Timor Resources

EASTERN DRILLING

OIL SPILL RESPONSE & CONTINGENCY PLAN

For

HYDROCARBONS & HAZARDOUS SUBSTANCES

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7		
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Related Documents

ED-HSE-01 Health & Safety Manual

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Terminology Used

In this document the recommendations for a course of action are made with varying degrees of emphasis. As a rule:
The word ***'may'*** indicates a possible course of action.
The word ***'should'*** indicates a preferred course of action.
The words ***'shall',*** *'will'*, and *'must'* indicate a mandatory course of action.

Abbreviation	Description
API	American Petroleum Institute
BBL	Barrel
BOP	Blow Out Prevention
CIMS	Coordinated Incident Management System
CMT	Crisis Management Team
CO_2	Carbon Dioxide
DWT or dwt	Dead Weight Tons
EOC	Emergency Operations Centre (Eastern Drilling/Timor Resources)
ED	Eastern Drilling
ERI	Emergency Response Interface
ESD	Emergency shutdown
H_2S	Hydrogen Sulphide
HR	Human Resources
HSSE	Health, Safety, Security and Environment
IC	Incident Controller
JV's	Joint Venture Parties
LEL	Lower Explosive Limit
M/sec or m/s	Metres Per Second
m^3	Cubic Metres
Mmscfd	Million cubic feet of gas per day
OSCP	Oil Spill Contingency Plan
PIC	Person in Charge
PPE	Personal Protection Equipment
ppm	Parts Per Million (concentration)
RC	Response Coordinator
ERT	Response Coordination Team
SG	Specific Gravity
SDS	Safety Data Sheets
TR	Timor Resources

Table of Contents

Document Structure

Part 1 – First Response and Corporate Response;

Sets out the emergency procedures that will allow immediate response and the initiation of corporate response for the mobilisation of appropriate response resources. Immediate roles and actions are described for onsite response and corporate response.

Part 2 – Guidance Notes

Sets out guidance on the various aspects of spill response, including health and safety, spill assessment, control and containment, oil characteristics, stakeholder management, and response termination.

Part 3 – Training and Preparedness

This section sets roles, responsibilities and training to ensure Eastern Drilling has adequate personnel and resources for a spill event.

Part 4 – Site Specific Response

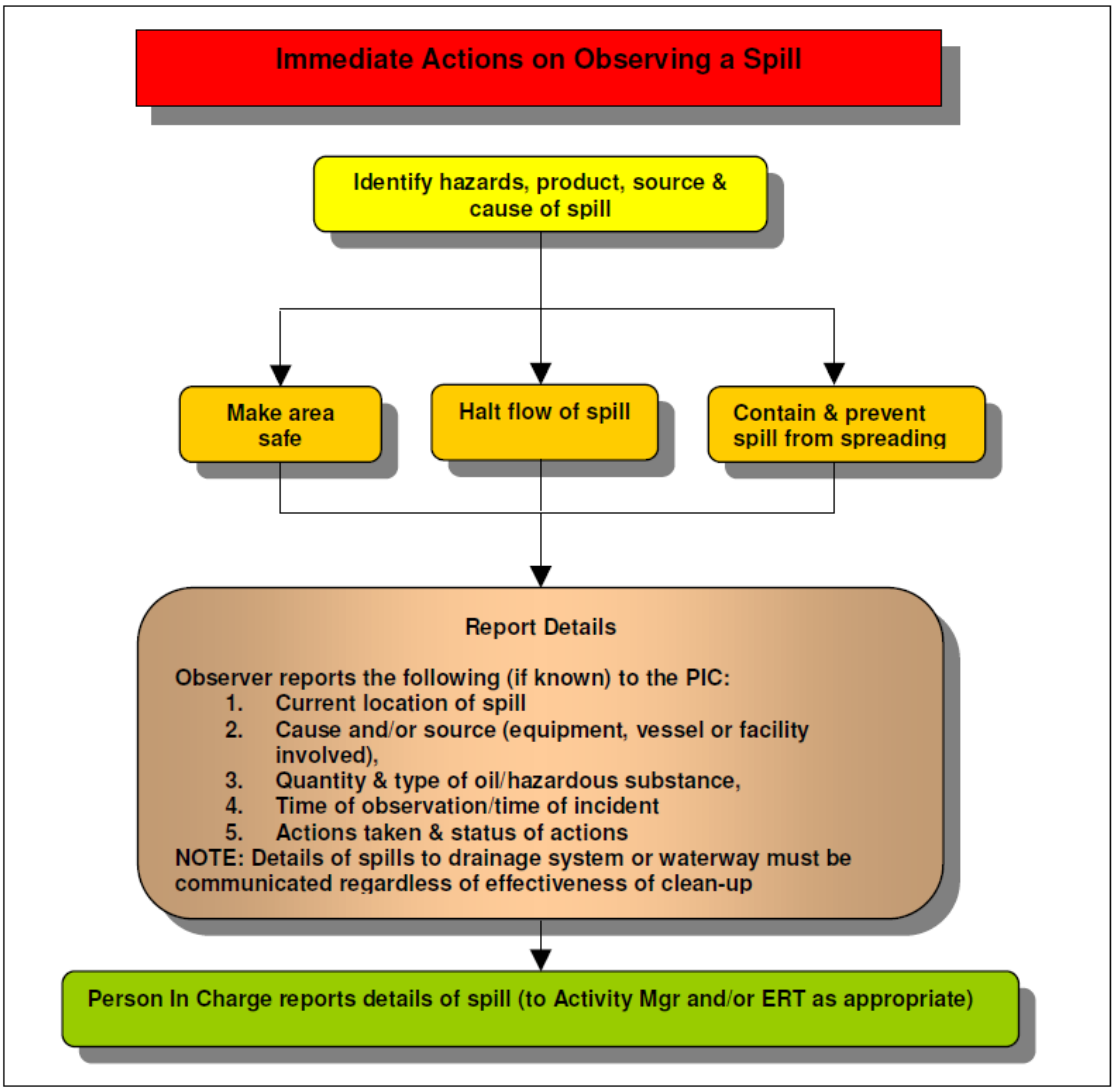
Contains specific spill response information for each of the following Eastern Drilling and Timor Resources sites.

Part 5– Appendices

The section contains three appendices;
Appendix 1: Forms
Appendix 2: Equipment Lists
Appendix 3: Overview of Corporate and Legal Requirements

Part 1 – First Response and Corporate Response

A: INITIAL RESPONSE



All response personnel should wear as a minimum approved safety boots, safety hard hat, gloves, coveralls and eye protection. Other safety equipment and measures will be required depending on the product, response location and environment - contact the onsite Health and Safety Coordinator and refer Part 2 Section A.

Correct identification is the most critical first step in dealing with a hazardous substance spill.

Product information for chemical and physical properties and toxicological information can be found on:

- **Documentation accompanying the substance;**
- **Safety Data Sheets**

The following information is also required:

- Source of the spill;
- Quantity and/or hazardous substance inventory
- Line of travel and potential destination;

B: PIC RESPONSE AND CLASSIFYING SPILL SEVERITY

In the event of a spill occurring within the site, the PIC must :

- ☐ *Assess safety hazards before attempting spill control and containment,*
- ☐ *Ensure monitoring for explosive vapours is initiated immediately*
- ☐ *Stop any export operations, and close block valves (if leak is condensate) – see Part 4 Site Specific Maps, Inventory and Control Points for valve locations.*
- ☐ *Confirm source of leak*
- ☐ *Ensure that appropriate personal safety precautions are implemented in respect of isolation activities*
- ☐ *Ensure isolations on the process or drainage systems are performed in accordance with Eastern Drilling isolations procedures*
- ☐ *If a valve has to be closed manually, identify a safe route to the valve location, (identify risk of gas or condensate/crude vapour)*
- ☐ *Check that the valves for chemical bunds are closed. These can be opened to the hazardous drainage system only after sampling and confirmation that chemical levels are acceptable*
- ☐ *If the spill has stopped, close the hazardous drainage system valves closest to the source of the spill*
- ☐ *If the spill cannot be stopped, open the valves to the hazardous drainage system where present.*
- ☐ *If a spill reaches a storm water drain or any other type of waterway the Response Coordinator must be notified immediately – regardless of size of spill.*
- ☐ *Estimate Spill Volume and Movement*
- ☐ *Identify Sensitivities likely to be affected (rivers and streams, flora and fauna in spill path, recreational users).*
- ☐ *Notify Incident Controller / Response Co-ordinator to Clasify Spill as Level 1, Level 2 or Level 3 (see below)*

1.1 Person-In-Charge (PIC) Response Actions

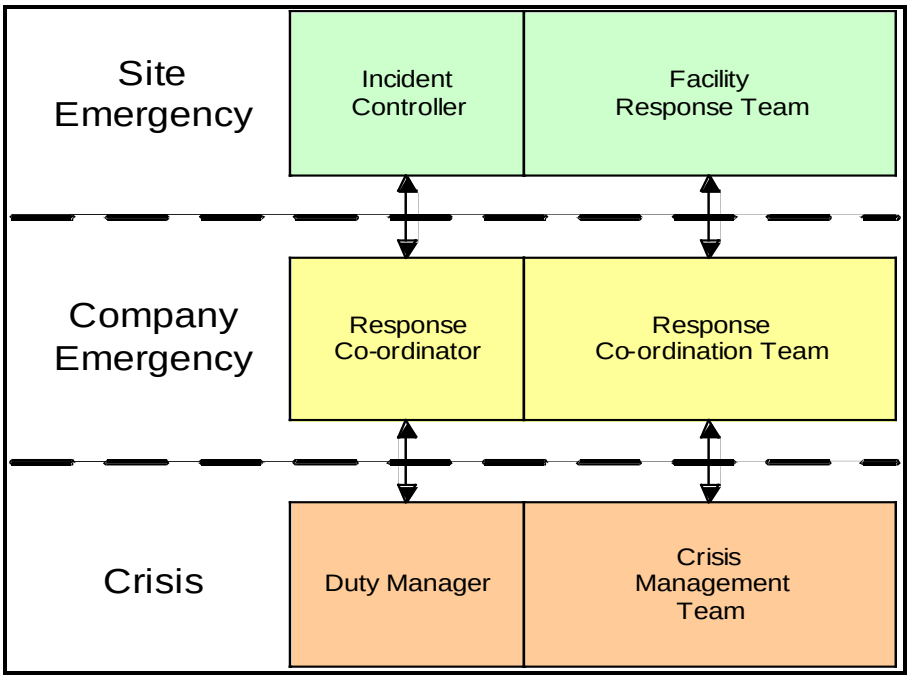
Refer:
Part 2 Section B for further guidance on spill assessment and movement
Part 4 on Sensitive Areas Specific for Eastern Drilling

1.2 Eastern Drilling Spill Classification

Eastern Drilling uses three levels for describing the severity of any hazardous spill onshore– as outlined in Figure B.1. The three severity levels used by Eastern Drilling.

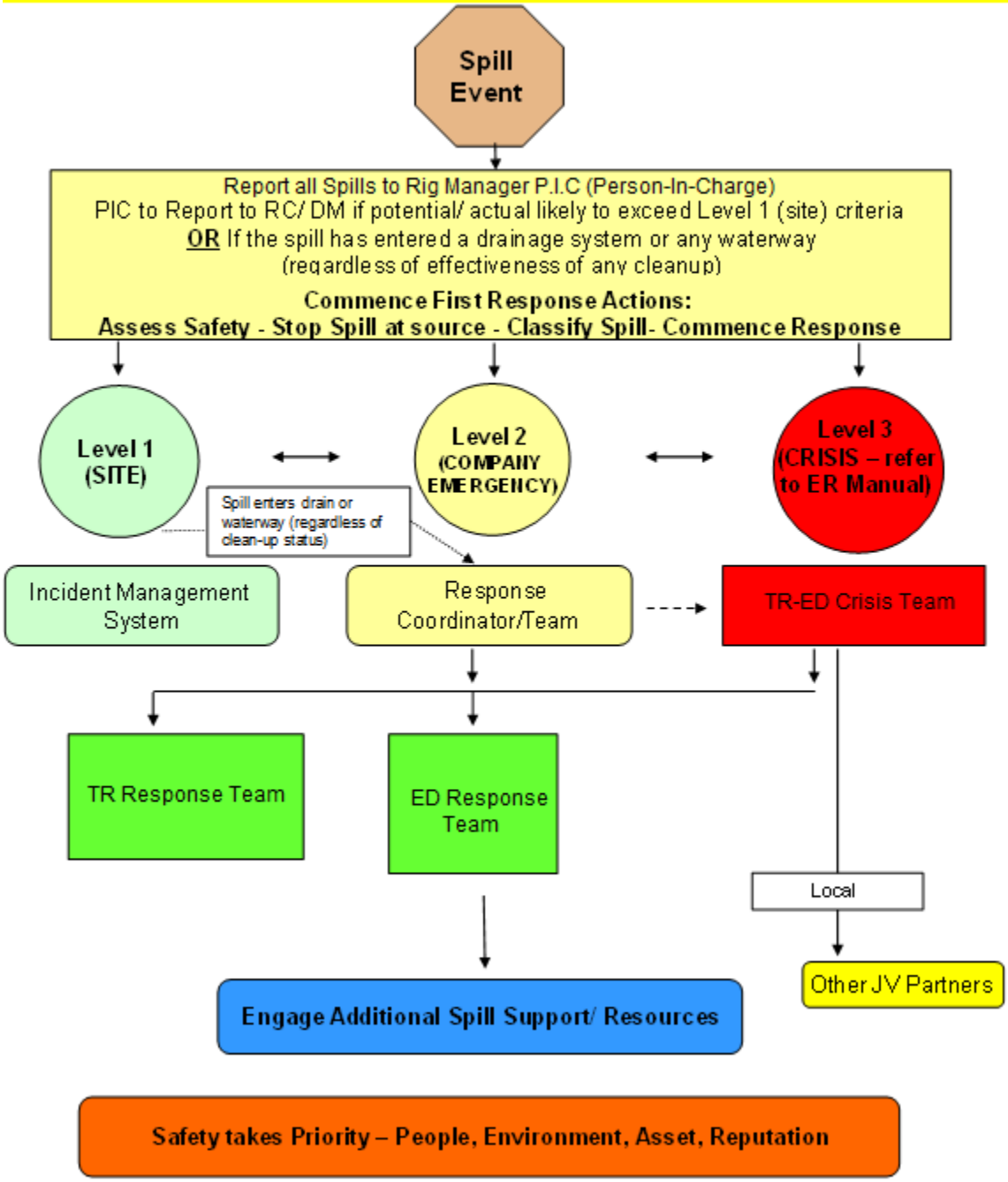
- ***Level 1 (Site)****:* The spill can be effectively and safely managed and contained at the site of the spill. Site staff are able to clean up the spill using the resources on-site.
- ***Level 2*** **(Company Emergency):** The spill is more serious than a Level 1, possibly resulting in environmental impacts. The spill is not controlled or contained on site, but the clean up can be managed by Eastern Drilling making use of its own resources, or the spill disperses naturally out at sea. e.g. a utility oil drum dropped from a helicopter, spills overboard from a platform or support vessel
- ***Level 3*** **(Crisis):** The spill poses serious health and safety hazards and/or the volume or location make it impossible to prevent potentially serious environmental effects. The spill could have a broad impact on the company's operations or its reputation. Control of the incident and the clean-up will require external assistance. e.g. a road tanker rollover, an uncontrolled fire at a facility, a well blowout, a storage tank or submarine pipeline rupture.

Figure B.1 Response Level Interaction



C: SPILL RESPONSE STRUCTURE AND REPORTING

Spill Response Structure and Reporting Lines



D: FACILITY RESPONSE TEAM - FIRST / LEVEL 1 SPILL RESPONSE

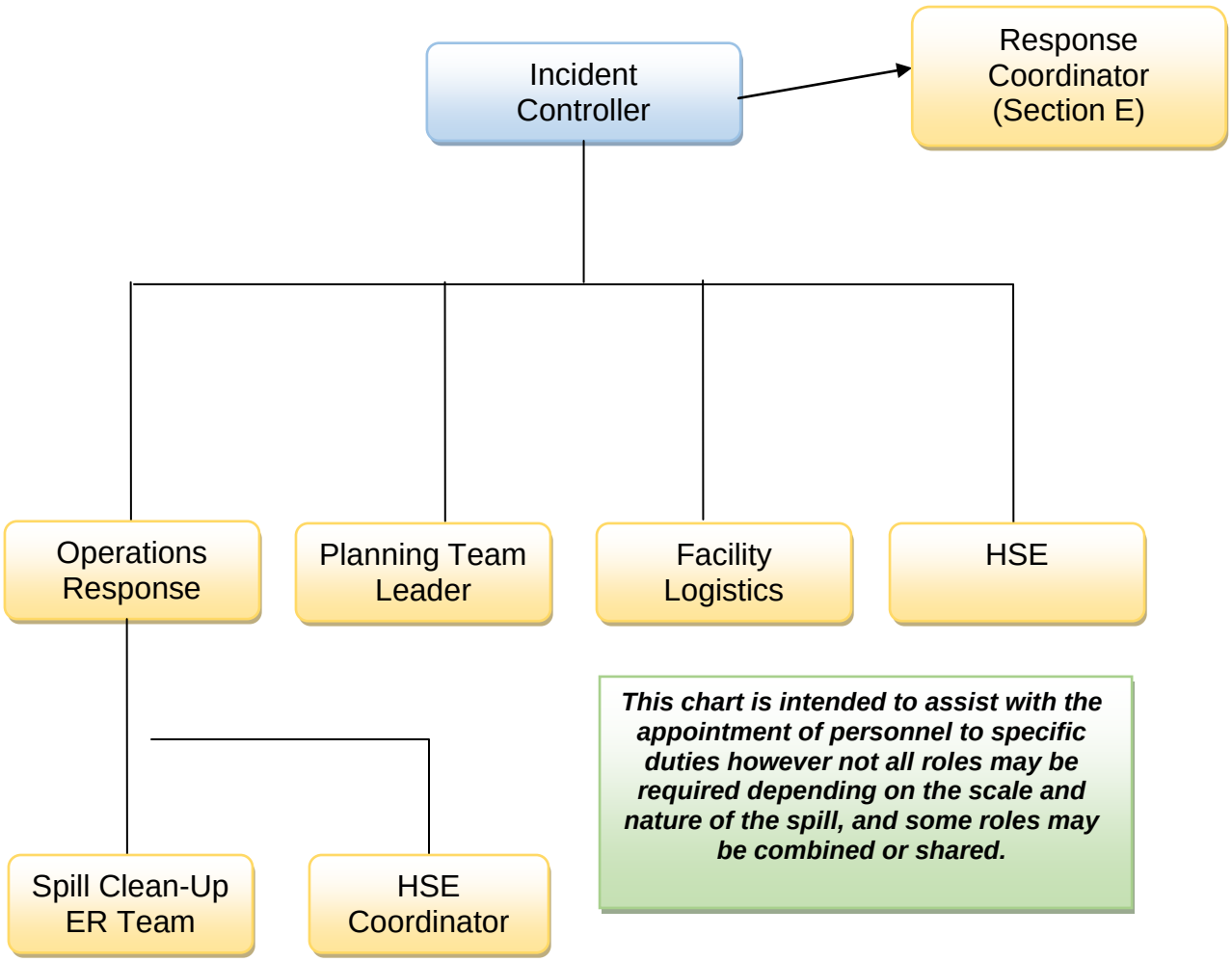
1.0 Role of Facility Response Team

This section provides general guidance on preparation and response actions for facility spill response roles.
Section 2 contains checklists designed to ***assist and guide*** various members of the Facility Response Team.
In this procedural system **the Incident Controller leads the facility's first response** to the spill with the support of three functional managers covering:

- Oil spill response, clean up, Logistics & security (Operations Response Leader – Operations Manager)
- Environmental monitoring and advice (HSE Manager)

ALL ROLES SHALL ENSURE THAT SAFETY IS THE PRIMARY CONCERN

FIGURE B.1 FACILITY RESPONSE TEAM ORGANISATIONAL CHART



2.0 Roles and Responsibilities

2.1 Incident Controller

Principal Response Duties

- Provide leadership of the Facility Response Team (ERT Site) and communicate the situation to ED/TR Senior Management
- Keep the Response Coordinator informed of any important developments
- Act as main point of contact for the Emergency Services (Fire Brigade, Police, Ambulance)
- Communicate with the Operations Response Leader to:
    - Obtain all the facts about the incident.
    - Assess the spill severity level.
    - Evaluate movement and potential impacts.

INCIDENT CONTROLLER – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Respond immediately when notified of a spill.* ☐ *Mobilise to the Site Control Room (Incident Control Room).* ☐ *Alert Operations Response Leader to put the Spill Clean-up Team on standby.* ☐ *Obtain as much detail as possible about the incident:* - Fire or explosion? - Injuries? - Gas/vapour hazard? - Location? - Gas and oil, or oil only? - Estimated quantity of spill? - Cause of spill? - When did the spill occur? - Is it continuing to spill? - How far to nearest house? - Any local people at risk? - Fresh water source at risk? - Land affected?

INCIDENT CONTROLLER – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
INITIAL ACTIONS	☐ *Start a Personal Log, and record time and details of own actions and own decisions.* ☐ *Ensure monitoring for explosive vapours is ongoing during the spill – **Refer Part 2, Section A for this and other Health and Safety matters*** ☐ *Set up Exclusion Zone where gas or vapour risk is present. It is recommended that a 100-metre exclusion zone be established from the source of a significant or ongoing onshore spill of crude oil or condensate. This exclusion zone may be varied once a safety assessment has been completed.* ☐ *Make sure that all personnel are warned of these areas, and are informed of the rules for operating close to exclusion zones,* ☐ *Manage the movement of vehicles and people,* ☐ *Mobilise assistance to prevent public from entering the danger zone,* ☐ *Specify fire and gas precautions in order to prevent all sources of ignition within the danger zone, for example no smoking, no use of mobile phones, and restrictions on starting engines,* ☐ *Display warning notices,* ☐ *Constantly review the extent of the exclusion zone.* ☐ *Ensure all reported details of the spill are immediately recorded on a status board on the wall of the Control Room.* ☐ *Assess the spill in greater detail using the **Internal Spill Notification Form*** ☐ *If the spill is Level 2 or above or entered drain or waterway immediately alert the Response Coordinator* ☐ *With Response Coordinator determine whether other surrounding property owners need to be notified or public warning is required.* ☐ *Depending on the type of incident and level of the spill:* ☐ *Appoint/ Mobilise/ Brief Emergency Response Team:* - Appoint Logistics Leader - Notify Operations Response Leader - Notify Planning Leader - Notify Health & Safety Coordinator ☐ *Estimate predicted speed and direction of movement of the spill – **refer Guidance in Part Section B.*** ☐ *Draw the predicted movement of the oil on a map showing areas impacted and areas at risk of impact.*
FURTHER ACTIONS	☐ *Maintain 'up to the minute' knowledge of the situation and continue to evaluate the spill* ☐ *Keep Response Coordinator informed of spill impacts and response actions taken (Level 2 or 3 Spill)* ☐ *Brief specialist response personnel if these have been mobilised by the Response Coordination Team* ☐ *Maintain awareness of equipment and personnel deployments and financial commitments*
FINAL ACTIONS	☐ *Conduct site visit to ensure that there is no further threat and that the spill has been cleaned up* ☐ *Stand down the Facility Response Team*

INCIDENT CONTROLLER – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
	☐ *Hold debrief with the Facility Response Team Leaders and ensure all personal logs are collected* ☐ *Prepare a report summarising the spill response and include recommendations on areas for improvement (procedures, training, equipment)* ☐ *Send the report together with all Personal Logs, and the overall Event Log to the Response Coordinator (HSE), Eastern Drilling* ☐ *incident investigation team leader, (HSE Manager)*

2.2 Operations Response Leader

Principal Response Duties

- Provide hands-on leadership for the spill clean-up team.
- Manage response operations at the spill site.
- Provide regular communications from the incident to the Incident Controller.
- Provide Incident Controller status report covering safety, logistics, progress and quantities recovered.

OPERATIONS RESPONSE LEADER - ACTION CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Liaise with Incident Controller to obtain latest details about the spill* ☐ *Mobilise the Spill Clean-up Team to pre-arranged meeting point and brief team*
INITIAL ACTIONS	**Before departing to the spill location:** ☐ *Start a Personal Log, and record time and details of own actions and own decisions.* ☐ *Check communications, response equipment and PPE.* ☐ *Organise the transportation of all emergency response equipment and required PPE.* ☐ *Confirm that every individual in the clean-up team knows their role and responsibilities, e.g. a) Who they report to b) Gas/vapour monitoring c) Fire fighting d) First aid and e) Spill surveillance.* ☐ *Give instructions to the team concerning – a) On-site communications, b) Safety precautions, and c) Actions to take if someone is injured.* **On arrival at the site of the spill:** ☐ *Carry out an assessment of hazards Refer Guidance Health and Safety Part 2 Section A* ☐ *Implement immediate on-site spill control measures – **Refer Guidance in Part 2 Section C*** ☐ *Initiate notification of nearby inhabitants and landowners of hazards if*

OPERATIONS RESPONSE LEADER - ACTION CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
	*necessary – **Refer Guidance Health and Safety Part 2 Section A***
	☐ *Assess the spill using the **Internal Spill Notification Form** as an aide memoire.*
	☐ *Assess speed and direction of movement of the spill – **Refer Guidance in Part 2 Section B.***
	☐ *Establish communications with everyone on site, particularly Incident Controller.*
	☐ *Allocate work zones to each clean-up team.*
	☐ *Ensure that everyone in the area of the spill uses appropriate PPE depending on the hazards and the response actions being taken.*
	☐ *Specify hot zone (contaminated area), warm zone (decontamination area), cold zone (clean area).*
	☐ *Specify decontamination procedures and procedures/permitted activities for response personnel in the hot, warm and cold zones.*
	☐ *Initiate Spill Clean-up Team (ERT).*
	☐ *Provide status report to Incident Controller.*
	☐ *Meet and brief all personnel arriving at the spill location.*
FURTHER ACTIONS	☐ *Supervise the spill clean-up team in the deployment of equipment to protect, divert, contain, recover, store and clean-up oil, oiled materials and contaminated soil. - **Refer Guidance in Part 2 Section B.***
	☐ *Liaise with Logistics Team Leader to establish a 'controlled entry' zone around the spill site so that only properly authorised and briefed personnel have access.*
	☐ *Record the locations and tasks of all personnel visiting or working at the site of the spill.*
	☐ *Quantify the volume of oil spilled, volume dispersed, and volume recovered.*
	☐ *Report any injuries or incidents*
	☐ *Monitor the clean-up activities. Rectify any breaches in procedures.*
	☐ *Report all damage to the spill response equipment to Incident Controller.*
	☐ *Request the Logistics Team Leader to provide additional supplies of response equipment, sorbent materials and PPE (as required).*
	☐ *Discuss effectiveness of the clean-up operations with the Planning Team Leader.*
FINAL ACTIONS	☐ *Debrief the spill clean-up team before standing them down.*
	☐ *Prepare a debriefing report in writing, containing: a) Actions taken during the response b) Recommendations for the future (e.g. procedures, training, equipment), c) Collate all information received and personal logs of actions taken,*
	☐ *Give Personal Log and debriefing report to the Incident Controller*

2.3 Planning Team Leader

PLANNING TEAM LEADER - SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Go to the Facility Control Room (TR/ED Office) to wait for briefing from Incident Controller.* ☐ *Appoint a clerk whose job is to maintain the Event Log in the Control Room and to assist with updating status boards, and provision of administrative support.* ☐ *Appoint a Communications Operator to manage incoming telephone calls and to assist with messages, e-mails etc.*
INITIAL ACTIONS	☐ *Start a Personal Log and record time and details of all actions taken.* ☐ *Collect or arrange for sampling equipment, PPE, camera* ☐ *Travel with the Operations Response Leader (ORL) to the spill location.* ☐ *Assist ORL with initial spill assessment.* ☐ *Advise the Spill Clean-up Team on environmental objectives in the response (in liaison with HSE Manger if required).* ☐ *Predict/Estimate movement and weathering of the spill.* ☐ *Take photos of areas, which are potentially at risk prior to becoming polluted.* ☐ *Take photographs (date/time stamped) of spill site and contaminated areas.* ☐ *Take water, oil and soil samples above and below spill location to establish environmental baseline and levels of contamination. Observe Eastern Drilling procedures for sampling, storage and transportation of samples.*
FURTHER ACTIONS	☐ *Explain possible environmental consequences of the spill to the Incident Controller.* ☐ *Monitor and record the extent of pollution.* ☐ *Advise on how to minimise environmental effects.* ☐ *Monitor weather conditions.* ☐ *Advise on:* ☐ *Wildlife response.* ☐ *Storage and disposal of waste.* ☐ *Assess effectiveness of response techniques.* ☐ *Assess results from lab analyses of samples.*
FINAL ACTIONS	☐ *Monitor the cleaning of oil spill response equipment and waste disposal.* ☐ *Advise Incident Controller when the clean-up has returned the environment to an 'acceptable' or pre-spill condition.* ☐ *Collect and collate all incident information: photos, Event Log, status board records, maps, Personal Log etc.* ☐ *Consider setting up a post-spill environmental monitoring programme.* ☐ *Review the environmental impacts of the spill and the response and prepare a report for the Incident Controller.*

2.4 Facility Logistics Coordinator

The Incident Controller will nominate this role in the event of the spill becoming unmanageable on site. The Facility Logistics Team Leader shall liaise with the ED/TR Crisis Management Team

FACILITY LOGISTICS COORDINATOR – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Go to the Facility Control Room (ED/TR Offices) to wait for briefing from Incident Controller*
INITIAL ACTIONS	☐ *Start a Personal Log, and record time and details of own actions and own decisions.* ☐ *Liaise with Operations Response Leader to identify Exclusion Zones and Safe Forward Point (SFP).* ☐ *Liaise with contractors and suppliers to transport spill response equipment, provide vacuum trucks, and supply equipment and materials needed for spill response.* ☐ *Obtain vehicles for the spill clean-up team.* ☐ *Ensure visitors to the spill site are met, advised of Exclusion Zones and directed to the SFP to be briefed.* ☐ *Provide guidance to Police, Ambulance and Fire Brigade arriving at the spill site.*
FURTHER ACTIONS	☐ *Provide for responder welfare at site of the spill e.g. food, washing facilities, toilets, and decontamination facilities.* ☐ *Provide support for medical services and casualty evacuation.* ☐ *Set up and manage temporary storage facilities for recovered liquids and solids.* ☐ *Segregate different types of oiled material and contaminated liquids as each may require different disposal methods. "Maximise segregation to minimise waste".* ☐ *Regularly replace stocks of 'consumables' during the response (e.g. sorbents, plastic waste sacks, disposable overalls).* ☐ *Arrange for radios, batteries, generators, fuel, temporary lighting, etc.* ☐ *Manage supply, refuelling, maintenance and daily schedules of vehicles and plant used during the response.* ☐ *Maintain status details (location, type, quantity, owner etc.) of equipment and transport allocated to the spill response.*
FINAL ACTIONS	☐ *Liaise with Operations Response Leader to arrange for clean up of equipment and repair or replacement of equipment and materials.* ☐ *Stand down when advised by the Incident Controller.* ☐ *Attend debrief with other Facility Response Team Leaders.* ☐ *Give Personal Log to the Incident Controller.*

2.5 Health & Safety Coordinator

Principal Response Duties

- Monitor the effectiveness of the health and safety system used in the response.
- Visit all areas where response personnel are working to provide safety advice, and to confirm that personnel are fit to work, safely equipped and appropriately qualified.
- In a prolonged response advise on safe working practices.

HEALTH & SAFETY COORDINATOR – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Go to the Facility Control Room to wait for briefing from Incident Controller*
INITIAL ACTIONS	☐ *Start a Personal Log and record time and details of all actions taken.* ☐ *Assist the Facility Response Team on implementing the health and safety system.*
FURTHER ACTIONS	☐ *Monitor the effectiveness of the safety system during the spill response.* ☐ *Prepare and issue periodic Safety Bulletins as necessary to communicate new health and safety information to response personnel and the general public. All Health & Safety Bulletins must be approved by the Incident Controller.* ☐ *In a prolonged response, advise on safe working hours, rest breaks, work rotation, rostering etc.* ☐ *Investigate and follow up on incident reports made during the response.*
FINAL ACTIONS	☐ *Monitor the cleaning of oil spill response equipment and waste disposal.* ☐ *Collate all incident reports, Personal Log etc, and give these to the Incident Controller.* ☐ *Review the health and safety system used in the spill and write a report for the Incident Controller.*

2.6 Oil Spill Clean-up Team ERT

Principal Response Duties

- Be responsible and be aware of risks to self and others.
- When working near the spill area, assess hazards and wear the correct PPE.
- Implement spill clean-up strategies, e.g. deploy boom, build containment dam, Observe Standard Operating Procedures for the use of spill response equipment, sorbent materials, chemical dispersants etc.
- Clean and if necessary repair all equipment after use.

EMERGENCY RESPONSE TEAM – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ALERT	☐ *Collect PPE and safety equipment.* ☐ *Collect communications equipment.* ☐ *Go to the muster point designated by the Operations Response Leader (ORL) to wait for briefing.*
INITIAL ACTIONS	☐ *Check that PPE and communications equipment are in good working order.* ☐ *Attend a briefing from ORL before going on site.* ☐ *Ensure that you are fully aware of the hazards, which may occur. For example, gas, explosive vapour, fire risk, and dangers when using response equipment or chemicals*
FURTHER ACTIONS	☐ *When you arrive at the site of the spill:* ☐ *Assume fire or explosion risk until proven otherwise.* ☐ *Wear and/or carry PPE.* ☐ *Carry out an on-site assessment to identify hazards.* ☐ *Monitor for gas or vapour if team leader thinks that there is a risk.* ☐ *Test communications.* ☐ *Know the locations and tasks of others on site,and ensure that they are aware of your location and task.* ☐ *Be aware of muster points, evacuation routes and the on-site alerting system.* ☐ *Be aware of Exclusion Zones and the areas where there is restricted entry for people or vehicles.* ☐ *Know what actions to take if someone is injured (i.e. first aid and MEDEVAC procedures).* ☐ *Be aware of the locations of hot, warm and cold zones and the permitted activities in each zone.* ☐ *Deploy oil spill response equipment as agreed or instructed.* ☐ *Monitor the movement of the oil.* ☐ *Be careful not to spread contamination.* ☐ *Regularly reassess safety hazards to yourself and to other team members.*
FINAL ACTIONS	☐ *Recover and clean equipment.* ☐ *Report any damage to equipment to the ORL.*

2.7 Waste Management Coordinator

If waste volumes are likely to be significant, the Incident Controller or Response Coordinator may appoint a Waste Management Coordinator within the Operations Team. This role is likely to be given to an HSE Coordinator from the HSE department.

WASTE MANAGER – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS**
ACTIONS	☐ *To advise the Incident Controller on the following:* ☐ *Safety requirements for handling, storage and transportation of waste.* ☐ *Documentation of waste types and volumes.* ☐ *Waste minimization opportunities* ☐ *Consulting with local authorities regarding waste disposal*.
FINAL ACTIONS	☐ *Identifying long-term waste storage and disposal sites.* ☐ *Monitoring of contractors and response personnel involved in handling, separation, transport and waste disposal.*

E: RESPONSE COORDINATION TEAM – LEVEL 2 / 3

ROLE OF THE RESPONSE COORDINATION TEAM

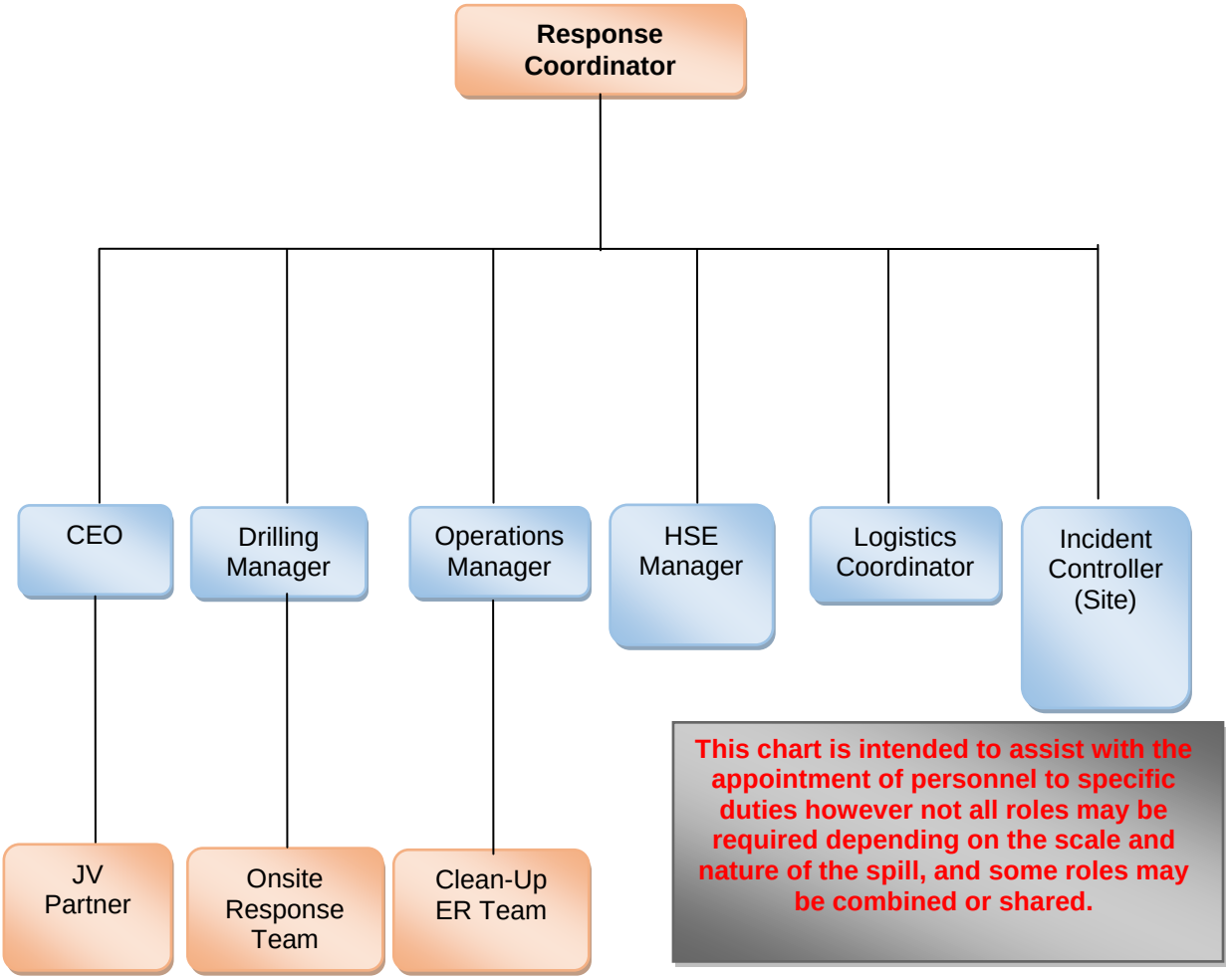
This section provides general guidance on preparation and response actions for the Response Co-ordination Teams spill response roles.

Section 2 contains checklists designed to ***assist and guide*** various members of the Response Co-ordination Team.

The key tasks for the Emergency Response Team (ERT) are to:

- ☐ **Assess the situation to identify problems, hazards and risks,**
- ☐ **Establish priorities for the response,**
- ☐ **Develop an Incident Action Plan in conjunction with response agencies,**
- ☐ **Implement, monitor and update the Incident Action Plan,**
- ☐ **Manage and provide logistics, administrative support and finance for all aspects of the response,**
- ☐ **Manage health and safety of all personnel involved in the response,**
- ☐ **Manage security (Visitors, Vehicle access to spill response locations, secure areas for equipment laydown & temporary storage of recovered waste),**
- ☐ **Brief and direct all teams of specialists arriving to support the response,**
- ☐ **Coordinate care of injured people,**
- ☐ **Communicate with employees,**
- ☐ **Provide for the welfare of casualties, families and the community,**
- ☐ **Control communications with external agencies and the media,**
- ☐ **Advise when it is safe to resume normal operations,**
- ☐ **Decide on when to stand down the response,**
- ☐ **Debrief all groups involved in the response operation,**
- ☐ **Advise on ongoing work and projects to ensure environmental recovery,**
- ☐ **Assess cause of incident, the effectiveness of response and prepare a post spill report.**

FIGURE B.2 RESPONSE CO-ORDINATION TEAM ORGANISATIONAL CHART



1.1 Incidents Involving Third Party Contractors on Eastern Drilling Sites.

Where there is a Level 2 spill involving a third party contractor, the Response Coordinator shall initiate the Response Coordination Team to a standby status, assess the incident and decide on the best way to offer Eastern Drilling any assistance.

2.0 Response Team Roles and Responsibilities

2.1 Response Coordinator

Principal Response Duties

- Following the report from the Incident Controller, establish the spill severity level and immediately report all spills into drainage systems and/or waterways to the ANPM (regardless of level),

- Provide leadership of the Response Coordination Team and keep the HSE Manager informed of any important developments,
- Liaise at management level with the Emergency Services (Fire Brigade, Police, Ambulance),
- Liaise with, and as requested, work under the direction of the Authorities during a spill response.

RESPONSE COORDINATOR – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
Step	**ACTIONS**
ALERT	☐ *Ensure that the public have been notified if there is any risk to them* ☐ *Mobilise to the Emergency Operations Centre and Alert Comms/Intel Manager to put the Response Coordination Team on standby.* ☐ *Obtain 'Spill Assessment Report' from the Incident Controller.* ☐ *Assesses the severity of the spill and initiate the Corporate Spill Contingency Plan.* ☐ *Notify the ED Drilling Manager and HSE Manager of all Level 2 or Level 3 spills.* ☐ *Inland spills* ☐ *Coordinate with the ED/TRHSE Team to ensure all spills to drainage systems and/or waterways regardless of level or effectiveness of clean-up are reported to the TRC as soon as is practicable* ☐ *Report Level 2 and 3 spills to the ANPM within one hour of notification, and email details as soon as possible (email – TBA).* ☐ *Immediately follow up with an 'Oil/Harmful Substances Spill Notification' form (email – TBA);*
INITIAL ACTIONS	☐ *Start a Personal Log, and record time and details of own actions and own decisions* ☐ *Ensure all reported details of the spill are immediately recorded on a status board on the EOC wall* ☐ *Liaise with Incident Controller (Site of spill)* ***Depending on the severity and location of the spill:*** ☐ *Notify ED & TR in the event of a Level 2 or Level 3 spill.* ☐ *Mobilise some/all of the ERT and brief them on the spill upon their arrival at the EOC.* ☐ *Fax or give a copy of the Spill Assessment Form to Duty Manager* ☐ *Assess the risks to people, environment, assets and reputation - Ensure that the public have been notified if there is any risk to them* ☐ *Arrange a helicopter for aerial observation as appropriate to assess spill situation.* ☐ *Ensure wall maps recording spill location and movement, response resource locations and potential spill impacts are regularly updated by the ERT* ☐ *Lead the ERT, ensuring that it is organised and staffed to meet the demands of the situation, and that the ERT have deputies/alternates if the response is prolonged or continues throughout the night.*

RESPONSE COORDINATOR – SPILL RESPONSE CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
Step	**ACTIONS**
FURTHER ACTIONS	☐ *Work in collaboration with, and possibly under the direction of, the On-Scene Commander.* ☐ *Develop spill response strategy through consultation with the Incident Controller and other advisors.* ☐ *Prepare and maintain (daily) a detailed response action plan during a major spill.* ☐ *Act as the company's senior representative to government agencies (ANPM, media and community representatives).* ☐ *Monitor overall safety of spill response operations.* ☐ *Ensure all response actions are properly documented;* ☐ *Keep the Drilling Manager informed of spill impacts and response actions taken.* ☐ *Maintain awareness of equipment and personnel deployments and financial commitments.* ☐ *Approve demobilisation plans.*
FINAL ACTIONS	☐ *Visit the clean-up / impacted sites to ensure that there is no further threat and that the spill has been cleaned up.* ☐ *Stand down spill response teams; Hold debrief with the Response Coordination Team Leaders and collect all personal logs.* ☐ *Prepare a report on the spill response activities, costs and commitments. Give findings and recommendations.*

2.2 Operations (Spill Response)

Response

- Take overall charge of the spill response teams, personnel and contractors who are involved in the clean up, disposal, dispersant and wildlife response and other spill cleanup operations.

Note*: In a Level 2 or 3 spill this function will usually be incorporated into the role of the Response Coordinator.*

SPILL RESPONSE OPERATIONS MANAGER – ACTION CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS** **ENSURE SAFETY IS THE PRIMARY CONCERN**
ALERT	*Respond immediately when notified of a spill:* ☐ *Be briefed by Response Coordinator.* ☐ *Alert ED response teams and contractors if this has not already been done.*
INITIAL ACTIONS	☐ *Mobilise ED response teams and contractors.* ☐ *Take overall responsibility for the response operation.* ☐ *Liaise with the senior officer in charge of the Emergency Services (Police, Ambulance and Fire Brigade) to advise on site access and to determine/manage exclusion zones.* ☐ *Supervise initial assessment of the spill and, if possible, participate in the first reconnaissance flight.*
FURTHER ACTIONS	☐ *Advise the Logistic Manager of onsite security requirements.* ☐ *Liaise with External Affairs and Analyst/Planner to alert local communities and implement safety restrictions.* ☐ *Coordinate ongoing spill surveillance with the Analyst/Planner.* ☐ *Select and implement the most appropriate response strategies.* ☐ *Liaise with the Analyst/Planner to establish shoreline protection or clean up priorities.* ☐ *Brief and coordinate spill response specialists when they arrive.* ☐ *Supervise the on-site response action and visits the site as often as necessary.* ☐ *Ensure that maximum support is given to the field response teams.* ☐ *Request support vehicles, aircraft and boats as required.* ☐ *Update the daily action plan as required by the Response Coordinator.* ☐ *Liaise with the Health & Safety Coordinator to ensure the safety of field operations.* ☐ *Control air operations in the vicinity of the spill.* ☐ *Hold daily meetings with the representatives of all parties involved the clean-up.* ☐ *Regularly update the Response Coordinator with the results and progress of the clean-up operations.*
FINAL ACTIONS	☐ *Debrief all response teams.* ☐ *Complete a log of response activities.* ☐ *Attend ERT debriefing and provide Response Coordinator with a summary of*

SPILL RESPONSE OPERATIONS MANAGER – ACTION CHECKLIST	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
STEP	**ACTIONS** **ENSURE SAFETY IS THE PRIMARY CONCERN**
	t

2.3 Logistics Coordinator

Prinicipal Response Duties

- Manage site security and Safety Exclusion Zone(s), i.e. coordinate and control movements in and out of the site or affected areas,
- Manage response logistics including welfare of responders, waste transportation & disposal of waste.

LOGISTICS COORDINATOR – SPILL RESPONSE CHECKLIST (Nominated by the Operations Manager)	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
Step	**ACTIONS**
ALERT	☐ Go to the EOC to be briefed by Response Coordinator
INITIAL ACTIONS	☐ Start a Personal Log, and record time and details of own actions and own decisions ☐ Liaise with Incident Controller to confirm details of Exclusion Zones ☐ Liaise with contractors and suppliers to transport spill response equipment, provide vacuum trucks, and supply equipment and materials needed for spill response ☐ Obtain vehicles for the spill clean-up team ☐ Ensure suppliers and contractors are advised of: who to contact at the delivery site, the means of access to site and exclusion zones
FURTHER ACTIONS	☐ Provide for responder welfare at site of the spill e.g. food, washing facilities, toilets, decontamination facilities. ☐ Provide support for medical services and casualty evacuation. ☐ Set up and manage temporary storage facilities for recovered liquids and solids. ☐ Segregate different types of oiled material and contaminated liquids as each may require different disposal methods. “Maximise segregation to minimise waste” ☐ Regularly replace stocks of ‘consumables’ during the response (e.g. sorbents, plastic waste sacks, disposable overalls) ☐ Manage supply, refuelling, maintenance and daily schedules of vehicles and plant used during the response. ☐ Obtain vehicles and drivers for response operations, and establish vehicle staging areas. ☐ Transport stockpiled and staged equipment and materials to clean up and other work sites. ☐ Maintain status details (location, type, quantity, owner etc.) of equipment and transport allocated to the spill response.

LOGISTICS COORDINATOR – SPILL RESPONSE CHECKLIST (Nominated by the Operations Manager)	
REFER PART 2 FOR GUIDANCE ON RESPONSE ACTIONS	
FINAL ACTIONS	☐ Prepare a demobilisation plan for recovery, clean-up, repair and return of equipment. ☐ Ensure documentation relating to contractors and suppliers is accurate and complete. ☐ Collate and file all logistics documentation generated during the spill response. ☐ Attend ERT debriefing and provide Response Coordinator with a summary of the Logistics operations.

PART 2 – GUIDANCE ON RESPONSE ACTION

A: HEALTH AND SAFETY

***The safety of people takes precedence over all other considerations*.** The following issues shall be considered during the identification phase to assist with the planning strategy for the spill response:

1.1 Personal Safety

All response personnel should wear appropriate protective clothing. As a minimum, this should include;

- Approved Safety boots, safety hard hat, gloves, coveralls and eye protection,
- Safety harnesses and lines may need to be worn by personnel when working at height or in marshy areas and these personnel must be competent in the use of safety harnesses,
- Safety lines should be rigged downstream of working areas,
- Personnel must wear inflatable work-vests when working in boats or over water.

1.2 Hazard Identification of Spilled Material

Product information for chemical and physical properties and toxicological information can be found on:

- Labels on the container of the substance;
- Documentation accompanying the substance;
- Safety Data Sheets

1.3 Hazards of Condensate/Crude Spill

Condensate/Crude oil is volatile in nature, thus in a spill significant amounts will evaporate. This volatility adds a significant hazard potential to recovery and clean-up efforts.

Condensate/Crude oil vapours have the potential to cause oxygen deficiency with subsequent asphyxiation and may contain compounds known to present other health hazards to people. If a spill is fresh (ongoing spill or less than four hours old) and there are unusual conditions, for example no air movement (no wind or within a confined space) monitoring for concentrations of hydrocarbon compounds may be required. The requirement for air monitoring should be determined at the time of each incident by the PIC, Operations Response Leader and where the public may be affected, in coordination with ANPM Regulators

Direct contact with petroleum hydrocarbons can cause minor skin irritation. Ensure gloves are available and used and avoid all skin contact. Prolonged or repeated exposure may be harmful.

1.4 Fire and explosion hazard

Hydrocarbon vapour can potentially be ignited by many sources, including vehicle ignition systems, electric motors and switches, welding equipment, pilot lights, electric fences, cell phones and smokers. Caution should be paid to features such as pits, creek beds, drains, sumps and other confined or enclosed spaces adjacent to and downhill from the release point where fluids and vapours can concentrate.

Always assume potential hazard of fire and explosion. If a flammable mixture is suspected, check the atmosphere with gas detection devices. ***Discuss and establish appropriate levels (flammable, explosion, health impacts) with the Emergency Response Team and the ED HSE Department prior to entering any potentially hazardous areas.***

1.5 Requirement for exclusion zones

It is recommended that a 100-metre exclusion zone be established from the source of a significant or ongoing onshore spill of crude oil or condensate. This exclusion zone may be varied once a safety assessment has been completed.

1.6 Areas Unsuitable for Spill Response

At times access to streams and rivers can be difficult. The flow itself may prevent damming or booming and access to stream banks may also be difficult due to steep gradients or bush/ scrub growth.

Spill response must not be attempted where riverbanks are steep or where movement on foot is dangerous.

1.7 Excavation work

Before digging interceptor trenches, for excavating contaminated soil:

- Plan the work so that access by emergency vehicles is maintained.

During any excavation work, the following precautions must be observed:

- Excavations more than 1.2 m deep must be shored or battened back to a safe level,
- Each day, any excavation more than 1.2 m deep must be inspected and certified safe by the HSE Coordinator before work resumes,
- Excavated soil must be kept well clear of excavation,
- Plant and equipment must not be positioned where it could cause collapse of the excavation,
- Excavation near pedestrian or vehicular access must be appropriately barricaded and illuminated during darkness hours.

B: SPILL ASSESSMENT

1.1 Monitoring and Estimating Spill Movement

All spills should be assessed and monitored to identify the immediate impact and whether the spill can be controlled on site.

On land, the speed of movement of spills will depend on the type of soil, slope and vegetation.

Use the **Site Specific Contingency Map (Part 4)** to assist in identifying all the areas that could be affected by the spill or by gas/vapour (danger zones). Calculate how long it will take for the spill to reach them.

- ***Groundwater:*** Depending on the size and location of the release, permeability of the soil impacted, depth to groundwater, and effectiveness of any response action a spill may reach groundwater. Petroleum hydrocarbons will adsorb onto soil particles and be held in soil pore spaces by capillary action. Left uncontrolled, a condensate spill will penetrate into a porous soil until it is adsorbed and bound by soil particles, or until it reaches an impermeable layer or groundwater.

On water, a spill will spread and move at the speed of the current. This makes it difficult to track the movement of a spill in a river.

- ***Rivers and streams:*** Flow velocity (to assist with determining spill movement) can be estimated by timing the movement of a floating object over a measured distance. The spill will accumulate in areas of quiet water, eddies, in vegetation, and in debris accumulations. Possible natural collection areas can be identified by the presence of accumulated debris.
- ***Drainage ditches and storm water drains:*** Drainage in cross-country pipeline areas may include buried pipes, open box culverts unlined channels. Where condensate flows or collects in confined spaces dangerous concentrations of vapours may accumulate. Stormwater drainage plans can be obtained from the relevant District Council or through the TRC.

1.2 Estimating Spill Volume

- ***Tank Spills*:** Spills from above ground storage tanks and tanker trucks can be calculated by comparing pre-spill fluid levels with post-spill levels or with the height of the hole, assuming the tank dimensions/capacity is known. The model below developed contains a module useful for estimating loss rate and volume from storage tanks. :

$$\text{Volume } (m^3) = \frac{(\text{diameter in inches})^2 \times \text{length (m)}}{2}$$

C: CONTROL AND CONTAIN

1.0 Containment Methods - Liquid Hydrocarbons

1.1 Selection of Spill Control Points

The selection of spill control points will vary between locations, seasons, nature of spill, time elapsed since release and path. The Spill Control Points described in the Site Specific Plans of this plan are locations which have been identified as potentially suitable for containing a spill either onsite or offsite (if it reaches a stream or river). Generally they are the nearest point down gradient and downstream of the source of a spill, which provides easy access for responders and where the river conditions may be suitable to conduct a spill response.

If there is a potential to contain any spill on land by containing overland flow, this is preferable to attempting a response and clean-up of a spill in a waterway.

2.2 Contain or divert spill on land

- ***Blocking of culverts and drains:*** Bunding such as sandbags, hay bales, wooden boards or earth and plastic sheeting can be used to stop spills from escaping into drains. Obviously if drains are blocked then there is a risk of flooding when it rains, and water may flow into trenches or pits designed to hold the spilt substance.

- ***Earth banks:*** A temporary bund can be constructed using pre-filled sandbags, or by soil available on-site if it is non-permeable. In using locally available soil, care should be taken not to cause environmental damage or expose areas to erosion. Refer Guidance on Health and Safety (Part 2 Section A) and contact Health and Safety Co-ordinator before any excavations.

- ***Trenches:*** An interceptor trench can be dug to intercept the horizontal movement of the spill within subsoil, or to prevent it from moving with groundwater. The depth of the trench will depend on the water table level and will be limited by the availability of trench digging equipment. Ideally dig the trench using machinery and line it to prevent oil permeation. Refer Guidance on Health and Safety (Part 2 Section A) and contact Health and Safety Co-ordinator before any excavations.

- ***Sorbents:*** Sorbent pads or other sorbent materials should be used for containment only on relatively flat terrain.

2.2.1Spill on permeable ground

When oil spills on to permeable ground (e.g. sand, pebbles, gravel, fractured basalt) it is important to reduce penetration.

- Close or block all drains leading away from the site of the spill,
- Contain spill with absorbents pads and booms;

- Flood the area to introduce a water bottom under the oil – in a controlled manner (seek advice from HSE Coordinatorfirst). The aim is to float the oil above the soil surface and so reduce penetration,
- Do not flush oil into a drainage ditch unless the ditch has been dammed,
- Increase sorption of the surface layer by spreading loose sorbent material e.g. sand, sawdust, wood chips,
- Do not allow vehicles near the oil, or to drive over soil that has been contaminated.

2.3 Contain or divert spill on water

The following methods can be used to divert spills if they have reached waterways:

- ***Dams - considered when:***
    - The river channel or drainage ditch is narrow and shallow,
    - Booms are not appropriate or not available,
    - The water flow is too fast for a boom,
    - Viscous oil has sunk and is travelling along the river bed.

  Dams can be constructed using pre-filled sandbags, or by soil available on-site if it is non-permeable (e.g. dense silt and clay). In using locally available soil, care should be taken not to environmental damage or expose areas to erosion. Refer Guidance on Health and Safety (Part 2 Section A) and contact Health and Safety Co-ordinator before any excavations.

Note: *Prior to any construction of a dam within a watercourse, consult with the ANPM Regulators*

- ***Sorbent boom***
    - May not be suitable for use with condensate,
    - Will provide a temporary barrier to oil on very slow flowing water (<0.3 m/sec),
    - Can be used to recover oil in conjunction with a wringer unit,
    - Consider storing sorbent booms on site so that they can be deployed quickly in the event of a spill.
- ***River boom - The purpose of booms is to:***
    - Contain oil near the source of a spill,
    - Divert oil away from sensitive areas,
    - Collect and contain oil so that it can be recovered.

Comments on Boom Usage:

- As there may be a risk of flammable vapour, do not use booms to contain fresh condensate spills. Use booms to collect oil or the residue of condensate after the light ends have evaporated,
- If boom is used across a river, which is flowing at more than 0.3 m/sec, oil will escape under the boom. Where the flow exceeds 0.3 m/sec the boom must be deployed at an angle,
- River boom is not suitable for tidal areas. Water ballasted booms (‘land-sea’ or ‘shore-seal’ booms) should be used in tidal areas.
- Response requires an area adjacent to the control point that is suitable for equipment lay down, waste management and coordination of personnel (including support services – washing and ablutions, food and water etc).

3.0 Recover Methods

3.1 Excavation of contaminated soil

- Refer Guidance on Health and Safety (Part 2 Section A) and contact Health and Safety Co-ordinator before any excavations.
- Contaminated soil can be excavated and then replaced with clean soil.
- Oil-saturated soil and oiled sediments can be excavated using machinery. This may speed up the recovery process, but will result in a greater amount of waste to dispose of than if manually recovered. Quick response using mechanical diggers may prevent the oil from spreading into sensitive areas, and can prevent long-term recovery operations.
- Vehicles should not be allowed to run over oil-saturated areas.
- Do not use excavators in areas where there is free oil on the surface.
- Limit removal to grossly contaminated soil only. In other words only remove the soil that is obviously contaminated by oil.
- Excavation can continue to just above the groundwater table or to the limit of the machinery.
- If impermeable layers are disturbed the oil may penetrate deeper.
- Sort out and segregate different types of contaminated waste. e.g. soil, vegetation, liquid waste.
- Dammed or pooled oil can be removed manually or by using vacuum trucks or pumps and skimmers.

3.2 Using Vacuum Systems

Oil can be recovered using vacuum systems.

- Do not use vacuum systems with freshly spilled condensate or low viscosity fuels,
- Vacuum truck is a highly effective and rapid means of recovering and transporting liquid oil and are most effective when there are large volumes of oil contained in a particular location,
- The vacuum truck should use grounded equipment to avoid the potential for static discharge and ignition of flammable vapours if these are present,
- Vacuum trucks can be used as oil water separators, temporary on-site storage tanks, and an effective means of returning recovered oil to production. Recovery efficiency depends on pump efficiency, but truck mounted vacuum systems can usually handle light through to medium viscosity oils,
- Screens should be fitted over vacuum hose nozzles to prevent dirt or debris from being sucked up,
- Vacuum systems are not effective on thin oil layers, but are ideal when the oil is floating in a very shallow area.

3.3 Using Skimmers and Pumps

- Do not use vacuum systems with freshly spilled condensate or low viscosity fuels.
- Oleophilic and weir skimmers are effective where oil has been contained and is floating on water of more than 0.5 metre depth,
- In shallow water, a duckbill or manta ray skimmer head should be fitted to the suction nozzle for oil recovery,
- Oleophilic disk skimmers should recover about 90% oil to water. These skimmers are suitable for low to medium viscosity oils.

3.4 Using Sorbency Material

Use sorbent booms (or sorbent pads) to:

- Create a seal between a boom and the shore,
- Clean up small patches of floating oil and residual sheen,
- Recover small amounts of oil from sumps, drainage ditches and bunded areas,
- Prevent migration of oil into a sensitive area,
- Recover oil in areas of still water, and where there may be a lot of floating debris,

Use sorbents pads or rolls to:

- Wipe oil off structures,
- Protect walkways.

Note: Sorbents contain oil, but also leach oil. Do not use them at right angles to a flow of water or they will leach oil. The faster the current the greater the leaching of oil.

3.5 Using Manual Means

Manual methods of recovery are slower than using equipment but may be equally effective. Sorbent materials, buckets, rakes, shovels, plastic sacks and appropriate protective clothing are required.

- Remove small pools of oil by using hand pumps and buckets,
- Do not overfill containers, as they will have to be carried safely out of the spill area,
- Remove oil layers from rocks, boulders and structures using scrapers and sorbent materials,
- Synthetic sorbents are much more efficient than mineral or natural products and work best with low viscosity oils,
- Lay sorbents pads or sheets on walkways to prevent pollution being trodden into uncontaminated areas,
- Look after the needs of clean-up personnel, as the work is labour intensive, dirty, tiring, boring and possibly dangerous.
- Take care not to damage plant roots.

3.6 Natural recovery

As a general rule, spilled oil should be recovered to the maximum practical extent. However, in environmentally sensitive areas, attempts to recover all of the spilled material may result in greater overall damage than partial, or even no physical recovery.

As oil is biodegradable, it may be appropriate to allow natural recovery by evaporation and weathering as a more environmentally acceptable alternative.

Natural recovery should always be considered as a potential clean up alternative. This decision shall be made by the corporate response team upon advice from the ED HSE Manager and specialists.

5.0 Sampling and collection of evidence

During any significant spill incident the HSE Coordinator is responsible for ensuring samples are taken including water, soil and spilled substance samples: recording the time and location of sampling, and observing appropriate sampling methodology.

To ensure the water samples collected can be used as evidence in court (if necessary), their collection and analysis must comply with relevant standards, including **but not limited** to:

- ISO 5667-6:2005: Water quality - Sampling - Part 6: Guidance on sampling of rivers and streams.

As part of his/her role in Spill Response Preparation (See Part 3), the HSE Coordinator must be knowledgeable of the requirements of the relevant sampling and analytical standards,and apply them based on the type and location of spill.

10	OSRL/EARL Global Alliance	Additional Response Resources	Response Coordinator

E: WASTE MANAGEMENT

1.0 Types of Waste Produced

The following types of waste could be produced during response operations:

Liquid waste:

- Oily waste (water recovered with crude oil, water contaminated during treatment).
- Non-oily discharges (including domestic wastewater).
- Used oils/hydraulic liquids.

Solid waste:

- Organic materials (wood and vegetation).
- Oiled inorganic materials (sediments).
- Oily sorbents.
- Domestic waste, including food wastes.
- Metal scrap.
- Oiled personal protective gear.
- Contaminated response materials (rags, tissues, sorbents).
- Contaminated wildlife.

Wastes are one of the largest sources of potentially contaminated material for the organisation to manage. The waste material will most likely be mixed media, surrounding soil or water (likely contaminated) and the spill material. Following analysis, the waste shall be disposed of in accordance with local regulations and instructions from the ED waste contractor.

Be aware of waste or hazardous materials that may not be related to the clean up activity (report any instances to the authorities).

2.0 Waste Minimisation

Every effort should be made to reduce the amount of material for final disposal. General methods include:

- Segregate oily and non-oiled wastes, as well as liquid and solid wastes.
- Consider in situ treatments for waste such as bioremediation.

Specific methods for solid and liquid waste are included below.

2.1 Solid Waste

- Minimize the amount of clean sand or soil removed from under oiled areas,
- Do not mix any oil, fuel, or oily wastes (including oily rags) with trash, garbage or any other nonpetroleum-contaminated materials. To do so only complicates later handling and treatment,

- Prevent recovered oil from contaminating soil or vegetation in adjacent areas. Use berms and liners beneath storage containers, decontamination areas or other work sites
- Use sorbents pads and sorbent materials to full capacity
- Wring oil from sorbents and reuse.
- Use manual clean up rather than mechanical methods whenever possible to reduce amount of uncontaminated soil recovered.
- Bag or store used sorbent and PPE separately from other materials. Some sorbents can be re-used or recycled. Such sorbents should be stored separately.
- Ensure that all waste brought to waste sites is from the spill. Check waste manifests and labels.
- Where contamination by tar balls occurs, sieving the material collected may separate clean sand. The clean sand can then be returned to the beach.

2.2 Liquid Waste

- Fluid oil collected in vacuum trucks (or other vessels) is usually mixed with large amounts of water. After a period of time, the oil and water will separate into two layers and the bottom water layer can then be discharged and appropriate disposal/treatment.
- Recovered fluid oil, which is free from excessive water, soil or other waste material, may be recyclable,
- Properly train and supervise personnel involved in skimming and vacuum operations to operate equipment with minimal water recovery,
- Where possible cover all waste storage containers to minimise collection of rainwater,
- Use cleaners sparingly, and do not use excessive amounts of wash water during decontamination, as decontamination products may contain chemicals that interfere with recycling of oil.
- Recycle water used for decontamination.
- Store decontamination fluids separately.
- Ensure that all liquid waste brought to waste sites is from the spill. Check waste manifests and labels.

3.0 Disposal

3.1 Liquid Waste

Various methods of disposal are available including direct disposal to controlled landfill sites; use in land reclamation, road building or similar activities; and destruction by incineration or biological processes. The disposal method chosen will depend on a number of factors including the amount and type of oil and debris collected, the location of the spill, the likely costs involved and environmental, legal or practical limitations

3.2 Solid Waste

Disposal of oily solid waste, mixed with domestic rubbish, to designated landfill sites is one of the methods most commonly used. Waste disposal sites are usually designed with an impermeable membrane to prevent substances from leaching from the site. Nevertheless, care is needed to make sure that contamination of nearby ground and surface water does not occur.

3.3 Biodegradation

This typically includes land farming, whereby the oil and debris is spread over an area of land. Biodegradation of oil by micro-organisms only takes place at the oil-water interface so that the oil must be first mixed with a moist substrate.

F: Response Termination

1.0 Conditions for terminating the response

Response termination involves the recovery, cleaning and maintenance of all equipment used during the clean-up, the demobilisation of all personnel involved in the response, and the collation and completion of all documentation associated with the spill response.

The decision to terminate any oil spill response will be taken by the head of whichever emergency response team was in control of the clean-up (Level 1: Incident Controller, Level 2: Response Co-ordinator). This decision will be made after considering whether the objectives of the response have been achieved based on expert, environmental and regulatory advice.

Before response personnel can stand down, they should attend a debriefing meeting with their immediate supervisor. These supervisors will then attend debriefings with the Incident Controller or Response Coordinator.

2.1 Response Coordinator Debrief

The RC will hold a post-spill debriefing for any spill for which a response was activated. The debrief should address:

- Spill causes (if known).
- Speed of response activation.
- Effectiveness of tactics and strategies.
- Equipment suitability.
- Health and safety issues (if any).
- Communications.
- Integration of ED & TR with other agencies and the authorities.

2.2 Equipment Cleaning and Replenishment

Upon demobilisation, the Operations Manager/Response Coordinator will:

- Arrange recovery of all equipment and unused materials.
- Ensure that all equipment is cleaned, to the extent that available facilities allow.
- Ensure that all equipment is returned to the original storage area/owner by the quickest possible means.
- Upon its return, the Operations Manager shall arrange for the equipment to be checked and serviced prior to being stored.

2.3 Waste Management

In a major spill the management of wastes may continue for a considerable time beyond the demobilisation of field operations. Procedures for the extended management of waste will be detailed in a final waste management plan prepared by the HSE department and approved as necessary by relevant government agencies.

2.5 Administrative, Financial and Legal Support

Administrative, financial and legal support will continue, at a reduced level, until:

- Response costs are fully determined and paid.
- All claims for costs and damages are processed.

3.0 Post spill reporting

On demobilisation, the Incident Controller and all of the Emergency Response Team will compile the logs, reports and records they kept during the response, and will pass these on to the Response Coordinator (RC). The RC is responsible for ensuring that the documentation is complete, and that post spill monitoring and reporting is undertaken.

No later than 30 days after completion of a Level 2 or 3 response, the HSE Manager will require a written report from the Response Coordinator on the deployment of response equipment and people. The Response Coordinator may appoint members of ERT to prepare this. The content of this report is outlined below.
Content of the post spill report should cover:

- Causes and circumstances of the spill.
- Description of the decision making and actions taken from activation through, spill containment, clean up and termination.
- Consequences of the spill for the general public, the environment and business.
- An assessment of the extent of the remaining contamination (residual pollution) of the land and water after completion of the response operations.
- Recommendations on reviewing plans and procedures from lessons learnt (see below).
- A financial report. It is recommended that this records expenditure under the following categories:
- Containment and recovery (onshore)
- Dispersant operations (including spraying and physical methods of dispersion)
- Wildlife response
- Disposal (all aspects of waste management and final disposal)
- Environmental rehabilitation (including environmental monitoring)
- Administrative Support
- Compensation (compensation/reimbursement for damage to the environment and affected parties)

3.4 Lessons Learnt and Plan Reviews

An incident provides the opportunity to learn from potential mistake, remedy gaps in procedures, training and process that may prevent a future spill. The post spill review and report should provide recommendations (if any are required) concerning:

- prevention of occurrence of similar spills;
- response methods and technologies;
- amendments to spill plans;
- replacement of equipment, training of emergency response teams, or other improvements in response capability.

3.5 Post spill monitoring

ED will undertake post spill monitoring to determine whether there has been any adverse environmental effects from the spill or response activities.

The scope, scale and design of each programme will be determined in consultation with the relevant Government agencies and will be undertaken by qualified contractors.

The objectives of post spill monitoring are to:

- Investigate if an environmental rehabilitation programme is feasible and appropriate.
- Assess the success of an environmental rehabilitation programme.
- Establish whether there are any long-term environmental effects from the spill.

PART 3 - SPILL PREPAREDNESS AND TRAINING

A: RESPONSIBITIES FOR SPILL PREPAREDNESS

The aim of oil spill response is to seek to minimise the effects of the spill on the environment and on people's safety and health. This section looks at Eastern Drillings responsibilities and capabilities for responding to onshore spills.

1.0 EASTERN DRILLING Scope of Responsibilities

Eastern Drilling by itself, cannot maintain the capability to deal effectively with all possible incidents. Nor is it reasonable for ED to buy and develop the resources necessary to protect against all possible spills. For this reason the company aims to maintain a level of equipment and response skills to be able to respond quickly and effectively to Level 1 spills wherever they occur. In the event of a serious (Level 2 or 3) spill, the role of Eastern Drilling would be to support any local authority or regulator by offering:

- Oil spill response equipment and trained personnel.
- HSE expertise and other relevant information associated with the source or cause of the spill.
- Use of company (ED/TR) facilities, e.g. the Emergency Operations Centre.
- Access to logistical support via existing relationships with contractors.
- Administrative support to international specialists, so that they are quickly integrated into the national response effort.

2.0 Spill Prevention

2.1 Eastern Drilling Sites

As a minimum, each ED site is expected to maintain, at reasonable cost, a capability to respond to all spills that could occur on site and which would be contained within bunds, sumps and site drainage. As a guideline, sites should:

- Maintain a site specific spill contingency plan and Level 1 response capability which covers all operations where there is an identifiable risk of an oil spill occurring.
- Maintain appropriate 'first response' spill kits and sufficient PPE and safety equipment for the 'first response' team.
- Ensure that personnel who will form a 'first response' team have received training in personal safety and the safe use of spill response materials and equipment.
- Develop links with local emergency services and local contractors who are able to assist with spill response and clean up.
- Be aware of potential consequences of spills on areas adjacent to facilities, and pay strict attention to public interest and expectations.
- Place an emphasis on employees' understanding that they are key participants in the company's initiatives for environmental protection, spill prevention and response. Ensure that all site personnel are well informed of their responsibilities in this regard.
- Run regular exercises to test and review the site's spill contingency plan. These should be designed to test communication systems, mobilisation of personnel, interaction with emergency services, equipment deployment and logistics.

3.0 Response Team Actions to Ensure Preparedness for Spill

Each Response Team member has to perform duties to ensure that adequate training and resources are in place before an event may occur. This preparedness is essential for a success spill response.

The table below outlines these responsibilities for each Team Member, which should form part of that person's job description.

Responsibilities in Spill Response Preparation

Team Member	Responsibilities
First and Level 1 response	
Incident Controller /PIC	☐ Ensure that Facility Response Team Leaders and key team members are aware of their responsibilities and appropriately trained for spill response.
Operations Response Leader	☐ Ensure that the Facility's on-site spill response equipment is in a good state and ready to be deployed at all times. ☐ Nominate personnel to be members of the spill clean-up team and ensure that they have received training in the use of spill response equipment

Team Member	Responsibilities
Health and Safety Coordinator	☐ Have an excellent knowledge of spill response safety and the Facility's HSE requirements ☐ Spill Clean-up Team are appropriately trained in handling of hazardous materials and in the safe operation of ED spill response equipment.
Clean up team	☐ Regularly attend drills/training in spill response techniques and equipment deployment.
Level 2 and 3 Response	
Response Coordinator	☐ Ensure that all members of the Response Coordination Team are appropriately trained in the specific technical, logistics and administrative requirements which will arise during a Level 2 or Level 3 inland or offshore spill ☐ Ensure the ERT are fully aware of any changes to the Corporate Spill Plan or the spill response guidelines in the Corporate Emergency Response Manual, ☐ Maintain up to date maps of ED facilities showing locations of spill response equipment, and comprehensive details of sensitivities of areas which may be affected by spills, e.g. Extraction points on rivers, environmentally sensitive locations and species. Ensure sensitivity maps are always on hand in the Emergency Operations Centre, ☐ Involve the TRC and Facilities in spill response exercises, as is appropriate.
Analyst Planner	☐ Provide backup to Response Coordinator in ensuring that the Emergency Operations Centre and the Response Coordination Team are fully prepared
Comms/Intel Manager	☐ Ensure that means of communications at the Emergency Operations Centre (EOC) are fully functioning and that the Response Coordination Team (ERT) has the ability to communicate directly with spill response operations, and that backup means of communication are available, ☐ Set up the EOC with computer access to real time information systems (e.g. weather), spill response information status boards, and an emergency management event logging system, ☐ Ensure that the emergency contacts directory is kept up to date with details and phone numbers of spill response specialists, equipment providers and contractors, ☐ Maintain copies of all documentation relevant to spill response in the EOC, and ensure that it is efficiently indexed and easy to find in an emergency.
Logistics Coordinator	☐ Prepare and maintain a logistics plan which will ensure good coordination of logistics during a prolonged oil spill response and clean-up operation. ☐ Maintain contact details of local companies with vehicles, plant and equipment suitable for recovering, storing, transporting and disposing of liquid and solid waste, and maintain contact details of local security management companies, ☐ Maintain sufficient stocks of PPE and manual clean-up equipment

Team Member	Responsibilities
	to meet the needs of an initial workforce, and arrange equipment stockpiles to ensure rapid supply to potential clean-up sites.
Operations	☐ Organise training an exercising of personnel who will be physically responsible for spill response. ☐ Ensure operational readiness of spill response equipment and contractors. ☐ Liaise with Operations manager to prepare a plan for rapid movement of equipment from storage to the response site. ☐ Liaise with Port Taranaki, TRC and Maritime NZ to take part in joint spill response training and/or exercises.
HSE Coordinator	☐ Become knowledgeable in the ISO Standards for the collection and analysis of water, oil and land sample, as part of collection of evidence. ☐ Prepare procedures for the implementation of these Standards during spill response

B: SPILL RESPONSE TRAINING

To ensure an efficient spill response, realistic rehearsals and relevant training need to be carried out on a regular basis.

1.1 Type of Training

The type of training will depend on the role of the person involved. For example, members of the Response Coordination Team tend to be isolated from the scene of the incident, and will coordinate resources and make strategic decisions. They will not be required to deploy response equipment themselves but should be aware of all the issues facing responders. In contrast, the Facility Response Team need to know what clean up techniques work best in any location they are deployed to and must be confident about deploying equipment safely.

1.4 Exercises to Test Spill Contingency Plans

Eastern Drilling will exercise the procedures and systems outlined in their oil spill contingency plans. Regular exercising of the Facility Response Team and Response Coordination Team improves team members' skills and tests organisational readiness for an oil spill emergency. Exercises are designed to give participants confidence in handling and deploying equipment, and to develop familiarity with response procedures and techniques. They allow for performance to be assessed, plans to be updated and systems to be improved through feedback from participants. Exercises give a clear message about the company's commitment to oil spill prevention and response.

TYPES AND PURPOSE OF EXERCISES

The purpose of an exercise is to test specific aspects of an emergency response. An exercise can be used to test:

- Contingency plan accuracy and effectiveness
- Communications and command and control structure

- Notification and call out procedures
- Response equipment deployment

Appendix 1: Drill Schedules

Rig # 1 - Emergency Drills Schedule 2020

January	February	March	April	May	June	July	August	September	October	November	December
N/A	N/A	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills	4 x BOP Drills
N/A	N/A	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill	Choke Drill
N/A	N/A	4 x Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill	Muster Drill
N/A	N/A	Fire Drill	Spill Response	Spill Response	Rescue from heights	Spill Response	Rescue from heights	Spill Response	Fire Drill	Spill Response	H2S Drill
N/A	N/A	Man Down / Medical Response	Rescue from heights	First Aid	H2S Drill	First Aid	H2S Drill	First Aid	Rescue from heights	Fire Drill	Rescue from heights
N/A	N/A	H2S Drill	Confined Space Rescue Drill	Man Down / Medical Response	Fire Drill	Confined Space Rescue Drill	Fire Drill	Man Down / Medical Response	H2S Drill	Man Down / Medical Response	Confined Space Rescue Drill

Appendix: Muster Drills to incorporate other drills ie: Fire Drill, Man down, as per the monthly schedule.

INTERNAL/EXTERNAL: SPILL NOTIFICATION & ASSESSMENT REPORT

To: From:

Phone: Phone:

Pages: Date:

Current Location of Spill:	**Origin / Source of Spill:**	**Cause of Spill:**
Latitude/longitude if possible	*Name of site, installation, rig, pipeline, unknown, etc Latitude/longitude if possible*	*e.g. blow-out, tank rupture, overflow, explosion, burst pipe, unknown cause*

Time of Spill:	**Volume Spilt (Estimated) in Litres:**
In local time	***1000 litres = ~1m³ = ~6 bbls***

Spill Type : (Tick box: ☑)

Kapuni Condensate	☐	Pohokura Condensate	☐	Maui Condensate	☐
Gasoline	☐	Diesel	☐	Lube Oil	☐
Hydraulic Oil	☐	Aviation Fuel	☐	Bilges	☐

Other Type of Spill ☐ Description:.....

[Include exact product name or CAS No. if possible]

Production Water with Dispersed Hydrocarbon >100 mg/L ☐ Measured Concentration (mg/L):

Actions taken and effectiveness:

TICK ALL BOXES THAT APPLY: ☑IF YOU ARE UNSURE, ASSUME WORST CASE

- ☐ Visible only as a sheen or small oily patch
- ☐ Able to respond to the spill immediately
- ☐ Day time release
- ☐ Source of spill is isolated
- ☐ Danger of fire or explosion (gas or vapour)
- ☐ Condensate or freshly spilled crude oil accumulating close to the installation
- ☐ Intervention by emergency services required
- ☐ Public at risk
- ☐ Local media attention
- ☐ Death or potentially very serious threat to life
- ☐ Catastrophic impact on local communities, regional industry or business
- ☐ Spill is contained within bunds, booms or site drainage
- ☐ Spill is on land > 100 metres from river or stream
- ☐ Spill is moving towards the coastline
- ☐ Night time/ poor visibility
- ☐ Continuous release
- ☐ Third Party facilities or offices at risk
- ☐ Risk of situation escalating in severity
- ☐ The spill is predicted to impact vulnerable areas
- ☐ Need to mobilise national/international oil spill response contractor(s)
- ☐ National media attention

☐ **Level 1**	The spill can be effectively and safely managed and contained at the site of the spill. Site staff are able to clean up the spill using the resources on-site.
☐ **Level 2**	Spill may result in environmental impacts. Spill is not contained on site, but clean up can be managed by Eastern Drilling using its own resources in Timor Leste
☐ **Level 3**	The spill volume and/or location make it impossible to prevent potentially serious environmental effects from the oil spill and/or serious health and safety hazards. Likely to have a broad impact on the company's operations or its reputation. External assistance required.

APPENDIX C: CORPORATE AND REGULATORY REQUIREMENTS

The ED Oil Spill Response & Contingency Plan is an element of EASTERN DRILLING's Coordinated Incident Management System. It draws on the ED HSE policy and is written in accordance with the International Petroleum Industry Environmental Conservation Association (IPIECA) Guidelines for Oil Spill Contingency Plans.

1.0 EASTERN DRILLING Principles of Spill Response Planning

The principles underlying the Corporate Spill Contingency Plan are:

- Implementation of company-wide consistency and co-ordination in preparation, planning and response,
- Ensure compliance within response planning and operations to Timor Leste law and in accordance with the requirements of the Regulators requirements
- All individuals and groups associated with ED,s oil spill planning and response should be appropriately trained,
- ED will take a precautionary approach, and when appropriate, will put oil spill response resources on stand-by to facilitate rapid deployment,
- Protection of human safety, health and welfare is of primary importance in preparing for and responding to marine oil spills,
- In the event of a spill from its operations, ED will respond immediately to contain and control the spill to minimise environmental damage,
- Ensure that information is promptly communicated to the appropriate agencies and stakeholders

EASTERN DRILLING	SAFETY POLICY	Annex 3	
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HSE Policy:

Eastern Drilling is committed to an HSE program that protects its employees, visitors, contractors, the public and property from incidents and ill health occurring on our site.

Demonstrate compliance with all applicable safety and health legal, Statutory, Regulatory and/or industry standards by integrating these requirements into all aspects of our business.

Ensure that risk assessments are being carried out on an on-going basis with employees participating in the risk assessment process. Assessments will cover Eastern Drilling undertakings and will assist in the identification of hazards and the setting of prioritized objectives for elimination and reduction of risk.

Promote a positive culture where employees and contractors are consulted and encouraged to actively participate in the safety and health management of the site.

Continuously improve safety and health performance through innovative technology, training, education and good management practices.

Approved by

Eastern Drilling

Russell Fletcher
Drilling Manager

Original Issued Date: 2 January 2019