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Bushfire Management Statement

Hastings Generation Project

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February 2022

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*Where the term “**Bushfire prevention and mitigation related activities**” (or words to that effect) are used, this is to be defined as the clearance of vegetation in accordance with the Victorian State Government guidelines, including clearing and maintenance of existing fire breaks and/or fire access for fire fighters under electricity pylons and properties that have been constructed to Australian Standard AS3959 and/or the National Construction Code.*

Introduction

This report has been developed to meet the requirements of the Bushfire Management Overlay as outlined within the Victorian Planning Provisions. The site located at Bayview Road, Hastings is within the Bushfire Management Overlay. This report outlines the required treatments to enable compliance with the Bushfire Management Overlay.

The proposal is to construct a Generation Facility on an existing vacant area of the property.

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

The report addresses the following provisions of the Victorian Planning Scheme:

Clause 53.02 – Bushfire Planning.

This report should be read in conjunction with the Clause 13.02 assessment.

Application Details

Municipality:	Mornington Peninsula
Title description:	Lot 39 LP3732
Overlays:	Bushfire Management Overlay (BMO)
Zoning:	Special Use Zone (SUZ)

Site Description

Existing use and siting of buildings and works on and near the land:	The location of the Generation Facility is within industrial land. There are currently mulch and compost piles and these will be removed prior to construction. An existing building is located to the north of the development.
Existing access arrangements:	The main access to the site is from Bayview Road with emergency access available from Long Island Drive.
Location of nearest fire hydrant:	A fire hydrant system that conforms with AS 2419.1 will be provided and connected to the existing hydrant system at the ESSO plant.

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Figure 1 – General area of the site with the BMO shaded (site area shown in blue outline)

Access and egress

The site is accessible from Bayview Road with emergency access available from the end of Long Island Drive. Once on Bayview Road, there is limited vegetation along the roadside and travel to a 'safer location' can occur quickly.

Topography

The property and the surrounding landscape are on what can be considered as flat ground. On the property, there is a slight fall from west to east, but this is considered negligible in the context of bushfire risk.

Vegetation

On the property are areas of vegetation that has been classified as forest when assessed against AS3959. There are trees and shrubs along various fence lines. On the adjoining properties is grassland and an area that has been classified as woodland is to the east.

There are areas where the surrounding vegetation includes weed varieties that if removed, would reduce the bushfire risk to the property.

Bushfire risk in south east Australia

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

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

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

When these conditions combine, fires can be expected to move quickly under the influence of strong, gusty north westerly winds. These fires can then move rapidly in a different direction when the subsequent south-westerly wind change arrives. Fires that start under these conditions can reach a very high intensity, even in

areas of relatively low fuel loads and can be difficult to control until the weather conditions abate.

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

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

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

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

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

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

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

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

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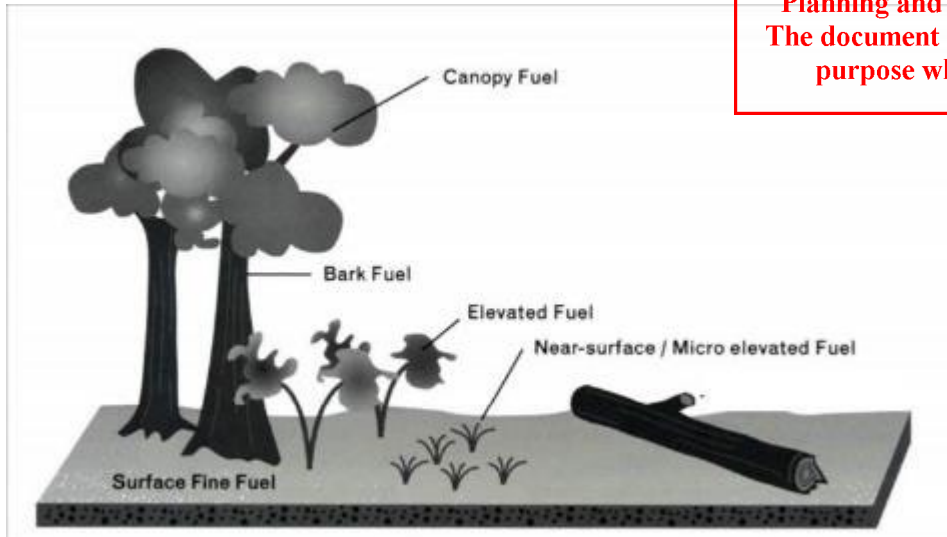


Figure 2 - Overview of fuel structure that affects bushfire behaviour

Bushfire Hazard Landscape Assessment

The Bushfire Hazard Landscape Assessment is completed to provide an assessment of the bushfire hazard more than 150 metres away from the subject site. This assessment considers all available information to determine the effects of a bushfire from more than 150m from the site.

For this assessment, the landscape risk has been assessed at one kilometre and 10 kilometres.

Fire History

The historical information provided by DELWP¹ indicates that few bushfires have burnt near the development site. There are limited bushfire occurrences in the surrounding area apart from a bushfire that occurred to the south of the Hastings township. This bushfire did not threaten the development site however it is acknowledged that under a south westerly influence, embers may have impacted on the site. The predominant vegetation that was burnt during this fire was coastal scrub which does not tend to generate long distance spotting. Therefore, it can be assumed that a repeat bushfire in the same location, would unlikely spread to the development area under a south westerly wind.

The Mornington Peninsula Municipal Fire Management Plan² indicates a bushfire in Denham Road, Tyabb which is to the north west of the site. This fire occurred in BlueScope Steels recreation reserve and was extinguished approximately 300 metres from the steelworks.

Figure 3 shows the bushfire history according to DELWP records.

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

² <https://www.mornpen.vic.gov.au/About-Us/Strategies-Plans-Policies/Strategy-Plan-Listing/Municipal-Fire-Management-Plan>

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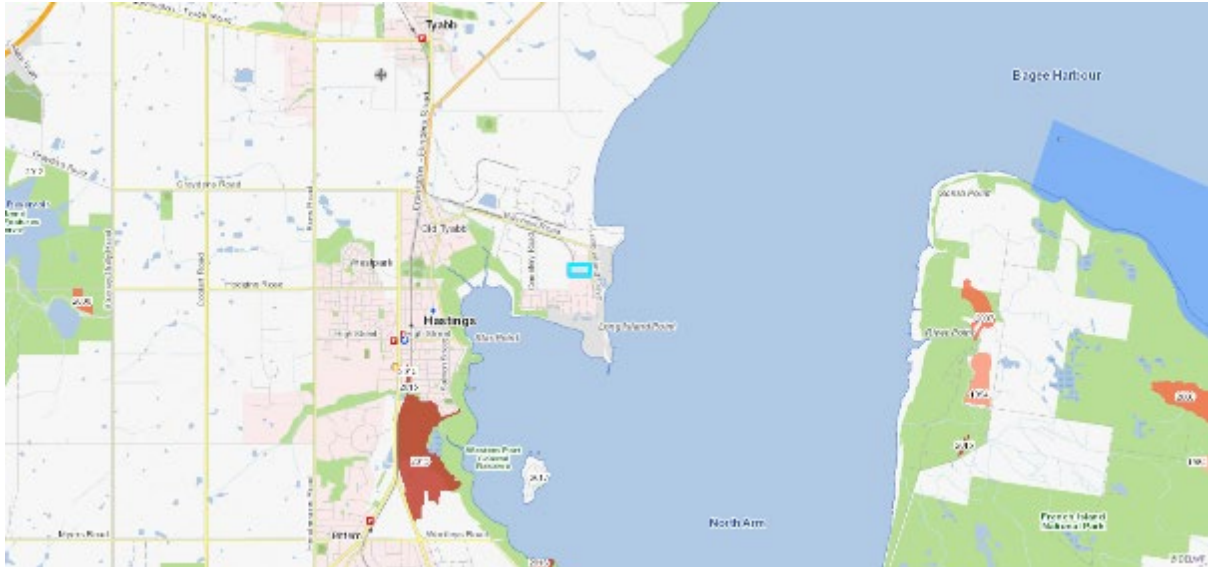


Figure 3 - Bushfire history with the property outlined in blue. There is no bushfire history in this area.

Likely Bushfire Scenarios

Figures 4 and 5 indicate the likely scenarios from a bushfire in the surrounding area and how they may impact on the proposed facility. This assessment considers all aspects however history shows us that bushfires would be likely to impact on the property from a north westerly direction and then subsequently from a south westerly direction after the wind change. These two fire scenarios cause the greatest amount of damage, including loss of life, in south eastern Australia during bushfire events.

The following table describes the scenarios that may impact on the facility:

Scenario reference	Description	Consequence
Scenario A	Figure 4 and 5 outlines the potential for bushfires to approach the property under a north westerly wind. The impact is likely to be from embers and radiant heat impacting the property. Due to the vegetation fragmentation in the surrounding landscape, it is likely for the bushfire that impacts the property to have started along Bayview Road or Cemetery Road. The maximum likely bushfire travel before the facility is impacted is approximately 500 – 600 metres.	Medium
Scenario C	The potential for a bushfire to approach from the south west is not likely however this bushfire could generate embers that could land in the surrounding vegetation and start additional bushfires. The presence of cleared and open space associated with the ESSO LIP facility will not support bushfire travel towards this new facility.	Low

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Scenario D	<p>The longest continuous vegetation source from a bushfire is north east of the new facility. This would require elevated fire danger conditions including strong winds to push the bushfire through this vegetation. This is unlikely weather conditions and as topography has very limited influence over local bushfire behaviour, it is highly unlikely that a bushfire will impact on the facility from this direction.</p> <p>If the bushfire does approach from this direction, the presence of various landscape features including roads, BlueScope Steel and other industries will limit its spread as it approaches the facility.</p>	Low
Scenario E	<p>A bushfire burning in the grassland areas to the north west of the proposed facility could under elevated fire danger conditions travel towards the area. The presence of numerous landscape features including the townships of Tyabb and Somerville, roads, managed properties and other features will make this type of scenario highly unlikely.</p>	Low

In summary, the most likely scenario is from a bushfire that starts in the local area and impacts on the facility in a short period of time. It is likely that the staff and visitors at the site will not have time to leave the area and will need to move to a 'safer location' whilst the bushfire is burning.

The vegetation will need to be removed/managed to reduce the impacts of a bushfire on the facility.

Landscape type

The determination of the landscape type enables the consideration of other treatments depending on the level of risk. These treatments may include additional construction requirements, vegetation management or other solutions. Note that whilst the determination of a landscape risk level is part of this analysis, the determination of the need for additional treatments will be considered as part of future activities.

Landscape risk descriptors	
Type 1	<p>There is little vegetation beyond 150 metres of the site (except grasslands and low threat vegetation).</p> <ul style="list-style-type: none"> • 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.
Type 2	<p>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.</p>

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	<ul style="list-style-type: none"> • Bushfire can only approach from one aspect and the site is located in a suburban, township or urban area managed in a minimum fuel condition. • Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.
Type 3	<p>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.</p> <ul style="list-style-type: none"> • 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
Type 4	<p>The broader landscape presents an extreme risk.</p> <ul style="list-style-type: none"> • Fires have hours or days to grow and develop before impacting. • Evacuation options are limited or not available.

In accordance with the Technical Guide, the landscape has been assessed as Type 1.

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Bushfire Hazard Site Assessment

The bushfire hazard within 150 metres of the building has been assessed and is outlined in the following table.

The following information is to be read in conjunction with Figure 6.

Bushfire Hazard Site Assessment

	Direction (Aspect)			
	Northern	Southern	Eastern	Western
Vegetation (within 150 metres of proposed building / works)	Excludable / Low Threat <input type="checkbox"/>	Excludable / Low Threat <input checked="" type="checkbox"/>	Excludable / Low Threat <input type="checkbox"/>	Excludable / Low Threat <input type="checkbox"/>
	Modified <input type="checkbox"/>	Modified <input type="checkbox"/>	Modified <input type="checkbox"/>	Modified <input type="checkbox"/>
	Forest <input checked="" type="checkbox"/>	Forest <input type="checkbox"/>	Forest <input type="checkbox"/>	Forest <input checked="" type="checkbox"/>
	Woodland <input type="checkbox"/>	Woodland <input type="checkbox"/>	Woodland <input checked="" type="checkbox"/>	Woodland <input type="checkbox"/>
	Scrub (tall) <input type="checkbox"/>	Scrub (tall) <input type="checkbox"/>	Scrub (tall) <input type="checkbox"/>	Scrub (tall) <input type="checkbox"/>
	Shrubland (short) <input type="checkbox"/>	Shrubland (short) <input type="checkbox"/>	Shrubland (short) <input type="checkbox"/>	Shrubland (short) <input type="checkbox"/>
	Mallee <input type="checkbox"/>	Mallee <input type="checkbox"/>	Mallee <input type="checkbox"/>	Mallee <input type="checkbox"/>
	Rainforest <input type="checkbox"/>	Rainforest <input type="checkbox"/>	Rainforest <input type="checkbox"/>	Rainforest <input type="checkbox"/>
	Grassland <input type="checkbox"/>	Grassland <input type="checkbox"/>	Grassland <input type="checkbox"/>	Grassland <input type="checkbox"/>
Effective Slope (under the classifiable vegetation within 150 metres)	Upslope / Flat <input checked="" type="checkbox"/> DOWNSLOPE	Upslope / Flat <input checked="" type="checkbox"/> DOWNSLOPE	Upslope / Flat <input checked="" type="checkbox"/> DOWNSLOPE	Upslope / Flat <input checked="" type="checkbox"/> DOWNSLOPE
	>0 to 5 ° <input type="checkbox"/>	>0 to 5 ° <input type="checkbox"/>	>0 to 5 ° <input type="checkbox"/>	>0 to 5 ° <input type="checkbox"/>
	>5 to 10° <input type="checkbox"/>	>5 to 10° <input type="checkbox"/>	>5 to 10° <input type="checkbox"/>	>5 to 10° <input type="checkbox"/>
	>10° to 15° <input type="checkbox"/>	>10° to 15° <input type="checkbox"/>	>10° to 15° <input type="checkbox"/>	>10° to 15° <input type="checkbox"/>
	>15 to 20° <input type="checkbox"/>	>15 to 20° <input type="checkbox"/>	>15 to 20° <input type="checkbox"/>	>15 to 20° <input type="checkbox"/>
	>20° <input type="checkbox"/>	>20° <input type="checkbox"/>	>20° <input type="checkbox"/>	>20° <input type="checkbox"/>
Distance (m) to Classifiable Vegetation	23 metres	N/A	10 metres	8 metres

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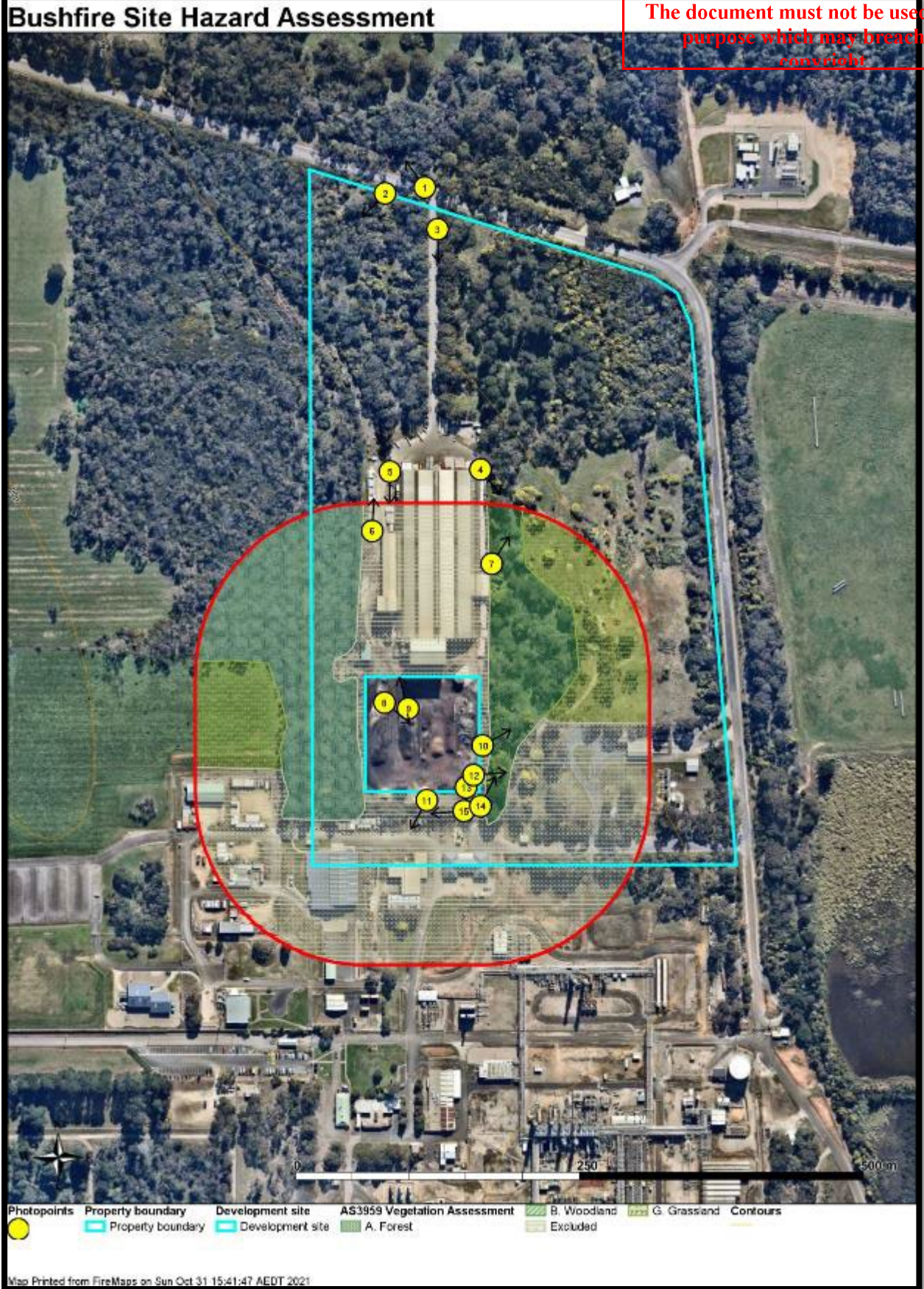


Figure 6 - Bushfire Site Hazard Assessment (photo references are in Appendix 2)

Bushfire Management Statement

53.02-4.1 Landscape, siting and design objectives

- Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape.
- Development is sited to minimise the risk from bushfire.
- Development is sited to provide safe access for vehicles, including emergency vehicles.
- Building design minimises vulnerability to bushfire attack.

Approved Measure (AM) 2.1 – Landscape

Requirement

The bushfire risk to the development from the surrounding landscape has been assessed as a low – medium risk. It is acknowledged that there is a potential for a bushfire to approach the facility, but this will be from a local ignition. The assessment against Clause 13.02 has identified additional mitigation treatments to reduce the risk of a bushfire starting along the surrounding roads.

The development will require vegetation removal both to allow the development to occur but to also reduce the bushfire risk. Vegetation management will occur to ensure the site is not exposed to more than 12.5 kW/m².

The landscape assessment has classified the risk as Type 1 which is the lowest risk. This is due to the limited ability for a landscape influenced bushfire to impact on this site, the availability of 'safer locations' and the type of facility being constructed that can be managed through policies and emergency management plans.

The landscape bushfire risk has been classified as Type 1³.

Has Approved Measure (AM) 2.1 been fully met? Yes No

Approved measure (AM) 2.2 – Siting

Requirement

The facility is sited to ensure the site best achieves the following:

- **The maximum separation distance between the building and bushfire hazard**

The facility will be provided with vegetation clearance and/or management to ensure the risk is at the required level. This will increase the distance between the facility and the vegetation.

- **The building is in close proximity to a public road**

The facility is located in close proximity to Long Island Drive and Bayview Road. In the event of a bushfire, an emergency access route is available that ensures people leaving the property do not need to drive through vegetated areas.

³https://www.planning.vic.gov.au/_data/assets/pdf_file/0029/107669/Technical-Guide-Planning-Permit-Applications-Bushfire-Management-Overlay.pdf

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- **Access can be provided to the building for emergency service vehicles**

Emergency service vehicles are able to access the site through the existing driveway from Bayview Road. An emergency access provision is also available from Long Island Drive.

Has Approved Measure (AM) 2.2 been fully met? Yes No

Approved Measure (AM) 2.3 – Building design

Requirement

As the landscape risk has been assessed as low and a Type 1 classification has been determined, the buildings will comply with the requirements of the BMO. There is no need to increase the level of protection associated with this development other than the standard BMO conditions.

Has Approved Measure (AM) 2.3 been fully met? Yes No

Any other comments

The bushfire risk will be successfully managed through the development of an Emergency Management Plan that includes a section on bushfire. This section will include as a minimum information on how the site will prepare and respond to bushfires depending on the fire danger rating forecast for the day. The plan will also outline the ongoing vegetation management arrangements to ensure the bushfire risk is reduced annually.

53.02-4.2 – Defendable Space and Construction Objectives

- Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on the building.

Approved Measure (AM) 3.1 – Bushfire Construction and Defendable Space

A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person's unit, industry, office or retail premises is provided with defendable space in accordance with:

- Table 2 Columns A, B, C and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land

The buildings that are provided onsite includes ablutions, kitchen, office and control room. These buildings are required to achieve the required level of protection and be constructed in accordance with AS3959.

The Bushfire Site Hazard Assessment has identified the vegetation within proximity to the four occupiable buildings as being forest. The entire development will be provided with defendable space to achieve BAL 12.5, however only the occupiable buildings will be constructed to this standard.

The defendable space distance required is 48 metres on the western side of the development and 33 metres on the eastern side. This will result in all occupiable buildings and equipment being exposed to a maximum of 12.5 kW/m². For further detail, refer to the Bushfire Management Plan in Appendix 2.

Table 6 of Clause 53.02-5 – Vegetation management requirements

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Defendable space is provided and is managed in accordance with the following requirements:

1. Grass must be short cropped and maintained during the declared fire danger period.
2. All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
3. Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
4. Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.
5. Shrubs must not be located under the canopy of trees.
6. Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.
7. Trees must not overhang or touch any elements of the building.
8. The canopy of trees must be separated by at least 5 metres.
9. There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

A building is constructed to the bushfire attack level:

That corresponds to the defendable space provided in accordance with Table 2 to Clause 53.02-5. The buildings will be constructed to **BAL 12.5** and provided with defendable space of 48 metres.

Any other comments?

The area that is required to be managed is under the control of ESSO LIP and as such will be maintained for the life of this project. The defendable space will also be supported by other vegetation management treatments that are already provided by ESSO LIP including paddocks to the west grazed by stock or slashed and reduced vegetation to the south west.

Has Approved Measure (AM) 3.1 been fully met? Yes No

53.02-4.3 – Water Supply and Access Objectives

- A static water supply is provided to assist in protecting property.
- Vehicle access is designed and constructed to enhance safety in the event of a bushfire.

Approved Measure AM 4.1 – Water Supply and Access

Water Supply Requirement

The building is provided with a static water supply for firefighting and property protection purposes as specified in Table 4 to Clause 53.02-5.

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for firefighting water supplies.

Lot Size (m ²)	Hydrant Available	Capacity (litres)	Fire Authority Fittings & Access Required	Select Response

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Less than 500	Not Applicable	2,500	No	<input type="checkbox"/>
500 – 1000*	Yes	5,000	No	<input type="checkbox"/>
500 – 1000	No	10,000	Yes	<input type="checkbox"/>
1001 and above	Not Applicable	10,000	Yes	<input checked="" type="checkbox"/>

Note: a hydrant is available if it is located within 120 metres of the rear of the building

Note: Fittings must be in accordance with the published requirements of the relevant fire authority

<p>Confirm Static Water Supply meets the following requirements</p>	<p>Unless otherwise agreed in writing by the relevant fire authority, the water supply must:</p> <ul style="list-style-type: none"> Be stored in an above ground water tank constructed of concrete or metal. Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal. Include a separate outlet for occupant use. <p>Where a 10,000 litre water supply is required, fire authority fittings and access must be provided as follows:</p> <ul style="list-style-type: none"> Be readily identifiable from the building or appropriate identification signs to the satisfaction of the relevant fire authority. Be located within 60 metres of the outer edge of the approved building. The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed. Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting). Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).
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Additional Information:

The site will be provided with a fire hydrant installation that complies with AS2419. In addition, a 10,000 litre static water supply will be provided near the occupiable buildings for use during a bushfire if the fire hydrant system is not accessible.

Has Approved Measure AM 4.1 (Water Supply) been fully met?

Yes No

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Access Requirement

Vehicle access is designed and constructed as specified in Table 5 to Clause 53.02-5.

Column A	Column B
Length of access is less than 30 metres	<input type="checkbox"/> There are no design and construction requirements if fire authority access to water supply is not required under AM 1.3
Length of access is less than 30 metres	<input checked="" type="checkbox"/> Where fire authority access to the water supply is required under AM1.3 fire authority vehicles must be able to get within 4 metres of the water supply outlet
Length of access is greater than 30 metres	<p>The following design and construction requirements apply:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> All weather construction <input checked="" type="checkbox"/> A load limit of at least 15 tonnes <input checked="" type="checkbox"/> Provide a minimum trafficable width of 3.5 metres <input checked="" type="checkbox"/> Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically <input checked="" type="checkbox"/> Curves must have a minimum inner radius of 10 metres <input checked="" type="checkbox"/> The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres <input checked="" type="checkbox"/> Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle
Length of access is greater than 100 metres	<p>A turning area for fire fighting vehicles must be provided close to the building by one of the following:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> A turning circle with a minimum radius of eight metres <input checked="" type="checkbox"/> A driveway encircling the site <input checked="" type="checkbox"/> The provision of other vehicle turning heads such as a T head or Y Head – which meet the specification of Austroad Design for an 8.8 metre service vehicle.
Length of access is greater than 200 metres	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Passing bays must be provided at least every 200 metres. <input checked="" type="checkbox"/> Passing bays must be a minimum of 20 metres long with a minimum trafficable width of 6 metres.

Additional Information:

The building will be provided with effective access to the water supply and the property.

Has Approved Measure AM 4.1 (Access) been fully met?	Yes ✓	No <input type="checkbox"/>
---	--------------	------------------------------------

Conclusion

The construction of the Hastings Generation Facility at this location can be undertaken safely. The mix of bushfire related mitigations along with other safety systems required for this type of facility including the fire hydrant system, equipment monitoring systems and the development of an emergency management plan will ensure that ongoing operation of the site is considerate of the local bushfire risk.

The landscape bushfire risk assessment has identified that the most likely bushfire risk is from the local area with it unlikely for a bushfire to burning through the grasslands to the north west to develop into a bushfire that is influenced by the landscape. This with the lack of topographical changes and reduced forested areas will ensure that bushfires are likely to be suppressed.

The design solution including water supply, emergency vehicle access, occupiable buildings constructed in accordance with AS3959 and a Bushfire Emergency Plan will ensure this design achieves the requirements of the Bushfire Management Overlay.

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Appendix 1 – Bushfire Management Statement

Construction Standard

The occupiable buildings will be designed and constructed to a minimum Bushfire Attack Level of **BAL 12.5**.

Defendable Space

Defendable space of 48 metres from the occupiable buildings and equipment on the western side and 33 metres on the eastern side will be provided, where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

Water Supply

Unless otherwise agreed in writing by the relevant fire authority, the **10,000 litres** of water supply must:

- Be stored in an above ground water tank constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.
- Include a separate outlet for occupant use.

Where a 10,000 litre water supply is required, fire authority fittings and access must be provided as follows:

- Be readily identifiable from the building or appropriate identification signs to the satisfaction of the relevant fire authority.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling
- (64 millimetre CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

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Access

Where fire authority access to the water supply is required under AM1.3 fire authority vehicles must be able to get within 4 metres of the water supply outlet

The following design and construction requirements apply:

- All weather construction
- A load limit of at least 15 tonnes
- Provide a minimum trafficable width of 3.5 metres
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
- Curves must have a minimum inner radius of 10 metres
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle

A turning area for fire fighting vehicles must be provided close to the building by one of the following:

- A turning circle with a minimum radius of eight metres
- A driveway encircling the site
- The provision of other vehicle turning heads such as a T head or Y Head – which meet the specification of Austroad Design for an 8.8 metre service vehicle.
- Passing bays must be provided at least every 200 metres.
- Passing bays must be a minimum of 20 metres long with a minimum trafficable width of 6 metres.

Bushfire Emergency Plan

During construction and operation, a Bushfire Emergency Plan is prepared and maintained which outlines as a minimum the following:

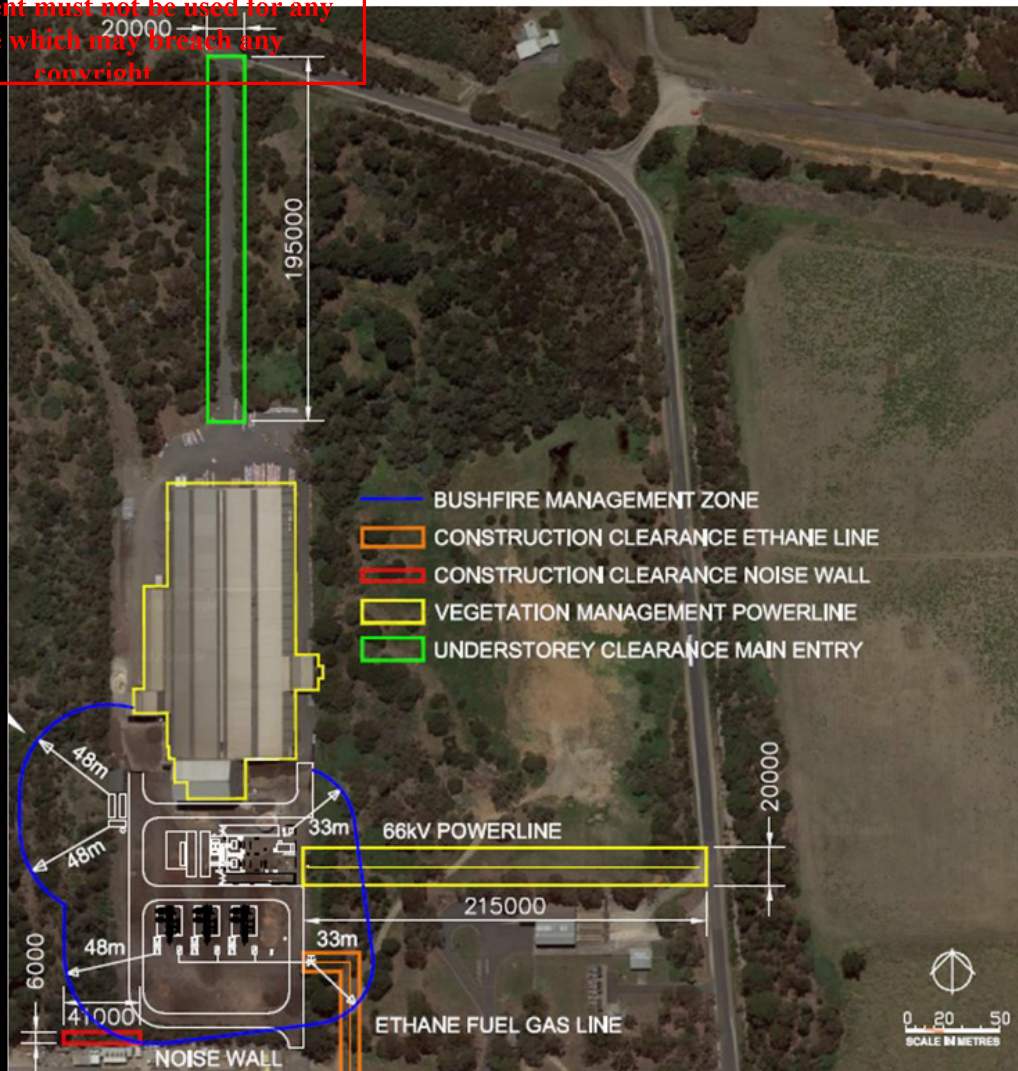
- Management of hot works and other high risk activities which can cause a bushfire.
- Ongoing vegetation management requirements.
- Procedures that outline the sites response to the various fire danger ratings.
- The ongoing management of the procedures.

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Bushfire Management Plan – Hastings Generation Project – ESSO



- BUSHFIRE MANAGEMENT ZONE
- CONSTRUCTION CLEARANCE ETHANE LINE
- CONSTRUCTION CLEARANCE NOISE WALL
- VEGETATION MANAGEMENT POWERLINE
- UNDERSTOREY CLEARANCE MAIN ENTRY



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Construction standard

The occupiable buildings will be designed and constructed to a minimum Bushfire Attack Level of BAL 12.5.

Defendable Space

Defendable space of 48 metres from the occupiable buildings and equipment on the western side and 33 metres on the eastern side will be provided, where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

Water Supply

Provide a static water supply of a minimum of 10,000 litres which must:

- Be stored in an above ground water tank constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.
- Include a separate outlet for occupant use.
- Be readily identifiable from the building or appropriate identification signs to the satisfaction of the relevant fire authority.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

Access

Where fire authority access to the water supply is required under AM1.3 fire authority vehicles must be able to get within 4 metres of the water supply outlet. The following design and construction requirements apply:

- All weather construction
 - A load limit of at least 15 tonnes
 - Provide a minimum trafficable width of 3.5 metres
 - Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
 - Curves must have a minimum inner radius of 10 metres
 - The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres
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 - A driveway encircling the site
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Bushfire Emergency Plan

During construction and operation, a Bushfire Emergency Plan is prepared and maintained which outlines as a minimum the following:

- Management of hot works and other high risk activities which can cause a bushfire.
- Ongoing vegetation management requirements.
- Procedures that outline the sites response to the various fire danger ratings.
- The ongoing management of the procedures.

Appendix 2 – Photos

1

Main entrance to the property from Bayview Road.



2

Typical vegetation along Bayview Road near the main entrance.



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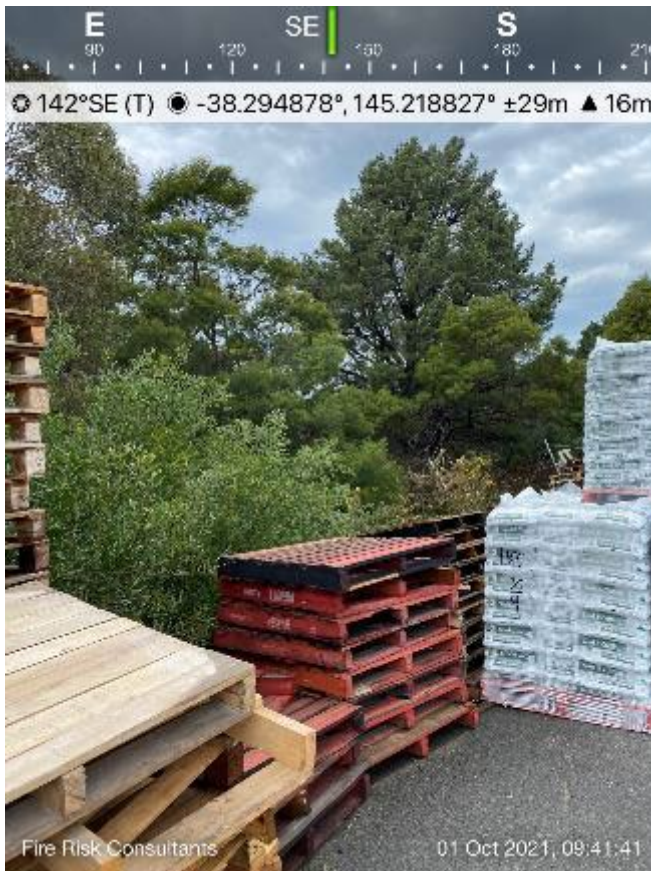
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3
Main driveway leading to the existing building.



4
Typical vegetation along the drain on the eastern side of the property.



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5

Existing driveway access leading to the new facility.



6

Looking along the western side of the existing building along the drain.



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7

Typical vegetation on the east side of the building.



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8

Location of Hastings Generation project.



9

Looking towards the driveway to the left of the building. The occupiable buildings will be located to the left of the photo.



10

Existing vegetation that will be managed.



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11

Existing fire hydrant system that will be upgraded to support the new facility.



12

Typical vegetation along the eastern fence.



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13

Existing emergency vehicle access to the south of the site.



14

Typical vegetation along the eastern boundary near the emergency vehicle access point.



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15

Typical vegetation along the southern boundary. Note that removal of weed varieties will reduce bushfire risk.

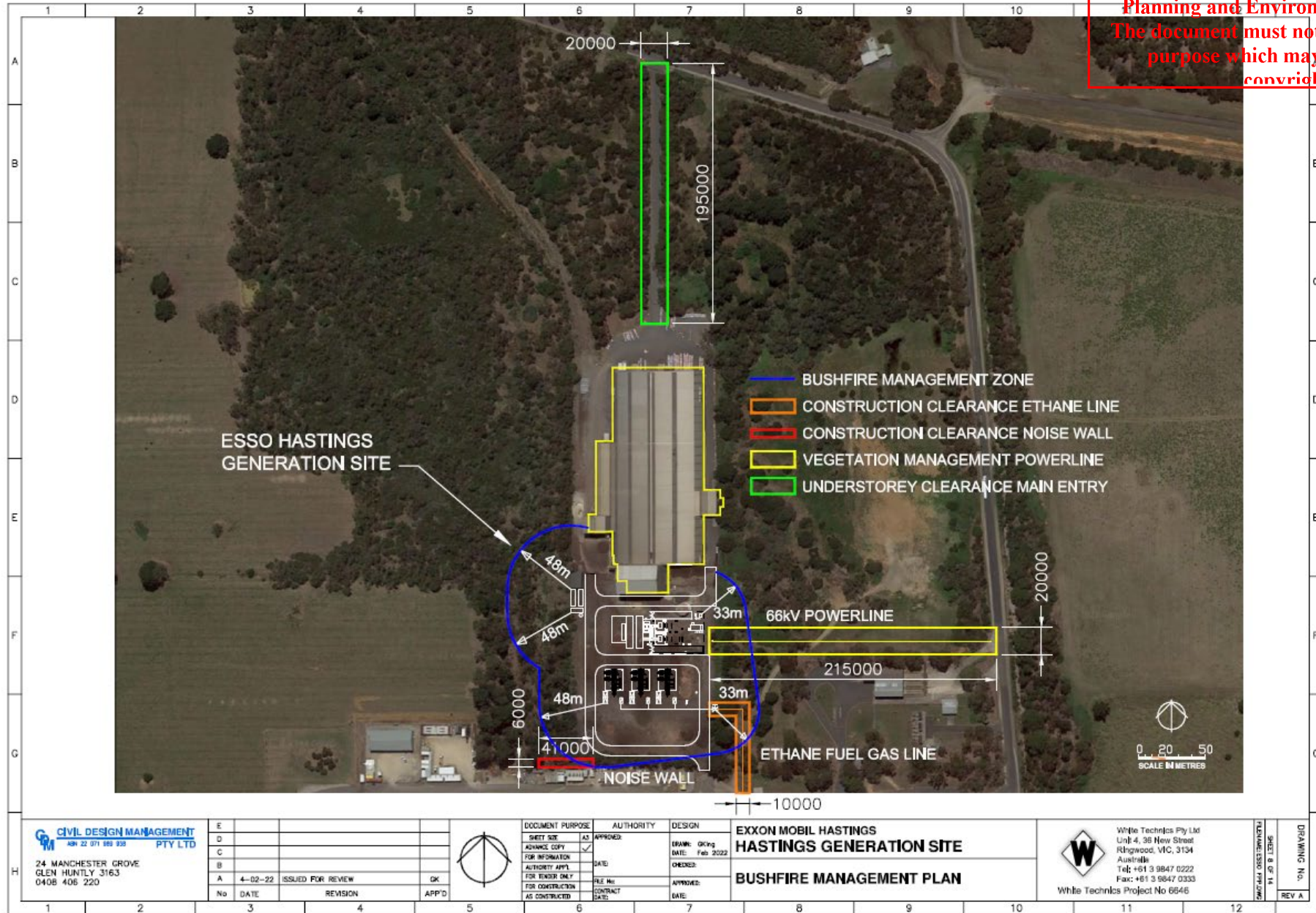


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Appendix 3 - Supplied plans

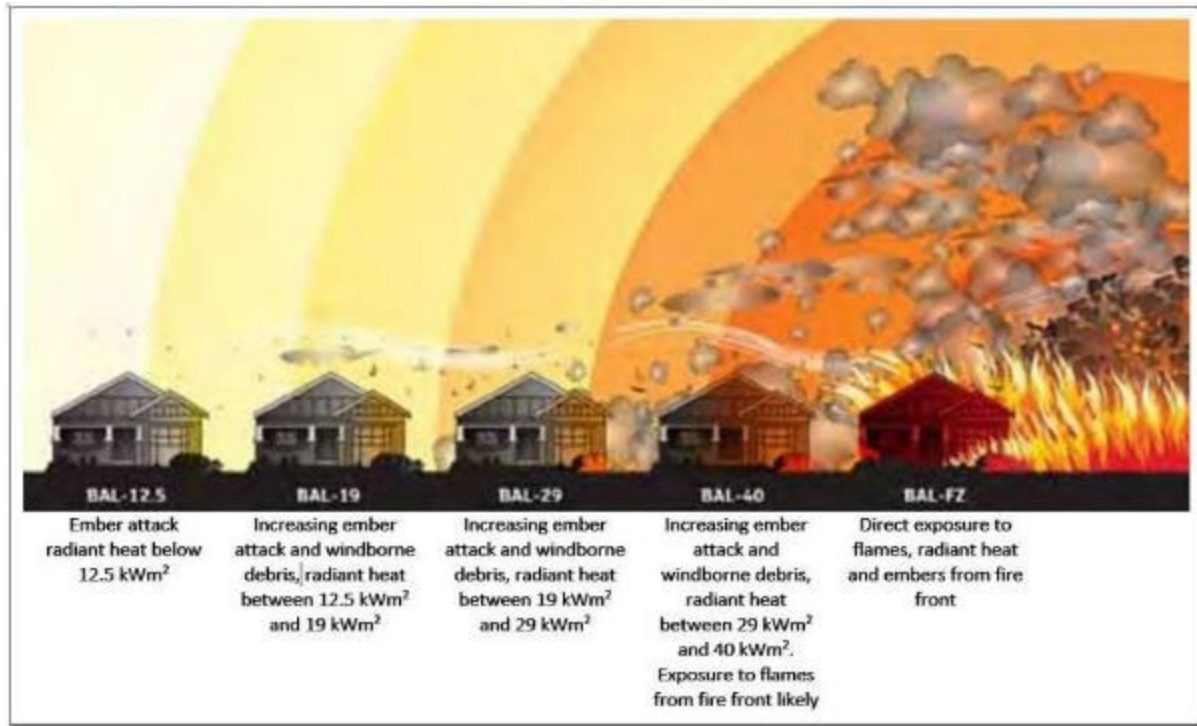
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Appendix 4 – BAL levels explained

The following diagram outlines the type of bushfire attack method that may impact on a building. This then indicates the relevant BAL construction level as determined by the Bushfire Management Overlay.



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