**REPORT**

# Central Térmica de Temane Project - Emergency Preparedness and Response Framework

*Moz Power Invest, S.A. and Sasol New Energy Holdings (Pty) Ltd*

Submitted to:

**Ministry of Land, Environment and Rural Development (MITADER)**


Submitted by:

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## ACRONYMS

| Acronym | Description |
|---|---|
| CMT | Crisis Management Team |
| CTT | Central Térmica de Temane |
| EHS | Environmental, Health and Safety |
| ERC | Emergency Response Controller |
| EPRF | Emergency Preparedness and Response Framework |
| EPRP | Emergency Preparedness and Response Plan |
| ERP | Emergency Response Plan |
| HSE | Health, Safety and Environment |
| $H_2S$ | Hydrogen sulphide |
| IMS | Incident Management System |
| IMT | Incident Management Team |
| ORT | On Site Response Team |
| SHE | Safety, Health and Environment |

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# 1.0 INTRODUCTION

## 1.1 Background

The Mozambican economy is one of the fastest growing economies on the African continent with electricity demand increasing by approximately 6-8% annually. In order to address the growing electricity demand faced by Mozambique and to improve power quality, grid stability and flexibility in the system, Moz Power Invest, S.A. (MPI), a company to be incorporated under the laws of Mozambique and Sasol New Energy Holdings (Pty) Ltd (SNE) in a joint development agreement is proposing the construction and operation of a gas to power facility, known as the Central Térmica de Temane (CTT) project. MPI's shareholding will be comprised of EDM and Temane Energy Consortium (Pty) Ltd (TEC). The joint development partners of MPI and SNE will hereafter be referred to as the Proponent. The Proponent propose to develop the CTT, a 450MW natural gas fired power plant.

The proposed CTT project will draw gas from the Sasol Exploration and Production International (SEPI) gas well field via the phase 1 development of the PSA License area, covering gas deposits in the Temane and Pande well fields in the Inhassoro District and the existing Central Processing Facility (CPF). Consequently, the CTT site is in close proximity to the CPF. The preferred location for the CTT is approximately 500 m south of the CPF. The CPF, and the proposed site of the CTT project, is located in the Temane/Mangugumete area, Inhassoro District, Inhambane Province, Mozambique; and approximately 40 km northwest of the town of Vilanculos. The Govuro River lies 8 km east of the proposed CTT site. The estimated footprint of the CTT power plant is approximately 20 ha (see Figure 1).

The proposed project will draw gas from either the Sasol Exploration Production International (SEPI) gas well field via the existing Central Processing Facility (CPF). Consequently, the CTT site is in close proximity to the CPF. The CPF, and the proposed site of the CTT project, is located in the Temane/Mangugumete area, Inhassoro District, Inhambane Province, Mozambique; and approximately 40 km northwest of the town of Vilanculos. The Govuro River lies 8 km east of the proposed CTT site. The estimated footprint of the CTT power plant is approximately 20 ha.

Several activities associated with the project may impact upon the health, safety and security of the local communities adjacent to the project infrastructure, except for one of the southernmost sections of the transmission line, falls within the district of Inhassoro. This district is in the north of Inhambane province, 360 km from the provincial capital.

The CTT area is rural with few settlements located near proposed infrastructure. There are nominal rural agricultural settlements adjacent to the transmission line. Further east, as one move away from the CTT site, denser settlements occur along the EN-1 (east and west of the road) and from the EN-1 eastward to the coast.

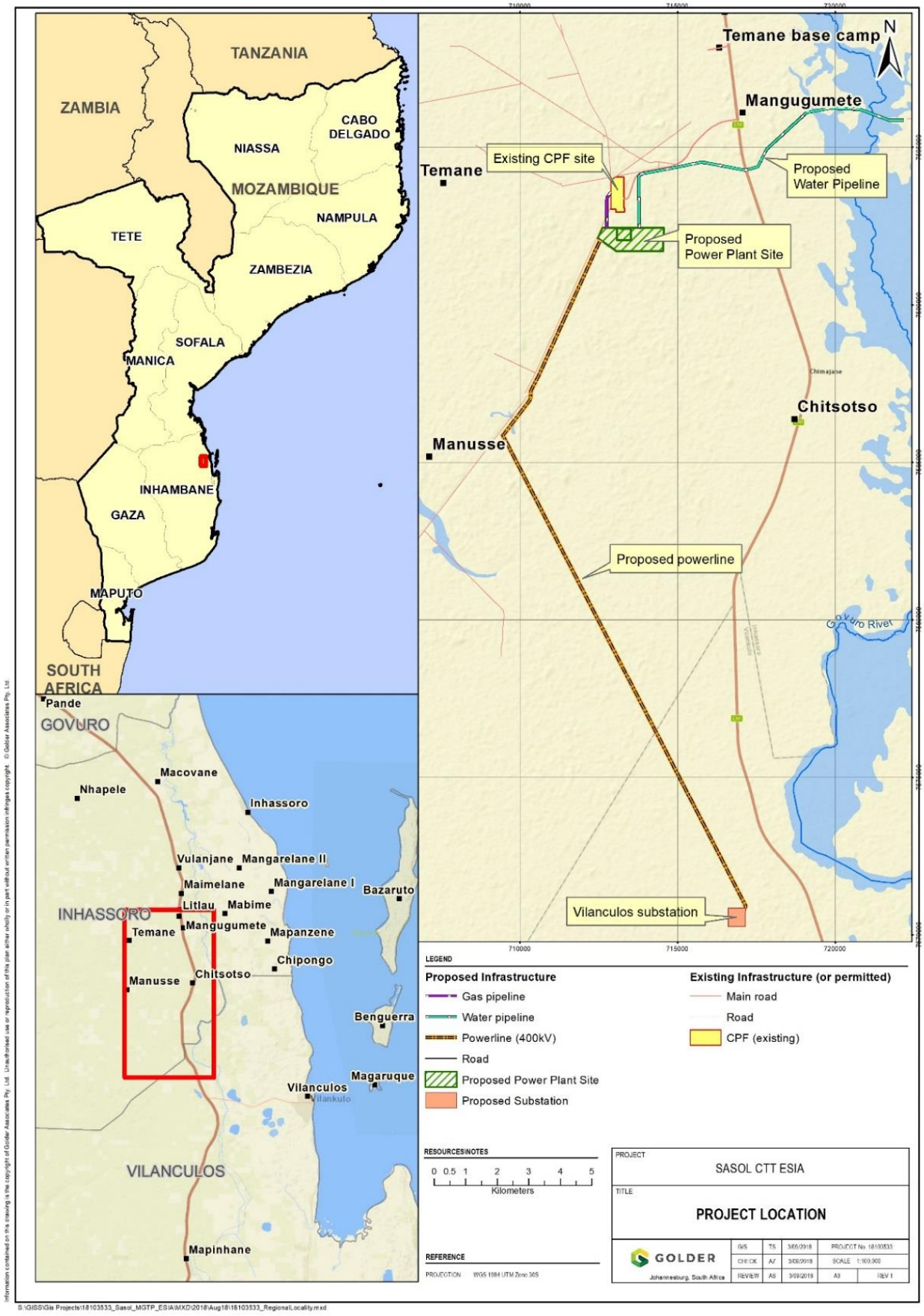


**Figure 1: Project Location**

## 1.2 Purpose

This Emergency Preparedness and Response Framework (EPRF) defines the Central Térmica de Temane (CTT) project's interventions and protocols that will be implemented to respond appropriately to any incident in a safe, rapid, effective, and efficient manner.

For purposes of this framework (Core Framework), incidents are defined as an event or hazardous circumstance that poses a significant impact on people, the environment, or property.

The EPRF's Emergency Response Principles are used as a basis for the assessment of the appropriate level of response in the event of an incident. These principles are described throughout this framework and should be integrated into all actions taken by the emergency response organisation.

The EPRF provides CTT staff with essential guidance on how the project manages the assessment, grading and response to emergencies.

The purpose of this framework is to outline the minimum requirements about emergency management to ensure that the appropriate resources and plans are prepared and available for an effective response to mitigate, control and recover from incidents.

## 1.3 Objectives

The objectives of this framework include:

- Defining the Emergency Response Organisational Structure;
- Defining Emergency Response terminology;
- Defining criteria for establishing Response Objectives;
- Defining Resources (personnel and equipment) that can be accessed and released in the event of an incident; and
- Defining roles and responsibilities of Command and Support staff.

## 1.4 Applicability and scope of work

This framework applies to emergency response activities carried out regardless of incident type and size.

It describes the procedures for CTT's response to all types of hazardous situations. Examples of emergencies that may require implementation of this framework:

- Uncontrolled hydrocarbon release from gas pipeline, or wells and flowlines (associated facilities);
- $H_2S$ release (CPF/associated facility);
- Gas release;
- Fire or explosion;
- Serious injury or fatality;
- Natural disaster and environmental emergency;
- Security breach and telephone threat; and
- Other unplanned events that have the potential to cause harm or damage property.

This framework applies to all project-controlled sites, both operational and corporate offices and includes contractor facilities within core facilities.

Due to the early stages of the CTT project, the Proponent has not yet chosen a technology option for the power generation unit. Therefore, the EPRF will need to be updated and supported by an addendum providing project specific details once the preferred power technology is chosen (including the manufacturer with its specifications), such as:

- Work site location;
- Site Plan, indicating:
  - Emergency gathering points;
  - Muster points;
  - Fire extinguisher locations;
  - Medical stations; and
  - Evacuation routes.

Regular and frequent emergency exercises and drills shall be performed to ensure adequate emergency response capabilities are always in place.

Periodic review and continuous improvement of this EPRF will be an integral part of this process.

## 2.0 DESCRIPTION OF THE KEY PROJECT COMPONENTS

The CTT project will produce electricity from natural gas in a power plant located 500m south of the CPF. The project will consist of the construction and operation of the following main components:

- Gas to Power Plant with generation capacity of 450MW;
- Gas pipeline (±2 km) that will feed the Power Plant with natural gas from the CPF;
- 400kV Electrical transmission line (± 25 km) with a servitude that will include a fire break (vegetation control) and a maintenance road to the Vilanculos substation. The transmission line will have a partial protection zone (PPZ) of 100m width. The transmission line servitude will fall inside the PPZ;
- Water supply pipeline to one or more borehole(s) located either on site or at borehole(s) located east of the Govuro River;
- Surfaced access road to the CTT site and gravel maintenance roads within the transmission line and pipeline servitudes;
- Temporary beach landing structures at Inhassoro for the purposes of delivery of equipment and infrastructure to build the power plant. This will include transhipment and barging activities to bring equipment to the beach landing site for approximately 1-2 days with up to 3-4 months between shipments over a period of approximately 8-15 months;
- Construction camp and contractor laydown areas adjacent to the CTT power plant site; and
- Temporary bridge structures across Govuro River and tributaries, as well possible new roads and/or road upgrades to allow equipment to be safely transported to site during construction.

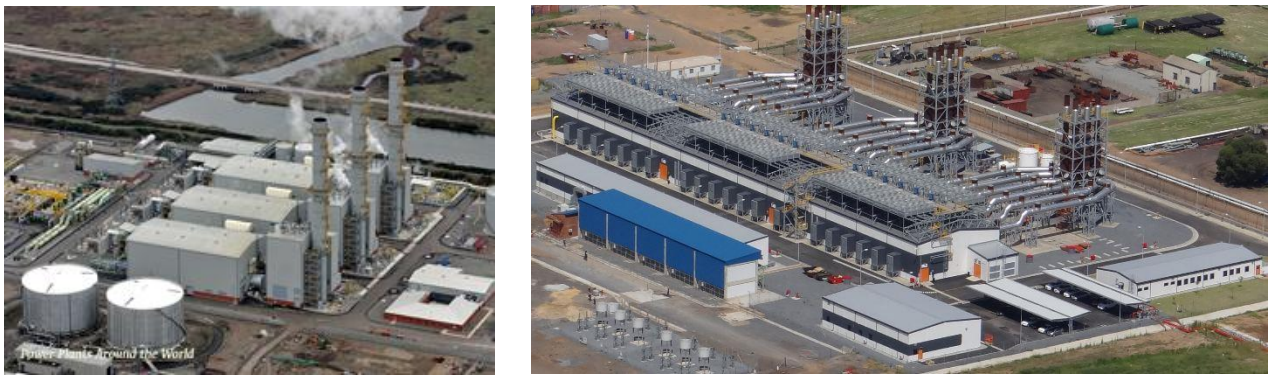


**Figure 2: Examples of gas to power plant sites (source: www.industcards.com and www.wartsila.com)**

The final selection of technology that will form part of the power generation component of the CTT project has not been determined at this stage. The two power generation technology options that are currently being evaluated are:

- Combined Cycle Gas Turbine (CCGT); and
- Open Cycle Gas Engines (OCGE).

Please refer to Chapter 4 of the main ESIA document for further details on the technology option.

At this early stage in the project a provisional layout of infrastructure footprints, including the proposed linear alignments is indicated in Figure 1. A conceptual layout of the CTT plant site is shown below in Figure 3.

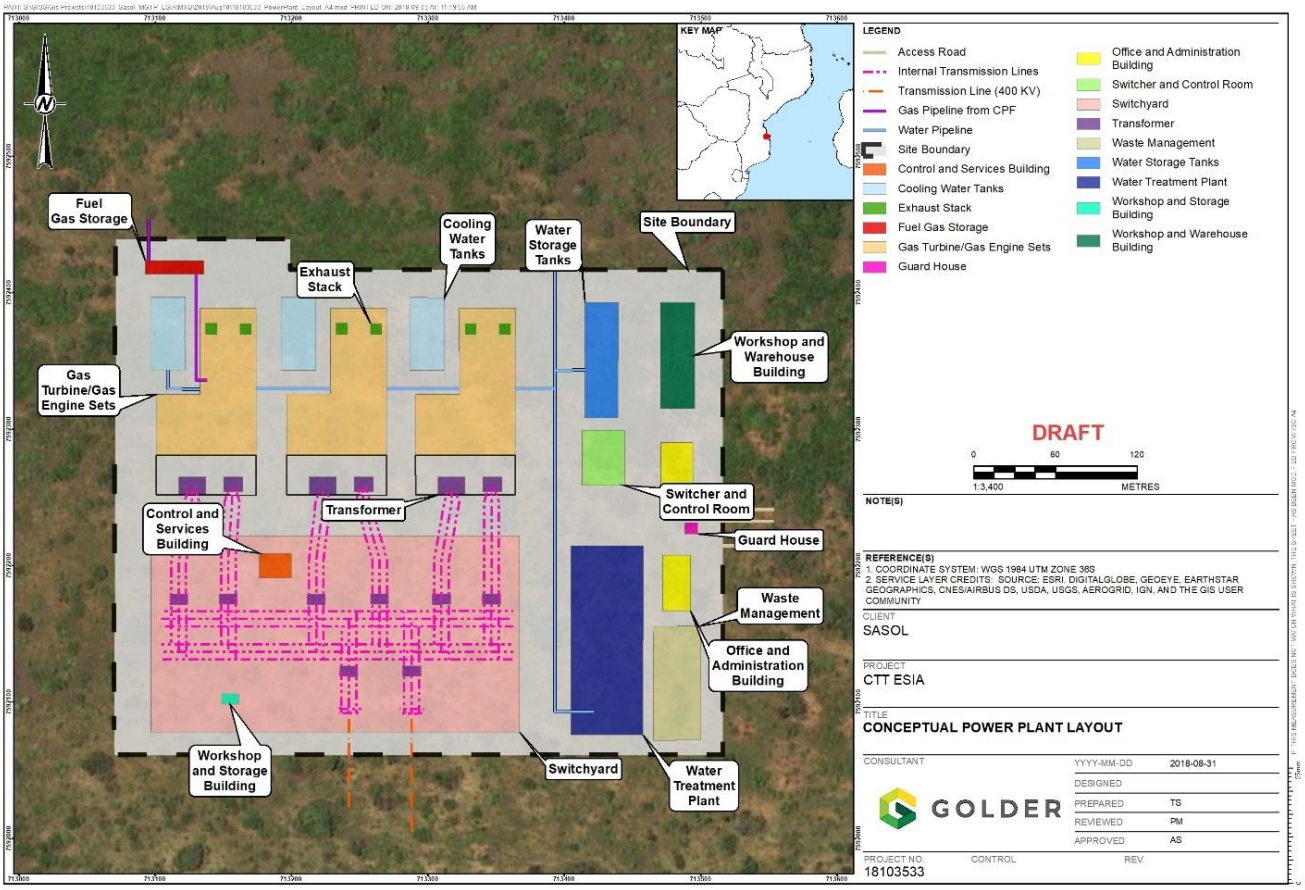


**Figure 3: Conceptual layout of CTT plant site**

## 3.0 EMERGENCY RESPONSE CLASSIFICATION

To provide for a structured commitment of emergency response resources, emergencies are classified into three levels of severity as outlined below. For all emergency situations, the Site Supervisor and HSE manager will be contacted as soon as possible and informed of the status and actions being taken to bring the emergency under control.

**Table 1: Emergency Response Classification**

| Level | Description |
|---|---|
| **Level 3 - Minor or Simple** | A Level 3 emergency is a minor emergency that is small and of short duration. A Level 3 emergency has limited impacts on personnel safety, the environment, the community and property. A minor emergency can be handled exclusively by the Contractor's On Site Response Team (ORT) and the ERC. |
| **Level 2 - Moderate or Complex** | A Level 2 emergency has broader impacts for personnel safety, the environment, the community and property, which may result in mustering, sheltering, medical evacuation, property recovery, and local community impact or evacuation response. In addition to the resources identified in a Level 3 event, a Level 2 event may require the involvement of external emergency services (e.g. fire and medical assistance). The ERC shall assess the availability of emergecy service before the commencement of the project. |

| Level | Description |
|---|---|
| **Level 1 - Major, Complex or Compound** | A Level 1 emergency has broad impacts on personnel safety, the environment, the community and property, which may include a major fire, a large spill/release of hydrocarbons or hazardous materials, a gas release, or multiple injuries and fatalities resulting from incidents, as well as significant community impact.<br><br>A Level 1 emergency is evident when an incident has escalated to a level where it has the potential to adversely affect the company, its joint venture partners, or the public on a broad front. The trigger point would be when the ERC is of the opinion that the organisational structure and management practices need to be changed to best respond to the situation.<br><br>In addition to the resources required for a Level 3 or 2 emergency, a Level 1 emergency will involve the Project Operations Manager. He or she shall arrange for any further external support as needed. The Community Liaison Officer (CLO) also manages the communication of the incident.<br><br>The Project Operations Manager will assist with the management of the incident and coordinate the response with the Site Supervisor and ERC. |

# 4.0 LEGAL FRAMEWORK -

## 4.1 Mozambique legislation

The primary laws and regulations relating to emergency response are listed below:

**Table 2: Mozambican laws and regulations relating to emergency response**

| Law/Decree | Title | Description |
|---|---|---|
| Law 21/2014 of 18 August | Petroleum Law | This Law establishes the regime for allocation of rights to execute petroleum operations within the Republic of Mozambique and beyond national borders, in a manner consistent with international law. |
| Decree 34/2015 of 31 December | Regulation for Petroleum Operators | Establishes the operational requirements, including aspects related to safety, health, and environmental protection, and provides a list of environmental issues to consider while conducting petroleum operations. Chapter III deals specifically with Emergency and Contingency Requirements. |
| Law 21/1997 of 1 October | Electricity Law | Applicable to generation, transportation, distribution and commercialisation of electric energy in Mozambique, as well as to the import and export of electricity. |
| Decree 8/2000 of 20 April | Regulations for Electricity Law | In Mozambique, generation, transmission, distribution and sale of electric energy (including import and |

| Law/Decree | Title | Description |
|---|---|---|
| | | export) is regulated by the Electricity Law and Its Regulations. |
| Law 23/2007 of 1 August | Labour Law | Defines aspects related to the hiring of workers, the rights and responsibilities of workers, including hygiene and health and safety. The law also discusses labour relations between employers and workers and the laws in terms of national and foreign workers. |
| Decree 63/2011 of 7 December | Regulation for the Contracting of Foreign Citizens in the Petroleum and Mining Sectors | Establishes the legal regime including mechanisms and procedures for contracting foreign citizens for work purposes in the Petroleum and Mining sectors. It provides, inter alia, that the performance of activities in these circumstances must be approved by the competent authority. |
| Law 25/91 of 31 December | Mozambican National Health Service | A tiered system which includes Primary, Secondary and Tertiary levels of health care service. The Law provides for a referral system. Where patients cannot be adequately attended to at the receiving level, they are forward to the next level. |

## 4.2 International standards

**Table 3: International standards which apply to this framework**

| Applicable performance standards | Reference where applicable |
|---|---|
| Perfomance Standard 2: Labor and Working Conditions | This framework considers the protection of workers to promote safe and healthy work conditions and the health of workers. |

# 5.0 FRAMEWORK MANAGEMENT

## 5.1 Framework review

CTT Environmental, Health and Safety (EHS) is responsible for maintenance of the EPRF. At a minimum, this plan should undergo an annual review, with input as appropriate from each operating area.

In addition, the EHS will:

- Ensure supporting tools and systems are appropriately implemented;
- Ensure continuous improvement opportunities are identified and shared with the project; and
- Ensure training and end-user education and awareness materials are available and appropriate.

## 5.2 Core commitments in emergency response

The Proponent commits to undertake the following emergency response activities throughout the project lifecycle:

- Undertake a timely, independent and rigorous risk assessment and situation analysis in each new work site or facility prior to initiation of construction or activity;
- Establish a clear management structure for the onsite response based on the Incident Management System;
- Develop an evidence-based sector response strategy, plan and appeal;
- Promote and monitor the application of technical standards and best practices; and
- Provide relevant technical expertise to all relevant affected parties.

## 5.3 Preparedness

The success rate of containing an emergency depends on how prepared a team is when an emergency occurs. It is thus essential that every Emergency Committee member and every person on the CTT site, as far as reasonably practicable, must be familiar with the contents of this emergency document.

Emergency management drills must be conducted to ensure that all personnel are aware of the process outlined in this document and the steps to follow in case of an emergency. In addition, the emergency drills must be conducted to test and validate the contents of this Emergency Framework. Consequently:

- A desktop emergency exercise shall be carried out on a six-monthly basis;
- A full evacuation drill should be planned so that every employee participates in a minimum of one drill per annum. Drills need to be carried out in both work shifts to ensure preparedness of emergency at any time.
- When drills are conducted, relevant people (such as police and local government) should be notified immediately that a drill is in progress and communications are being checked. This practice presupposes that prior contact has been established with such bodies when the systems are set up. It is also advisable to warn persons on site of the drill, but this decision is usually at the discretion of the drill co-ordinator.

Learning outcomes and actions from activities shall be documented, communicated and tracked for completion.

## 5.4 Prevention of incidents and emergencies

Apart from natural disasters, and deliberate attacks, all efforts must be directed at the prevention of an emergency before it occurs. This effort will require all personnel to take responsibility as far as safety, health, environment and security are concerned on the CTT site.

Personnel must acquire a positive attitude towards risk management and recognise safety and health as the prime requirement for working efficiently. This attitude must be fostered and promoted to all employees and contractors on the CTT site.

The potential incidents and emergencies should include, but not be limited to:

- Adverse environmental impacts;
- Bomb threats;
- Disease outbreaks;
- Electricity-related incidents;
- Explosions;
- Fires;

- Force Majeure events (including floods, cyclone and seismic events);
- Gas and significant chemical spills, hazmat or hydrocarbon releases;
- Labour and civil unrest;
- Missing persons and vehicles;
- Buried landmine explosions (risk to personnel and vehicles);
- Road transport incidents;
- Terrorism and terrorist attacks;
- The case of Incidents requiring medical evacuation; and
- Vehicle accidents.

In identifying potential emergencies and developing and maintaining the emergency plan, both the size and complexity of the site and the number and nature of occupants should be taken into consideration.

## 5.5 Emergency Control Centre

For this Emergency Framework, the Emergency Control Centre will be the CTT administration boardroom unless otherwise decided by the Emergency Coordinator.

## 5.6 Emergency Equipment and Location

CTT shall ensure that the relevant emergency equipment is provided; strategically located and adequately maintained.

The CTT emergency equipment must be situated in easily accessible locations and within a reasonable distance from the identified sources of a potential hazard. All identified locations must be sign-posted, including directions from areas where they cannot be seen and clearly marked on current evacuation drawings.

Regular inspections should be considered and be made by qualified personnel. Records of inspection shall be kept at all operations. The actual plan will be developed before the commencement of any project site activities such as site preparation, clearing as part of construction activities.

## 5.7 Emergency Committee

The Emergency Committee key roles are to ensure that in case of an emergency, all individuals know what part they must play to prevent, control and take corrective action. The committee will be made up of the following persons as per the below Table:

**Table 4: Emergency Committee**

| Team Member | Appointment |
|---|---|
| Emergency Coordinator | The Site Manager or his/ her delegate will be appointed as Emergency Coordinator. |
| Deputy Emergency Coordinator | Safety Manager will be appointed as Deputy Emergency Coordinator. |
| Fire Coordinator | A Site Supervisor will be trained and appointed as Fire Coordinator. |

| Team Member | Appointment |
|---|---|
| First Aid Coordinator | A person with a valid first aid certificate will be appointed as a First Aid Coordinator. |
| First Aid Team | First Aid teams will be trained and appointed as members of the First Aid Team and will assist the First Aid Coordinator in the event of an emergency. The number of first aid teams and coordinators will be confirmed prior to the commencement of the project (depending on technology option selected and number of employees on site). |
| Communications Coordinator | The HR Manager will be appointed and trained as Communications Coordinator. |
| Transport Coordinator | The Operations Manager will be appointed as the Transport Coordinator. |
| Medical Response Coordinator | The onsite Doctor will be appointed as the Medical Response Coordinator. |
| Security Services | Security Personnel will be appointed to coordinate all security aspects on the site. They will assist with security procedures during an emergency. |

## 5.8 Responsible for implementation

The Site Head of Departments and Safety, Health and Environment (SHE) representatives on site are responsible for ensuring that employees and contractors are familiar with this procedure and implemented accordingly.

The Safety Manager is responsible for maintaining an up-to-date list of members of the Emergency Committee, as well as to communicate this plan within the Emergency Committee members.

After an Emergency has occurred or any emergency response exercise, a debriefing should be held and documented in a report. The report shall identify all deficiencies in the emergency response processes and formulate recommendations on how to avoid occurrences of incidents.

## 5.9 Training

The need for retraining should be determined when modifications are made that impact on the emergency response and should include specific site Emergency scenarios.

Personnel should be trained in how to initiate the emergency response and evacuation procedures.

The proponent should determine the training needed for personnel who are assigned for emergency response duties and ensure that the training is received.

Emergency team personnel must be able to identify the locations of all Emergency equipment. In addition, they must be trained in the correct use, maintenance and testing requirements of all Emergency equipment.

## 5.10 Key Contact Details

The below table acts as a guide as to the detail required for each of the key contact persons.

**Table 5: Key Contact Details**

| Designation | Appointed Person | Contact Number |
|---|---|---|
| Emergency Coordinator | | |
| Deputy Emergency Coordinator | | |
| Fire Coordinator | | |
| Security Coordinator | | |
| Communications Coordinator | | |
| Transport Coordinator | | |
| Environmental Team | | |
| Community Relations Team | | |
| Key Community Members | | |

## 5.11 Responsible for review

The Emergency Response Plan must be amended and updated regularly to reflect lessons learnt and any changes in operations.

The Safety Manager, in consultation with the Emergency Committee, is responsible for the review and update of this document. Furthermore, the Safety Manager is responsible for the effective management and implementation of any change made to this framework.

# 6.0 REFERENCES


- Cenovus Energy, Emergency Response Plan, July 2017.
- Canadian Natural Resources Limited, Corporate (CORE) Emergency Response Plan, April 2018.
- Anadarko, Emergency Response Core Plan.
- Sasol, Emergency Response Plan, June 2017.


# 7.0 DEFINITIONS

| Term | Definition |
|---|---|
| Disaster / Emergency | A serious, unexpected, and often dangerous situation requiring immediate action.<br><br>Three types of disasters or emergencies should be considered, namely:<br><br>■ Natural disasters, including earthquakes, lightning, storms, floods; |

| Term | Definition |
|---|---|
| | ■ Human-made disasters – malfunctioning of equipment and machinery, negligent behaviour resulting in explosions, fire, chemical spills, and so forth; and<br>■ A disaster caused by the deliberate actions of an individual or group of individuals such as sabotage, civil and labour unrest, strikes, riots and bomb blasts or bomb threats. |
| Emergency Response | Actions taken at the site of a major incident, to preserve lives, the environment and property, including the management of these actions. |
| Emergency Response Plan | A comprehensive document that plans for probable emergencies which could occur at each site and appropriate responses if such an emergency takes place. |
| Evacuation | The orderly movement of people from a place of danger. |
| Event | An event is defined as one or multiple occurrences or changes of a particular set of circumstances, a Stanwell event has three classifications, hazard, near hit and incident. |
| Hazard | A danger or risk. |
| Incident | An event that results in harm to people, the environment or results in a negative financial impact (including damage to plant) and reputation damage. |
| Muster Point / Assembly Area | The designated place or places where people assemble during an evacuation. |
| Preparedness | Activities implemented before an incident that may be used to support and enhance mitigation of, response to, and recovery from disruptions. |
| Shall | Indicates a statement is mandatory. |
| Should | Indicates a desirable or expected state. |

# Signature Page

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