

Bushfire assessment Miners Rest Township Plan

Final report

30 August 2022
Version 1.1

Prepared for:

City of Ballarat

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About

Kevin Hazell Bushfire Planning is a town planning service that works with public and private sector clients to understand and apply planning scheme bushfire policies and requirements. It is led by Kevin Hazell who is a qualified town planner with extensive experience working on bushfire planning at State and local levels in Victoria.

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Disclaimer

The views expressed in this report are those of the author. Information in this document is current at the time of writing. While all professional care has been undertaken in preparing the document, the author accepts no liability for loss or damages incurred because of reliance placed upon its content.

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Version Control

Version	Date	Comment	Name
v1.0	12 August 2022	Final Report	Kevin Hazell Town Planner
v1.1	30 August 2022	Updated Final Report	Kevin Hazell Town Planner

1. Introduction

Kevin Hazell Bushfire Planning has been engaged by the City of Ballarat (the '**Council**') to prepare a bushfire assessment to inform a planning scheme amendment to introduce content from the Miners Rest Township Plan (November 2019) (the '**Township Plan**') into the Ballarat Planning Scheme (the '**planning scheme**').

1.1 The Township Plan

The Township Plan includes the following description of its purposes:

The Miners Rest Township Plan is a strategic document that provides a long-term planning and design vision for Miners Rest. It sets a strategic framework to manage and guide future development through to 2040.

The plan is being developed as part of a program of local area planning for the City of Ballarat to implement the Ballarat Strategy. The scope of the project includes the full extent of the Miners Rest postcode.

The Township Plan includes a township plan diagram which is reproduced in Figure 1A. This sets out the key directions of the Township Plan.

The Council provided a draft copy of a proposed planning scheme amendment to introduce a new local policy for Miners Rest. This would include high level directions derived from the Township Plan, with the Township Plan included as a policy document.

See Figure 1A: Township plan extract

1.2 About Miners Rest

The Township Plan describes Miners Rest as follows:

Miners Rest is a small rural township/settlement located within a picturesque open rural landscape. The township is located immediately north of the Western Freeway, some 17 kilometres north of the Ballarat Central Business District. The township is physically separated from the outer northern edge of Ballarat by the Western Freeway, while the north/south aligned Howe Street runs through the centre of Miners Rest in a north-south direction.

Miners Rest is characterised by the original township area located to the north of Cummins Road and the new residential estates of Macarthur Park and Sunraysia Heights Estates located south of Cummins Road towards the Western Freeway. The North and South areas of Miners rest have very different settlement history, character and needs.

The township area of Miners Rest is set within a broader open rural/agricultural landscape, which includes open views and scenic vistas of a number of surrounding volcanic hills/landforms, including Mt Rowan, Mt Blowhard and the Bald Hills.

Other major land uses/developments within Miners Rest study area include:

- *The Dowling Forest Racecourse and surrounding equine precinct (located immediately to the north east) which is a significant economic and activity hub.*
- *The Miners Rest Community Park, and the Miners Rest and Macarthur Park Wetlands*
- *The former quarry site which has been decommissioned and recently rehabilitated for potential redevelopment*
- *The Central Victorian Livestock Exchange development, which was approved by separate planning processes, is currently under construction to the west.*

1.3 The study area

The Study Area for this report uses the study area included in the Township Plan., which is reproduced in Figure 1B. Other contextual elements relevant to this report are included in maps within this chapter.

See Figure 1B: Township plan extract – Study area

See Figure 1C: Locality map with study area

See Figure 1D: Locality aerial photo with study area

See Figure 1E: Zones

See Figure 1F: Bushfire Management Overlay and Bushfire Prone Areas

1.4 Methodology

c13.02-1S Bushfire Planning includes strategies that inform how bushfire hazards are to be assessed and for considering where and how growth and new development should occur. Having regard to these strategies, this report responds to the scope of work as follows:

- Section 2 provides an overview of bushfire content in the planning scheme, including the strategies in *c13.02-1S Bushfire Planning*.
- Section 3 describes the bushfire context using a range of information sources, mostly arising from the work of public authorities such as fire authorities and the Council.

- Section 4 describes landscape bushfire hazards that may influence the locality, similar to a bushfire hazard landscape assessment described in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP 2017). This includes the identification of landscape types that help understand the relative risk between different places.
- Section 5 describes the bushfire hazard at the neighbourhood and local scale. This is informed by the methodology for a bushfire hazard site assessment as described in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP 2017) and *AS3959-2018 Construction of buildings in bushfire-prone areas* (Standards Australia).
- Section 6 includes a discussion and recommendations. The objectives and strategies in *c13.02-1S Bushfire Planning* are used to inform the recommendations.

1.5 A note about the bushfire assessments

The bushfire assessments have been prepared to inform decision making associated with strategic planning and the strategic application of *c13.02-1S Bushfire Planning*. The bushfire assessments do not consider bushfire for the purpose of individual planning applications.

FIGURE 1A: MINERS REST TOWNSHIP PLAN (EXTRACT)



Figure 13 Miners Rest Township Plan - Township Plan

FIGURE 1B: MINERS REST TOWNSHIP PLAN (EXTRACT SHOWING STUDY AREA)

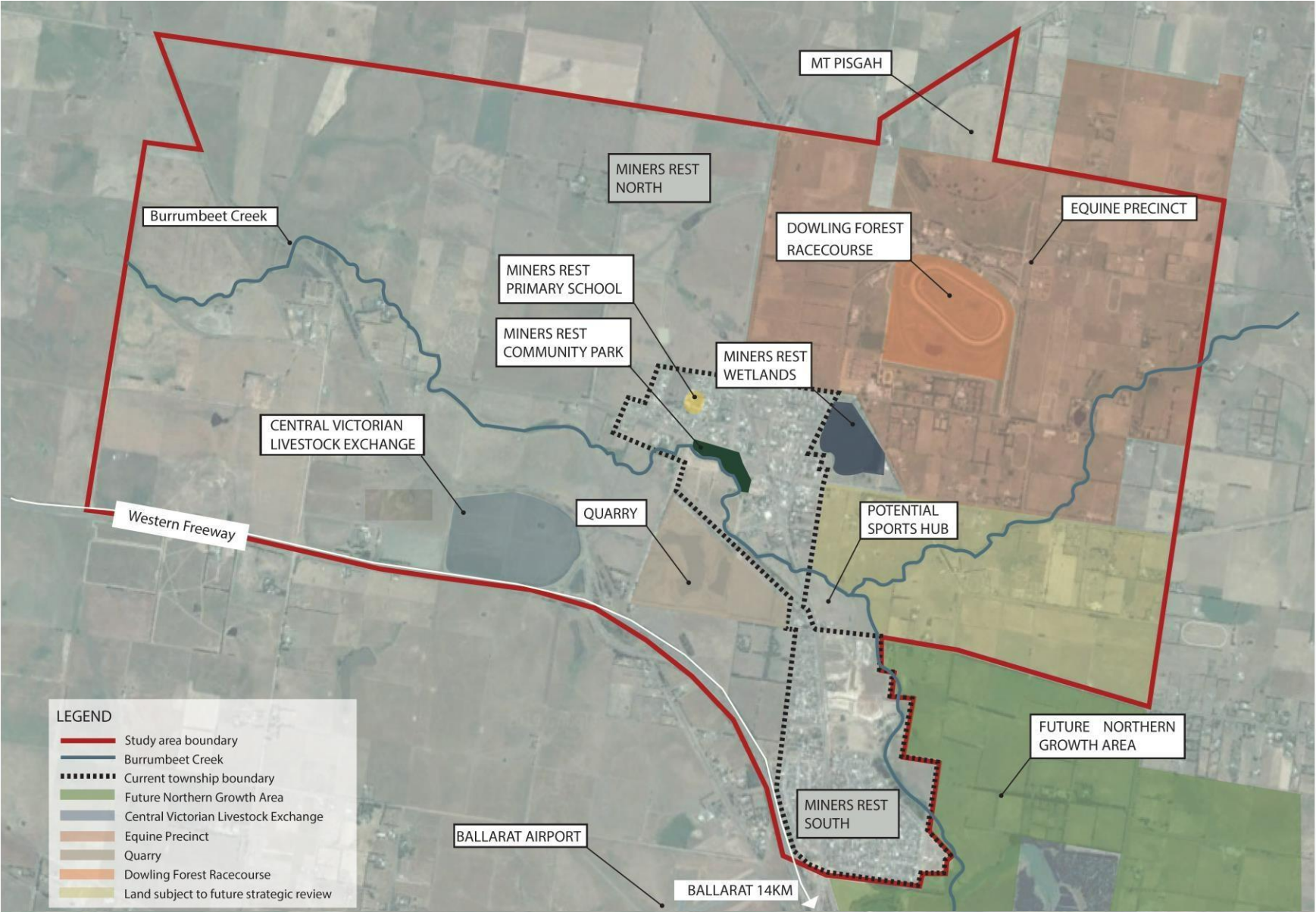
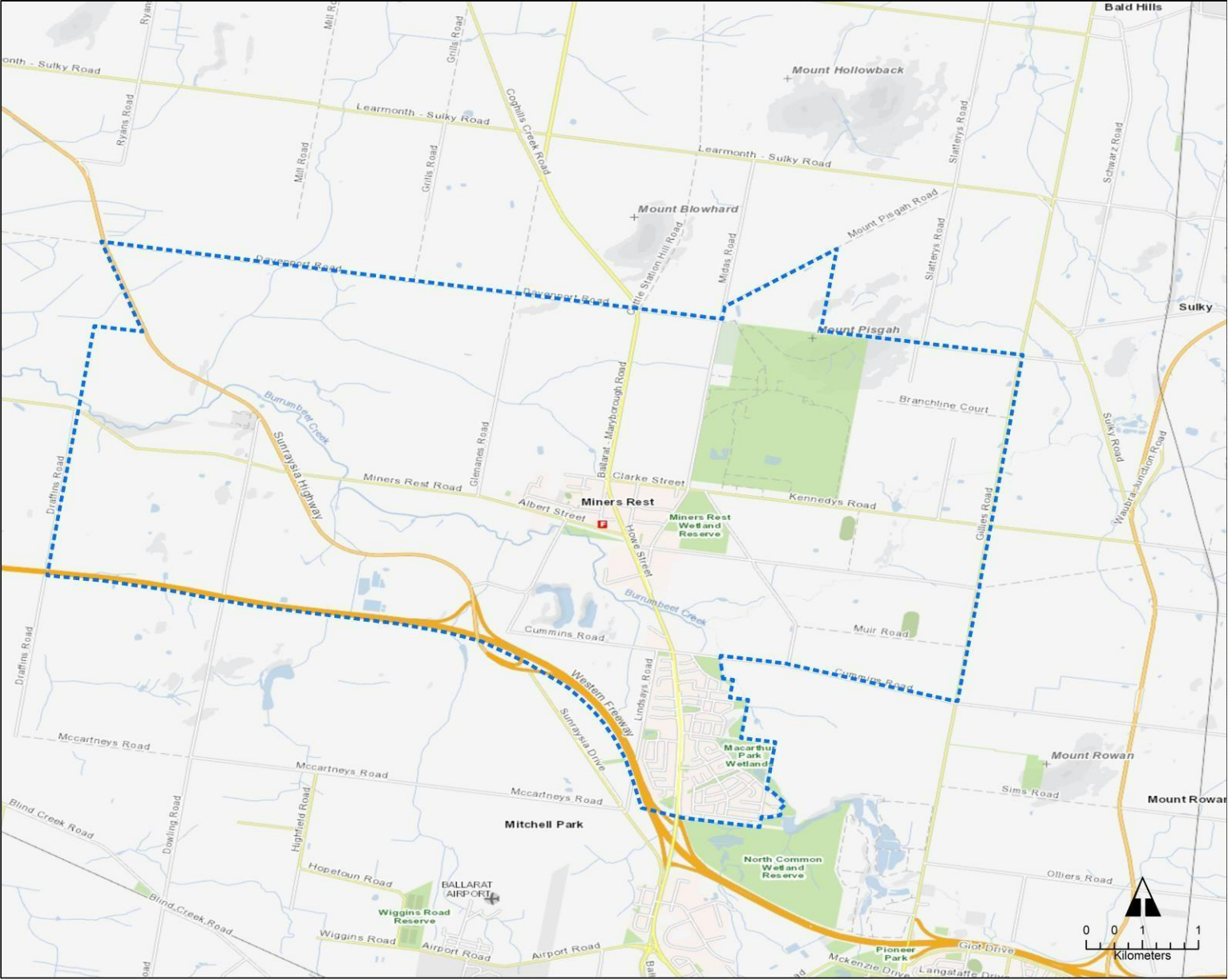


FIGURE 1C: LOCALITY MAP



 Study area

FIGURE 1D: LOCALITY AERIAL PHOTO



 Study area

FIGURE 1E: ZONES

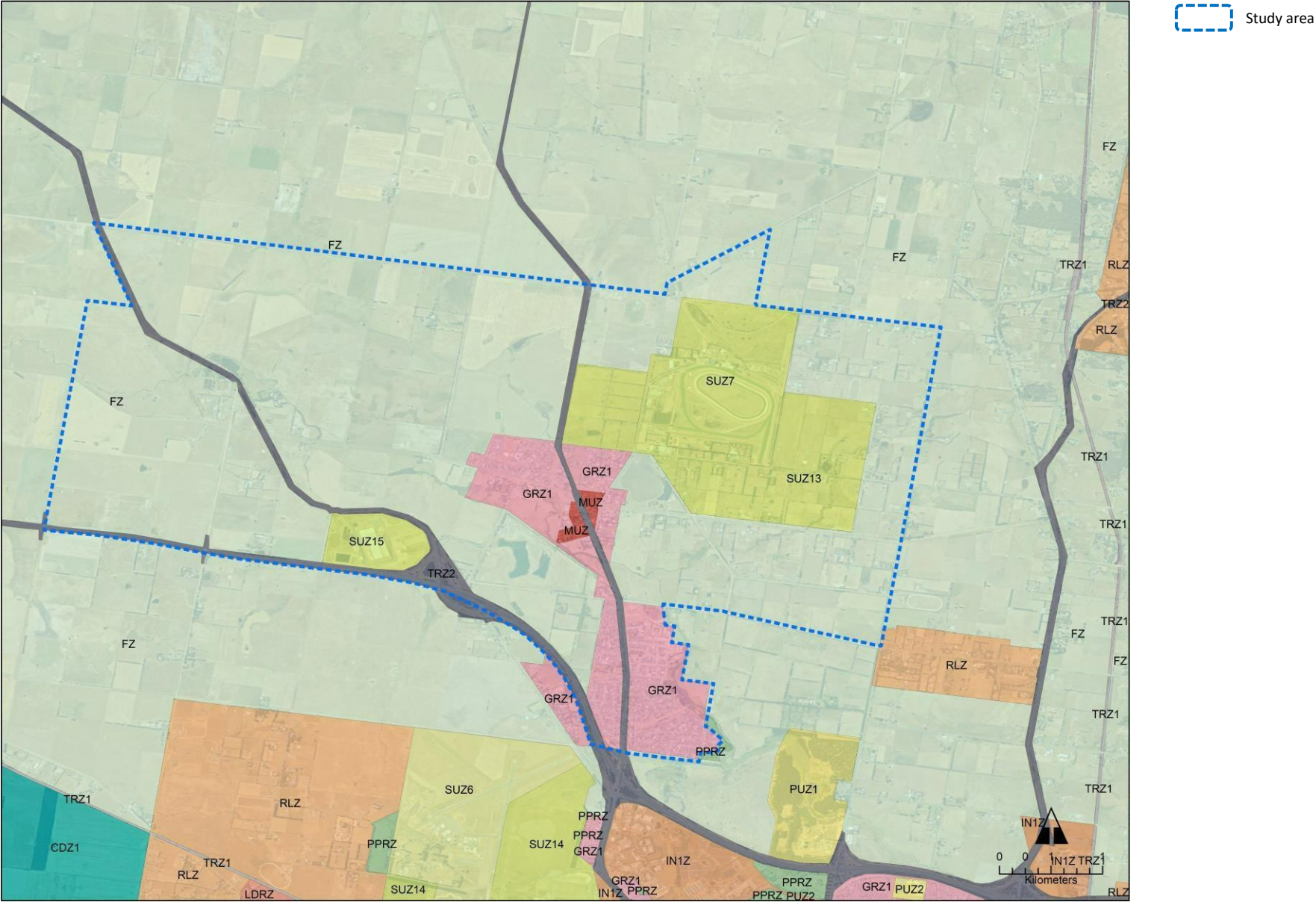
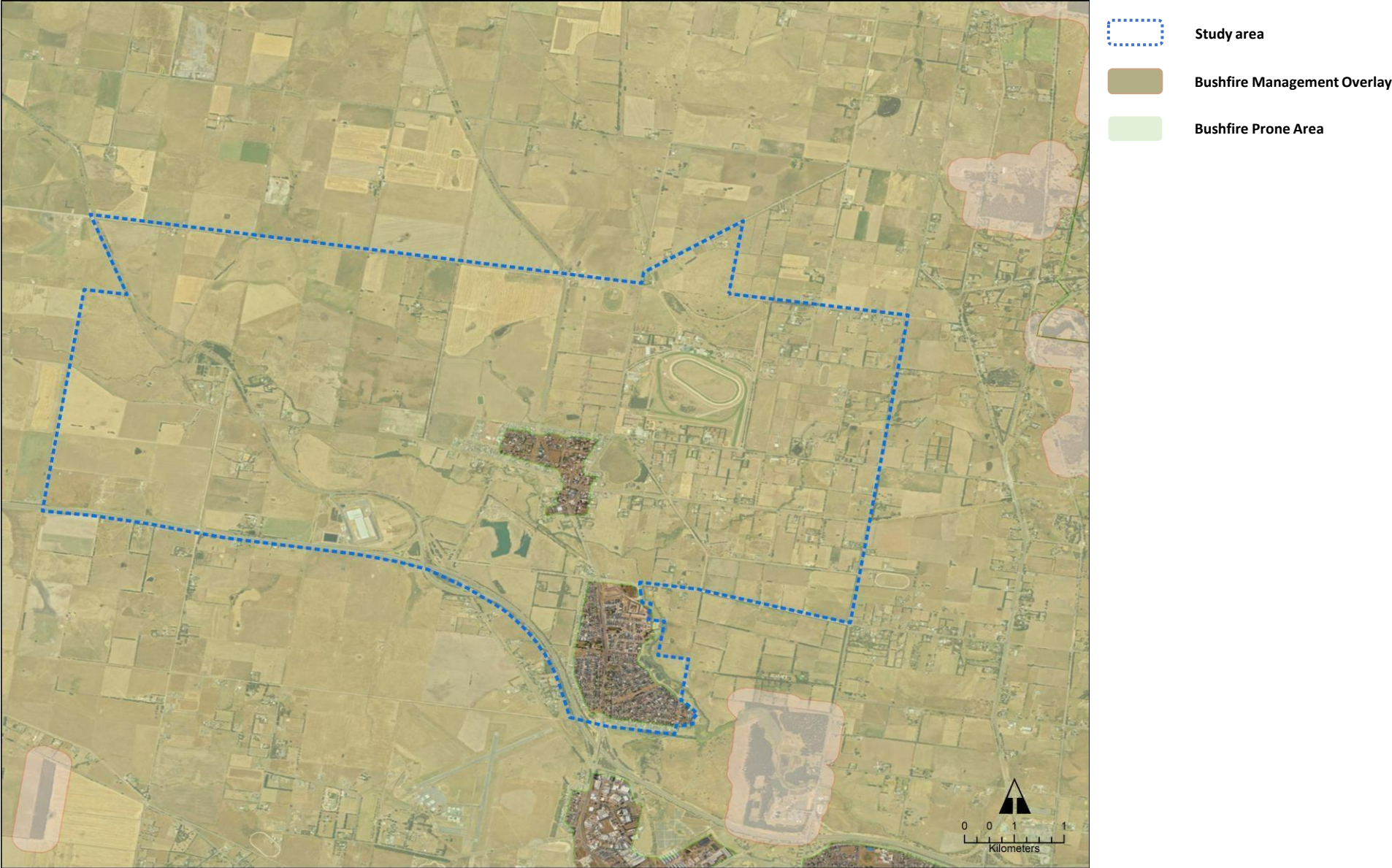


FIGURE 1F: BUSHFIRE MANAGEMENT OVERLAY AND BUSHFIRE PRONE AREA



2. Planning scheme bushfire context

The planning scheme contains provisions that inform permit requirements, application requirements and policies & decision guidelines where the bushfire hazard could be an influence on future land use and development. This section provides an overview of these provisions. Figure 2 summarises the considerations.

2.1 Integrated decision making (c71.02-3)

c71.02-3 requires planning authorities, in bushfire areas:

[T]o prioritise the protection of human life over all other policy considerations.

Bushfire considerations are not to be balanced in favour of net-community benefit, as occurs for all other planning scheme matters. The bushfire emphasis in c71.02-3 was introduced through Amendment VC140 in December 2017. Such policy settings were recommended in 2011 by the *2009 Victorian Bushfires Royal Commission*.

2.2 Natural hazards and climate change (c13.01-1S)

The objective of the State natural hazards and climate change policy is:

To minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning.

c13.01-1S *Natural hazards and climate change* contains a series of strategies to meet the above objective:

- *Respond to 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 and climate adaptation strategies to be implemented.*
- *Site and design development to minimise risk to life, property, the natural environment and community infrastructure from natural hazards.*

2.3 State planning policy for bushfire (c13.02-1S)

The objective of the State planning policy for bushfire is:

To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.

The key strategy that directs bushfire decision making is:

Give priority 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 the consideration of bushfire risk in decision making at all stages of the planning process.*

c13.02-1S *Bushfire Planning* applies to all planning and decision making relating to land:

- *Within a designated bushfire prone area;*
- *Subject to a Bushfire Management Overlay; or*
- *Proposed to be used or developed in a way that may create a bushfire hazard.*

c13.02-1S *Bushfire Planning* contains a series of strategies and these are summarised below.

Landscape bushfire considerations

c13.02-1S *Bushfire Planning* requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;*
- *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.*

Alternative locations for development

c13.02-1S Bushfire Planning includes two strategies that seek to direct new development:

- Give priority to the protection of human life by [...] directing population growth and development to low risk locations [.]
- Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.

Availability and safe access to areas of enhanced protection

c13.02-1S Bushfire Planning requires a location in easy reach that provides better protection for life from the harmful effects of bushfire:

- Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS3959-2018 Construction of buildings in bushfire-prone areas (Standards Australia) where human life can be better protected from the effects of bushfire.
- Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.

The views of the relevant fire authority

c13.02-1S Bushfire Planning identifies that a key element of a risk assessment is to:

- Consult [...] with [...] the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.

Site based exposure

c13.02-1S Bushfire Planning provides policy directions for planning authorities about the level of acceptable exposure for new development enabled by a planning scheme amendment:

- 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 AS3959-2018 Construction of buildings in bushfire-prone areas (Standards Australia).
- 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 AS3959-2018.

Areas of high biodiversity conservation value

c13.02-1S Bushfire Planning provides directions on situations where a bushfire risk and biodiversity values are both present:

- 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.

No increase in risk

c13.02-1S Bushfire Planning provides an overall view of acceptable risk:

- 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.

2.4 Bushfire Management Overlay (c44.06)

The purpose of the Bushfire Management Overlay is:

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

The Bushfire Management Overlay is generally applied to patches of vegetation (except grasslands) that are larger than 4 hectares in size. Where such a patch of vegetation exists, a 150 metre ember protection buffer is added and this land is also included in the Bushfire Management Overlay. Areas of extreme hazard are also included in the Bushfire Management Overlay.

Planning Advisory Note 46: Bushfire Management Overlay Methodology and Criteria (2013, DPTLI) provides more information on where the Bushfire Management Overlay is applied.

2.5 Bushfire Planning (c53.02)

c52.03 *Bushfire Planning* specifies the requirements that apply to a planning application under c44.06 Bushfire Management Overlay. The purpose of this provision is:

- *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 ensure that the location, design and construction of development appropriately responds to the bushfire hazard.*
- *To ensure development is only permitted where the risk to life, property and community infrastructure from bushfire can be reduced to an acceptable level.*
- *To specify location, design and construction measures for a single dwelling that reduces the bushfire risk to life and property to an acceptable level.*

2.6 Bushfire prone area (c13.02-1S, Building Act 1993 & Building Regulations 2018)

Bushfire Prone Areas are areas that are subject to or likely to be subject to bushfire. The Minister for Planning makes a determination to designate Bushfire Prone Areas under section 192A of the Building Act 1993.

Designated Bushfire Prone Areas include all areas subject to the Bushfire Management Overlay. Bushfire Prone Areas also include grassland areas and, occasionally, smaller patches of non-grassland vegetation.

The Building Regulations 2018 require bushfire construction standards in these areas and these are implemented by the relevant building surveyor as part of the building permit. These construction standards are referred to as bushfire attack levels (BAL).

Where land is included in the Bushfire Prone Area is also included in the Bushfire Management Overlay, the requirements of the Bushfire Management Overlay take precedence. Where this is the case, the building regulations ensure bushfire construction requirements in a planning permit are given effect to by the relevant building surveyor at the time a building permit is issued.

2.7 Use and development control in Bushfire Prone Areas (c13.02-1S)

c13.02-1S *Bushfire Planning* includes planning requirements for Bushfire Prone Areas. These are in the form of a 'use and development control' that applies to certain uses that are in a Bushfire Prone Area.

The use and development control applies to 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.

The use and development control requires that when assessing a planning permit application:

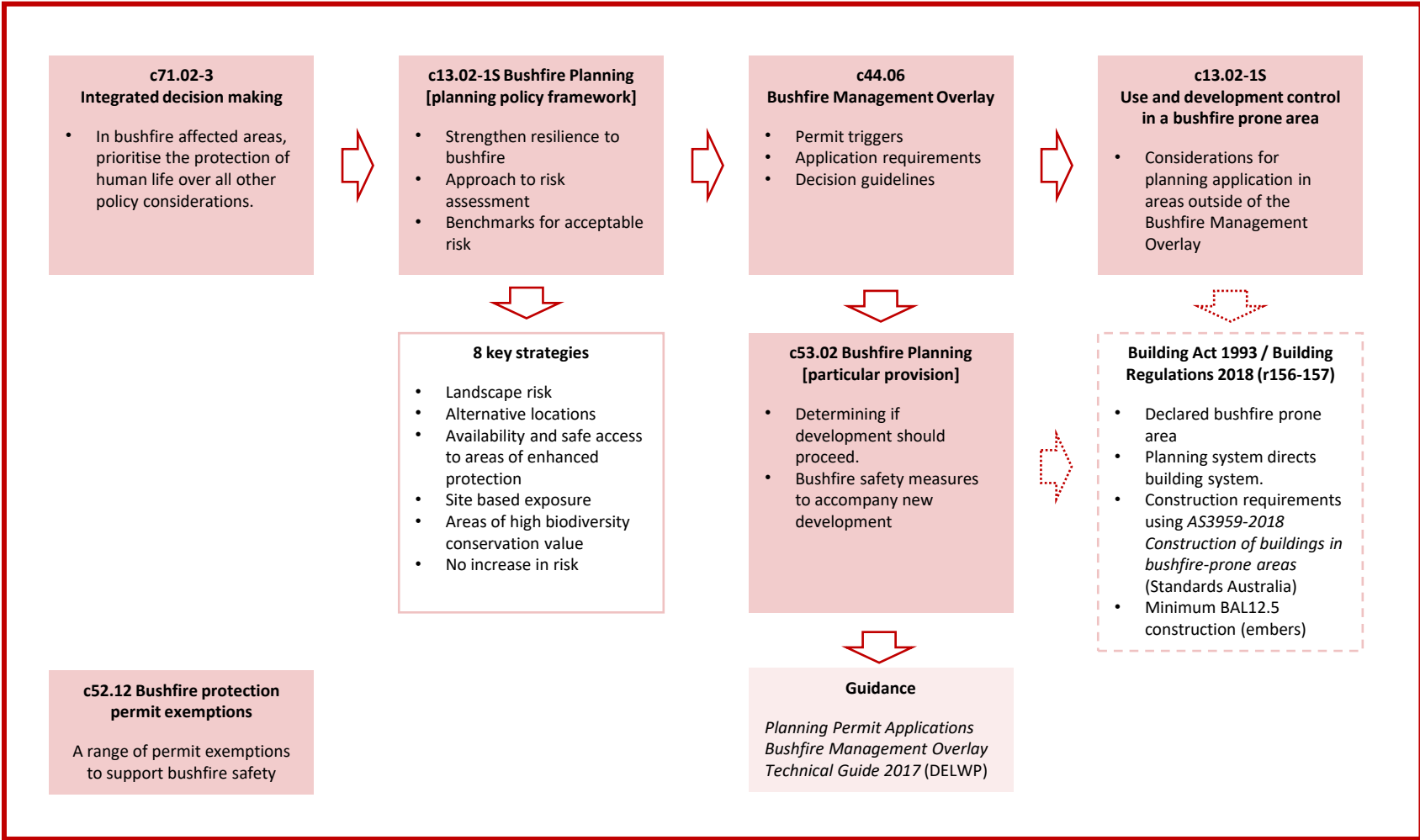
- *Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.*

2.8 Bushfire protection permit exemptions (c52.12)

Bushfire related permit exemptions are included in c52.12 *Bushfire protection exemptions*. Exemptions are included for the following matters:

- Permit exemptions to create defensible space around existing buildings used for accommodation. They apply to bushfire prone areas, which includes land subject to the Bushfire Management Overlay. These are commonly known as the 10/30 rule and the 10/50 rule. This exemption applies to accommodation constructed or approved on or before 2009.
- Permit exemptions to create defensible space for a dwelling under the Bushfire Management Overlay, where the defensible space is specified in a planning permit issued after 31 July 2014. The permit exemption only applies to specified zones, which include residential zones. The permit exemption does not apply to defensible space specified in a planning permit for uses other than a dwelling and for any uses outside of the Bushfire Management Overlay.
- Permit exemptions for buildings and works associated with a community fire refuge and a private bushfire shelter (where a Class 10c building).

FIGURE 2: PLANNING SCHEME BUSHFIRE PROVISIONS AND SUPPORTING MATERIAL



3. Bushfire context

This section describes the bushfire context of the study area using a range of information sources that help understand bushfire. The matters identified include information typically provided as part of a bushfire hazard landscape assessment as described in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP 2017).

Spatial information on the bushfire context is included in Attachment 1.

3.1 Bushfire conditions in Victoria

The Department of Environment, Land, Water and Planning (2015) identifies key features relevant to bushfires in Victoria. These include:

- A forest fire danger index of well over 100
- Severe drought conditions
- Temperatures above 40° C
- Relative humidity below 10%
- Strong to gale-force north-westerly winds
- A strong to gale-force west-south-westerly wind change that turns the eastern flank of a running bushfire into a wide new fire front.

These conditions can create bushfires with powerful convection columns. Ember storms, wind-blown debris, downbursts, fire tornadoes and explosive flares of igniting eucalyptus vapour are likely to arise. DELWP notes that these weather conditions are representative of where a bushfire does most of its damage in a single day.

DELWP notes that these weather conditions are representative of where a bushfire does most of its damage in a single day. The greatest loss of life and property in Victoria have historically been caused by such single day bushfires.

DELWP (2020) further notes that climate change is forecast to:

- Extend the bushfire season
- Make bushfires larger, more severe, and more frequent
- Make days with an elevated fire danger rating more frequent
- Start the bushfire season earlier, with more bushfires starting in spring (which may also change fire weather conditions that are experienced, such as wind speed and direction).

3.2 Bushfire management strategy guiding public agencies

The *Grampians Bushfire Management Strategy* (DELWP 2020) considers the long-term implications of bushfire to direct the activities of bushfire-related public agencies and to reduce bushfire risk to people, property, infrastructure and economic activity.

The bushfire management strategy includes simulations of house loss to identify areas across a landscape where bushfires could have the greatest impact. The outputs from these simulations show that the study area, comparative to other locations in the Grampians Region, does not have areas significantly affected by projected house loss from bushfire.

See **Attachment 1 Figure A: Modelled house loss bushfire risk**

3.3 Planning scheme bushfire designations

Planning schemes identify potentially bushfire affected land through the inclusion of land into the Bushfire Management Overlay or within a designated bushfire prone area (referenced in *c13.02-1S Bushfire Planning* and approved under the Building Act 1993).

3.3.1 Bushfire Management Overlay

The Bushfire Management Overlay is applied across Victoria based on areas of non-grassland vegetation larger than 4ha, with a 150m buffer applied to account for ember attack. It is also applied to land likely to be subject to extreme bushfire behaviour.

The Bushfire Management Overlay is not applied to any part of the Study Area. This reflects the lack of non-grassland bushfire hazards that meet the 4ha size threshold.

3.3.2 Bushfire prone area

A bushfire prone area is applied to all land within the Bushfire Management Overlay along with grassland areas, smaller patches of non-grassland vegetation and land usually within 150m or 50m of these areas.

For the Study Area, grasslands are included in the Bushfire Prone Area whilst low and lower fuel parts of the settlement are excluded except for a 50m buffer on the grassland edges of the settlement.

See **Figure 1F: Bushfire Management Overlay and bushfire prone area**

3.4 Victorian Fire Risk Register

The Victorian Fire Risk Register (VFRR) is a data set prepared by fire authorities and local councils that identifies assets at risk of bushfire. The human settlement data is most relevant to planning scheme decision making.

The VFRR is useful to the extent that it shows current assets (for example, settlements) at risk, according to fire authorities and the local council. The VFRR should not however be over-emphasised in planning decision making as it has not been prepared for this purpose and does not contemplate new risk that might arise because of a planning decisions.

The VFRR identifies the existing settlement parts of Study Area as being at medium risk. This is a typical risk to identify where settlements are located within a grassland setting.

See **Attachment 1 Figure B: Victorian Fire Risk Register human settlement polygons**

3.5 Regional bushfire planning assessment

The *Regional Bushfire Planning Assessment Grampians 2012* (DPCD) provides information about 'identified areas' where a range of land use planning matters intersect with a bushfire hazard.

Identified areas are not shown for the Study Area.

See **Attachment 1 Figure 1E: Regional Bushfire Planning Assessment**

3.5 Joint Fuel Management Program

The Joint Fuel Management Program outlines where Forest Fire Management Victoria, the CFA and (sometimes) other public agencies intend to carry out fire management operations on Victoria's public and private land over the next three years. The Joint Fuel Management Program is published by Forest Fire Management Victoria (2021).

The Joint Fuel Management Program can include the following treatments:

- Asset protection zones designed to provide localised protection to human life, property and key assets.
- Bushfire moderation zones designed to reduce the speed and intensity of bushfires.
- Landscape management zones designed to reduce overall bushfire hazard at the landscape scale, in addition to land management and ecological objectives.

Interventions are identified in the Miners Rest Recreation Reserve and small area in the Miners Rest Public Park. These are best described as local treatments rather than landscape-wide treatments.

See **Attachment 1 Figure 1C: Joint fuel management plan**

3.6 Bushfire history

Bushfire history can be informative to understanding possible bushfire behaviour, but where bushfire has or has not occurred in the past should not be overemphasised in planning decision making. All bushfire hazards are assumed capable of being part of a bushfire and planning decision making is required to respond to bushfire hazards on this basis.

However, bushfire history can assist in understanding how communities have previously experienced bushfire and can reiterate important features likely to arise in any future bushfire (for example, the effect of the late afternoon wind change typical in Victoria's worst bushfire weather).

Bushfire history includes fires in forested areas well away from Miners Rest, as well as grassfires in the grassland areas to the west of Miners Rest.

See **Attachment 1 Figure 1D: Bushfire history**

4. Landscape and strategic bushfire considerations

This section describes landscape bushfire hazards. Having regard to the contextual information in Section 3, it considers how the bushfire hazard in the surrounding landscape may affect the study area.

Landscape bushfire hazards are important because they help to understand how bushfire may impact on a location, including the likelihood of a bushfire threatening a location, its likely intensity and destructive power, and the potential impact on life and property.

The extent of the surrounding landscape that is relevant is determined by factors such as the extent and continuity of vegetation, potential fire runs and where a bushfire can start, develop and grow large. The extent of bushfire hazard relevant may be 1-2km or up to 50km, depending on the locality.

The landscape analysis in this section takes a similar approach to a bushfire hazard landscape assessment described in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP 2017). This includes the identification of landscape types that help understand the relative risk between different places.

See **Figure 4A: Overview of landscape types**

The section enables key strategies in *c13.02 Bushfire Planning* to be considered. These strategies include the following:

Landscape bushfire considerations

c13.02-1S Bushfire Planning requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site.*
- *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.*

Availability of safe areas

c13.02-1S Bushfire Planning requires a location in easy reach that provides absolute protection for life from the harmful effects of bushfire:

- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS3959-2018 Construction of Buildings in bushfire-prone areas (Standards Australia) where human life can be better protected from the effects of bushfire.*
- *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.*

Landscape areas schematically illustrated in this section are derived from two key variables :

- Landscape bushfire hazards and their potential to generate extreme fire behaviour and neighbourhood scale destruction; and
- Availability and access to low fuel areas that may provide shelter from the harmful effects of bushfire.

See **Figure 4B: Landscape bushfire analysis**

4.1 Landscape bushfire hazards

Landscape bushfire hazards are from grasslands.

Due to the highly modified environment grassland areas are often in a managed setting either because of agricultural activities or managed as part of the gardens associated with rural living and low-density residential development. For considering the landscape risk associated with grassland areas, it is assumed that the grasslands are unmanaged.

The Country Fire Authority (2022) identify the following grassfire characteristics:

- Grassfires can start and spread quickly and are extremely dangerous.
- Grassfires can travel up to 25 km per hour and pulse even faster over short distances.
- Grass is a fine fuel and burns faster than bush or forests.
- Grassfires tend to be less intense and produce fewer embers than bushfires, but still generate enormous amounts of radiant heat.
- The taller and drier the grass, the more intensely it will burn.

- The shorter the grass, the lower the flame height and the easier the fire will be to control.
- Grassfires can start earlier in the day than bushfires, because grass dries out more quickly when temperatures are high.

Interspersed with grassland areas are areas of fragmented vegetation. These will include clumps of non-grassland vegetation, roadside vegetation, strips of trees (for example, along vehicle accesses and water courses) and the occasional smaller patch of non-grassland vegetation. The extent of fragmentation will be a factor when considering bushfire at the local scale but the impact on landscape-scale bushfire is minimal. The grassland vegetation will be the dominant driver of bushfire behaviour in the grasslands around the Study Area.

4.2 Likely landscape bushfire scenarios

The extent of grasslands means a larger grassfire can approach the Study Area, most likely under the influence of a north-westerly wind and/or a south-westerly wind on the wind change typical in Victoria's bushfire weather. Grassfires may start in any location.

Figure 4C provides a generalised understanding of how bushfire threatens settlements.

See **Figure 4C: Generalised understanding of how bushfire threatens settlements**

4.3 Low fuel areas

An assessment has been made of the location and access to places that are lower fuel where human life can be better protected from the harmful effects of bushfire. Low fuel areas can provide protection by enabling people to move away from bushfire hazards if they need to.

c13.02-1S Bushfire Planning defines low fuel places as BAL:Low. BAL:Low places are where hazardous vegetation is more than 100m away (50m for grasslands). Hazardous vegetation for the purpose of BAL:Low is defined as vegetation that cannot be excluded under 2.2.3.2 of *Australian Standard AS3959:2018 Construction of buildings in bushfire-prone areas* (Standards Australia).

In BAL:Low places, people sheltering in the open air will not be exposed to flame contact and the highest levels of radiant heat from a moving bushfire, although radiant heat from some hazards may still be life threatening. BAL:Low places may also be subject to localised fires, which could include gardens and structures on fire. BAL:Low places do not consider ember attack, which may arise in these areas.

BAL:Low places are present in most parts of the existing settlement where more than 50m away from grasslands. For the Study Area, the land not included in a Bushfire Prone Area is a credible estimate of land that is capable of being assessed as BAL:Low. It provides a reliable assessment of low-fuel land in Miners Rest.

See **Figure 4B for indicative locations of low fuel areas and BAL:Low capable areas**

4.4 Landscape types

Based on the likely bushfire scenarios, the potential for neighbourhood scale destruction and the availability and access to low fuel areas, landscape types can be applied. The identified landscape types are necessarily strategic and are not intended to be scaled to apply to individual properties.

Landscape type 1 is assessed for the Study Area. Landscape type 1 is described by DELWP (2017) as follows:

- *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 (usually capable of being provided within a site or development proposal).*

Landscape type 1 positions the Study Area at the lowest end of landscape risk on the spectrum of risk in Victoria using the landscape type typology.

FIGURE 4A: OVERVIEW OF LANDSCAPE TYPES

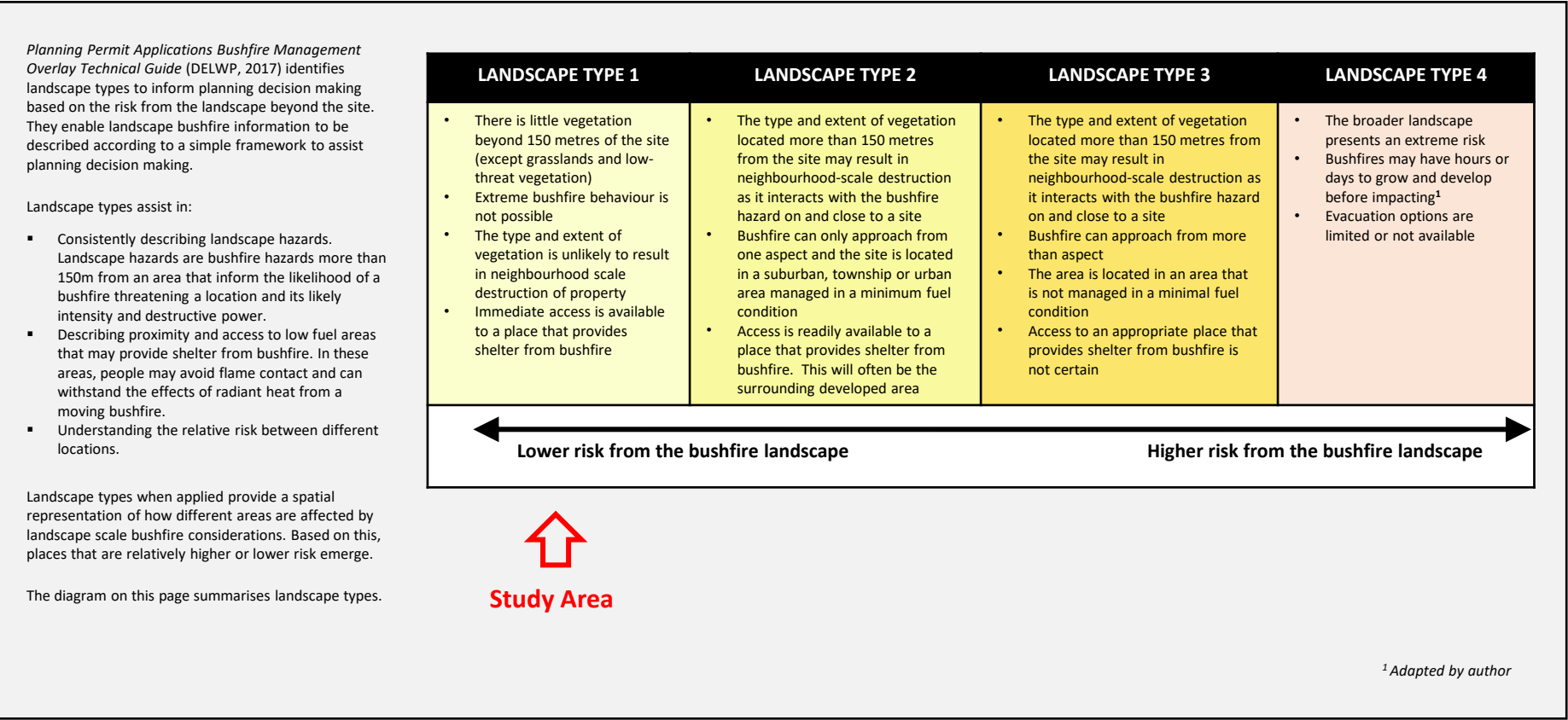


FIGURE 4B: LANDSCAPE BUSHFIRE ANALYSIS

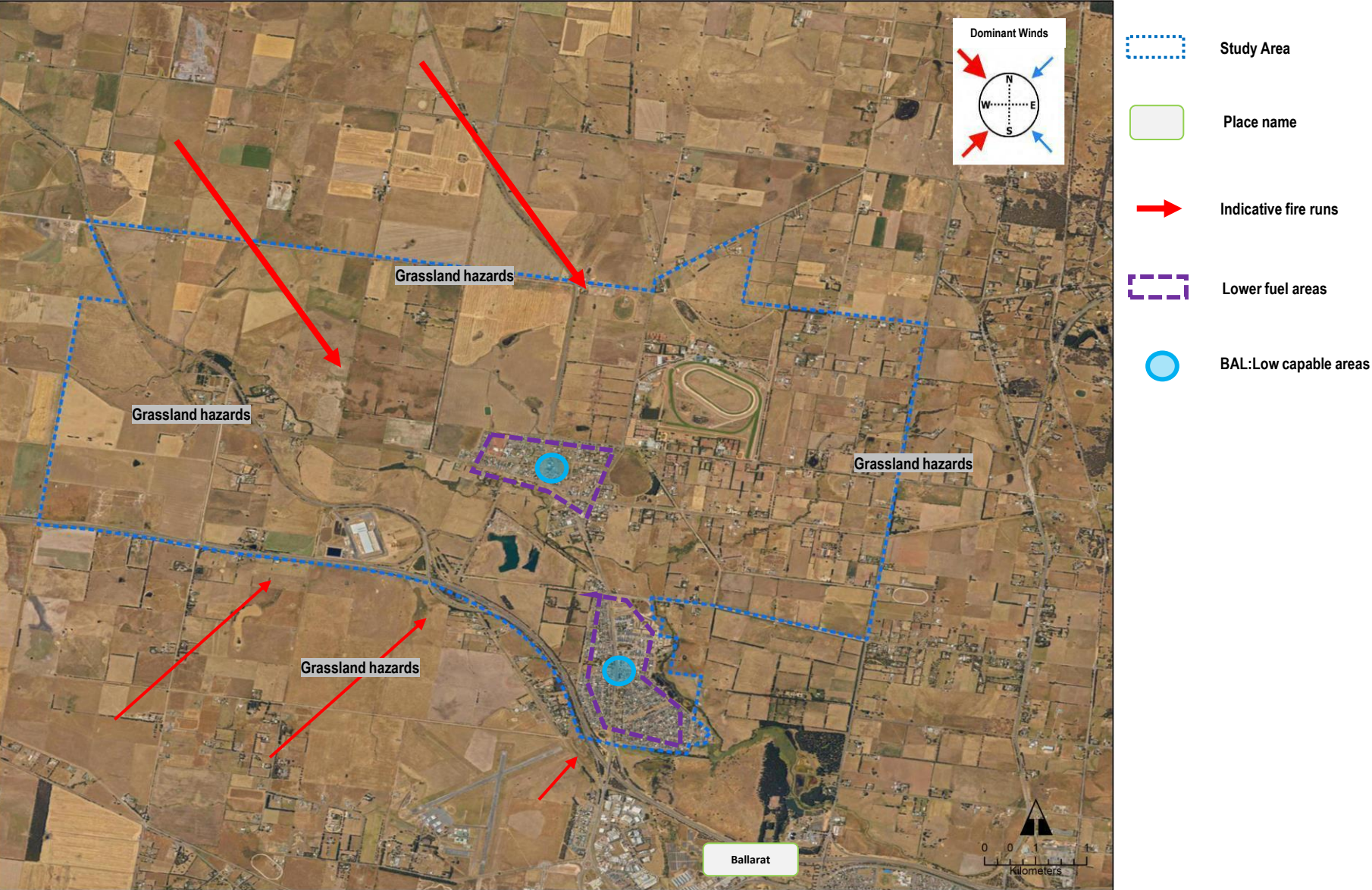
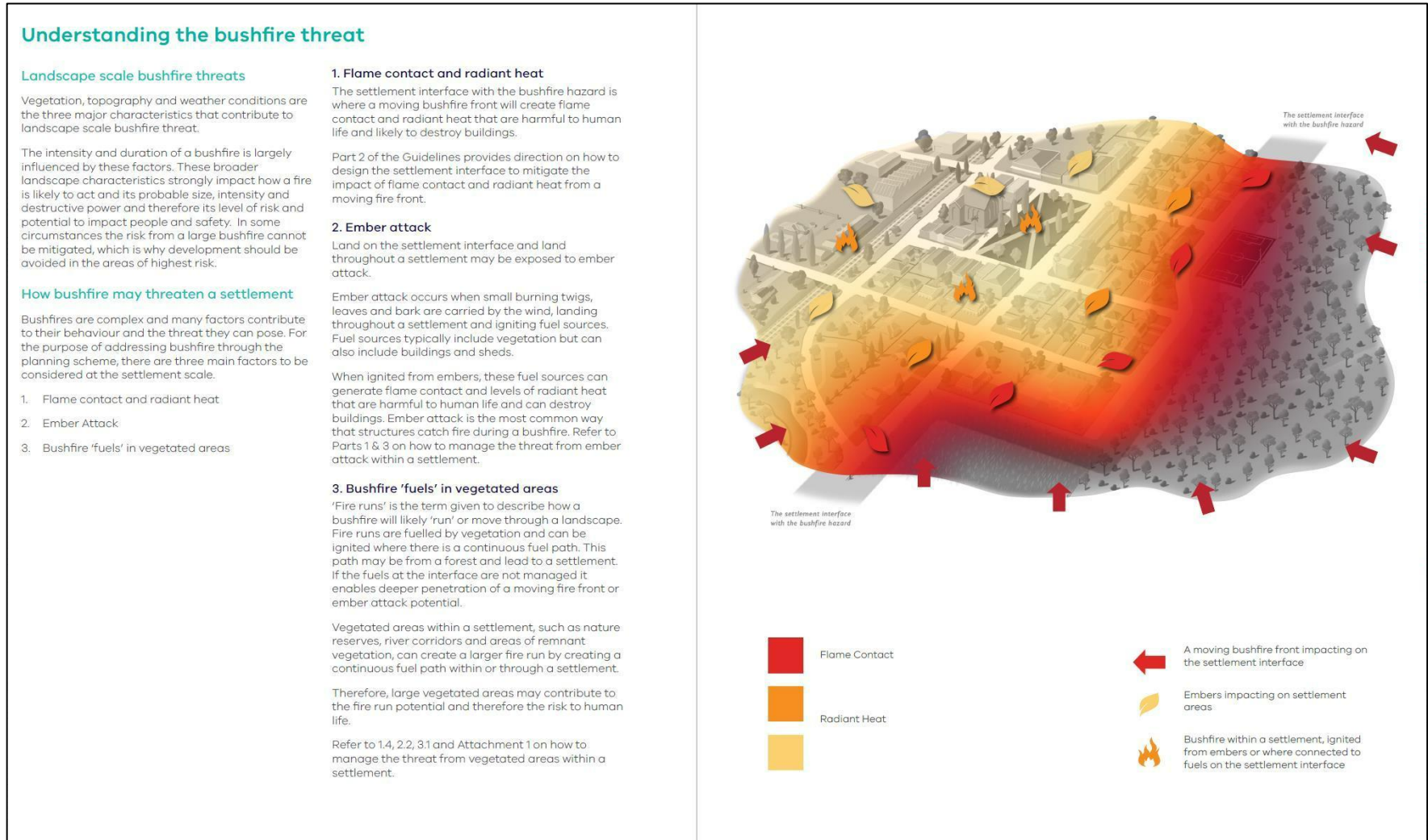


FIGURE 4C: GENERALISED UNDERSTANDING OF HOW BUSHFIRE THREATENS SETTLEMENTS (DELWP 2020)



5. Exposure to bushfire at the neighbourhood and local scale (12.5kw/sq.m of radiant heat)

Exposure to bushfire at the neighbourhood and local scale assesses the level of radiant heat likely to arise from hazardous vegetation within and in close proximity (150m) to a proposal. Considering exposure to bushfire enables new development to be separated from hazardous vegetation so that radiant heat of less than 12.5kw/sq.m arises, as required by *c13.02-1S Bushfire Planning* for new development enabled by a planning scheme amendment.

This section enables key strategies in *c13.02 Bushfire Planning* to be considered. These strategies include the following:

Site based exposure

- *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 AS3959-2018.*
- *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 AS3959-2018 Construction of buildings in bushfire-prone areas (Standards Australia).*

5.1 Methodology to determine exposure to bushfire

The methodology for a bushfire hazard site assessment as described in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP 2017) and *AS3959-2018 Construction of buildings in bushfire-prone areas* (Standards Australia) informs the assessment. Key assumptions include a Fire Danger Rating of 100 and a flame temperature of 1080°C.

The hazard assessment is described on the following worksheet and diagram.

See **Figure 5A: Indicative site assessment diagram prepared at the settlement scale**

Hazard identification

Hazardous vegetation was identified within and around (150m) the study area using expert judgment based on field work and aerial photography. EVC's and tree cover data sets were also reviewed.

Ecological vegetation classes (EVCs) include:

- Healthy Dry Forest
- Plains Grassy Wetland
- Plains Grassy Woodland
- Plains Sedgy Wetland
- Riparian Woodland

See **Figure 5C: Ecological vegetation classes**

Low-threat vegetation as described in *AS3959-2018 Construction of buildings in bushfire-prone areas* (Standards Australia) was excluded as it is not considered hazardous.

Slope under hazardous vegetation was assessed using the 10m contour, having regard to topographical information. Slope under hazardous vegetation informs how fast a bushfire may travel.

See **Figure 5C: Slope based on a 10m contour**

See **Figure 5D: Elevation based on 10m contour**

5.2 Planning scheme required bushfire setbacks

Setbacks from hazardous vegetation for developed enabled by a planning scheme amendment must meet Column A in Table 2, *c53.02-3 Bushfire Planning*. These setbacks provide for exposure a radiant heat flux of less than 12.5 kilowatts/square metre, as required by *c13.02-1S Bushfire Planning*.

5.3 Land exposed to a radiant heat flux of less than 12.5kw/sq.m

Satisfying the planning scheme exposure requirement in the Study Area means development enabled by the Township Plan must be setback from bushfire hazards (grasslands) as follows:

- **19m**, based on a slope of flat / upslope.
- **22m**, based on downslope of 0-5 degrees.
- **25m**, based on a downslope of 5-10 degrees.

The difference between assessed slopes used in determining exposure is limited (for example, setbacks may vary by up to 6m). The potential for variation necessitates a bushfire hazard site assessment being prepared for individual development proposals.

These setbacks are highly achievable in the grassland setting that dominates the Study Area.

Where forest / woodland is assessed, this is for completeness. They are more than 1km from the Study Area and they are immaterial to the exposure at the neighbourhood and local scale.

FIGURE 5A: INDICATIVE SITE ASSESSMENT DIAGRAM PREPARED AT THE SETTLEMENT SCALE



FIGURE 5B: ECOLOGICAL VEGETATION CLASSES



FIGURE 5C: ELEVATION BASED ON 10m CONTOUR

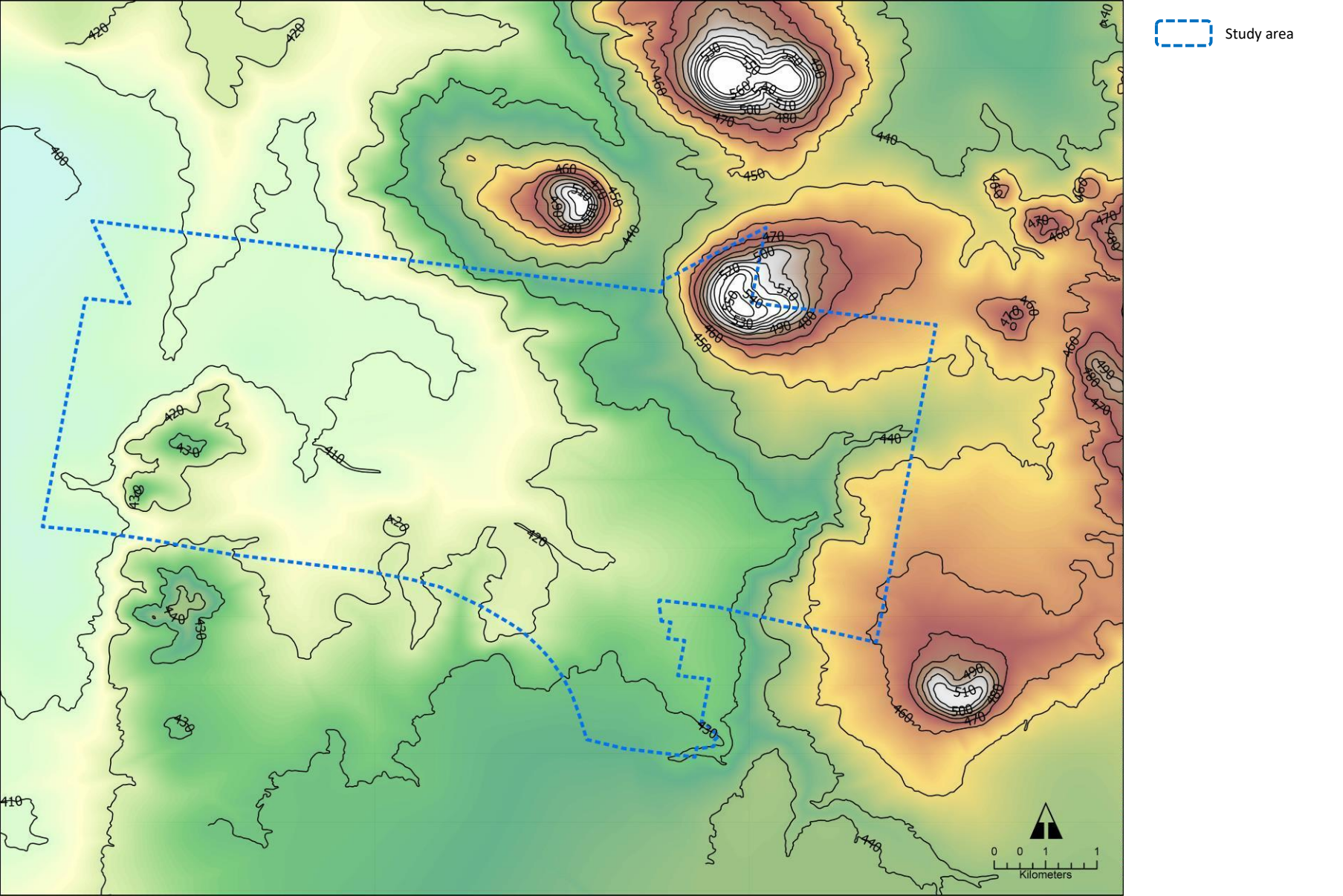
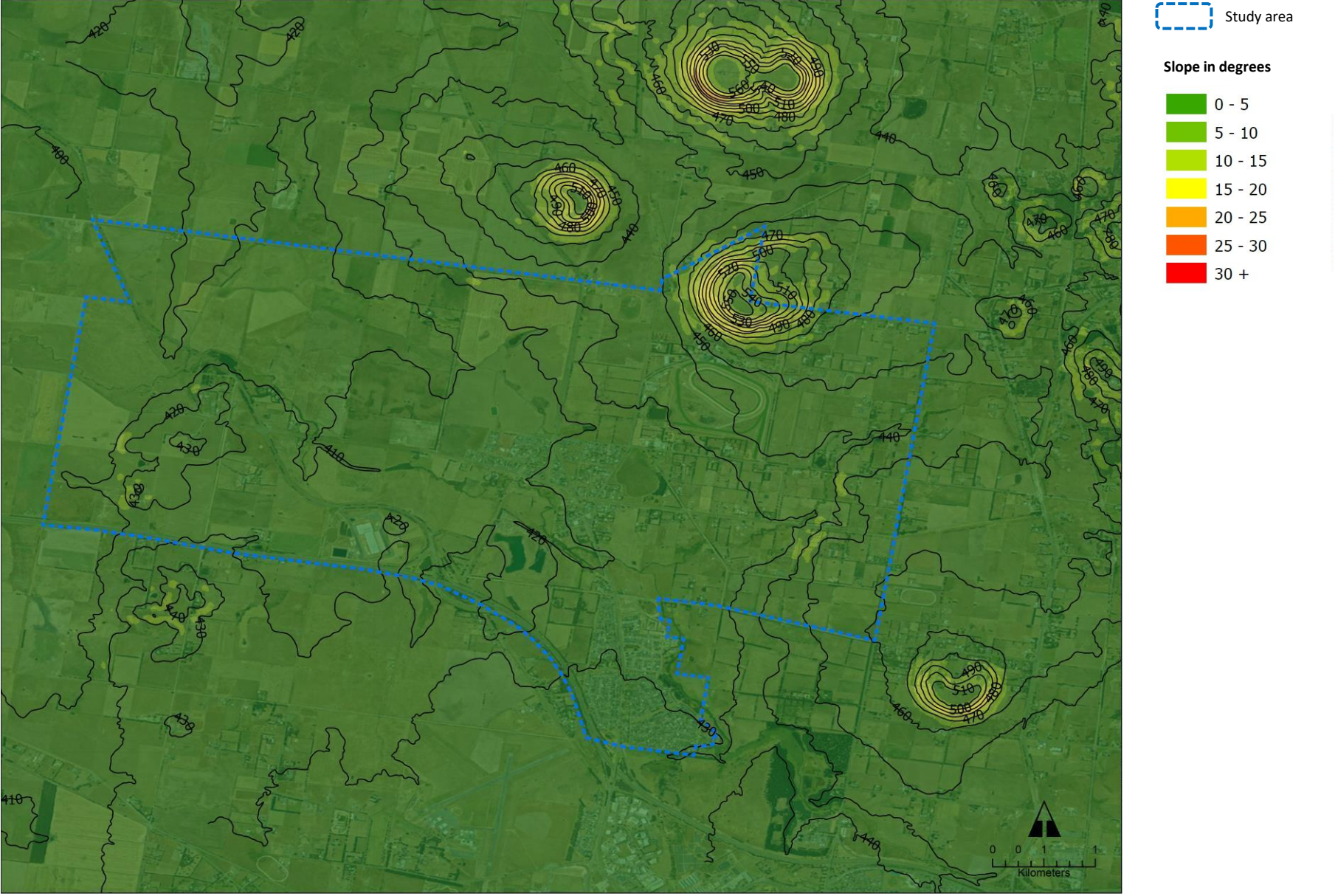


FIGURE 5D : SLOPE BASED IN A 10M CONTOUR



6. Assessment against *c13.02-1S Bushfire Planning* and other bushfire provisions

This report has considered the bushfire context of the study area, the landscape hazard, the availability of low fuel areas and whether there are locations that could satisfy the *c13.02 Bushfire Planning* exposure requirement.

6.1 *c13.02-1S Bushfire Planning*

6.1.1 Landscape bushfire considerations

c13.02-1S Bushfire Planning requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site.*
- *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.*

The bushfire hazard landscape assessment has considered the bushfire hazard at the strategic and landscape scales as required by these policies.

The residual risk at the landscape scale is from grassfire. Grassfire is likely to arise from the north-west, west and south-west of the subject site under dominant bushfire weather in Victoria.

Mitigating the landscape impact of grassfire is highly achievable through the separation of development from unmanaged grasslands and the planning of development to be low-fuel, preventing grassfire from penetrating urban areas and providing the ability for people to move away from the hazard interface.

The identified landscape type is Landscape type 1. Landscape type 1 positions the Study Area at the lowest end of landscape risk on the spectrum of risk in Victoria using the landscape type typology. Due to the lack of non-grassland landscape scale hazards, the potential for extreme bushfire behaviour is limited.

Based on the landscape assessment undertaken, it is concluded that development within the Study Area is consistent with landscape-scale bushfire considerations.

6.1.2 Alternative locations for development

c13.02-1S Bushfire Planning includes two strategies that seek to direct new development:

- *Give priority to the protection of human life by [...] directing population growth and development to low risk locations[.]*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*

The residual risk is from grassfires. This is a routine risk area in Victoria and is where most new growth is directed to, including for example Ballarat and Melbourne's growth areas. There is no relative risk benefit in directing development away from the Study Area based on the grassland risk.

The relative risk is better understood through landscape types, with the Study Area assessed as Landscape type 1, the lowest landscape type using the DELWP methodology.

The Study Area is a preferred location for development, consistent with other settlements in grassland areas and where significant new development is being directed under various planning schemes.

6.1.3 Availability of safe areas

c13.02-1S Bushfire Planning requires a location in easy reach that provides absolute protection for life from the harmful effects of bushfire:

- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS3959-2018 Construction of buildings in bushfire-prone areas (Standards Australia) where human life can be better protected from the effects of bushfire.*
- *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.*

BAL:Low areas in proximity to the subject site exist in the existing settlement of Miners Rest. It will be important as development moves outside of existing low fuel areas that new low fuel areas are created as part of new development. This is highly achievable in the grassland setting. It is essential that this outcome be given effect to in the planning scheme.

Recommendations later in this report outline how this can be achieved.

6.1.4 Site based exposure

c13.02-1S Bushfire Planning provides directions for planning authorities about the level of acceptable exposure for new development enabled by a planning scheme amendment:

- *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 AS3959-2018.*
- *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 AS3959-2018 Construction of buildings in bushfire-prone areas (Standards Australia).*

The assessment of site based exposure prepared as part of this report confirms that development can be set back from bushfire hazards to achieve a radiant heat flux of less than 12.5kw/sq.m in completed development. Based on this, exposure of future development would be consistent with *c13.02-1S Bushfire Planning*.

6.1.5 Areas of high biodiversity conservation value

c13.02-1S Bushfire Planning provides directions on situations where bushfire and high biodiversity conservation values correlate:

- *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.*

It is beyond the scope of this report to assess the biodiversity conservation value of vegetation that may need to be removed or managed as a result of bushfire requirements. However, given the lack of vegetation on the subject site, it is reasonable to assume that development can accommodate bushfire protection measures.

6.1.6 No increase in risk

c13.02-1S Bushfire Planning provides an overall view of acceptable risk:

- *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.*

The proposal is consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant new development being directed away from the Study Area. The risk from grassfire can be managed in accordance with standard planning scheme responses to bushfire hazards.

6.2 c13.02 Use and development control in a bushfire prone area

Planning consideration is required under the *c13.02-1S Use and development control in a bushfire prone area* for the proposal. The use and development control requires that when assessing a planning permit application:

- *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.*

The Use and development control in a bushfire area will apply to future planning applications to subdivide the land into more than 10 lots and a range of development types. This provides a planning scheme mechanism to ensure future development fully considers bushfire at the planning application stage.

The following mitigation is recommended for new growth and development if they are enabled by the Township Plan or the planning scheme amendment:

- Requiring future development to achieve the *c13.02-1S Bushfire Planning* exposure requirement.
- Where development would create lot sizes for Accommodation that are larger than 1,200sq.m, *c53.02 Bushfire, Table 6 Vegetation management requirements* should be applied. This will provide for a low fuel outcome and not enable hazards to increase over time. Other bespoke approaches to hazard management in areas with larger lots can be investigated and determined at subsequent stages and to the satisfaction of the relevant fire authority.

New lots for Accommodation smaller than 1,200sq.m mostly avoid hazards being introduced due to the lot size itself. Larger lots for industrial development tend to have high site coverages and managed gardens, mostly avoiding the need for vegetation management requirements. These tend to not need on-going management requirements to achieve low or lower fuel outcomes.

- Perimeter roads be provided on grassland interfaces / permanent hazard edges. This includes in development with larger lot sizes and industrial development.

This outcome is now typical in grassland areas, including in Ballarat's and Melbourne's growth areas and arising from precinct structure plans and CFA requirements. It will support preventing a moving grassfire from entering developed areas.

6.3 Conclusion

The Township Plan is consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant the Township Plan directions not proceeding. More specifically, the proposal has considered and complies with:

- *c13.02-1S Bushfire Planning.*
- *c13..02-1S Use and development control in a bushfire prone are.*

6.4 Taking forward the recommendations in this report

The Township Plan is orientated to better managing existing development. This is reflected in the township boundary not changing. Changes within the existing township boundary where enabled by the Township Plan do not require any specific bushfire mitigation to be included as part of a planning scheme amendment. These areas are low fuel and are optimised for (re)development consistent with bushfire policies, in any event.

More specifically, the proposal to rezone land from the General Residential Zone to the Neighbourhood Residential Zone within the existing settlement boundary has no bushfire implications, including the proposed c54 & c55 variations.

Some elements of the Township Plan look ahead to further planning activities, including:

- Quarry, which is identified as a future potential growth area subject to further analysis.
- Northern growth area boundary, which is subject to a separate planning process but the Township Plan does not preclude urban growth within this part of the Study Area.
- Land in the Farming Zone east of the existing settlement areas, which are shown as subject to review of planning controls.

The Planning Authority can consider what the effect of the above policies are, in terms of whether bushfire mitigation needs to be included into the planning scheme at this time. The recommendations in this report and summarised in Section 7 only practically apply to any new growth outside of existing settlement areas.

Based on the information provided, the Township Plan does not in our opinion enable the above to occur, it simply looks ahead to places which may be subject to further analysis. On this basis, the recommendations in this report could be considered concurrently with those further investigations.

7. Recommendations

Based on the assessments contained in this report, there are no specific recommendations to be accommodated in a planning scheme amendment where the Planning Authority considers the Township Plan and planning scheme amendment does not enable new development. However, the proposal local policy could include a general strategy in support of bushfire pending further work being progressed.

Alternatively, if the Planning Authority considers that the Township Plan enables development not otherwise permitted by the planning scheme, especially outside of the 'extent of existing zoned land' shown on Figure 13 of the Township Plan, then the following recommendations can be included into the planning scheme amendment:

Recommendation 1: Interfaces with a bushfire hazard

Development enabled by the Township Plan, including land rezoned because of it, will be required to be set back from assessed hazards for a distance no less than that required to ensure exposure is less than 12.5kw of radiant heat. This equates to Column A in Table 2 to c53.02 *Bushfire* in the planning scheme. Constructed (perimeter) roads can be used as part of the above setbacks.

Recommendation 2: Vegetation in completed development

c53.02 *Bushfire Planning*, Table 6 *Vegetation management requirements* should be applied to all lots for Accommodation which are more than 1,200sq.m. Alternative hazard management approaches can be developed to the satisfaction of the relevant fire authority in conjunction with future planning.

Notes:

As a result of Recommendations 1 and 2, the Township Plan can demonstrate that development is exposed to less than 12.5kw/sq.m of radiant heat and a construction standard of no more than BAL:12.5 will arise.

Bushfire vegetation management requirements are shown on Figure 7B.

Recommendation 3: Perimeter roads

Development for urban growth should be separated from permanent hazards by perimeter roads on permanent grassland interfaces.

Note:

Hazard interface treatments are indicatively shown on Figure 7A.

Recommendation 4: Planning scheme controls

The recommendations in this report should form part of the planning scheme through local planning scheme content.

FIGURE 7A: EXPECTED INDICATIVE TREATMENT ON HAZARD INTERFACES: GRASSLAND HAZARDS

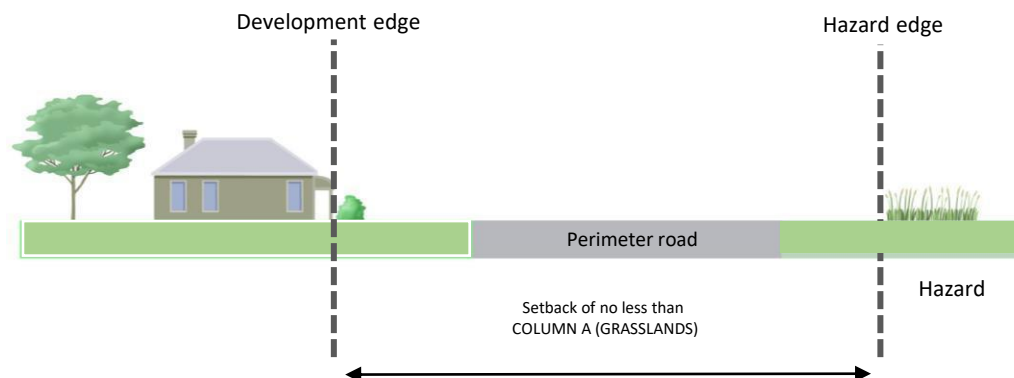


FIGURE 7B: TABLE 6, *c53.02 BUSHFIRE PLANNING* BUSHFIRE VEGETATION MANAGEMENT STANDARDS (DEFENDABLE SPACE)

- 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 3 metres of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

References

Australian Institute for Disaster Resilience (Feb 2021) [Ash Wednesday Bushfire - VIC/SA 1983 | Australian Disasters \(aidr.org.au\)](https://www.aidr.org.au/),

Country Fire Authority (2022), *Grassfires – Rural* (accessed at <https://www.cfa.vic.gov.au/plan-prepare/am-i-at-risk/grassfires-rural>)

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Department of Environment, Land, Water and Planning (2015), *Measuring Bushfire Risk in Victoria*

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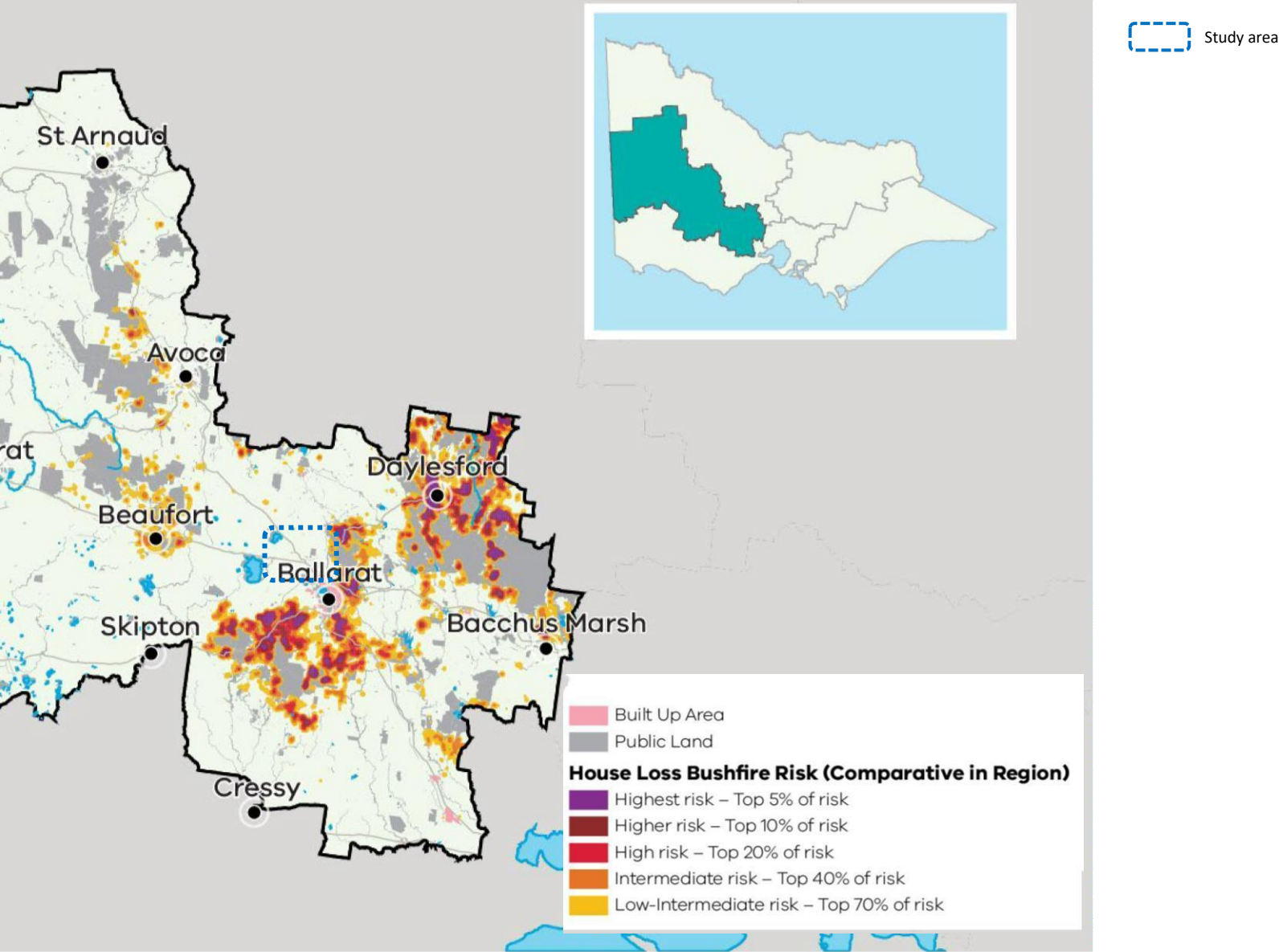
Forest Fire Management Victoria (accessed in July 2022) [Past bushfires \(ffm.vic.gov.au\)](https://www.ffm.vic.gov.au/) - Forest Fire Management Victoria (2022) Strategic Bushfire Management Planning (accessed at <https://bushfireplanning.ffm.vic.gov.au/>)

Ballarat Planning Scheme

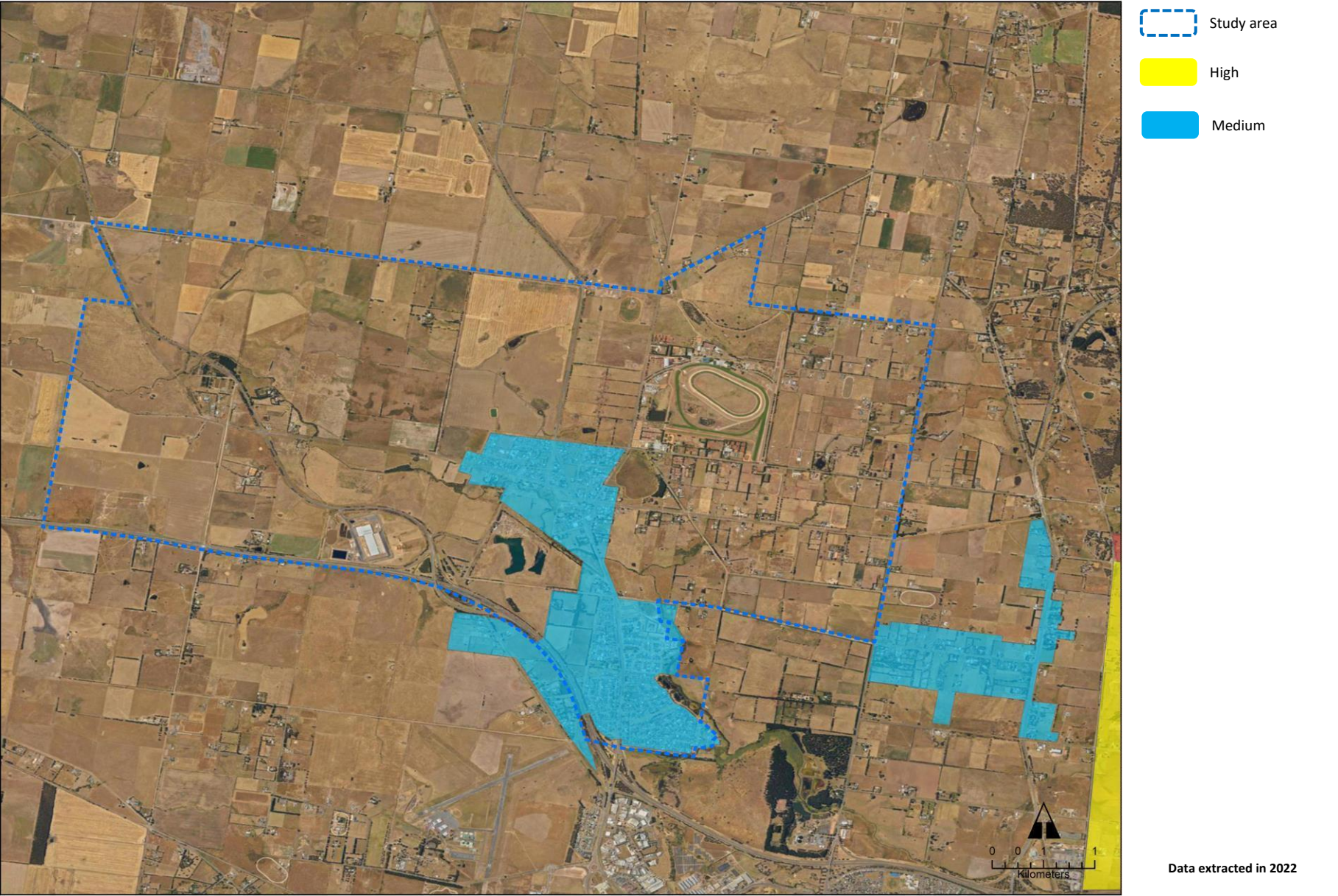
Department of Environment, Land, Water and Planning, (accessed in March 2021), *Nature Kit 2.0* (<https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit>)

Attachment 1: Bushfire Contextual Information

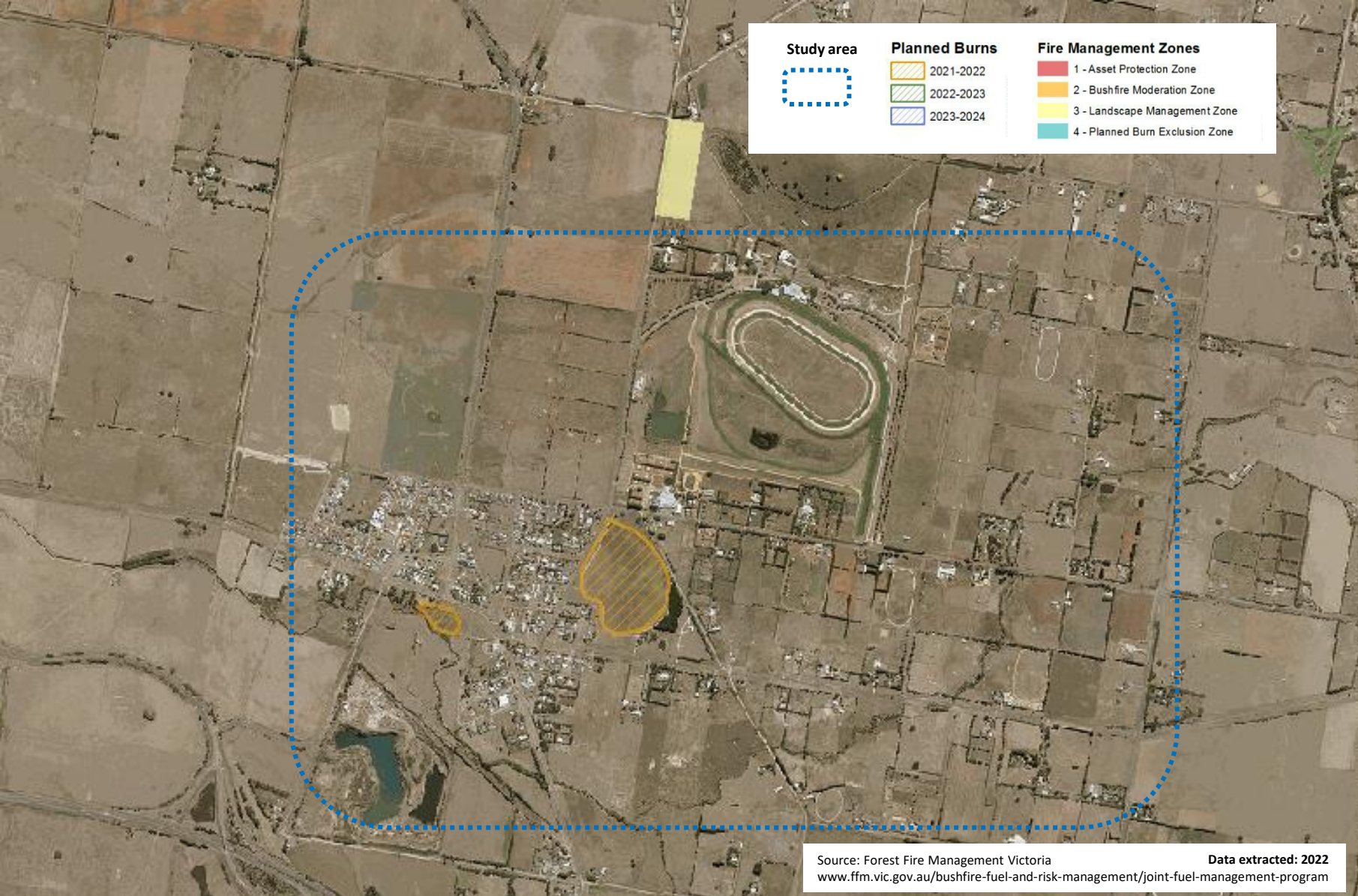
ATTACHMENT 1 FIGURE A: MODELLED HOUSE LOSS BUSHFIRE RISK (ADAPTED FROM DELWP 2020)



ATTACHMENT 1 FIGURE B: VICTORIAN FIRE RISK REGISTER HUMAN SETTLEMENT



ATTACHMENT 1 FIGURE C: JOINT FUEL MANAGEMENT PLAN

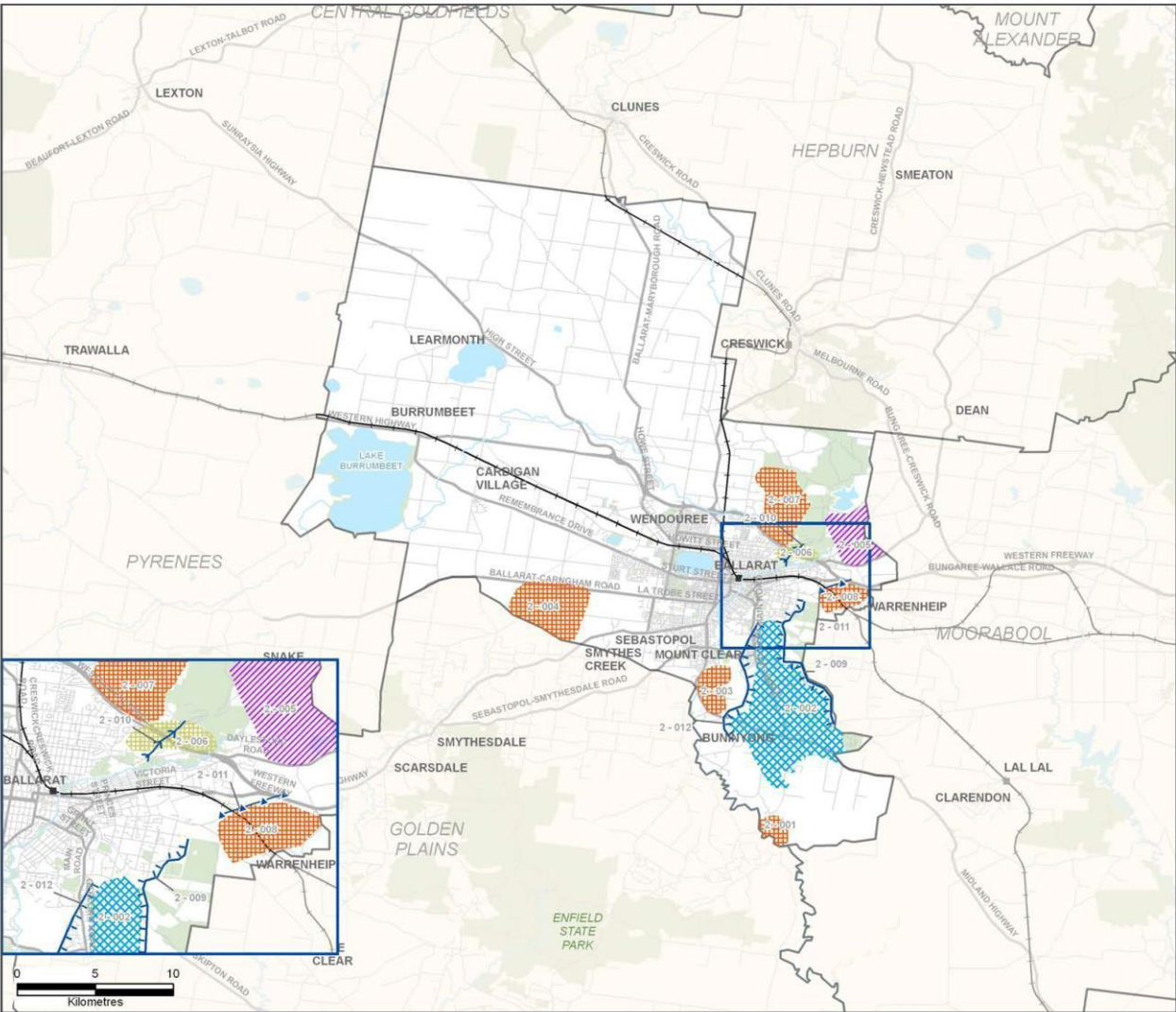


The map displays the Sacramento-San Joaquin River Delta, a complex network of waterways and agricultural land. Key features include:

- Water Bodies:** Large areas of water are shown in light blue, representing the Sacramento and San Joaquin Rivers and their tributaries. Smaller, darker blue areas represent reservoirs and other water storage facilities.
- Land Use:** The majority of the land is brown, indicating agricultural fields. Other colors like green and yellow represent different types of land or vegetation.
- Historical Data:** Numerous colored polygons and labels are scattered across the map, representing different years. These labels include 1961, 1965, 1976, 1977, 1980, 1987, 1997, 2002, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, and 2020. These likely represent the year of acquisition or a specific event related to the land or water.
- Infrastructure:** A dashed blue line outlines a specific area in the center of the map, possibly a project boundary or a specific water management zone.
- Scale and Orientation:** A scale bar in the bottom right corner indicates distances in kilometers (0, 1, 2, 4). A north arrow is also present.

Data extracted in 2022

BALLARAT MUNICIPAL MAP



Identified Areas

- Small lots in or close to hazard (0 - 0.4 hectares)
- Medium lots in or close to hazard (0.4 - 4 hectares)
- Specific local knowledge
- Other information of interest to planning
- Multiple matters
- Limited access and egress
- Urban/bushfire hazard interface
- Future strategic directions and bushfire hazard conflict

Features

- Major road
- Road
- Railway
- Railway station
- Watercourse
- Waterbody
- Public land

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