

# Former Lilydale Quarry Strategic Bushfire Assessment

FINAL REPORT

Prepared for Intrapac Property

29 April 2020

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- Client: Anthony Jansen
- Urbis: Evan Granger

Biosis staff involved in this project were:

- Julian Turner (mapping)

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# 1 Purpose and scope of this report

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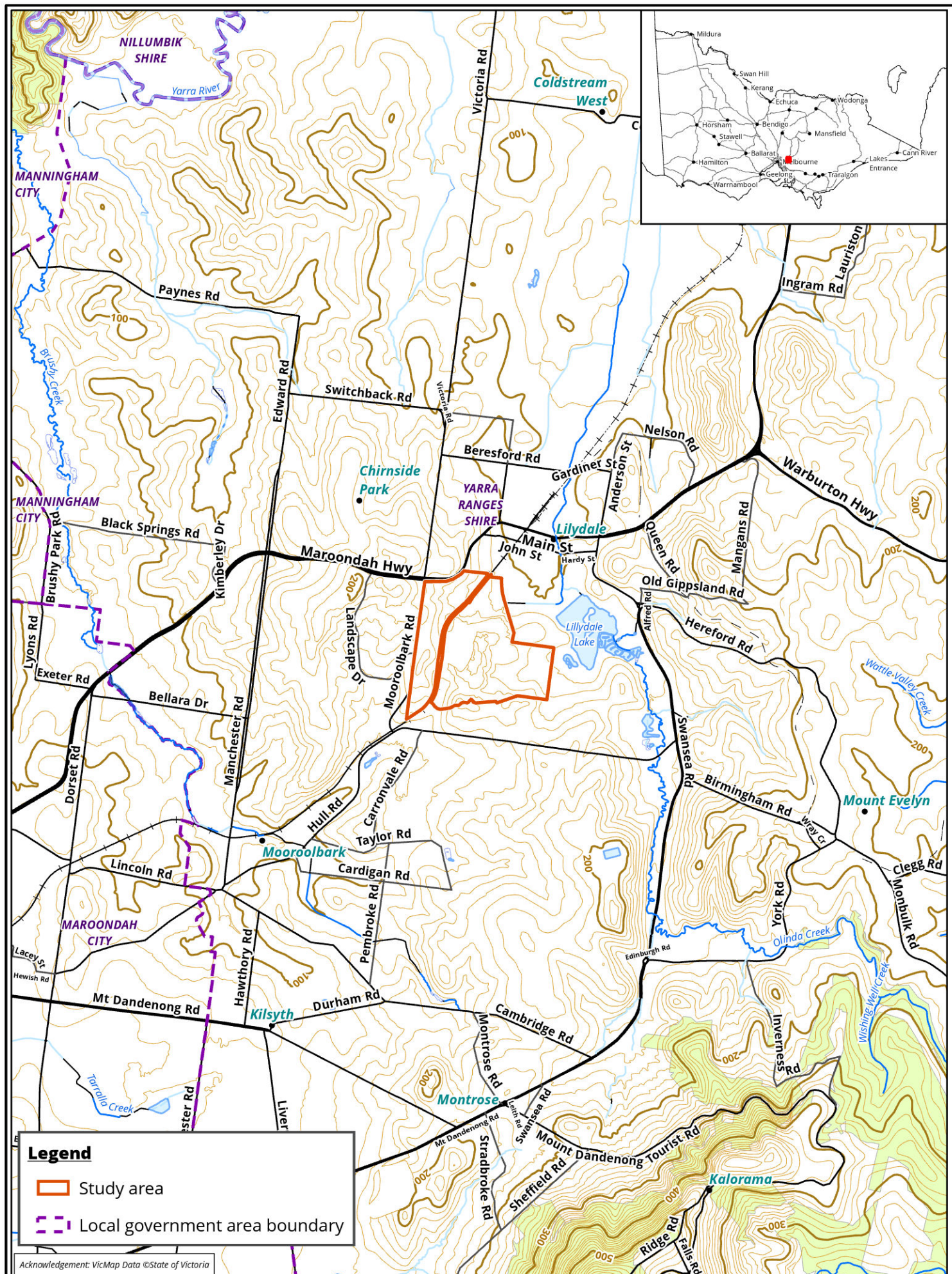
Biosis Pty Ltd (Biosis) has been engaged by Intrapac Property (Client) to conduct a strategic assessment of the bushfire risk associated with proposed redevelopment of the former Lilydale quarry (site). Refer to Figure 1 for the site locality.

This assessment has been prepared on the basis of future conditions anticipated through proposed amendment to the Yarra Ranges Planning Scheme (Planning Scheme). It is proposed to introduce a new schedule to the Comprehensive Development Zone (CDZ), incorporate the Former Lilydale Quarry Comprehensive Development Plan (CDP) into the Yarra Ranges Planning Scheme (Planning Scheme) and amend the overlay controls affecting the site (Amendment or Proposal).

This report documents the outcomes of Biosis' assessment and incorporates the following:

- An overview of the State bushfire planning policy.
- Analysis of fire behaviour likely to affect the site, taking into account landscape scale and localised considerations.
- Stakeholder engagement.
- Assessment of the bushfire risk, taking into account existing and future communities.
- Identification of suitable bushfire mitigation measures that could be incorporated into the Amendment to reduce the risk from bushfire to an acceptable level.







## 2 Proposed planning scheme amendment

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### 2.1 Overview

The Planning Scheme will be amended to facilitate the redevelopment of the site. A new schedule is proposed to the CDZ and a Former Lilydale Quarry CDP is proposed to be incorporated into the Planning Scheme.

The Amendment also includes updates to the Heritage Overlay (HO), Environmental Audit Overlay (EAO), Development Contributions Plan Overlay (DCPO) and Public Acquisition Overlay (PAO).

Most significantly for the purpose of this assessment, it is also proposed to remove the Bushfire Management Overlay (BMO) from the site. The BMO currently affects the eastern edge of the site, which appears to correlate with revegetation that has occurred in association with the former quarry (Refer to Figure 2).

### 2.2 Form of future development

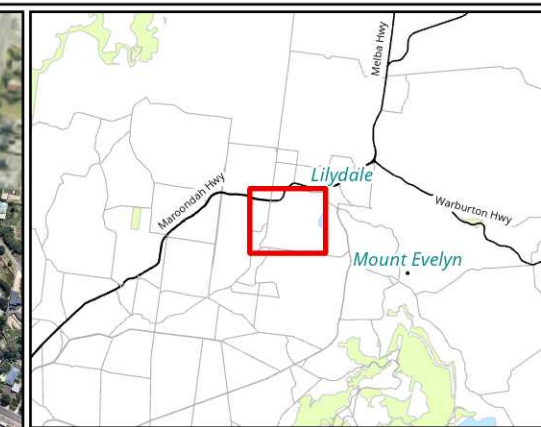
The Amendment will establish a regulatory framework which will influence the future form of development. The form of development and vegetation on the site will influence the level of bushfire risk affecting existing and future communities.




The CDP (prepared by Urbis), Framework Plan (Drawing no. RD 3300 Rev J, prepared by RobertsDay) (Refer to Figure 3) and Concept Masterplan (Drawing no. RD 3018 Rev. F, prepared by RobertsDay) (Refer to Figure 4) indicates that the site will be developed with a fairly typical form of urban development, comprising residential and commercial precincts, managed open space areas, infrastructure and pedestrian and cycle paths.

The Framework Plan indicates no significant revegetation is proposed and the largest patches of vegetation will include four open space areas in the central part of the site, two open space areas that also cater for stormwater requirements and a larger active recreation reservation in the northern corner of the site. A 10 metre wide 'Vegetation Retention Zone' is identified in the south west corner of the site, along the interface with the existing residential community. The vegetation was planted as part of the quarry operations and is proposed to be retained.

The Concept Masterplan indicates street tree planting is proposed along all connector and avenue streets.





- Legend**
-  Study area
  -  Bushfire Management Overlay (BMO)
  -  Bushfire Prone Area (BPA)

**Figure 2 Bushfire Mapping**

0 50 100 150 200 250  
Metres  
Scale: 1:7,500 @ A3  
Coordinate System: GDA 1994 MGA Zone 55

  
Matter: 30545,  
Date: 17 April 2020,  
Checked by: MD, Drawn by: SKM, Last edited by: jturner  
Layout: 30545\_F2\_2 BMO BPA  
Location: \\bio-data-01\matters\$\30500s\30545\mapping\30545\_Kinley\_Bushfire\_Assessment\30545\_Kinley\_Bushfire\_Assessment.aprx



**Figure 3 Proposed Framework Plan**



**Lilydale Quarry**  
Yarra Ranges Council, Vic

Framework Plan

REF NO: DRAW NO: REV  
INT: LD RD 3300 J

J J Draft 11/01/2020 23/03/24 MJ MJ

**INTRAPAC**  
PROPERTY

**Bayport**

**URBIS**

**REEDS**  
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## 3 Methodology

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The following methodology was used to conduct this assessment:

### 3.1 Initial Desktop Assessment and policy review

- Review of relevant State and local planning policy objectives, particularly the requirements at clause 13.02-1S – *Bushfire planning* of the Planning Scheme.
- Review of practice notes and guidance in relation to planning for bushfire.

### 3.2 Stakeholder Engagement

- Informal discussions with representatives from the CFA.

### 3.3 Desktop Assessment

- Review of vegetation type and topography, at the landscape and site scale.
- Review of existing land use, future form of development and features that will affect the bushfire risk.
- Identification of likely forms of bushfire attack.

### 3.4 Bushfire risk assessment

- The outcomes of the desktop assessments, policy review and stakeholder engagement were used to assess the bushfire risk to existing and future communities.

### 3.5 Statutory mechanisms and recommendations to mitigate risk to acceptable level

- Review of current and proposed regulatory framework and its ability to mitigate the risk, including a review of the criteria for BMO mapping in *Planning Advisory Note 46 - Bushfire Management Overlay Mapping Methodology and Criteria, August 2013*.



## 4 Context

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### 4.1 Integrated bushfire hazard identification and mitigation

In Victoria the planning and building system are integrated and two mapping systems are used to identify bushfire risk across the State.

The BMO is a planning control that is applied to areas that have the potential for extreme bushfire behaviour, such as a crown bushfire and extreme ember attack and radiant heat (DELWP 2017). These are the type of locations where the creation of new or expanded settlements should be avoided where possible and accordingly the mapping of the BMO has also used as an important input for the landscape scale bushfire assessment. The eastern part of the site is currently affected by the BMO.

In the building system, areas that are, or are likely to be subject to bushfire, are designated and mapped as a Bushfire Prone Area (BPA) pursuant to Section 192A of the *Building Act 1993*. This map is used to trigger bushfire construction requirements under the National Construction Code 2016<sup>1</sup> (National Construction Code) and is now also referenced in Clause 13.02-1S and is to be used to guide decision making in the planning system.

Areas designated as BPA include all areas mapped in the BMO and also include areas that are exposed to lower levels of bushfire hazard – typically grassland environments and other bushfire prone areas where extreme bushfire behaviour is unlikely to be generated.

#### Australian standard

Australian Standard AS.3959-2018 – *Construction of buildings in bushfire prone areas* (2018) (AS.3959-2018) is utilised in both the planning system and the building system to determine the level of bushfire attack on buildings in bushfire prone areas and to determine the appropriate construction response to mitigate these effects for specified types of buildings.

The starting point of the assessment of risk under the planning and building system is the vegetation type, slope and assumptions about the weather conditions. These are the inputs that feed into the model that underpins the Australian Standard.

According to the Australian Standard, there are different classifications for vegetation, including 'classifiable' vegetation which is likely to contribute to fire behaviour and 'excluded' which is a less significant influence on fire behaviour. Excluded vegetation is described as:

- *Single areas of vegetation less than 1 hectare in area and not within 100 metres of other classifiable vegetation.*
- *Multiple areas of vegetation less than 0.25 hectares in area and not within 20 metres of the site or each other.*

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<sup>1</sup> ABCB, 2016

- *Strips of vegetation less than 20 metres in width and not within 20 metres of the site or each other or other areas of classifiable vegetation.*
- *Non-vegetated areas including waterways, roads, footpaths, buildings or rock outcrops.*
- *Low threat vegetation including managed grassland, maintained lawns, golf courses and public reserves.*

The planning system also recognises 'modified' vegetation which could contribute to fire behaviour but will not necessarily influence in the fire behaviour in the manner assumed in the modelling that underpins AS3959-2018.

## 4.2 State bushfire planning policy Clause 13.02-1S

The Planning Policy Framework seeks to increase the Victorian community's resilience to bushfire through risk-based planning that prioritises the protection of human life.

Clause 13.02-1S – *Bushfire planning* (Clause 13.02-1S) applies to all planning and decision making under the *Planning and Environment Act 1987* (PE Act) relating to land that is within a BPA, subject to a Bushfire Management Overlay (BMO) or are proposed to be developed in a way that may create a bushfire hazard.

The objective of Clause 13.02-1S is:

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

The strategies that underpin Clause 13.02-1S include:

- *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.*

Of particular relevance to this assessment, Clause 13.02-1S sets out the following strategy for settlement planning:

- *Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:*
- *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*
- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire.*
- *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.*
- *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall.*



- *Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*
- *Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*

### **Integrated decision making and prioritisation of bushfire considerations**

Clause 71.02 – *Operation of the planning policy framework* of the Planning Scheme also provides important guidance on the consideration of bushfire in decision making and how this is to be balanced against other policy considerations. In particular, Clause 71.02-3 states the following:

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

## **4.3 Local planning policy framework**

The following local planning policy is relevant to this assessment:

### **Clause 21.09-2 – Environmental hazards**

#### *Objective 1*

*To ensure that the use of land and development takes account of physical development constraints such as flood, fire and landslip and to control development in these areas.*

#### *Strategies*

- *Implement fire prevention programs which are closely integrated with environmental and fire management principles.*
- *Encourage people to adopt principles and practices in the planning and development of their land which minimise the risks from wildfires.*
- *Limit development in areas prone to intense wildfire behaviour and provide township protection features. Identify areas subject to flooding from streams or at risk from overland stormwater flows.*
- *Ensure that risk factors are fully identified and addressed before additional development is undertaken in areas that are subject to flooding.*
- *Limit development in areas prone to high volume flood flows, and protect the storage capacity of flood pondage areas.*
- *Maintain a safe and attractive living environment.*
- *Promote safety of people and property.*
- *Provide adequate design and services that allow rapid and effective response by emergency services.*

- *Ensure the community is aware of the risks of landslide, wildfire hazards, flooding (in specific areas) and the need to limit, and even prevent, development where there are problems or to apply special development criteria.*

#### **4.4 Guidance and practice notes**

The following practice notes and guidance have been published in relation to bushfire risk assessment:

- *Advisory Note 46, Bushfire Management Overlay Mapping Methodology and Criteria, Victorian Government, August 2013 (Advisory Note 64 BMO mapping methodology)*
- *Advisory Note 68 – Bushfire State Planning Policy Amendment VC140 (Planning Advisory Note 68)*
- *Planning Practice Note 64 - Local planning for bushfire protection, Victorian Government, September 2015 (PPN64: Local planning for bushfire protection)*
- *Technical Guide Planning permit Applications Bushfire Management Overlay, Victorian Government, September 2017 (BMO Technical Guide)*



## 5 Stakeholder engagement

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### 5.1 Country Fire Authority

Stakeholder feedback was sought from the Country Fire Authority (CFA). Understandably there were limitations in staff availability given the 2019/20 fire season and 2020 workplace restrictions (i.e. COVID-19). To date feedback from the CFA has not been obtained, however we will endeavour to obtain advice through the Amendment process.

We understand the CFA has previously been consulted regarding BPA mapping across an existing stage of development at the site (Refer to Phase 1 land shown on Figure 3).

## 6 Hazard Assessment

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### 6.1 Methodology and assumptions

A desktop assessment of the site and surrounding areas was completed to identify the likely forms of bushfire attack.

This was a factual assessment of the vegetation type, slope and other factors that are likely to influence the fire behaviour and associated risk.

The key findings from this assessment are shown on Figure 6 and Figure 7, which show the key features affecting fire behaviour at the landscape scale and site scale respectively.

The future form of development will be generally consistent with that which is presented in the CDP, Framework Plan and Concept Masterplan, and that there will not be any significant revegetation occurring either within the site or within 150 metres of the site, except for managed open space, the managed 10 metre wide vegetation retention zone and street trees.

### 6.2 Mechanisms of bushfire attack

As noted in the *Technical Guide Planning permit Applications Bushfire Management Overlay* (DELWP, September 2017) (BMO Technical Guide) there are up to five forms (or mechanisms) of bushfire attack that need to be taken into account when undertaking bushfire assessments. These are: Ember attack, Radiant heat, Localised flame contact, Flame contact from the fire front and Extreme fire behaviour.

### 6.3 Landscape scale assessment

Figure 6 shows the key influencers of fire behaviour at the landscape scale.

The most significant risk arising at this scale is from ember attack from a convection fire in the Dandenong Ranges or further north near Kinglake.

### 6.4 Site scale assessment

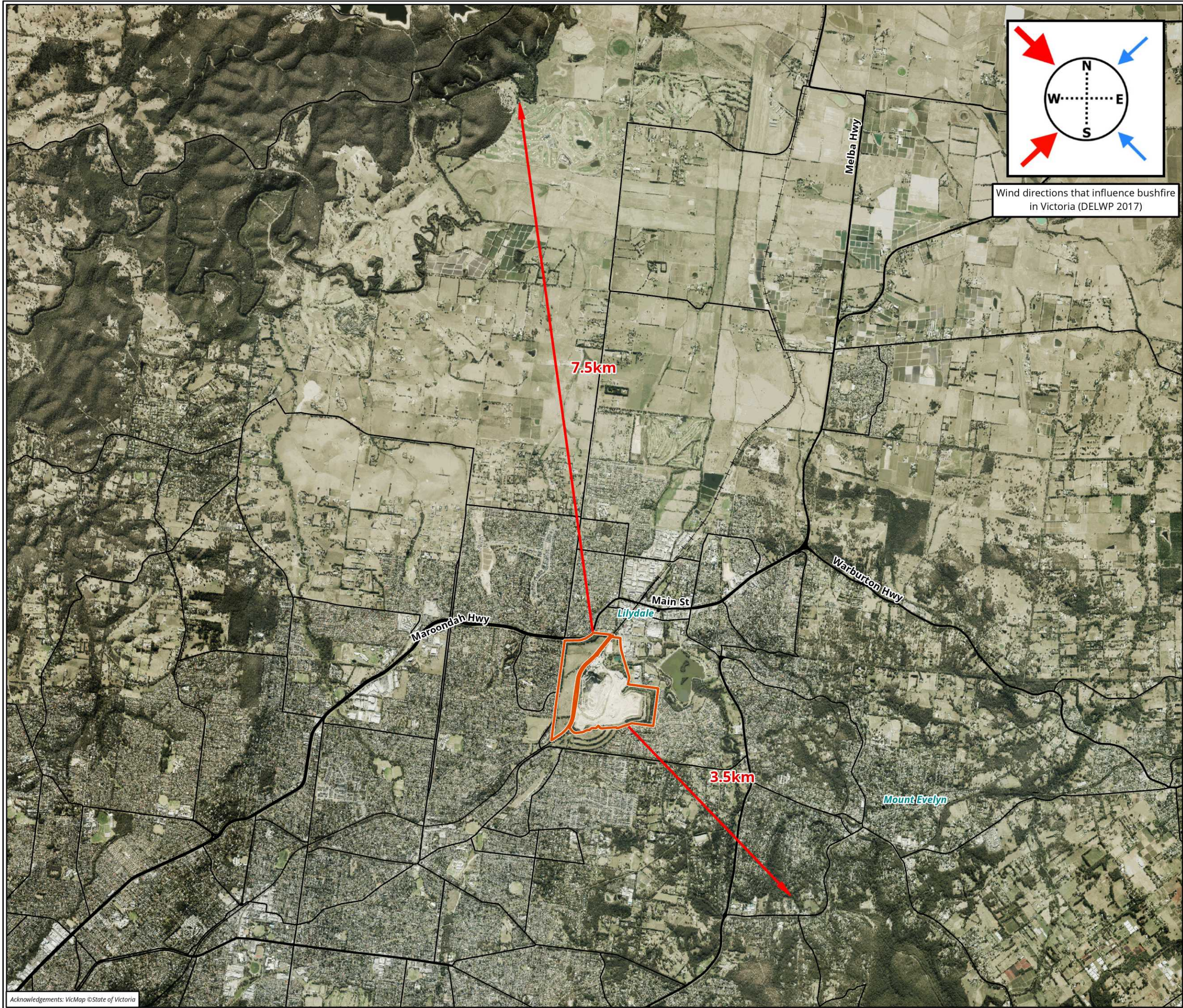
Figure 7 shows the key vegetation and topography most likely to affect the fire behaviour at the site scale.

Vegetation within and surrounding the site will be excluded under AS3959. For example, the open space reserves will consist of manicured grasses and managed landscaping, the vegetation retention zone will be actively managed to a width of 10 metres and the rows of street trees will be less than 5 metres in width.

Although excluded under AS3959, the most likely form of bushfire attack is likely to occur in the eastern part of the site, with a risk of localised flame contact and limited radiant heat. There is also some potential for ember attack, however this is more likely to be influenced by a landscape scale fire.

While the site may currently only marginally meet the criteria in the Advisory Note 64 BMO mapping methodology, it is expected that the future form of development will no longer meet the criteria. This is because the vegetation that is proposed is likely to be cultivated or in strips that are less than 20 metres that are not connected to larger patches of vegetation.





**Legend**

 Study area

**Figure 5 Landscape assessment**

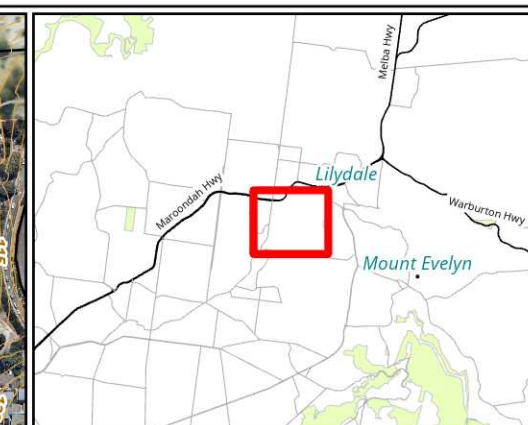
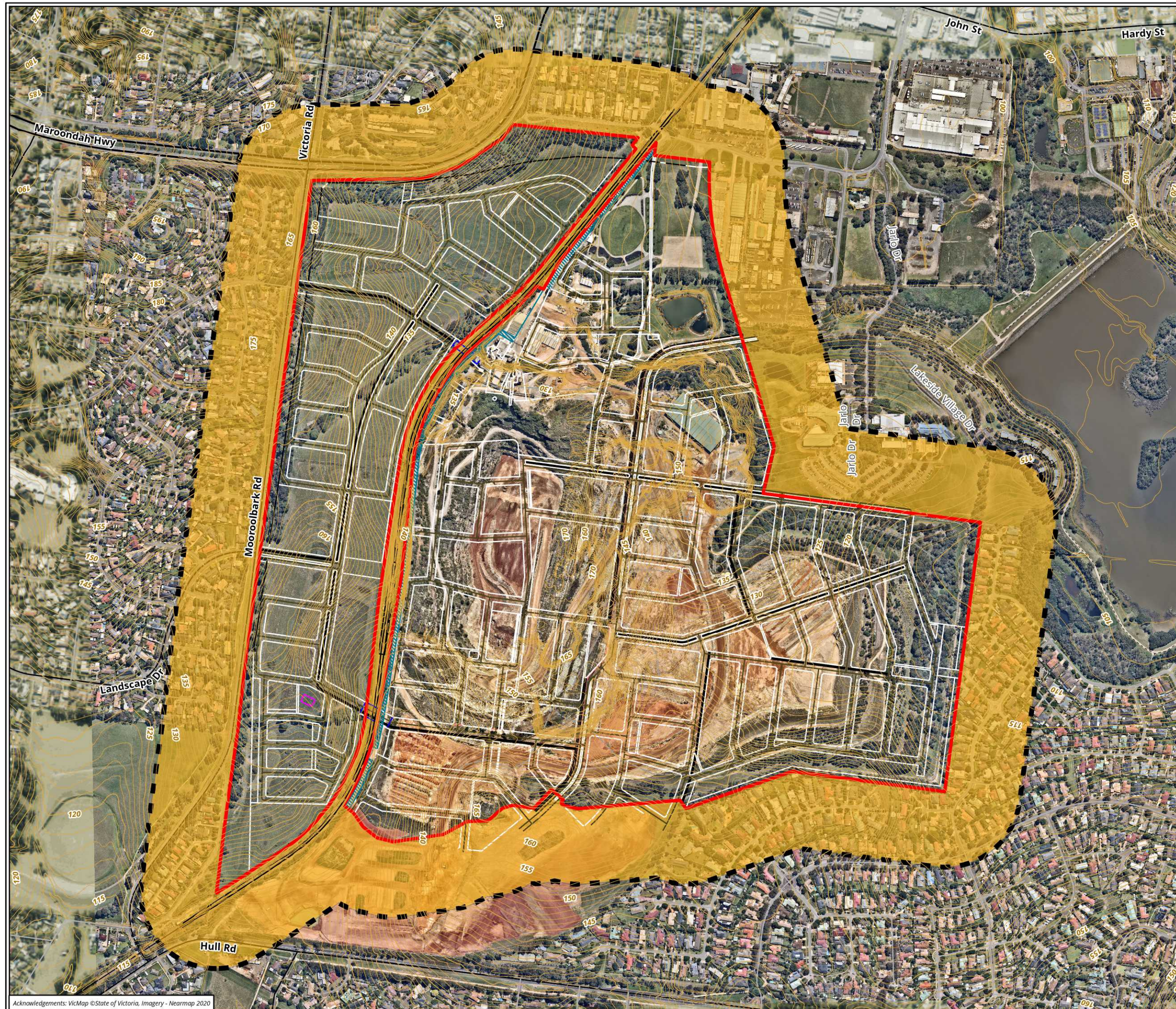


Scale: 1:50,000 @ A3  
Coordinate System: GDA 1994 MGA Zone 55



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Date: 17 April 2020,  
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Layout: 30545\_F5\_LandscapeAssessment  
Location: \\bio-data-01\matters\$\30500s\30545\Mapping\30545\_Kinley\_Bushfire\_Assessment\30545\_Kinley\_Bushfire\_Assessment.aprx





- Legend**
- Study area
  - 150m buffer
  - Low threat vegetation

**Figure 6 Site assessment**

0 50 100 150 200 250  
Metres  
Scale: 1:7,000 @ A3  
Coordinate System: GDA 1994 MGA Zone 55



Matter: 30545.  
Date: 17 April 2020.  
Checked by: MD, Drawn by: JPT, Last edited by: jturner  
Layout: 30545\_F6\_SiteAssessment  
Location: \\bio-data-01\\matters\$  
\\30500s\\30545\\Mapping\\30545\_Kinley\_Bushfire\_Assessment\\  
30545\_Kinley\_Bushfire\_Assessment.aprx



## 7 Bushfire Risk Assessment

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### 7.1 Other factors affecting risk

The site is located within the centre of an established suburb.

The redevelopment of the site will only intensify the form of urban development, reduce the extent of classifiable vegetation in the landscape, thereby reducing the risk.

There is excellent access to infrastructure, including roads and rail and options to egress to a safer place in the event of an emergency. There are local emergency services in the local area and ready access to water supply.

### 7.2 Bushfire risk

The most likely fire scenario likely to affect the site is from a landscape scale fire in the Dandenong Ranges or from land near Kinglake. In such an event the risk arises from ember attack and possible localised fire events.

There is also some, more remote risk of a localised fire event on the eastern side of the site, in the event that a fire ignites in the vegetation corridor or Lillydale Lake. It is considered this risk is more remote given the proximity of emergency services and the limited fire run that any fire would have in that highly modified environment.

### 7.3 Existing risk mitigation measures in place

There are already statutory building controls in place that address the risk of ember attack. The land is within the designated BPA and accordingly all dwellings need to achieve a construction standard of BAL-12.5, which provides protection from embers.

Furthermore, given this will be an urbanised environment hydrants and access roads will need to be designed to CFA standards (as per the requirements at clause 56.09-3 of the Planning Scheme).

## 8 Recommendations to mitigate risk

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### 8.1 Further design and consultation measures

It is recommended that:

- A decision guideline should be included in Section 4.3 (Open Space) of the CDP to ensure that the amount of vegetation (e.g. bushfire hazard) is not inadvertently increased in the future.
- The road network throughout the site is appropriately designed to allow emergency services easy access to all parts of the development, in line with the objectives at clause 56.09-3 (Fire hydrants) of the Planning Scheme)
- The CFA is consulted as part of the PSA referral process. Ongoing CFA comments and recommendations should also be considered as part of the subsequent precinct plan process, required by the PSA.

### 8.2 Statutory mechanisms

It is recommended that the BMO is removed from the site as the mapping criteria will no longer be achieved, and the measures in the Amendment will mitigate the risk.



## 9 References

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Advisory Note 46, Bushfire Management Overlay Mapping Methodology and Criteria, Victorian Government, August 2013

Advisory Note 68 – Bushfire State Planning Policy Amendment VC140

Planning Practice Note 64 - Local planning for bushfire protection, Victorian Government, September 2015

Technical Guide Planning permit Applications Bushfire Management Overlay, Victorian Government, September 2017

DELWP 2017. Guidelines for the removal, destruction or lopping of native vegetation, [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/91146/Guidelines-for-the-removal,-destruction-or-lopping-of-native-vegetation,-2017.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/91146/Guidelines-for-the-removal,-destruction-or-lopping-of-native-vegetation,-2017.pdf).

Standards Australia 2018. *Australian Standard AS.3959-2018 – Construction of buildings in bushfire prone areas (AS.3959-2018)*, Council of Australian Standards.