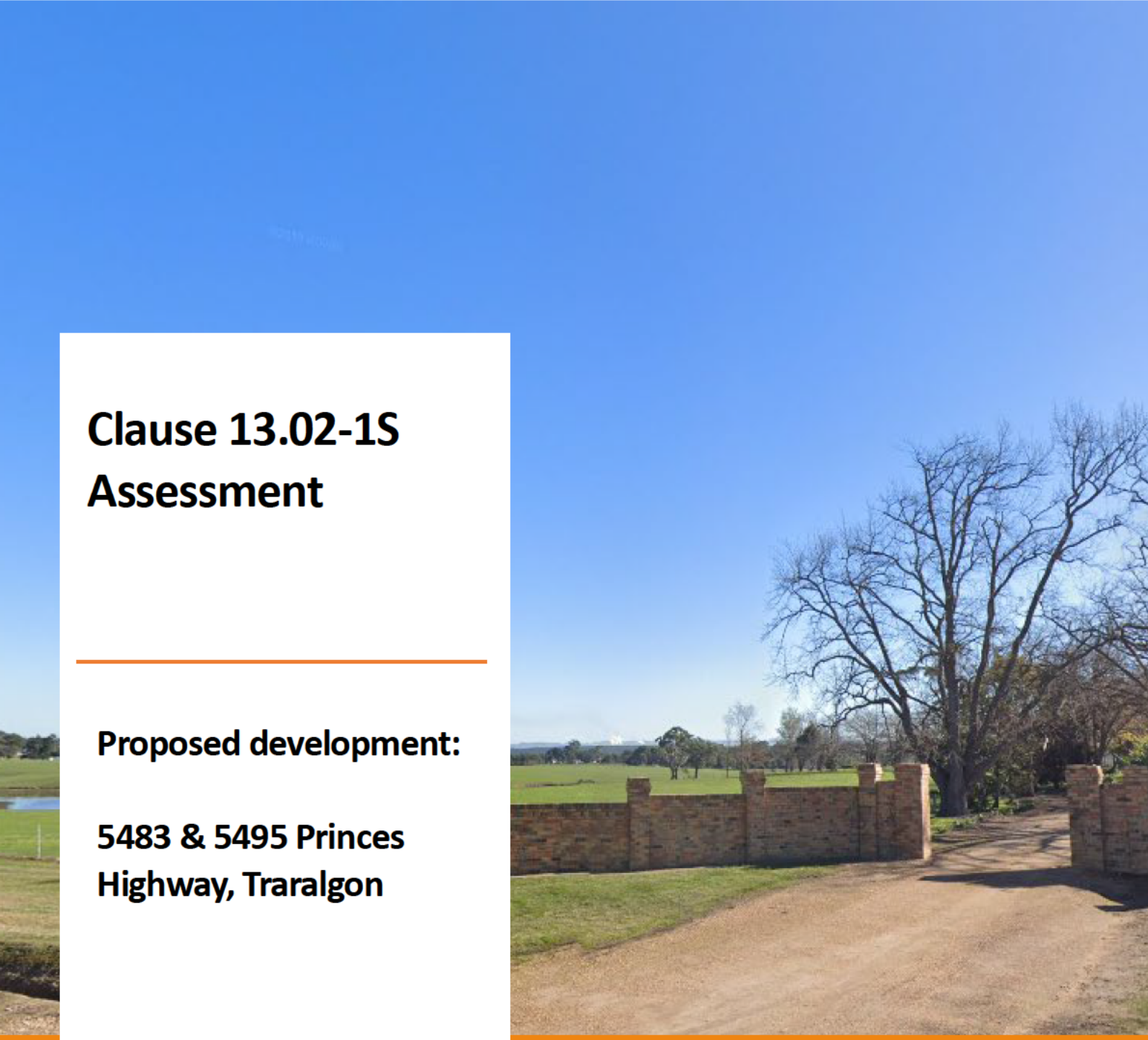
Clause 13.02-1S Assessment



Proposed development:

5483 & 5495 Princes Highway, Traralgon

November 2022

FIRE RISK
Consultants

Cover image:	Looking north-west across the property from the Princes Highway entrance.
Prepared by:	[redacted] – **Risk and Emergency Planning Lead** **Fire Risk Consultants Pty Ltd**
Approved by:	[redacted] – Managing Director Fire Risk Consultants Pty Ltd
Date:	17/11/2022
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*Where the term **"Bushfire prevention and mitigation related activities"** (or words to that effect) are used, this is to be defined as the clearance of vegetation in accordance with the Victorian State Government guidelines, including clearing and maintenance of existing fire breaks and/or fire access for fire fighters under electricity pylons and properties that have been constructed to Australian Standard AS3959 and/or the National Construction Code.*

Table of Contents

Introduction

This report has been developed to meet the requirements of Clause 13.02-1S of the Latrobe City Planning Scheme. 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'. As this property is in a Bushfire Prone Area it meets the 'Policy Application' test to be assessed against the Clause 13.02-1S Policy.

The report has been developed following extensive assessment of the landscape and local bushfire risk along with access, egress and topography.

The property is located approximately 8.8 kilometres to the east of the Morwell township and approximately 4.3 kilometres west of the Traralgon township. The development is currently zoned as Farming Zone (FZ) with Rural Living Zone (RLZ) to the north and west and Low Density Rural Zone (LDRZ) with residential dwellings occurring to the east. The proposal is seeking to rezone the land from Farming Zone (FZ) to General residential Zone (GRZ) and Commercial 1 Zone (C1Z).

The development is approximately 56 hectares in size and will result in new properties along with open space and a drainage reserve. The development will be accessed from both Princes Highway and Bradford Avenue.

The property is currently used for agricultural purposes with a large lake in the centre of the property. The surrounding properties are small acreage and a mix of managed properties and areas of paddocks.

This report has been developed following a site inspection, analysis of various plans and publications that assess bushfire risk within this area and assessment against Clause 13.02-1S of the Latrobe City Planning Scheme. Figure 1 provides an overview of the surrounding area and the various land uses.

Application Details

Municipality	Latrobe
Title Description	Lot1 TP823034 / Lot 1 TP954239 (Allot. 41D Parish of Traralgon)
Overlays	Design and Development Overlay (DDO)
Zoning	Farming Zone (FZ)

Site Description

Existing use of buildings and works on or near the land	The property is used for agricultural purposes and has dwellings, various sheds and other farming related infrastructure on the property. Most of the property is open paddocks used for stock grazing.
Development size	The properties combined are approximately 56.85 hectares.
Existing vehicle access arrangements	Access to the property is from Princes Highway.
Location of nearest fire hydrant	Street fire hydrants will be provided within the development. There are currently street fire hydrants provided along Princes Highway. These are shown in Appendix 3.

Figure 1 – Subject site with Traralgon township to the east.

Bushfire risk in south east Australia

The southeast of Australia is one of the most fire prone areas in the world.

The rate a bushfire can spread is a direct result of the weather, fuel hazard (including dryness, quantity and arrangement) and the topography in which the fire is burning. Bushfire fuel is the only one of these three factors that it is possible to modify.

Extreme fire conditions can occur in south-eastern Australia when dry winters and springs are followed by summers where bushfire fuels become very dry.

When these conditions combine, fires can be expected to move quickly under the influence of strong, gusty north westerly winds. These fires can then move rapidly in a different direction when the subsequent south–westerly wind change arrives. Fires that start under these conditions can reach a very high intensity, even in areas of relatively low fuel loads and can be difficult to control until the weather conditions abate.

The height of a bushfire's intensity is directly linked to its destructiveness and the more difficult it is to control. As the intensity increases so does the difficulty of containment and effective suppression. Very high intensity fires with flame heights greater than 10 metres are generally uncontrollable.

Bushfire intensity is a function of the heat content of the fuel, the quantity of fuel and the rate of spread of the bushfire. The heat content of vegetation fuels is roughly constant. It has been found that the quantity and distribution of fine fuels are the main factor influencing bushfire behaviour. Larger fuels burning during a bushfire do not contribute significantly to the spread of a bushfire.

Fine fuels available to a bushfire are fuels such as grass, leaves, dead pine needles and twigs that ignite readily and are consumed rapidly when dry. They are often defined as those dead fuels less than 6mm in thickness. Fine fuel load (measured in tonnes per hectare) has therefore been used as a convenient measure of the underlying bushfire hazard in areas dominated by woody vegetation. The fine fuel load at any given time is a balance between the rate of fuel build up, and factors that remove fuel such as litter decomposition and fire. In the absence of fire, fuel loads in forests and woodlands with a shrubby or heathy understorey build up to a quasi-equilibrium state where the rate of fuel production equals the rate of decomposition. The maximum levels vary for different vegetation types and for the same vegetation types in different locations.

It has been found that fuel structure is possibly more important than the total fine fuel load in determining bushfire behaviour. Fuels in forests, woodlands and shrublands can be categorised into four layers with differing effects on fire behaviour (Hines, et al., 2010). These layers are:

Surface fine fuels: leaves, bark, small twigs and other fine fuel lying on the ground. These fuels provide the horizontal continuity that allows a bushfire to spread

Near surface fine fuels: grasses, low shrubs, bracken etc. up to about .5 m above the ground surface. Fuels in this layer will burn when the surface fuel layer burns and will increase bushfire intensity

Elevated fuels: larger shrubs and small saplings with most of the fuel closer to the top of this layer and a clear gap between them and the surface fuels. These interact with the two-layer fuel layers to further increase bushfire intensity. They also contribute to the vertical continuity of fire that allows fire to 'climb' into the tree canopy

Bark fuels: flammable bark on trees, saplings and large bushes from ground level to the canopy. Loose fibrous bark on string-bark eucalypts, and candle bark on some gums can generate large amounts of burning embers which can start spot fires ahead of the main fire front.

Bushfire Hazard Assessment

A Bushfire Hazard Assessment is a key component of assessing risk as outlined within Clause 13.02-1S of the Latrobe Planning Scheme. The requirements outline the need to consider and assess the bushfire hazard on the basis of:

- Landscape conditions (10 kilometres)
- Local conditions (1 kilometre)
- Neighbourhood conditions (400 metres)
- The site for the development

In addition to this assessment, analysis of past bushfire history and the development of likely bushfire scenarios supports the response to the 'settlement planning' requirements of Clause 13.02-1S.

Fire History

The historical information provided by DEWLP[1] indicates that there have been no bushfires directly impacting this property. There have been bushfires in the surrounding area. The nearest bushfires according to the available data are mainly to the west of the development. The larger fires occurred in recent years around the Traralgon, Morwell and other areas.

An additional large bushfire occurred to the south of Princes Highway when the local landscape was dominated by plantations. The landscape is now dominated by grasslands and as such, the bushfire risk has reduced significantly.

Whilst it can be expected for bushfire activity to occur, these are likely to be small due to the high level of vegetation fragmentation, density of dwellings and the surrounding road network. The residential developments to the west, north and east and provide protection to the development.

Figure 2 outlines the location of historical bushfires as they relate to the development site.

[1] https://mapshare.vic.gov.au/MapShareVic/index.html?viewer=MapShareVic.PublicSite&locale=en-AU

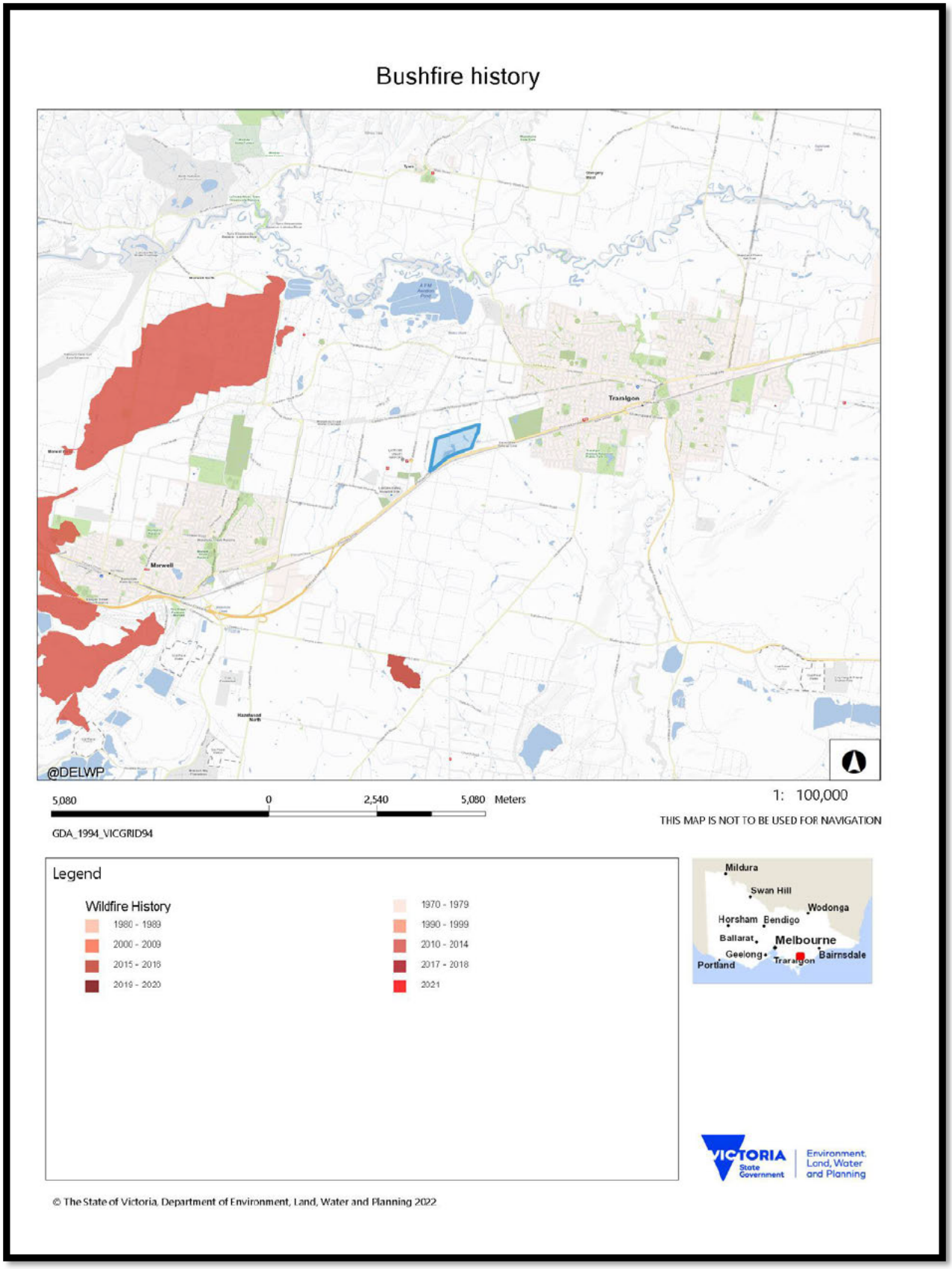


Figure 2 - Bushfire history with the property outlined in blue.

Vegetation

As the site is primarily used for agricultural purposes, the dominant vegetation type according to AS3959 is Class G – Grassland. The surrounding landscape is a mix of grassland and managed lawns and gardens. This is outlined within Figure 7.

Approximately 800 metres to the north west are large areas of plantations that are managed by HVP. There are several roads and tracks within these areas that are likely to influence bushfire behaviour. To the south of Princes Highway, the landscape is dominated by grassland areas that is used for farming activities.

The Bushfire Management Overlay (BMO) which is an indicator of areas that are prone to extreme bushfire behaviour, is shown in Figure 3. The nearest BMO area is approximately 800 metres to the north-west of the property and is associated with the Plantations to the north west.

Figure 3 - Bushfire Management Overlay areas in relation to the proposed development site.

The Bushfire Prone Area (BPA) is another indicator of bushfire risk at a lower level. Figure 4 shows the location of the BPA. It is likely that once the development commences parts will be excluded from the Bushfire Prone Area.

Figure 4 - Bushfire Prone Areas in relation to the proposed development site

The dominant vegetation that will affect bushfire behaviour on the property and up to 400 metres surrounding the property is grassland. Once the development has been established, the amount of classifiable vegetation will be reduced. This development will further reduce the already low bushfire risk to the local area.

The surrounding landscape is not expected to support elevated bushfire activity. Bushfire behaviour as it approaches the development will be highly influenced by the fragmented vegetation to the north and west.

Bushfire risk assessment

An analysis of available bushfire risk information has identified the following sources:

- City of Latrobe City Municipal Fire Management Plan 2018 [2]

The Municipal Fire Management Plan (MFMP) indicates this area of the municipality as being exposed to a 'high' bushfire risk (refer to Pg 39 – VFRR 40034, 40045, 40049). The MFMP also identifies that the ongoing bushfire management treatments are sufficient to manage the bushfire risk within this area. The key driver for this elevated assessment of risk is the presence of the Plantations to the north west.

Likely Bushfire Scenarios

Due to the nature of the landscape surrounding the proposed development, grassfires will influence the likely bushfire scenarios. The likely bushfire attack mechanism will be from embers that may start additional fires in vegetated areas.

Table 1 outlines the hazard assessment relating to the proposed development.

[2] Latrobe City Municipal Fire Management Plan 2018 - https://www.latrobe.vic.gov.au/sites/default/files/2020-06/MFMP%20V2.pdf

Table 1 - Overview of bushfire hazard and likely scenarios

Bushfire hazard type	Description	Scenario/s	Considerations
Landscape conditions (10 kilometres)	The landscape hazards up to 10 kilometres from the site identifies predominantly grassland vegetation to the north, south and west and a mix of forest and grassland vegetation to the north west. Refer to Figure 6 for further detail.	The threat of a bushfire developing to the north west is present. The fragmented landscape will likely reduce bushfire behaviour. The presence of small acreage properties to the north west of the property will influence bushfire behaviour by slowing its spread. It is likely for embers to drop on and around the development. A bushfire approaching from the north west and south west is through grassland areas, bushfire history has demonstrated that bushfires form this direction are often suppressed quickly. The presence of Princes Highway, the Latrobe Valley Airport, the Latrobe Hospital and other landscape features will reduce the potential for bushfires to directly impact on the property. The most likely scenario would be for a bushfire to start to the south west of Princes Highway bypass and rapidly approach the development. Once further development in this area occurs this scenario would be eliminated. The Highway itself provides a large buffer for any bushfire approaching from this direction.	The development is in a Bushfire Prone Area and any accommodation or residential buildings will be constructed to meet AS3959. There are effective access and egress options to a safer place if required. The development will create 'safer areas' that can be utilised during a bushfire if required. The CFA community education campaign advising people in similar developments to walk at least two streets back would apply to this area.
Local conditions (1 kilometre)	Within one kilometre of the site the vegetation includes grassland that is primarily associated with stock grazing. Refer to Figure 5 for further detail.	The likely scenario is for a grassfire to start to the north west or south west of the property and under the prevailing wind conditions travel towards the development. The surrounding vegetation and roadside vegetation may allow the generation of embers which may impact on the proposed development. The risk of fires starting from the roadsides is reduced due to the ongoing slashing program that occurs during the fire danger period along the surrounding roads. Evidence of this is provided in Appendix 2. Farming practices will ensure that the grasslands surrounding the property will be eaten out through stock grazing and likely limit a bushfires intensity making it easier to suppress by firefighters. The increasing development to the west, east and south is further reducing the risk of bushfires in this landscape.	As above

Bushfire hazard type	Description	Scenario/s	Considerations
Neighbourhood conditions (400 metres)	The vegetation surrounding the property is considered grassland associated with agricultural activities. There is managed vegetation along the Princes Highway. Further detail is provided within Figure 7.	The predominant threat to the development at the neighbourhood level is a fire starting to the north west or north of the property. The grassed areas that are managed during the fire danger period by grazing stock will still support a bushfire but at a lower intensity. Large areas to the north and west are also maintained as gardens and lawns. The AS3959 Standard allows this type of vegetation to be excluded from the assessment. Due to the size of the new properties, dwellings will be located close to the rear fences with grassland vegetation on the opposite side.	Consideration be given to providing a buffer along the northern, western and eastern (the part north of Bradford Drive) boundaries to ensure that any future dwelling can achieve a BAL 12.5 rating in accordance with AS3959.
The site for the development	The site is currently grassland and utilised for farming activities. Following the development, it will be primarily residential properties with open space and a drainage reserve.	There is the potential for a grassfire to start on the property during construction. This fire will be influenced by the availability of vegetation and bushfire spread is likely to be interrupted due to the creation of bare earth in preparation for the construction of roads and other infrastructure. As people will be working at the site, they will be able to report the fire immediately and if safe to do so, commence firefighting activities. Any revegetation programs within the open space and drainage reserves should be considerate of not increasing the bushfire risk.	Vegetation management programs will be implemented during the construction phase of the project and included within the Construction Management Plan. Any revegetation program within the waterway and drainage reserve will be undertaken to achieve a maximum classification of grassland as per AS3959 and will provide a minimum setback of 19 metres from any proposed dwelling. The open space areas that have been included within the development will be maintained by Council and will not create a bushfire risk.

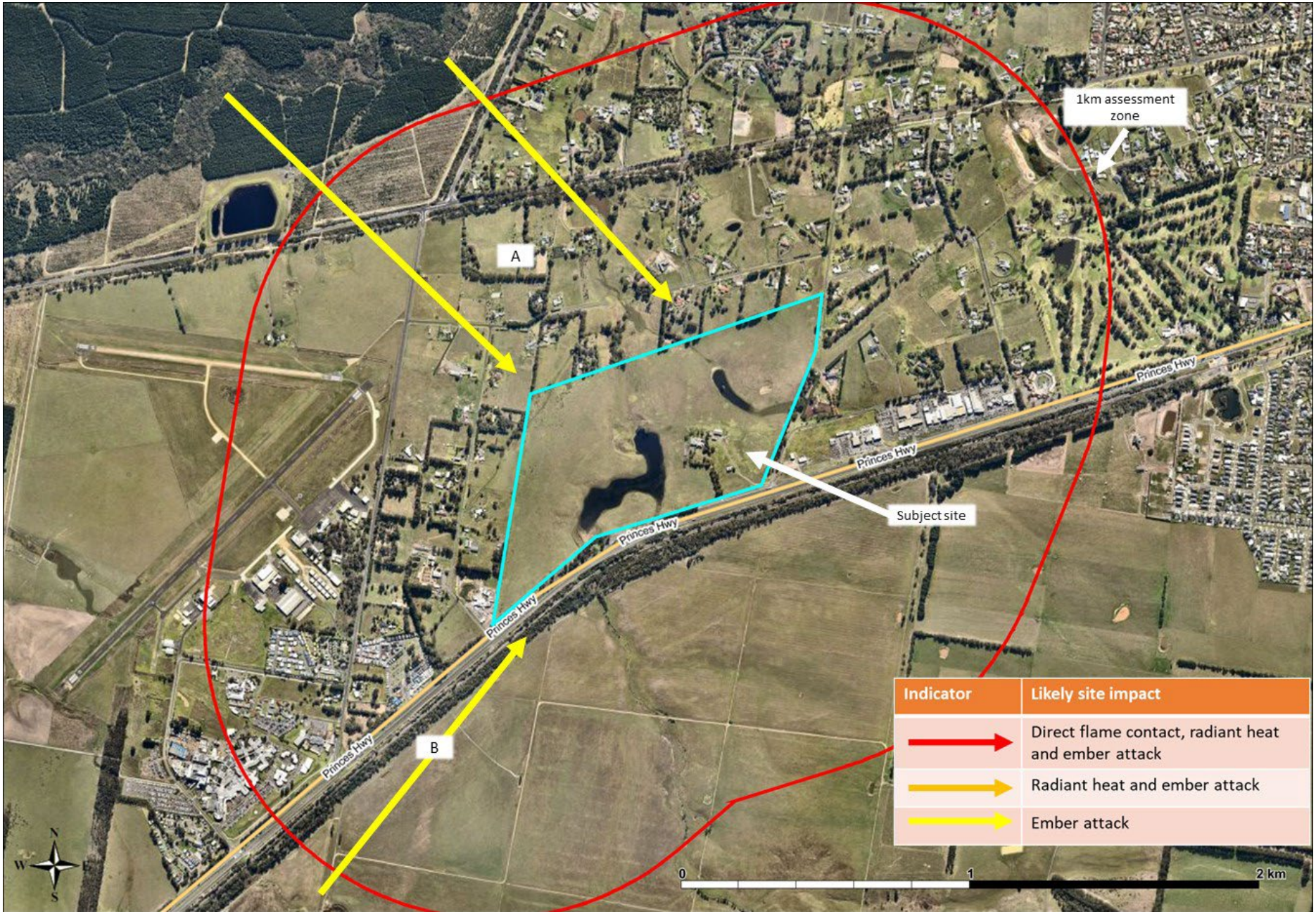


Figure 5 - 1 kilometre landscape risk analysis

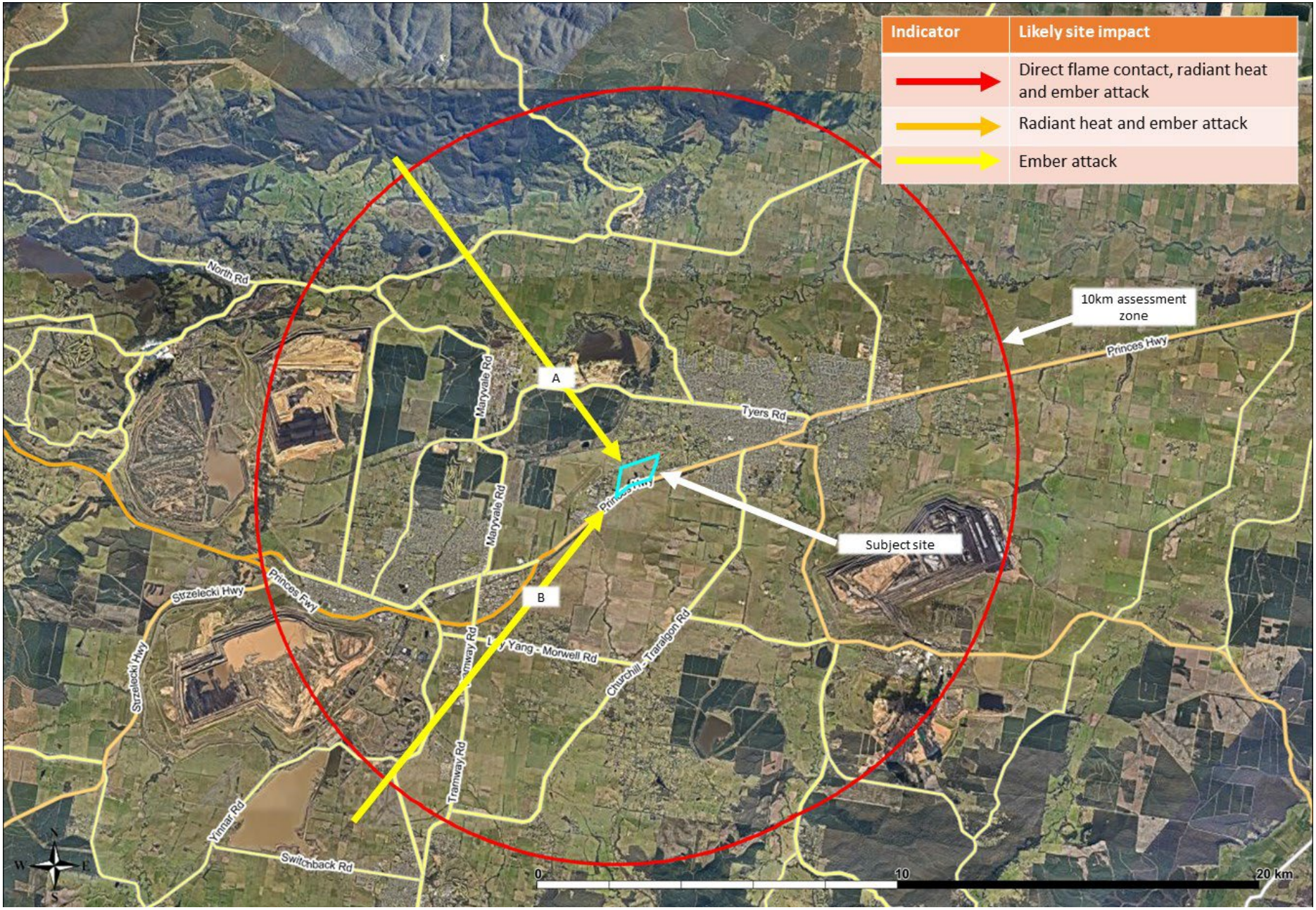


Figure 6 - 10 kilometre landscape risk analysis

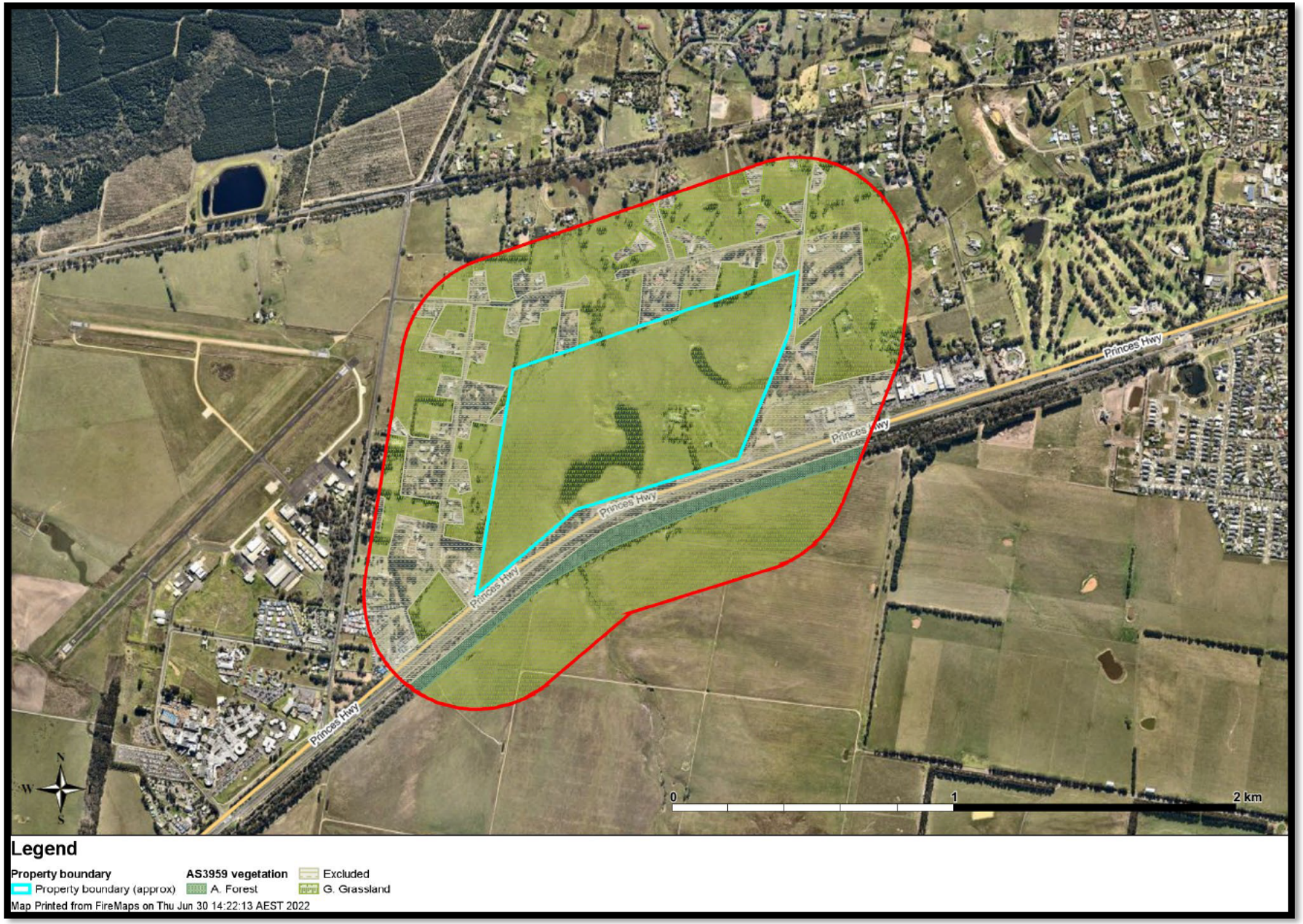


Figure 7 - 400 metre landscape risk analysis

The landscape risk has been assessed as Type 1. This is the lowest risk landscape and is due to the excellent access and egress opportunities from this development and the availability of safer areas within the development itself and Morwell to the west and Traralgon to the east.

In summary, the landscape analysis has identified the most likely bushfire attack method as being ember attack.

Settlement Planning – Clause 13.02-1S

Clause 13.02-1S of the Latrobe City Planning Scheme identifies the objectives that are required to be achieved to strengthen the resilience of settlements and communities and prioritise protection of human life.

Table 2 outlines how this development meets the objectives of Clause 13.02-1S based on the bushfire hazard assessment and the adoption of the proposed treatments. To ensure the development achieves the requirements of the clause 13.02-1S policy, the following treatments are proposed. In addition to the site-specific treatments, it is important to note that the land management agencies including Regional Roads Victoria and other government agencies have legislated responsibilities to manage bushfire risk such as roadside vegetation management and community education.

Proposed treatments

To offset the identified bushfire risk following the completion of the bushfire hazard assessment and the site analysis, the following will be implemented:

1. The dwellings adjoining the surrounding farming properties will be constructed to achieve the requirements of AS3959.
2. Consideration be given to providing a buffer along the northern, western and eastern (the part north of Bradford Drive) boundaries to ensure that any future dwelling can achieve a BAL 12.5 rating in accordance with AS3959.
3. Vegetation management programs will be implemented during the construction phase of the project and included within the Construction Management Plan.
4. Any revegetation program within the waterway and drainage reserve will be undertaken to achieve a maximum classification of grassland as per AS3959 and will provide a minimum setback of 19 metres from any proposed dwelling.

Settlement Planning objective	Discussion	Achieved
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)	Once the development is completed, there would be no dwellings exposed to more than 12.5kW/m². However, the ability to achieve a radiant heat flux of less than 12.5 kW/m² is achieved through the creation of buffers along the northern, western and part of the eastern boundaries that may include the creation of open space or roads.	✓
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.	Large parts of the new development will achieve the requirements of BAL LOW and can be considered a safer area. In addition to these areas, the central areas of Morwell and Traralgon will also provide areas that can be considered safer.	✓
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.	The development will not increase the bushfire risk to the future residents and any residents, property and community infrastructure in the surrounding area. The development will reduce the risk to these areas. The implementation of controls for revegetation programs will ensure the risk is maintained to achieve a radiant heat flux less than 12.5 kW/m². The open space areas that are created by the development will be managed by Council.	✓
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.	This development will reduce the risk to the surrounding areas by removing the grassland fuels that are on the property. There will be a net reduction in bushfire risk to the adjoining land owners and surrounding communities whilst not exposing the development occupants to increased bushfire risk.	✓
Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local,	The bushfire hazard has been assessed and has identified the risk from a grassfire from the north west and south west of the development. There is limited potential for neighbourhood scale destruction due to the primary vegetation within one kilometre of the development site being	✓

Settlement Planning objective	Discussion	Achieved
neighbourhood and site scale, including the potential for neighbourhood-scale destruction.	grassland. The property is surrounded by managed properties and other landscape features that will reduce bushfire risk.	
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.	The overall bushfire risk was assessed as low. This site has been assessed as having a low risk providing the proposed treatments are implemented.	✓
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).	This development along with the proposed treatments will see all properties being able to achieve less than BAL 12.5 when assessed using AS3959 *Construction of buildings in bushfire prone areas*.	✓

Conclusion

This development is in an area that can be considered a low bushfire risk.

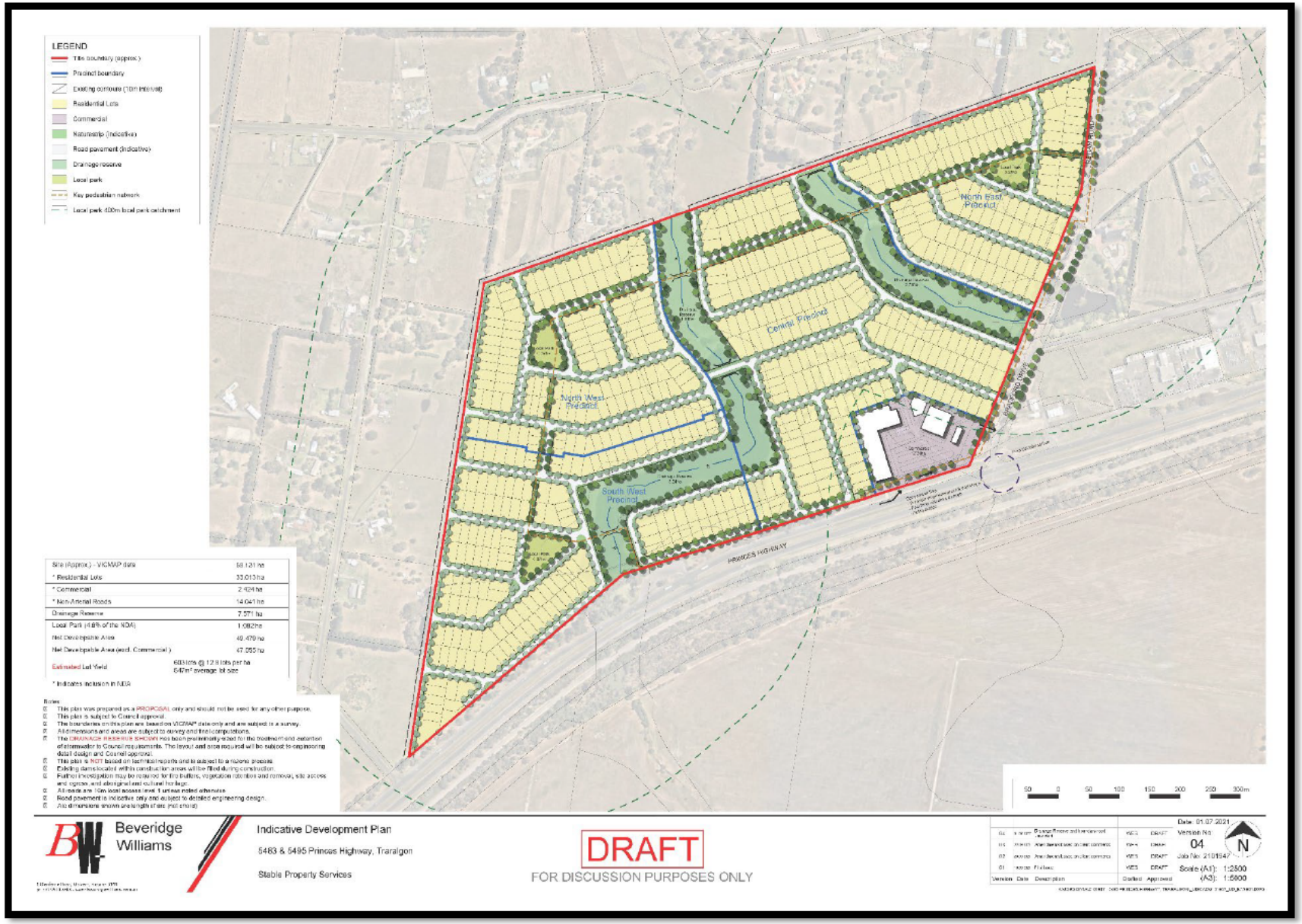
This is supported by the various other plans that consider bushfire risk within this area. Whilst it may still be exposed to ember attack, this is consistent with other parts of the surrounding landscape.

The bushfire history indicates that there is an ongoing risk of bushfires in the local area every summer, but according to the available data, they have not impacted on this specific location. This is likely due to the fragmented landscape and other features that interrupt a bushfires ability to escalate and travel towards the property.

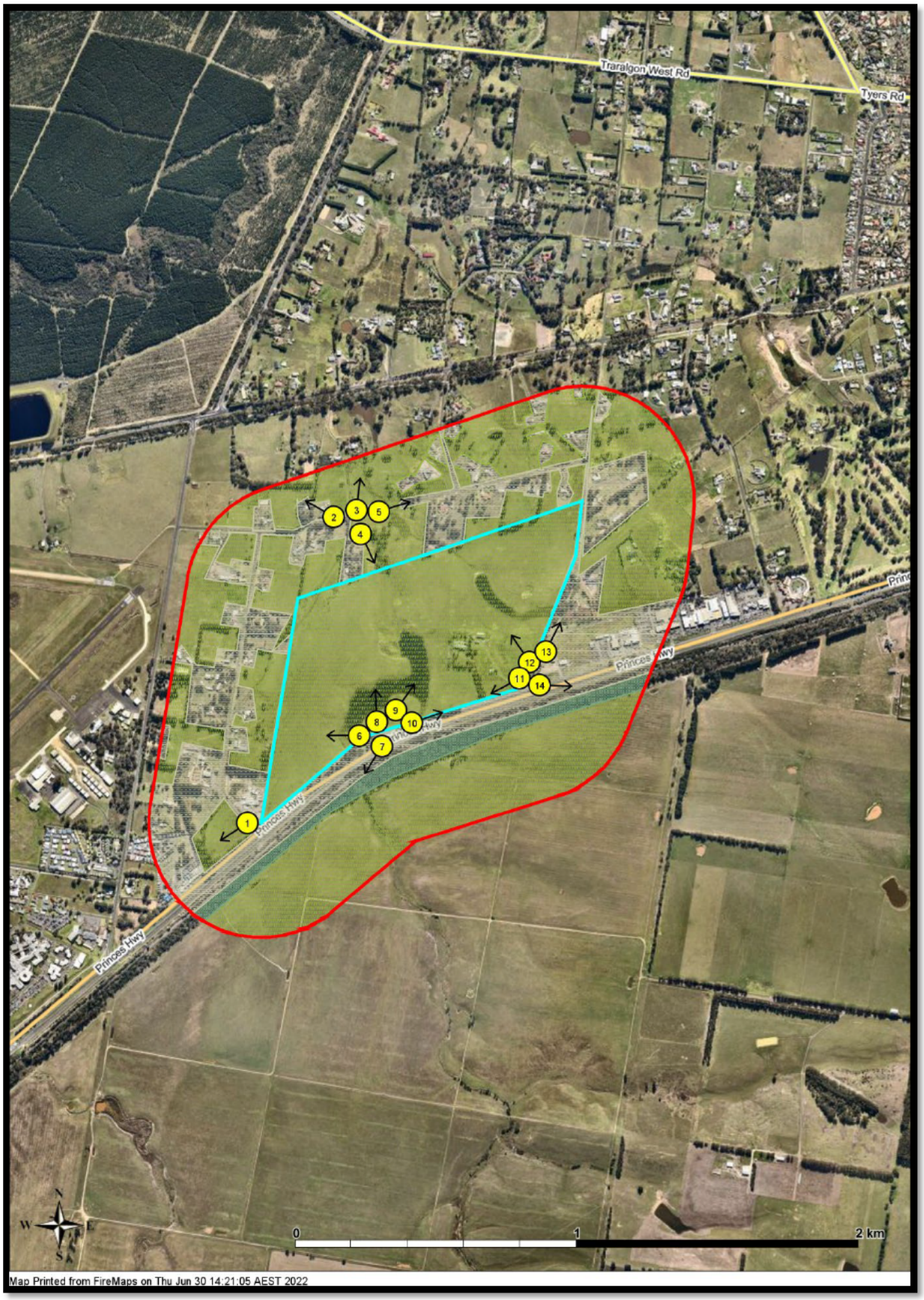
Providing any revegetation program is managed with bushfire risk as a key consideration, the development will be able to ensure less than BAL 12.5 is achieved across the entire property. This is largely achieved through the provision of a perimeter road around the northern and western boundaries.

Due to the low landscape risk in the surrounding area, this development meets the requirements of Clause 13.02-1S of the Latrobe Planning Scheme.

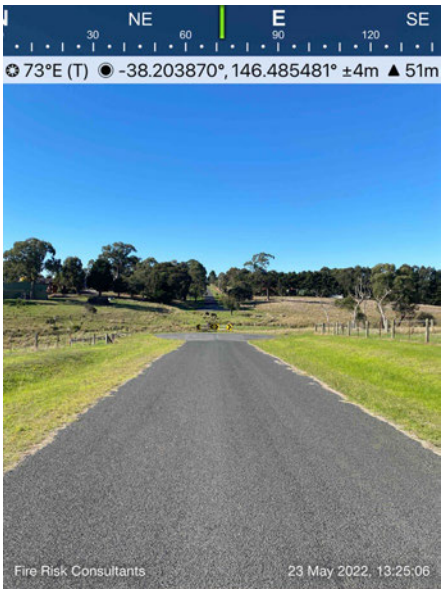
Appendix 1 – Provided plans



Appendix 2 – Site photos

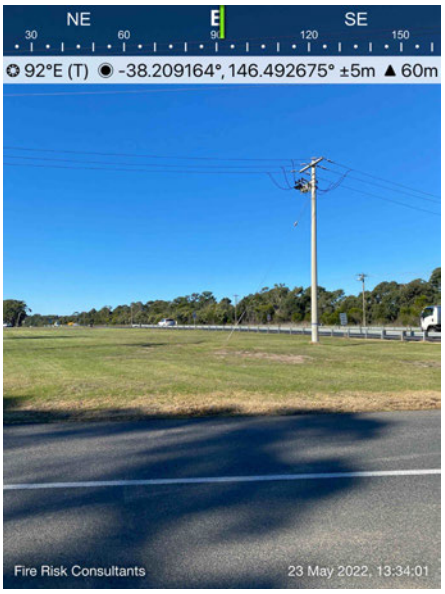


1 Typical vegetation to the south east of the property along Northern Drive.	
2 Typical vegetation to the north west of the development site.	
3 Typical vegetation to the north west of the development site.	

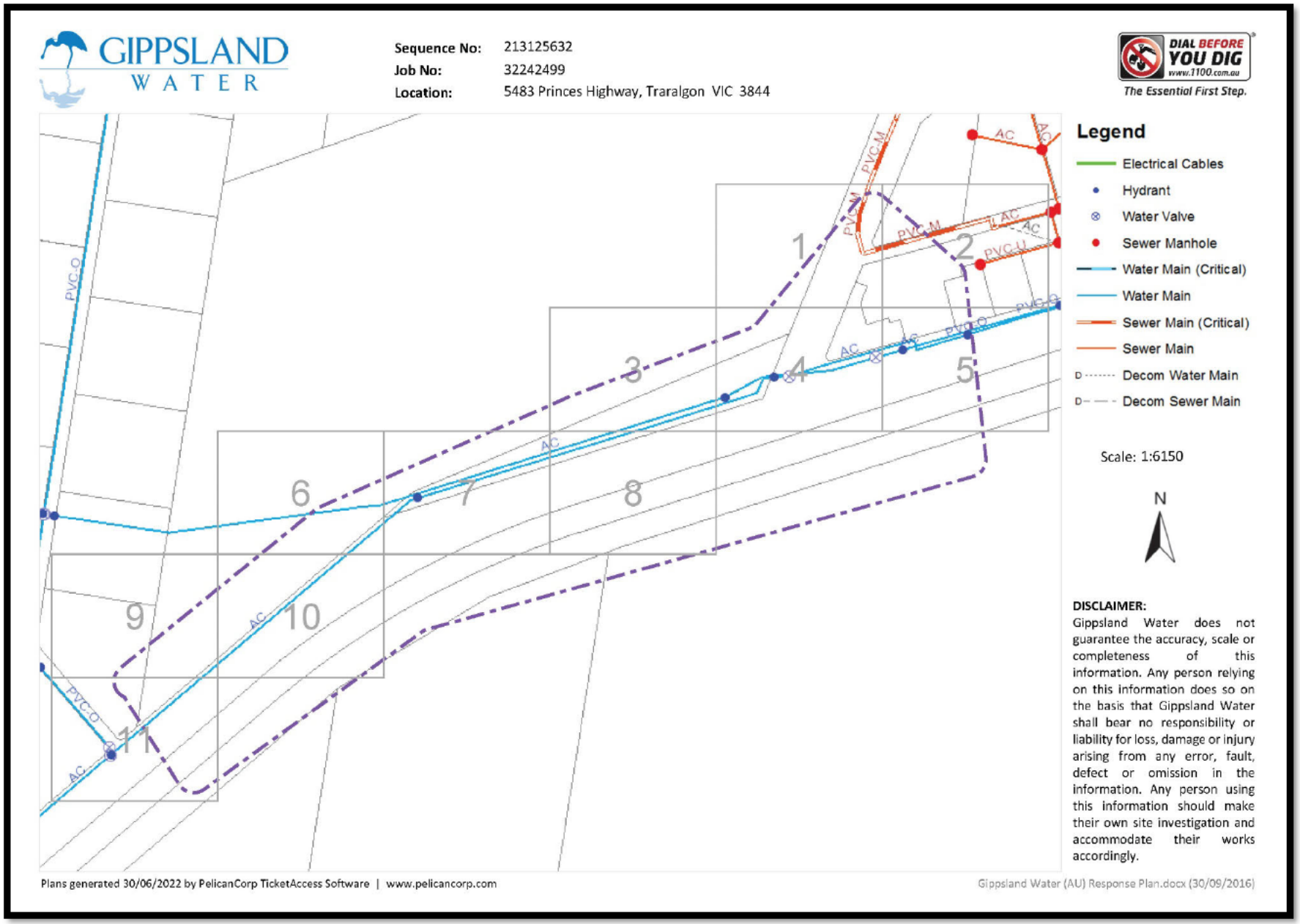
4 Typical vegetation to the north west of the development site.	
5 Typical vegetation to the north west of the development site.	
6 Typical vegetation on the southern side of the property along Princes Highway.	

8 Typical vegetation on the southern side of the property along Princes Highway.	
9 Typical vegetation on the southern side of the property along Princes Highway.	
10 Typical vegetation on the southern side of the property along Princes Highway.	

11 Typical vegetation on the southern side of the property along Princes Highway.	
11 Typical vegetation near the intersection of Princes Highway and Bradford Drive.	
12 Typical vegetation on the property from Bradford Drive.	

13 Looking northerly along Bradford Drive.	
14 Looking easterly along Princes Highway from Bradford Drive.	

Appendix 3 – Street fire hydrant location



Appendix 4 – References

Francis Hines, Kevin G Tolhurst, Andrew AG Wilson and Gregory J McCarthy 2010, *Overall Fuel Hazard Guide* 4th Edition, Department of Sustainability and Environment, 44 pp

Ahern, A. and Chladil, M. (1999) *How far do bushfires penetrate urban areas?* Aon Re Worldwide and Tasmanian Fire Service.

Attorney-General's Department (2015) *National Emergency Risk Assessment Guidelines.* Commonwealth of Australia.

Blanchi, R. and Leonard, J. (2005) *Investigation of Bushfire Attack Mechanisms Resulting in House Loss in the ACT Bushfire 2003.* CSIRO and Bushfire CRC.

Bull, H. (2011) *Fire Ecology: Guide to Environmentally Sustainable Bushfire Management in Rural Victoria.* Burwood East: Country Fire Authority

Byram, G. (1959) Combustion of Forest Fuels, in: *Forest Fire: Control and Use.* New York: McGraw-Hill, pp. 113-126

Cheney, P. and Sullivan, A. (2008) *Grassfires: fuel, weather and fire behaviour, second edition.* CSIRO Publishing, Melbourne.

DSE (2012) *Code of Practice for Bushfire Management on Public Land.* Melbourne: Department of Sustainability and Environment.

Gill, M. (2008) *Underpinnings of fire management for biodiversity conservation in reserves* (No. 73). East Melbourne, Victoria: Department of Environment, Land, Water and Planning.

Gould, J. S., McCaw, W. L., Cheney, N. P., Ellis, P. F. and Mathews, S. (2007) *Field guide: fuel assessment and fire behaviour prediction in dry eucalypt forest.* Ensis-CSIRO, Canberra, ACT and Department of Environment and Conservation, Perth, WA.

Leonard, J. (2009) *Report to the 2009 Victorian Bushfires Royal Commission: Building Performance in Bushfires* (Report to the VBRC). p. 80. CSIRO

Luke, H. R, and McArthur, A. G. (1986) *Bushfires in Australia.* CSIRO Division of Forest Research, Canberra

Standards Australia (2018) *AS 3959-2018 Construction of Buildings in Bushfire Prone Areas* (No. up to amendment 3 (Nov 2011). Sydney: SAI Global.

Standards Australia Limited (2009) *AS/NZS ISO 31000:2009 Risk management – Principles and guidelines.* Sydney: SAI Global Limited.

Tolhurst, K. (1994) Effects of Fuel Reduction Burning on Fuel Loads in a Dry Sclerophyll Forest. In DEST (1994) *Fire & Biodiversity: The Effects & Effectiveness of Fire Management,* Biodiversity Series, Paper No. 8, Biodiversity Unit, Canberra.

Tolhurst, K. and Cheney, N. (1999) *Synopsis of the Knowledge Used in Prescribed Burning in Victoria.* Melbourne: Department of Natural Resources and Environment, Fire Management.