

# Timor Resources - Internal/ External Waste Management Plan

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## **Acronyms**

EIS	Environmental Impact Statement
ESC	Erosion and Sediment Control
EMP	Environmental Management Plan
TG	TIMOR GAP
TL	Timor – Leste
TR	Timor Resources



# 1 INTRODUCTION

Waste management is identified as a hazard with relatively high potential for environmental damage and detrimental health effects.

This document provides a description of the approach Timor Resources is taking with respect to the management of all waste streams that may be produced by its operations.

Timor Resources will be responsible for ensuring that project wastes are managed in a manner consistent with regulation and best practices.

Timor Resources are committed to reducing their wastes where possible and will strive to follow a waste management hierarchy. This hierarchy is (in order of decreasing preference):

- Avoidance
- Reduction
- Re-use
- Recycling
- Treatment
- Disposal

Development and control of this Waste Management Plan includes:

- Collecting and maintaining an inventory of waste management
- Developing continual improvement strategies
- Reporting on compliance with the plan
- Communicating requirements of the plan to personnel, contractors and authorities, as required
- Provision of waste awareness training to personnel and contractors.
- Monitoring waste management performance of contractors.

Timor Resources will ensure all waste management facilities are able and authorised, to receive the wastes assigned to them.

Project contractors are responsible for ensuring that all types of waste are managed in accordance with this Waste Management Plan including:



- Compliance with TR policies and procedures and any other relevant legislative requirements.
- Separation and storage of waste in accordance with this plan.
- Proper management and disposal of waste through provision of waste generation and waste management data.
- Auditing of compliance against this plan.
- Training of staff as required.

Wastes produced from accidental release of oil are covered under the Timor Resources Oil Spill Contingency Plan (“OSCP”)



## 1.1 OPERATION OUTLINE

Timor Resources, as the Operator of PSC TL-OT-17-08 and TL-OT-17-09 is required, under the terms of the agreement, to conduct specified operations within the licence areas.

The waste products derived from these operations will be disposed of as per prescribed methods and as approved by the Timor-Leste regulator, ANPM. This will be either locally or transported to an approved disposal facility/area. The waste will be categorised and segregated in a manner appropriate to the non-hazardous or hazardous nature of the material.

## 1.2 PURPOSE OF THE WASTE MANAGEMENT PLAN

The purpose of the Waste Management Plan is to ensure that all wastes associated with activities will be appropriately stored, managed, disposed of and monitored in a comprehensive and environmentally responsible manner.

## 1.3 ENVIRONMENTAL COMMITMENT AND POLICIES

Timor Resources HSE Policy provides the over-riding commitments that will apply to the project.

Timor Resources requires all discharges, emissions, wastes and consumption of resources (including energy) for activities be accurately recorded. This data provides information which allows for monitoring of progress against environmental targets and plans.





## **2 SOURCES OF WASTE**

### **2.1 General Waste**

General waste includes items that are generated from the operation that are of the type that would occur in a regular domestic situation, for example:

- Plastic
- Food Waste
- Glass and Metal
- Paper and Cardboard

These will be segregated and disposed of by appropriate means at an approved facility.

### **2.2 Medical Waste**

Medical waste will be collected by an approved contractor and taken to a local Hospital, as per prior arrangement, to be incinerated as required by Ministry of Health.

### **2.3 Sewage**

Domestic grey and black water will be generated at accommodation camps, particularly as sewage from toilet blocks. Sewage will be collected in septic tanks installed on site for the project. If sewage treatment is installed on site, the effluent may be used for surface irrigation providing it meets with standards approved by the appropriate governing bodies. Untreated waste will be collected by an approved contractor and taken for disposal at an approved disposal site. Approved sites have been identified in the licence areas.

### **2.4 Airborne Waste**

Emissions from equipment shall be minimized via filters and preventative maintenance schedules. Distribution of dust (including cement dust) will be prevented from blowing from site by the regular wetting down of the lease and work area.

### **2.5 Lease and Road Cleanliness**

The lease and access road will be kept clean to reduce movement of mud or debris off site on vehicle wheels. Where possible site areas should be compacted with gravel.

### **2.6 Drilling Waste**

The following list provides a summary of the drilling wastes:



- Rock, cement and associated chemicals removed by the drilling operation
- Drilling fluid adhering to the rock / cement when it is separated from the drilling fluid
- Unwanted or non-recyclable solids and fluids. These will normally be restricted to dewatering effluents, cement-related products, lost circulation materials that are incorporated into the drilling fluid, and clean-up fluids.
- Lubricants, these mainly consist of minute quantities of oil, grease and pipe dope (threading compound), which either leak into the mud system or are squeezed out of threads due to excess application. During tripping and casing operations the relative proportion of dope to cuttings increases but is still negligible in terms of total mud volume. MSDS and other product data for the lubricants to be used will be acquired from the suppliers and loaded onto the materials database.
- Drilling operations generate swarf (fine particles of metal) from tubulars such as drill pipe and casing. It is standard practice to remove metal not screened out by the shakers with magnets placed at several points in the mud processing system. The metal screened out will end up as drilling waste, but quantities are negligible and non-toxic.
- Contaminated mud with dirt if it has spilled on site.

The Well Proposal, Drilling Fluids Programme will be the master reference for specific composition of fluids. All Drilling Fluids are to be composed of non-toxic additives in a water-based system. Solids control equipment will be optimised to ensure that quantities discharged are minimised.

### 2.6.1 Cuttings and Mud Spill

In the event of drilling fluid or cuttings spillage, the products will be cleaned up and waste will be disposed of as per category i.e. liquids to vessel and cuttings to waste bin.

Timor Resources will provide spill kits around the site to contain any spills. Allocated personnel will immediately remove spilled cuttings to appropriate cuttings bins and inform the Timor Resources Site Representative and Rig Manager of the circumstances of the spillage.



An Incident report will be written by the Rig contractor and distributed to Timor Resources as soon as practicable after the event.

A verbal report will be given to ANPM as soon as possible, to conform with oral reporting requirements; 0-80 litres within 24 hours and >80 litres within 2 hours. The verbal report will be followed by a written report within 3 days of the event.

### **2.6.2 Cuttings and Mud disposal**

In the absence of legislation for disposal of cuttings and drill mud, Timor Resources will use best oilfield practice. The Cuttings and Drill mud waste from a water-based system with non-toxic additives is very likely to be non-toxic itself. The most likely contaminants would come from the well bore, such as oil, if present.

It is recognised in many jurisdictions that non-toxic cuttings do not pose an environmental risk and can in fact be beneficial for soil enrichment due the often-higher organic content. Methods of disposal can include burial on site or locally or “land-farming” (distributing and assimilating with the surface soil. Prior to disposal the cuttings and mud must be tested to confirm non-toxicity.



## 2.7 Hazardous and Non – Hazardous Wastes

Nonhazardous waste will be segregated, disposed appropriately by authorised contractor.

Hazardous Waste (Table XX) is defined as material that is an explosive, poison or irritant, flammable, toxic, carcinogenic or corrosive. Due to their hazardous properties, materials in this waste stream must be dealt with separately from other waste and in an approved manner.

Hazardous waste receptacles must display correct and prominent signage. Hazardous wastes, such as fuels, oils, lubricants, batteries and chemicals, are to be contained within a bunded area until transported for disposal.

**Table 1: Types of Hazardous Waste And Disposal Methods (Source: Eastern Drilling, 2020)**

HAZARDOUS	Type	Occurrence	Action
Gases	Compressed air Ammonia Acetylene Liquid nitrogen Hydrogen		Cylinder returned to manufacture or supplier
Flammable Liquids	Alcohol, ester, ethenes Hydrocarbons, ketones Solvents, general Fuel		Recycle when possible
Oils	Lubricating oil Hydraulic oil	Leakage from rig equipment to be captured and transferred to storage tanks.	Disposal at an approved facility
Corrosive Materials	Alkalis, caustics Ammonia solution	Low volumes in drilling fluid	Treat to reduce pH or separate and return to supplier
Batteries		Contains HM and Acids	Disposal at an approved facility
Empty containers of Haz materials		Segregated on site	Disposal at an approved facility
Medical Waste		Segregated on site	Disposal at an approved facility



### **3 WASTE MANAGEMENT METHODS**

Appropriate management of wastes will assist in avoiding solid and liquid waste discharges onto soil and water. It is also essential that wastes are appropriately stored, collected and disposed of, to minimise the accidental spillage/leakage of potentially harmful products into the environment.

The following procedures are in accordance with international best practices in waste management:

- Solid wastes are to be separated into streams: putrescible, plastics, recyclable (paper and cardboard only), other (non-hazardous, non-recyclable) and hazardous. Skip bins will be provided and clearly labelled for each of the four types of solid waste.
- A waste inventory will be maintained, detailing wastes generated and disposed of (per skip bin).
- Potential wastage and over-consumption will be identified where possible, to assist with waste minimisation principles.
- Solid waste skip bins will be stored within designated areas and covered (e.g. lidded bins). Skip bins will be located at the accommodation camps only. All rubbish generated during the day, that is not already within the accommodation area, is to be brought back to the camps at the end of each day. Skip bins for potentially hazardous materials are to be waterproofed and located within a bunded bay.
- Procedures for refuelling and maintenance of vehicles is to be strictly abided by and spill kits readily available, with staff trained in their use.
- Materials that can be recycled will be separated for appropriate disposal – at this stage only paper and cardboard can be recycled at Timor-Leste, but Timor Resources will look into recycling of other material such as plastics and will re-use as much as possible.
- Only experienced and approved companies will be engaged for the transfer of waste to the nearest approved landfill facility.



- Potentially hazardous wastes will be identified and tracked from area of production to final disposal site, to ensure traceability should accidental spill occur. Material Safety Data Sheets will be kept with clearly labelled hazardous waste containers/skip bins and spill kits will be located close-by. Transport of hazardous materials will only be undertaken by appropriately licensed, specialised transport company.
- Only experienced and authorised companies will be used for waste disposal.
- Putrescible waste will be disposed of at a landfill/burial site at a suitable selected location. The location of this landfill has taken into account proximity to accommodation, but avoidance of residential areas and sensitive environments.
- Non-hazardous, non-recyclable wastes will be transferred to the nearest approved landfill as required.
- The preferred method for drill cuttings is by natural (evaporative) dewatering and burial onsite. Cuttings will be tested for toxicity levels prior to disposal.
- Any personnel involved in the storage, handling and/or disposal of wastes will be appropriately trained.
- Hygienic sanitation and disposal of grey and black water will be managed to ensure the protection of the general health of the workers and the general public.
- Fuel and other non-aqueous liquid storage areas will be bunded. The rig floor will be bunded and any waste collected in the bunds or cellar will be drained to a waste vessel and pumped back into the mud system or separated if heavily contaminated and removed from site for disposal. Excess Cement Unit Wash water will be collected in a bunded area.
- Any discharge of treated waste waters will be away from environmentally sensitive areas, areas likely to have a high-water table, wetlands, areas prone to



flooding/inundation, and community areas (including water wells and vegetable / crop growing).

### 3.1 DRILLING WASTE MANAGEMENT

Mud contaminated cuttings will be separated from the drilling fluid by a series of solids removal devices. The primary devices (shale shakers) fitted with fine mesh screens, through which fine solids will be removed from the mud system for disposal. Two centrifuges will then be used to remove finer solids from the active drilling fluid system. All attempts will be made keep the waste streams generated as dry as possible.

The initial planning process led to the following decisions:

- Recycling of re-usable drilling fluid and removal of solid drilling waste at the rig-site will be maximised by optimised operation of solids separation.
- Any fluid recycled on the rig site will be reused for building of new mud provided it conforms to required properties for acceptable drilling. If deemed not required, fluid will be stored for use on the next well or disposed of in accordance with the approved manner, after testing has been performed meeting the quality standards.



## **4 ROLES AND RESPONSIBILITIES**

### **4.1 Timor Resources**

Timor Resources will assign responsibility for waste management to a project contractor who will be responsible for satisfactory disposal of all waste products accumulated through the project. Timor Resources will monitor the contractor to ensure compliance with the Waste Management Plan. Timor Resources is ultimately responsible for the operation compliance with the laws of Timor-Leste.

### **4.2 Contractor**

- Ensure all site personnel are aware of the potential risks specific to hazardous waste
- Shall provide all necessary equipment to comply with the plan.
- Maintain supplies of consumables required for handling, cleaning and disposal
- All relevant personnel shall be trained and certified to handle material.
- Monitor and record the waste volumes and disposal details (Waste Management Tracker)
- Record and report any spills to Timor Resources within the specified timeline
- Report to Timor Resources as per agreed schedule
- Contractor will utilise a suitable, and authorised sub-contractor(s) for collection and transport of wastes from the site and camp through to disposal
- Ensure that all chemicals that are delivered to the project have an associated MSDS and handling procedures.





## **5 MONITORING AND REPORTING**

### **5.1 Testing**

All cuttings volumes will be recorded in a manifest; cuttings will be tested prior to disposal according to “Good oil field practice”, as approved.

### **5.2 Tracking**

All waste will be tracked and the following recorded:

- Date, Type
- Volume (individual and cumulative)
- Location
- Disposal method, destination and sub-contractor details

### **5.3 Reporting**

- Waste Disposal records will be reported by the Contractor to the Timor Resources on a daily basis
- Waste Disposal statistics will be included in the Daily HSE or Drilling Report, as provided to ANPM
- A monthly report will be prepared; to include statistics, any reportable incidents and non-compliance with the Plan.
- Reporting formats and times are to be as agreed between Timor Resources and Contractor and accepted by ANPM.

## Timor Resources – Management System Document

*Table 2 : Waste Management Tracker (Source: Timor Resources,2020)*

**Rig Number:**

**DATE:**

Type of Waste	Area Generating	Quantity (Amount / Month)	Disposal Technique	By Whom (Agency)	Records of Disposal
Mud materials / Sacks					
Wooden pallets					
Waste Oils					
Steel scraps					
Domestic waste					
Casing protectors					
Plastic products					
Refrigeration gas					
Food Waste					
Tyres & rubber					
Cuttings/mud					
Turkeys nest plastic					
Grey water sewage					
Batteries					
Metal drums					
Drilling line					
Well clean up fluid					