ACEN | Australia

New England Solar – Fire and Emergency Response Plan



Stage 1b – 400MWac – Operations

Stage 2a – 320MWac - Construction

Premises geocode (GPS co-ordinates)

Latitude: -30.625646°

Longitude: 151.618911°

12 December 2023

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ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, TAS 7004

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Glossary of Terms and Abbreviations

Abbreviation	Definition
AC	Alternating Current
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability - a flood which has a 1% chance of occurring in any year.
APZ	Asset Protection Zone
BAL	Bushfire Attack Level. AS 3959 (2009) describes six levels of risk of bushfire attack including BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ and are based upon the potential exposure to heat flux thresholds, expressed as kW/m^2.
BESS	Battery Energy Storage System
BFMC	Bushfire Management Committee (New England)
BLEVE	Boiling Liquid Expanding Vapour Explosion
Bushfire	A general term used to describe fire in vegetation, including grass fire and forest fire.
Bushfire Hazard	The potential severity of a bushfire, which is evaluated by fuel load, fuel arrangement and topography under a given climatic condition.
Bushfire Management	A systematic process that identifies and assesses assets and provides a range of treatments that contributes to the wellbeing of communities and the environment, which suffer the adverse effects of wildfire/bushfire.
Bureau	Bureau of Meteorology
BPA	Bushfire Prone Area
Bushfire Risk	The chance of a bushfire igniting, spreading and causing damage to the environment, community or the assets.
BRA	Bushfire Risk Assessment – the process of evaluating bushfire risk.
Bushfire Threat	Potential bushfire exposure of an asset due to the proximity and type of a hazard, and the slope on which the asset is situated.
CCTV	Closed Circuit Television
CFR	Community First Responder (SES member trained in advanced first aid)
Clearance	The physical removal of vegetation. This may involve the removal of all vegetation from an area, for example on a fire track, through to trimming branches or the selective removal of species or a stratum of vegetation. With the exception of a fire track, generally clearance does not mean the removal of all vegetation.
DC	Direct Current

Abbreviation	Definition
DEOCON	District Emergency Operations Controller (Police Officer)
DISPLAN	New South Wales State Disaster Plan
EIS	Environment Impact Statement
Emergency	As defined in Section 1.1
EMS	Environment Management Strategy
EPA	Environment Protection Authority
EMPC	Emergency Planning Committee
ERC	Emergency Response Coordinator
ERP	Emergency Response Procedures
ERT	Emergency Response Team
ESIP	Emergency Services Information Package
FDI	Fire Danger Index
FERP	Fire and Emergency Response Plan
FRNSW	Fire and Rescue New South Wales
ha	Hectare, 1 hectare = 10,000 metres^2.
Hazard(s)	A situation or an intrinsic property with the potential to cause harm to people, property or the built or natural environment.
Hazard Zone	An 30km buffer around NES where the consequences of a particular incident may impact on people, property and the environment.
Heat Flux	Is the heat per unit area, usually expressed in kilowatts per square metres (kW/m^2).
HV	High Voltage
IAPZ	Inner asset protection zone - land adjacent to assets with a low fuel hazard, reducing the level of ember attack, direct flame contact and radiant heat impact and providing a defensible space with increased safety under some conditions (ESA 2014[1]).
km	Kilometres
kV	Kilo Volt
LEOCON	Local Emergency Operations Controller (Police Officer)
LPG	Liquefied Petroleum Gas

Abbreviation	Definition
LV	Low Voltage
MSDS	Material safety data sheet (also referred to as a safety data sheet)
MV	Medium Voltage
MW	Megawatt
NCC	National Construction Code
NES	New England Solar
ACEN Australia	ACEN Australia Pty Ltd
NSW RFS	New South Wales Rural Fire Service
O&M	Operations and Maintenance
OAPZ	Outer asset protection zone - land adjacent to an inner asset protection zone, where fuel hazard is reduced to a lesser extent than within the IAPZ.
PBP	NSW RFS 2019. *Planning for Bushfire Protection: A guide for Councils, planners, fire authorities and developers*.
PCU	Power Control Unit
PPE	Personal Protective Equipment
PV	Photovoltaic
SCADA	Supervisory Control and Data Acquisition
SFAZ	Strategic Firefighting Advantage Zone - corridors established to break up major fire runs in instances where initial attack fails and conditions permit, although they may assist in initial attack in some circumstances. These zones are strategically located to slow the spread of unplanned fires and reduce fire intensity and spotting (ESA 2009[2]).
SOPs	Standard Operating Procedures

1 Introduction

1.1 Definition of Emergency

This Fire and Emergency Response Plan (FERP) is restricted in application to the footprint of the New England Solar (NES) development footprint and the hazard zone that surrounds NES.

Emergency is defined as an occurrence at or near NES requiring activation of the FERP.

The FERP will be activated when an actual, or imminent occurrence triggers one or more of the following:

- Poses a danger to staff and/or the public on site or in the hazard zone
- Threatens or causes serious environmental harm
- Threatens or causes serious damage to the Site
- The occurrence requires a significant and coordinated immediate response involving a combat agency (external assistance) to manage the situation
- The failure of, or incorrect implementation of the Standard Operating Procedures (SOP) resulting in an emergency as defined in Appendix C

As examples, a spill of hazardous material on site that that is resolved through the application of standard operating procedures (SOPs) would not be regarded as an emergency. A bushfire burning 5 km radius from the development footprint of NES would trigger the FERP and be deemed to be an emergency.

The FERP is de-activated once the emergency situation ceases to exist. It must be noted that actions are likely to be required to be taken after the de-activation of the FERP, however these actions will be conducted under other mechanisms, such as, but not limited to the NES Environmental Management Strategy (EMS) or SOPs.

1.2 Context

This FERP has been prepared to address the requirements of Schedule 3, Condition 26 of the NES Development Consent, which states:

> ***Emergency Plan***
>
> *26. Prior to commissioning operations, the Applicant must develop and implement a comprehensive Emergency Plan and detailed emergency procedures for the development, to the satisfaction of FRNSW and the RFS. The Applicant must keep two copies of the plan on-site in a prominent position adjacent to the site entry points at all times. The plan must:*
>
> *a) be consistent with the Department's Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning';*
> *b) identify the fire risks and controls of the development; and*
> *c) include procedures that would be implemented if there is a fire on-site or in the vicinity of the site.*

d) include bushfire emergency management planning, including:

- *details of the location, management and maintenance of the Asset Protection Zone;*
- *a list of works that should not be carried out during a total fire ban*
- *details of how RFS would be notified, and procedures that would be implemented, in the event that:*
  - *there is a fire on-site or in the vicinity of the site;*
  - *there are any activities on site that would have the potential to ignite surrounding vegetation; or*
  - *there are any proposed activities to be carried out during a bushfire danger period; and*
- *include an Emergency Services Information Package in accordance with Emergency services information and tactical fire plan (FRNSW, 2019), to the satisfaction of FRNSW and RFS; and*

e) prior to commencing construction of the Battery Storage:

- *be updated in accordance with the findings of the Fire Safety Study required under Condition 23 of Schedule 3; and*
- *include details of how the Battery Storage can be safely isolated in an emergency.*

Following approval, the Applicant must implement the Emergency Plan for the duration of the development and following commencement of operations of the battery storage, keep a copy of the Emergency Services Information Package on-site in a prominent position adjacent to the site entry points at all times.

This FERP also addresses requirements outlined in Schedule 3, Condition 25, which states:

Operating Conditions

25. The Applicant must:

a) minimise the fire risks of the development, including managing vegetation fuel loads on-site;
b) ensure that the development:

- *includes at least a 10 metre defendable space around the perimeter of the solar array area and battery storage facility that permits unobstructed vehicle access;*
- *manages the defendable space and solar array areas as an Asset Protection Zone;*
- *complies with the relevant asset protection requirements in the RFS's Planning for Bushfire Protection 2019 (or equivalent) and Standards for Asset Protection Zones;*
- *is suitably equipped to respond to any fires on site including provision of a 20,000 litre water supply tank fitted with a 65mm Storz fitting and a FRNSW compatible suction connection located adjacent to the internal access road;*

c) *assist the RFS and emergency services as much as practicable if there is a fire in the vicinity of the site; and*
d) *notify the relevant local emergency management committee following construction of the development, and prior to commencing operations.*

This FERP has been developed in accordance with the Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning' (Department of Planning, 2011).

1.3 Aims

The aim of the FERP is to provide a system and resources to enable ACEN Australia staff and its contractors to respond to emergencies in order to protect:

- People
- The NES Project
- The environment.

1.4 Objectives

The objectives of this FERP are:

- Facilitate a coordinated emergency response
- Develop emergency response procedures (ERP) (Located in Appendix C)
- Maintain a high level of preparedness
- Respond quickly and efficiently to minimise the effects of an emergency
- Protect people both on site (NES), including combat agency staff and within the surrounding community from harm
- Protect NES and the environment from harm
- Manage the emergency until the appropriate external agency arrives (combat agency)
- Support the combat agency/agencies with information, knowledge skills and equipment until the emergency is resolved.

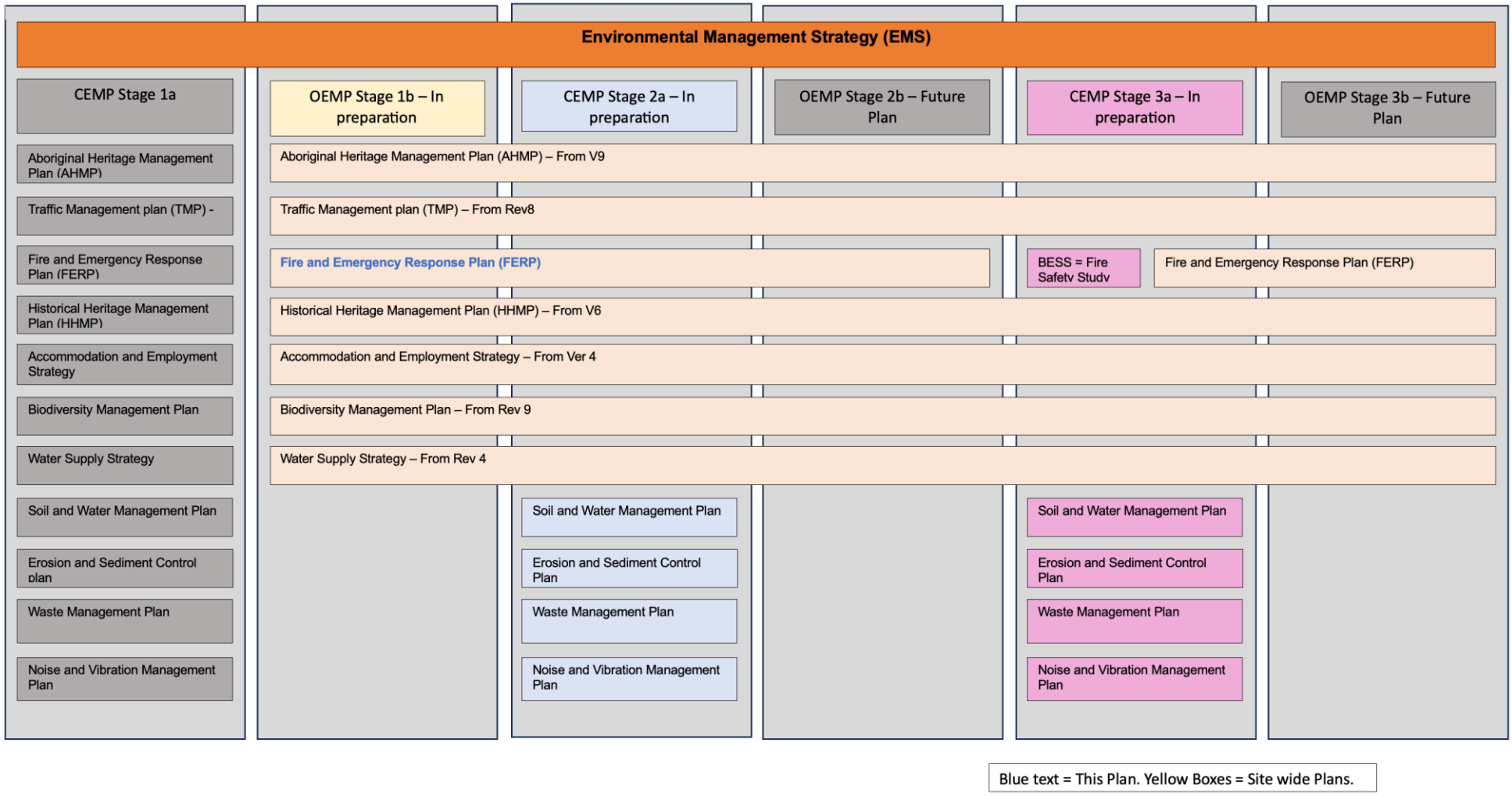


Figure 1: Environmental Management System Framework

1.5 Emergency Roles and Responsibilities

This FERP has been developed by ACEN Australia, with the implementation and maintenance of the FERP the sole responsibility of ACEN Australia and its contractors.

All staff on site are required to comply with this FERP and fully understand and perform the roles and responsibilities as defined in the NES FERP.

This section identifies the key personnel that have responsibilities under the FERP. The duties, accountability and authority of key personnel are specified.

Each contractor and their sub-contractors are required to be informed of these key personnel and their associated responsibilities and the hazards and associated emergency responses that relate to NES and the hazard zone through the process of induction prior to commencing work at NES.

To facilitate efficient and safe emergency response, ACEN Australia may combine the functions listed in this FERP or temporarily assign duties to another officer or contractor as necessary. These changes must be documented within the FERP and communicated to all staff and contractors.

As NES has multiple stages of development involving various stakeholders at different intervals. ACEN Australia has identified that Emergency Areas of Control (EAC) must be established to set clear boundaries between different stages and stakeholders. Each identified EAC must have an ERC and subsequent ERT nominated to it.

The fundamental structure to implement this FERP is given in Figure 2

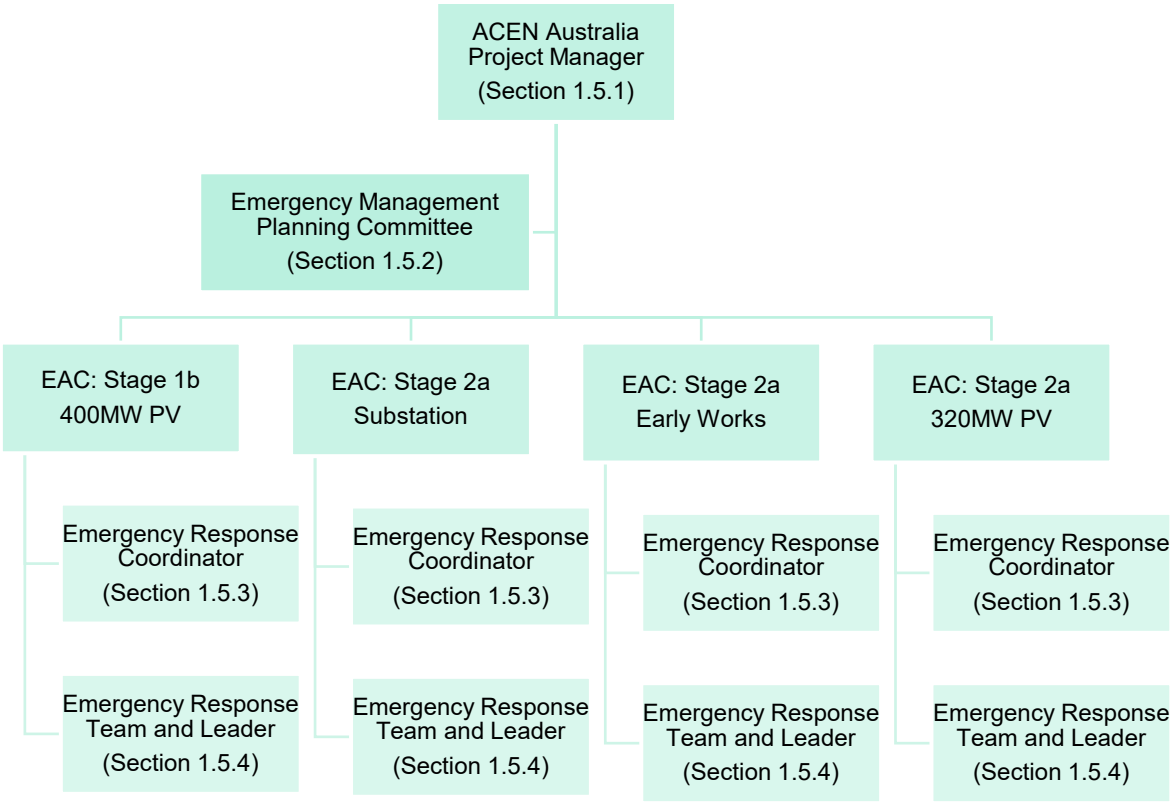


Figure 2 Emergency Response Organisation Structure

1.5.1 ACEN Australia Project Manager

ACEN Australia's Project Manager is responsible for ensuring that:

- An Emergency Planning Committee (EMPC) is formed and performing their duties as specified within this FERP, in accordance with Australian Standard AS 3745:2010 and as required by NSW legislation
- Membership of the EMPC is registered, kept up to date (including contact details) and is available on site
- Management systems are implemented to ensure that all contractors receive the necessary training and updates to ensure that they are familiar with the requirements of this FERP and related processes
- The EMPC and system requirements outlined within the FERP are sufficiently supported and adequately resourced
- Audits are conducted to evaluate the effectiveness of the FERP and compliance with the FERP management procedures and requirements
- The staff with overall responsibility for each stage of the Site must ensure that all hazards are identified and reported. This is of particular importance where new projects (e.g., subsequent stage development) are proposed for NES
- Ensure members of the EMPC are adequately indemnified.

1.5.2 Emergency Planning Committee (EMPC)

ACEN Australia shall form an Emergency Planning Committee including as a minimum:

- ACEN Australia's Project Manager
- ACEN Australia's Site Operations Manager
- Contractors O&M Manager
- ACEN Australia's Health, Safety and Environment (HSE) Manager
- Contractors HSE Managers (for both construction and operations)
- Emergency Response Coordinator (ERC – NES based staff member) and members of the Emergency Response Team (ERT – NES based staff) as considered necessary

It is permissible for an individual to perform more than one of these positions/responsibilities.

The EMPC is responsible for the following:

- Identifying events and hazards that could reasonably give rise to an emergency
- Develop, maintain and update this FERP and the associated documentation controls
- Identifying, documenting and communication of the Emergency Area of Control
- Ensure the FERP is appropriately resourced for its development and implementation

- Ensuring the FERP is monitored and reviewed in accordance with the following triggers incorporated within the FERP:
    - An emergency
    - Outcomes of an emergency response exercise
    - Five year life of the FERP (review triggered at commencement of year four to enable the revised FERP to be implemented within year five)
    - Transition of NES from construction into operation
    - Significant development at NES (e.g., Stage 4 development to enable the new Stage to be incorporated into the existing FERP)
    - Significant change to legislation or Australian Standards
    - A development within the Hazard Zone that presents a hazard to NES
- Ensuring the FERP is identifiable and available to the appropriate staff within ACEN Australia, its contractors and external agencies (stakeholders)
- Establish the Emergency Response Team (ERT) as appropriate
- Planning the emergency testing program for NES:
- Two practice drills per year
- EMPC will meet quarterly:
    - One ERP will be reviewed at each meeting.

1.5.2.1 ACEN Australia HSE Manager/ Contractors HSE Managers

The EMPC is responsible for planning for emergencies. Each Contractor's HSE Manager is responsible for implementing actions arising from the EMPC including the following:

- Ensuring that visitors to NES are aware of emergency response procedures via the NES Induction Procedure
- Ensuring the ERT have completed FERP emergency preparedness and response training and hold relevant qualification where required
- Conducting site audits across NES (hazardous chemicals, emergency equipment, workplace) to ensure emergency preparedness
- Ensuring that records are maintained of each emergency situation
- Enacting the recommendations of the EMPC including implementing the annual emergency testing program including reviewing the outcome and incorporating recommended actions into the revised FERP as required
- Ensuring that the equipment (fire, medical and rescue) utilised in an emergency is maintained in an operational standard and that the necessary documentation is maintained. For example, fire extinguisher testing and tagging

- Communication of emergency management information to its relevant staff e.g., commencement of bushfire season, construction activity
- Conduct or coordinate the review of the FERP
- Ensure that ACEN Australia and all contractors comply with the requirements of the NSW *Work Health and Safety Act 2011* and associated *NSW Work Health and Safety Regulation 2017*.

ACEN Australia's HSE Manager may contribute to all aspects of emergency management at NES however the Contractors HSE Managers have specific duties that relate to environmental emergencies. The Contractors HSE Manager is responsible for:

- Ensuring that resourcing for environmental emergency management is adequate
- Ensuring that emergency equipment required to combat environmental emergencies is provided, adequate and maintained fit for purpose e.g., spill containment, bunding, extraction and storage equipment
- Providing input into and reviewing the FERP including following emergency testing drills
- Ensuring that NES is compliant with environmental legislative requirements
- Ensuring that the induction program includes environmental emergency management and all contractors are informed of their environmental responsibilities and are competent in the performance and understanding of environmental emergency management under the FERP

These actions will be reported to and facilitated by ACEN Australia's HSE Manager.

1.5.2.2 ALL Project Based Manager/s

Any Site Manager, Site Superintendent, Construction Manager, Operations Manager, Departmental Manager or other staff with a comparative managerial role have the following duties and responsibilities:

- Comply with FERP procedures and requirements
- Ensure the ERT receive FERP emergency preparedness and response competency training
- Resource and coordinate emergency preparedness drills
- Identify and report hazards to ACEN Australia's and Contractors HSE Manager. This is of particular importance where new works are proposed
- Ensure standard operating procedures are being followed for activities conducted within NES.
- Assist and liaise with the ACEN Australia's and Contractors HSE Manager in auditing the emergency preparedness of NES.

1.5.2.3 ALL Project Foreman and Supervisor/s

Project Foreman, Supervisors and Team Leaders shall undertake or ensure the following:

- Comply with FERP procedures and requirements
- Coordinate emergency preparedness drills
- Ensure standard operating procedures are being followed for activities conducted within NES
- All staff have been inducted to NES
- Provide formal input into all emergency related documentation, systems and processes from an operational perspective.

1.5.2.4 ALL Employees and sub-contractors

Employees and workers at NES are responsible for the following:

- Complying with their requirements under relevant legislation
- Ensuring they have undertaken a Site induction
- Complying with all safety requirements
- Identifying, reporting and eliminating hazards
- Complying with SOPs
- Reporting any emergency, dangerous occurrence, injury, hazard or defective equipment
- Actively participating in site safety meetings (Toolbox meetings), safety programs (including induction) and emergency training
- Ensuring they are trained/accredited in the use of emergency equipment as appropriate
- Proficient in the application of the hazard risk assessment, including the hierarchy of controls.

1.5.3 Emergency Response Coordinator(s) (ERC)

Each contractor will have a designated Emergency Response Coordinator (and deputy) for the relevant stage it is engaged for. Either the ERC and/or the deputy (alternate) ERC should be present on site at all times. Where this role is shared amongst several staff it must be established who is acting in this capacity on a daily basis prior to the commencement of works at the site. The ERC is responsible for the following:

- Responding to incidents/emergencies in accordance with the FERP
- When evacuation is required, ensuring that personnel that are affected are evacuated in accordance with the FERP
- Ensuring that head counts are conducted by supervisors responsible for particular workgroups and that any missing persons are identified and subsequently accounted for
- Liaise and coordinate with Emergency Services, providing up to date information
- Direct Emergency Services to the incident scene from the designated site access location
- Report the emergency in accordance with the FERP

- Recording the incident/emergency and relevant details as outlined in the FERP.

1.5.4 Emergency Response Team (ERT) and ERT Leader

Each ERC may appoint an Emergency Response Team (ERT) in order to respond or assist in the response to an emergency. The ERT will follow the directions of the ERC. The ERC may appoint an ERT Leader who has the overall responsibility of the ERT. The ERT Leader has the responsibility of:

- Coordinate any rescue and respond to all emergency situations
- Control the incident scene
- Coordinate the emergency response from the scene of the incident.

1.5.5 First Aid Personnel/Officer

Key staff and contractor representatives are to have completed a basic first aid training course and have a current first aid accreditation. There should be a number of first aid trained staff on-site at all times during construction, and these staff are to be identifiable. First Aid staff are responsible for:

- Ensuring first aid supplies are kept up to date (re-stocked following an incident/use)
- Ensuring their qualifications are maintained
- Providing first aid in the event of injury providing that it is safe to do so
- Contacting Emergency Services when required
- Providing first aid and assistance as instructed by the ERC
- Directing emergency services to the casualty
- Directing staff to the aid station or access point with emergency services as appropriate
- Informing ACEN Australia's HSE Manager of any incident at NES.

1.6 Combat Agency Roles, Responsibilities and Contact Details

1.6.1 Fire and Rescue New South Wales (FRNSW)

FRNSW is the combat agency that will respond to fires and rescue emergencies on or adjacent to NES including vehicle crashes. It is likely that units of FRNSW would be dispatched to NES to respond to structural emergencies due to the specialist equipment that they are equipped with, whilst either FRNSW and/or NSWRFS units would respond to grassfires subject to location and availability.

The fire service units would liaise with the ERC and/or ERT Leader when on site at NES although once present, the fire service will take command of the fire ground.

FIRE AND RESCUE STATION 205 ARMIDALE

Location: 66 Barney Street, ARMIDALE, NSW 2350

Approximate distance from NES (by road): 30km

Phone: (02) 6771 5076

Emergency Phone: 000

FIRE AND RESCUE STATION 475 URALLA

Location: 28 Salisbury St, URALLA NSW 2358

Approximate distance from NES (by road): 15km

Phone: (02) 6778 4010

Emergency Phone: 000

FIRE AND RESCUE STATION DUMARESQ

Location: 10 Mann Street, ARMIDALE, NSW 2350

Approximate distance from NES (by road): 30km

Phone: (02) 6771 5076

Emergency Phone: 000

FIRE AND RESCUE STATION GUYRA

Location: 73 Ollera Street, GUYRA, NSW 2365

Approximate distance from NES (by road): 66km

Phone: (02) 6779 1448

Emergency Phone: 000

Standard inter-agency operating procedures are to be followed when multiple combat agencies are present at NES.

1.6.2 New South Wales Rural Fire Service (NSWRFS)

There are four NSW RFS brigades within close proximity to NES in addition to the New England Logistics/Remote Area Fire-fighting Team (RAFT) that are located at Armidale Airport,41 Shand Drive, Armidale NSW 2350.

NSW RFS DUMARESQ BRIGADE

Location: 10 Mann Street, ARMIDALE, NSW 2350

Approximate distance from NES (by road): 30km

Phone: (02) 6771 2400

Emergency Phone: 000

NSW RFS DIGGINGS (BILGA ROAD) BRIGADE

Location: Bilga Road, IVERGOWRIE, NSW 2350

Approximate distance from NES (by road): 25km

Emergency Phone: 000

NSW RFS DIGGINGS (ROCKY RIVER) BRIGADE

Location: Duzus, 301 Thunderbolts Way, ROCKY RIVER, NSW 2358

Approximate distance from NES (by road): 15km

Emergency Phone: 000

NSW RFS KENTUCKY BRIGADE

Location: Kingstown Road, URALLA, NSW 2358

Approximate distance from NES (by road): 28km

Emergency Phone: 000

These NSWRFS brigades may respond to grass or bushfires within NES or surrounds. The fire service units would liaise with the ERC and/or ERT Leader when on site at NES although once present the fire service will take command of the fire ground.

Standard inter-agency operating procedures are to be followed when multiple combat agencies are present at NES.

1.6.3 NSW Ambulance

NSW Ambulance provides a paramedic and emergency response from the NSW Ambulance Station located in Armidale.

ARMIDALE AMBULANCE STATION

Location: 197 Barney Street, (cnr of Butler Street) ARMIDALE, NSW 2350.

Approximate distance from NES (by road): 28km

Phone: (02) 6771 1710

Emergency Phone: 000 (Emergency)

The ERC and/or ERT Leader will liaise with NSW Ambulance Officers/Paramedic when on site at NES. All first aid staff will take direction from NSW Ambulance Officers in order to provide support in the event of a medical emergency.

Standard inter-agency operating procedures are to be followed when multiple combat agencies are present at NES.

1.6.4 NSW State Emergency Services (SES)

The closest SES unit is located at Uralla and includes Community First Responders (CFR) trained by NSW Ambulance in extended first aid skills such as defibrillation and oxygen therapy. The ERC and/or ERT Leader will liaise with the SES CFR when on site at NES until NSW Ambulance Officers/Paramedic arrives.

The SES unit is the local combat agency for floods and storm damage and provides support to general rescue efforts in the local community. The unit may also provide Road Crash Rescue (RCR), Vertical Rescue (VR), Urban Search and Rescue (USR) and other forms of specialist rescue.

The Armidale SES unit may also respond to emergencies at or within the vicinity of NES, including road crashes. SES units can provide support to both fire services and the police in responding to emergencies.

The SES Unit Commander is responsible for directing the SES Unit personnel at the site and will liaise with the ERC and/or ERT Leader when on site at NES. In a situation where more than one SES Unit has responded to the emergency situation the SES Local Commander will undertake the role of liaising with the ERC and/or ERT Leader when on site at NES.

URALLA SES UNIT

Location: 1 Depot Road, URALLA, NSW, 2358.

Approximate distance from NES (by road): 12km

Phone: 13 25 00

ARMIDALE SES UNIT

Location: 203 Mann Street, ARMIDALE, NSW, 2350.

Approximate distance from NES (by road): 27km

Phone: 13 25 00

Standard inter-agency operating procedures are to be followed when multiple combat agencies are present at NES.

1.6.5 NSW Police

Where a combat agency is designated in the NSW State Disaster Plan (DISPLAN) the head of the combat agency controls the combat area and NSW Police have overall control of the site. For example, if a fire occurs on NES the fire service will have control of the fire zone and NSW Police would be responsible for the overall control of the site (NES) with both agencies liaising with the ERC and/or ERT Leader when on site at NES.

An NSW Police Officer performs the role of the Local Emergency Operations Controller (LEOCON).

An NSW Police Officer performs the role of the District Emergency Operations Controller (DEOCON).

URALLA POLICE STATION (not open 24 hours)

Location: Hill Street, URALLA, NSW 2358

Approximate distance from NES (by road): 10km

Phone: (02) 6778 4400

Phone: 000 (Emergency)

ARMIDALE POLICE STATION (open 24 hours)

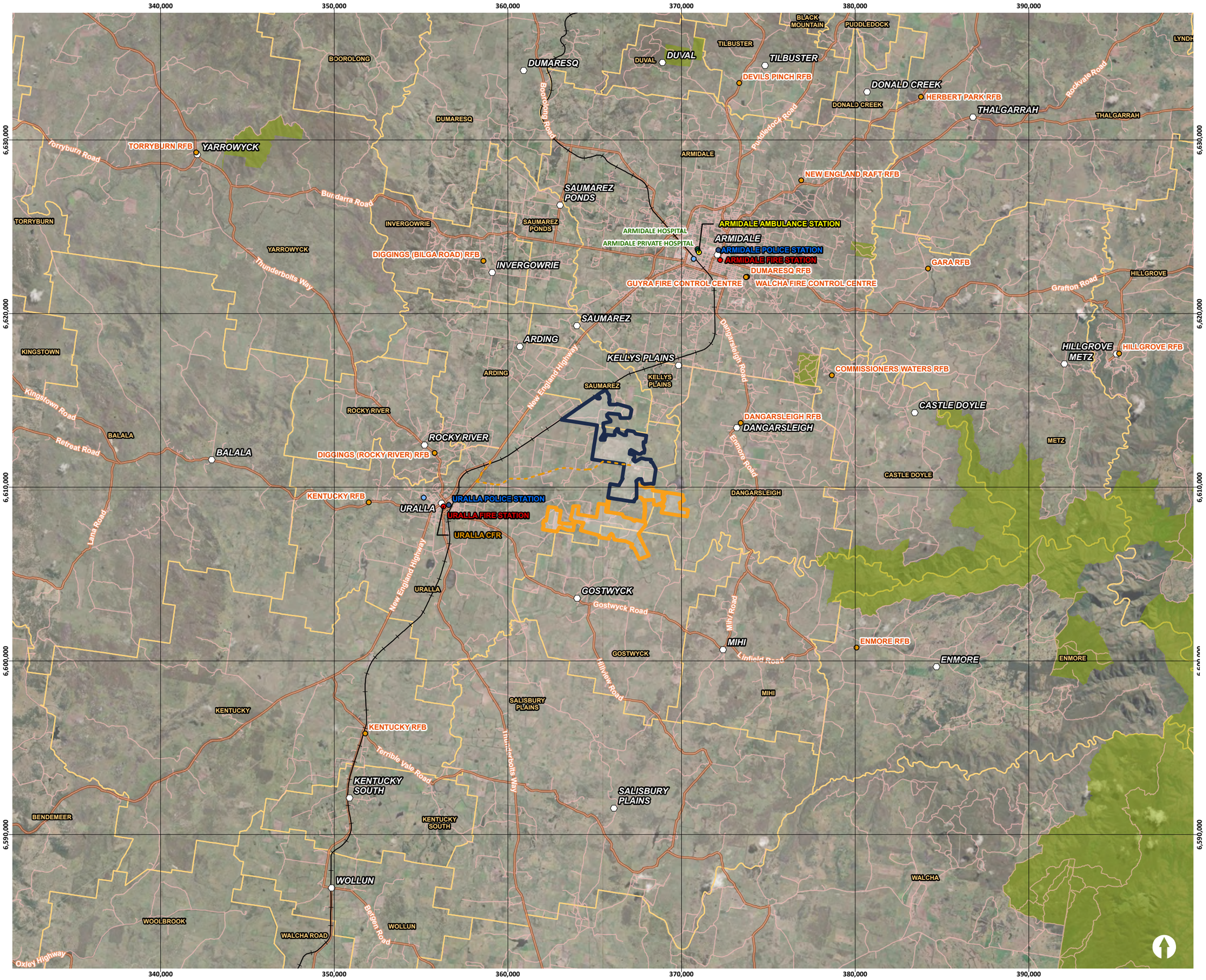
Location: 96-98 Faulkner Street, ARMIDALE 2350

Approximate distance from NES (by road): 29km

Phone: (02) 6771 0699

Phone: 000 (Emergency)

Standard inter-agency operating procedures are to be followed when multiple combat agencies are present at NES.



Legend

New England Solar Site

- Stage 1b
- Stage 2a
- Site Access Road

Reference Layers

- Hospital
- Ambulance Station
- NPWS Reserve / State Forest
- Arterial Road
- Minor Road
- Railway

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Emergency Services within 30km from Site

Drawing no. NESF-P014 - Figure 3

Date 25/08/2023

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1:200,000

GDA2020 MGA Zone 56

ACEN Australia

364,000
366,000
368,000
370,000
6,616,000
6,614,000
6,612,000
6,610,000

Proposed water cart and 20000L static water supply and RFS fitting

Stoneleigh Rd

Coxs Rd

Stanley Vale Ln

Big Ridge Rd

Gate 1

Gate 2

Gate 3

Gate 4

Proposed water cart

60,000L water supply

O&M building (Emergency Control Centre)

Fuel storage: 2,500L Petrol & 6,000L Diesel

Legend

- Water Point
- New Gate Required
- No Through Road
- Emergency Staging Point
- Diesel/Petrol Storage
- Main Access Road
- Class 1 Access Track (6m wide)
- Class 2 Access Track (4m wide)
- Not Accessable/Trafficable
- New Class 4 Access Track
- Fire Hazard Areas
- Asset Protection Zone
- Fence (Perimeter)
- Fence (Livestock)
- O&M Building
- Railway Line
- Existing 330 kV Transmission Line
- Sealed Road
- Unsealed Road

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Emergency Response Plan

Drawing no.
NESF-P020 - Figure 4

Date
23/10/2023

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GDA2020 MGA Zone 56

ACEN Australia

2 Project Description

2.1 Approved Project

New England Solar (NES) was granted Development Consent from the Department of Planning, Infrastructure and Environment (DPIE) (now the Department of Planning and Environment [DPE]) on 9 March 2020 (SSD 9255). The Development Consent was most recently modified on 26 May 2023 (Modification 2), after receiving approval for Modification 1 on 9 Feb 2021.

2.1.1 General project description

ACEN Australia Pty Ltd (ACEN Australia) (formerly named UPC Renewables Australia Pty Ltd) has approval to develop the New England Solar and Battery Project; a significant grid-connected solar and battery energy storage system (BESS) project along with associated infrastructure (the Project), approximately 6 kilometres (km) east of the township of Uralla, which lies approximately 19 km south of Armidale, in the Uralla Shire local government area (LGA) (hereafter referred to as NES). NES is within the New England Renewable Energy Zone (REZ). NES was approved, subject to conditions, by the New South Wales (NSW) Independent Planning Commission (IPC) on 9 March 2020 (SSD 9255).

NES will be constructed in the following stages:

- Stage 1a: Construction of a 400 megawatt (MW) solar farm within the Northern Array, which commenced on 7 February 2022 and is expected to be completed by Q4 2023
- Stage 1b: Operations of 400MW solar
- Stage 2a: Construction of a 320 megawatt (MW) solar farm within the Central Array, which is expected to commence by Q1 2024
- Stage 2b: Operations of 320MW solar
- Stage 3a: Construction of 200MW/2hr BESS within the approved Substation/BESS area, which is expected to commence by Q1 2024
- Stage 3b: Operations of 200MW/2hr BESS
- Stage 4a: Construction of 1200MW/2hr BESS within the approved Substation/BESS area
- Stage 4b: Operations of 1200MW/2hr BESS
- Stage 5: Decommissioning

Key components of NES development are summarised in Table 2-1.

Table 2-1 Key components of NES

Aspect	Description
NES project summary	The NES project includes:

	• A generating capacity of approximately 720 (MWac), including about 400 MWac generated by the northern arrays (Stage 1) and 320 MWac from the central arrays (Stage 2). • Approximately 1.4 million single-axis tracking solar panels (up to 4.3 metres (m) high) and 150 power conversion units (PCU) (up to 2.7 m high). • A grid substation in the northern array area and connection to TransGrid's 330 kilovolt (kV) transmission line. • A lithium-ion battery storage facility (1,400 MW/2,800 MWh) located adjacent to the substation and within a number of small enclosures (up to 2.9 m high) or larger battery buildings (up to 5.5 m high) (Stage 3 & 4). • Internal access tracks, staff amenities, maintenance buildings (up to 8 m high), offices, laydown areas, car parking and security fencing. • Subdivision of land within the site for the TransGrid switchyard.
Project area	Site: 3,655 hectares (ha). Total NES footprint: 2,159 ha • Stage 1 footprint: 1,159 ha • Stage 2 footprint: 985 ha • Stage 3 footprint: 15 ha
Access route	All vehicles will access the site via the New England Highway, Barleyfields Road (North) and Big Ridge Road).
Site entry and road upgrades	Two new site entry points are constructed on Big Ridge Road with a rural property access type. Upgrades to the intersection of: • The New England Highway and Barleyfields Road (North), including a Channelised Right Turn (CHR) treatment. • Barleyfields Road (North) and Big Ridge Road, including a Basic Left Turn (BAL) treatment. Upgrades have been made to: • Barleyfields Road (North) between the New England Highway and Big Ridge Road, including sealing to a width of 7.2 m and 1 m gravel shoulders. • Big Ridge Road including sealing sections to a width of 7.2 m and 1 m gravel shoulders, and upgrading a section with a gravel surface to a width of 8.7 m.
Rail transport	Construction materials may be transported to the site via a combination of road and rail (average of 2 trains per week).

	A train unloading area and materials storage area may be constructed adjacent to the Main Northern Railway. Materials will be stored in shipping containers (up to 2.9 m high) until required on-site.
Construction	Construction materials may be transported to the site via a combination of road and rail (average of 2 trains per week). Construction hours limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	The expected operational life of NES is approximately 30 years. However, this may involve infrastructure upgrades that could extend the operational life.
Decommissioning and rehabilitation	The NES project also includes decommissioning at the end of the NES project life, which will involve removing all infrastructure.
Hours of operation	Daily operations and maintenance will be undertaken Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm. NES will be operational 24/7.
Subdivision	Subdivision of the lots on which the approved TransGrid Switchyard is located has been completed.
Employment	Approximately 700 construction jobs and up to 15 full-time operational jobs.
Capital investment value	$1.268 billion.

2.2 Working Hours

2.2.1 Construction

Unless approval has been obtained from the Secretary, construction, upgrading and decommissioning activities on site can only be undertaken between the following hours:

- 7 am to 6 pm Monday to Friday;
- 8 am to 1 pm Saturdays; and
- at no time on Sundays and NSW public holidays.

2.2.2 Operations

Once commissioned, NES will operate 24 hours a day. The Site will be staffed during daylight hours, generally from:

- 7 am to 6 pm Monday to Friday (staff on-call during weekends and public holidays).

2.3 Site Contacts (All Hours)

Emergency Services 000

GLC O&M Contractor (Stage 1b):

Position:	Site Manager: John Hunter	Contact Number: +61 423 448 835
Alternate:	HSE Manager: Clint Mullen	Contact Number: +61 421 729 364

ACEN Australia:

Position:	Site Manager: Richard de Bruin	Contact Number: +61 447 010 124
Alternate:	Asset Manager: Mona Janbaz	Contact Number: +61 476 935 844

2.4 Operational Workforce

A workforce of up to 15 full time employees will be located at NES. This workforce will be responsible for the ongoing operation and maintenance of the Site in addition to security monitoring of the arrays and infrastructure.

Specialist contractors and /or equipment manufacturers will be engaged to perform operational and maintenance activities as required. The number of staff present at Site can therefore be expected to vary in accordance with site activities and requirements.

2.5 Construction Workforce

Green Light Contractors Pty Ltd (GLC) was the Engineering Procurement and Construction (EPC) contractor engaged by ACEN Australia to construct Stage 1a of NES and will continue into Operations for Stage 1b for two years.

Multiple Contractors will be engaged by ACEN Australia for the remaining Stages of work. It is anticipated that during construction up to 700 construction personnel will be required for the whole of the Project.

2.6 Application of FERP

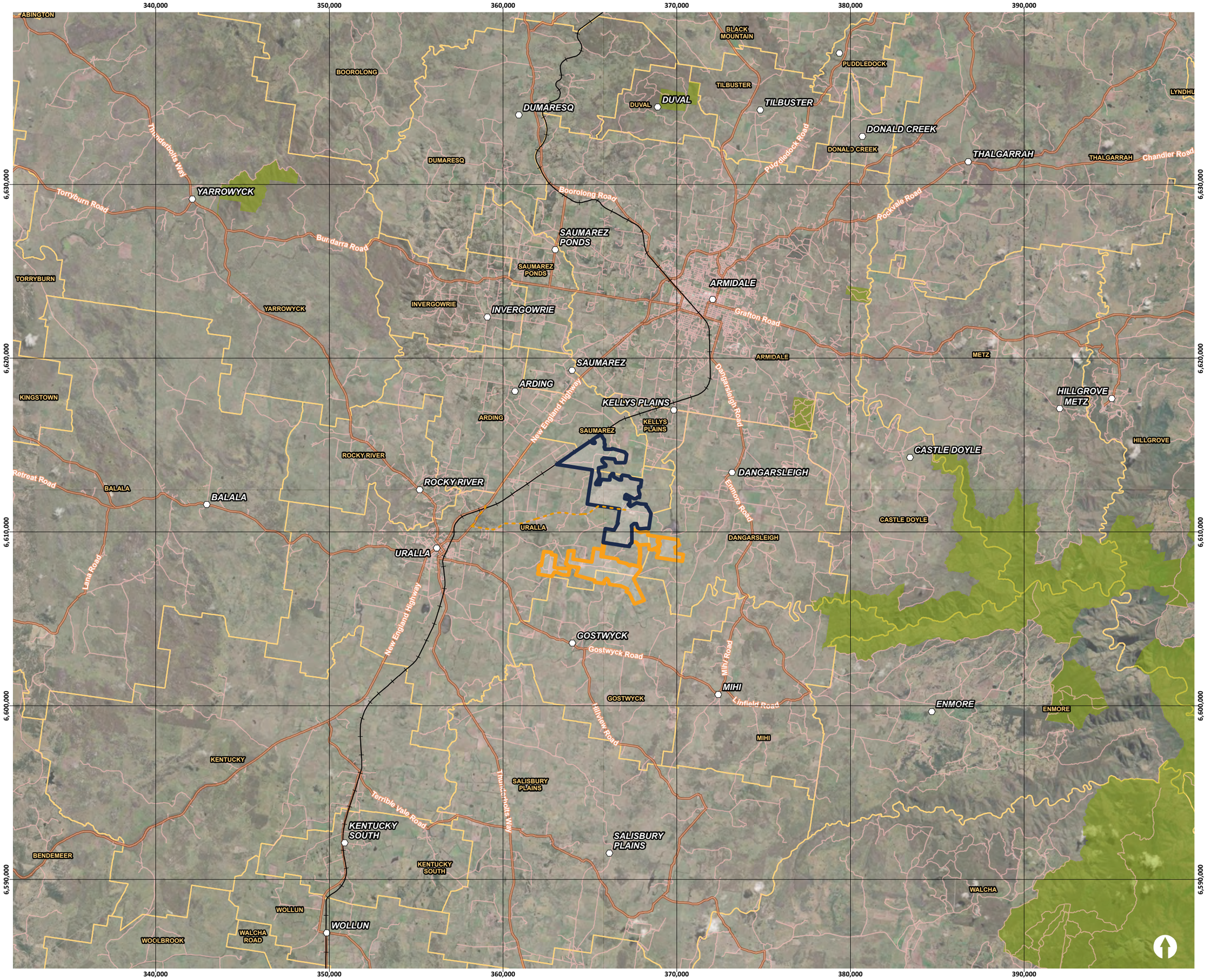
This FERP is restricted in application to the footprint of the NES development footprint, including the construction office and temporary compound and laydown areas and the associated surrounding Hazard Zone.

The Hazard Zone associated with NES extends for a distance of 30 km from the development footprint and is primarily determined by the potential for a bushfire to occur and impact upon the Site, rather than for any activity (other than a fire) originating within NES to impact upon the hazard zone.

The FERP will require review to accommodate any future stages of the development.

2.7 NES Access

All vehicles will access the Project via the New England Highway, Barleyfields Road (North) travelling into the site via Big Ridge Road, Figure 3.



Legend

New England Solar Site

- Stage 1b
- Stage 2a
- Site Access Road

Reference Layers

- Towns
- Railway
- Arterial Road
- Minor Road
- NPWS Reserve / State Forest

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Site Location

Drawing no.
NESF-P014 - Figure 5

Date
25/08/2023

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GDA2020 MGA Zone 56

ACEN Australia

360,000

370,000

6,610,000

Lambing Gully

Saumarez Creek

Powers Creek

Hariet Gully

New England Highway

Gostwyck Road

Dog Trap Creek

Julia Gully

Salisbury Waters

Legend

New England Solar Site

- Stage 1b
- Stage 2a
- BESS and Substation
- Gates
- Perimeter Fence
- Site Access Road
- Site Compound
- Internal Array Tracks
- Current Array Area

Reference Layers

- Waterbody
- Watercourse
- Existing 330 kV Transmission Line
- Railway
- Arterial Road
- Minor Road

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Site Layout

Drawing no.: NESF-P014 - Figure 6

Date: 25/08/2023

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GDA2020 MGA Zone 56

ACEN Australia

3 Hazard and Risk Assessment

3.1 Hazard Identification

Hazards and their associated risks were assessed at a preliminary level as part of the preparation of the Environmental Impact Statement (EIS) and to address the NSW Department of Planning and Environment Secretary's Environmental Assessment Requirements (SEARs).

A separate bushfire hazard assessment was conducted as part of the preparation of the NES EIS.

Hazards that are likely to give rise to an emergency situation include the storage, transport and use of hazardous chemicals, principally fuels, stored on site, activities that occur on site, especially during construction and natural hazards including bushfires and severe storms.

3.2 Hazardous Materials

The *Hazards and Risk Assessment* (Sherpa Consulting, 2018) completed to inform the NES EIS identified a number of hazardous chemicals and materials. Several additional chemicals and materials that present a hazard at NES that have the potential to give rise to an emergency situation for NES have been included in this FERP. The combined list of hazardous materials used during construction of the Stage 1 NES includes the following, with similar anticipated to be used in the construction of Stage 2:

- Unleaded Petrol –2,500 L – Dangerous Good (DG) Class 3 PG II
- Diesel – 6,000L – Dangerous Good (DG) Class 4
- LPG – 18L – Dangerous Good (DG) Class 2.1
- Oil-filled Equipment

3.2.1 Unleaded Petrol

Approximately 2,500 L of unleaded petrol may be stored at the Site at any point in time, with a vehicle re-fuelling facility present. Gasoline may be released when re-fuelling the bulk storage tank or during vehicle re-fuelling either due to a mechanical fault or human error. There exists the risk that spilt fuel could ignite causing a fire or explosion.

Unleaded petrol exceeds the Schedule 11 threshold. A draft Hazardous Chemicals Manifest, and Manifest Site Plan showing the location of unleaded petrol, are located in Appendix D. These will be reviewed and kept up to date as part of the EMPC meetings.

3.2.2 Liquefied Petroleum Gas (LPG)

LPG is used in small cylinders for BBQ and heat guns. LPG may be released through mechanical failure, human error or damage to the storage tank and presents a risk of fire and/or explosion. LPG also may cause a Boiling Liquid Expanding Vapour Explosion (BLEVE) that may be triggered when the storage tank is ruptured releasing the LPG that had been held under pressure or when the storage tank is heated. The sudden change in pressure and lowering of the boiling point causes the pressurised liquid to expand extremely rapidly converting into a gas that may be sufficient to rupture the vessel and explode.

3.2.3 Diesel

Approximately, 6,000 L of diesel will be stored at NES for use in multiple generators set for power and to refuel vehicles. A filling point will be available for vehicles. The generators will be removed upon completion of construction. Diesel may be released when re-fuelling the bulk storage tank or during vehicle re-fuelling either due to a mechanical fault or human error. There exists the risk that spilled fuel could ignite causing a fire or explosion.

3.2.4 Transformer oil and oil filled equipment

The following equipment within the substation or at NES that may contain oil potentially occurs in:

- Power transformers (from pole tops to generator transformers)
- Current transformers (CTs)
- Voltage transformers (VTs)
- Capacitor voltage transformers (CVTs)
- Circuit breakers (CBs)
- Switchgear
- Capacitors
- High voltage bushings

NES and its associated substation utilises a range of electrical equipment that is insulated by fluids (oils/mixtures). There is the potential for this equipment to fail causing an oil leak, explosion and/or fire.

3.2.5 Gas based fire protection systems.

The use of an inert gas (carbon dioxide) fire suppression system within the switch room structures presents a suffocation hazard. Any individual within the gas filled space following discharge of the inert gas (carbon dioxide) may be at risk of barotrauma due to the difference in pressure.

3.3 Hazardous Activities/Equipment

3.3.1 Vehicle Movements

Numerous vehicle hazards exist that could give rise to emergency situations including but not limited to the following:

- Vehicle collision
- Animal strike
- Vehicle Fire
- Grass Fire
- Transportation of over-sized loads

Vehicle collisions between vehicles or with NES infrastructure, (arrays, fencing, buildings, fuel storage facilities) or with site personnel is an ongoing hazard.

Eastern Grey Kangaroos (*Macropus giganteus*) and livestock may be present at NES or along the access road creating the potential for animal strikes to occur.

Vehicle mechanical faults may give rise to a car fire. Service vehicles travelling through or parking in long dry grass can ignite grass fires.

Transportation of large equipment (e.g., transformers) will involve road transport by heavy and over-sized vehicles to NES via the existing road network. This presents hazardous situations such as loss of load, striking roadside infrastructure and vehicle collisions.

The level of risk associated with vehicle movements at the site is increased during the construction phase of the project.

3.3.2 Construction (O&M buildings, spare parts building, internal road construction, hot works)

3.3.2.1 Earthworks

Earthworks including drilling, the operation of excavators, graders, trucks and other heavy equipment present a range of hazards with the potential to give rise to emergency situations. Some of the hazards include being struck by vehicles or equipment, entrapped by moving parts, trench collapse, exposure to dust, falls and trips, stockpile collapse or being struck by material.

3.3.2.2 Hot works

Hot works includes activities such as grinding, welding, thermal or oxygen cutting or heating, and other related heat or spark producing operations. Undertaking hot work in an area where flammable liquids, vapours or gases, combustible liquids, materials including dry grass, dust or fibres, or other flammable or explosive substances are present creates a significant risk of fire or explosion. Hazards associated with hot works include but is not limited to the following:

- Fire caused by heat, sparks, molten metal or direct contact with the flame
- Explosion when cutting up, repairing or working in the vicinity of drums, tanks, pipes, vessels, which contain or may have contained flammable materials
- Fire/explosion caused by a gas leak, backfire or flashback
- Fire/burns from the misuse of oxygen/acetylene
- Burns from contact with the flame, explosions or hot material (includes bitumen)
- Crush or impact injuries resulting from explosion or when handling cylinders.

Hot works or works that have the potential to cause a fire require a Hot Work permit. Hot Works are controlled applying standard operating procedures (SOPs).

3.3.2.3 Plant, Equipment and Materials

Plant items such as generators, scissor lifts, forklifts, cranes and trucks present hazards with the potential to give rise to emergency situations. Power tools such as nail guns, drills, circular saws, shears and other tools also present hazards that should be controlled through developing and applying standard operating procedures (SOPs). Emergency situations may arise due to mechanical failure or operator error.

Hazardous materials are used in the construction industry including fuels, solvents, corrosive substances and glues and materials that generate fine (PM10) particulate matter such as concrete

or when cut such as engineered stone. Appropriate personal protective equipment (PPE) must be utilised during all construction work on the site and SOPs must be adhered to. Emergency situations may arise due to spills, inadequate ventilation of the workspace, spontaneous combustion or explosions.

Hazards also exist due to the potential for materials or structures to fail.

3.3.2.4 Manual Handling

The use of appropriate PPE and working in accordance with established SOPs is necessary to avoid workplace injuries and/or emergencies.

3.3.3 Electrical Equipment

Electrical hazards exist across NES due to the potential for staff to be exposed to voltage arising from a short circuit or electrical connection failure associated with the following electrical equipment present at NES:

- PV modules
- PCUs
- Medium voltage (MV) cable reticulation network
- Batteries
- Substation
- Transformers
- Overhead transmission lines
- O&M and site buildings.

The consequences of these hazards can produce emergency situations such as electrocution, injury and/or fatality and fire.

3.3.3.1 Arc Flash

An arc flash is a phenomenon where a flashover of electric current leaves its intended path and travels through the air from one conductor to another, or to ground. The results are often violent and when a human is in close proximity to the arc flash, serious injury and even death can occur.

An arc flash may result in a rapid rise in the air temperature and air pressure in the space between electrical conductors, with this increase occurring so fast that it can produce an explosion referred to as an arc blast.

An arc flash can be associated with any electrical equipment and may be caused due to human error including incorrect installation or maintenance, faulty design such as when equipment is located too close or due to an equipment fault. Lightning strike may also cause an arc flash. Arc blasts may result in fires and staff exposure to pressure waves, intense heat, light and noise. Staff exposed to an arc flash can be burnt, injured or killed.

3.3.4 Overhead Transmission Lines & Power lines.

Overhead transmission lines are a physical hazard, in particular during construction work that involves cranes or elevated working platforms or ladders that have the potential to contact the overhead transmission lines.

Overhead transmission lines pose a hazard as lines, cross arms, insulators and auxiliary equipment mounted on poles (e.g., transformer and surge diverter) can break. Powerlines can ignite fires through the following mechanisms:

- An electric arc igniting surrounding vegetation or combustible material.
- Hot molten metal particles can be released when two live parts of power lines make physical contact, for example in wire clashing incidents, igniting dry material on the ground.
- Electric current flows through vegetation, an animal (e.g., bird) or other material causing ignition.

Power lines and associated equipment are a recognised cause of bushfire ignition. Energy Safe Victoria (2009) report that while power lines are considered to start only between one and four percent of bushfires, a disproportionately high number of the catastrophic bushfires are known to have been caused by power lines. In Victoria alone, power lines are thought to have started:

- Nine of the 16 major fires on 12 February 1977
- Four of the eight major fires on Ash Wednesday (16 February 1983)
- Five of the 15 major fires on Black Saturday (7 February 2009) that were considered by the Royal Commission (Energy Safe Victoria 2009).

3.3.5 Vandalism/Un-authorised Access

Arson is a leading cause of fire ignition within the New England region (New England BFMC 2017). Setting alight stolen cars can be a common cause of bushfire ignition. Unauthorised access to the site presents a serious hazard to the perpetrator and poses a risk of equipment damage and/or the ignition of structural and grassfires.

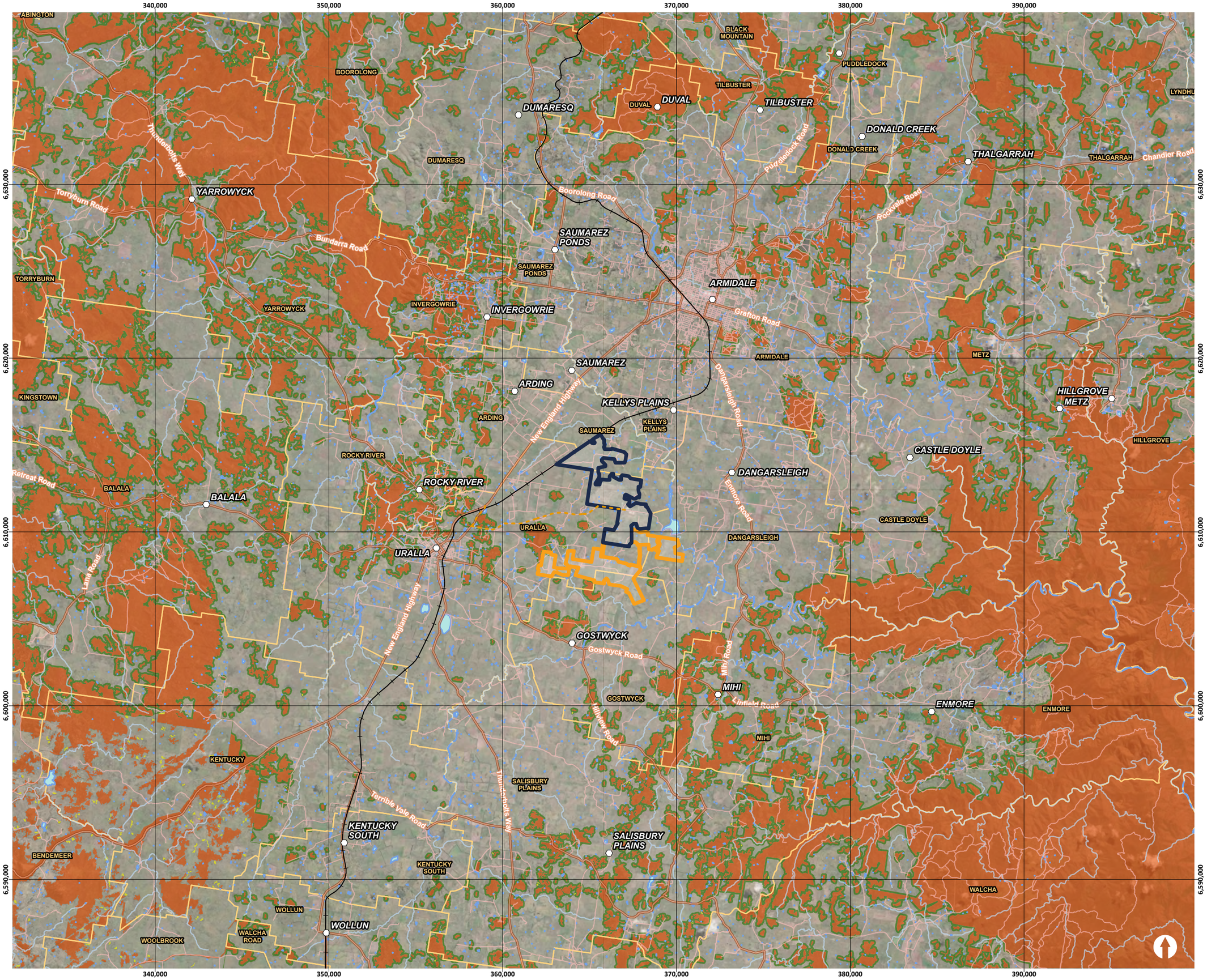
3.4 Natural Hazards

3.4.1 Bushfire/Grassfire

For the purposes of this FERP no distinction is made between bushfire and grassfire, with respect to the emergency response and both terms can be used interchangeably. Approximately 12% of the land within the footprint of the development is mapped by Uralla Shire Council as bushfire prone land (EMM 2018). Outside of the footprint of NES bushfire prone land is present largely as isolated patches as per Figure 7. It must be noted that there is a requirement to map grasslands as Category 3 Vegetation in accordance with NSWRFS (2015) Guide for Bush Fire Prone Land Mapping. Application of this requirement would result in the vast majority of land within and surrounding NES as being considered bushfire prone due to the presence of modified pastures and cropping that has the potential to carry a fire.

Many of the hazards presented have the potential to start a fire that if unchecked could progress to a bushfire. There is a risk of bushfires travelling onto NES principally from the northwest and west of the site due to the prevailing wind directions associated with days of greatest fire danger. There also remains the risk that fire originating within NES could travel beyond the boundaries of NES to impact upon the hazard zone surrounding the Site.

The main northern railway that is adjacent to NES also presents a bushfire hazard as train brakes can produce sparks, igniting dry grass along the side of the tracks, while burning carbon embers from the train engine exhaust can also start bushfires.



Legend

New England Solar Site

- Stage 1b
- Stage 2a
- Site Access Road

Reference Layers

- Towns
- Railway
- Arterial Road
- Minor Road
- Watercourse
- Waterbody

Bush fire Prone Land

Category

- Vegetation Buffer
- Vegetation Category 1
- Vegetation Category 2

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Bush Fire Prone Land within 30km from Site

Drawing no.
NESF-P014 - Figure 7

Date
25/08/2023

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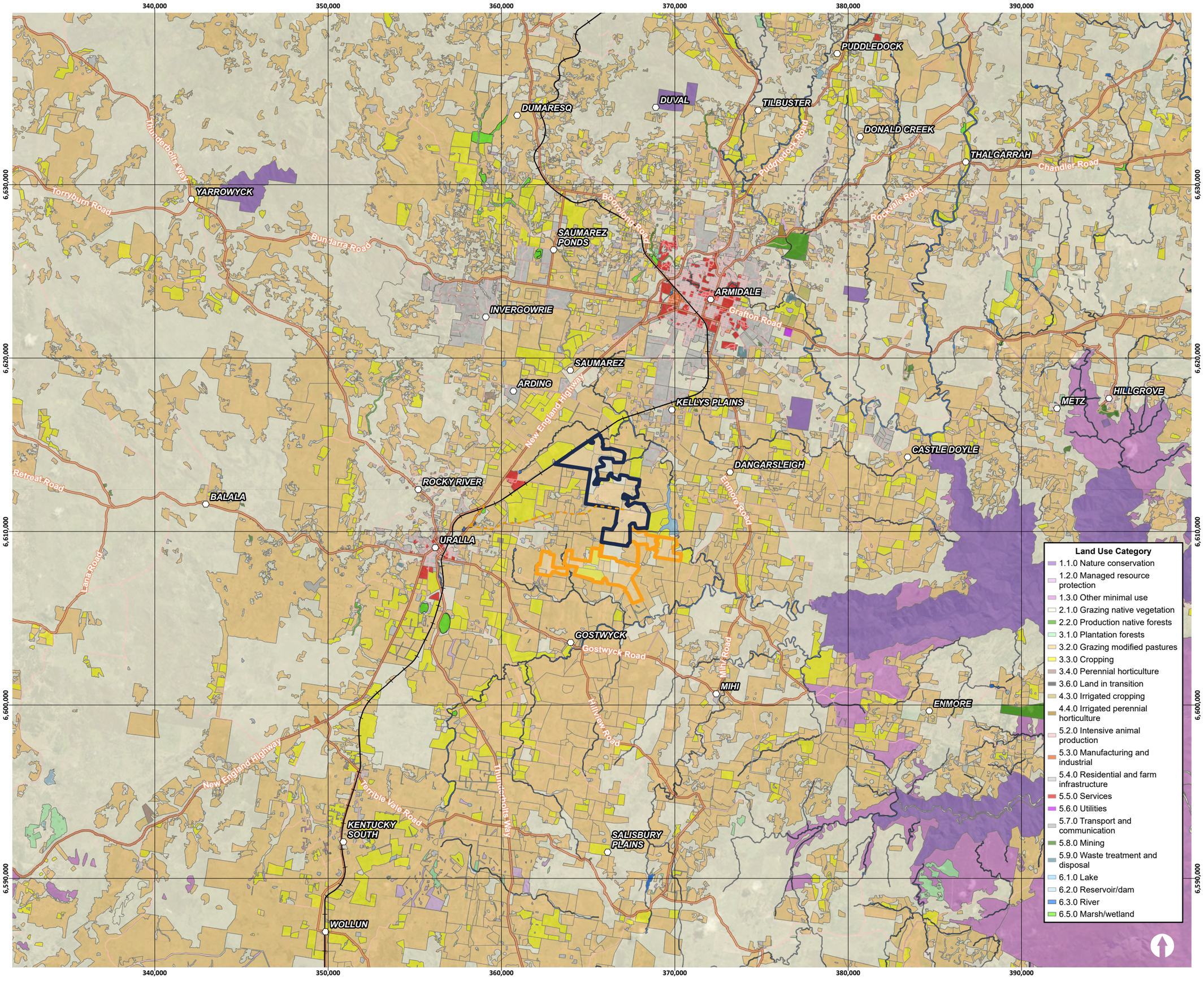
GDA2020 MGA Zone 56

ACEN Australia



Legend

New England Solar Site

- Stage 1b
- Stage 2a
- Site Access Road

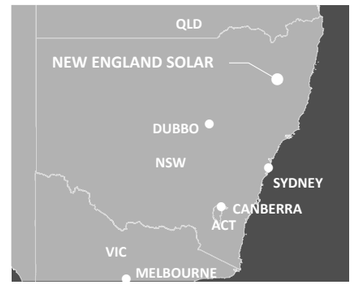
Reference Layers

- Towns
- Railway
- Arterial Road
- Minor Road

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Land Use within 30km from Site

Drawing no.
NESF-P014 - Figure 8

Date
25/08/2023

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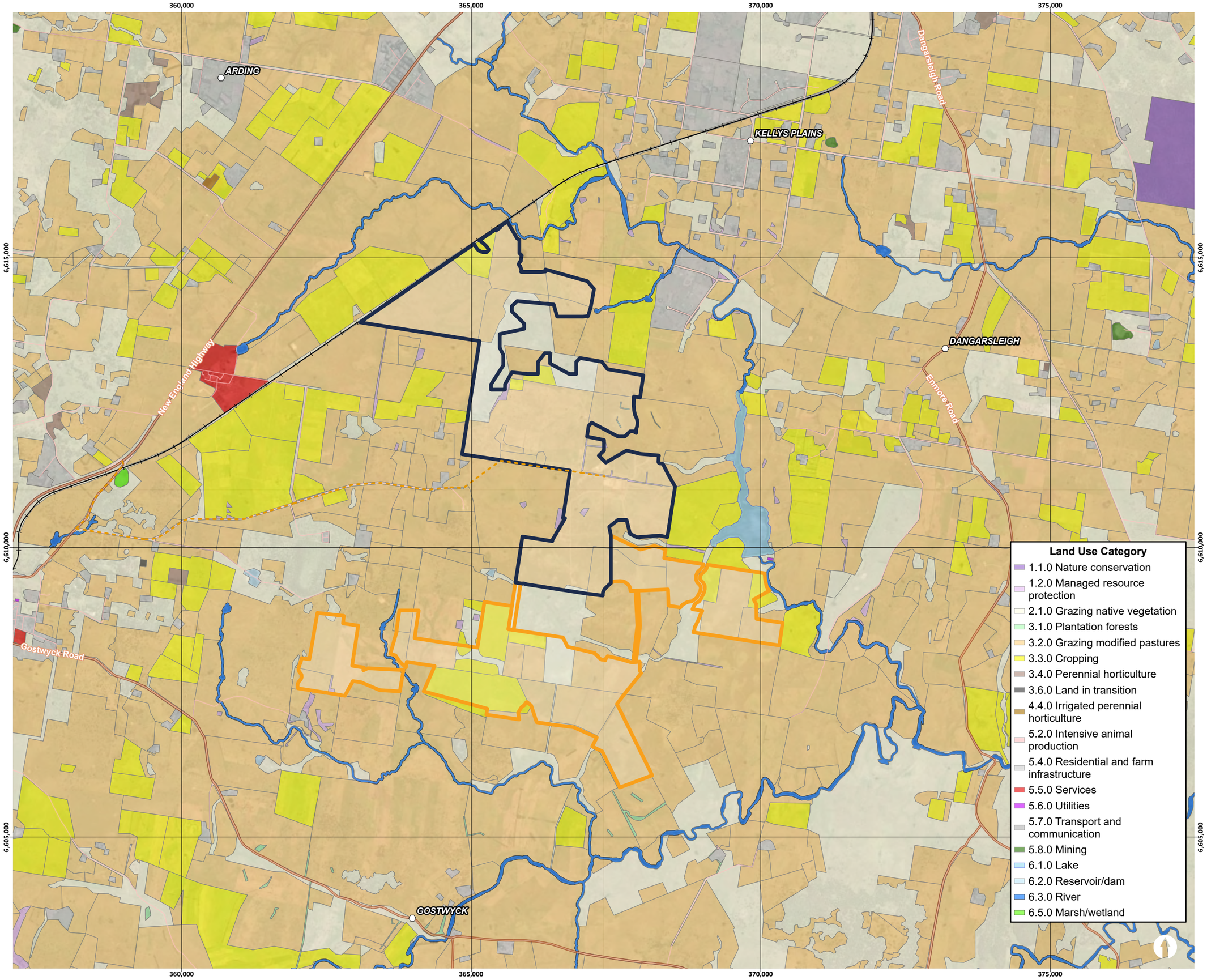
GDA2020 MGA Zone 56

ACEN Australia



Legend

New England Solar Site

- Stage 1b
- Stage 2a
- Site Access Road

Reference Layers

- Towns
- Railway
- Arterial Road
- Minor Road

Notes

1. Project features shown are preliminary and subject to change.

Locality



Project

New England Solar
Renewable Energy from ACEN

Title

Land Use within 5km from Site

Drawing no. NESF-P014 - Figure 9

Date 25/08/2023

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GDA2020 MGA Zone 56

ACEN Australia

Sherpa Consulting (2018) assessed the risk of bushfire occurring as 'Medium' considering this risk as 'tolerable' if it is managed as So Far As Reasonably Practicable (SFARP). It must be noted that grassfires may occur in periods of cold weather as frost acts to dry grass. The potential for fires to occur associated with hot works being conducted during construction of solar farm infrastructure, and other hazards indicates a more precautionary approach is warranted.

NES is located within the New England Bushfire Management Committee (BFMC) area that cites the main sources of unplanned fires as:

- Escaped private burn-off
- Lightning strikes
- Arson/fire setting (New England BFMC 2017).
- Bushfires have the potential to cut NES road access and egress, including the New England Highway, Barleyfields Road and Big Ridge Road and the railway crossing.

3.4.2 Severe Storm

3.4.2.1 Wind damage

Strong winds may cause overhead transmission lines to clash or come into close contact triggering an electric arc igniting surrounding vegetation. Strong winds may also cause wires to break or even transmission towers to fail.

To highlight the potential extent of transmission line structure failure, the South Australian Black System event of 28 September 2016 involved the following damage to transmission towers (AEMO 2016):

- Davenport to Mt Lock and Davenport to Belalie 275 kilovolt line – five double circuit towers damaged
- Brinkworth to Templers West 275 kilovolt line (East circuit) – two towers damaged
- Davenport to Brinkworth 275 kilovolt line (East circuit) – 14 towers damaged
- Port Lincoln to Yadnarie 132 kilovolt line – one tower damaged.

Dust associated with strong winds, grass mowing or earthmoving activities within or close to the powerline easement may produce ionised particles around the transmission lines to the extent that it may become conductive leading to a flashover or arc, either between the powerlines or from the transmission line to the ground that may ignite a fire or strike personnel in the vicinity (Frost, Vosloo and Meeuwis 2011).

3.4.2.2 Lightning strike

The average annual lightning ground flash density (Ng) map shows that the New England area experiences between two to three lightning strikes per square kilometre per year (Dowdy and Kuleshov 2014). This indicates that NES that occupies approximately 2,000 ha is likely to receive 40 to 60 lightning strikes each year.

Lightning strikes have the potential to start grass fires within or near NES.

Lightning strikes also pose a direct risk to NES infrastructure, including the PV panels, transmission lines and substation. Facilities are earthed to protect them from lightning strikes. However, an electrically grounded object that comes near to an energised component has the

potential to cause a flashover. Molten metal in the form of sparks may be created by the flashover process triggered by the lightning strike, with the potential to start a bushfire.

New England BFMC (2017) cite lightning strikes as a leading cause of bushfire ignition within the New England region.

3.4.3 Flood

The project boundary is located in the upper reaches of the Macleay River catchment. First and second Strahler stream order drainage lines occur within the northern array and along with Julia's Creek, a third order stream, they flow into Saumarez Creek to the west of the site.

Flood conditions were modelled for a 1% Annual Exceedance Probability (AEP), that is, a flood which has a 1% chance of occurring in any year. In such an eventuality several proposed primary access points to NES would be impacted by flood waters, potentially preventing site access and egress. Surface water modelling did not extend to the main site access roads, namely Big Ridge Road, Munsies Road and Barleyfields Road and it is likely that flood waters would cut these roads off at several points. Vehicular movement across NES would be impacted as the internal roads are gravel construction.

Localised flooding poses a hazard during construction. The potential exists for the inundation of site works, compounds, storage areas and plant/equipment where these are located within flood prone areas. This presents an environmental hazard with the potential for plant, equipment and materials to be washed into a watercourse. Localised flooding, in particular rapid onset flooding presents a hazard to site workers.

3.4.4 Earthquake

Uralla is mapped by the National Seismic Hazard Assessment for Australia - 2018 of having between 0.08 and 0.1 probability of a 2 percent chance of exceedance of mean Peak Ground Acceleration (PGA) in a 50 year period. (Geoscience Australia 2019). This places NES in the mid-range level of risk as assessed by the NSHA18 with respect to a strong earthquake occurring within a 50 year period.

NES may also experience ground movement as a result of an earthquake a considerable distance away, with the likelihood of damage occurring at the site related to the distance from the earthquake epicentre.

An earthquake of sufficient strength to impact NES may affect site infrastructure, including building and/or structural collapse, foundation cracking, underground service breakage including fuel lines and transport route disruption, in particular the railway line due to rail displacement

4 Types and levels of emergency

4.1 Types of Emergencies

The following types of emergency situations have been identified via the hazard assessment and associated risk analysis, Table 2.

Table 2: Types of emergencies at NES.

Emergency	Potential or Likely Cause
Bushfire/Grassfire	Lightning strike, hot works (e.g., grinder, welding), equipment failure, vehicle driving in long grass, brake/engine spark from train, arson, discarded cigarette, escaped control burn, fuel spill, gas leak.
Fire - Industrial	Lightning strike, arc flash, equipment failure, vandalism, oil, fuel or gas leak, battery thermal runaway, powerline clash, electrical failure.
Fire - Building	Kitchen fire, paper fire, discarded cigarette, equipment failure, electrical failure, arson.
Fire - Smoke	Bushfire/s in the vicinity and unfavourable weather conditions preventing smoke dispersal, industrial fire on site in particular burning oil or diesel. Exposure to fine particulate matter and/or hazardous chemicals. Reduced visibility. Asthma attack in susceptible individuals.
Extreme temperature/Heatwave	Extreme heat events are occurring in Australia more often and for longer periods, which is expected to continue with greater intensity in the future (Safe Work NSW 2020).
Hazardous substance spill	Release of fuel while re-filling or re-fuelling. Equipment failure. Damage to equipment.
LPG BLEVE event	LPG tank exposed to extreme heat due to a fire. LPG cylinder ruptured.
Explosion	Mechanical failure, human error, storage tanks ruptured due to damage (e.g. vehicle collision). Bushfire. LPG tank – BLEVE event.
Discharge to the environment	Ruptured or leaking fuel storage tank. Release of fuel while re-filling or re-fuelling. Equipment failure. Equipment failure. Bund failure. Vandalism. Isolation equipment failure.
Emission to the atmosphere	Release of fuel while re-filling or re-fuelling, in particular LPG. Equipment failure. Discharge of gas fire suppression system.
Flood/Flash Flood	Natural disaster. Poor on site drainage or siting of buildings, equipment.
Earthquake	Natural disaster. Failure to comply with National Construction Code (NCC) requirements.

Emergency	Potential or Likely Cause
Severe storm damage	Natural disaster. Failure to comply with NCC and/or Australian Standards. Mechanical or structural failure.
Trench/excavation collapse	Installation of underground services.
Personal injury	The following activities may lead to personal injury: • Potential for confined space work • Hot work • Manual handling • Removing equipment from transport • Working with hazardous materials • Lightning strike • Working with powered equipment (e.g. nail guns, saws) • Fatigue.
Snake bite	Extremely or highly venomous snakes of the northern Tablelands include the following snakes: • Common Death Adder *Acanthophis antarcticus* • Highlands Copperhead *Austrelaps ramsayi* • Eastern Small-Eyed Snake *Cryptophis nigriscens* • Stephen's Banded Snake *Hoplocephalus stephensii* • Tiger Snake *Notechis scutatus* • Mulga Snake *Pseudechis australis* • Spotted Black Snake *Pseudechis guttatus* • Red Belly Black Snake *Pseudechis porphyriacus* • Eastern Brown Snake *Pseudonaja textilis* • Curl Snake *Suta suta* • Rough Scaled Snake *Tropidechis caranatus.* Source: Anon (2017). Other mildly venomous snakes also occur within the region and may occur within NES.
Vehicle incident	• Traffic accident (onsite/off site) • Vehicle/pedestrian interface (e.g. forklift) • Vehicle/animal interface (e.g. kangaroo, sheep) • Vehicle/equipment or structure.

Emergency	Potential or Likely Cause
Building/structure collapse	O&M building, transmission tower.
Powerline failure	Strong winds, lightning strike, mechanical failure, human error.
Electrocution	Exposure to electric current, human error – installation, maintenance, contact with energised system or structure. Lightning strike.
Environmental harm/Illegal clearance	Unapproved removal of vegetation. Damage to protected vegetation by equipment or placement of materials. Discharge of chemical or construction waste onto protected vegetation or into waterways.

4.2 Levels of Emergency

4.2.1 Localised Emergency

Emergency situations where the impacts on people, property and the environment are expected to be confined to specific locations within NES, and no escalations are expected.

Emergency Services may be required, for example in the following scenarios:

- Vehicle collision with structure (e.g., post)
- Personal injury due to a fall from height
- Diesel spill while re-fuelling the generator

4.2.2 Site Emergency

Emergency situations where the impacts on people, property and the environment are expected to spread to, or involve a large area of NES. Impacts are expected to be contained to within the perimeter of NES and not extend into the hazard zone.

Emergency services are likely to be required in the following examples:

- Grassfire amongst PV array
- Diesel leak from storage tank
- Multiple High Voltage (HV) transmission tower collapse

4.2.3 External Emergency

Emergency situations where the impacts on people, property and the environment are expected to occur within large areas of NES and extend beyond the boundary into the hazard zone.

Emergency situations that originate outside of NES within the hazard zone and are expected to spread into NES.

Emergency situations that involve NES staff and/or infrastructure, that occurs outside of NES.

Emergency services will be required, for example in the following scenarios:

- Bushfire approaching the NES

- LPG storage BLEVE event
- Transport incident involving site equipment

4.3 Critical Incidents

Critical incidents are those emergency situations that give rise to:

- Incident
- Material Harm

4.3.1 Notifiable Incidents

The Development Consent defines an incident as:

> *An occurrence or set of circumstances that causes or threatens to cause material harm.*

The Development Consent defines material harm as harm that:

- *involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or*
- *results in actual or potential loss of property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).*

This definition of 'material harm' is consistent with the definition in Section 147 of the *Protection of the Environment Operations Act 1997* and the associated legal obligations to notify the EPA where a 'pollution' incident occurs such that material harm to the environment is caused or threatened.

4.3.2 Immediate Response

Any incident that occurs that causes or threatens to cause material harm will be reported immediately to ACEN Australia's Project Manager (during construction and operations).

Upon receiving notification of an incident, ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) will immediately attend the incident and:

- Isolate the area affected by the incident
- Stop works around the area
- Implement containment measures to prevent the impact of the incident spreading
- Decide as to whether the incident has caused or threatens to cause material harm.

4.3.3 External Notifications

4.3.3.1 Duty to Report

If ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) has determined the incident has caused or threatens to cause material harm, he/she will, pursuant to requirements under Section 148 of the *Protection of the Environment Operations Act 1997* immediately notify the EPA, the NSW Ministry of Health, Fire and Rescue NSW and SafeWork NSW by verbal means.

These authorities will be notified (verbally) and provided the following relevant information:

- The time, date, nature, duration and location of the incident
- The location of the place where pollution is occurring or is likely to occur
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- The circumstances in which the incident occurred (including the cause of the incident, if known)
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.

The EPA may direct ACEN Australia to notify such other persons of the incident as the EPA requires.

4.3.3.2 Notifications

Following EPA notification immediately after becoming aware of an incident, ACEN Australia will immediately notify DPE in writing. Consistent with Schedule 4 Condition 7 of the Development Consent, notification to DPE will be in writing via the Major Projects website portal, including the following information:

- Identify the development (i.e. the NES) and the application number (SSD 9255)
- Set out the location and nature of the incident.

Uralla Shire Council would then be notified verbally of the incident.

The DPE written notification will be undertaken immediately after the EPA, NSW Ministry of Health, Fire and Rescue NSW and SafeWork NSW have been notified by verbal means, as there is an overriding legislative requirement to notify those parties, immediately.

This initial notification to DPE and Uralla Shire Council will be for information purposes alone and ACEN Australia will continue to concentrate on responding to any instruction or request from the EPA in the first instance.

Seven days after the incident, ACEN Australia will prepare a report as per Appendix 7 of the development Consent.

5 EMERGENCY FUNCTIONS AND ORGANISATIONAL STRUCTURE

5.1 Site Emergency Control

Control and coordination (emergency control point) of any emergency will be conducted from the O&M building. The roles and responsibilities of emergency control officers are outlined in Section 1 of the FERP.

The NES UHF radio base station with battery backup will be located within the O&M building.

The first aid response will also be coordinated from the O&M building, with each building (permanent or temporary) and all vehicles at NES equipped with a first aid kit. An adequate number of staff are to be trained in basic first aid.

In the event that the O&M building is involved in the emergency the ERC shall establish an alternate emergency control point and communicate this to the ERT via the UHF radio or via runners. If necessary, the emergency response can be coordinated from a site vehicle.

5.2 Identification of Emergency Personnel

Emergency personnel will be identifiable by the colour of their hard hats and will also wear a high visibility vest or jacket with their position/role written on the back during an emergency.

- ERC (Performs duties of Chief Fire Warden) - RED
- ERT Leader (Performs duties of Deputy Chief Fire Warden) - RED
- ERT Member - ORANGE
- First Aid Officer - GREEN
- HSE Manager - BLUE
- Site workers – WHITE
- Site visitors - YELLOW

5.3 Emergency Communication

A UHF two way radio system (or equivalent) will be utilised across the site. The base station with battery backup will be located within the O&M building with all site vehicles to be fitted with UHF two-way radios as a requirement of site entry.

Two way radio and to a lesser extent personal mobile telephone communication are the main means of communication in the event of an emergency.

In the event of an emergency, persons that are not involved in the emergency shall maintain radio silence so as to allow radio communications between the ERC and/or ERT Leader, combat agency services and site personnel involved in the emergency, to flow uninterrupted.

The ERC and/or ERT Leader shall be in control of radio communications during an emergency.

An air horn is also to be used to notify site staff that an emergency has occurred.

5.3.1 Emergency Response Channel

A dedicated Emergency Response Channel will be utilised across the site in the event of an emergency. Site personnel are not to use the emergency channel with radio silence maintained so that the channel remains free for use by the ERC, ERT and ERT Leader, First Aid Officer.

In declaring an Emergency at NES the ERC or designated ERT member will make a radio call across all the standard UHF channels in operation at the site and say:

- **EMERGENCY, EMERGENCY, EMERGENCY**
- Staff will be advised to stop work immediately and maintain radio silence
- The caller (ERT member or ERC) will proceed to announce the appropriate steps required to be taken by site staff
- The UHF radio call will be followed by **three (3) blasts**, each 3 seconds long on the **air horn** to indicate an emergency.

In the event that a site evacuation is required the ERC or designated ERT member will make a radio call across all the standard UHF channels in operation at the site and say:

- **EVACUATE, EVACUATE, EVACUATE**

Staff will then follow the SITE EVACUATION EMERGENCY RESPONSE PROCEDURE (ERP 16).

5.4 Emergency Response Diagrams

An Emergency Response Diagram will be prepared for NES detailing the following:

- Emergency Muster Point
- Fire Extinguishers
- First Aid Kit
- Spill Kits
- Offices
- Storage Facilities
- Sanitary Facilities
- Stockpile areas (if applicable)
- Traffic Flow /road network
- Hose Reels
- Water tank location (s)
- Firefighting trailer location
- Fire blankets
- Site access gates and alternative emergency exits Chemical storage areas (Gasoline, Diesel, LPG).

The Diagram will form part of this FERP and the Site Induction and will be displayed on the Safety Notice Board and provided within the emergency services information package (ESIP).

Emergency Response Diagrams will be included within Appendix A of the FERP.

5.5 Emergency Evacuation Diagrams

Emergency evacuation diagrams, minimum A4 size are to be prepared for each building within NES. Emergency evacuation diagrams will follow AS 3745 – 2010.

Diagrams will be prepared for the following buildings within NES once the design has been completed and will be installed in each building in accordance with AS 3745 – 2010 prior to the site being commissioned:

- O&M Building
- Warehouse (opposite O&M Building)
- All Site Compounds

A copy of each Emergency Evacuation Diagram will be included within Appendix B of the FERP.

6 EMERGENCY RESOURCES

6.1 Emergency Response Equipment

6.1.1 Personnel

6.1.1.1 Site Personnel.

All shall have access to the following emergency equipment:

- Appropriate PPE for the task/s being conducted
- Personnel working alone shall have/access to a two-way radio. (carried on the person if working away from the vehicle)
- When working in a team, the team leader shall have a two-way radio
- First aid kit – including snake bite kit
- Access to safety equipment identified in SOP for the task being conducted (e.g. insulated hook).

6.1.2 Vehicles

All site vehicles shall be fitted with the following equipment:

- Two-way radios (and aerial)
- Reversing buzzer
- Dry chemical powder (ABE) fire extinguishers in compliance with AS 2444 - 2001
- First aid kit – including snake bite kit
- Amber flashing light – to be activated when travelling across the site.

Site vehicles are to have high visibility markings and are to have unique vehicle numbers for identification (call number e.g., 012) and tracking.

6.1.3 Fire Strike vehicle or fight fighting trailer

A firefighting trailer will be located at NES. Alternatively, a single or dual cab four-wheel drive, dedicated full-time fire-fighting appliance will be located at the NES. This firefighting vehicle will be used as a rapid intervention vehicle (thus the name 'Striker') to attack small and spot fires quickly before they are able to spread. The larger NSW RFS heavy, medium and light tankers would arrive at NES to aid in the event of a fire and to provide the main fire-fighting effort where a larger fire is involved.

Strikers are much faster and while they carry a limited water supply (approximately 800 litres) they can attack a spot fire and extinguish it or contain it, while waiting for fire service support to arrive. Firefighting trailers are also used to patrol an almost extinguished fire for flare-ups and can 'mop-up' small hot spots.

The location of a fire-fighting water storage tank at NES will allow the Strike vehicle to refill and continue to attack are fire, potentially before assistance arrives. Water will be available as soon as the construction starts.

The crew of the Strike vehicle would receive training, appropriate for the equipment they carry and the types of fire they may encounter at NES.

6.1.4 O&M Building

The O&M building fills the function of a first aid room and acts as the emergency control centre. Emergency equipment located within the O&M building includes:

- Portable defibrillator
- Portable First Aid kit/s – Electrical Trades (+ burns kit + snake bite kit/bites and stings kit)
- Fire blanket located near the exit door in compliance with AS 2444 – 2001
- Dry chemical powder (ABE) fire extinguishers in compliance with AS 2444 – 2001.

A battery-operated megaphone will be available to facilitate the direction of staff.

As the Emergency Control Centre, the O&M building will contain:

- a copy of the FERP
    - a laminated set of Emergency Response Procedures
- SDS for all hazardous chemicals located on NES
    - SDS folders are to be located within the O&M building
- Emergency Response Diagrams for NES
- Emergency Evacuation Plans for all buildings

6.1.5 Fire –fighting Water Tank

As required by Schedule 3, Condition 25, a static water supply with 20,000 litre capacity reserved for firefighting purposes, is located at O&M adjacent to the internal access road. An additional 40,000 litres capacity has been installed as for firefighting purposes.

The water supply tank is fitted with a 65mm Storz Coupling and a FRNSW compatible suction connection

7 ACTIVATION OF THE FERP

7.1 Initial Advice to Emergency Services

The emergency services are contacted via triple zero (000). The information to be provided should include the following where it is available:

- Name of the Site – NES and the location of the emergency/incident
- Number of individuals injured, nature of injuries, casualties
- Nature of the emergency
    - Type
    - Scale
    - Brief description of events
- Hazards involved
    - Types of substances, quantities, UN numbers
- Contact phone number for return messages
- Name and position of person making the call
- Any other useful information
    - Access gate to use and directions
    - ERT member or security will meet emergency service at the gate to guide/direct them to the site.

7.2 Environmental Emergencies

The additional reporting requirements in the event of an environmental emergency, such as a discharge to a water body are provided within NES Environmental Management Strategy as provided.

7.2.1 Immediate Response

Any incident that occurs that causes or threatens to cause material harm will be reported immediately to ACEN Australia's Project Manager (during construction and operations).

Upon receiving notification of an incident, ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) will immediately attend the incident and:

- Isolate the area affected by the incident
- Stop works around the area
- Implement containment measures to prevent the impact of the incident spreading
- Decide as to whether the incident has caused or threatens to cause material harm.

7.3 External Notifications

7.3.1 Duty to Report

If ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) has determined the incident has caused or threatens to cause material harm, he/she will, pursuant to requirements under Section 148 of the *Protection of the Environment Operations Act 1997*

immediately notify the EPA, the NSW Ministry of Health, Fire and Rescue NSW and SafeWork NSW by verbal means.

These authorities will be notified (verbally) and provided the following relevant information:

- The time, date, nature, duration and location of the incident
- The location of the place where pollution is occurring or is likely to occur
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- The circumstances in which the incident occurred (including the cause of the incident, if known)
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.

The EPA may direct ACEN Australia to notify such other persons of the incident as the EPA requires.

7.3.2 Notifications

Following EPA notification immediately after becoming aware of an incident, ACEN Australia will immediately notify DPE in writing. Consistent with Condition 4.3 of the Development Consent, notification to DPE will be in writing via the Major Projects website portal, including the following information:

- Identify the development (i.e. the NES) and the application number (SSD 9255)
- Set out the location and nature of the incident.

Uralla Shire Council would then be notified verbally of the incident.

The DPE written notification will be undertaken immediately after the EPA, NSW Ministry of Health, Fire and Rescue NSW and SafeWork NSW have been notified by verbal means, as there is an overriding legislative requirement to notify those parties, immediately.

This initial notification to DPE and Uralla Shire Council will be for information purposes alone and ACEN Australia will continue to concentrate on responding to any instruction or request from the EPA in the first instance.

7.3.3 Incident Reporting

7.3.3.1 Documentation

Any environmental incident will be recorded on an Environmental Incident Report and an updated Environmental Incidents Register will be maintained. This will include near miss incidents, which are unplanned incidents which had the potential to cause harm to the environmental, personal or property. Each Environmental Incident Report will include details on:

- The date, time and duration of the incident
- Clarify whether there was material harm to the environment
- Detail the nature of the incident
- Climatic conditions
- The location of the incident
- Pollutants involved
- Circumstances in which the incident occurred
- Corrective action taken

- External notification, where applicable.

7.3.3.2 Dissemination

For an incident in which material harm has or could have resulted and the EPA, WorkSafe NSW, NSW Ministry of Health, Fire and Rescue and DPE have been notified, ACEN Australia's HSE Manager will provide reporting to these entities if instructed, in accordance with the timeframes that may be so specified by them

ACEN Australia's HSE Manager or Contractors HSE Manager (where relevant) is to provide this information to the EMPC. This requirement includes the reporting of all environmental incidents that have the potential to give rise to an emergency response. This information is then reviewed by the EMPC to ensure that all ERP are adequate, and any omissions or improvements can then be actioned for incorporation into the upgrade of the FERP.

The EMPC are scheduled to meet quarterly and in response to an emergency incident with the FERP reviewed as required in accordance with the actions arising out of these meetings.

7.4 Special Cases – Bomb Threat

NES will utilise the following bomb threat checklist, Table 3 in accordance with AS 3745 – 2010. The NES staff member taking the call will complete the Bomb threat checklist and immediately following the call advise their supervisor who will report the threat to the ERC. ERC will contact Emergency Services by dialling triple zero (000).

Table 3: Bomb Threat Checklist

PHONE THREAT CHECKLIST KEEP CALM RECIPIENT:	
NAME (PRINT): TELEPHONE NO. SIGNATURE:	
GENERAL QUESTIONS TO ASK	**RESPONSE**
1. What is it?	
2. When is the bomb going to explode? **OR** When will the substance be released?	
3. Where did you put it?	
4. What does it look like?	
5. When did you put it there?	
7. Did you put it there?	
8. Why did you put it there?	
CHEMICAL/BIOLOGICAL THREAT QUESTIONS	**RESPONSE**
1. What kind of substance is it?	
2. How much of the substance is there?	
3. How will the substance be released?	
4. Is the substance a liquid, powder or gas?	
BOMB THREAT QUESTIONS	**RESPONSE**
1. What type of bomb is it?	
2. What is in the bomb?	
3. What will make the bomb explode?	
EXACT WORDING OF THREAT	

PLEASE TURN OVER FORM TO RECORD FURTHER CALLER INFORMATION

PHONE THREAT CHECKLIST - KEEP CALM	
CALLERS VOICE	**RESPONSE**
Accent (specify)	
Any speech impediment (specify)	
Voice (loud, soft etc.)	
Type of speech (fast slow etc.)	
Diction (clear, muffled, slurred etc.)	
Manner (calm, emotional rage etc.)	
Did you recognise the caller? If so – who?	
Was the caller familiar with the area?	
THREAT LANGUAGE	**RESPONSE**
Well spoken:	
Incoherent:	
Irrational:	
Taped:	
Message read by caller:	
Abusive:	
Other:	
BACKGROUND NOISES	**RESPONSE**
Street or house noise:	
Aircraft/Railway:	
Voices:	
Music:	
Machinery:	
NOTES	
Sex of caller: Male Female Estimate Age:	
CALL DETAILS	
Date & Time:	
Duration & Number called:	

ACTION - REPORT CALL TO SUPERVISOR/ADVISE ERC/DIAL 000

8 SUPPORTING INFORMATION

8.1 Emergency Services Information Package (ESIP)

ESIP information will be located at each of the site access points within the emergency services box.

The ESIP will include:

- Site operating hours
- Emergency contact details – office hours and after hours + alternates
- Location of hazardous/dangerous materials and SDS Folders:
    - Gasoline
    - Diesel
    - LPG
- NES Emergency Control Centre
- Emergency Response Diagrams for NES
- Emergency Evacuation Plans for all buildings
- Two (2) copies of laminated scaled site plans
- Location of fire-fighting water tanks
- The ESIP will be updated as required so that all information is correct.

8.2 Safety, Health and Environmental Information

As the Emergency Control Centre for NES the O&M building will contain:

- A copy of the FERP:
    - A laminated set of Emergency Response Procedures
- SDS for all hazardous chemicals located on NES:
    - SDS folders are to be located at the O&M building
- Emergency Response Diagrams for NES
- Emergency Evacuation Plans for all buildings
- Staff training records will be retained within the O&M building under the direct management of the Contractors HSE Manager which will be reported to ACEN Australia's HSE Manager.
- The O&M building site noticeboard will post:
    - Relevant Safety and Emergency Information
    - Daily site activities information:
        - Restricted areas
        - Areas of increased activity

        - Site hazards
    - Daily weather forecast:
        - Weather warnings
    - Identify the ERC officer for the day.

8.3 Medical Facilities

The closest medical facilities to NES are located as follows:

Table 4: Medical Facilities

Medical Facility	Address	Phone Number
Uralla Medical Centre	22 Hill Street, Uralla NSW 2358	6778 4500
Armidale Rural Referral Hospital	226 Rusden Street, Armidale NSW 2350	6771 4000
Armidale Medical Centre	78 Barney Street, Armidale NSW 2350	6772 2233
West Armidale Medical Centre	277 Rusden Street, Armidale NSW 2350	6772 2933
Faulkner Street Medical Practice	145 Faulkner Street, Armidale NSW 2350	6772 2355
UNE Medical Centre	110 Butler Street, Armidale NSW 2350	6773 2916

9 MANAGEMENT OF THE FERP

9.1 Induction

The Emergency information to be included within the NES induction pack will include:

- Reference to all identified hazards and corresponding Emergency Response Procedures
- Name and contact phone number of the ERC
- Instructions on how to respond in an emergency
- Identification of site access and egress routes, muster points and site maps showing the location of emergency equipment (e.g., hose reels, first aid)
- Communication procedure.

The site induction pack is to be retained by the worker for reference on site in the event of an emergency.

9.2 Training

The EMPC, that includes ACEN Australia's HSE Manager and Contractors HSE Manager and ERC has the role of establishing the emergency training requirements of staff at NES. Training is required to meet Australian Standards, legislated requirements and National competency standards where they exist and otherwise to meet industry best practice.

Training will be delivered to meet the specific task/duty requirements of required staff with respect to the management and response to emergency situation to ensure the workforce if capable and prepared to respond to emergency situation at NES.

Training may include but is not limited to the following, and may vary between staff:

- Basic First Aid as part of the Induction (all workers on site)
- First Aid – Low Voltage (LV) rescue by accredited organisation
- Advanced (Level 2) First Aid and advanced first aid – First Aid Officers by accredited organisation
- Basic Fire training - (all workers on site) e.g., use of fire extinguishers, fire blankets, fire hose reels
- Fire response (Staff filling the role of fire wardens)
- Advanced fire-fighting – Strike crew in coordination by NSW RFS/FR NSW
- LV/High Voltage Rescue
- Hazardous substance/spill response
- Emergency response.

A training register will be maintained on site and by the Contractors HSE Manager. This information will be regularly reported to ACEN Australia's HSE Manager.

9.3 Emergency Response Scenarios

The emergency response scenarios are to comprise both practice drills and ERP reviews.

9.3.1 Practice Drills

The EMPC are responsible for coordinating these practice drills in consultation with site management.

These emergency practice drills are to each be conducted twice a year and to be selected from the list of hazards identified as occurring at the site, Table 2. Emergency Services representatives are invited to attend these practice drills to participate and to provide input into the emergency response and mechanisms by which the ERP may be improved upon.

A review of the outcomes of the practice drill will be reported following a debriefing session provided by each contractor to ACEN Australia Management and emergency service agencies.

9.3.2 ERP Reviews

The EMPC will review 1 or more emergency response procedures (ERP) at each of the quarterly meetings resulting in 4 to 8 of the 19 identified ERPs being reviewed annually.

These ERP reviews involve the EMPC conducting a review of the procedure rather than staging an enactment of the scenario. The review may consider the following:

- Is the emergency response procedure readily available?
- Are site emergency contact numbers current and readily available?
- Is emergency equipment testing up to date e.g., fire extinguishers
- Do emergency response personnel understand their roles in the event of an emergency?

9.4 Emergency Incident Reporting

The NES incident reporting form is to be utilised for incidents that escalate or involve an emergency response.

ACEN Australia's HSE Manager is to provide this information to the EMPC. This requirement includes the reporting of all incidents that have the potential to give rise to an emergency response. This information is then reviewed by the EMPC to ensure that all ERP are adequate, and any omissions or improvements can then be actioned for incorporation into the upgrade of the FERP.

The EMPC are scheduled to meet quarterly and in response to an emergency incident with the FERP reviewed as required in accordance with the actions arising out of these meetings.

9.5 FERP Review

The FERP is subject to regular review and an over-arching review schedule. Review of the FERP is also triggered by an incident requiring an emergency response and by a major change to planned works at NES.

9.5.1 Scheduled Review

- Five-year FERP complete review
- Transition from construction to operations

- Annual Review
- Quarterly EMPC meetings:
    - ERP Reviews
    - Incident reports
- Practice Drill outcomes
- A review of the FERP is to be conducted following the end of the bushfire season that typically is at the end of March. The FERP annual review is required to be presented to the EMPC.

9.5.2 Unscheduled FERP review triggers

- Emergency response incident/near miss:
    - Critical incident
    - Material Harm
- Proposed Change to NES planned works/infrastructure
- Legislative or standards change:
    - National Construction Code
    - Australian Standards.

10 FIRE MANAGEMENT PLAN (FMP)

10.1 Introduction

The Hazard and Risk Assessment (Sherpa Consulting, 2018) undertaken to inform the EIS covered fire and bushfire. A stand-alone Bushfire Hazard Assessment (EMM Consulting, 2018) was also prepared to inform the EIS.

The following fire management plan (FMP) has been developed to address:

- The bushfire risk associated with a bushfire approaching NES from within the hazard zone
- The potential for a fire to spread from an ignition point within NES into the hazard zone impacting upon neighbouring properties
- The third aspect of this FMP is to address the risk associated with an infrastructure fire within NES.

Bushfire and grassfire are terms used interchangeably within this report.

This FMP builds upon the assessments conducted, namely Sherpa Consulting (2018) and EMM Consulting (2018) additional clarification and comment on these assessments as considered necessary. Management actions, including recommendations contained within these assessments are consolidated within this FMP.

10.2 The Site

The general location of the site within the broader landscape is considered. While the vegetation and landscape immediately or within proximity to NES is an important aspect when developing an FMP, it is important to consider the potential for larger fires to develop in the broader region that may threaten the site. It is also important to consider the broader landscape so that evacuation of NES does not place personnel at greater risk.

The general site location is provided in Figure 5, while the site layout is provided in Figure 6.

10.3 Land Use

The land use within 30 km of NES has been mapped (Figure 8) and shows that there are large tracts of grazed native vegetation to the northwest and the southeast of NES that pose a potential bushfire hazard. The land use between these regions is dominated by modified pasture with smaller areas of cropping. The land use within NES is predominantly modified pasture for grazing with small areas of cropping and grazing of native vegetation (Figure 9).

The standing fuel load of vegetation will require monitoring across each bushfire season.

10.4 Fire Prone Land

REFER TO SECTION 3.4.1 and Figure 7.

The bushfire assessment undertaken to inform the EIS stated that approximately 12% of the core development area is mapped as bushfire prone land under the Uralla LEP 2012. Figure 7 shows mapped bushfire prone land outside of the core development area. Of this, the large area of Category 1 vegetation to the west-southwest of the Project, located between Big Ridge Road and

Munsies Road presents a significant risk as it crosses the Project site access/egress roads. This vegetation is comprised of the Yellow Box (*Eucalyptus melliodora*) / Broad Leaved Stringybark (*Eucalyptus caliginosa*), which can give rise to embers and firebrands during a bushfire and burn intensely. This vegetation is aligned such that a fire approaching the site from the west or southwest has the potential to run into this vegetation, intensify and continue towards the site.

10.5 Bushfire Risk

10.5.1 Ignition Sources

REFER TO SECTION 3.4.1.

The potential for lightning to ignite a bushfire is discussed. REFER TO SECTION 3.4.2.2.

10.5.2 Fire History

The distribution of bushfire within the broader landscape highlights two potential issues. The first issue is that bushfires can be expected to occur within the region that lies between Yarrowyck and Invergowrie to the north-west of the site. The threat posed by fires in this region is considered in section 11.5.3. The second potential issue highlighted by the fire history is the large number of fires within the ranges to the southeast of NES. This is to be noted with respect to the choice of evacuation routes, indicating that directing staff to evacuate towards this area is unlikely to be a preferred option.

10.5.3 Fire Runs

10.5.3.1 Yarrowyck/Invergowrie/NES

This area includes the Mount Yarrowyck Nature Reserve and a broad ridge covered by native vegetation that is grazed that extends south-easterly to Invergowrie. The alignment is significant as it creates a potential fire run along the ridge line extending to approximately within 10 km of NES. The wind direction on days of extreme or catastrophic fire danger can be expected to be from the north-west which has the potential to spread a fire towards NES from this region. The land use between Invergowrie and NES is largely comprised of modified pasture and cropping. A bushfire originating in the region described has the potential to spot ahead into the agricultural land potentially giving rise to a grassfire that has the potential to continue to run with prevailing winds across the New England Highway into NES.

10.5.3.2 Balala/Rocky River or Uralla/NES

Under westerly winds a potential fire path exists from the native vegetation that occurs west of Balala, potentially as far west as Warrabah National Park to the townships of either Rocky River or Uralla and subsequently through modified pasture and cropping land with patches of Broad-Leaved Stringybark, or Broad Leaved Stringybark in association with Yellow Box towards NES. As discussed, the presence of Stringybark has the potential to intensify a bushfire and to generate embers and firebrands that can spot ahead of the fire front.

A shorter potential fire run exists for a fire originating near the townships of Rocky River or Uralla to the west of NES amongst native vegetation, along gullies associated with Rocky River. Patches of Broad-Leaved Stringybark in association with Yellow Box that occur in the area have the potential to trigger spot fires and spreading the fire in the direction of Big Ridge Road and Munsies Road.

10.5.3.3 NES/Dangarsleigh/Oxley Wild Rivers

A grassfire originating within NES has the potential to burn into stands of Yellow Box – Blakely's Red Gum outside of the NES perimeter. This fire may continue to burn as a grassfire with potential occasional flare ups as the fire runs into stands of Eucalypts before reaching Saumarez Creek. If the fire jumped the creek-line it may continue to burn towards Dangarsleigh and potentially running into the Oxley Wild Rivers National Park. Any bush fire originating from NES that reached the Oxley Wild Rivers National Park would have the potential to be a significant fire.

10.6 Access

10.6.1 External Access

REFER TO SECTION 2.7.

10.6.2 Internal Access Roads

The vehicle carrying capacity of internal roads within NES is required to meet Category 1 (or CAT 1) large 4WD tanker.

Internal access roads must be constructed so as to avoid a dead end in accordance with NSW RFS Fire Trail Standards (2017). All internal access tracks must meet the Category 1 NSW RFS Fire Trail Standards (2017). Under no circumstances are dead-end internal roads permitted within NES. Internal access roads must be constructed with either or a mix of the following:

- A turning bay
- A terminal T shaped turning point
- Connect to the asset protection zone to allow CAT 1 fire fighting vehicles to turn or continue.

10.7 Water Supply

REFER TO SECTION: 6.1.5.

An additional water supply tank with 60,000L capacity is located next to the O&M building and is fitted with storz adapter and FRNSW compatible suction connection to allow firefighting vehicles to refill.

10.8 Asset Protection Zones (APZ)

- An APZ provides:
- A buffer zone between a bush fire hazard and an asset
- An area of reduced bush fire fuel that allows suppression of fire
- An area from which back-burning may be conducted
- An area which allows emergency services access and provides a relatively safe area for firefighters and homeowners to defend their property. (NSW RFS 2005).

All site buildings are to include an Inner Asset Protection Zone (IAPZ) of 10 m surrounded by an Outer Asset Protection Zone (OAPZ) of another 10 m. The combined 20 m APZ around site buildings acts to reduce the risk of flame contact, reduces the heat flux that the building is exposed to and provides fire-fighters with a safer space within which to operate.

Any landscaping within these zones must be compliant with NSW RFS (2005).

A 10 m APZ is to be created around the perimeter of the solar arrays as per Rural Fire Service NSW minimum requirements. The perimeter access track is to be located within this 10 m APZ.

APZs of a minimum 20 m are to be created around fuel storage facilities so as to eliminate fuel combustion risk.

Slashing, grazing and other vegetation control measures may be used to control the fuel load of the APZ on an as-required basis. The frequency would vary based on seasonal and climatic conditions (e.g. more frequently during Spring and Summer months when grass grows faster, less frequently during Winter). Monitoring of standing fuel load across site (including the APZ) is described in Section 11.12.

10.9 Strategic Firefighting Advantage Zone (SFAZ)

The remainder of the site is to maintain a reduced fuel load through sheep grazing across the site, mowing or slashing.

10.10 NES Construction Bushfire Risk Management

Fire management actions that relate to construction of NES are presented in Section 3.4.1.

10.10.1 Emergency Response Procedures (ERPs)

Four ERPs have been developed to respond to fire and smoke. They include:

ERP 2 Bushfire/Grassfire	REFER TO APPENDIX C
ERP 7 Fire – Industrial	REFER TO APPENDIX C
ERP 8 Fire – Building	REFER TO APPENDIX C
ERP 9 Fire – Smoke	REFER TO APPENDIX C

These ERPs remain relevant following completion of construction of NES remaining in place and being refined by the review process for the operational phase.

10.10.2 Fire Fighting

10.10.2.1 Firefighting trailer

The firefighting trailer located at NES is to provide a means of first response attacking small spot fires and other fires until assistance can arrive from the fire services.

REFER TO SECTION: 6.1.3

10.11 NES Operation Bushfire Risk Management

Fire management actions that relate to construction of NES are presented in Section 3.4.1.

10.11.1 Total Fire Ban

During total fire bans, you cannot light, maintain or use a fire in the open, or carry out any activity in the open that causes, or is likely to cause, a fire.

General purpose hot works are not to be done in the open. Rock drilling and slashing activities must only be undertaken following assessment and approval from the site supervisor and with management measures in place (e.g. nearby watercart available at all times during works).

To carry out hot works activities during a Total Fire Ban, a standard exemption (by Government Gazette) or specific exemption (RFS total fire ban exemption approval) is required in addition to a Hot Works Permit.

10.11.2 Transmission Line Easement

Bushfire risk management measures exist for transmission line easements. TransGrid includes these bushfire mitigation measures within Easement Acquisition Deeds (i.e. easement terms) and the TransGrid Transmission Line and Easement Maintenance Plans. The existing TransGrid management measures are based upon the Electrical Industry Safety Steering Committee Guidelines (ISSC) relating to management of vegetation (ISSC 2016) and activities ISSC (2012) within easements.

Grass within the HV Transmission Line easement is to be maintained to achieve a Grassland fire hazard score of less than 35 when grassland curing is greater than 70 per cent in accordance with ESA (2014) that is equivalent to the fuel management standards for an OAPZ, for the entire bushfire season, Table 5.

Table 5: Grassland Fuel Hazard Score at 70% cured [Source Table4, ESA 2009].

Height	Cover (%)									
(metres)	10	20	30	40	50	60	70	80	90	100
0.1	1	2	3	4	5	6	7	8	9	10
0.2	2	4	6	8	10	12	14	16	18	20
0.3	3	6	9	12	15	18	21	24	27	30
0.4	4	8	12	16	20	24	28	32	36	40
0.5	5	10	15	20	25	30	35	40	45	50
0.6	6	12	18	24	30	36	42	48	54	60
0.7	7	14	21	24	35	42	49	56	63	70
0.8	8	16	24	32	40	48	56	64	72	80
0.9	9	18	27	36	45	54	63	72	81	90
1.0	10	20	30	40	50	60	70	80	90	100

Table 6: NES Fire Risk Management Actions.

NES Fire Risk Management Actions	Applies to Construction Phase	Applies to Operation Phase	Comments
ACCESS			
Access and egress must be kept clear and safe at all times.	yes	yes	
All access roads and tracks must be inspected annually, and management actions undertaken if roads and tracks are considered unsuitable for emergency vehicle passage (inspect for erosion, fallen timber, locked gates, and dead end tracks). Where locked gates are required, keys will be provided to RFS and FRNSW (if required).	yes	yes	
Ensure gates are in good condition for entry and exit of fire fighting vehicles (in advance of bushfire season).	yes	yes	
Ensure that there are no overhanging branches or objects that would prevent access within the development footprint, i.e. minimum 4 m vertical clearance (in advance of and throughout bushfire season).	yes	yes	
Ensure perimeter roads and defendable space is free of obstacles to provide access for RFS and FRNSW fire-fighting appliances and personnel (in advance of and throughout bushfire season).	yes	yes	
BUILDINGS			
Project buildings are to be constructed in accordance with AS 3959-2018 requirements – BAL 12.5 as a minimum.	yes	yes	

Ensure removal of material such as litter from roofs and gutters (in advance of and throughout bushfire season).	yes	yes	
Ensure screens on windows and doors are in good condition without breaks, tears or holes that allow penetration of airborne embers (<2 mm).	yes	yes	
Ensure rooflines have no broken or dislodged roofing material and there are no gaps in the roof or eaves (in advance of and throughout the bushfire season).	yes	yes	
Where practicable, a 20 m Building Protection Zone should be identified and maintained clear around all new building footprints during construction. Roads can be included within the building protection zone as part of the separation distance.	yes	yes	
A fire break 5 m wide is to be maintained around temporary site buildings	n/a	n/a	
DESIGN			
Ensure all water tank fittings are compatible with RFS and FRNSW fire trucks.	yes	n/a	
Design and construction of assets is undertaken to meet legal requirements including NCC, industry standards or higher and is conducted to consider incorporation of relevant AS 3959 BAL (BAL 12.5 as a minimum), PBP (NSW RFS 2019) and recommendations of 2009 Victorian Bushfires Royal Commission (Parliament of Victoria 2010).	yes	no	This includes consideration of the use of aerial bundled cable (insulated) or underground cables.

Commercial buildings must have fully compliant fire safety systems in accordance with AS and BCA requirements and as appropriate to each building (in advance of and throughout the bushfire season).	yes	yes	
All creek crossings are to be constructed to meet the requirements of a CAT1 tanker.	yes	n/a	Refer to NSW RFS (2019)
The LPG storage tank is to be fitted with a directed water deluge system. The technical specifications will be subject to the size of the LPG utilised at the site. Is to include a manual start.	yes	n/a	The deluge system will be tested in accordance with manufacturer's recommendations and the test and maintenance logged.
Installation of bollards to protect the LPG, Diesel and Gasoline storage vessels from collision.	yes	n/a	Need to consider whether some bollards are required to be removable in order to allow access for the service of the vessels.
EMERGENCY			
An Emergency management plan is to be developed and maintained that incorporates a response to bushfire incidence including evacuation.	yes	yes	ERP 2 Bushfire/Grassfire REFER TO APPENDIX C ERP 7 Fire – Industrial REFER TO APPENDIX C ERP 8 Fire – Building REFER TO APPENDIX C ERP 9 Fire – Smoke REFER TO APPENDIX C ERP 16 Site Evacuation REFER TO APPENDIX C
Transport capable of evacuating all staff at NES must be present and available on a daily basis in the event of fire or bushfire (or other emergency).	yes	yes	This capacity can be achieved via a mix of private vehicles and/or buses.
Emergency Practice Drill – for a bushfire at the site will be conducted prior to bushfire season at least once every 2 years (generally quarterly or every 6 months). Fire services will participate in the debriefing following the practice drill.	yes	yes	Refer to Section 9.3.1

ERP reviews will be conducted by the EMPC	yes	yes	Refer to Section 9.3.2 ERP 2 Bushfire/Grassfire REFER TO APPENDIX C ERP 7 Fire – Industrial REFER TO APPENDIX C ERP 8 Fire – Building REFER TO APPENDIX C ERP 9 Fire – Smoke REFER TO APPENDIX C ERP 16 Site Evacuation REFER TO APPENDIX C
Emergency Services will be invited to participate in a site familiarisation visit during construction of NES and again following completion of each Stage	yes	yes	Coordinated via EMPC. Stage 1 RFS visit completed September 2023.
ENVIRONMENTAL MANAGEMENT			
Landscaping should utilise plants with low flammability. Short green grass (regularly watered and mowed), non-flammable mulch such as pebbles or gravel or paths, should be positioned against buildings. Shrubs or other plants should not abut buildings, with flammable plants no closer than 10 m from an exposed window or door.	yes	yes	Refer to NSW RFS PBP
Inspect and take the necessary action to maintain the defendable space as per IPA and Standards for Asset Protection Zones.	yes	yes	(NSW RFS 2005)
The ETL corridors are managed as per the specifications in ISSC3 Guide for the management of vegetation in the vicinity of electricity assets (ISSC 2016).	yes	yes	
Ensure combustible materials are well away from the buildings.	yes	yes	
Inorganic materials are to be utilised for paths, switching yards and mulch.	yes	yes	

Vegetation on the construction site is to be managed so as not to present a fire hazard e.g. weed management, grass height ≤10 cm, cut vegetation to be managed so as not to present a fire hazard.	yes	no	
Gutters and the roof of any site buildings present during construction (e.g. site office) must be checked monthly and cleared of flammable material.	yes	yes	The inspection schedule may be altered if trees are absent – inspect prior to bushfire season
Easement managed to reduce the risk of bushfire.	yes	yes	
Implementation and maintenance of APZs identified within this report. Proposed APZs should be endorsed by the NSW RFS and incorporated into the New England Regional Fire Management Plan	yes	yes	
Weeds are to be managed across the site by a control program to ensure that they do not constitute a fire hazard.	yes	yes	Refer to Section 10.12.2 of this document, and the Biodiversity Management Plan (BMP)
Neighbouring landowners encouraged to install and maintain a 5 metre wide fire break against the external boundary of NES.	Yes	yes	Coordinated by EMPC – this increases the APZ to 25 m
Sheep be utilised to reduce the vegetation within NES. Consideration can be given to crash grazing the site in the lead up to the August commencement of the bushfire season.	yes	yes	Sheep to be agisted either permanently on site or used to crash graze the site prior to or during the bushfire season to reduce the fuel load.
In the absence of sheep grazing mowing and slashing is to be conducted to reduce the standing fuel load to create a SFAZ.	yes	yes	
FIRE SAFETY SYSTEM			
Fire systems must be regularly serviced and audited in accordance with AS 1851 – 2012 Routine Service of Fire Protection Systems and	yes	yes	

Equipment, and AS/NZS 2293.1:2018 Emergency Lighting and Exit Signs for Buildings (Part 1: System Design, Installation and Operation).			
Ensure all pumps and water sources are working, clearly marked and easy to find.	yes	yes	
Routine maintenance of active fire safety systems such as hose reels or fire extinguishers (supplier recommended schedule of maintenance).	yes	yes	
Ensure that the drenching or spray system over the LPG cylinder is tested according to the suppliers recommended schedule.	yes	yes	
HAZARDOUS SUBSTANCES			
Store flammable liquids away from buildings or in approved storage compounds.	yes	yes	
Hazardous substances (Petrol, Diesel, LPG) are to be stored on an inorganic hard stand area that extends 20 m from the storage tank.	yes	yes	The intent is to establish and maintain a 20 m separation zone from flammable material.
INDUCTION			
Site Induction – staff are trained, have appropriate accreditations, qualifications, permits, licences, Health and Safety training, familiar with bushfire/smoke/fire emergency response procedures and site controls.	yes	yes	Applies to staff and contractors and refers to associated management plans e.g. Safe work method statements.
Hot works permitting system is defined – staff sign off.	yes	yes	

PPE			
All NES staff are to have access to P2 disposable filters to provide protection from bushfire smoke.	yes	yes	ERP 9 Fire – Smoke REFER TO APPENDIX C
Fire-fighting Strike vehicle crew are to have appropriate PPE to assist in a fire emergency when using a strike vehicle.	yes	yes	REFER TO SECTION: 6.1.1.1
PROCEDURES			
Temporary site buildings whether utilised for construction or ongoing operations are to be protected from bushfire and maintained so as not to present a fire risk (e.g. perimeter fire break, cleaning gutters, constructed of non-flammable materials).	yes	no	Temporary site buildings will be removed following construction. Any temporary building brought onto site during the operational phase will need to comply with these actions.
Equipment is to be maintained and inspected to minimize risk of failure giving rise to a fire. Appropriate equipment is to be utilised for the task being conducted.	yes	yes	
Electrical equipment should be inspected, tested and tagged prior to use on the site.	yes	yes	
Standard operating procedures are developed for all tasks conducted incorporating consideration of bushfire risk.	yes	yes	
Monitor, rapidly diagnose and respond rapidly to system faults.	yes	yes	
Safety procedures must be developed for all power infrastructure within a substation or associated with transmission lines.	yes	yes	

Ensure all security clearances, communication and access arrangements have been updated and confirmed with RFS and FRNSW in readiness for upcoming season (in advance of bushfire season).	yes	yes	
Smoking in designated areas	yes	yes	
Hot works are to be restricted (critical works only – exemption required) on days of declared catastrophic fire danger. Restrictions on use must be incorporated into the safe operating procedure (SOP) for all equipment deemed to involve Hot Work.	yes	yes	
Hot works or works that have the potential to cause a fire require a Hot Work permit	yes	yes	
Areas where hot works are to be conducted must be cleared of flammable vegetation and materials in all directions to a distance of 5 metres.	Yes	yes	
Adequate fire extinguisher or water tankers must be present when conducting hot works during the bushfire season.	yes	yes	
A spotter will be used when hot works are conducted in areas where flammable materials cannot be removed.	yes	yes	
A post work check of any hot works will be conducted after the completion of any hot works.	yes	yes	
Site vehicles are prohibited from driving through or parking in long grass during the bushfire season August to March inclusive.	yes	yes	

SECURITY			
Site security – security fencing, lighting, monitoring (active patrol and/or remote sensing CCTV). A security presence should be maintained at the site and the site should be actively patrolled after hours during the bushfire season.	yes	yes	
TRAINING			
Training – all permanent staff are to receive basic fire awareness training in the use of fire extinguishers, fire blankets, fire hose reels.	yes	yes	Fire Warden Training has been completed. Staff training register is maintained.
Fire-fighting Strike vehicle crew are to be adequately trained for the use of the strike vehicle.	yes	yes	Liaison via NES EMPC to identify appropriate training for volunteer strike vehicle crew.
VEHICLES			
Site vehicle specifications include bushfire risk reduction considerations including carrying one or more fire extinguishers be of a suitable height clearance for off road use and use diesel fuel.	yes	yes	
Vehicle access controls are established to define vehicle movement areas, control paddock access, restricting vehicle use on days of equal to or greater than high declared Fire Danger, vehicles fitted with a UHF radio.	yes	yes	
The strike vehicle located at the NES is to provide a means of first response attacking small spot fires and other fires until assistance can arrive from the fire services.	yes	yes	REFER TO SECTION: 6.1.3
WASTE MANAGEMENT			

Waste management plan – waste removed from site to avoid accumulation of flammable materials, locked non-flammable receptacles, secured.	yes	yes	
Flammable construction waste to be placed into metal skips or equivalent and removed from site when full. Wooden pallets and flammable waste materials are to be removed from site as soon as practical.	yes	n/a	
WATER SUPPLY			
One static water supply with minimum 20,000 litre capacity will be located next to the O&M Building.	yes	yes	60,000L tank has been installed
The water supply tanks will be fitted with a 65 mm outlet, 65 mm ball valve and Storz Coupling and Banking Cap to facilitate re-filling by fire-fighting appliances.	yes	yes	Signed off by RFS NSW, September 2023.
Inspect static water supply levels and top up if required prior to commencement of the bushfire season and following their use.	yes	yes	
Monitor the site waterbodies to have a working knowledge of potential alternate water sources for fire-fighting purposes.	yes	yes	

10.12 FMP Monitoring and Review

10.12.1 FMP Monitoring

Each Contractor has to confirm that FMP actions have been effectively implemented via a register and are to regularly monitor the performance of fire management actions. This is to be reported monthly to ACEN Australia.

It is recommended that ACEN Australia accurately map the footprint of all fires within NES so as to build an accurate fire history for the site utilizing information presented by each Contractor.

Each Contractor has to monitor the standing fuel load across the site on an as-required basis to determine slashing requirements and frequency. The frequency would vary based on seasonal and climatic conditions (e.g. more frequently during Spring and Summer months, less frequently during Winter or periods with regular rainfall). This information is reported monthly to ACEN Australia.

10.12.2 FMP Review

Review of the FMP within the FERP is triggered by the same mechanisms as the FERP.

REFER TO SECTION 9.5.

A review of the FMP is to be conducted if significant changes in legislation occur that manifestly affect the management actions of the FMP component of the FERP.

This FMP is to be presented to the NSW RFS and FR NSW for comment and endorsement. Feedback from these agencies is to be incorporated into the FERP.

An unplanned fire within NES or within the immediate vicinity (within 1 km) of NES will trigger a review of the FERP ERPs and the FMP.

A significant change in the bushfire risk will trigger a review of the FMP, for example:

- An extended period of extreme weather
- Any bushfire within 5 km of NES
- Housing development or subdivision of land for housing (within 5 km)
- Proposed significant change in site infrastructure.

A complete review of the FERP including the FMP is to be conducted prior to the 2025-2026 bushfire season.

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APPENDIX A EMERGENCY REPONSE PROCEDURES

NES EMERGENCY RESPONSE PROCEDURES (ERP)

The following emergency response procedures have been developed to address hazards associated with NES. As the BESS is not part of the Stage 1 and 2 developments it falls outside of the remit for this FERP, an emergency response procedure will need to be developed as part of the Stage 3a update of the FERP.

The ERP developed for NES are listed in Table 1. Relevant ERPs will be reviewed following the associated training exercise, following the review of an emergency and prior to the development of Stage 3a of NES.

Table 1: List of emergency response procedures developed for NES.

ERP	SECTION	ERP NUMBER
BUILDING/STRUCTURE COLLAPSE	SECTION 1.1	ERP 1
BUSHFIRE/GRASSFIRE	SECTION 1.2	ERP 2
EARTHQUAKE	SECTION 1.3	ERP 3
ELECTROCUTION	SECTION 1.4	ERP 4
EXPLOSION	SECTION 1.5	ERP 5
EXTREME TEMPERATURE/HEATWAVE	SECTION 1.6	ERP 6
FIRE - INDUSTRIAL	SECTION 1.7	ERP 7
FIRE - BUILDING	SECTION 1.8	ERP 8
FIRE - SMOKE	SECTION 1.9	ERP 9
FLOOD	SECTION 1.10	ERP 10
HAZARDOUS SUBSTANCE SPILL	SECTION 1.11	ERP 11
LPG LEAK/BLEVE EVENT	SECTION 1.12	ERP 12
PERSONAL INJURY/MEDICAL EMERGENCY	SECTION 1.13	ERP 13
POWERLINE DOWN OR VEHICLE CONTACT	SECTION 1.14	ERP 14
SEVERE STORM EVENT/LIGHTNING	SECTION 1.15	ERP 15
SITE EVACUATION	SECTION 1.16	ERP 16
SNAKE BITE	SECTION 1.17	ERP 17
TRENCH/EXCAVATION COLLAPSE	SECTION 1.18	ERP 18
VEHICLE INCIDENT	SECTION 1.19	ERP 19

1.1 BUILDING/STRUCTURE COLLAPSE – EMERGENCY RESPONSE PROCEDURE 1

This emergency response procedure has been developed to address the collapse or partial collapse of buildings or temporary structures including scaffolding.

Once an incident has occurred, the first responder needs to respond effectively and assist victim/s as quickly as possible. Responders must not place themselves or victims at further risk.

AT SITE OF INCIDENT

- **Stop** work
- **Assess the danger**. Ensure you and others are not in immediate danger (further collapse, equipment or structures failing/falling.)
    - **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance
- **Locate and assess** – Locate the section/area of collapsed structure. (Look for evidence of trapped personnel e.g., tools, helmet), ask any other staff present - need to establish the number of individuals involved. Are all workers in the area accounted for? Look for potential hazards, powerlines, broken pipes, gas leaks, smoke or flame:
    - REFER TO POWERLINE DOWN OR VEHICLE CONTACT EMERGENCY RESPONSE PROCEDURE
    - REFER TO FIRE – INDUSTRIAL EMERGENCY RESPONSE PROCEDURE
    - REFER TO FIRE – BUILDING EMERGENCY RESPONSE PROCEDURE
    - REFER VEHICLE INCIDENT EMERGENCY RESPONSE PROCEDURE
    - Injured workers/trapped workers/workers unaccounted for
        - REFER TO TRENCH EVACUATION/COLLAPSE EMERGENCY RESPONSE PROCEDURE
    - **Alarm - CALL TRIPLE ZERO (000)** for emergency services (e.g. ambulance, FRNSW, SES) and provide details – patient/s, location, nature of incident
- **Raise the alarm** – two – way radio or mobile phone (Emergency Communication Protocol) advise of emergency notification
- **Prevent** - Do not allow anyone to enter the area/structure until it has been made safe
- **Apply RACE** – Rescue, Alarm, Contain, Extinguish
- **IF SAFE - Rescue** – Remove the injured person from the situation, if it is safe to do so
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit
    - REFER TO PERSONAL INJURY EMERGENCY RESPONSE
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers/spill containment equipment to the incident site as necessary
    - Directs site First Aid Officer to the incident (member of ERT)
    - Escalate/De-escalate emergency situation as required
    - Directs services to make the incident site safe upon termination of emergency
    - Declares emergency over
    - Authorises communication of 'all clear signal.'
- ERT Leader
    - Prevent access to area by others (establish cordon)
    - Assess the situation and communicate any requirements to ERC
    - Direct rescue operations UNTIL EMERGENCY SERVICES ARRIVES
    - Where damaged plant or a vehicle is involved and where it is considered stable and poses no danger to personnel, any injured individuals are to be removed if this has not already occurred (provided this is safe to do so and does not pose a risk of further injury to the occupant
        - REFER VEHICLE INCIDENT EMERGENCY RESPONSE PROCEDURE
    - Conducts handover and continues to liaise with emergency services upon their arrival
    - Maintains communication/updates with ERC
    - Ensure the area is made safe.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.2 BUSHFIRE/GRASSFIRE – EMERGENCY RESPONSE PROCEDURE 2

The following procedure is developed to address a fire approaching NES and a fire originating within NES that has the potential to spread beyond the boundary. The bushfire season can extend from August to March (NSW RFS 2017), although fires can occur at any time of the year.

1.2.1 SMOKE PLUME SIGHTING

SITE WIDE

- **Smoke** - If a worker sights smoke in the area they are to inform their supervisor
- **Report the sighting** – as soon as practicable use the two – way radio or mobile phone (Emergency Communication Protocol)
    - Provide approximate location (e.g. direction and distance, prevailing wind direction)
- ERC Issues **BUSHFIRE ADVICE** OR **WATCH AND ACT** subject to location of the fire
- **BUSHFIRE ADVICE**
    - Work continues
    - Foreman, Team Supervisor, Responsible Person ensure they have a direct means of contact with ERC/ERT Leader
    - Check bushfire preparations – fire extinguishers in vehicles, fire hose reels, vehicles prepared in case of evacuation
    - Work schedule reviewed
- **WATCH AND ACT**
    - Await instruction from Foreman, Team Supervisor, Responsible Person or direct from ERC/ERT Leader
    - Stop work, turn off equipment
    - Make the area safe as quickly as possible
    - Stay together, prepare to move
- **EVACUATE** – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE.

1.2.2 BUSHFIRE WITHIN 30 KM OF NES

A bushfire within a 30 km radius 'Hazard Zone' of NES triggers this Bushfire/Grassfire Emergency Response Procedure.

OPERATION AND MAINTENANCE

- Contractors HSE Manager and/or ERC check daily Bureau of Meteorology (Bureau) fire danger and weather report
    - The following sources trigger this Bushfire/Grassfire Emergency Response Procedure:
        - Catastrophic Fire Danger FDI forecast triggers this Bushfire/Grassfire Emergency Response Procedure

        - NSWRFS 'Fire Near You' website is monitored, a fire notification within 30 km of NES triggers this Bushfire/Grassfire Emergency Response Procedure
        - Local ABC radio station (ABC New England Northwest **Armidale 101.9 FM**) is monitored continuously for a Bushfire Advice broadcast
        - Phone or radio call received from NSW RFS or FR NSW or Police or SES
        - Site worker observes and reports smoke plume
- ERC activates ERT/ERT Leader
- ERC issues BUSHFIRE ADVICE warning via two-way radio communication to all staff, mobile phone or word of mouth
    - This informs staff that a fire is present in the Hazard Zone (within 30 km of NES).
    - There is no immediate danger.
- Ensure sufficient transport is available on site to transport workers if required to evacuate.
- ERC issues update BUSHFIRE WATCH AND ACT as bushfire approaches and threat escalates.
    - Bushfire burning towards NES (typically from Northwest of the NES)
    - Watch and Act alert broadcast
    - Advice received from emergency services
    - Evacuation route/s- predetermine the evacuation route based on advice re fire movement and projected path
        - Uralla or Armidale or both
- A firefighting trailer prepared and crewed (to attack spot fires where safe to do so)
- Fire management procedures activated for possible imminent fire
    - Sprinkler systems activated
- ERC continues to monitor the situation, if situation deteriorates
- EVACUATION – ERC Activates SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
    - Evacuation Trigger direction from Emergency Services to evacuate
    - Evacuation Trigger when fire is 20 km away, but projected path is in line with NES
        - At 20 km site may start to experience some ember attack.

1.2.3 BUSHFIRE ON NES - IGNITION

Any fire that occurs on NES triggers this Bushfire/Grassfire Emergency Response Procedure.

ALL SITE VEHICLES HAVE A FIRE EXTINGUISHER ON-BOARD

AT SITE OF / NEAR THE FIRE

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
- **Assess the fire** - to be undertaken by ER Coordinator, HSE Manager, HSE Team, Construction Manager.

  - Await instruction from Foreman, Team Supervisor, Responsible Person or direct from ERC/ERT Leader
  - Stop work, turn off equipment.
  - Make the area safe as quickly as possible.
  - Stay together, prepare to move.
- **Assess area conditions such as** - wind direction, available fire breaks/access roads, combustible materials, fire front, fire area.
- **Consider resources available such as** - fire fighting vehicles (watercarts/water tankers/furphy's), available persons to assist.
- **Once an assessment of the fire situation has been undertaken by a minimum of 2 persons from the assessment team to make the decision as to whether Emergency Services (000) and further firefighting (RFS) are required.**
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
  - Provide location (e.g. size, burning direction, prevailing wind direction)
- **Rescue**- assist anyone injured at the incident site if it is safe to do so
  - Administer First Aid
- **Extinguish** the fire if the fire is small (rubbish bin size)
  - Retrieve the fire extinguisher/s from the vehicle/s
  - Place extinguishers stranding together – lay down when empty
  - Test the fire extinguisher before attacking the fire
    - **P – Pull the pin**
    - **A – Aim the extinguisher at the base of the flame**
    - **S – Squeeze the trigger while holding the extinguisher upright**
    - **S – Sweep the extinguisher or nozzle from side to side covering the base of the fire**
  - Do not use (or continue to use) an extinguisher if:
    - you are putting your life at risk
    - the fire is spreading quickly beyond the point of origin
    - the extinguisher is not having any effect or is having an adverse reaction on the fire
    - you cannot extinguish the fire quickly
- **Ensure** the fire does not get between you and your escape route
- **Communicate-** maintain communication with ERC
- **Evacuate –** move to a safe place if the fire cannot be extinguished or the situation becomes dangerous to you or others

- **FIRE –** alert issued by ERC
    - Await instruction from Foreman, Team Supervisor, Responsible Person or direct from ERC/ERT Leader
    - Stop work, turn off equipment
    - Make the area safe as quickly as possible
    - Stay together, prepare to move
- **Strike vehicle or trailer -** strike vehicle or firefighting trailer will extinguish the fire or fight/ contain the fire until fire services arrive (where safe to do so)
- **Emergency services assume command of the fire ground.**

OPERATION AND MAINTENANCE

ERC activates ERT/ERT Leader

- ERT Leader to coordinate actions at the incident site
- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- Escalate/De-escalate emergency situation as required
    - **DECLARE EVACUATION** – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
    - Evacuation Trigger - direction from Emergency Services to evacuate
    - ERC advices emergency services that the site is being evacuated
    - Informs Emergency services of evacuation route and destination
- Declares emergency over
- Authorises communication of 'all clear signal'
- Directs services to make the incident site safe upon termination of emergency
- ERC issues FIRE warning via two-way radio communication to all staff, mobile phone or word of mouth
    - This informs staff that a fire is present within NES
- NES **fire trailer ACTIVATED**
    - Strike vehicle or firefighting trailer will extinguish the fire, or fight/contain the fire until fire services arrive (where safe to do so)
    - Strike team must assess the hazard posed by electrical equipment as necessary
- Fire management procedures activated for possible imminent fire (subject to location of the fire)
    - Sprinkler systems activated
- ERT Leader
    - At the fire ground - prevent access to area by others

- Assess the situation and communicate any requirements to ERC
- Direct rescue operations/evacuation
- Conducts handover and continues to liaise with emergency services upon their arrival
- Maintains communication/updates with ERC
- Ensure the area is made safe

1.2.4 BUSHFIRE ON NES – FIRE FRONT

SITE WIDE

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
- **Assess the fire** - to be undertaken by ER Coordinator, Contractors HSE Manager, HSE Team, Construction Manager.
- **Assess area conditions such as** - wind direction, available fire breaks/access roads, combustible materials, fire front, fire area.
- **Consider resources available such as** - fire fighting vehicles (watercarts/water tankers/furphy's), available persons to assist.
- **Once an assessment of the fire situation has been undertaken by a minimum of 2 persons from the assessment team to make the decision as to whether Emergency Services (000) and further firefighting (RFS) are required.**
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
  - Provide location (e.g. size, burning direction, prevailing wind direction)
- **Rescue**- assist anyone injured at the incident site if it is safe to do so
  - Administer First Aid
- **Evacuate** – move to a safe place, out of the path of the fire e.g. muster point, O&M building, construction depot
- **WATCH AND ACT –** alert issued by ERC
  - Await instruction from Foreman, Team Supervisor, Responsible Person or direct from ERC/ERT Leader
  - Stop work, turn off equipment
  - Make the area safe as quickly as possible
  - Stay together, prepare to move
- REFER TO: SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
- **Strike vehicle or fire fighting trailer -** strike vehicle or firefighting trailer will extinguish the fire, or fight/contain the fire until fire services arrive (where safe to do so)
- **Emergency services assume command of the fire ground.**

OPERATION AND MAINTENANCE

AS FOR 5.2.3

ALL FIRES ARE REPORTED TO EMERGENCY SERVICES

1.3 EARTHQUAKE – EMERGENCY RESPONSE PROCEDURE 3

The following earthquake emergency response procedure has been developed to guide the on-site response to an earthquake that has caused injury, structural collapse or instability, powerline failure, fire or an environmental discharge to occur.

Given the broad range of possible impacts associated with a large earthquake the following procedure is deliberately generic and refers to relevant Emergency Response Procedures.

1.3.1 DURING THE EARTHQUAKE

1.3.1.1 INDOORS

- **Drop, Cover, Hold**
    - Take cover, move under a sturdy table, desk, load bearing or sturdy doorway close to you
    - Hold on until shaking stops
    - If there is no table, crouch in an inside corner of the building and cover your face with your arms
- **Stay away from**:
    - glass, windows, exterior walls and doors, furniture or overhead fixtures that could fall e.g., lights
    - interior doorways (many are lightly constructed)
- **Stay inside until the shaking stops** and it is safe to exit. Do not exit a building while shaking
- When shaking stops **exit the building** and move a safe distance away
- **Move away** from all structures, overhead powerlines
- **Report** damage or injuries - – two – way radio or mobile phone (Emergency Communication Protocol)
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident. – INJURED OR TRAPPED STAFF OR FIRE
    - Do not call emergency services to report the earthquake, only call for emergency assistance
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit
    - Danger/Response/Send/Airway/Breathing/Circulation (CPR)/Defibrillation
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader.

1.3.1.2 OUTDOORS

- **Stop** work, move away from any structures and overhead powerlines due to the risk of collapse
- Once in the open **stay** there until the shaking stops
- **Proceed cautiously** once earthquake has stopped as infrastructure may have been damaged:
    - Roads
    - Culverts
    - Overhead and underground services
    - Buildings
- **Report** damage - – two – way radio or mobile phone (Emergency Communication Protocol).

1.3.1.3 IN A VEHICLE

- **Stop** as soon as safely possible, away from trees, structures, overhead powerlines
- **Proceed cautiously** once earthquake has stopped as infrastructure may have been damaged:
    - Roads
    - Culverts
    - Overhead and underground services
    - Buildings
- **Report** damage - – two – way radio or mobile phone (Emergency Communication Protocol).

OPERATION AND MAINTENANCE

While there is generally no warning for an earthquake, once the initial earthquake has occurred there are likely to be aftershocks occurring over the following hours and/or days.

- Contractors HSE Manager and/or ERC to monitor the emergency broadcaster:
    - Local ABC radio station (ABC New England Northwest **Armidale 101.9 FM**) is monitored continuously for an **Earthquake Advice** broadcast
    - Phone or radio call received from NSW RFS or FR NSW or Police or SES
- ERC activates ERT/ERT Leader
- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- ERT collate reports of damage to the Site that require an emergency response
- Activation of Emergency Response Procedures as required
- ERC continues to monitor the situation, if situation deteriorates

- **EVACUATION** – ERC Activates SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
    - Evacuation Trigger direction from Emergency Services to evacuate.

1.4 ELECTROCUTION – EMERGENCY RESPONSE PROCEDURE 4

1.4.1 LOW VOLTAGE (LV)

In the event of a low voltage electric shock the rescuer/s shall:

AT SITE OF INCIDENT - If Rescuer/s are not trained in Low Voltage Rescue

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Prevent** access to the area by others until the ERT members or Emergency Services arrive.
- If Rescuers are trained in Low Voltage Rescue and not in danger themselves, they should:
- **Isolate** the source of electricity. (See below in red if source cannot be isolated)
- **IF SAFE - Rescue** – Remove any injured staff member from the situation, if it is safe to do so. Use insulated crook
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit
    - Danger/Response/Send/Airway/Breathing/CPR/Defibrillation
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Report** – Following the incident make a report.

If source of electricity cannot be isolated

- Separate the victim from the source of electricity by using an **insulated crook**
- If a crook is not available use a dry length of wood or plastic object, strong and long enough to prevent danger to the rescuer (IF IN DOUBT DO NOT USE – WAIT FOR HELP)
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit/Burns kit
    - Danger/Response/Send/Airway/Breathing/Circulation (CPR)/Defibrillation
- If you cannot separate the victim from the power source WAIT for assistance.
- OPERATION AND MAINTENANCE
- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site

- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s (Burns Kit) and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- Escalate/De-escalate emergency situation as required
- Declares emergency over
- Authorises communication of 'all clear signal'
- Directs services to make the incident site safe upon termination of emergency.

- ERT Leader
  - Prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct rescue operations
  - Isolate electrical supply in accordance with operating procedures
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe.

1.4.2 HIGH VOLTAGE

AT SITE OF INCIDENT

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Isolate** – Isolate the electrical supply in accordance with operating procedures
- **Prevent** access to the area by others until the ERT members or Emergency Services arrive.

OPERATION AND MAINTENANCE

- Staff trained in HV rescue deployed.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.5 EXPLOSION – EMERGENCY RESPONSE PROCEDURE 5

CALL TRIPLE ZERO (000) IMMEDIATELY IF:

- YOU CAN SMELL GAS OR FUEL
- YOU CAN HEAR GAS OR FUEL ESCAPING
- THERE HAS BEEN AN EXPLOSION
- THERE IS OR SUSPECT DAMAGE TO AN LPG CYLINDER, PIPLELINE, FUEL STORAGE TANK

Once an incident has occurred, the first responder needs to respond effectively and assist victim/s as quickly as possible. Responders must not place themselves or victims at further risk.

The following steps form the general procedures and precautions to be taken.

IMPORTANT

Do not use a naked flame or other ignition source to look for gas or fuel leak
Do not create sparks by using a vehicle, electronic devices (mobile phones, tablets, cameras etc) in the vicinity of the incident.

AT SITE OF INCIDENT

- **Assess the danger**. Ensure you and others are not in immediate danger
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Apply RACE** – Rescue, Alarm, Contain, Extinguish
- **IF SAFE - Rescue** – Remove any injured staff member from the situation, if it is safe to do so
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit
    - Danger/Response/Send/Airway/Breathing/ CPR/Defibrillation
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Evacuate** to Muster Point and await instruction
- **Report** – Following the incident make a report.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader

- ERT Leader to coordinate actions at the incident site
- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- Escalate/De-escalate emergency situation as required
  - DECLARE EVACUATION – Refer to EVACUATION PROCEDURE
- Declares emergency over
- Authorises communication of 'all clear signal'
- Directs services to make the incident site safe upon termination of emergency

- ERT Leader
  - Prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct rescue operations/evacuation
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.6 EXTREME TEMPERATURE/HEATWAVE – EMERGENCY RESPONSE PROCEDURE 6

This EXTREME TEMPERATURE/HEATWAVE EMERGENCY RESPONSE PROCEDURE is triggered by the **Bureau Extreme Intensity Heatwave forecast**.

Heatwave – a three day period of unusually high maximum and minimum temperatures at a location.

SITE WIDE

- **Water** - Drinking water available to all workers
    - Drink 2-3 litres of water a day even if not feeling thirsty
- Hot surfaces – wear appropriate PPE
- Re-schedule outdoor work to another time if possible
    - Avoid physically demanding tasks
    - Increase frequency of breaks
    - Provide shade were possible
- **Monitor health** - Be aware of symptoms of heat related illness including:
    - dizziness, tiredness, irritability, thirst, fainting, muscle pains or cramps, rapid pulse, shallow breathing, vomiting and confusion
    - Administer First Aid
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Evacuate.** If the situation is assessed to pose a **danger,** then you must evacuate to a safe place in the first instance
    - Air conditioned - vehicle, lunchroom, office building
- If advised to **cease work** and seek shelter:
    - Stop work
    - Make work area safe (switch off equipment)
    - Evacuate to a sheltered location or temperature controlled location.

OPERATION AND MAINTENANCE

- Contractors HSE Manager and/or ERC check daily Bureau of Meteorology (Bureau) heat wave report http://www.bom.gov.au/australia/heatwave/ and weather report
    - The following sources trigger this EXTREME TEMPERATURE EMERGENCY RESPONSE PROCEDURE:
        - **Bureau forecast of Extreme Intensity Heatwave**
        - Extreme or Catastrophic Fire Danger FDI forecast (associated with high temperatures)

  - NSW Health - ALERT issued for extreme heat
  - Site worker/s report dehydration, heat stress or heat stroke and other related health problems

- ERC activates ERT/ERT Leader
- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s and portable defibrillator to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- ERC issues **HEAT ADVICE** warning via two- way radio communication to all staff, mobile phone or word of mouth
  - ADVICE incorporated into toolbox briefings/site meetings
  - WH&S noticeboard
  - Included as a component of the induction program
- ERC continues to monitor the situation
- ERC may issue cease work order.

1.7 FIRE - INDUSTRIAL – EMERGENCY RESPONSE PROCEDURE 7

This emergency response procedure has been developed to address a fire that is associated with electrical equipment present at NES, e.g. PV modules, PCUs, Transformers.

As a fire on NES may spread to become a grassfire the BUSHFIRE/GRASSFIRE EMERGENCY RESPONSE PROCEDURE is triggered.

CALL TRIPLE ZERO (000) IMMEDIATELY

DO NOT USE WATER ON AN ELECTRICAL FIRE

AT SITE OF / NEAR THE FIRE

- **ASSESS THE DANGER**. Assess the hazards ensure you and others are not in immediate danger
    - LOOK – be aware of the potential for electrical hazards to exist or be created
    - DO NOT stand or park vehicles under powerlines
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
    - Provide location (e.g. indicate the location, equipment involved, size of fire)
- **Isolate** – isolate the power to the equipment involved if applicable, possible and safe to do so
- **Rescue**- assist anyone injured at the incident site **if it is safe** to do so
    - Administer First Aid
- **Extinguish** the fire if the fire is small (rubbish bin size), accessible and it is safe to do so
    - Retrieve an ABE fire extinguisher/s from the vehicle/s if equipped
    - Place extinguishers stranding together – lay down when empty
    - Test the fire extinguisher before attacking the fire
        - **P – Pull the pin**
        - **A – Aim the extinguisher at the base of the flame**
        - **S – Squeeze the trigger while holding the extinguisher upright**
        - **S – Sweep the extinguisher or nozzle from side to side covering the base of the fire**
    - Do not use (or continue to use) an extinguisher if:
        - you are putting your life at risk
        - the fire is spreading quickly beyond the point of origin
        - the extinguisher is not having any effect or is having an adverse reaction on the fire

        - you cannot extinguish the fire quickly
        - there is a risk of explosion
        - the fire is inaccessible
- **Ensure** the fire does not get between you and your escape route
- **Communicate-** maintain communication with ERC
- **Evacuate –** move to a safe place if the fire cannot be extinguished or the situation becomes dangerous to you or others
- **FIRE –** alert issued by ERC
    - Await instruction from Foreman, Team Supervisor, Responsible Person or direct from ERC/ERT Leader
    - Stop work, turn off equipment
    - Make the area safe as quickly as possible
    - Stay together, prepare to move
- **Strike vehicle -** the strike vehicle or trailer will attend to:
    - Attack the fire where possible and safe to do so
    - Ensure the fire does not spread to ignite a grass fire
    - Fight/contain the fire until fire services arrive
- **Emergency services assume command of the fire ground.**

<u>OPERATION AND MAINTENANCE</u>

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary.
    - Directs site First Aid Officer to the incident (member of ERT) if required
    - Escalate/De-escalate emergency situation as required:
        - **DECLARE EVACUATION** – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
        - Evacuation Trigger - direction from Emergency Services to evacuate
        - ERC advices emergency services that the site is being evacuated
        - Informs Emergency services of evacuation route and destination
    - Declares emergency over
    - Authorises communication of ‘all clear signal’
    - Directs services to make the incident site safe upon termination of emergency
- ERC issues **FIRE** warning via two-way radio communication to all staff, mobile phone or word of mouth:

  - This informs staff that a fire is present within NES
- NES **firefighting trailer ACTIVATED**:
  - firefighting trailer will extinguish the fire, or fight/contain the fire until fire services arrive (where safe to do so)
  - Strike team must assess the hazard posed by electrical equipment as necessary
- Fire management procedures activated for possible imminent fire (subject to location of the fire):
  - Sprinkler systems activated
- ERT Leader:
  - At the fire ground - prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct rescue operations/evacuation
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe.

1.8 FIRE - BUILDING – EMERGENCY RESPONSE PROCEDURE 8

This emergency response procedure has been developed to address a fire that is associated the O&M building or other site buildings including temporary site compound.

As a fire on NES may spread to become a grassfire the BUSHFIRE/GRASSFIRE EMERGENCY RESPONSE PROCEDURE is triggered.

CALL TRIPLE ZERO (000)

DO NOT USE WATER ON A FLAMMABLE LIQUID FIRE E.G. OIL

DO NOT CARRY A CONTAINER OF BURNING LIQUID

1.8.1 COOKING FIRE

- **ASSESS THE DANGER**. Assess the hazards ensure you and others are not in immediate danger
    - LOOK – be aware of the potential for electrical hazards to exist or be created
- **Isolate** - any equipment involved if applicable, possible and safe to do so
    - Turn off the gas
    - Turn off the power (e.g., toaster)
- **Extinguish** the fire if the fire is small (rubbish bin size), accessible and it is safe to do so
- **Stove top** fire – consider use of the **fire blanket**
    - *Retrieve the Fire blanket*
    - *Remove blanket from bag – pull tabs down*
    - *Grab a tab in each hand and rotate your hands inward so they are protected by the blanket*
    - *Hold arms out towards the fire*
    - *Move slowly and carefully towards the fire. The blanket will protect you from the heat and flame*
    - *DO NOT LOOK OVER THE TOP OF THE BLANKET AT THE FIRE*
    - *Let the bottom of the blanket touch the side of the bench top or the container. Still moving your arms forward slowly and carefully lower the blanket over the top of the container*
    - *DO NOT THROW THE BLANKET OVER THE CONTAINER*
    - *Place a saucepan lid, a metal tray or flat solid object on top of the fire blanket over the mouth of the container and leave it on the stove*
    - *Turn off the heat source (if not already)*
    - *CALL TRIPLE ZERO (000) – They will attend to check for any fire spread e.g. into exhaust system and will assist in removing smoke*
    - *Leave the container in place to cool for at least an hour before you attempt to move it. (SAMFS 2020)*

- **Raise the alarm** –two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
    - Provide location (e.g. indicate the location, equipment involved, size of fire)

1.8.2 OFFICE FIRE

- **ASSESS THE DANGER**. Assess the hazards ensure you and others are not in immediate danger:
    - LOOK – be aware of the potential for electrical hazards to exist or be created
    - SMOKE KILLS – evacuate if the room is filling with smoke
- **Extinguish** the fire if the fire is small (rubbish bin size), accessible and it is safe to do so:
    - Retrieve the fire extinguisher/s in the area (all site vehicles have fire extinguishers)
    - Test the fire extinguisher before attacking the fire:
        - **P – Pull the pin**
        - **A – Aim the extinguisher at the base of the flame**
        - **S – Squeeze the trigger while holding the extinguisher upright**
        - **S – Sweep the extinguisher or nozzle from side to side covering the base of the fire**
    - Do not use (or continue to use) an extinguisher if:
        - you are putting your life at risk
        - the fire is spreading quickly beyond the point of origin
        - the extinguisher is not having any effect or is having an adverse reaction on the fire
        - you cannot extinguish the fire quickly
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification:
    - Provide location (e.g. indicate the location, equipment involved, size of fire)
- **Rescue**- assist anyone injured at the incident site **if it is safe** to do so:
    - Do not re-enter a burning building
- **Ensure** the fire does not get between you and your escape route
- **Evacuate –** move to a safe place if the fire cannot be extinguished or the situation becomes dangerous to you or others
- Administer First Aid – when a safe distance away
- **Communicate-** maintain communication with ERC
- **FIRE HOSE REELS – all hour access**
    - Access the closest fire hose reel/s if trained and confident to use the equipment
    - Use hose reel in accordance with training to fight and/or suppress the fire

- **DAYTIME Strike vehicle -** the strike vehicle will attend to:
    - Attack the fire where possible and safe to do so
    - Ensure the fire does not spread to ignite a grass fire
    - Fight/contain the fire until fire services arrive
- **Emergency services assume command of the fire ground.**

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader:
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
    - Directs site First Aid Officer to the incident (member of ERT) if required
    - Escalate/De-escalate emergency situation as required:
        - **DECLARE EVACUATION** – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
        - Evacuation Trigger - direction from Emergency Services to evacuate
        - ERC advices emergency services that the site is being evacuated
        - Informs Emergency services of evacuation route and destination
    - Declares emergency over
    - Authorises communication of 'all clear signal'
    - Directs services to make the incident site safe upon termination of emergency
- ERC issues **FIRE** warning via Two way radio communication to all staff, mobile phone or word of mouth:
    - This informs staff that a fire is present within NES
- NES **firefighting trailer ACTIVATED**:
    - Firefighting trailer will extinguish the fire or fight/contain the fire until fire services arrive (where safe to do so)
    - Strike team to coordinate fire-fighting effort (use of hose reels) until emergency services arrives
- ERT Leader:
    - At the fire ground - prevent access to area by others
    - Assess the situation and communicate any requirements to ERC
    - Direct rescue operations/evacuation
    - Conducts handover and continues to liaise with emergency services upon their arrival
    - Maintains communication/updates with ERC
    - Ensure the area is made safe.

1.9 FIRE - SMOKE – EMERGENCY RESPONSE PROCEDURE 9

This emergency response procedure has been developed to respond to a scenario where major bushfires or industrial fire (e.g., diesel storage tank fire) has resulted in the Site being or likely to be blanketed in smoke for an extended period of time.

This situation has the potential to reduce on site visibility creating a hazard to on-going site works and also creating a short and long term health impact through the inhalation of fine particulate matter.

OPERATION AND MAINTENANCE

- Contractors HSE Manager and/or ERC check daily Bureau of Meteorology (Bureau) fire danger and weather report and/or Public Health Warning:
    - The following sources trigger this FIRE SMOKE EMERGENCY RESPONSE PROCEDURE:
        - Site observation of widespread smoke
        - Public health warning
- ERC & Contractors HSE Manager issue health directive:
    - Air-conditioning set to re-circulate
    - Non-essential outdoor work to be re-scheduled (visibility 1.5 km Air Quality Very Poor) (EPA 2020)
    - Outdoor work cancelled (visibility less than 1.5 km Air Quality Hazardous) (EPA 2020)
    - P2 masks to be utilised where outdoor workers are exposed:
        - Ensure masks are fitted properly forming a seal
    - Site vehicles must have lights switched on when travelling on site
    - Non-essential visits to site re-scheduled
    - AT RISK STAFF evacuated or placed on restricted duties to minimise smoke exposure, provided with P2 masks where remaining on site:
        - Pregnant
        - Asthmatic
        - COPD - Emphysema
        - Bronchitis
        - High blood pressure
        - Heart conditions
- ERC activates ERT/ERT Leader:
    - ERT Leader to coordinate actions across the site
    - Directs site First Aid Officer to ensure appropriate first aid stocks are available (member of ERT) as required:

- Eye wash
- P2 masks
- oxygen

- Escalate/De-escalate emergency situation as required:
  - DECLARE EVACUATION – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
  - Evacuation Trigger - direction from Emergency Services to evacuate
  - ERC advices emergency services that the site is being evacuated
  - Informs Emergency services of evacuation route and destination
- Declares emergency over
- Authorises communication of ‘all clear signal’.

1.10 FLOOD – EMERGENCY RESPONSE PROCEDURE 10

The following flood emergency response procedure has been developed to guide the on-site response to a flood that has caused injury, structural collapse or instability, powerline failure, fire or an environmental discharge to occur. Flooding of NES and the access roads in particular may be the result of sever storm activity resulting in a flash flood event.

While there is generally a warning for severe weather and heavy rainfall there can be instances of localised flash flooding that occur with little warning.

SITE WIDE

- DO NOT ENTER FLOODWATERS:
- Vehicles MUST stay out of flood water more than 10 cm deep
    - A 2.5-tonne 4WD can float once water reaches 95 cm in depth
    - Small car can be moved by 15 cm of water
    - The site has gravel roads that can be severely eroded by flood water
- **If a person has been swept away by flood water or a vehicle is stranded or swept from the road by flood water CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident:
    - Do not call emergency services to report the flood, only call for emergency assistance.
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- Foreman, Team Supervisor, Responsible Person – ensure that all team members/crew are accounted for
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from ERC or ERT Leader and then Emergency services upon their arrival:
    - Move to higher ground
    - Move to a safer place

OPERATION AND MAINTENANCE

- Contractors HSE Manager and/or ERC check daily Bureau of Meteorology (Bureau) severe weather report:
    - Local ABC radio station (ABC New England Northwest **Armidale** 101.9 FM) is monitored continuously for a Flood Warning Advice broadcast
    - Phone or radio call received from NSW RFS or FR NSW or Police or SES
    - Monitor SES Flood Watch via https://www.ses.nsw.gov.au/
- ERC activates ERT/ERT Leader
- **Flood Warning** - ERC issues flood warning
- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency as required

- Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- ERT collate reports of damage to the Site that require an emergency response
- Erect barriers to prevent workers driving through flooded areas
- Coordinate any site works to shore up areas:
- Sand bagging
    - Placement of fill or rock to stabilise areas
- Activation of Emergency Response Procedures as required
- ERC continues to monitor the situation, if situation deteriorates
- **EVACUATION** – ERC Activates SITE EVACUATION EMERGENCY RESPONSE PROCEDURE:
    - Evacuation Trigger direction from Emergency Services to evacuate
    - Must determine if evacuation routes are open
- Post Flood Event coordinate check for infrastructure damage:
    - Inspect waterways for erosion damage
    - Inspect for presence of dead animals
    - Arrange burial of dead stock
    - Check fence lines
    - Check culverts and roads are trafficable/damage report.

1.11 HAZARDOUS SUBSTANCE SPILL – EMERGENCY RESPONSE PROCEDURE 11

The HAZARDOUS SUBSTANCE SPILL EMERGENCY RESPONSE PROCEDURE is activated when the hazardous substance spill cannot be managed by following the associated SOP or the incident threatens to cause material harm.

1.11.1 SMALL SPILL

- **Assess the danger**. Ensure you and others are not in immediate danger
- **Report** spill to Foreman, Team Supervisor, Responsible Person
- **Eliminate all ignition** sources:
    - Switch off engines, turn off plant
    - No hot works are in in the vicinity of the spill
        - Extinguish any naked flames
- **PPE** – wear approved PPE for the chemical involved
- **Stop leak**/spill if it is safe to do so
- If the chemical is stored in separate containers – **move** other sealed (non-leaking) containers form the area:
    - **Isolate** the leaking container/drum
    - Place leaking drum on a bunded pallet
- **Absorb** spilt chemical with **inert material** (apply from spill kit)
- **Use spark proof tools** and explosion proof equipment
- **Notify**– FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol)
- Place absorbed material into an appropriate **waste disposal container** for the chemical involved
- Consult the **Safety Data Sheet** (SDS) for the chemical involved as to the correct spill clean-up procedures
- **Disposal** – dispose of absorbed material via an appropriately licenced waste operator to a licenced facility
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from the ERC or ERT Leader otherwise from Emergency services staff upon their arrival
- **Report** – Following the incident make a report.

1.11.2 LARGE SPILL

- **Assess the danger**. Ensure you and others are not in immediate danger. Avoid breathing vapour – move upwind
- **Report** spill to Foreman, Team Supervisor, Responsible Person

- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- Eliminate all ignition sources:
    - Switch off engines, turn off plant
    - No hot works are in in the vicinity of the spill:
        - Extinguish any naked flames
- **PPE** – wear approved PPE for the chemical involved:
    - Breathing protection required
- **Stop leak**/spill if it is safe to do so
- **Contain the spill** - Take action/s to prevent the material from entering the stormwater system, waterway or septic/sewer system:
    - Construct a dike around the spill area to contain the chemical
    - Deploy bund or other containment equipment
- **Absorb** spilt chemical with **inert material:**
    - vermiculite
    - sand or earth
    - diatomaceous earth
- Place absorbed material into an appropriate **waste disposal container/s** for the chemical involved

CAUTION ABSORBED MATERIAL MAY RETAIN HAZARDOUS PROPERTIES

- Consult the **Safety Data Sheet** (SDS) for the chemical involved as to the correct spill clean-up procedures
- **Disposal** – dispose of absorbed material via an appropriately licenced waste operator to a licenced facility.

<u>OPERATION AND MAINTENANCE</u>

ERC activates ERT/ERT Leader:

- ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
    - Directs site First Aid Officer to the incident (member of ERT) if required
    - Coordinates hazardous waste collection
    - Coordinates with Contractors HSE Manager and ACEN Australia's HSE Manager
    - Coordinates with Emergency Services/EPA
    - Escalate/De-escalate emergency situation as required:

        - DECLARE EVACUATION – Refer to SITE EVACUATION EMERGENCY RESPONSE PROCEDURE
    - Declares emergency over
    - Authorises communication of ‘all clear signal’
    - Directs services to make the incident site safe upon termination of emergency
- ERT Leader:
    - Prevent access to area by others
    - Assess the situation and communicate any requirements to ERC
    - Direct rescue operations/evacuation
    - Conducts handover and continues to liaise with emergency services upon their arrival
    - Maintains communication/updates with ERC
    - Ensure the area is made safe.

1.12 LPG LEAK/BLEVE EVENT – EMERGENCY RESPONSE PROCEDURE 12

CALL TRIPLE ZERO (000) IMMEDIATELY IF:

- YOU CAN SMELL GAS
- YOU CAN HEAR GAS ESCAPING
- THERE HAS BEEN A GAS EXPLOSION OR FIRE
- THERE IS OR SUSPECT DAMAGE TO THE LPG CYLINDER OR PIPLELINE.

Once an incident has occurred, the first responder needs to respond effectively and assist victim/s as quickly as possible. Responders must not place themselves or victims at further risk.

The following steps form the general procedures and precautions to be taken.

IMPORTANT

- Do not use a naked flame or other ignition source to look for gas leak
- Do not create sparks by using a vehicle, electronic devices (mobile phones, tablets, cameras etc) in the vicinity of the incident.

AT SITE OF INCIDENT

- **Assess the danger**. Ensure you and others are not in immediate danger
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – patient/s, location, nature of incident
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol) advise of emergency notification
- **Apply RACE** – Rescue, Alarm, Contain, Extinguish
- **IF SAFE - Rescue** – Remove any injured staff member from the situation, if it is safe to do so
- **Activate** – Press the manual activation button for the Deluge Spray System
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit:
    - Danger/Response/Send/Airway/Breathing/Circulation (CPR)/Defibrillation
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Evacuate** to Muster Point and await instruction
- **Report** – Following the incident make a report.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader:

  - ERT Leader to coordinate actions at the incident site
  - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
  - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers to the incident site as necessary
  - Directs site First Aid Officer to the incident (member of ERT) if required
  - Escalate/De-escalate emergency situation as required:
    - DECLARE EVACUATION – Refer to EVACUATION PROCEDURE
  - Declares emergency over
  - Authorises communication of 'all clear signal'
  - Directs services to make the incident site safe upon termination of emergency
- ERT Leader:
  - Prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct rescue operations/evacuation
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.13 PERSONAL INJURY/MEDICAL EMERGENCY – EMERGENCY RESPONSE PROCEDURE 13

ASSESS THE SITUATION FOR DANGER TO YOURSELF AND THE PATIENT
ASSESS PATIENT - CONSCIOUS OR UNCONSCIOUS

1.13.1.1 IF PATIENT IS UNCONSCIOUS OR NON-RESPONSIVE

Where the patient is unconscious or non-responsive the following steps are to be taken.

AT SITE OF INCIDENT

- **CALL TRIPLE ZERO (000)** for an ambulance and provide details – patient, location, description of injury
- **Raise the alarm** – two – way radio or mobile phone or word of mouth (Emergency Communication Protocol)
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit. **DRSABCD Card in First Aid Kit**
    - Danger – ensure there is nothing that will harm you or the patient – move patient to safe location if possible.
    - Response – check for a response of the patient (touch the shoulder and ask " ca you hear me, what's your name, squeeze my hand."
    - Send for help – Call triple zero (000).
    - Airway – clear and open airway.
    - Breathing – check for breathing.
    - (CPR) – begin CPR (30 compressions :2 breaths) continue until help arrives or it is physically impossible to continue.
    - Defibrillation – Attach Defibrillator and follow the prompts
- **Stay with patient and monitor,** keep patient calm if they regain consciousness until help arrives
- **Advise** – Let staff arriving know of any hazard to avoid
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report.
- **Seek support** – it is important to debrief with a trained professional after a traumatic event to ensure your health and wellbeing.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator to the incident site as necessary. Other equipment as required

- Directs site First Aid Officer to the incident (member of ERT)
- Escalate/De-escalate emergency situation as required
- Directs services to make the incident site safe upon termination of emergency
- Declares emergency over
- Authorises communication of 'all clear signal'

- ERT Leader:
  - Establish control of the area
  - Assess the situation and communicate any requirements to ERC
  - Liaise with First Aid Officer and coordinate assistance required
  - Liaise with emergency services at incident location upon their arrival
  - Neutralise any hazards present if it is safe to do so (e.g. cut power to equipment)
  - Maintains communication/updates with ERC.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.13.1.2 IF PATIENT IS CONSCIOUS AND RESPONSIVE

Where the patient is conscious and responsive the following steps are to be taken.

AT SITE OF INCIDENT

- **Assess** the nature and extent of the injury/medical emergency
- **Raise the alarm** – two – way radio or mobile phone or word of mouth (Emergency Communication Protocol)
- If required **CALL TRIPLE ZERO (000)** for an ambulance and provide details – patient, location, description of injury
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit. **DRSABCD Card in First Aid Kit**
  - Danger – ensure there is nothing that will harm you or the patient – move patient to safe location if possible.
  - Response – check for a response of the patient (touch the shoulder and ask "can you hear me, what's your name, squeeze my hand."
  - Send for help – Call triple zero (000).
  - Airway – clear and open airway.
  - Breathing – check for breathing.
  - (CPR) – begin CPR (30 compressions :2 breaths) continue until help arrives or it is physically impossible to continue.
  - Defibrillation – Attach Defibrillator and follow the prompts.
- **Stay with patient and monitor,** keep patient calm if they regain consciousness until help arrives
- **Re-assess** – if the patient's health status changes - **CALL TRIPLE ZERO (000)** for an ambulance and provide details – patient, location, description of injury

- **Advise** – Let staff arriving know of any hazard to avoid
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report.
- **Seek support** – it is important to debrief with a trained professional after a traumatic event to ensure your health and wellbeing

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator to the incident site as necessary. Other equipment as required
    - Directs site First Aid Officer to the incident (member of ERT)
    - Escalate/De-escalate emergency situation as required
    - Directs services to make the incident site safe upon termination of emergency
    - Declares emergency over
    - Authorises communication of 'all clear signal'
- ERT Leader
    - Establish control of the area
    - Assess the situation and communicate any requirements to ERC
    - Liaise with First Aid Officer and coordinate assistance required
    - Liaise with emergency services at incident location upon their arrival
    - Neutralise any hazards present if it is safe to do so (e.g. cut power to equipment)
    - Maintains communication/updates with ERC.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.14 POWERLINE DOWN OR VEHICLE CONTACT – EMERGENCY RESPONSE PROCEDURE 14

The emergency response procedure differs subject to whether a powerline has fallen/broken or if a vehicle e.g., crane has struck a powerline and remains in contact with the line.

LOW VOLTAGE (LV) OR HIGH VOLTAGE (HV) LINE/S
ASSUME LINE AND BOTH ENDS ARE ENERGISED
REFER TO: ELECTROCUTION EMERGENCY PROCEDURE IF VICTIM IS PRESENT
FIRE EMERGENCY PROCEDURE

1.14.1 LOW VOLTAGE (LV) POWERLINE OR HIGH VOLTAGE (HV) POWERLINE DOWN

AT SITE OF INCIDENT

- **Stop work**
- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
    - **Stay 8-10 m away** from all points of the powerline
    - If the powerline is broken **both ends remain energised**
    - Unbroken lines in contact with the ground or an object in contact with the ground may burn through creating a **fall hazard.** Do not stand under powerlines
    - Powerlines may cause a **fire**
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol)
- **Prevent** access to the area by others until the ERT members or Emergency Services arrive
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Report** – Following the incident make a report

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – location, nature of incident as required
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services/ Electricity Supply Company Response Team to the location of the emergency

- Directs ERT member/s to take portable first aid kit/s (Burns Kit) and portable defibrillator/fire extinguishers to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT) if required
- Escalate/De-escalate emergency situation as required
- Declares emergency over
- Authorises communication of 'all clear signal'
- Directs services to make the incident site safe upon termination of emergency

- ERT Leader
  - Prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct ERT to isolate electrical supply in accordance with operating procedures
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe.

1.14.2 VEHICLE CONTACT WITH LOW VOLTAGE (LV) POWERLINE OR HIGH VOLTAGE (HV) POWERLINE

WHERE A VEHICLE CONTAINING PEOPLE HAS PARKED OVER A POWERLINE ON THE GROUND OR A VEHICLE HAS UNKNOWINGLY PARKED OVER OR UNDER A FALLEN POWERLINE.

STEP AND TOUCH HAZARDS EXIST - STAY 8 TO 10 METRES FROM THE VEHICLE AND POWERLINE

AT SITE OF INCIDENT

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger
  - **Stay 8-10 m away** from all points of the powerline and vehicle
  - If the powerline is broken **both ends remain energised**
  - Assume the **vehicle is energised**
  - All occupants are to **remain in the vehicle**
  - Unbroken lines in contact with the ground or an object in contact with the ground may burn through creating a **fall hazard.** Do not stand under powerlines
  - Powerlines may cause a **fire**
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol)
- **Drive away -** If the driver is uninjured and the vehicle can be driven, instruct the driver to carefully move the vehicle away

  - **If the driver is injured or the vehicle cannot be driven direct occupants to remain in vehicle until electricity supply company response team arrives**
- **Prevent** access to the area by others as there is the risk of powerline recoil
- **Advise** – Let staff arriving know the locality of any hazards and stay 8-10 metres away
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Report** – Following the incident make a report.
- OPERATION AND MAINTENANCE
- ERC contacts Electricity Supply Company – requests response team attend.
- ERC activates ERT/ERT Leader
  - ERT Leader to coordinate actions at the incident site
  - **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – location, nature of incident as required
  - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services/ Electricity Supply Company Response Team to the location of the emergency
  - Directs ERT member/s to take portable first aid kit/s (Burns Kit) and portable defibrillator/fire extinguishers to the incident site as necessary
  - Directs site First Aid Officer to the incident (member of ERT)
  - Escalate/De-escalate emergency situation as required
  - Declares emergency over
  - Authorises communication of 'all clear signal'
  - Directs services to make the incident site safe upon termination of emergency
- ERT Leader
  - Prevent access to area by others
  - Assess the situation and communicate any requirements to ERC
  - Direct ERT to isolate electrical supply in accordance with operating procedures
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC
  - Ensure the area is made safe
  - A vehicle that has been in contact with a powerline may be subject to the tyres exploding due to pyrolysis that may not be evident. Vehicles must be parked in isolation (300 m radius from any structure) and monitored for 24 hours
    - Remove everyone from isolation zone for 24 hours
    - Advise the fire service.

1.14.3 DISABLED VEHICLE ON FIRE IN CONTACT WITH LOW VOLTAGE (LV) POWERLINE OR HIGH VOLTAGE (HV) POWERLINE

A situation where a vehicle has otherwise, come into contact with an overhead powerline, cannot be driven and is on fire.

STEP AND TOUCH HAZARDS EXIST - STAY 8 TO 10 METRES FROM THE VEHICLE AND POWERLINE

AT SITE OF INCIDENT

- **Assess the danger**. Assess the hazards ensure you and others are not in immediate danger.
    - **Stay 8-10 m away** from all points of the powerline and vehicle
    - If the powerline is broken **both ends remain energised**
    - Assume the **vehicle is energised**
    - All occupants are to **remain in the vehicle as long as possible**
    - Unbroken lines in contact with the ground or an object in contact with the ground may burn through creating a **fall hazard.** Do not stand under powerlines
    - Powerlines may cause a **fire** (all site vehicles have an on-board fire extinguisher)
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance in the first instance
- **Raise the alarm** – FROM A SAFE DISTANCE two – way radio or mobile phone or verbal/runner (Emergency Communication Protocol)
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services and provide details of the situation – location, patient/s, nature of incident as required
- **Advise** – Let staff arriving know the locality of any hazards and stay 8-10 metres away
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- **Report** – Following the incident make a report.
- VEHICLE OCCUPANTS
- Remain in the vehicle as long as possible
    - EXITING VEHICLE IS A LAST RESORT
- **Exit** vehicle if in **Immediate Danger**
- **Jump Clear** - Occupants must stand on the sill of the vehicle and jump clear (keep legs/feet together)
    - Step and touch potential exist occupants **must not step out**
    - Avoid simultaneous contact with ground and vehicle
    - When out of vehicle occupants must shuffle, jump or hop away from the vehicle
    - DO NOT WALK OR RUN
    - If occupants fall on the ground, they are to roll away DO NOT STAND UP

- An injured occupant that cannot exit the vehicle must remain until the system can be de-energised.

OPERATION AND MAINTENANCE

- ERC and ERT & ERT Leader roles and responsibilities remain unchanged from previously outlined.

1.15 SEVERE STORM EVENT/LIGHTNING – EMERGENCY RESPONSE PROCEDURE 15

Severe storms may activate an emergency response due to the potential or actual infrastructure damage associated with lightning strike, heavy rainfall, hail and very strong winds and risk they may present to on site staff.

IF STAFF NOTICE A LIGHTNING FLASH - IF THE TIME BETWEEN THE FLASH AND HEARING THUNDER IS LESS THAN 30 SECONDS, THEY SHOULD IMMEDIATELY SEEK SHELTER.

SITE WIDE

- **Lightning Flash** - If lightning is observed and thunder is heard less than 30 seconds (less than 10 km away) after the flash staff must immediately seek **shelter**
- **Shelter** include but not limited to lunch rooms, administration buildings, fully enclosed metal vehicle with windows up
- **Turn off** – equipment or otherwise 'make safe' equipment if it is quick and easy to do so
- Foreman, Team Supervisor, Responsible Person – ensure that all team members/crew have left the work area
- **Raise the alarm** – as soon as practicable use the two – way radio or mobile phone (Emergency Communication Protocol)
- **Shelter** - Remain at the shelter until instructed by ERC or ERT member or ERT Leader (typically until no lightning/thunder for 30 mins).

OPERATION AND MAINTENANCE

- Contractors HSE Manager or via daily Bureau monitoring activates ERC
- ERC activates ERT/ERT Leader
- ERC issues lightning/storm warning via two-way radio communication to all staff, mobile phone or word of mouth
- ERC issues update as storm approaches and threat escalates
- Lightning detected at 15 km will trigger the EPC to issue a cease work, secure materials, plant and equipment and take shelter directive via radio
- A change in weather conditions – heavy rainfall, hail or strong and gusty winds will also trigger the EPC to issue a cease work, secure materials, plant and equipment and take shelter directive via radio
- EPC will trigger alternate Emergency response procedures as necessary. e.g.
    - Personnel injury
    - Fire
    - Flood
    - Power line failure
- ERC will escalate or de-escalate the situation as necessary
- ERC will issue and communicate the ALL CLEAR.

Note that SOPS regulate working conditions, work schedules when adverse weather is expected.

1.16 SITE EVACUATION – EMERGENCY RESPONSE PROCEDURE 16

CALL TRIPLE ZERO (000) IMMEDIATELY IF SITUATION NECESSITATES EVACUATION

SITUATIONS THAT REQUIRE EVACUATION WILL REQUIRE EMERGENCY SERVICES TO BE NOTIFIED AND/OR ATTENDANCE.

In the event of an emergency requiring NES to be evacuated, the following emergency evacuation protocols must be followed.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
- **Evacuation Declared** - ERC declares the emergency evacuation
- ERC issues **Evacuation Order**
    - Evacuation **siren sounded** – **three (3) blasts of three (3) second duration**
    - Two way radio communication to all staff, , uses the words **EMERGENCY EMERGENCY EMERGENCY** maintain radio silence and follow instruction provided by wardens
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency (AS REQUIRED)
    - ERT Leader directed to **MUSTER point**
    - First Aid Officer to attend Muster Point with Portable First Aid Kit/ Defibrillator
    - Directs ERT as required
    - Escalate/De-escalate emergency situation as required
    - Directs services to make the incident site safe upon termination of emergency
    - Declares emergency over
    - Authorises communication of ‘all clear signal’
- ERT Leader
    - ERT Leader to **coordinate Evacuation**
        - Communicate any alternate routes if hazards exist that block the planned route
    - Establish control of the muster area
        - Instruct roll call
        - Coordinate ERT to direct evacuation
    - Assess the situation and communicate any requirements to ERC
        - ERC will advise evacuation route/s from NES
    - Communicate evacuation routes to be utilised to personnel prior to allowing staff to leave the muster point
    - Liaise with First Aid Officer and coordinate assistance required
    - Liaise with emergency services upon their arrival

- Maintains communication/updates with ERC.

SITE WIDE

- **Evacuation Alarm Sounds** – three (3) blasts of three (3) second duration
- **Receive Evacuation radio call** – EMERGENCY EMERGENCY EMERGENCY
- **Stop Work** - all work shall cease immediately, and personnel shall make sure all team members are aware that an emergency evacuation has been declared
- **Turn off** plant and equipment if safe to do so
- **MUSTER** – all personnel make their way to the designated MUSTER POINT. (Refer Induction)
  - Leave in an orderly manner
  - Obey road and site traffic rules
  - Foreman, Team Supervisor, Responsible Person – ensure that all team members/crew have left the work area
  - Communicate with ERC if assistance is required
- **Roll Call** at Muster Point
  - Each Foreman, Team Supervisor, Responsible Person will conduct a roll call to ensure all their staff are present
  - Advise ERT of anyone remaining on site/absent
- **Transport** – Once instructed to leave site by the ERT/ERT Leader
  - Foreman, Team Supervisor, Responsible Person is to ensure that all staff have a 'ride' before allowing staff to leave the muster point
- **Evacuate Site** – for a total site evacuation (e.g. bushfire) personnel once allocated to a vehicle will make their way to their vehicle and exit making their way to the designated exit route and Safe Place (Uralla/Armidale)
- **Safe Place** – Follow instructions from Emergency Services personnel.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.17 SNAKE BITE – EMERGENCY RESPONSE PROCEDURE 17

ALL SNAKE BITES ARE TO BE TREATED AS POTENTIALLY LIFE THREATENING.

IF YOU ARE BITTEN BY A SNAKE CALL TRIPLE ZERO (000) FOR AN AMBULANCE.

AT SITE OF INCIDENT

- **Assess for danger**, ask where the snake went if it is close by remove the patient a short distance by dragging them if it safe to do so. Snakes will generally naturally move away when disturbed
- **Leave the snake** undisturbed
- **Keep the victim calm and still**. Reassure the patient. This can slow down the spread of the venom if the snake is poisonous
- **Identify** - What did the snake look like – colour, patterns. (Refer to snake ID chart in Site Induction)
- **CALL TRIPLE ZERO (000)** for an ambulance and provide details – patient, snake, location
- **Raise the alarm** – two – way radio or mobile phone (Emergency Communication Protocol)
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit (Snake Bite Kit)
    - (ongoing monitor condition/reassure patient) Danger/Response/Send/Airway/Breathing/ CPR/Defibrillation
- **Bandage 1.** If bitten on a limb apply a broad pressure bandage over the bite site (leave clothes on). This should be firm and tight. You shouldn't easily be able to slide a finger between the bandage and the skin
- **Bandage 2.** With a second broad roller bandage, start at the extremities of the limb (fingers or toes) and bandage up the limb. This must be firm and tight as before. Cover as much of the limb as possible. **IF YOU ONLY HAVE ONE BANDAGE DO THIS STEP** – it is the most important bandage
- **Immobilise limb**. - The limb should be immobilised with a splint or sling. Draw a mark over the bite site so hospital staff know where to look
- **Reassure** patient and make comfortable e.g. shade
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of the snake to avoid the hazard
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report.

DO NOT

- Do not try to pick up or kill the snake
- Do not allow the patient to move around.
- Do not apply a tourniquet

- Do not wash the puncture site – medical personnel can use any venom present to identify the snake.
- Do not allow the patient to drink alcohol or caffeinated drinks.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator to the incident site as necessary
    - Directs site First Aid Officer to the incident (member of ERT)
    - Escalate/De-escalate emergency situation as required
    - Directs services to make the incident site safe upon termination of emergency
    - Declares emergency over
    - Authorises communication of 'all clear signal'
- ERT Leader
    - Prevent access to area by others (establish cordon)
    - Assess the situation and communicate any requirements to ERC
    - Liaise with emergency services at incident location upon their arrival
    - Maintains communication/updates with ERC.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.18 TRENCH/EXCAVATION COLLAPSE – EMERGENCY RESPONSE PROCEDURE 18

Once an incident has occurred, the first responder needs to respond effectively and assist victim/s as quickly as possible. Responders must not place themselves or victims at further risk.

AT SITE OF INCIDENT

- **Locate** – Locate the section of collapsed trench or excavation. (Look for evidence e.g. tools, helmet), ask any other staff present - need to establish the number of individuals involved
- **Alarm - CALL TRIPLE ZERO (000)** for emergency services (e.g. ambulance, FRNSW, SES) and provide details – patient/s, location, nature of incident
- **Raise the alarm** – two – way radio or mobile phone (Emergency Communication Protocol) advise of emergency notification
- **Assess the danger**. Ensure you and others are not in immediate danger (further collapse, equipment or structures falling into excavation. Look for cracks in the ground, sides of the excavation, observe the site conditions)
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance
- **Prevent** - Do not allow anyone to enter the trench/excavation until it has been made safe
- **Apply RACE** – Rescue, Alarm, Contain, Extinguish
- **IF SAFE - Rescue** – Remove the injured person from the situation, if it is safe to do so
- **IF UNSAFE - Shore Up** – If possible, carefully batter the sides of the trench/excavation in the collapsed and adjacent area to prevent further collapse
- **Shield** – if possible, install shield/shoring to protect the trapped person and rescuers
- **SAFE** – When the trench/excavation has been made safe to enter the **Rescue** can proceed
- **Excavate** - Carefully remove collapsed soil by shovel. Avoid standing on top of the collapsed soil (the person may be trapped beneath)
    - When close to the trapped person continue digging by hand
    - If shovels are still required, then extreme care must be exercised so as not to cause further injury
    - When the trapped person is located clear soil from around the head and chest area
- **Administer First Aid** – Personal first aid kit or Vehicle first aid kit
    - (ongoing monitor condition/reassure patient) Danger/Response/Send/Airway/Breathing/Circulation (CPR)/Defibrillation
    - Check for response
    - Check breathing and a pulse
    - Person may need to be removed in order to allow CPR to commence
    - If not breathing and no pulse commence CPR and continue until emergency services arrive to take over

    - Utilise portable defibrillator if required once it has arrived at the incident site
- **Stay with patient and monitor,** if conscious keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from First Aid Officer and then Emergency services staff upon their arrival otherwise take direction from the ERC or ERT Leader
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report.

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site
    - Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
    - Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers/spill containment equipment to the incident site as necessary
    - Directs site First Aid Officer to the incident (member of ERT)
    - Escalate/De-escalate emergency situation as required
    - Directs services to make the incident site safe upon termination of emergency
    - Declares emergency over
    - Authorises communication of 'all clear signal'
- ERT Leader
    - Prevent access to area by others (establish cordon)
    - Assess the situation and communicate any requirements to ERC
    - Direct rescue operations
    - If damaged plant or vehicle is considered stable and poses no danger to personnel, any injured individuals are to be removed if this has not already occurred (provided this is safe to do so and does not pose a risk of further injury to the occupant
    - Isolate ignition/power/hydraulic systems and secure plant/vehicle if involved in the collapse
    - Conducts handover and continues to liaise with emergency services upon their arrival
    - Maintains communication/updates with ERC
    - Ensure the area is made safe.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

1.19 VEHICLE INCIDENT – EMERGENCY RESPONSE PROCEDURE 19

A vehicle includes motor vehicles, delivery trucks, vans, semi-trailers, other heavy vehicles and mobile plant. The emergency response is triggered due to vehicle roll-over, collision or collapse resulting in fluid leaking from the vehicle, serious injury or vehicle fire. Minor collisions (e.g. reversing into a post) are dealt with under SOPs. If in doubt, then the emergency procedure is to be followed.

AT SITE OF INCIDENT

- **Assess the danger**. Ensure you and others are not in immediate danger (fire, leaking fuel, smoke)
- **If safe** – turn off the engine
- **Evacuate.** If the situation is assessed to pose an **immediate danger,** then you must evacuate to a safe distance
- **Apply RACE –** Rescue, Alarm, Contain, Extinguish
- **Rescue –** Remove the injured staff member from the situation/vehicle, if it is safe to do so and only if they are in imminent danger
- **Alarm - CALL TRIPLE ZERO (000)** for an ambulance and/or fire brigade and provide details – patient/s, location, nature of incident
- **Raise the alarm** – two – way radio or mobile phone or runner (Emergency Communication Protocol) advise of emergency notification
- **Administer ongoing First Aid** – Personal first aid kit or Vehicle first aid kit
    - (ongoing monitor condition/reassure patient) Danger/Response/Send/Airway/Breathing/Circulation (CPR)/Defibrillation
- **Contain** – use spill kit from vehicle if accessible/available
- **Disconnect the battery** of the vehicle is stable and it is safe to access the battery
- **Extinguish** – access the vehicle fire extinguisher and deploy if fire is present and you are confident to do so. Otherwise have fire extinguisher stationed ready for use if required
- **Reassure** patient and make comfortable e.g. shade
- **Stay with patient and monitor,** keep patient calm and quiet until help arrives
- **Advise** – Let staff arriving know the locality of any hazards
- **Direction** – take direction from Emergency services staff upon their arrival, otherwise take direction from the ERC or ERT Leader
- Non-essential staff to **clear the area**
- **Report** – Following the incident make a report

OPERATION AND MAINTENANCE

- ERC activates ERT/ERT Leader
    - ERT Leader to coordinate actions at the incident site

- Directs ERT member/other to meet emergency services at access gate to assist directing emergency services to the location of the emergency
- Directs ERT member/s to take portable first aid kit/s and portable defibrillator/fire extinguishers/spill containment equipment to the incident site as necessary
- Directs site First Aid Officer to the incident (member of ERT)
- Escalate/De-escalate emergency situation as required
- Directs services to make the incident site safe upon termination of emergency
- Declares emergency over
- Authorises communication of 'all clear signal'

- ERT Leader
  - Prevent access to area by others (establish cordon)
  - Assess the situation and communicate any requirements to ERC
  - If damaged plant or vehicle is considered stable and poses no danger to personnel, any injured individuals are to be removed if this has not already occurred (provided this is safe to do so and does not pose a risk of further injury to the occupant
  - Isolate ignition/power/hydraulic systems and secure plant/vehicle
  - Conducts handover and continues to liaise with emergency services upon their arrival
  - Maintains communication/updates with ERC.

NOTE THAT IF AN URGENT MEDICAL TRANSFER VIA AIR EVACUATION IS REQUIRED, EMERGENCY SERVICES WILL COORDINATE THIS.

APPENDIX B DRAFT HAZARDOUS CHEMICALS MANIFEST AND SITE PLAN

MANIFEST OF SCHEDULE 11 HAZARDOUS CHEMICALS

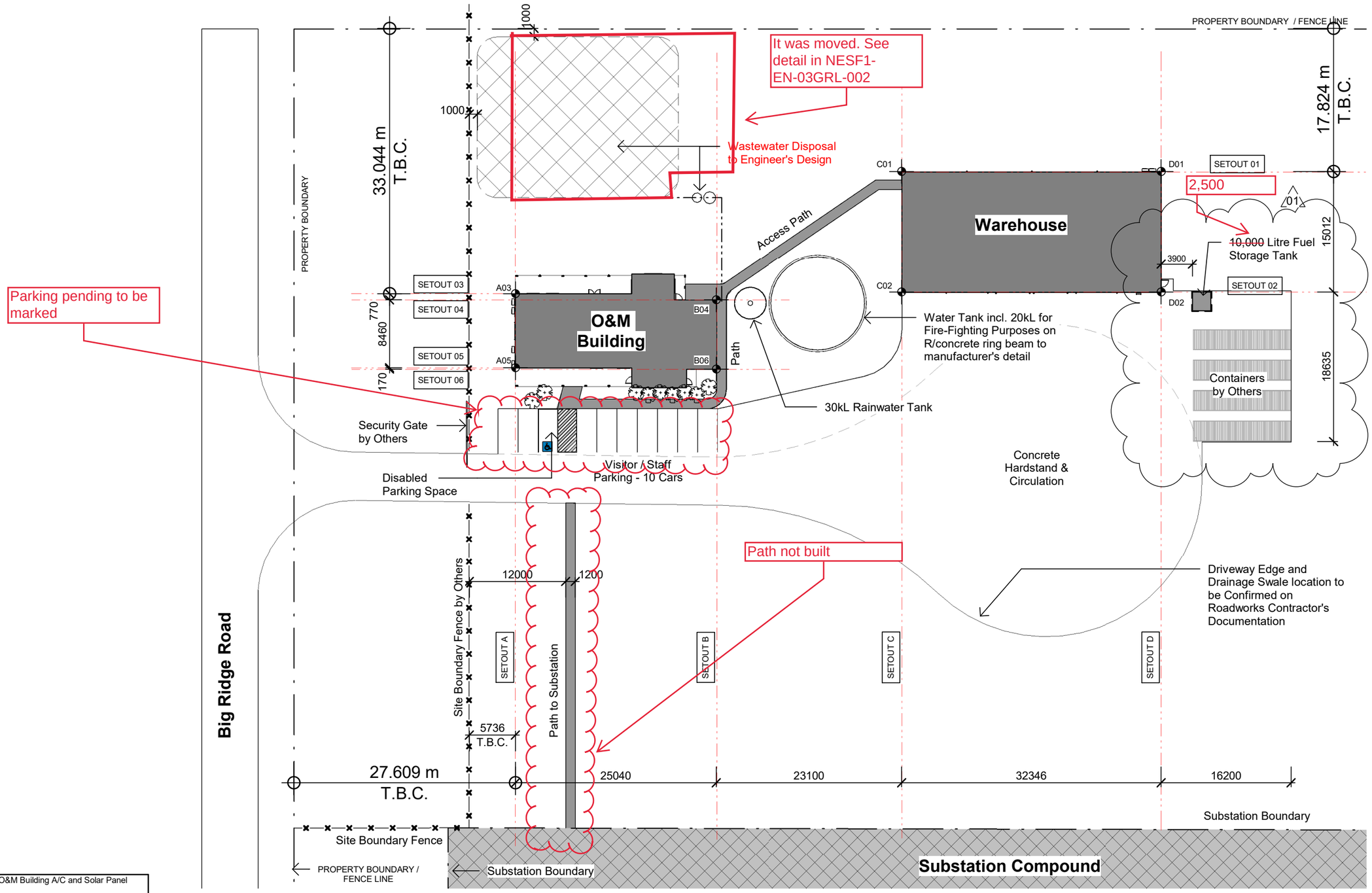
Person conducting the business or undertaking (PCBU)	ACEN Australia Pty Ltd
Address of premise	Lot 2, Big Ridge Road, URALLA NSW 2358
Date of preparation	21 September 2023

Emergency Contacts

Name	Position	Telephone
Richard de Bruin	Site Manager	+61 447 010 124
Mona Janbaz	Asset Manager	+61 476 935 844

Hazardous chemicals stored in tanks

Storage area	Proper shipping name	UN No.	Class/ Division	PG	Type	Design capacity	Diameter	Typical quantity
South side of O&M Building	Petrol	UN1203	3	II	Double walled	2,500 L	Rectangular tank 2.2 x 1.6x 1m	2,500 L



No.	Date	Revision
01	11/01/22	VARIATION 2 - Modifications to O&M Building A/C and Solar Panel installation Warehouse roof.
00	17/09/21	ISSUED FOR CONSTRUCTION
4	05/08/21	90% Completion Issued for Review
3	14/07/21	60% Completion Issued for Coordination
1	19/06/21	50% Completion Issued for review

Proposed O&M Building & Warehouse
New England Solar Farm, Big Ridge Road, Uralla

FOR **Green Light Contractors Pty Ltd**

Site Layout Plan

DO NOT SCALE
USE FIGURED DIMENSIONS ONLY
Contractor must verify all dimensions on site before commencing any work or preparing shop drawings.
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a.n.e. building design
armidale new england building design
contact: peter holzberger po box 1992 armidale nsw 2350
P 0428 714592 E peter@anedesign.com.au

green light elecnor group

UPC AC Renewables AUSTRALIA

Designed: PH	Approved: GLC	Scale: 1:500
Checked: PH	Drawn: ANE	Date: 03/18/21
Drawing: **NESF1-ANE-BD-03STR-DWG-011**		Revision: 01

RED LINE

12/01/2022 1:15:37 PM

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APPENDIX C ESIP

New England Solar

EMERGENCY SERVICES INFORMATION PACKAGE (ESIP)

IMPORTANT INFORMATION

DO NOT REMOVE FROM

Lot 2, Big Ridge Road,
URALLA NSW 2358

TITLE PAGE

Company or premises name and logo

ACEN Australia Pty Ltd

Premises address

Lot 2, Big Ridge Road, URALLA NSW 2358

Head office address

Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004

Premises geocode (GPS co-ordinates)

Latitude: -30.625646°.

Longitude: 151.618911°

EMERGENCY CONTACT DETAILS

Name	**Position**	**After Hours Phone Number**
Richard de Bruin	Site Manager	+61 447 010 124
Mona Janbaz	Asset Manager	+61 476 935 844

PREMISES OVERVIEW

The New England Solar and Battery Project is a solar and battery energy storage system with associated infrastructure. The Project includes several stages:

- Stage 1: 400-Megawatt solar farm – complete.
- Stage 2: 320-Megawatt solar farm – to be commenced.
- Stage 3: 200-Megawatt battery – to be commenced.
- Stage 4: 1,200-Megawatt battery – to be commenced.

Stage 1 includes solar arrays leading to 72 Power Conversion Units. Underground cables feed high voltage (33 kilovolt) from the Power Conversion Units to the substation. The substation converts 33 kilovolts to 330 kilovolts. The nearby offsite TransGrid switchyard provides a connection between the substation and the 330 kilovolt overhead powerlines.

The project is supported by an Operations and Maintenance building (with warehouse), a one storey brick building typically occupied 7 am to 6 pm Monday to Friday (staff on-call during weekends and public holidays).

A large water tank including 65,000 litres for firefighting purposes is located adjacent to the Operations and Maintenance building.

CONTACT LIST

List of key personnel to be contacted in an emergency.

Name	Position	Phone Number
Richard de Bruin	Site Manager	+61 447 010 124
Mona Janbaz	Asset Manager	+61 476 935 844
John Hunter	Stage 1 Contractor Site Manager	+61 447 010 124
Luigi Carpinteri	Stage 1 Contractor Asset Manger	+61 431 846 180

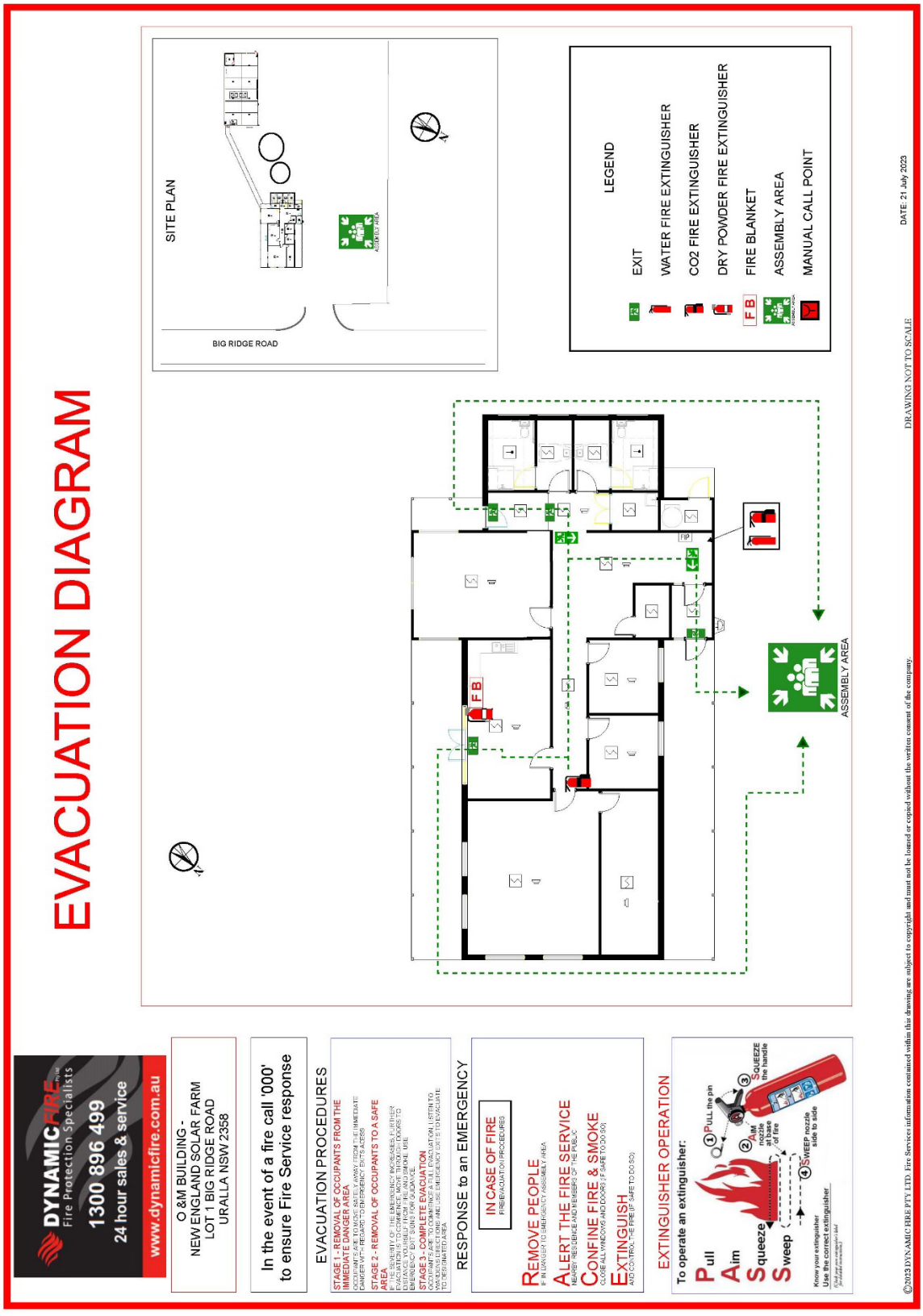
EVACUATION OVERVIEW

Stage 1b GLC Emergency Control Organisation and Warden Structure

Emergency Warden Name		Phone Number	Location
	**Clint Mullen** Emergency Response Team Coordinator	**0421 729 364**	**Main Compound**
	**John Hunter** Emergency Response Team Coordinator	**0423 448 835**	**Main Compound**
	**James Emery** Communication Officer	**0428 776 556**	**Main Compound Field**
	**Toby Ryan** Communication Officer	**0404 933 070**	**Main Compound Field**
	**Matt Rathmussan** Communication Officer	**0493 832 684**	**Main Compound Field**

New England Solar

Stage 1b Operations and Maintenance Building – Evacuation Diagram



Version/revision	Date of issue	Date of next review
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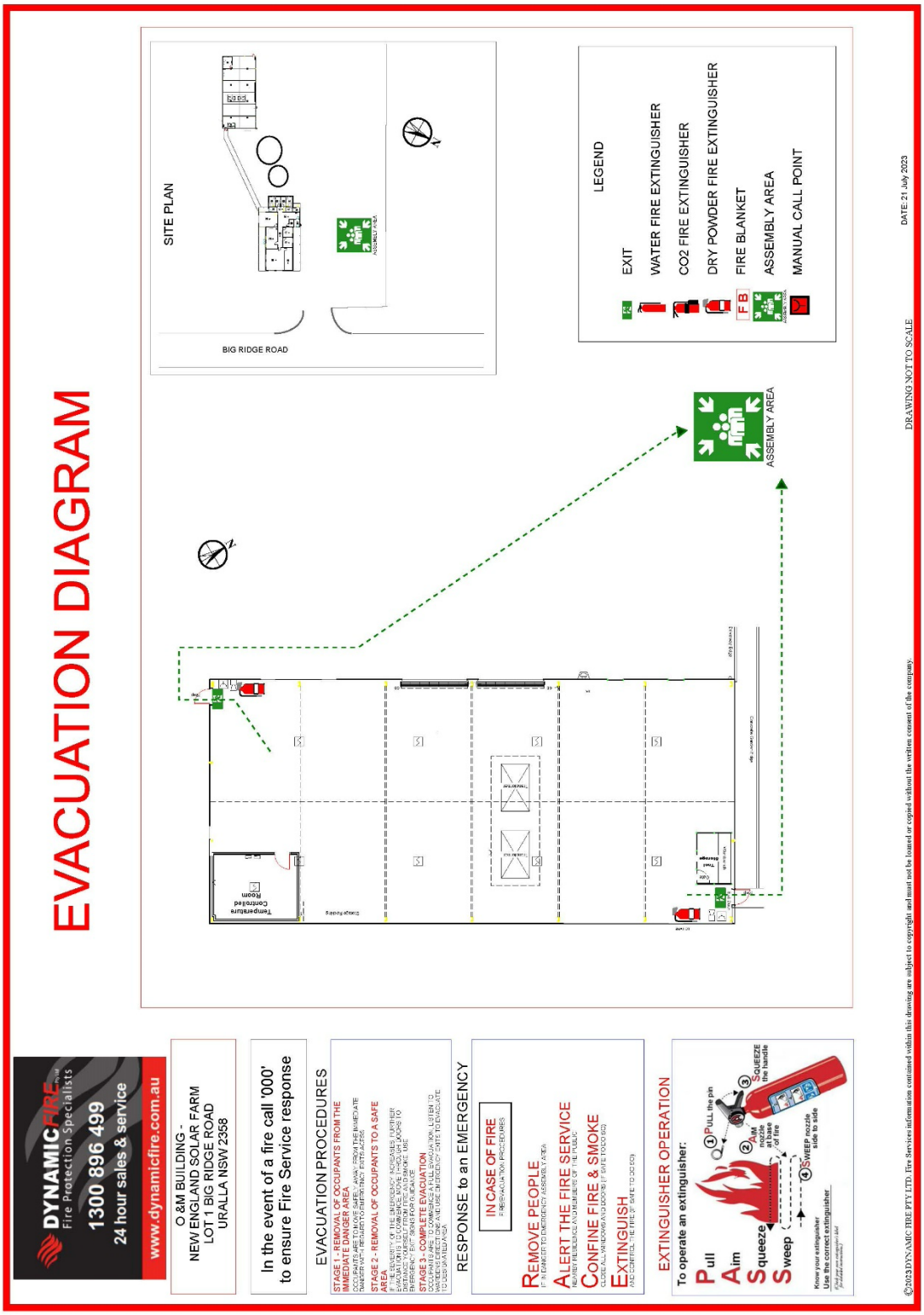
New England Solar

Stage 1b Warehouse – Evacuation Diagram



Substation and switchyard evacuation diagrams N/A because generally unoccupied unless permitted works being undertaken.

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TACTICAL CHECK LISTS

Refer to Appendix A for relevant as-built drawings for substation and switchyard rooms. O&M building has no fire suppression system installed.

Stage 1b Unleaded Petrol Tank Fire

Contents	Unleaded – ULP 91 – see Manifest
Tank size	2,500L
Bund size	Double Skinned – interstitial space
Extinguisher	No system fitted

No.	Description of Task	Task Completed
1	Liaise with Site ERTC or available site personnel – Assume control if needed	Yes / No
2	Ascertain if all personnel in the vicinity have evacuated to muster point or designated safe zone	Yes / No
3	Assess current situation – i.e. Is tank intact or has it ruptured.	Yes / No
4	Check for proximity of secondary explosion/ignition sources. (Vehicles and 6000L double skinned diesel tank WITHIN 3 metres) (Spill kit available; ABE extinguisher within 5 metres)	Yes / No
5	Decide whether to attempt cooling/extinguishing	Yes / No
6	Commence response	Yes / No

Stage 1b Diesel Tank Fire

Contents	Diesel
Tank size	6,000L
Bund size	Double Skinned – interstitial space
Extinguisher	No system fitted

No.	Description of Task	Task Completed
1	Liaise with Site ERTC or available site personnel – Assume control if needed	Yes / No
2	Ascertain if all personnel in the vicinity have evacuated to muster point or designated safe zone	Yes / No
3	Assess current situation – i.e. Is tank intact or has it ruptured.	Yes / No
4	Check for proximity of secondary explosion/ignition sources. (Vehicles and 2500L ULP tank – WITHIN 3 metres) (Spill kit available, ABE extinguisher within 5 metres)	Yes / No
5	Decide whether to attempt cooling/extinguishing	Yes / No
6	Commence response	Yes / No

High Voltage Tower Collapse

No.	Description of Task	Task Completed
1.	Liaise with Site ERTC on initial call to determine if safe access is possible	Yes / No
2.	Liaise with Site ERTC or available site personnel – Assume control if needed	Yes / No
3.	Determine if all staff in that area or vicinity have evacuated or are at a muster point.	Yes / No
3.	Check Site Manifest and ESIP	Yes / No
4.	Ascertain location of collapse	Yes / No
5.	If transmission lines need to be switched off – Site ERTC or representative to notify TransGrid.	Yes / No
6.	Determine if substation, part or complete solar farm isolation is needed – Speak to ERTC or Greenlight HV Switching Authority	Yes / No
7.	Determine if secondary factors such as fallen powerlines, fuel tanks, or access will affect the response.	Yes / No
8.	Ascertain Permits and control isolations needed, and timings for same.	Yes / No
9.	Commence incident response in accord with 8.	Yes / No

Grassfire/Bushfire

No.	Description of Task	Task Completed
1	Liaise with Site ERTC or available site personnel – Assume control if needed	Yes / No
2.	Check Site Manifest and ESIP	Yes / No
3.	Ascertain severity/location/direction of fire	Yes / No
4.	Determine if all staff in that area or vicinity have evacuated or are at a muster point.	Yes / No
5.	Determine whether site will need to be evacuated	Yes / No
6.	Determine if area or complete solar farm isolation is needed – Speak to ERTC or Greenlight contact.	Yes / No
7.	Determine if secondary factors such as fallen powerlines, fuel tanks, or access will affect the response.	Yes / No
8.	Identify any support resources such as site water tanks and dams (60,000L water tank with multiple storz fittings near O&M building)	Yes / No
9.	Determine whether transmission lines may need to be switched off – talk to TransGrid	Yes / No
10.	Determine location of incident control point	Yes / No
11.	Commence incident response	Yes / No

Electrical Fire

No.	Description of Task	Task Completed
1	Liaise with Site ERTC or available site personnel – Assume control if needed	Yes / No
2.	Check Site Manifest and ESIP	Yes / No
3.	Ascertain severity/location/direction of fire	Yes / No
4.	Determine if all staff in that area or vicinity have evacuated or are at a muster point.	Yes / No
5.	Determine whether site will need to be evacuated	Yes / No
6.	Determine if substation, part or complete solar farm isolation is needed – Speak to ERTC or GLC HV Switching Authority	Yes / No
8.	If switchroom/substation is involved, has the fire suppression system been activated? Is Self Contained Breathing Apparatus needed and/or local or assisted ventilation?	Yes / No
9.	Determine if secondary factors such as fallen powerlines, fuel tanks, or access will affect the response.	Yes / No
10.	Determine whether transmission lines need to be switched off – notify TransGrid	Yes / No
11.	Determine location of incident control point	Yes / No
12.	Commence incident response	Yes / No

HAZARDOUS CHEMICALS MANIFEST

MANIFEST OF SCHEDULE 11 HAZARDOUS CHEMICALS

Person conducting the business or undertaking (PCBU)	ACEN Australia Pty Ltd
Address of premise	Lot 2, Big Ridge Road, URALLA NSW 2358
Date of preparation	21 September 2023

Emergency Contacts

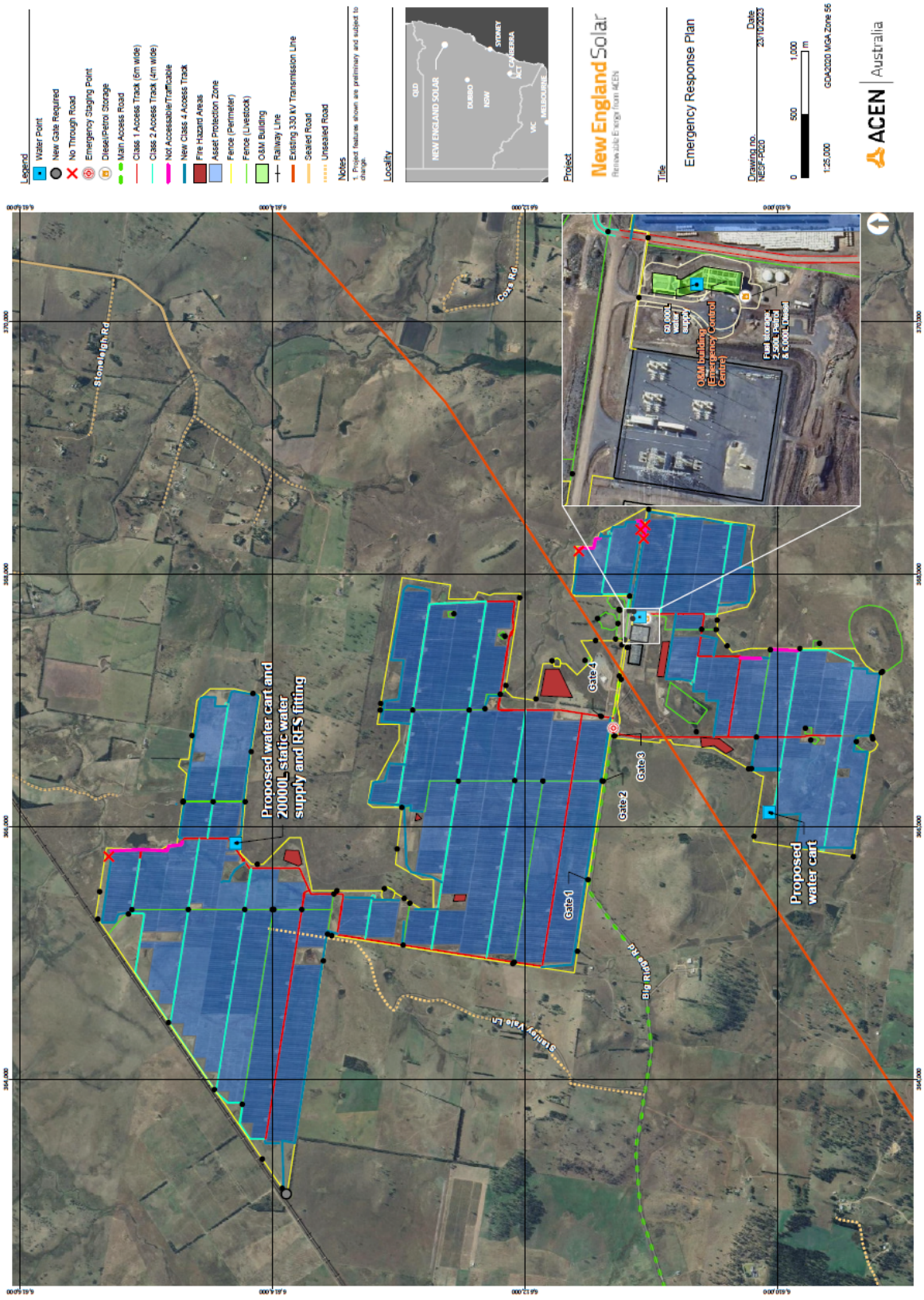
Name	Position	Telephone
Richard de Bruin	Site Manager	+61 447 010 124
Mona Janbaz	Asset Manager	+61 476 935 844

Hazardous chemicals stored in tanks

Storage area	Proper shipping name	UN No.	Class/ Division	PG	Type	Design capacity	Diameter	Typical quantity
South side of O&M Building	Petrol	UN1203	3	II	Double walled	2,500 L	Rectangular tank 2.2 x 1.6x 1m	2,500 L

TACTICAL FIRE PLANS

General Site Plan



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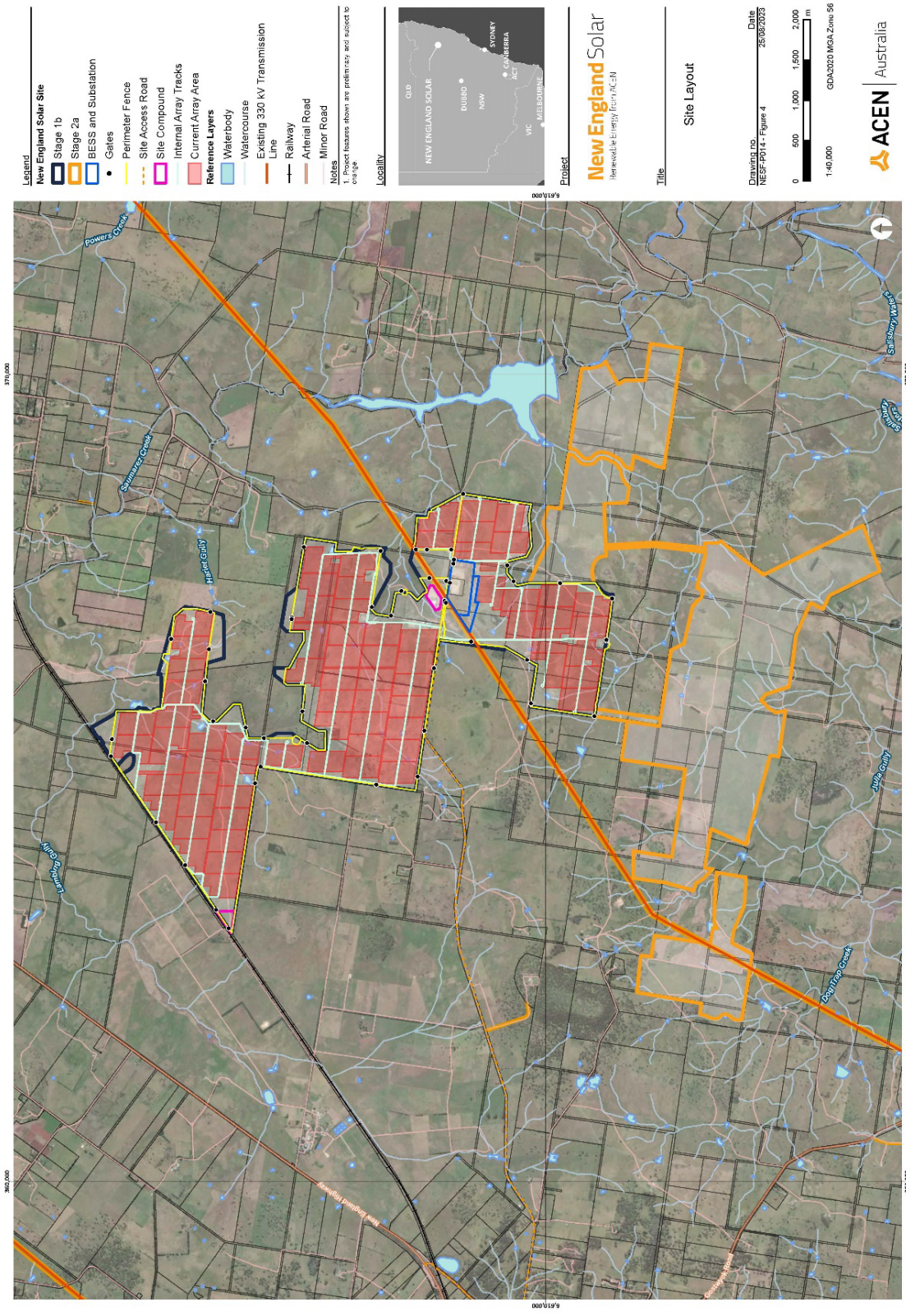
TACTICAL FIRE PLANS

Site Plan – Stage 1b and Stage 2a Site Boundaries



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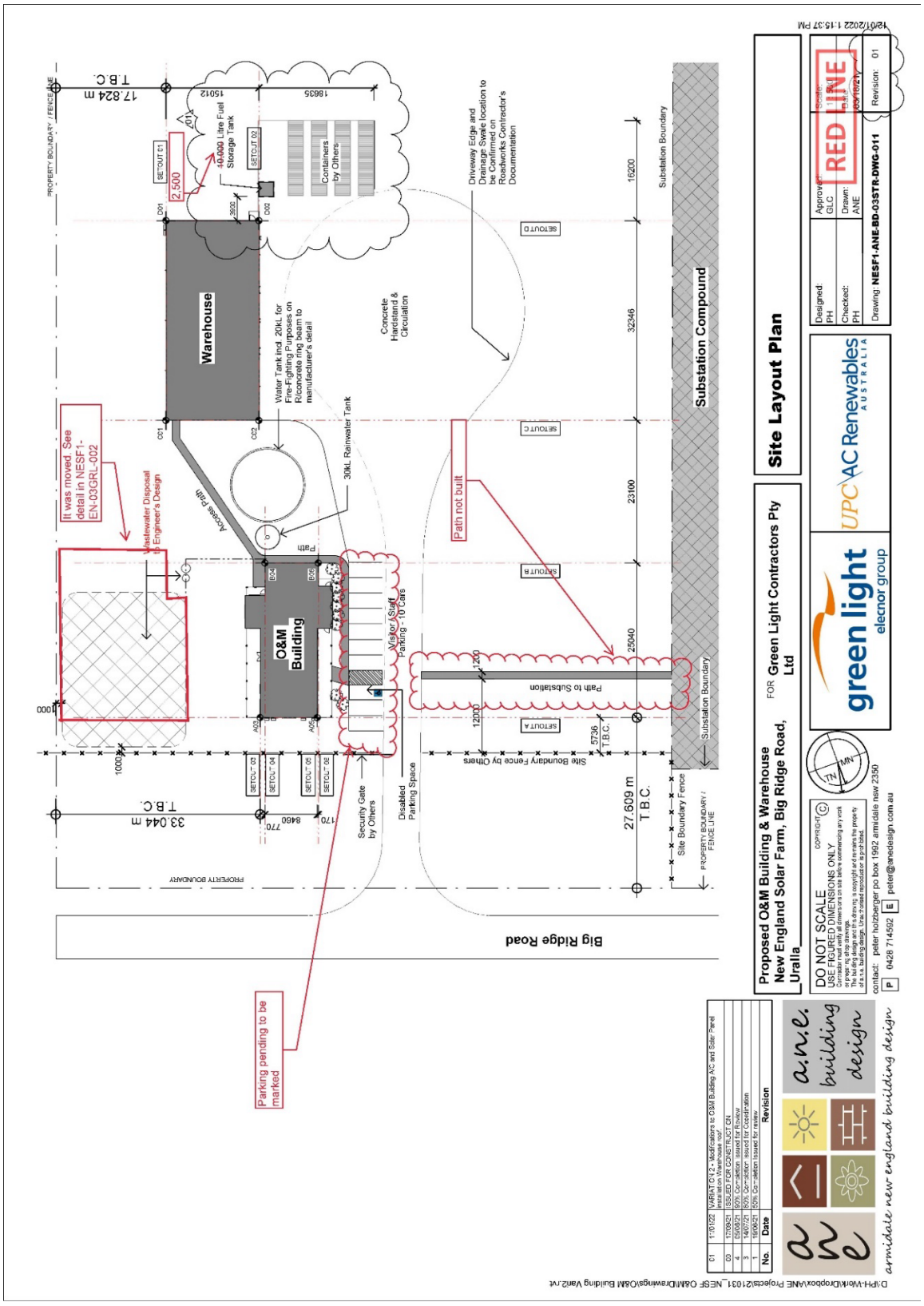
New England Solar

Stage 1b Hazardous Chemical Manifest Site Plan



Version/revision	Date of issue	Date of next review
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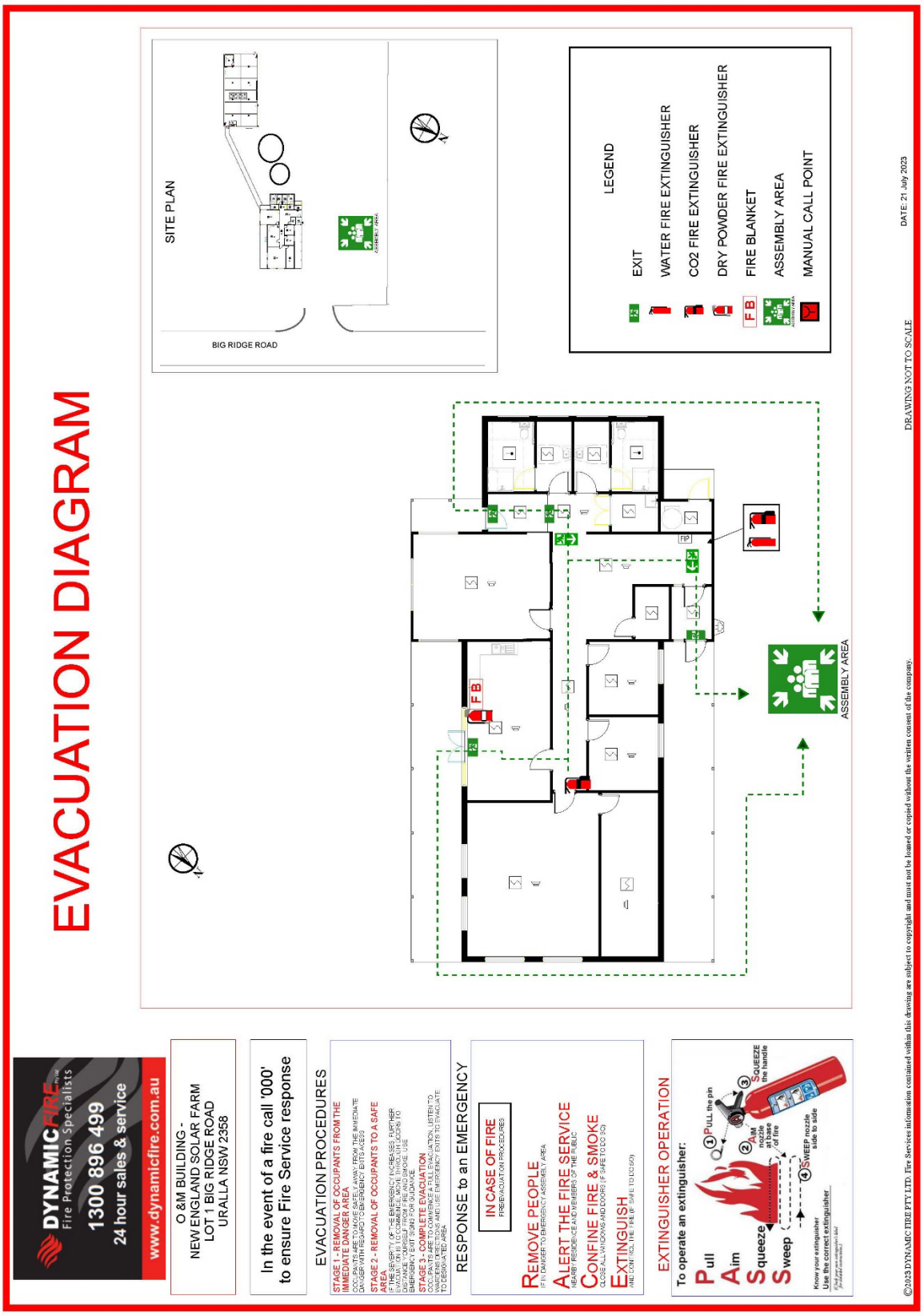
New England Solar

Stage 1b Operations and Maintenance Building – Installed Systems



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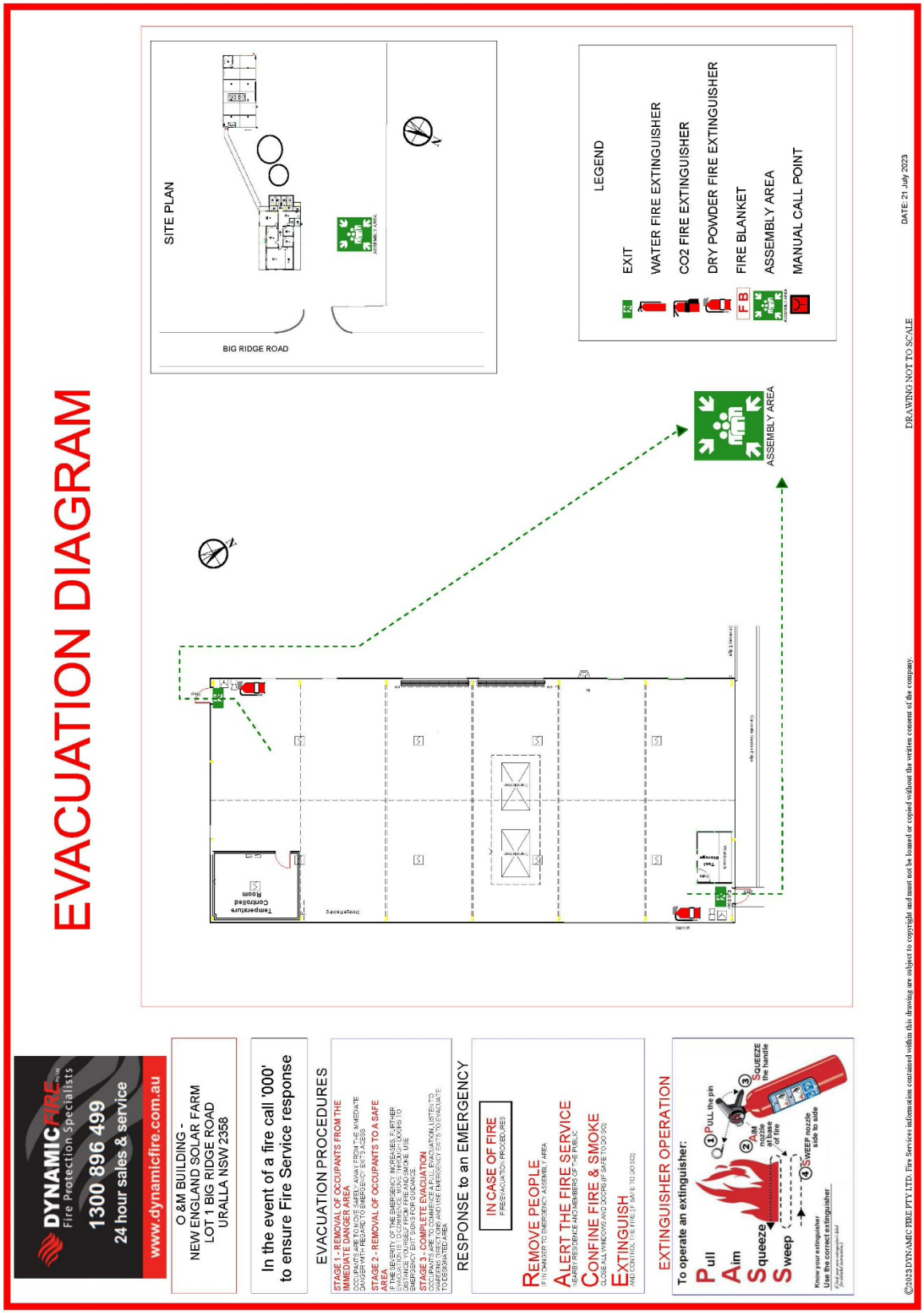
New England Solar

Stage 1b Warehouse –Installed Systems



Version/revision	Date of issue	Date of next review
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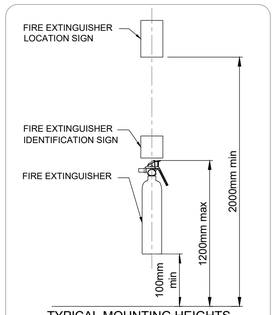
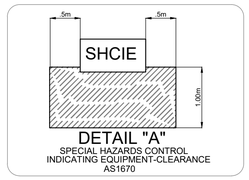
APPENDIX A – Substation and Switchyard Drawings

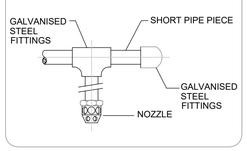


TYPICAL MOUNTING HEIGHTS
FOR PORTABLE FIRE EXTINGUISHER
AND LOCATION SIGNS
AS PER AS2444

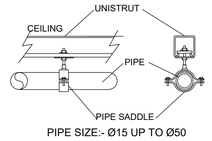


DETAIL "A"
SPECIAL HAZARDS CONTROL
INDICATING EQUIPMENT-CLEARANCE
AS1670

INDICATIVE NOZZLE DETAIL ONLY

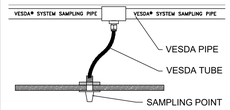


PIPE SUPPORT



PIPE SIZE:- Ø15 UP TO Ø50

VESDA SAMPLING POINT DETAIL



HANGERS SPACING

MAXIMUM PIPE SUPPORT SPACING		
NOMINAL DIAMETER(mm)	NOMINAL DIAMETER(inches)	MAXIMUM DISTANCE BETWEEN SUPPORT(m)
10mm	3/8"	1.0m
15mm	1/2"	1.5m
20mm	3/4"	1.8m
25mm	1"	2.1m
32mm	1 1/4"	2.4m
40mm	1 1/2"	2.7m
50mm	2"	3.4m

FIRE RATED CABLE INSTALLATION

STAINLESS STEEL CABLE TIES SHALL BE USED FOR FIXING CABLE TO TRAY EVERY 1.0 METRE WHEN MOUNTED HORIZONTALLY AND EVERY 0.6 METRES WHEN MOUNTED VERTICALLY.

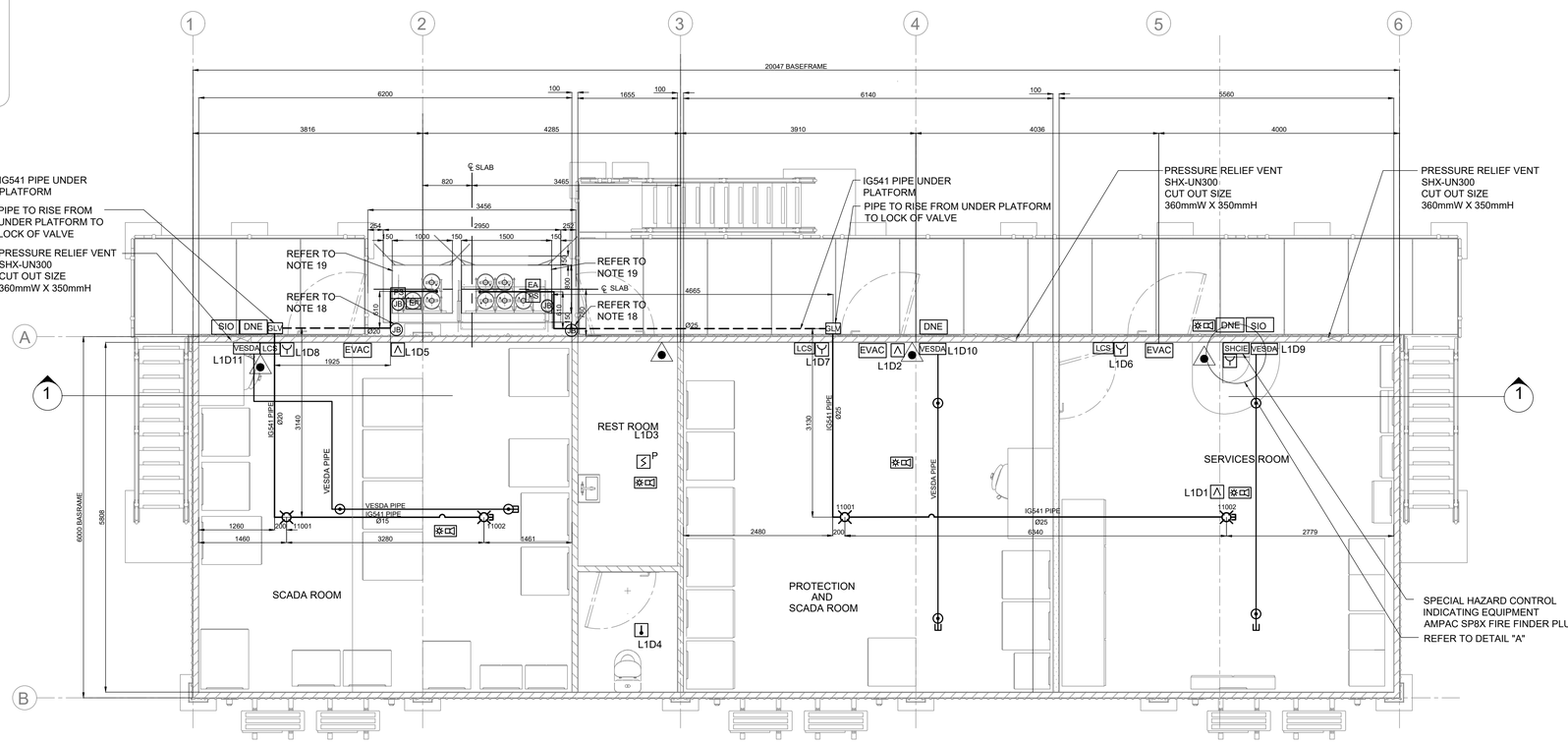
CABLE TIES MUST BE MINIMUM 304 STAINLESS STEEL 200MMLONG 4.6MM WIDE.

WHEN FIXING FIRE RATED CABLES TO CATENARY WIRE THE MANUFACTURER'S RECOMMENDATION IS AS FOLLOWS:

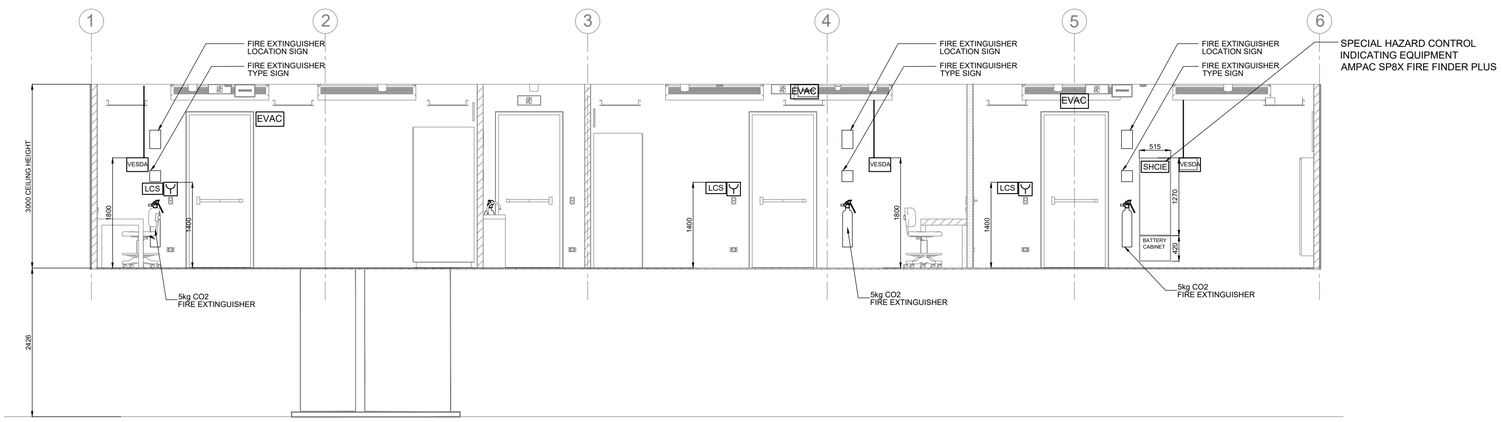
IF CABLE BUNCH IS >= 25MM DIAMETER CABLES SHOULD BE SUPPORTED WITH STAINLESS STEEL TIES EVERY 300MM

IF CABLE BUNCH IS < 25MM DIAMETER CABLES SHOULD BE SUPPORTED WITH STAINLESS STEEL TIES EVERY 600MM

ALL TERMINATIONS SHOULD BE EQUIPPED WITH STEEL GLANDS.



LAYOUT



SECTION 1 - 1

NOTES

1. SYSTEM DESIGNED IN ACCORDANCE WITH AS 4214-2018 AND AS1670.5 WITH 20MINUTE HOLD TIME DEEP SEATED FIRE.
2. ALL PIPE TO BE CLASS 2, SCHEDULE 40 SEAMLESS GRADE B.
3. DISTRIBUTION PIPE TO BE LEAK TESTED TO 300KPA FOR 10 MINUTES
4. ALL PIPE TO BE GALVANISED.
5. ALL PIPE TO BE JOINTED WITH GALVANISED STEEL FITTINGS USING THREADSEAL TAPE.
6. ALL PIPEWORK TO BE FASTENED SECURELY TO AS 4214-2018.
7. BUILDING TO BE MADE GAS TIGHT (BY LAI).FAN TESTING BY WORMALD.
8. DOORS ARE TO HAVE SMOKE SEALS FITTED AND HAVE AUTOMATIC CLOSING DEVICES (BY LAI).
9. FAN TEST TO BE CARRIED ON SITE ACCORDANCE WITH AS 14520.1-2015 ANNEX E.
10. ALL EXTERNAL WARNING LIGHTS TO BE WEATHERPROOF.
11. THE POWER SUPPLY CABLE TO THE SHCIE IS TO BE IN ACCORDANCE WITH AS 3000, ALL OTHER CABLING IS TO BE IN ACCORDANCE WITH AS CA S009-2020.
12. A MINIMUM CLEARANCE OF 1M IN FRONT AND 0.5M TO EACH SIDE SHALL BE MAINTAINED FROM CONTROL INDICATING EQUIPMENT ENCLOSURES (FIP) THAT REQUIRE OPERATION BY EMERGENCY SERVICE PERSONNEL.REFER TO CLAUSE 3.9.3 AS1670
13. PRESSURE RELIEF VENT IS SUPPLIED BY WORMALD INSTALLED BY LAI
14. EARTH BOND POINT INSTALLED BY WORMALD CONNECTED BY LAI.
15. CYLINDERS CABINETS INTERNAL DIMENSION REQUIRED:
    FOR PROTECTION & SCADA AND SERVICES ROOM:
    W-1400MM X D-800MM X H-2400MM
    FOR SCADA ROOM:
    W-900MM X D-800MM X H-2400MM
    SUPPLIED BY LAI
16. REST ROOM NOT PROTECTED BY IG541 GAS SUPPRESSION
17. MINIMUM CONCRETE SLAB FOR GAS CYLINDERS CABINETS SIZE: 2950mm X 1100
18. FIRE ALARM CABLING FROM ROOM TO TERMINATE IN EXTERNAL JUNCTION BOX.
    CABLE FROM THIS JUNCTION BOX TO GAS CYLINDER CABINET IS TO BE INSTALLED AT THE FINAL SITE LOCATION BY OTHERS.
19. FIRE ALARM CABLING FROM GAS CYLINDER CABINET TO TERMINATE IN JUNCTION BOXES LOCATED WITH IN CABINET FOR CONNECTION AT FINAL SITE LOCATION BY OTHERS.
20. DESIGN AND OPERATION TO AS 1670.5-2016 , THIS IS NOT A REQUIRED SMOKE DETECTION SYSTEM UNDER NCC 2019 SPECIFICATION E2.2a.
21. INSTALLATION AND CABLING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1670.1-2018, EXCEPT THAT THE EXTINGUISHING AGENT ACTUATOR TRANSMISSION PATH SHALL HAVE A MINIMUM RATING OF WS51W IN ACCORDANCE WITH AS/NZS 3013, WITH THE MECHANICAL RATING UPGRADED DEPENDENT UPON THE HAZARD.
22. ALL FIRE CABLES BETWEEN THE SHCIE AND ELECTRICAL ACTUATOR ARE TO BE FIRE RATED AND WHERE THESE CABLES ARE EXTERNAL TO THE BUILDING THEY ARE TO BE ENCLOSED IN FLEXIBLE METAL CONDUIT CONNECTED TO THE GAS CYLINDER CABINET VIA FIRE RATED HANDIFIT JUNCTION BOX
23. COMMISSIONING OF SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF AS 1670.1-2018
24. DETAILED DESIGN DRAWINGS THAT SUPPORT THIS DESIGN ARE AS FOLLOWS:ADC01093-01,ADC01093-02,ADC01093-03, ADC01093-04, ADC01093-05,ADC01093-06,ADC01093-07 ,ADC01093-08,ADC01093-09, ADC01093-10,ADC01093-11,ADC01093-12,ADC01093-13,ADC01093-14.

LEGEND

- SHCIE — SPECIAL HAZARD CONTROL INDICATING EQUIPMENTAMPAC SP8X FIRE FINDER PLUS
- INEREX NOZZLE
- LCS — LOCAL CONTROL STATION (STOP GAS)
- PS — PRESSURE SWITCH
- EA — ELECTRICAL ACTUATOR
- GLV — GAS LOCK OFF VALVE
- EVAC — EVACUATE WARNING SIGN
- DNE — DO NOT ENTER WARNING SIGN
- SIO — SYSTEM INOPERATIVE WARNING SIGN
- P — PHOTOELECTRIC SMOKE DETECTOR
- THERMAL DETECTOR
- UV FLAME DETECTOR
- MANUAL CALL POINT
- SOUNDER/STROBE INTERNAL/EXTERNAL
- VESDA — VESDA VLF 250
- VESDA SAMPLING POINT & END CAP
- FIRE EXTINGUISHER (5.0kg CO2)
- IG541 INEREX CYLINDER
- JB — JUNCTION BOX

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
B	19.11.21	REVISED ISSUE FOR APPROVAL	JS	MH	DC
C	16.02.22	ISSUE FOR CONSTRUCTION	JS	MH	DC
D	11.05.22	AS BUILT	JS	MH	DC

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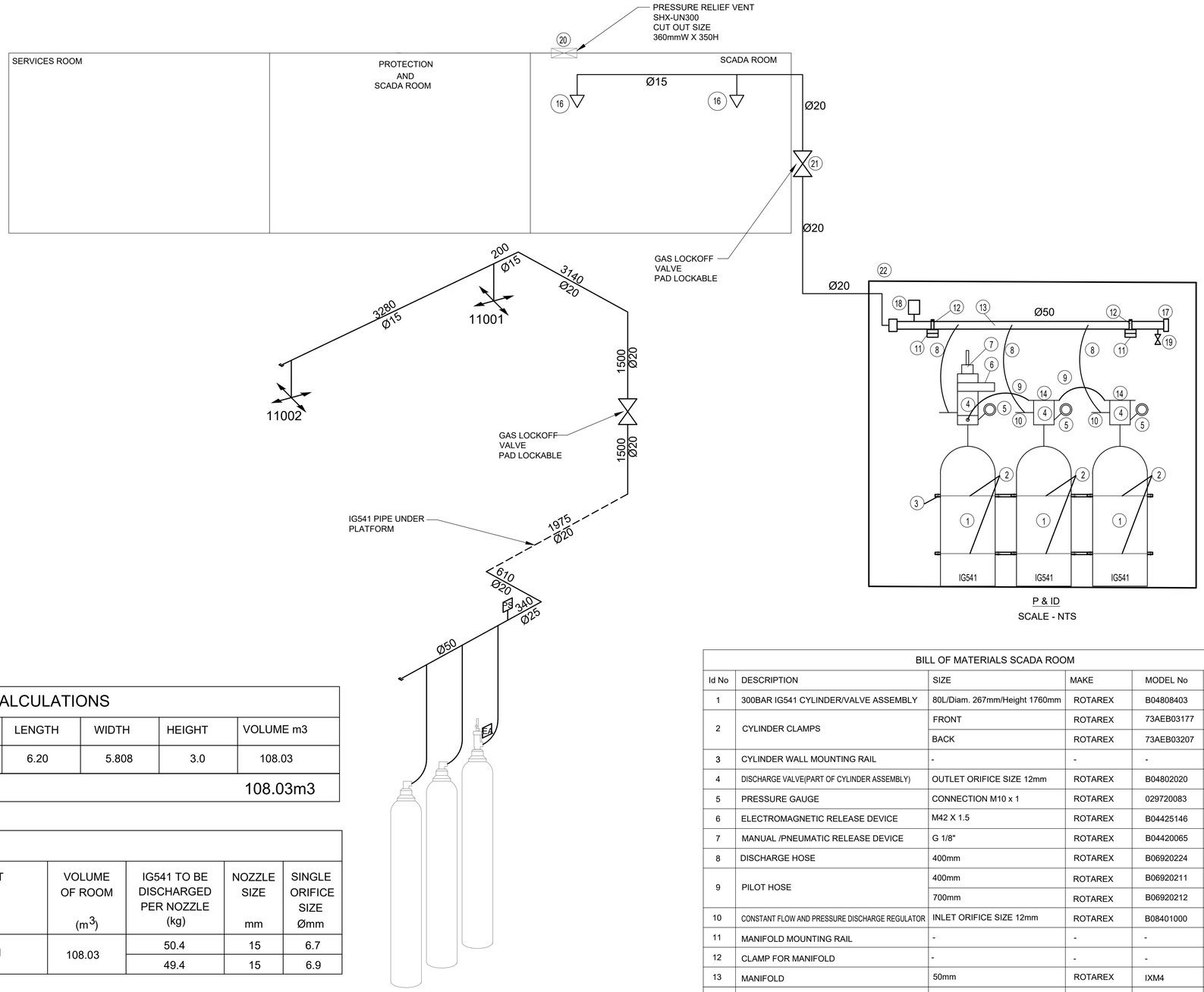
WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND SOLAR FARM

DRAWING TITLE
CONTROL ROOM
IG541 300 bar INEREX
GASEOUS FIRE SUPPRESSION
AND DETECTION SYSTEM LAYOUT AND SECTION

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	1:50 @A1	JOB NUMBER	ADC01093

DRAWING NO ADC01093-01
REVISION D



P & ID
SCALE - NTS

ROOM VOLUME CALCULATIONS

ROOM	LENGTH	WIDTH	HEIGHT	VOLUME m3
SCADA ROOM	6.20	5.808	3.0	108.03
TOTAL VOLUME				108.03m3

NOZZLE DATA

NOZZLE NO	COMPARTMENT	VOLUME OF ROOM (m^3)	IG541 TO BE DISCHARGED PER NOZZLE (kg)	NOZZLE SIZE mm	SINGLE ORIFICE SIZE Ømm
11001	SCADA ROOM	108.03	50.4	15	6.7
11002			49.4	15	6.9

ENCLOSURE SUMMARY

ROOM HEIGHT	ASSUME WALL STRENGTH (mbar)	IG541-MASS IN 1 CYLINDER	NUMBER OF CYLINDERS	TOTAL IG541 MASS	MINIMUM DESIGN CONCENTRATION (% VOL)	PRESSURE RELIEF VENT AREA (m2)	PRESSURE RELEIF VENT
3.00	2.5	33.3kg	3	99.9	41.7	0.036	SHX-UN300

ISOMETRIC VIEW
SCALE - NTS

BILL OF MATERIALS SCADA ROOM

Id No	DESCRIPTION	SIZE	MAKE	MODEL No	MATERIAL	QTY
1	300BAR IG541 CYLINDER/VALVE ASSEMBLY	80L/Diam. 267mm/Height 1760mm	ROTAREX	B04808403	CrMo-STEEL	3
2	CYLINDER CLAMPS	FRONT	ROTAREX	73AEB03177	GALVANISED STEEL	6
		BACK	ROTAREX	73AEB03207	GALVANISED STEEL	6
3	CYLINDER WALL MOUNTING RAIL	-	-	-	-	2
4	DISCHARGE VALVE(PART OF CYLINDER ASSEMBLY)	OUTLET ORIFICE SIZE 12mm	ROTAREX	B04802020	BRASS	3
5	PRESSURE GAUGE	CONNECTION M10 x 1	ROTAREX	029720083		3
6	ELECTROMAGNETIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04425146	BRASS AND S/S RED PLASTIC PROTECTION CAP	1
7	MANUAL /PNEUMATIC RELEASE DEVICE	G 1/8"	ROTAREX	B04420065	BRASS AND S/S	1
8	DISCHARGE HOSE	400mm	ROTAREX	B06920224	- -	3
9	PILOT HOSE	400mm	ROTAREX	B06920211	- -	2
		700mm	ROTAREX	B06920212	-	-
10	CONSTANT FLOW AND PRESSURE DISCHARGE REGULATOR	INLET ORIFICE SIZE 12mm	ROTAREX	B08401000	BRASS	3
11	MANIFOLD MOUNTING RAIL	-	-	-	GALVANISED STEEL	2
12	CLAMP FOR MANIFOLD	-	-	-	GALVANISED STEEL	2
13	MANIFOLD	50mm	ROTAREX	IXM4	GALVANISED STEEL	1
14	PNEUMATIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04420066	BRASS	2
15	BLEED VALVE	G 1/8" ISO228-1	ROTAREX	029730040	BRASS	1
16	NOZZLE	Nozzle 1/2"(15mm)	ROTAREX	B04610100	BRASS	2
17	MANIFOLD END CAP	50mm	ROTAREX	024900322	GALVANISED STEEL	1
18	PRESSURE AND FLOW DETECTOR SWITCH	G1/2"	ROTAREX	028250050	-	1
19	CONDENSATE DRAIN	15mm	ROTAREX	IGDRAIN	-	1
20	PRESSURE RELIEF VENTS	PRV-SHX-UN300	AFP	PRV-SHX-UN300	STEEL POWDER COATED	1
21	LOCK OF VALVE	20mm	ROTAREX	B05512200	-	1
22	FIRE SUPPRESSION CYLINDERS CABINET	W-1000mm X D-800mm x H-2400mm	LAI SB		-	1
23	FIRE EXTINGUISHER	5.0kg CO2	WORMALD	WA5.0CO2	-	4

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
B	19.11.21	REVISED ISSUE FOR APPROVAL	JS	MH	DC
C	16.02.22	ISSUE FOR CONSTRUCTION	JS	MH	DC
D	11.05.22	AS BUILT	JS	MH	DC

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WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

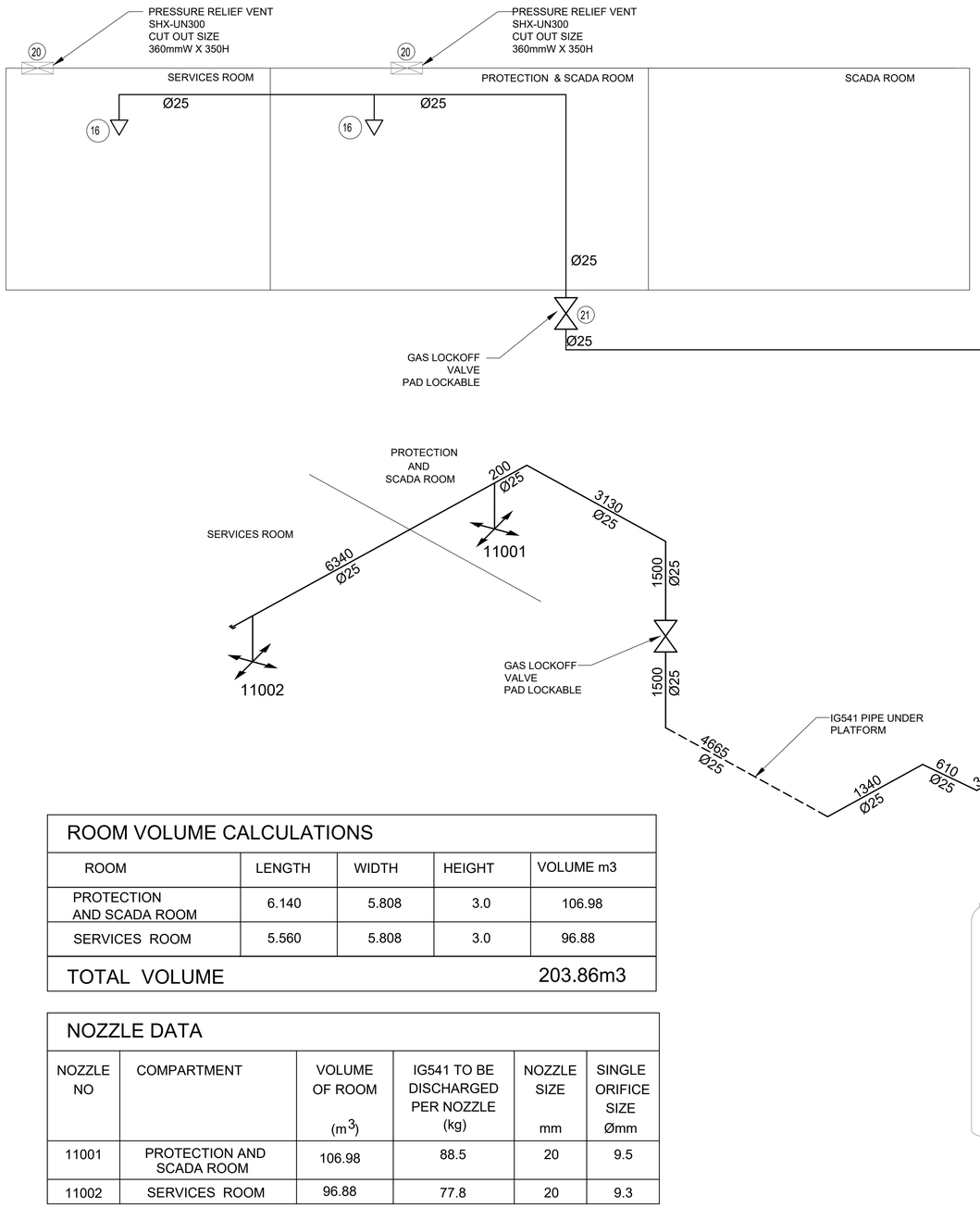
PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
SCADA ROOM
IG541 300 bar INEREX
GASEOUS FIRE SUPPRESSION
ISOMETRIC,P&ID,DETAILS & BOM

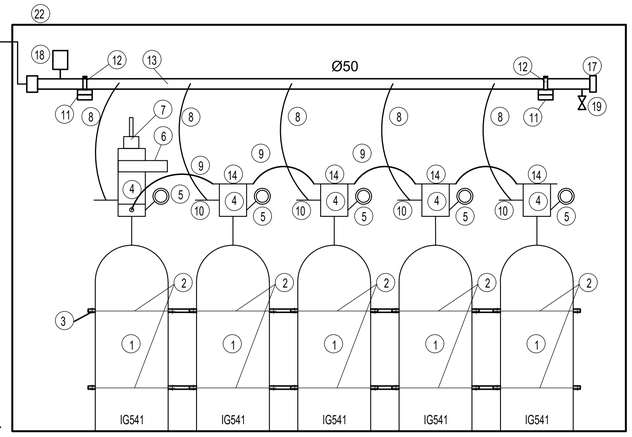
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	NTS@A1
JOB NUMBER	ADC01093		

DRAWING NO
ADC01093-02

REVISION
D



ISOMETRIC VIEW
SCALE - NTS



P & ID
SCALE - NTS

ROOM VOLUME CALCULATIONS

ROOM	LENGTH	WIDTH	HEIGHT	VOLUME m3
PROTECTION AND SCADA ROOM	6.140	5.808	3.0	106.98
SERVICES ROOM	5.560	5.808	3.0	96.88
TOTAL VOLUME				203.86m3

NOZZLE DATA

NOZZLE NO	COMPARTMENT	VOLUME OF ROOM (m^3)	IG541 TO BE DISCHARGED PER NOZZLE (kg)	NOZZLE SIZE mm	SINGLE ORIFICE SIZE Ømm
11001	PROTECTION AND SCADA ROOM	106.98	88.5	20	9.5
11002	SERVICES ROOM	96.88	77.8	20	9.3

ENCLOSURE SUMMARY

ROOM HEIGHT	ASSUME WALL STRENGTH (mbar)	IG541-MASS IN 1 CYLINDER	NUMBER OF CYLINDERS	TOTAL IG541 MASS	MINIMUM DESIGN CONCENTRATION (% VOL)	PRESSURE RELIEF VENT AREA PROTECTION AND SCADA ROOM (m2)	PRESSURE RELEIF VENT PROTECTION AND SCADA ROOM	PRESSURE RELIEF VENT AREA SERVICES ROOM (m2)	PRESSURE RELEIF VENT SERVICES ROOM
3.00	2.5	33.3kg	5	166.5	41.7	0.036	SHX-UN300	0.032	SHX-UN300

BILL OF MATERIALS SERVICES ROOM AND SCADA ROOM

Id No	DESCRIPTION	SIZE	MAKE	MODEL No	MATERIAL	QTY
1	300BAR IG541 CYLINDER/VALVE ASSEMBLY	80L/Diam. 267mm/Height 1760mm	ROTAREX	B04808403	CrMo-STEEL	5
2	CYLINDER CLAMPS	FRONT	ROTAREX	73AEB03177	GALVANISED STEEL	10
		BACK	ROTAREX	73AEB03207	GALVANISED STEEL	10
3	CYLINDER WALL MOUNTING RAIL	-	-	-	-	2
4	DISCHARGE VALVE(PART OF CYLINDER ASSEMBLY)	OUTLET ORIFICE SIZE 12mm	ROTAREX	B04802020	BRASS	5
5	PRESSURE GAUGE	CONNECTION M10 x 1	ROTAREX	029720083		5
6	ELECTROMAGNETIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04425146	BRASS AND S/S RED PLASTIC PROTECTION CAP	1
7	MANUAL /PNEUMATIC RELEASE DEVICE	G 1/8"	ROTAREX	B04420065	BRASS AND S/S	4
8	DISCHARGE HOSE	400mm	ROTAREX	B06920224	- -	5
9	PILOT HOSE	400mm	ROTAREX	B06920211	- -	4
		700mm	ROTAREX	B06920212	-	1
10	CONSTANT FLOW AND PRESSURE DISCHARGE REGULATOR	INLET ORIFICE SIZE 12mm	ROTAREX	B08401000	BRASS	5
11	MANIFOLD MOUNTING RAIL	-	-	-	GALVANISED STEEL	2
12	CLAMP FOR MANIFOLD	-	-	-	GALVANISED STEEL	2
13	MANIFOLD	50mm	ROTAREX	IXM6	GALVANISED STEEL	1
14	PNEUMATIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04420066	BRASS	5
15	BLEED VALVE	G 1/8" ISO228-1	ROTAREX	029730040	BRASS	1
16	NOZZLE	Nozzle 3/4"(20mm)	ROTAREX	-	BRASS	2
17	MANIFOLD END CAP	50mm	ROTAREX	024900322	GALVANISED STEEL	1
18	PRESSURE AND FLOW DETECTOR SWITCH	G1/2"	ROTAREX	028250050		1
19	CONDENSATE DRAIN	15mm	ROTAREX	IGDRAIN	-	1
20	PRESSURE RELIEF VENTS	PRV-SHX-UN300	AFP	PRV-SHX-UN300	STEEL POWDER COATED	2
21	LOCK OF VALVE	25mm	ROTAREX	B05512300		1
22	FIRE SUPPRESSION CYLINDERS CABINET	W-1500mm X D-800mm x H-2400mm	LAI SB	-	-	1

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
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WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

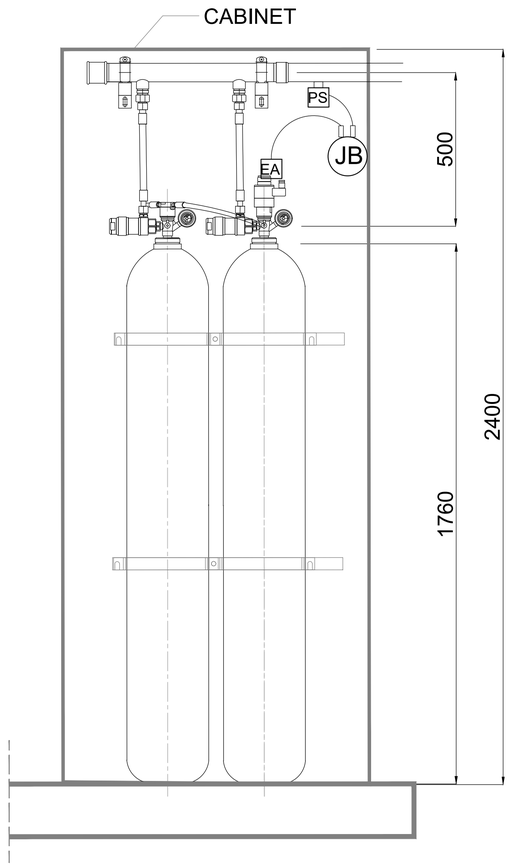
PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
PROTECTION,SCADA AND SERVICES RM
IG541 300 bar INEREX
GASEOUS FIRE SUPPRESSION
ISOMETRIC,P&ID,DETAILS.BOM

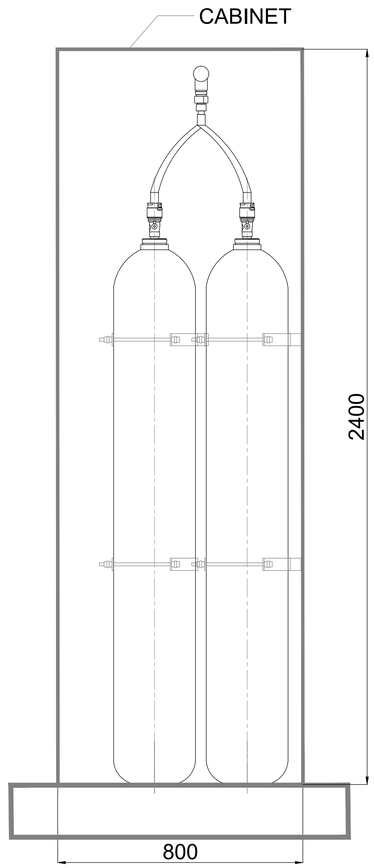
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	NTS @A1	JOB NUMBER	ADC01093

DRAWING NO
ADC01093-03

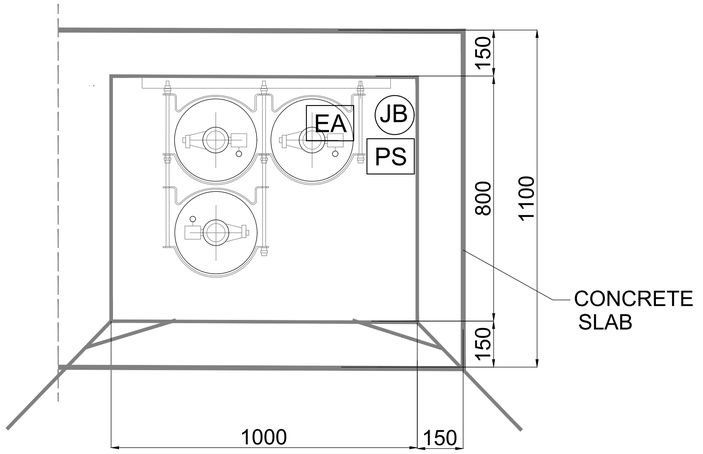
REVISION
D



FRONT VIEW



SIDE VIEW



PLAN VIEW

LEGEND

PS	PRESSURE SWITCH
EA	ELECTRICAL ACTUATOR
JB	JUNCTION BOX

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
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5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
SCADA ROOM
IG541 300 bar INEREX
FIRE SUPPRESSION OUTDOOR
CYLINDERS CABINET

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	1:10 @A1
JOB NUMBER	ADC01093		

DRAWING NO
ADC01093-04

REVISION
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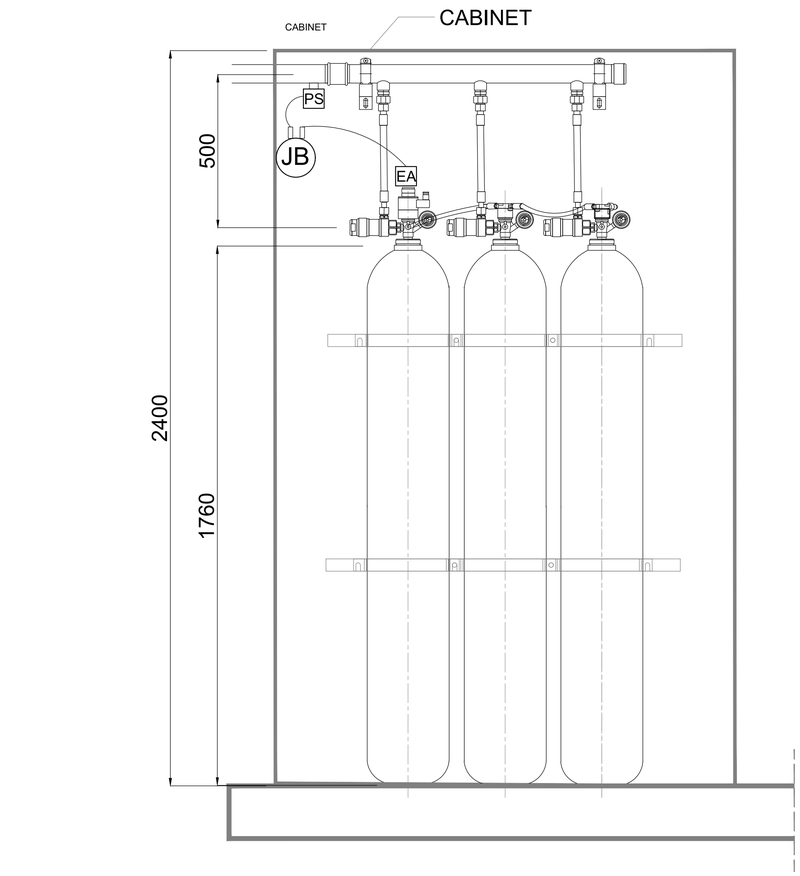
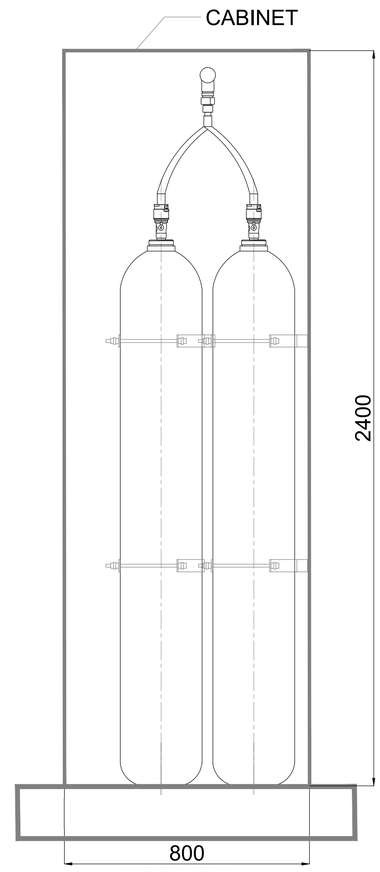
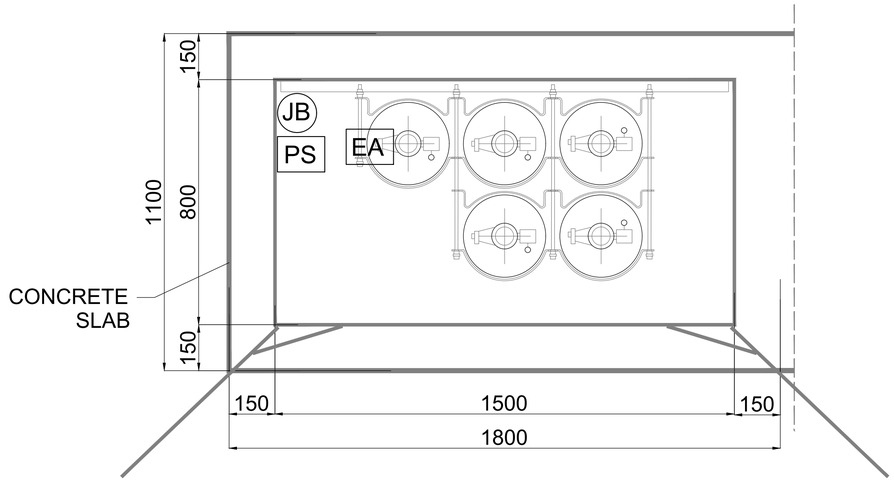


FRONT VIEW



SIDE VIEW



PLAN VIEW

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
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Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
PROTECTION,SCADA AND SERVICES ROOM
IG541 300 bar INEREX
FIRE SUPPRESSION OUTDOOR
CYLINDERS CABINET

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	1:10 @A1	JOB NUMBER	ADC01093

DRAWING NO
ADC01093-05

REVISION
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SPECIAL HAZARD CONTROL
INDICATING EQUIPMENT
AMPAC SP8X FIRE FINDER PLUS

ASS86MBA'X'-03 FFP MAIN CONNECTION BOARD
BRD86MBA'X'-A

FFP FRONT BOARD
BRD86MBA'X'-A

CN11 96PIN DIN CONNECTOR
CN2 MAIN CPU
BRD85CPU3-B

CN13 24PIN DIN CONNECTOR
CN14 24PIN DIN CONNECTOR
CN15 24PIN DIN CONNECTOR

INTERNAL COMMS CN20
LOOP COMMS CN18
TERMINATION BOARD CN10
POWER CN26
PSU MON. & BRIGADE INT. CN7

COMMS2 RS232(TOP) COMMS1 RS232/MODEM (BOTTOM) CN8
EXPANSION PANEL CN2
INTERNAL COMMS CN21
EXPANSION LEADS CN3
FRONT PANEL CN4
PRINTER CN5

26 CN2

HLI CONTROLLER 4310-0080
CN4 COMMS IN
CN5
TB1 + - SHD
RS485
LK2 INSTALLED BRD43SPB

*CARDS IN FIRE INDICATOR PANEL SUPPLIED WIRED BY AMPAC. POWER COMES FROM PSU BOARD.

RJ45
AGENT TERMINATION BOARD
CN 1 COMMS IN
CN 2 COMMS OUT
CN 3 POWER IN
CN 4 POWER OUT
MODULE NO. 1
PROTECTION AND SCADA ROOM
BRD25ATB'X'-A

MCP SHCIE
1.5mm2c TPS TWISTED

PROTECTION AND SCADA ROOM
4c 1.5MM2 FR SCREENED
LCS LOCAL CONTROL STATION (GAS INHIBIT) VIA GAS TERM STRIP
2c 1.5mm2 TWIN ACTIVE
SIO EOL SYSTEM INOPERATIVE SIGN
2c 1.5mm2 TWIN ACTIVE
DNE DNE SIGN
DNE/EVAC SIGNS EOL EVAC EVAC SIGN
2c 1.5mm2 FR
GLV EOL GAS ISOLATION VALVE VIA GAS TERM STRIP
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15
CYLINDER CABINET
PS EOL GAS RELEASED PRESSURE SWITCH VIA GAS TERM STRIP
JB JB
EA EOL ELECTRICAL ACTUATOR
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15
3 INPUT MODULE IN SHCIE
VESDA
4p INSTRUMENT CABLE
POWER SUPPLY
EOL

SERVICES ROOM
4c 1.5mm2 FR SCREENED
2c 1.5mm2 TWIN ACTIVE
2c 1.5mm2 TWIN ACTIVE
LCS EOL LOCAL CONTROL STATION (GAS INHIBIT) VIA GAS TERM STRIP
DNE
EVAC
3 INPUT MODULE IN SHCIE
VESDA
4p INSTRUMENT CABLE
POWER SUPPLY
1.5mm2c TPS TWISTED

1.5mm2c TPS TWISTED
1.5mm2c TPS TWISTED

AC/SD SERVICES ROOM
AC/SD SCADA ROOM

DUAL LOOP TERM, BRD.
CN1 'A' SIDE TB1
CN2
CN3 'B' SIDE TB1
CN4

GAS CONTROL BOARD
RJ45
CN6 COMMS IN
CN7 COMMS OUT
TB4 1 2
MODULE NO. 1
BRD25ARB6-A

GAS CONTROL BOARD
RJ45
CN6 COMMS IN
CN7 COMMS OUT
MODULE NO. 2
BRD25ARB6-A

YELLOW MCP AGENT RELEASE
TB 2 4
10K
4 2
4105-1022 (ACP-06)

BRIGADE/PSU MONITOR BOARD
CN11 RS485 COMMS OUT
RJ45
CN 8
CN 7
CN 6
CN 5
CN 4
AUX POWER OUTPUT (1A MAX EACH)
AUX OUT 2 24V DC SUPPLY
SWITCH POWER E.BOARD
CN 3
TB 9
TB 10
BRD86HCI'X'-A
TB1 DC IN
TB2 BATTERY
BATTERY LEADS
DC OUTPUTS (1A MAX)
VESDA POWER SUPPLY

BARGRAPGH DISPLAY ASS4310-88
RJ45
CN6 IN
CN2 OUT
CARD No.1
BRD70BD'X'-A

BARGRAPGH DISPLAY ASS4310-88
RJ45
CN6 IN
CN2 OUT
CARD No.2
BRD70BD'X'-A

BARGRAPGH DISPLAY ASS4310-88
RJ45
CN6 IN
CN2 OUT
CARD No.3
BRD70BD'X'-A

BARGRAPGH DISPLAY ASS4310-88
RJ45
CN6 IN
CN2 OUT
CARD No.4
BRD70BD'X'-A

PSU1888
5A 27V P/S
6 VE+
4 VE-
L(AC) 1
N(AC) 2
GND 3
HW3031 GPO
240V INPUT

*CARDS IN FIRE INDICATOR PANEL SUPPLIED WIRED BY AMPAC. POWER COMES FROM PSU BOARD.

RJ45
AGENT TERMINATION BOARD
CN 1 COMMS IN
CN 2 COMMS OUT
CN 3 POWER IN
CN 4 POWER OUT
MODULE NO. 2
SCADA ROOM
BRD25ATB'X'-A

SCADA ROOM
4c 1.5MM2 FR SCREENED
LCS EOL LOCAL CONTROL STATION (GAS INHIBIT) VIA GAS TERM STRIP
2c 1.5MM2 TWIN ACTIVE
SIO EOL SYSTEM INOPERATIVE SIGN
2c 1.5MM2 TWIN ACTIVE
DNE EOL DNE SIGN
2c 1.5MM2 TWIN ACTIVE
EVAC EOL EVAC SIGN
2c 1.5MM2 FR
GLV EOL GAS ISOLATION VALVE VIA GAS TERM STRIP
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15
CYLINDER CABINET
PS EOL GAS RELEASED PRESSURE SWITCH VIA GAS TERM STRIP
JB JB
EA EOL ELECTRICAL ACTUATOR
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15
3 INPUT MODULE IN SHCIE
VESDA
4p INSTRUMENT CABLE
POWER SUPPLY
1.5mm2c TPS TWISTED
EOL

REST ROOM
EOL
1.5mm2c TPS TWISTED
EOL
2c 1.5mm2 FR
EXTERNAL

FIRE ALARM BILL OF MATERIALS

Id No	EQUIPMENT DESCRIPTION	MANUFACTURER	MANUFACTURER PART NUMBER	NUMBER OF ITEMS
1	AMPAC SP8X FIRE FINDER PLUS	AMPAC	8651-0116	1
2	FIREFINDER SP8X AGENT RELEASE AS4214	AMPAC	4310-0011	2
3	VESDA VLF 250	XTRALIS	VLF-250	3
4	12V 55AHR SLA BATTERY	AMPAC	12V 55AHR	2
5	SOUNDER / STROBE	AMPAC	VTB-I	4
6	PHOTO OPTICAL DETECTOR	AMPAC	XP95	1
7	THERMAL DETECTOR	AMPAC	XP95	1
8	XP95/ DETECTOR BASE WITH XPERT CARD	AMPAC	PDS4107-6001	2
9	AGENT RELEASE LCS SURFACE MOUNT (4310)	AMPAC	4310-0019	3
10	WARNING SIGN (NO FASCIA PLATE)	AMPAC	4210-0110	3
11	WARNING SIGN IP65 (NO FASCIA PLATE)	AMPAC	4210-0120	5
12	'FIRE ALARM, DO NOT ENTER' FASCIA PLATE	AMPAC	4210-0131	3
13	'FIRE ALARM, EVACUATE AREA' FASCIA PLATE	AMPAC	4210-0132	3
14	'EXT SYSTEM INOPERATIVE' FASCIA PLATE	AMPAC	4210-0135	2
15	XP95 BASE MOUNTED UV FLAME DETECTOR	AMPAC	201-0130 UV FLAME	3
16	XP95/ DETECTOR BASE WITH XPERT CARD	AMPAC	PDS4107-6001	3

AS BUILT

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D	11.05.22	AS BUILT	JS	MH	DC

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5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

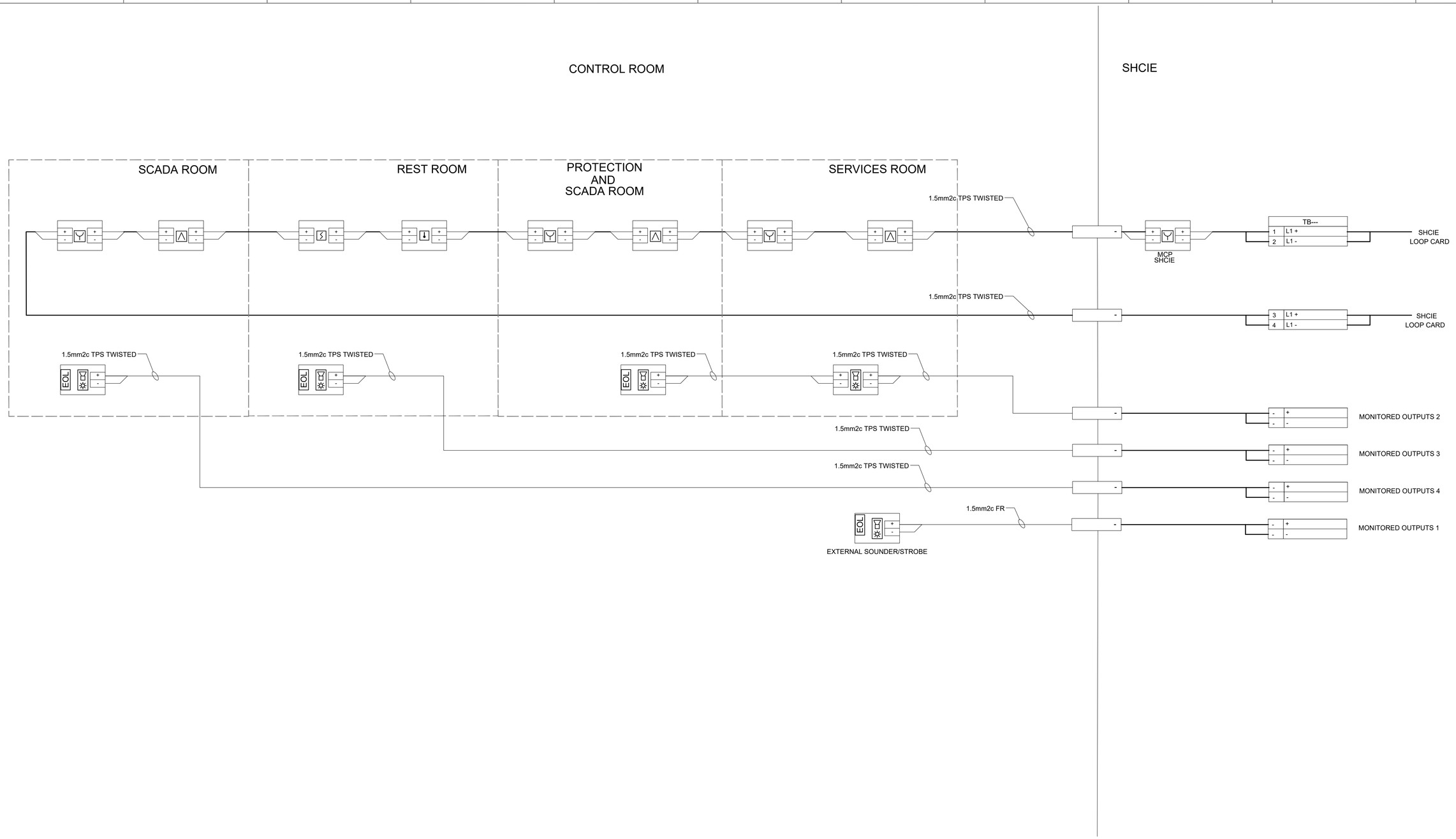
PROJECT
NEW ENGLAND SOLAR FARM

DRAWING TITLE
CONTROL ROOM
FIRE PANEL SINGLE LINE DIAGRAM AND BILL OF MATERIALS

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093

DRAWING NO
ADC01093-06

REVISION
D



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A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
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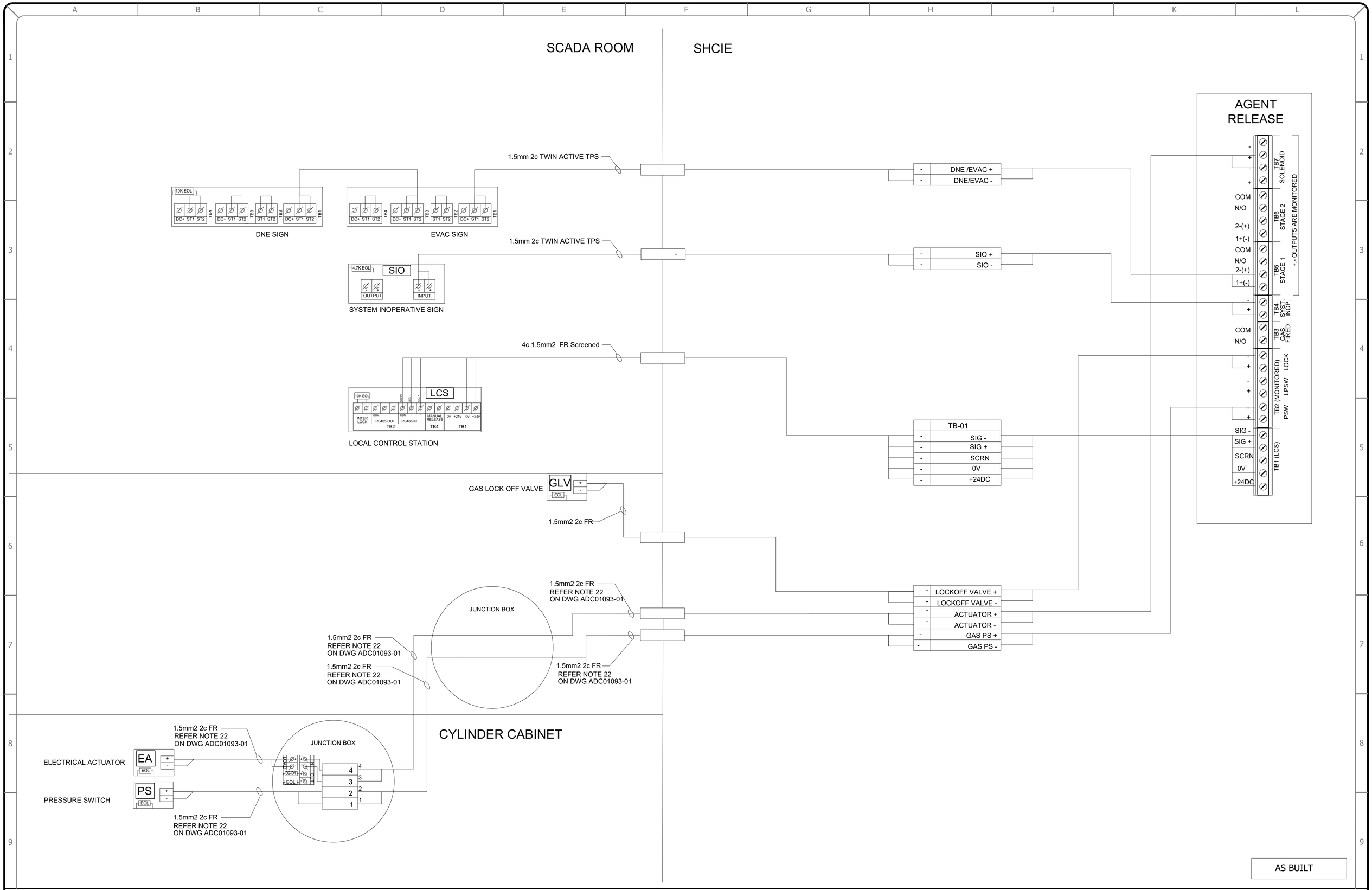
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND SOLAR FARM

DRAWING TITLE
CONTROL ROOM
FIRE PANEL TERMINATION
1 OF 4

DATE	11.10.2021	FILE NAME	ADC01093.dwg		
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-07
REVISION: D



REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
B	19.11.21	REVISED ISSUE FOR APPROVAL	JS	MH	DC
C	16.02.22	ISSUE FOR CONSTRUCTION	JS	MH	DC
D	11.05.22	AS BUILT	JS	MH	DC

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5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
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PROJECT
NEW ENGLAND SOLAR FARM

DRAWING TITLE
CONTROL ROOM
FIRE PANEL TERMINATION
2 OF 4

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC		
SCALE	N.T.S @A1	JOB NUMBER	ADC01093

DRAWING NO: ADC01093-08
REVISION: D

PROTECTION &SCADA AND SERVICES ROOM

SHCIE

PROTECTION AND SCADA ROOM

SERVICES ROOM

DNE SIGN

EVAC SIGN

EVAC SIGN

DNE SIGN

10K EOL

1.5mm 2c TWIN ACTIVE TPS

1.5mm 2c TWIN ACTIVE TPS

4c 1.5mm2 FR Screened

- DNE /EVAC +
- DNE/EVAC -

- SIO +
- SIO -

4.7K EOL

SIO

OUTPUT

INPUT

SYSTEM INOPERATIVE SIGN

SERVICES ROOM

PROTECTION AND SCADA ROOM

10K EOL

LCS

INTER LOCK

RS485 OUT

RS485 IN

MANUAL RELEASE

0v +24v 0v +24v

TB2

TB4

TB1

LOCAL CONTROL STATION

LOCAL CONTROL STATION

TB-01
- SIG -
- SIG +
- SCRN
- 0V
- +24DC

AGENT RELEASE

TB7 SOLENOID

TB6 STAGE 2

TB5 STAGE 1

+ - OUTPUTS ARE MONITORED

TB4 SYST. INOP.

TB3 GAS FIRED

TB2 (MONITORED) PSW LPSW LOCK

TB1 (LCS)

- COM
- N/O
- 2-(+)
- 1+(-)
- SIG -
- SIG +
- SCRN
- 0V
- +24DC

GAS LOCK OFF VALVE

GLV

EOL

1.5mm2 2c FR

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

JUNCTION BOX

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

- LOCKOFF VALVE +
- LOCKOFF VALVE -
- ACTUATOR +
- ACTUATOR -
- GAS PS +
- GAS PS -

CYLINDER CABINET

ELECTRICAL ACTUATOR

EA

PRESSURE SWITCH

PS

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

JUNCTION BOX

4
3
2
1

1.5mm2 2c FR
REFER NOTE 22
ON DWG ADC01093-01

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
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5 Valetta Road
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Web: wormald.com.au

PROJECT

NEW ENGLAND SOLAR FARM

DRAWING TITLE

CONTROL ROOM
FIRE PANEL TERMINATION
3 OF 4

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093

DRAWING NO ADC01093-09

REVISION D

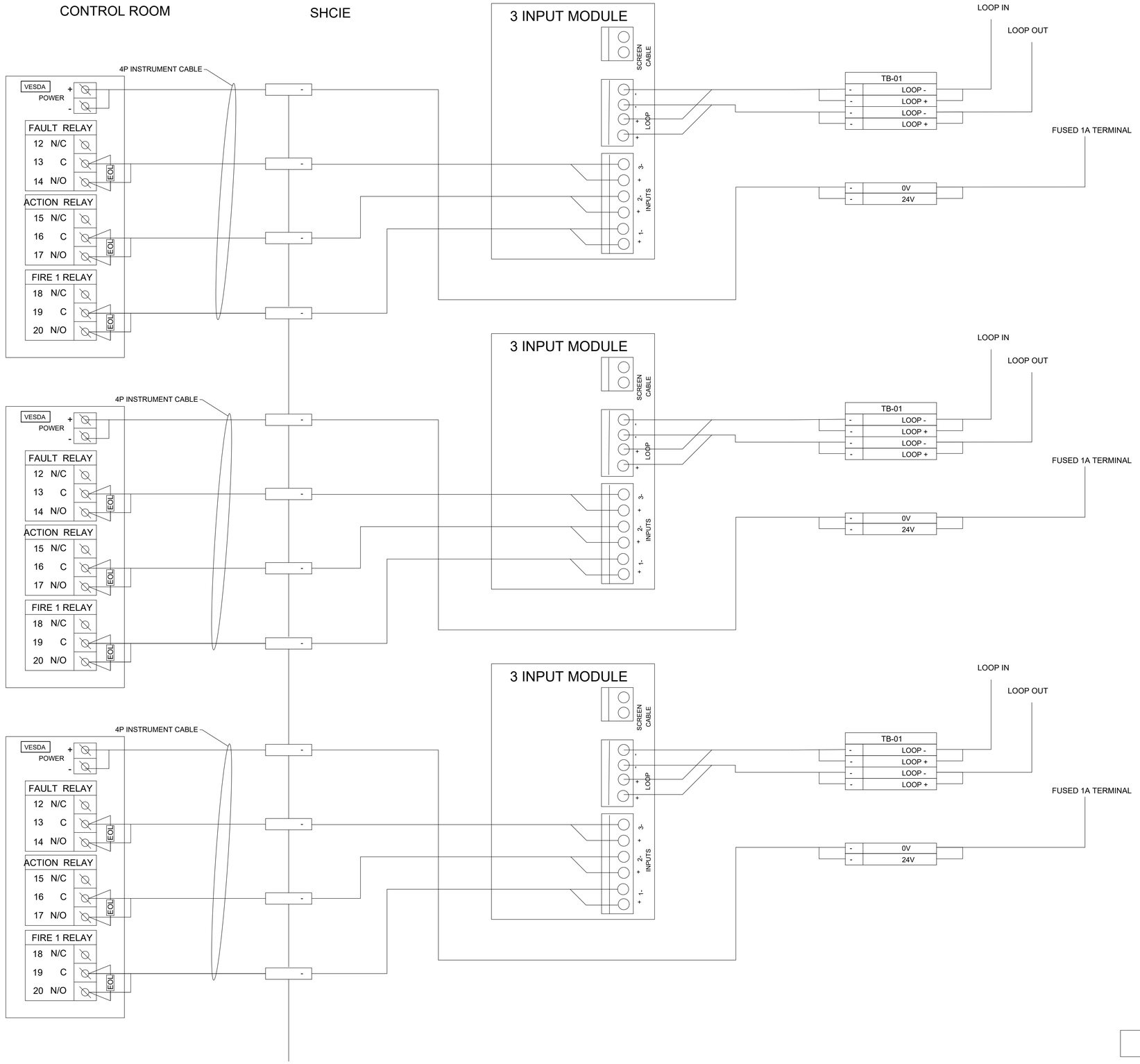
CONTROL ROOM

SHCIE

SCADA ROOM

PROTECTION AND SCADA ROOM

SERVICES ROOM



AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
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Kidman Park
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PROJECT

NEW ENGLAND SOLAR FARM

DRAWING TITLE

CONTROL ROOM
FIRE PANEL TERMINATION
4 OF 4

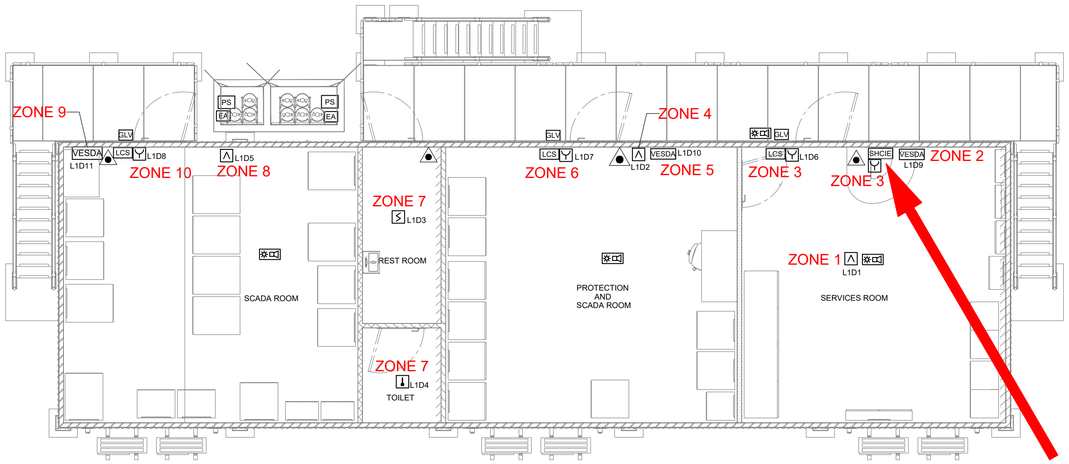
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-10

REVISION: D

FIRE ALARM BLOCK PLAN

NEW ENGLAND SOLAR FARM
CONTROL ROOM



ZONE LIST

ZONE 1	SERVICES ROOM UV FLAME DETECTOR
ZONE 2	SERVICES ROOM VESDA
ZONE 3	SERVICES ROOM MCP'S
ZONE 4	PROTECTION AND SCADA ROOM UV FLAME DETECTOR
ZONE 5	PROTECTION AND SCADA ROOM VESDA
ZONE 6	PROTECTION AND SCADA ROOM MCP
ZONE 7	REST ROOM/TOILET AREA SMOKE/HEAT DETECTORS
ZONE 8	SCADA ROOM UV FLAME DETECTOR
ZONE 9	SCADA ROOM VESDA
ZONE 10	SCADA ROOM MCP

LEGEND

- SHCIE — SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
- LCS — LOCAL CONTROL STATION (STOP GAS)
- PS — PRESSURE SWITCH
- EA — ELECTRICAL ACTUATOR
- SLV — GAS LOCKOFF VALVE
- P — PHOTOELECTRIC SMOKE DETECTOR
- UV FLAME DETECTOR
- MANUAL CALL POINT
- SOUNDER/STROBE INTERNAL/EXTERNAL
- VESDA — VESDA
- FIRE EXTINGUISHER (5.0kg CO2)
- IG541 INEREX CYLINDER

GENERAL NOTES

1.BASELINE DATA IS LOCATED AT THE SHCIE

2.DESIGN CRITERIA AS1670.5-2016

INSTALLED MAY 2022

WORMALD®

IN THE EVENT OF A FIRE RING '000'
TO ENSURE FIRE SERVICE RESPONSE

Phone 24 Hours: **133 166**

AS BUILT

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5 Valetta Road
Kidman Park
South Australia 5025
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PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: CONTROL ROOM FIRE ALARM BLOCK PLAN

DATE	11.10.2021	FILE NAME	ADC01093.dwg		
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-11

REVISION: D

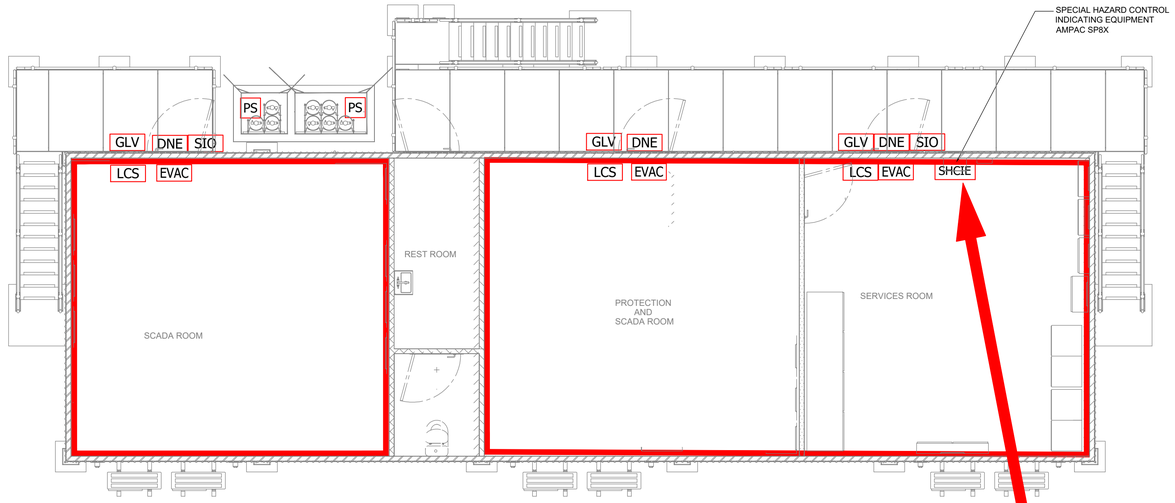
GASEOUS FIRE EXTINGUISHING SYSTEM
BLOCK PLAN

NEW ENGLAND SOLAR FARM
CONTROL ROOM

THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214-2018 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE	SCADA ROOM
GROSS VOLUME	108.07m3
NET VOLUME	108.07m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	99.9kg
ESTIMATED MAX.CONCENTRATION	47.85 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	30 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.3m

PROTECTED SPACE	PROTECTION AND SCADA/SERVICE ROOM
GROSS VOLUME	203.86m3
NET VOLUME	203.86m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	166.5kg
ESTIMATED MAX.CONCENTRATION	43.81 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	21.3 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.25m



LEGEND:

SHCIE	SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
EVAC	'EVACUATE AREA' AUDIO VISUAL INDICATOR
DNE	'DO NOT ENTER' AUDIO VISUAL INDICATOR
SIO	GAS SYSTEM INOPERATIVE WARNING SIGN
LCS	LOCAL GAS CONTROL STATION
GLV	GAS LOCKOFF VALVE
PS	PRESSURE SWITCH (GAS)
	GAS SUPPRESSION CYLINDERS
	PROTECTED AREA

INSTALLED MAY 2022

WORMALD®

IN THE EVENT OF A FIRE RING '000' TO ENSURE FIRE SERVICE RESPONSE

Phone 24 Hours: **133 166**

AS BUILT

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5 Valetta Road
Kidman Park
South Australia 5025
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PROJECT	NEW ENGLAND SOLAR FARM
DRAWING TITLE	CONTROL ROOM GAS SUPPRESSION SYSTEM BLOCK PLAN 1 OF 3
DRAWING NO	ADC01093-12
REVISION	D

DATE	11.10.2021	FILE NAME	ADC01093.dwg		
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093		

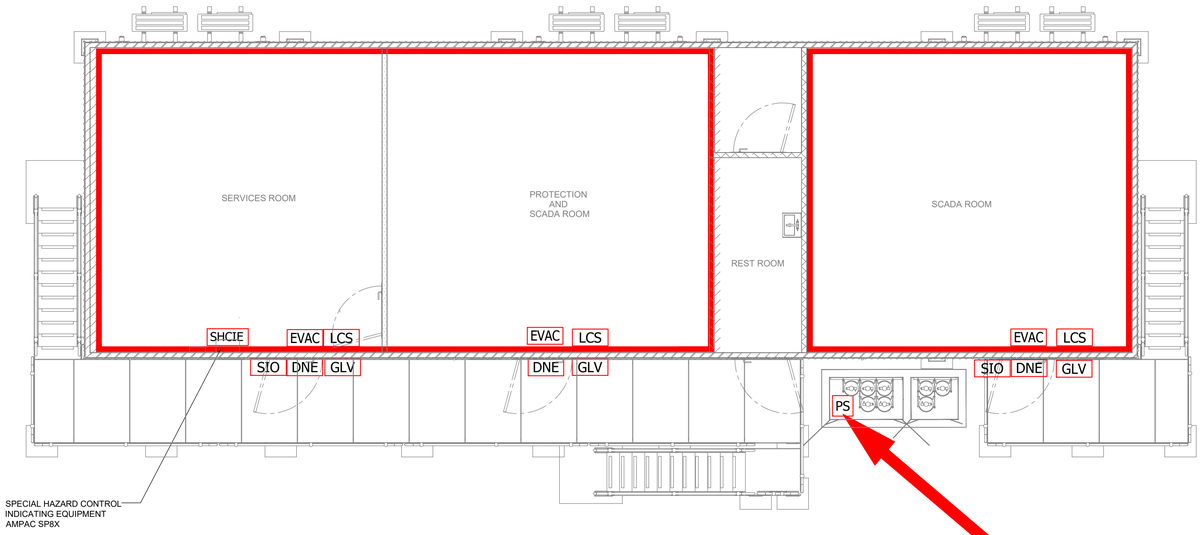
GASEOUS FIRE EXTINGUISHING SYSTEM
BLOCK PLAN

NEW ENGLAND SOLAR FARM
CONTROL ROOM

THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214-2018 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE	SCADA ROOM
GROSS VOLUME	108.07m3
NET VOLUME	108.07m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	99.9kg
ESTIMATED MAX.CONCENTRATION	47.85 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	30 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.3m

PROTECTED SPACE	PROTECTION AND SCADA/SERVICE ROOM
GROSS VOLUME	203.86m3
NET VOLUME	203.86m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	166.5kg
ESTIMATED MAX.CONCENTRATION	43.81 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	21.3 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.25m



LEGEND:

SHCIE	SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
EVAC	'EVACUATE AREA' AUDIO VISUAL INDICATOR
DNE	'DO NOT ENTER' AUDIO VISUAL INDICATOR
SIO	GAS SYSTEM INOPERATIVE WARNING SIGN
LCS	LOCAL GAS CONTROL STATION
GLV	GAS LOCKOFF VALVE
PS	PRESSURE SWITCH (GAS)
	GAS SUPPRESSION CYLINDERS
	PROTECTED AREA

INSTALLED MAY 2022

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PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: CONTROL ROOM GAS SUPPRESSION SYSTEM BLOCK PLAN 2 OF 3

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-13

REVISION: D

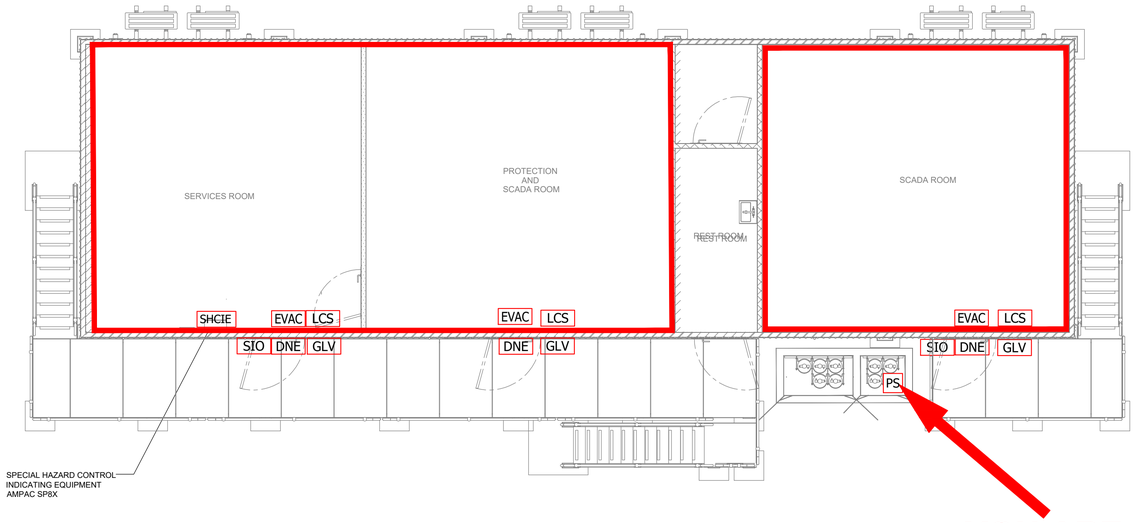
GASEOUS FIRE EXTINGUISHING SYSTEM
BLOCK PLAN

NEW ENGLAND SOLAR FARM
CONTROL ROOM

THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214-2018 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE	SCADA ROOM
GROSS VOLUME	108.07m3
NET VOLUME	108.07m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	99.9kg
ESTIMATED MAX.CONCENTRATION	47.85 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	30 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.3m

PROTECTED SPACE	PROTECTION AND SCADA/SERVICE ROOM
GROSS VOLUME	203.86m3
NET VOLUME	203.86m3
MAXIMUM FLOODED HEIGHT'	3.00 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	166.5kg
ESTIMATED MAX.CONCENTRATION	43.81 %
PRESSURE RELIEF VENT AREA	0.036 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	21.3 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.25m



LEGEND:

SHCIE	SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
EVAC	'EVACUATE AREA' AUDIO VISUAL INDICATOR
DNE	'DO NOT ENTER' AUDIO VISUAL INDICATOR
SIO	GAS SYSTEM INOPERATIVE WARNING SIGN
LCS	LOCAL GAS CONTROL STATION
GLV	GAS LOCKOFF VALVE
PS	PRESSURE SWITCH (GAS)
⊕	GAS SUPPRESSION CYLINDERS
▬	PROTECTED AREA

INSTALLED MAY 2022

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TO ENSURE FIRE SERVICE RESPONSE

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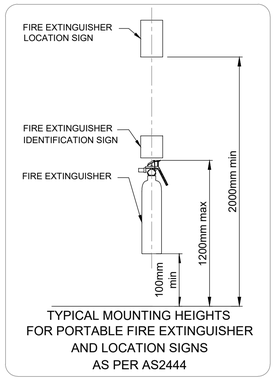
PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: CONTROL ROOM GAS SUPPRESSION SYSTEM BLOCK PLAN 2 OF 3

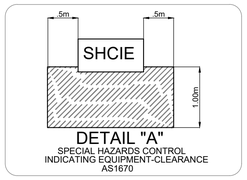
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	1:50 @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-14

REVISION: D

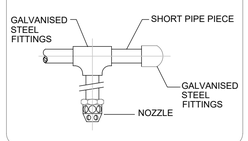


TYPICAL MOUNTING HEIGHTS FOR PORTABLE FIRE EXTINGUISHER AND LOCATION SIGNS AS PER AS2444

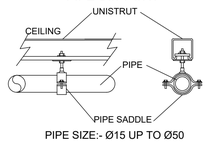


DETAIL "A"
SPECIAL HAZARDS CONTROL INDICATING EQUIPMENT-CLEARANCE AS1670

INDICATIVE NOZZLE DETAIL ONLY

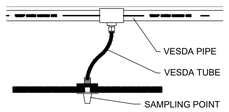


PIPE SUPPORT



PIPE SIZE:- Ø15 UP TO Ø50

VESDA SAMPLING POINT DETAIL



HANGERS SPACING

MAXIMUM PIPE SUPPORT SPACING		
NOMINAL DIAMETER(mm)	NOMINAL DIAMETER(inches)	MAXIMUM DISTANCE BETWEEN SUPPORT(m)
10mm	3/8"	1.0m
15mm	1/2"	1.5m
20mm	3/4"	1.8m
25mm	1"	2.1m
32mm	1 1/4"	2.4m
40mm	1 1/2"	2.7m
50mm	2"	3.4m

FIRE RATED CABLE INSTALLATION

STAINLESS STEEL CABLE TIES SHALL BE USED FOR FIXING CABLE TO TRAY EVERY 1.0 METRE WHEN MOUNTED HORIZONTALLY AND EVERY 0.6 METRES WHEN MOUNTED VERTICALLY.

CABLE TIES MUST BE MINIMUM 304 STAINLESS STEEL 200MMLONG 4.6MM WIDE.

WHEN FIXING FIRE RATED CABLES TO CATENARY WIRE THE MANUFACTURER'S RECOMMENDATION IS AS FOLLOWS:

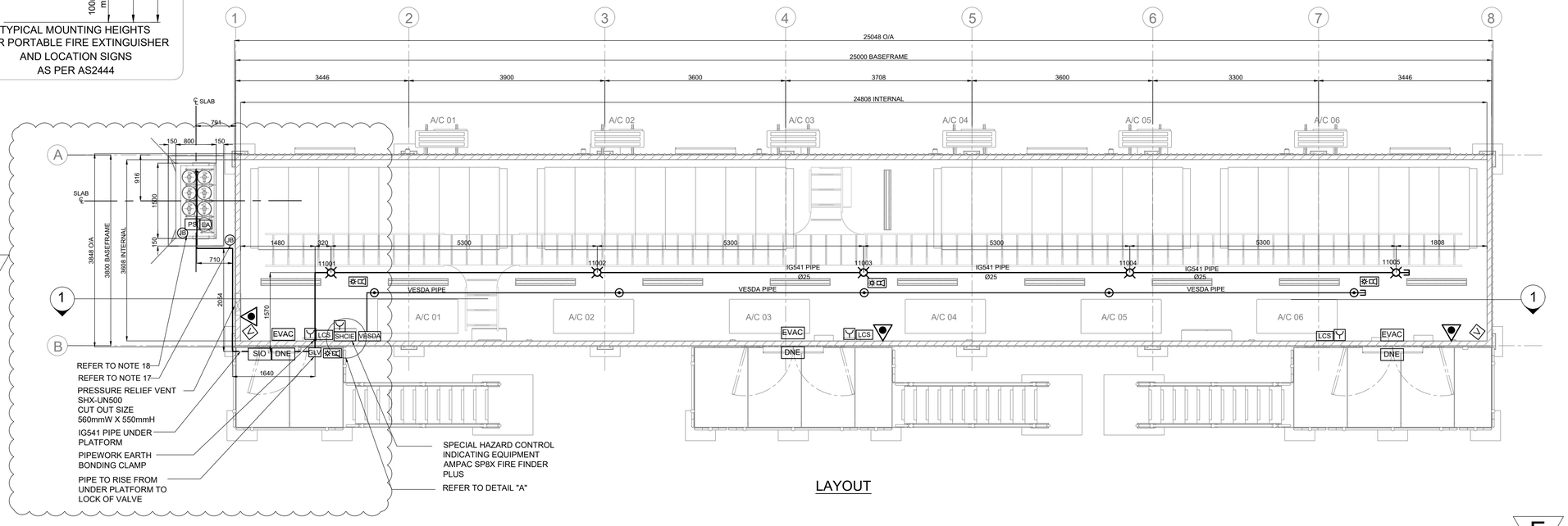
IF CABLE BUNCH IS >= 25MM DIAMETER CABLES SHOULD BE SUPPORTED WITH STAINLESS STEEL TIES EVERY 300MM

IF CABLE BUNCH IS < 25MM DIAMETER CABLES SHOULD BE SUPPORTED WITH STAINLESS STEEL TIES EVERY 600MM

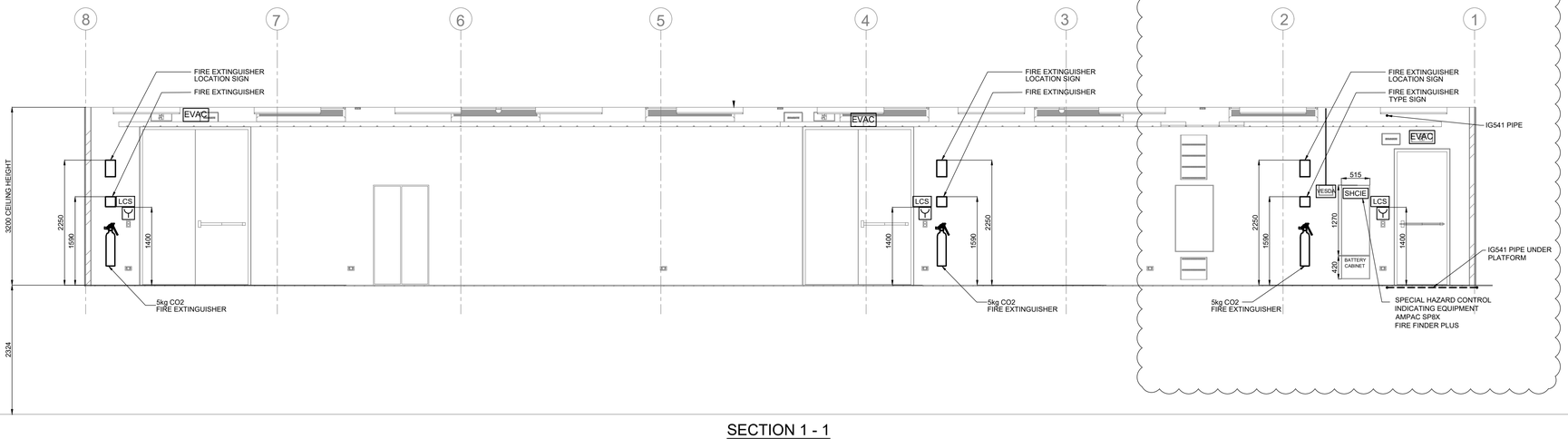
ALL TERMINATIONS SHOULD BE EQUIPPED WITH STEEL GLANDS.

NOTES

1. SYSTEM DESIGNED IN ACCORDANCE WITH AS 4214-2018 AND 1670.5 2016 WITH 20minute HOLD TIME DEEP SEATED FIRE
2. ALL PIPE TO BE CLASS 2, SCHEDULE 40 SEAMLESS GRADE B.
3. DISTRIBUTION PIPE TO BE LEAK TESTED TO 300KPA FOR 10 MINUTES
4. ALL PIPE TO BE GALVANISED.
5. ALL PIPE TO BE JOINTED WITH GALVANISED STEEL FITTINGS USING THREADSEAL TAPE.
6. ALL PIPEWORK TO BE FASTENED SECURELY TO AS 4214-2018.
7. BUILDING TO BE MADE GAS TIGHT (BY LAI). FAN TESTING BY WORMALD.
8. DOORS ARE TO HAVE SMOKE SEALS FITTED AND HAVE AUTOMATIC CLOSING DEVICES (BY LAI).
9. FAN TEST TO BE CARRIED ON SITE ACCORDANCE WITH AS 14520.1-2015 ANNEX E.
10. ALL EXTERNAL WARNING LIGHTS TO BE WEATHERPROOF.
11. THE POWER SUPPLY CABLE TO THE SHCIE IS TO BE IN ACCORDANCE WITH AS 3000, ALL OTHER CABLING IS TO BE IN ACCORDANCE WITH AS CA S009-2020.
12. A MINIMUM CLEARANCE OF 1M IN FRONT AND 0.5M TO EACH SIDE SHALL BE MAINTAINED FROM CONTROL INDICATING EQUIPMENT ENCLOSURES (FIP) THAT REQUIRE OPERATION BY EMERGENCY SERVICE PERSONNEL. REFER TO CLAUSE 3.9.3 AS1670
13. PRESSURE RELIEF VENT IS SUPPLIED BY WORMALD INSTALLED BY LAI
14. EARTH BOND POINT INSTALLED BY WORMALD CONNECTED BY LAI.
15. CYLINDERS CABINET INTERNAL DIMENSION REQUIRED: W-1500MM X D-800MM X H-2400MM SUPPLIED BY LAI
16. MINIMUM CONCRETE SLAB FOR GAS CYLINDERS CABINET SIZE:1800mm X 1100
17. FIRE ALARM CABLING FROM ROOM TO TERMINATE IN EXTERNAL JUNCTION BOX.CABLE FROM THIS JUNCTION BOX TO GAS CYLINDER CABINET IS TO BE INSTALLED AT THE FINAL SITE LOCATION BY OTHERS.
18. FIRE ALARM CABLING FROM GAS CYLINDER CABINET TO TERMINATE IN JUNCTION BOXES LOCATED WITH IN CABINET FOR CONNECTION AT FINAL SITE LOCATION BY OTHERS.
19. DESIGN AND OPERATION TO AS 1670.5-2016 , THIS IS NOT A REQUIRED SMOKE DETECTION SYSTEM UNDER NCC 2019 SPECIFICATION E2.2a.
20. INSTALLATION AND CABLING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1670.1-2018, EXCEPT THAT THE EXTINGUISHING AGENT ACTUATOR TRANSMISSION PATH SHALL HAVE A MINIMUM RATING OF WS51W IN ACCORDANCE WITH AS/NZS 3013, WITH THE MECHANICAL RATING UPGRADED DEPENDENT UPON THE HAZARD.
21. ALL FIRE CABLES BETWEEN THE SHCIE AND ELECTRICAL ACTUATOR ARE TO BE FIRE RATED AND WHERE THESE CABLES ARE EXTERNAL TO THE BUILDING THEY ARE TO BE ENCLOSED IN FLEXIBLE METAL CONDUIT CONNECTED TO THE GAS CYLINDER CABINET VIA FIRE RATED HANDIFIT JUNCTION BOX
22. COMMISSIONING OF SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF AS 1670.1-2018
23. DETAILED DESIGN DRAWINGS THAT SUPPORT THIS DESIGN ARE AS FOLLOWS:ADC01093-15,ADC01093-16,ADC01093-17,ADC01093-18, ADC01093-19,ADC01093-20,ADC01093-21,ADC01093-22,ADC01093-23, ADC01093-24.



LAYOUT



SECTION 1 - 1

LEGEND

- SHCIE — SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
- INEREX NOZZLE
- LCS — LOCAL CONTROL STATION (STOP GAS)
- PS — PRESSURE SWITCH
- EA — ELECTRICAL ACTUATOR
- SLV — GAS LOCK OFF VALVE
- EVAC — EVACUATE WARNING SIGN
- DNE — DO NOT ENTER WARNING SIGN
- SIO — SYSTEM INOPERATIVE WARNING SIGN
- PHOTOELECTRIC SMOKE DETECTOR
- UV FLAME DETECTOR
- MANUAL CALL POINT
- SOUNDER/STROBE INTERNAL/EXTERNAL
- VESDA — VESDA VLF 500
- VESDA SAMPLING POINT & END CAP
- FIRE EXTINGUISHER (5.0kg CO2)
- IG541 INEREX CYLINDER
- JB — JUNCTION BOX

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
B	19.11.21	REVISED ISSUE FOR APPROVAL	JS	MH	DC
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E	08.08.22	REVISED AS BUILT	JS	MH	DC

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WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

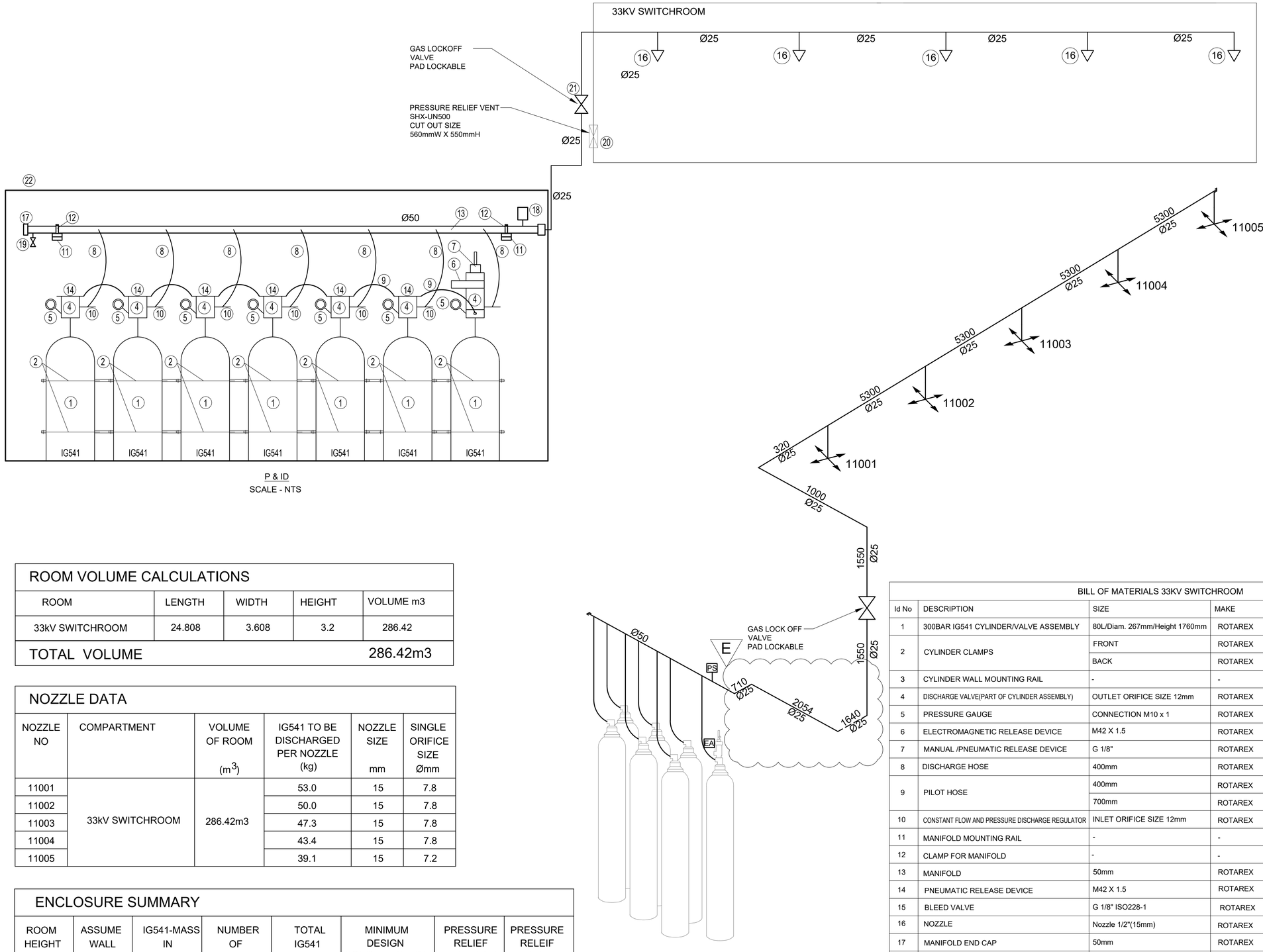
PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: 33kV SWITCHROOM IG541 300 bar INEREX GASEOUS FIRE SUPPRESSION AND DETECTION SYSTEM LAYOUT AND SECTION

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	1:50 @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-15

REVISION: E



P & ID
SCALE - NTS

ISOMETRIC VIEW
SCALE - NTS

ROOM VOLUME CALCULATIONS

ROOM	LENGTH	WIDTH	HEIGHT	VOLUME m3
33kV SWITCHROOM	24.808	3.608	3.2	286.42
TOTAL VOLUME				286.42m3

NOZZLE DATA

NOZZLE NO	COMPARTMENT	VOLUME OF ROOM (m^3)	IG541 TO BE DISCHARGED PER NOZZLE (kg)	NOZZLE SIZE mm	SINGLE ORIFICE SIZE Ømm
11001	33kV SWITCHROOM	286.42m3	53.0	15	7.8
11002			50.0	15	7.8
11003			47.3	15	7.8
11004			43.4	15	7.8
11005			39.1	15	7.2

ENCLOSURE SUMMARY

ROOM HEIGHT	ASSUME WALL STRENGTH (mbar)	IG541-MASS IN 1 CYLINDER	NUMBER OF CYLINDERS	TOTAL IG541 MASS	MINIMUM DESIGN CONCENTRATION (% VOL)	PRESSURE RELIEF VENT AREA (m2)	PRESSURE RELEIF VENT
3.20	2.5	33.3kg	7	233.1	41.7	0.098	SHX-UN500

BILL OF MATERIALS 33KV SWITCHROOM

Id No	DESCRIPTION	SIZE	MAKE	MODEL No	MATERIAL	QTY
1	300BAR IG541 CYLINDER/VALVE ASSEMBLY	80L/Diam. 267mm/Height 1760mm	ROTAREX	B04808403	CrMo-STEEL	7
2	CYLINDER CLAMPS	FRONT	ROTAREX	73AEB03177	GALVANISED STEEL	14
		BACK	ROTAREX	73AEB03207	GALVANISED STEEL	14
3	CYLINDER WALL MOUNTING RAIL	-	-	-	-	2
4	DISCHARGE VALVE(PART OF CYLINDER ASSEMBLY)	OUTLET ORIFICE SIZE 12mm	ROTAREX	B04802020	BRASS	7
5	PRESSURE GAUGE	CONNECTION M10 x 1	ROTAREX	029720083		7
6	ELECTROMAGNETIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04425146	BRASS AND S/S RED PLASTIC PROTECTION CAP	1
7	MANUAL /PNEUMATIC RELEASE DEVICE	G 1/8"	ROTAREX	B04420065	BRASS AND S/S	1
8	DISCHARGE HOSE	400mm	ROTAREX	B06920224		7
9	PILOT HOSE	400mm	ROTAREX	B06920211	OIL RESISTANT SINTHETIC RUBBER	6
		700mm	ROTAREX	B06920212	OIL RESISTANT SINTHETIC RUBBER	1
10	CONSTANT FLOW AND PRESSURE DISCHARGE REGULATOR	INLET ORIFICE SIZE 12mm	ROTAREX	B08401000	BRASS	7
11	MANIFOLD MOUNTING RAIL	-	-	-	GALVANISED STEEL	2
12	CLAMP FOR MANIFOLD	-	-	-	GALVANISED STEEL	2
13	MANIFOLD	50mm	ROTAREX	IXM8	GALVANISED STEEL	1
14	PNEUMATIC RELEASE DEVICE	M42 X 1.5	ROTAREX	B04420066	BRASS	6
15	BLEED VALVE	G 1/8" ISO228-1	ROTAREX	029730040	BRASS	1
16	NOZZLE	Nozzle 1/2"(15mm)	ROTAREX	-	BRASS	5
17	MANIFOLD END CAP	50mm	ROTAREX	024900322	GALVANISED STEEL	1
18	PRESSURE AND FLOW DETECTOR SWITCH	G1/2"	ROTAREX	028250050		1
19	CONDENSATE DRAIN	15mm	ROTAREX	IGDRAIN	-	1
20	PRESSURE RELIEF VENTS	PRV-SHX-UN500	AFP	PRV-SHX-UN500	STEEL POWDER COATED	1
21	LOCK OF VALVE	25mm	ROTAREX	B05512300	-	1
22	FIRE SUPPRESSION CYLINDERS CABINET	W-1500mm X D-800mm x H-2400mm	LAI SB		-	1
23	FIRE EXTINGUISHER	5.0kg CO2	WORMALD	₩A5.0CO2	-	3

AS BUILT

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
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WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
33kV SWITCHROOM
IG541 300 bar INEREX
GASEOUS FIRE SUPPRESSION
ISOMETRIC,P&ID,DETAILS.BOM

DATE	11.10.2021	FILE NAME	ADC01093.dwg
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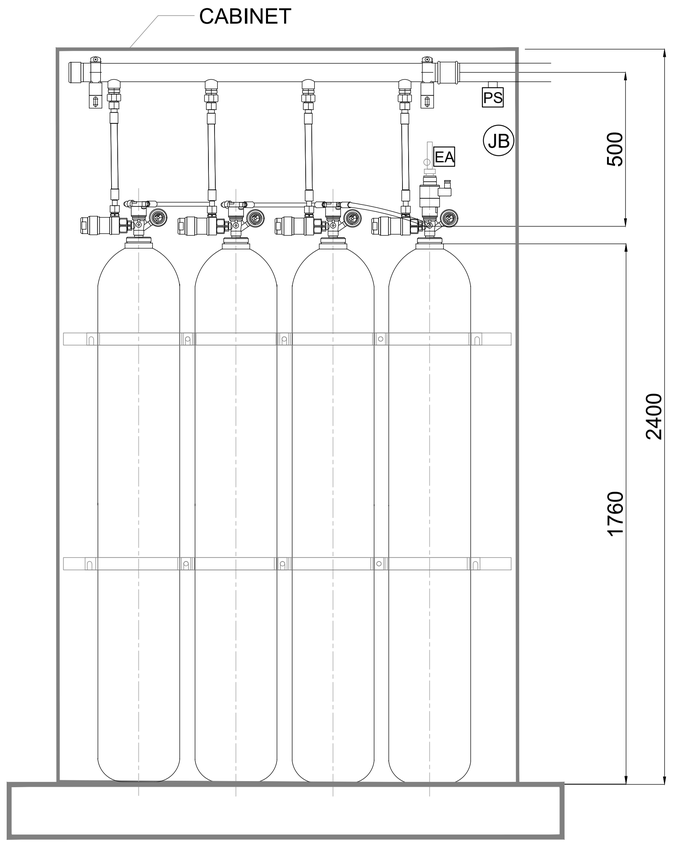
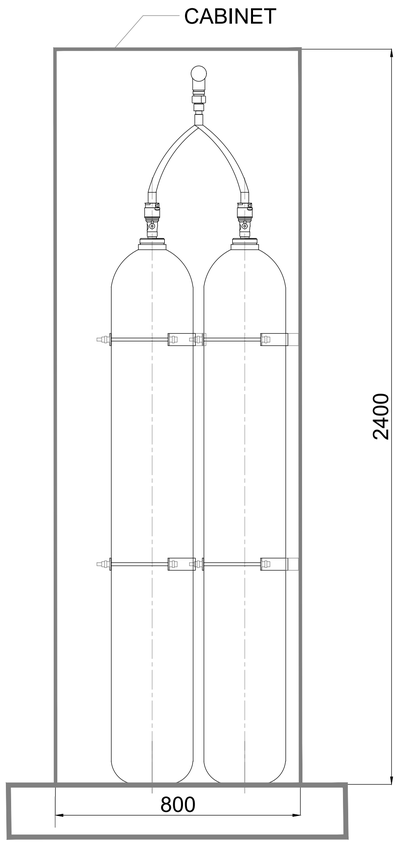
APPROVED BY	DC	SCALE	1:10 @A1
JOB NUMBER	ADC01093		

DRAWING NO
ADC01093-16

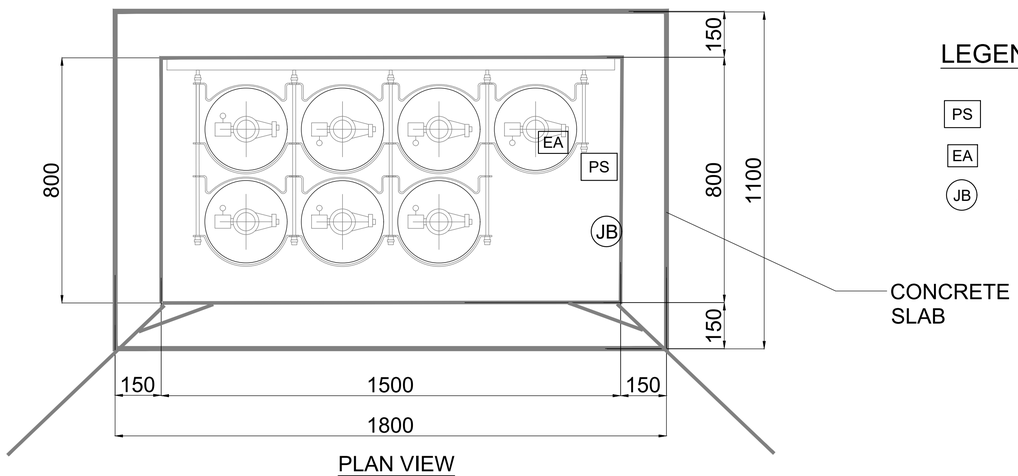
REVISION
E



FRONT VIEW



SIDE VIEW



PLAN VIEW

LEGEND

PS	PRESSURE SWITCH
EA	ELECTRICAL ACTUATOR
JB	JUNCTION BOX

AS BUILT

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5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT
NEW ENGLAND SOLAR FARM

DRAWING TITLE
33kV SWITCHROOM
IG541 300 bar INEREX
FIRE SUPPRESSION OUTDOOR CYLINDERS CABINET

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	1:10 @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-17
REVISION: D

SPECIAL HAZARD CONTROL
INDICATING EQUIPMENT
AMPAC SP8X FIRE FINDER PLUS

ASS86MBA'X'-03 FFP MAIN CONNECTION BOARD
BRD86MBA'X'-A

FFP FRONT BOARD
BRD86MBA'X'-A

CN11 96PIN DIN CONNECTOR
CN2 MAIN CPU
BRD85CPU3-B

CN13 24PIN DIN CONNECTOR
CN14 24PIN DIN CONNECTOR
CN15 24PIN DIN CONNECTOR

INTERNAL COMMS CN20
LOOP COMMS CN18
TERMINATION BOARD CN10
POWER CN26
PSU MON. & BRIGADE INT. CN7

COMMS2 RS232(TOP)
COMMS1 RS232/MODEM (BOTTOM)
EXPANSION PANEL
INTERNAL COMMS
EXPANSION LEADS
FRONT PANEL
PRINTER

CN8 CN2 CN21 CN3 CN4 CN5

26 CN2

HLI CONTROLLER 4310-0080
CN4 COMMS IN
CN5
TB1 + - SHD
RS485
LK2 INSTALLED BRD43SPB

AC/SD

*CARDS IN FIRE INDICATOR PANEL SUPPLIED WIRED BY AMPAC. POWER COMES FROM PSU BOARD.

AGENT TERMINATION BOARD
RJ45
CN 1 COMMS IN
CN 2 COMMS OUT
CN 3 POWER IN
CN 4 POWER OUT
2
MODULE NO. 1
BRD25ATB'X'-A

4c 1.5MM2 FR SCREENED
2c 1.5MM2 TWIN ACTIVE
2c 1.5MM2 TWIN ACTIVE
2c 1.5MM2 TWIN ACTIVE
2c 1.5MM2 FR
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15
2c 1.5mm2 FR REFER NOTE 21 ON DWG ADC01093-15

33KV ROOM
LCS LCS LCS EOL LOCAL CONTROL STATION (GAS INHIBIT) VIA GAS TERM STRIP
SIO EOL SYSTEM INOPERATIVE SIGN
DNE DNE DNE EOL DNE SIGN
EVAC EVAC EVAC EOL EVAC SIGN
GLV EOL GAS ISOLATION VALVE VIA GAS TERM STRIP
CYLINDER CABINET
PS EOL GAS RELEASED PRESSURE SWITCH VIA GAS TERM STRIP
EA EOL ELECTRICAL ACTUATOR
JB JB

MCP SHCIE
1.5mm2c TPS TWISTED
3 INPUT MODULE IN SHCIE
4p INSTRUMENT CABLE
VESDA
POWER SUPPLY
1.5mm2c TPS TWISTED
1.5mm2c TPS TWISTED
EOL
2c 1.5mm2 FR
EOL
EXTERNAL

GAS CONTROL BOARD
CN6 COMMS IN
CN7 COMMS OUT
TB4 1 2
MODULE NO. 1
BRD25ARB6-A
RJ45

GAS CONTROL BOARD
CN6 COMMS IN
CN7 COMMS OUT
MODULE NO. 2
BRD25ARB6-A
RJ45

DUAL LOOP TERM, BRD.
20
CN1 TB1 L2+ L1-
CN2 'A' SIDE
CN3 TB1 L2+ L1-
2
'B' SIDE
CN4

YELLOW MCP AGENT RELEASE
TB 2 4
10K
4 2
4105-1022 (ACP-06)

BRIGADE/PSU MONITOR BOARD
CN11 RS485 COMMS OUT
CN1 RS485 COMMS IN
RJ45
RJ45
CN 8
CN 7
CN 6
CN 5
CN 4
2
2
AUX POWER OUTPUT (1A MAX EACH)
AUX OUT 1
AUX OUT 2
AUX OUT 2 24V DC SUPPLY
E.BOARD SWITCH POWER
MONITORED INPUT+
MONITORED OUTPUTS
BATT FAIL
ISOLATE
WARNING
FAULT
ALARM

BARGRAPGH DISPLAY ASS4310-88
CN6 IN
CN2 OUT
CARD No.1
BRD70BD'X'-A
RJ45

BARGRAPGH DISPLAY ASS4310-88
CN6 IN
CN2 OUT
CARD No.2
BRD70BD'X'-A
RJ45

BARGRAPGH DISPLAY ASS4310-88
CN6 IN
CN2 OUT
CARD No.3
BRD70BD'X'-A
RJ45

BARGRAPGH DISPLAY ASS4310-88
CN6 IN
CN2 OUT
CARD No.4
BRD70BD'X'-A
RJ45

PSU1888
5A 27V P/S
6 VE+
4 VE-
L(AC) 1
N(AC) 2
GND 3
HW3031 GPO
240V INPUT

CN4 CN3 CN2 CN1
RELAY BOARD 1
RL1 RL2 RL3 RL4 RL5 RL6 RL7 RL8
TB 1 TB 2 TB 3 TB 4 TB 5 TB 6 TB 7 TB 8
TO SCADA

FIRE ALARM BILL OF MATERIALS

Id No	EQUIPMENT DESCRIPTION	MANUFACTURER	MANUFACTURER PART NUMBER	NUMBER OF ITEMS
1	AMPAC SP8X FIRE FINDER PLUS	AMPAC	8651-0116	1
2	FIREFINDER SP8X AGENT RELEASE AS4214	AMPAC	4310-0011	1
3	VESDA VLF500	XTRALIS	VLF500	1
4	12V 26AHR SLA BATTERY	AMPAC	12V 26AHR	2
5	SOUNDER / STROBE	AMPAC	VTB-I	4
6	XP95 BASE MOUNTED UV FLAME DETECTOR	AMPAC	201-0130 UV FLAME	2
7	XP95/ DETECTOR BASE WITH XPERT CARD	AMPAC	PDS4107-6001	2
8	UV FLAME DETECTOR MOUNTING BRACKET	AMPAC	29600-458	2
9	AGENT RELEASE LCS SURFACE MOUNT (4310)	AMPAC	4310-0019	3
10	WARNING SIGN (NO FASCIA PLATE)	AMPAC	4210-0110	3
11	WARNING SIGN IP65 (NO FASCIA PLATE)	AMPAC	4210-0120	4
12	'FIRE ALARM, DO NOT ENTER' FASCIA PLATE	AMPAC	4210-0131	3
13	'FIRE ALARM, EVACUATE AREA' FASCIA PLATE	AMPAC	4210-0132	3
14	'EXT SYSTEM INOPERATIVE' FASCIA PLATE	AMPAC	4210-0135	1
15	-	-	-	-

AS BUILT

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A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
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5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT: NEW ENGLAND SOLAR FARM

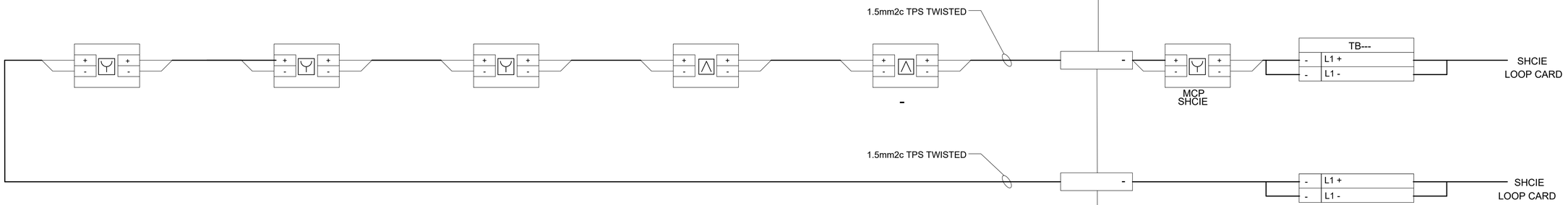
DRAWING TITLE: 33kV SWITCHROOM FIRE PANEL SINGLE LINE DIAGRAM AND BILL OF MATERIALS

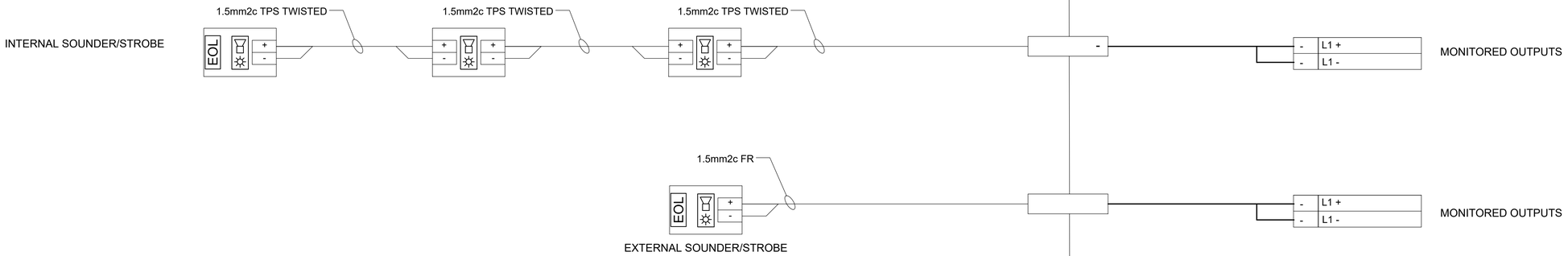
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093

DRAWING NO: ADC01093-18
REVISION: D

33kV SWITCH ROOM

SHCIE





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WORMALD®

5 Valetta Road
Kidman Park
South Australia 5025

Tel: (+61) 133 166

Web: wormald.com.au

PROJECT

NEW ENGLAND
SOLAR FARM

DRAWING TITLE

33kV SWITCHROOM
FIRE PANEL TERMINATION
1 OF 3

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-19

REVISION: D

33kV SWITCH ROOM

SHCIE

1.5mm 2c TWIN ACTIVE TPS

EVAC SIGN

DNE SIGN

EVAC SIGN

1.5mm 2c TWIN ACTIVE TPS

DNE SIGN

EVAC SIGN

DNE SIGN

1.5mm 2c TWIN ACTIVE TPS

SYSTEM INOPERATIVE SIGN

4c 1.5mm2 FR Screened

LOCAL CONTROL STATION

LOCAL CONTROL STATION

LOCAL CONTROL STATION

GAS LOCK OFF VALVE

1.5mm2 2c FR

1.5mm2 2c FR
REFER NOTE 21
ON DWG ADC01093-15

JUNCTION BOX

1.5mm2 2c FR
REFER NOTE 21
ON DWG ADC01093-15

1.5mm2 2c FR
REFER NOTE 21
ON DWG ADC01093-15

1.5mm2 2c FR
REFER NOTE 21
ON DWG ADC01093-15

CYLINDER CABINET

ELECTRICAL ACTUATOR

PRESSURE SWITCH

1.5mm2 2c FR
REFER NOTE 21
ON DWG ADC01093-15

JUNCTION BOX

-	DNE /EVAC +
-	DNE/EVAC -
-	SIO +
-	SIO -

	TB-01
-	SIG -
-	SIG +
-	SCRN
-	0V
-	+24DC

-	LOCKOFF VALVE +
-	LOCKOFF VALVE -
-	ACTUATOR +
-	ACTUATOR -
-	GAS PS +
-	GAS PS -

AGENT RELEASE

TB7

TB6 STAGE 2

TB5 STAGE 1

+,- OUTPUTS ARE MONITORED

TB4 SYST. INOP.

TB3 GAS FIRED

TB2 (MONITORED) PSW LPSW LOCK

TB1 (LCS)

SIG -
SIG +
SCRN
0V
+24DC

AS BUILT

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A	11.10.21	ISSUED FOR APPROVAL	JS	MH	DC
B	19.11.21	REVISED ISSUE FOR APPROVAL	JS	MH	DC
C	16.02.22	ISSUE FOR CONSTRUCTION	JS	MH	DC
D	08.04.22	AS BUILT	JS	MH	DC

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WORMALD®

5 Valetta Road
Kidman Park
South Australia 5025

Tel: (+61) 133 166

Web: wormald.com.au

PROJECT

NEW ENGLAND
SOLAR FARM

DRAWING TITLE

33kV SWITCHROOM
FIRE PANEL TERMINATION
2 OF 3

DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO

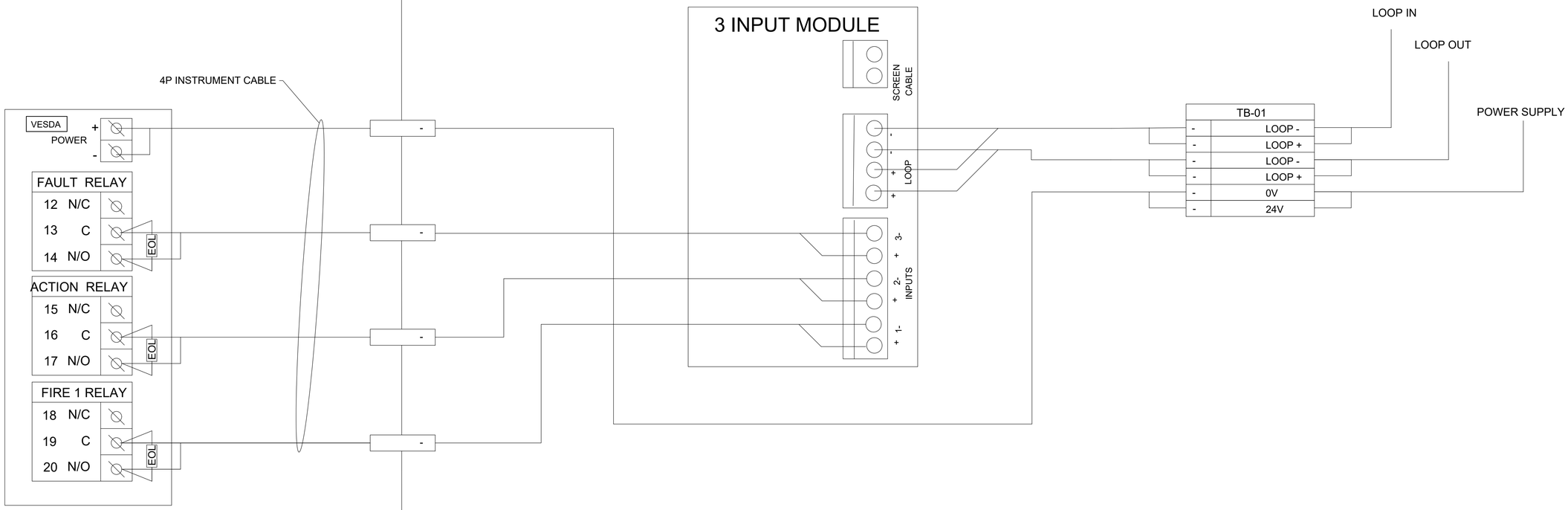
ADC01093-20

REVISION

D

33kV SWITCH ROOM

SHCIE



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South Australia 5025

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Web: wormald.com.au

PROJECT
NEW ENGLAND
SOLAR FARM

DRAWING TITLE
33kV SWITCHROOM
FIRE PANEL TERMINATION
3 OF 3

DATE	11.10.2021	FILE NAME	ADC01093.dwg		
DRAWN BY	JS	CHECKED BY	MH	APPROVED BY	DC
SCALE	N.T.S @A1	JOB NUMBER	ADC01093		

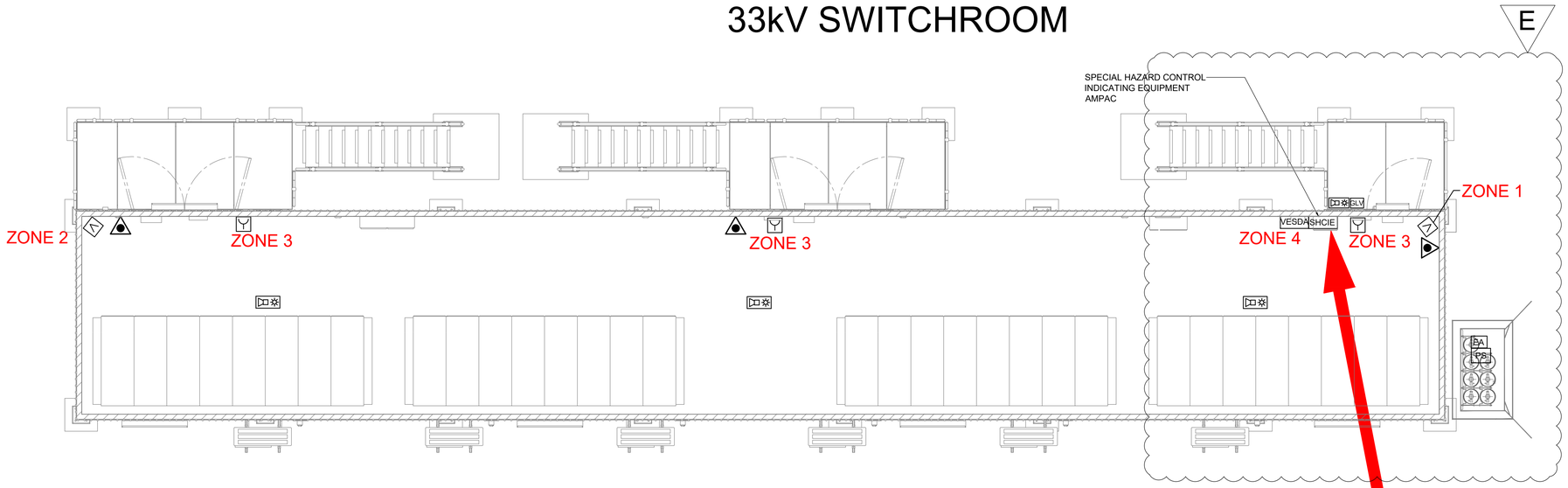
DRAWING NO
ADC01093-21

REVISION
D

FIRE ALARM BLOCK PLAN

NEW ENGLAND SOLAR FARM

33kV SWITCHROOM



ZONE LIST

ZONE 1	FLAME DETECTOR
ZONE 2	FLAME DETECTOR
ZONE 3	MANUAL CALL POINTS
ZONE 4	VESDA

LEGEND

- SHCIE — SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
- LCS — LOCAL CONTROL STATION (STOP GAS)
- PS — PRESSURE SWITCH
- EA — ELECTRICAL ACTUATOR
- GLV — GAS LOCKOFF VALVE
- P — PHOTOELECTRIC SMOKE DETECTOR
- UV FLAME DETECTOR
- MANUAL CALL POINT
- SOUNDER/STROBE INTERNAL/EXTERNAL
- VESDA — VESDA
- FIRE EXTINGUISHER (5.0kg CO2)
- IG541 INEREX CYLINDER

GENERAL NOTES

1.BASELINE DATA IS LOCATED AT THE SHCIE

2.DESIGN CRITERIA AS1670.5-2016

REVISED AUGUST 2022

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TO ENSURE FIRE SERVICE RESPONSE

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E	08.08.22	REVISED AS BUILT	JS	MH	DC

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WORMALD®
5 Valetta Road
Kidman Park
South Australia 5025
Tel: (+61) 133 166
Web: wormald.com.au

PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: 33kV SWITCHROOM FIRE ALARM BLOCK PLAN

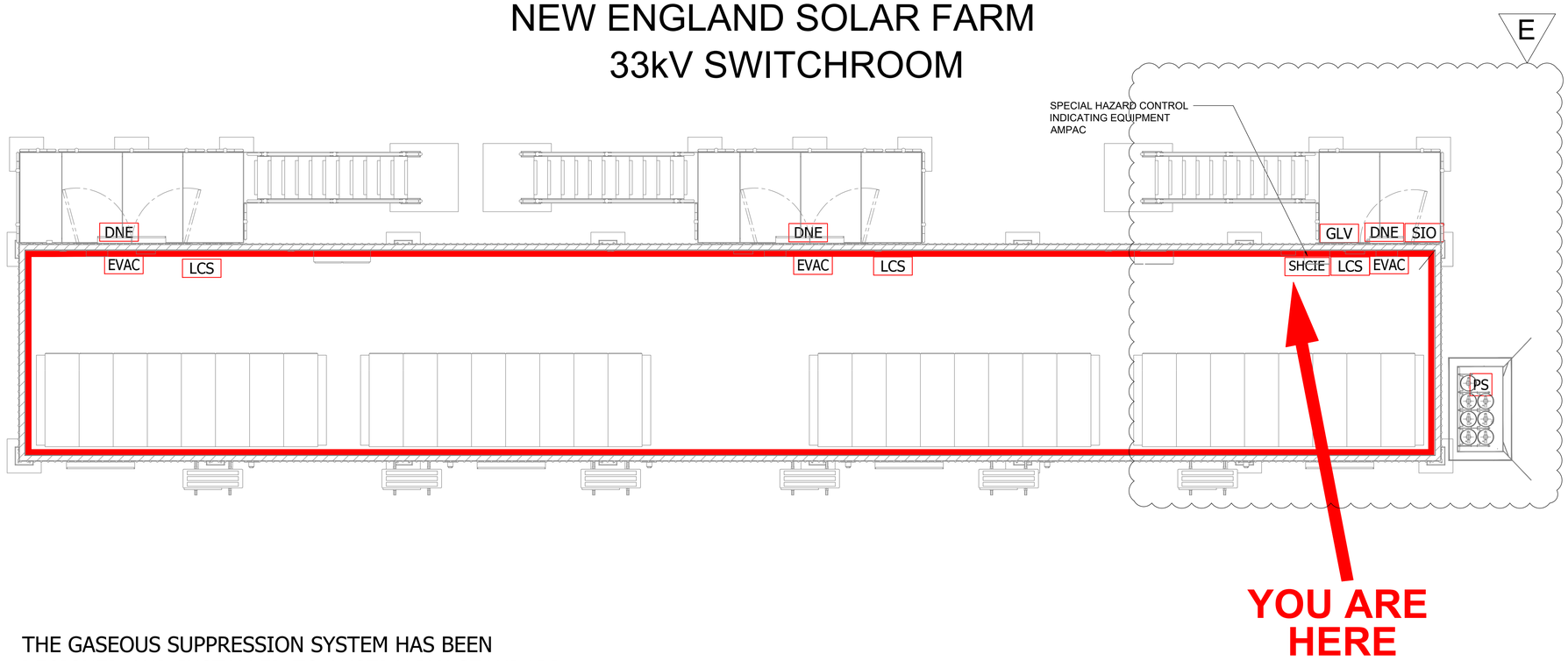
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-22

REVISION: E

GASEOUS FIRE EXTINGUISHING SYSTEM
BLOCK PLAN

NEW ENGLAND SOLAR FARM
33kV SWITCHROOM



THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214-2018 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE	33kV SWITCHROOM
GROSS VOLUME	286.42m3
NET VOLUME	286.42 m3
MAXIMUM FLOODED HEIGHT'	3.20 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	233.1kg
ESTIMATED MAX.CONCENTRATION	43.725 %
PRESSURE RELIEF VENT AREA	0.090 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	29 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.35m

REVISED AUGUST 2022

LEGEND:

SHCIE	SPECIAL HAZARD CONTROL INDICATING EQUIPMENTAMPAC SP8X FIRE FINDER PLUS
EVAC	'EVACUATE AREA' AUDIO VISUAL INDICATOR
DNE	'DO NOT ENTER' AUDIO VISUAL INDICATOR
SIO	GAS SYSTEM INOPERATIVE WARNING SIGN
LCS	LOCAL GAS CONTROL STATION
GLV	GAS LOCKOFF VALVE
PS	PRESSURE SWITCH (GAS)
	GAS SUPPRESSION CYLINDERS
	PROTECTED AREA

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TO ENSURE FIRE SERVICE RESPONSE

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Kidman Park
South Australia 5025
Tel: (+61) 133 166
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PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: 33kV SWITCHROOM
GAS SUPPRESSION SYSTEM
BLOCK PLAN 1 OF 2

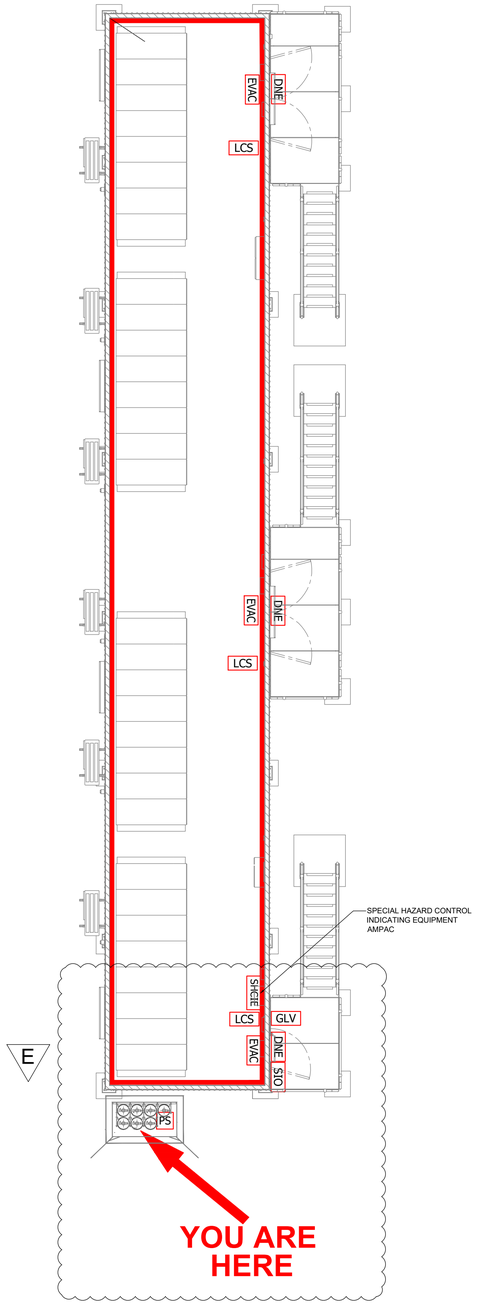
DATE	11.10.2021	FILE NAME	ADC01093.dwg
DRAWN BY	JS	CHECKED BY	MH
APPROVED BY	DC	SCALE	N.T.S @A1
JOB NUMBER	ADC01093		

DRAWING NO: ADC01093-23
REVISION: E

GASEOUS FIRE EXTINGUISHING SYSTEM BLOCK PLAN

NEW ENGLAND SOLAR FARM

33kV SWITCHROOM



THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214-2018 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE	33kV SWITCHROOM
GROSS VOLUME	286.42m3
NET VOLUME	286.42 m3
MAXIMUM FLOODED HEIGHT'	3.20 m
AGENT	IG541
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	41.7%
AGENT QUANTITY REQUIRED	233.1kg
ESTIMATED MAX.CONCENTRATION	43.725 %
PRESSURE RELIEF VENT AREA	0.090 m²
REQUIRED HOLD TIME(MIN)	20 min
COMMISSIONED HOLD TIME	29 min
HOLD TIME CRITERIA	DESCENDING INTERFACE
MAXIMUM PROTECTED HEIGHT	2.35m

LEGEND:

- SHCIE — SPECIAL HAZARD CONTROL INDICATING EQUIPMENT AMPAC SP8X FIRE FINDER PLUS
- EVAC — 'EVACUATE AREA' AUDIO VISUAL INDICATOR
- DNE — 'DO NOT ENTER' AUDIO VISUAL INDICATOR
- SIO — GAS SYSTEM INOPERATIVE WARNING SIGN
- LCS — LOCAL GAS CONTROL STATION
- GLV — GAS LOCKOFF VALVE
- PS — PRESSURE SWITCH (GAS)
- ⊕ — GAS SUPPRESSION CYLINDERS
- PROTECTED AREA

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5 Valetta Road
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PROJECT: NEW ENGLAND SOLAR FARM

DRAWING TITLE: 33kV SWITCHROOM GAS SUPPRESSION SYSTEM BLOCK PLAN 2 OF 2

DATE	11.10.2021	FILE NAME	ADC01093.dwg		
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REVISION: E

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