

Bushfire Assessment Development Plan Manuka Road Berwick



February 2023

xwb consulting
Town Planning and Bushfire Consultants



1. Introduction

XWB Consulting has been engaged by Veris Australia to prepare a bushfire assessment for a development plan for the residential development of land in Manuka Road north of Allan Street.

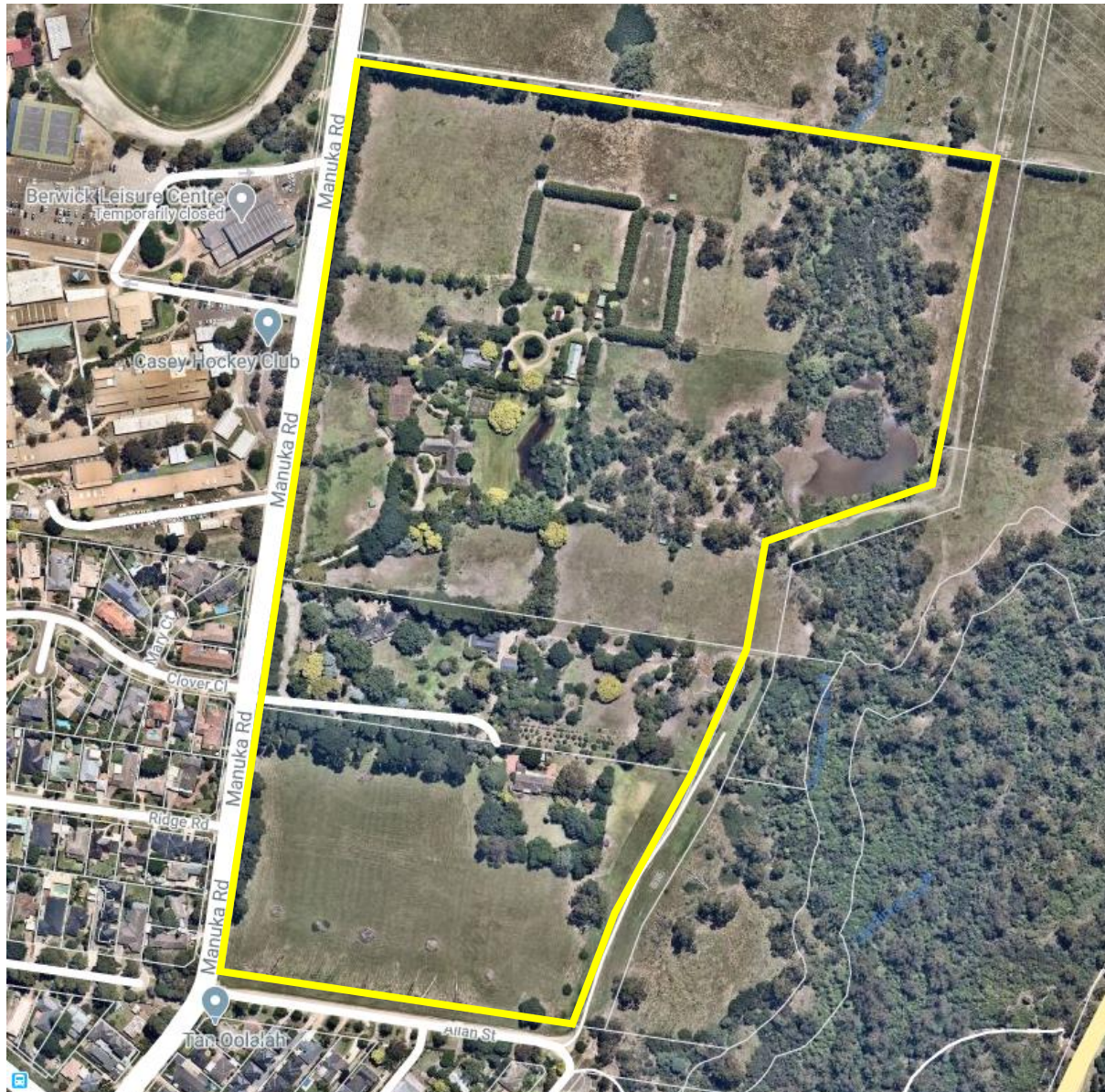
The bushfire assessment has been prepared by:

Phil Walton
XWB Consulting
PO Box 752
Beaconsfield 3807

mail@xwbconsulting.com.au
Ph: 0408 517 143

2. Land Description

The land is located on the eastern side of Manuka Road to the north of Allan Street. The land is shown in yellow on the aerial photograph below:



The land in the development plan has an area of 18.78ha comprising 4 parcels:

- 42-52 Manuka Road
- 54-60 Manuka Road
- 60-70 Manuka Road
- 72-80 Manuka Road

42-52 Manuka Road contains a number of mature trees in the established gardens around the existing dwelling. There a number of mature pine trees along the driveway / northern boundary and along Manuka Road. The majority of the land is open paddocks with a fall to the south.

54-60 Manuka Road contains the former Clover Cottage Restaurant and a dwelling set in established ornamental gardens. The land falls to the south and east.

60-70 Manuka Road and 72-80 Manuka Road form part of one holding and contains a substantial dwelling and cottage set in established gardens. The land contains a number of open paddocks with windrows and the Grassmere Creek passes through the eastern part of the land including a large dam. The area around the dam comprises scrubby vegetation with scattered trees. A significant ridgeline passes through the land with the land to the east falling to the east and the land to the west falling to the north west.

Manuka Road to the west is an urban collector street with a wide pavement and kerb and channel whilst Allan Street to the south is a residential street with a gravel pavement and table drains.

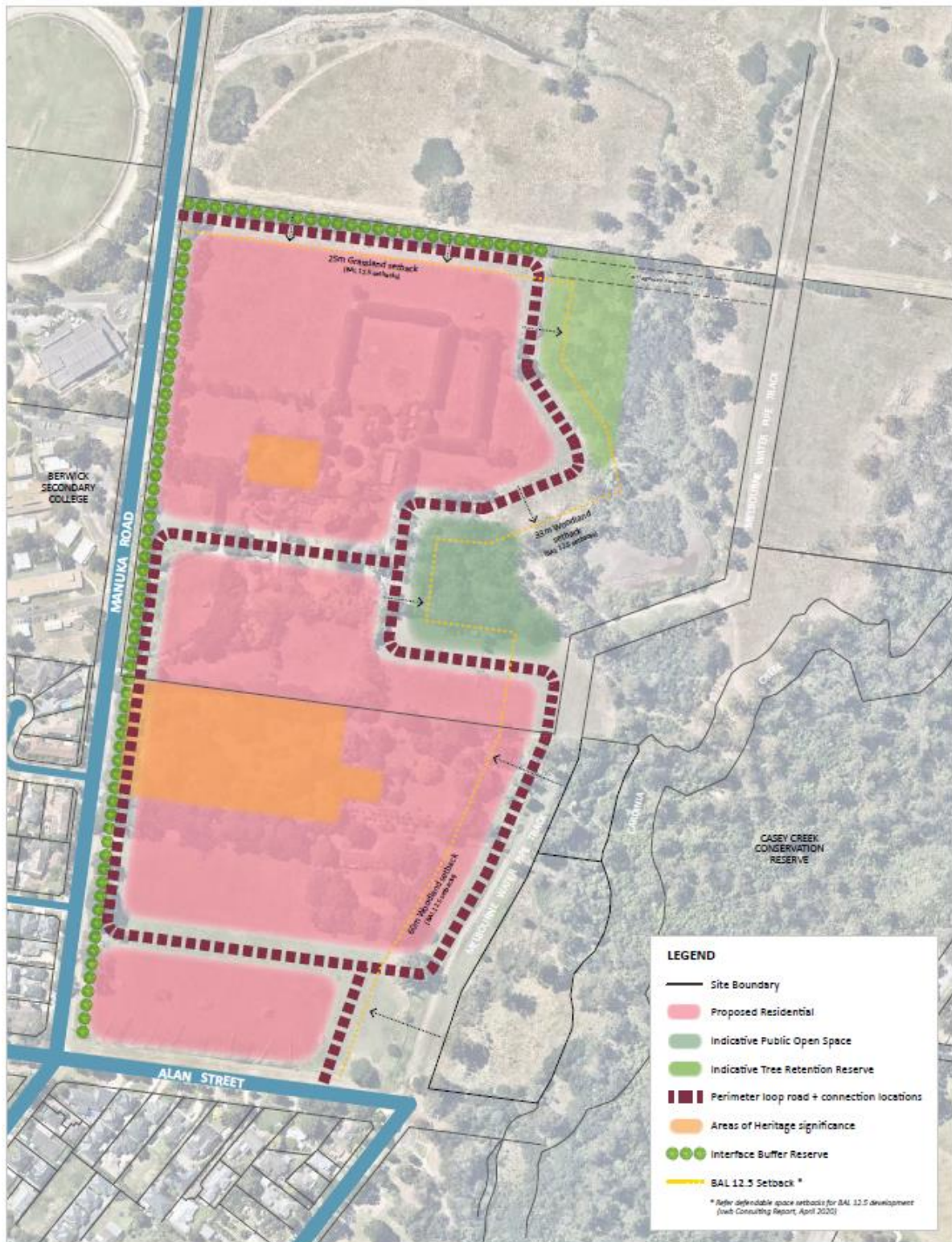
The land to the west and south is existing residential properties within the Berwick Township and the Berwick Secondary College and Edwin Flack Recreation Reserve.

The land to the east comprises a water pipeline reserve, an open grassy area between the pipeline easement and Cardinia Creek, and a bushland area along the Cardinia Creek associated with the Cardinia Creek Nature Conservation Reserve. There is a small scrubby area along the Grassmere Creek. Part of the land between the pipeline reserve and Cardinia Creek has been acquired by the state government as part of the Cardinia Creek Parklands with the remaining sections to be acquired in the future.

The land is included within a Neighbourhood Residential Zone and Green Wedge Zone under the Casey Planning Scheme. The land is also partly within a Bushfire Management Overlay under the Casey Planning Scheme. The land is also included in a Development Plan Overlay which specifies provisions in relation to bushfire.

3. Proposal

It is proposed to develop the majority of the land within the development plan area for residential lots and a number of open space, drainage and tree reserves. Access to the development is provided from Allan Street to the south and Manuka Road to the west. The development plan for the land is shown below:



4. Planning Context

4.1 State Planning Policy

State planning policy in relation to bushfire planning in Clause 13.02-1S of the planning scheme. The objective of the state policy is to strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life. Strategies to meet this objective are set out below:

Protection of human life

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.

Bushfire hazard identification and assessment

Identify bushfire hazard and undertake appropriate risk assessment by:

- Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.
- Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the *Building Act 1993* or regulations made under that Act.
- Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire 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;
 - Local conditions - meaning conditions in the area within approximately 1 kilometre from a site;
 - Neighbourhood conditions - meaning conditions in the area within 400 metres of the site;
 - The site for the development.
- Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.
- Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures.
- Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.

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

Areas of high biodiversity conservation value

Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value.

Use and development control in a Bushfire Prone Area

In a bushfire prone area designated in accordance with regulations made under the *Building Act 1993*, bushfire risk should be considered when assessing planning applications for the following uses and development:

- Subdivisions of more than 10 lots
- Accommodation
- Childcare centre
- Education centre
- Emergency services facility
- Hospital
- Indoor recreation facility
- Major sports and recreation facility
- Place of assembly
- Any application for development that will result in people congregating in large numbers.

When assessing a planning permit application for the above uses and development:

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

Policy guidelines

The policy guidelines under the State Planning Policy Framework specify that planning must consider as relevant:

- Any relevant approved State, regional and municipal fire prevention plan.

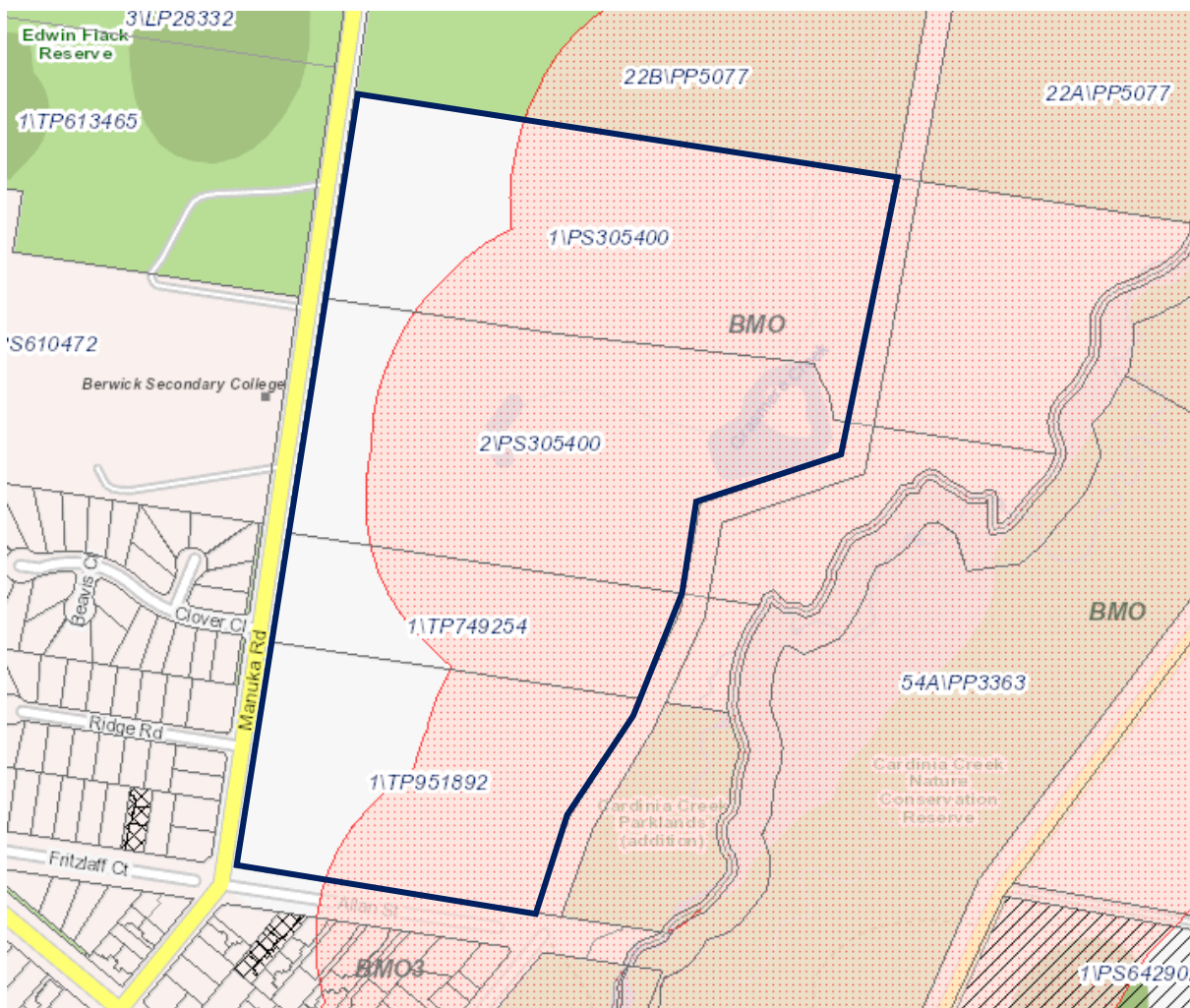
- AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).
- Building in bushfire-prone areas - CSIRO & Standards Australia (SAA HB36-1993)

4.2 Municipal Strategic Statement

There are no policies within the Municipal Strategic Statement within the Casey Planning Scheme in relation to bushfire.

4.3 Bushfire Management Overlay

Part of the site is contained within a Bushfire Management Overlay under the Casey Planning Scheme. The extent of the Bushfire Management Overlay is shown by the red shading on the plan below:



The purpose of the overlay 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 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.

4.4 Planning for Bushfire

The provisions under Clause 53.02 of the Casey Planning Scheme, apply where a planning permit is required under a Bushfire Management Overlay. The purpose of the provisions is to:

- 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.

4.5 Development Plan Overlay

The land is included within a Development Plan Overlay (Schedule 24) under the Casey Planning Scheme. In relation to bushfire, the schedule to the overlay requires that any subdivision creating a residential lot must meet the following requirements:

- All new lots must either include a building envelope that is capable of achieving a setback from a bushfire hazard to enable construction standard of BAL 12.5 (equivalent to a radiant heat exposure of 12.kilowatts/square metre) under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018) or be located a sufficient distance from the hazard vegetation that a building may be sited anywhere on the lot to achieve compliance with a BAL 12.5 construction standard.
- Any vegetation located in the setback between a future dwelling and a bushfire hazard must be managed in accordance with defensible space standards as per Table 6 of Clause 53.02.
- A perimeter road must be incorporated along the northern and eastern boundaries.
- Where a road forms part of the nominated defensible space area, it must be designed, landscaped and managed for the purpose of providing defensible space.
- Areas of public open space must provide a buffer between the identified bushfire hazard and any residential lots. The public open space must be shown on a landscape plan that is submitted to and approved by the responsible authority and the relevant fire authority prior to the issue of a statement of compliance. The plan must:
 - Demonstrate how the public open space will be designed for the purpose of providing defensible space (and may include shared paths and occasional park furniture).
 - Demonstrate how the open space will be managed and maintained for the purpose of providing defensible open space.
 - Be incorporated directly or indirectly into the council's Municipal Fire Prevention Plan

In addition, the schedule requires a bushfire report prepared by a suitably qualified person that:

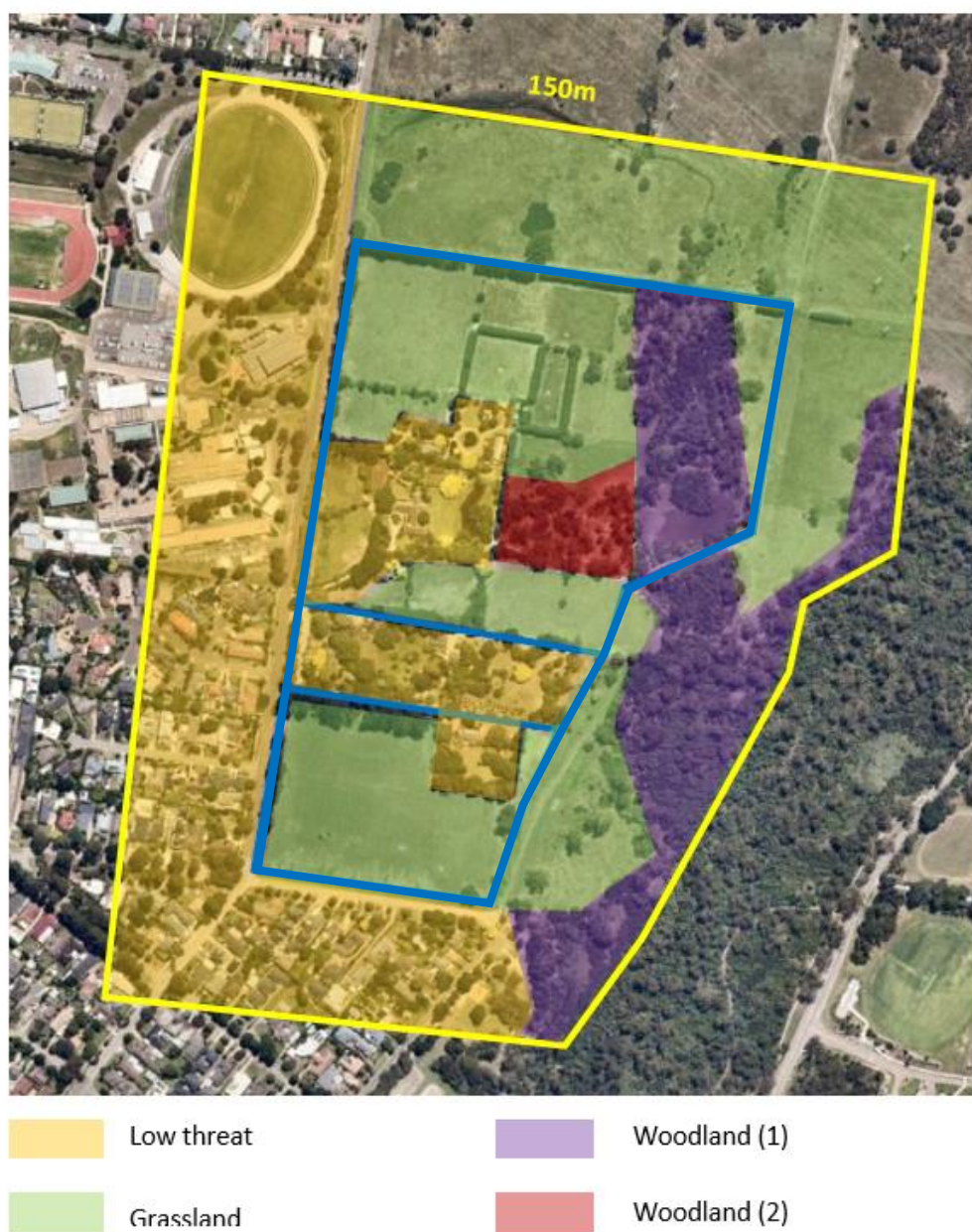
- Identifies the areas of bushfire hazard within 150 metres of the site, including classifiable vegetation and the slope, under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).

- Shows the required setbacks to building envelopes from any area of bushfire hazard to ensure a construction standard of BAL 12.5 can be met.
- Shows the required areas of defendable space on private and public land.
- Identifies the vegetation management requirements for areas of defendable space generally in accordance with Table 6 of Clause 53.02, with the exception of canopy tree separation that can be reduced to two metres.
- Shows the location of public open space.
- Shows the road layout and provision of a perimeter road on the northern and eastern boundaries.

5. Bushfire Hazard Assessment

A Bushfire hazard assessment under the provisions of the Bushfire Management Overlay describes the bushfire hazard within 150 metres of the proposed development. The description of the hazard must be prepared in accordance with Sections 2.2.3 to 2.2.5 of AS3959:2009 Construction of buildings in bushfire prone areas (Standards Australia) excluding paragraph (a) of section 2.2.3.2. Photographs or other techniques may be used to assist in describing the bushfire hazard.

The plan below shows the bushfire hazard within 150m of the development plan area:



The land within the development plan area largely comprises open paddocks which would be classified as grassland under AS3959 and managed gardens which would be classified as low threat vegetation under AS3959.

The land to the north of the development plan area comprises open paddocks acquired for the Cardinia Creek Parklands. It is unclear if the open paddocks will be managed parklands in the future, therefore they have been classified as Grassland under AS3959. The slope of the grassland is downslope with a slope of 9°.

The land to the west of the development plan area comprises existing residential development and the Berwick Secondary College and Edwin Flack Reserve. The college and reserve are dominated by buildings, hard standing areas, managed sportsgrounds or managed gardens. The land to the west would be classified as low threat vegetation under AS3959.

The land to the south of the development plan area comprises existing residential development which would be classified as low threat vegetation under AS3959.

The land to the east comprises a more complex mix of vegetation types which will be the main bushfire hazard in relation to the development plan area. The land along the pipeline reserve comprises grass which is largely managed. The pipeline reserve would be classified as grassland under AS3959 and is generally flat relative to the development plan area. There are open paddock to the east of the pipeline reserve at the northern and southern end of the development plan area which would be classified as grassland under AS3959. The slope of the majority of the grassland is flat along the Cardinia Creek environs, although there is a short steep step adjoining the pipeline reserve to the south approximately 20m wide. Along the Cardinia Creek and extending out towards the pipeline reserve in the mid section of the development plan area is an area dominated by scrub with scattered trees. The EVC for the area describes the vegetation as Swampy Riparian Woodland. The scattered trees are ribbonbark eucalypts with a canopy cover of 15% to 20%. The scrubby woodland area has been classified as Woodland under AS3959. The slope of the majority of the scrubby woodland is flat along the Cardinia Creek, although there is a small section where it extends to the pipeline reserve where the slope is a downslope of 13°. There is also a scrubby woodland area along the Grassmere Creek and around the dam to the north. The area is dominated by scrub with scattered trees. The slope of the majority of the scrubby woodland is flat along the Grassmere Creek, although a section of the vegetation west of the creek is downslope with a slope of 14°. There is a treed area between the Grassmere Creek dam and the dwelling on 60-70 Manuka Road which contains scattered trees with a managed grass understorey (Woodland 2). The area is modified, albeit it is still classified as Woodland under AS3959 with a significantly reduced fuel load. The slope of the woodland is variable relative to the proposed subdivision with a maximum downslope of 9°. The vegetation types to the east are shown in the photographs below:



Pipeline reserve adjoining 42-52 Manuka Road



Looking east from the pipeline reserve adjoining 42-52 Manuka Road showing open paddocks and scrubby woodland along the Cardinia Creek.



Treed area with managed grass on 60-70 Manuka Road (Woodland 2).



Scrubby woodland along Grassmere Creek west of the pipetrack.



Open paddocks on 72-80 Manuka Road with scrubby woodland along Cardinia Creek.



Scrubby woodland along Grassmere Creek east of the pipetrack

The bushfire site hazard assessment around the proposed subdivision is summarised in the following tables:

	North	West	South	East
Vegetation type	Grassland	Low threat	Low threat	Grassland Woodland 1 Woodland 2
Slope under classified vegetation (Max)	9° downslope	n/a	n/a	Flat 13° downslope* 9° downslope
Distance to classified vegetation	0m	n/a	n/a	0m Varies** 0m

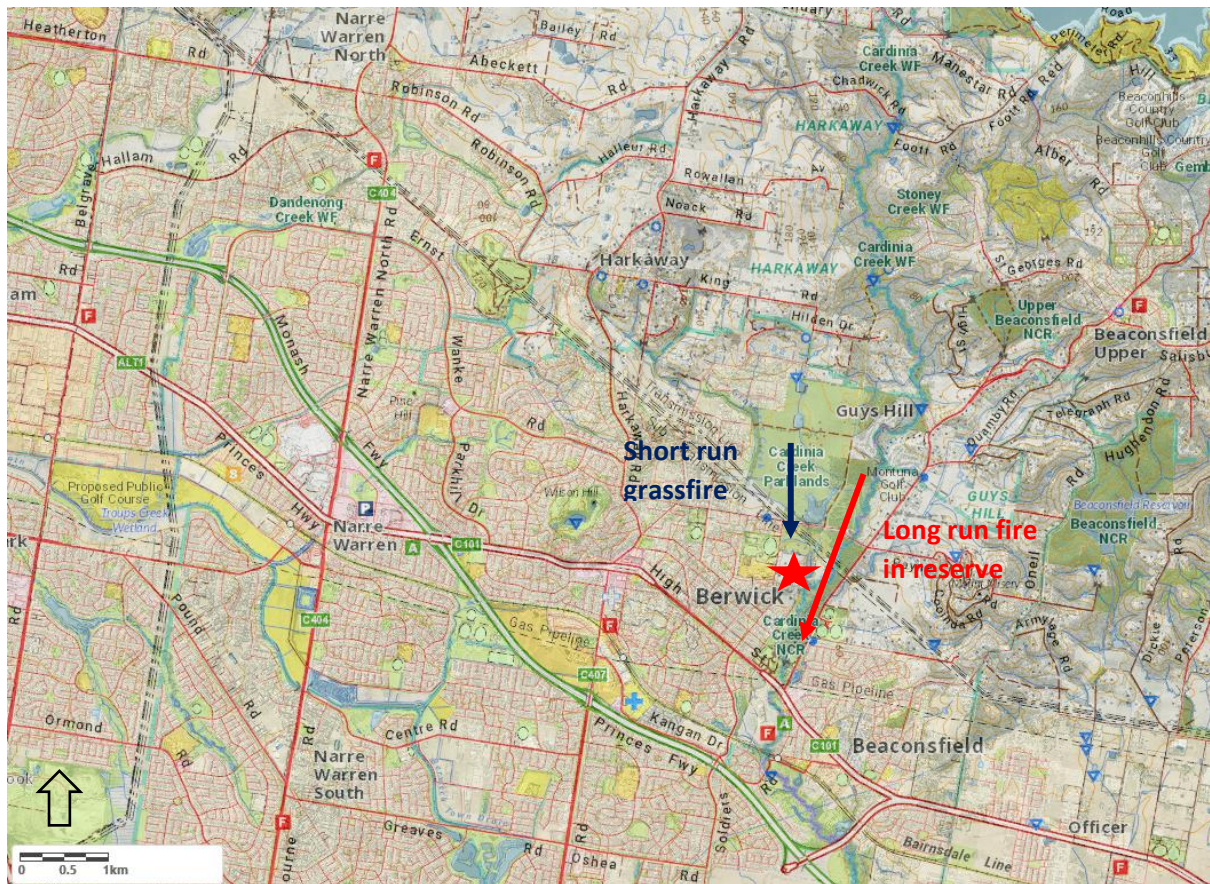
*Only for section west of Grassmere Creek

**Refer to detailed assessment later in report

6 Bushfire Hazard Landscape Assessment

Under the provisions of the Bushfire Management Overlay, a bushfire hazard landscape assessment includes a plan that describes the bushfire hazard of the general locality more than 150 metres from the site. Photographs or other techniques may be used to assist in describing the bushfire hazard.

The site and surrounding landscape context is shown on the plan below:



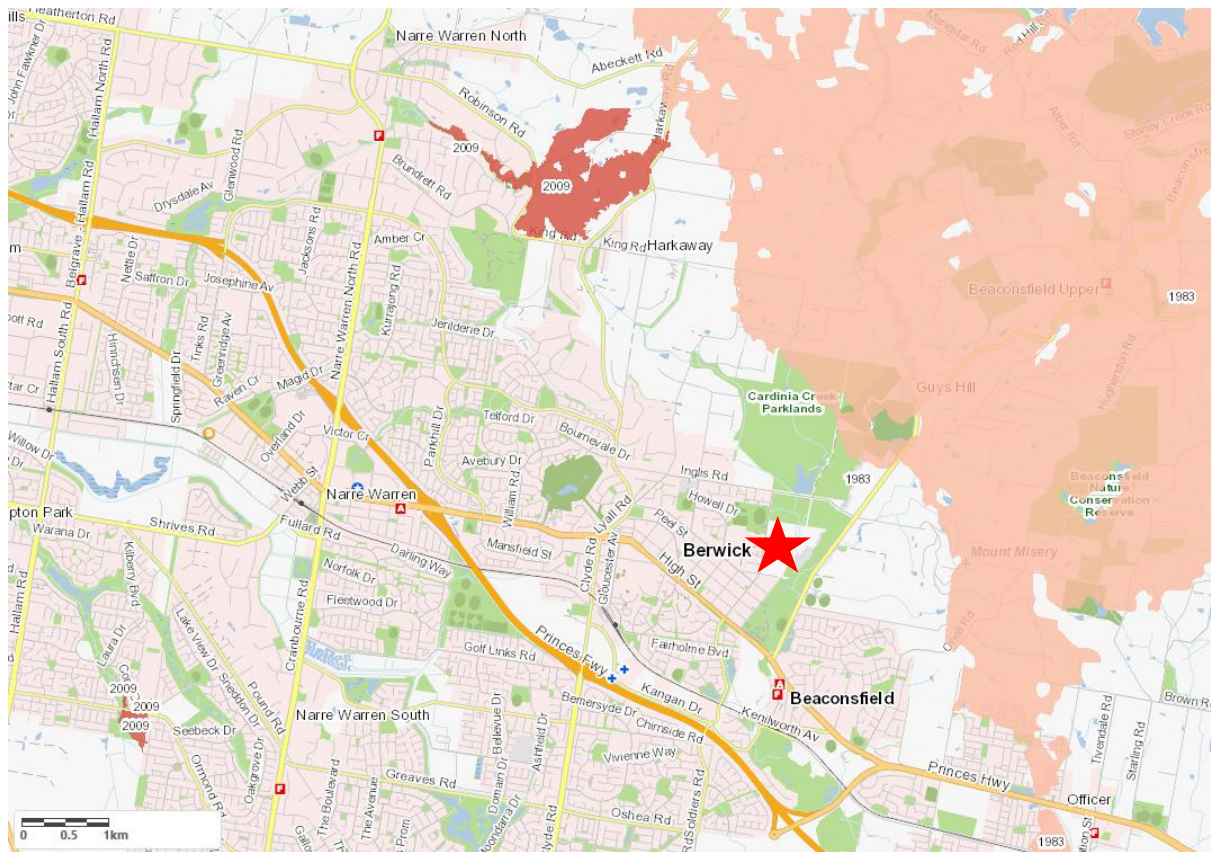
The land is located on the eastern edge of the Berwick Township. The adjoining land to the north and east is either existing or proposed parkland. The parkland to the north including to the north of Inglis Road is mainly open grassland. The section of the parkland comprising bushland is largely located to the east of the pipeline reserve including the Cardinia Creek Nature Conservation Reserve.

The land will not be impacted by a bushfire from the north west, west, south west or south due to existing urban development. Any fire from the north is likely to be a localised grassfire within the Cardinia Creek Parklands. There is not contiguous bushland vegetation to the north to support a long run bushfire.

A bushfire within Cardinia Creek Nature Conservation Reserve to the east is unlikely to have a significant impact on the land. An easterly wind which would drive a bushfire towards the land is not associated with extreme bushfire weather conditions. Easterly winds are normally associated with more humid conditions which would suppress the intensity of a bushfire as evidenced over the summer of 2021/22. There were numerous hot humid days with a east to

south easterly wind, but no days with a fire danger rating of 50FFDI or greater. Additionally the maximum width of the Cardinia Creek Nature Conservation Reserve is approximately 300m providing for a limited bushfire run towards the site. A longer run bushfire within the Cardinia Creek Nature Conservation Reserve influenced by a north easterly wind is likely to direct a bushfire run past the site with any resulting fire being a flanking fire of lower intensity.

In south eastern Australia, the greatest bushfire threat occurs when there is a strong dry north westerly wind followed by a south westerly wind change. Under these conditions the landscape risk to the site is low and the greatest threat will be from a larger bushfire to the north creating embers which may result in new fires in the Cardinia Creek Parklands resulting in more localised fires. The plan below shows the history of significant fires in the surrounding landscape.



Notable is the Ash Wednesday fires in 1983 and the Black Saturday fires in 2009. The Ash Wednesday fire ran from Belgrave South under the influence of a strong north westerly wind down the Cardinia Creek Valley to Guys Hill before running towards Mount Misery and Officer to the east. The Black Saturday fire ran from Narre Warren North to Harkaway under the influence of a strong north westerly wind. Both fires could have potentially resulted in spot fires within the Cardinia Creek Parklands, however any fire impacting on the land would be the result of a more localised fire run or flanking fire.

The site does not neatly fall into one of the Broader Landscape Types described under Practice Note 65. Consistent with Broader Landscape Type 2, the following criteria apply to the site:

- Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.

Consistent with Broader Landscape Type 3, the following criteria applies to the site:

- The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site.
- Bushfire can approach from more than one aspect (north and east).

6 Response to Development Plan Overlay

The table below sets out the response to the requirements in the schedule to the Development Plan Overlay. The residential development can achieve a bushfire construction standard of BAL12.5 which is identified as a low risk location under state planning policy in relation to bushfire.

Development Plan Requirement	Response
All new lots must either include a building envelope that is capable of achieving a setback from a bushfire hazard to enable construction standard of BAL 12.5 (equivalent to a radiant heat exposure of 12.kilowatts/square metre) under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018) or be located a sufficient distance from the hazard vegetation that a building may be sited anywhere on the lot to achieve compliance with a BAL 12.5 construction standard.	<p>The following separation distances are required to achieve a BAL12.5 construction standard for the residential areas shown on the development plan:</p> <p>West and south No separation required as the vegetation to the west and south is classified as low threat.</p> <p>North To the north a 25m separation is required from the grassland hazard. This separation should comprise a managed interface buffer reserve, road reserve and a minimum dwelling setback from the road.</p> <p>East On the southern section, a 60m separation is required from the eastern boundary of the pipeline reserve due to the woodland hazard. This separation should comprise the pipeline reserve, road reserve and a building setback in lots.</p> <p>On the northern section, a 33m separation is required from the woodland hazard. The separation should comprise proposed reserves and the road reserve with no setback required in lots.</p>
Any vegetation located in the setback between a future dwelling and a bushfire hazard must be managed in accordance with defendable space standards as per Table 6 of Clause 53.02.	Acknowledged. This will need to be addressed in a bushfire management plan prepared for a planning permit application for subdivision and in landscaping plans prepared for roads and reserves.
A perimeter road must be incorporated along the northern and eastern boundaries.	A perimeter road is proposed along the northern and eastern boundary of the development on the development plan. The road forms part of the separation distance required to achieve a BAL12.5 construction standard.
Where a road forms part of the nominated defendable space area, it must be designed, landscaped and managed for the purpose of providing defendable space.	The perimeter road will form part of the defendable space area, therefore the landscaping plan prepared for the road as part of a planning permit application will need to address defendable space requirements.
Areas of public open space must provide a buffer between the identified bushfire hazard and any residential lots.	Open space areas shown on the development plan to the north and east of the residential area form part of the separation distance required to achieve a BAL12.5 construction standard.
<p>A bushfire report prepared by a suitably qualified person that:</p> <ul style="list-style-type: none"> Identifies the areas of bushfire hazard within 150 metres of the site, including classifiable vegetation and the slope, under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018). Shows the required setbacks to building envelopes from any area of bushfire hazard 	<p>This report addresses the matters set out in the schedule to the Development Plan Overlay. A further bushfire assessment has been prepared for planning permit applications for the subdivision of parcels within the development plan area which addresses the provision of Clause 53.02 in more detail.</p> <p>The report identifies the separation distances required to achieve a BAL12.5 construction standard</p>

Development Plan Requirement	Response
<p>to ensure a construction standard of BAL 12.5 can be met.</p> <ul style="list-style-type: none">• Shows the required areas of defensible space on private and public land.• Identifies the vegetation management requirements for areas of defensible space generally in accordance with Table 6 of Clause 53.02, with the exception of canopy tree separation that can be reduced to two metres.• Shows the location of public open space.• Shows the road layout and provision of a perimeter road on the northern and eastern boundaries.	<p>which have been shown on the development plan. The development plan also shows the location of open space and the provision of a perimeter road.</p> <p>Defensible space within the required separation distances should be managed in accordance with Table 6 of Clause 53.02, with the exception of canopy tree separation that can be reduced to two metres as per the Development Plan Overlay schedule.</p>

7 Conclusion

The development plan facilitates a residential development on the eastern edge of the Berwick township.

The bushfire risk to the development can be mitigated to an acceptable level for the development to proceed. There is a low landscape exposure to a bushfire under extreme bushfire weather conditions when a fire would typically approach from the north west or south west due to existing urban development. A bushfire approaching from the Cardinia Creek Nature Conservation Reserve to the east represents a lower risk as easterly winds are not associated with extreme fire conditions.

Dwellings constructed on all lots within the subdivision should be constructed to a minimum bushfire attack level of BAL12.5. To achieve this BAL rating, the following separation distances are required:

- 25m from the grassland hazard to the north.
- 33m from the woodland hazard on the northern part of the development plan area.
- 60m from the eastern boundary of the pipeline reserve (woodland hazard) on the southern part of the development area.

The development plan shows that these separation distances are mostly contained within road reserves, open space reserves or the pipeline reserve reducing the need for dwelling setbacks within lots.

A further detailed assessment against the provisions of Clause 53.02 should be undertaken in relation to detailed subdivision plans forming part of a planning permit application.