – Grassland FBI and fire danger rating (Source: AFAC, 2022).

Grassland Fire Behaviour Index	Fire Danger Rating (FDR)	Description of conditions	
		Indicative fire behaviour	Potential for impact
100+	Catastrophic	Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.	Extremely high likelihood of agricultural/ pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing machinery and buildings. Very limited visibility due to smoke and dust. Very high risk to the community related to inappropriate pre-considered plans, inadequate sheltering. Extremely strong winds are likely to impact infrastructure (e.g., power lines) and fall trees increasing the likelihood of obstructed roads and power outages.
50-99	Extreme	Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.	Increasingly high likelihood of agricultural/ pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing machinery and buildings. Limited visibility due to smoke and dust. High risk to the community related to inappropriate pre-considered plans, inadequate sheltering. Strong winds are likely to impact infrastructure (e.g., power lines) and fall trees increasing the likelihood of obstructed roads and power outages.
24-49	High	Wind driven, rapidly spreading fires with potential for development into large fire area/size and with the potential for short distance spotting and long flame lengths.	High likelihood of agricultural/ pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing machinery and buildings.
12-23	Moderate	Typically wind driven and rapidly spreading fires with the potential to gain size quickly.	Possible agricultural/ pasture/crop/stock losses together with loss of rural assets such as homesteads, fencing machinery and buildings.
6-11	No rating	Fires easily sustained. Typically wind driven fires that can spread quickly.	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.

5 Bushfire hazard site assessment

The site was assessed on 4th August 2021. Due to access constraints and weather conditions, the Jacksons Creek escarpment area could not be accessed either from the site or from other directions. The assessment of the escarpment area has been done by a desktop analysis. Aerial imagery interpretation, Google Street view imagery, DELWP EVC data and previous assessments of the vegetation within the region have informed this assessment.

5.1 Vegetation

Vegetation within a 100m BAL assessment zone around the site has been classified in accordance with the 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.

The classification is based on the current and likely future state of the vegetation in the short to medium term.

5.1.1 Forest

Treed vegetation in the Rosslynne Reservoir reserve to the west of the site, beyond the quarry, and in the corner of the quarry adjacent to the site, best accords with the Forest group of AS 3959-2018. Forest vegetation comprises areas with trees up 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).

This vegetation is a relatively small area of bushland, largely isolated from the more extensive areas of forest to the west, is distant from the residential areas within the site, and is outside of the BMO.

5.1.2 Woodland

Treed vegetation in the Jacksons Creek corridor partially on the escarpment best accords with the Woodland group of AS 3959-2018. Woodland vegetation comprises areas with trees up to 30m tall, 10% – 30% foliage cover dominated by eucalypts (and/or callitris) with a prominent grassy understorey, may contain isolated shrubs (Standards Australia, 2020).

The areas of Woodland on the escarpment are setback from the site boundary and generally lie toward the base of the slope.

A small patch of Woodland occurs in the disused quarry (see Map 4) to the west of the site; this comprises a mix of vegetation, including some shrubs, and largely comprises a line of trees along the fence line with some limited vegetation within the quarry. Terramatrix is advised that the vegetation in the disused quarry area will be managed for the purposes of bushfire protection and consequently this area has not been assessed (see Section)

5.1.3 Scrub

Riparian vegetation along Jackson Creek best accords with the Scrub group of AS 3959-2018. Scrub comprises areas with shrubs that have an average height of more than 2m, with 10% – 30% foliage cover. Typical of coastal areas and tall heaths up to 6 metres in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres (Standards Australia, 2020).

5.1.4 Shrubland

Vegetation on the slopes of the escarpment to the south of the residential area best accords with the Shrubland group of AS 3959-2018. Shrubland comprises areas with shrubs that are on average less than 2m tall, with greater than 30% foliage cover. Understorey may contain grasses (Standards Australia, 2020).

5.1.5 Grassland

89 Ross Watt Road, the escarpment area immediately to the south, in the quarry and the adjacent property to the north comprised classified Grassland at the time of inspection. Grassland is defined as all forms of vegetation (except Tussock Moorlands) including situations with shrubs and trees, if overstorey foliage cover is less than 10% (includes pasture and cropland) (Standards Australia, 2020).

Grassland is considered hazardous, and therefore classifiable, when it is not managed in a minimal fuel condition. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (e.g. short-cropped grass, to a nominal height of 100 mm) (Standards Australia, 2020). Grassland areas should be assumed to be unmanaged and classifiable unless there is ‘reasonable assurance’ that they will be managed in perpetuity, in a low threat state, no more than 100mm high.

Figure 5 – Looking west along the northern boundary at Grassland on adjacent land to the north.

5.1.6 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 100m from the site* (or a building).
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).

This assessment assumes that the residential and other urban areas proposed for the site will comprise non-vegetated land or low threat vegetation including maintained lawns and cultivated gardens.

Additionally, areas within the site around the development area have been excluded from classification based on their future management as low threat vegetation; these areas include the drainage reserve and open space abutting Swinburne Avenue and the residential areas within the site, and all other areas of open space within the site. These areas are discussed at Section 6.1.3. Non-vegetated areas include roads, structures and driveways within the 100m site assessment zone.

5.2 Topography

AS 3959-2018 requires that the 'effective slope' be identified to determine the BAL and applicable vegetation setback distances. This is the slope of the land under the classified vegetation[6] 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˚.

The topography around 89 Ross Watt Road is varied. To the north, is largely benign undulating land that, despite the minor undulations, is in the 'All upslopes and flat land' slope category of AS 3959-2018 (see Map 3).

The quarry includes a complex arrangement of slopes resulting from its former use, with a central excavation and raised edges abutting the site. Although some steep slopes occur within the quarry itself, the classified vegetation generally sits on the raised berm along the interface with the site, creating a ridge on which half the classified vegetation is Upslope from the site and over which half the classified vegetation is on a Downslope. Although the vegetation on the downslope is effectively screened from the site by the berm, this vegetation is considered to be on a slope in the 'Downslope >0˚ to 5˚' slope class.

The slopes within the escarpment area to the south are also complex, with steep slopes (in the 'Downslope >10˚ to 15˚' and 'Downslope >15˚ to 20˚' classes) giving way to lesser slopes closer to the residential areas, which are generally in the 'Downslope >10˚ to 15'˚ and 'Downslope >5˚ to 10'˚ slope classes, with the Grassland in the drainage reserve being on a slope in the 'Downslope >0˚ to 5'˚ class (see Map 4).

[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 (north).

Map 4 – Bushfire hazard site assessment (south).

6 Planning and design response

This section identifies how future development can respond to the bushfire risk, including the requirements of Clause 13.02-1S, published CFA guidance and the building regulations applicable to construction in a BPA.

6.1 BAL construction standard

To satisfy the relevant strategies of Clause 13.02-1S, future dwellings and other buildings requiring a BAL (see Section 3.2), should be sufficiently setback from classified vegetation to enable the applicable BAL construction standard.

Building setbacks are measured from the edge of the classified vegetation to the external wall of a building, excluding eaves, roof overhangs and some other building appurtenances[7] (Standards Australia, 2020) (see Figure 6).

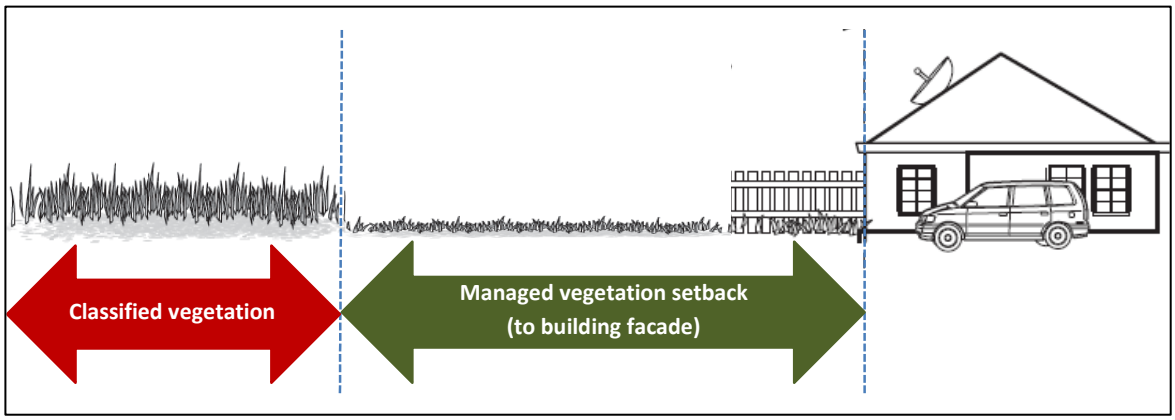


Figure 6 - Example of building-classified vegetation setback (adapted from CFA, 2013).

[7] The setback distance is measured from the edge of the classified vegetation to the external wall of the building, or for parts of the building that do not have external walls (including carports, verandas, decks, landings, steps and ramps), to the supporting posts or columns. The following parts of a building are excluded:

a) Eaves and roof overhangs.
b) Rainwater and domestic fuel tanks.
c) Chimneys, pipes, cooling or heating appliances or other services.
d) Unroofed pergolas.
e) Sun blinds (Standards Australia, 2020).

6.1.1 Building setbacks

89 Ross Watt Road is exposed to classified Grassland to the north, and various vegetation types in other directions. As the settlement planning strategies of Clause 13.02-1S do not apply, the development of the site is not limited to a BAL-12.5 construction standard.

The setbacks required in response to the classified vegetation for BAL-19, based on the hazard assessment in Section 5 and determined using the simple Method 1 procedure of AS 3959-2018, are shown in Table 4 below (note that the Scrub and Shrubland shown on Map 3 and Map 4 are not considered here as they do not constitute a direct bushfire hazard to the site). Dwellings on lots throughout the balance of the site can achieve a BAL-12.5 construction standard without issue.

Table 4 - Building setbacks for BAL-19 and BAL-12.5.

Vegetation type	Effective slope	BAL-12.5 low threat setback distance	BAL-19 low threat setback distance
Grassland	All upslopes and flat land	19m	13m
	Downslope >0˚ to 5˚	22m	15m
	Downslope >5˚ to 10˚	25m	17m
	Downslope >10˚ to 15˚	28m	20m
Forest	Downslope >0˚ to 5˚	57m	43m
Woodland	All upslopes and flat land	33m	24m
	Downslope >5˚ to 10˚	41m	37m
	Downslope >10˚ to 15˚	50m	45m
	Downslope >15˚ to 20˚	60m	56m

The required BAL setbacks (where required) and implications for specific lots are shown on Map 5 and Map 6. The areas of Woodland and Grassland on the steeper slopes of the escarpment to the south are sufficiently separated from the residential areas such that the closer Grassland, on lesser slopes, presents the predominant bushfire hazard and imposes the need for setbacks. Consequently, Map 5 and Map 6 show the site layout responding to the more proximate Grassland on the lesser slopes, with the perimeter road along the southern edge of the development area providing much of the setback.

The perimeter road between the bushfire hazard much of the residential development area, combined with internal setback of dwellings within lots, will provide setbacks for most dwellings such that a BAL-12.5 construction standard can be achieved across most of the site. All lots except those

discussed below can achieve a BAL-12.5 construction standard. Two lots require a BAL-19 construction standard (see Map 5 and Map 6), with the appropriate BAL construction standard on other lots to be determined based on setbacks from the bushfire hazard.

All lots will be subject to a BAL assessment at the time of building permit application and the appropriate BAL applied.

North (see Map 5)
As documented below (see Section 6.1.2), it is anticipated that the disused quarry area will be managed in a low threat state by Southern Rural Water through the Macedon Ranges FPN process, and consequently no setbacks are required from this direction.

Most lots along the northern boundary can achieve BAL-12.5 with no issue due to the presence of the minor reserves and perimeter road. Map 5 shows two areas with pink shading where residential lots are within 19m of the northern boundary; a BAL-12.5 construction standard can be achieved on these lots if the dwellings are setback more than 19m from the northern boundary with the use of internal setbacks. Where the required setbacks cannot be achieved, a BAL-19 construction standard (the next higher BAL) is required.

BAL-19 Lot
At the north-western corner of the site, the end lot backing onto the quarry area and side on to the neighbouring land to the north-west must be built to a BAL-19 construction standard. The dwelling on this lot will require a 13m setback from the bushfire hazard, which must be provided in perpetuity on the neighbouring land to the north-west as shown in orange shading on Map 5.

South (see Map 6)
On the southern bushfire hazard interface with the drainage and conservation reserves associated with Jacksons Creek, dwellings can achieve a BAL-12.5 construction standard if setback beyond the pink shaded areas shown on Map 6. Facing the drainage reserve, dwellings must be setback 22m from the reserve. BAL-12.5 is also possible on the lots facing the conservation reserve, with a 25m setback required from the west and south-west, and a 28m setback from the south.

Where the required setbacks cannot be achieved, a BAL-19 construction standard (the next higher BAL) is required.

All setbacks are shown from the edge of the drainage or conservation reserves. Where part of the reserves is managed in a low threat state (i.e. with grass mown to less than 100mm in height) or a pathway is provided, the setbacks shown will be measured from the edge of the unmanaged vegetation and the overlap with the proposed lots commensurately reduced.

BAL-19 Lot
One lot in the south-eastern most corner immediately abuts the conservation reserve and will require a BAL-19 construction standard with a 17m setback from the bushfire hazard. This setback can be achieved by locating the dwelling 17m from the lot southern boundary or managing the

vegetation in the conservation reserve for 14m (allowing for a 3m side setback of the dwelling from the boundary) in perpetuity.

6.1.2 Disused quarry area

Terramatrix is advised that the disused quarry to the west of the development area will be managed for the purposes of bushfire protection by Southern Rural Water through the issuance of an annual Fire Prevention Notice (FPN) by the Macedon Ranges Municipal Fire Prevention Officer.

6.1.3 Landscaping and vegetation

This report assumes that vegetation within the site, comprising minor reserves, residential gardens and public open space, will be maintained in a low threat state.

Areas of unmanaged vegetation within the site will not comprise hazardous classified vegetation if they meet one or more of the exclusion criteria for low threat vegetation under AS 3959-2018, including:

- Single areas of vegetation less than 1ha in area and at least 100m from other areas of classified vegetation;
- Multiple areas less than 0.25ha (2,500m^2) in area that are at least 20m from a building or each other; and
- Strips of vegetation less than 20m wide that are at least 20m from a building, other strips or any other area of classified vegetation.

Landscaping will not be considered hazardous if vegetation beneath the tree canopies is reliably low threat, including grass maintained at less than 100mm in height, or if plantings meet the exclusion criteria above.

6.1.4 Perimeter roads and fire hydrants

Perimeter roads are a useful design feature to separate future development from hazardous vegetation and to facilitate property protection and fire fighting (see Figure 7). A perimeter road provides much of the setbacks along the top of the escarpment in the south of the site. Perimeter roads, and all roads within the site, should meet the CFA guidelines detailed in the CFA publication *Design Requirements Vehicle Access and Water Supply Requirements in Residential Developments* (CFA, 2022). This publication also provides guidance regarding the provision of a reliable water supply for fire fighting is provided, via a conventional reticulated hydrant system, in accordance with the hydrant objective for residential subdivision at Clause 56.09-3.

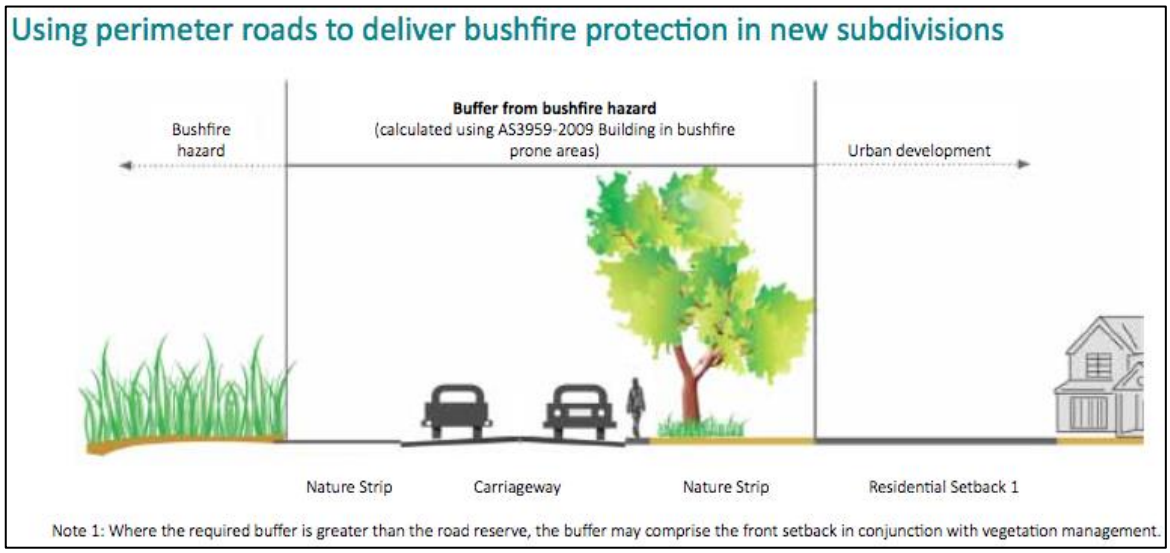
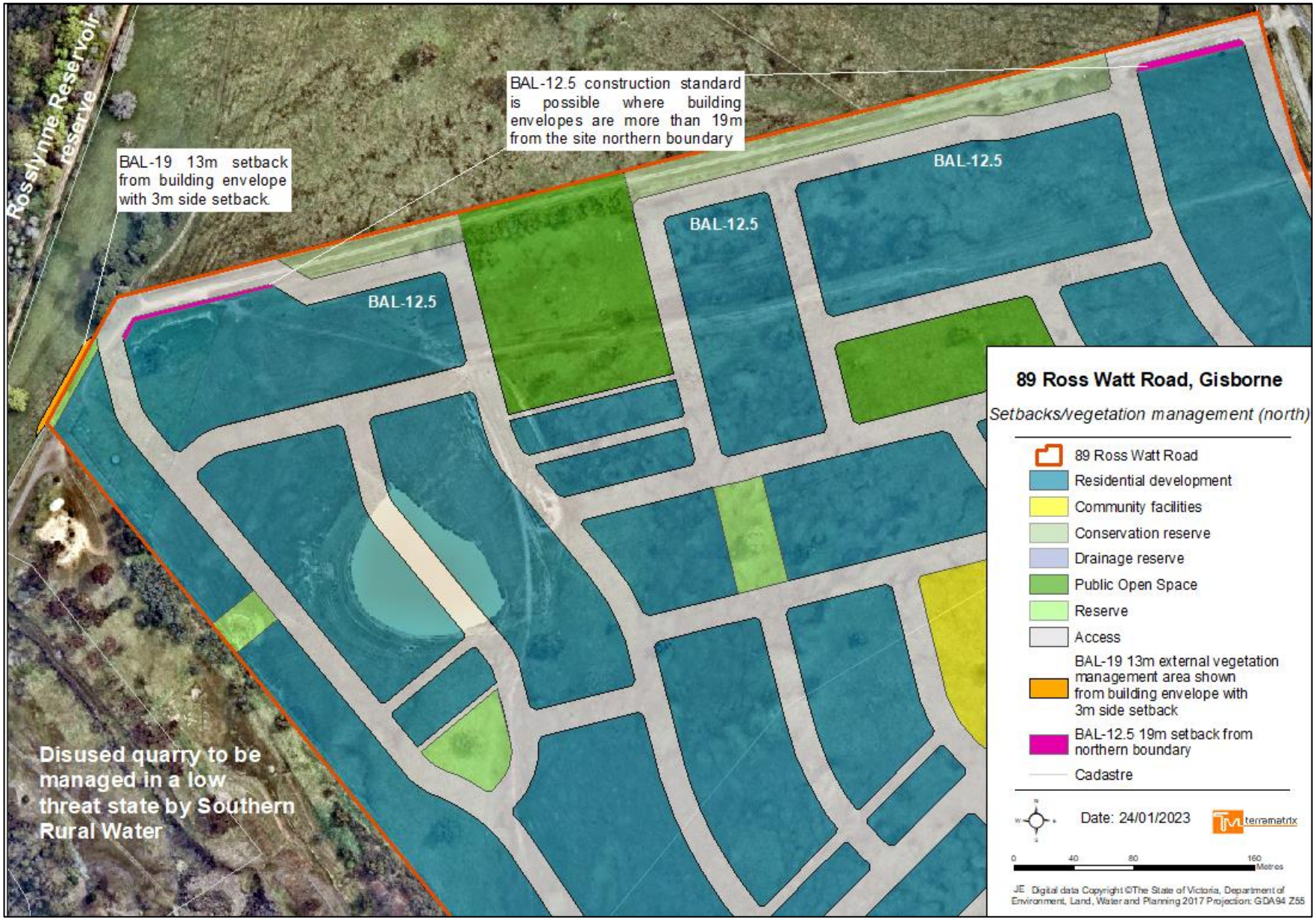
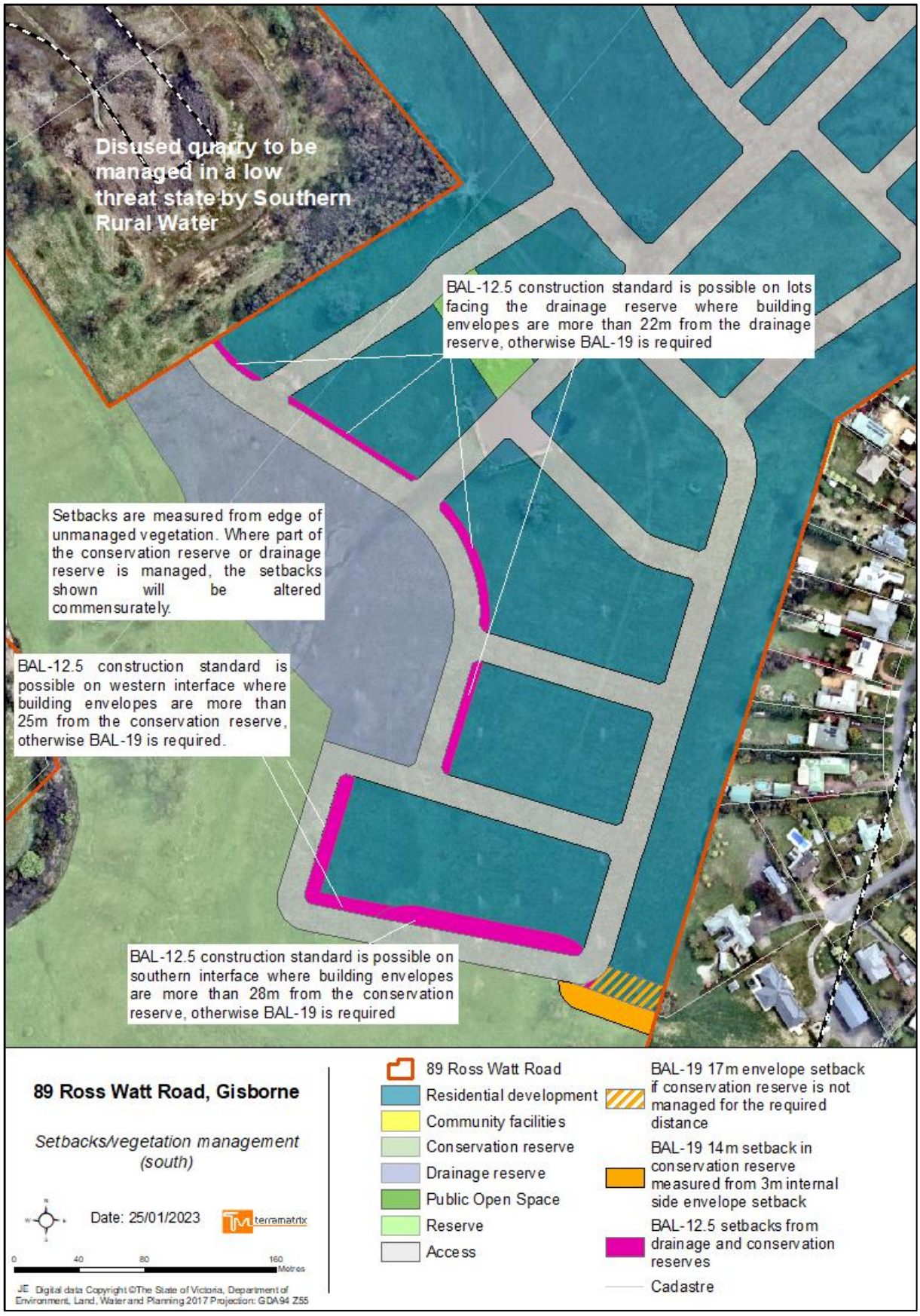


Figure 7 - Illustration of a perimeter road to provide required development setbacks (DELWP, 2015).



Map 5 – Applicable BAL setbacks from classified vegetation (north).



Map 6 – Applicable BAL setbacks from classified vegetation (south).

6.2 Clause 13.02-1S Bushfire planning

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

6.2.1 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

The site is in a moderate risk bushfire risk location, with the Rosslynne Reservoir acting to fragment the bushfire hazard to the north-west. The risk will be further reduced as development occurs within of the site, with a 'buffer' provided by the large lot interface and BAL-19 dwellings (where required) on the development edge and a perimeter road along much of the northern and southern interfaces. The application of the building controls as they relate to bushfire is an appropriate response to the bushfire risk to the site.

Accordingly, the protection of human life can be prioritised by adopting the measures recommended in this report and through application of the building regulations for construction in a BPA, including ensuring future dwellings, and other applicable buildings, are located where an appropriate BAL construction standard can be achieved (i.e. achieving setbacks for future buildings from unmanaged vegetation).

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.

As identified in Section 4.1, the site is in a moderate risk landscape, with limited possibility of approach of bushfire from the higher threat direction to the north-west. The bushfire threat to the site is limited to Grassfire on adjacent properties and the escarpment area where the closest vegetation comprises Grassland, and the possibility of ember attack from a fire in the bushland further to the west.

The nearest *lowest* risk locations are the developed urban areas of the Gisborne township, immediately adjacent across Swinburne Avenue to the east that are not in the BPA (see Figure 2 and Map 1).

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 development in the site.

The CFA consider that community resilience to bushfire will be strengthened (and hence, presumably, vulnerability to bushfire will be reduced) when a strategic planning proposal demonstrates that Clause 13.02-1S strategies have been applied, and where a proposal takes advantage of existing settlement patterns so that new development will not expose the community to increased risk from bushfire.

The CFA provide principles to respond to Clause 13.02-1S including that settlement planning decisions should:

- *'Direct development to locations of lower bushfire risk.*
- *Carefully consider development in locations where there is significant bushfire risk that cannot be avoided.*
- *Avoid development in locations of extreme bushfire risk.*
- *Avoid development in areas where planned bushfire protection measures may be incompatible with other environmental objectives'* (CFA, 2015).

It is considered that development of the site can appropriately implement the strategies in Clause 13.02-1S that aim to prioritise protection of human life and will, therefore, meet the CFA strategic planning principles for bushfire.

6.2.2 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 of AS 3959-2018 and, as appropriate, additional guidance provided in *Planning Practice Note 64 Local planning for bushfire protection* (DEWLP, 2015), *Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140* (DEWLP, 2018a) and *Planning Permit Applications Bushfire Management Overlay Technical Guide*[8] (DELWP, 2017).

The type and extent of (hazardous) vegetation within, and up to 400m around, the site has been identified and classified into AS 3959-2018 vegetation groups. Classification was 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 100m around the site (see Map 3 and Map 4).

[8] Although the site is not affected by the BMO, DELWP's BMO technical guide provides useful descriptors and guidance for assessing the bushfire risk at the landscape scale, as discussed in Section 4.1.

In relation to climatic conditions and fire weather, the AS 3959-2018 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 (see Section 3.5) and is shown in Map 1. This is based on the most recent BPA mapping for the area, which was released on 17th August 2022.

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

As identified in Section 3.6.2, no part of the site area is covered by the BMO. An area of BMO occurs approximately 200m to the west. This is considered appropriate and reflects state-wide BMO mapping introduced into the Macedon 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; and***
- ***The site for the development.***

The hazard has been assessed and described at the landscape, site, neighbourhood and local scales (see Section 4 and Map 1 to Map 4).

At the site scale, the assessment follows the AS 3959-2018 methodology applied in a BPA, of classifying vegetation and topography within 100m of a building, and for this study extending 100m around the overall site (see Map 3 and Map 4). At the local and neighbourhood scales, the site has been assessed at the 1km and 400m scales (see Map 2).

At the broader landscape scale a 20km radius around the site has been applied (see Section 4.1 and Map 1) in accordance with guidance about assessing risk for planning scheme amendments in Planning Advisory Note 68 (DEWLP, 2018a) 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 author is not aware of any consultation that may have occurred with CFA. This report forms part of the consultation process that will occur prior to development.

The site layout incorporates bushfire protection elements in its design and layout in response to the bushfire hazard. These include an interface of larger lots that allow for internal setbacks on exposed edges of the development area and a road interface with the escarpment area and the northern boundary. The removal or permanent assured management of nearby vegetation is discussed in this report (such as in the disused quarry area), allowing for reduced BAL construction standard and setbacks. These features are consistent with CFA guidance.

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.

DELWP advisory and practice notes, Clause 13.02-1S, and the building regulations invoked by the BPA coverage, specify the general requirements and standards for assessing the risk. These have been applied in this report as appropriate and bushfire protection measures have been identified commensurate with the risk.

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.

If the objective and applicable strategies of Clause 13.02-1S are successfully implemented, as discussed in this report, and the building regulations for construction in a BPA are complied with, then the risk can be deemed to be acceptably mitigated such that development can proceed.

The CFA specify that areas where development should not proceed could include:

- *'Isolated settlements where the size and/or configuration of the settlements will be insufficient to modify fire behaviour and provide protection from a bushfire.*
- *Where bushfire protection measures will not reduce the risk to an acceptable level.*
- *Where evacuation (access) is severely restricted.*
- *Where the extent and potential impact of required bushfire protection measures may be incompatible with other environmental objectives or issues, e.g. vegetation protection, land subject to erosion or landslip'* (CFA, 2015).

None of these criteria or characteristics are applicable to the site.

6.2.3 Settlement planning strategies

Settlement planning must strengthen the resilience of settlements and communities and prioritise protection of human life. In the absence of a re-zoning or other planning scheme amendment, the settlement planning strategies of Clause 13.02-1S are not considered to apply to the development of 89 Ross Watt Drive. The strategies are listed here but not responded to.

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'

6.2.4 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 site has a long history as pastoral land, with no remnant vegetation present in the development area. There are no apparent additional biodiversity impacts associated with the findings of this bushfire assessment.

6.2.5 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'* (Macedon 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'* (Macedon Ranges Planning Scheme, 2018a).

Development of the site will be able to respond to this strategy and achieve acceptable safety if:

- Setbacks for dwellings from classified vegetation are achieved to enable appropriate BAL construction;
- Neighbouring land is managed through the Macedon Ranges FPN process where required;
- Vegetation within the site is managed in a low threat state;
- Adequate access and egress for emergency management vehicles is provided by a residential road network; and
- A reliable water supply for fire fighting is provided, via a conventional reticulated hydrant system, in accordance with the hydrant objective for residential subdivision at Clause 56.09-3 (Macedon Ranges Planning Scheme, 2014).

7 Conclusion

This report has assessed the bushfire hazard in and around 89 Ross Watt Road, Gisborne, in accordance with Clause 13.02-1S in the Macedon Ranges Planning Scheme, the AS 3959-2018 methodology invoked by the Victorian building regulations, and additional guidance provided in *Planning Practice Note 64 Local planning for bushfire protection* (DEWLP, 2015), *Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140* (DEWLP, 2018a) and, in relation to the landscape hazard assessment, the DELWP technical guide *Planning Permit Applications Bushfire Management Overlay* (DELWP, 2017).

All of the site is currently a designated BPA; however, no part of the site, or land within 200m around it, is covered by the BMO.

The type and extent of (hazardous) vegetation within, and up to 100m around the development area, has been identified and classified into AS 3959-2018 vegetation groups, based on aerial imagery and site investigation (where accessible). The classification is based on the current state of the vegetation and identifies that the predominant bushfire hazard is primarily Grassland to the north on adjacent land and south-west on the Jacksons Creek escarpment. The vegetation in the disused quarry to the west has not been assessed as it will be managed through the Macedon Ranges FPN process.

For the purposes of determining BALs and vegetation setback distances for future buildings, the applicable slope class is 'All upslopes and flat land' under the classified vegetation to the north and various Downslopes to the south-west.

The landscape is one of moderate bushfire risk, with the higher bushfire threat direction to the north-west comprising the Rosslynne Reservoir. Bushfire behaviour can reasonably be expected to be within AS 3959-2018 presumptions and design parameters. Accordingly, it is considered that the risk can be mitigated to an acceptable level and the development can appropriately prioritise the protection of human life, if dwellings (and any other buildings that require a BAL) are separated from hazardous vegetation to allow an appropriate BAL construction standard, in accordance with the building regulations.

Vegetation within the site, on lots and common areas, must be managed in a low threat state. Good access and egress for emergency management vehicles and residents, in the event of a bushfire, can be achieved via a conventional urban-residential road network. A reliable water supply for fire fighting can be provided via a conventional reticulated hydrant system in accordance with the hydrant objective for residential subdivision.

8 Appendix 1 - 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, 2019).

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