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Bushfire Planning Assessment
Solar energy facility

1377 Plunkett Road, Barnawartha

Prepared for:

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Version Control

Version	Date	Comment	Name
v0.1	21 February 2020	Draft report for CFA engagement	Kevin Hazell Town Planner
v0.2	25 February 2020	Preliminary report for client review	Kevin Hazell Town Planner
v0.3	29 April 2021	Further draft report for CFA engagement	Kevin Hazell Town Planner
v1.0	30 July 2021	Final Report to accommodate final 5MW or less proposal	Kevin Hazell Town Planner

Bushfire Planning

Bushfire Planning is a town planning service that works with public and private sector clients to understand and apply planning scheme bushfire policies and requirements. It is led by Kevin Hazell who is a qualified town planner with extensive experience working on bushfire planning at State and local levels in Victoria.

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Disclaimer

The views expressed in this report are those of the author. Information in this document is current at the time of writing. While all professional care has been undertaken in preparing the document, the author accepts no liability for loss or damages incurred because of reliance placed upon its content.

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1.0 INTRODUCTION

1377 Plunkett Road, Barnawartha (the 'subject site') is proposed to be developed with a Solar energy facility. This report provides a bushfire assessment of the proposal for the purpose of planning scheme decision making.

1.1 The subject site and surrounds

The subject site is located at 1377 Plunkett Road, Barnawartha. The bushfire hazard landscape assessment (Section 3) and bushfire hazard site assessment (Section 4) provides more information about the site and its surrounds. Photos of the subject site are included in Attachment 2.

1.2 The proposal

The proposal is to use and develop the land for a Solar energy facility (which is nested under Energy generation facility / Renewable energy facility).

> *Solar energy facility*
> *Land used to generate electrical energy using ground mounted photovoltaic and thermal technology structures, where the primary role is to export power to the electricity network. It does not include the generation of electricity principally for an existing use of the land.*

No batteries are proposed as part of the development.

This report is based on instructions that the facility has a capacity of 5MW or less. A solar facility up to and including 5MW is referred to in CFA guidance as a 'micro solar farm'. The recommendations in this report only apply where the proposal is 5MW or less.

Plans of the proposal are included in Attachment 3.

1.3 Planning scheme controls that apply to the subject site

The Indigo Planning Scheme (the 'planning scheme') applies to the subject site. The subject site is within the Farming Zone (FZ) and the Bushire Management Overlay (BMO) applies to part of the land. No planning permit is required to use or development the land for a Solar energy facility under the BMO.

c53.13 Renewable energy facility (other than wind energy facility) applies to the application. It sets out application requirements and decision guidelines for planning applications.

The subject site is within a declared bushfire prone area under the Building Regulations 2018, as referenced in the planning scheme at *c13.02-1S Bushfire*.

A planning property report is included in Attachment 4.

1.4 Purpose of this report

This report has been prepared to inform consideration of bushfire as part of a planning permit application. It does this by considering the requirements in *c13.02-1S Bushfire* which requires:

- The bushfire risk to be assessed. This report uses a bushfire hazard landscape assessment and a bushfire site assessment, as described in *Planning Permit Applications Bushfire Management Overlay Technical Guide 2017 (DELWP),* to inform these assessments.
- An assessment against policies contained in *c13.02-1S Bushfire.*

The report further considers *c53.13 Renewable energy facility (other than wind energy facility),* which is a particular provision in the planning scheme. The report also considers published advice provided by DELWP and CFA on suitable planning responses for renewable energy facilities.

FIGURE 1A: LOCALITY AERIAL PHOTO

FIGURE 1B: LOCALITY MAP

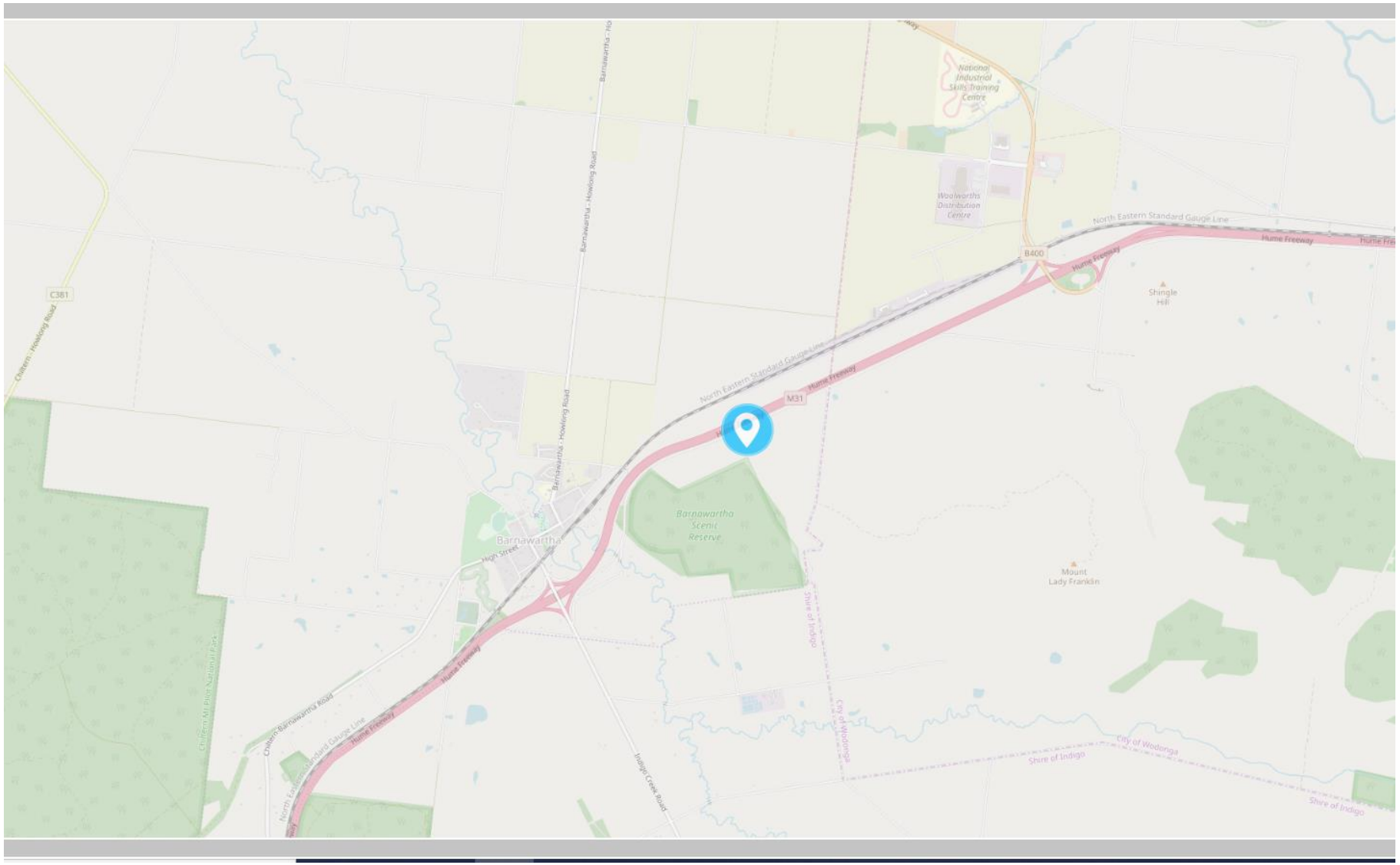


FIGURE 1C: ZONE MAP

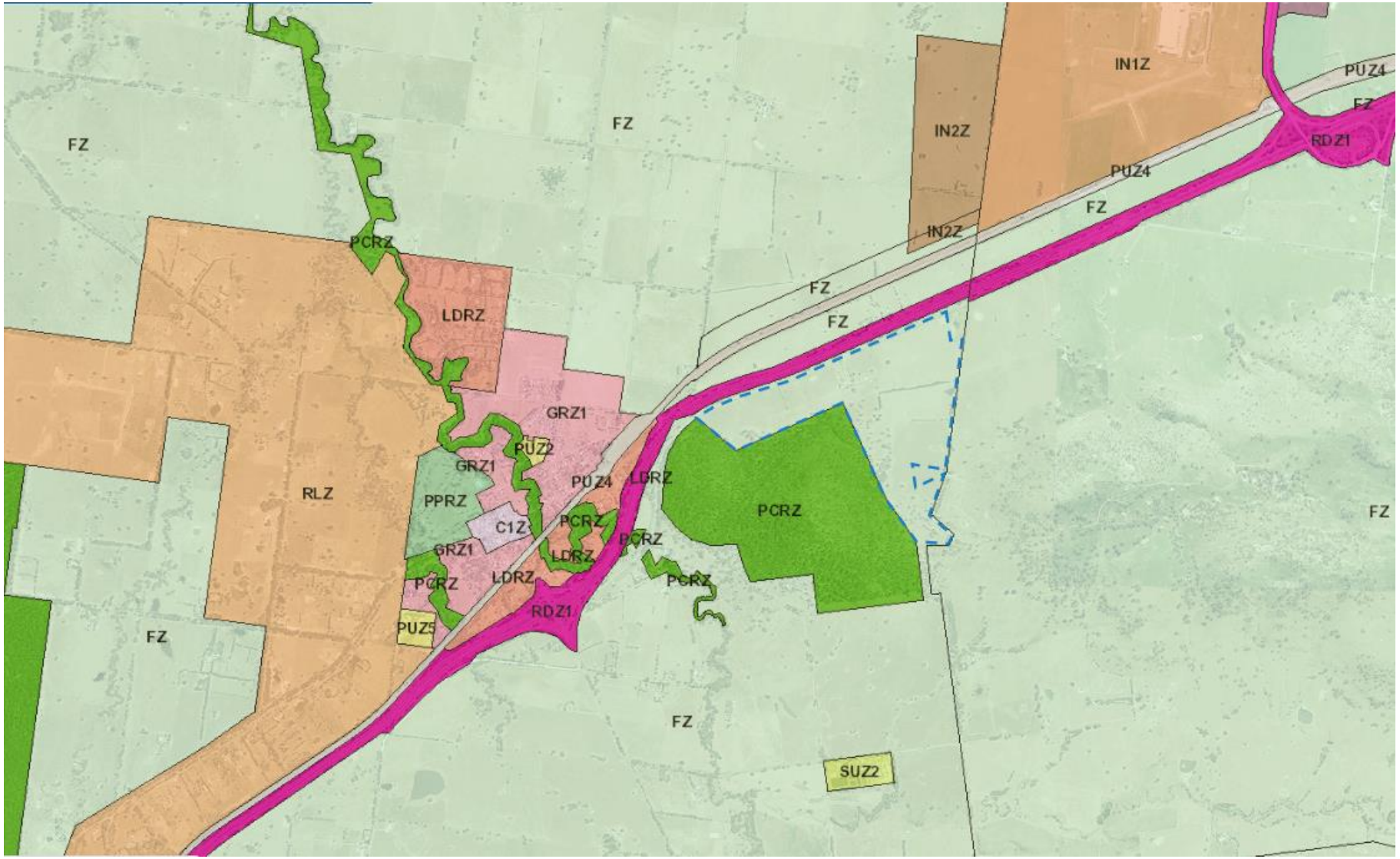


FIGURE 1D: BUSHFIRE MANAGEMENT OVELRAY

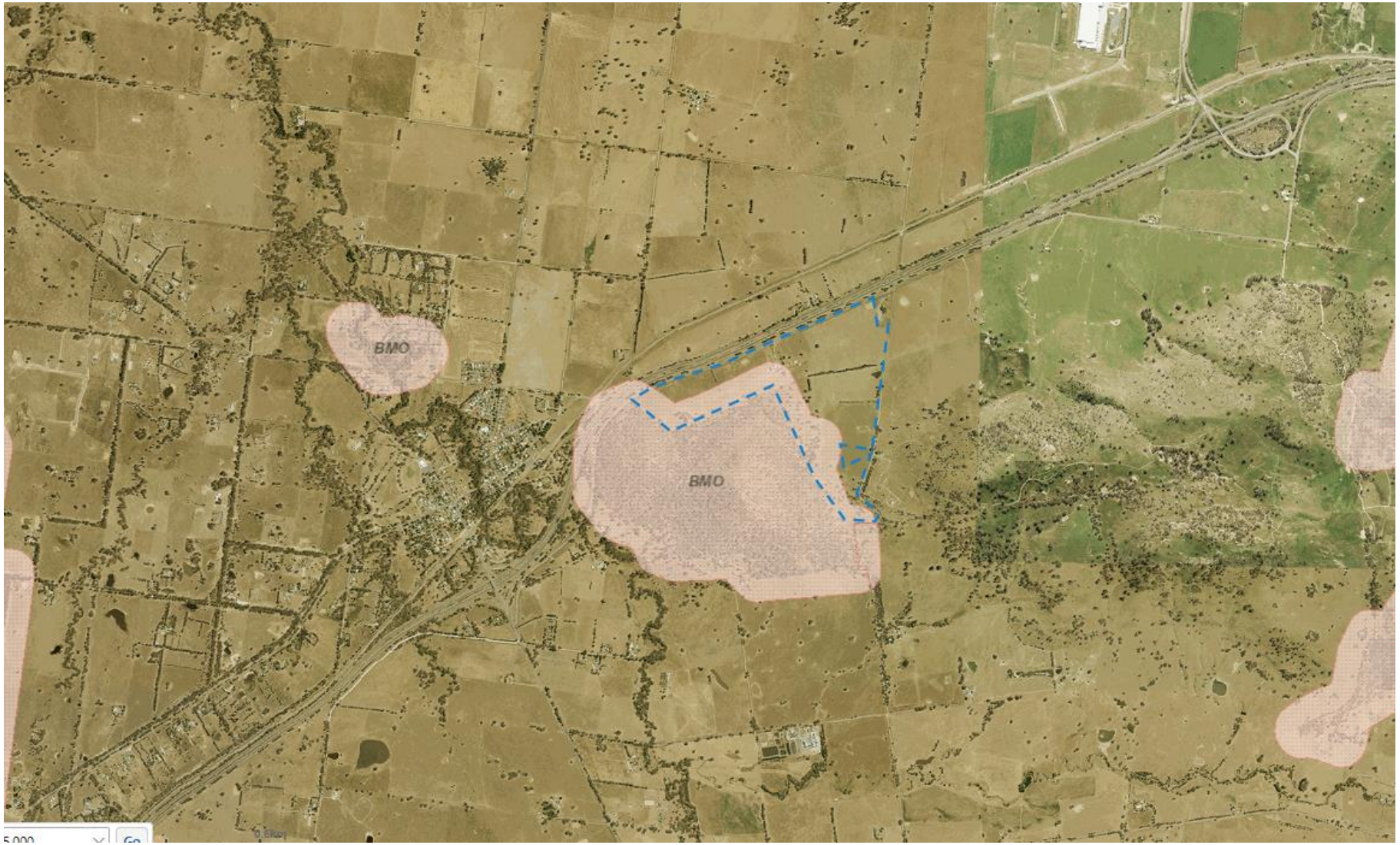


FIGURE 1E: BUSHFIRE PRONE AREA

2.0 PLANNING SCHEME BUSHFIRE CONTEXT

The planning scheme contains provisions that that inform permit requirements, application requirements and policies & decision guidelines where the bushfire hazard could be an influence on future land use and development. This section provides an overview of these provisions. Figure 2 summarises the considerations.

2.1 Integrated decision making (c71.02-3)

Clause 71.02-3 requires planning authorities, in bushfire areas:

> *[T]o prioritise the protection of human life over all other policy considerations.*

Bushfire considerations are not to be balanced in favour of net-community benefit, as occurs for all other planning scheme matters. The bushfire emphasis in c71.02-3 was introduced through Amendment VC140 in December 2017. Such policy settings were recommended in 2011 by the *2009 Victorian Bushfires Royal Commission*.

2.2 Natural hazards and climate change (c13.01-1S)

The objective of the State natural hazards and climate change policy is to

> *To minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning.*

Clause 13.01-1S contains a series of strategies to meet the above objective:

- *Consider the risks associated with climate change in planning and management decision making processes.*
- *Identify at risk areas using the best available data and climate change science.*
- *Integrate strategic land use planning with emergency management decision making.*
- *Direct population growth and development to low risk locations.*
- *Develop adaptation response strategies for existing settlements in risk areas to accommodate change over time.*
- *Ensure planning controls allow for risk mitigation or risk adaptation strategies to be implemented.*
- *Site and design development to minimise risk to life, property, the natural environment and community infrastructure from natural hazards.*

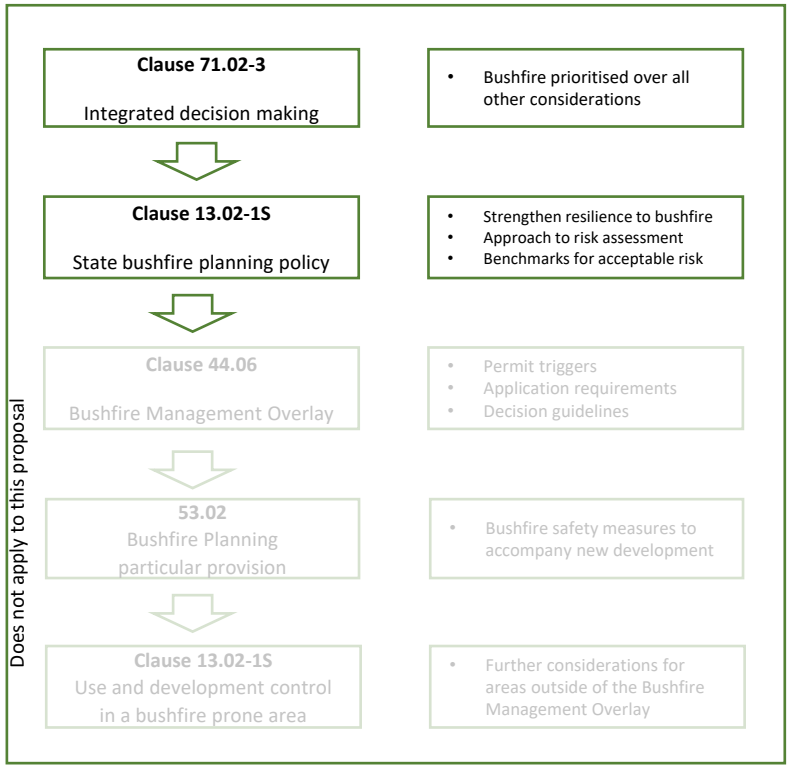
2.3 State planning policy for bushfire (Clause 13.02-1S)

The objective of the State planning policy for bushfire is:

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

Clause 13.02-1S contains a series of strategies to meet the above objective and these are summarised below.

FIGURE 2: PLANNING SCHEME BUSHFIRE PROVISIONS



Landscape bushfire considerations

Clause 13.02-1S requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;*
- *Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.*

Alternative locations for development

Clause 13.02-1S includes two strategies that seek to direct new development:

- *Give priority to the protection of human life by [...] directing population growth and development to low risk locations [.]*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*

Availability and safe access to area of enhanced protection

Clause 13.02-1S requires a location in easy reach that provides better protection for life from the harmful effects of bushfire:

- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under 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.*
- *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.*

The views of the relevant fire authority

Clause 13.02-1S identifies that a key element of a risk assessment is to:

- *Consult […] with […] the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.*

Site based exposure

Clause 13.02-1S provides policy directions for planning authorities about the level of acceptable exposure for new development enabled by a planning scheme amendment:

- *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*
- *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

Clause 13.02-1S provides directions on situations where a high bushfire risk and high biodiversity conservation values are both present:

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

No increase in risk

Clause 13.02-1S provides an overall view of acceptable risk:

- *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.*
- *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.*

Does not apply to this proposal

2.4 Bushfire Management Overlay (c44.06)

The purpose of the Bushfire Management Overlay is:

- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.*
- *To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.*

The Bushfire Management Overlay is generally applied to patches of vegetation (except grasslands) that are larger than 4 hectares in size. Where such a patch of vegetation exists, a 150 metre ember protection buffer is added and this land is also included in the Bushfire Management Overlay. Areas of extreme hazard are also included in the Bushfire Management Overlay.

Planning Advisory Note 46: Bushfire Management Overlay Methodology and Criteria (2013, DPTLI) provides more information on where the Bushfire Management Overlay is applied.

Does not apply to this proposal

2.5 Bushfire Planning particular provision (c53.02)

Clause 52.03 Bushfire specifies the requirements that apply to a planning application under c44.06 Bushfire Management Overlay. The purpose of this provision is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To ensure that the location, design and construction of development appropriately responds to the bushfire hazard.*
- *To ensure development is only permitted where the risk to life, property and community infrastructure from bushfire can be reduced to an acceptable level.*
- *To specify location, design and construction measures for a single dwelling that reduces the bushfire risk to life and property to an acceptable level.*

Does not apply to this proposal

2.6 Bushfire prone area (c13.02-1S and building regulations)

Bushfire Prone Areas are areas that are subject to or likely to be subject to bushfire. The Minister for Planning, under the Building Regulations 2018, determines that specific areas are designated Bushfire Prone Areas for the purposes of the building control system. Bushfire Prone Areas include all areas subject to the Bushfire Management Overlay. Bushfire Prone Areas also include grassland areas and, occasionally, smaller patches of non-grassland vegetation.

Specific bushfire construction standards apply in these areas and these are implemented by the relevant building surveyor as part of the building permit. These construction standards are referred to as bushfire attack levels (BAL).

Where land included in the Bushfire Prone Area is also included in the Bushfire Management Overlay, the requirements of the Bushfire Management Overlay take precedence.

Does not apply to this proposal

2.7 Use and development control in Bushfire Prone Areas (c13.02-1S)

Clause 13.02-1S of the planning scheme includes planning requirements for Bushfire Prone Areas. These are in the form a 'use and development control' that applies to certain uses that are in a Bushfire Prone Area but not subject to the Bushfire Management Overlay.

The use and development control applies to Subdivisions of more than 10 lots, Accommodation, Child care centre, Education centre, Emergency services facility, Hospital, Indoor recreation facility, Major sports and recreation facility, Place of assembly, and any application for development that will result in people congregating in large numbers.

The use and development control requires that when assessing a planning permit application:

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

2.8 c53.13 Renewable energy facility (other than wind energy facility)

c53.13 contains a particular provision for a Renewable energy facility. It sets out application requirements and decision guidelines for planning applications. A decision guideline required that the responsible authority must consider *Solar Energy Facilities Design and Development Guideline* (DELWP, 2019).

See Attachment 1.

2.9 Solar Energy Facilities Design and Development Guidelines (DEWLP 2019)

DELWP has published information to guide the development of, and assist in the granting of a permit for, ground-mounted photovoltaic (PV) solar structures the main purpose of which is to export electricity generated onsite to the National Electricity Market (NEM), either directly or via battery storage. The following are the main bushfire related elements of the guidelines:

Suitable locations (pg. 10)

A solar energy facility should not lead to:

- *increased exposure of the area to fire, flood or other natural or environmental hazard.*

Ideally, a solar energy facility should be located:

- *a sufficient distance from existing urban areas or designated urban growth areas where it has ready access to main roads.*

Natural hazards management (pg. 18)

Proponents should consult the relevant fire management authority early in the site selection and design process, to ensure a facility avoids unnecessary bushfire risk exposure and has fire management planning in place to manage risk.

Within rural and regional areas, a proponent should consult the CFA's Guidelines for renewable energy installations for information about bushfire risk management and other risk management matters.

Design stage – siting facility components (Pg. 22)

A proponent should consider:

- *providing a minimum setback of 30m from any part of a component that makes up a solar pod or zone, or other building or structure, measured from the neighbouring property boundary.*
- *increasing the minimum setback to an appropriate distance to manage bushfire hazard areas, interface with sensitive wetlands or environmental areas.*
- *providing a minimum 6m of separation between each solar pod or zone, to allow emergency vehicle access for firefighting or other management purposes.*
- *grouping large electrical transfer, substation, battery storage unit, carparking or other ancillary buildings or structures in a single location accessible from a main road.*
- *providing an appropriate separation distance from any battery storage unit and other solar component, as required by the relevant fire authority.*

A proponent should seek advice from the relevant fire authority about the siting of a battery storage facility relative to other structures and property boundaries, to ensure compliance with the Dangerous Goods (Storage and Handling) Regulations 2012.

Natural hazards management (pg. 25)

Building a solar energy facility should not increase the risk of bushfire in the area. A proponent can take practical measures in consultation with the relevant fire authority to mitigate any risks.

A solar energy facility built within the BMO or BPA must maintain site vegetation to appropriate management levels. This includes:

- *maintaining grass at below 100mm in height during a declared fire danger period*
- *establishing fire breaks around the perimeter of the facility*
- *providing adequate onsite water supply and firefighting equipment*
- *meeting site access management requirements.*

Risk and emergency management planning (pg. 27)

The CFA requires a solar energy facility to have an emergency management plan, incorporating a fire management plan, consistent with the requirements of AS 3745-2010 Planning for emergencies in facilities. This plan can include:

- *emergency prevention, preparedness and mitigation activities*
- *activities to prepare for and prevent emergencies (such as training and maintenance)*
- *control and coordination arrangements for emergency response (such as evacuation procedures, emergency assembly areas and procedures for responding to hazards)*
- *the agreed roles and responsibilities of onsite personnel (such as equipment isolation, fire brigade liaison and evacuation management).*

The CFA expects the fire management plan to form part of the emergency management plan; where hazards, risks and controls are identified and implemented to ensure fire risk is managed so far as is reasonably practicable, and fuel reduction and maintenance activities are part of the facility's standard operating procedures.

Proponents should consult the CFA's Guidelines for Renewable Energy Installations for guidance about how to prepare and submit an emergency management plan incorporating a fire management plan.

Application requirements (pg. 34)

Information related to surrounding areas in the analysis might include:

- *bushfire risks.*

2.10 Guidelines for Renewable Energy Installations (CFA 2021)

The CFA has published information that provides details about standard measures and processes in relation to fire safety, risk and emergency management that should be considered when designing, constructing and operating new renewable energy facilities, and upgrading existing facilities.

This guideline is extensive and includes requirements relating to:

- Development of installations.
- Emergency Management.
- Facility Design and Infrastructure.
    - Access.
    - Firefighting Water Supply.
- Site Operation.
    - Operation and Maintenance of Facilities.
    - Vegetation management.
    - Dangerous Goods Storage and Handling.
- Solar Facilities.
- Battery Energy Storage Systems (BESS).

3.0 BUSHFIRE HAZARD STRATEGIC AND LANDSCAPE ASSESSMENT

Incorporating the Bushfire Hazard Landscape Assessment

3.1 About the Bushfire Hazard Landscape Assessment

The Bushfire Hazard Landscape Assessment provides information on the bushfire hazard more than 150 metres from the subject site. Considering bushfire from a landscape perspective is important as it affects the likelihood of a bushfire threatening the site, its likely intensity, destructive power and potential impact on life and property. These characteristics help understand how bushfire may impact on a location.

The Bushfire Hazard Landscape Assessment is ordinarily used to respond to the objectives and approved measures in *c53.02-4.1 Bushfire Planning* of the planning scheme when a planning permit is required under c44.06 *Bushfire Management Overlay*. This requires that the risk from the surrounding landscape is mitigated to an acceptable level for development to proceed.

However, no planning permit is required under *c44.06 Bushfire Management Overlay* for the proposal. In this case, the bushfire hazard landscape assessment has been prepared to support a broader understanding of bushfire risk as defined by the planning scheme to inform the *c13.02 Bushire* assessment in Section 8 of this report. This includes the *c13.02-1S Use and development in a bushfire prone area.*

The methodology for a bushfire hazard landscape assessment is set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide 2017* (DELWP).

3.2 Bushfire hazard landscape analysis of the locality

The following information describes landscape bushfire factors relevant to the subject locality. It includes the landscape assessment diagram and other information to satisfy requirements associated with the Bushfire Hazard Landscape Assessment.

The extent of the surrounding landscape that is relevant is determined by the bushfire hazard that may influence a locality. This includes the extent and continuity of vegetation, potential fire runs, where a bushfire can start, develop and grow large, and areas where enhanced safety from a bushfire may be available (including through evacuation).

Bushfire conditions in Victoria

The Department of Environment, Land, Water and Planning (DEWLP)[1] identifies key features relevant to bushfires in Victoria. These include:

- A forest fire danger index of well over 100.
- Severe drought conditions.
- Temperatures above 40°C.
- Relative humidity below 10%.
- Strong to gale-force north-westerly winds.
- A strong to gale-force west-south-westerly wind change that turns the eastern flank of a running bushfire into a wide new fire front.

DELWP notes that these weather conditions are representative of where a bushfire does most of its damage in a single day. The greatest loss of life and property have historically been caused by such single day bushfires.

[1] Measuring Bushfire Risk in Victoria, Department of Environment, Water, Land and Planning, 2015

3.3 Larger areas of bushfire hazard of landscape significance

Hazard Area 1 (HA1 on the bushfire hazard landscape assessment diagram)

Hazard area 1 comprises vegetated areas to the west and south-west of the subject site. These areas of hazard are 3-4km away, separated by grassland areas. Whilst these areas of hazard are relatively large, orientated around the Chiltern-Mt Pilot National Park and the Chiltern Box Iron Bark National Park, they are limited in their ruggedness or capacity for a bushfire to grow large enough to generate fire behaviour that could significantly impact on the subject site.

The residual landscape consideration from these areas is from ember attack, although even this is marginal given the separation that exists. There may be a heightened potential for ember attack in grassland areas that ignites grassfires

On balance, Hazard area 1 is of limited landscape relevance to the subject site.

Hazard Area 2 (HA2 on the bushfire hazard landscape assessment diagram)

Hazard area 2 comprises vegetated areas to the immediate south and west of the subject site, within the Barnawartha Scenic Reserve. This area of hazard is approximately 140ha in size and comprises mostly woodland vegetation. The size of this area and the vegetation type are inadequate to generate extreme fire behaviour on a landscape scale. This area of hazard is better assessed at the site scale, and is done so in Section 4 of this report.

Hazard Area 3 (HA3 on the bushfire hazard landscape assessment diagram)

The balance of the landscape comprises grasslands. For considering the landscape risk associated with grassland areas, it is assumed that all grasslands are unmanaged.

Key characteristics of grassfires include[1]:

- Grassfires can start and spread quickly and are extremely dangerous.
- Grassfires can travel up to 25 km per hour and pulse even faster over short distances.
- Grass is a fine fuel and burns faster than bush or forests.
- Grassfires tend to be less intense and produce fewer embers than bushfires, but still generate enormous amounts of radiant heat.
- The taller and drier the grass, the more intensely it will burn.
- The shorter the grass, the lower the flame height and the easier the fire will be to control.
- Grassfires can start earlier in the day than bushfires, because grass dries out more quickly when temperatures are high.

[1] Adapted from advice at https://www.cfa.vic.gov.au/plan-prepare/grassfires-rural

Interspersed with grassland areas are areas of fragmented vegetation and non-vegetated areas. These will often be clumps of vegetation, roadside vegetation, strips of trees (for example, along vehicle accesses), roads and dams. Areas of fragmented vegetation will be a factor when considering bushfire at a site level but their impact on landscape-scale bushfires is minimal. The grassland vegetation will be the dominant driver of bushfire behaviour in these grassland areas.

3.4 Other landscape-scale factors *(see diagrams for spatial information on these)*

3.4.1 Bushfire history

There is some limited bushfire history recorded for the locality [1].

[1] Information on bushfire history is published here:
www.emergency.vic.gov.au/prepare/#fire/risk/bushfire-history-50-years

3.4.2 Availability of locations where human life can be better protected from a bushfire

An assessment has been made of the subject sites relatively proximity and access to locations that are low fuel where human life can be better protected from the harmful effects of bushfire. The planning scheme defines such areas as BAL:Low, which are areas where hazardous vegetation is more than 100m away. Such locations will experience no flame contact from a moving fire front and lower levels of radiant heat.

BAL:Low areas based on existing conditions in the landscape are available in the settlement area of Barnawartha, an approximately 3km vehicle journey to the west of the subject site. Travel is on roads affected by roadside vegetation and grasslands. A designated places of safety in the landscape is located at the Barnawartha Sports Ground Pavilion Neighbourhood Safer Place.

It is noted that the proposed development is not likely to result in people congregating on the site once the development is completed. The need for shelter options is limited, in any event, and is included above for completeness rather than relevance.

3.5 Landscape type most applicable to the locality around the subject site

The methodology for a bushfire hazard landscape assessment set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP,2017) includes four landscape typologies. These provide a framework for identifying landscape risk consistently across Victoria according to the extent of vegetation and likely bushfire behaviour and the availability of places where shelter could be available before, during and after a bushfire.

Landscape type 3 most closely aligns with the landscape around the subject site. The characteristics of this landscape type include:

- 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.
- 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.

This positions the subject site at the middle of the spectrum of bushfire risk in Victoria using the landscape typologies approach. This is consistent with the grassland environment around the locality and the Bushfire Management Overlay that applies based on the Barnawartha Scenic Reserve.

3.6 Recommendations arising from the bushfire hazard landscape assessment

The landscape bushfire risk arising from the bushfire hazard is moderate on the spectrum of bushfire risk in Victoria. The landscape risk arising from the bushfire hazard is primarily from grasslands (at the landscape scale). In this setting there is no landscape factor that would warrant the development not proceeding or a specific bushfire response as part of the development over and above the site based mitigation and CFA requirements that are required in any event.

The Barnawartha Scenic Reserve is best considered as a site-scale hazard and is better assessed at the site scale, which is done so in Section 4 of this report.

FIGURE 3A: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT DIAGRAM

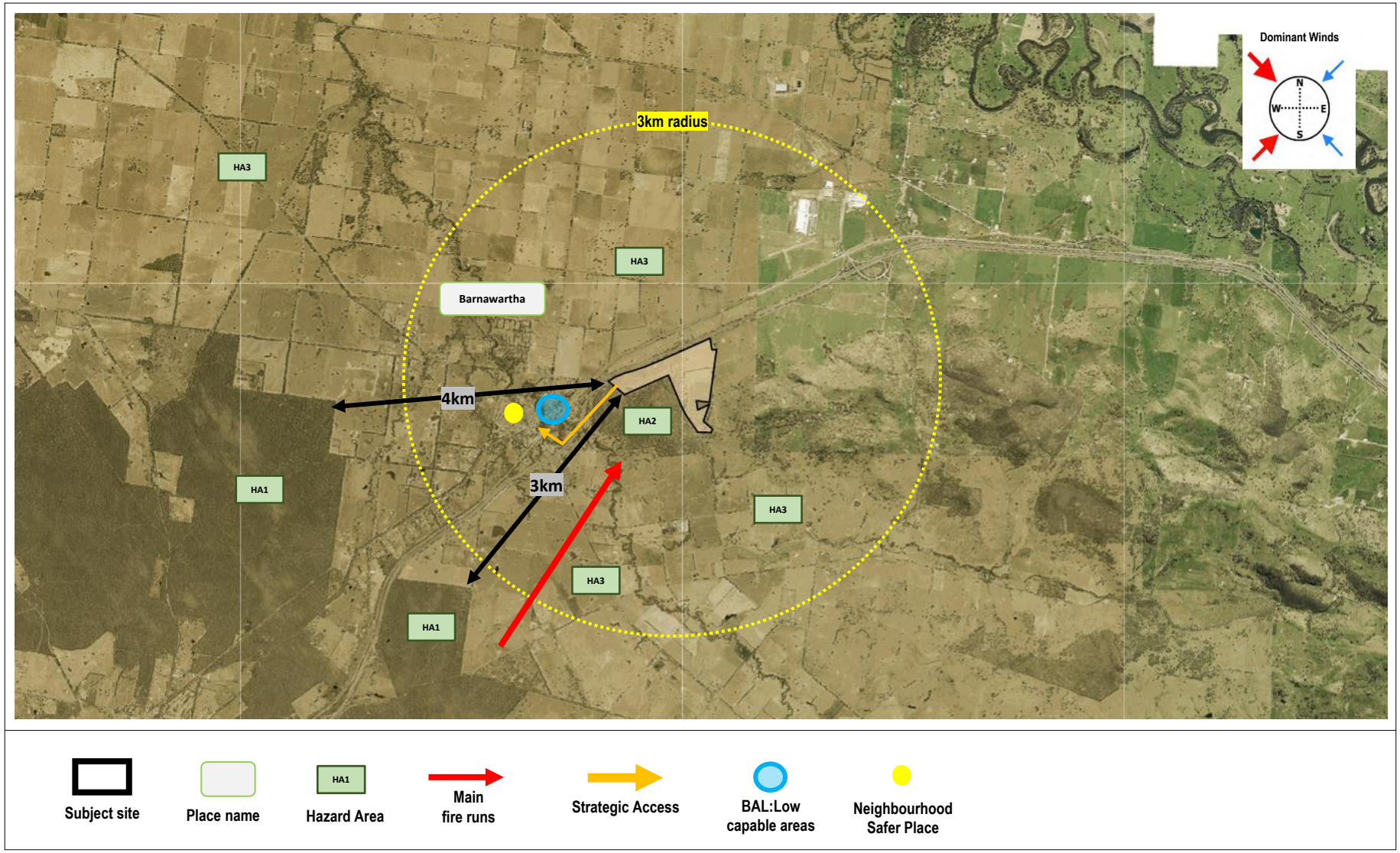


FIGURE 3B: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT LANDSCAPE TYPOLOGIES

Planning Permit Applications Bushfire Management Overlay Technical Guide 2017 authored by DELWP identifies landscape types to streamline decision making based on the risk from the landscape beyond the site.

The following describes the landscape types and indicates the landscape type(s) most applicable to the subject locality.

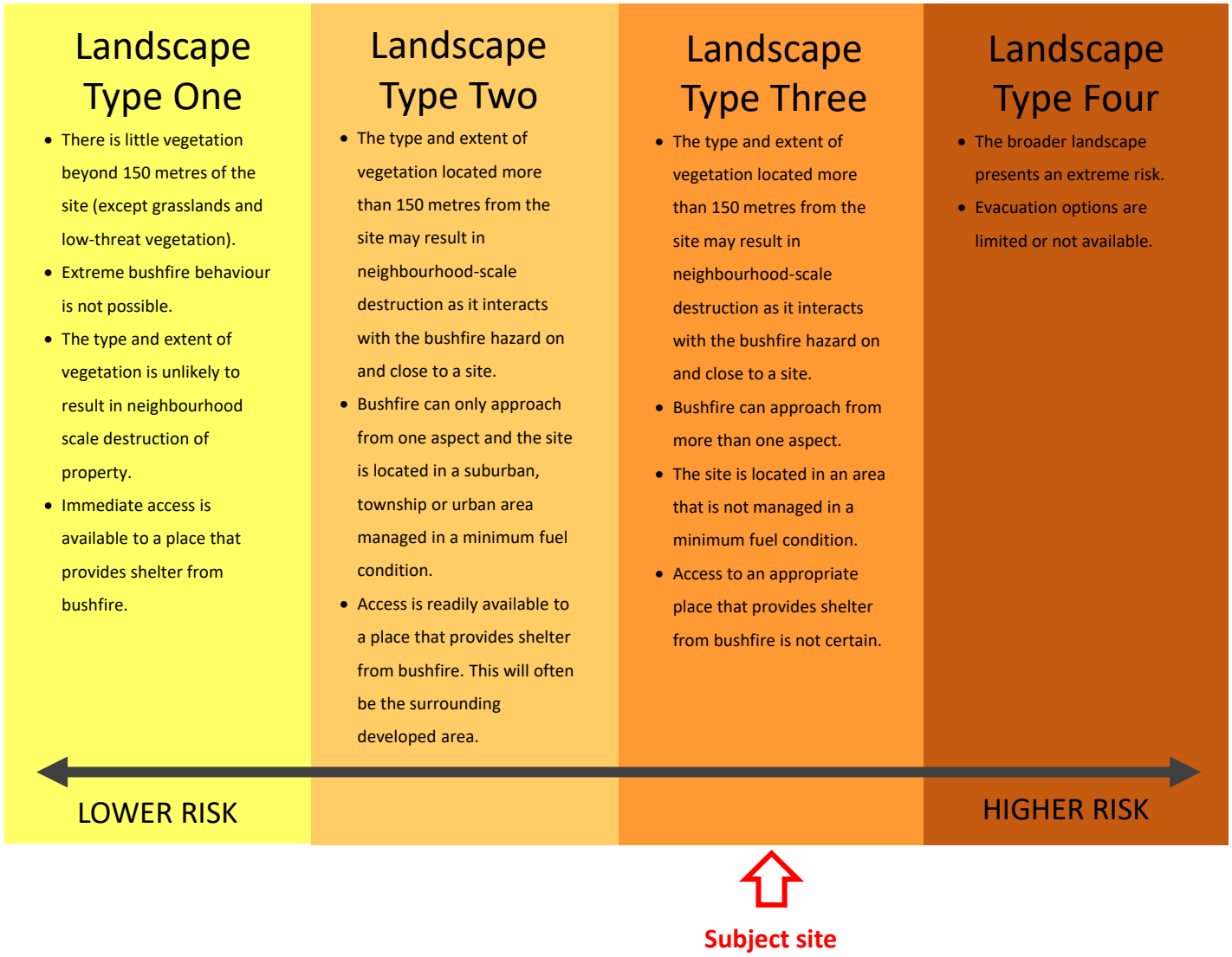
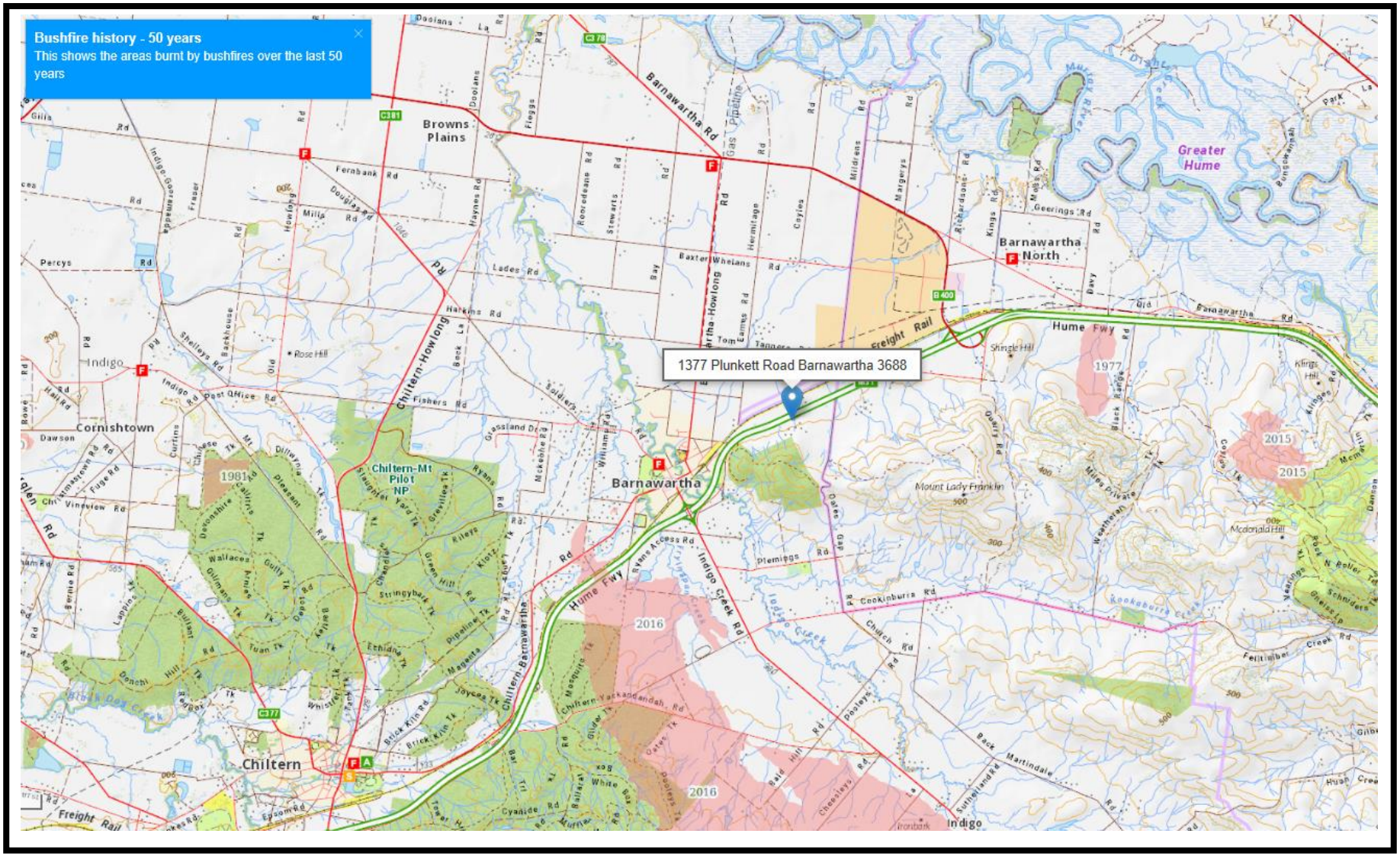


FIGURE 3C: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT BUSHFIRE HISTORY



4.0 BUSHFIRE HAZARD SITE-SCALE ASSESSMENT

Incorporating the Bushfire Hazard Site Assessment

4.1 About the Bushire Hazard Site Assessment

Assessing bushfire at the site scale considers the hazard within 150 metres of a proposed development or site. At the site scale, the exposure to bushfire is determined by the amount of separation between the bushfire hazard and a proposed structure or where people will be located.

The assessment is undertaken in accordance with *c53.02 Bushfire Planning* and Sections 2.2.3 to 2.2.5 of *Australian Standard AS3959:2009 Construction of buildings in bushfire prone areas* (Standards Australia) (referred to as '*AS3959-2009*'). The simplified procedure (Method 1) set out in Clause 2.2 is used.

Using the AS3959:2009 methodology, vegetation and slope is assessed to determine different levels of exposure to a bushfire based on a range of assumptions, including a Fire Danger Rating of 100 and a flame temperature of 1080°C.

4.2 Site based exposure benchmark

The Bushfire Hazard Site Assessment assesses hazardous vegetation and the slope under hazardous vegetation as part of considering the separation required between development and permanent hazard areas. CFA Guidance indicates that 10m of separation is a relevant benchmark for planning decision making.

4.3 Site assessment worksheet and diagram

The following worksheet documents the hazard and slope at the site scale and should be read in conjunction with the Figure 4B: Bushfire Hazard Site Assessment diagram.

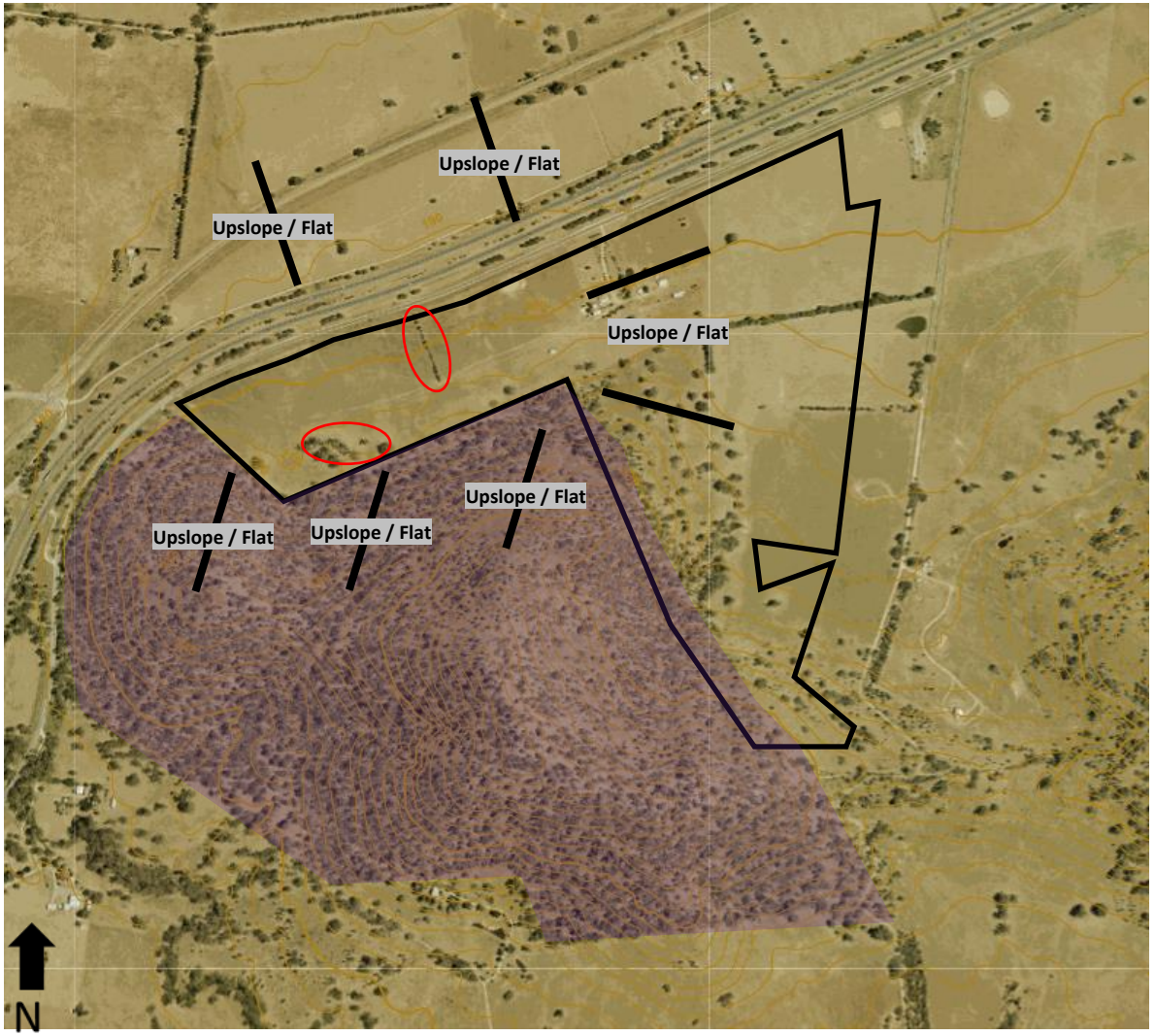
FIGURE 4A: SITE ASSESSMENT WORKSHEET

	GRASSLAND INTERFACES	STRATFORD – BENGWORDEN ROAD
Vegetation within 100m of buildings / works **Within 150m or buildings / works**	❑ Grassland	❑ Woodland
Effective slope **Under classifiable vegetation**	❑ Upslope and Flat	❑ Upslope and Flat
Proposed distance (m) **to classifiable vegetation and landscape buffers**	10m	10m
Defendable space on-site	❑ Yes	❑ Yes

Note

10m of separation from classifiable vegetation and any landscape buffers on the perimeter of a site is a requirement of the CFA guidelines.

FIGURE 4B: BUSHFIRE HAZARD SITE ASSESSMENT DIAGRAM



1377 PLUNKETT ROAD BARNAWARTHA

Subject Site

150m Assessment Area

Downslope 5-10°

Slope direction & degrees

Classifiable vegetation

Woodland (roadside)

BALANCE

Grassland

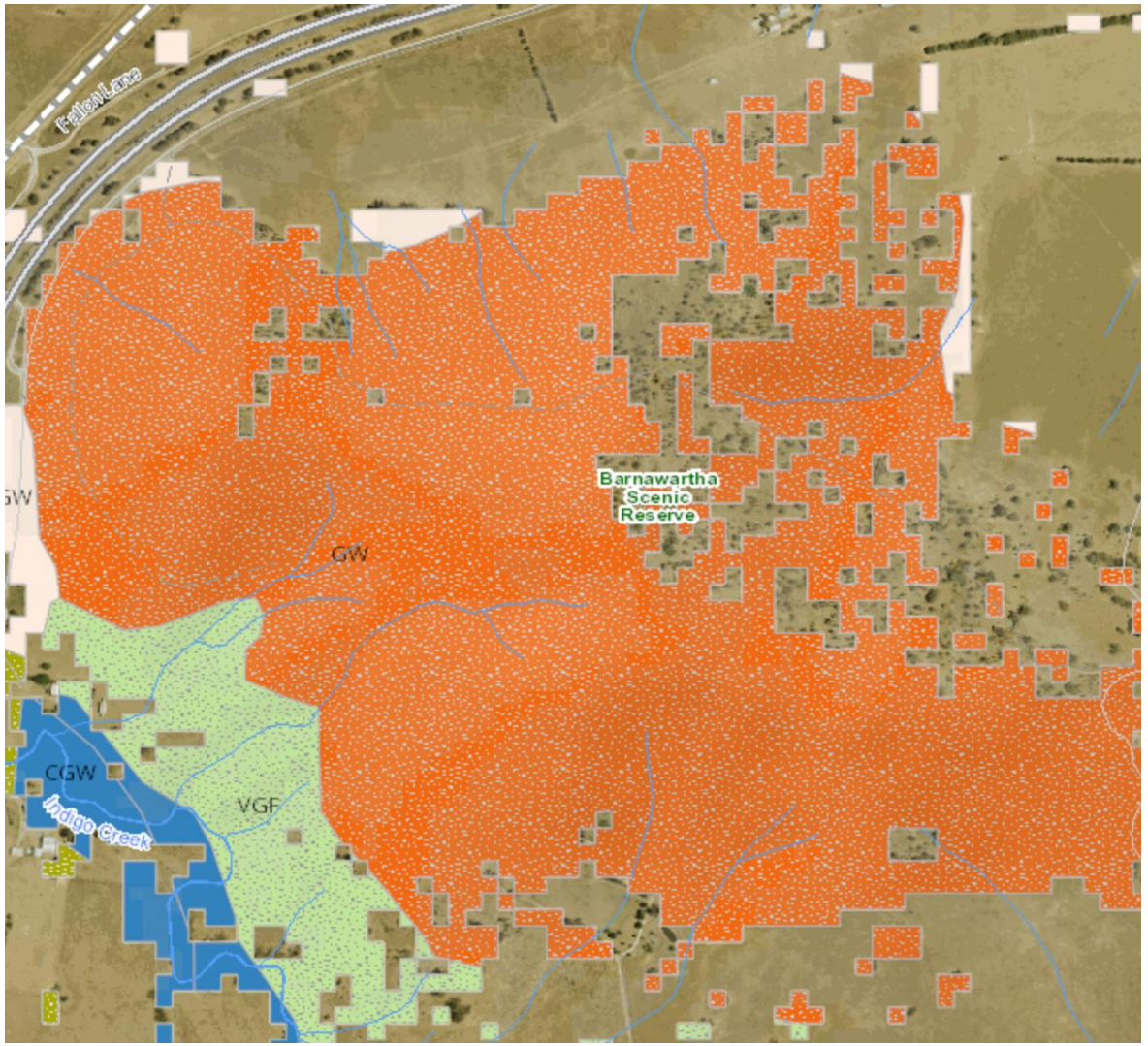
Isolated / strip of trees

Excludable vegetation

(e) Non-vegetated areas

(f) Low-threat vegetation

FIGURE 4C: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT ECOLOGICAL VEGETATION CLASS



1377 PLUNKETT ROAD BARNAWARTHA

GW (shown as dark orange on plan)

EVC NAME Grassy Woodland

Source; DELWP Nature Kit
http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit

4.4 Vegetation assessment

Barnawartha Scenic Reserve

The Barnawartha Scenic Reserve is assessed as woodland. This was derived from an inspection of the area and by using the site assessment methodology. The assessment of woodland was also validated by considered the EVC that applies (grassy woodland, see Figure 4C).

Grassland interfaces

All other interfaces contain grasslands.

Isolated / strip of trees

There are 5-10 existing trees south of the proposed solar panels. There is also a line of trees central to the proposed solar panels. These are not considered to be material to site-scale risk due to their configuration and minimal under storey and middle storey elements. They are also separated form the solar panels by more than 10m, in any event.

4.5 Approach to site based exposure

The requirements in planning schemes for site based exposure mostly relate to separating development that may be occupied by people from vegetation that may be on fire. For a Solar energy facility, this is not particularly relevant. Instead, the main site based exposure issues are fires penetrating the site from its surrounds and minimising fires arising from on-site infrastructure spreading outwards. The CFA guidelines provide advice on responding to these.

Perimeter separation

CFA guidance requires that 10m of separation be provided on the perimeter of the site. Where a landscape buffer is proposed for screening purposes, the 10m of separation applies from the inner edge of the landscape buffer.

The 10m separation area will operate as a fire break and must be managed in a no-fuel condition at all times. CFA guidance suggests a non-combustible mulch such as crushed rock or mineral earth in these areas.

Fuel management within the site

Within the perimeter separation and any landscape buffer provided, the site must be managed in a minimal fuel condition. This can be provided through grass maintained to 100mm or less or a no-fuel surface. Grazing can be used to manage grass areas.

Fuel management within the site is required during the declared fire danger period.

4.6 Conclusions on site based exposure

Where the requirements of CFA guidance is implemented in relation to perimeter separation and fuel management within the area of proposed development, site-based exposure can be adequately addressed.

These requirements also minimise the potential for fires arising from within the site from spreading beyond the site. A range of site management and operational requirements seek to minimise the potential for fires arising within the site, as discussed in other parts of this report.

5.0 FACILITY DESIGN INCLUDING VEGETATION MANAGEMENT AREAS

This section describes requirements that should be accommodated in the proposal.

5.1 Fire breaks and vegetation management on the perimeter of the site

CFA requirement

4.2.3 A fire break area of at least ten (10) metres width must be maintained around the perimeter of the facility, where vegetation in the screening zone/landscape buffer is a width of 20m or less (refer to Figure 5).

4.2.4 Where the vegetation in the screening zone/landscape buffer exceeds a width of 20m, a risk management process must be conducted to determine the appropriate fire break area.

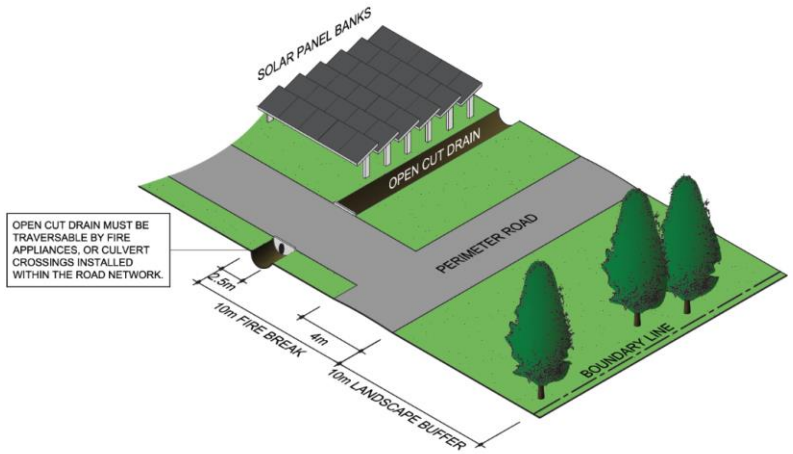


Figure 5: Typical cross-section indicating fire break requirements.

Likely permit condition

a) A fire break area of at least ten (10) metres width must be maintained around the perimeter of the facility. Where the vegetation screening zone/landscape buffer:
    a) Is a width of 20 (twenty) metres or less, the fire break area must be at least ten (10) metres width (maintained between the screening vegetation and the solar panels, batteries, and other infrastructure).
    b) Exceeds a width of 20 (twenty) metres, the fire break area must be greater, as determined through a risk management process that considers radiant heat from a bank of solar panels fully involved in fire as an ignition source. The risk management plan, incorporating risk assessment, must be provided to the satisfaction of CFA.

b) Fire breaks must:
    - For perimeter fire breaks, commence from the boundary of the facility or from the vegetation screening (landscape buffer) inside the property boundary.
    - Be constructed using either mineral earth or non-combustible mulch such as crushed rock.
    - Be free of vegetation at all times.
    - Be free of obstructions at all times (e.g. no stored materials of any kind).

5.2 Fire breaks and vegetation management around key infrastructure

CFA requirement

4.2.5 A fire break area of at least ten (10) metres width must be maintained around the perimeter of control rooms, electricity compounds (including battery energy storage systems) and substations.

Likely permit condition

A fire break area of at least ten (10) metres width must be maintained around electricity compounds, substations, and battery installations.

5.3 Vegetation management including in any landscape / screening buffer zone

CFA requirement

4.2.1 Grass must be maintained at below 100mm in height during the declared Fire Danger Period.

4.2.2 There must be a clearance of at least two (2) metres between the lowest branches and ground level within the vegetation screening (landscape buffer) zone. Where the vegetation screening zone is 30m or more away from solar panels, wind turbines and/or battery energy storage systems, this requirement may be altered in consultation with CFA.

Likely permit condition

a) Grass must be maintained at below 100mm in height during the declared Fire Danger Period.
b) There must be a clearance of at least two (2) metres between the lowest branches and ground level within the vegetation screening (landscape buffer) zone.

5.4 Vegetation management under solar panels

CFA requirements

6.4.1 Solar facilities are to have grass or other vegetation maintained to 100mm or mineral earth or non-combustible mulch such as crushed rock under solar panels and within fire breaks during the Fire Danger Period.

6.4.2 Where practicable, solar facilities can be sited on grazed paddocks. In this case, vegetation must be managed as per the requirements of this guideline, or as informed through a risk management process.

6.4.3 Where practicable, low-flammability vegetation (such as root vegetables) may be planted under solar panels, provided foliage does not extend beyond panels.

Likely permit condition

a) The area under solar arrays must be non-combustible material such as mineral earth; non-combustible mulch such as stone; or other vegetation managed to no more than 100mm. Managed vegetation may include localised crops of root vegetables or other plants with low flammability, planted to ensure that no part of the plant extrudes from underneath panel banks.

5.5 Access

CFA requirement

3.1.8 The provision of at least two (2) but preferably more access points to the facility, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire. The number of access points must be informed through a risk management process.

Discussion

The proposal includes a primary site access located to the west of the site and enables informal access from the eastern part of the land via the part of the site containing a dwelling. Whilst informal, the access to the east is satisfactory as a secondary access to the development and combined with the primary site access, access overall is acceptable.

CFA guidance is unclear as to whether fire authority vehicle access construction requirements need to apply from the site entry to the fire fighting water supply. Based on the typical approach under the Bushfire Management Overlay, it is recommended that this be provided in the proposal.

Likely permit condition

The vehicle access from the site entry to the fire fighting water supply must:

a) Be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes.
b) Where they are constructed roads, they must be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface.
c) Be of average grade no more than 1 in 7 (14.4[illegible] maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.

b) Where they are constructed roads, they must be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface.

c) Be of average grade no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.

d) Where there are dips in the road, they must be no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.

e) Incorporate passing bays at least every 600 metres, which must be at least 20 metres long, and have a minimum trafficable width of 6 metres. Where roads are less than 600 metres long, at least one passing bay must be incorporated.

5.6 Other requirements

It is noted that CFA guidance does not require the following to be included in a micro-solar farm:

- 6.5.3: 6m separation of solar banks.
- 6.5.2: Construction of a 4m perimeter road and passing bays.

Based on the above, they are not included as likely permit conditions in this report.

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6.0 FIRE FIGHTING WATER SUPPLY

This section describes fire fighting water supply requirements that should be accommodated in the proposal.

CFA requirement

6.5.2 Designers/operators may consider provision of a single static water storage tank of not less than 22,500 litres effective capacity, located at the primary vehicle entrance to the facility, or elsewhere as agreed by CFA.

3.2.6 The static water storage tanks must be located at vehicle entrances to the facility and must be positioned at least 10m from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).

Discussion

The proposal includes a fire fighting water supply consistent with the CFA capacity requirement. It is located close to the primary vehicle access to the site. It is noted that standard CFA requirements for the water supply include a need for a turning circle where a site has only one access.

Likely permit conditions

a) The fire protection system must incorporate a single static water storage tank of not less than 22,500 litres effective capacity, located at the primary vehicle entrance to the facility, or elsewhere as agreed by CFA.
b) Water access points must be clearly identifiable and unobstructed to ensure efficient access.
c) Static water storage tank installations are to comply with AS 2419.1-2005: Fire hydrant installations – System design, installation and commissioning.
d) The static water storage tank(s) must be an above ground water tank constructed of concrete or steel.
e) The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.
f) The static water storage tanks must be located at vehicle entrances to the facility and must be positioned at least 10m from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).
g) The hard-suction point must be provided, with a 150mm full bore isolation valve, (Figure 1) equipped with a Storz connection, sized to comply with the required suction hydraulic performance. Adapters that may be required to match the connection n are, 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters (Figure 2) with a matching blank end cap to be provided.
h) The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.
i) An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, eight (8) metres long and six (6) metres wide or to the satisfaction of the CFA.
j) The road access and hardstand must be kept clear at all times.
k) The hard-suction point must be protected from mechanical damage (i.e. bollards) where neccessary.
l) Where the access road has one entrance, a ten (10) metre radius turning circle must be provided at the tank.
m) An external water level indicator must be provided to the tank and be visible from the hardstand area.
n) Signage (Figure 3) indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.
o) Signage (Figure 4) must be provided at the front entrance to the facility, indicating the direction to the static water tank. Signage must be to the satisfaction of CFA.

Figure 1: 150mm full bore isolation valve.

Figure 2: 125mm, 100mm, 90mm, 75mm, and 65mm Storz tree adapters.

Figure 3: Fire water signage to comply with AS 2419.1 section 5.4.5.

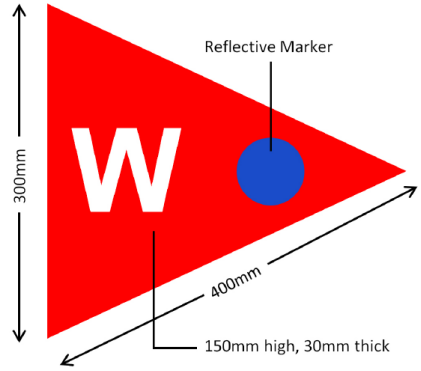


Figure 4: Directional signage: fade resistant, fixed to rigid post in contrasting lettering, white sign writing on red background, with a circle reflective marker. 'W' in 150mm upper case lettering.

7.0 SITE OPERATION ADDITIONAL REQUIREMENTS

This section describes site operation additional requirements that should be accommodated in the proposal.

Design and siting consideration

CFA requirement

4.1.1 Maintenance and repair activities that involve flame cutting, grinding, welding or soldering (hot works) must be performed under a 'hot work permit' system or equivalent hazard or risk management process.

4.2.5 Restrictions and guidance during the Fire Danger Period, days of high fire danger and Total Fire Ban days (refer to www.cfa.vic.gov.au) must be adhered to.

4.2.6 All plant and heavy equipment must carry at least a 9-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or firefighting equipment as a minimum when on-site during the Fire Danger Period.

4.2.7 Long grass and/or deep leaf litter must not be present in areas where plant and heavy equipment will be working, during construction or operation.

Likely permit conditions

a) Maintenance and repair activities that involve flame cutting, grinding, welding or soldering (hot works) must be performed under a 'hot work permit' system or equivalent hazard or risk management process.

b) Restrictions and guidance during the Fire Danger Period, days of high fire danger and Total Fire Ban days (refer to www.cfa.vic.gov.au) must be adhered to.

c) All plant and heavy equipment is to carry at least a 9-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or firefighting equipment as a minimum when on-site during the Fire Danger Period.

d) Long grass and/or deep leaf litter must not be present in areas where plant and heavy equipment will be working.

c) Long grass and/or deep leaf litter must not be present in areas where plant and heavy equipment will be working, during construction or operation.

8.0 DANGEROUS GOODS STORAGE AND HANDLING 31

This section describes dangerous good-related matters that should be accommodated in the proposal.

Design and siting consideration

CFA requirement

4.3.1 Where applicable, the requirements of the relevant Australian Standards must be complied with, e.g. AS/NZS 5139-2019: Electrical installations – Safety of battery systems for use with power conversion equipment; AS 3780-2008: The storage and handling of corrosive substances; and AS 1940-2017: The storage and handling of flammable and combustible liquids.

4.3.2 Signage and labelling compliant with the Dangerous Goods (Storage and Handling) Regulations 2012 and the relevant Australian Standards must be provided.

4.3.3 All dangerous goods stored on-site must have a current Safety Data Sheet (SDS). Safety Data Sheets must be contained within the facility's Emergency Information Book, in the Emergency Information Container.

4.3.4 Appropriate material (including absorbent, neutralisers, tools and personal protective equipment) for the clean-up of spills must be provided and available on-site.

Likely permit conditions

a) Where applicable, the requirements of the relevant Australian Standards must be complied with, e.g. AS/NZS 5139-2019: Electrical installations – Safety of battery systems for use with power conversion equipment; AS 3780-2008: The storage and handling of corrosive substances; and AS 1940-2017: The storage and handling of flammable and combustible liquids.

b) Signage and labelling compliant with the Dangerous Goods (Storage and Handling) Regulations 2012 and the relevant Australian Standards must be provided.

c) All dangerous goods stored on-site must have a current Safety Data Sheet (SDS). Safety Data Sheets must be contained within the facility's Emergency Information Book, in the Emergency Information Container.

d) Appropriate material (including absorbent, neutralisers, tools and personal protective equipment) for the clean-up of spills must be provided and available on-site.

9.0 EMERGENCY & SITE OPERATIONAL MANAGEMENT

CFA guidance includes extensive content to inform emergency and site operational management.

9.1 Emergency management plan consideration

CFA requirement

CFA requires that facility operators develop an emergency management plan consistent with the requirements of AS 3745-2010: Planning for emergencies in facilities. The Emergency Management Plan must include:

2.2.1 Emergency prevention, preparedness and mitigation activities

2.2.2 Activities for preparing for, and prevention of emergencies (eg. training and maintenance)

2.2.3 Control and coordination arrangements for emergency response (eg. evacuation procedures, emergency assembly areas and procedures for response to emergencies), and

2.2.4 The agreed roles and responsibilities of on-site personnel (eg. equipment isolation, fire brigade liaison, evacuation management).

To facilitate fire brigade response, CFA's expectation is that the emergency management plan includes:

2.2.5 Facility description, including infrastructure details, activities and operating hours

2.2.6 A site plan depicting infrastructure (solar panels, wind turbines, inverters, battery energy storage systems, generators, diesel storage, buildings), site entrances, exits and internal roads; fire services (water tanks, fire hydrants, fire hose reels); and neighbouring properties

2.2.7 Up-to-date contact details of facility personnel, and any relevant off-site personnel that could provide technical support during an emergency

2.2.8 A manifest of dangerous goods (if required under the Dangerous Goods (Storage and Handling) Regulations 2012)

2.2.9 Emergency procedures for credible hazards and risks, including grassfire and bushfire

2.2.10 Procedures for notifying the emergency services

2.2.11 Procedures for evacuating personnel

2.2.12 A fire management plan must be incorporated into the emergency management plan, that includes all of the fire mitigation measures that will be implemented to reduce the risk of fire so far as is reasonably practicable, established through a risk management process. A fire management plan must specifically address:

• Risk management measures specific to fire (as above), and

• A fuel (vegetation) reduction and maintenance plan/procedure

Activities associated with fuel reduction and maintenance must be captured in the organisation's policies and/or procedures.

Likely permit conditions

The above requirements are likely to be included on any planning permit issued.

9.2 Emergency information considerations

CFA requirement

CFA requires the installation of Emergency Information Containers at each vehicle entry to the facility, each containing an Emergency Information Book. The Emergency Information Book is to include:

2.3.1 A description of the premises, its infrastructure and operations.

2.3.2 Site plans that include the layout of the entire site, including buildings, internal roads, infrastructure, fire protection systems and equipment, dangerous goods storage areas (including battery energy storage systems), substations/grid connections, drains and isolation valves, neighbours and the direction of north.

2.3.3 Up-to-date contact details for site personnel, regulatory authorities and site neighbours.

2.3.4 A manifest of dangerous goods (if required) as per Schedule 3 of the Dangerous Goods (Storage and Handling) Regulations 2012.

2.3.5 Safety Data Sheets (SDS) for dangerous goods stored on-site.

2.3.6 Procedures for management of emergencies, including evacuation, containment of spills and leaks, and fire procedures (including infrastructure/vehicle fires; grassfire/bushfire).

CFA requires that the Emergency Information Container be:

2.3.7 Painted red and marked 'EMERGENCY INFORMATION' in white contrasting lettering not less than 25mm high.

2.3.8 Located at all vehicle access points to the facility, installed at a height of 1.2 metres – 1.5 metres.

2.3.9 Accessible with a fire brigade standard '003' key.

2.3.10 Kept clear of obstructions, including products, rubbish, vehicles, vegetation and any hazards (eg. pest infestation).

6.3.1 Solar farm operators must provide specifications for safe operating conditions for temperature and the safety issues related to electricity generation, including isolation and shut-down procedures, if solar panels are involved in fire. This information must be provided within the facility's Emergency Information Book.

Likely permit conditions

The above requirements are likely to be included on any planning permit issued.

9.3 Fire brigade site familiarisation and emergency exercises

CFA requirement

2.4.1 Prior to commissioning the facility, operators are to offer a familiarisation visit and explanation of emergency procedures to CFA and other emergency services. Information on the specific hazards and fire suppression requirements of the facility should be provided during this visit.

2.4.4 An annual emergency exercise should be conducted at the facility, with an invitation extended to the local CFA brigade to participate.

Likely permit conditions

The above requirements are likely to be included on any planning permit issued.

9.4 Staff training

CFA requirement

Staff operating and/or working within this facility are required to be trained in:

2.5.1 Facility and operational risks and hazards.

2.5.2 Facility emergency management roles, responsibilities and arrangements.

2.5.3 The use of any fire-fighting equipment where there is an expectation for staff to undertake first aid firefighting.

2.5.4 The storage, handling and emergency procedures for dangerous goods at the facility.

2.5.5 The location of first aid facilities and application of first aid equipment.

Likely permit conditions

The above requirements are likely to be included on any planning permit issued.

9.5 Emergency arrangements for unoccupied facilities

CFA requirement

Where facilities are predominantly unoccupied:

2.6.1 Appropriate monitoring for facility infrastructure must be provided, to ensure that any shorts, faults or equipment failures with the potential to ignite or propagate fire are rapidly identified and controlled, and any fire is notified to 000 immediately.

2.6.2 Arrangements must be made for site familiarisation with the local brigade prior to commissioning of facilities to confirm access arrangements and contact information for at least two persons who may be able to provide information or support during emergencies (24 hours a day).

Likely permit conditions

The above requirements are likely to be included on any planning permit issued.

10.0 ASSESSMENT OF THE PROPOSAL AND RECOMMENDATIONS

10.1 *c13.02-1S Bushfire*

Section 2 of this report identified planning scheme policies *in c13.02 Bushfire* that apply to the subject site. This section uses this to assess the proposal, having regard to the completed bushfire hazard landscape assessment and bushfire hazard site assessment.

c13.02-1S Strategic location policies

c13.02-1S requires that landscape bushfire risk be assessed and to protect human life by directing development to low risk locations. The bushfire hazard landscape assessment informs this consideration.

The subject site is located in an area assessed as landscape type 3. This positions the subject site at the middle of the spectrum of bushfire risk in Victoria using the landscape typologies approach. This is consistent with the grassland environment around the locality and the Bushfire Management Overlay that applies based on the Barnawartha Scenic Reserve.

However, the elevated risk is only being driven by this reserve which is a relatively small (on a landscape scape) area of hazard with grassy woodland vegetation present. It has limited potential to drive extreme fire behaviour. It more readily elevates the risk at a site scale, for which adequate separation between the development and the hazard can be provided. Further, the hazard is upslope to the development which further reduces its potential severity at the edge of the subject site.

On balance, the subject site represents an acceptable location for the proposal subject to the CFA guidance on necessary bushfire protection measures being implemented.

c13.02-1S Places of enhance safety

c13.02-1S requires a location in easy reach that provides protection for life from the harmful effects of bushfire. It defines such an area as BAL:Low. BAL:Low areas. These are available in the nearby settlement of Barnawartha.

c13.02-1S Site based exposure

Policies require that site based exposure to a bushfire be considered in decision making. The bushfire hazard site assessment informs this consideration along with CFA guidance. The assessment confirms that CFA guidance in relation to perimeter separation and fuel management within the site can be met in full.

Where the requirements of CFA guidance is implemented, site-based exposure can be adequately addressed.

Overall conclusion in response to *c13.02-1S Bushfire*

The proposal is consistent with the bushfire policies contained in the Planning Policy Framework. Further, the proposal where it gives effect to DELWP and CFA guidance for Solar energy facilities, as recommended in this report, demonstrates that bushfire has been appropriately considered and that the package of mitigation is capable of reducing the bushfire risk to acceptable levels.

10.2 c44.06 Bushfire Management Overlay

No planning permit is required under the Bushfire Management Overlay for the development of the land for a Solar energy facility.

10.3 c53.13 Renewable energy facility (other than wind energy facility)

c53.13 contains a particular provision for a Renewable energy facility. It sets out application requirements and decision guidelines for planning applications. A decision guideline required that the responsible authority must consider *Solar Energy Facilities Design and Development Guideline* (DELWP, 2019).

The DELWP guidelines, which reference the CFA guidelines, can be fully accommodated in the proposal (as they relate to bushfire). CFA guidelines have been extensively documented in this report and can be fully accommodated in the proposal. CFA pre-application advice in relation to a range of matters can confirm outstanding requirements.

10.4 Overall conclusion

There is no planning scheme bushfire factor that would warrant the proposal not proceeding subject to bushfire requirements being accommodated in the proposal based on CFA guidance and the inclusion of bushfire-related planning permit conditions.

ATTACHMENT 1 : VICTORIAN PLANNING PROVISIONS c53.13 RENEWABLE ENERGY FACILITIES

53.13 RENEWABLE ENERGY FACILITY (OTHER THAN WIND ENERGY FACILITY)

17/09/2019
VC161

Purpose

To facilitate the establishment and expansion of renewable energy facilities, in appropriate locations, with minimal impact on the amenity of the area.

53.13-1 Application

17/09/2019
VC161

This clause applies to an application under any provision of this planning scheme to use or develop land for a renewable energy facility (other than a wind energy facility).

53.13-2 Application requirements

01/07/2021
VC203

An application must be accompanied by the following information, as appropriate:

- A site and context analysis, including:
  - A site plan, photographs or other techniques to accurately describe the site and the surrounding area.
  - A location plan showing the full site area, local electricity grid, access roads to the site and direction and distance to nearby accommodation, hospital or education centre.
- A design response, including:
  - Detailed plans of the proposed development including, the layout and height of the facility and associated building and works, materials, reflectivity, colour, lighting, landscaping, the electricity distribution starting point (where the electricity will enter the distribution system), access roads and parking areas.
  - Accurate visual simulations illustrating the development in the context of the surrounding area and from key public view points.
  - The extent of vegetation removal and a rehabilitation plan for the site.
  - Written report and assessment, including:
    - An explanation of how the proposed design derives from and responds to the site analysis.
    - A description of the proposal, including the types of process to be utilised, materials to be stored and the treatment of waste.
    - Whether a Development Licence, Operating Licence, Permit or Registration is required from the Environment Protection Authority.
    - the potential amenity impacts such as noise, glint, light spill, emissions to air, land or water, vibration, smell and electromagnetic interference.
    - the effect of traffic to be generated on roads.
    - the impact upon Aboriginal or non-Aboriginal cultural heritage.
    - the impact of the proposal on any species listed under the *Flora and Fauna Guarantee Act 1988* or *Environment Protection and Biodiversity Conservation Act 1999*.
    - A statement of why the site is suitable for a renewable energy facility including, a calculation of the greenhouse benefits.
    - An environmental management plan including, a construction management plan, any rehabilitation and monitoring.

53.13-3 Decision guidelines

17/09/2019
VC161

Before deciding on an application, in addition to the decision guidelines of Clause 65, the responsible authority must consider, as appropriate:

- The Municipal Planning Strategy and the Planning Policy Framework.
- The effect of the proposal on the surrounding area in terms of noise, glint, light spill, vibration, smell and electromagnetic interference.
- The impact of the proposal on significant views, including visual corridors and sightlines.
- The impact of the proposal on strategically important agricultural land, particularly within declared irrigation districts.
- The impact of the proposal on the natural environment and natural systems.
- The impact of the proposal on the road network.
- *Solar Energy Facilities Design and Development Guideline* (Department of Environment, Land, Water and Planning, August 2019).

53.13-4 Amendment VC161 transitional provisions

17/09/2019
VC161

Clauses 19.01-2S and 53.13 of this planning scheme, as in force immediately before the approval date of Amendment VC161, continue to apply to an application to use or develop land for a renewable energy facility (other than a wind energy facility) lodged before the approval date of Amendment VC161.

Clauses 14.02-3S and 66.02-12 of this planning scheme do not apply to an application to use or develop land for a renewable energy facility (other than a wind energy facility) lodged before the approval date of Amendment VC161.

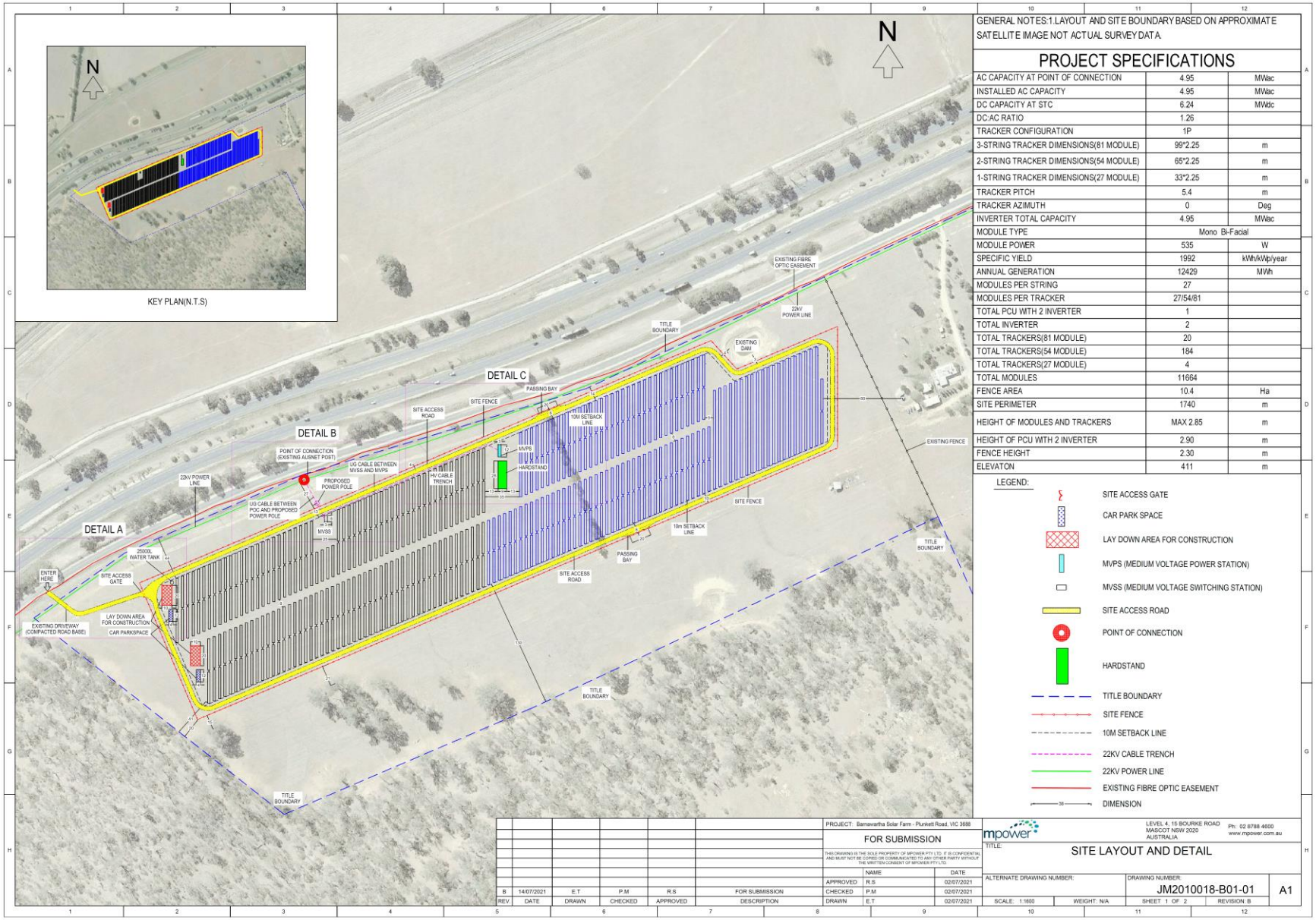
ATTACHMENT 2 : SITE ASSESSMENT PHOTOS

Subject site looking south

Looking north from subject site (towards freeway)

Roadside vegetation and strand of trees on the subject site

ATTACHMENT 3: PLANS OF THE PROPOSAL



GENERAL NOTES:1.LAYOUT AND SITE BOUNDARY BASED ON APPROXIMATE SATELLITE IMAGE NOT ACTUAL SURVEY DATA.

PROJECT SPECIFICATIONS

AC CAPACITY AT POINT OF CONNECTION	4.95	MWac
INSTALLED AC CAPACITY	4.95	MWac
DC CAPACITY AT STC	6.24	MWdc
DC:AC RATIO	1.26	
TRACKER CONFIGURATION	1P	
3-STRING TRACKER DIMENSIONS(81 MODULE)	99*2.25	m
2-STRING TRACKER DIMENSIONS(54 MODULE)	65*2.25	m
1-STRING TRACKER DIMENSIONS(27 MODULE)	33*2.25	m
TRACKER PITCH	5.4	m
TRACKER AZIMUTH	0	Deg
INVERTER TOTAL CAPACITY	4.95	MWac
MODULE TYPE	Mono Bi-Facial	
MODULE POWER	535	W
SPECIFIC YIELD	1992	kWh/kWp/year
ANNUAL GENERATION	12429	MWh
MODULES PER STRING	27	
MODULES PER TRACKER	27/54/81	
TOTAL PCU WITH 2 INVERTER	1	
TOTAL INVERTER	2	
TOTAL TRACKERS(81 MODULE)	20	
TOTAL TRACKERS(54 MODULE)	184	
TOTAL TRACKERS(27 MODULE)	4	
TOTAL MODULES	11664	
FENCE AREA	10.4	Ha
SITE PERIMETER	1740	m
HEIGHT OF MODULES AND TRACKERS	MAX 2.85	m
HEIGHT OF PCU WITH 2 INVERTER	2.90	m
FENCE HEIGHT	2.30	m
ELEVATON	411	m

LEGEND:

- SITE ACCESS GATE
- CAR PARK SPACE
- LAY DOWN AREA FOR CONSTRUCTION
- MVPS (MEDIUM VOLTAGE POWER STATION)
- MVSS (MEDIUM VOLTAGE SWITCHING STATION)
- SITE ACCESS ROAD
- POINT OF CONNECTION
- HARDSTAND
- TITLE BOUNDARY
- SITE FENCE
- 10M SETBACK LINE
- 22KV CABLE TRENCH
- 22KV POWER LINE
- EXISTING FIBRE OPTIC EASEMENT
- DIMENSION

REV.	DATE	DRAWN	CHECKED	APPROVED	DESCRIPTION
B	14/07/2021	E.T	P.M	R.S	FOR SUBMISSION

PROJECT: Barnawartha Solar Farm - Plunkett Road, VIC 3688

FOR SUBMISSION

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	NAME	DATE
APPROVED	R.S	02/07/2021
CHECKED	P.M	02/07/2021
DRAWN	E.T	02/07/2021

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Ph: 02 8788 4600 www.mpower.com.au

TITLE: SITE LAYOUT AND DETAIL

ALTERNATE DRAWING NUMBER:

DRAWING NUMBER: JM2010018-B01-01 A1

SCALE: 1:1600 WEIGHT: N/A SHEET 1 OF 2 REVISION: B

ATTACHMENT 4 : PLANNING PROPERTY REPORT (extract)

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

From www.planning.vic.gov.au on 07 February 2020 01:46 PM

PROPERTY DETAILS

Address:	1377 PLUNKETT ROAD BARNAWARTHA 3688	
Lot and Plan Number:	Lot 1 PS309491	
Standard Parcel Identifier (SPI):	1\PS309491	
Local Government Area (Council):	INDIGO	www.indigoshire.vic.gov.au
Council Property Number:	1190	
Planning Scheme:	Indigo	planning-schemes.delwp.vic.gov.au/schemes/indigo
Directory Reference:	VicRoads 35 D3	

UTILITIES

Rural Water Corporation:	Goulburn-Murray Water
Urban Water Corporation:	North East Water
Melbourne Water:	outside drainage boundary
Power Distributor:	AUSNET

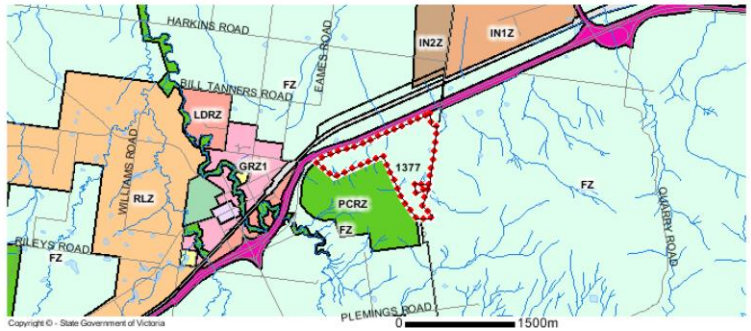
STATE ELECTORATES

Legislative Council:	NORTHERN VICTORIA
Legislative Assembly:	BENAMBRA

Planning Zones

FARMING ZONE (FZ)

SCHEDULE TO THE FARMING ZONE (FZ)



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- C1Z - Commercial 1
- IN1Z - Industrial 1
- PCRZ - Public Conservation & Resource
- PUZ4 - Public Use - Transport
- RLZ - Rural Living
- FZ - Farming
- IN2Z - Industrial 2
- PPRZ - Public Park & Recreation
- PUZ5 - Public Use - Cemetery / Crematorium
- SUZ - Special Use
- GRZ - General Residential
- LDRZ - Low Density Residential
- PUZ2 - Public Use - Education
- RDZ1 - Road - Category 1

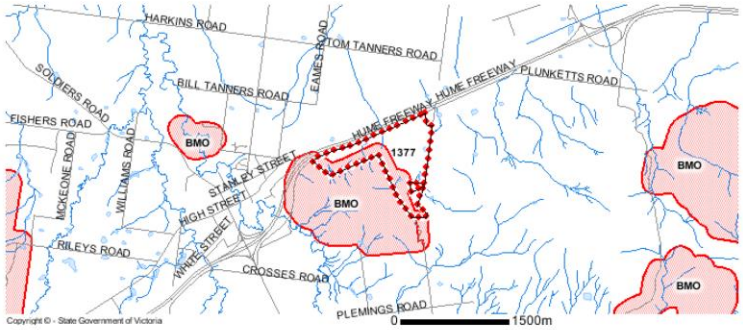
Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Planning Overlay

BUSHFIRE MANAGEMENT OVERLAY (BMO)



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BMO - Bushfire Management

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

PLANNING PROPERTY REPORT

Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

DESIGN AND DEVELOPMENT OVERLAY (DDO)

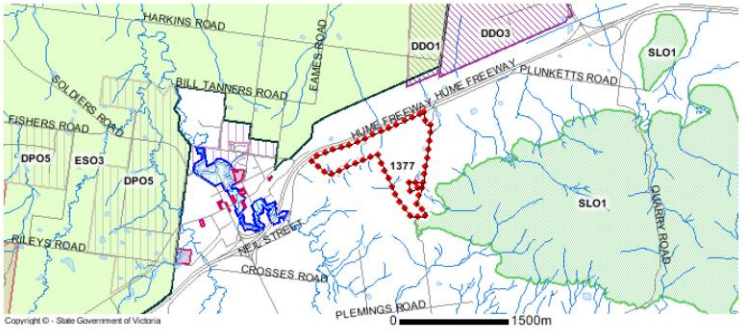
DEVELOPMENT PLAN OVERLAY (DPO)

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

HERITAGE OVERLAY (HO)

LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

SIGNIFICANT LANDSCAPE OVERLAY (SLO)



DDO - Design and Development

DPO - Development Plan

ESO - Environmental Significance

HO - Heritage

LSIO - Land Subject to Inundation

SLO - Significant Landscape

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend.

Further Planning Information

Planning scheme data last updated on 5 February 2020.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting https://www.planning.vic.gov.au

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the *Planning and Environment Act 1987*. It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates at Landata - https://www.landata.vic.gov.au

For details of surrounding properties, use this service to get the Reports for properties of interest.

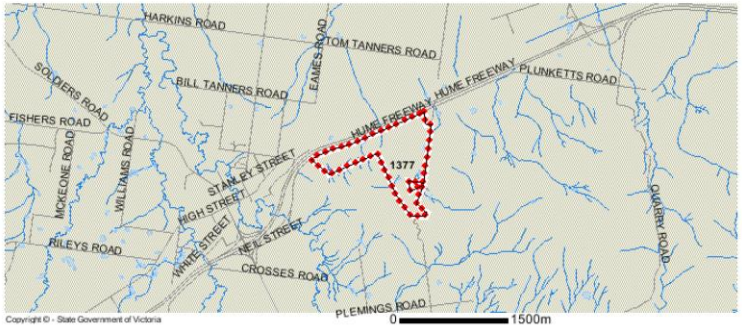
To view planning zones, overlay and heritage information in an interactive format visit http://mapshare.maps.vic.gov.au/vicplan

For other information about planning in Victoria visit https://www.planning.vic.gov.au

PLANNING PROPERTY REPORT

Designated Bushfire Prone Area

This property is in a designated bushfire prone area.
Special bushfire construction requirements apply. Planning provisions may apply.



Designated Bushfire Prone Area

Designated bushfire prone areas as determined by the Minister for Planning are in effect from 8 September 2011 and amended from time to time.

The Building Regulations 2018 through application of the Building Code of Australia, apply bushfire protection standards for building works in designated bushfire prone areas.

Designated bushfire prone areas maps can be viewed on VicPlan at http://mapshare.maps.vic.gov.au/vicplan or at the relevant local council.

Note: prior to 8 September 2011, the whole of Victoria was designated as bushfire prone area for the purposes of the building control system.

Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website www.vba.vic.gov.au

Copies of the Building Act and Building Regulations are available from www.legislation.vic.gov.au

For Planning Scheme Provisions in bushfire areas visit https://www.planning.vic.gov.au

[end]