9 SEPTEMBER 2021 (v1.0)

BUSHFIRE PLANNING ASSESSMENT

Solar energy facility
Lot 2 / LP204862 Hopkins Road, Fulham

Final report

Prepared for:

Solis Renewable Energy Pty Ltd

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Version Control

Version	Date	Comment	Name
v0.1	21 August 2020	Preliminary report for CFA pre-application discussions	Kevin Hazell Town Planner
v0.2	11 September 2020	Working document to inform design response	Kevin Hazell Town Planner
v0.3	6 September 2021	Draft final report	Kevin Hazell Town Planner
v1.0	9 September 2021	Final report	Kevin Hazell Town Planner

About

Kevin Hazell 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.

Contents

1.0 INTRODUCTION

1.1 Introduction

Lot 2 / LP204862 Hopkins Road, Fulham (the '***subject site***') is proposed to be developed with a Solar energy facility. This report provides a bushfire assessment for the purpose of planning scheme decision making. This report has been commissioned by Ricardo Energy, Environment and Planning on behalf of Solis Renewable Energy Pty Ltd.

The bushfire hazard landscape assessment (Section 2) and bushfire hazard site assessment (Section 3) provides more information about the site and its surrounds.

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.*

The solar energy facility will have over 200,000 solar panels to generate 80MW with 80MWh of battery storage. It will connect to AusNet Services located approximately 1.5km south of the site. The proposed solar energy facility will comprise the following key components:

- A minimum 200,000 solar panels with 80MW output
- 80MWh battery storage
- Substation
- Transformer
- Switching Yard
- 23 x invertor stations

Other site features include a security fence, the main administration building with amenities, and 10 car parking spaces with five each near the administration building and substation.

This report is based on the Schematic Overall Site Layout Plan, drawing 31046TP003-A prepared by Ricardo.

See: **Attachment 3: Plans of the proposal**

1.3 The subject site

The site is formally identified as Lot 2 on LP204862, as shown in Figure 2.1 below. It is located on Hopkins Road, Fulham, on the north eastern corner of Hopkins Road and McLarens Road. Located within the Shire of Wellington, the subject site is approximately 207km east of Melbourne.

The land is irregular in shape, and abuts Hopkins Road along the eastern boundary, and McLarens Road along the southern boundary. A single residential lot is located along the McLarens Road frontage, and shares three boundaries with the subject site.

With an approximately 1km frontage to Hopkins Road along the eastern boundary and 1.6km southern frontage to McLaren's Road, the site has a total land area of approximately 160 hectares. The topography is relatively flat, with a gentle slope from the north-western corner down to the south-eastern corner of approximately 7 metres. Given the size of the site, the change in level is modest and gradual.

The site is currently used for low intensity grazing of cattle (Black Angus) for beef production. Pastures are moderate to low quality, with a mix of annual and perennial pasture. The quality of the pasture is moderate to poor, with significant areas where weeds are dominant.

See:

Figure 1A: Locality aerial photo

Figure 1B: Locality map

Attachment 4: Existing conditions plan

Attachment 5: Planning property report

1.4 Planning scheme controls that apply to the subject site

The Wellington Planning Scheme (the 'planning scheme') applies to the subject site. The subject site is within the Farming Zone (FZ). The subject site is not affected by an overlay, including the Bushfire Management Overlay.

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 Planning*.

See:

Figure 1C: Zone map

Figure 1D: Bushfire prone area map

The *c13.02-1S Bushfire Planning* (Use and development control in a bushfire prone area) applies to a range of specified uses (see Section 1A.7 of this report) and any application for development that will result in people congregating in large numbers. A Solar energy facility is not a listed use and therefore the Use and development control in a bushfire prone area does not apply to this planning application. The proposal is also unlikely to result in people congregating in large numbers.

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.

See:

Attachment 1: c53.13 Renewable Energy Facilities

1.5 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:

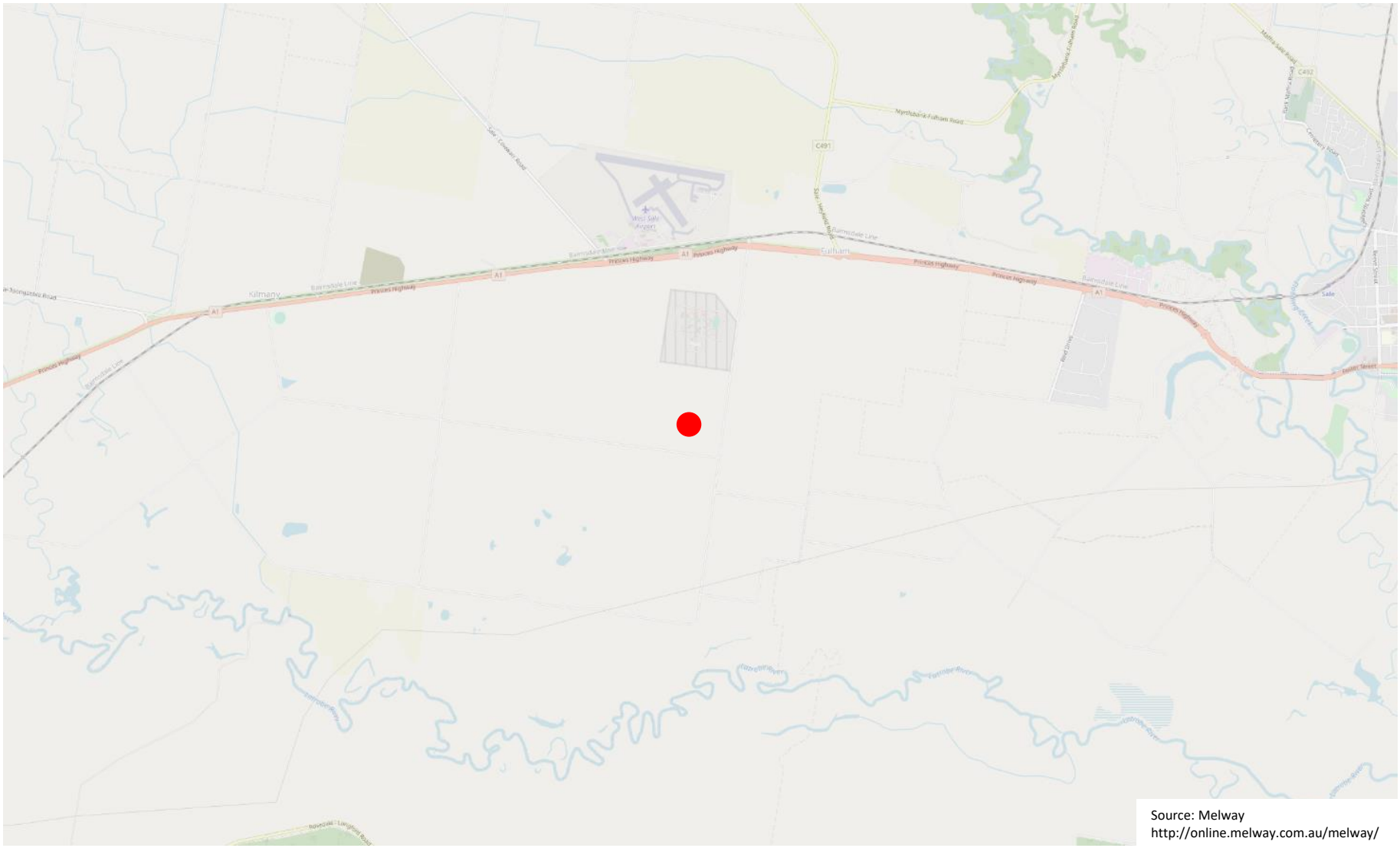
- The bushfire risk to be assessed. This report uses a bushfire hazard landscape assessment and a bushfire site assessment, as described in *Planning Permit Applications Bushfire Management Overlay Technical Guide 2017 (DELWP),* to inform these assessments.

- 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, by assessing the proposal against the published advice provided by DELWP and CFA on suitable planning responses for renewable energy facilities.

FIGURE 1A: LOCALITY AERIAL PHOTO

FIGURE 1B: LOCALITY MAP



Source: Melway
http://online.melway.com.au/melway/

FIGURE 1C: ZONE MAP

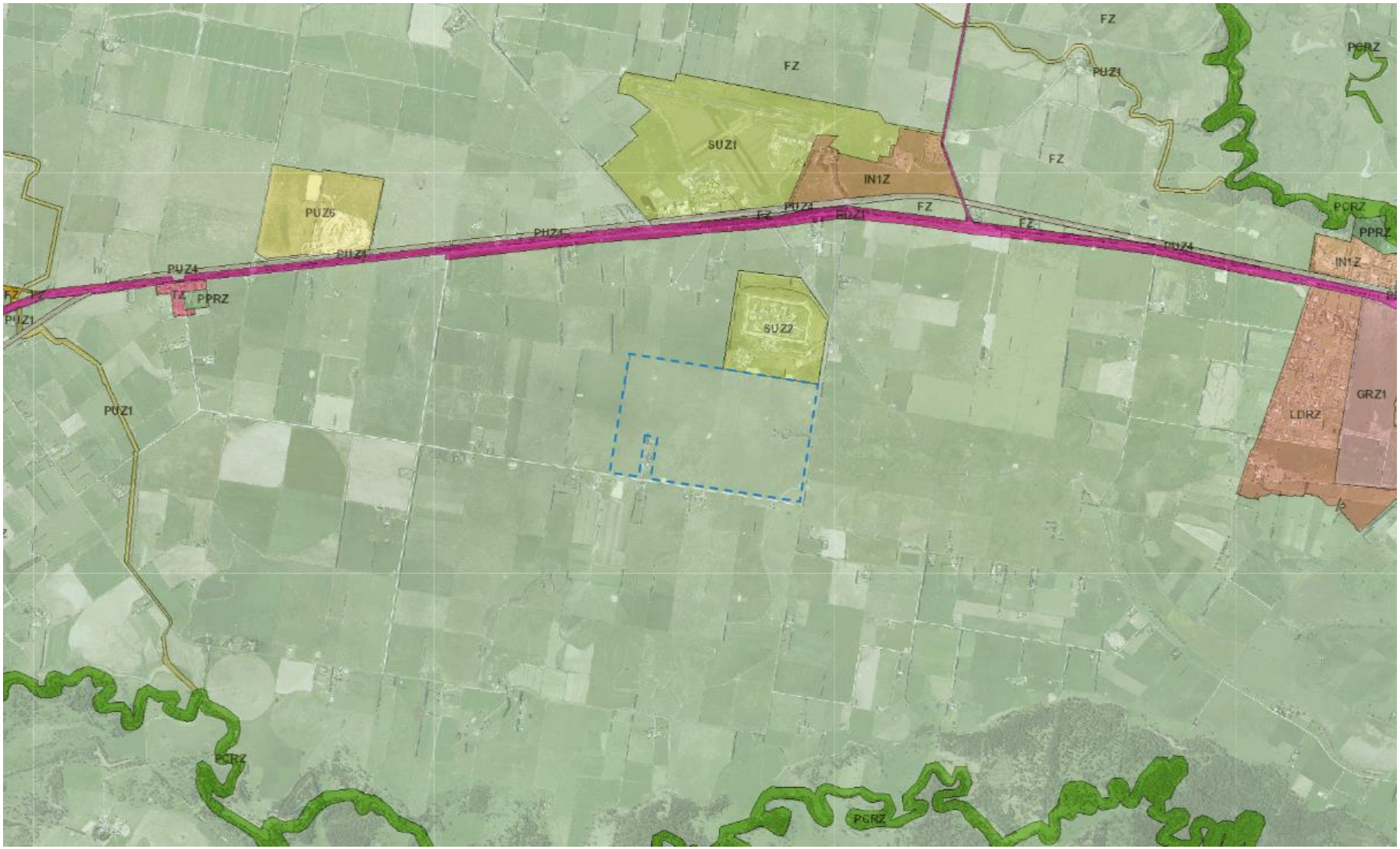


FIGURE 1D: BUSHFIRE PRONE AREA

2.0 PLANNING SCHEME BUSHFIRE CONTEXT

The planning scheme contains provisions 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)

c71.02-3 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 minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning.*

c13.01-1S Bushfire Planning 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 (c13.02-1S)

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.*

The key strategy that directs bushfire decision making is:

> *Give priority to the protection of human life by:*
>
> - *Prioritising the protection of human life over all other policy considerations.*
> - *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.*
> - *Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.*

C13.02-1S Bushfire Planning applies to all planning and decision making relating to land:

- *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.*

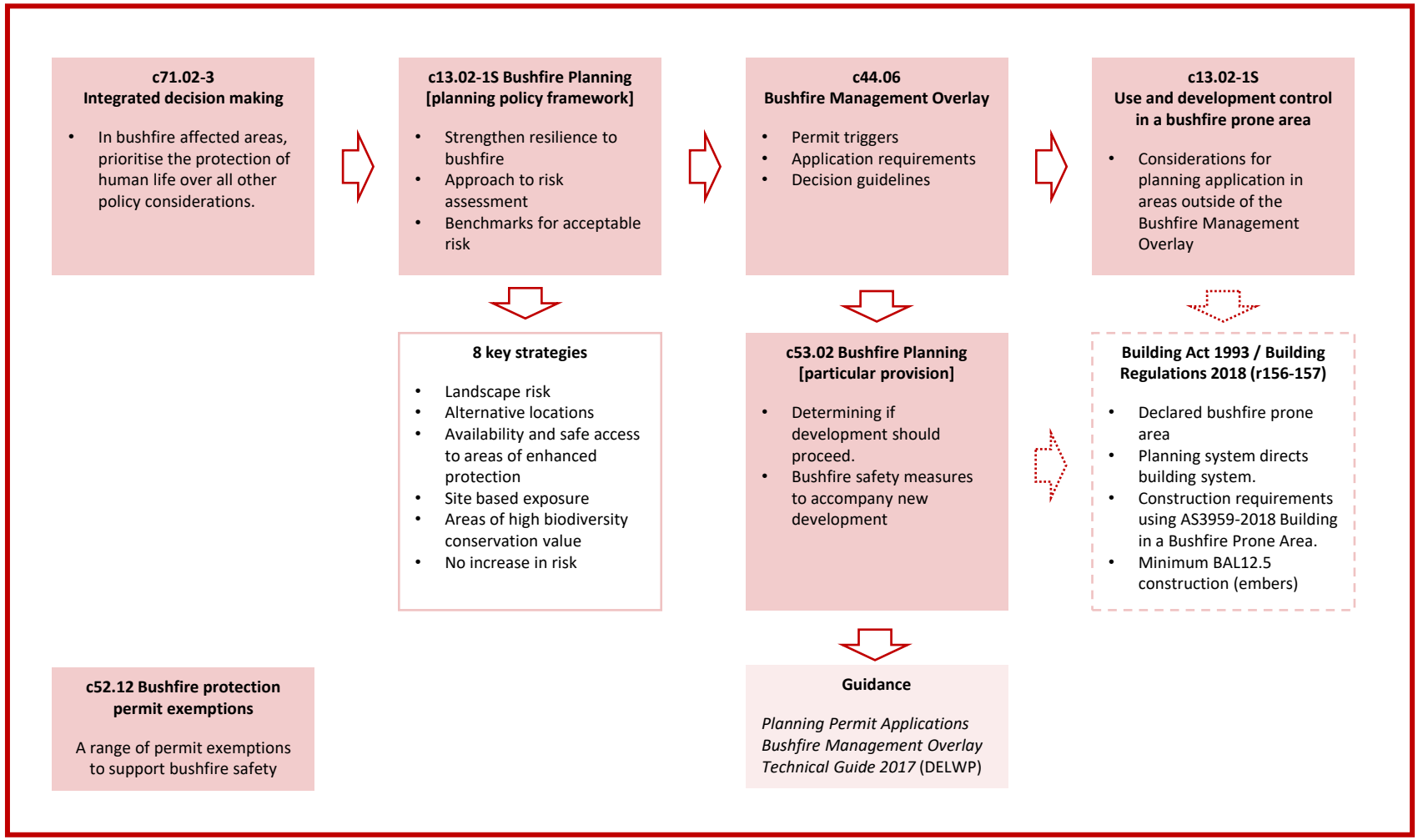
c13.02-1S Bushfire Planning contains a series of strategies and these are summarised below.

<u>Landscape bushfire considerations</u>

c13.02-1S Bushfire Planning 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.*

FIGURE 2: PLANNING SCHEME BUSHFIRE PROVISIONS AND SUPPORTING MATERIAL



Alternative locations for development

c13.02-1S Bushfire Planning 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 areas of enhanced protection

c13.02-1S Bushfire Planning 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 3959-2018 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

c13.02-1S Bushfire Planning 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

c13.02-1S Bushfire Planning 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 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia).*
- *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.*

Areas of high biodiversity conservation value

c13.02-1S Bushfire Planning provides directions on situations where a bushfire risk and biodiversity 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

c13.02-1S Bushfire Planning 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.*

2.4 Bushfire Management Overlay (c44.06)

Does not apply to this proposal

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 (c53.02)

c52.03 Bushfire Planning 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.*

2.6 Bushfire prone area (*c13.02-1S,* Building Act 1993 & Building Regulations 2018)

Bushfire Prone Areas are areas that are subject to or likely to be subject to bushfire. The Minister for Planning makes a formal determination to designate Bushfire Prone Areas under section 192A of the Building Act 1993.

Designated 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.

The Building Regulations 2018 require bushfire construction standards 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 is included in the Bushfire Prone Area is also included in the Bushfire Management Overlay, the requirements of the Bushfire Management Overlay take precedence. Where this is the case, the building regulations ensure bushfire construction requirements in a planning permit are given effect to by the relevant building surveyor at the time a building permit is issued.

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

c13.02-1S Bushfire Planning 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.

Does not apply to this proposal

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).

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:

<u>Suitable locations (pg. 10)</u>

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 a location. Considering bushfire from a landscape perspective is important as it affects the likelihood of a bushfire threatening a location, 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. The Bushfire Hazard Landscape Assessment is then used to consider how site-based safety measures should be applied so that proposed mitigation is responsive to the landscape risk.

However, no planning permit is required under *c44.06 Bushfire Management Overlay* as it does not apply to the subject site. 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 5 of this report.

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

3.2 Context on the Bushfire Hazard Landscape Assessment

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. The landscape assessment assumes these conditions as the basis for landscape scale hazard assessments.

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

3.3 Areas of bushfire hazard of landscape significance

Hazard Area 1 (HA1 on Figure 2A: Bushfire Hazard Landscape Assessment diagram)

Hazard area 1 comprises grassland areas. Due to the highly modified environment grassland areas are often in a managed setting either because of agricultural activities or managed as part of the gardens associated with rural living and low-density residential development. For considering the landscape risk associated with grassland areas, it is assumed that the 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. These will often be clumps of vegetation, roadside vegetation, strips of trees (for example, along vehicle accesses and water courses) and the occasional smaller patch of vegetation. These areas of fragmented vegetation will be a factor when considering bushfire at a site scale level but their impact on landscape-scale bushfires is low. The grassland vegetation will be the dominant driver of bushfire behaviour in these grassland areas.

Fire runs in the hazard area are extensive. Grassland hazard areas immediately adjoin the subject site. All hazard areas have the potential to generate ember attack, although extreme ember attack from grassland areas are unlikely.

Hazard Area 2 (HA2 on Figure 2A: Bushfire Hazard Landscape Assessment diagram)

Hazard area 2 comprises heavily forested areas that include plantations and public land in Holey Plains State Park and other large areas of public land further south-west of the subject site.

Fire runs in the hazard are up to 15-30km in length and much larger further to the south-west. These fires runs are located south-west of the subject site. Prevailing bushfire weather in Victoria is likely to move a bushfire towards the subject site. Based on the extent of vegetation and a rugged terrain, the hazard area has the potential to enable bushfires to grow large and to generate extreme fire behaviour.

The hazard area is separated from the subject locality by 5kms of grassland areas. There is no ability for these forested areas to create flame contact or radiant heat from forest vegetation on the subject site.

The hazard area has the potential to generate ember attack into surrounding areas, including grassland hazard areas. It therefore increases the potential for grassfires in Hazard area 1.

Hazard Area 3 (HA2 on Figure 2A: Bushfire Hazard Landscape Assessment diagram)

Hazard area 3 comprises fragmented treed areas in conjunction with the Latrobe River that would be assessed as woodland for the purpose of determining likely bushfire behaviour.

Fire runs in the hazard area are short.

The hazard area is unlikely to generate extreme fire behaviour due to the lack of rugged terrain, the vegetation type and the extent / configuration of vegetation. The hazard area is separated from the subject locality by 2kms of grassland areas. On balance, the separation distance and the extent / configuration of vegetation means this hazard area is a low landscape risk to the subject site.

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

3.4.1 Bushfire history

There is limited bushfire history in the surrounding landscape relevant to the locality.

See:
Figure 2C: Bushfire history

3.4.2 Joint Fuel Management Program

The Joint Fuel Management Program outlines where Forest Fire Management Victoria, the CFA and (sometimes) other public agencies intend to carry out fire management operations on Victoria's public and private land over the next three years. .

The joint fuel management plan for 2018-2021 does identify proposed interventions to hazard areas relevant to the subject site.

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

BAL:Low areas

An assessment has been made of the location's relative proximity and access to places that are lower fuel where human life can be better protected from the harmful effects of bushfire.

The planning scheme defines (in *c13.02-1S Bushfire*) such areas as BAL:Low, which are areas where hazardous vegetation is more than 100m away (50m for grasslands). Hazardous vegetation is vegetation that cannot be excluded under 2.2.3.2 of *Australian Standard AS3959:2009 Construction of buildings in bushfire prone areas* (Standards Australia).

BAL:Low areas are in proximity to the subject site in conjunction with:

- Fulham Correction Centre;
- Sale Airport; and
- The western edge of the settlement of Sale.

BAL:Low areas provide future occupants of the subject site with good access to locations that provides shelter from the harmful effects of flame contact and radiant heat from a moving bushfire. Access is available by walking and by vehicle.

The site is large enough where fuel management required by the CFA if a planning permit is granted will result in an area of BAL:Low being created within the site. The viability of sheltering in this area (for example, by staff) should be factored into site emergency management plans.

The need for shelter options is limited, in any event, and is included above for completeness rather than relevance.

There are no designated places of safety in the landscape (for example, a neighbourhood safer place). This is expected given the relatively lower landscape risk and the available of low-fuel areas as part of urban areas in nearby townships and settlements.

See:
Figure 2A: Bushfire Hazard Landscape Assessment diagram

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

- 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.
- Immediate access is available to a place that provides shelter from bushfire.

This positions the subject site at the lower end of bushfire risk in Victoria using the landscape typologies approach. This landscape type is consistent with the Bushfire Management Overlay not being applied to the subject site, as is the case.

Whilst Landscape type 1 is assessed, the potential for ember ignited grassfires from landscape-scale bushfires burning in large forested areas to the south-west does increase the potential for grassfires to occur.

3.6 Conclusions arising from the bushfire hazard landscape assessment

The Bushfire Hazard Landscape Assessment concludes that the bushfire risk is moderate within the risk spectrum contained in planning scheme decision making across Victoria. This is supported by landscape type 1 that applies to the subject site using the BMO-methodology for assessing landscaping risk.

Landscape-scale hazard areas in proximity to the subject site have the potential to generate flame contact and higher levels of radiant heat from grassland areas adjoining the subject site. Ember attack is possible from larger forested areas to the south-west, although it would not be at high or extreme levels given the separation that exists.

The landscape risk arising from the bushfire hazard is considered alongside good access to locations where human life can be better protected from the harmful effects of bushfire, including areas of BAL:Low that are in proximity to the subject site and will arise within completed development on the subject site.

Based on the above, there is no landscape factor that would warrant the development not proceeding or a specific landscape-scale bushfire response as part of the proposal.

Applying site-based bushfire safety measures as specified in the planning scheme and to satisfy CFA requirements mitigates the landscape risk to an acceptable level for development to proceed.

FIGURE 3A: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT DIAGRAM

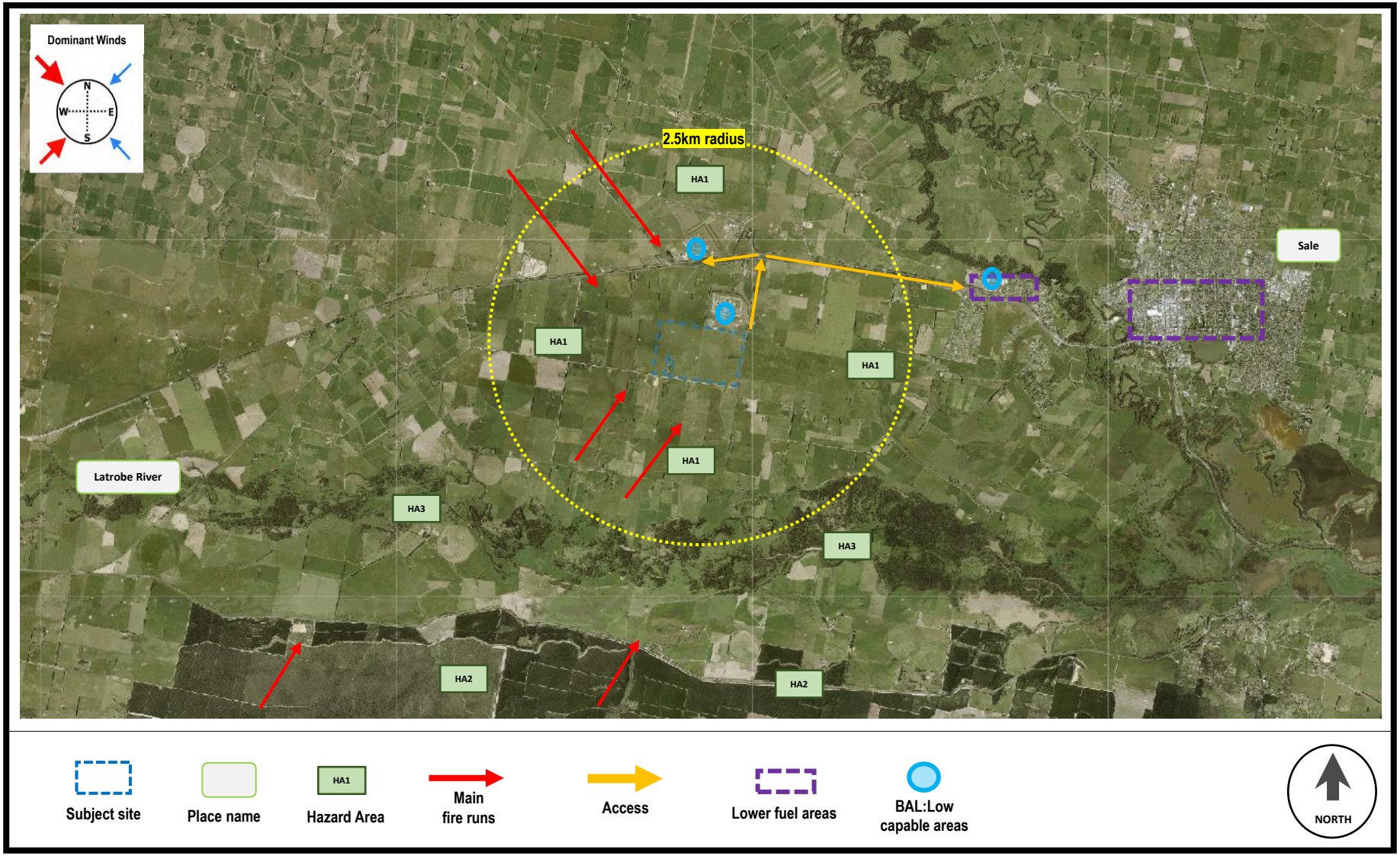
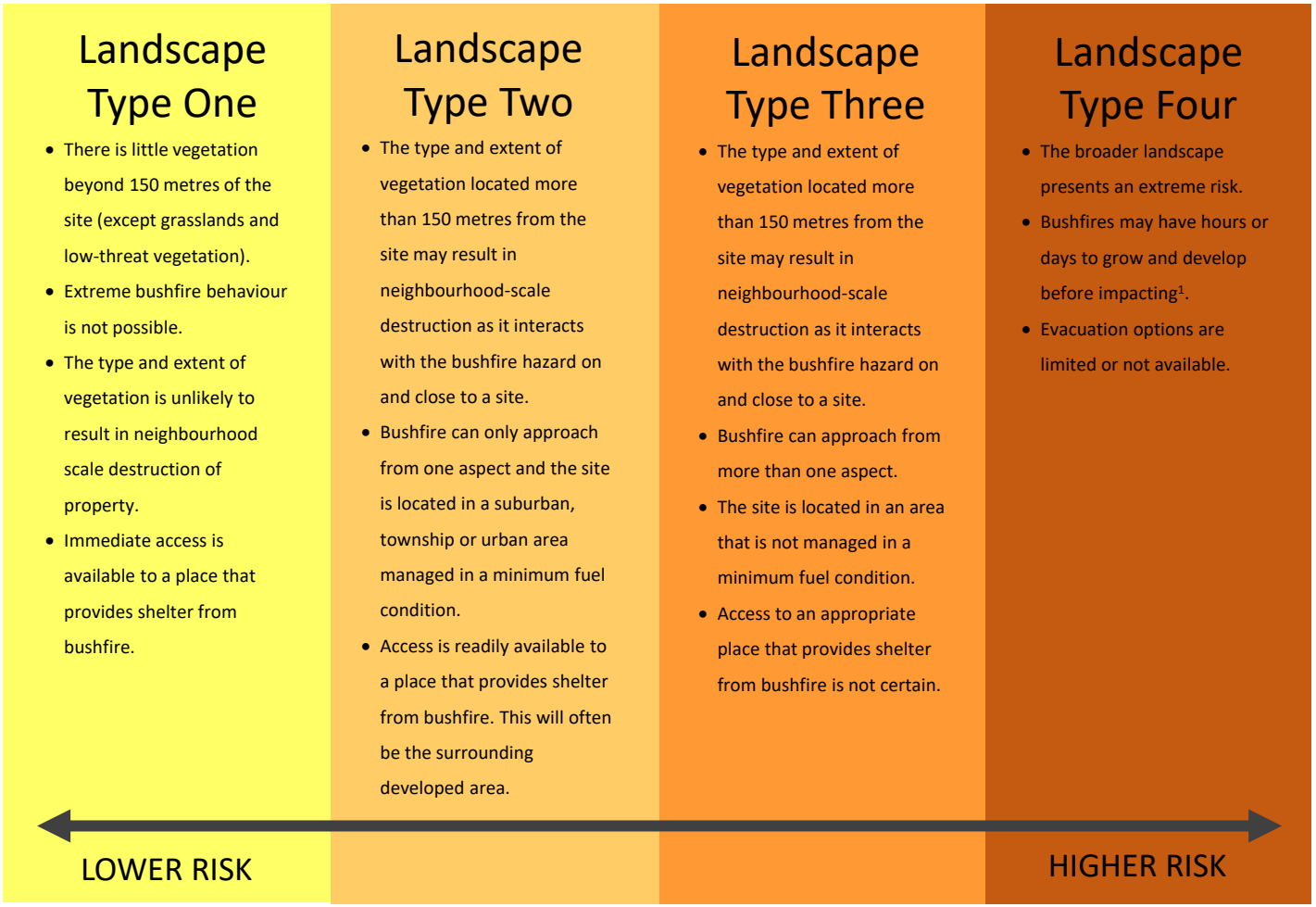


FIGURE 3B: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT: LANDSCAPE TYPOLOGIES

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.



[1] Adapted by author

FIGURE 3C: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT: BUSHFIRE HISTORY

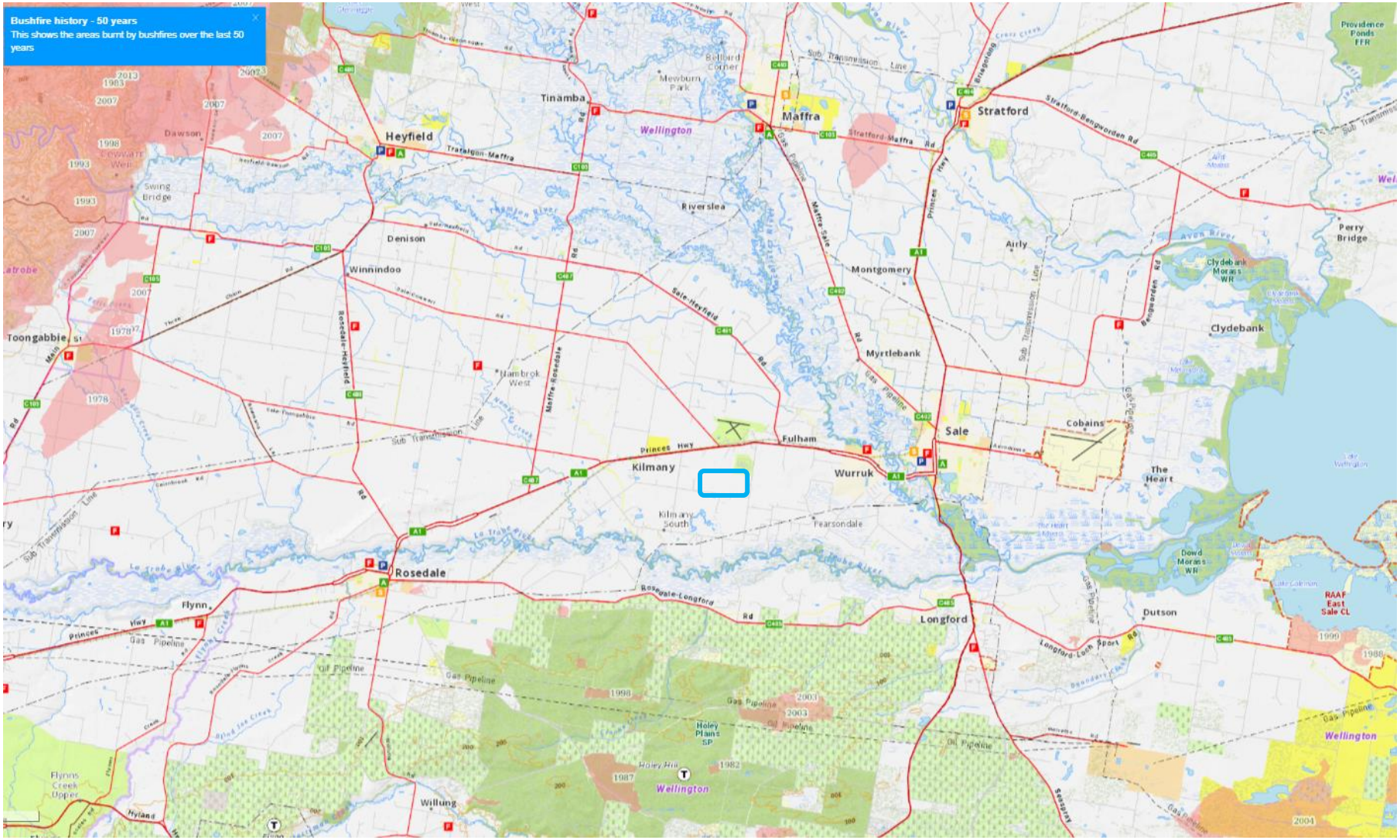
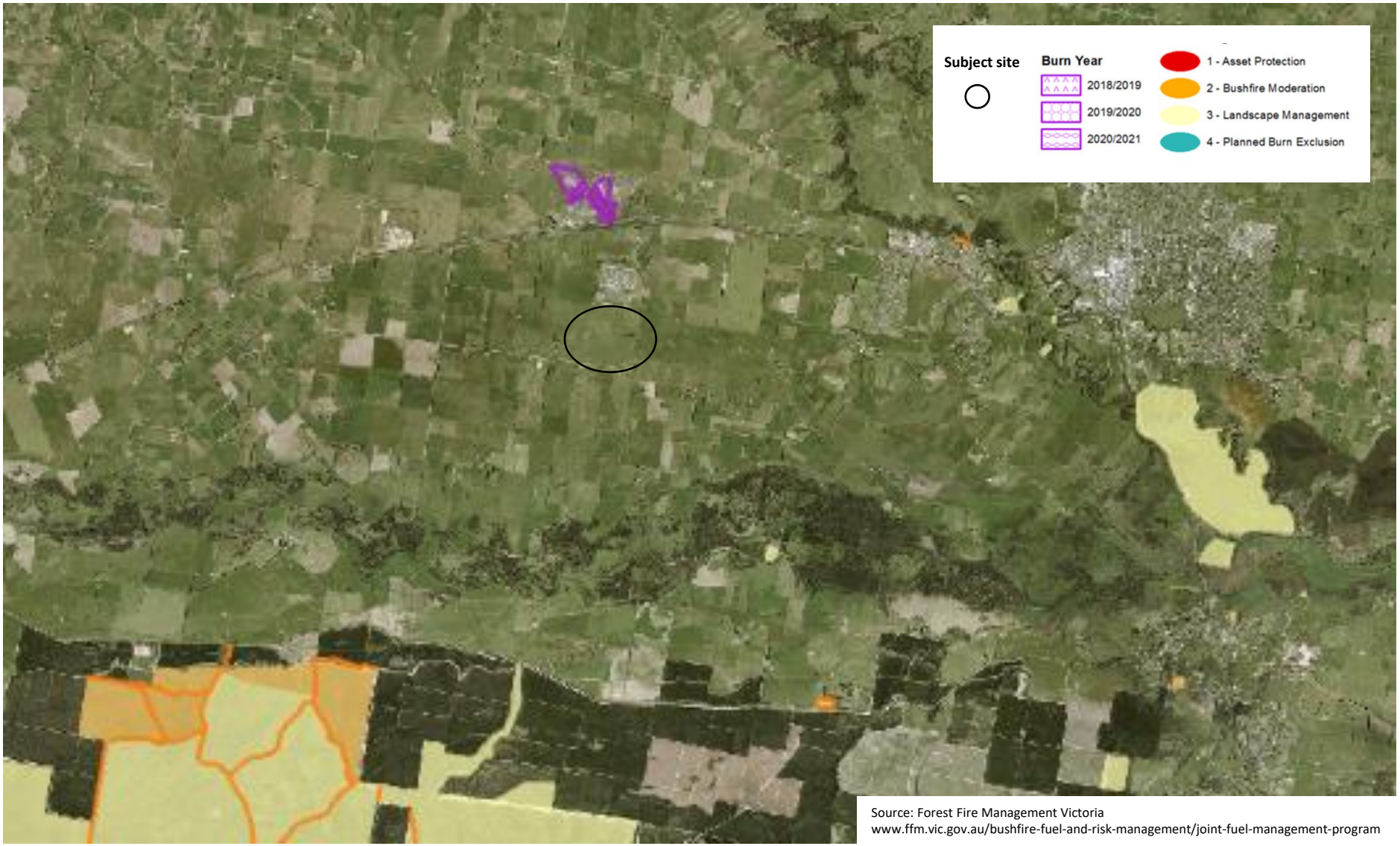


FIGURE 3D: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT: JOINT FUEL MANAGEMENT PROGRAM



Source: Forest Fire Management Victoria
www.ffm.vic.gov.au/bushfire-fuel-and-risk-management/joint-fuel-management-program

4.0 SITE-SCALE EXPOSURE TO BUSHFIRE

Incorporating a Bushfire Hazard Site Assessment

4.1 Why has a Bushfire Hazard Site Assessment been prepared?

A Bushfire Hazard Site Assessment has been prepared for completeness and to understand the site-scale exposure to bushfire. It is noted that:

- There is no planning scheme requirement to prepare a bushfire hazard site assessment as the land is not within a Bushfire Management Overlay.
- The *c13.02-1S Use and development control in a bushfire prone area* does not apply to the application, so site-based exposure using the bushfire hazard site assessment does not require assessing.
- CFA guidance and recommended mitigation is not dependant on the level of site-based exposure derived from the bushfire hazard site assessment.

However, considering site-based exposure through the bushfire hazard site assessment does enable a general understanding of what is likely to be expected at the edges of the subject site from adjoining hazard areas.

4.2 About the Bushfire Hazard Site Assessment

The Bushfire Hazard Site Assessment describes the bushfire hazard within 150 metres of a proposed development. The bushfire hazard comprises hazardous vegetation and the slope of land under the hazardous vegetation. The type of vegetation provides an understanding of likely fire behaviour and the slope of land impacts on how fast a bushfire will travel.

The description of the bushfire hazard is prepared in accordance with the requirements specified in the planning scheme. This includes *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***'). Key assumptions forming part of AS3959 include a Fire Danger Rating of 100 and a flame temperature of 1080'C.

Exposure using the Bushfire Hazard Site Assessment relates to radiant heat and flame contact. Ember attack is assumed in all areas and the severity of ember attack is not separately assessed at the site scale (for example, the different ember generating potential within a fuel type is not assessed or considered in the Bushfire Hazard Site Assessment). The severity of the ember attack is considered as part of the Bushfire Hazard Landscape Assessment.

4.3 Inputs to the Bushfire Hazard Site Assessment

The simplified procedure (Method 1) set out in AS3959, c2.2 has been used, along with Table 2 in *c53.02-3 Bushfire Planning* as required by the planning scheme.

See:
Figure 4A contains the site assessment worksheet

Figure 4B contains the site assessment diagram

Figure 4C: Slope in degrees

Attachment 2 contains photos of the site assessment area

FIGURE 4A: SITE ASSESSMENT WORKSHEET

	GRASSLAND ASPECTS	LOW-THREAT ASPECTS	BATTERIES
Vegetation within 100m of buildings / works **Within 150m or buildings / works**	Grassland	❑ Excludable / Low Threat ❑ Excludable – Managed Grasslands	Excludable / Low Threat based on completed development where fuel management on the site is implemented
Effective slope **Under classifiable vegetation**	Upslope and Flat	Upslope and Flat	Upslope and Flat
Distance (m) **to classifiable vegetation**	10m (minimum under CFA guidance)	10m (minimum under CFA guidance)	10m (minimum under CFA guidance) to other infrastructure

4.4 CFA-requirements

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 risks.

- *Perimeter separation (CFA guidance, page 8)*

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 (bushfire vegetation management standards)*

Beyond 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.

- *Battery installations (CFA Guidance, page 18)*

CFA guidance requires that at least 10m of separation be provided around batteries and 10m of non-combustible requires non-combustible mulch such as crushed rock or mineral earth within 10m of the metres.

The 10m of non-combustible materials can be provided.

The battery storage infrastructure are located away from site boundaries and separated from adjoining grassland areas for a distance of at least 35m. This separation in combination with the management of grass within the subject site as otherwise required means that radiant heat from grassland areas on adjoining land are at very low levels (2kw/sq.m according to Table 3 in *c53.02 Bushfire Planning).*

Smaller pods of batteries are located throughout the site and are within 10m of other infrastructure. CFA guidance is not achieved for these, with the proposed response discussed in other parts of this report.

FIGURE 4B: BUSHFIRE HAZARD SITE ASSESSMENT DIAGRAM

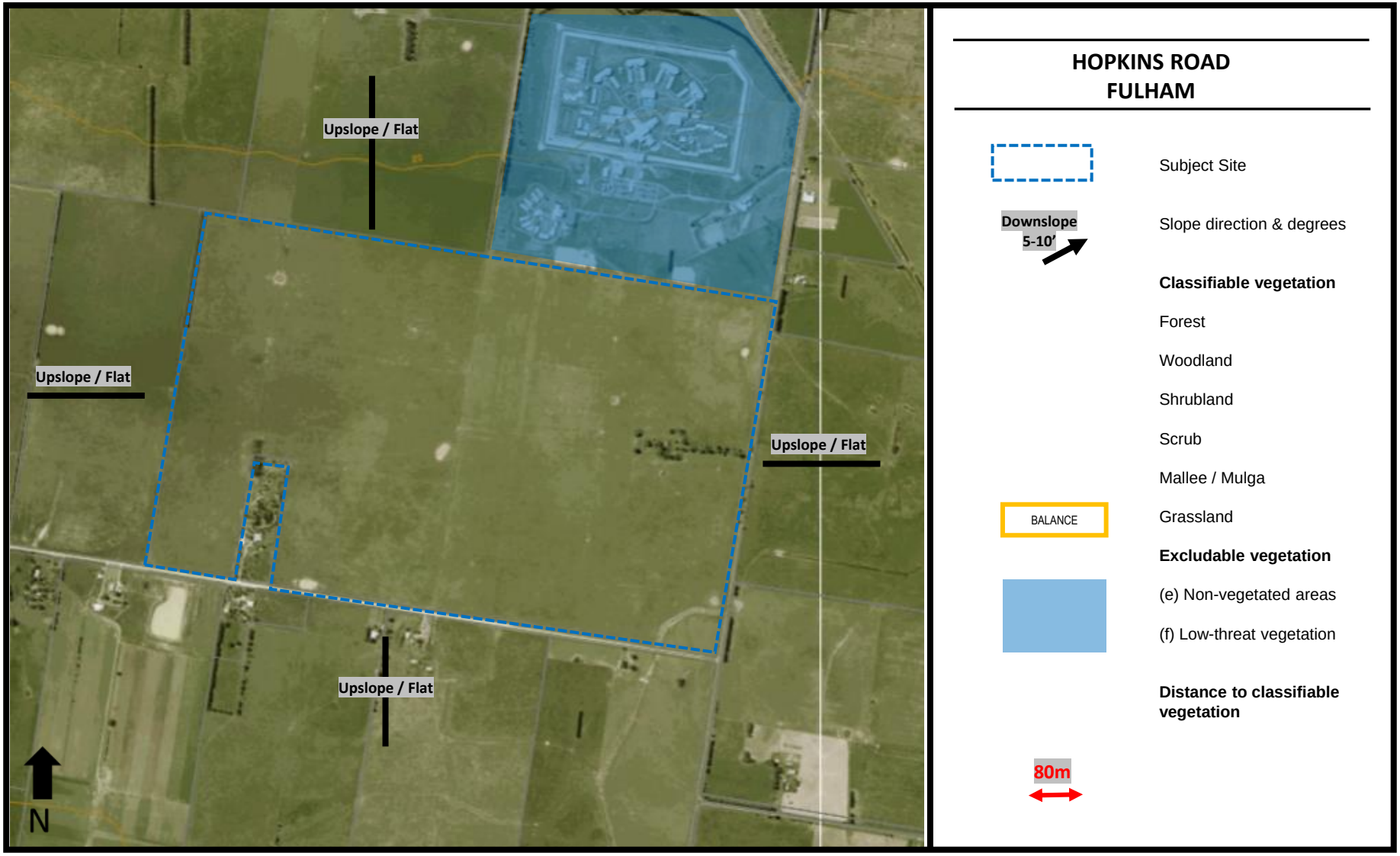
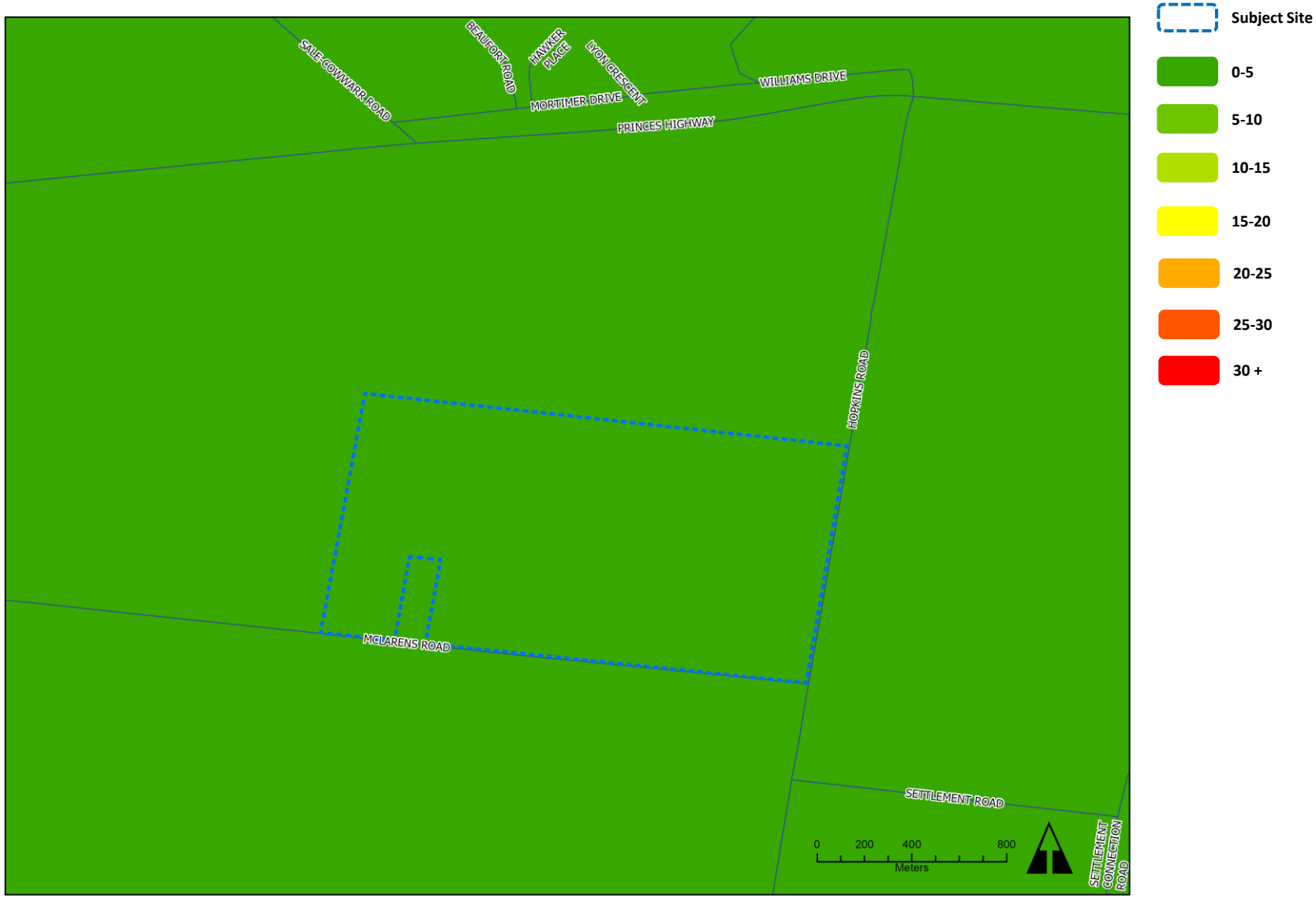


FIGURE 4C: SLOPE IN DEGREES



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

Design and siting consideration

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.

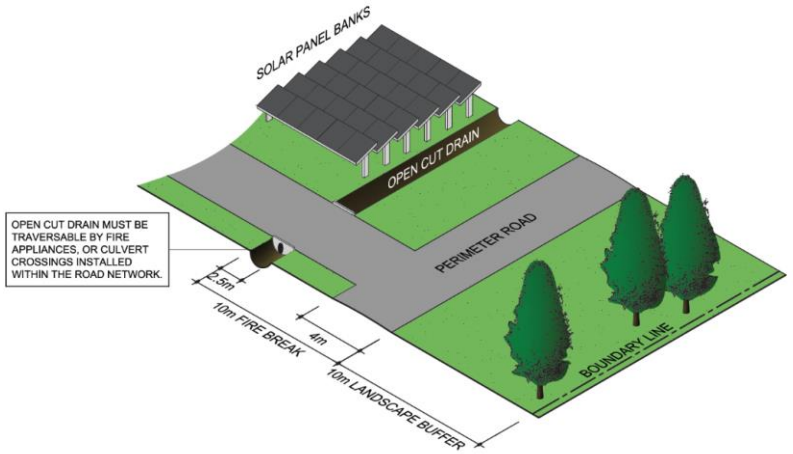


Figure 5: Typical cross-section indicating fire break requirements.

The proposal provides for perimeter screening 5m wide and a 10m fire break on the perimeter of the subject site.

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.

Note: Bushfire vegetation management requirements also apply to perimeter screening, see Section 5.3 of this report.

5.2 Fire breaks and vegetation management around key infrastructure

Design and siting consideration

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.

4.2.6 Where fire breaks are required, they 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).

The proposal provides for a fire break of at least 10m around key infrastructure. Specific conditions for the batteries are discussed in Section 7.2.

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 throughout the site

Design and siting consideration

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 within the facility is to 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.

For completeness, this requirement should also apply to the south-east corner of the site that includes a triangular area of land not proposed for any infrastructure.

5.4 Vegetation management under solar panels

Design and siting consideration

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) 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.

5.5 Separation of solar panels

Design and siting consideration

CFA requirement

6.1.1 Solar facilities are to have a six (6) metre separation between solar panel banks.

For the purposes of this guideline, a 'bank' of solar panels may be that connected to a single inverter.

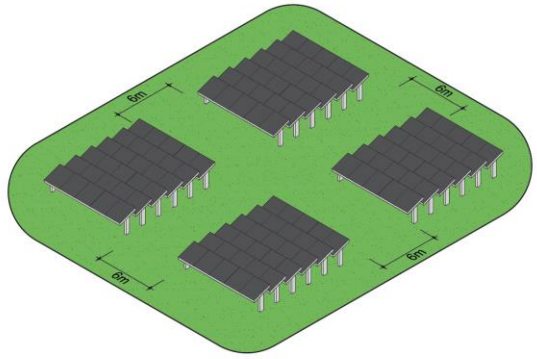


Figure 7: Six metre separation between solar panel banks (indicative only).

The proposal provides for the 6m separation between solar panel banks.

Likely permit condition

a) Solar facilities are to have a minimum 6 metre separation between banks of solar panels. A bank of solar panels may be that connected to a single inverter.

5.6 Access

Design and siting consideration

CFA requirement

3.1.1 Construction of a four (4) metre perimeter road within the ten (10) metre perimeter fire break.

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.

The proposal provides a 4m wide perimeter road with passing bays 20m in length every 600m. The proposal also includes:

- Primary access from Fulham Road, in the north-east corner of the site.
- Emergency access from Mclarens Road in the south-west corner of the site.

Likely permit condition

A four (4) metre perimeter road should be constructed within the ten (10) metre perimeter Fire Break. Roads 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% 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.

5.7 Vegetation management

Design and siting consideration

CFA requirement

All renewable energy installations that are constructed within the Bushfire Management Overlay or a Bushfire Prone Area must maintain the vegetation to the prescriptions listed within the planning permit conditions.

Facility operators must undertake the following fuel management measures during the Fire Danger Period.

Likely permit condition

Not all of the requirements for vegetation management included throughout the CFA guidance specify when management it to occur. It is recommended that a condition be included that reiterates vegetation management is to occur during the Fire Danger Period.

It is noted that other requirements (for example, areas of no fuel around batteries) are to be provided at all times, as these often relate to preventing fire spread within the site and between infrastructure and are therefore not dependant on the time of year.

6.0 FIRE FIGHTING WATER SUPPLY

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

Design and siting consideration

CFA requirement

6.2.1 A fire protection system must be provided for solar energy facilities. The fire protection system must be designed to allow adequate response to the risks and hazards at the facility, in consultation with CFA.

6.2.2 The fire protection system must incorporate one (1) x 45kL static water tank for every 150ha. For example, a 750ha site requires a minimum of five (5) x 45kL static water tanks, located at site entrance points.

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.).

The proposal provides a 45,000lt above ground water tank located adjoining the primary site access on the north-east of the subject site. The water tank is at least 10m from any energy infrastructure.

Likely permit conditions

a) The fire protection system must incorporate one (1) x 45kL static water tank for every 150ha. For example, a 750ha site requires a minimum of five (5) x 45kL static water tanks, located at site entrance points.

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 necessary.

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.

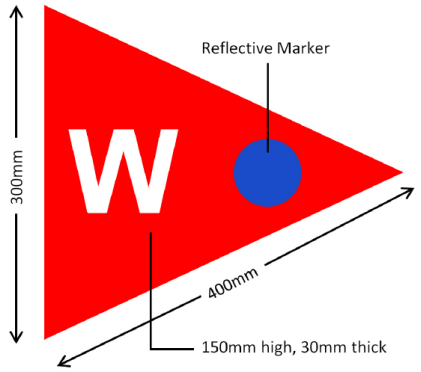


Figure 4: Directional signage: fade resistant, fixed to rigid post in contrasting lettering, white sign writing on red background, with a circle reflective marker. 'W' in 150mm upper case lettering.

7.0 BATTERY INSTALLATIONS

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

7.1 Siting of batter installations

Design and siting consideration

CFA requirement

7.1.2 Containers/infrastructure for battery energy storage systems must be located so as to be directly accessible to emergency responders through provision of a suitable access road.

The proposal provides batteries in two typology of locations.

The AC couple battery is located in the south-east of the subject site and is directly accessible from the perimeter access road. This is the main location in the proposal for a concentration of batteries and satisfies the CFA requirement to be directly accessible.

Other batteries are located within the proposed east-west 10m of separation between solar pods / zones. There are 69 in total (3 DC coupled batteries per inverter). These have been sited:

- Within the 10m of separation between solar panels. This separation is extended from the CFA guidelines minimum requirement of 6m to enable direct vehicle access.
- To meet the operational and technical requirements of the proposal.
- To ensure all of these batteries are setback at least 35m from hazardous vegetation (grasslands) to limit their exposure to grassfires on adjoining land.

The proposal delivers emergency responder access through the extended (from 6m to 10m) east west separation areas that will provide at least 6m clear for vehicles to pass the battery infrastructure. The separation areas will be maintained as short cropped grass areas on what is a flat site. It is considered highly achievable that emergency responders can access each of the batteries located within the internal part of the proposal.

It would be appropriate to reinforce the suitability of the proposed approach to batteries sited within the 10m east-west separation areas through a performance based response. This can considers radiant heat from a battery fire on adjacent inverters and solar panel infrastructure to minimise the impact of such an event. The assessment can be included in a fire engineers report required as a condition of planning permit.

Likely permit condition

Containers/infrastructure for battery energy storage systems must be located so as to be directly accessible to emergency responders through provision of an access road. This can be met through the 10m east-west separation areas.

A fire engineers report must demonstrate that the risk of radiant heat from a battery fire onto nearby infrastructure is reduced to acceptable levels.

7.2 Vegetation management around battery installations

Design and siting consideration

CFA requirement

7.4.1 Containers/infrastructure for battery energy storage systems must be clear of vegetation, including grass, for at least ten (10) metres on all sides. CFA requires non-combustible mulch such as crushed rock or mineral earth within this ten (10) metre area.

7.4.2 The fire break must be scaled to the risk of surrounding vegetation, including any landscape buffer.

7.4.3 During planning and design phases, the risk management process for battery energy storage systems must consider the risk of grassfire/bushfire impact from outside the facility.

Infrastructure for battery energy storage systems will be clear of vegetation, including grass, for at least 10m on all sides.

The proposed battery storage infrastructure is located away from site boundaries and separated from adjoining grassland areas for a distance of at least 35m. This separation in combination with the management of grass within the subject site as otherwise required means that radiant heat from grassland areas on adjoining land are at very low levels (2kw/sq.m according to Table 3 in *c53.02 Bushfire Planning).*

Likely permit condition

a) Containers/infrastructure for battery energy storage systems must be clear of vegetation, including grass, for at least ten (10) metres on all sides. CFA requires non-combustible mulch such as crushed rock or mineral earth within this ten (10) metre area.

7.3 Spill and wiring of battery installations

Design and siting consideration

CFA requirement

7.1.3 Containers and infrastructure for battery energy storage systems must be provided with appropriate spill containment (bunding or otherwise) that includes provision for management of fire water runoff.

7.1.4 Wiring must be closed, and cables for battery energy storage systems must be buried, except where required to be above-ground for grid connection.

Likely permit condition

The battery energy storage system(s) must be:

a) Provided with appropriate spill containment (bunding or otherwise) that includes provision for management of fire water runoff.

b) Provided with underground (buried) cabling and closed wiring, except where required to be above-ground for grid connection.

7.4 Fire protection for battery energy storage systems

Design and siting consideration

CFA requirement

7.2.1 A fire protection system must be provided for battery energy storage systems. The fire protection system must be designed to allow safe and effective response to the risks and hazards at the facility. Where a battery energy storage system is incorporated into a solar, wind or other renewable energy facility, additional fire protection may be required. Fire protection systems are to be designed in consultation with CFA.

7.2.2 The risk management process, as described in part 2.1 of this guideline, is to consider the (additional) hazards and risks of battery energy storage systems in the design of fire protection systems.

Battery infrastructure is proposed to be managed through the separation of infrastructure form adjoining grasslands, fuel management (of grass) across the site, and a 10m area of no-fuel around each element of the battery energy storage system. This will operate in conjunction with the fire engineers report recommended in Section 7.1 that will include the management of risks arising from batteries igniting and creating radiant heat for nearby infrastructure.

Likely permit condition(s)

It is anticipated the CFA will review the proposal and may include additional conditions from what is otherwise required and recommended in this report.

7.5 Fire protection for battery energy storage systems

Design and siting consideration

CFA requirement

7.3.1 Battery energy storage systems that contain dangerous goods may be required to comply with the requirements of the Dangerous Goods Act 1985; the Dangerous Goods (Storage and Handling) Regulations 2012; and relevant Australian Standards.

7.3.2 Battery manufacturers must provide specifications for safe operating conditions for temperature, and the effects of fire on battery energy storage systems (e.g., the emission of any toxic gases). This information must be provided within the content of the site's Emergency Information Book.

7.3.3 Battery energy storage systems must be kept free of extraneous materials and combustible materials of all kinds. Regular inspections and housekeeping must be conducted to ensure materials do not accumulate.

7.3.4 Battery energy storage systems must be serviced/maintained as per the manufacturer's requirements.

Likely permit condition(s)

a) The specifications for safe operating conditions for temperature, details of the electrical safety hazards, details of the effects of fire on the battery energy storage system(s), and the shut-down procedures if the batteries (and solar panels) are involved in fire, must be provided within the facility's Emergency Information Container(s).

b) Battery energy storage systems must be kept free of extraneous materials and combustible materials of all kinds. Regular inspections and housekeeping must be conducted to ensure materials do not accumulate.

c) Battery energy storage systems must be serviced/maintained as per the manufacturer's requirements.

e) The risk management process for battery energy storage systems must consider the risk of grassfire/bushfire impact from outside the facility.

7.6 Fire protection for battery energy storage systems

Design and operation consideration

CFA requirement

7.1.1 In lieu of any current Australian Standard, the current version of UL 9540: Energy Storage System Requirements and NFPA 855: Standard For The Installation Of Stationary Energy Storage Systems, must be used in the design and operation of battery energy storage systems.

Likely permit condition(s)

a) UL 9540: Energy Storage System Requirements and NFPA 855: Standard For The Installation Of Stationary Energy Storage Systems, must be used in the design and operation of battery energy storage systems.

8.0 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) 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.

b) 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.

9.0 DANGEROUS GOODS STORAGE AND HANDLING

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.

10.0 EMERGENCY & SITE OPERATIONAL MANAGEMENT

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

10.1 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

These CFA requirements are likely to be included onto the planning permit.

10.2 Emergency Management for Battery Energy Storage Systems

CFA requirement

7.5.1 EMPs must include the specifications for safe operating conditions for temperature, details of the electrical safety hazards, details of the effects of fire on the battery energy storage system(s), and the shut-down procedures if the batteries are involved in fire.

7.5.2 EMPs must incorporate a plan for partial and full decommissioning of the battery energy storage system in the event of an emergency incident that renders the facility inoperable or unsafe, prior to its anticipated end-of-life.

Likely permit conditions

These CFA requirements are likely to be included onto the planning permit.

10.3 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

These CFA requirements are likely to be included onto the planning permit.

10.4 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

These CFA requirements are likely to be included onto the planning permit.

10.5 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

A condition has not been applied to the existing permit requiring staff training. It is a matter for the responsible authority to determine if this condition needs to be inserted on the amended planning permit as the CFA requirement also applied at the time the existing permit was issued.

10.6 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

These CFA requirements are likely to be included onto the planning permit.

11.0 ASSESSMENT OF THE PROPOSAL AND RECOMMENDATIONS

11.1 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 1. This is the lowest level of landscape risk arising under bushfire considerations in the planning scheme. The subject site represents a relatively lower risk location which is a suitable place for the proposal considering the spectrum of bushfire risk across Victoria.

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 will be available within the completed development when the required fuel management requirements are implemented.

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.

Site based exposure arises from grassland interfaces on all sides of the subject site. Where the requirements of CFA guidance is implemented in relation to perimeter separation, perimeter fuel management and fuel management across the subject site, site-based exposure can be adequately addressed.

11.2 c44.06 Bushfire Management Overlay

The Bushire Management Overlay does not apply to the subject site. No planning permit is required under the Bushfire Management Overlay for future development.

11.3 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 requires that the responsible authority must consider *Solar Energy Facilities Design and Development Guideline* (DELWP, 2019).

The DELWP guidelines, which reference the CFA guidelines, have been considered. The CFA guidelines have been extensively documented in this report and have been used to inform the design response as it relates to bushfire.

11.4 Overall conclusion

The proposal is consistent with the bushfire policies contained in the Planning Policy Framework. Further, the proposal gives effect to DELWP and CFA guidance for renewable energy facilities and can demonstrate that bushfire has been appropriately considered and that the package of mitigation is capable of reducing the bushfire risk to acceptable levels.

There is no planning scheme bushfire factor that would warrant the proposal not proceeding.

11.5 Permit conditions

This documents sets out bushfire-related permit conditions that are derived from CFA guidance. They are likely to be included on any planning permit issued based on the CFA guidelines.

Attachment 1: Victorian Planning Provisions c52.13 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

31/07/2018
VC148

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 Works Approval or Licence 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

North-east aspect

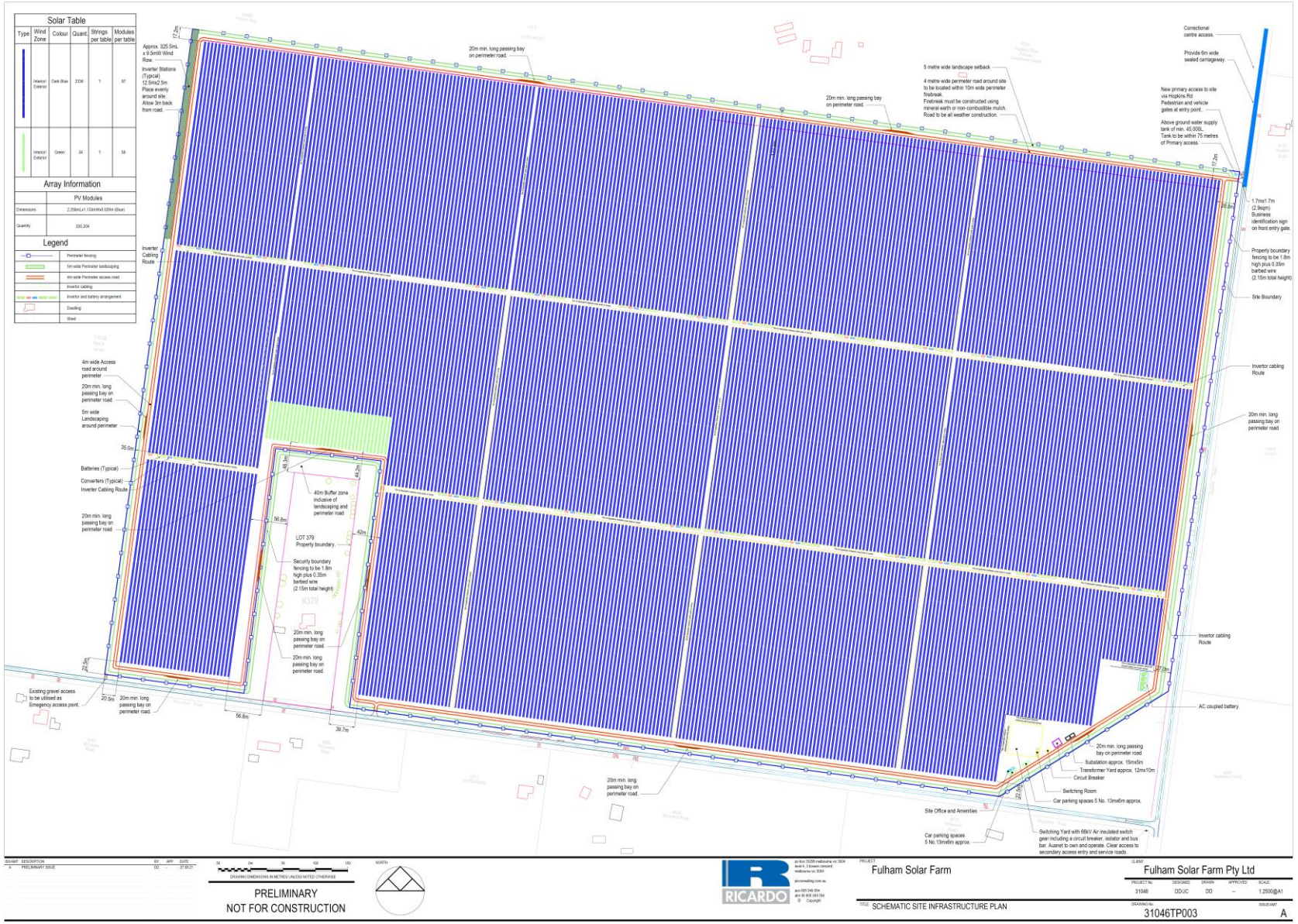
North-west aspect

South-east aspect

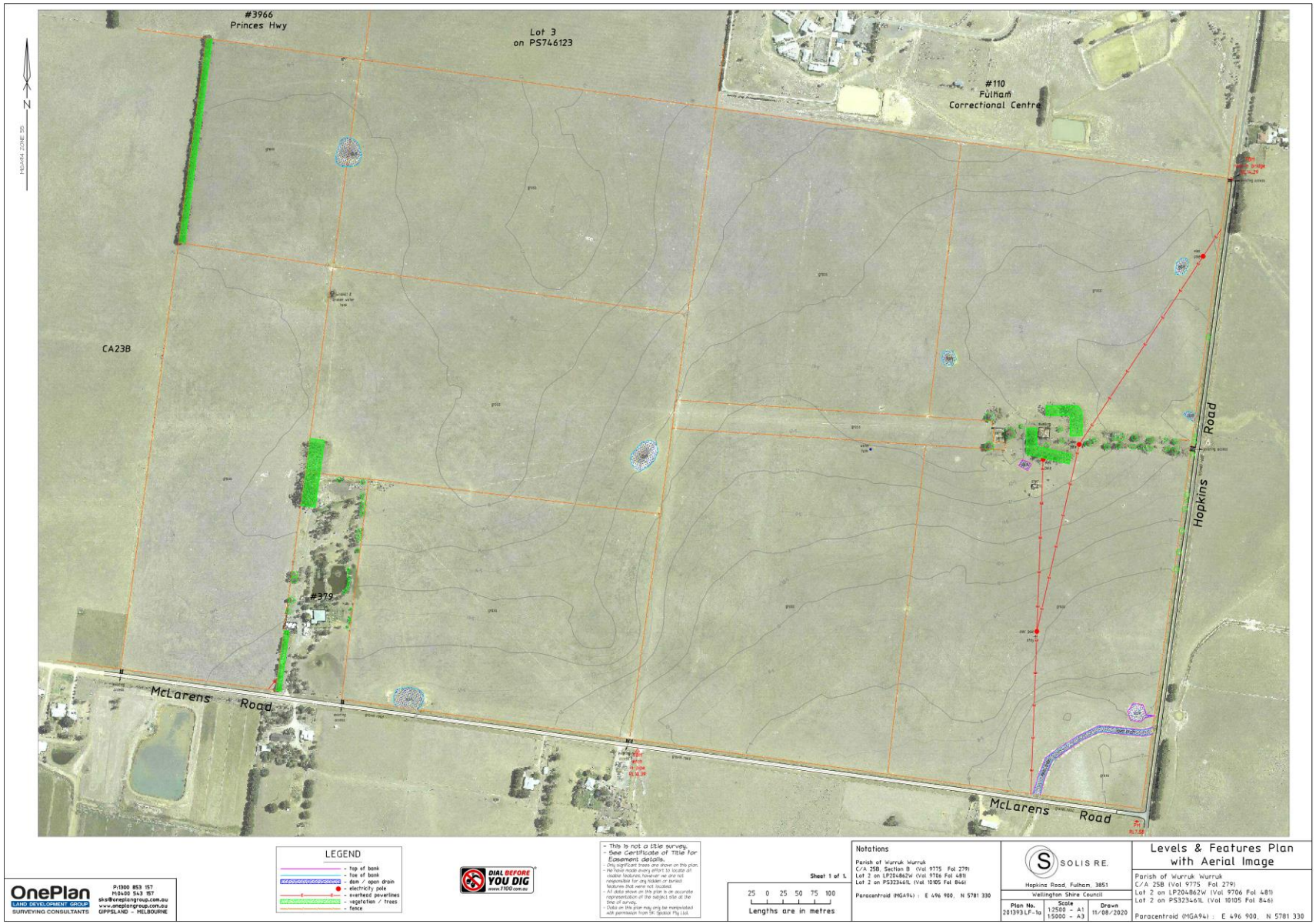
Looking south over the subject stie towards larger forested areas

South-west aspect

Attachment 3: Plans of the proposal



Attachment 4: Existing conditions plan



Attachment 5: Planning property report (extract)

PLANNING PROPERTY REPORT

From www.planning.vic.gov.au on 20 July 2020 04:35 PM

PROPERTY DETAILS

Address:	**HOPKINS ROAD FULHAM 3851**	
Lot and Plan Number:	**Lot 2 LP204862**	
Standard Parcel Identifier (SPI):	**2\LP204862**	
Local Government Area (Council):	**WELLINGTON**	www.wellington.vic.gov.au
Council Property Number:	**102608**	
Planning Scheme:	**Wellington**	planning-schemes.delwp.vic.gov.au/schemes/wellington
Directory Reference:	**VicRoads 98 H3**	

This property has 3 parcels. For full parcel details get the free Basic Property report at Property Reports

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Urban Water Corporation:	**Gippsland Water**
Melbourne Water:	**outside drainage boundary**
Power Distributor:	**AUSNET**

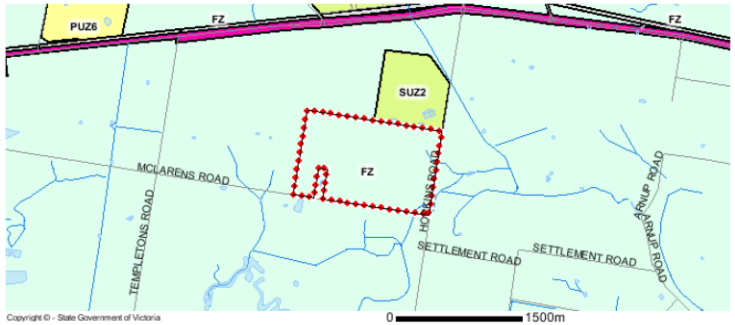
STATE ELECTORATES

Legislative Council:	**EASTERN VICTORIA**
Legislative Assembly:	**GIPPSLAND SOUTH**

Planning Zones

FARMING ZONE (FZ)

SCHEDULE TO THE FARMING ZONE (FZ)



FZ - Farming
PUZ6 - Public Use - Local Government
TZ - Township
PPRZ - Public Park & Recreation
RDZ1 - Road - Category 1
PUZ4 - Public Use - Transport
SUZ - Special Use

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

PLANNING PROPERTY REPORT

Planning Overlay

None affecting this land - there are overlays in the vicinity

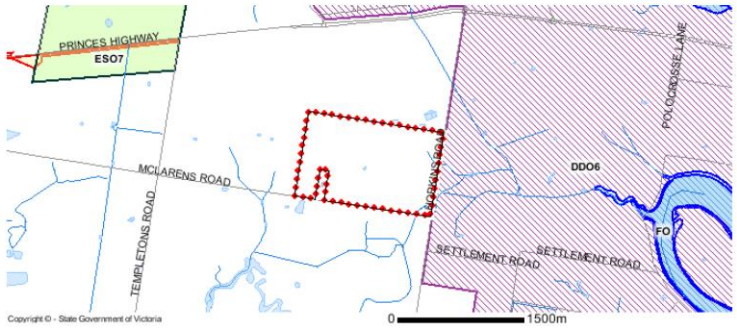
DESIGN AND DEVELOPMENT OVERLAY (DDO)

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

FLOODWAY OVERLAY (FO)

LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

PUBLIC ACQUISITION OVERLAY (PAO)



DDO - Design and Development
LSIO - Land Subject to Inundation
ESO - Environmental Significance
PAO - Public Acquisition
FO - Floodway

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 15 July 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

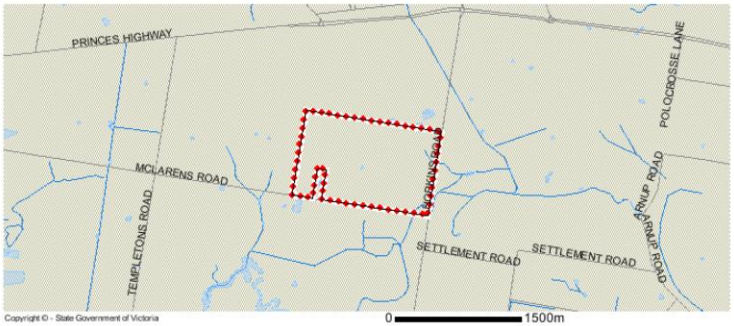
For other information about planning in Victoria visit https://www.planning.vic.gov.au

PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

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]