

Esso Highlands Limited



Papua New Guinea LNG Project

**Environmental and Social Management Plan
Appendix 6: Spill Prevention
and Response Plan**

PGGP-EH-SPENV-000018-008

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1.0 OBJECTIVE

Esso Highlands Limited (Company) has developed this Spill Prevention and Response Plan as part of its Environmental and Social Management Plan (ESMP).

The objectives of the Spill Prevention and Response Plan are to:

1. Prevent spills
2. In the event of a spill, minimize environmental and social impact.

The Spill Prevention and Response Plan should be read in conjunction with other Company plans:

- Waste Management Plan
- Water Management Plan
- Hazardous Material Management Plan
- Project Emergency Response Plan.

2.0 LEGAL AND OTHER REQUIREMENTS

Legal and other requirements applicable to this plan are identified in Attachment 1.

3.0 SURVEYS

Contractor shall, as part of detailed execution planning and prior to the commencement of work, undertake a spill risk assessment to establish high risk locations and activities, including transportation and marine activities, identify measures to reduce identified risks to as low as reasonably practical, and develop site and activity specific response measures. The scope of Contractor's spill risk assessment is subject to Company approval.

4.0 MANAGEMENT AND MONITORING

Table 1 presents a summary of the potential impacts due to spills, together with mitigation and management measures to avoid or reduce these impacts.

Contractor shall develop a Spill Prevention and Response Plan, which will as a minimum incorporate the measures described in Table 1 but shall not be limited to these measures.

Due to differing scopes of work and work locations, not all management and mitigation measures in the Spill Prevention and Response Plan are applicable to all Contractors. Company's Environmental and Social Mitigation Register defines which management and mitigation measures are applicable to each Contract scope of work.

In Table 1, any mitigation and management commitments that were contained in the PNG LNG Project Environmental Impact Statement (EIS) are identified by a code commencing with an 'M' in the 'Mitigation Item Reference Number' column. Some mitigation measures have been reworded to provide further clarity or more detailed information regarding required measures. In these instances, the code is displayed in italics, and these reworded measures supersede what is in the EIS.

Other mitigation and management commitments required by Company required by Company are identified in Table 1 with a code commencing with an 'A'.

Table 1: Management and Monitoring

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Source of Impact	Potential Impact and Relevant Management Plan Objective[†]	Mitigation and Management (Design Feature/Specific Measure)	Mitigation Item Reference Number	Monitoring	Monitoring Frequency	Responsibility
Spillage of oil/fuel/chemical during transport, storage, handling or refueling		<p>Prior to the commencement of construction activities, Contractor shall undertake a spill risk assessment to establish high risk locations and activities, including transportation and marine activities, identify measures to reduce identified risks to as low as reasonably practical, and develop site and activity specific response measures to be incorporated in Contractor's Spill Prevention and Response Plan.</p> <p>Contractor's Spill Prevention and Response Plan should consider as a minimum:</p> <ul style="list-style-type: none"> • Description of activity type and operator information • Identification of persons responsible for managing spill response efforts, including their authority, role and contact details • Notification requirements • Clear demarcation of spill severities, according to the size of the spill using a clearly defined tiered approach • Spill response frameworks based on site specific risk assessments including spill location, volume and type of spill and environmental sensitivity • Strategies and equipment for managing Tier I spills at a minimum • Arrangements and procedures to mobilize external resources for responding to larger spills and strategies for deployment • Full list, description, location, and use of on-site and off-site response equipment and the response time estimates for deploying equipment 	M27, M209	Verification	Ongoing	Contractor

Table 1: Management and Monitoring						
Source of Impact	Potential Impact and Relevant Management Plan Objective†	Mitigation and Management (Design Feature/Specific Measure)	Mitigation Item Reference Number	Monitoring	Monitoring Frequency	Responsibility
		<ul style="list-style-type: none"> Diagrams of the surrounding layout, topography, evacuation paths and drainage flow paths, ground and surface water resources, sensitive ecological and protected areas, community and cultural sensitivities Identification of response priorities, with input from potentially affected or concerned parties; Clean up strategies and handling instructions for recovered oil, chemicals, fuels or other recovered contaminated materials, including their transportation, temporary storage, and treatment/disposal (refer to Waste Management Plan) Identification and evaluation of potential discharge hazards and description of discharge detection procedures and equipment Facility response self-inspection, training, exercises, drills and logs Security measures, including fences, lighting, guards etc. <p>Contractor's spill risk assessment shall be updated as necessary to incorporate changes in construction operations and/or equipment and the results of updated risk assessment, including additional mitigation and management measures, shall be incorporated into Contractor's Spill Prevention and Response Plan.</p>				
		Fuel and chemical storage facilities shall be purpose-built, located in designated above ground areas away from watercourses, and provided with secondary containment (e.g. double-walled tanks/lined containment bunds) as appropriate to enable containment of 110% of the storage capacity of the largest container present.	M26, M30, M130	Verification	Ongoing	Contractor

Table 1: Management and Monitoring						
Source of Impact	Potential Impact and Relevant Management Plan Objective[†]	Mitigation and Management (Design Feature/Specific Measure)	Mitigation Item Reference Number	Monitoring	Monitoring Frequency	Responsibility
		Spill kits appropriate to the spill risk are to be available at each work site and vehicles as necessary. All fuel tankers and those tankers transporting hazardous materials shall carry appropriate spill kits.	A24	Verification	Ongoing	Contractor
		Operational practices for vehicle/equipment refueling, which includes the prevention of spillage and the use of spill containment and response equipment, are to be in place. To be included is the requirement for fuel delivery vehicles and equipment to be routinely inspected so as to ensure the tank, pumps, pipe work and the vehicle itself are free from leaks and fit for purpose.	M147	Verification	Ongoing	Company and Contractor
		Material Safety Data Sheets (MSDS) for all stored substances will be located within each storage area and at the site office (see Hazardous Materials Management Plan).	A25	Verification	Ongoing	Contractor
		An appropriate number of staff will be trained in the handling of emergency response and spill scenarios.	M151	Verification	Ongoing	Contractor
		Drivers are to be appropriately trained in spill prevention and response and have required driving licenses.	M148	Verification	Ongoing	Contractor
		Conduct regular emergency drills to practice timely and effective spill response.	A26	Verification	Ongoing	Contractor
		Vehicles and equipment are to be maintained and inspected to a high level of safety with respect to leaks.	M25	Verification	Ongoing	Company and Contractor
		All servicing operations will take appropriate measures to contain spills and be undertaken in appropriate locations.	A27	Verification	Ongoing	Company and Contractor
		Discarded oil filters will be drained prior to disposal and stored in a contained. Refer to Waste Management Plan for disposal of waste oil.	A28	Verification	Ongoing	Contractor
		Prohibit the washing of equipment, vehicles or machinery	M150	Verification	Ongoing	Company and

Table 1: Management and Monitoring						
Source of Impact	Potential Impact and Relevant Management Plan Objective[†]	Mitigation and Management (Design Feature/Specific Measure)	Mitigation Item Reference Number	Monitoring	Monitoring Frequency	Responsibility
		near or within watercourses.				Contractor
		Adequate quantities of emergency response materials such as absorbent materials, sand bags, flocculating agents and pH buffer solutions shall be readily available adjacent to all storage areas.	A29	Verification	Ongoing	Contractor
		Spill response equipment will be inventoried and replaced where required.	A30	Verification	Ongoing	Contractor
		The integrity of all storage tanks and bunds will be inspected for leaks and flaws. Record in inspection logs.	A31	Verification	Ongoing	Contractor
		Drums in the field will be managed and handled to reduce the risk of spillage and uncontained release.	A32	Verification	Ongoing	Contractor
		Safe transfer of fuel to and from the storage tanks will be facilitated through the provision of devices such as dry-break couplings, automatic flow cut off devices and tank overflow controls.	A33	Verification	Ongoing	Contractor
		Refueling and storage operations performed in the field will be performed from road licensed fuel trucks in designated areas not less than 30 m from any drainage systems (natural or otherwise).	A34	Verification	Ongoing	Contractor
		Immediately notify Company of all contained and uncontained spills detailing: <ul style="list-style-type: none"> • Material released • Volume • Location • Cause • Proposed corrective measures, where appropriate. For all uncontained releases, the following additional information shall be provided: <ul style="list-style-type: none"> • Response time • Clean up requirements and outcome (refer to the 	A35	Notification	Per occurrence	Contractor

Table 1: Management and Monitoring						
Source of Impact	Potential Impact and Relevant Management Plan Objective†	Mitigation and Management (Design Feature/Specific Measure)	Mitigation Item Reference Number	Monitoring	Monitoring Frequency	Responsibility
		Waste Management Plan for management of wastes arising from clean up) <ul style="list-style-type: none"> Initial assessment of environmental and social impact. 				
		Conduct inspections to evaluate the presence and condition of spill prevention measures. Record in inspection logs.	A36	Verification	Ongoing	Contractor
		Conduct post-spill response investigations to evaluate the performance of spill prevention measures. Record in incident response logs.	A37	Verification	Per occurrence	Contractor
		Collect post-response samples of soil and/or streams, if affected by spill.	A38	Sampling and analysis	Per occurrence	Contractor

† See Section 1.

The level of spill response is dependent upon the potential impact of the spill.

Company proposes the following spill categorisation:

- Tier I: Within capability of Contractor's on-site resources.
- Tier II: Exceeds Contractor's on-site resources
- Tier III: Exceeds available resources in PNG and requires additional resources to be mobilized internationally.

Generally, Contractor shall respond to Tier I spills using on site resources. Contractor shall have in place response arrangements with specialist third parties for Tier II and Tier III spills. Such arrangements are subject to Company approval.

Contractor shall work closely with Company to define the spill categorisation and include it in Contractor's Spill Prevention and Response Plan.

Contractor shall develop spill response frameworks based on site specific risk assessments including spill location, volume and type of spill and environmental sensitivity and include this information in Contractor's Spill Prevention and Response Plan.

Contractor's spill categorisation and response framework are subject to Company approval.

Subsequent to a Tier II or Tier III spill release where site contamination has occurred, action shall be taken to remediate the site and prevent (further) impacts to human health or the environment. A site specific risk assessment shall be undertaken to identify human health and environmental risks associated with the contaminated site.

The risk assessment shall be based on a site assessment which generally follows the process established in the Australian National Environment Protection Council's (Assessment of Site Contamination) Measure 1999 Schedule A (Recommended General Process for Assessment of Site Contamination) and considers, as a point of reference, the Health Investigation Levels (HIL) and Environmental Investigation Levels (EIL) established in its Schedule B1 (Guideline on the Investigation Levels for Soil and Groundwater).

The purpose of the risk assessment and site assessment shall be to determine whether site contamination poses an actual or potential risk to human health and the environment, either on or off the site, of sufficient magnitude to warrant remediation appropriate to the current or proposed land use.

Based on the results of the risk assessment and site assessment, a remediation plan shall be developed for the site as necessary. The remediation plan shall include target levels for contaminants of relevance and shall provide for post remediation site assessment in order to verify successful remediation and, if necessary, ongoing monitoring requirements.

Contaminated materials arising from the remediation shall be dealt with pursuant to the requirements of the Waste Management Plan (PGGP-EH-SPENV-000018-006).

In the case of a spill by Contractor and/or its subcontractor, Contractor shall be responsible for the implementation of the above requirements. Contractor's risk assessment, site assessment and remediation plan are subject to Company approval.

5.0 ROLES AND RESPONSIBILITIES

Contractor shall ensure sufficient resources are allocated on an ongoing basis to achieve effective implementation of the Spill Prevention and Response Plan.

Contractor's Spill Prevention and Response Plan shall describe the resources allocated to and responsible for the execution of each task and requirement contained therein, and shall describe how roles and responsibilities are communicated to relevant personnel.

Company shall ensure sufficient resources are allocated on an ongoing basis to achieve effective implementation of Company's responsibilities in the Spill Prevention and Response Plan.

6.0 TRAINING, AWARENESS AND COMPETENCY

Contractor shall ensure that all personnel responsible for the execution of the tasks and requirements contained within the Spill Prevention and Response Plan are competent on the basis of education, training and experience.

Contractor's Spill Prevention and Response Plan shall describe the training and awareness requirements necessary for its effective implementation.

Contractor's training activity associated with the Spill Prevention and Response Plan shall be appropriately documented by means of a training needs assessment, training matrix/plan and records of training undertaken.

Company shall ensure that all Company personnel responsible for the execution of Company's tasks and requirements in the Spill Prevention and Response Plan are competent on the basis of education, training and experience.

Company's training activity associated with the Spill Prevention and Response Plan shall be appropriately documented by means of a training needs assessment, training matrix/plan and records of training undertaken.

7.0 PERFORMANCE INDICATORS

Table 2 outlines the indicators for measuring and verifying performance in relation to spill prevention and response.

Table 2: Performance Indicators

ID #	Performance Indicator	Measurement	Internal Assessment Frequency	Relevant Management Plan Objective [†]
1	Number of contained and uncontained releases	Number of releases	Quarterly	1
2	Number of spill prevention and response drills	Number of spill prevention and response drills	Quarterly	2
Performance Indicators to be further developed and agreed between Contractor and Company				

[†] See Section 1.

8.0 REPORTING AND NOTIFICATION

Contractor shall report to Company the results of the risk assessment described in Section 3.0 and integrate the results, including additional mitigation and management measures as agreed with Company, into the Spill Prevention and Response Plan.

Contractor shall immediately notify Company of all contained and uncontained spills detailing material released, volume, location, cause and proposed corrective measures, where appropriate.

For all uncontained releases, Contractor shall provide the following additional information:

- response time
- clean up requirements
- outcome and initial assessment of environmental and social impact.

Contractor's monthly report to Company shall include:

- Number and results of verification inspections prescribed in Table 1
- Summary of all contained and uncontained spills/releases and follow-up action/outcome
- Results of sampling undertaken to demonstrate successful remedial and decontamination of receiving environment in the event of an uncontrolled release
- Performance Indicators as applicable in the reporting period.

Refer to the Environmental and Social Management Plan (main document) for details of additional reporting and notification requirements relating to spills.

Attachment 1: Legal and Other Requirements

LEGAL AND OTHER REQUIREMENTS

Contractor shall comply with applicable Papua New Guinea Laws and Regulations, applicable International Finance Institution (IFI) requirements and International Treaties and Conventions (where applicable).

Papua New Guinea Laws and Regulations

PNG has no specific legislation or guidelines relating to spill prevention and response although it is party to several relevant international conventions. Also, the Environment Act 2000 contains numerous provisions that promote environmental protection, regulate environmental impacts associated with development activities, and safeguard the life supporting capacity of air, water land and ecosystems. It also contains Duty of Care provisions, as well as provisions relating to incidents threatening or causing environmental harm.

International Financial Institution Requirements

The following International Finance Corporation (IFC) Performance Standards are applicable to Spill Prevention and Response:

- IFC Performance Standard 1: *Social and Environmental Assessment and Management System*, which establishes requirements for assessment, management, organizational capability, training, community engagement, monitoring, and reporting.
- IFC Performance Standard 3: Pollution Prevention and Abatement, which refers to the need for the client to be prepared to respond to process upset, accidental, and emergency situations in a manner appropriate to the operational risks and the need to prevent their potential negative consequences. This preparation will include a plan that addresses the training, resources, responsibilities, communication, procedures, and other aspects required to effectively respond to emergencies associated with project hazards.
- IFC Performance Standard and Guidance Note 4 on Community Health, Safety and Security refers to the following:

“Where the project poses risks to or adverse impacts on the health and safety of affected communities, the client will disclose the Action Plan and any other relevant project-related information to enable the affected communities and relevant government agencies to understand these risks and impacts, and will engage the affected communities and agencies on an ongoing basis consistent with the requirements of Performance Standard 1.”

“Where the consequences of emergency events are likely to extend beyond the project property boundary or originate outside of the project property boundary (e.g. hazardous material spill during transportation in public roadways), the client is required to design emergency response plans based on the risks to community health and safety identified during the process of Social and Environmental Assessment. When projects need to develop such plans, the proposed actions and measures should be included in the client’s Action Plan. Emergency plans should be developed in close collaboration and consultation with potentially affected communities and should include detailed preparation to safeguard the health and safety of workers and the communities in the event of an emergency.”

“The client should provide relevant local authorities, emergency services, and the affected community with information on the nature and extent of environmental and human health effects that may result from routine operations or unplanned emergencies at the project facility. Information campaigns should describe appropriate behaviour and safety measures in the event of an accident involving project facilities, as well as actively seek community views concerning risk management and associated community preparedness. In addition, clients should consider including the community in regular training exercises (e.g. simulations, drills, and debriefs of exercises and actual events) to familiarize them with proper procedures in the event of an emergency. Emergency plans should address the following aspects of emergency response and preparedness:

- Specific emergency response procedures
- Trained emergency response teams
- Emergency contacts and communication systems / protocols
- Procedures for interaction with local and regional emergency & health authorities
- Permanently stationed emergency equipment & facilities (e.g. first aid stations, fire extinguishers/hoses, sprinkler systems)
- Protocols for fire truck, ambulance and other emergency vehicle services
- Evacuation routes and meeting points
- Drills (annual or more frequently as necessary)

The following IFC Guidelines are applicable to Spill Prevention and Response. Contractor shall meet the intent of these guidelines:

- IFC EHS General Guidelines (April 2007), Section 3.7 which, in brief, advocates the Emergency Preparedness and Response Plan that is commensurate with the risks of the facility or activity and that includes the following elements:
 - Administration (policy, purpose, distribution, definitions, etc)
 - Organization of emergency areas (command centers, medical stations, etc)
 - Roles and responsibilities
 - Communication systems
 - Emergency response procedures
 - Emergency resources
 - Training and updating
 - Checklists (role and action list and equipment checklist)
 - Business Continuity and Contingency.