

# Bushfire Mitigation Plan

**WINTON SOLAR FARM**

**Winton, Vic**

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Prepared By:  
Justin Beukman  
HSE Manager  
GRS

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Reviewed By:  
Pedro J. Castejón  
Project Manager  
GRS

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Approved By:  
Juan M. Madrid  
Project Director  
GRS

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**TABLE OF CONTENTS**

<b>1.0 INTRODUCTION .....</b>	<b>4</b>
1.1 Key Site Information of Operators.....	4
1.2 Purpose .....	6
1.3 Aims & Objectives.....	6
1.4 Document Responsibilities .....	6
1.5 Document Amendment and Distribution.....	7
1.6 Revision Status .....	7
1.7 Key reference documents & definitions .....	7
<b>2.0 PROJECT DESCRIPTION .....</b>	<b>9</b>
2.1 Project Overview .....	9
<b>3.0 ORGANISATION .....</b>	<b>10</b>
3.1 Responsibilities and Authorities.....	10
3.1.1 Project Manager.....	10
3.1.2 HSE Manager .....	11
3.1.3 O&M Site Manager .....	11
3.1.4 All workers on Site .....	11
3.1.5 Certificates of Competency .....	11
<b>4.0 APPLICABLE REQUIREMENTS .....</b>	<b>12</b>
<b>4.1 Legal Requirements .....</b>	<b>12</b>
4.2 Contractual Requirements .....	12
<b>5.5 BUSHFIRE CONTEXT .....</b>	<b>13</b>
5.1 Overview .....	13
5.2 Responsibility for Fire Management .....	13
<b>6.0 LEGISLATION .....</b>	<b>13</b>
<b>7.0 PLANNING .....</b>	<b>14</b>
<b>8.0 BUSHFIRE RISK ASSESSMENT .....</b>	<b>14</b>
<b>8.1 Bushfire hazard assessment .....</b>	<b>14</b>
<b>8.2 Fire Climate and bushfire .....</b>	<b>15</b>
<b>8.3 Fuel Hazard .....</b>	<b>16</b>
8.5 Assets at Risk .....	17
8.6 The Fire Danger Index.....	18

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8.7 Fire History .....	20
8.8 Fire Fighter and Public Safety .....	20
8.9 Access and Egress .....	21
8.10 Primary Access Roads .....	22
8.11 Fire Equipment on Site .....	22
8.12 Water Points .....	23
8.13 Dangerous Goods Storage and Handling .....	24
<b>9.0 MITIGATION STRATEGIES .....</b>	<b>24</b>
9.1 Overview .....	24
9.2 Asset Protection Zone .....	25
9.3 Fire Breaks .....	25
<b>10.0 POTENTIAL FOR ADDITIONAL BUSHFIRE RISK .....</b>	<b>25</b>
10.1 Bushfire risk during construction .....	26
10.2 Bushfire risk ongoing operations .....	26
10.2.1 Fuel Management within solar farm .....	26
10.2.2 Fire Risks from PV system .....	27
10.2.3 Power Line Fires .....	27
10.2.3(a) Power Line Vegetation Procedure .....	27
10.2.3(b) Power Line Maintenance Procedure .....	28
10.2.4 Asset maintenance .....	31
10.2.5 Risk & Investigation .....	31
10.2.6 OHL Asset Information .....	34
10.2.7 Audit & Monitoring .....	34
<b>11.0 RECORDS .....</b>	<b>39</b>
<b>12.0 APPENDIX .....</b>	<b>40</b>
Appendix A – Location of Local CFA Stations surrounding WISF. ....	40
Appendix B – CFA Contact Details for Local Brigades .....	40

## 1.0 INTRODUCTION

### 1.1 Key Site Information of Operators.

Operator:

Winton Asset Company Pty Ltd as Trustee for Winton Asset Trust  
(ACN 623 824 288)

Director: Carlo Frigerio

Level 22, 6 O'Connell Street  
Sydney | NSW | 2000 | Australia

Facilitator:

**Juan José Pérez Morales**  
*O&M Manager GRS Australia*

Level 4, 307 Queen Street  
4000 Brisbane  
Queensland (Australia)

M. (+61) 439 703 302 / M. (+34) 664 110 184  
[jjperez@gransolar.com](mailto:jjperez@gransolar.com)

Author/HSE Manager/Responsible Person :

**Justin Beukman**  
*HSE Manager Winton Solar Farm – Australia*

458 Winton-Glenrowan Road  
Winton, Victoria 3673  
Australia  
M: +61 428 809 850  
[jbeukman@gransolar.com](mailto:jbeukman@gransolar.com)

O&M Site Manager/ Responsible Person 24/7:

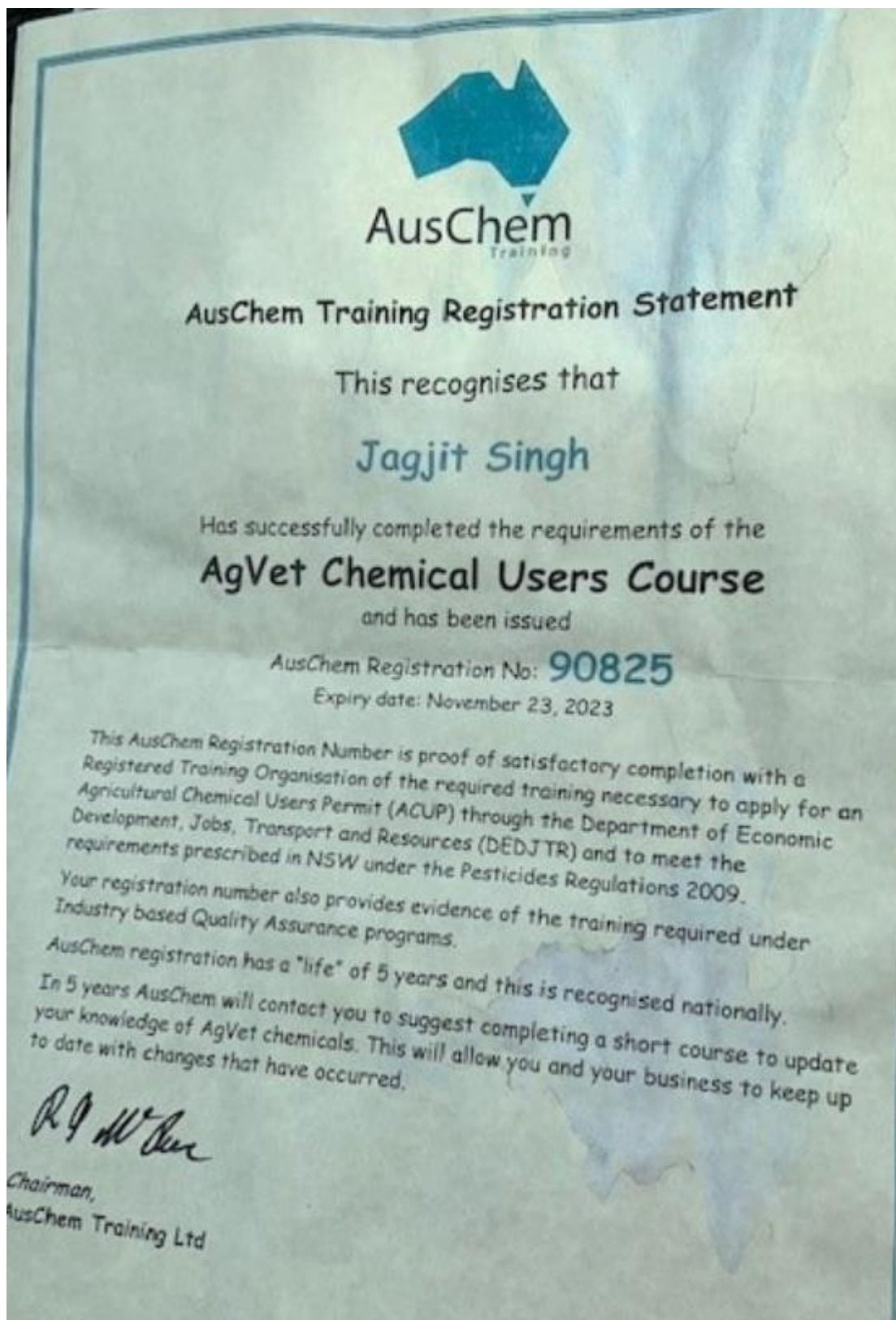
**Paul Stacey**  
*O&M Site Manager Winton Solar Farm – Australia*

458 Winton-Glenrowan Road  
Winton, Victoria 3673  
Australia  
M: +61 427 920 482  
[pstacey@gransolar.com](mailto:pstacey@gransolar.com)

O&M Maintenance Worker/ Responsible Person:

**Jagjit Singh**  
*O&M Maintenance Winton Solar Farm – Australia*

458 Winton-Glenrowan Road  
Winton, Victoria 3673  
Australia  
M: +61 412 437 897



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## 1.2 Purpose

Victoria is one of the most fire-prone areas in the world, with a history of catastrophic bushfires.

The objective of all bushfire management activities in Victoria is to reduce the impact and consequences of bushfire on people, property, and the environment, with the protection of human life the highest priority.

Our analysis has indicated that the Winton Solar Farm development does not increase the bushfire risk in the landscape if recommendations during the distinct phases of development, construction and operation are implemented.

In Victoria, bushfire safety is considered a shared responsibility between the fire services, the Victorian Government and local government, communities, and individuals. All parties are responsible for preparing prior to the fire season to protect themselves and their interests from the impact and effect of bushfires.

## 1.3 Aims & Objectives.

This bushfire management plan has the following aims:

- Address the requirements identified by the Country Fire Authority (CFA) for WISF
- Recommend mitigation actions to
  - Protect human life, property, cultural and natural values from fire.
  - Protect WISF and its values from the damaging effects of bushfire.
  - Reduce the likelihood of a bushfire impacting the site or spreading from the site.
  - Cooperate with relevant agencies and land managers in fire management.
  - Minimize the risk of fire spreading from within or entering WISF.
  - Keep the Assets in a sound condition.

The Bushfire Mitigation Plan is developed in accordance with the requirements of

**Electrical Safety Act 1998 Section 83 Division 1A**

## 1.4 Document Responsibilities

This Bushfire Mitigation Plan must be in place and operational prior to commencement of power generation and Operation work.

The O&M Plant Manager will ensure that the plan is monitored, reviewed (at least annually), maintained and updated as necessary and kept up to date during the project.

One hardcopy of the Fire Management Procedure and associated plans will be maintained by the GRS HSE Manager (document-controlled revision) for the duration of the contract.

### 1.5 Document Amendment and Distribution

This document shall be reviewed as follows:

- As requested by Management Review
- When there is a change of method and/or technology that may affect the accuracy of this document; or
- When there has been a significant event to which this document was relevant; or
- As a result of a Non-Conformance resulting from an audit

Document amendments and distribution will be conducted as per detailed in the Project Management Plan and the Records Management Plan.

New and amended documentation issued after the initial approval and distribution of this plan to controlled copy holders shall be identified in the Document Control Register. Revision details shall be recorded in the Section 1.3.1. Revision Status of this plan.

All changes to documents shall be reviewed and approved by the same function that performed the original review and approval and as per the cover of this plan, unless specifically designated otherwise.

This document has been accepted by ESV & is available for viewing on the FRV Winton Solar Farm website a copy can also be found in the office at 459 Winton-Glenrowan Road Winton Vic.

[www.wintonsolarfarm.com](http://www.wintonsolarfarm.com)

### 1.6 Revision Status

Revision	Revision Date	Issued Date	Nature of modification
1	A0	19/01/2021	Implement
2	A1	13/04/2021	Amendment
3	A2	12/05/2021	Amendment
4	A3	16/06/2021	Amendment
5	A4	14/07/2021	Amendment
6			
7			

### 1.7 Key reference documents & definitions

The Bushfire Mitigation Plan is to be read in conjunction with the below mentioned Management Plans. The CEMP includes the following Management Plans to be developed in the time frames as noted within the contract agreement and to enable site works to commence as quickly as possible:

WIN-GRS-HS-PLN-001\_A9 Health Safety Management Plan  
WIN-GRS-HS-PLN-0003\_A10 Construction Environmental  
Management Plan  
WIN-GRS-HS-PLN-0008\_A5 Emergency Evacuation Plan  
WIN-GRS-HS-PRO-0002\_A2 First Aid Procedure  
WIN-GRS-HS-PRO-0027\_A3 Vegetation Control Procedure  
WIN-GRS-HS-PRO-0028\_A3 Electrical Line Procedure  
WIN-GRS-OM-HS-PLN-0005\_A4 Emergency Response Plan

## DEFINITIONS

<b>GRS</b>	GRANSOLAR CONSTRUCCION Y DESARROLLO
<b>WISF</b>	Winton Solar Farm
<b>Assets</b>	Anything valued by people which includes houses, crops, forests and, in many cases, the environment.
<b>Bushfire</b>	A general term used to describe fire in vegetation, includes grass fire
<b>CFA</b>	Country Fire Authority (Victoria)
<b>Contained</b>	The status of a bushfire suppression action signifying that a control line has been completed around the fire, and any associated spot fires, which can reasonably be expected to stop the fire's spread.
<b>CEMP</b>	Construction Environmental Management Plan
<b>DELWP</b>	Department of Environment, Land, Water and Planning
<b>ERP</b>	Emergency Response Plan
<b>FFDI</b>	Forest Fire Danger Index
<b>Fuel Hazard</b>	The arrangement of bushfire fuel available for bushfire
<b>FDR</b>	Fire Danger Rating
<b>Fire Management</b>	All activities associated with the management of fire prone land, including the use of fire to meet land management goals and objectives.
<b>GFDI</b>	Grass Fire Danger Index
<b>Fuel Load</b>	The amount of bushfire fuel available, expressed in t/ha
<b>Head Fire</b>	The part of the fire where the rate of spread, flame height and intensity are greatest, usually when burning downwind or upslope.
<b>Intensity</b>	The rate of energy release per unit length of fire front usually expressed in kilowatts per metre (Kw/m)
<b>Likelihood</b>	The probability of a fire igniting and spreading, and how often this may occur
<b>MFB</b>	Metropolitan Fire Brigade
<b>Preparedness</b>	All activities undertaken in advance of the occurrence of an incident to decrease the impact, extent, and severity of the incident and to ensure more effective response activities.

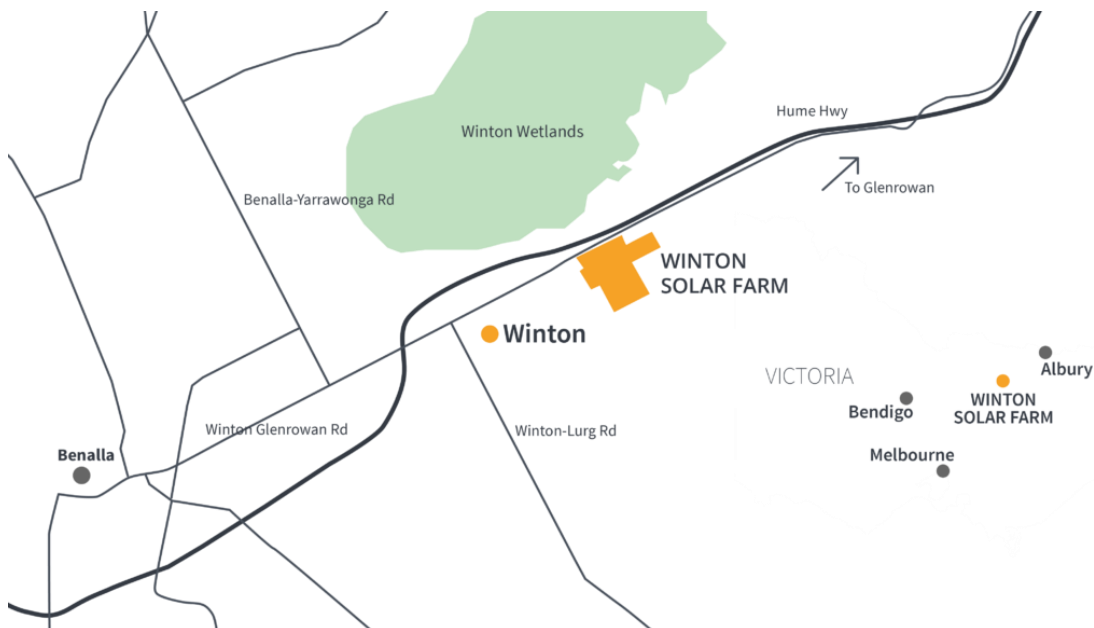


<b>Prevention</b>	The elimination or reduction of the incidence or severity of emergencies and the mitigation of their effects.
<b>Recovery</b>	The coordinated process of supporting emergency affected communities in reconstruction of the physical infrastructure and restoration of emotional, social, economic, and physical wellbeing.
<b>Response</b>	Actions taken in anticipation of, during, and immediately after an incident to ensure that its effects are minimized, and that people affected are given immediate relief and support.
<b>Risk</b>	The exposure to the possibility of such things as economic or financial loss or gain, physical damage, injury, or delay, because of pursuing a particular course of action. The concept of risk has two elements, i.e., the likelihood of something happening and the consequences if it happens
<b>Spotting</b>	Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

## 2.0 PROJECT DESCRIPTION

### 2.1 Project Overview

The Winton Solar Farm site is located about 26 Km South of the city of Wangaratta in North East of Victoria.



Site Location

The site is located at 458 Winton-Glenrowan Road Winton. The site consists of an area of approximately 250 ha of rural land. Out of this area, a maximum of 200 ha approx. will be utilised for electricity generating equipment.

The geographic coordinates of the project are:

- Latitude: 36.5179° S
- Longitudes: 146.0843° E
- Elevation: 189 m.a.m.s.l.

The construction will last approximately 12 months and the plant will be operated for a duration of 25 years. This document covers the construction stage.

GRS is the Principal Contractor for the scope of works, and is responsible for Engineering, Procurement and Construction (EPC).

The project will be delivered in several stages outlined below:

**Stage 1 – Civil works** consisting of land clearing, levelling and earthworks, internal road construction, drainage installation, laydown area preparation, fencing installation, site establishment, preparation of delivery station and inverter station, and vegetation screening/landscaping.

**Stage 2 – Mechanical works** consisting of foundation piling (ramming and auguring), tracker installation, module installation and delivery.

**Stage 3 – Electrical works** consisting of solar cabling of aerials and conduits, DC main cabling via direct burial, MV cabling from inverter station to delivery station through direct buried, module connection, connection of junction boxes-inverters-delivery station, connection to grid and finally testing and commissioning.

**Stage 4 – Substation works** consisting of all civil and electrical works related to the new Substation.

For further information about the Project Scope please refer to the Construction Management Plan.

## 3.0 ORGANISATION

### 3.1 Responsibilities and Authorities

This section defines the duties, responsibilities, accountabilities, and authorities of key persons with safety associated responsibilities.

#### 3.1.1 Project Manager

- Ensuring appropriate resources are available for the implementation of the Bushfire Mitigation Plan
- Making sure emergency contacts are communicated through all work site and are up to date.

- Ensuring that emergency drills are planned and conducted and are debriefed afterwards.

### 3.1.2 HSE Manager

- Responsible for aiding and advice to the Project Engineers and site team to fulfil the requirements of this Plan, assessing data from inspections, monitoring, and reporting, and providing project-wide advice to ensure consistent approach and outcomes are achieved.
- Responsible for providing necessary training for project personnel to cover fire prevention and emergency preparedness and response.
- Ensure that the personnel are advised of Fire Ban Days and relevant controls are in place.
- The HSE Coordinator is also responsible for the review and update of this Plan.

### 3.1.3 O&M Site Manager

- Responsible for developing/revising the construction schedule in consultation with the HSE Coordinator to minimize the risks of fire.
- Identifying, analyzing, and treating the risks before commencing works each day and ensuring that the appropriate controls are implemented and effective; thus, controls may be increased or decreased as required.
- Ensuring all flora and fauna controls are implemented and effective in controlling impacts.

### 3.1.4 All workers on Site

In relation to Fire management, all workers on site are required to:

- Implement and maintain all applicable control measures.
- Report any potential and/or actual incidence of fire.
- Follow the emergency management procedures and plans.

### 3.1.5 Certificates of Competency

In line with the relevant legislation, the project team will ensure that the following occupations/activities require the operator or user to hold a valid Certificate of Competency or accreditation, applicable to the item being erected, operated or used: All Licenses & accreditations when renewed must be resubmitted.

- White Card
- First aid
- Rigger/ dogman / scaffolder
- Truck, forklift, earthmoving, crane, Telehandler and hoist operators (Note: a ticket received from a Registered Training Organisation (RTO) for earthmoving equipment must be presented

or a certificate of competency from an RTO)

- Work at heights
- Confined space
- Elevating work platform
- All trade personnel e.g. welders, fitters, electricians
- Site/personnel ongoing training as part of the project requirements e.g. certificate II/III in construction
- This is not limited to the above all RTO's must be provided for all High Risk Work activities.

Formal evidence of these competencies must be provided prior to any work commencing otherwise work will not be authorised to commence. Subcontractors who engage employees to work with them must provide evidence of the above and confirm the competencies of their workers in writing. All Licenses & accreditations when renewed must be resubmitted.

## 4.0 APPLICABLE REQUIREMENTS

### 4.1 Legal Requirements

The following Acts, Regulations and Standards are applicable to this Project:

[Occupational Health and Safety Act 2004](#)

[Country Fire Authority Act 1958](#)

[Environmental Protection Authority Act 1970](#)

[Planning and Environment Act 19897](#)

[Planning and Environment Act 1987 \(Vic\)](#)

[Occupational Health & Safety Regulations 2017](#)

[Electricity Safety \(Bushfire Mitigation\) Regulations 2013](#)

[Electricity Safety \(Bushfire Mitigation\) Further Amendment Regulations 2016](#)

[Compliance Code: First Aid in the Work Place Victoria](#)

[Code of Practice - Bushfire Management on Public Land Victoria](#)

[Emergency Management Act 1986](#)

[Catchment and Land Protection Act 1994](#)

[Water Act 1989](#)

[Road Management Act 2004](#)

[CFA's Guidelines for Renewable Energy Installations 2019](#)

### 4.2 Contractual Requirements

GRS have identified the most critical Environmental Contractual requirements for the project, these are captured in the Appendix 1.

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## 5.5 BUSHFIRE CONTEXT

### 5.1 Overview

Victoria's high bushfire risk is the result of factors that increase the likelihood and consequences of fire. These factors include large areas of the state comprising highly flammable dry eucalypt forest, protracted droughts, and an increasing population density in bushfire-prone areas.

While bushfire is a significant risk facing Victoria, it is also a natural part of the environment and many plant species rely on fire to regenerate. A variety of causes can ignite a bushfire: some bushfires result from events that are natural, such as lightning, while others result from human activity. Following ignition, the direction and speed of the fire's travel, and the height and intensity of the flames are determined by climatic and weather conditions, topography, and fuel in the area.

Victoria has two main vegetation types affecting the spread of bushfires: grass and forest. Grass fires are predominantly wind driven and spread rapidly under the influence of strong winds. Grass fires burn at a lower intensity and flame height than forest fires and burn out quickly. Grass fires can often be quickly extinguished with water.

While the weather and topography in an area cannot be modified to reduce the fire hazard, a reduction in the flammable fuels in an area can reduce the flame height and intensity of a forest fire. Reduced flame height and intensity makes it safer and easier for firefighters to suppress a forest fire.

Infrastructure such as roads can also increase the speed of a fire response, allowing firefighters to suppress a fire safely and effectively before it reaches maximum intensity and flame height.

### 5.2 Responsibility for Fire Management

Victoria has three fire services:

- MFB is responsible for the suppression of fire in the metropolitan fire district. MFB specialises in urban fire.
- CFA is responsible for the suppression of fire in the country area of Victoria (private property outside the metropolitan fire district). CFA specialises in grass fires and township fires.
- DELWP is responsible for the prevention and suppression of fire on public land in Victoria outside the metropolitan fire district. DELWP specialises in forest fire. DELWP delivers its responsibilities through FFMVic, which includes staff from DELWP, Parks Victoria, Vic Forests and Melbourne Water.

The Country Fire Authority Act 1958 enables CFA to form Forest Industry Brigades (FIB), where forest industry companies are required to provide and maintain specified levels of equipment, officers and firefighters. These brigades are under the operational direction of CFA during incidents and are afforded the legal protections of CFA.

## 6.0 LEGISLATION

The WISF is on privately owned land in the country area of Victoria (private property outside the metropolitan fire district)

The Country Fire Authority Act 1958 relates to fire prevention and suppression in the county area of Victoria, with CFA responsible for the suppression of fire in this area. Although not explicit, the onus is on individual owners and occupiers of land to ensure their properties are free of fire hazards that may put the lives and property of other people at risk.

Section 43 of the Country Fire Authority Act 1958 states *'it is the duty of every municipal council and public authority to take all practical steps (including burning) to prevent the occurrence of fires on and minimise the danger of the spread of fires on and from – any land vested in it or under its control or management: and any road under its care and management'*.

Each municipality that has a bushfire risk appoints a Municipal Fire Prevention Officer. The Act authorises Municipal Fire Prevention Officers to issue Fire Prevention Notices on owners or occupiers of private properties to complete fire management works. A Municipal Fire Prevention Officer may enter private land to remove fire hazards if they are not treated within the time frame or manner stipulated on the Fire Prevention Notice.

The Municipal Fire Prevention Officers also acts as the executive officer of the Municipal Fire Management Planning Committees, responsible for producing a Municipal Fire Management Plan.

The Forests Act 1958 identifies the Secretary of the Department of Environment, Land, Water and Planning (DELWP) as responsible for the prevention and suppression of fire across all National parks, State forests and protected public land. This Act imposes fire regulations all year on public land.

Victoria Police prosecute offences relating to fire pursuant to the Country Fire Authority Act 1958, the Crimes Act 1958 and the Summary Offences Act 1966.

## 7.0 PLANNING

The Emergency Management Act 1986 and Emergency Management Act 2013 provide the emergency management framework for Victoria and the Emergency Management Manual Victoria contains emergency-related policy and planning documents for Victoria, including the arrangements for State, regional (Victorian State Government regions) and municipal fire management planning.

The structures for fire management planning are defined in the Emergency Management Manual Victoria Part 6 Municipal Emergency Management Planning Arrangements - Guidelines for Committees. The diagram below indicates these structures.

## 8.0 BUSHFIRE RISK ASSESSMENT

### 8.1 Bushfire hazard assessment

The bushfire hazard assessment is a key component of assessing risk. The requirements outline the need to consider and assess the bushfire hazard based on:

- Landscape conditions (20kms)
- Local conditions (1 km)
- Neighbourhood conditions (400 meters)
- The site for development

Table 1 outlines the hazard assessment relating to WISF.

Bushfire Hazard Type	Description	Likely scenarios/s	Considerations
<b>Landscape conditions</b>	The landscape hazards up to 20 kilometres from the WISF indicates significant areas of native forests. There are tracts of grassland that is primarily farmland. The farmland is predominantly dry acre farming. Winton Wetlands is a large dry lake area with grasslands and native trees and vegetation.	The likely scenario when assessing the hazard up to 20 kms from WISF, is fires burning through grassland. Neighbouring properties which are private land surround the WISF. Winton Wetland's is public land.	<ul style="list-style-type: none"> <li>Maintenance of perimeter fuel breaks</li> <li>Early identification of fire ignitions</li> <li>Engagement with local DELWP and CFA and local council and community groups to ensure fuel management treatments on surrounding land including roadsides are implemented and maintained.</li> </ul>
<b>Local conditions</b>	The conditions within 1 kilometre of the site are primarily grassland on private property with some native tree plantations for endangered fauna species to habitat.	The likely scenario is a bushfire starting in farmland and privately owned land and travelling towards the WISF.	<ul style="list-style-type: none"> <li>Establish effective road access that also serves as fuel breaks.</li> <li>Early identification of fire ignitions</li> <li>Eliminate unnecessary activity on high-risk days including hot works</li> </ul>

## 8.2 Fire Climate and bushfire

Fire climate strongly influences the likelihood of ignitions and how often, here expressed as the average number of days per year, when fires will be uncontrollable without mitigation measures.

The Victorian Government's Climate Change Framework has identified the future impact on the emergency management sector. It states that in relation to emergency management the following scenarios will be realised:

- More complex emergency response situations because of increases in the frequency, intensity, and severity of extreme weather events
- Response to emergency events will become increasingly more complex, especially for community preparedness and emergency responders.
- Overlapping fire seasons in the northern and southern hemispheres increases the cost of bushfire response as equipment and emergency management staff may not be able to be shared.

The Framework also identifies the changing vegetation type as our forests become drier due to reduced annual rainfall. These changes combined will mean larger and more complex emergency response situations into the future. It is also anticipated that the number of high-risk days will increase which directly

correlates to a reduced opportunity for Land Managers to manage the risk from their land through fuel reduction burning.

These issues strongly support the need to continually improve the way fire management planning is assessed and plans delivered into the future.

### 8.3 Fuel Hazard

WISF is in a rural setting in a gently undulating landscape.

WISF has largely been cleared of native vegetation for pastures. WISF still has some scattered paddock trees and some planted native tree plantations.

Any significant bushfire around the site would occur in grasslands or tree plantations. There will be periods when the site will be non-flammable because they are fallow, too green to burn.

The PV panels are made of glass with aluminium frames.

It is intended that the vegetation fuel under and between the PV panels will be maintained in a low fuel state by sheep grazing and other land management activities such as mowing and application of pesticides.

A fire could still spread in this fuel under severe fire weather conditions.

The likelihood of a fire spreading within the area of the proposed PV panels, by propagating from panel to panel in a solar farm installation, is difficult to assess at this stage, because a case history and or experiments are required for similar environments, climate, and solar farm components, ideally from within Australia. No data was found from within Australia, however, the risk of a fire spreading widely from panel to panel is likely to be very low because of the panel construction materials (i.e., fire resistance rating) and the time of flame exposure to initiate these materials.

The overhead powerlines across the WISF and from the Substation to the Power Station need to be maintained regularly to reduce fuel loads. This will be achieved by mowing and slashing the grass underneath the powerlines. WISF has a Vegetation Control Procedure and High Voltage Power Line Procedure to address the hazards and controls for maintenance and reducing fuel loads under these powerlines.

### 8.4 Fuel Ignitions

Bushfires in this district can be started by several means, but typically started by lightning or crop harvesting equipment.

Earthmoving equipment, power tools (welders and grinders), mowers and slashers are well known for starting bushfires under conditions of high temperatures, low humidity, and high wind. Therefore, in the months of December to March construction and ongoing maintenance of the solar farm will be a source of potential ignition.



The solar panels are non-reflective and present no risk of ignitions from concentrated solar energy. Ignitions from other PV equipment is theoretically possible from electrical faults such as arc faults, short circuits, ground faults and reverse currents, the arcing issues are normally created from the following:

- incorrect connecting of the inter module connectors
- corroded inter module connectors caused from incorrect storage of modules on site
- electrical connections on isolators / DC combiners
- miss match of inter module connectors causing insufficient electrical connections

It is conceivable that arcs or melted components resulting from a fault could ignite grass fuels under or surrounding installations and start a bushfire. However, the level of risk from faults cannot be assessed at this stage because there is no case history available and it is not possible to compare the ignition risk from farm operations (e.g. crop harvesting) relative to solar farm operation.

Overhead powerlines and high voltage powerlines can start fires by:

- Lightning Strikes
- Short Circuits
- Line dropping or sagging in extreme heat.
- Dead Shorts
- Branches falling onto power lines.
- Carbon builds up on insulators.
- Inadequate clearance around power lines
- Vegetation
- Being Hit by Machinery not observing "No Go Zones"

## 8.5 Assets at Risk

The following assets are located on site:

- Solar Panels and Infrastructure
- Substations
- High Voltage Transmission Lines
- O&M Building
- Fences
- Tree Protected Zones for native wildlife.
- HV Substation
- High Voltage Powerlines
- Overhead Powerlines

## Neighbouring Assets

- Telstra Tower
- Glenrowan Power Station
- Neighbouring Farms and farm infrastructure including homesteads.

## 8.6 The Fire Danger Index

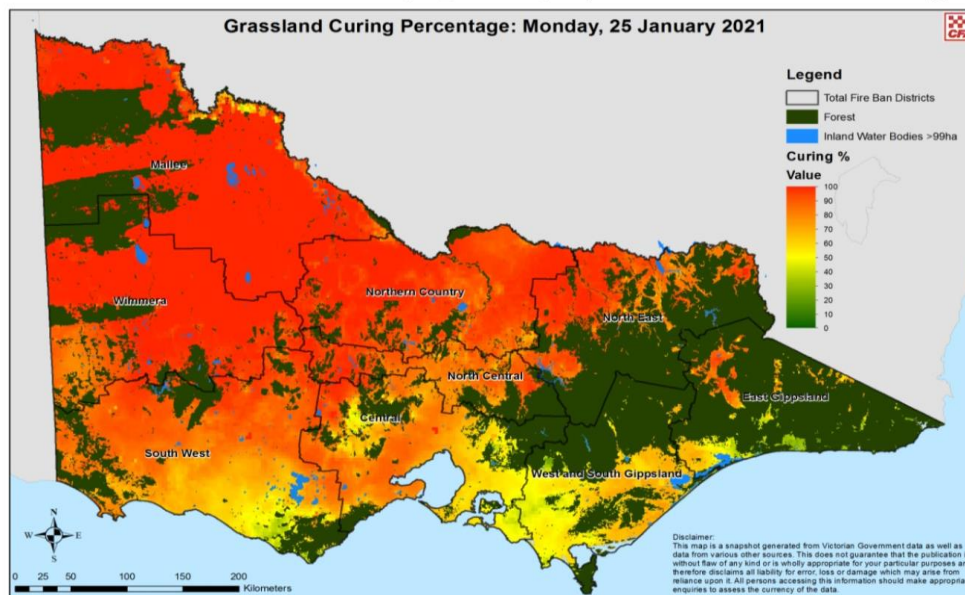
The Forest Fire Danger Index (FFDI) is used to represent the level of bushfire threat on a given day based on a set of fuel and weather conditions.

The FFDI is most used by fire services to forecast bushfire threat and predict potential fire behaviour, which is then used to undertake operational planning and preparedness.

The CFA also use the FFDI to issue fire warnings to communities, scaling the FFDI into a set of Fire Danger Ratings (FDRs) that correspond with the level of threat.

The Grassfire Danger Index (GFDI) is the weather input for grassfire behaviour modelling. The GFDI is also based on a set of weather conditions. (As there is no single mathematical relationship between the FFDI and the GFDI, a GFDI of 130 is the deemed equivalent to an FFDI of 100).

Refer the map below that shows the CFA Grassland Curing for Victoria in January 2021. This map is updated regularly.



The choice of weather conditions determines both the potential severity of a bushfire event and the return interval (likelihood) of those weather conditions occurring. The higher the FFDI, the less likely those conditions are to occur; however, if they were to occur, the more severe a bushfire would be on that day (all other things being equal).

## Fire Danger Rating Categories

Fire Danger Rating categories	Grassland Fire Danger Index (GFDI)	Forest Fire Danger Index (FFDI)
Low – Moderate	0 – 11	0 – 11
High	12 – 24	12 – 24
Very High	25 – 49	25 – 49
Severe	50 – 99	50 – 74
Extreme	100 – 149	75 – 99
<b>Code Red</b>	150 +	100 +

## Days of Code Red

- HSE Manager or Project Manager/O&M Manager to notify all relevant managers and contractors on site of Code Red Day
- Cancel any planned construction activity or outdoor work.
- Contractors to confirm availability and working arrangements with staff and visitors to site.
- Activities including use of grinding, cutting drilling or welding equipment is banned on Days of Code Red

## Total Fire Ban Days (Non code Red Day)

- SWMS to be undertaken to include climatic conditions of the day.
- Cancel any planned construction activity works that include the use of Earthmoving Equipment and Tractors and Slashes in grassland locations.
- Avoid driving any vehicles through long grass during a Total Fire Ban day.
- Cancel any planned use of grinding, cutting, drilling, or welding equipment.

## During the declared fire danger period

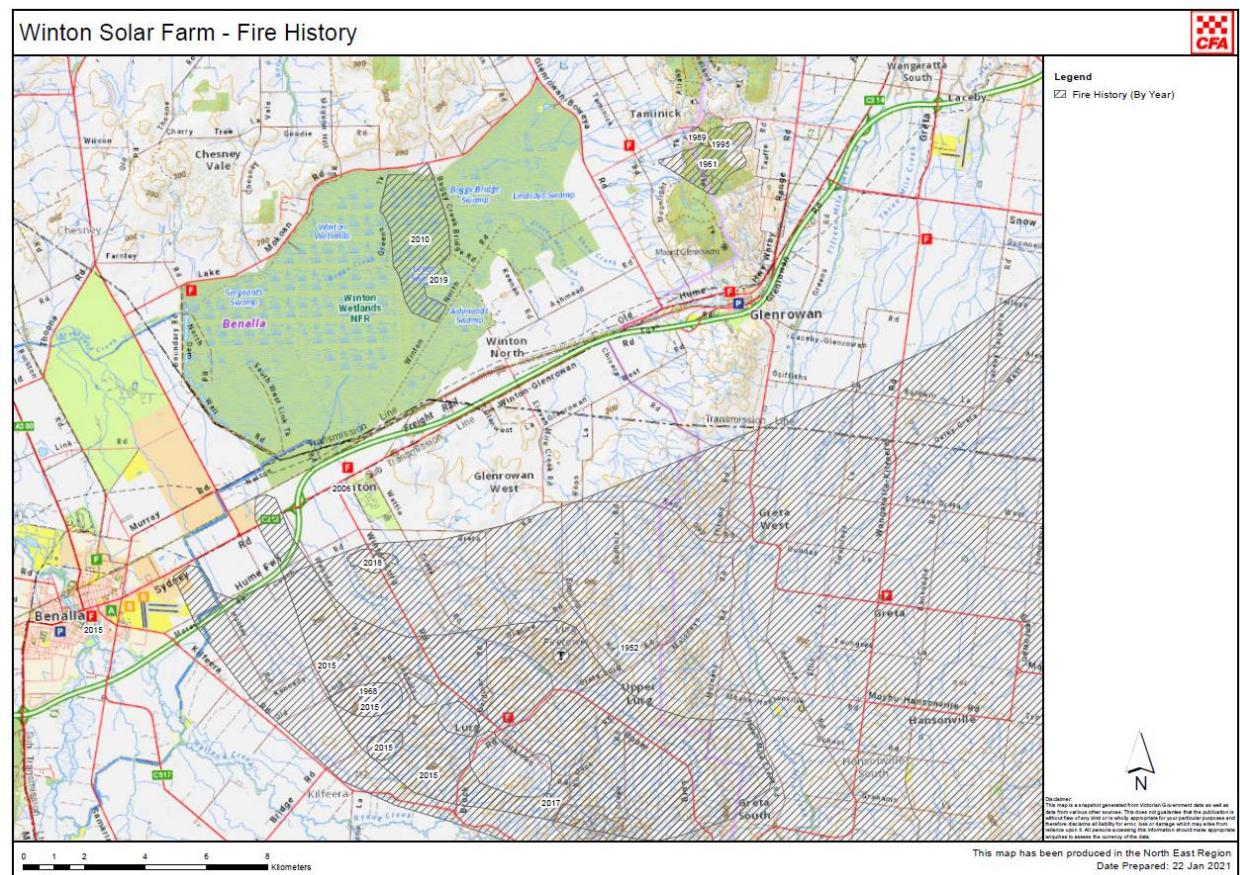
- Ensure powered mobile plant and equipment is fitted with a spark arrester and is free from faults.
- Ensure while operating mobile plant and equipment that as a minimum not less than 9 litres capacity knapsack spray pump or a water fire extinguisher is available at the work site.

The fire season work conditions information should be provided as standard contract conditions to all contractors or licensees undertaking work on WISF. Prior to any work going ahead, contractors should be

required to provide a work plan, detailing how they will meet the requirements. WISF should provide supervision to ensure all work undertaken within the solar farm is in accordance with the regulations.

On days of very high fire danger, to minimise the risk of grass fire ignitions, all operations on the site involving earth moving equipment, vehicles, slasher, and hot works (grinders and welders) should cease while the GFDI is or forecast to be 35 or greater.

## 8.7 Fire History



## 8.8 Fire Fighter and Public Safety

The usage of the general area surrounding the site is mostly limited to landowners, who are farmers, and the operators of the solar farm site.

The fire-fighters likely to respond to a bushfire in this area would be volunteers from the CFA and or individual property owners; the latter are mostly equipped with one or more of their own small fire units.

The risks to fire-fighter safety associated with a fire burning the solar panels and associated equipment include:



- electrocution – solar panels would be energized under any natural or artificial light conditions – isolation of DC current can only occur external to any solar array because there is no point of isolation.
- safe use of water spray or foam application is only possible from the perimeter of the solar paneled portion of the farm and could not reach the furthest internal distance: and
- inhalation of potentially toxic fumes and smoke from any plastic components such as cables (although the main structure of the panels will be glass and aluminum) or other decomposed products of the panels.

Any fire-fighters from the Country Fire Authority or neighbouring farms attending bushfires in this area will not be equipped with breathing apparatus and are unlikely to be trained in structural and electrical firefighting.

Given the possible toxicity of smoke from burning solar farm components, fire-fighters, farm workers and neighbours should avoid working down wind of any fire burning within the solar farm.

An Emergency Response Plan (ERP) has been prepared by GRS for WISF which provides the following:

- addresses foreseeable on-site and off-site fire events.
- activation of water spray systems and any other response/protection measures
  - clearly states work health safety risks and procedures to be followed by fire-fighters, including o personal protective clothing.
  - minimum level of respiratory protection
  - minimum evacuation zone distances
  - a safe method of shutting down and isolating the PV system (or noting if this is not possible for safe internal access)
  - any other risk control measures required to be followed by fire-fighters.
- evacuation triggers and protocols
- suppression response strategies and tactics, including aerial suppression options/management.

Copies of the ERP are in the Emergency Information Cabinets at Front Gate and Back Site Access gate of Glenwest Lane. A further copy is located the Site First Aid Room.

Other information contained in the Emergency Information Cabinets includes:

- First Aid Officers and Contact Details
- First Aid Procedure
- SDS for hazardous substances and chemicals on site
- SDS Hazardous Substance and Chemical Register

## 8.9 Access and Egress

Infrastructure such as roads and tracks increase the speed of a fire response, allowing firefighters to suppress a fire safely and effectively before it reaches maximum intensity and flame height.

A road and track network can also act as boundaries for planned burns and to create a defensible space near assets, from which firefighters can work to protect these assets.

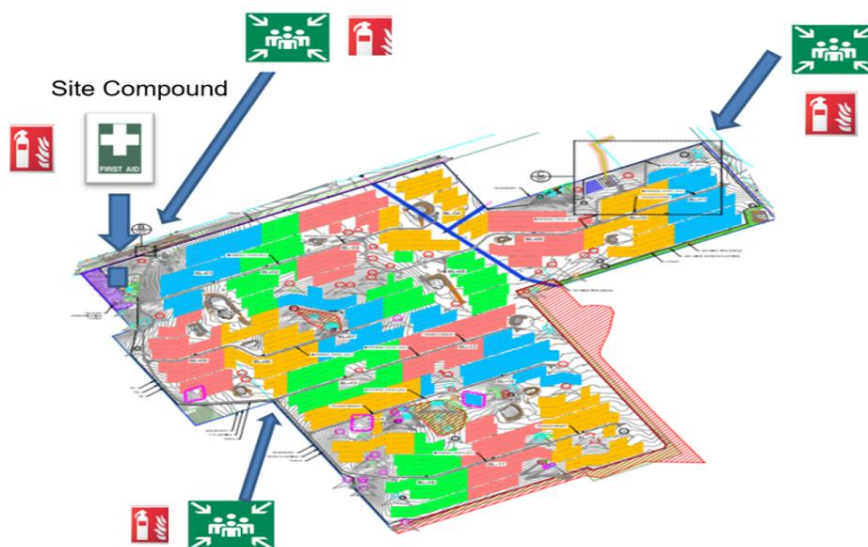
A good road and track network can:

- improve bushfire response times, which increase the likelihood of bushfires being suppressed in minimal time and to a minimal area.
- improve firefighter safety, by providing a safer platform from which firefighters can prepare for and fight bushfires.
- provide greater protection for assets.
- improve the speed of evacuation of the area, if required.

Further guidelines on access to solar farms is obtainable from the following document prepared by the CFA: *CFA Guidelines for Renewable Energy Installations Feb 2019*

GRS Emergency Response Plan and Evacuation Plan outline the Emergency Meeting Points and External Fence Access Gates on WISF.

Refer map below:



## 8.10 Primary Access Roads

Primary and secondary roads that provide key access to WISF are listed in the table below.

Primary Roads	Secondary Roads
Winton-Glenrowan Road	Glen west Lane (back of WISF)

## 8.11 Fire Equipment on Site

Several fire extinguishers are located on WISF at strategic locations. Refer table above from EMP.

Vehicles and Plant & Machinery on site also carry a fire extinguisher as part of WISF Plant & Equipment Induction.

Fire extinguishers are regularly maintained as per the table below and referenced in the EMP – Section 7.5 Equipment

EQUIPMENT INSPECTION	FREQUENCY
First Aid Equipment	12 months by accredited First Aider or restocked after any use
Fire Equipment	6 monthly by Link Fire & Safety Services North East
Fire Extinguishers	Need to be tested every six months in accordance with AS1851 Section 10 – Fire Extinguishers Refilled and pressure tested every five years by a qualified and certified company for testing

Location of fire extinguishers are kept for Emergency Services, including maps, SDS, ERP in the Emergency Information Cabinets at Front Gate and Back Site Access gate of Glen west Lane. A further copy is located the Site First Aid Room.

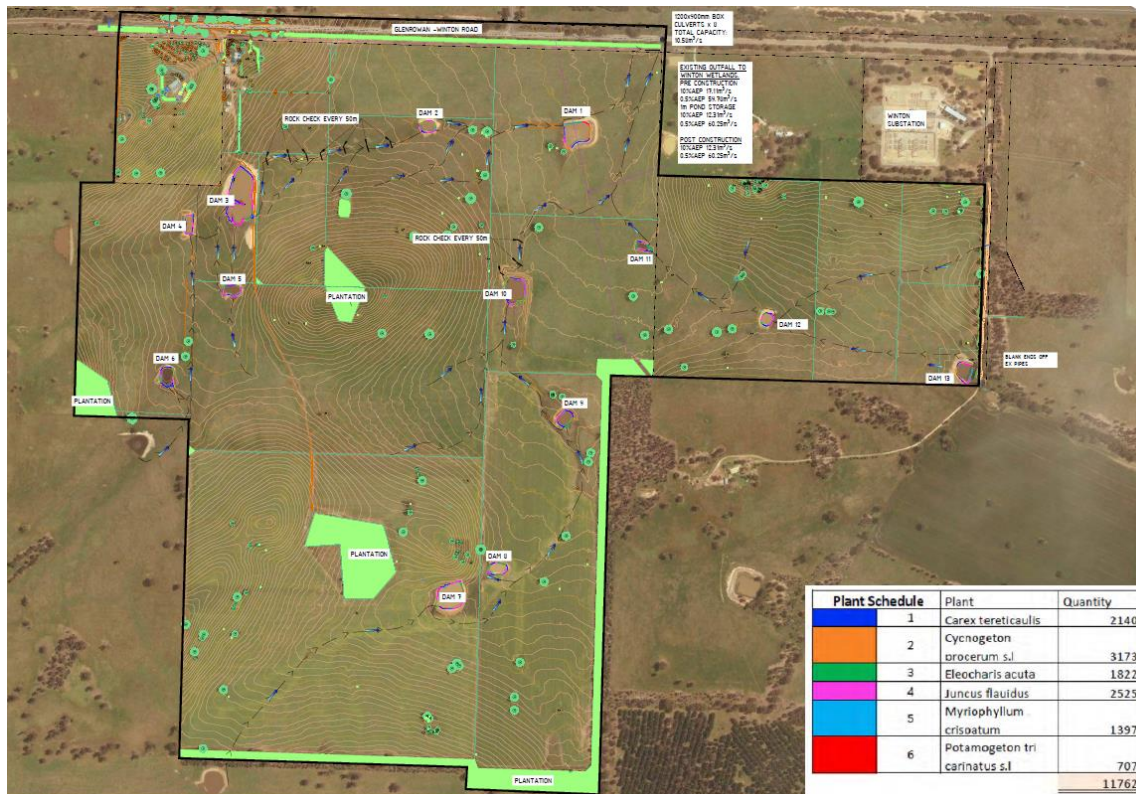
## 8.12 Water Points

On-site water supply is an important part of the fire suppression requirements which will assist with the safe, effective, and timely fires suppressions activities of responding CFA brigades in the event of a bushfire on WISF.

Sufficient water access points are available on WISF. In the event of a fire this water is available to fire trucks and air support to ensure that fire suppression activities are not hindered in any water.

Water points will be clearly identified and unobstructed to ensure efficient access as per the requirements and signage in the *CFA Guidelines for Renewable Energy Installations 2019*.

WISF consists of 13 dams on site and are located on the map provided in table below:



Location of dams are kept for Emergency Services, including maps, SDS, fire extinguisher locations and the ERP in the Emergency Information Cabinets at Front Gate and Back Site Access gate of Glenview Lane. A further copy is located the Site O&M Office.

### 8.13 Dangerous Goods Storage and Handling

The requirements of the relevant Australian Standards must be complied with Australian Standards 5139 Electrical Installations – Safety of battery systems for use with power conversion equipment and Australian Standard 3780 – the storage and handling of corrosive substances, and Australian Standard 1940 – the storage and handling of flammable and combustible liquids.

Reference - CFA Guidelines for Renewable Energy Installations 2019

All dangerous goods stored on WISF have current SDS. SDS are contained in the Emergency Information Cabinets located on site along with the WISF Hazardous Substances Register.

Spill kits are located at the diesel bowser on site for use in the clean-up of spills.

## 9.0 MITIGATION STRATEGIES

### 9.1 Overview

Mitigation strategies are guided by knowledge of the factors that contribute to bushfire risk:

- Fuels, weather, topography, predicted fire behavior.



- Spatial patterns and frequency of unplanned ignitions.
- Suppression capability: resources (air and ground), access (roads, tracks) and water; and
- Values and assets: people, buildings, commerce, industry, services, and the natural environment.

Mitigation strategies are also guided by evidence of efficacy of available treatment options. Mitigation must be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the solar farm and the community.

WISF has been actively involved in meetings with the CFA to discuss the bushfire risk at WISF. Input from the CFA District 23 Group for WISF has been included in the GRS Emergency Evacuation Plan and GRS Emergency Response Plan.

Advice from these officers was provided on the following:

- Fire History and Causes
- Local Fire Fighting Resources
- Mitigation Measures – recommended fire breaks, fire fighting equipment and water storage.
- Fire Suppression – (ie stated that the fire fighters unlikely to operate amongst solar panels)

## 9.2 Asset Protection Zone

An Asset Protection Zone (APZ) is typically designed to separate a vulnerable asset from the bushfire hazard (vegetation/fuel). An APZ is either a lower fuel hazard such as mown or heavily grazed grass or a fire break of ploughed or fallow ground. APZs do not eliminate the fire risk but may lower it to an extent where fire control is more feasible or damage to the asset is reduced or eliminated.

Despite the limitations of any APZ it is recommended that a perimeter APZ/fire break be established around the solar farm. An APZ/fire break will significantly reduce the likelihood of a bushfire spreading into the solar farm or from the solar farm into surrounding farmland.

## 9.3 Fire Breaks

Fire break area of ten (10) metres width is to be maintained around the perimeter of the facilities, electricity compounds and substations.

- The fire break area must commence from the boundary of the facility or from the vegetation screening (landscape buffer) inside the property boundary.
- The firebreak must be constructed using either mineral earth or non-combustible mulch such as crushed rock.
- The fire break must be always vegetation free.
- No obstructions are to be within the firebreak area (e.g., no stored materials of any kind)

*Reference: CFA Guidelines for Renewable Energy Installations Feb 2019*

## 10.0 POTENTIAL FOR ADDITIONAL BUSHFIRE RISK

The risk of bushfires resulting from solar farms could arise from the following scenarios:

### 10.1 Bushfire risk during construction

Due to the presence of ignition sources including hot works, increased vehicle traffic and difficulties with keeping vehicles off vegetated areas the risk of a fire-starting during construction is always present.

The following measures are recommended to control the risk of grass fire ignitions:

- the APZ/fire break is constructed as the first stage of development.
- all plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g., soil and vegetation);
- a suitable fire appliance is present on site with at least two personnel trained in bushfire fighting.
- on days when Very High fire danger, the “Victorian Emergency Warnings App” is to be checked hourly for the occurrence of any fires likely to threaten the site; and
- all operations involving earth moving equipment, vehicles, slashers and hot works (e.g. grinders, welders) cease while the GFDI is or forecast to be 35 or greater

### 10.2 Bushfire risk ongoing operations

#### 10.2.1 Fuel Management within solar farm

GRS have a Vegetation Management Procedure for the O&M Phase of the project which provides direction for the control of fuel management on WISF.

Vegetation is required to be managed throughout the solar farm to reduce fuel levels to a minimal condition by such means as slashing, mowing, and grazing.

This will minimise the radiant heat exposure to solar farm components and reduce the risk of a fire spreading beyond the solar farm.

The CFA Guidelines for Renewable Energy Installations sets out the following requirements for Fuel/Vegetation Management:

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

*Facility operators are to undertake the following fuel management measures during the Fire Danger Period:*

- *Grass is to be maintained at below 100mm in height during the declared Fire Danger Period*
- *Firebreaks set out as per 10.3 – Firebreaks.*
- *Adhere to 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](http://www.cfa.vic.gov.au))*

- *All plant and heavy equipment are to carry at least a 9-Litre water stored-pressured fire extinguisher with a minimum rating of 3A, or firefighting equipment as a minimum when on-site during the Fire Danger Period*
- *There is to be no long grass or deep leaf litter in areas where plant and heavy equipment will be working.*

On days of very high fire danger, to minimise the risk of grass fire ignitions, all operations on the site involving earth moving equipment, vehicles, slasher, and hot works (grinders and welders) should cease while the GFDI is or forecast to be 35 or greater.

### 10.2.2 Fire Risks from PV system

All electrical equipment will comply with relevant construction standards and design; installation of electrical equipment such as junction boxes, inverters, transformer, and electrical cabling is to be in accordance with AS 3000:2007 Wiring Rules.

### 10.2.3 Power Line Fires

Powerline transmission lines and high voltage overhead lines are located on WISF.

Powerlines can be the cause of bushfires such as Black Saturday fires in 2007 in extreme heat and fire danger periods.

Powerlines in extreme weather can ignite fires from the following:

- Lightning Strikes
- Short Circuits
- Line dropping or sagging in extreme heat.
- Dead Shorts
- Branches falling onto power lines.
- Carbon builds up on insulators.
- Inadequate clearance around power lines
- Vegetation
- Being Hit by Machinery not observing "No Go Zones"

#### 10.2.3(a) Power Line Vegetation Procedure

The electrical lines located on WISF are not near any trees or high vegetation that cause damage to the lines and increase the fire risk.

Reference is hereby given to the section of the 66kV OHL between the gantry in WISF Substation and the first pole (Pole Number1) just outside the WISF perimeter fence.

Therefore, Winton Solar Farm will use the following methods to control vegetation underneath the powerlines:

- Mowing/Slashing under powerlines & Power Stations which includes buffers of 7m to each side of the power line to a total buffer width of 14 metres. (minimum width to be cleared/maintained shall not be less than the specified easement width of 14m as per AusNet standards).

- Grass height be maintained at a height below 100mm during the declared Fire Danger Period. (CFA Guidelines for Renewal Energy Installations 2019)

### 10.2.3(b) Power Line Maintenance Procedure

The strategi for the Maintenance on WISF Sub-Station to the first pole for the OHL is to engage a contractor (Powernet). This routine maintenance will be conducted every 12months by a contractor (Powernet). All maintenance will be in-conjunction with the Electric Line Clearance Plan & in conjunction with 10.2.6 of this document.

Asset Inspection & Maintenance scope as follows:

#### 7.1. 33kV Dead Tank CB - GE 33kV DT1-72.5FK-F1

	Yearly	Bi Annual
Visual Inspection for signs of deterioration	<input type="checkbox"/>	
Operational check including Trip Circuits		<input type="checkbox"/>
Clean Insulators	<input type="checkbox"/>	
Primary Electrical connections Clean and Tight and Ductor Connections	<input type="checkbox"/>	
Undo regrease and replace bolts on primary electrical connections including Ductor		<input type="checkbox"/>
Check Secondary electrical connections	<input type="checkbox"/>	
Measure Main Contact Wear		<input type="checkbox"/>
Clean and lubricate all moving parts		<input type="checkbox"/>
Insulation Resistance Test	<input type="checkbox"/>	
Time Spring Charge		<input type="checkbox"/>
Timing Test Open and Close		<input type="checkbox"/>
Check Semaphore Operation		<input type="checkbox"/>
Document Number of Operations	<input type="checkbox"/>	
SF6 Gas Testing		<input type="checkbox"/>

#### 7.2. 33kV ROI / Earth Switch type 12771

	Yearly	Bi Annual
Clean Insulators	<input type="checkbox"/>	
Clean and lubricate ROI and Earth Switch Contacts	<input type="checkbox"/>	
Check alignment of ROI and Earth Switch	<input type="checkbox"/>	
Check Secondary Connections	<input type="checkbox"/>	
Document number of operations	<input type="checkbox"/>	
Check Current rating and loading of motor during operations		<input type="checkbox"/>
Check limits and signal back to HMI		<input type="checkbox"/>
Check earthing connections	<input type="checkbox"/>	

#### 7.3. 33kV HV Out Door Terminations onto Bus Structure

	Yearly	Bi Annual
Check Connections and Ductor	<input type="checkbox"/>	
Clean and replace bolts / connections if necessary	<input type="checkbox"/>	

#### 7.4. 66/33kV Power Transformer

	Yearly	Bi Annual
Check Oil Levels in all bushings via sight glass	<input type="checkbox"/>	
Check main tank conservator and tap changer oil levels at Ambient Temp	<input type="checkbox"/>	
Collect oil samples and send away for testing		<input type="checkbox"/>
Check explosion vent diaphragm for deterioration or rupture / bleed of air		<input type="checkbox"/>
Check pressure relief devices		<input type="checkbox"/>
Visual inspection of surrounds for oil leaks	<input type="checkbox"/>	
Check Maximum indicated levels on the winding temperature, Hot Winding and Hot oil Indicators	<input type="checkbox"/>	
Check Silica Gel Breathers	<input type="checkbox"/>	
Check piping for oil leaks	<input type="checkbox"/>	
Check Nebar Seals		<input type="checkbox"/>
Check Fan Operations	<input type="checkbox"/>	
Clean Fans		<input type="checkbox"/>
Check Oil Pump Operations	<input type="checkbox"/>	
Check anti- condensation heaters in control cubicles	<input type="checkbox"/>	
Check secondary connections		<input type="checkbox"/>
Visual inspection of overall Transformer including radiators	<input type="checkbox"/>	
Duct all bolted connections		<input type="checkbox"/>
Test Buchholz relay operation		<input type="checkbox"/>
Test alarms	<input type="checkbox"/>	
Load test oil and fan pumps		<input type="checkbox"/>
Check all sampling locations are clean and closed	<input type="checkbox"/>	
Wash transformer		<input type="checkbox"/>
Inspect transformer earthing	<input type="checkbox"/>	

#### 7.5. 66kV VTs

	Yearly	Bi Annual
Inspect Oil Level through Sight Glass	<input type="checkbox"/>	
Check for oil on base plate and surround	<input type="checkbox"/>	
Clean insulators		<input type="checkbox"/>
Check earthing connections	<input type="checkbox"/>	
Duct primary connections		<input type="checkbox"/>
Check secondary connections in marshalling cubical		<input type="checkbox"/>

### 7.6. 66kV Transf 1 CB DT1-72.5FK-F1

	Yearly	Bi Annual
Visual Inspection for signs of deterioration	<input type="checkbox"/>	
Operational check including Trip Circuits		<input type="checkbox"/>
Clean Insulators	<input type="checkbox"/>	
Primary Electrical connections Clean and Tight and Ductor Connections	<input type="checkbox"/>	
Undo regrease and replace bolts on primary electrical connections including Ductor		<input type="checkbox"/>
Check Secondary electrical connections	<input type="checkbox"/>	
Measure Main Contact Wear		<input type="checkbox"/>
Clean and lubricate all moving parts		<input type="checkbox"/>
Insulation Resistance Test	<input type="checkbox"/>	
Time Spring Charge		<input type="checkbox"/>
Timing Test Open and Close		<input type="checkbox"/>
Check Semaphore Operation		<input type="checkbox"/>
Document Number of Operations	<input type="checkbox"/>	
SF6 Gas Testing		<input type="checkbox"/>

### 7.7. 66kV GNTS FDR LINE ROI

	Yearly	Bi Annual
Clean Insulators	<input type="checkbox"/>	
Clean and lubricate ROI and Earth Switch Contacts	<input type="checkbox"/>	
Check alignment of ROI and Earth Switch	<input type="checkbox"/>	
Check Secondary Connections	<input type="checkbox"/>	
Document number of operations	<input type="checkbox"/>	
Check Current rating and loading of motor during operations		<input type="checkbox"/>
Check limits and signal back to HMI		<input type="checkbox"/>
Check earthing connections	<input type="checkbox"/>	

### 7.8. 66kv SA

	Yearly	Bi Annual
Clean Insulators	<input type="checkbox"/>	
Check earthing connections	<input type="checkbox"/>	
Ductor primary connections		<input type="checkbox"/>
IR Test		<input type="checkbox"/>
Power Factor Test		<input type="checkbox"/>

### 7.9. 66kV Outgoing line to first Pole Just outside Substation Yard

	Yearly	Bi Annual	Tri Annual
Clean Gantry Insulators	<input type="checkbox"/>		
Check earthing connections	<input type="checkbox"/>		
Ductor primary connections	<input type="checkbox"/>		
Clean and redo primary connections not including line wrap		<input type="checkbox"/>	
Check and clean earthing stirrups	<input type="checkbox"/>		
Thermal Imaging of ROI Connections			<input type="checkbox"/>
Thermal Imaging of Pole connections and jumpers			<input type="checkbox"/>
Check earthing connections on pole	<input type="checkbox"/>		

## 10.2.4 Asset maintenance

The strategi for Maintenance on WISF Sub-Station will be carried out via a drone to all HV assets. The drone will inspect all over headlines & joins. Thermal imaging will be part of the process to capture any maintenance required. This process will be undertaken every 12 months. Please refer to table 2 the WISF maintenance schedule for a full list of preventative maintenance & timeline on page 30 of this document. This work will be completed in conjunction with 10.2.3(b)

## 10.2.5 Risk & Investigation

The O&M Manager along with the HSE Manager are responsible for the Incident Investigation & analyses on Winton Solar Farm. Please refer to Table 1 for Risk Assessment. Please refer to Incident & Investigation Report (WIN-GRS-HS-IAR 000N\_A1 Incident & Investigation Report) below, Refer to below Roles & Responsibilities of O&M, HSE managers.

- Ensuring risk assessments are being completed for all hazards and O&M activities.
- Measurement and evaluation will take place throughout the lifecycle of the O&M via the use of inspections and audits on a regular basis by any of the following: O&M Manager, HSE Manager.

COMPLETE PART 2 OF THIS REPORT FORM WHERE AN INVESTIGATION IS REQUIRED TO BE CARRIED OUT.

REFER TO THE INCIDENT REPORTING AND INVESTIGATION PROCEDURE.

PART 2. INVESTIGATION REPORT (Refer to the Incident Investigation Guidelines)			
<b>1. INCIDENT INVESTIGATION</b>			
Lead Investigator:	Justin Beukman	Position:	HSE Manager
Date of Investigation:		Signature:	
<b>2. WITNESSES AND/OR PERSONS INTERVIEWED (Attach Witness Statements if applicable)</b>			
Name:		Company:	Contact Number:
<b>3. CAUSE ANALYSIS (Attach other documentation as necessary)</b>			
<b>Direct causes</b> (Inexistence would have avoided the incident):			
<b>Indirect causes</b> (No certainty that inexistence would have avoided the incident, although it would have influence):			
<b>New Risks Identified:</b>		<b>Risk Rating:</b> (Refer to Risk Matrix)	<b>Included in Risk Register:</b> (Y or N)
<b>4. ACTIONS TO BE IMPLEMENTED TO AVOID/REDUCE THE RISK</b>			



Corrective Action / Preventive Action:	Timeframe:	Responsible:

#### 5. REVIEW OF PROCEDURES OR EMERGENCY PLANS (If Required)

Changes required to any process/procedure as a result of CA/PA:	Implemented:	Closed Out Date:

#### Comments:

#### 6. CLOSE OUT OF CORRECTIVE ACTIONS

The following corrective actions have been transferred to the CAR, implemented and closed out:

#	Details of Implementation:	Closed Out (Sign and Date):

#### 7. REPORTED DISTRIBUTED TO (Mark with an X)

Director	Department Manager	IMS Manager	Human Resources
Legal	Finance	CONTRACTOR	EXTERNAL
CLIENT			

#### 8. SIGNED OFF FOR CLOSE OUT (HSE MANAGER)

Name:	Justin Beukman	HSE Manager
Signature:		

### 10.2.6 OHL Asset Information

Winton Solar Farm is in a HBRA with 66Kv Lines that span 27m, this is the responsibility of WISF. There is 1 pole in total that is constructed of concrete, please refer to Figure 2 for further information. North East Tree Services will be engaged to carry out Inspections every year under these lines to ensure the vegetation under the OHL is being maintained. Powernet will also be contracted to carry out Inspections on the OHL as per 10.2.4 of this document.

Figure 2



### 10.2.7 Audit & Monitoring

WISF will carry out preventative maintenance & inspections in conjunction with the WISF Preventative Maintenance Plan. All internal & external audits will be in conjunction with the WISF Quality Management Plan. The IMS Manager will control the auditing process with the O&M Manager. Please refer to Tables 2 & 3 for Maintenance & Inspection frequency.

Table 2

WINTON PV PLANT: PREVENTIVE WORKS		PERIODICITY
<b>1</b>	<b>GENERAL PV PLANT</b>	
1.1	General Inspection PV Plant	Monthly
1.2	Perimeter Fence Inspection	Monthly
1.3	Pest control	Every Six Months
1.4	Inspection and Cleaning of the monitoring system and meteorological stations	Weekly
1.4.a)	Calibration of Irradiance Sensors (2022)	Every 2 Year (2022)
1.5	Review of the foundations and electrical pits	Quarterly
1.6	Inspection of fire detection system.	Monthly
<b>2</b>	<b>PHOTOVOLTAIC MODULES</b>	
2.1	Photovoltaic module cleaning	Yearly
2.2	VISUAL INSPECTION OF THE MODULES AND CONNECTORS	Yearly
2.3	Thermographic Analysis	Yearly
<b>3</b>	<b>ONE AXIS SINGLE TRACKER</b>	
3.1	Structure and Moving Parts	Every two years
3.2	Moving Parts	Yearly
3.3	Control system: Dbox, Tbox, Mbox	Every six months
<b>4</b>	<b>WIRING, CONNECTIONS AND HARNESS SYSTEM</b>	
4.1	Visual Inspection	Yearly
4.2	Thermographic inspection and Tightening of electrical connections.	Yearly
4.3	Insulation Measurements	Yearly
4.4	Testing of Circuit Breakers protections	Yearly
4.5	Voltage and Current Measurements of series	Yearly
<b>5</b>	<b>INVERTER</b>	
5.1	Maintenance work under voltage	Every six months
5.2	Maintenance work under voltage-free condition	Every six months
<b>6</b>	<b>POWER STATION</b>	
6.1	General Maintenance works	Monthly
6.2	Specific Maintenance works	Every six months
6.3	MV Wiring	Yearly
<b>7</b>	<b>SURVEILLANCE SYSTEM</b>	
<b>6.1</b>	<b>GENERAL INSPECTION</b>	
7.1.1	General Inspection	Monthly
7.1.2	CCTV	Monthly
7.1.3	Access Control	Monthly
<b>7</b>	<b>COMMUNICATIONS SYSTEM AND SCADA</b>	
7.1	COMMUNICATIONS SYSTEM AND SCADA	Weekly
<b>8</b>	<b>SUBSTATION</b>	
8.1	Visual inspection to ensure the correct status.	Weekly
8.2	Control of vegetation and animals in the yard of the substation.	Weekly
8.3	Thermal images inspection and electrical measurements to verify the correct status of all equipment, and identifying any noise vibrations. Specialized maintenance to be done in 2025 eg. Tap changer, 132 kV breaker, 132 kV isolator maintenance.	Yearly
8.4	Review Low Voltage AC-DC	Yearly
8.5	Review lighting, infrastructure and security systems	Yearly
8.6	Measurement of earth resistance	Yearly
8.7	Verification of electrical interlocks and operation of equipment	Yearly
8.8	Refining and Lubrication of the commands breaker and switches	Yearly
8.9	Cleaning the main components	Yearly
8.10	Measurement of contact resistance of the circuit breakers	Yearly
8.11	Verification of the metering systems. Comparison at Inverter level	Monthly
<b>9</b>	<b>Vegetation</b>	
9.1	Weed Management	Monthly
9.2	Grass Management	Monthly

Table 3 (Weekly Inspections)

Worksite Name: Winton Solar Farm

Date Completed:

Week Ended:

Person Completing:

\*\*\*C - Compliant NI - Needs Improvement NC - Not Compliant N/A - Not Applicable

KEY ITEMS		C	NI	NC	N/A
<b>Edge Protection</b>					
1.1	Are physical barriers installed and secure for any exposed edges?				
1.2	Where an exclusion zone is established is it 2 metres back from the live edge?				
1.3	Where edge protection is impractical is a system in place for the use of harnesses and attachment points and are these certified by a competent person?				
<b>Amenities</b>					
2.1	Are amenities always clean, sealed and vermin proof with adequate appliances?				
2.2	Are there suitable toilets and crib areas on site for all workers?				
2.3	Are toilets located separately from the crib room, working, cleaned regularly and easily accessible?				
2.4	Is drinking water provided and accessible?				
2.5	Are first aid facilities available, stocked, accessible and with adequate signage and trained person (s) on site?				
<b>Emergency Response</b>					
3.1	Are there emergency evacuation diagrams on all gates and noticeboards?				
3.2	Are emergency contacts on display?				
3.3	Are fire extinguishers located at all exits with signs erected and tagged 6 monthly?				
<b>Traffic Management</b>					
4.1	Does the project have one or more approved Traffic Management Plan/s (TMP) on display?				
4.2	If there are devices to be temporarily installed as per Site TMP is there a suitably licenced traffic controller on site?				
4.3	Is all site signage set out in accordance with the Site TMP?				
4.4	Are weekly pre-starts /weekly vehicle log checklists completed?				
4.5	Site access roads and/or roadways free from mud and litter				
4.6	Vehicle Movements only on access areas and access tracks				
4.7	Vehicle speeds are within specified area limits				

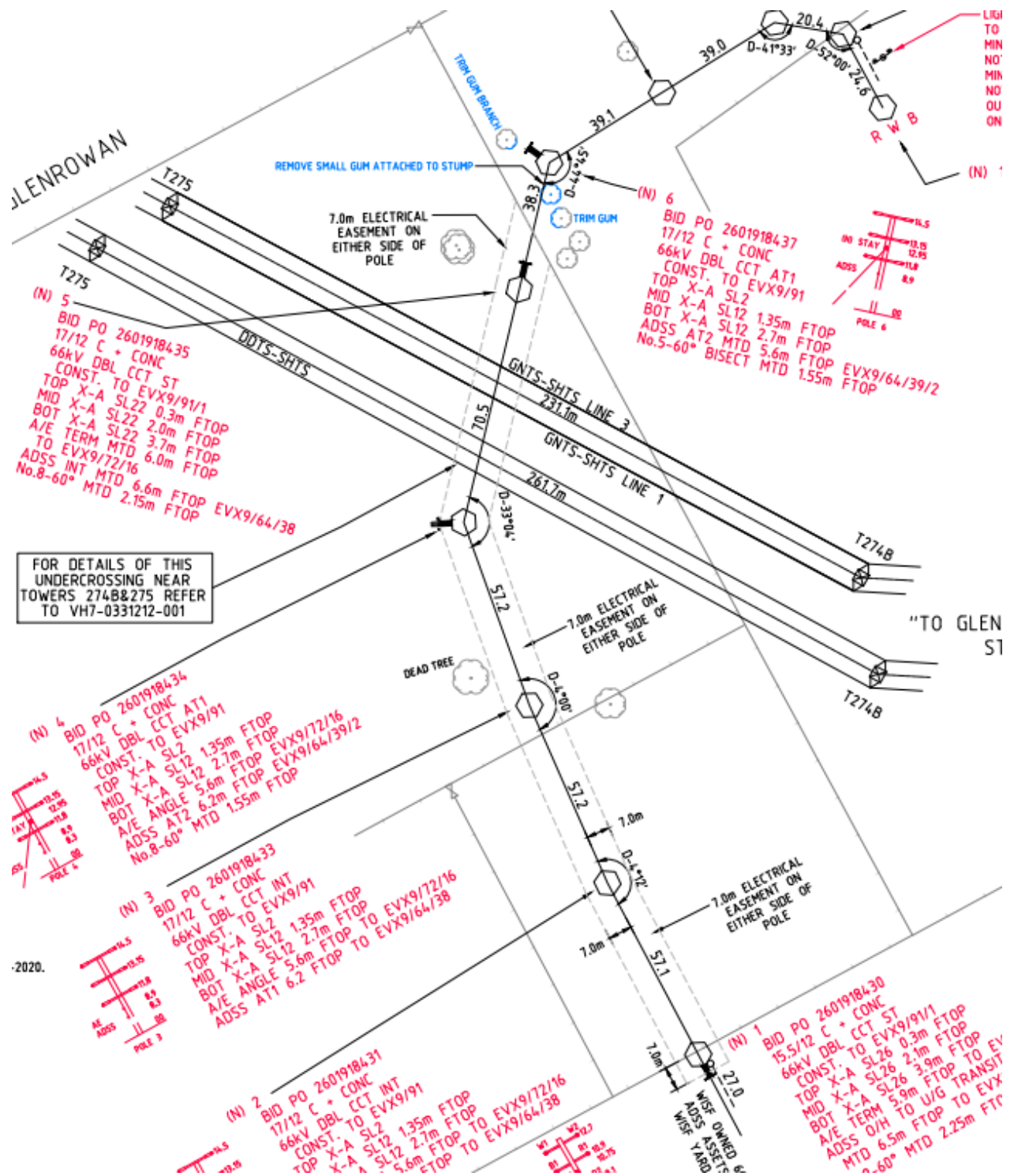
KEY ITEMS	C	NI	NC	N/A
4.8 Space between arrays kept clear for weed control and vegetation maintenance				

KEY ITEMS	C	NI	NC	N/A
<b>GENERAL SAFETY</b>				
S1 Falls managed, exclusion signs & zones in place.				
S4 Excavations - Collapse controlled, barricades in place, safe access, stockpiles away from trenches				
S5 Cranes & lifting - Safe lifting practices near workers, warnings processes or exclusion zones in place, tag lines				
S7 Concrete pumps / trucks set up - Set up in agreed area clear of trenches and clear of obstructions, exclusion zones in place				
<b>Dangerous Goods</b>				
S9 High risk work activities - All workers completing high risk work have completed GRS Work Permit for activity and suitable controls are in place.				
S10 Fuels and Chemicals, Dangerous goods stored, handled as per standards (bundling, signage, spill kits, labelling, PPE, containers and SDS's)				
<b>ENVIRONMENTAL</b>				
<b>Noise &amp; Vibration</b>				
E1 High risk work activities - All workers completing high risk work have completed GRS Work Permit for activity and suitable controls are in place.				
<b>Dust Generation</b>				
E2 Dust - Monitor dust emissions visually and apply measures /controls dust suppression				
<b>Flora and Fauna</b>				
E3 Weed and Seed Inspection - Weeds and Seed Inspections are maintained on a basis on re-introducing plant to site, in prevention of spreading weeds on site.				
E4 Flora and Fauna - no impact on vegetation beyond designated work areas				
E5 Site free from weed infestations and control activities recorded				
E6 Check to see if any maintenance required (fencing, vegetation rehabilitation areas, erosion control)				
E7 Grass height complies with CFA Guidelines for Renewable Energy Installations 2019 Clause 4.2.1 & 6.3.1				
<b>Soil and Water</b>				
E7 Water ways free of pollution and works >40m from a watercourse				
E8 Sediment control - none leaving site - Sediment fences erected & maintained, no soil on roads,				
E9 Soil & Water - all temporary and permanent drains effective (not eroding or discharging to stable areas)				
E10 Temporary diversion drains and sediment controls established prior to heavy rain (if required)				

KEY ITEMS		C	NI	NC	N/A
E11	All Bunded areas empty of water -Remove ponded water from area				
	<b>Waste</b>				
E13	Site is clear of debris, waste eg no litter distributed on or offsite				
E14	Concrete washout areas- maintained and not overfilled				
E15	Waste disposal area demarcated, waste segregated, bins securely covered, waste disposal regularly, no visible stock piling.				
E16	Smoking only in designated places, no cigarette butts on ground				
E17	Any liquid waste (sewage) contained				
E18	No regulated waste and regulated waste register used to record waste removed				
E19	Spill kits on site and maintained - Contents are maintained and adequate, spills cleaned up and waste disposed of correctly				
E20	Stockpiles, bare slopes and internal roads for erosion;				
E21	Drainage systems including silt fences and stormwater interception or drainage channels; and				
E22	Dust on external roads surrounding the site;				
E23	Vehicles and machinery for noise and exhaust gas pollution				
	<b>Bushfire Risk</b>				
E20	Fire Management Plan in operation and effective				
E21	Hot works away from possible fuel loads				
E22	Access to and operational firefighting equipment				
E23	Consultation with CFA and emergency services formally conducted annually				

#	COMMENTS / RECOMMENDATIONS	PERSON RESPONSIBLE	CLOSE OUT DATE





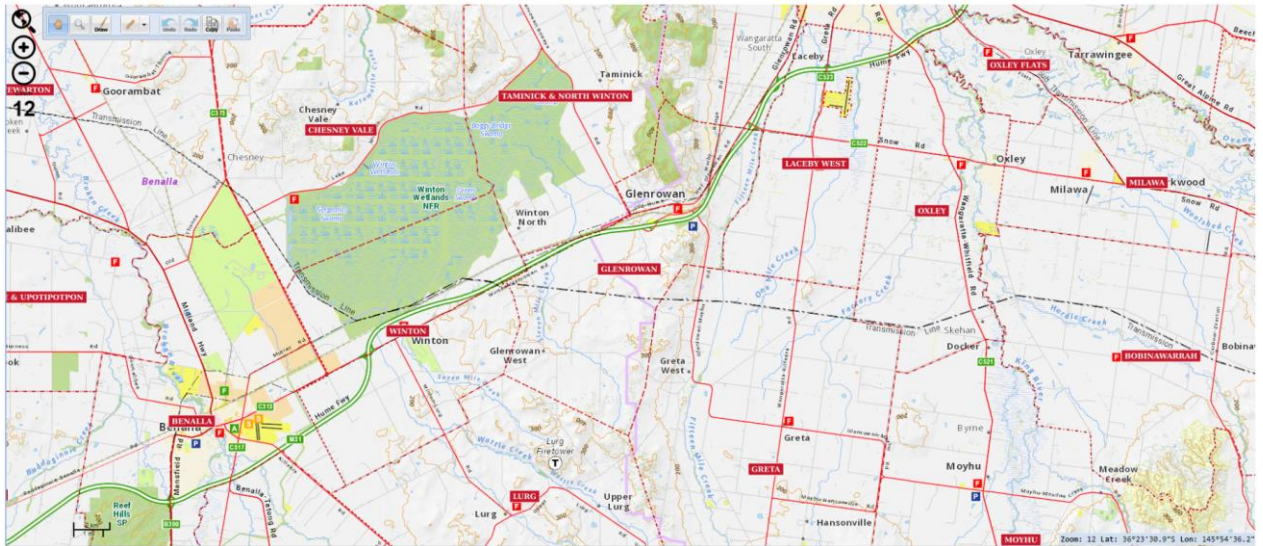
## 11.0 RECORDS

All records shall be maintained as per Document Control and Record Management Procedure.

## 12.0 APPENDIX

### Appendix A – Location of Local CFA Stations surrounding WISF.

Indicated with a red “F”.



### Appendix B – CFA Contact Details for Local Brigades

Name	Position	Brigade	Contact Number
Rod Railton	Benalla and Mansfield Catchment Officer Fire Investigator/ D23 DFIC	Region 23 – Hume Region	0439 720 345
Jamie Beaton	Captain	Benalla Brigade	0409 950 768
Phil Spokes	Captain	Winton Brigade	0417 935 385
24 Hrs Service		Wangaratta HQ	03 5720 2300