

# ADVERTISED PLAN

## 910 Princes Hwy Solar Farm, Bairnsdale

### Bushfire Planning Report

Prepared for Bison Energy

March 2023  
Report No. 22340.02 (1.0)

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# 1. Executive summary

Site details	
Municipality:	East Gippsland Shire
Subject Site:	910 Princes Highway
Site Area:	20.73 hectares
Zoning:	Farming Zone (FZ1)
Overlays:	Design and Development Overlay – Schedule 7 (DD07) Vegetation Protection Overlay – Schedule 1 (VPO1)
Existing Buildings and Works:	Vegetated block, no existing structures or works
Summary of Proposal and recommended bushfire mitigation measures	
Development Plan:	Construction of a Solar Farm
Fire Break requirements:	20 metres around the perimeter of the Solar Farm in accordance with fire break requirements for solar farms including a 10m wide non-vegetated area.
Water Supply requirements for solar farm:	45,000-litre static water supply
Water Supply requirements for Battery Storage:	Retiulated water supply or where there is no reticulated water available: A quantity no less than 288,000L or as per the provisions for Open Yard Protection of AS 2419.1-2005 flowing for a period of no less than four hours at 20L/s, whichever is the greater. The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2005, Table 3.3.

Bison Energy engaged Nature Advisory Pty Ltd to prepare a Bushfire Planning Report for a proposed development of a solar farm on a 20.73-hectare parcel of land at 910 Princes Highway, Bairnsdale, zoned Farming Zone – Schedule 1 in the East Gippsland Planning Scheme. The land is within a designated Bushfire Prone Area (BPA).

This report demonstrates how the application meets the requirements of Clause 13.02-1S *Bushfire* of the State Planning Provisions, and includes the following components:

- A *bushfire hazard site assessment*, that describes bushfire hazards within 150 metres of the proposed subdivision in accordance with the planning permit application requirements of Clause 44.06-3. The description of the hazards has been prepared in accordance with the *Australian Standards AS 3959:2018, Construction of buildings in bushfire prone areas* (Standards Australia 2018); and
- Bushfire planning measures relevant to solar farms have been outlined, in accordance with the *Design Guidelines and Model Requirements – Renewable Energy Facilities* (CFA, 2022); and
- A *bushfire hazard landscape assessment*, including a plan that describes the bushfire hazards in the general locality more than 150 metres from the site.

During the site assessment, classified vegetation in the form of grassland and woodland was recorded in the study area. Grassland, comprising large paddocks, occupied the majority of the site and study area. Some of the grassland in the west section of the study area is maintained at a low threat state by a neighbouring power facility. Woodland occurred within a rail reserve along the northern boundary of the study area and a strip of eucalypt woodland to the south on the opposite side of the Princes Highway. Slope was recorded under each of these areas of classified vegetation.

A solar farm and associated infrastructure (as shown in Appendix 1) is proposed for the majority of the property, excluding areas required to be undeveloped for setbacks under the DDO1 overlay.

A 20-metre wide fire break is required around the perimeter of the site in accordance with the Design Guidelines for Renewable Energy Facilities (CFA 2022). Although woodland vegetation was recorded within the study area, this was not considered to pose a sufficiently significant threat to warrant a larger separation distance (see Section 3.2). The vegetation within the fire breaks is to be managed to a low-threat state (i.e., grass slashed to a maximum height of 10 centimetres) and is to include a 10m wide non-vegetated area (see Section 4.2.4).

This report was prepared by a team from Nature Advisory, comprising Merinda Day-Smith (Botanist), Nhung Thi Hong Nguyen (Senior GIS Analyst), Dr Kate Callister (Senior Ecologist & Project Manager) and Chris Armstrong (Senior Botanist & Project Manager).

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## 2. Sources of information and policy context

### 2.1. Existing information

The reports, planning scheme and development plans relating to the study area listed below were reviewed.

- *VicPlan* (DTP 2023a);
- Victoria Planning Provisions (DTP 2022b);
- Australian Standards AS 3959:2018, Construction of buildings in bushfire-prone areas (Australian Standards 2018);
- *Regional Bushfire Planning Assessment* for the Gippsland Region (DPCD 2012);
- East Gippsland Planning Scheme; and
- Design Guidelines and Model Requirements – Renewable Energy Facilities (CFA 2022).

### 2.2. Definitions

#### 2.2.1. Site and study area

The term ‘site’ is used herein to refer to the land proposed for subdivision at 910 Princes Highway. The term ‘study area’ refers to area up to 150 metres from the site (see Figure 1).

#### 2.2.2. Classified vegetation

For the purposes of a Bushfire Hazard site assessment areas of vegetation within 150m of the site area which were considered to pose a bushfire threat are classified according to the vegetation classes defined in Table 2.3 of AS 3959:2018. These hazards are grouped as either:

- Forest;
- Woodland;
- Shrubland;
- Scrub;
- Mallee/Mulga;
- Rainforest; or
- Grassland.

Non-vegetated areas and those considered ‘low-threat’, as defined in Section 2.2.3.2 of AS 3959:2018, are excluded from consideration as potential bushfire hazards and therefore do not influence BAL determination.

### 2.3. Field methodology

The field assessment was conducted on the 6<sup>th</sup> February 2023. During this assessment, the site was inspected on foot and the surrounding study area observed from the site and surrounding roads and access tracks.

Sites in the study area found to contain classified vegetation were mapped. Mapping was undertaken through a combination of aerial photograph interpretation and ground-truthing using a hand-held ArcGIS Collector® (Esri).

### 2.4. Precautionary approach

Wherever appropriate, a precautionary approach has been adopted in the discussion of implications. That is, where insufficient evidence is available on the predicted behaviour of fire in a wildfire event, it is

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assumed both that the most severe fire behaviour could take place and that unmanaged immature vegetation could reach mature heights. The implications under legislation and policy are considered accordingly.

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## 3. Bushfire hazard assessment

### 3.1. Bushfire hazard site assessment

#### 3.1.1. Site description

The site consists of 20.73 hectares of private land located at 910 Princes Highway, Bairnsdale, approximately 232 kilometres east of Melbourne CBD (Figure 1). It is bordered by the Princes Highway to the south, Power Station Road to the west, a VicTrack rail reserve to the north and private pasture to the east.

The property comprised a grazing paddock with cattle yards in the east and two small dams central to the southern portion of the study area. These dams were fed and connected by a network of drainage lines. Vegetation largely comprised non-native pasture grasses with planted windrows of non-indigenous natives and non-native species along the western and eastern fence lines as well as a vegetated rail reserve on the northern property boundary. The landscape is gently undulating and elevation varies little across the site and surrounds with a slightly elevated point at the centre of the property. The shape of the land parcel is rectangular. It is approximately 580m at the longest point north to south and 440m east to west. The surrounding area largely supports pasture paddocks and other large-scale agricultural operations in all directions.

The site is currently zoned Farming Zone in the East Gippsland planning scheme.

Photographs of the site and study area are provided in Section 3.2.

#### 3.1.2. Classified vegetation, slopes and BAL assessment

During the field assessment, two classified vegetation classes were identified as per the classification methods in the Australian Standard AS 3959:2018. Classified vegetation is represented in Figure 1 and comprised:

- Grassland – Covering the majority of the site as well as surrounding paddocks within the study area.
- Woodland – Sparse treed vegetation along a rail reserve to the north of the property and eucalypt woodland along the southern side of Princes Highway.

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### 3.2. Vegetation classification zones

The following distinct bushfire hazards were recorded within the study area. Where vegetation has been excluded from further consideration as a bushfire threat, the applicable clause from AS3595 is indicated.

Zone	1	Photo	1
Vegetation Classification or Exclusion Clause			
Class G – Grassland			
Description/Justification for classification			
<p>Unmanaged grassland of exotic pasture species, occupying the majority of the site. 0°/upslope.</p>			

Zone	2, 3, 4, 5	Photo	2
Vegetation Classification or Exclusion Clause			
Class G – Grassland			
Description/Justification for classification			
<p>Unmanaged grassland of exotic pasture species, located on paddocks surrounding the site. Grassland south and north of the site is separated by a major road (Princes Highway) and a rail line. 0-5° downslope.</p> <p>Note: Grassland is also located west of the site area, however it is actively managed to a low threat state by the neighbouring power station.</p>			

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Zone	6	Photo	3
Vegetation Classification or Exclusion Clause			
Class B – Woodland (low fuel load)			
Description/Justification for classification			
<p>Woodland located north of the site area on a rail reserve. Also encompasses the treed roadside reserve running perpendicular to rail reserve. 0-5° downslope.</p> <p>This woodland hazard is considered to be of low threat due to the sparseness of woody vegetation, its linear nature and lack of continuity with threats in the broader landscape. Therefore, a fire in this hazard will most likely occur as a flanking fire (rather than approach as a fire front) and run parallel with the site, lessening the risk posed by this hazard. Additionally, fire behaviour will likely be more typical of a grassland fire rather than a woodland fire, due to limited fuel loads in these woodland corridors.</p>			
			

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Zone	7, 8	Photo	4
Vegetation Classification or Exclusion Clause			
Class B - Woodland			
Description/Justification for classification			
<p>Woodland consisting of a linear strip of eucalypt woodland on the far side of the Princes Highway. The current set back from this classified vegetation is over 100 metres and is separated by a 4-lane highway. This separation distance is considered sufficient and therefore does not warrant additional protection measures. 0-5° downslope.</p>			
			

### 3.3. Fire Break requirements

A 20-metre wide fire break is required around the perimeter of the site in accordance with the Design Guidelines for Renewable Energy Facilities (CFA 2022). Although a heightened threat of woodland vegetation was recorded to the north (within the rail reserve) and to the south (neighbouring property south of Princes Highway) of the site, they were not considered to pose a sufficiently significant threat to

warrant a larger separation distance (see Section 3.2). The vegetation within the fire breaks is to be managed to a low-threat state (i.e., grass slashed to a maximum height of 10 centimetres) and is to include a 10m wide non-vegetated area (see Section 4.2.4).

If any of the vegetation within the development footprint is not cleared prior to the commencement of construction, interim fire breaks will be required around solar farm infrastructure facing hazards on site. This is required to protect workers and infrastructure during the construction process and must be created and maintained in a low-fuel state, until this threat is removed by the final development layout.

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# Figure 1: Bushfire hazard site assessment

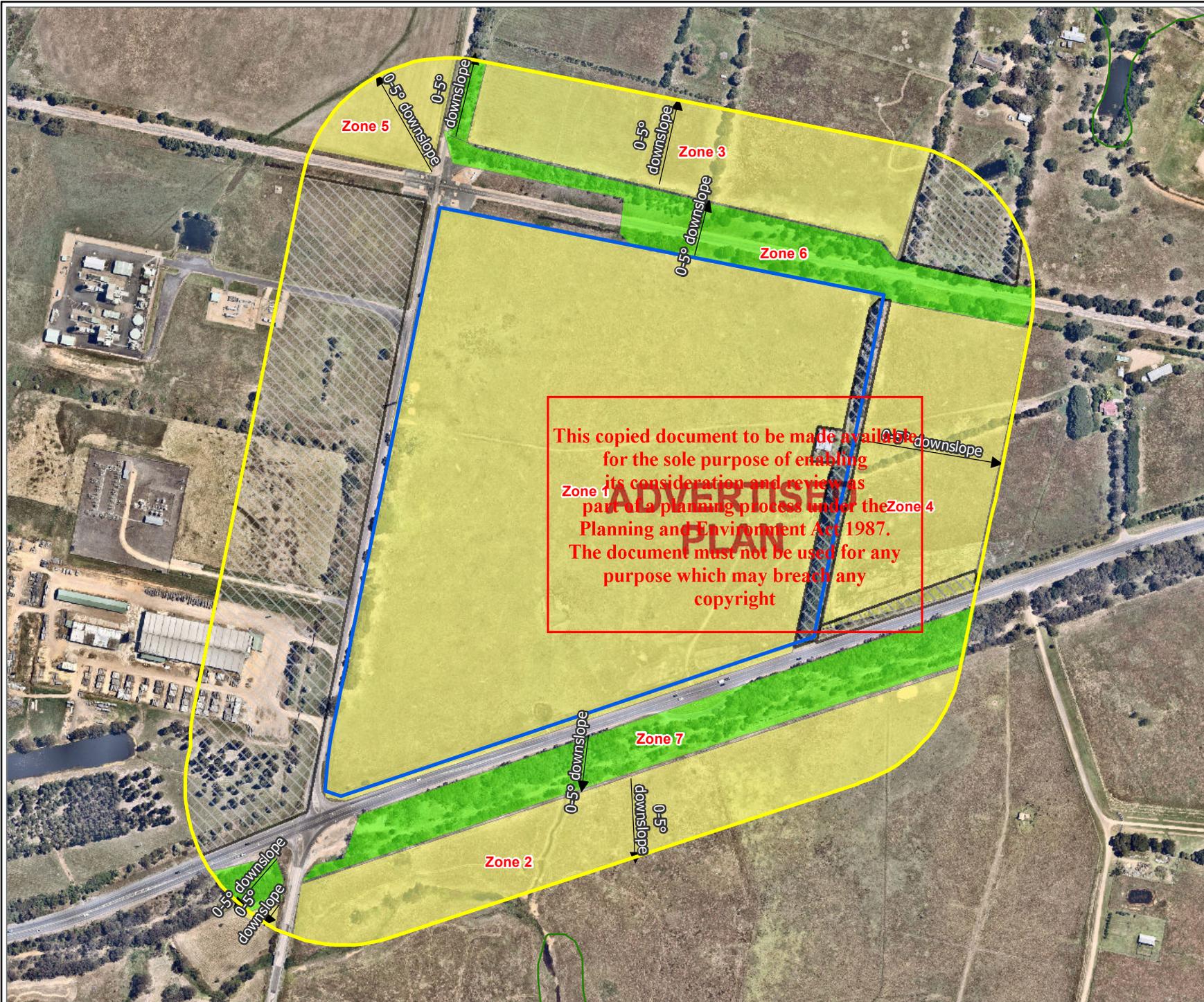
**Project:** 910 Princes Hwy Solar Farm, Bairnsdale.

**Client:** Bison Energy

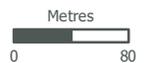
-  Site
-  Study area (150m buffer of site)
-  Effective slope under hazard

## Classified vegetation

-  Grassland
-  Woodland
-  Low threat



N



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### 3.4. Bushfire hazard landscape assessment

#### 3.4.1. Hazards in the landscape

The surrounding area to the east supports extensive residential and commercial development, associated with the town of Bairnsdale. This area represents minimal fire risk to the site. Meanwhile, areas to the south, west and north support paddocks of pasture grasses and semi-rural dwellings. These areas in an unmanaged condition may present a bushfire hazard to the site in the form of grassfires.

The study area lies within a broader landscape Type Two as defined in the BMO technical guide (DELWP 2017) and includes the following:

- Grassland vegetation extends more than 150m from the site in the form of paddocks. In an unmanaged state it presents a risk of grassfire. However, grassland vegetation is separated from the site by wide roads and highways so it is unlikely to result in neighbourhood-scale destruction except in catastrophic conditions. There is also linear treed vegetation on roadsides.
- There is potential for bushfire to approach from multiple aspects; however, many egress routes are available including the Princes Highway adjacent to the site. As this major egress route is readily available to Bairnsdale, this can provide a safe evacuation route to an area of low threat during a bushfire scenario.

The site is not in proximity to any ‘identified areas’ of bushfire hazard listed in the *Regional Bushfire Planning Assessment* for the Gippsland area (DPCD 2012).

Examination of historical fire records (DEECA 2023) shows that the site burnt during a significant bushfire event in 1978. No other fires within the site have been recorded. Numerous planned burns have occurred throughout the region within areas which pose a significant bushfire threat to the community. This demonstrates CFA’s commitment to minimising the potential for landscape scale destruction from bushfire. Areas where planned burns have occurred include the rail corridor north of the site in 2004, 2005 and 2011, within the Moormung Flora and Fauna Reserve between 1997 and 2016 and smaller planned burns in Macleod Morass as recently as 2016.

Refer to Figure 2 for a map presenting the landscape assessment.

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#### 3.4.2. Likely bushfire scenarios

In Victoria, the most severe weather conditions for bushfire are hot dry winds from the northwest, that change direction to the southwest after a cool change. The sudden shift in wind direction can cause a rapid change in bushfire direction and behaviour. However, the threat from a bushfire can approach in all directions.

The most likely bushfire scenario would be from grass fires within and adjacent to the site, arising from either ember attack or ignition risks from operational activities. These fires may travel along retained areas of grassland within and around the site. However, the presence of a maintained 20 m wide fuel break will limit the potential for fire spreading into the facility from a bushfire in the landscape or from the facility into the surrounding landscape.

### 3.5. Egress to built-up areas

The proposed solar farm will provide two vehicular egress routes. All roads are single-carriageway roads, with Princes Highway and Bairnsdale-Dargo Rd being sealed and Power Station Rd being partially sealed. These roadways could provide the following egress routes to nearby built-up areas or away from potential fire risk in the event of extreme bushfire behaviour (Figure 2):

- Bairnsdale – 3.3 kilometres to the east via Princes Highway.
- Lindenow – 11.9 kilometres to the north west via Power Station Rd and Bairnsdale-Dargo Rd.

Each of these egress routes would involve travelling on roads that traverse low risk areas such as paddocks, semi-rural and residential areas. Treed vegetation is very sparse along all routes.

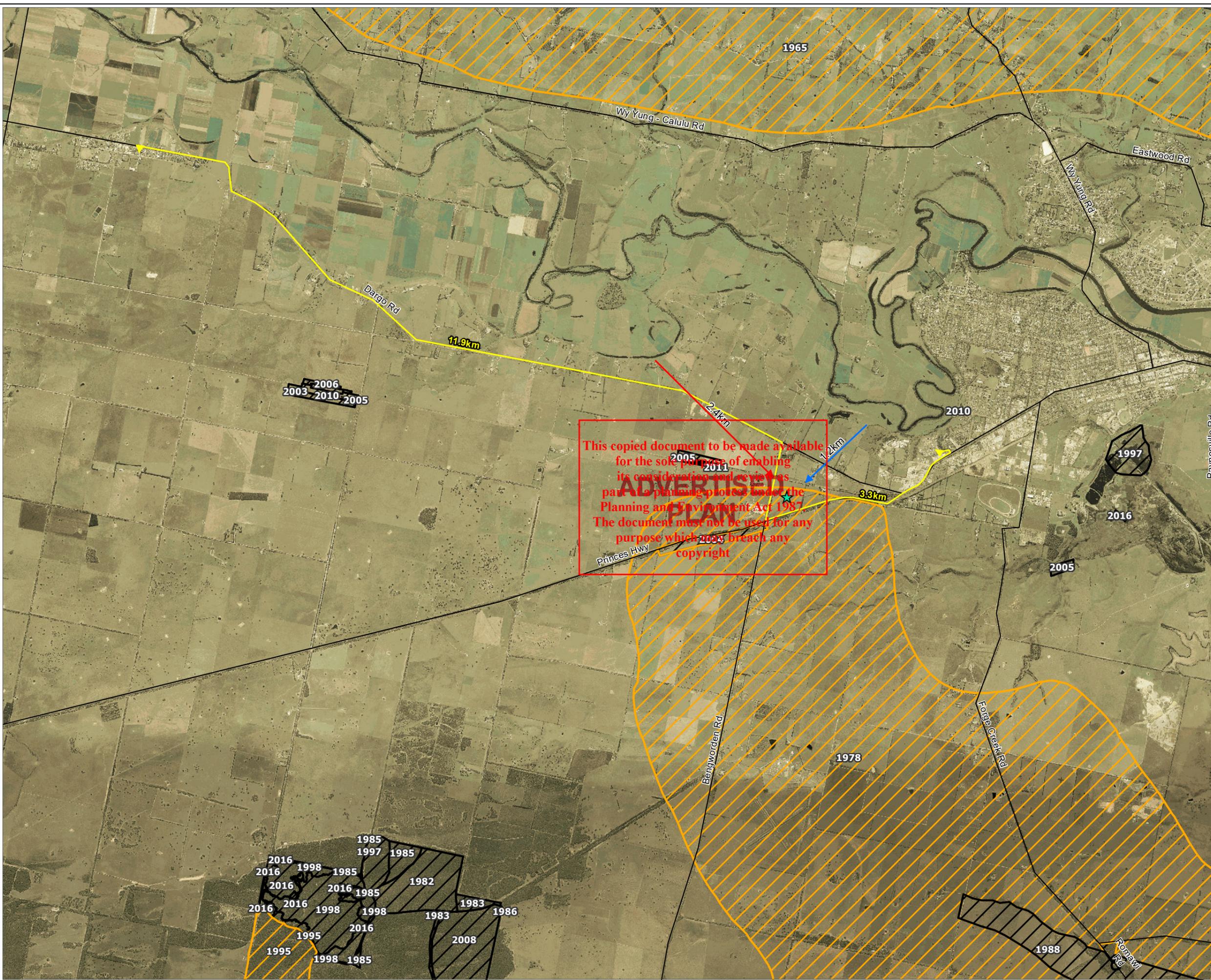
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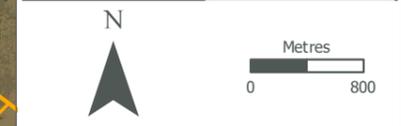
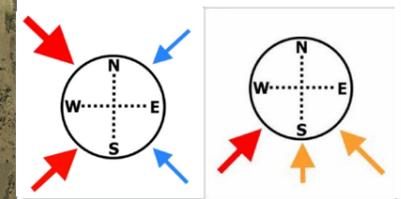
**Figure 2: Bushfire Hazard Landscape Assessment**

**Project:** 910 Princes Hwy  
**Solar Farm Bairnsdale**  
**Client:** Bison Energy  
**Date:** 27/02/2023

- ★ Site
- Access and egress
- Fire History**
- ▨ Planned Burn
- ▨ Bushfire
- Potential fire run**
- More likely
- Less likely



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## 4. Risk management

This section provides an analysis of site risks and associated management strategies in accordance with Section 5 of the Design Guidelines and Model Requirements for Renewable Energy Facilities (CFA 2022). This will serve to inform the design of the facility.

### 4.1. Risk analysis

**Table 1: Risks, associated consequences and mitigation measures**

Risk	Potential consequences	Mitigation measures
Electrical/Battery fault	<ul style="list-style-type: none"> <li>Localised fires within the immediate site</li> <li>Spread of fire into the surrounding landscape</li> <li>Damage to solar farm infrastructure.</li> <li>Risk of injury and death</li> </ul>	<ul style="list-style-type: none"> <li>Regular maintenance of electrical/battery storage infrastructure</li> <li>Report any issues relating to infrastructure faults or unsafe work practices</li> <li>Ensure staff have reviewed the bushfire management plan and received appropriate training. I.e., familiarisation of egress routes and emergency meeting points</li> <li>Maintenance of water supply requirements</li> <li>Maintenance of fire breaks around infrastructure, particularly the battery storage facility.</li> <li>Ensure that the CFA are familiar with the site layout (i.e. vehicle access, water supplies, infrastructure, etc.)</li> </ul>
Bushfire/Grassfire in landscape	<ul style="list-style-type: none"> <li>Fire spreading into site from neighbouring hazards</li> <li>Damage to solar farm infrastructure</li> <li>Risk of injury and death</li> </ul>	<ul style="list-style-type: none"> <li>Ensure staff have reviewed the bushfire management plan and received appropriate training. I.e., familiarisation of egress routes and emergency meeting points</li> <li>Maintenance of the identified fire breaks around the perimeter of the site</li> <li>Maintenance of water supply requirements</li> <li>Ensure that the CFA are familiar with the site layout (i.e. vehicle access, water supplies, infrastructure, etc.)</li> </ul>

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### 4.2. Risk management strategies

The following risk management strategies are transcribed from Section 6.2. of the Design Guidelines and Model Requirements for Renewable Energy Facilities (CFA 2017), where relevant to the proposal.

#### 4.2.1. Emergency vehicle access

The provision of adequate access for emergency services must be considered, to enable an effective response and management of onsite fires. The CFA identifies the following requirements as the minimum expectations for emergency vehicle access:

- Construction of a four metre perimeter road within the perimeter fire break.
- Roads must be of all-weather construction and capable of accommodating a vehicle of fifteen tonnes.
- Constructed roads should be a minimum of four metres in trafficable width with a four metre vertical clearance for the width of the formed road surface.
- The average grade should be 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 metres.
- Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.

- Roads must incorporate passing bays at least every 600 metres, which must be at least twenty metres long and have a minimum trafficable width of six metres. Where roads are less than 600 metres long, at least one passing bay must be incorporated.
- Road networks must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, and battery energy storage systems and related infrastructure.
- The provision of at least two 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.

#### 4.2.2. Firefighting water supply

In the event of a fire, emergency services must have safe and effective access to a sufficient water supply. The location of firefighting access points and the quantity of water must be established through a comprehensive risk management process.

The CFA identifies the following requirements for onsite water supplies:

- Water access points must be clearly identifiable and unobstructed to ensure efficient access.
- Static water storage tank installations must comply with AS 2419.1-2005: Fire hydrant installations – System design, installation and commissioning.
- The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.
- The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.
- The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least ten metres from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc).
- The hard-suction point must be provided, with a 150mm full bore isolation valve (Figure 3) equipped with a Storz connection, sized to comply with the required suction hydraulic performance. Adapters that may be required to match the connection are: 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters (Figure 3) with a matching blank end cap to be provided.
- The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.
- 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.
- The road access and hardstand must be kept clear at all times.
- The hard-suction point must be protected from mechanical damage (eg. bollards) where necessary.
- Where the access road has one entrance, a ten (10) metre radius turning circle must be provided at the tank.
- An external water level indicator must be provided to the tank and be visible from the hardstand area.
- Signage (Figure 3) indicating 'FIRE WATER' and the tank capacity must be fixed to each tank. It should comply with AS 2419.1-2005, Section 5.4.5: Fire hydrant tank signs.
- Signage (Figure 3) must be provided at the front entrance to the facility, indicating the direction to the static water tank. It should be fade resistant, fixed to a rigid post in contrasting lettering, white sign writing on red background, with a circle reflective marker and 'W' in 150mm upper case lettering.



150mm full-bore isolation valve



125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters.



Figure 3. CFA Firefighting water supply equipment and signage requirements

Model requirements identified by the CFA as being specific to solar energy facilities include:

- The fire protection system for solar energy facilities must incorporate at least one (1) x 45,000L static water tank for every 100ha.
- A fire water tank must be located at the primary vehicle access point to the facility, and elsewhere in consultation with CFA.
- Fire water must be provided to cover buildings, control rooms, substations and grid connections, in consultation with CFA.
- Additional fire protection systems or equipment required under any Australian Standards for dangerous goods must be provided as prescribed.

For facilities with battery energy storage systems, the fire protection system must include at a minimum:

- A fire hydrant system that meets the requirements of AS 2419.1-2005: Fire hydrant installations, Section 3.3: Open Yard Protection, and Table 3.3: Number of Fire Hydrants Required to Flow Simultaneously for Protected Open Yards. Except, that fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet.

If no reticulated water is available, a fire water supply in static storage tanks can be utilised if the following are included:

- The fire water supply must be of a quantity no less than 288,000L or as per the provisions for Open Yard Protection of AS 2419.1-2005 flowing for a period of no less than four hours at 20L/s, whichever is the greater.
- The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2005, Table 3.3. (E.g., For battery installations with an aggregate area of over 27,000m<sup>2</sup>, 4 hydrant outlets are required to operate at 10L/s for four hours, which equates to a minimum static water supply of 576kL.)
- Fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet.
- The fire water supply must be located at vehicle entrances to the facility, at least 10m from any infrastructure (electrical substations, inverters, battery energy storage systems, buildings).
- The fire water supply must be reasonably adjacent to the battery energy storage system and shall be accessible without undue danger in an emergency (e.g., Fire water tanks are to be located closer to the site entrance than the battery energy storage system).
- The fire water supply must comply with AS 2419.1-2005: Fire hydrant installations - Section 5: Water storage.

#### 4.2.3. Onsite vegetation

Any vegetation existing within or adjacent to the site must be considered for its potential to contribute to fire hazard. Therefore, vegetation must be managed so that it does not create the potential for ignition of infrastructure or retained vegetation.

The fire risk resulting from onsite vegetation may be mitigated via the following measures:

- Vegetation removal.
- Separation from nearby infrastructure (e.g. fire breaks), in accordance with prescribed defensible space requirements.
- Trees must not overhang or touch any elements of the solar farm.
- Regular maintenance of fire breaks.

#### 4.2.4. Fire breaks

Fire breaks must be utilised to provide a barrier to the movement of fire, as well as assisting in emergency vehicle access. Figure 6 shows the location of firebreaks recommended for the facility.

An effective fire break must be non-combustible (e.g. concrete/road base) and free of vegetation and obstructions at all times.

The width of fire breaks must be a minimum of 10m, and at least the distance where radiant heat flux (output) from the surrounding vegetation does not create the potential for ignition of on-site infrastructure. See Figure 4 for an example of a fire break for a solar facility.

A fire break must be established and maintained around the following solar farm areas:

- The perimeter of the facility, commencing from the boundary of the facility or from the vegetation screening inside the property boundary.
- The perimeter of control rooms, electricity compounds, battery storage systems, substations and all other buildings on site.

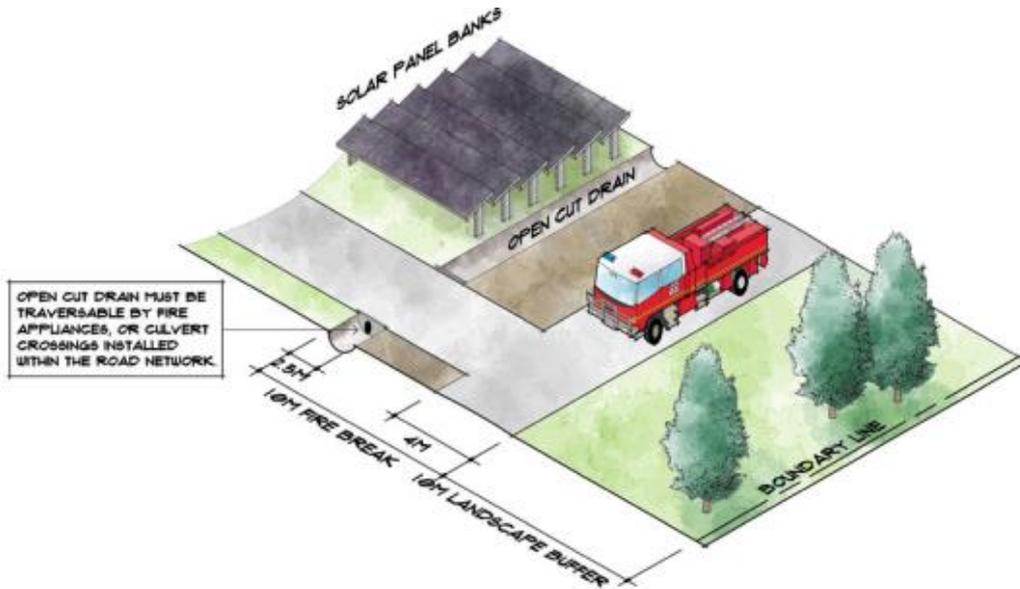


Figure 4. Example fire break requirements for a solar facility (CFA 2022)

#### 4.2.5. Battery storage systems

At present, an Australian standard has not been established to mitigate risks for large scale battery storage systems. Therefore, the CFA advises that the current version of the *UL 9540: Energy Storage System Requirements* and *FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems* should be used in the design and operation of battery energy storage systems.

When siting battery storage systems, the CFA has indicated that the following guidelines must be considered:

- A layout of site infrastructure that
  - Considers the safety of emergency responders.
  - Minimises the potential for grassfire and/or bushfire to impact the battery energy storage system.
  - Minimises the potential for fires in battery containers/enclosures to impact on-site and offsite infrastructure.
- Located so as to be reasonably adjacent to a site vehicle entrance (suitable for emergency vehicles).
- Located so that the site entrance and any fire water tanks are not aligned to the prevailing wind direction (therefore least likely to be impacted by smoke in the event of fire at the battery energy storage system).

Furthermore, energy storage systems must be:

- Provided with in-built detection and suppression systems. Where these systems are not provided, measures to effectively detect and/or suppress fires within containers must be detailed within the Risk Management Plan.
- Provided with suitable ember protection to prevent embers from penetrating battery containers/enclosures.
- Provided with suitable access roads for emergency services vehicles, to and within the site, including to battery energy storage system(s) and fire service infrastructure.
- Installed on a non-combustible surface such as concrete.
- Provided with adequate ventilation.
- Provided with impact protection to at least the equivalent of a W guardrail-type barrier, to prevent mechanical damage to battery containers/enclosures.

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- Provided with enclosed wiring and buried cabling, except where required to be above-ground for grid connection.
- Provided with spill containment that includes provision for management of fire water runoff.

#### 4.2.6. Dangerous goods storage and handling

The following measures are outlined by the CFA, to ensure compliance with the *Dangerous Goods (Storage and Handling) Regulations (2012)*:

- Signage and labelling compliant with the Dangerous Goods (Storage and Handling) Regulations 2012 and the relevant Australian Standards must be provided at the site entrance, dangerous goods storage locations, and storage tanks where applicable.
- Appropriate material for the clean-up of dangerous goods spills and leaks (including absorbent, neutralisers, tools, disposal containers and personal protective equipment) must be provided and available on-site.
- Training must be provided for site personnel on the hazards, safe use and emergency response for spills, leaks and fire involving dangerous goods.
- All dangerous goods stored on-site must have a current Safety Data Sheet (SDS). Safety Data Sheets must be provided within the facility's Emergency Information Book(s), in the Emergency Information Container(s).
- The requirements of the dangerous goods legislative framework, and all relevant Australian Standards must be complied with for all facilities, including facilities with battery energy storage systems.

#### 4.2.7. Additional siting considerations

The CFA requires that solar panel banks are separated by a minimum of six metres, in order to support effective firefighting responses (Figure 5). Any modifications to separation distances must be in consultation with the CFA.



Figure 5. Solar panel bank separation diagram (CFA 2022)

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### 4.3. Roles and responsibilities

This section outlines the responsibilities and contact details of staff with roles relating to occupational health and safety (OH&S).

**Table 2: OH&S staff information**

Role	Responsibilities	Contact information
Operations Manager	<ul style="list-style-type: none"> <li>▪ Responsible for the implementation and maintenance of specifications detailed within this plan, including:               <ul style="list-style-type: none"> <li>▪ Maintenance of fire breaks</li> <li>▪ Maintenance of firefighting equipment to ensure it is in working order and remains unobstructed for CFA access during an emergency</li> </ul> </li> </ul>	
OH&S Committee	<ul style="list-style-type: none"> <li>▪ Ensure all staff members are inducted into bushfire response procedures including evacuation points and egress routes</li> </ul>	
All staff	<ul style="list-style-type: none"> <li>▪ Understanding of the bushfire response procedures and can respond appropriately</li> </ul>	N/A

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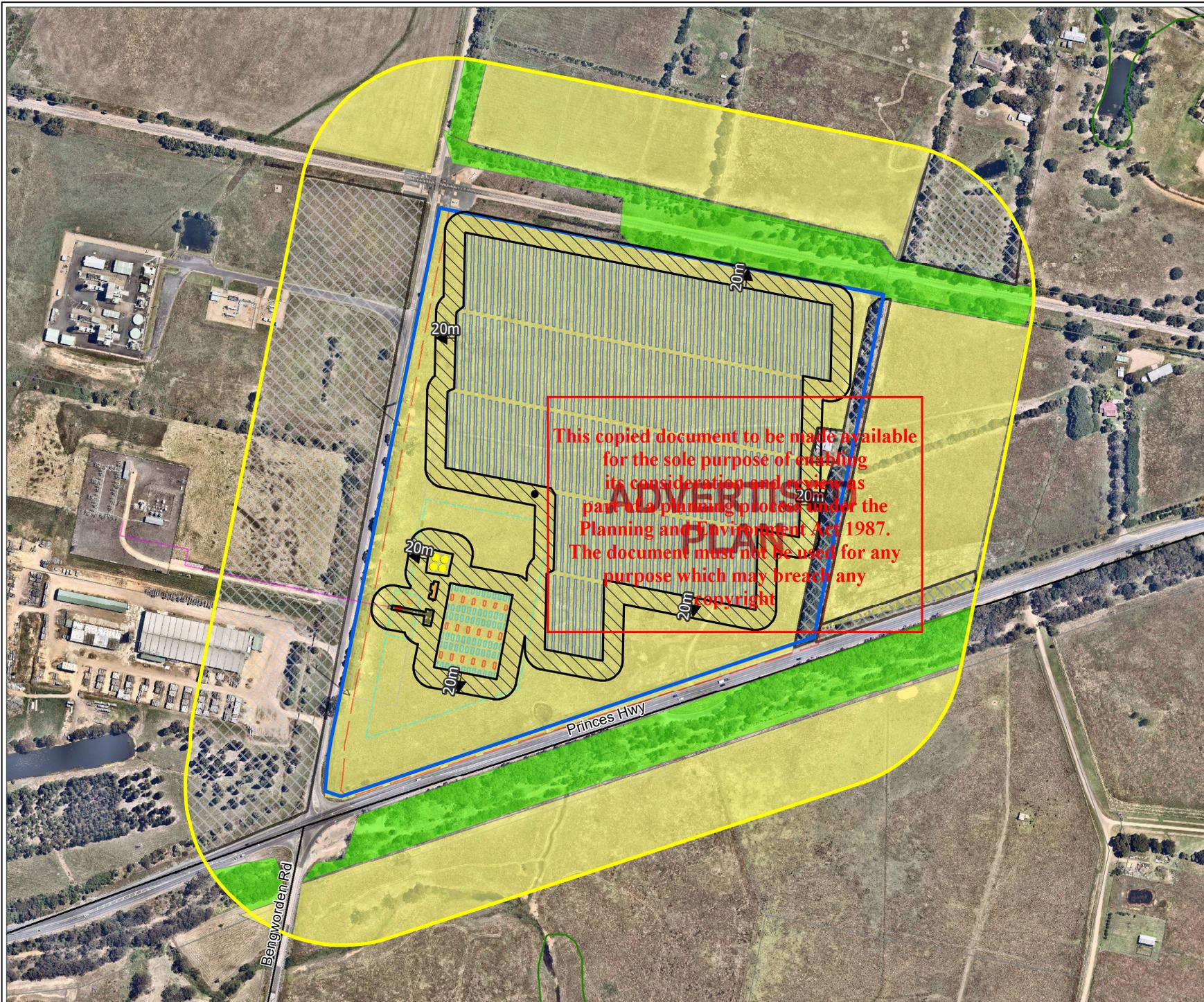
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**Figure 6: Bushfire protection measures**

**Project:** 910 Princess Hwy Solar Farm, Baimsdale.

**Client:** Bison Energy

-  Site
  -  Study area (150m buffer of site)
  -  Fire break (20m)
- Classified vegetation**
-  Grassland
  -  Woodland
  -  Low threat



N



Metres



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[www.natureadvisory.com.au](http://www.natureadvisory.com.au)  
 03 9815 2111 - [info@natureadvisory.com.au](mailto:info@natureadvisory.com.au)

## 5. References

- CFA 2019, *Identification of street hydrants for firefighting purposes*, State of Victoria, Country Fire Authority, Burwood East.
- DELWP 2017, *Planning Permit Applications – Bushfire Management Overlay, Technical Guide*, Department of Environment, Land, Water and Planning, East Melbourne.
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- DPCD 2012, *Regional Bushfire Planning Assessment – Gippsland Region*, Department of Planning and Community Development, Melbourne.
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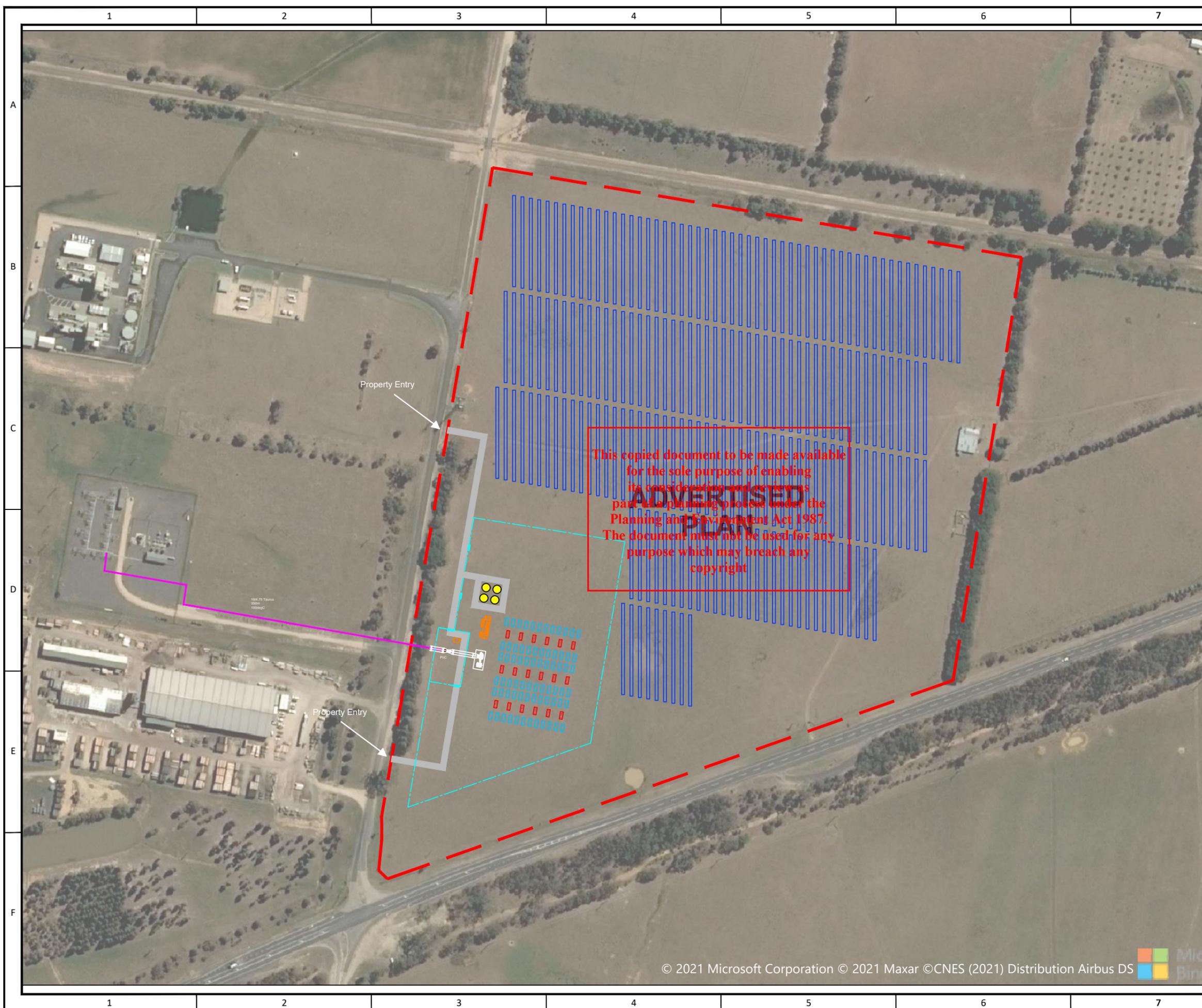
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**Appendix 1: Solar Farm design**

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**NOTES**

Bairnsdale Battery  
 Region Victoria  
 Country Australia

Peak Power: 50MWac  
 Rated Power: 65.16MVA  
 Inverters: 18 x SMA SCS3600UP  
 MVPS: 18 x SMA SC4200UP  
 Storage: 72 x 3.72MWh Containers

**LEGEND**

- - - Solar Farm Boundary
- - - Security Fence
- ▨▨▨ Security Gate
- Access Track
- 66kV AusNet Feeder
- 72,000L Water Tank
- ▭ Power Station
- ▭ Battery Container
- ▭ Site Buildings
- Point of Connection (PoC)
- ▭ Solar Panels

REV	DESCRIPTION	BY	DATE



**BISON ENERGY**

PROJECT: Bairnsdale Battery

DRAWING: BDBS-002

SCALE: Not to scale      SHEET: 1 OF 1

REVISION: 3.1      DATE: 11-12-2022

DIN A3