

Kevin Hazell

BUSHFIRE PLANNING

Bushfire planning assessment for Maldon

Final report

1 August 2023

Version 1.0

Prepared for:

Mount Alexander Shire Council

Corner Lyttleton and Lloyd Streets

Castlemaine Vic 31450

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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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Version Control

Version	Date	Comment	Name
v0.1	28 March 2023	Preliminary report for client review	Kevin Hazell Town Planner
v0.2	20 May 2023	Preliminary report for CFA review	Kevin Hazell Town Planner
v1.0	1 August 2023	Final report	Kevin Hazell Town Planner

1. Introduction

Kevin Hazell Bushfire Planning has been engaged by Mount Alexander Shire Council (the 'Council') to prepare a bushfire assessment for Maldon. The bushfire assessments will inform the Maldon updated Framework Plan, and the strategic planning housing work being completed by Council.

1.1 Study Area for this bushfire assessment

The Study Area is generally defined by existing urban zoned land in Maldon.

See Figure 1A: Locality map with Study Area

See Figure 1B: Locality aerial photo with Study Area

See Figure 1C: Zones

See Figure 1D: Land subject to a Significant Landscape Overlay

1.2 Scope of work

The scope of work requires the following:

1. Strategic landscape assessment to consider how landscape and strategic bushfire factors may influence future planning and how bushfire may affect different parts of the Study Area.
2. Considering the role of the Study Area on a municipal-wide basis to accommodate growth.
3. The identification of bushfire landscape types in the Study Area, using the approach set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide* 2017 (DELWP).
4. Assessment of the Study Area using *c13.02-1S Bushfire Planning* of the planning scheme and the identification of directions for growth that can give effect to bushfire policies, including acceptable exposure standards and access to places of relative safety.

Engagement with the Country Fire Authority (CFA) forms part of the project to secure their advice early in the planning process.

1.3 Methodology

c13.02 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, especially 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 Study Area, similar to the approach for 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 within the Study Area.
- Section 5 describes the bushfire hazard at the neighbourhood and local scale to inform consideration of whether there is land capable of being exposed to no more than 12.5kw/sq.m of radiant heat. 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 Building in a Bushfire Prone area* (Standards Australia).
- Section 6 includes a discussion on a strategic approach to manage bushfire in conjunction with planning decision making and the identification of locations that could be suitable for directing growth and development. The objectives and strategies in *c13.02-1S Bushfire Planning* are used to inform the discussion.
- Section 7 includes recommendations

1.4 Planning context

c02.04 of the planning scheme includes the Maldon Land Use Framework Plan. The planning scheme describes Maldon as follows:

Maldon is the second largest township in the Shire. The town has been recognised for its heritage significance. The retail centre in High Street, Maldon, is the second largest retail centre in the Shire. It provides local shopping needs for the township and the rural district in the north western part of the Shire and serves an important tourism role.

See Figure 1E: Maldon Land Use Framework Plan, c02.04 of the Planning Scheme

The Council has recently completed and consulted on a *Settlement Planning Assessment* (July 2022). This project is providing information to inform future strategic planning. It provides the following role and strategic directions for Maldon:

Maldon will continue to be a key retail centre in the Shire to support residents in the town and surrounding rural areas, and will also continue to serve an important tourism role. Urban expansion will continue to be limited in Maldon due to the bushfire hazards surrounding the town and to protect identified, significant landscapes.

Key issues and opportunities identified (in part) include (emphasis added):

*There is available land supply of 328 lots in Maldon, which accounts for 9.3% of total land supply in the Shire. Approximately half of this supply is available as existing lots (retail with title). This **demonstrates that there are opportunities for new urban development within the existing township boundary**, subject to planning controls and guidelines applicable to each site that seek to protect heritage and landscape values (Heritage Overlay, Significant Landscape Overlay, Maldon Design Guidelines) and ensure development addresses **environmental risks** (Erosion Management Overlay, **Bushfire Management Overlay**).*

A bushfire risk assessment (as included in this report) is identified as being required for future settlement planning work.

1.5 A note about the bushfire assessments

This bushfire assessment has been prepared to inform decision making associated with reviews of strategies and strategic planning. The analysis is directed to this purpose with a focus on the strategic application of *c13.02-1S Bushfire Planning*.

In future, any request for a planning scheme amendment from a landowner would need to be accompanied by a bushfire hazard landscape assessment and bushfire hazard site assessment tailored to the specific site and proposal. This provides the opportunity for local and site-specific data and information to be accurately captured into any request.

This bushfire assessment does not consider bushfire for the purpose of planning applications, including under *c44.06 Bushfire Management Overlay*.

FIGURE 1A: Locality Map

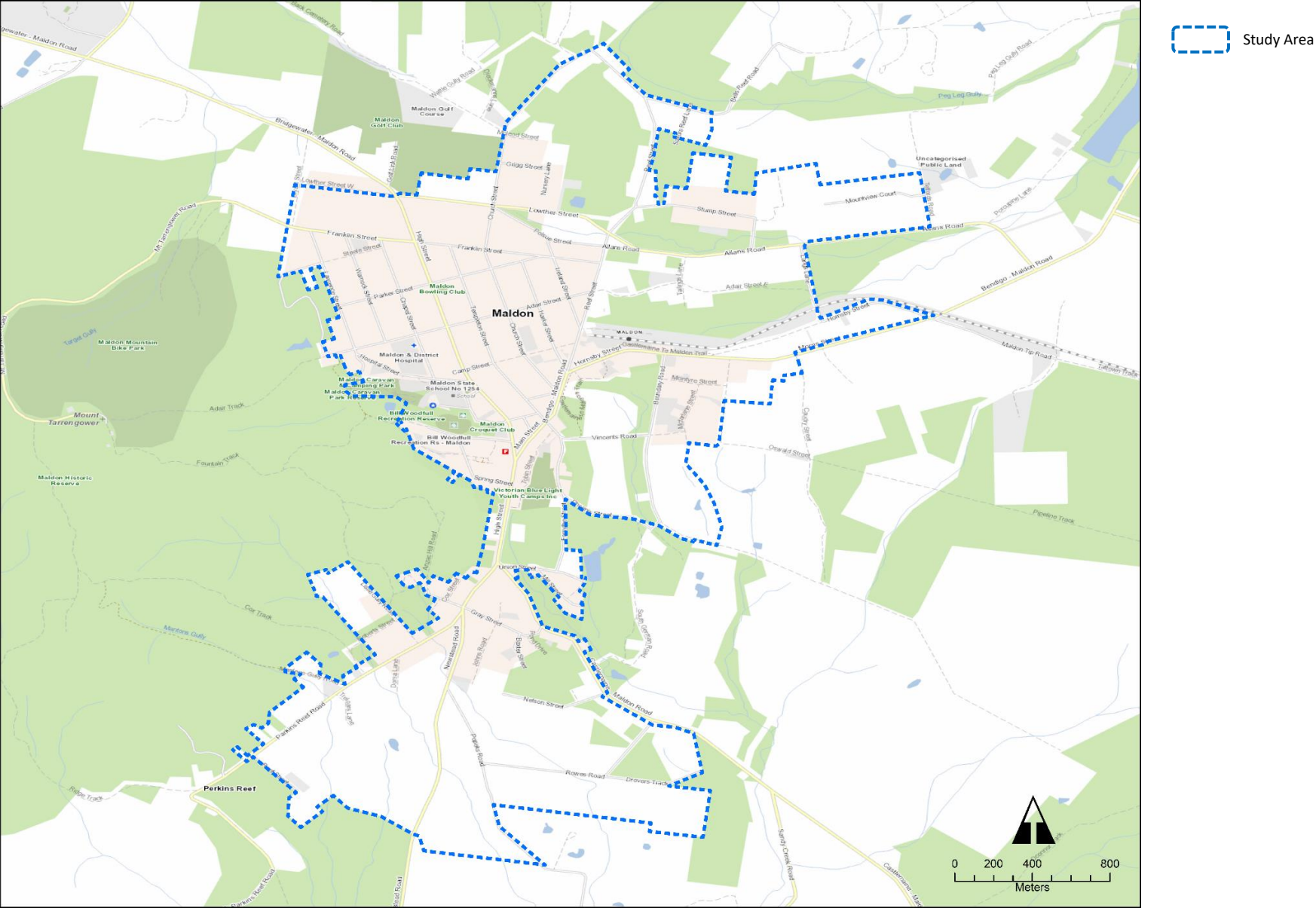


FIGURE 1B: Locality Aerial Photo

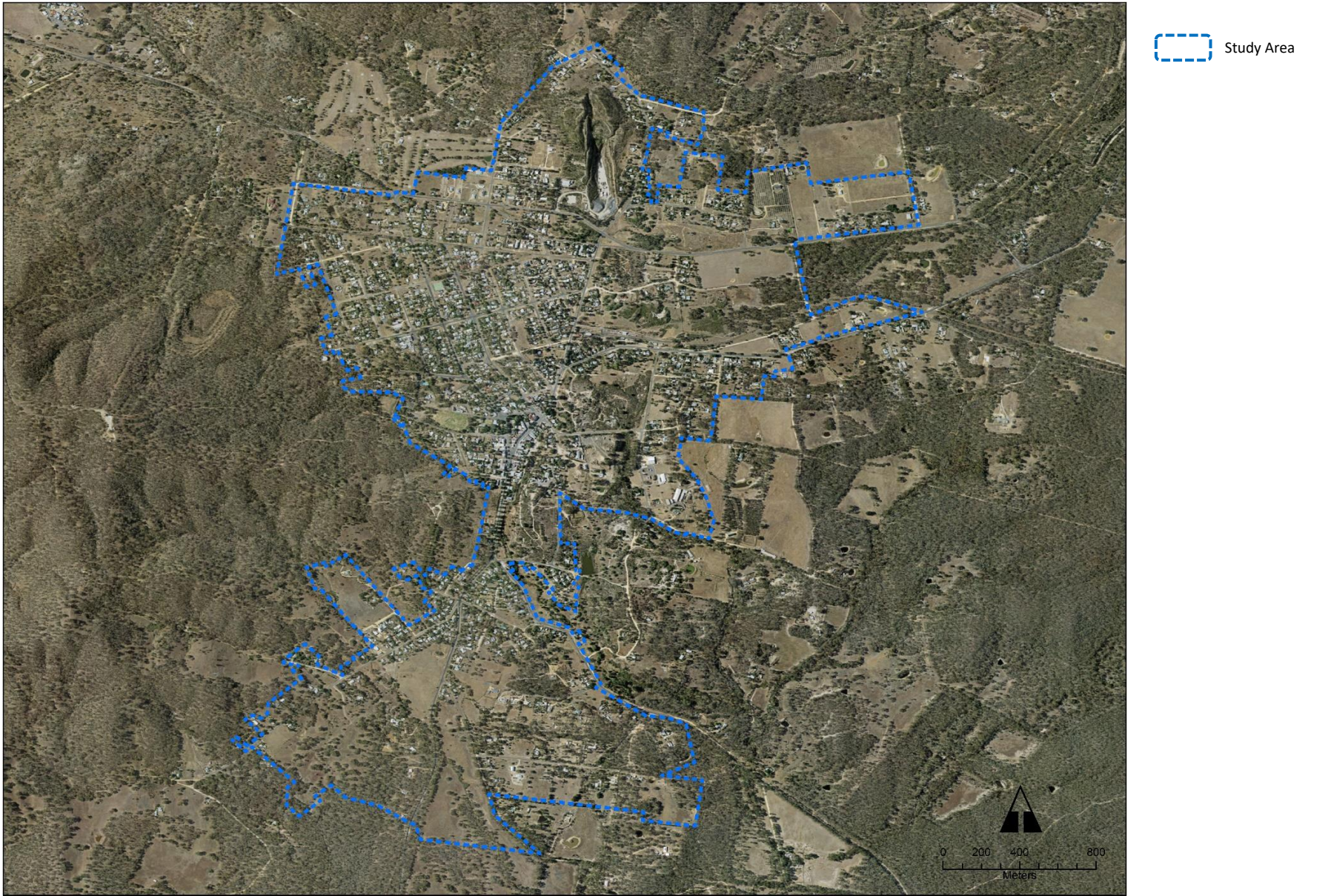


FIGURE 1C: Zones

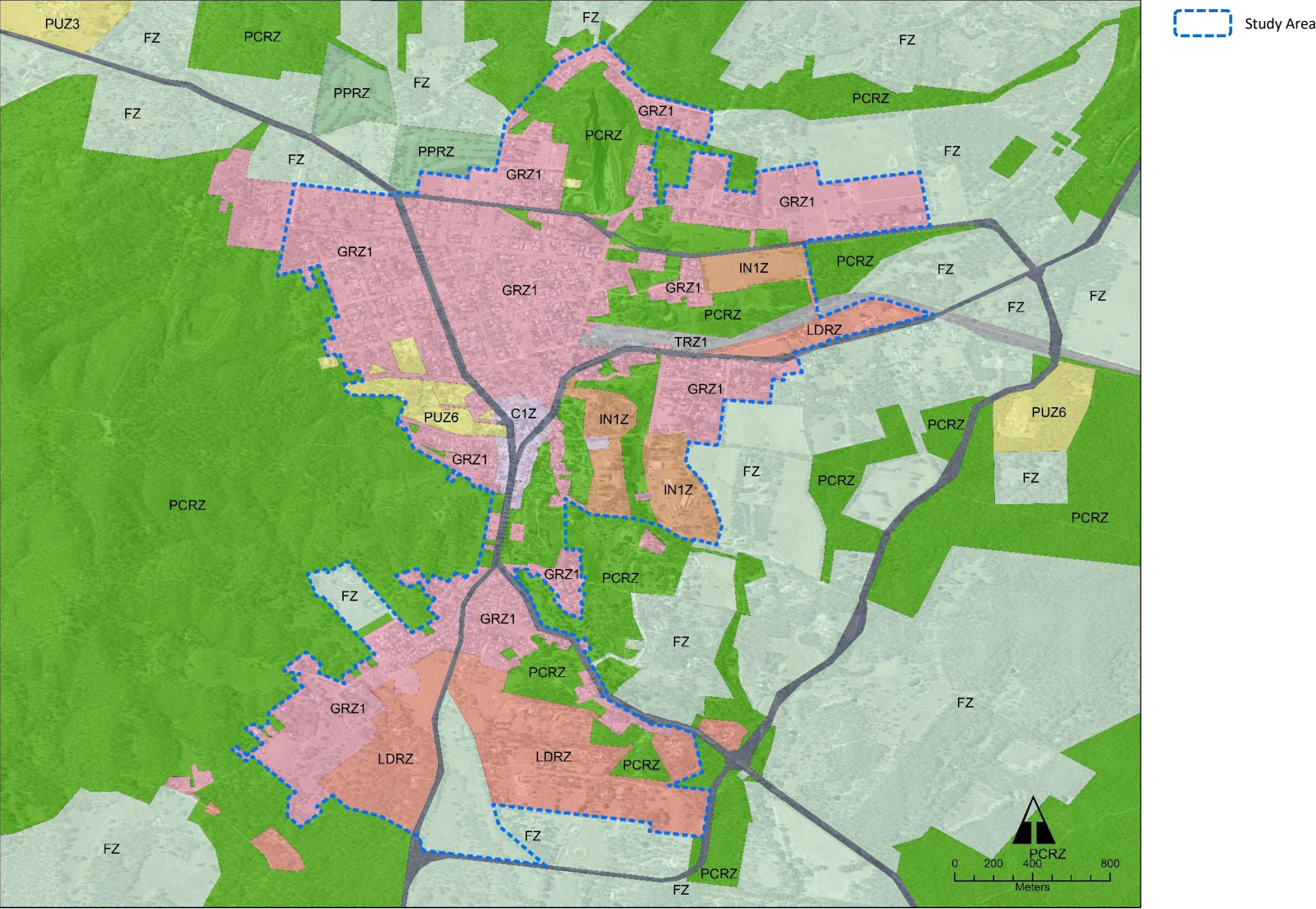


FIGURE 1D: Land subject to a Significant Landscape Overlay

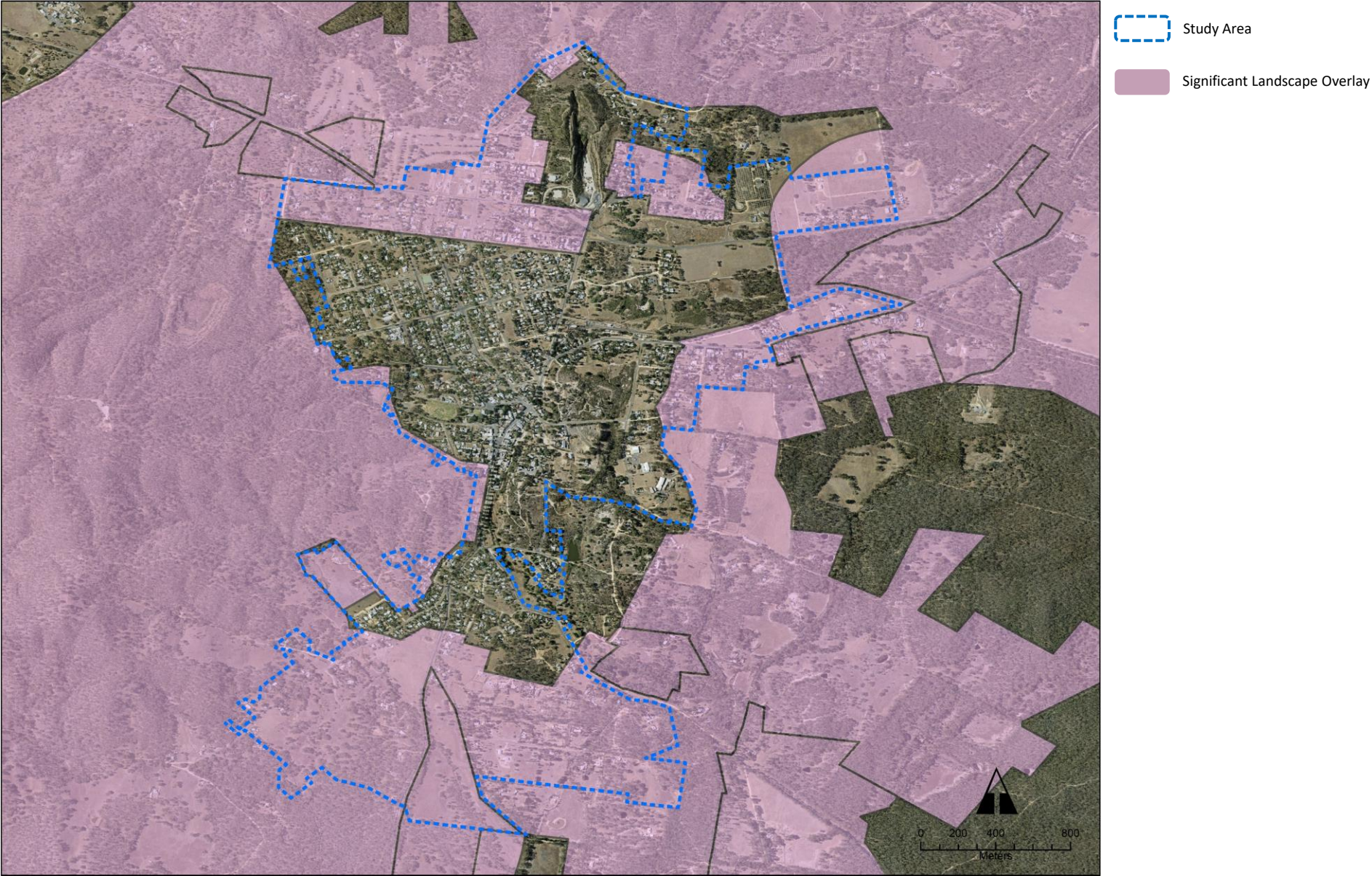
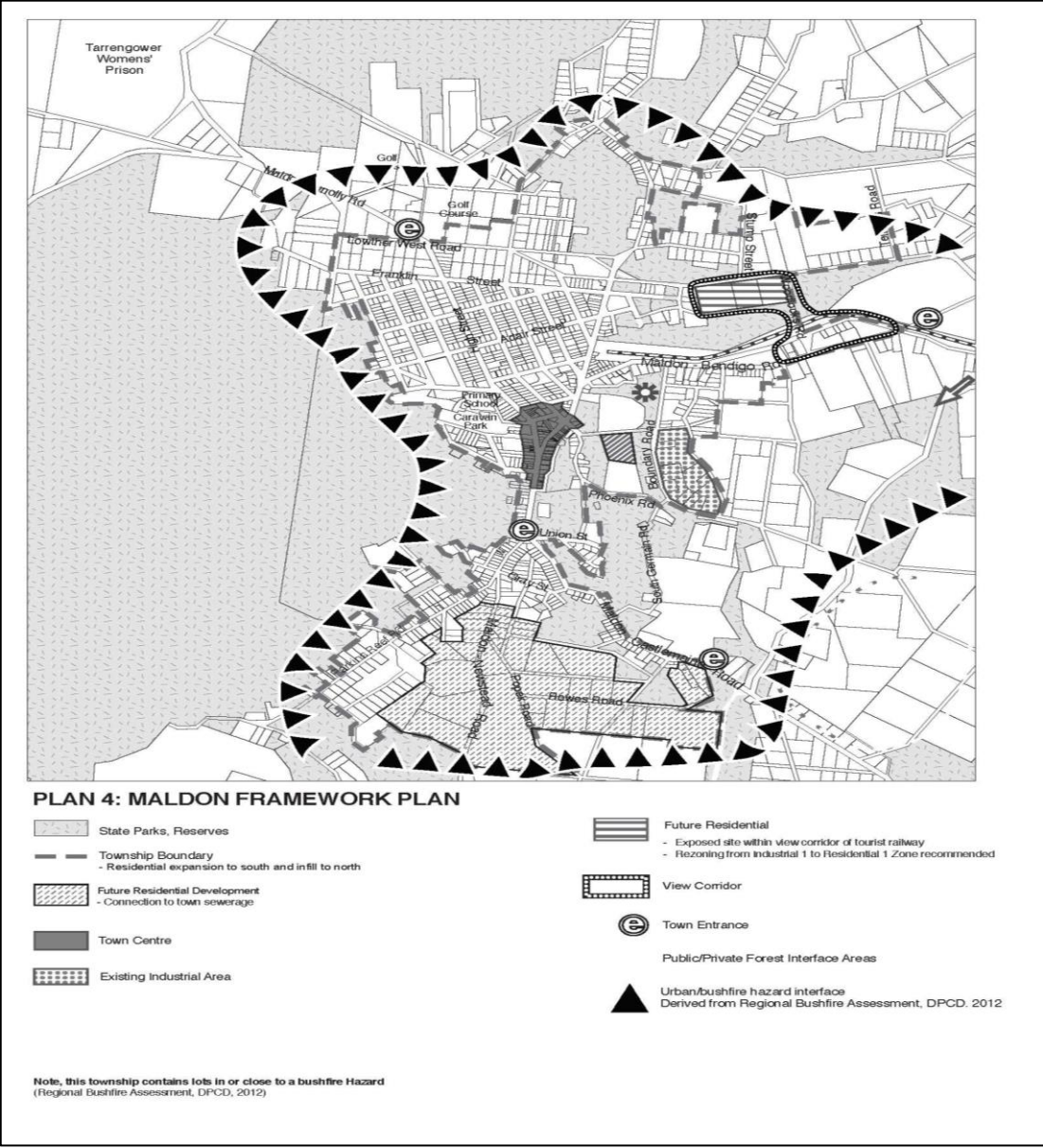


FIGURE 1E: Maldon Land Use Framework Plan, C02.04 of the Planning Scheme



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 (c13.02-15, 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 (c13.02-15)

c13.02-15 *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:

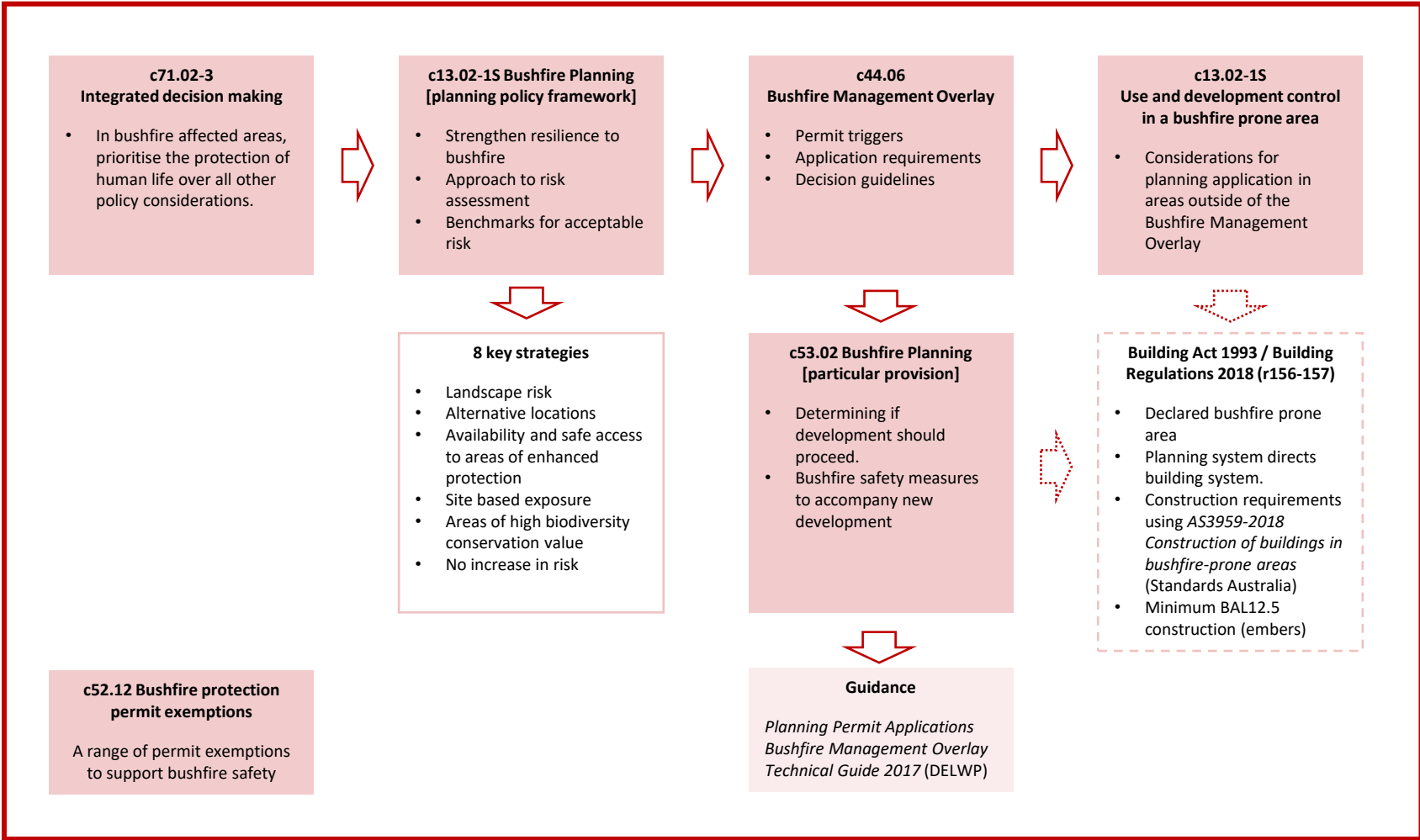
- *Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity 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 defendable 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 defendable space for a dwelling under the Bushfire Management Overlay, where the defendable 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 defendable 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).

3.1 Bushfire conditions in Victoria

The Department of Environment, Land, Water and Planning (DELWP) (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. 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 *Loddon Mallee 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 contains information that assists in appreciating the landscape bushfire risk. This includes the following extracts:

Destructive bushfire weather in Victoria is generally defined by a high-pressure system over the Tasman Sea and a cold pressure system in the Great Australian Bight. This leads to hot and dry conditions, with strong north-westerly winds followed by a mid-afternoon south-westerly change.

The change brings gusting winds, instability, lightning events and often no rainfall or increase in humidity to provide relief. Under these conditions, in the forests of the southern parts of the Loddon Mallee region, fires may be dominated by powerful convection columns, intense flames and ember storms.

Fires in the region can occur at any time of the year but are most common between October and April, and the most damaging fires have occurred from December through to February. Despite the worst bushfires occurring on days with similar weather patterns, the hot, dry climate of our region means destructive bushfire events can occur under lower fire danger conditions. Days with a fire danger rating of low to moderate — with temperatures of 20° C, surface winds at 20 km/hr and relative humidity of 20% — often support fast-running grass and scrub fires that can significantly impact life, property and other values.

Large fires in the south of the region have often been associated with extended drought periods.

The bushfire management strategy also states that:

- *Nearly 14% of recorded bushfires in Victoria have occurred in the southern part of the Loddon Mallee region, and more than half of these can be attributed to human activities*
- *Fires can start at any time during the day, but most occur in the early afternoon between 14:00 and 15:30 hrs. This is when fire danger approaches its peak, with peak fuel dryness being a significant contributor to bushfire spread at this time of day.*

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 at the published spatial scale makes it difficult to draw any conclusions for the Study Area.

See **Figure 3A: 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 *c13.02-15 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 applies to most of the outer edges of the Study Area where larger areas of non-grassland vegetation exist, with the 150m buffer applied.

3.3.2 Schedules to the Bushfire Management Overlay

Some areas of Bushfire Management Overlay are within a schedule. These specify bushfire protection measures to streamline decision making for the development of a lot with a single dwelling. These areas include:

- Land on western hazard interface of the Study Area.
- Land on the northern and eastern hazard interface of the Study Area.

3.3.3 Bushfire prone area

The criteria requires that it be 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.

All of the Study Area is included in the Bushfire prone area. This is a key piece of information as it shows that ember attack is expected across the entirety of the settlement, including deep into settlement areas.

3.3.4 Conclusions

The effect of planning scheme bushfire designations is that there is no land within the Study Area not considered to be affected by bushfire hazards.

See **Figure 3B: 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 identifies all of Maldon as an extreme risk.

The VFRR needs to be carefully used in the setting of Maldon. The rating is useful to appreciate the potential for large fires to be occurring in the broader landscape, for ember attack across the Study Area, and to some extent appreciate the relative risk between different settlements in Mount Alexander Shire.

However, the VFRR should not be over-emphasised in planning decision making. It has not been prepared for this purpose. The rating does not distinguish between areas of risk with Maldon, from which there is considerable variability (for example, between land at the hazard interface and land in the centre of the settlement).

See **Figure 3C: Victorian Fire Risk Register human settlement polygon**

3.5 Regional bushfire planning assessment

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

Identified areas apply to the following locations:

- All of Maldon (53-002) and is described as:
The township of Maldon is surrounded by the Maldon Historical Reserve and state forest.
- The western and eastern edges of Maldon (53-016, 53-017) are identified as being at the urban / bushfire hazard interface.

- The south-eastern edge of Maldon (53-018) is identified as an area where the Township Structure Plan directs growth.

See **Figure 3E: Regional Bushfire Planning Assessment**

3.6 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.

At a landscape scale, there are extensive treatments in the forested areas to the north and south-west of Maldon. Within Maldon, settlement edges are identified as asset protection zones as are the bushfire areas where they penetrate into the settlement (especially in the southern part of the Study Area).

See **Figure 3D: Joint fuel management plan**

3.7 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).

The potential for bushfire around the Study Area is demonstrated by bushfire history which shows large, landscape-scale fires in hazard areas within 5-10km of Maldon, including bushfires that affected the settlement edges of Maldon.

See **Figure 3F: Bushfire history**

FIGURE 3A: Modelled House Loss Bushfire Risk (ADAPTED FROM DELWP 2020)

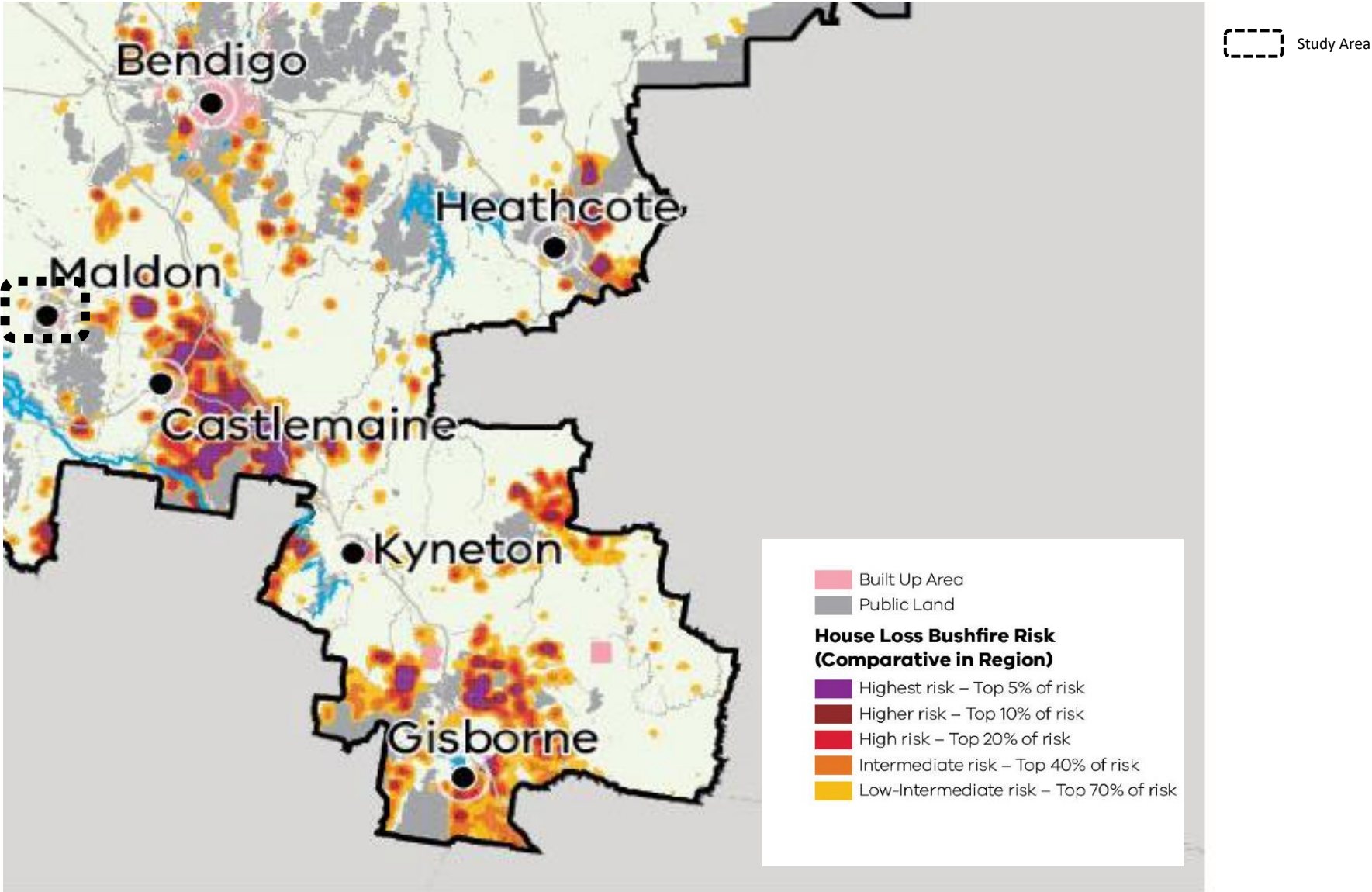


FIGURE 3B: Bushfire Management Overlay and Bushfire Prone Area

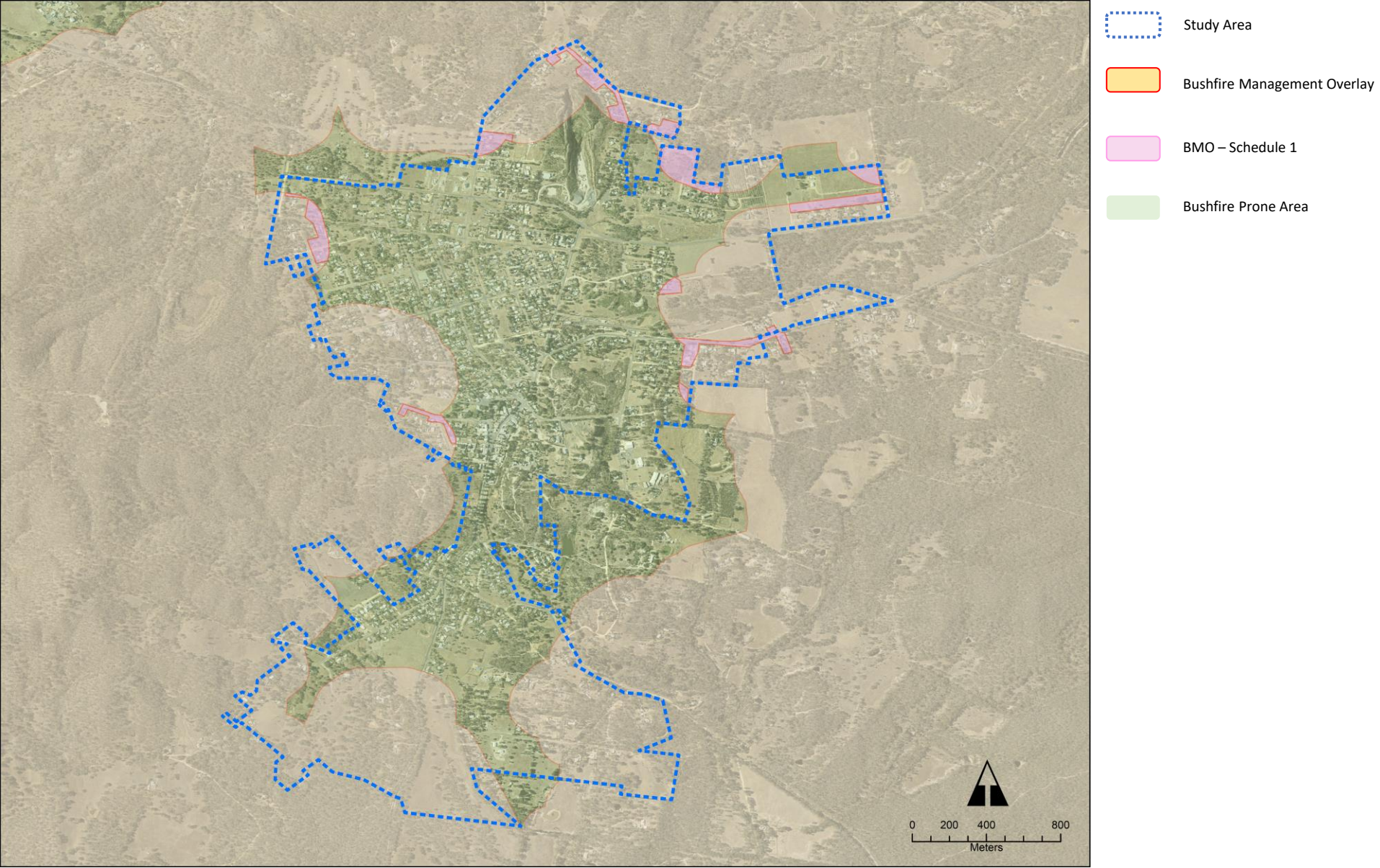


FIGURE 3C: Victorian Fire Risk Register Human Settlement

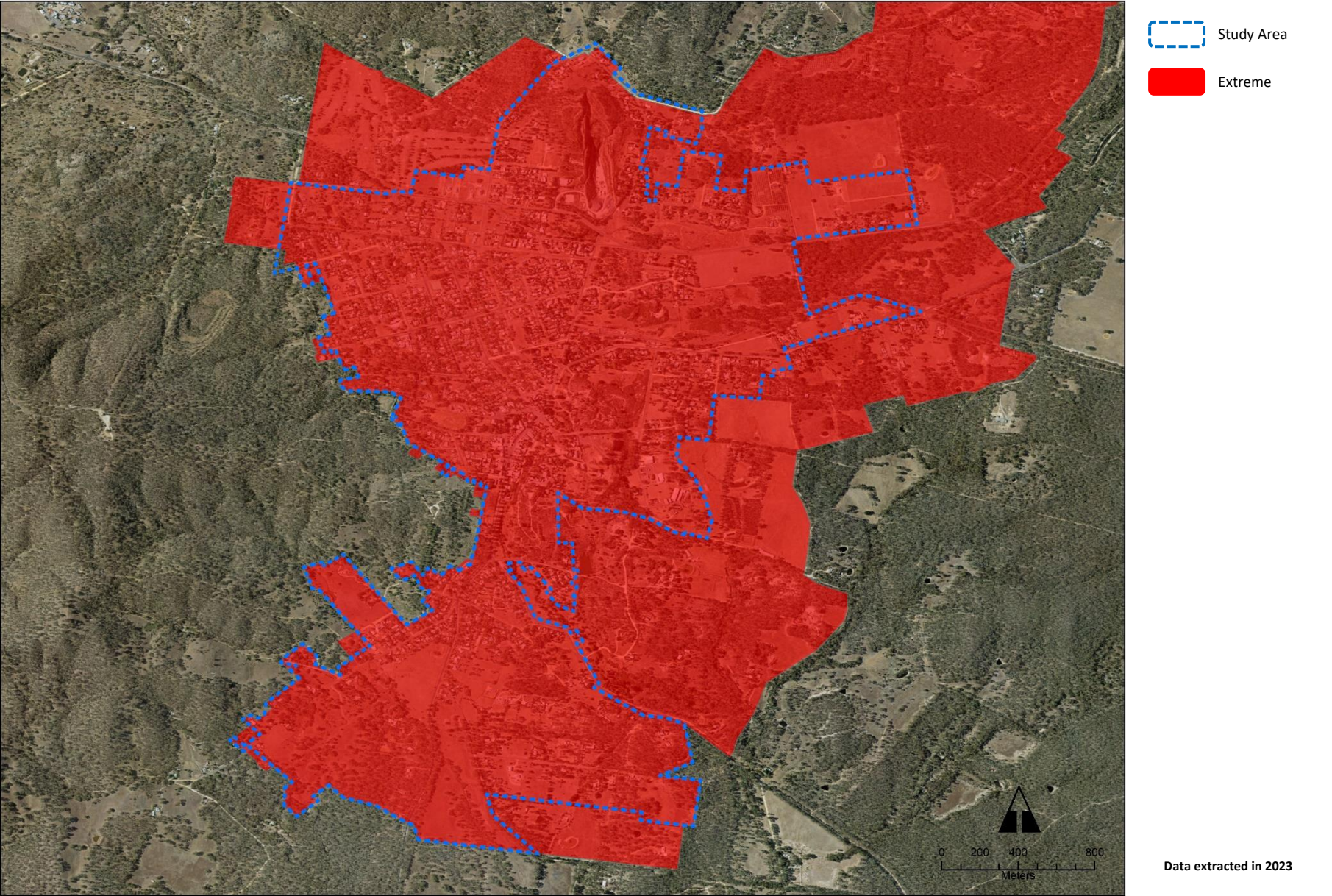


FIGURE 3D: Joint Fuel Management Plan

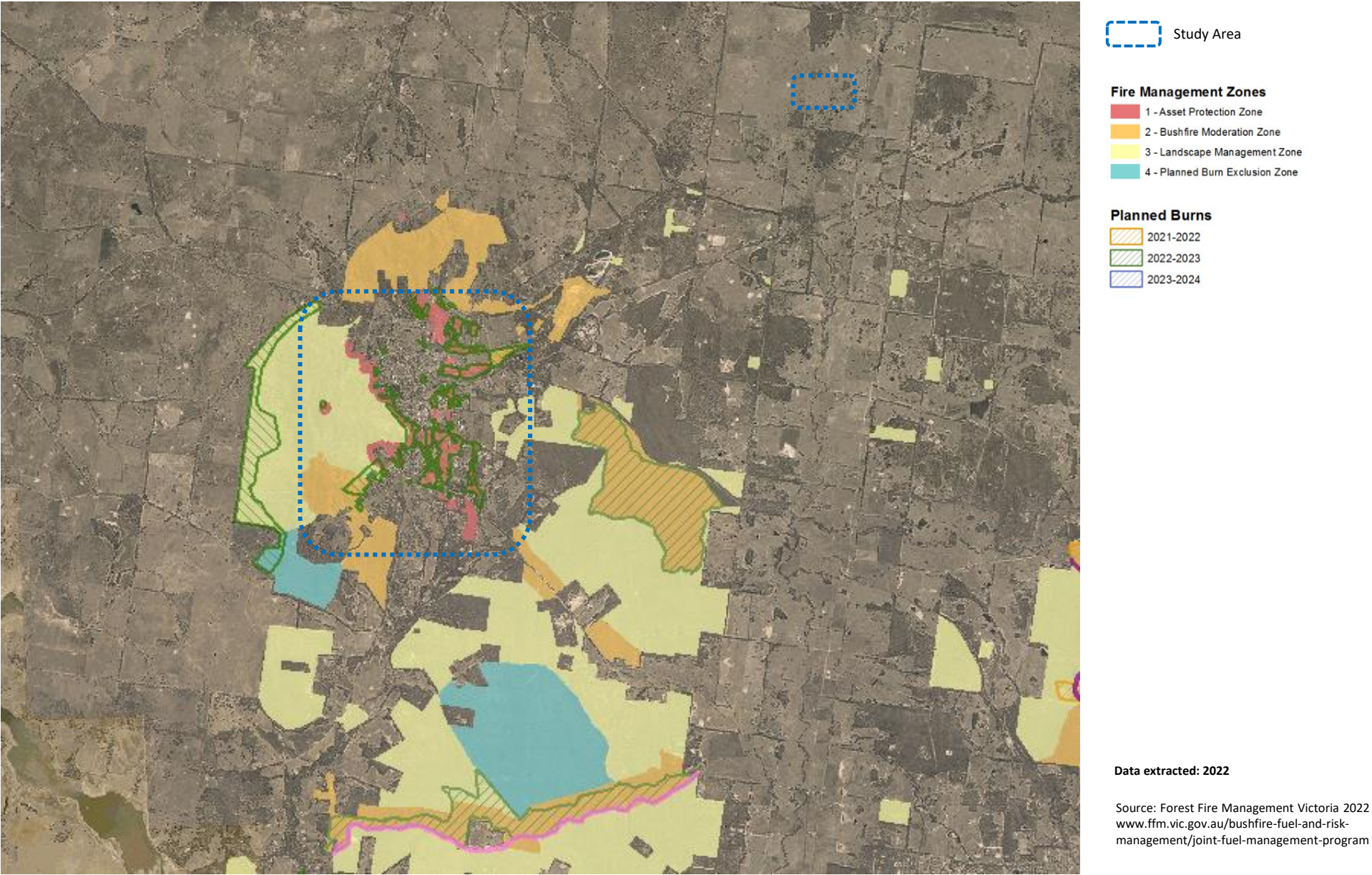


FIGURE 3E: Regional Bushfire Planning Assessment Loddon Mallee (DPCD)

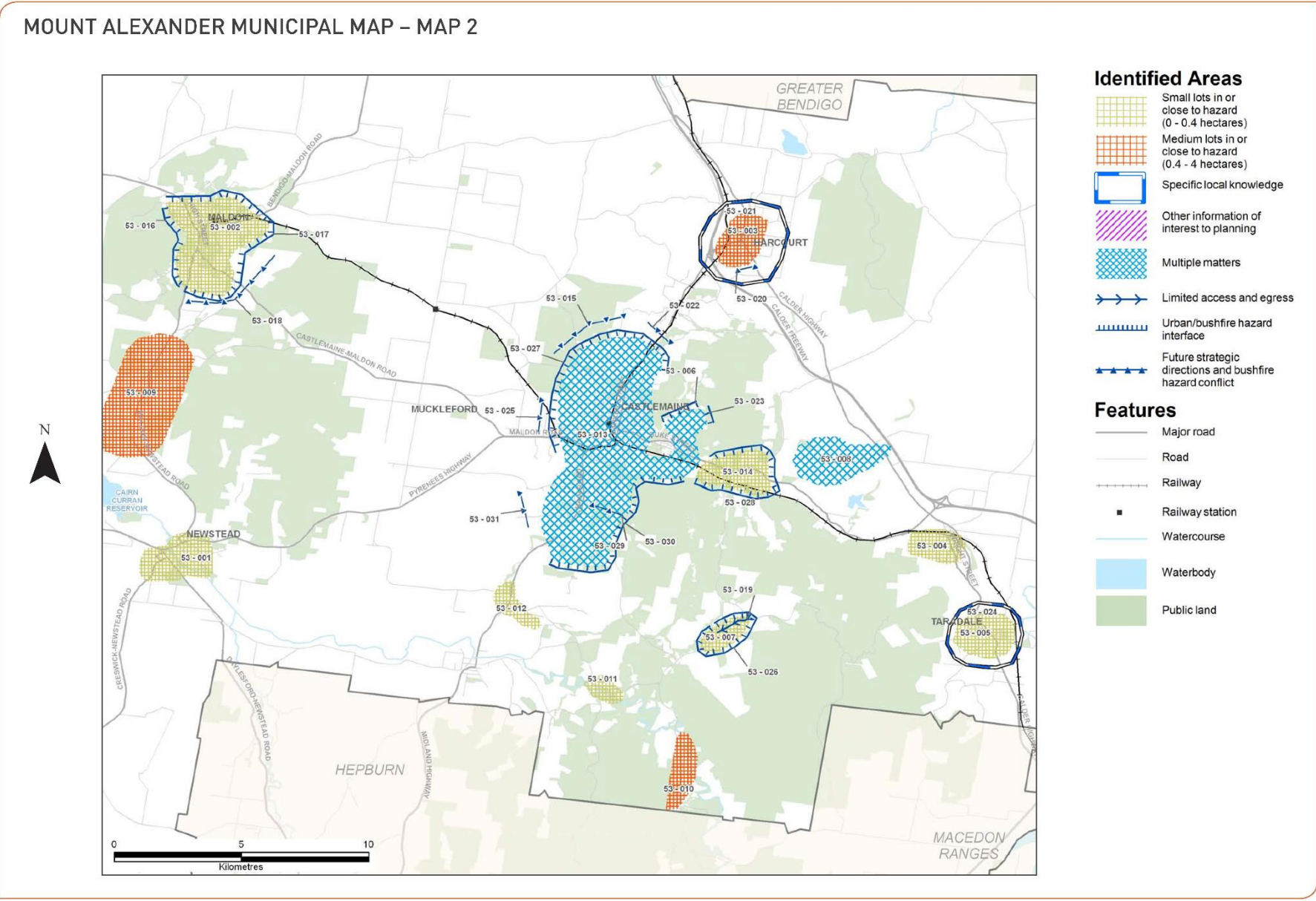
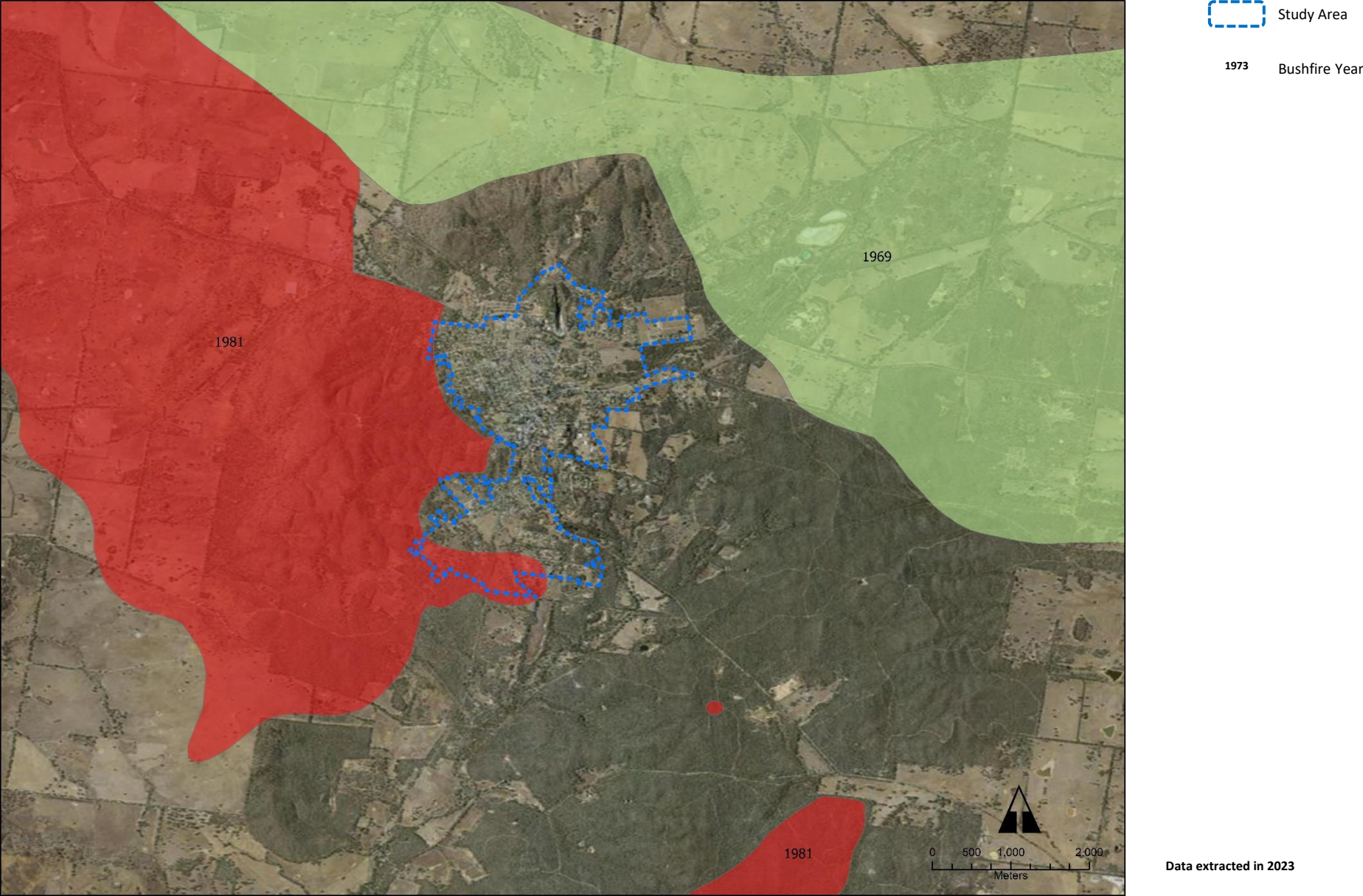


FIGURE 3F: Bushfire History



Data extracted in 2023

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 4D: Assessed landscape types**

4.1 Landscape bushfire hazards

The Study Area is within a landscape containing extensive bushfire hazards. This includes forested areas with areas of more rugged terrain that has the potential to generate extreme fire behaviour. This includes forested hazard areas to the north-west, west and south-west. On these aspects, prevailing bushfire weather in Victoria would move a bushfire towards the Study Area. Fire runs within forest hazards are relatively short (less than 1km to the north-west and 3km to the south west).

Beyond forested hazards are grassland hazards. These extend the available fire runs for many kilometres. These grassland hazards can run into the forest hazards, including with a wide fire front. The effect is the potential for more severe fires in the forested hazards where ignition is from a grassfire moving into them.

To the east of the Study Area are further areas of landscape scale forest hazards. However, prevailing bushfire weather in Victoria would ordinarily be moving a bushfire in this area away from the Study Area. However, in higher risk bushfire weather these hazards would be engaged in a bushfire, especially from ember attack, and would add to Maldon being within an area of bushfire rather than discernible moving bushfires running to more predictable patterns.

Hazard areas on all sides of Maldon are also significant to the extent that it affects and reinforces the lack of viable movement options from Maldon to another (lower risk) location before and during a bushfire.

4.2 Likely landscape bushfire scenarios

The Study Area is surrounded by bushfire hazards. During a bushfire, the conditions will be complex as fire moves into the settlement and from localised bushfires. The Study Area may have multiple fires occurring within the single bushfire event.

Large landscape scale bushfire burning in the forests to the north-west and south-west of the Study Area are reasonably anticipated. Under prevailing bushfire weather fire would be moving towards Maldon. The north, west and southern aspects of the settlement will be especially impacted by bushfire.

The hazard / Study Area interface is variable:

- In places where there is a perimeter road and low fuel land (for example, parts of Lawrence Street), a moving bushfire is unlikely to enter the settlement.
- In other areas with continuous fuel paths, a moving fire is likely to enter settlement areas. This may arise in the northern part of the Study Area where lots are larger and carry bushfire hazards (grasslands) and in the southern part of the Study Area where there are larger lots with bushfire hazards and no obvious edge to bushfire hazards (or place where a moving bushfire would stop).

As fire impacts on the settlement edge and on the edges of areas with continuous fuel paths, flame contact and radiant heat it to be expected. Neighbourhood scale destruction is to be reasonably anticipated.

Higher levers of ember attack will arise closest to forested areas, focused within 150m of the forest edge. Ember attack into these areas and across the settlement may ignite localised fires where there are bushfire hazards. There are many patches of hazards (including bushlands and grasslands) within the Study Area that even if not connected to a continuous fuel path from forested areas, can be on fire through ember attack into them and subsequently impact on their localised surrounds.

The above represents a scenario bushfire when weather conditions are at their reasonably anticipated levels associated with Victoria (see Section 3.1). As weather conditions become less severe, relatively less impact can be anticipated although even at considerably reduced bushfire weather conditions, destructive bushfire is to be anticipated in the Study Area.

See Figure 4B: Landscape bushfire analysis

Figure 4E provides a generalised understanding of how bushfire threatens settlements. This is highly consistent with what is to be expected in Maldon.

See Figure 4E: 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.

c13.02-15 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 the central part of the Study Area, correlating with the more heavily built-up areas. Beyond these areas, more limited lower fuel areas consistently arise. This reflects the presence of bushfire hazards in many parts of the Study Area, including as a result of hazards (including grasslands and patches of vegetation) that exist deep into settlement areas.

It is specifically noted that no area of BAL:Low arises in the southern part of the Study Area.

See Figure 4C: Low fuel areas and BAL:Low capable land

(Note: Figure 4C includes the buffer line used to define the vegetation edge and from where the 100m or 50m buffer was applied.)

Other places of shelter

A designated neighbourhood safer place is located at Bill Woodfull Recreational Reserve and comprises open air and indoor elements.

See: **Figure 4C:** Neighbourhood Safer Place locations

Consistent with CFA advice, designated places of safety are not afforded any weight in this bushfire assessment. This is because designated places of safety are not a justification to enable new risk to be introduced that is otherwise not consistent with planning scheme policies. They may also be undesignated or moved.

Ember attack

All areas within the landscape, including BAL:Low areas and designated neighbourhood safer places, are likely to be subject to ember attack. Sheltering in these locations and traveling to these locations during a bushfire will be uncomfortable and potentially dangerous for people.

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. They do however provide an indication on the relative risk in different parts of the bushfire Study Areas based on a settlement and neighbourhood scale of assessment.

For Maldon, some areas have elements of more than one landscape type. This reflects the different risk characteristics that is driving the assessment. Where relevant, these are discussed below.

The following landscape types are assessed for the Study Area.

Landscape type 2 & 3 (heavily built up areas)

Landscape type 2 and 3 is assessed in the central part of the Study Area, oriented around the town centre and more built-up areas. This area fits elements of Landscape type 2 and 3 as described by DELWP (2017) as follows:

Landscape type 2

- *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.*

Landscape type 3

- *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 aspect*
- *The area is located in an area that is not managed in a minimal fuel condition*
- *Access to an appropriate place that provides shelter from bushfire is not certain.*

The key difference between the two landscape types as it relates to these areas is the weight to be afforded to the shelter provided by the low fuel areas (optimised for Landscape type 2) when they would be subject to ember attack, making the viability of shelter less certain (Landscape type 3).

In either event, this is the relatively lowest risk parts of the Study Area (compared to other areas) but at either Landscape type, they are not low risk when in a settlement such as Maldon.

Landscape type 3 (balance of Study Area – North)

Landscape type 3 is assessed in most areas in the northern part of the Study Area that are not low-fuel. In these areas, they adjoin landscape hazards, have increased hazards (fuels) within the settlement, and/or contain larger patches of hazards. Whilst they have some proximity to lower fuel areas, the journey becomes progressively longer and less certain the further away from the heavily built-up low fuel land. The north-west, west and south-west parts of this area are most affected by landscape scale hazards.

This area best fits Landscape type 3 as described by DELWP (2017) as follows:

- *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 aspect*
- *The area is located in an area that is not managed in a minimal fuel condition*
- *Access to an appropriate place that provides shelter from bushfire is not certain.*

Landscape type 3 (upper) – Balance of Study Area (South)

Landscape type 3 and elements of Landscape type 4 are assessed for the balance of the Study Area comprising the southern areas. These areas fit elements of both landscape types which are described by DELWP (2017) as follows:

Landscape type 3

- *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 aspect*
- *The area is located in an area that is not managed in a minimal fuel condition*
- *Access to an appropriate place that provides shelter from bushfire is not certain.*

Landscape 4

- *The broader landscape presents an extreme risk*
- *Bushfires may have hours or days to grow and develop before impacting¹*
- *Evacuation options are limited or not available*

Both landscape type 3 and 4 contain elements of marginal or no shelter options. For the southern part of the Study Area, no area of BAL:Low has been identified, consistent with Landscape Type 4. The scale of fire and journey to low fuel areas during a bushfire presents highly problematic access to a shelter location.

Another key difference between these landscape types is the emphasis on the scale of bushfire. Whilst Maldon will be exposed to dangerous bushfires, it is not exposed to the type of extreme risk fires that have hours or days to grow and develop as might be contemplated in other parts of Victoria (for example, Gippsland, Otway Ranges). It is therefore lower risk these placed which makes Landscape 4 potentially over profiling the risk.

On balance, this report concludes that **applying Landscape type 3 best fits**, but it is assessed based on being at the **upper level** of the risk spectrum with a landscape type 3. This makes it distinguishable to other assessed Landscape type 3 areas in this report and other bushfire assessment prepared for Mount Alexander Shire Council.

There is no landscape type 1 or 4 assessed in the Study Area.

See **Figure 4D: Assessed Landscape Types**

FIGURE 4A: Overview of Landscape Types

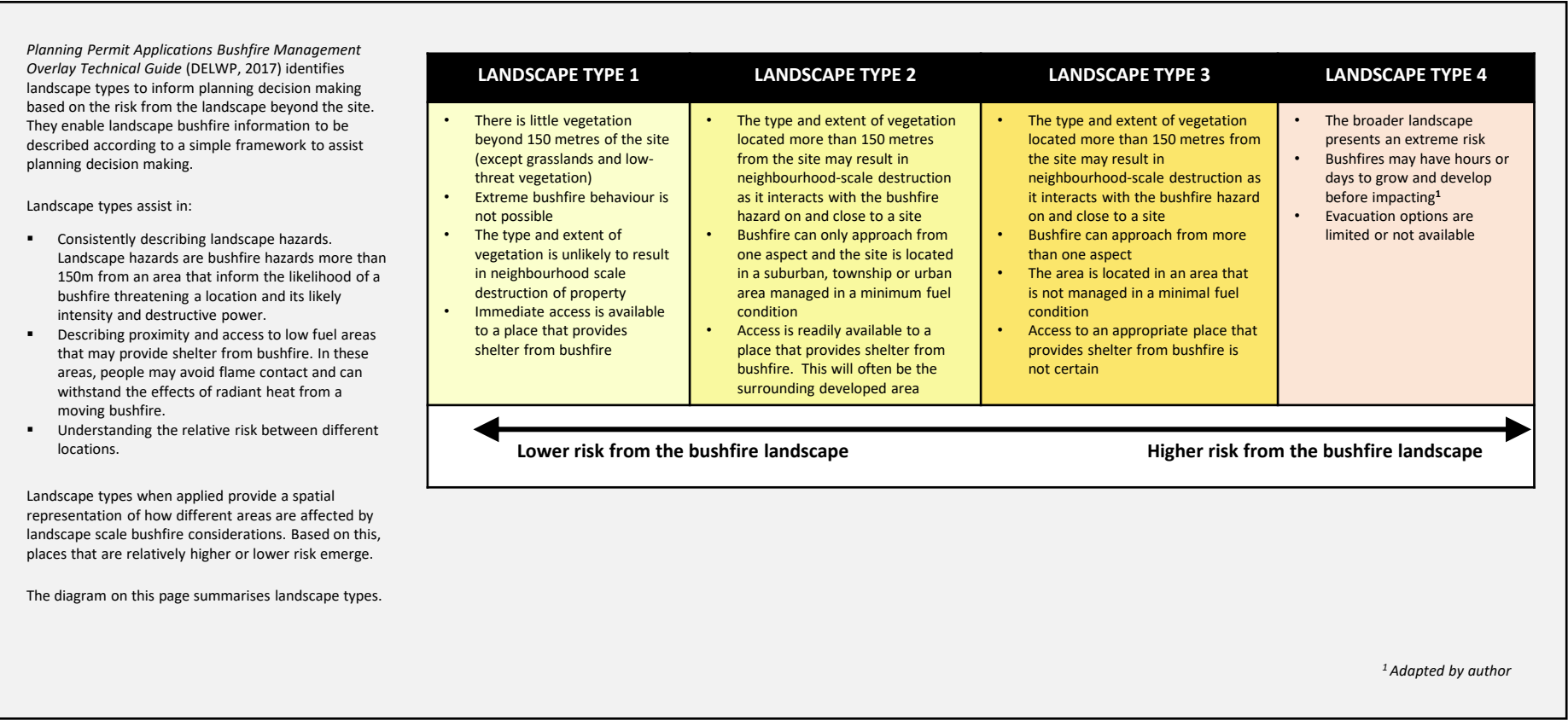


FIGURE 4B: Landscape Bushfire Analysis

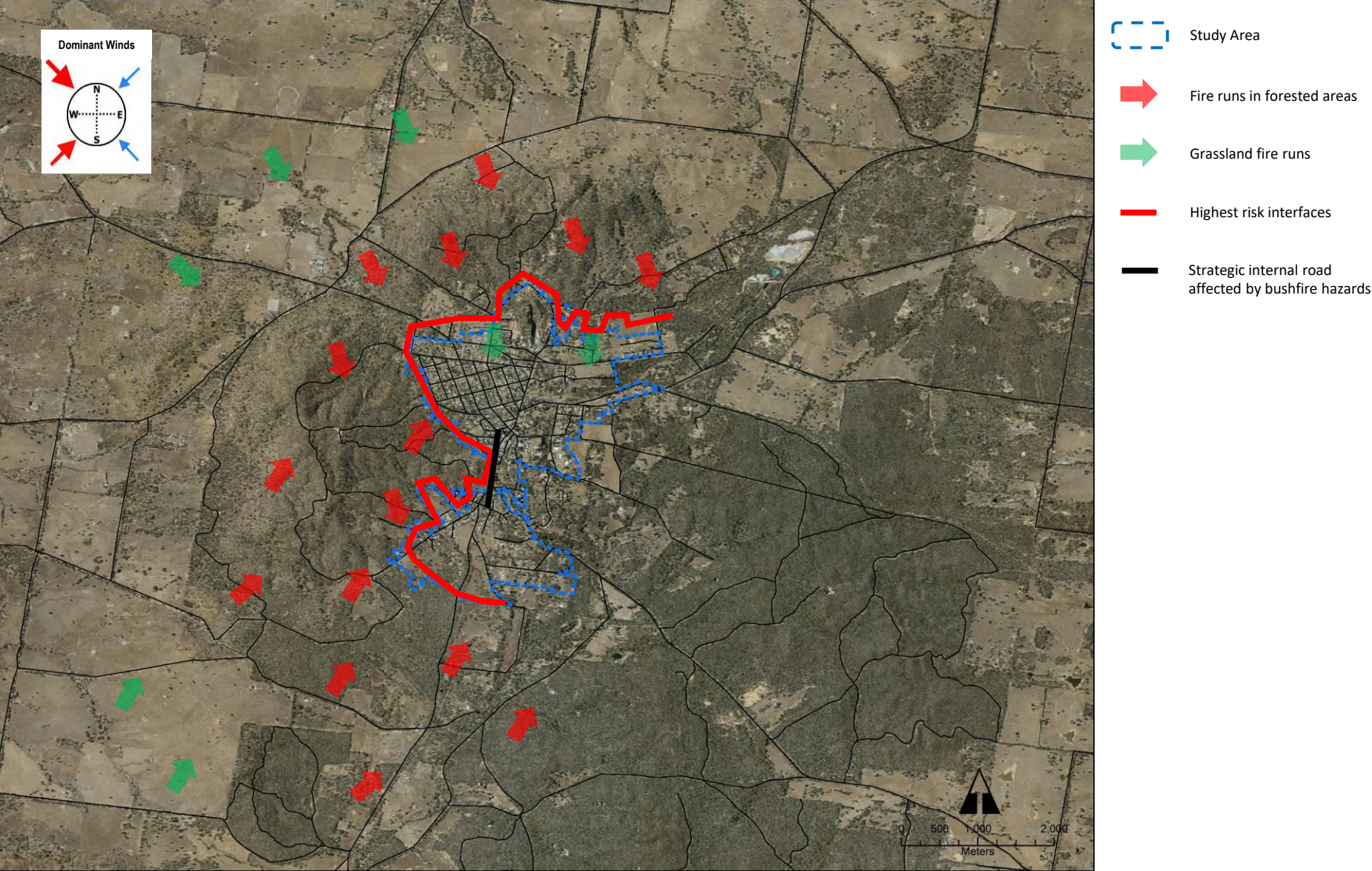


FIGURE 4C: Low Fuel Areas and BAL:Low capable land

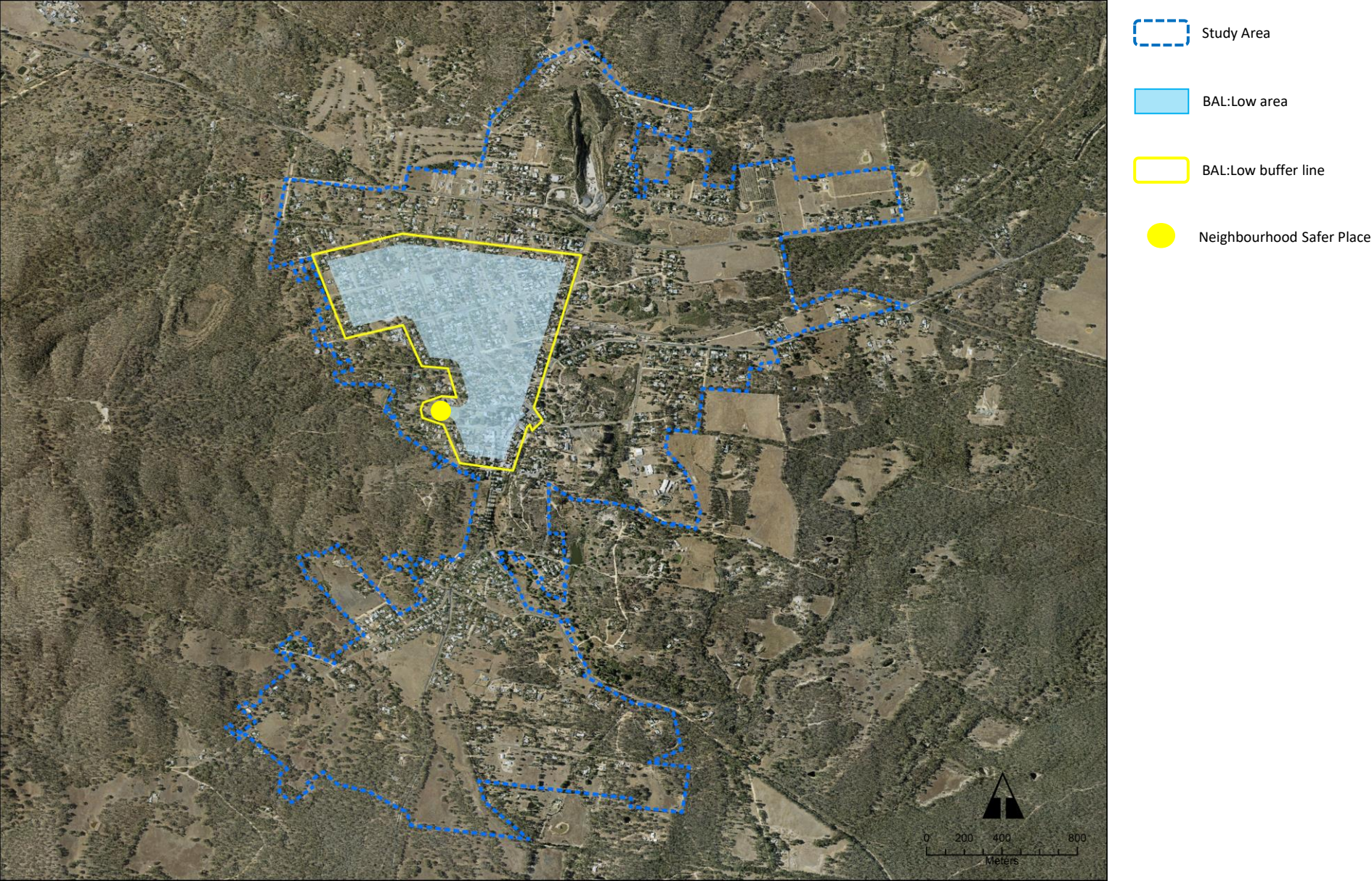


FIGURE 4D: Assessed Landscape types

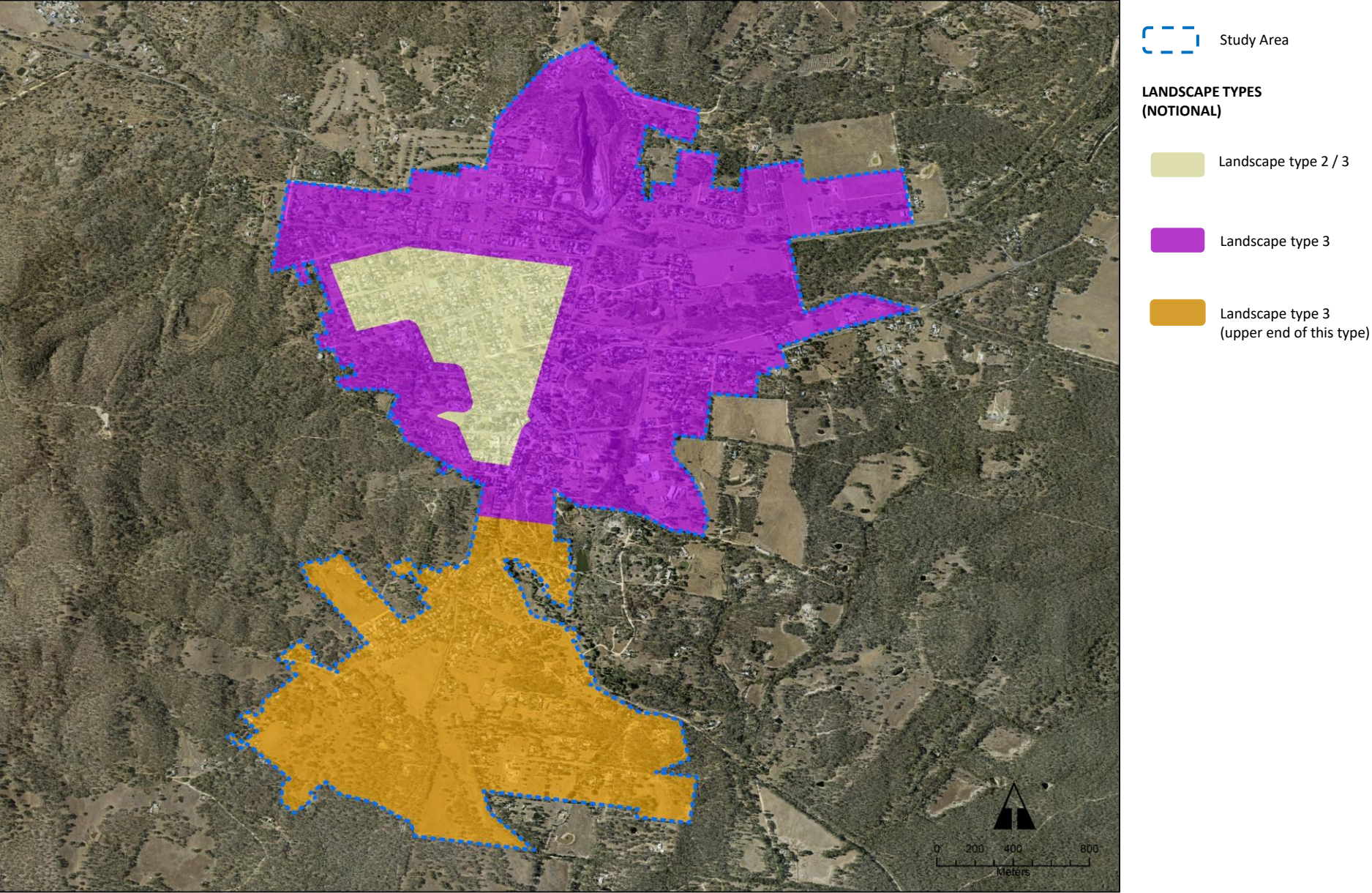
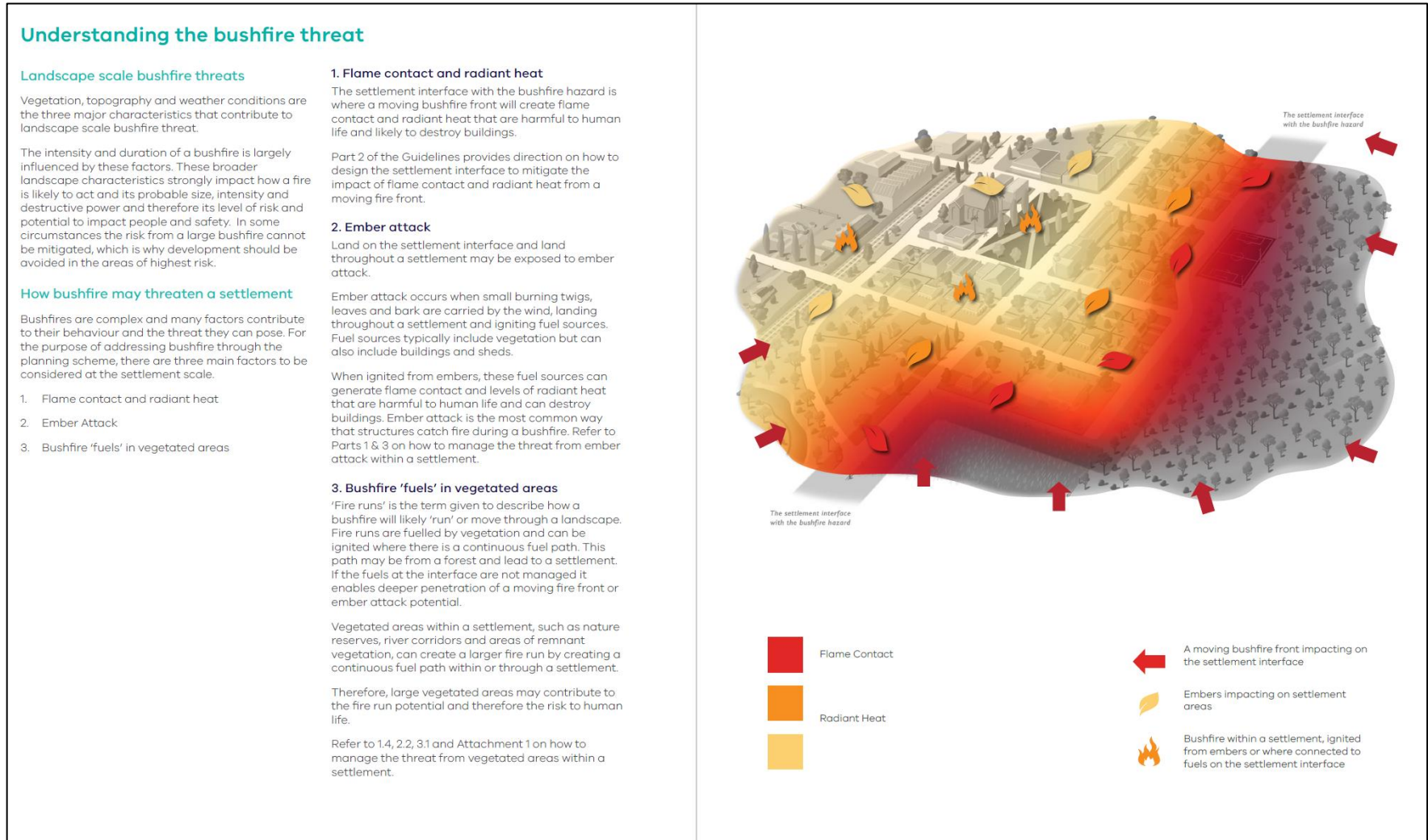


FIGURE 4E: Generalised understanding of how bushfire threatens settlements (DELWP 2020)



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 *c13.02-15 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 following inputs were used.

5.1.1 Hazard identification

Vegetation types

Hazardous vegetation was identified within and around (150m) the Study Area using expert judgment based on field work and aerial photography. Ecological vegetation classes (EVCs) were also reviewed. Figure 5C includes the vegetation types applied.

The predominant hazards are woodlands and grasslands.

Low-threat vegetation as described in *AS3959-2018 Building in a Bushfire Prone area* (Standards Australia) was excluded as it is not considered hazardous under the planning scheme.

Grassland hazards within the Study Area are assessed as low threat and non-hazardous as it is assumed they would be modified to be non-hazardous as part of any development proceeding.

Slope

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. Where possible, slope is based on vegetation north-west and south-west which are likely bushfire direction of travel in Victoria.

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

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

5.1.2 Applied setbacks

Setbacks from hazardous vegetation (except grasslands) were applied based on Column A in Table 2, *c53.02-3 Bushfire Planning*. This setback provides for exposure to be no more than a radiant heat flux of 12.5 kilowatts/square metre, as required by *c13.02-15 Bushfire Planning*.

Setbacks from grasslands of 50m were applied. This simplified the assessment given the variability of slope along grassland interfaces. Applying 50m exceeds the set back specified Column A in Table 2, *c53.02-3 Bushfire Planning* in all cases, and therefore takes a cautious approach.

At a strategic scale, the difference between assessed vegetation types or slopes used in determining exposure is limited (for example, setbacks may vary 19m-30m). The potential for variation on the site-scale should be considered when reading Figure 5D. This necessitates a bushfire hazard site assessment being prepared for any individual planning scheme amendment or development proposal. This is required under the ordinary operation of the Bushfire Management Overlay or as part of preparing a planning scheme amendment, in any event.

See **Figure 5C: Vegetation assessment, applied slope and Column A setback**

5.2 Land likely to be exposed to no more than 12.5kw/sq.m of radiant heat

Land likely to be exposed to no more than 12.5kw/sq.m of radiant heat emerges from applying the above methodology. In these places, exposure to bushfire is likely to satisfy the requirement in *c13.02-1S Bushfire Planning*. It is discussed later in this report that the required exposure may vary for the Study Area as the land is mostly already in a zone that enables development to proceed.

See **Figure 5D: Land likely to be exposed to no more than 12.5kw/sq.m of radiant heat**

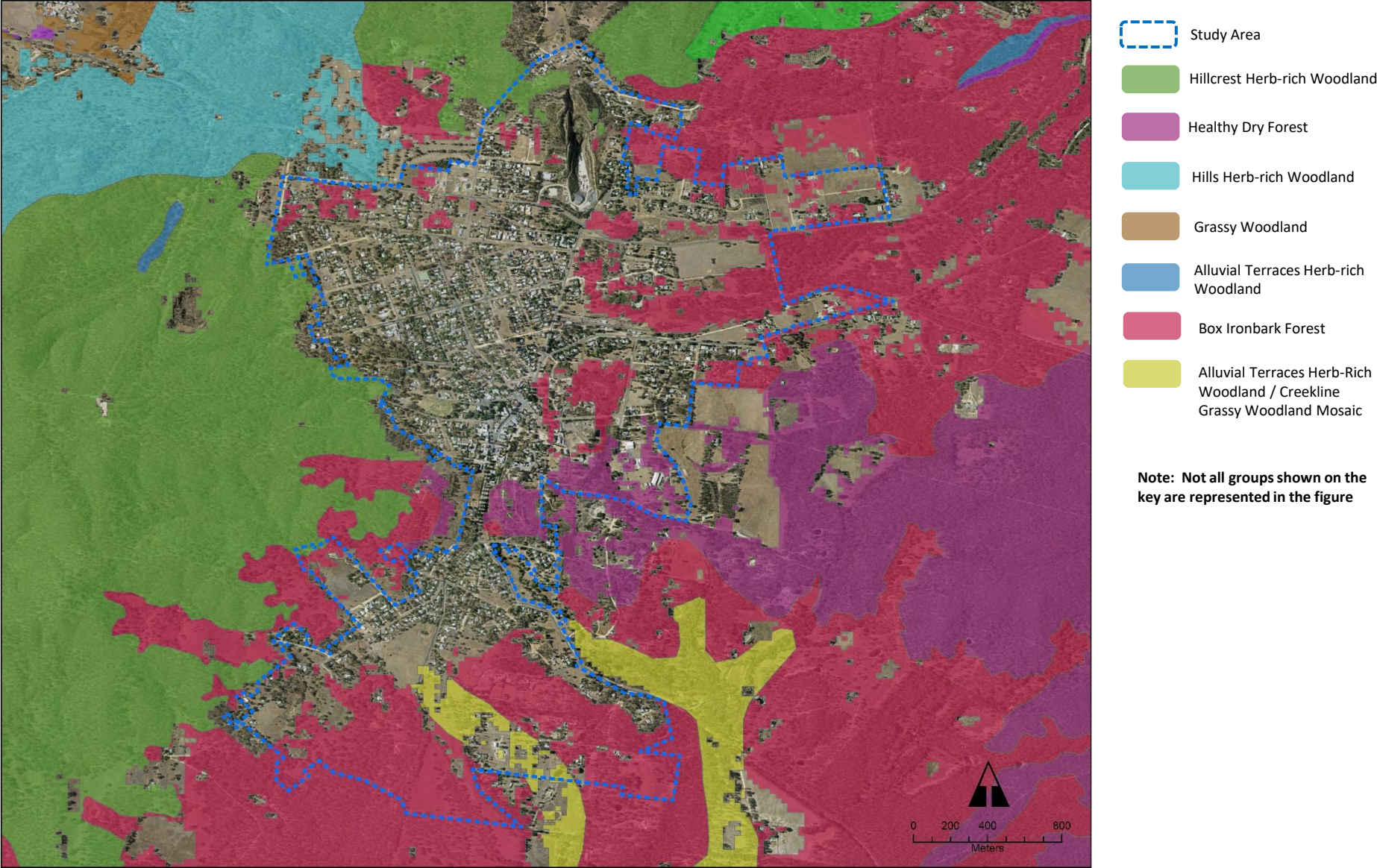
5.3 Points to note about using this assessment

It is yet to be fully resolved how exposure is to be considered in every circumstance, especially in locations which are not proposing outward expansion of settlements or where the underlying zone need not change even if a strategic planning document promoted intensification. It is also the case that planning schemes routinely permit development with higher exposure through its ordinary operation.

Despite these limitations, considered exposure assists to understand the relative risk between different locations and, on a neighbourhood and local scale, lower risk places. It is important to note that the neighbourhood and local risk is always considered alongside landscape and strategic bushfire considerations and is not in isolation determinative of acceptable risk outcomes.

Exposure using the bushfire hazard site assessment relates to radiant heat and flame contact. Ember attack is assumed in all areas and the severity of ember attack is not separately assessed at the site scale (for example, the different ember generating potential within a fuel type is not assessed or considered in the bushfire hazard site assessment). The severity of ember attack is considered as part of the landscape scale assessments as included in this report.

FIGURE 5A: Ecological Vegetation Classes



Data extracted: 2023

FIGURE 5B : Slope based on 10m contour

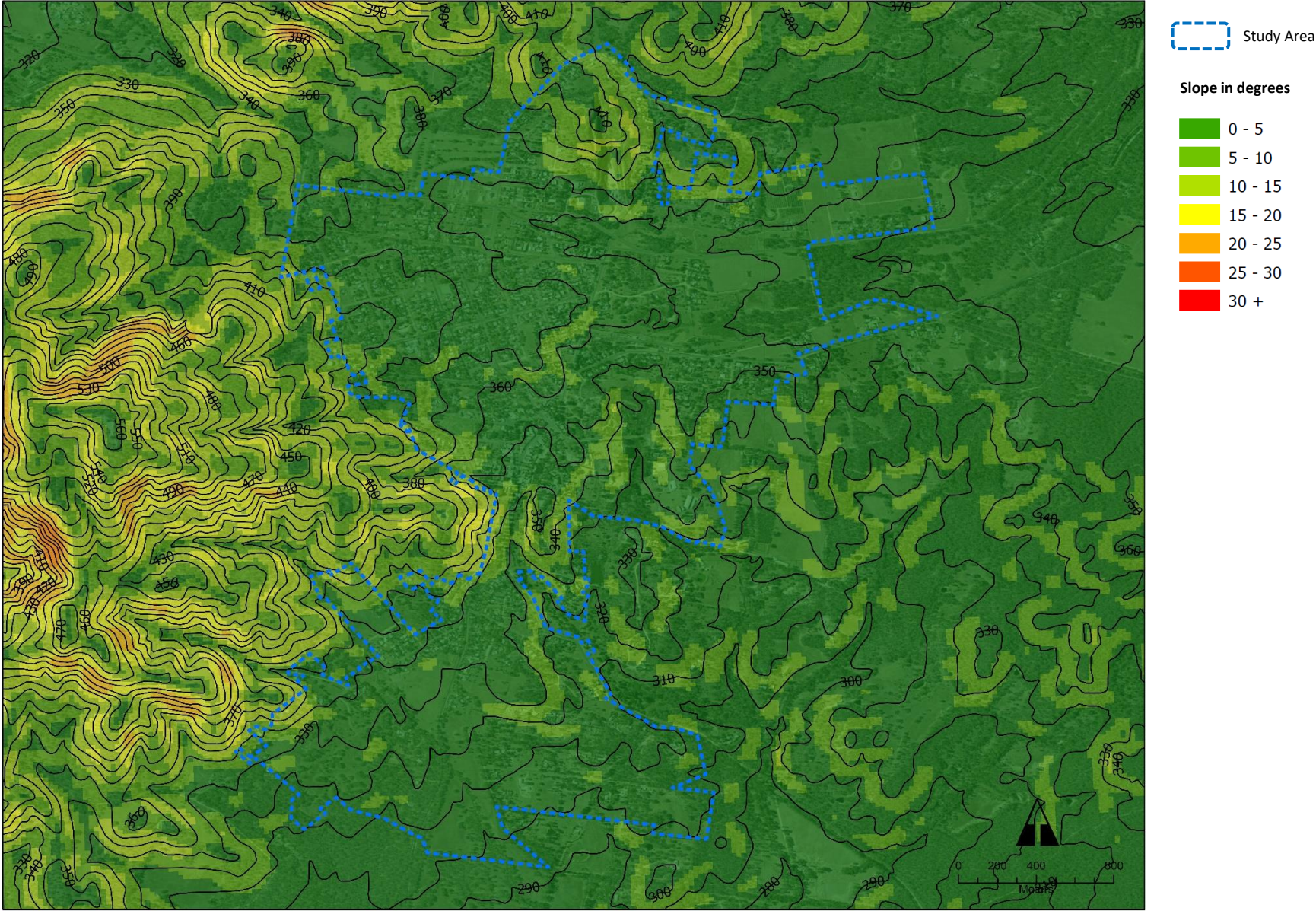


FIGURE 5C: Vegetation Assessment, applied slope and applied Column A Setback

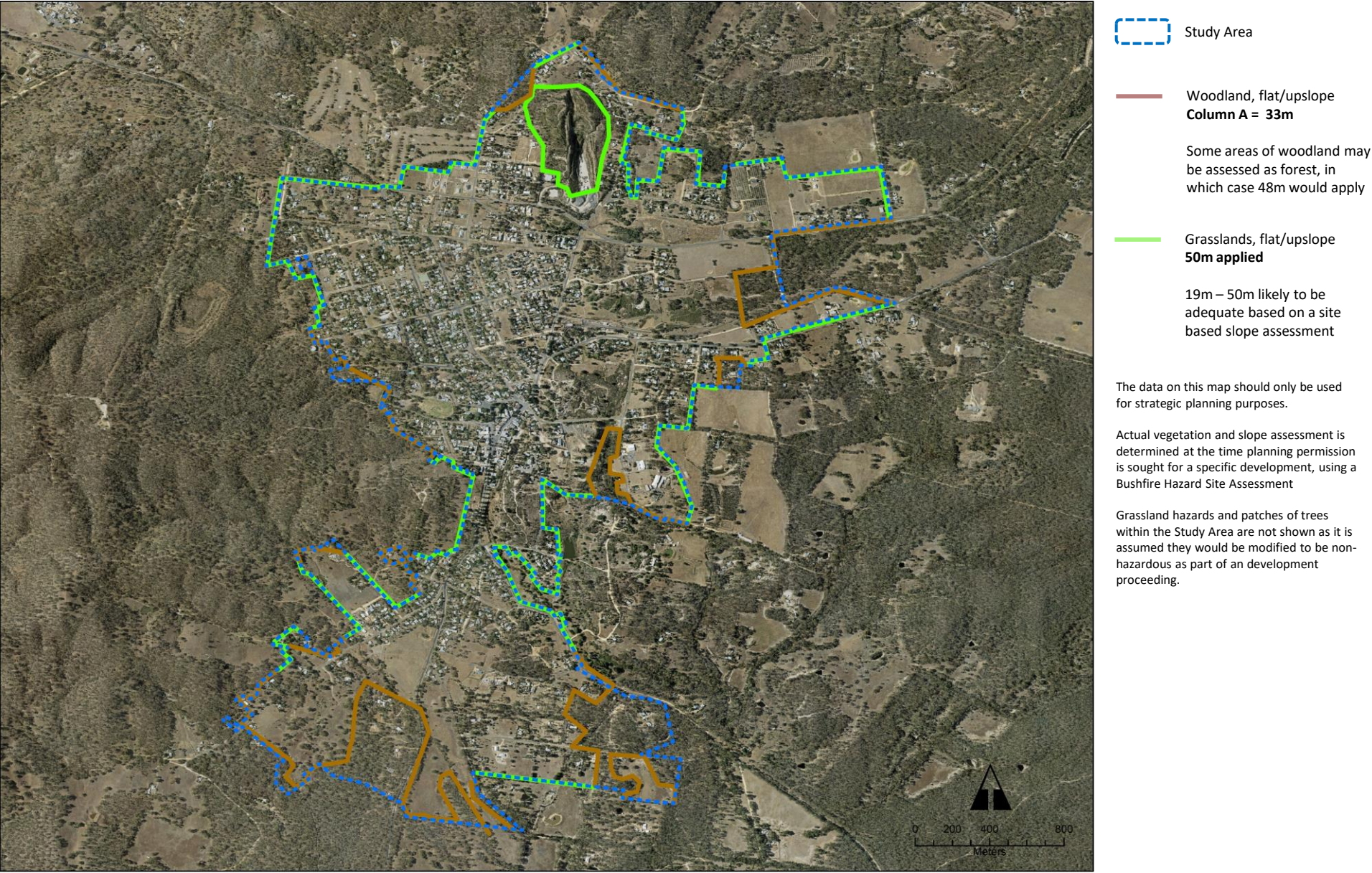
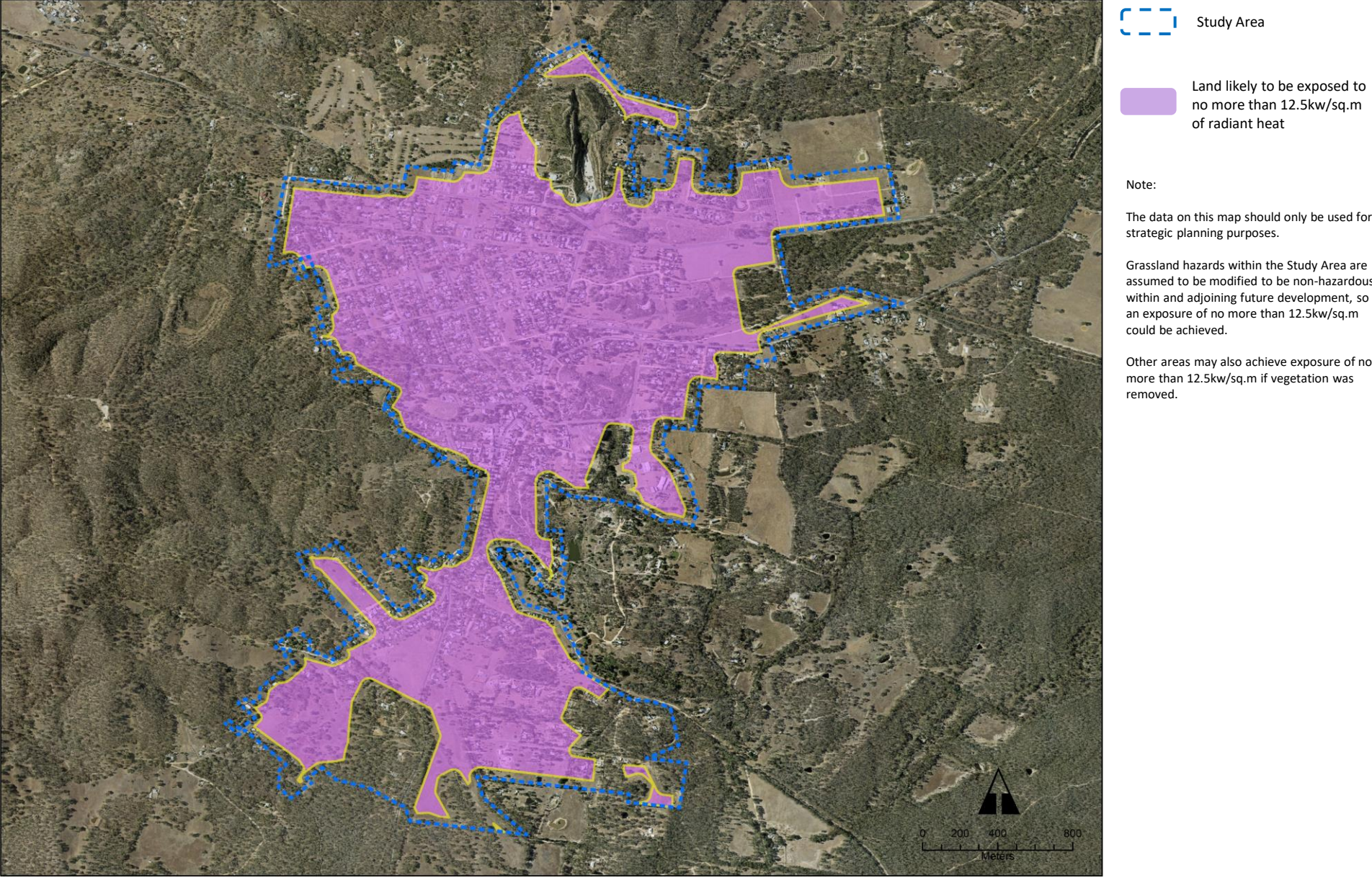


FIGURE 5D: Land likely to be exposed to no more than 12.5kw/sq.m of radiant heat



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 *c13.02-1S Bushfire Planning* exposure requirement. This section uses that information to consider strategic and settlement policies in *c13.02-1S Bushfire Planning*.

6.1 *c13.02-1S Bushfire Planning*

6.1.1 Alternative locations for development and landscape risk

c13.02-1S Bushfire Planning includes strategies that seek to direct new development and to manage bushfire risk overall.

- *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.*

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.*

Sub-regional and municipal context

The larger settlements in Mount Alexander Shire comprise Castlemaine / Campbell Creek / Chewton, Maldon, Newstead and Harcourt. All of these settlements are within areas of bushfire hazard. Maldon is a higher risk settlement within this settlement mix owing to forested bushfire hazards being on all sides of the settlement. Its risk in some places is comparable to (for example) Chewton.

Like many settlements in Mount Alexander, the sub-regional or municipal scale of assessment may be less informative where the settlement and neighbourhood scale of assessments is more purposeful to demonstrating that bushfire planning scheme policies can be given effect to. This reflects the differences in risk in different parts of a settlement rather than a single risk assessment for the entire town (as is done in the VFRR, for example).

Land in the southern part of the Study Area is within the highest risk parts of a higher risk settlement. There are alternative locations available within Maldon and in other settlements which are relatively and absolutely lower risk. The southern part of the Study Area is not a preferred location for development having regard to a range of scales of assessment.

The northern part of the Study Area presents a range of different risk area but benefits from a core of low fuel land which is a favourable attribute. The northern Study Area is mostly already within a General Residential Zone and limited areas of Low Density Residential Zone.

This means that the planning scheme already contemplates development occurring, with no new strategic planning intervention required to achieve this. It is necessary to consider whether this part of the Study Area is such a high risk that land should be rezoned to non-urban uses to prevent further development. This report concludes that this is not the case if settlement level considerations and the settlement and local scale of analysis is applied and emphasised.

Based on the above and as further explored in this Chapter, parts of Maldon could be favourably assessed against *c13.02-1S Bushfire Planning* as a location for development, by assessing each risk area (landscape type) individually.

Landscape type 2 & 3 (built up areas in the northern Study Area)

The northern Study Area orientated around lower fuel urban areas are lower risk locations, consistent with landscape type 2/3 being assessed along with the Bushfire Management Overlay not generally applying. These are the lowest risk parts of the Study Area (but noting they sit within a high-risk location overall).

The development of these areas consistent with existing Zones is an appropriate strategy at the planning scheme level and requires no intervention to enable this to occur, as they are already zoned. Most lots already contain a dwelling and any intensification of residential or non-residential uses beyond a single dwelling would be subject to a planning application where bushfire could be considered using *c13.02-1S Bushfire Planning*.

Landscape type 3 (balance of northern Study Area)

Other areas in the northern study area are higher risk than the low fuel core of the settlement and are again located within a high-risk settlement. They are affected by forest, woodland and grassland hazards to the west, north and east combined with bushfire hazards within parts of the Study Area itself. These areas are less favourably assessed against *c13.02-15 Bushfire Planning*.

If an entirely new settlement area, it would be unlikely to be considered an acceptable location for growth or development. However, this area is already within the GRZ, IN1Z and other urban zones and the planning scheme contemplates development proceeding. The risk, whilst elevated, is not so high that the rezoning of land to a non-urban zone be contemplated.

The Bushfire Management Overlay applies to the highest's risk edges, which strengthens planning scheme responses including for single dwellings in these areas. The emphasis on settlement edges is a highly effective strategy in this part of Maldon, driven by the Bushfire Management Overlay. However, the Bushfire Management does not apply to all areas within Landscape type 3 in the balance of the northern Study Area.

Strategic planning can make a material difference to managing legacy bushfire risks and existing Zones through new development whilst taking advantage of the relatively good proximity to low fuel / BAL:Low areas to the immediate south and west. If more areas of low fuel arose over time, this would result in lower risk outcomes like the adjoining Landscape type 2/3 areas.

Key to securing acceptable planning outcomes is the creation of an effecting bushfire interface with hazard areas to ensure that continuous fuel paths are not available, that a moving bushfire will not enter developed areas, created or assuring access to low fuel areas and confirming the bushfire exposure requirement is met.

Design Guidelines: Settlement Planning at the Bushfire Interface (DELWP 2019) provides design advice on settlement planning and can be used for this purpose, in combination with drawing on key requirements in the Bushfire Management Overlay even where it does not apply. Perimeter roads and bushfire vegetation management will be a particularly important design response on interfaces to permanent bushfire hazards.

Where this occurred, strategic planning that continues to manage development through urban Zones would be consistent with *c13.02-15 Bushfire Planning* directions. This is because they:

- Have a lower landscape bushfire risk in completed development as a result of new planning controls.
- Would have in new development reasonable access to low fuel areas and immediate access to low fuel areas in some places.

- Can deliver completed development to satisfy a bushfire exposure requirement (12.5kw/sq.m). This may involve vegetation removal to achieve this.

There is some coherence in the above strategies with the schedules to the BMO in this part of the Study Area. These schedules enable and in fact streamline the development of a lot with a single dwelling, consistent with some recognition that an effective strategy is managing the introduction of risk rather than avoiding it all together.

On balance, continuing to enable development could be acceptable subject to neighbourhood scale planning that can coordinate change and manage bushfire risks more effectively than the planning scheme currently does. It is reasonable for the Council to further consider development in these areas through its strategic planning.

Landscape type 3 (upper) - Southern Study Area

The mostly development GRZ land generally oriented around Gray Street is not assessed as low fuel, despite this land being the most distinct 'core' of a settlement in the southern Study Area. The lack of a low fuel area is a significant contributor to the risk increase relative to the northern Study Area.

This area is mostly developed with a dwelling on each lot and the risk is mostly already realised. The emphasis for strategic planning is on redevelopment which can deliver a risk reduction if contemporary bushfire protection measures were required in future development.

Further south, the southern Study Area is dominated by undeveloped GRZ lots and land in the LDRZ & FZ.

It has been considered whether introducing new growth could enable some existing risks to be addressed that might result in an overall risk reduction. For example, creating a low fuel area through a greenfield subdivision. If not for the broader landscape risk, this may be an effective strategy.

However, even if a transition to more resilient neighbourhood could be managed over time through individual planning approvals, the broader landscape risk remains high, including ember attack across the entire area. Even through introducing more growth, it is unlikely low risk outcomes could be achieved.

Concurrently, rezoning land for non-urban uses may also not be an effective strategy as it would leave permanently undeveloped lots in a non-managed condition with no realistic prospective of a future use that could better manage the hazards. This would reinforce higher risk outcomes. Some of these lots are larger, reinforcing that they can and often carry contain bushfire hazards.

See **Figure 6B: Southern Study Area (Selected GRZ and LDRZ Lot Size Analysis)**

A strategy for dealing with legacy risks associated with existing Zones could provide for the Bushfire Management Overlay to be applied to the entirety of the southern Study Area. This would enable bushfire and life-safety to be considered across the entire southern Study Area, removing the distinction between BMO land and non-BMO land (which for life safety purposes, there is not). Given the landscape risk, BMO Criteria 3 (extreme fire behaviour) can likely be used to achieve this.

There is opportunity for the Council to reflect on the bushfire risk in delivering residential zone reforms, which may include the Neighbourhood Residential Zone replacing the General Residential Zone and the potential for matters in the schedule to the Low Density Residential Zone being updated to better reflect bushfire risks. In progressing residential zone reforms, bushfire risk would indicate an emphasis on minimal change as being justified.

Increasing the emphasis of bushfire risk in Zones alongside the broader application of the Bushfire Management Overlay would together support bushfire outcomes in the southern Study Area.

Land within the Farming Zone in the southern part of the Study Area is within the highest risk parts of a higher risk settlement. The rezoning of the Farming Zone land for growth and development cannot be justified having regard to the settlement, municipal and sub-regional context. There are alternative locations available within Maldon and in other settlements which are lower risk and low risk. The rezoning of this FZ land in this part of the Study Area is unlikely to be consistent with *c13.02-1S Bushfire Planning*.

Conclusion on alternative locations for growth

The above assessment reflects the varying levels of bushfire risk across the Study Area and supports seeking to address bushfire risk within a restrictive framework for planning scheme enabled change based on bushfire considerations.

The strategic directions for different parts of the Study Area are shown on Figure 7A-1 and 7A-2 and further explained in Section 7.

See **Figure 7A-1 & 7A-2: Strategic directions**

6.1.2 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 places are present in the central part of the Study Area, orientated around more urban and heavily built-up areas within the northern part of the Study Area. Beyond these defined areas of BAL:Low, limited reliable lower fuel areas arise. This reflects the presence of bushfire hazards in many parts of the Study Area, including as a result of bushland open spaces, vacant land in residential development and large areas of undeveloped grassland areas.

As described in Section 6.1.1, BAL:Low areas can be created in new urban development in the north and north-east of the study area. This is central to delivering acceptable outcomes in that area.

Less reliance can be placed on creating low fuel areas in the southern part of the Study Area as it is less obvious how that would occur. Any low fuel areas created would continue to be subject to fire behaviours that may be harmful to people.

6.1.3 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. In many places, this is achieved by assuming vegetation removal and/or management. Based on this, exposure of future development could be consistent with *c13.02-1S Bushfire Planning*. The exposure benchmark is not a particularly useful indicator of overall risk in the Study Area.

However, the Study Area is mostly already within urban Zones and no future planning scheme amendment is required. The statutory planning exposure requirement is therefore derived from:

- The Bushfire Management Overlay where it applies.
- Discretionary decision making under *c13.02-1S Bushfire Planning (Use and development control in a bushfire prone area)* for most development, including subdivision.

Both above technically enable exposure to be higher than if the planning scheme amendment exposure requirement applies.

On balance, the land subject to the Bushfire Management Overlay can manage exposure through its decision-making framework in *c53.02 Bushfire Planning*. It will require defensible space vegetation management to be applied to all land subject to a future planning permit, so low fuel outcomes will be achieved. The bushfire attack level component of managing exposure is less relevant to the strategic objectives being sought in this report (preventing moving bushfires entering settlement areas and creating low fuel land).

Discretionary decision making under *c13.02-1S Bushfire Planning (Use and development control in a bushfire prone area)* would be enhanced for subdivisions by including the 12.5kw/sq.m exposure as a benchmark to guide decisions making. This enhancement is necessary to make development acceptable as assessed in this report and to realise the lower risk outcomes which are sought under contemporary planning scheme considerations (rather than considerations in place at the time land was included into urban Zones).

6.1.4 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.

The objective to achieve low fuel development will necessitate vegetation being modified where it is currently a hazard as part of future planning approvals. This arises under the Bushfire Management Overlay where it applies and in other areas as a result of the recommendations of this report.

Many parts of the Study Area are subject to vegetation-related planning permit triggers, where the emphasis may be on vegetation protection. This is unlikely to be compatible with good bushfire outcomes at the strategic level, but at an individual application level it is likely the operation of the planning scheme in c71.02 would enable bushfire considerations to prevail, if there was a conflict.

It may be reasonable that future strategic planning for the Study Area contemplates lower fuel outcomes on private land where unmanaged hazards are currently dominant.

See **Figure 1D: Land subject to a Significant Landscape Overlay**

6.1.5 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.*

There is an opportunity in undertaking more contemporary strategic planning for existing urban Zoned land to significantly reduce new risk and to better manage exiting risks, to the extent planning decision making can. This applies to all existing Zoned land, although implemented differently depending on the location within the Study Area.

To demonstrably respond to planning scheme policies, it is recommended that bushfire requirements be considered and introduced into the planning scheme to achieve enhanced bushfire outcomes. These have been identified in this section, are explained further in the next Section, and are illustrated on Figure 7A-1 & 7A-2 Strategic Directions.

The limited areas of Farming Zone land in the southern Study Area are high risk locations. Their use for urban purposes would increase bushfire risk and is not therefore identified for growth and development in the recommendations of this report.

6.2 Conclusion to planning scheme considerations

Strategic planning in Maldon can give effect to bushfire policies and directions contained in the planning scheme by considering and giving effect to the recommendations in this report. Where mitigation is delivered in future planning, there is no planning scheme bushfire factor that would warrant Maldon being further restricted again from what is recommended in this report.

Where mitigation as recommended in this report is applied, the Maldon Framework Plan can comply with:

- *c13.02-1S Bushfire Planning.*
- *c44.06 Bushfire Management Overlay.*
- *c13..02-1S Use and development control in a bushfire prone are.*

Recommendations in this report are intended to reiterate the key outcomes that should be integrated into the planning scheme. These should operate in the planning scheme as local content in the form of the Bushfire Management Overlay and other controls.

FIGURE 6A: LOTS LARGER THAN 1,200SQ.M IN THE STUDY AREA

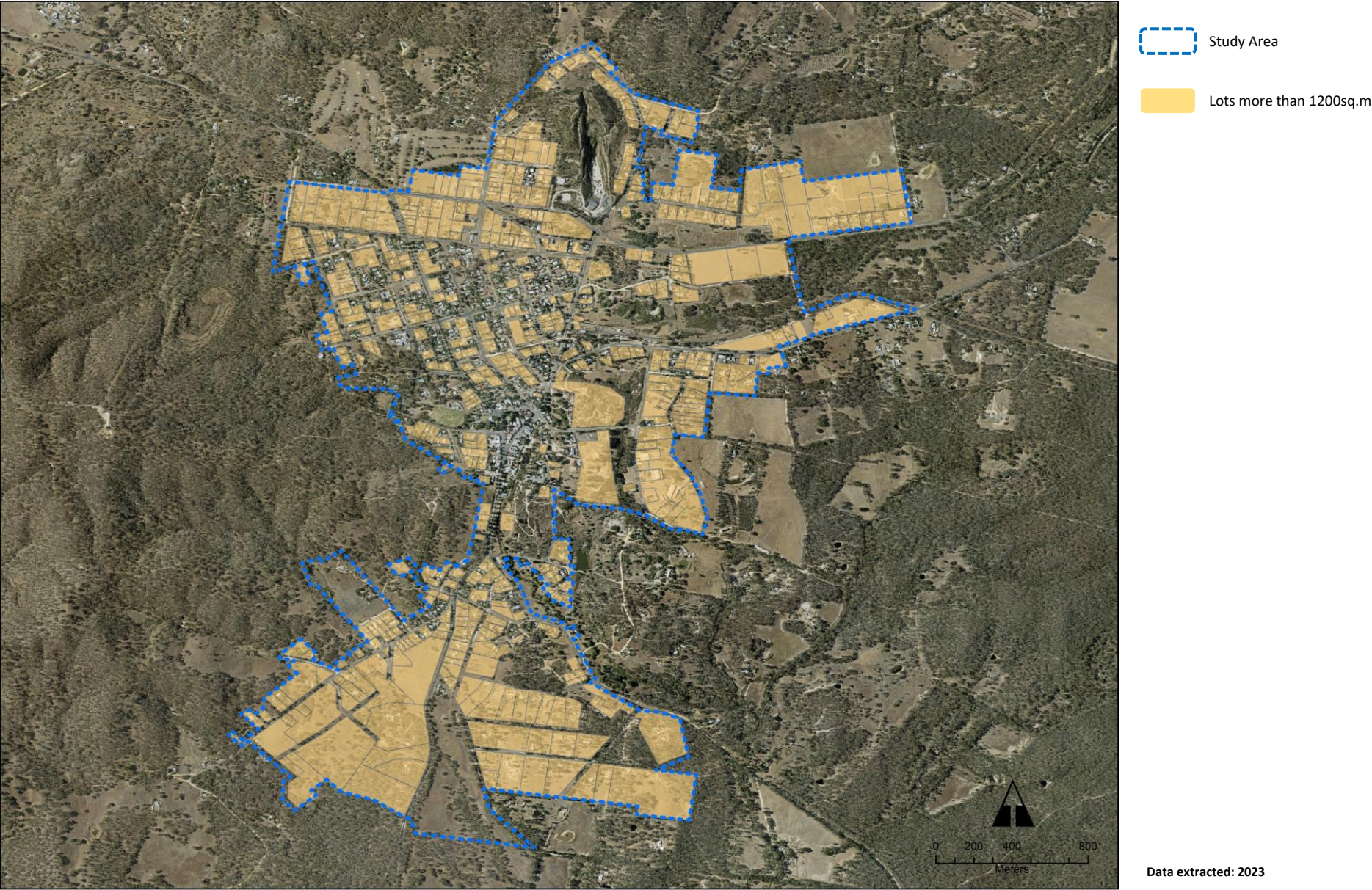
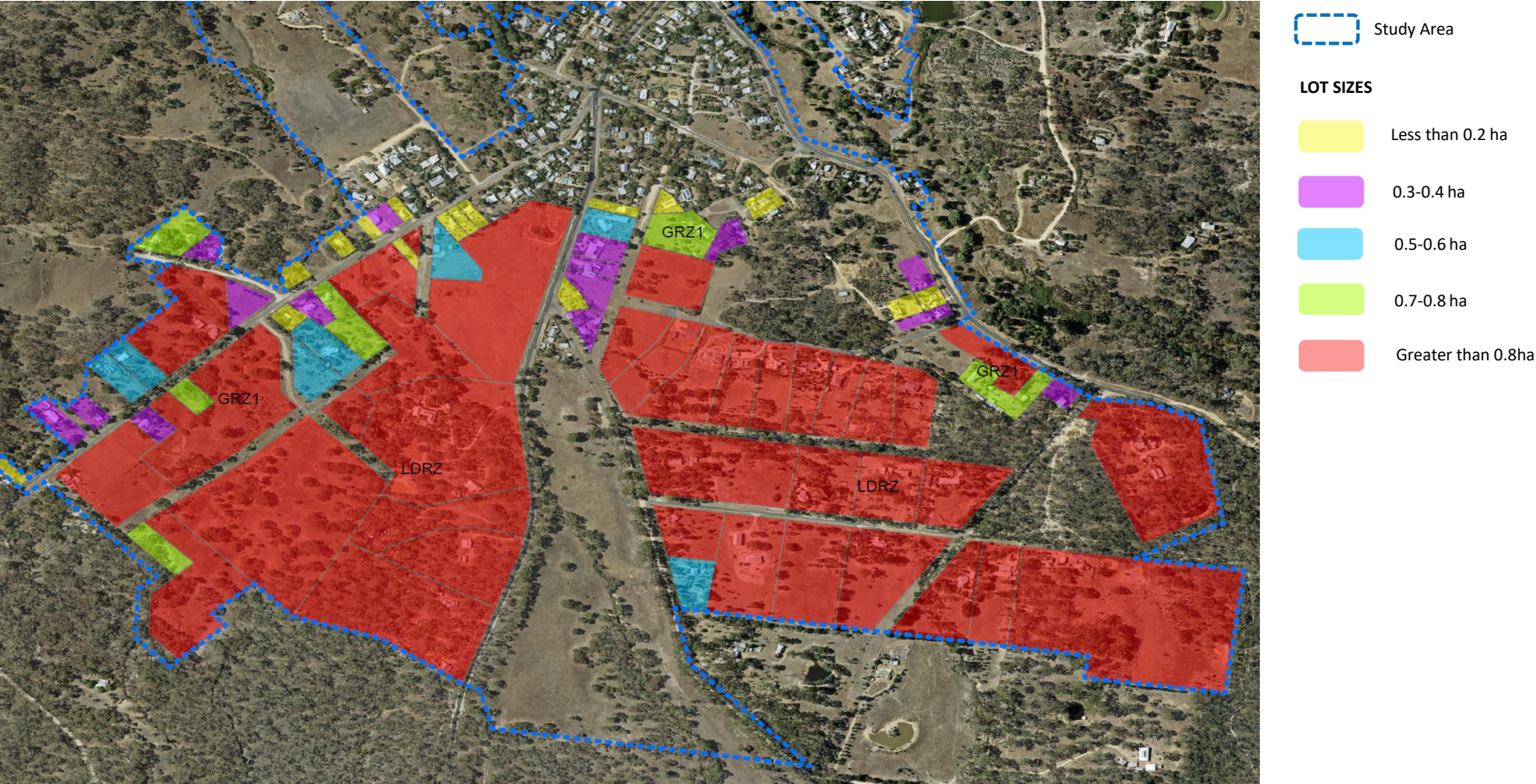


FIGURE 6B: SOUTHERN STUDY AREA (SELECTED GRZ AND LDRZ) LOT SIZE ANALYSIS



7. Bushfire requirements and mitigation

This section sets out a proposed strategy or approach to progressing bushfire considerations as part of planning for Maldon. It is derived from the assessment in response to *c13.02-1S Bushfire Planning* in the previous section.

7.1 Bushfire Management Overlay

The Bushfire Management Overlay applies to some parts of the Study Area, including parts of the Landscape type 3 areas. A planning permit will be required to develop, including subdivide, the land. The requirements of *c53.02 Bushfire Planning* can be met as they relate to the following approved measures, including:

- AM2.2 - Siting of development within a proposed lot.
- AM2.3 – Building design.
- AM3.1 - Defendable space and construction standards.
- AM4.1 - Water supply and emergency vehicle access.
- AM5.3 - Perimeter road adjoining permanent hazards.

The planning scheme requirements for vegetation management for bushfire purposes in *c53.02 Bushfire Table 6 Vegetation management* requirements will be applied to all developed areas subject to the Bushfire Management Overlay. The result of this is that all parts of a development site or new lot created will be low fuel where land is within the Bushfire Management Overlay (unless the relevant fire authority agrees otherwise).

7.2 c13.02-1S Use and development control in a bushfire prone area

All development for which a planning permit is required requires consideration against the generality of *c13.02-1S Bushfire Planning*.

Planning consideration is specifically required under the *c13.02-1S Use and development control in a bushfire prone area* for parts of the Study Area, including the Landscape Type 3 areas that are a focus for better bushfire outcomes as recommended in this report. This includes land not within a Bushfire Management Overlay and for which the protection it requires does not apply.

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 selected future planning applications, including to subdivide the land into more than 10 lots. This provides a planning scheme mechanism to ensure development considers bushfire at the planning application stage. However, it specifies no actual requirements and its considerations are discretionary (similar to *c13.02-1S Bushfire Planning* overall) as it relates to planning applications.

It is recommended that additional bushfire protection be specified to secure necessary mitigation in response to the assessed Landscape type 3 areas and to demonstrably direct future discretionary decision making. Necessary mitigation can be included into updated strategic plans and subsequently given effect to in local planning scheme content.

The recommended approach would enable the differences in land in the Bushfire Management Overlay and outside of it to be made consistent as it relates to the outcomes that need to be met, as well as considering adjustments to existing Zones in the southern Study Area as part of applying residential zone reforms.

The following outlines bushfire mitigation measures that can be further considered in strategic planning for Maldon.

7.2.1 Landscape type 2 & 3 (built up areas in the northern Study Area)

These locations are the lowest risk parts of a settlement. The development of these are consistent with existing Zones is an appropriate strategy at the planning scheme level and requires no intervention or recommendations in this report for this to occur.

Most lots already contain a dwelling and any intensification of residential or non-residential uses beyond a single dwelling would be subject to a planning application where bushfire could be fully considered. In the event that a proposed use or a configuration of development might result in an unacceptable bushfire outcome, then a planning permit could be refused. No additional bushfire requirements need to be applied in these areas.

7.2.2 Landscape type 3 (balance of northern Study Area)

The analysis in Section 6 concluded that low fuel outcomes should be achieved on land when it is developed in the balance of the northern Study Area that is not currently low fuel or within the Bushfire Management Overlay.

To achieve this outcome, a requirement can be introduced into the planning scheme that specifies that development on a lot larger than 1,200sq.m **and** subdivision which would create a new lot for Accommodation has *c53.02 Bushfire Planning, Table 6 Vegetation management requirements* applied to all land.

To manage site-based exposure in subdivisions, a building envelope set back from assessed hazards for a distance no less than that required to ensure exposure is less than 12.5kw of radiant heat can be required. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

See Figure 7A-1:

Strategic Directions to be considered for inclusion into the planning scheme – Northern Study Area

This will provide for a low fuel outcome, reduce hazards, place hazards into a management regime, and support the progressive neighbourhood wide reduction in the hazard over time as individual sites are developed or redeveloped. The outcome is similar to those sought in the Bushfire Management Overlay.

Lots already subdivided for urban purposes that are smaller than 1,200sq.m within an urban township setting do not generally need any specific requirement to manage fuels as there is insufficient land for hazards to arise in any event, especially once development and other hard surface areas are provided. An assessment of lot sizes supports this, with larger lots correlating with many areas that are not low fuel within the Study Area.

See Figure 6A: Lots larger than 1,200sq.m in the Study Area

The intention of the above requirement is that it should be applied to single dwellings on lots larger than 1,200sq.m. There is not currently a permit trigger under the General Residential Zone but on balance, in these areas, a planning permit trigger should be introduced to deliver acceptable bushfire outcomes. This provides the necessary delivery mechanism in contrast to existing highly discretionary decision making or no bushfire emphasis / permit trigger.

Other development, such as subdivisions and Accommodation, would typically require a planning permit in any event, with local planning scheme content providing a basis for informing decision making.

Requirements as recommended above can be included in the planning scheme through an Overlay such as the Design and Development Overlay, which enables requirements to be specified for development including subdivision. This also has the power to trigger a planning permit for single dwellings, a key part of the recommendations.

A referral or notice to the relevant fire authority would be a reasonable inclusion into the selected planning scheme provision, although for single dwellings on a lot specified outcomes similar to the schedules to the Bushfire Management Overlay can be used to streamline decision making.

Whilst it may be somewhat more efficient to simply apply the Bushfire Management Overlay to the balance of the northern Study Area, this would unnecessarily draw in more requirements than those which are needed. Discussions with the CFA may assist to finalise the approach in preparing any future planning scheme amendment.

7.2.3 Landscape type 3 (upper) – Southern Study Area

Additional bushfire protection can be provided to support resilience in the southern Study Area, reflecting its high risk from bushfire.

- *Consider whether the BMO should be applied to the entire southern Study Area*

Applying the Bushfire Management Overlay would be an effective strategy as BMO Mapping Criteria 3 – Extreme fire behaviour is likely met. Such a criteria is already used extensively across Victoria, including for example in Chewton where the BMO is applied to the entire neighbourhood using Criteria 3.

Securing Bushfire Management Overlay outcomes across the entire neighbourhood would provide a full package of protection measures and to ensure there is no distinction between BMO land and non-BMO land (which for life safety purposes, there is not).

This recommendation will require implementation by the Minister for Planning. A request from the Council into the Department of Transport and Planning regular review of bushfire mapping would enable this recommendation to be advanced. CFA engagement occurs as part of the Department of Transport and Planning process.

- *GRZ land oriented around Gray Street*

The GRZ land that forms a more dense core are mostly developed with a single dwelling. Any redevelopment would be assessed under the Bushfire Management Overlay (if applied) and would deliver a risk reduction from existing conditions (as better bushfire protection measures would be required in future).

- *Managing other General Residential Zone and Low Density Residential Zone land*

Where the Bushfire Management Overlay is applied as recommended, no meaningful risk increase can occur without being approved in a planning permit.

There are concurrently other opportunities to better align Zones to the bushfire risk, including as part of delivering residential zone reforms. The Council can select Zones and use the scheduled-content of Zones to tailor outcomes responsive to bushfire risk. A focus on minimal change would be justified based on bushfire factors. Increasing the emphasis of bushfire risk in Zones alongside the broader application of the Bushfire Management Overlay would together support better outcomes in the southern Study Area.

A key consideration is that land in the General Residential Zone and Low Density Residential Zone in the southern Study Area should not be further subdivided to enable new dwellings on entirely new lots.

It is an option for the Council to consider rezoning land to restrict development currently permitted with or without a planning permit and/or to pursue restructuring initiatives. However, the mitigation recommended above provides full oversight of risk increases and regulates any new risk. If the Department of Transport and Planning does not extend the Bushfire Management Overlay as recommended, the Council may need to revisit other mechanisms to manage the bushfire risks identified in this report.

Planning applications would in future be assessed under the Bushfire Management Overlay, a key benefit and basis for it being applied to the entire neighbourhood, as well under reformed residential Zones with bushfire risk factored into Zone selection and scheduled content. In the event that a use proposed or a configuration of development might result in an unacceptable bushfire outcome, then a planning permit could be refused.

Managing FZ land

Retain the Farming Zone land to prevent the introduction of new risk.

See Figure 7A-2:
Strategic Directions to be considered for inclusion into the planning scheme (Southern Study Area)

7.3 Bushfire construction

All of the Study Area is within a designated Bushfire Prone Area under the *Building Regulations 2018*. This will require a dwelling to be constructed to at least a BAL12.5 (focused on ember protection). This protection is delivered by the Bushfire Management Overlay where it applies and by the building system in other areas.

The southern Study Area where the Bushfire Management Overlay would be applied more extensively, as recommended in this report, provides the framework for enhanced construction requirements, a key benefit and basis for it being applied to all land.

7.4 Other mitigation

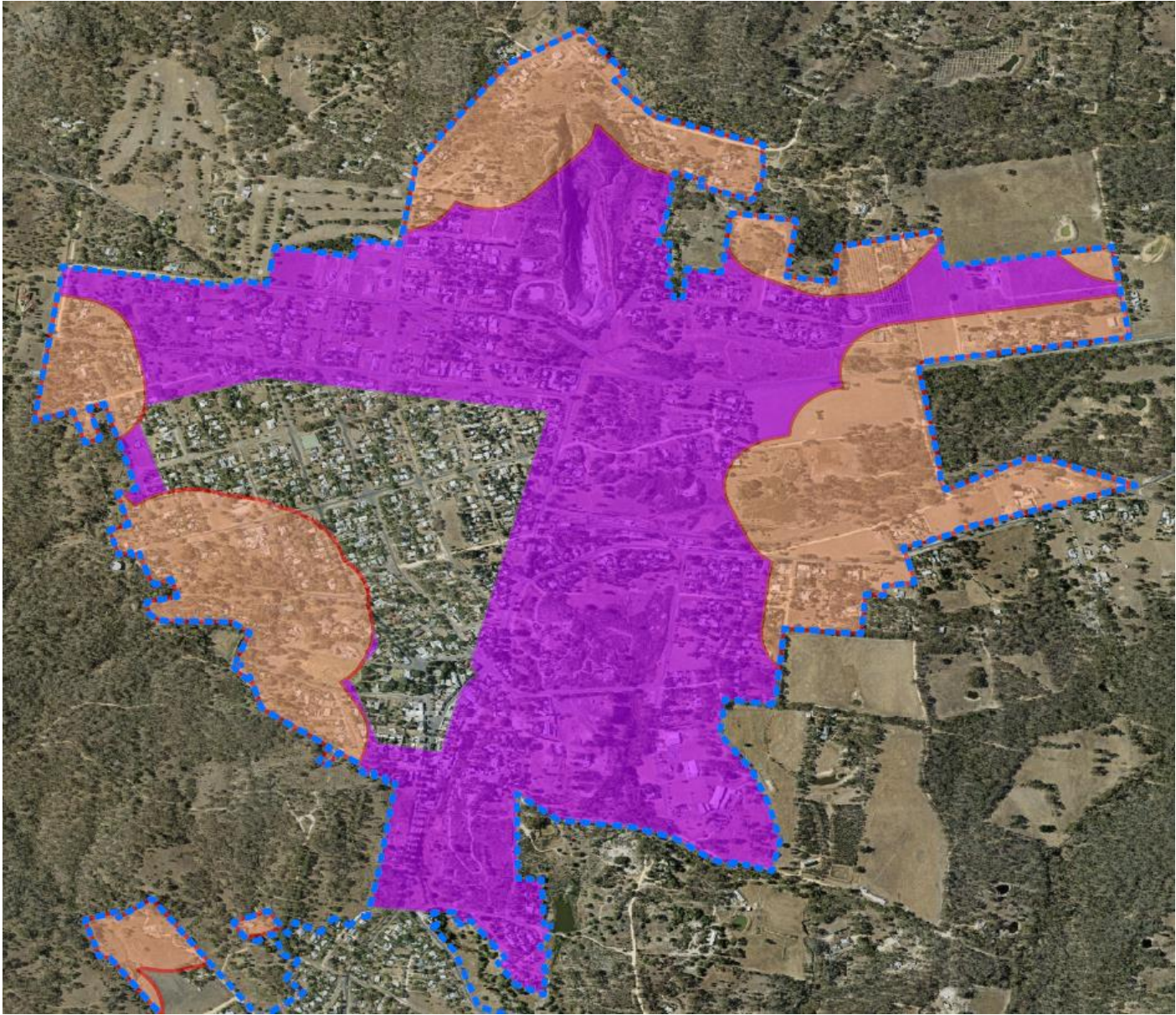
Land in the southern Study Area has limited reliable low fuel places.

Future new development under the recommendations in this report would support lower fuel areas arising, although this is dependent on development proceeding which is not certain. As many different sites might develop over time, in completed development low fuel areas will arise. However, the management of risk in the transitional period is not necessarily secured as there is no existing low fuel area.

It is beyond the scope of this report to recommend that a publicly provided low fuel area be provided (for example, a designated place of shelter). However, integrated decision making would be supported where planning actions under the *Planning and Environmental Act 1987* were considered alongside the Council and Country Fire Authority considering how complementary outcomes under the CFA Act 1958 might also enhance resilience.


Consideration of these matters is a recommendation of this report. This could be actioned by the Council facilitating a discussion with the CFA as part of municipal fire prevention activities, having regard to the final strategy for this area arising from the Council's strategic planning activities.


FIGURE 7A-1: STRATEGIC DIRECTIONS TO BE CONSIDERED FOR INCLUSION INTO THE PLANNING SCHEME: NORTHERN STUDY AREA



 Study Area

Risk management recommendations

 Use the Bushfire Management Overlay to secure acceptable outcomes

 Require hazard management on existing lots larger than 1,200sq.m and for new lots created in a subdivision

Subdivision to achieve no more than 12.5kw of radiant heat (using building envelopes on a lot)

FIGURE 7A-2: STRATEGIC DIRECTIONS TO BE CONSIDERED FOR INCLUSION INTO THE PLANNING SCHEME: SOUTHERN STUDY AREA

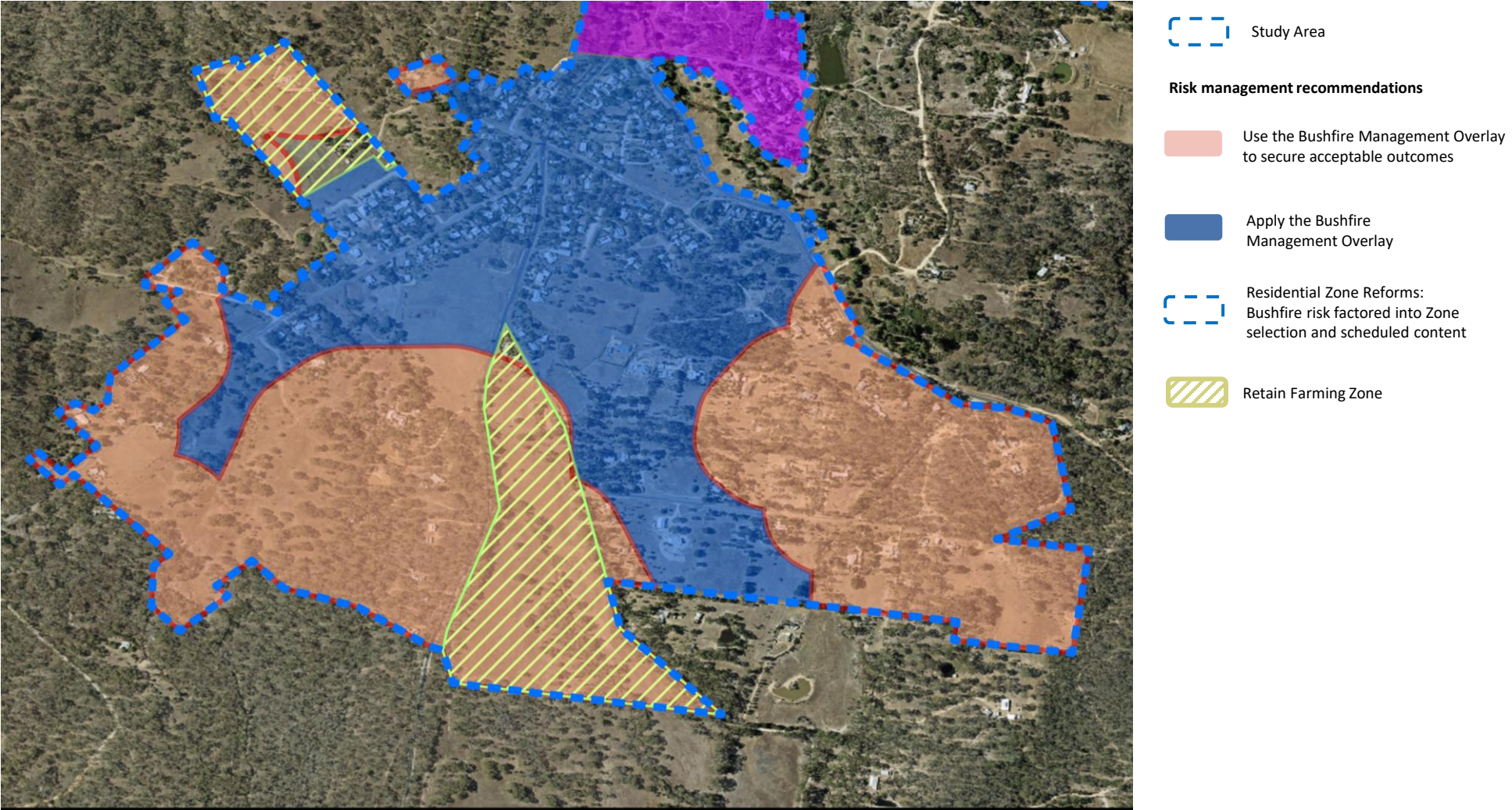


FIGURE 7B: EXPECTED INDICATIVE TREATMENT OF HAZARD INTERFACES

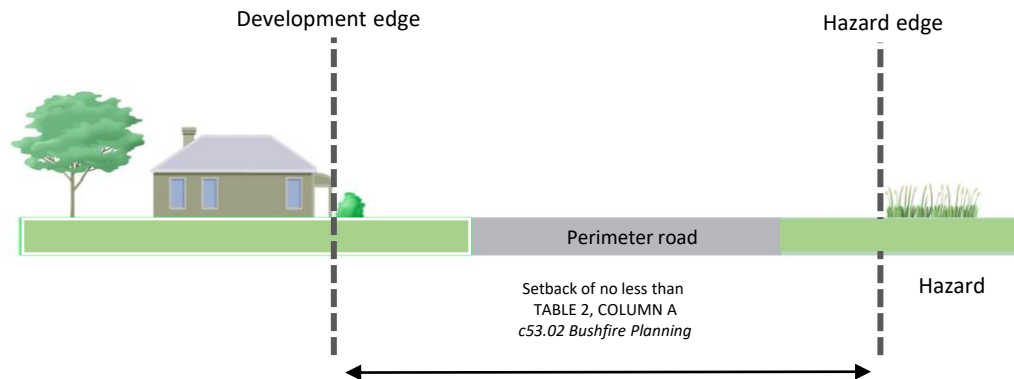


FIGURE 7C: TABLE 6, c53.02 BUSHFIRE PLANNING BUSHFIRE VEGETATION MANAGEMENT STANDARDS (DEFENDABLE SPACE)

- 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.

7A. Views of the relevant fire authority

c13.02-15 *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.

The CFA were consulted on a draft of this report. A copy of their written response (7 July 2023) is included in Attachment 1.

CFA confirm that Maldon is a very high location.

In relation to the bushfire hazard, CFA advise the following:

- The terrain is undulating, with significant *Localised* and more distant *Landscape* bushfire risk exposure. This can expose the community to life threatening bushfire attack on an annual basis.
- All forms of Bushfire attack can occur into Maldon – *Direct Flame, Radiant Heat and significant Ember Attack*.
- Access/ egress is quite problematic due to roadways all having the potential to be impacted by severe fire risk exposure. This may restrict residents' ability to leave the location in a safe manner and restrict Emergency Services supporting the township.
- The age of Building stock within the township is quite old hence they have limited ability to restrict bushfire exposure. It is likely a fire event threatening the township will be difficult to control and based on building stock may see considerable loss.
- It is also CFA understanding the reticulated water supply in Maldon is poor which can compromise effective firefighting operations

In relation to bushfire mitigation measures, the CFA advise the following:

- Maldon highlights several difficult challenges that would restrict future development.
- CFA supports the comments within the Bushfire Planning Assessment
- CFA supports the review of the BMO overlay coving the township which will create increased controls that may work to reduce risk.

It is especially noted that the CFA is supportive of the recommended changes to the Bushfire Management Overlay coverage. The Council should bring this to the attention of the Department of Transport and Planning when requested the review of mapping.

Overall, the CFA supports the bushfire assessment as an accurate assessment of bushfire risk.

The draft of this report reviewed by the CFA included a recommendation that land in the General Residential Zone and Low Density Residential Zone in the southern Study Area should not be further subdivided to enable new dwellings on entirely new lots.

This recommendation (4a) has been adjusted to reflect the opportunity for this to be considered in the selection of Zones in delivering residential zone reforms, including through scheduled content. This provides an implementation mechanism for these changes to be considered, with any changes accompanied by the recommended application of the Bushfire Management Overlay to all land in the southern Study Area, provide oversight over the introduction of all new risk in the southern Study Area.

8. Recommendations

Based on the assessments contained in this report, the following recommendations should be accommodated in updated strategic planning and planning scheme content for Maldon.

NORTHERN STUDY AREA

Recommendation 1: Bushfire Management Overlay

1A. Continue to use the Bushfire Management Overlay to derive acceptable bushfire outcomes in the areas where it applies.

Recommendation 2: Hazard management

2A. Require hazard management on existing lots larger than 1,200sq.m and for new lots created in a subdivision. Require new lots created to achieve the 12.5kw/sq.m exposure benchmark.

These can be achieved by apply a planning scheme control, such as a Design and Development Overlay. Hazard management requires should be as specified in *c53.02 Bushfire, Table 6 Vegetation management requirements*.

SOUTHERN STUDY AREA

Recommendation 3: Apply the Bushfire Management Overlay to urban Zoned land

3A. Council should seek from the Department of Transport and Planning a review of the Bushfire Management Overlay extent, including *BMO Mapping Criteria 3 – Extreme fire behaviour*, with a view that the Bushfire Management Overlay should apply to all urban Zoned land in the southern Study Area.

Recommendation 4: Integrate bushfire risk into residential Zone reforms

4a. The Council select residential Zones and use the scheduled-content of residential Zones to tailor outcomes responsive to the bushfire risks identified. A focus on minimal change would be justified based on bushfire factors, with a particular focus on limiting future subdivision potential that might create new lots for dwellings.

Recommendation 5: Enhancing sheltering options

5A. The Council and the Country Fire Authority consider whether there is justification for a place of shelter to be identified to support community resilience in the southern Study Area. This could be actioned by the Council facilitating a discussion with the CFA as part of municipal fire prevention activities.

References

Country Fire Authority (2023), *Grassfires – Rural* (accessed at <https://www.cfa.vic.gov.au/plan-prepare/am-i-at-risk/grassfires-rural>)

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Department of Planning and Community Development (2012), *Regional Bushfire Planning Assessment - Loddon Mallee Region*

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Our patron, Her Excellency the Honourable Linda Dessau AC, Governor of Victoria

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7 July 2023

Dear

SUBMISSION TO PROPOSED STRATEGY

Proposal: Bushfire Planning Assessment
Location: Maldon

Thank you for providing the CFA with the opportunity to comment on Bushfire Planning Assessment.
As expected, Maldon is a very high bushfire risk location.

Bushfire Hazard

- The terrain is undulating, with significant *Localised* and more distant *Landscape* bushfire risk exposure. This can expose the community to life threatening bushfire attack on an annual basis.
- All forms of Bushfire attack can occur into Maldon – *Direct Flame, Radiant Heat and significant Ember Attack*.
- Access/ egress is quite problematic due to roadways all having the potential to be impacted by severe fire risk exposure. This may restrict residents' ability to leave the location in a safe manner and restrict Emergency Services supporting the township.
- The age of Building stock within the township is quite old hence they have limited ability to restrict bushfire exposure. It is likely a fire event threatening the township will be difficult to control and based on building stock may see considerable loss.
- It is also CFA understanding the reticulated water supply in Maldon is poor which can compromise effective firefighting operations.

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Bushfire Mitigation Measures

- Maldon highlights several difficult challenges that would restrict future development.
- CFA supports the comments within the Bushfire Planning Assessment
- CFA supports the review of the BMO overlay coving the township which will create increased controls that may work to reduce risk.

In conclusion CFA supports the Bushfire Assessment of Maldon as a an accurate assessment of the risk.

If you wish to discuss this matter in more detail, please do not hesitate to contact the Manager Community Safety on 0419 878 958

Yours sincerely,

David Allen AFMSM
Manager Community Safety
North West Region

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