BUSHFIRE RISK ASSESSMENT - RESPONSE TO CLAUSE 13.02-1S – HOPETOUN PARK NORTH

REF: 2021-107, 2023-120

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South Coast Bushfire Consultants

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- Postgraduate Certificate in Business – The University of Notre Dame, Broome (2002)
- Bachelor of Science, Honours – The University of Melbourne (1998)
- Native Vegetation Planning Permit Applications – Planet (Department of Planning and Community Development) Training Seminar (2013)

Version Control

	Name	Date Completed	Comments
Report Version	Kylie Steel	10/06/21 15/07/21 26/07/21 23/08/22 23/05/23 05/06/23 09/06/23 13/06/23 18/08/23 18/08/23	Version 1 Version 2 Version 3 Version 4 Version 5 Version 6 Version 7 Version 8 Version 9 Version 10
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Disclaimer

This report has been made with careful consideration and with the best information available to South Coast Bushfire Consultants at the time of writing. Before relying on information in this report, users should evaluate the accuracy, completeness and relevance of the information provided for their purposes. South Coast Bushfire Consultants do not guarantee that it is without flaw or omission of any kind and therefore disclaim all liability for any error, loss or other consequence that may arise from you relying on any information in this report.

Requirements detailed in this document do not guarantee survival of the buildings or the occupants. The client is strongly encouraged to develop and practice a bushfire survival plan.

Information and assistance including a template for a Bushfire Survival Plan is provided as part of the 'Fire Ready Kit' available through the CFA website at http://www.cfa.vic.gov.au or through your local CFA Regional office.

Conditions of Use

Contents

DEFINITIONS, ABBREVIATIONS AND ACRONYMS

AS 3959-2018	Australian Standard AS 3959 -2018 Construction of buildings in bushfire-prone areas
CFA	Country Fire Authority
Clause	A clause is a provision in the planning scheme
Clause 44.06	Bushfire Management Overlay
Clause 53.02	Planning for Bushfire
Clause 13.02-1S	Environmental Risk – Bushfire
DELWP	Department of Environment, Land, Water and Planning
BAL	Bushfire Attack Level
BPA	Bushfire Prone Area
BMO	Bushfire Management Overlay
BMS	Bushfire Management Statement
Method 1	refers to methodology in AS 3959-2018 for determining a BAL with a number of predetermined inputs
Method 2	refers to methodology in AS 3959-2018 for determining a site specific BAL
Pathway 1	refers to an application pathway in Clause 53.02 of the planning scheme
Pathway 2	refers to an application pathway in Clause 53.02 of the planning scheme
Planning Practice Note	a guide for using various sections of the planning scheme prepared by DELWP
RA	Responsible Authority
SCBC	South Coast Bushfire Consultants
Total Fire Ban Day	is declared by CFA on days when fires are likely to spread rapidly and could be difficult to control

Bushfire Risk Assessment - Response to Clause 13.02-1S – Hopetoun Park North

1. EXECUTIVE SUMMARY

This report has been prepared to accompany a re-zoning application for the land included within the Hopetoun Park North precinct as identified in the Bacchus Marsh Urban Growth Framework Plan. The parcel proposed to be rezoned is located to the west of Hopetoun Park Road.

The site is within a Bushfire Prone Area (BPA) of the state and as such all development needs to demonstrate that it meets the objective of *Clause 13.02-1S Bushfire Planning*. 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'.

A future subdivision design will ensure that residential lots are not exposed to radiant heat loads greater than 12.5kW/m^2.

The minimum construction standard for all development within a Bushfire Prone Area of the state is a BAL of 12.5.

The proposed rezoning is not within the Bushfire Management Overlay (BMO).

The bushfire hazards in the surrounding landscape can be mitigated and the intended use of the land for residential subdivision and subsequent development is deemed appropriate given the surrounding bushfire hazards. This report demonstrates how the site can mitigate the surrounding grassland bushfire hazards and small areas of protected Greybox Woodland within the site.

The report recommends mitigation measures to improve the protection of life safety and demonstrate compliance with the objectives of Clause 13.02-1S.

This report recommends setback distances and vegetation management to ensure that future development is not exposed to radiant heat loads in excess of a BAL of 12.5 from *Australian Standard AS 3959-2018 Construction of buildings in bushfire-prone areas.*

2. SUMMARY

The following details the proposed development, the assessment methodology and the proposed bushfire mitigation measures.

Application	A planning scheme amendment to rezone land to the west of Hopetoun Park Road.
Bushfire Landscape Risk	The landscape risk to the site is low, there are no large areas of woodland or forest vegetation within a 1km radius. The dominant hazard is grassland that can be mitigated by building setbacks and future construction standards.
Bushfire Attack Level (Bushfire Attack Level) BAL	A future subdivision design will ensure that residential lots are not exposed to radiant heat loads greater than 12.5kW/m^2. The minimum construction standard for all development within a Bushfire Prone Area of the state is a BAL of 12.5.
Protection of Human Life	The site can meet the objectives of Clause 13.02-1S in protection of human life.
Vegetation Management within the site	It is recommended that all public open space within the site, with the exception of the protected areas of Grey Box woodland and shrubland are managed as 'low threat vegetation' in accordance with AS 3959-2018 (see Appendix 11.1 for definition).
Access	The site is accessed via the Western Freeway and the Old Western Freeway. Both roads run between Melton to the east and Bacchus Marsh to the west. Access to Melton is via the Western Freeway and access to Bacchus Marsh is via the Old Western Freeway. Both roads are wide open roads that enable high volumes of traffic.
Hydrant	Any future development within the site will be able to meet the CFA's (Fire Rescue Victoria's) objective for the water supply and access for hydrants. The CFA's objective is; 'Water is available to every lot in a subdivision for firefighting purposes in locations and amounts to enable firefighters to safely and efficiently carry out an initial attack on a residential building fire' (Requirements for water supplies and access for subdivisions in residential 1 and 2 and Township Zones 2006).

2.1 Subject Site

Property 1 – 124 Hopetoun Park Road

Property 2 – 150 Hopetoun Park Road

Property 9 - 62 Cowans Road (parts of various titles)

3. SCOPE OF THE REPORT

This assessment has been prepared to demonstrate that a future residential subdivision could meet the objectives of Clause 13.02-1S.

4. METHODOLOGY

The methodology used to prepare a holistic approach to assessing and mitigation the bushfire risk to the development includes the following:

- Design Guidelines for Settlement at the Bushfire Interface (DELWP)
- Legislative Controls Affecting the Development
- Bushfire Hazard Landscape Assessment
- Bushfire Hazard Site Assessment
- A Bushfire Attack Level (BAL) Assessment
- Vegetation Management within the site
- Response to Clause 13.02-1S

5. LEGISLATIVE CONTROLS AFFECTING THE DEVELOPMENT

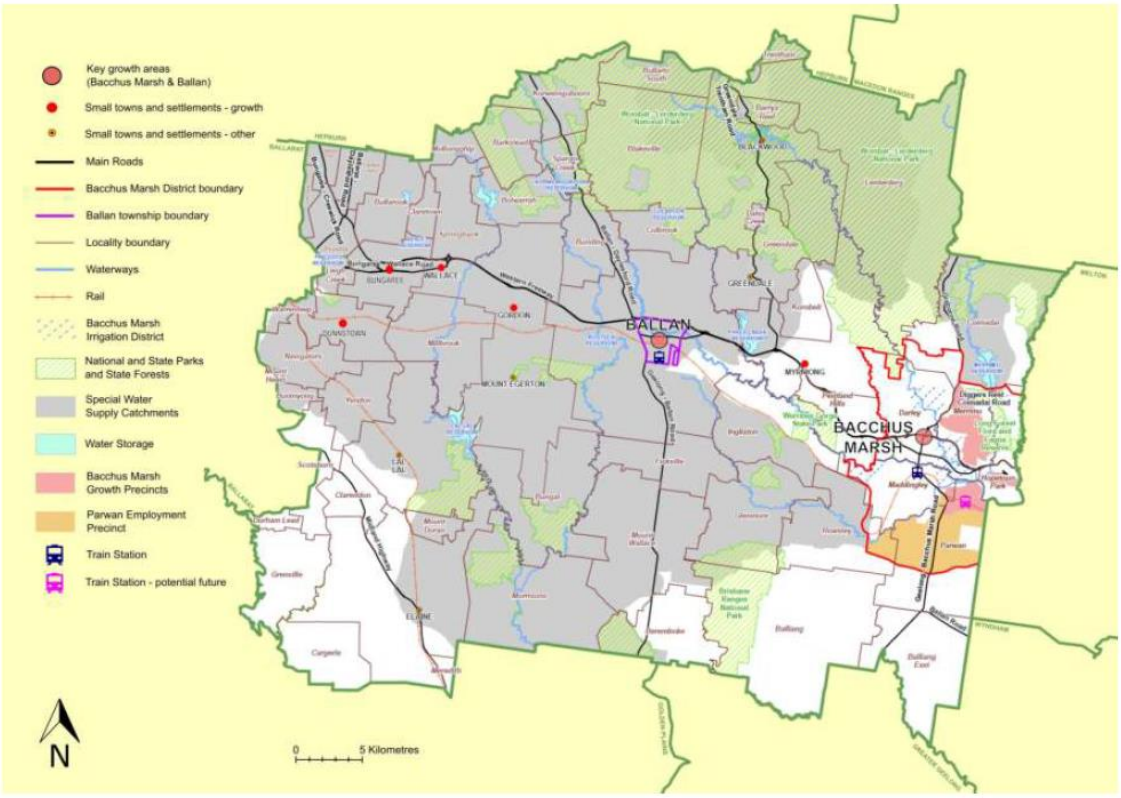
The site is affected by planning, building and legislative controls.

5.1 Planning controls

Table 1 – Planning Clauses affecting the site

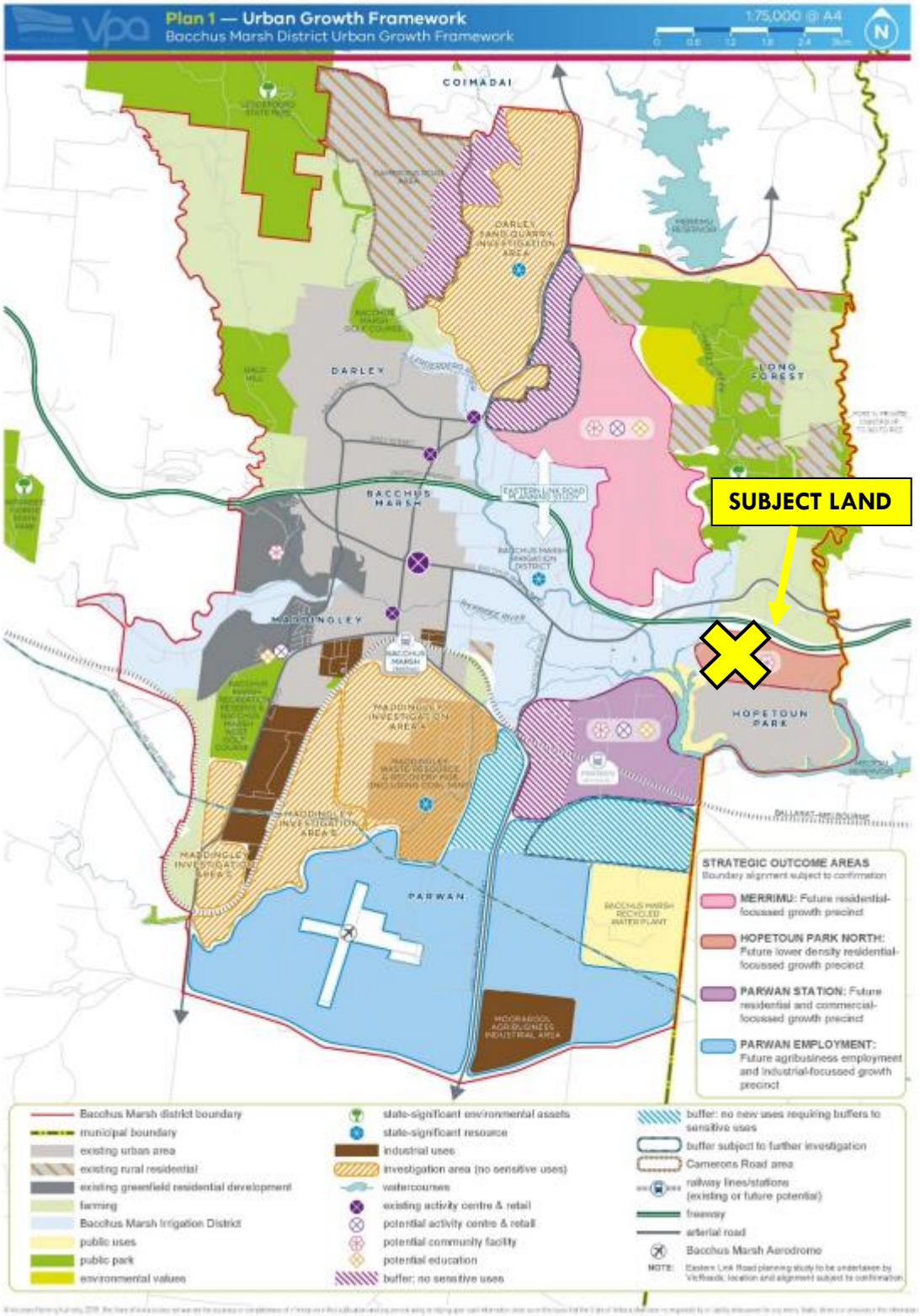
Clause Number	Name	Detail
Planning Policy Framework		
02.03-1	***Strategic Directions - Settlement***	Council's strategic directions for settlement are to: • Direct the majority of growth to Bacchus Marsh and Ballan. • Support the sustainable development of small towns and settlements. Provide for growth consistent with the Bacchus Marsh Urban Growth Framework. Accommodate residential growth within: • The existing settlement boundary of Bacchus Marsh. • Merrimu, Parwan Station and Hopetoun Park.
02.04	***Strategic Framework Plan***	

Moorabool Shire Strategic Framework Plan



11.01-1L-02	***Settlement – Bacchus Marsh***	**Policy application** This policy applies to the land identified on the Bacchus Marsh Urban Growth Framework Plan to this clause, including: • Encourage residential growth including community facilities/amenities within Hopetoun Park where it would. facilitate improved connectivity between Hopetoun Park and the Western Freeway, to and from the west. • Refer to Map 1 – Subject Site
11.02-2L	***Structure Planning in Moorabool - Strategies***	Manage urban growth through Development Plans or Precinct Structure Plans and the implementation of Development Contributions Plans where appropriate. Discourage large subdivisions unless they are in accordance with an approved Precinct Structure Plan or a Development Plan.
13.02-1L	***Bushfire Planning***	Limit subdivision of towns subject to severe bushfire risk and other serious constraints including Korweinbugoora/Spargo Creek, Dales Creek, Blackwood, Greendale and Lal Lal.
13.02-1S	***Bushfire Planning***	*Objective - To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.* *This policy must be applied to all planning and decision making relating to land which is:* • *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.* *The subject site is within a designated Bushfire Prone Area and therefore the policy applies, but **not** within the BMO.*
Existing Planning Zone:		
35.07	***Farming Zone (FZ)*** ***Schedule***	*To implement the Municipal Planning Strategy and the Planning Policy Framework. To provide for the use of land for agriculture.*
Planning Overlays:		
	Outlined below in Table 2	

5.2 Map 1 – Subject Site



5.3 Planning Site Details

Table 2 – List of properties within the study site.

Property No.1	**124 HOPETOUN PARK ROAD, HOPETOUN PARK 3340**
Lot and Plan Number:	Lot 2 PS604556 - 2\PS604556 Lot 2 TP604721 - 2\TP604721 Lot 3 TP604721 - 3\TP604721
Directory Reference:	Melway 335 C11
35.07	Farming Zone (FZ) Schedule
43.02	Design and Development Overlay (DDO) Schedule 2
42.01	Environmental Significance Overlay (ESO) Schedule 8
42.03	Significance Landscape Overlay (SLO) Schedule 1
Property No. 2	**150 HOPETOUN PARK ROAD, HOPETOUN PARK 3340**
Lot and Plan Number:	Lot 1 PS604556
Directory Reference:	Melway 335 C11
35.07	Farming Zone (FZ) Schedule
43.02	Design and Development Overlay (DDO) Schedule 2
42.03	Significance Landscape Overlay (SLO) Schedule 1
Property No. 9	**COWANS ROAD, HOPETOUN PARK 3340**
Lot and Plan Number:	
Directory Reference:	Melway 335 F12
35.07	Farming Zone (FZ) Schedule
43.02	Design and Development Overlay (DDO) Schedule 2

6. BUSHFIRE HAZARD IDENTIFICATION AND ASSESSMENT

The landscape assessment is important to consider as it defines the context of site assessment. The Bushfire Hazard Landscape Assessment has identified risks in the surrounding landscape and has considered the assessment of bushfire hazards on the basis of:

- Landscape type from *Planning Permit Applications Bushfire Management Overlay Technical Guide (DELWP 2017)*,
- Landscape conditions – meaning conditions in the landscape up to 75 kilometers from a site;
- Local conditions – meaning conditions in the area within approximately 1km of a site;
- Neighbourhood conditions – meaning conditions in the area within 400m of a site; and
- The site for the development (see section 7).

6.1 Landscape Type

This report uses landscape types to respond to the objectives of *Clause 13.02-1S Bushfire Planning*. Landscape types assist in determining the relative risk between areas of the State and attempt to provide consistency of landscape risk assessments. To provide consistency the landscape type methodology has been considered for this application.

The methodology to determine the landscape risk is described in *Planning Permit Applications Bushfire Management Overlay Technical Guide (DELWP 2017)*. Landscape types range from 1 to 4, and consider the likely bushfire scenarios, the potential for neighbourhood scale destruction and the availability and access to safer areas.

The subject site in Hopetoun Park west of Hopetoun Park Road is characterised as a landscape type 2 as per the table description below.

Table 3 – Description of Landscape Types (DELWP 2017)

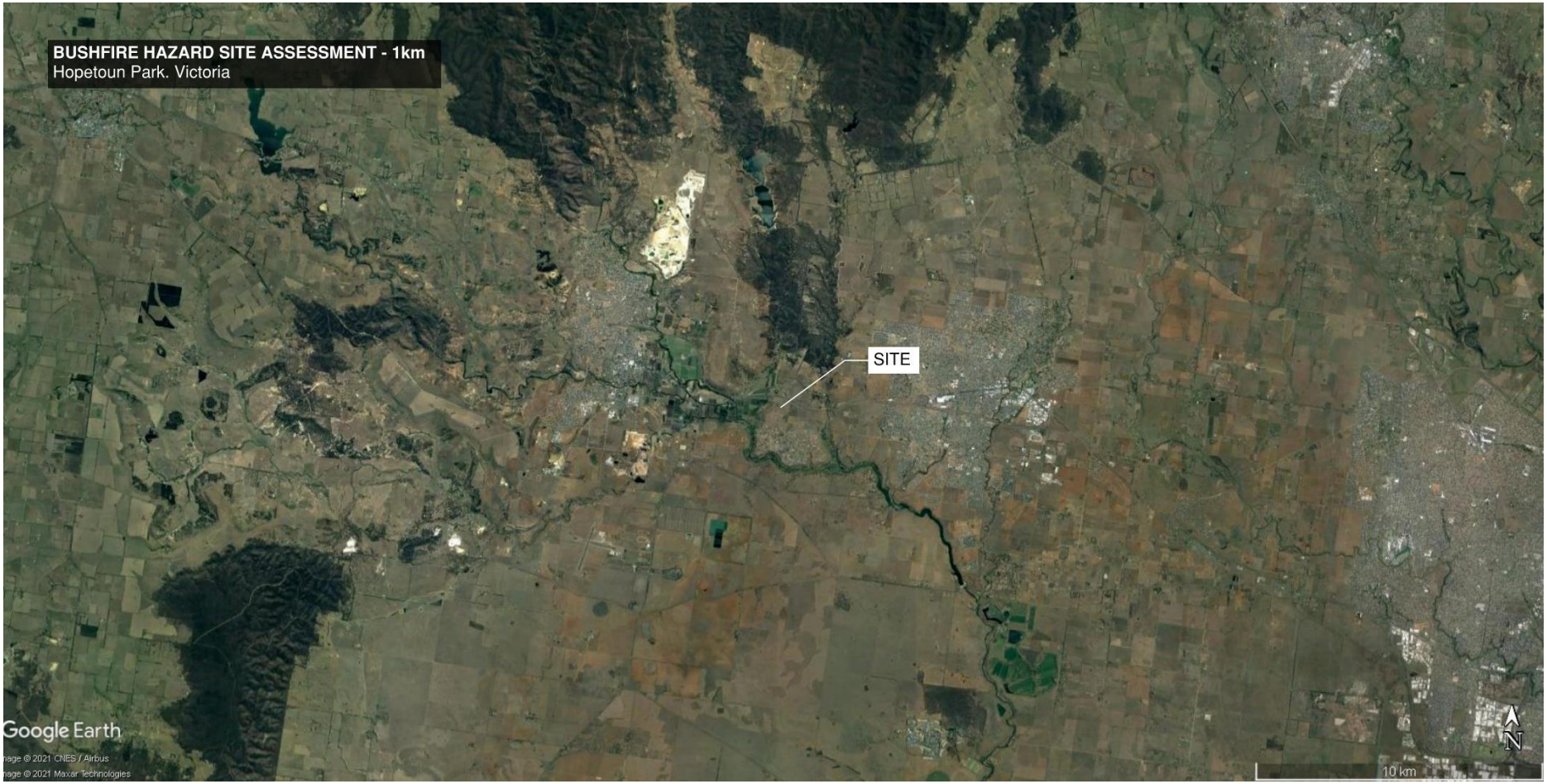
Description of Landscape Types (DELWP 2017)	
The broader landscape and the potential size or scale of a bushfire is an important consideration in the assessment of a planning application. The likelihood of a bushfire, its severity and intensity, and the potential impact on life and property varies depending on where a site is located in the surrounding landscape. To determine these requirements models are used to predict radiant heat from a fire front based on specific inputs and assumptions. Considering the surrounding landscape in bushfire decisions is	***Broader Landscape <u>Type One</u>*** • *There is little vegetation beyond 150 metres of the site (except grasslands and low threat vegetation).* • *Extreme bushfire behaviour is not possible.* • *The type and extent of vegetation is unlikely to result in neighbourhood-scale destruction of property.*

important because the accuracy of the models in reflecting bushfire exposure on a particular site, varies in different landscapes. This is because the scale of a bushfire and its potential destructive power is driven by the characteristics of broader landscape, rather than those characteristics within 150 metres of the site.	• *Immediate access is available to a place that provides shelter from bushfire.*
	Broader Landscape <u>Type Two</u> – Applicable to Hopetoun Park North • ***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.***
	Broader Landscape <u>Type Three</u> • *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 and the site is located in an area that is not managed in a minimum fuel condition.* • *Access to an appropriate place that provides shelter from bushfire is not certain.*
	Broader Landscape <u>Type Four</u> • *The broader landscape presents an extreme risk.* • *Fires have hours or days to grow and develop before impacting.* • *Evacuation options are limited or not available.*

6.2 The Landscape Conditions

- The landscape surrounding the site has been considered in a 50km radius of the proposed development. A landscape assessment of 75km was not deemed necessary.
- The vegetation within the 50km radius was dominated by grasslands in the form of agricultural land use. The landscape has a mixture of uses ranging from grazed grasslands, cropping and hobby farms. The risk profile of these land uses is largely dictated by the type and life stage of the crops and seasonal dryness.
- The You Yangs Regional Park is a forested area to the south of the development and is located approximately 50km south of the site.
- The Brisbane Ranges is to the south west of the site and is 20km from the proposed development.
- The Long Forest Flora and Fauna Reserve is a national park that supports Mallee vegetation and is 598ha in area. It is located approximately 2km north of the site.
- The Lerderderg State Park if located further north of the Long Forest Flora and Fauna Reserve and is 20,180 hectares and is located approximately 10km from the development site.
- The township of Bacchus Marsh is located approximately 4.5km to the west and Melton approximately 2km to the east.

Map 2 – BHSA up to 75km



6.3 Local Conditions – approximately within 1km of the site.

- The development at Hopetoun Park North is bounded by the Werribee River from the west, south and around to the east. The Melton reservoir is located to the east and south east of the site.
- The farming areas which are represented as green areas on the Map 3 border the site to the west and are a combination of orchards and highly irrigated crops such as strawberries and lettuce.
- North of the site is the Western Freeway and the Old Western Highway, both large open roads that would impact a grassfire impacting the proposed development from the north.
- The vegetation along the perimeter of the Western Freeway is slashed and managed during the fire danger period.
- East of the site are grassland hazards land between the township zone of Melton and the proposed development that is currently zoned as 'Green Wedge Zone' and is used for farming. This land would present as a grassland hazard to the proposed development.
- There are areas of woodland vegetation to the east of Hopetoun Park Road that may form a nature reserve in the future. These areas have been classified as woodland vegetation.
- The existing Hopetoun Park development is located to the south of the proposed development and supports residential land use.

6.3.1 Map 3 – BHSA up to 1km

*Noe the plan above shows and indicative layout. Development setbacks are provided in greater detail on the 100m assessment in Map 6 at section 7.4.

6.4 Local Conditions – approximately within 400m Assessment Zone

- The 400m radius shows the immediate bushfire hazards to the proposed development site. The 400m radius shows that the majority of land use surrounding the proposed development is grassland to the north and east, existing development to the south and irrigated farmlands to the west.
- West of the site is a steep ravine that falls down into the creek line which is a tributary of the Werribee River. These steep ravines are not suitable for development.
- The vegetation supported on and along the ravine to the west is grassland and grassland fires are impacted significantly by wind strength and the cured rate (or seasonal dryness) of the surround grasslands rather than topography as is found in most other vegetation types.

6.4.1 Map 4 – BHSA up to 400m

*Note the plan above shows and indicative road network layout. Development setbacks are provided in greater detail on the 100m assessment in Map 6 at section 7.4.

7. BUSHFIRE HAZARD SITE ASSESSMENT

The Bushfire Hazard Site Assessment includes a plan that describes the bushfire hazard within 150 meters of proposed development. The description of the hazard is prepared in accordance with AS 3959-2018 Construction of buildings in bushfire prone areas (Standards Australia) excluding paragraph (a) of section 2.2.3.2 (Vegetation Exclusions).

7.1 Vegetation

The vegetation within the 100 metre assessment area was classified according to method 1 in AS 3959-2018 for the purposes of this assessment.

The method 1 assessment in AS 3959-2018 uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a particular type of fire behavior and these categories or classifications are then used to determine bushfire intensity.

Table 4 – Vegetation Assessment

Vegetation Classification	Vegetation Type (AS 3959-2018 Description)	Site Description
Grassland	***Open Woodland/Low Open Woodland/Open Shrubland/Low Open Shrubland/Hummock Grassland/Closed Tussock Grassland/Tussock Grassland/Open Tussock/Sparse Open Tussock/Dense Sown Pasture/Sown Pasture/Open Herbfield/Spare Open Herbfield:*** *All forms (expect tussock, moorlands), including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.*	The site is surrounded by grassland to the north, east and west. The most exposed aspects are to the north and east as these area's present the longest available fire runs. There are landscape features that would impact a grassland fire impacting from both the north and the east including to the east an area of grassland on the plateau, in the creek line and surrounding the Melton Reservoir. The vegetation to the north along the Western Freeway presents in a low threat condition due to the rocky soil and dry exposed growing conditions. Based on the precautionary principle this strip of vegetation has been classified as grassland, given the fact that this land is not cropped frequently throughout the bushfire season. A grassland fire from the north is unlikely to occur with the intensity assumed in a grassfire run as assumed in AS 3959-2018 based on fuel loads and limited fire runs.

		Figure 1 – Vegetation along Hopetoun Park Road.  Figure 2 – Grasslands on the river flats to the east. 

		Figure 3 – The top of the Plateau at Hopetoun Park.  Figure 4 – Hopetoun Park Road looking towards the Western Freeway to the north. 

		Figure 5 – Western Freeway turnoff towards Hopetoun Park. 
Low Threat	*The following vegetation shall be excluded from a BAL assessment:* *(a) Vegetation of any type that is more than 100m from the site.* *(b) Single areas of vegetation less than 1 ha in area and not within 100m of other areas of vegetation being classified.* *(c) Multiple areas of vegetation less than 0.25ha in area and not within 20m of the site, or each other of other areas of vegetation being classified vegetation.* *(d) Strips of vegetation less than 20m in width (measured perpendicular to the evaluation exposed to the strip of vegetation) regardless of length and not within 20m of the site or each*	The vegetation within the development and along the interface of the Western Freeway will be highly managed. The landscape will be dominated by roads, managed nature strips and built forms (including houses and driveways etc.). The Western Freeway and the Old Western Highway are both located to the northern interface of the proposed development and provide 2 large noncombustible strips through the surrounding landscape.

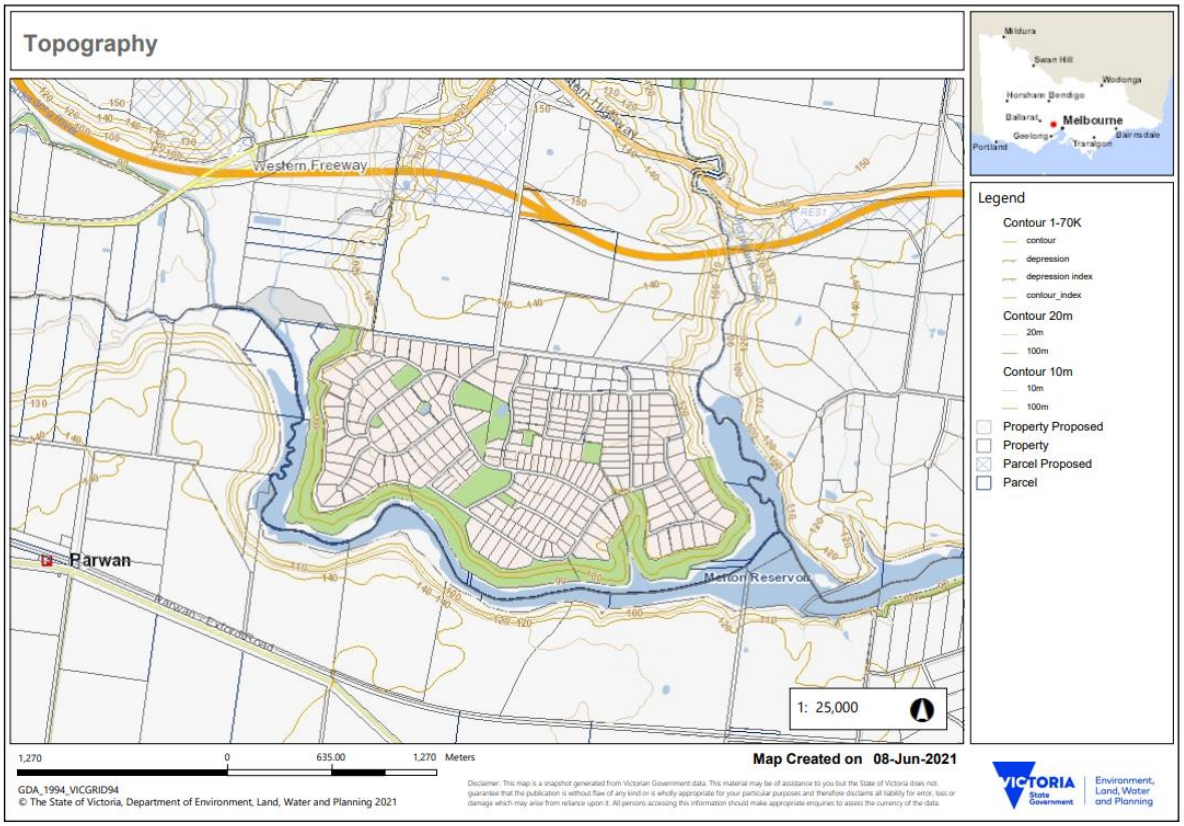
	other, or other areas of vegetation being classified. *(e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.* *(f) Vegetation regarded as low threat due to factors such flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.*	Figure 6 – Orchards to the west.  Figure 7 – Orchards to the west and this image shows the sparse vegetation along the rocky hill face. 

Shrubland	***Closed (low) Heath/Open Heath:*** *Found in wet areas and/or areas affected by poor soil fertility or shallow soils. Shrubs 1m-2m high. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.* ***Low Shrubland****: Shrubs <2m high; greater that 30% foliage cover. Understoreys may contain grasses, Aacacia, Casuarina often dominated in the arid and semi-arid zones.*	
Woodland	***Woodland/Low Woodland****: Trees 10-30m high; 10-30% foliage cover dominated by eucalypts and/or callistris with a prominent grassy understorey. May contain isolated shrubs.*	Within the site are a number of remnant stands of Plains Woodland, some of which are to be retained as part of the open spaces. There are patches of Grey Box Woodland that are to be retained as they are protected. The areas of woodland are small and would not enable a fire front as assumed by AS 3959-2018. These area are recognized as a bushfire hazard and appropriate setback distances have been proposed to ensure future infrastructure is not impacted by a bushfire within these patches of vegetation. Figure 8 – Existing Woodland areas within the site. 

7.2 Topography

All the proposed development is on a plateau and is surrounded by steep slopes to the east and west down to the Werribe River, Melton Reservoir and their tributaries.

7.2.1 Map 5 – Topography of the site



7.3 Bushfire Attack Level (BAL) for the proposed developments

The bushfire attack level (BAL) is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per meter squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

Clause 13.02-1S defines low risk locations as having a radiant heat flux of less than 12.5 kW/m^2 (BAL 12.5). Clause 13.02-1S also states that any strategic planning document, local planning policy or planning scheme amendment that results in the introduction or intensification of development in an area exposed to a radiant heat load greater than a BAL of 12.5 should not be approved.

The risks both within and surrounding the site have been assessed and the following BAL tables demonstrate what setbacks are required to ensure future development is not exposed to radiant heat loads greater than a BAL of 12.5.

The setback distance nominated for each vegetation classification is to the relevant façade of future buildings.

North of the site is the Western Freeway, there are areas of grassland that line the Western Freeway that are on rocky dry soils and the vegetation is largely in a low threat condition due to the harsh growing conditions and soils. Based on the precautionary principle the BAL for the north has been determined from a grassland hazard.

The BAL's and setback distances detailed in Table 7 and 8 are based on setbacks from future buildings. The BAL for a building is based on the setback from the façade of a building not from the property boundary.

The eastern interface of the subdivision is exposed to woodland and grassland vegetation at different sections. Where the development is adjacent to woodland a setback distance of 33m from the hazard is required. Where the interface is from grassland the setback distance is required to be 19m.

Table 5 – BAL determination table.

Orientation	Highest threat vegetation	Slope under classifiable vegetation	Setback Distance from future dwellings	Bushfire Attack Level (BAL)
North	Grassland	Downslope 0-5°	22m	12.5
East	Woodland	Flat	33m	12.5
East	Grassland	Flat	19m	12.5
West	Grassland	Downslope 15-20°	32m	12.5

Table 6 – BAL for Woodland vegetation within the site

Orientation	Highest threat vegetation	Slope under classifiable vegetation	Setback Distance from the woodland vegetation to future dwellings.	Bushfire Attack Level (BAL)
All Aspects	Woodland	Flat	33m	12.5

There are areas of open space around the existing woodland vegetation, where these areas of open space are not managed to a low threat condition the separation distance from the open space should be 33m. If the open space is managed to a low threat condition, then they can be included in the 33m setback distance.

7.4 Map 6 – Bushfire Attack Level (BAL) Assessment – 100m Assessment Zone

Note the setback to achieve a BAL of 12.5 to the west requires a 32m setback from the property boundary. The vegetation within the 32m lineal reserve will be managed to a low threat condition.

The setback from the eastern boundary includes Hopetoun Park Road (bitumen) and the road reserve on the western side of Hopetoun Park Road as this area will be managed to a low threat condition. A setback of 33m is required from all woodland areas including east of Hopetoun Park Road and within the woodland reserve within the site. The setback from grassland areas to the east of Hopetoun Park Road is 19m and is within Hopetoun Park Road (bitumen) and the road reserve to the west of Hopetoun Park Road.

The setbacks from grassland to the north requires a 22m setback from the property boundary.

The setbacks are required to the interface of all future dwellings not to the property boundary.

The Bushfire Hazard Map above shows a red dotted line indicating the perimeter of the study site. The map also indicates proposed indicative internal roadways and areas of protected woodland and open space reserves.

8. FIRE BEHAVIOUR

8.1 Bushfire History of the Area

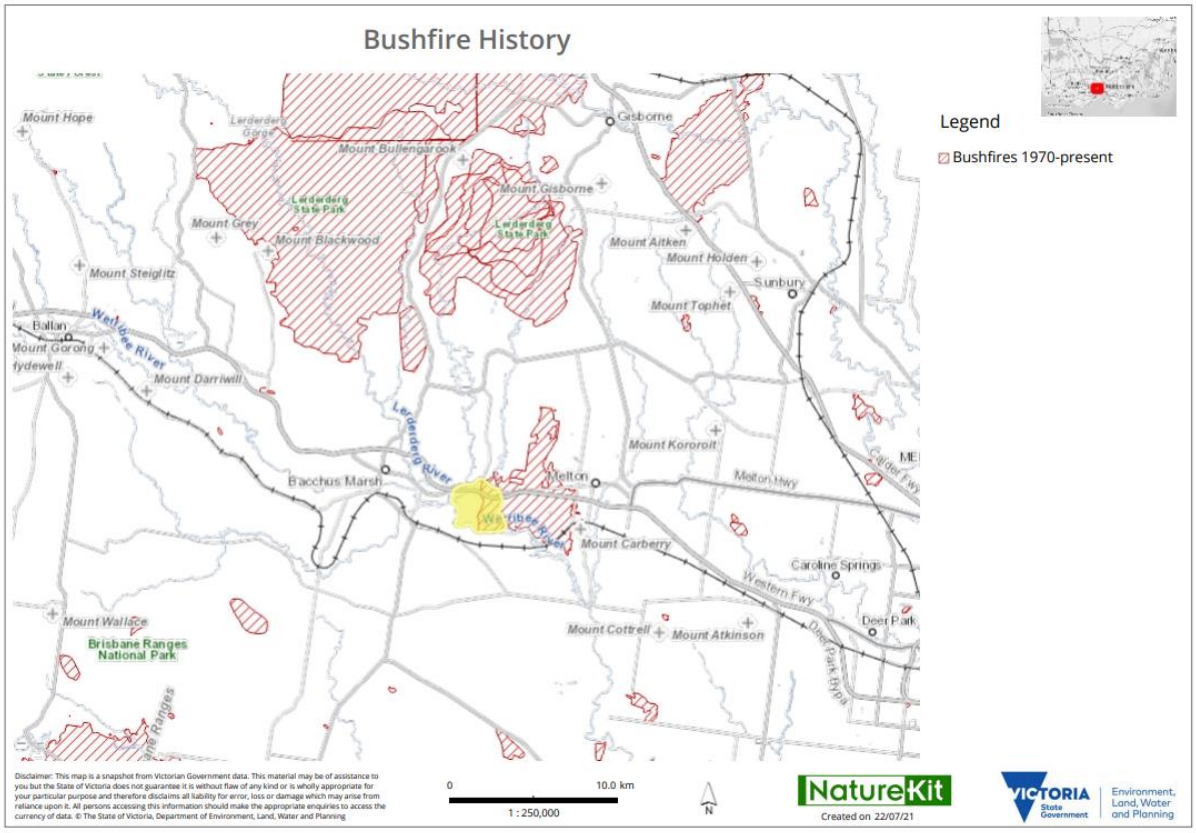
The map below (Map 3) sourced from NatureKit shows bushfires within the surrounding landscape since 1970. This map shows a significant fire to the east of the site in 1985.

The study of historical bushfires within the surrounding landscape is important as it demonstrates typical fire weather and resulting fire footprints in Southern Victoria.

Typically, bushfires are started in southern Victoria under a strong, hot, dry northerly wind and are pushed in a southerly direction. When the south westerly cold front is introduced, it turns the edge or flank of a fire in the head fire and pushes the fire front in a north westerly direction. The introduction of the south westerly cold front often introduces unstable conditions to a fire front and can increase the intensity of a large landscape bushfire.

The site was impacted by the 1985 fires, it is important to note that at this time the Melton West area had not been developed and there were extensive areas of grassland. A long fire run through unmanged grassland to the east would be restricted due to the growth around Melton.

8.1.1 Map 7 – Bushfire History of the surrounding area



8.2 Potential Fire Behavior

Bushfire behavior is influenced by three key factors; climate, topography and fuel availability. The landscape surrounding the site is dominated by grassland fuel loads and the topography of the landscape is undulating.

Table 7 – Bushfire attack mechanisms and appropriate inputs for models

	Standard Assessment Inputs and Considerations	**Risk Based Assessment Inputs and Considerations**
Consideration of all bushfire mechanisms:	The AS 3959-2018 methodology assumes that distance to classification determines the radiant heat exposure and associated BAL. The BAL determines the construction standard. The higher the BAL the greater a developments resilience to bushfire. AS 3959-2018 does not have any regard for convective heat or bushfire induced winds.	Consider and assess each bushfire attack mechanism independently considering the unique specifics of the site. The bushfire attack mechanisms to be assessed include: • Radiant Heat Exposure • Convective Heat Exposure • Ember Attack • Bushfire Induced Winds.
Analysis of the bushfire model inputs:	**Forest Fire Danger Index (FFDI)** The FFDI is used nationally as a measure for fire weather. It uses the drought factor (seasonal dryness), relative humidity, temperature and wind speed to establish the fire weather severity. The BMO and AS 3959-2018 assumes an FFDI of 100.	The assessment has assumed an FFDI of 100 as it is the state-based assumption.
	Flame Temperature The BMO and AS 3959-2018 assumes a flame temperature of 1090K.	Use the state-based assumption.
	Fuel Loads In AS 3959-2018 assumes fuel loads within grasslands.	The assumed fuel loads within AS 3959-2018 are deemed appropriate.

Table 8 – Bushfire Attack Mechanisms

Attack Mechanism	Sites Risk and Response
Radiant Heat Exposure	Future development of the site can be designed to ensure that all future development will not be exposed to radiant heat loads greater than 12.5 kW/m^2.
Convective Heat Exposure	The landscape does not have the topography or fuel loads to enable the formation of convection columns.
Ember Attack	Ember attack is not likely to have a large influence as there are no large areas of woodland or forest within 1km of the site. Ember attack from vegetation within the Long Forest Road Nature Reserve is possible but not likely to have a large impact on the surrounding landscape. Ember attack is the most common cause of house loss in bushfires and this threat is considered low within the surrounding landscape and thus contributing to the sites low risk rating.
Bushfire Induced Winds	The development is likely to be impacted by high winds as it is located on a plateau surrounded by steep gullies. Bushfire induced winds would be associated with a grassfire and they could increase in intensity, however, it is not considered to be significantly higher than a severe storm event.

9. BUSHFIRE MITIGATION MEASURES PROPOSED

The development site is not considered to be in a landscape exposed to a high bushfire risk. The dominant bushfire hazard is grassland and through future subdivision design these risks can be treated to an acceptable level.

The following mitigation measures are recommended to improve *protection of human life*.

1. **Construction Standards**

   The minimum construction standard in a Bushfire Prone Area is a BAL of 12.5. All future construction of dwellings would need to comply with AS 3959-2018 Construction in Bushfire Prone Areas.

   Houses at the interface of the grasslands will likely be classified as a BAL 12.5, however, lots within the central areas of the subdivision will likely be determined to be BAL-Low, however, the minimum construction standard will be BAL 12.5.

   The subdivision will be designed to ensure that lots at the interface of grassland areas have an appropriate setback from the hazard.

2. **The management of vegetation within the site**

   The preliminary BAL assessment indicates setbacks required to ensure future development is mitigated against radiant heat loads greater than 12.5 kW/m^2. The setback distances are indicated in tables 7 and 8 of this document, notwithstanding that technically the BMO does not apply to the site.

   The vegetation within the setbacks is recommended to be managed as per defendable space requirements from the Bushfire Management Overlay (BMO).

   Defendable space is where vegetation (and other flammable materials) are modified and managed in accordance with the following requirements:

   - 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 meters of a building, flammable objects must not be located close to the vulnerable parts of the building.
   - Plants greater than 10 cm in height must not be placed within 3m 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 5sq. 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 meters.
   - There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

3. Water Supply

The site will meet the current CFA objective for the water supply and access for hydrants. The CFA's objective is; 'Water is available to every lot in a subdivision for firefighting purposes in locations and amounts to enable firefighters to safely and efficiently carry out an initial attack on a residential building fire' (Requirements for water supplies and access for subdivisions in residential 1 and 2 and Township Zones 2006).

4. Access and Egress

The site is accessed via the Old Western Freeway. Both roads run between Melton to the east and Bacchus Marsh to the west. Access to Melton is via the Western Freeway and access to Bacchus Marsh is via the Old Western Freeway. Both roads are wide open roads that enable high volumes of traffic.

In an emergency there will be low threat areas centrally within the development. Typically retreat one street or row of houses back from a grassfire will provide protection.

5. Development Planning

The future development would include areas such as:

- sports facility such as an oval,
- early learning / childcare centre, and
- a small retail precinct.

6. Perimeter Roads

The subdivision layout and design will provide a perimeter road adjoining the grassland vegetation to the western escarpments and the Western Freeway to the north to support fire fighting and to provide further separation from the grassland hazard. The Western Freeway will provide access for fire fighting vehicles to an exposure to the north and a perimeter road to the north is proposed in line with CFA requirements.

A perimeter road is not required to the south as the subdivision adjoins the existing residential development at Hopetoun Park.

A perimeter road around the proposed conservation area is also proposed to mitigate the impacts of an ignition within this vegetation.

The perimeter road to the north has been requested by the CFA and is included as a condition in the Development Plan Overlay.

10. DESIGN GUIDELINES – SETTLEMENT PLANNING AT THE BUHFIRE INTERFACE (DELWP 2020)

The consideration of bushfire impacts and hazards when designing a settlement plays a significant role in passive bushfire mitigation. The site has been addressed against a criteria developed by DELWP in 2020 for new settlement areas at the bushfire interface.

The principles adopted in the Guideline can be applied within any bushfire landscape. However, they have been developed to typically address an appropriate design response in a landscape where it has been assessed as Type 1 or 2 in the landscape bushfire assessment.

The development site at Hopetoun Park is considered to be a Type 2 landscape type as it is only exposed to grassland hazards surrounding the site and there are some small areas of woodland within the site, however, they would not enable long fire runs with high fuel loads.

Table 9 – Design Guidelines – Settlement Planning at the Bushfire Interface (DELWP 2020)

Part 1 - Form and structure of settlements.		
1.1	**Consider the bushfire hazard in directing growth.**	This report assessed the bushfire hazards surrounding the site. The vegetation at the interface of the development is grassland both the north and west. The dominant bushfire hazard to the east is also grassland although there is a small area of woodland vegetation. Easterly winds are not generally associated with extreme fire behaviour. North of the site are fragmented areas of grassland vegetation due to the Western Freeway and the Old Western Highway, both, wide sealed roads that present as a significant fire break. North of the site is the Long Forest Nature Conservation Reserve that is approximately 1.2km from the site and will not have a significant impact on the surrounding vegetation. West of the site are the orchards and market gardens along the Werribee River. This vegetation is irrigated and does not present as a bushfire hazard. There are small areas of grassland along the escarpment the separates the orchards from the proposed settlement, however, these areas would not enable long fire runs and a permitter road will separate the hazard from any residential settlement to this interface.
1.2	**Consider the distribution of uses in the settlement.**	The distribution of uses within the settlement needs to be considered. If the development includes a vulnerable use (aged care facilities, retirement villages, child care centres, education centres or places of assembly) and these should be located centrally within the site to ensure they are not exposed to hazards at the interface. The site includes a number of areas where remnant patches of vegetation are to be retained. There areas of vegetation are limited in area and are not likely to enable a fire front as assumed in AS 3959-2018. As a precautionary measure defendable space distances around

		these areas of woodland are proposed to mitigate the associated bushfire risk. Hazardous uses such as petrol stations should not be located at the north western or south western interfaces of a development. There are no hazardous uses proposed within or surrounding the proposed development.
1.3	**Consider lot sizes in settlement layout.**	Lot sizes in settlement may impact the degree of vegetation management undertaken with the settlement, where, larger lots may not be as highly managed and may allow for fires to travel through a site or enable spot fires to develop. Spot fires are generally started from embers landing within a subdivision. Embers are generally generated from forest and woodland vegetation. There are no large areas of forest or woodland vegetation that would enable a 'steady state' bushfire to develop within 1km of the site. This significantly reduces the likelihood of ember attack within the subdivision. An ignition of the woodland vegetation within the proposed internal open space areas would not enable a significant fire front and ember densities from this vegetation is not likely to be significant as the eucalypt species does not have a high bark hazard. The site is largely surrounded by grassland, grassland does not cause embers or spot fires. Grassland hazards are largely influenced by the cured state (dryness), heigh of the grassland, consistency of the fuel and wind speed. The grassland hazards surrounding the site would be mitigated by a combination of vegetation management, building setbacks and perimeter roads. The optimum lot size for residential allotments is considered to be between 800-1,200m^2 (DELWP 2020). These lot sizes provide minimum open space on private land for fuel sources whilst enabling good separation between individual structures. Larger lots sizes of approximately 0.2ha are often considered in regional Victoria where there are no reticulated services. These lots sizes are a good transitional lot size at the interface of settlements. Vegetation management requirements on private land can reduce the risk that these larger residential lots can present.
1.4	**Consider vegetated areas within a settlement.**	It is assumed that residential areas within the subject site will have highly managed gardens. Public open space areas can be strategically managed to ensure that walking tracks, playgrounds, retention and detention basins and outdoor sporting fields can be strategically located to enhance a strategic bushfire buffer between residential development and unmanaged vegetation.

		A mechanism is required to ensure that residential lots within specified bushfire setback areas manage their gardens to a low threat condition. It is proposed that interface areas such as the lineal reserve to the west and the road reserve to the north and east will be managed to a defendable space condition as per Table 6 to Clause 53.02. This will ensure that a grassfire approaching the site will be mitigated from broaching the settlement interface.
Part 2 - The Settlement interface with the bushfire hazard.		
2.1	**Apply the required development set back.**	A future subdivision will need to provide a perimeter road where one does not exist. The perimeter road and managed road reserve either side of the road will reduce the radiant heat exposure to the interface or residential areas and will provide an area for emergency services to undertake suppression activities. The Western Highway runs along the northern interface of the proposed settlement and is considered to play a significant role in reducing a large grassfire from impacting the site. There is approximately an area grassland between the Western Freeway and the settlement interface that would enable a fire run of approximately 160m. This would not enable a significant fire front to establish and treatment of the interface areas of a steel fence and/or vegetation management would mitigate the grassland hazards to this aspect. As a precautionary measure a perimeter road is proposed along the northern boundary of the site between the western highway and the interface of development. All future development will ensure that radiant heat exposures do not exceed 12.5 kW/m^2. The proposed setbacks from all aspects will reduce the radiant heat exposure to 12.5kW/m^2. Where the interface areas are exposed to grassland hazards a separation distance of 50m would enable a BAL Low. A BAL Low can be achieved to the majority of the internal areas of a future development at this site. Research undertaken following historical bushfire events in Australian have found that only 10% of buildings were lose where they were located between >100m-200m of bushland and 5% between >200m-700m of bushland and no buildings were lost beyond 700m from bushland (Chen & McAneney (2004,2010). It is important to note that no development within the future development of this site will be within 700m of large areas of bushland. Historically house loss has occurred at the interface of grassland, however, the impacts of grassland can be mitigated through building setbacks, vegetation management and perimeter roads.
2.2	**Design the settlement interface.**	The location of public open space such as football ovals, tennis, netball and basketball courts, bike riding paths and walking track can all enhance the management of the interface areas by providing areas void of vegetation or areas of well managed vegetation.

		The future development of this site may include infrastructure such as storm water storage (retention and detention basins), sports ovals and bike / walking paths. The strategic placement of infrastructure can be used to increase the separation distance between the interface areas of unmanaged vegetation and residential development. The settlement design of the proposed development includes appropriate management of the grassland interface to reduce the radiant heat exposure to 12.5kW/m^2 and ensure that future development around the internal areas of remnant vegetation are not exposed to radiant heat exposures greater than 12.5kW/m^2.
2.3	**Access and egress.**	The design of the road network within a subdivision provides residents with a safe network or roads to move away from the bushfire hazard. The road network also enables emergency services and fire agencies with safe areas to undertake suppression activities. An effective road network should include the following design principles: • Ensuring the spacing of roads leading away from the hazard are no more than 120 metres apart (on average). • Designing road widths to meet planning scheme requirements and those of the relevant fire authority. • Providing multiple roads. At least two different roads leading away from the hazard edge should be available to each lot. • Ensuring travel to and from a location is not alongside a bushfire hazard and providing multiple access and egress routes within developed areas to minimise the use of perimeter roads in the event of a bushfire. • Effectively connecting roads to the broader road network within the settlement.
Part 3 – Bushfire protection measures at the settlement scale.		
3.1	**Consider vegetation management.**	Vegetation management is particularly important where a settlement area is exposed to ember attack. Ember attack at this site is not considered to be high due to the limited areas of woodland and forest vegetation within 1km of the site. The remnant areas of vegetation within the site are dominated by the native Grey Box (*Eucalyptus microcarpa*). Grey Box has a coarsely fibrous bark and is considered to have a bark hazard rating of 'high' in accordance with the Overall fuel hazard assessment guide 4th edition (DSE 2010). A bark hazard of high equates to a fuel load of 2 t/ha which is very low on the scale of hazards where a stringybark tree (not present at this site) has a bark hazard of Very High or Extreme which has a fuel load of 5-7t/ha. The bark hazard of surrounding vegetation is very important to understand as this will indicate the likely intensity of ember attack. The dominant eucalypt in the surrounding landscape is the Grey Box

		species. The bark on this species does not have a bark hazard that hinders fire control (DSE 2010). The ember risk is also increased where the surrounding terrain is complex and embers can be lofted up steep hills and lofted into settlements. The topography under areas of woodland or forest within 1km of this site do not occur on steep slopes. Strategic planning proposals should ensure planning controls or other mechanisms are put in place to ensure that vegetation management can be adequately implemented to mitigate the unlikely occurrence of ember attack.
3.2	**Consider bushfire construction standards**	All building work must comply with the Building Act 1993, Building Regulations 2006 and the National Construction Code (the NCC) unless specifically exempted. The NCC calls upon the *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire Prone Areas* for Class 1, 2 and 3 buildings and associated Class 10a (e.g. deck) building works. The standard AS 3959-2018 specifies the requirements for the construction of buildings in bushfire prone areas to improve their resistance to bushfire attack from embers, radiant heat, flame contact and combinations of the three attack forms. Strategic design of a future development at this site will ensure compliance with Clause 13.02-1S that requires minimum radiant heat exposures of 12.5kW/m^2. Where possible the strategic design should attempt to reduce the radiant heat to BAL Low exposures as discussed in section 2.1 and 2.2 of this table.
3.3	**Consider fences and other localised fuel sources.**	When council considers requirements for fencing of new allotments the following should be considered: • Timber fences and brush fencing add to fuel loads throughout a settlement and are discouraged. • Steel fences are ideal as they slow the spread of bushfire through a settlement and act to attenuate radiant heat.

11.RESPONSE TO CLAUSE 13.02-1S – BUSHFIRE PLANNING

11.1 Policy Application

Clause 13.02-1S must be applied to all planning and decision making under the Planning and Environment Act 1987 relating to land that is:

- *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.*

11.2 Objective

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

11.3 Strategies: Protection of human life

Give priority to the protection of human life by:

Strategy	Consideration
Prioritising the protection of human life over all other policy considerations.	The bushfire risks to the site have been considered at the re-zoning stage of the development. The site is not in a landscape at a high risk from bushfire and central areas of the site can provide areas exposed to low levels of radiant heat.
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 proposed development is within the defined settlement boundary identified on the Bacchus Marsh District Urban Growth Framework. The Hopetoun Park North development provides low risk locations that enable existing residents of Hopetoun Park and new residents with areas at a low radiant heat exposure which enables human life to be better protected from the effects of a bushfire. Access to low threat areas within the subdivision will not require travel through unmanaged vegetation.
Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.	The bushfire risk of the proposed site is being considered at the rezoning and permit stage. The site is **not** within the BMO and the details within the body of this report demonstrates the proposed subdivision has considered the implication of bushfire risk and is deemed appropriate. Section 6.2 of this document propose bushfire mitigation measures to

	further reduce the vulnerability of the proposed development.

11.4 Strategies: Bushfire Hazard Identification and Assessment

Identify bushfire hazard and undertake appropriate risk assessment by:

Strategy	Consideration
Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard	The best available science has been applied to this application.
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	The site is within the Bushfire Prone Area of the state.
Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard	The BMO is not applied to the site. There are no large areas of unmanaged vegetation within close proximity to the site and the application of the BMO is not deemed necessary.
Considering and assessing the bushfire hazard on the basis of: • ***Landscape conditions – meaning conditions in the landscape within 20 km (and potentially up to 75km) of a site.*** • ***Local conditions – meaning conditions in the area within approximately 1km of a site.*** • ***Neighbourhood conditions – meaning conditions in the area within 400m of a site.*** • ***The site for the development.***	Section 6 and 7 of this report address the landscape, local and neighborhood conditions.
Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.	Emergency services have been consulted through the settlement planning process. Comments were received from the CFA on 11/7/22 and a meeting was conducted. A response was then provided to the CFA comments on 8/12/22, and a further meeting sought, and this report now updated as a further response.

	The CFA and council were consulted on the 23/05/23 regarding the proposed draft bushfire clauses in the DPO schedule and the DDO Schedules.
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.	The application includes appropriate bushfire protection measures, including: subdivision layout, location of perimeter roads, appropriate setback distances to achieve a BAL of 12.5, minimum construction requirements of Bushfire Prone Areas and the provision of areas exposed to a BAL of Low.
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.	This report demonstrates satisfactory compliance with policy and bushfire mitigation measures.

11.5 Strategies: Settlement Planning

Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:

Strategy	Consideration
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 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).	This report demonstrates that through appropriate subdivision design future dwellings will not be exposed to radiant heat levels that exceed 12.5kW/m^2.
Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire.	The development site is exposed to grassland hazards at the interface and small areas of remnant woodland within the site. Area's are determined to be a BAL -LOW when they are greater than 50m from a grassland hazard and 100m from woodland hazards. Internal areas of a future subdivision are likely to be exposed a BAL of LOW. Access to areas of BAL-LOW will be a short drive and will not require travel through high fuel loads.

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.	There will be no increase in risk to people or property as the result of the proposed 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.	There will be no net increase in risk to people or property as the result of the future development if the subdivision design and layout responds to the surrounding bushfire hazards. All future dwellings within the site will be required to be constructed to a BAL of 12.5 as a minimum.
Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behavior it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.	The bushfire hazards to the proposed site can be addressed through subdivision design and construction requirements and setback distances to ensure radiant heat exposures do not exceed 12.5kW/m^2.
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.	The proposed northern development area of Hopetoun Park is currently a farming area and supports grassland vegetation. The development of this area would provide a larger settlement area of Hopetoun Park and is considered low risk. Alternative low risk locations have not been considered as this site is considered to be a low risk.
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 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).	The development of a future subdivision within the site can be designed to ensure all building envelopes achieve a BAL of 12.5 or BAL-Low.

11.6 Strategies: Areas of biodiversity conservation value

Strategy	Consideration
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 important areas of biodiversity.	The biodiversity impacts of the site have been assessed by a Senior Ecologist from Nature Advisory Pty Ltd and there were found to be areas of Yellow Box Woodland within the site. These areas are proposed to be retained and protected within the subdivision. Appropriate design and setback distances from these areas of woodland will ensure

	they do not expose future development to radiant heat loads greater than 12.5kW/m^2.

11.7 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.*
- *Child care 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:

Strategy	Consideration
Consider the risk of bushfire to people, property and community infrastructure.	The bushfire risk to people and property has been addressed as part of this application.
Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.	The proposal includes appropriate bushfire protection from the surrounding hazards.
Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.	The biodiversity impacts have been considered by a qualified ecologist and the subdivision design has ben influenced by their findings.

11.8 Policy Guidelines

Consider as relevant:

- *Any applicable approved state, regional and municipal fire prevention plan.*

11.9 Policy Documents

Consider as relevant:

- *AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).*
- *Building in bushfire-prone areas – CSIRO and Standards Australia (SAA HB36-1993, 1993)*

- *An bushfire prone area map prepared under the Building Act 1993 or regulations made under the Act.*

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13. APPENDICES

12.1 Appendix 1 – The definition of 'Low Threat Vegetation'.

There are two different definitions of 'Low Threat' vegetation. One is detailed within the planning scheme (Clause 53.02 Bushfire Planning) and another in AS 3959-2018.

Within the body of this report the existing fuel is assessed in accordance with AS 3959-2018 and the report recommends areas to be managed as 'low threat vegetation' the definition for how to manage vegetation to a low threat condition is not defined in AS 3959-2018 and the definition from Clause 53.02 for defendable space is used to guide landscaping and vegetation management within the site that is nominated to be 'low threat'.

The two definitions are detailed below;

1. Low threat vegetation – AS 3959-2018

The definition in AS 3959-2018 includes the following:

(g) Multiple areas of vegetation less than 0.25ha in area and not within 20m of the site, or each other of other areas of vegetation being classified vegetation.
(h) Strips of vegetation less than 20m in width (measured perpendicular to the evaluation exposed to the strip of vegetation) regardless of length and not within 20m of the site or each other, or other areas of vegetation being classified.
(i) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.

Vegetation regarded as low threat due to factors such flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

2. Low threat vegetation (Defendable Space) – Clause 53.02

The definition of 'Low Threat' vegetation is detailed in Clause 53.02 for sites within the Bushfire Management Overlay (BMO). Clause 53.02 refers to areas of low fuel loads around buildings as areas of Defendable Space. The vegetation management criteria of defendable space include the following:

- *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 square 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.*