Attexo
APEM Group

# Appendix K

## Safety and Emergency Management Plan

Riskcon engineering

# Safety and Emergency Management Plan

## Tully BESS, QLD

Attexo Group Pty Ltd
Document No. RCE-25642_TullyBESS_SEMP _Final _01Jun26_Rev(0)
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# Safety and Emergency Management Plan

Tully BESS, QLD

Attexo Group Pty Ltd

Prepared by

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## Quality Management

| Rev | Date | Remarks | Prepared By | Reviewed By |
|---|---|---|---|---|
| A | 25th February 2026 | Draft issued for comment | Ezra Bagaskara | Renton Parker |
| B | 8th May 2026 | Updated per comments | | |
| 0 | 1st June 2026 | Final issued | | |

# Executive Summary

## Background

Attexo Group Pty Ltd (Attexo) is assisting RWE Tully Battery Pty Ltd (RWE) with the development application for the Tully Battery Energy Storage System (BESS) located within the Cassowary Coast Regional Council. As part of the planning services, subspecialist reports will be required to meet the performance outcomes outlined in the published State Code 27: Battery storage facility development of the State Development Assessment Provisions. This document represents the Safety and Emergency Management Plan (SEMP) and will cover regular operations of the facility, and also during construction, as the construction risks differ based both on the number of peoples on site and the activities being conducted.

There is particular concern regarding the risk of the Li-ion batteries and regarding fires on-site, so care has been made to address these risks. The contents of this document are to be read and understood by all personnel at the site and contractors involved with the site.

It is a requirement that all those with emergency responsibilities as defined in this plan have a copy of this SEMP and receive the appropriate level of training needed to allow sufficient response to the incidents identified in this document.

The guidelines in this document are simple, but if you are in doubt about any aspect of safety or procedures you must consult the company supervisor in charge immediately.

This document has been prepared in accordance with AS 3745-2010 (Ref. [1]) and HIPAP No. 1.

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# Abbreviations

| Abbreviation | Description |
|---|---|
| ADG | Australian Dangerous Goods Code |
| AFAC | Australasian Fire and Emergency Service Authorities Council Limited |
| BESS | Battery Energy Storage System |
| CA | Combat Agency |
| CBD | Central Business District |
| DM | Duty Manager |
| DA | Development Application |
| DGs | Dangerous Goods |
| EMP | Emergency Management Plan |
| ERP | Emergency Response Procedure |
| FSS | Fire Safety Study |
| HIPAP | Hazardous Industry Planning Advisory Paper |
| LFP | Lithium Iron Phosphate |
| Li-NMC | Lithium Nickel Manganese Cobalt Oxide |
| MVPS | Medium Voltage Power Station |
| NSW | New South Wales |
| PBP | Planning for Bushfire Protection |
| PCUs | Power Conversion Units |
| PG | Packing Group |
| PHA | Preliminary Hazard Analysis |
| PPE | Personal Protection Equipment |
| QFD | Queensland Fire Department |
| QLD | Queensland |
| RFSQ | Rural Fire Service Queensland |
| RMAR | Risk Management Assessment Report |
| SARA | State Assessment and Referral Agency |
| WHS | Work Health and Safety |

# 1.0 Introduction

## 1.1 Background

Attexo Group Pty Ltd (Attexo) is assisting RWE Renewables Australia Pty Ltd (RWE) with the development application for the Tully Battery Energy Storage System (BESS) located within the Cassowary Coast Regional Council. As part of the planning services, subspecialist reports will be required to meet the performance outcomes outlined in the published State Code 27: Battery storage facility development of the State Development Assessment Provisions. This document represents the Safety and Emergency Management Plan (SEMP) and will cover regular operations of the facility, and also during construction, as the construction risks differ based both on the number of peoples on site and the activities being conducted.

There is particular concern regarding the risk of the Li-ion batteries and regarding fires on-site, so care has been made to address these risks. The contents of this document are to be read and understood by all personnel at the site and contractors involved with the site.

It is a requirement that all those with emergency responsibilities as defined in this plan have a copy of this SEMP and receive the appropriate level of training needed to allow sufficient response to the incidents identified in this document.

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This document has been prepared in accordance with AS 3745-2010 (Ref. [1]) and HIPAP No. 1.

## 1.2 Aim of the Emergency Management Plan

The purpose of this document is to:

- Provide a clear understanding of how to handle and react to any emergency at the BESS site during construction and regular operation (including non-dangerous and dangerous goods).
- Prevent or minimise the impact of an emergency.
- Facilitate a return to normal operations as soon as possible.

## 1.3 Definition of an Emergency

An emergency is a situation which harms (or threatens to harm) people, property or the environment. For example, non-minor spill of hazardous chemicals and fires are to be treated as emergencies. Not all spillages are considered as an emergency, however. If there is any doubt, an event should be treated as an emergency.

## 1.4 Levels of an Emergency

The three levels of an emergency are defined as:

1) Local Alert: any situation which threatens life, property or the environment at one location on site, but may not spread to other areas on site.
2) Site Alert: where effects may spread to other areas on the site.
3) External Alert: where effects may spread and impact on people, property or the environment outside the site.

Each of these three levels of emergency may be further classified as:

- Minor Emergency: Where the emergency can be handled entirely on site and no assistance is required from the public emergency services.
- Major Emergency: Where the situation requires the assistance of the public emergency services, i.e., ambulance, fire brigade or police.

An External Alert is automatically a Major Emergency, as action cannot be taken outside the site boundary independently of the public emergency services.

## 1.5 Authorisation

The Site Manager (O&M or Construction) for the BESS Facility is responsible for distributing and updating the SEMP. It is under the Site Manager's authority/delegation that the plan is distributed and executed. To maximise its usefulness, the Site Manager encourages controlled copyholders and all other interested parties to suggest potential improvements. **Table 1-1** contains the contact details for the Site Senior Executive.

**Table 1-1: Site Senior Executive Contact Details**

| Name | Position | Contact |
|---|---|---|
| TBC | TBC | TBC |

The Duty Manager for the site will be responsible for the implementation of the emergency requirements under the direction of the Site Senior Executive. It will be the Duty Manager's responsibility to monitor the emergency response elements (hardware and software) and to raise issues to the notice of the Site Senior Executive for corrections, change or update. The Site Senior Executive may then delegate responsibility for corrections, changes and updates to the Duty Manager as required.

**Section 11.4.3** gives details on review and updating this SEMP.

This SEMP has been developed using the guidelines published in the Hazardous Industry Planning Advisory Paper (HIPAP) No. 1 as Queensland does not have equivalent planning documents. The SEMP fulfils the requirements of the Work Health and Safety (WHS) Regulation which requires an emergency plan to be prepared for a facility storing and handling dangerous goods (DGs) in excess of the threshold quantities listed in the WHS Regulation.

Signed:

.....

.....

[name]

# 2.0 Objectives

## 2.1 Purpose

The purpose of the SEMP is to prevent or minimise the impact of an emergency and to facilitate a return to normal operations as soon as possible, by providing effective:

- Emergency Response.
- Incident Management.
- Training.
- Updating and reviewing of the emergency procedures.

## 2.2 Objectives

This SEMP provides guidance on response actions to be taken in an emergency which may occur within all areas of the site, to minimise the potential for loss of life, injury to people, damage to the environment, and damage to property.

The objectives of the SEMP (in order of priority) are:

1) Protection of human life and rescue of people.
2) Protection of the environment.
3) Protection of property, equipment and products.
4) Restoration of safety to affected areas.
5) Restoration of facilities.
6) Resumption of normal operations.

# 3.0 Site Description

## 3.1 Site Location

The proposed site for the Tully BESS is approximately 4 km (via Tully Gorge Road) to the south-west of the centre of Tully and approximately 145 km south of Cairns via the Bruce Highway. **Figure 3-1** shows the location of the proposed site in relative to Tully. **Figure 3-2** shows the conceptual BESS Layout with the existing substation. It is acknowledged that the designs are preliminary at this stage; however, any changes to the design are unlikely to be significant to the hazards present.

## 3.2 Adjacent Land Uses

The land for the proposed site is located in a regional / rural area surrounded by the following land used which are adjacent to the sites:

- North – Power link substation
- South – Cane farm
- East – Wetland
- West – Rural land used for cattle grazing and evaporation ponds

## 3.3 General Description

The Project includes a proposed BESS with a capacity up to 200 MW for a duration of 4 hours and associated infrastructure (e.g. transformer, OHTL, air insulated switchgear, access roads, laydown areas, foundations, hard stand, parking, switch rooms and storage). The BESS and associated infrastructure will comprise a total development footprint of approximately 9 ha within the 28.7 ha Project Site.

The Project has been designed to minimise impacts, in keeping with the sustainable nature of the development for supporting renewable energy projects and reducing greenhouse gas emissions. Accordingly, the existing environment; existing land use at the Site and the surrounding locality; proximity to existing electricity infrastructure; stormwater management; and noise impact have all been considered in the design development.

The primary components of the Project will consist of the following:

- Up to 188 battery units will cover a total area of approximately 2.5 ha. The foundations for the proposed battery units will likely be screw piles, piers or concrete pad formations. The BESS will be connected to the adjacent switch rooms via underground cables. Inverters may be incorporated as part of the battery units or there may be separate Power Conversion Units (PCU) that convert the DC energy from the battery units.
- Switching station will be located to the north of the battery unit and comprise a 132/33 kV high-voltage transformer, switchgear, an auxiliary transformer, two 33 kV switch rooms and potentially harmonic filters.
- Stormwater drainage systems will be constructed to allow for safe collection and diversion of rainwater at the BESS facility and will be established for both construction and operational phases.

- Access to the facility will be via the existing local road network with upgraded access proposed from Sandy Creek Road.
- Grid connection will be via an overhead transmission line running from the north of the BESS area to substation on the adjoining lot. The OHTL will be supported by five (5) single circuit 132 kV concrete poles approximately 27.5 m in height.
- The BESS area will be fenced for safety and security purposes.
- An Asset Protection Zone (APZ) will be established and maintained around the battery storage infrastructure to ensure protection from bushfire and to allow access to firefighting personnel in the event of fire.
- A perimeter access track around BESS units will be provided for operations, maintenance and emergency response.
- Earthworks, including batters and clearing required for access to undertake civil works.
- An acoustic wall of 6 m in height has been included with the design, this is located directly on the northern perimeter of the BESS units. The acoustic wall may not be required, subject to further design enhancements of the BESS units to reduce noise levels.
- The Project includes provision for lighting for when maintenance works are to be undertaken at night; these will be on 10 m high poles. Additionally, there would be security lighting that is controlled by sensor. All lighting would be designed and operated in accordance with AS 4282:2023 Control of the obtrusive effects of outdoor lighting.
- Two lightning arrestors will also be located within the development footprint; these will be up to 20 m in height.

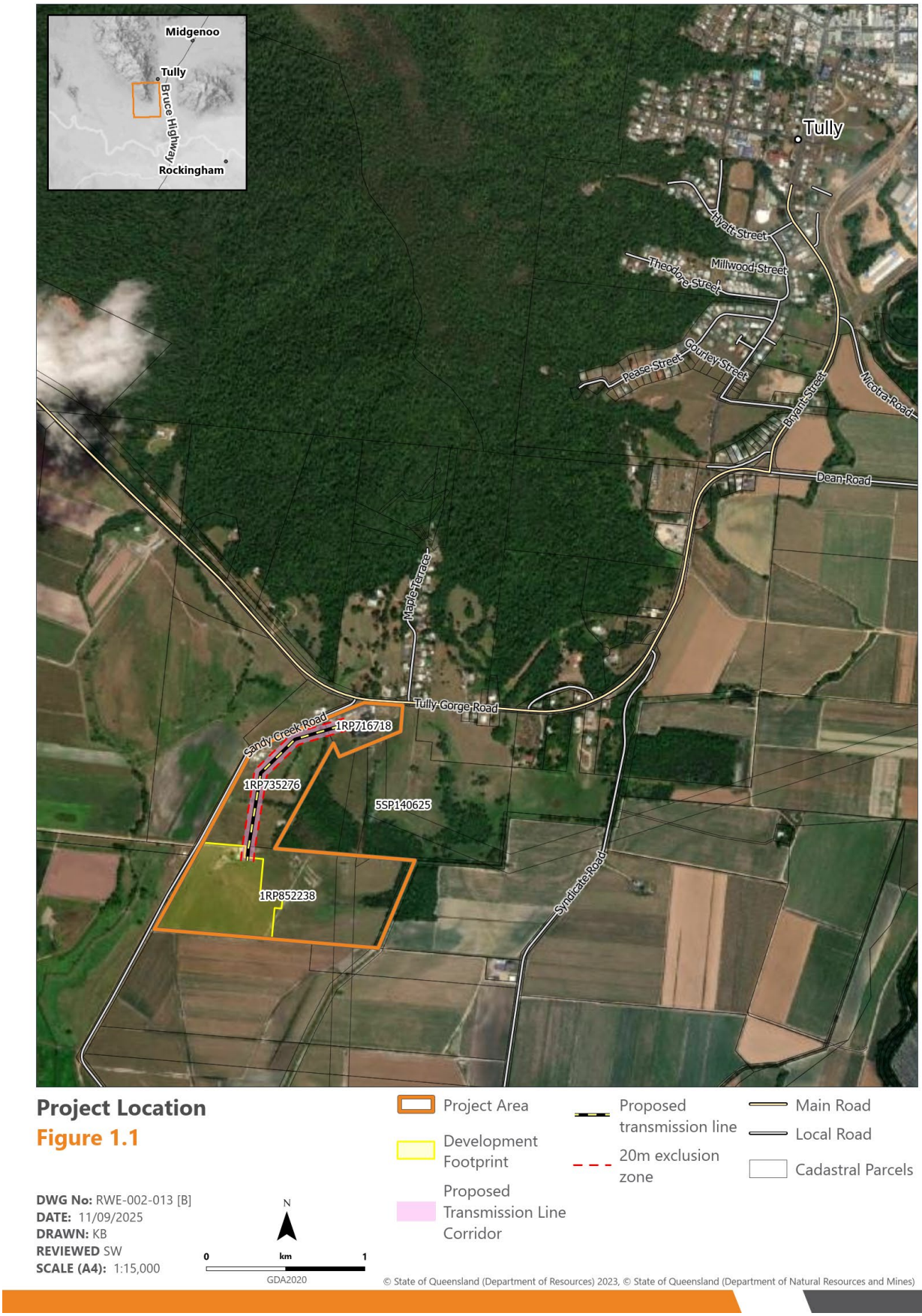
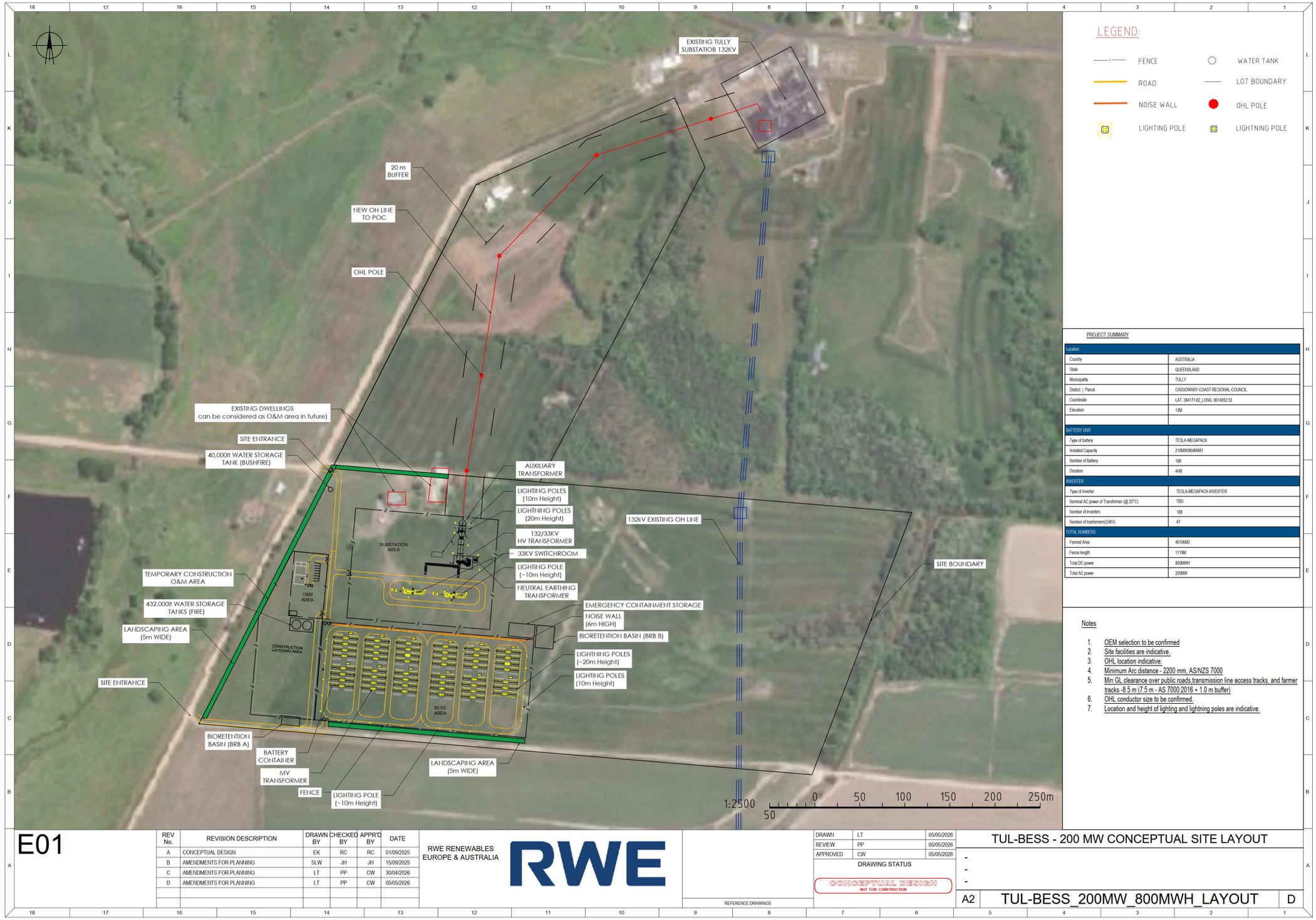



**Figure 3-1: Site Location**




LEGEND:

- FENCE
- ROAD
- NOISE WALL
- LIGHTING POLE
- WATER TANK
- LOT BOUNDARY
- OHL POLE
- LIGHTNING POLE

PROJECT SUMMARY

| | |
|---|---|
| **Location** | |
| Country | AUSTRALIA |
| State | QUEENSLAND |
| Municipality | TULLY |
| District \| Parcel | CASSOWARY-COAST-REGIONAL-COUNCIL |
| Coordinate | LAT.:-384171.62_LONG.:8014052.53 |
| Elevation | 12M |
| | |
| **BATTERY UNIT** | |
| Type of battery | TESLA-MEGAPACK |
| Installed Capacity | 210MW/864MWH |
| Number of Battery | 188 |
| Duration | 4HR |
| **INVERTER** | |
| Type of Inverter | TESLA-MEGAPACK-INVERTER |
| Nominal AC power of Transformer (@ 25°C) | TBD |
| Number of inverters | 188 |
| Number of tranformers(33KV) | 47 |
| **TOTAL NUMBERS** | |
| Fenced Area | 46100M2 |
| Fence length | 1119M |
| Total DC power | 800MWH |
| Total AC power | 200MW |

Notes

1. OEM selection to be confirmed
2. Site facilities are indicative.
3. OHL location indicative.
4. Minimum Arc distance - 2200 mm, AS/NZS 7000
5. Min GL clearance over public roads,transmission line access tracks, and farmer tracks -8.5 m (7.5 m - AS 7000:2016 + 1.0 m buffer)
6. OHL conductor size to be confirmed.
7. Location and height of lighting and lightning poles are indicative.

E01

| REV No. | REVISION DESCRIPTION | DRAWN BY | CHECKED BY | APPR'D BY | DATE |
|---|---|---|---|---|---|
| A | CONCEPTUAL DESIGN | EK | RC | RC | 01/09/2025 |
| B | AMENDMENTS FOR PLANNING | SLW | JH | JH | 15/09/2025 |
| C | AMENDMENTS FOR PLANNING | LT | PP | CW | 30/04/2026 |
| D | AMENDMENTS FOR PLANNING | LT | PP | CW | 05/05/2026 |

RWE RENEWABLES EUROPE & AUSTRALIA

REFERENCE DRAWINGS

| | | |
|---|---|---|
| DRAWN | LT | 05/05/2026 |
| REVIEW | PP | 05/05/2026 |
| APPROVED | CW | 05/05/2026 |

DRAWING STATUS: CONCEPTUAL DESIGN NOT FOR CONSTRUCTION

TUL-BESS - 200 MW CONCEPTUAL SITE LAYOUT

A2 TUL-BESS_200MW_800MWH_LAYOUT D

**Figure 3-2: Conceptual BESS Layout**

## 3.4 Activities Phase

### 3.4.1 Construction

Construction works will include the construction of the BESS and construction of the substations. The commencement of construction is dependent on receiving approval from the consenting Authority. During the peak construction period the number of workers on site may range from 40 to a maximum of 50 personnel. Construction is anticipated to occur during normal business hours (9am-5pm, Monday-Friday) until construction is completed. This means personnel will be present on site regularly during construction.

The BESS construction works include:

- Clearing/grubbing and contouring.
- Laying and compacting access tracks.
- Unloading components.
- Drilling and piling.
- Assembling BESS units.
- Trenching and laying collector group cables

The collector substation construction works include:

- Laying earth-grid and placing crushed rock for the collector substation bench.
- Foundation construction for the collector substation elements.
- Installation of control/switching rooms, transformer and associated ancillaries.
- Cable terminations.
- Commissioning.

### 3.4.2 Regular Operation

During regular operation, the site will be remotely monitored. Personnel will only need to attend the site for maintenance and inspections, in which case up to 8 people may be present.

In the first few years, more regular maintenance trips and/or visual inspections are anticipated to take place up to once per week. In the following years, inspections and maintenance will occur on an as-needed basis. Alarms, faults and/or security breaches that occur will be relayed to a remote manned control centre, which will be staffed 24/7. This will allow a response to occur from a service crew and/or emergency services as required.

The key activities that would be undertaken during operation include:

- Visual inspections, maintenance and general housekeeping.
- Vegetation management.
- Repair and replacement of equipment.
- General operational requirements.

## 3.5 Bushfire Risk

There is the potential for an external fire event to impact the BESS Project such as a bushfire incident. The proposed BESS site is situated next to bushfire prone land with a Very High, High and Medium Potential Bushfire Intensity, as indicated in **Figure 3-4.** As such, the site shall maintain good housekeeping procedures to prevent the accumulation of combustible loads; hence, in such an event any escalation would be expected to be a minor grass fire. Grass fires can move quickly; however, they tend to be short-lived as the combustible load is exhausted. Subsequently, sustained radiant heat impacts at the site would not be expected and would be unlikely to result in sufficient heat to impact the BESS or other infrastructure such that incident propagation occurs.


**Figure 3-3: Bushfire Prone Land**

Furthermore, it is determined that in the event fires originate on site, they are unlikely to propagate to a bushfire that threatens developments surrounding the facility, as there is minimal vegetation at the site to sustain this type of escalation. All electrical equipment on site will be on non-combustible hardstands and sufficiently separated to avoid incident propagation, thus limiting the spread of bushfire.

Assuming the additional protection measures described in **Section 3.5.1**, it is estimated that fires originating on-site will pose a greater threat to the BESS site than fires originating off-site. Any small-scale vegetation fire originating onsite (i.e. from flying sparks or hot debris) will be handled in the same manner as other small fires onsite.

Fires may be caused by ignition sources that will be present at the proposed site during construction and operation, including the following:

- Machinery movement
- Hot work
- Storage of combustible and flammable liquids and waste
- Electrical faults
- Lightning strikes
- Lithium-ion battery storage

The site will have designated smoking areas that have adequate separation distances from any fire-risk material, meaning the risk of ignition from cigarettes will be eliminated. Furthermore, during the construction of the site, the only DGs present will be diesel in storage or in vehicles. This is a significant safety feature as the risk of BESS fires is substantially higher during construction periods.

The nature of these fires is discussed in greater detail in **Section 4.1**.

### 3.5.1 Protection Measures

There are several protective measures the BESS site can adopt to further reduce the risk of bushfires. These measures were cross-checked against the New South Wales Planning for Bushfire Protection 2019 (PBP 2019), as Queensland does not have an equivalent document.

**Table 3-1** outlines the protection measures are being provided in line with PBP 2019 (Ref. [2]).

**Table 3-1: Summary of Mitigation Strategies and Actions**

| Protection Measure | Description |
|---|---|
| Create and maintain an Asset Protection Zone (APZ) around the Development Footprint | A 48.1 m APZ is to be established around the Development Footprint from woodland areas and 10 m width in grassland areas. The APZ is to be maintained from the commencement of construction in perpetuity in accordance with the QFD (2019) APZ requirements for an Inner Protection Area. The Development Footprint APZ is to incorporate a fire trail (TBC). |
| Construction and Design | Electrical equipment is to be installed in accordance with relevant Australian Standards and vulnerable components are to be shielded or buried where required. Dangerous goods are to be stored in accordance with relevant Australian Standards.<br>All electrical equipment, including BESS units are to be located on hardstands, meaning there is limited vegetation on the site to fuel bushfires. Furthermore, all equipment is to be housed in individual metal housing with suitable IP ratings, providing heat and fire resistance and protection from embers. |
| Construction and Operation During High Fire Danger Periods | All operations involving earth moving equipment, vehicles, slashers and hot works (e.g. grinders, welders) must cease during Total Fire Bans, while the Grassland Fire Danger Index (GFDI) is or is forecast to be 35 or greater, or high winds are forecast.<br>During Very High or worse fire danger days, the QLD Fire Department website and/or the QLD Fires app is to be checked hourly for the occurrence of any fires likely to threaten the Site; and all plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g. soil and vegetation). |

| Protection Measure | Description |
|---|---|
| | Should construction take place during a declared Bushfire Danger Period, the following measures are recommended to control the risk of grassfire ignitions:<br>• The APZ is constructed as one of the first stages of development<br>• A suitable fire appliance is present on site with at least two personnel trained in fire fighting |
| Maintain emergency access/egress for fire fighters and site personnel | The APZ is to incorporate a fire trail, established and maintained in accordance with QFD requirements, including provisions for passing bays and turn around points. The NSW Planning for Bushfire Protection (PBP) 2019 was consulted due there being no QLD equivalent. |
| Fire preparedness and response | A Bushfire Hazard Assessment and Management Plan (incorporating a discrete SEMP) including:<br>• Ignition reduction strategies<br>• Fire suppression equipment details<br>• Flammable materials storage requirements<br>• Fire preparedness procedures<br>• Fire reporting and response to formal emergency alerts<br>• A standalone SEMP (this document): detailing firefighting restrictions, potential hazards, specialised Personal Protective Equipment (PPE) requirements, shutdown/isolation procedures, evacuation zone distances, aerial suppression considerations and availability of the SEMP. |
| Separation of electrical equipment | Electrical equipment, particularly BESS units, shall be sufficiently separated to comply with test results and/or supplier requirements. This will limit the potential for incident propagation. |

## 3.6 Quantities of Dangerous Goods Stored and Handled

Lithium-ion batteries are considered Class 9: Miscellaneous Dangerous Goods. These will be the majority of DGs stored on site. Other DGs that are expected to be stored onsite include oil in the transformers (often ester or mineral oils). The precise quantities of DGs are to be confirmed, however **Table 3-1** contains the expected quantities of DGs onsite for a project of this scale.

The threshold column in **Table 3-1** indicates placard threshold, at which there are certain legal requirements to comply with Work Health and Safety Regulation 2011 (Ref. [7]). The detailed description of these requirements is beyond the scope of this report.

**Table 3-2: Maximum Quantities of Dangerous Goods Stored & Preliminary Risk Screening**

| Area | Class | Description | Quantity | WHS 2011 Placard Threshold |
|---|---|---|---|---|
| BESS Units | 9 | Li-Batteries | 2,847 T | n/a |
| Transformer oil | C1 | Combustible Liquid | 400 kL* | 10,000 L |

*TBC. Estimated quantity based on similar projects

# 4.0 Types of Emergencies

The following emergency scenarios were identified during the hazard identification process as being credible threats to people, the environment and property both during construction and regular operation. Where an emergency scenario requires a procedure within the Emergency Management Plan, a reference to corresponding procedure section of this document has been provided.

The classification of an emergency according to the levels described in **Section 1.4** is necessary to confirm the most appropriate action to take. All emergencies have the potential to be categorised to any level as the context and extent of the emergency must be considered.

## 4.1 General Fire and Explosion

There are several sources where a fire or explosion might occur at the site, including:

- Transformer internal arcing, resulting in an oil spill, possible ignition and bund fire.
- Electric sparks and arcs (from electrical circuits, motors, switches etc.).
- Grass fire caused by hot works during construction.
- Vehicular accident resulting in a release of fuel as a result of the collision, ignition of released fuels including construction vehicles.
- Monitoring house fires from electrical faults, sparking, etc.

The required response to fires or explosions at the site is given in procedure **Emergency Response Procedure (ERP)-01**.

### 4.1.1 Substation Fires

Substation fires can result from several sources including arcing causing ignition of the oil (combustible liquid) present, switchgear failure, power surge, damage from pests or malicious attacks. A substation fire may occur while the site is attended either during modification works or during maintenance, however the substation will be primarily unattended. If a fire is present at the substation, emergency services will be required to respond, and the substation will require evacuation.

### 4.1.2 Workshop and Construction Site Office Building Fire

In the workshop and temporary construction site buildings, an electrical fire (computers, servers, printers, photocopiers, etc.) may propagate quickly due to fuel in the form of paper, furniture (wood), carpet, etc. During construction and operations, these types of fires should be quickly identified and may be able to be mitigated by the trained personnel on-site.

However, during periods when the office is unattended (i.e., after normal working hours) a fire will likely continue until it has either burned out or emergency responders arrive.

### 4.1.3 Combustible Liquids Fires

Transformers contain oil (combustible liquid) which is used to cool the units during operation. If arcing occurs within the transformer, there is the potential for pressure build up, resulting in rupture of the oil reservoir and spill into the bund. This, coupled with the heat within the reservoir, may cause an ignition and fire within the transformer and bund, which would need to be dealt with by the fire brigade with the fire contained within the bunded area encompassing the transformers.

### 4.1.4 Vehicular Collisions Leading to Fires

The site will have vehicle access for employees and any visitors. If a collision occurred, there is potential for fuel within the vehicles to ignite resulting in a fire. In such an event, personnel are present and can initiate first attack firefighting using extinguishers and hose reels. In the event these firefighting systems fail to control the fire, the fire brigade will be required.

It is noted that vehicular movements around the site would be very limited after construction is complete as staffing requirements at the BESS facility are minimal.

## 4.2 Lithium-Ion Battery Fire

### 4.2.1 Background

Lithium-ion batteries contain flammable substances which present as a unique hazard upon ignition. Lithium-ion batteries can ignite if overcharged, overheated, or because of mechanical damage. The vapours released by a fire can be flammable themselves or toxic. Lithium-ion battery fires are particularly dangerous as they cannot be extinguished using water. The BESS facility will require evacuation and emergency services will be required to respond.

The BESS units to be implemented in the site shall be compliant with UL 9540, the Standard for Energy Storage Systems and Equipment, which is the nationally adopted standard in the US and Canada, and the globally adopted standard for BESS manufacturers. The associated UL 9540A test aims to demonstrate the improbability of thermal runaway, as well as the inherent safety features designed into BESS units to reduce the consequences if a BESS fire is to occur. BESS units that are compliant with this test are considered the safest in industry.

While there have been cases of lithium-ion BESS fires in Australia, the fires from initiating units were contained to no more than two (2) units, which indicates compliance with UL 9540. The causes of these events were attributed to coolant leaks and issues on the power side of the BESS units.

The following sections explain more about the chemistry of lithium-ion batteries, thermal runaway, the gases potentially released during a lithium-ion battery fire and the safety features to be implemented for the BESS site to minimise the risk of BESS fires.

#### *4.2.1.1 Li-ion Battery Chemistry*

A review of the batteries proposed to be used as part of this project indicates the battery chemistry is anticipated to be lithium iron phosphate (LiFePO4, or simply LFP) which are one of the safest battery chemistries within the industry.

The thermal rise of LFP batteries at peak is 1.5$^{o}$C/min, compared to the 200-400$^{o}$C/min thermal rise experienced by other lithium-ion batteries. Thus, the use of LFP batteries significantly decreases the risk of ignition and propagation of fires to other batteries. The stability of the batteries is due to the cathode not releasing oxygen, therefore preventing violent redox reactions resulting in rapid temperature rise as the oxygen oxides the electrolyte. Lithium Nickel-Manganese-Cobalt batteries (Li-NMC) were also considered viable for BESS facilities due to their high energy density relative to LFP batteries. However, operation of Li-NMC does result in oxygen release, potentially increasing fire risks. For this reason, LFP batteries are advised as the industry standard for safety in lithium-ion battery technology, and most new BESS units contain LFP chemistry. Further details on thermal runaway experienced by different battery chemistries can be found in **Appendix A.**

#### 4.2.1.2 *Thermal Runaway and Li-ion Battery Fire*

The key hazard associated with Lithium-ion-BESS (Li-BESS) systems is thermal runaway which can be initiated in a cell by several events including (Ref. [9]) :

- Manufacturing defects
- Overcharging
- Overheating
- Mechanical abuse

During thermal runaway, cells can release a large quantity of both toxic and flammable gases creating a risk for explosion and toxicity to bystanders. Thermal runaway in a single cell within a BESS unit has potential to induce thermal runaway propagation which may eventually lead to larger-scale fire and/or explosion incidents (Ref. [10]).

The likelihood and consequence of thermal runaway in a BESS is dependent on several factors including the design, battery chemistry and installed systems. The battery product that has been proposed for this project is the Tesla Megapack 3 of which the battery chemistry is LiFePO4, or simply LFP. LFP cells are the current standard for large-scale BESS systems accounting for approximately 80% of the total battery storage market as of 2023. This is largely due to lower cost, higher cycle lives and safety considerations when compared to other chemistries such as nickel manganese cobalt (NMC)(Ref. [11]). Although NMC has a higher energy density, LFP batteries have begun to dominate the grid-scale energy market due to the following advantages when compared to NMC (Ref. [12]):

- Longer cycle life and less capacity reduction over time
- Higher thermal stability and less prone to overheating
- Better mechanical stability
- More stable electrochemically with fewer side reactions which accelerate degradation
- More resilient to state of charge (SOC) and depth of discharge (DOD) with less degradation from deep cycling

#### 4.2.1.3 *Li-ion Battery Fire and Toxic Gas Dispersion*

If a BESS failure occurs, resulting in a fire, toxic byproducts of combustion may form. A literature review was conducted on LFP battery fires to identify the toxic gases that may be generated in the event of a fire. The review identified the following gases or classes of gases that can form:

- Carbon dioxide;
- Carbon monoxide; and
- Fluorine gases.

Each of these have been discussed in further detail in the following subsections.

*Carbon Dioxide*

Carbon dioxide is a colourless, odourless, dense gas which is naturally forming and is present in the atmosphere at concentrations around 415 ppm (0.0415%). At low concentrations carbon dioxide is physiologically impotent and at low concentrations does not appear to have any toxicological effects. However, as the concentration grows it increases the respiration rate of

exposed persons. The Short Term Exposure Limit (STEL) is 30,000 ppm (3%) as established by SafeWork Australia; thus, levels above 50,000 ppm (5%) will induce a strong respiration effect, along with dizziness, confusion, headaches, and shortness of breath. Concentrations more than 100,000 ppm (10%) may result in coma or death.

Carbon dioxide is a by-product of combustion where hydrocarbon or carbon-based materials are involved. A typical combustion reaction producing carbon from a hydrocarbon has been provided in **Equation 4-1**. This reaction proceeds when there is an excess of oxygen to the fuel being consumed and is known as complete combustion as it is the most efficient reaction pathway.

$$C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$$ **Equation 4-1**

The lithium-ion batteries are predominantly composed of metal structures. However, during a fire event ancillary equipment and materials within the batteries will be involved in the fire including wiring, plastics, anodes, etc. which will liberate carbon dioxide. However, a review of the toxicological impacts indicates high concentrations would be required to result in injury or fatality. Based upon a review of the sensitive areas, and the similar BESS fires (i.e. Victoria BESS fire), it is not considered that the formation of carbon dioxide in a fire would be sufficient to result in downwind impacts sufficient to cause injury or fatality. In other words, there would be insufficient production of carbon dioxide to generate a plume of sufficient concentration to displace the required oxygen for a significant downwind consequence to occur.

*Carbon Monoxide*

Carbon monoxide is an odourless, colourless gas which is slightly denser than air and occurs naturally in the atmosphere at concentrations around 80 ppb. Carbon monoxide is a toxic gas as it irreversibly binds with haemoglobin which prevents these molecules from carrying out the function of oxygen / carbon dioxide exchange. The loss of 50% of the haemoglobin may result in seizures, coma or death which can occur at concentration exposures of approximately 600 ppm (0.06%).

Carbon monoxide is by-product of combustion if there is insufficient oxygen to enable complete combustion. The reaction pathway for the formation of carbon monoxide is provided in **Equation 4-2**.

$$2C_3H_8(g) + 7O_2(g) \rightarrow 6CO(g) + 8H_2O(g)$$ **Equation 4-2**

The is the small potential for a fire to occur with the BESS units which could form carbon monoxide if there is insufficient oxygen to sustain complete combustion. However, it is noted that the combustible load within the BESS which could result in the formation of carbon monoxide is relatively low compared to the available oxygen in the surrounding atmosphere. Thus, carbon monoxide is unlikely to form.

*Fluoride and Toxic Gases*

LFP batteries contain fluoride in the form of $LiPF_6$. In the event of a thermal runaway, the electrolyte will expand and be vented from the battery. In the event of a fire, the vented gas and other components such as the polyvinylidene fluoride binders may form gases such as hydrogen fluoride (HF), phosphorous pentafluoride ($PF_5$) and phosphoryl fluoride ($POF_3$) (Ref. [3]), which are toxic. Note that Li-NMC batteries do not release fluoridated or toxic gases, although their greater propensity to thermal runaway means they are nonetheless considered more dangerous.

The decomposition of $LiPF_6$ can be promoted by the presence of water / humidity according to reactions **Equation 4-3** to **Equation 4-5**.

$$LiPF_6 \rightarrow LiF + PF_5$$ **Equation 4-3**

$$PF_5 + H_2O \rightarrow POF_3 + 2HF$$ **Equation 4-4**

$$LiPF_6 + H_2O \rightarrow LiF + POF_3 + 2HF$$ **Equation 4-5**

Of the fluorine gases formed, $PF_5$ is a short-lived gas while $POF_3$ is a reactive intermediate. Thermal destruction of a several battery chemistries, configurations and State of Charge (SOC) indicated the vast majority of the batteries did not produce observable $POF_3$ with the condition that a specific battery chemistry was at 0% SOC (Ref. [3]). Therefore, the main fluorine gas of concern in an LFP battery fire is HF.

HF gas is hydroscopic and readily dissolves into water vapour / humidity or moisture in airways, forming hydrofluoric acid. Although hydrofluoric acid is a weak acid, it is highly corrosive and may result in chemical burns. In addition, it has calcium scavenging properties. Hence, it will readily bind with calcium in cells and tissues disrupting the nerve signalling. The immediately dangerous to life or Health (IDLH) for HF is 30 ppm and the 10-minute lethal concentration is 170 ppm. However, UL9540A testing typically shows only trace amounts of HF gas released for LFP fires 1 m away from the fire.

For a toxic gas dispersion, a battery container fire is necessary as the initiating event. As discussed in **Sections 4.2.1.1 and 4.2.1.2**, the potential for a fire to occur for LFP batteries is considered negligible due to the highly stable and safe battery chemistries used. By ensuring the BESS units implemented at the facility are compliant with the UL 9540A test criteria, the presence of toxic gases released in the unlikely event of thermal runaway will be negligible.

#### *4.2.1.4 Previous Li-ion Battery Fires*

There have been two major instances of BESS fires in Australia: The Victorian Big Battery fire in 2021 and the Bouldercombe Battery Project fire in 2023.

The Victorian Big Battery (VBB) experienced a fire in July 2021 which also has a back-to-back layout. According to the independent investigation report on its fire incidence, the back-to-back layout was not the cause for propagation. The main reason for fire propagation was strong wind blowing flames from one BESS into the unprotected vent atop of an adjacent BESS which resulted in the ignition of the plastic fan which was able to impact the battery modules directly beneath the fan. This fire can also be partially attributed to the battery chemistry being Li-NMC, which is more likely to experience thermal runaway.

The Bouldercombe Battery Project fire (BBP) fire in 2023 occurred due to an issue on the AC side and occurred during construction of the facility. The batteries at this facility were LFP. Upon ignition, the BESS unit withstood the fire and demonstrated the inherent safety features that made it compliant with UL 9540A testing; the fire was contained to the single BESS unit and no external water was required to contain the fire. The BESS unit was subsequently removed and tested, and the BBP is in operation as of April 2024.

#### *4.2.1.5 Application to Tully BESS*

The following safety precautions are applied to BESS units that will be implemented at the BESS site:

- Use of Lithium-Iron-Phosphate (LFP) battery chemistry, which is less prone to thermal runaway than Lithium Nickel Manganese Cobalt oxide (Li-NMC) battery chemistry. LFP batteries have a

higher temperature of thermal runaway, meaning they will not spontaneously combust until much higher temperatures are reached. LFP batteries also have a milder thermal reaction, with less heat being produced, thus reducing the risk of propagation to adjacent BESS units.

- Expected compliance with UL 9540A Test, which requires the design of the BESS unit to prove the following:
  - Prevention of propagation of fires from the initiating cells
  - Prevention of flaming and flying debris or explosive discharge of gases
  - Appropriate temperature sensing
  - Appropriate air or liquid cooling systems
  - Negligible concentration of toxic gases emitted from any BESS fires

Although the risk of lithium-ion battery fires is reduced, a small risk remains. The required response to a lithium-ion battery fire is given in procedure **ERP-02.**

### 4.2.2 Advice for QFD

The application of water to Li-ion fires will not extinguish the flames and will instead generate contaminated water. However, the Fire Brigade shall nonetheless be notified in the case of a Li-ion fire and called in to monitor the flames and prevent propagation. Firefighters shall also be required to control any spot fires surrounding the BESS unit. The procedure for firefighters from QFD to follow in the event of a Li-ion fire is detailed in **ERP-02.**

## 4.3 Bushfires

### 4.3.1 Originating On-Site

Due to the risk mitigation strategies detailed in **Section 3.5**, the risk that a substantial bush or grassfire would occur from the BESS site is low. It is acknowledged that a low-level grassfire has the potential to damage transformers and BESS units resulting in a subsequent electrocution risk or lithium-ion battery fire.

Even though it is unlikely due to the existence and upkeep of the APZ, and the sparse vegetation of the surrounds, a low-level grass fire still has potential to impact on neighbouring properties.

The goal of the procedure to deal with a bushfire originating on-site is to ensure the safety of personnel and prevent spread to surrounding properties, then to control and prevent damage to assets which would create subsequent risks. These risks are considered equivalent to those posed by other fires originating onsite. Thus, bush or grassfires originating onsite are considered as part of **ERP-01.**

### 4.3.2 Originating Off-Site

The majority of the surrounding area is considered bushfire-prone with a Very High, High and Medium risk (see **Figure 3-4**). The protection measures outlined in **Section 3.5.1** will reduce the risk of off-site bushfires being of significant risk to the BESS facility.

Nevertheless, there remains a risk of bushfires to the site, particularly during uncontrollable weather events such as dry weather and high wind that can propagate grass fires. As such the procedure for a bushfire originating offsite focuses on personnel safety and spot fire identification and mitigation.

The required response to a bushfire or grassfire originating offsite is given in procedure **ERP-03**.

## 4.4 Hazardous and Dangerous Materials Spill

Beyond the BESS units themselves, the DGs stored at the site likely include combustible liquids in the form of oils within the transformers and/or diesel. Due to the infrequent interaction with these DGs, it is unlikely that a spill would occur. Notwithstanding this, a spill procedure has been developed and is to be utilised.

The required response to spillage at the site is given in procedure **ERP-04**.

## 4.5 Medical Emergency or Personal Injury

Personal injuries can occur as a result of work-related accidents or illnesses. Operations at site such as vehicle movements (particularly during construction), using tools and vegetation management may result in personal injury or illness. In this event it may be necessary to evacuate personnel as a medical emergency.

Emergency Response Procedures for medical emergency or personal injury are found in **ERP-05**.

## 4.6 Natural Events (Floods/Earthquake)

There is negligible potential for flooding to occur within this region. However, the site will be designed for a 0.2% Annual Exceedance Probability event. Furthermore, this indicates the potential for flooding to endanger the BESS operations is negligible. In the case of minor flooding, all electrical equipment is appropriately sited and equipped with water ingress protection suitable for the minor inundation.

Whilst the facility has been constructed using the appropriate earthquake design codes, in the unlikely event of an earthquake, there is a potential for damage to occur to infrastructure at the BESS facility; however, this would be expected to be localised and unlikely to result in escalation. Notwithstanding this, damage to the transformers may result in loss of containment.

Spill clean-up required as a result of natural disasters is covered in **ERP-04**.

## 4.7 Bomb Threat

The potential for bomb threat exists at the site. To assist in controlling this hazard, a bomb threat procedure forms part of this plan, the procedure is included at **ERP-06**.

Bomb threat cards will be located adjacent to each phone and a search procedure has been developed to facilitate rapid location of potential explosive devices in areas allocated as assembly points. Detailed bomb searches will be conducted by Police or other combat agencies.

## 4.8 Collision of Vehicles

During construction, vehicle/mobile plant collisions are more likely due to the higher traffic load on the site. During regular operation and with the minimal staffing levels the potential for collision of vehicles is low. Whilst there are speed limits placed on all vehicles on site and there will be traffic control during construction, there is still a potential for incidents involving vehicles.

To ensure rapid response to any collision incidents a procedure has been developed. This can be found at **ERP-07**.

## 4.9 Civil Disturbance, Vandalism or Intruder Onsite

Civil disturbance is unlikely based on the remote location of the site. However, periods of construction create a higher risk for theft as general site security is often not as strict and many valuable materials and tools are stored.

The main hazard associated with a civil disturbance arises when personnel approach an unauthorised person. A procedure for handling civil disturbance, vandalism and/or intruders has been developed as part of the site emergency plan in **ERP-08**.

# 5.0 Emergency Response Structure

The Emergency Planning shall be coordinated by the Duty Manager and Emergency Response Team (ERT). Emergency Planning shall include establishing and implementing an emergency plan, ensuring that personnel are appointed to all positions in the Emergency Organisation, arranging for their training, arranging to conduct evacuation exercises and emergency response drills, reviewing the effectiveness of exercises and drills, and arranging for procedural improvements.

The site emergency response structure shown in **Figure 5-1** will be implemented in emergency situations. It is noted that each role may be filled by a solitary person due to the low staffing levels at the site.

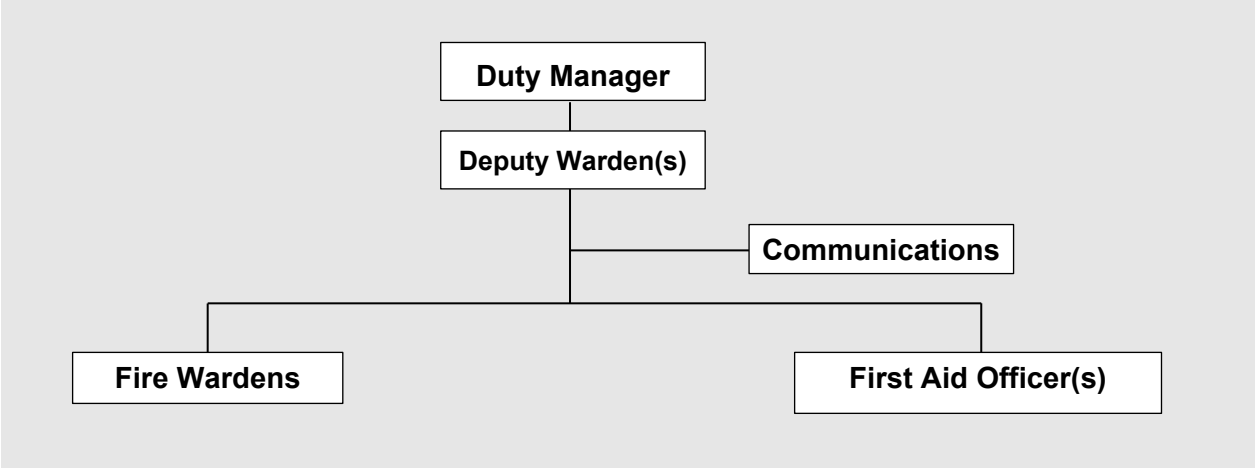



**Figure 5-1: Emergency Response Team Structure**

## 5.1 Emergency Command Structure General Notes

### 5.1.1 Immediate Response and Alarm Initiation

Any person discovering an emergency situation or a situation, which is likely to give rise to an emergency, shall:

- Isolate the affected area (if on site)
- Alarm - raise the alarm by contacting the Duty Manager who shall decide on the level of alert and details of the emergency.
- Consider controlling the situation alone (if offsite, consider if the situation can be mitigated remotely).
- Control it (only if safe to do so).
- Rescue - assist or alert persons in immediate danger.
- Enact the specific Emergency Response Procedures described in **Section 9.0** if appropriate.

If in doubt, the alarm shall be activated first and then the doubt will be clarified.

### 5.1.2 Criteria for the Selection of Emergency Response Personnel

Persons appointed to deal with emergencies will in general:

- be physically capable and willing to carry out the respective function.

- have leadership qualities and command authority.
- have maturity of judgement, good decision-making skills and be capable of remaining calm under pressure.
- have clear diction and be able to communicate with the majority of persons in their care.

These points shall be considered when selecting personnel for the emergency response tasks.

## 5.2 Principal Roles and Responsibilities

It is necessary for personnel to be allocated key emergency response duties. Key positions and duties are listed below. **Appendix C** provides a summary of the roles and responsibilities of key personnel in emergency response positions on site. Secondary roles and responsibilities are also described in **Appendix C**, although it may be decided that these responsibilities are absorbed by personnel who hold the essential emergency management roles.

Each of these roles will be selected by the Site Senior Executive or delegate.

### 5.2.1 Duty Manager and Deputy Wardens

The Duty Manager (DM) and Deputy Warden(s) will be pre-selected by the Site Senior Executive. In the event that the DM is unavailable at the time of the emergency, Emergency Control will be the responsibility of the Deputy Warden. It is assumed the DM or Deputy DM will be the Incident Controller in the case of an emergency.

Upon detection and notification of an emergency situation, the DM will assess and classify the emergency according to the levels described in **Section 1.4**. All emergencies have the potential to be classified to any level, and thus the context and impact of the event must be assessed. The DM will take the appropriate actions

The DM will take responsibility for control of onsite emergencies and direct the emergency response until the arrival of combat agency (CA). The DM will then hand control over to the Combat Agency (CA) Commander. The DM will brief the CA Commander and remain close to the CA Commander to provide advice on site-specific issues as required.

The DM will also regain control of the emergency situation upon release by the CA. It is the responsibility of the DM to terminate the emergency.

### 5.2.2 Communications

#### *5.2.2.1 Internal*

The Communications Officer will be a Stake Holder Manager. It will be his/her task to monitor communication and facilitate the effective exchange of information between the site and the CA.

#### *5.2.2.2 External*

The Communications Officer is the only person responsible for relaying information to the media and other public bodies. Staff will be instructed not to discuss issues with any persons outside the site as this is the role of the Communications Officer only.

When a significant incident occurs, a media statement should be prepared as quickly as possible, and include:

- A description of the nature of the emergency.

- The corrective action taken, and its effectiveness.
- When the emergency is expected to be over.
- The investigative action that is to be taken.
- Any assistance that can be given by the media.

Only facts should be stated. Statements as to the cause and effects of the emergency should be avoided until a thorough investigation has been conducted.

### 5.2.3 Fire Wardens

An overarching category for emergency response personnel. They are the primary emergency team which encompasses the following.

- Traffic management.
- Evacuation Control/Co-ordination
- Emergency Response Co-ordinator

Fire Wardens will be allocated duties (i.e., traffic management, evacuation control, etc.) by the Duty Manager as required during the emergency situation.

### 5.2.4 First Aid Officer(s)

The site first aid officer (for emergency response) will be responsible for attending any emergency where personnel are injured. The site first aid officer will be directed by the site emergency commander as required.

The site emergency first aid officer will also be responsible for ensuring the emergency response first aid kit is well stocked and any items with “use-by” dates are regularly replenished as required.

The site first aid officer will also be responsible for ensuring their first aid qualifications and certification are valid at all times. This will involve regular refresher training as required.

## 5.3 Site Command Centre

In the event of an emergency, control will be taken by the DM. He/she will be located in the site command centre. During construction this should be located at the construction compound site office and during regular operation this will be the Operations and Maintenance Office.

## 5.4 Emergency Response Positions and Roles

All emergency positions will be allocated to specific staff on site and regular exercises conducted to monitor the effectiveness of the SEMP. A list of emergency response roles and contact information is given in **Appendix C**.

## 5.5 Principles of Emergency Response

The principles of response will be based on prevention, containment, rescue and first aid. These have been summarised below:

#### *5.5.1.1 Prevention*

- Maintenance and testing of all detection and protection equipment on a regular basis (e.g., in accordance with the requirements of AS 1851-2012, Ref. [4]).

- Inspection of all plant and storage facilities on a regular basis.
- Regular emergency response drills to ensure site readiness (biennially).

#### *5.5.1.2 Detection and Notification*

- The systems shall have in-built detection mechanisms and employees shall be trained to identify emergency situations as part of initial training.
- Upon detection of an emergency situation, an alarm (automatic or from personnel) shall be raised to alert employees of the emergency, so that the appropriate response can be taken.

#### *5.5.1.3 Containment*

- Switch off any operating equipment (dock levellers, etc.).
- Isolate electrical supplies at the main switchboard.
- Take any operating equipment (e.g., forklifts) outside.
- Co-ordinate with DM.

#### *5.5.1.4 First Aid*

- First aid is to be given only by trained first aid officers.

# 6.0 Evacuation Details

## 6.1 Evacuation of Personnel Located Onsite

In the event an emergency escalates to the point that personnel must evacuate, it is critical that they are aware of the emergency assembly points. These locations will allow fire wardens to identify if all personnel are in attendance or if personnel may be trapped within the facility.

The procedure for managing an evacuation has been developed as is located in **ERP-09.**

During construction, the site will be manned during regular business hours. During regular operation, the site will typically be unmanned with regular monitoring occurring in a remote control centre. This centre will be staffed 24/7. Nevertheless, some of the hazards present mean evacuation may be necessary in an emergency event.

The order to evacuate the site shall be issued by the DM or the responsible CA.

All personnel, during construction and normal operation, are to move quickly to the emergency assembly area via the emergency egress point. The emergency egress point is the site entrance as shown in **Figure 6-1**. Staff are to warn others as they go.

- Report to the Evacuation Officer (nominated Fire Warden), this person will mark names off the evacuation list.
- Do not move or leave assembly area without permission from Evacuation Officer or responsible Combat Agency unless the area is under direct threat.
- Priority that must be observed during a building evacuation are:
    - those who are able to walk without assistance leave first.
    - those who require some assistance leave next; and
    - those who must be carried leave last.

Mobility impaired persons should be assembled in a safe area away from immediate danger.

### 6.1.1 Events Requiring Evacuation of Onsite Persons

The following events may require evacuation as part of the response procedure, if there are staff onsite. Further details can be found in the individual ERPs, as indicated.

- Uncontrollable fires or explosions (as per **ERP-01**)
- Lithium-Ion Battery fires (as per **ERP-02**)
- Off-site bushfires (as per **ERP-03**)
- Bomb threats or bomb placement onsite (as per **ERP-06-01** and **ERP-06-02**)

If evacuation is required, the procedure in **ERP-09** shall be carried out.

## 6.2 Evacuation of Personnel Located Offsite (Adjacent Properties)

The businesses and residential properties in proximity of the BESS facility that may need to be notified in the event of a spreading emergency are listed in **Table 6-1**.

**Table 6-1: List of Contacts - Neighbouring Sites**

| Neighbour | Site Contact | Contact Number |
|---|---|---|
| Businesses | | |
| Powerlink Queensland | Withheld | Withheld |
| Tully Sugar | Withheld | Withheld |
| Neighbours | | |
| 8 Sandy Creek Road, Tully | Withheld | Withheld |
| 122 Syndicate Road, Tully | Withheld | Withheld |

The emergency operations flow chart, shown at **Figure 6-3**, indicates actions to be taken by persons responsible for undertaking actions and how they will be performed.

### 6.2.1 Events Requiring Evacuation of Offsite Persons

The following events may require evacuation for offsite persons as part of the response procedure. Further details can be found in the individual ERPs, as indicated.

- Uncontrollable fires or explosions (as per **ERP-01**)
- Off-site bushfires (as per **ERP-03**)
- Bomb threats (as per **ERP-06**)

It is assumed in the case of spreading emergency that emergency services will be able to assist in evacuations. It is also assumed neighbouring properties will have their own established evacuation assembly point; they should not use that for the BESS site as this may put them in closer proximity to the emergency incident.


**Figure 6-1: Emergency Assembly Points**

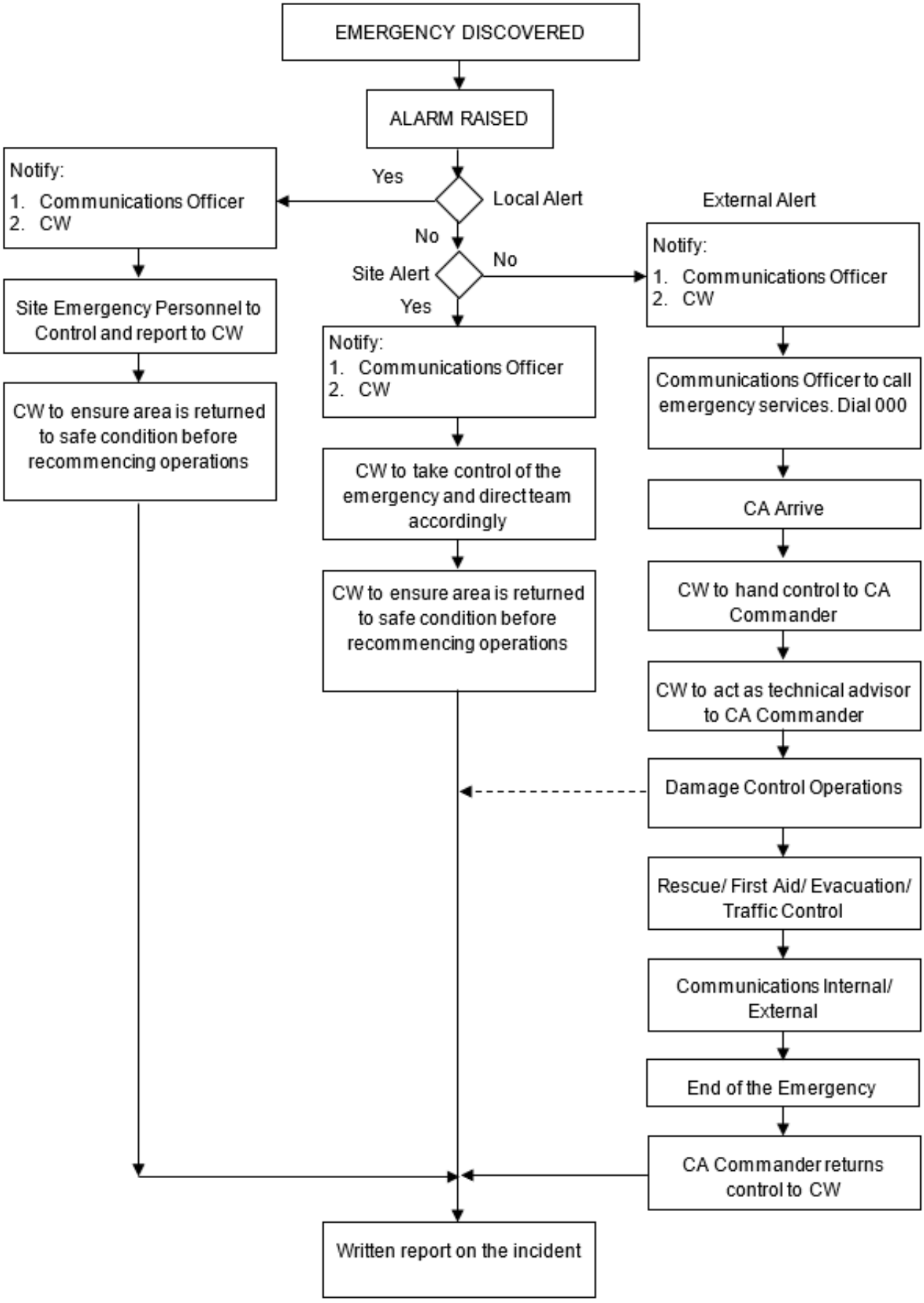



**Figure 6-2: Emergency Operations Flow Chart**

# 7.0 Emergency Equipment and Alarms

Equipment has been installed around the site for use in response to emergencies. It shall be maintained and accessible for immediate use, and its location appropriately sign posted. The range of equipment installed at the site includes the following.

## 7.1 Extinguishers

Fire extinguishers are provided for first attack firefighting, when safe, by employees trained in their use. Procedures for the use of extinguishers are given in **ERP-01**.

Note that it can be hazardous to use the incorrect extinguisher on some types of fires (e.g., water extinguisher on electrical fires). Extinguishers and hose reels will be tested in accordance with the relevant Australian Standard (e.g., AS 1851-2012, Ref. [4]). Note also that lithium-ion battery fires cannot be extinguished and attempting to use water on these batteries will only result in contaminated water.

The proposed locations of the site extinguishers during construction and during regular operation are shown in **Figure 7-1.**

## 7.2 First Aid Kits

First aid kits are provided in the monitoring office during regular operation and in the site offices during construction. First aid kits will be regularly checked and maintained (quarterly) and any components used between review periods will be replaced immediately to ensure equipment in the kit is serviceable and available when required. The proposed locations of the first aid kits during construction and during regular operation are shown in **Figure 7-1**.

## 7.3 Spill Equipment

Safety Data Sheets (SDS) detailing action to be taken to safely control spills of hazardous materials and Dangerous Goods shall be made available at the monitoring office. Only trained persons in spill control procedures will engage in spill response. Spill kits are to be located in a HAZMAT container adjacent to the monitoring office. The proposed locations of the spill kits during construction and during regular operation are shown in **Figure 7-1**.

## 7.4 Emergency Firefighting Water Supply

A 432 $m^3$ static water supply tank is to be provided on-site for firefighting use. Furthermore, it is proposed that the BESS site be protected by a 40 $m^3$ static water supply tank available to address bushfire risks. In the case of a fire requiring attention from the QFD, it is proposed that a fire engine will use the available water in its tanker and then refill from the tank if needed. The firefighting use of these tanks are only to be engaged by the CAs.


**Figure 7-1: Proposed Locations for Emergency Equipment**

# 8.0 Notification of Incident to Authorities and Adjacent Businesses

## 8.1 Combat Agency (Police, Ambulance, Fire Brigade, etc.)

In the event of an incident, the following is to be instigated with the Combat Agencies:

- Raise vocal alarm (directly or via UHF) and make sure it is acted upon and/or phone 000.
- Advise: Neighbours of the incident and inform of potential evacuation.
- Type of emergency:
  - Casualties
  - Assistance required
  - Hazards
  - Telephone Contact Number
  - Name

## 8.2 Adjacent Businesses

The adjacent operators at the site are to be advised of any incidents. In the case of External Alert emergency, neighbouring sites must be immediately contacted as soon as able.

## 8.3 Authorities

Contact with authorities in relation to the consequences of the emergency is covered in more detail in the individual ERP sections in **Section 9.0**, with **Section 9.14** detailing terminating an emergency.

# 9.0 Emergency Response Procedures – Specific Emergencies

## 9.1 General

In any emergency that arises, clear and explicit communications are essential to maintain control. All staff are expected to maintain a thorough knowledge of emergency procedures and therefore there should be no need for reference to this material during the actual emergency.

It is acknowledged that the site will be unmanned for the majority of time during regular operation. If an emergency event occurs, it will be detected and reported to an offsite monitoring station, which will be manned 24/7.

## 9.2 Communication Onsite

Communication with onsite personnel, contractors, and visitors in the event of an emergency will be via UHF radio on **channel 11** and mobile phones. In the event of an emergency requiring evacuation, an evacuation alert ('EVACUATE, EVACUATE, EVACUATE') will be made over the radio.

## 9.3 Emergency Contact Numbers

The telephone numbers, which should be used in an emergency, as appropriate, are listed in **Appendix D.**

## 9.4 Emergency Procedures

This section details the responses to specific emergencies as listed below in **Table 9-1**. A general flowchart of an emergency procedure is given in **Figure 6-3**.

Each emergency response procedure follows the following general process:

- Detection and notification
- Response (as per the appropriate Emergency Response Procedure (ERP))
- Deactivation of emergency action (on instruction of DM)

**Table 9-1: List of Emergency Response Procedures**

| Procedure | Emergency Procedure Number |
|---|---|
| Fire and Explosion | ERP-01 |
| Lithium-Ion Battery Fire | ERP-02 |
| Bushfire Originating Offsite | ERP-03 |
| Loss of Containment (Spill) | ERP-04 |
| Medical Emergency/Personal Injury | ERP-05 |
| Bomb Threat | ERP-06 |
| Collision of Road Vehicles | ERP-07 |
| Intruder(s) on site | ERP-08 |
| Evacuation (Emergency action) | ERP-09 |

## 9.5 ERP-01 Fire and Explosion

### 9.5.1 General

It is imperative that for all fires and explosions the alarm is raised as early as possible.

Incidents occurring outside site hours or during regular operation would initiate site detection systems and alarms, however, no personnel will be on-site to attend to the incident. In this case, the alarm will be raised at the control room of the site security company who will relay the alarm to the Fire Brigade and then to the DM (or deputy). The site will then be attended by the Fire Brigade and the DM (or deputy). The ERP and emergency procedures will be located at the site entrance emergency box. The Fire Brigade will have access to the site emergency box on entry to the facility. The DM (or deputy) will attend the site and assist the CA as required.

### 9.5.2 Procedures

#### *9.5.2.1 Fire*

*Person Discovering the Fire*

a) If onsite, warn personnel close by or those who may be in immediate danger. Typically, a fire will be detected and transmitted to the offsite monitoring station.

b) Immediately notify the DM. If the DM cannot be located, notify the deputy.

c) If appropriate, the DM will notify the Fire Brigade (000).

*Duty Manager*

Upon notification, the DM will take charge of the emergency until the fire brigade arrives at the BESS facility. The procedure for the DM is as follows:

a) The DM will assess the emergency (remotely or if onsite) and categorise it according to the levels described in **Section 1.4**. Particular care shall be taken if the emergency has the potential to extend beyond the site boundaries.

b) Turn off power at the main switchboard.

c) If appropriate, the DM will notify the Fire Brigade (000). If off site, the DM will travel out to the site to assess the event in person if deemed safe to do so.

    a. Small fires (e.g. in a rubbish bin in a non-hazardous area and not in danger of spreading) may be extinguished if deemed safe to do so. In this case, the Fire Brigade need not be notified. If they were, the DM must notify the QFD that the fire was extinguished. While the QFD may still arrive to the site to ensure no re-ignition occurs, there will be less urgency on their behalf.

    b. If the fire is unlikely to be controlled, a suitably qualified electrician should be called to the site. For the CA to fight the fire, the BESS units need to be de-energised and this can only be confirmed by a qualified electrician.

d) The DM will direct CA to commence evacuation if people are onsite (as per **ERP-09**).

e) If the emergency was assessed and determined to be major and external alert, or if the emergency event is detected to be spreading, the businesses in the vicinity shall be notified of the event by the DM.

f) The DM will direct emergency response personnel (e.g., Fire Wardens) to ensure clear access for Fire Brigade (i.e. remove trucks off site).

g) The DM will advise the Fire Brigade of the situation and be prepared to assist as required.

h) Secure records and make visitors book available.

*Fire Wardens*

a) If onsite, Emergency Team (Fire Wardens) shall attempt to extinguish the general fire if it is feasible and rescue personnel casualties if involved in fire area, but only where a rescue can be accomplished without undue risk to the rescuer. Use fire extinguishers or hose reels as required. Take care to select the correct firefighting medium based on the fire type (i.e., care must be taken with electrical fires and water).

b) Only low-level spot fires should be attempted to be contained by the Emergency Team, if any infrastructure becomes engulfed or the fire is unable to be controlled by an extinguisher, evacuation should be initiated as per **ERP-09**.

c) If offsite, under the instruction of the DM, Fire Wardens may be required to travel to site to assist in fire-fighting or allowing access to the fire by the CA.

*Drivers*

Stop loading or unloading operations. If possible, move vehicles to a safe area. Assemble at the emergency evacuation assembly point shown in **Figure 6-1**.

*Staff*

If onsite, upon instruction by the DM, proceed to “Safe Assembly Areas”. Ensure free access to roadway for vehicles leaving site. Prevent entry of vehicles other than the Fire Brigade, Ambulance, etc.

If staff are not onsite, no action is required.

#### *9.5.2.2 Explosion*

*Person Detecting the Explosion*

a) If onsite, remove personnel in the vicinity who may be injured, without endangering yourself. During regular operation, an explosion will be detected and transmitted to the offsite monitoring station.

b) Regardless of being onsite or off-site, immediately notify the DM. If the DM cannot be located, notify the deputy.

c) The DM will notify the Fire Brigade (000) and attend the site.

Staff are expected to be familiar with and be prepared to carry out the following Action Plan.

*Duty Manager*

Upon notification, the DM will take charge of the emergency until the fire brigade arrives at the BESS facility. The procedure for the DM is as follows:

a) The DM will assess the emergency (remotely or if onsite) and categorise it according to the levels described in **Section 1.4**. Particular care shall be taken if the emergency has the potential to extend beyond the site boundaries.

b) Turn off power at the main switchboard.

c) If appropriate, the DM will notify the Fire Brigade (000). The DM will attend the site to assess the event and assist the QFD in person if deemed safe to do so.

d) The DM will direct CA to commence evacuation if people are onsite.

e) If the emergency was assessed and determined to be major and external alert, or if the emergency event is detected to be spreading, the businesses in the vicinity shall be notified of the event by the DM. An explosion should be assumed to be a major event.

f) The DM will direct emergency response personnel (e.g., Fire Wardens) to ensure clear access for Fire Brigade (i.e. remove trucks off site).

g) The DM will advise the Fire Brigade of the situation and be prepared to assist as required.

h) Secure records and make visitors book available.

*Fire Wardens*

a) If fire has occurred as a result of an explosion, the fire wardens shall attempt to extinguish the general fire if it is feasible and rescue personnel casualties if involved in fire area, but only where a rescue can be accomplished without undue risk to the rescuer. Use fire extinguishers or hose reels as required. Take care to select the correct firefighting medium based on the fire type (i.e., care must be taken with electrical fires and water).

b) Only low-level spot fires should be attempted to be contained by the Emergency Team, if any infrastructure becomes engulfed or the fire is unable to be controlled by an extinguisher, evacuation should be initiated as per **ERP-09**.

c) If offsite, under the instruction of the DM, Fire Wardens may be required to travel to site to assist in fire-fighting or allowing access to the fire by the CA.

*Drivers*

Stop loading or unloading operations. If possible, move vehicles to a safe area. Assemble at the emergency evacuation assembly point shown in **Figure 6-1**.

*Staff*

If onsite, on the instruction by the DM, proceed to “Safe Assembly Areas”. Ensure free access to roadway for vehicles leaving site. Prevent entry of vehicles other than the Fire Brigade, Ambulance, etc.

If staff are not onsite, no action is required.

## 9.6 ERP-02 Lithium-Ion Battery Fire

### 9.6.1 General

Lithium-ion batteries present a unique hazard due to their containing highly flammable materials that cannot be extinguished if ignited. The alarm must be raised for any lithium-ion battery fire, including if the BESS equipment begins smoking. In the event a lithium-ion battery fire is discovered, the person detecting the incident shall notify others in the immediate facility and contact the DM. The DM will then make further decision regarding fire response. Where the DM cannot be immediately located, the Site Senior Executive shall be contacted, and the location of the DM identified so that the incident details can be relayed. Lithium-ion battery fires must not be attempted to be extinguished by untrained personnel.

Incidents occurring outside site hours would initiate site detection systems and alarms, however, no personnel will be on-site to attend to the incident. In this case, the alarm will be raised at the control room of the site security company who will relay the alarm to the Fire Brigade and then to the DM (or deputy). The site will then be attended by the Fire Brigade and the DM (or deputy). The ERP and emergency procedures will be located at the site entrance emergency box. The Fire Brigade will have access to the site emergency box on entry to the facility. The DM (or deputy) will attend the site and assist the CA as required.

### 9.6.2 Procedure

*Person Discovering the Battery Fire*

a) Warn personnel close by or those who may be in immediate danger (if people are onsite).

b) Immediately notify the DM. If the DM cannot be located, notify the deputy.

c) If appropriate, the DM will notify the Fire Brigade (000).

*Duty Manager*

a) The DM will assess the emergency (remotely or if onsite) and categorise it according to the levels described in **Section 1.4**. Particular care shall be taken if the emergency has the potential to extend beyond the site boundaries. A Li-ion battery fire shall be automatically assumed to be a major emergency event.

b) If possible, and if trained and properly equipped, shut off the unit/system.

c) The DM will notify the Communications Team to notify the Fire Brigade (000) or will do so themself. The DM will travel out to the site with a mobile phone to assess the event in person if deemed safe to do so.

d) The DM will direct Fire Wardens to commence evacuation if people are onsite as per **ERP-09**.

e) If the emergency was assessed and determined to be major and external alert, or if the emergency event is detected to be spreading, the businesses in the vicinity shall be notified of the event by the DM. A Li-ion battery fire shall be automatically assumed to be a major emergency event.

f) The DM will direct emergency response personnel (e.g., Fire Wardens) to ensure clear access for Fire Brigade (i.e. remove trucks off site).

g) The DM will advise the Fire Brigade of the situation and be prepared to assist as required.

h) Secure records and make visitors book available.

*Fire Wardens*

Emergency Team (Fire Wardens) shall attempt to rescue personnel casualties if involved in fire area, but only where a rescue can be accomplished without undue risk to the rescuer.

When instructed to do so by the DM, Fire Wardens are to initiate evacuation as per **ERP-09**.

*Drivers*

Stop operations. If possible, move vehicles to a safe area. Assemble at the emergency evacuation assembly point shown in **Figure 6-1**.

*Staff*

If onsite, on the instruction by the DM, proceed to “Safe Assembly Areas” shown in **Figure 6-1**.. Ensure free access to roadway for vehicles leaving site. Prevent entry of vehicles other than the Fire Brigade, Ambulance, etc.

*Fire Brigade – QFD Firefighters*

a) The Fire Brigade will be notified by DM to arrive to site.

b) Upon arrival, firefighters shall access the emergency fire-fighting water in the tanks via the QRT fittings.

c) Water shall not be applied directly to the BESS units; instead, they shall be allowed to burn out.

d) The Fire Brigade shall monitor the BESS fire and control any spot fires in the surrounding area to prevent propagation.

## 9.7 ERP-03 Bushfire Originating Offsite

### 9.7.1 General

Meridian Urban has an existing Bushfire Response Plan for the BESS site. The Guide describes the following levels of bushfires to assist the DM or Incident Controller in determine the appropriate response actions:

- **Level 1** – Bushfire location 10 km from BESS site
- **Level 2** – Bushfire location 5 km from BESS site
- **Level 3** – Bushfire location 2 km from BESS site

In the event a bushfire or grassfire is discovered outside of the APZ, the person detecting the incident shall raise the alarm by immediately notifying others in the immediate vicinity and then contacting the DM. The DM will then contact the CA and inform them of the fire.

The role of the CA in this scenario is to contain the spread of the fire to adjacent properties and businesses and the role of the Fire Wardens and Emergency Response teams on site is to monitor for spot fires and maintain communication with the CA.

### 9.7.2 Procedures

*Person Discovering the Fire*

a) If onsite, warn personnel close by or those who may be in immediate danger.

b) Whether onsite or in the remote monitoring centre, immediately notify the DM. If the DM cannot be located, notify the deputy.

c) The DM will notify the Communications Team to notify the Fire Brigade (000) or will do so themselves. For a bushfire, the DM shall not attempt to attend the site while the bushfire is ongoing.

d) Emergency Team (Fire Wardens) shall notify all on site to halt work (if safe to do so) and will establish teams to monitor the site.

    a. As far as is reasonably practicable, personnel should be spread out and be equipped with UHF radios and extinguishers.

e) The CA will operate from the outside of the site to fight the fire and prevent spreading to the site; personnel will remain on site unless instructed otherwise by the DM (if applicable).

*Duty Manager*

a) The DM will assess the emergency (remotely or if onsite) and categorise it according to the levels described in **Section 1.4**, as well as the levels described above, in accordance with the existing Bushfire Response Plan. A bushfire is only anticipated to already be an external event.

b) The DM will notify the Fire Brigade (000). For a bushfire, the DM shall not attempt to attend the site while the bushfire is ongoing.

c) The businesses and residents in the vicinity shall be notified of the bushfire by the DM.

d) The DM will maintain communication between the Fire Brigade and the personnel on site.

e) The DM shall inspect the site once the bushfire has been deemed under control by the CA.

f) **In the case of a Level 1 bushfire event (10 km away):**

    a. The bushfire is to be monitored.

    b. Review QLD Fire Alerts

    c. Turn off power at the main switchboard.

    d. Consider mobilising non-essential personnel off-site if safe to do so.

g) **In the case of a Level 2 bushfire event (5 km away):**

    a. Turn off power at the main switchboard.

    b. Commence evacuation to Emergency Assembly Point A (or B if A is impacted).

    c. Consider mobilising non-essential personnel off-site if safe to do so.

h) **In the case of a Level 3 bushfire event (2 km away):**

    a. Turn off power at the main switchboard (if safe to do so).

    b. Notify personnel onsite to seek protection indoors.

    c. If a spot fire does eventuate on site, it should be attempted to be contained and the DM and CA should be notified. If any non-BESS unit becomes engulfed or the fire is unable to be controlled by an extinguisher, then **ERP-01** should be initiated along with evacuation as per **ERP-09**. If the BESS units are impacted by an incident bushfire, **ERP-02** should be initiated, and evacuations should be carried out as per **ERP-09.**

*Fire Wardens*

a) **In the case of a Level 1 or 2 bushfire event:**

   a. If onsite, Emergency Team shall prepare the site for a potential bushfire by removing any flammable sources and clearing combustible material. Emergency Team shall assist in the evacuation of personnel, either to a designated Assembly Point, under the direction of the DM and the CA.

   b. If a small spot fire occurs, the Emergency Team shall use fire extinguishers to contain it.

   c. If offsite, under the instruction of the DM, Fire Wardens may be required to travel to site to assist in fire-fighting or allowing access to the fire by the CA.

b) **In the case of a Level 3 bushfire event:**

   a. If onsite, Emergency Team (Fire Wardens) shall attempt to extinguish the general fire if it is feasible and rescue personnel casualties if involved in fire area, but only where a rescue can be accomplished without undue risk to the rescuer. Use fire extinguishers as required. Take care to select the correct firefighting medium based on the fire type (i.e., care must be taken with electrical fires and water).

   b. Only low-level spot fires should be attempted to be contained by the Emergency Team, if any infrastructure becomes engulfed or the fire is unable to be controlled by an extinguisher, evacuation should be initiated as per **ERP-09**.

   c. If off-site, no action to be taken.

*Staff*

Follow instructions of the DM. Ensure free access to roadway for vehicles leaving site. Prevent entry of vehicles other than the Fire Brigade, Ambulance, etc.

## 9.8 ERP-04 Loss of Containment

### 9.8.1 Product Spills Onsite

#### *9.8.1.1 General*

While spills are not expected to occur at the site, in the event of spill, the following procedure should be followed. Spills should not be attempted to be recovered and shall be disposed of responsibly.

#### *9.8.1.2 Procedures*

*Person Discovering the Spill*

This procedure applies to the detection of a spill whether people are on-site or offsite.

a) Warn any personnel in immediate danger.

b) Report the spill to the DM.

c) If the DM cannot be located, notify the DM's deputy or the O&M / Site Senior Executive. If an incident occurs after hours, the identification of the spill would be made by the first supervisory staff attending the site.

d) Unless appropriately trained or competent in spill clean-up, evacuate the area and contact the DM.

Note: Do not use water to wash down spills

*Duty Manager*

a) Assess the incident against the emergency levels described in **Section 1.4** and formulate a first attack response. Attend the site for in-person inspection if off-site.

b) Ensure CA are called as required (Call 000).

c) Co-ordinate emergency actions, including permitting the Fire Wardens to attempt spill containment using the site spill kit(s) located as per **Figure 7-1**., if appropriately trained.

d) Contact tenants on adjacent sites if required and notify of potential evacuation if required.

e) Arrange for evacuation of on-site personnel and offsite facilities if required.

f) Provide advice to CA as required and liaise with CA commanders.

g) Coordinate the contact of a hazardous waste disposal company, if not already completed by CA. An example of such a company can be located in **Appendix D.**

*Communications Officer*

a) Alert the DM (if not already done so by the person discovering the spill).

b) If instructed by the DM call the Fire Brigade (Call 000).

c) Notify site emergency response personnel (Fire Wardens) of the incident by phone, UHF radio or message (e.g., via runners).

*Fire Wardens*

a) Evacuate areas (if onsite), or under the direction of the DM.

b) Conduct personnel count and account for all personnel on site.

c) Perform duties as required by DM.

d) Upon notification by the DM and if safe, protected (i.e., PPE) and trained (e.g. Fire Wardens) individuals may contain the spill using the site spill kit(s) located as per **Figure 7-1**.

If not onsite, Fire Wardens may be instructed by the DM to make their way to the site to attempt spill containment using spill kits.

### 9.8.2 Product Spills Outside of Site

#### *9.8.2.1 General*

Spills off-site constitute a serious incident and must be responded to immediately. An off-site spill would be classified as an external alert requiring the response of CA. Spills off-site should not be attempted to be recovered.

In the event of spill, the following procedure should be followed.

#### *9.8.2.2 Procedures*

*Person Discovering the Spill*

a) Warn any personnel in immediate danger (if personnel are onsite).

b) Contact the DM (or the deputy of the DM cannot be located). If an incident occurs after hours, the site security company are to notify the DM of the incident.

c) If no answer, notify the O&M / Site Senior Executive to physically report the incident.

Note: Do not use water to wash down spills

*Communications Officer*

a) Alert the DM.

b) Call the Fire Brigade (Call 000).

c) Notify site emergency response personnel of the incident by phone or message (via runners).

*Fire Wardens*

a) Evacuate areas (if onsite), or under the direction of the DM.

b) Conduct personnel count and account for all personnel on site.

c) Perform duties as required by DM.

d) If deemed safe and under the instruction of the DM, trained personnel may attempt to contain the spill from spreading further using the spill containment kits on site.

If not onsite, Fire Wardens may be instructed by the DM to make their way to the site to attempt spill containment using spill kits.

*Duty Manager*

a) Ensure CA are called immediately (Call 000).

h) Assess the incident against the emergency levels described in **Section 1.4** and formulate a first attack response (i.e., instruct trained personnel to attempt containment using spill kits). An external spill is automatically considered a major external emergency requiring CA attendance. Attend the site for in-person inspection if off-site.

b) Co-ordinate emergency actions, including permitting the Fire Wardens to attempt spill containment using the site spill kit(s) located as per **Figure 7-1**., if appropriately trained.

c) Contact landowners on adjacent sites if required and notify of potential evacuation if required.

d) Arrange for evacuation of on-site personnel and offsite facilities of required.

e) Provide advice to emergency services as required and liaise with CA commanders.

f) Coordinate the contact of a hazardous waste disposal company, if not already completed by CA. An example of such a company can be located in **Appendix D.**

### 9.8.3 Notification

For any suspected pollutions, written notification must be made to the QLD Environment Protection Authority (EPA), within 24 hours at: 1300 130 372.

## 9.9 ERP-05 Personal Injuries

### 9.9.1 General

If an injury occurs to a person while on or off site, the following procedure shall be followed. The emergency services contact details can be located in **Appendix D.**

### 9.9.2 Procedures

If injured, seek first aid/medical treatment immediately. If a person is severely injured, has collapsed or is in distress, do not panic, the following procedure shall be carried out. Note that this procedure is applicable whether on or off-site.

*Person Discovery Casualty*

a) Advise the supervisor of the injured person.

b) Contact the O&M / Site Senior Executive and advise of the casualty.

c) If qualified, apply first aid, if not qualified await arrival of first aid officer or qualified first aid person.

d) Prevent unqualified persons from attempting to assist or treat the casualty.

*Communications Officer:*

a) Alert the duty first aiders and notify of the casualty location.

b) Notify the DM and, under his/her direction call the ambulance (call 000).

- Describe the nature of the emergency
- Say how many are injured, if known
- Give your name and where you are telephoning from

*Duty Manager*

a) Assess the injury according to the levels of emergency described in **Section 1.4** and call assistance from ambulance service as required.

b) Assist on site response (first aiders) as required.

c) Arrange for guidance of the ambulance to the scene of the casualty.

d) Arrange for the accident/incident investigation and completion of the appropriate forms.

*First Aid Officers*

a) Treat the casualty as required

Notes:

1) Where an accident occurs involving loss of life or serious personal injury, or is an accident involving plant and equipment, written notice of this accident is to be forwarded to the relevant Government Authorities, which include WorkSafe QLD, Dangerous Goods and WHS, Police.

2) Where an accident or incident occurs with actual or potential significant off-site impacts on people or the biophysical environment, a report shall be submitted to the Department of State Development, Infrastructure and Planning (DSDIP)/Environmental Protection Agency (EPA), within 24 hours of the incident, outlining the basic facts. A further detailed report shall be submitted following investigation of the causes and identification of necessary additional preventative measures.

Company incident reporting procedures should be followed.

## 9.10 ERP-06 Bomb Threat

### 9.10.1 General

The BESS site will be operated remotely under normal operations, apart from regular inspection and maintenance trips. The risk of a bomb threat is considered very small, as the site is not populated under normal conditions. Nevertheless, the following section describes the appropriate response to a bomb threat.

Threats of this nature are usually made:

1) By telephone to a location.
2) By telephone through the local police, who may have received the message direct, or who may be repeating a communication to the press, radio, television or authorities.
3) By anonymous letter.

Letters received containing information on the alleged placing of a bomb should be handed to the police for any action they consider desirable. They should be handled as little as possible and by a minimum number of persons.

An emergency of this nature need not be assessed against the levels of emergency as described in **Section 1.4** as it should be considered automatically a major emergency.

### 9.10.2 Planning

The objectives of the guidelines, which follow, are:

1) To ensure maximum safety of personnel.
2) To protect Company property.
3) To minimise interference with normal production, business etc.
4) To enable an early appreciation of the situation to be made and to arrive at the correct decisions without anxiety and confusion.

### 9.10.3 Procedures

#### *9.10.3.1 Initial Response*

The initial response is identical regardless of whether there are people on-site or only in the remote monitoring office.

Threats by mail or other published media should be passed immediately to the supervisor and then to the DM. Staff receiving phone threats should:

a) Remain calm (or appear to be) and do not hang up; let the caller finish message.
b) Obtain information and record on the nearest paper; wording is a priority. Keep answers to one or two words.
c) Warn others if possible.
d) Listen to background noises and voice mannerisms.
e) When caller hangs up, complete checklist.
f) Inform Supervisor or site emergency response personnel.

g) Await interview by Site Emergency Commander.

A bomb threat checklist is provided in **ERP-06-01**.

*Person Discovering the Bomb Threat*

a) Notify the DM of the incident, regardless of whether onsite or offsite.

b) Act under instructions from the DM as directed.

*Duty Manager*

a) The DM shall notify police of details, ask them for their recommendation for immediate action, and ask them to attend site to assess further required actions with management input.

b) On Police advice, take action to safeguard personnel (i.e., possible evacuation if personnel are onsite).

c) Consult with the site management and provide advice to the Police on site-specific issues.

#### *9.10.3.2 Search Procedures*

A search team shall be established under the direction of the DM. The following general procedures will apply:

The DM shall nominate and search a safe area to be used for evacuation (if people are onsite). A search procedure is given in **ERP-06-02**.

a) Search of area(s) for bomb; the search to be organised by the police if they deem it necessary with management advice. All personal effects must be removed before search.

b) If a potential bomb is found by an employee, it should be reported to the DM. The device/object shall not be handled or disturbed. The DM shall notify police and bomb squad.

A search checklist is provided in **ERP-06-02**, to assist with the search if required.

#### *9.10.3.3 Evacuation*

If the site is manned when a bomb threat is made or a bomb is identified, the following actions shall be made:

a) Where a bomb is identified in other areas of the site and there are people onsite, the area is to be evacuated immediately in accordance with **ERP-09**. It is noted that explosions in open air have less impact than when enclosed. If an explosion does occur, exposed persons away from the immediate area will be impacted by an overpressure wave with damage a function of distance from the bomb source. The chosen emergency assembly point is sufficiently distanced from infrastructure to avoid incident propagation.

b) On instruction to evacuate, evacuate the nominated area of all personnel not required for the safe running of the facility, to the safe area as shown in **Figure 6-1.**

c) Those remaining shall bring the facility to a safe condition and then immediately evacuate to the safe area.

d) The evacuation time shall be for a period instructed by the police or DM.

#### *9.10.3.4 All Clear*

The police shall declare when the bomb threat no longer exists to the DM, or his representative who shall declare it to all personnel.

## 9.10.4 ERP-06-01

### *9.10.4.1 Preamble - Bomb Threat and Search Checklists*

This section is designed to give information on how to respond to bomb threats. **Figure 9-1** provides a call sheet with specific instructions to respond appropriately to bomb threats.

Bomb threats, and other similar types of threats, may arise from several causes. They may simply be made for harassment purposes, as a diversion, or as a 'party prank'. Alternatively, they may be a part of an extortion attempt (with or without an actual explosive device), part of the operations of a terrorist group, or an individual's malicious attempt to inflict injury or damage.

The threat may be specific or non-specific. In a specific threat the caller is prepared to give detailed information about the bomb; why it has been placed, when it will explode etc. Non-specific threats are more common and typically consist of the caller simply stating a bomb has been placed and hanging up.

Most threats are hoaxes, but this is of little consolation when you are faced with deciding how you will respond to one. It may appear that evacuation of people is the best response, but there are several options open to you, and you have to decide which, in these circumstances, will be the safest. For example, if an explosive device has been set in a car park you would be placing people at greater risk by evacuating them to or through such an area. However, if the location of the bomb is given, or the bomber is thought to be genuinely motivated, evacuation of the known danger area may be the best response. A check of the evacuation route and the assembly area should be made prior to the evacuation. Note: Do not use the fire assembly area in a bomb threat situation if there is the likelihood that the area may be a target. Direct people to the nearest alternative emergency assembly point.

In some cases, it may be best to tell people the reason for the evacuation and ask them to check their area for any suspicious objects and report, but do not touch them as they leave. In other circumstances it may be possible to safely conduct a discrete search while the building is still occupied, or the building may be evacuated as a 'fire drill' and then discretely search. The point is, there is no standard response to a bomb threat which will give the best (safest) result in every situation. Each threat must be individually evaluated. **Figure 9-1** provides a checklist for detailing bomb threat information.

### *9.10.4.2 Things to Consider When Assessing a Threat*

- How did the threat sound? Was the caller familiar with the premises? Were they familiar with the nature and location of the alleged explosive device?
- Was the tone of the call consistent with a genuine threat? Was the call related to a current bomb threat climate? (Company pursuing a controversial policy, significant visitors on site, recent sacking etc.)
- How much time do you have? When is the device set to go off?
- What options do you have open to you? Is a specific area under threat, or the whole site? What is the best way of safely and quickly conducting a search?
- What is the safest place for people on the site; where they are, in standard evacuation areas, or in some other area? Are your actions likely to encourage other threats?

The basic rule is to look at the threat and, given the known details, decide what should be done that will minimize the risk to human life.

The police must always be advised of any threat, and their advice considered in working out your response. As they are unfamiliar with your site, the job of searching for an explosive device may fall largely to Company personnel.

If an evacuation is implemented as per **ERP-09**, ask occupants to take personal effects with them and report any suspicious objects noticed. If a suspicious device is found, it should not be touched or interfered with in any way. It shall be immediately reported to the police who will take charge of disposal operations.

If it appears that the threat is a hoax, a decision must be made about re-occupation of the area. People will need reassurance that there is no further danger, and a reasonable criterion is how comfortable you personally feel about going back in the area. In some circumstances, re-occupation may be better left to the next day, or shift.

#### *9.10.4.3 Summary of the Duty Manager's Duties During a Bomb Threat*

- Decide what action should be immediately taken in response to the threat. Take charge of this response.
- Ensure that the police are notified as soon as possible.
- If appropriate, and in consultation with the police, form a bomb search team and brief them on their duties. Arrange for temporary relocation of any evacuated person.
- In consultation with the Police, advise neighbouring properties of the situation, if required.
- If any suspicious device is located, do not touch it, and hand over disposal operations to the police.

Note: You should also familiarize yourself with the bomb threat call sheet visible in **Figure 9-1** and other instructions in this section.

#### *9.10.4.4 Explanation of Bomb/Extortion Threat Call Sheet*

Copies of the call sheet (**Figure 9-1**) should be kept out of sight, but readily available to O&M / Site Senior Executive and other persons likely to receive such calls. The purpose of the call sheet is to enable the call recipient to extract as much information as possible from the caller, so that the safest response to the threat can be worked out. To this end, the layout of **Figure 9-1** follows the logical sequence of such a call.

#### *9.10.4.5 The Instructions*

The Instructions are in a brief form at the top of the sheet in **Figure 9-1** to remind the recipient what to do, rather than give any detailed explanation. Some call tracing may be possible, even if one of the parties have already hung up, hence Instruction 3 in **Figure 9-1** is not to hang up. The police will action this if appropriate. The exact wording of the threat should be recorded. The time and date may be added later.

#### *9.10.4.6 Questions to Ask*

If the caller has not already given these details, ask specifically the questions listed. If the call is genuine, they will probably give straight answers to them. Extensive hesitation may tend to indicate a hoax. In Point 7 is the question, "Why are you doing this?" this question gives some scope for

delaying tactics and for narrowing down the psychological make-up and identity of the caller. Following this is a request for the caller to give a name and address. These are unlikely to be given, even if the call is a sympathetic warning. Leave these questions till last, as they may well cause the caller to hang up.

#### *9.10.4.7 Notification of Call*

As soon as possible, the Duty Manager should be advised of the threat. If another person can do this while the call is in progress, well and good. If not, do it immediately after the caller has hung up.

#### *9.10.4.8 Analysis of Call*

Tick the appropriate squares. Add any details as necessary.

**Bomb Threat Check List**

**Instructions:** Use this sheet while receiving the call, complete as soon as possible
Obtain as much information as possible, ask questions
**Do not hang up at the end of the call**

| **Questions to Ask:** | Caller's Voice ☑ | |
|---|---|---|
| When is the bomb going to explode? | ☐ Man | ☐ Woman |
| ..... | ☐ Child | Age:..... |
| Where is the bomb right now? | ☐ Calm | ☐ Angry |
| ..... | ☐ Excited | ☐ Uneducated |
| What does the bomb look like? | ☐ Talking Slow | ☐ Talking Fast |
| ..... | ☐ Soft | ☐ Loud |
| What kind of bomb is it? | ☐ High | ☐ Deep |
| ..... | ☐ Clear | ☐ Clearing Throat |
| What will cause the bomb to explode? | ☐ Nasal | ☐ Stuttering |
| ..... | ☐ Lisp | ☐ Raspy |
| Did you place the bomb? | ☐ Ragged | ☐ Slurred |
| ..... | ☐ Laughing | ☐ Crying |
| Why did you place the bomb? | ☐ Deep Breathing | ☐ Drunk |
| ..... | ☐ Distinct | ☐ Disguised |
| What is your name? | ☐ Foreign | ☐ Familiar |
| ..... | Whom does it sound like? (someone you know/movie star/radio personality) | |
| What is your address? | ..... | |
| ..... | | |

| | | | |
|---|---|---|---|
| ☐ Well spoken | ☐ Taped | BACKGROUND NOISES | |
| ☐ Foul | ☐ Incoherent | ☐ Street Sounds | ☐ Factory/Machines |
| ☐ Irrational | ☐ Message Read | ☐ Crockery/Plates | ☐ Animal Noises |
| TELEPHONE CALL | | ☐ Other voices | ☐ PA System |
| ☐ Local | ☐ Private | ☐ Static | ☐ House Noises |
| ☐ Trunk/Toll | ☐ Extension | ☐ Short echoes | ☐ Long Echoes |
| ☐ STD | ☐ Public Phone | ☐ Traffic | ☐ Aeroplanes |
| ☐ Mobile | | ☐ Office Sounds | ☐ Train Sounds |
| | | ☐ Boat Sounds | ☐ Music (type) ..... |

**REPORT THE CALL IMMEDIATELY TO YOUR SUPERVISOR OR CHIEF WARDEN**

Did the caller appear familiar with plant/buildings by their description of the bomb location?

☐ Yes ☐ No

Call Recipients details:

Name - ..... Location - ..... Phone - .....

Date - ..... Time - .....

**Figure 9-1: Bomb Threat Call Sheet**

### 9.10.5 ERP-06-02

If it has been established that a bomb may have been placed on site, a search should be conducted whenever it is considered that it is safe. The search team will consist of responsible people who normally work in the area, and will therefore be familiar with what is, and is not, out of place. As the police will not have this familiarity, they will need this assistance in the search. As a general rule it is advisable to secure the co-operation of potential searchers in advance of a threat being received.

If a bomb is suspected to have been placed, this emergency qualifies as a major emergency with necessity for external alert.

The Duty Manager shall carry out the following procedure:

1) Organise a search team/s

- Only organise a search team under the instruction of the CA. If deemed unsafe, the site shall not be attended by employees, including the DM.
- Select responsible volunteers to carry out the search.
- Determine the exact area to be searched by the team/s.
- Determine a deadline for completing the search, including a safe margin before the threatened detonation time, if given.

2) Brief the Searchers

- Advise the type of explosive device, if known; and any other details given by the caller, which may be relevant.
- Tell them to look for out-of-place items in the open, or in hidden, but accessible spots. Tell them to search in a methodical manner (See attached sheets).
- Tell them not to touch or tamper with any suspicious device.
- If there is the possibility of a booby-trap device, tell them to avoid any action which might trigger it. These may include opening doors, cupboards or hatches, or operating equipment or light switches in some circumstances.
- Tell them to immediately report any suspicious devices found.

3) Carry out Search

- Conduct the search in accordance with the briefing and in co-operation with the police. (In some cases, the Police may provide specialist assistance, e.g., sniffer dogs etc.)
- If a suspicious device is found, withdraw from the area and allow Police/ Military Bomb disposal units to handle the situation. If a suspicious device is not found, a decision on re-occupying the building should be made. When people are permitted to re-enter the area, they should be briefed so as to reassure them that no further danger exists and be accompanied back into the area by management personnel.

4) If applicable, notify adjacent properties.

- If the bomb may harm adjacent properties, the DM shall inform adjacent properties to execute an evacuation according to their own procedures.

Note: When people have been evacuated from an area due to a bomb threat, they should be kept well clear of the danger area, and only the minimum number of people required for the purpose should be in the area during the search.

## 9.11 ERP-07 Collision of Road Vehicles

### 9.11.1 General

It is unlikely that a serious accident involving a transport vehicle will occur in the immediate vicinity of the facility. However, during construction a minor collision resulting in product spillage and fire may occur on the roads. Notwithstanding the nature of the incident, the immediate objectives after a vehicle incident are to:

- Protect life and property.
- Control and prevent any spillage from spreading.
- Extinguish any fire if safe and possible.
- Remove ignition source (to prevent any fuel spills from igniting).
- Prevent spilt product from entering drains.
- Contain spilt product for subsequent removal.
- Prevent or minimise further spillage.

If the accident is serious enough to call the CA (Police, Fire Brigade, etc.) allow the Emergency Service Commander to assume traffic control on their arrival. Make all efforts to stop or divert approaching vehicles, depending on the risk and circumstances. Warn people to remain at a safe distance, taking into consideration the type and likely flow of liquid and vapour (e.g., Fuel, acid, liquefied gas) and prevailing climatic conditions. Vehicle safety triangles are to be used where available.

Note that this emergency can only occur when personnel are onsite. Thus, the distinction between onsite and offsite actions has not been made.

### 9.11.2 Protecting Watercourses

Make every effort to prevent spilt product from entering drain or watercourses.

The priority actions are:

- Contain.
- Minimise spread of the product and prevent water usage, particularly in toxic/bioactive chemical spills.

Avoid hosing down, but the senior fire officer must use his discretion. The senior fire officer's prime concern is for public safety, so he must evaluate the potential risks involved in alternative courses of action. If flammable or combustible liquid is spilled and cannot be prevented from entering drains, foam can be applied to minimise flammable vapour generation.

Block inlets to drains by using drain covers, dirt, sand, paper, rags, old clothing or similar material.

### 9.11.3 Incident Location Restoration

After an accident any contamination of the incident location is to be restored as soon as possible (in consultation with Management).

Repair damage to the road surface, surroundings or drainage systems. Co-operate with the local authorities. Clean the road surface of spilled materials or oil to prevent subsequent accidents from

vehicles skidding or sliding on the chemical residue or oil. Notify public utilities, such as Telecom, electricity supply authority, water board, etc if their property has been damaged so that they can affect the necessary repairs. Similarly, damage to any signs, notices or hoardings should be made good or those responsible for them notified of the need for repair.

Assure owners of damaged private property such as houses, fences, gardens, motor cars, boats, etc. that their claims for compensation or repair will be promptly and sympathetically handled but no acknowledgment of liability should be made. Any employees on the scene should ensure that the company does, in fact, take appropriate follow-up action promptly.

If land has been polluted by chemicals, flammable/combustible liquids or vehicle oil, it may be necessary to remove soil and replace it with fresh material to restore the area to its original condition. Consult Management and any haulage contractor for advice.

### 9.11.4 Fire Fighting

If a fire has started, extinguish it (if safe and practicable) using the portable extinguishers from the vehicle or site. Try to limit the use of water until drains have been effectively covered and spill control is in place. See Procedure **ERP-01**.

## 9.12 ERP-08 Intruders Onsite (Vandalism, Armed Hold-Up, Assault)

### 9.12.1 General

The infrastructure onsite may be attractive items and can draw particular attention from certain elements of the community. Whilst the site includes security features (perimeter fence, CCTV) there may be times when intruders could access the site and, hence, the products may draw unwanted attention. Site staff should be on the lookout for any suspicious activity by persons or vehicles on site.

Note the description and registration number of suspicious vehicles and/ or persons. Inform the site management personnel, security and Police immediately. Action can then be taken before a crime is committed. The number for contacting the security company is in **Appendix D**.

### 9.12.2 Objectives

The objective of this procedure is to minimise the contact between site staff and intruders and to ensure the appropriate security forces apprehend the intruders with the minimum impact on the site.

### 9.12.3 Procedure

#### *9.12.3.1 Armed Hold-Up*

*Staff involved directly in the incident – onsite*

- During an armed hold-up co-operation is more important than intervention. Remember: No amount of money is worth a human life, don't be heroic.
- Try to remain calm, control your emotions and avoid any action which may incite violence.
- Obey the intruder's instructions, do precisely as they say, and nothing more.
- Tell the intruders what you're doing, make no sudden movements.
- Observe as much as possible as to the description of the intruders, including clothing and other distinguishing features (i.e., voice, accent, movements). Do not stare at the intruders.
- Do not touch anything which may be handled by the intruders

*After the armed hold-up, as soon as it is safe to do so*

- Call for assistance or activate an alarm – Notify the DM of the incident. If an incident occurs after-hours on-site security are to notify the DM of an incident.
- Give details to the DM of the incident (DM to use components of the list below to gather details)

*Duty Manager*

- Assess the emergency against the levels of emergency as described in **Section 1.4.**
- Call the site security personnel, they may be able to apprehend the intruders before the escape from the estate.
- Telephone Police (000) and say "Tully BESS facility has been held up".
- Give your name, telephone number, exact location of the incident, and description of any person(s) and vehicle(s) involved.

- State clearly if the person(s) were armed and the type of weapon.
- Close the premises completely and do not allow unauthorised people to enter.
- Do not allow any person into the area accessed by the intruders and do not let any personnel to handle objects touched by the intruders.
- Ask any employee witnesses to remain until interviewed by Police or if they insist on leaving ask for their permission for Police to interview them either at home or a later date.
- Do not discuss with any persons outside the business the goods or valuable stolen.
- Ensure staff or witnesses are provided with any trauma counselling if required.

#### *9.12.3.2 Identification of Intruders Onsite*

- Where intruders are identified on site (whether or not there are personnel onsite), be it identification of an armed hold up in progress, identification of an unfamiliar person wandering around the site (i.e., person without a temporary identification badge that should have been obtained from O&M office / Site Demountable Offices), or identification of vandals, the following procedure should be followed:
- Immediately notify the Site Senior Executive and ascertain whether the possible intruder is a visitor or is authorised on site. If this cannot be verified, notify the DM or a member of the site emergency team (who will locate and notify the DM).
- The DM will decide on the action to be taken; however, it is not recommended that the intruder(s) be approached, the recommended action is to immediately notify the site security (**Appendix D**) and then the Police (external line - 000). If the DM is offsite, it may be best to remain offsite and to inspect the site after the emergency has been terminated.
- Lock all entry and exit gates
- Attempt to keep intruders in view from a safe distance.
- Write down description of intruders (use the personal description form in **Figure 9-2**).

Note: Do not at any time attempt to confront or arrest intruders. This is not your job!

#### *9.12.3.3 Civil Disorder*

It is unlikely that civil disorders (like bomb threats or large sporting crowds) will occur due to the reasonably remote location from residential, sporting or commercial (shops) outlets. Notwithstanding this, disruptive crowds can cause severe damage and major disruption to BESS operations, both directly to the facility and to the infrastructure immediately surrounding the site. It is therefore essential that the site emergency response contains procedures for coping with civil disturbance.

Examples of civil disturbance include:

- Industrial disputes
- Unpopular political decisions
- Emotional international situations
- Demonstrations and marches that get out of control
- Clashes of opposing groups (i.e., youth gangs) that spill over into the site

The procedure below is designed to minimise the danger to personnel and the risk of damage to assets.

1) As soon as the DM is aware of a civil disorder occurring:

- on the site
- in the vicinity of the site
- such that the event is imminent of unauthorised entry to the site by a disaffected person or group

The following action should be taken:

- Alert members of the CA
- Initiate action to restrict entry to the buildings on site.
- Prevent contact between demonstrators and the site occupants (employees)
- Notify the site security (**Appendix D**) and Police of the incident and request assistance
- Notify nominated Managers.

1) Restrict entry to the site – site emergency personnel, under direction from the DM, should check security in their area and ensure all external gates and entry points to the site are locked.
2) The DM shall restrict contact between the site personnel and the demonstrators.
3) The DM shall contribute in a practical manner by:

- Withdrawal of staff where necessary
- Supervising the locking up of offices
- Securing all records, files, cash, and other valuables
- Promoting an air of confidence and calmness.

### 9.12.4 Personal Description Form

**Figure 9-2** shows a form to be filled out with the following instructions:

- Separate form required for each person
- To be completed immediately after incident by each staff member, also, passers-by if possible
- Place tick in the box applicable □, if answer is unknown draw a dash "-"
- Do not consult others during the completion of the form
- Site Emergency Commander to collect the forms, copy and hand to Police

| | | | | | |
|---|---|---|---|---|---|
| Name/Nickname Used: | | | Sex: Male ☐ Female ☐ | | |
| Approximate Age: | | | Nationality: | | |
| Height (feet or metres): | | | Weight: | | |
| Complexion | ☐ Fair | ☐ Dark | ☐ Pale | ☐ Fresh | ☐ Pimply |
| | ☐ Ruddy | ☐ Suntanned | ☐ Dirty | | |
| Build | ☐ Thin | ☐ Medium | ☐ Stout | ☐ Nuggetty | |
| Voice | ☐ Clear | ☐ Loud | ☐ Quiet | | |
| Accent: | | | Eyeglasses (Colour/shape): | | |
| Stature | ☐ Straight | ☐ Stooped | ☐ Slouchy | | |
| Walk | ☐ Quick | ☐ Slow | ☐ Limp | ☐ Springy | ☐ Pigeon toed |
| Disguise: | | | | | |
| Moustache/Beard (Colour/type): | | | | | |
| Hands | ☐ Soft | ☐ Hairy | ☐ Calloused | | |
| Nails: | | | | | |
| Hair (Colour): | | | | | |
| Hair Style | ☐ Straight | ☐ Bald | ☐ Curly | ☐ Thick | ☐ Thin |
| | ☐ Wavy | ☐ Long | ☐ Cut | | |
| Eyes (Colour): | | | | | |
| Size | ☐ Large | ☐ Little/Piggy | ☐ Squint | ☐ Staring | ☐ Sore/irritated |
| Gloves (type/Colour): | | | | | |
| Scars or Marks | | | | | |
| Ears (Size/Shape) | | | | | |
| Nose (Size Shape) | | | | | |
| Teeth | ☐ Good | ☐ Bad | ☐ Spaced | ☐ Blackened | ☐ Protruding |
| | ☐ Uneven | ☐ Missing | | | |
| Weapon | | | | | |
| Other distinguishing features (clothing, hat, tie, coat, shirt, etc.): | | | | | |
| Method and direction of escape (car model, registration, on foot, etc.): | | | | | |
| Method of operation (what did the intruder do, say, touch, take, etc.): | | | | | |

**Figure 9-2: Personal Description Form for Intruders**

## 9.13 ERP-09 Evacuation as Part of an Emergency

### 9.13.1 Evacuation Procedure and Emergency Assembly Areas

In the event of an emergency while personnel are onsite, the following procedure shall be followed.

On the instruction to evacuate, all personnel will assemble in the Emergency Assembly Point A located in the North-West, just outside the site boundary.

The locations of the Emergency Assembly Point during construction and regular operations are shown in **Figure 6-1.**

### 9.13.2 Emergency Control Centre

The emergency control centre will be at Emergency Assembly Point A. If this area is affected by the emergency, the emergency control centre will be near at Emergency Assembly Point B.

### 9.13.3 Alarms

Alarm is raised manually by personnel physically identifying an incident. Personnel will then notify the DM, who will initiate the site emergency evacuation as necessary. Notice to evacuate will be relayed by voice to all staff on site.

### 9.13.4 Procedure

On the instruction to evacuate given by the DM or their Deputy, all personnel, including contractors' personnel, shall proceed to Emergency Assembly Point A. This assembly area will be used for all staff and contractors on site. The DM will arrange for the mark off of names to ensure all staff have evacuated safely. At the assembly point, staff and contactors will be given instructions on site evacuation or return to work as stipulated by the emergency condition.

In the event that the primary evacuation point is not available (i.e., the emergency is affecting the location), the alternate assembly point (Emergency Assembly Point B) will be used.

## 9.14 Terminating an Emergency

When the CA Commander's role is complete, control will be handed back to the DM.

The DM should carefully consider the overall situation and review the following:

- Re-organisation of staff.
- Re-construction of damaged equipment.
- Clean-up, safe storage and disposal of all contaminated material.

Once the DM has deemed the emergency to be sufficiently completed, he/she will officially terminate the emergency. Depending on the level of destruction of the emergency, the DM, in consultation with the Site Senior Executive, will assess if normal operations can continue.

The DM shall facilitate the immediate removal of contaminated liquids (e.g., firewater or spills) off-site by contacting a hazardous waste removal company, such as that provided in **Appendix D.**

## 10.0 Training, Drills and Exercises

Providing training, drills and exercises to employees is critical for simulating an emergency situation. This ensures the SEMPs detailed above are appropriate and functional.

A general training in emergency preparedness shall be provided to all Employees on the following subjects as a minimum:

- Definition and types of emergencies.
- Emergency facilities, their function, location and how to use them.
- Means of communication and the location of communication facilities.
- Actions in case of emergency.
- Evacuation procedures.
- Different alarm types which may sound at the site.

Specific training shall be provided to the appropriate staff on:

- First aid.
- Rescue operations.
- Use of firefighting equipment.
- Spill containment and clean up equipment.

The training shall be provided to all new employees at the start of their employment.

- Retraining shall be provided annually.
- Evacuation drills shall be carried out biennially.

This Safety and Emergency Response Plan shall be evaluated by simulated emergencies. The simulated emergencies and drills involving all emergency functions and all employees shall be performed biennially, proposed to be in March and September.

The training of each employee shall be recorded, and the records of training shall be kept in personnel files.

# 11.0 Communications

## 11.1 Actions with Emergency Services

The DM will invoke the provisions of the appropriate emergency plan. The site will ensure that the following occurs:

- Company DM to assist the CA Commander whenever possible.
- All company personnel to assist the local DM whenever possible.
- All safety, emergency and firefighting equipment to be made available to emergency services.
- Any documents to be made available to emergency services (e.g., SDS).
- All entrances are cleared for emergency vehicles access.
- All access doors cleared for emergency services access.

## 11.2 Public Relations

Company personnel are NOT to speak to the media unless authorised by the DM. DM should also consult with the relevant stakeholders prior to communicating with the media.

Any press releases issued to the media will be done so through the DM and are to contain the following information. Releases must be approved by the Site Senior Executive.

- Description of the nature of the emergency.
- The corrective action taken and its effectiveness.
- When the emergency is expected to be over.
- The investigative action that will or has been taken.
- Any assistance that can be given by the media.

Note: Only facts should be stated.

## 11.3 Statutory Investigation

There may be a statutory investigation into any emergency depending on the requirements in the various regulations.

A coronial inquiry may be held in the case of fire and will be held in the case of fatalities:

- Investigating authorities can be:
    - Police
    - Fire Brigade
    - WorkSafe QLD
    - QLD EPA
    - SARA
- The DM is to ensure no movement of any evidence apart from that necessary to control the emergency.

- The CA will nominate a senior police officer to take charge of any situation which may later become subject to a coronial inquiry.

## 11.4 Reports

### 11.4.1 Incident Reports

As soon as possible after the emergency a full written report on the incident must be compiled. This will be reviewed by the Site Senior Executive and passed to the appropriate authorities within 28 days of the incident.

The report must cover in detail the following items:

- Objects of the report
- Summary
- Conclusions
- Recommendations
- Remedial Action Report

### 11.4.2 Incident Follow-Up

A review will be conducted within 28 days of the emergency in relation to the effectiveness of the SEMP. Areas of ineffectiveness or inefficiency will be noted, and the EMP modified to reflect the required actions. The modifications will be tested at the ensuing drills.

### 11.4.3 Review and Revision of the SEMP

In addition to review and revision arising from real emergency situations and training exercises, the SEMP shall be subjected to a periodical review. This review shall be carried out annually to ensure that the Plan is up-to-date, effective and in line with changing community standards.

The amendments to the Plan shall be made by the Duty Manager and Workplace and Safety team and approved by the Site Senior Executive.

The SEMP shall be audited annually by the Site Senior Executive and Emergency Management Team.

Commencing an update, all previously distributed versions of the SEMP shall be collected, accounted for and replaced with the updated version.

The SEMP shall be evaluated by simulated emergencies. The simulated emergencies and drills involving all emergency functions and all employees shall be performed biennially.

## 12.0 References


[1] Standards Australia, “AS 3745:2010 - Planning for emergencies in facilities,” Standards Australia, Sydney, 2010.

[2] N. R. F. Service, “Planning for Bush Fire Protection,” NSW Rural Fire Service, Granville, 2019.

[3] F. Larson, P. Andersson, P. Blomqvist and B.-E. Mellander, “Toxic fluoride gas emissions from lithium ion battery fires,” Nature: Scientific Reports, 2017.

[4] Standards Australia, “AS 1851-2012 - Routine service of fire protection systems and equipment,” Standards Australia, Sydney, 2012.

[5] Power Tech Systems, “Safety of Lithium-Ion batteries,” Power Tech Systems, 2022. [Online]. Available: https://www.powertechsystems.eu/home/tech-corner/safety-of-lithium-ion-batteries/. [Accessed 13 April 2022].

[6] Tesla, “UL 9540A: Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage System,” Tesla, 2024. [Online]. Available: UL 9540A: Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage System. [Accessed 16 April 2025].

[7] Standards Australia, AS 1940-2017 - Storage and Handling of Flammable and Combustible Liquids, Sydney: Standards Australia, 2017.

# Appendix A BESS Chemistry and Thermal Runaway

Appendix A

Lithium ion (Li-ion) batteries are composed of a metallic anode and cathode which allows for electrons released from the anode to travel to the cathode where positively charged ions in the solute migrate to the cathode and are reduced. The flow of electrons provides the source of energy which is discharged from a battery and used for work. In lithium iron phosphate (LFP) batteries, the cathode is composed of LFP or $LiFePO_4$ and the anode is composed of graphite. During charging, lithium ions are released from the cathode, through the electrolyte and across the separator and are stored in the graphite. When discharge occurs, the electrons are released in the circuit and the lithium ions exit the anode and return to the cathode. This process is shown in **Figure 4-1**.

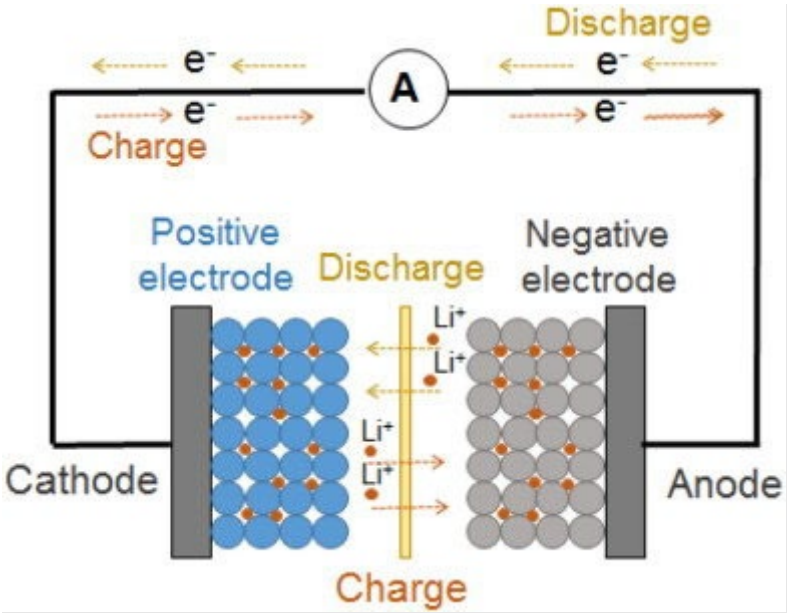



**Figure 4-1: Cathode and Anode of a Battery (Source Research Gate)**

The key hazard associated with Lithium-ion-BESS (Li-BESS) systems is thermal runaway which can be initiated in a cell by several events including (Ref. [9]) :

- Manufacturing defects
- Overcharging
- Overheating
- Mechanical abuse

During thermal runaway, cells can release a large quantity of both toxic and flammable gases creating a risk for explosion and toxicity to bystanders. Thermal runaway in a single cell within a BESS unit has potential to induce thermal runaway propagation which may eventually lead to larger-scale fire and/or explosion incidents (Ref. [10]).

The likelihood and consequence of thermal runaway in a BESS is dependent on several factors including the design, battery chemistry and installed systems. The battery product that has been proposed for this project is the Tesla Megapack 3 of which the battery chemistry is LiFePO4, or simply LFP. LFP cells are the current standard for large-scale BESS systems accounting for approximately 80% of the total battery storage market as of 2023. This is largely due to lower cost, higher cycle lives and safety considerations when compared to other chemistries such as nickel manganese cobalt (NMC)(Ref. [11]). Although NMC has a higher energy density, LFP batteries have begun to dominate the grid-scale energy market due to the following advantages when compared to NMC (Ref. [12]):

- Longer cycle life and less capacity reduction over time
- Higher thermal stability and less prone to overheating
- Better mechanical stability
- More stable electrochemically with fewer side reactions which accelerate degradation
- More resilient to state of charge (SOC) and depth of discharge (DOD) with less degradation from deep cycling

Tesla has not disclosed any details of the UL9540A test results for the Tesla Megapack 3; however, installed safety systems generally include:

- Shut-down separator (for overheating)
- Tear-away tab (for internal pressure relief)
- Vent (pressure relief in case of severe outgassing)
- Thermal interrupt (overcurrent/overcharging/environmental exposure)
- Battery Management Systems (BMS) – constant monitoring of the voltage, temperature and state of charge of individual cells to aid in early detection of a fault condition. Upon detection of cell fault, the BMS disconnects and isolates the cell to prevent propagation of the incident, and alarms the site Emergency Management System (EMS).
- Emergency stop
- Gaseous fire protection system
- Explosion prevention vent

While the Tesla Megapack 3 has not yet attained its certification, the Tesla Megapack 2XL has. The two models share the same battery chemistry and arrangement on a system level; hence, the results of the tests are expected to be identical. The testing would have demonstrated in the event of thermal runaway initiated in a single cell, it is highly unlikely that propagation beyond the initiating module would occur even in absence of active control measures.

During a thermal runaway triggered at the cell level, flaming outside of the unit does not typically occur. However, should a larger issue such as electrical faults or arcing in a number of cells occur, thermal runaway in multiple cells may occur with may cause the entire unit to catch fire and the spacing between units and fire suppression installed would be relied upon to prevent fire spread.

# Appendix B UL9540A Testing Criteria

Appendix B

The UL9540A test criteria for BESS cells are the following:

- Thermal runaway cannot be induced in the cell; AND
- The gases vented by the cell are non-flammable in the air.

If the cell does not meet the cell-level test, the test progresses to the BESS modules. The UL9540A test criteria for BESS modules are the following:

- Thermal runaway is contained by the module design; AND
- The gases vented by the cell are non-flammable in the air.

If the cell does not meet the module-level test, the test progresses to BESS units. The UL9540A test criteria for BESS units are the following:

- No flames are evident outside of the BESS; AND
- The surface temperature of adjacent units does not exceed the cell venting temperature; AND
- The temperature of the wall of the BESS unit does not exceed 97 $^{o}$C; AND
- No explosion hazards are exhibited.

If the cell does not meet the unit-level test, the test progresses to BESS installation. The UL9540A test criteria for the installation of BESS units are the following:

- Any evident flames do not propagate beyond the width of the unit; AND
- The surface temperature of adjacent units does not exceed the cell venting temperature; AND
- The temperature of the wall of the BESS unit does not exceed 97 $^{o}$C.

**Figure 12-3** exhibits a flowchart to help understand the UL9540A test at different levels.

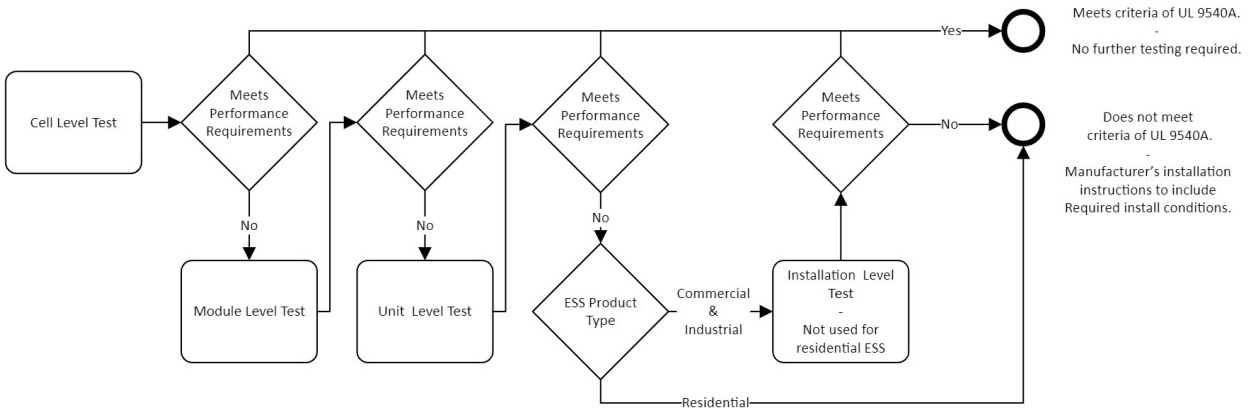



**Figure 12-2: Flow Chart for UL9540A Testing at Different Levels. Source: [6]**

# Appendix C Summary of Emergency Response Roles

Appendix C

## C1. Principal Roles

The principal roles for the management of an emergency as described as follows:

1) Duty Manager (DM)

The DM will be the controller of the hazard/emergency response. The DM will control all response actions and delegate authority as required by the specific situation. They will control the hazard/emergency response from the site control centre and will be assisted by the other members of the emergency response team as required.

The DM will also be the liaison between the site emergency response team and the combat agency (CA). In the event of an emergency requiring attendance at the site of the CA, the DM will relinquish control to the CA Commander and assist the CA Commander as required.

The DM will be the control authority for update of the site Emergency Response Plan and will co-ordinate review and update annually.

The DM will also be responsible for arranging emergency drills and exercises throughout the year. These will consist of desk top exercises and a full emergency exercise/evacuation at least biennially.

2) Communications

The communications officer will assist the DM as required. They will assist in the emergency command centre and field communications (e.g., phones, radios, media, etc.) as required.

The communications officer is to ensure that they are fully familiar with the requirements of speaking with the media (Section 5.2.3).

3) First Aid

The site first aid officer (for emergency response) will be responsible for attending any emergency where personnel are injured. The site first aid officer will be directed by the site emergency commander as required.

The site emergency first aid officer will also be responsible for ensuring the emergency response first aid kit is well stocked and any items with “use-by” dates are regularly replenished as required.

The site first aid officer will also be responsible for ensuring their first aid qualifications and certification are valid at all times. This will involve regular refresher training as required.

4) Fire Wardens

An overarching category for emergency response personnel. They are the primary emergency team which encompasses the following.

- Traffic management.
- Evacuation Control/Co-ordination
- Emergency Response Co-ordinator

Fire Wardens will be allocated duties (i.e., traffic management, evacuation control, etc.) by the Duty Manager as required during the emergency situation.

## C2. Secondary Roles

To assist with the management of an emergency situation, the following roles may be assigned to personnel. Alternatively, the responsibilities of these roles may be absorbed into the aforementioned primary roles.

1) Traffic Management

The site is located in an agricultural / rural area. On arrival at an emergency incident, it may be difficult for the attending QFD response crew to locate the exact source of the incident, where the incident is not immediately evident (i.e., smoke cannot be seen). Hence, it would be necessary for a member of the emergency team to meet the QFD team at the site entrance and direct the crew to the specific emergency location.

Notwithstanding this, the emergency response traffic management officer shall not commence any traffic management operations without the express direction of the DM.

In the event of an incident on site it will be necessary to ensure a clear traffic path is available for CA vehicles to approach the site. It will be the responsibility of the traffic management emergency response officer to clear the path of vehicles that may block the way into the solar farm. This will include vehicles at the front and rear of the site on the roadways and approaches to the solar farm.

It will also be the responsibility of the emergency response traffic management officer to direct traffic at the front of the site. This may require the establishment of a traffic zone at the front of the site. The emergency response traffic management officer is to wear highly visible clothing at all times during the emergency to ensure he/she is clearly seen, limiting the potential for accident and vehicle impact to the officer.

2) Evacuation Control/Co-ordination

The evacuation control/co-ordinator will be responsible for ensuring all personnel are safely evacuated off-site to one of the assembly points. This position requires the incumbent to be familiar with the main and alternate assembly points and to arrange for communication of the evacuation order under the direction of the DM. The evacuation co-ordinator shall not instigate an evacuation without the express permission of the DM.

The evacuation control/co-ordinator will be responsible for obtaining the employees/visitors list of names and marking these names off at the assembly point. Where any person's whereabouts cannot be verified, details shall be passed to the Site Emergency Commander for action.

3) Emergency Response Co-ordinator

Whilst the DM is located in the site emergency centre, it will be necessary for physical response to the emergency to be actioned. This will be the responsibility of the Emergency Response Co-ordinator (ERC).

In the event an emergency occurs, the ERC will immediately contact the DM for direction on how to respond to the specific emergency. The ERC shall be fully conversant with the emergency response equipment on site. The ERC shall have first attack firefighting equipment, spill response training, hazardous materials knowledge/training and cursory first aid training.

The ERC will control the emergency response personnel allocated as part of this plan.

4) Emergency Response Personnel (DG Co-ordinators)

The emergency response personnel will be under the control of the ERC. They will take direction from the ERC as required, specific to the type of emergency at hand. These personnel must be fully conversant with the emergency response equipment on site and shall have (as a minimum) the following training:

- First Attack Fire Fighting
- Spill Response
- Hazmat Knowledge

**List of Contacts**

A list of roles, personnel in those roles and contact information is provided in **Table 12-1** and **Table 12-2**.

The list of contacts shall be located in the Emergency Services Information Package (ESIP). This package shall be located in the following areas:

- Office
- Site Emergency Box

**Table 12-1: Emergency Personnel - Construction**

| Position | Name | Contact Number |
|---|---|---|
| Duty Manager | TBC | TBC |
| Deputy Warden | TBC | TBC |
| Fire Warden | TBC | TBC |
| First Aid | TBC | TBC |
| DG Coordinator | TBC | TBC |
| Communications | TBC | TBC |
| Traffic Management | TBC | TBC |
| Waste Management | TBC | TBC |
| Site Security | TBC | TBC |

**Table 12-2: Emergency Personnel – Regular Operation**

| Position | Name | Contact Number |
|---|---|---|
| Duty Manager | TBC | TBC |
| Deputy Warden | TBC | TBC |
| Fire Warden | TBC | TBC |
| First Aid | TBC | TBC |
| DG Coordinator | TBC | TBC |
| Communications | TBC | TBC |
| Traffic Management | TBC | TBC |
| Waste Management | TBC | TBC |
| Site Security | TBC | TBC |

# Appendix D Emergency Contact Numbers

Appendix D

## Contact Numbers

| Responder | Contact Information |
|---|---|
| Ambulance | Telephone: 000 |
| Fire Service | |
| Police | |
| Medical emergency | |
| Site Security | TBC |
| Tully Hospital | 17 Bryant Street, Tully QLD 4854 |
| | Telephone: 07 4068 4144 |
| Royal Flying Doctor Service | Telephone: 1300 My RFDS (1300 69 7337) |
| Poisons Information Centre | Telephone: 13 11 26 |
| Hazardous Waste Disposal Service | TBC |
| | TBC |

## Adjacent Sites

| Neighbour | Site Contact | Contact Number |
|---|---|---|
| Businesses | | |
| Powerlink Queensland | Withheld | Withheld |
| Tully Sugar | Withheld | Withheld |
| Neighbours | | |
| 8 Sandy Creek Road, Tully | Withheld | Withheld |
| 122 Syndicate Road, Tully | Withheld | Withheld |