EMERGENCY PREPAREDNESS AND RESPONSE PLAN (CONSTRUCTION PHASE)

REV.	DATE (dd/mm/yyyy)	DESCRIPTION	PREPARED	CHECKED	APPROVED
2	22/09/2016	Revision #2 allowing for project design changes			
1	27/03/2015	Revision #1		See attachment of reviewer's signature	
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REVISION LOG

Rev.	Date (dd/mm/yyyy)	Revised Detail			
		Item	Page	Article	Description
0	23/01/2015	all	all	all	First Issue
1	27/03/2015	all	all	all	Second Issue
2	22/09/2016	all	all	all	Third issue for new project configuration

CONTENTS

ACRONYMS

BOC	Balance of Complex
CSR	Corporate Social Responsibility
CECT	Central Emergency Co-Ordination Team
CPR	Cardiopulmonary Resuscitation
CTU	Central Utility Plant
DONRE	(Regional) Department of Natural Resources and Energy
EHS	Environmental, Health and Safety
EMT	Emergency Medical Treatment
EPC	Engineering, Procurement and Construction
EPRP	Emergency Preparedness and Response Plan
ERT	Emergency Response Team
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
ha	Hectares
HDPE	High Density Polyethylene Plant
HR	Human Resources department
HS&E	Health, Safety and Environmental
HSSE	Health, Safety, Security and Environmental
HSSE&S	Health, Safety, Security, Environment and Social
IC	Incident Commander
ICC	Incident Control Centre
IFC	International Finance Corporation
IMC	Incident Management Centre
IT	Information Technology department
LLDPE	Linear Low Density Polyethylene Plant
LSP	Long Son Petrochemicals Company Limited
MEDEVAC	Medical Evacuation
MONRE	Ministry of Natural Resources and Energy
MPs	Management Plans
OCG	Office Commander Group
OSC	On-Scene Commander
P/OCT	Pandemic/ Outbreak Contingency Team
PP	Polypropylene Plant
PPE	Personal Protective Equipment
PSs	Performance Standards on Social and Environmental Sustainability
WHO	World Health Organisation

DISCLAIMER

It is upon the Contractor to solicit, acquire and comply with all information, laws, rules, regulations, and Applicable Standards which is/are necessary and/or required for and applicable to the Contractor's performances of the works hereunder.

The Contractor hereby agrees and acknowledges that the Employer makes no representation or warranty, express or implied, regarding the accuracy or completeness of any or all information, laws, rules, regulations, and Applicable Standards which is/are necessary and/or required for and applicable to the Contractor's performances of the works hereunder. THE EMPLOYER HEREBY EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ALL RESPECTS, and the Contractor agrees that neither the Employer nor any of its affiliate(s), director(s), officer(s), employee(s), consultant(s), professional advisor(s), and duly authorised representative(s) shall have any liability to the Contractor or any of its affiliate(s), director(s), officer(s), employee(s), consultant(s), professional advisor(s), and duly authorised representative(s) in any way relating to those information, laws, rules, regulations, and Applicable Standards which is/are necessary and/or required for and applicable to the Contractor's performances of the works hereunder or the Contractor's or its affiliate(s)', director(s)', officer(s)', employee(s)', consultant(s)', professional advisor(s)', and duly authorised representative(s)' reliance thereupon and/or use thereof.

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

An emergency is defined as any sudden, abnormal or unplanned situation which requires immediate attention and may endanger human life, the environment, or have an adverse effect on assets and/or reputation.

This plan describes the steps to be taken in an emergency, which the EPC Contractor is required to prepare for, implement and respond to, during the construction phase of the Project. It sets out the actions to be taken by site personnel and visitors in the event of an emergency situation developing on, or in the vicinity of but impacting, the EPC Contractors activities on the Project site. It sets out the key actions to effectively control and deal with any perceived emergency situation.

This plan is for guidance in the event of an emergency and is not intended to restrict those persons responsible from taking whatever actions they may deem necessary to aid other persons or contain an emergency by use of their on-site knowledge or their professional judgment.

Items identified in this plan have been included based on information provided by LSP on the activities that will occur on site. Further amendments to this plan will be necessary where additional emergency items are identified.

The key objectives of this Emergency Preparedness and Response Plan (EPRP) (LSP-1S01-0002) are to:

- Secure the safety of personnel on site and the safety of local communities;
- Ensure that any environmental damage resulting from an emergency incident is kept to the absolute minimum without compromising the safety of personnel and the surrounding communities;
- Ensure that any damage to assets resulting from an incident is kept to the absolute minimum without compromising the safety of personnel or endangering the environment;
- Maintain information on legislative associated with the organisation's activities;
- Provide a process for achieving targeted performance levels;
- Provide appropriate and sufficient resources, including training, to achieve targeted performance levels on an on-going basis;

- Provide simple and clear communication processes to both site personnel, site emergency teams, off-site emergency team and the surrounding communities;
- Evaluate emergency response performance against LSP's HSSE&S policy, objectives and targets and seek improvement where appropriate; and
- Establish a management process to audit and review the LSP EPRPs during the construction phase and to identify opportunities for improvement of the system and resulting emergency response and enhancement performance.

1.2 APPLICABILITY

These requirements apply to LSP, the EPC Contractor, all Sub-contractors, and suppliers engaged on any portion of the works associated with the Project.

These procedures are applicable to all areas of the Project site and describe the role and responsibilities of all personnel in the event of emergencies originating within the site. As such the contents of this document and any subsequent EPC ERP will be included in the basic training of site personnel (Workers Training Management Plan LSP-1S01-0003).

This EPRP (LSP-1S01-0002), including medical response, may cover any off-site incident that may be related to site works, including such things as road traffic accidents, personal injury or any emergency.

All plans will be fully reviewed on an annual basis and each time site conditions or hazards are subject to change where necessary the EPRP will be amended and resubmitted for approval by LSP.

Where there is a statutory requirement for certain plans to be produced (such as Fire Fighting and Oil Spill Response) these will be copied to the relevant local authorities for comment.

Where hazards are identified which have the potential for significant internal or external impacts consideration shall be given for the development of Business Continuity Plan. It will be the responsibility of EPC Contractor Site Manager to review the potential impact and develop the necessary level of response. The business continuity requirements will also be subject to annual review or when site conditions or hazard impacts materially change. The EPC contractor will be expected to produce their own ERP, following the guidance contained in this document. This will give the detail of staff names responsible for the co-ordination of emergency response and their contact numbers, asset details for muster points and evacuation routes and the other site specific details of the areas under their control.

1.3 PROJECT OVERVIEW

The Long Son Petrochemicals Complex Project is located in Hamlet 2 and Rach Gia Hamlet, Long Son Commune, Vung Tau City, Ba Ria – Vung Tau Province, Vietnam. The Complex is spread over 464 ha, including area for its future expansion. The Project will be comprised of two main components:

1) The Petrochemical Plant, which consists of the following plants and units:
- Main Production Plants
  - Olefins Plant
  - High Density Polyethylene (HDPE) Plant
  - Linear Low Density Polyethylene (LLDPE) Plant
  - Polypropylene (PP) Plant
- Supporting Units
  - Central Utility Plant (CTU) (contains a Steam Generation Unit and Water Plant)
  - Tank Farm
  - Common Infrastructure

2) The Seaport, which consists of the following components:
- Hydrocarbon Jetty - to transfer feedstock and product for the Petrochemical Plant; and
- Construction Jetty - to import construction materials, including heavy lift modules.

The total land area that will be acquired for the Project is 464 ha, consisting of 398 ha for the Complex, and 66 ha for the specific port. In addition, there is a total water surface area of 194 ha that will be acquired for the seaport.

1.4 POTENTIAL IMPACTS OF EMERGENCY SITUATIONS

The potential impacts of emergency situations during the construction phase are as noted in the following sections. A summary of potential impacts of emergency situations during the construction phase are shown in ***Annex A***.

1.4.1 Potential Impacts from Offshore Emergency Situations

The following impacts could potentially arise during the construction of the Seaport:

- Impacts from offsite vessel collisions and/or sinking;
- Impacts from persons falling into water; and
- Impacts from typhoons and adverse weather.

1.4.2 Potential Impacts from Onshore Emergency Situations

The following impacts could potentially arise during the construction of the Petrochemical Plant and other facilities:

- Impacts from offsite vehicle accidents;
- Impacts from typhoons and adverse weather;
- Impacts from chemical/oil/sanitary effluent spill;
- Impacts from major hazardous material release;
- Impacts from loss of radiation sources/equipment;
- Impacts from major labour accidents;
- Impacts from fire and explosion; and
- Impacts from pandemic and the outbreak of communicable diseases or food poisoning of workers.

1.5 APPLICABLE STANDARDS, REFERENCES AND DOCUMENTS

The framework of the LSP EPRP (LSP-1S01-0002) has been developed with due regard to relevant legal requirements, National Standards and International Standards. The framework includes laws and requirements to which all relevant parties must adhere from the commencement of the Project through the completion of the rehabilitation works and decommissioning activities.

Should new regulations, guidelines or standards apply; the EPC Contractor will review, amend and resubmit their EPRP to LSP.

The references, documents and applicable standard related to emergency response are noted in the following sections.

1.5.1 National Laws and Regulations

The following legislative texts apply to emergency preparedness and response planning:

- Decree 21/2012/ND-CP dated 21st March 2012 on Management of Seaports and Navigable Channels; and
- Circular No. 43/2010/TT-BCT Regulations on Safety Management in Industry and Trade.

1.5.2 *International Treaties and Standards*

The following international standards apply to emergency preparedness and response planning:

- The IFC's Performance Standards on Social and Environmental Sustainability (IFC's PSs) (2012); and
- IFC's Environmental Health and Safety Guidelines – General Guidelines, Large Volume Petroleum -based Organic Chemical Manufacturing, Petroleum-based Polymers Manufacturing and Ports Harbours and Terminals.

Where both Vietnamese and international standards are applicable, the Project will aim to apply the most stringent.

2 *ROLES AND RESPONSIBILITIES*

2.1 *INTRODUCTION*

Having an appropriate organizational structure in place, with all people having defined roles and responsibilities, is essential to ensuring the overall success of this EPRP (LSP-1S01-0002). This section provides details of LSP's organizational structure with regards to onsite delivery of the EPRP, and the various roles and responsibilities of those people in relation to meeting its requirements, including the EPC Contractor and their sub-contractors.

2.2 *ORGANIZATIONAL STRUCTURE*

LSP has developed an organisational structure for the construction phase to ensure that all works can be executed in a manner consistent with the requirements of this EPRP (LSP-1S01-0002), which is depicted in ***Figure 2.1***.

2.3 *DESCRIPTION OF RELEVANT ROLES AND RESPONSIBILITIES*

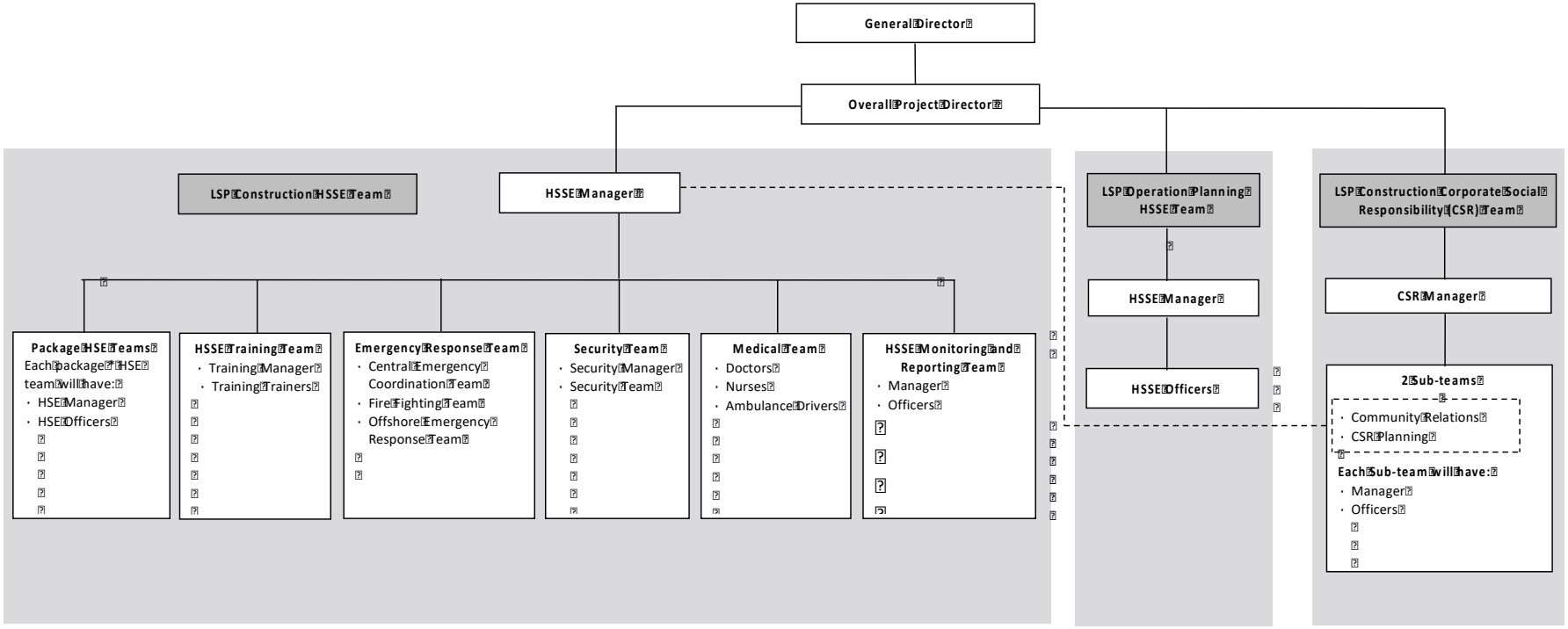
The roles and responsibilities of key resources involved in the emergency preparedness and response during the construction phase of the Project, under the LSP's EPRP, are noted in the following sections.

2.3.1 Overall Project Director

The Overall Project Director is responsible for the arrangements and for ensuring that the construction of the Project is executed at all time in such a manner as to ensure, so far as is reasonably practicable, the health, safety and welfare of all employees and others who may be affected by its construction. In particular the Overall Project Director will:

- Ensure there is an effective company policy for emergency preparedness and response and that all employees, contractors and temporary workers are made aware of their individual responsibility;
- Ensure that the EPRP is maintained and is fit for purpose;
- Ensure that the operations are sufficiently resourced with competent and trained personnel to comply with the requirements of the EPRP; and
- Ensure that all managers, LSP staffs, and Contractors understand and fulfil their responsibilities with regard to the EPRP.

Figure 2.1 Organisation of HSSE Management Team during Construction Phase



Note:

Package A: Olefins Plant, Tank farm, Complex interconnecting pipelines/pipe racks, Land development of tank farm area, Topside facilities of hydrocarbon jetties, Complex Wastewater Treatment Unit and HP Flare/LP Flare System

Package B/C/D: Polyolefins Plant (HDPE/PP/LLDPE)

Package F: Sea Port (excluding Top Side of the Hydrocarbon Jetties and construction jetty which are under the scope of the Contractor Package A and Package E respectively)

Package G: Central Utility Plant (including Steam Generation Unit and Water Plant)

Package H: Common Infrastructure of the Complex (including Administration Building, Laboratory Building, Canteen Building, Emergency Center, First Aid Center and Polyolefins Product warehouse)

Package I: Complex road including drainage, Street lighting, CCTV, green area, Top Side for construction jetty, Complex truck scale, and Blown film system

Package L: Land development work of the whole complex except tank farm area

2.3.2 LSP Construction HSSE Team

The LSP Construction HSSE Team will lead the management of all EPRP issues as follows:

- Collaborate with LSP's Construction CSR Team to establish and implement LSP's EPRP during the construction phase;
- Ensure LSP's EPRP are applied to all of LSP's staff, EPC Contractors, subcontractors and other third parties engaged in work for, or on behalf of LSP;
- Review and approve the EPRP of the EPC Contractors for submission to Lenders and then implementation on site;
- Review the EPRP performance reports collated by the HS&E Monitoring and Reporting Team and report these to the Overall Project Director and Lenders; and
- Lead audits and inspections, committees, and incident investigations of the
- EPC contractors and subcontractors to ensure the continual improvement of the EPRP.

2.3.2.1 HSSE Manager

The roles and responsibilities of the HSSE Manager are listed as follows:

- Ensure that LSP's corporate and project level policies especially the emergency preparedness and response procedures are being applied by all workers on site, regardless of whether they are a LSP employee, EPC Contractor, Sub-contractors or visitors;
- Provide support to operations (including Sub-contractors) towards the implementation and maintenance of LSP EPRPs (LSP-1S01-0002);
- Lead, facilitate or assist with the investigation of emergency incidents and development and implementation of corrective and preventive actions; and
- Ensure that notification and reporting procedures to the relevant statutory authorities are carried out.

The HSSE Manager oversees six teams: the Package HSE Team; the HSSE Training Team; the Emergency Response Team; the Security Team; the Medical Team; and the HSSE Monitoring & Reporting Team. The roles and responsibilities of the aforementioned teams are noted in the following sections.

2.3.2.2 *Package HSE Teams*

- Collaborate with the HSE teams of the EPC Contractors to manage all HSE and emergency responses issues of EPC Contractors and Sub-contractors;
- Review the HSE and emergency preparedness and responses performances reports from EPC Contractors and transfer to the HSSE Monitoring and Reporting Team;
- Lead regular inspection and audits to ensure the continual improvement of the EPRP; and
- Lead incident investigations.

2.3.2.3 *HSSE Training Team*

- Development of an HSSE and emergency preparedness and responses training matrix, plan, programs, etc. in collaboration with the EPC Contractors;
- Keep HSSE and emergency response training records;
- Coordinate with the EPC Contractors to ensure new workers or existing workers are trained in accordance with the training matrix and plan; and
- Ensure all staff are trained in what action is to be taken during a particular emergency
- incident as laid out in the Worker Training Management Plan (LSP-1S01-0003).

2.3.2.4 *LSP Construction's Emergency Response Teams (ERT)*

- Supervise the development of Onshore and Offshore EPRPs that provide site-specific procedures to respond to each identified emergency situation for the construction phase by each EPC Contractor;
- Co-ordinate with EPC Contractor's Emergency Response Team to respond to emergencies timely and in compliance with the EPRPs;
- Be involved in incident investigation teams with EPC Contractor's Emergency Response Team as necessary;
- Collect safety statistics from each EPC Contractor's Emergency Response Team and provide them to the HSSE Monitoring and Reporting Team; and
- Provide the necessary measures to manage emergencies, including emergency response facilities and resources.

The three teams below are under the management of the Emergency Response Team:

Teams	Responsibilities

Teams	Responsibilities
Central Emergency Coordination Team	• Receive all emergency cases occurring during the construction phase; and • Allocate proper resources and equipment to respond to emergency cases timely.
Fire Fighting Team	• Supervise the development of a Fire Prevention and Fighting Plan by each EPC Contractor and submit this plan to local authorities for comment; • Follow the Fire Prevention and Fighting Plan which will developed and submitted to local authorities for comment; • Ensure necessary measures to fight fire, including equipment, resources; • Conduct fire-fighting timely and in compliance with the approved • Fire Prevention and Fighting Plan; • Be involved in incident investigation teams with EPC Contractor's • Emergency Response Teams as necessary; • Collect safety statistics from each EPC Contractor's Emergency Response Team and provide them to the HSSE Monitoring and Reporting Team; • Lead regular Fire extinguisher inspection; and • Prepare Fire Prevention and Fighting Report and submit to the HSSE Monitoring and Reporting for review periodically.
Offshore Emergency Response Team	• Follow the Offshore EPRP to respond to offshore emergency cases.

2.3.2.5 Security Team

- Provide security measures including resources and Security Plan in line with the Applicable Standards; and
- Prepare Security Report and submit to the HSSE Monitoring and Reporting for review periodically.

2.3.2.6 Medical Team

- Ensure the medical facility is equipped with sufficient and adequate materials and equipment;
- Provide treatment to patients/ injured workers timely;
- Be involved in incident investigation teams as necessary; and
- Provide health and safety statistics to the HSSE Monitoring and Reporting
- Team.

2.3.2.7 HSSE Monitoring and Reporting Team

- Conduct HSSE monitoring according to the monitoring plan;
- Review HSSE performance reports submitted by other teams;
- Prepare the HSSE Monitoring Report which is collated from following sources
  - The HSSE performance reports from the EPC Contractors;
  - Reports submitted by other teams (i.e. Emergency Response Team, Medical
  - Team, Security Team); and
  - Environmental monitoring reports.
- Submit the HSSE performance reports to the HSSE Manager and Overall Project Director for review.

2.3.3 EPC Contractor HSSE Teams

All EPC contractors must have a HSSE Team in place during the construction phase of the Project. The roles and responsibilities of the EPC contractors HSSE Team is as follows:

- Establish and implement their own ESMSs and EPRPs in line with the Applicable Standards;
- Manage their subcontractors and suppliers in line with their own ESMSs and EPRPs;
- Ensure their workers are fully competent by ensuring their attendance at the training organised and provided as required;
- Report all incidents to the LSP Package HSE Teams and participate in and assist incident investigations conducted by LSP;
- Participate in regular inspections and audits conducted by the Package HSE Teams and conduct their own regularly;
- Ensure closure of identified non-conformances according to agreed timelines;
- Conduct HSSE and Emergency Preparedness and Response monitoring onsite in line with the Monitoring Plan;
- Report their HSSE and Emergency Preparedness and Response performance to the Package HSE Teams regularly as required; and
- Participate in HSSE committees organised by LSP's Construction HSSE Team and communicate HSSE and Emergency Preparedness and Response information and notifications to relevant people with their organisation as required.

2.3.4 SUB-CONTRACTORS

All sub-contractors must:

- Comply with the EPC Contractor's ESMS and EPRPs;
- Establish HSSE Teams comprised of sufficient resources and competency to ensure compliance with the EPC Contractors' ESMS and EPRPs;
- Reporting HSSE performance to the EPC Contractors regularly as required;
- Report all incidents to the EPC Contractors and participate in and assist incident investigations conducted by LSP's Package HSE Teams;
- Participate in regular inspections and audits conducted by LSP's Package HSE Teams and EPC Contractors;
- Ensure closure of identified non-conformances according to agreed timelines;
- Participate in HSSE committees organised by the LSP Construction HSSE Team and communicate HSSE information and notifications to relevant people with their organisation as required; and
- Ensure their workers are fully competent by ensuring their attendance at the training organised and provided as required.

2.3.5 *Regulator Authorities and Emergency Support Services*

LSP's HSSE Manager must identify and contact local emergency support services and relevant regulatory authorities and provide a project outline to key personnel, including details of the establish emergency response procedures. The EPC Contractors EPRP's must identify when they will call upon extra support, on local emergency services and the contact procedures, including relevant phone numbers.

Lists of regulatory authorities and emergency support services including phone numbers are described in ***Annex B***.

2.4 FUNCTIONAL EMERGENCY RESPONSE ROLES AND RESPONSIBILITIES

2.4.1 *EPC Contractor's On-Scene Commander (OSC)*

The role of the EPC Contractor's On-Scene Commander (OSC) is to implement tactical response safely and efficiently utilising all available on-scene resources.

The EPC Contractor's OSC and the Emergency Response Teams (ERT) (see ***Section 2.3.2.4 and Section 2.4.2***) are responsible for the initial response to an incident and the prevention of further escalation at their respective facilities. The OSC would normally be the EPC Contractor's HSSE Manager.

The EPC Contractor's OSC must be able to direct the efforts of his team to protect the lives of personnel, collect the information needed to establish the extent of the emergency and limit the escalation of the emergency.

The primary responsibilities of the EPC Contractor's OSC are:

- Act as focal point for all incident notification;
- Implement and co-ordinate immediate response with available resources;
- Confirm that Level 1 EPC Contractor's ERT has been mobilised, as required;
- Establish the severity of the incident;
- Determine level of response required based on OSC's experience;
- Ensure the Incident Commander (See Section 2.4.3) has been notified and appraised;
- Ensure all personnel are accounted for and moved to a place of safety;
- Implement any tactical plan established in liaison with the Central Emergency Co-Ordination Team (CECT) (See Section 2.4.4);
- Monitor and prepare for potential escalation;
- Monitor and evaluate the safety and effectiveness of the response; and
- Provide a situation briefing to on-site personnel and to the CECT.

Deployment

On being notified of an incident, depending on its nature, the OSC may attend the scene to direct operations, if safe to do so. If the incident requires co-ordination of multiple resources he should manage this from his office at Site or from the Incident Management Centre (IMC) at the Project Offices.

In the event of a Site Alarm he should proceed directly to the Incident Control Centre (ICC).

2.4.2 EPC Contractor's Emergency Response Teams (ERT)

Functional emergency roles and responsibilities of the EPC Contractor's Emergency Response Teams (ERT) are described as follows:

- Develop the Onshore and Offshore EPRPs that provide site-specific procedures to respond to each identified emergency situation for the construction phase by each EPC Contractor;
- Respond to emergencies in a timely manner with the co-ordination from LSP Construction's Emergency Response Teams and in compliance with the EPRPs;
- Be involved in incident investigation teams with LSP Construction's Emergency Response Teams;
- Provide safety statistics to LSP Construction's Emergency Response Teams; and
- Provide the necessary measures to manage emergencies for each own employees, including emergency response facilities and resources.

In addition, the EPC Contractor's ERT will work closely with the HSE Supervisor of EPC Contractor or EPC Contractor's HSSE Manager, who will supervise Assembly Points and report headcount to the ICC. They also secure the scene of an incident, restrict access to site and manage traffic, if required

2.4.3 EPC Contractor's Incident Commander (IC)

The EPC Contractor's Incident Commander (IC) is the interface between an incident site and the resources required to manage and control an emergency. He is the primary point of contact for the OSC in support of emergency response and is responsible for mobilising the Central Emergency Co-ordination Team (CECT).

The IC role is normally assumed by the EPC Contractor Site Manager.

The primary responsibilities of the EPC Contractor's Incident Commander (IC) are:

- Activate the Level 2 or Level 3, CECT as required;
- Act as CECT leader;
- Overall management of the response to an emergency;
- Evaluating the potential magnitude of incident;
- Setting clear strategic objectives and implement appropriate actions;
- Initiate relevant notifications immediately in line with LSP requirements;
- Liaise with the OCG and agree a joint strategy;
- Act as focal point for dissemination of security information out of working hours; and
- Decide when the emergency is over, stand down the CECT and return to normal operations.

Deployment

On being notified of an incident by the OSC or in the event of a Site Alarm, the IC should deploy to the Incident Management Centre in the Project Offices. He will mobilise the Level 2 or Level 3, CECT as required.

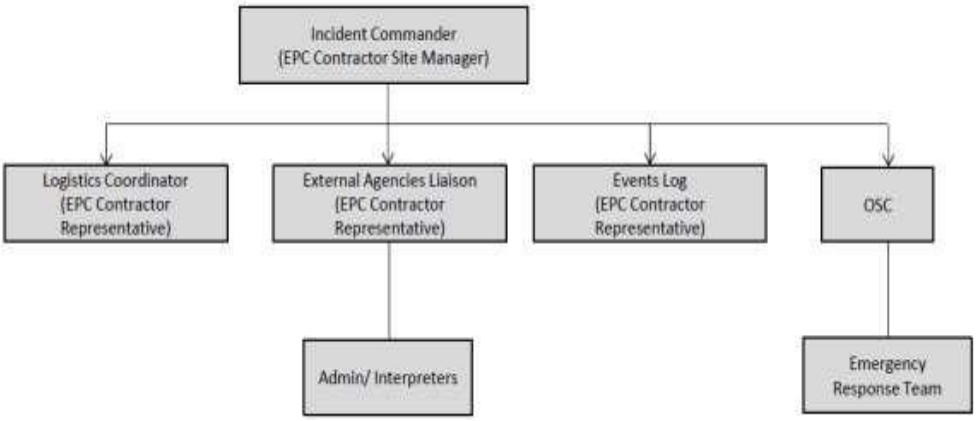
2.4.4 Central Emergency Co-Ordination Team (CECT)

The role of the Central Emergency Co-Ordination Team (CECT) is to lead the OSC and his ERT. In the event of a Level 2 (Emergency) or Level 3 (Crisis), the CECT will mobilise and co-ordinate any additional resources required at site. The structure of the CECT is shown in ***Figure 2.2***.

The primary responsibilities of the CECT are:

- Co-ordination of support by liaising with Local Emergency Services, the District People's Committee, specialist contractors, local authorities and other outside agencies;
- Providing assistance for all injured and/or evacuated personnel from the site with medical support, transport, reception facilities and accommodation as needed;
- Notification and liaison with LSP management via shortwave radio communication;
- Provision of information to Police and Medical Services when requested;
- Notification to other areas or facilities which may be affected by the incident;
- Alerting neighbouring communities of any incident which may affect them via warning tower or broadcast tower;
- Notify and, as appropriate, update the Office Command Group (see Section 2.4.5);
- Ensure appropriate notifications are made to relevant parties; and
- Ensure information is confirmed and accurate before its timely release.

Figure 2.2 Central Emergency Co-ordination Team (CECT) Structure



The roles and responsibilities of each subunit as presented in CECT structure (***Figure 2.2***) are provided as follows:

Logistic Coordinator

- Providing assistance for all injured and/or evacuated personnel from the site with medical support, transport, reception facilities and accommodation as needed under the instruction of EPC Contractor's Incident Commander (IC).

External Agency Liaison

- Co-ordination of support by liaising with Local Emergency Services (Ba Ria – Vung Tau Fire Station, Ba Ria – Vung Tau Police Station and Ba Ria Hospital) and Vung Tau City People's Committee;
- Alerting neighbouring communities (Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee and Long Son Commune People's Committee) of any incident which may affect them; and
- Provision of information to Ba Ria – Vung Tau Police Station and Medical
- Services (Ba Ria Hospital) when requested.

Event Logs

- Notification and liaison with LSP Construction Management Team;
- Notify and, as appropriate, update the Office Command Group (OCG); and
- Ensure information is confirmed and accurate before its timely release.

EPC Contractor's On-Scene Commander (OSC)

- Under the instruction of EPC Contractor's Incident Commander (IC), implement and co-ordinate immediate response with available resources.

EPC Contractor's Emergency Response Team (ERT)

- Under the instruction of EPC Contractor's On-Scene Commander (OSC), respond to emergencies timely and in compliance with the EPRP.

Admin/ Interpreters

- Under the instruction of External Agency Liaison sub-unit, assist to provide the information to Ba Ria – Vung Tau Police Station and Medical Services (Ba Ria Hospital) when requested;
- Under the instruction of External Agency Liaison sub-unit, assist to alert neighbouring communities (Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee and Long Son Commune People's Committee) of any incident which may affect them; and
- Under the instruction of External Agency Liaison sub-unit, assist to co-ordinate the support by liaising with Local Emergency Services (Ba Ria – Vung Tau Fire Station, Ba Ria – Vung Tau Police Station and Ba Ria Hospital) and Vung Tau City People's Committee.

Deployment

On hearing the site general alarm or when notified by the IC, nominated CECT members will proceed to the Incident Management Centre (IMC), prepare their functional roles and await instructions from the IC.

2.4.5 Office Command Group (OCG)

The role of Office Command Group (OCG) is to manage the consequences of an incident by assessing the impact on business and Employer reputation so that longer-term issues can be dealt with effectively.

Its primary role is to ensure all resources needed to manage the emergency are provided and to maintain communications with the CECT. It supports the CECT for liaising with external agencies, Government, stakeholders (Rach Gia Hamlet Village Commiitte, Long Son Communue People's Committee, Hamlet 2 Village Commiittee, Vung Tau Port Authority, Ba Ria - Vung Tau Province Police Station, Ba Ria - Vung Tau Province Fire Station, Ba Ria – Vung Tau Province People's Committee, Ba Ria – Vung Tau VEA/ DoNRE, Long Son Frontier Commander, Division of Standards, Metrology,

Quality and Radiation and Nuclear Safety Inspection (Inspection Division No.4), the Ministry Inspectorate, Ministry of Science and Technology (MOST) and Ministry of Natural Resources and Environment (MONRE)) and the Media throughout the emergency situation.

The OCG is led by LSP HSSE Manager and will typically comprise HSSE&S Section Managers, Administration Manager, Accounting Manager and other members as required.

The primary Responsibilities of the OCG include:

- Minimize longer-term effects on the Employer;
- Ensure adequate resources to maintain effective emergency response;
- Interface with Media;
- Limit Employer liability;
- Protect Employer value and reputation;
- Minimise delays to return to normal operations; and
- Maintain effective communications with stakeholders, the public and Vietnam Authorities.

The OCG is supported by trained specialist teams with the following responsibilities:

Package HSE Teams

- To provide any additional Health, Safety and Security resources requested by the CECT;
- To collate relevant information on the emergency situation and liaise with:
  - Ba Ria - Vung Tau Province People's Committee;
  - Ba Ria – Vung Tau Police Station;
  - Ba Ria – Vung Tau Fire Station; and
  - Division of Standards, Metrology, Quality and Radiation and Nuclear Safety Inspection (Inspection Division No.4), the Ministry Inspectorate, Ministry of Science and Technology (MOST).

LSP's Environment Team in Package HSE Teams

- To provide any additional resources to protect the Environment during an emergency;
- To collate relevant information on the emergency situation and liaise with:

- Ministry of Natural Resources and Environment (MONRE);
- Ba Ria – Vung Tau Provincial Vietnam Environment Administration/ Department of Natural Resources and Environment (BR-VT VEA/ DoNRE);
- Vung Tau Port Authority;
- Long Son Frontier Commander.

LSP Construction CSR Team

- To collate relevant information on the emergency situation and liaise with:
  - Rach Gia Hamlet Village People's Committee
  - Long Son Commune People's Committee; and
  - Hamlet 2 Village People's Committee.
- To collate relevant information on the emergency situation and liaise with:
  - The Media;
  - Concerned members of the public;
  - Commercial Partners; and
  - Lenders.

2.5 ADDITIONAL RESOURCES

The EPC Contractor must undertake a review of the risk assessments completed for his work activities at the site, establish all the foreseeable emergencies that may arise from them and put in place appropriate resources and personnel to effectively manage the response to the emergency.

It is acknowledged that some responses may require the support of external emergency response teams or specialist advice for both dealing with the incident itself or its clean-up. In such instances, the EPC Contractor must identify what emergency situations require additional off-site support, how the support is triggered and who takes control of the incident upon their arrival.

In addition, the EPC Contractor must maintain an up to date list of the support agencies and specialist and their contact details. A copy of the most recent list must be provided to LSP's HSSE Manager.

3 EMERGENCY COMMUNICATION SYSTEMS AND PROTOCOLS

3.1 EMERGENCY RESPONSE PHILOSOPHY AND STRUCTURE

The overall incident management and emergency response structure is shown in ***Figure 3.1***. The EPC Contractor and Sub-contractor personnel are required to respond to an emergency as and where appropriate. Lives should not be put at risk to protect assets, and environmental impact should be reduced to as low as reasonably practicable. Decisions taken during an emergency will be informed, timely and cognisant of escalation potential. All alarms will be responded to as if real until the true status is confirmed.

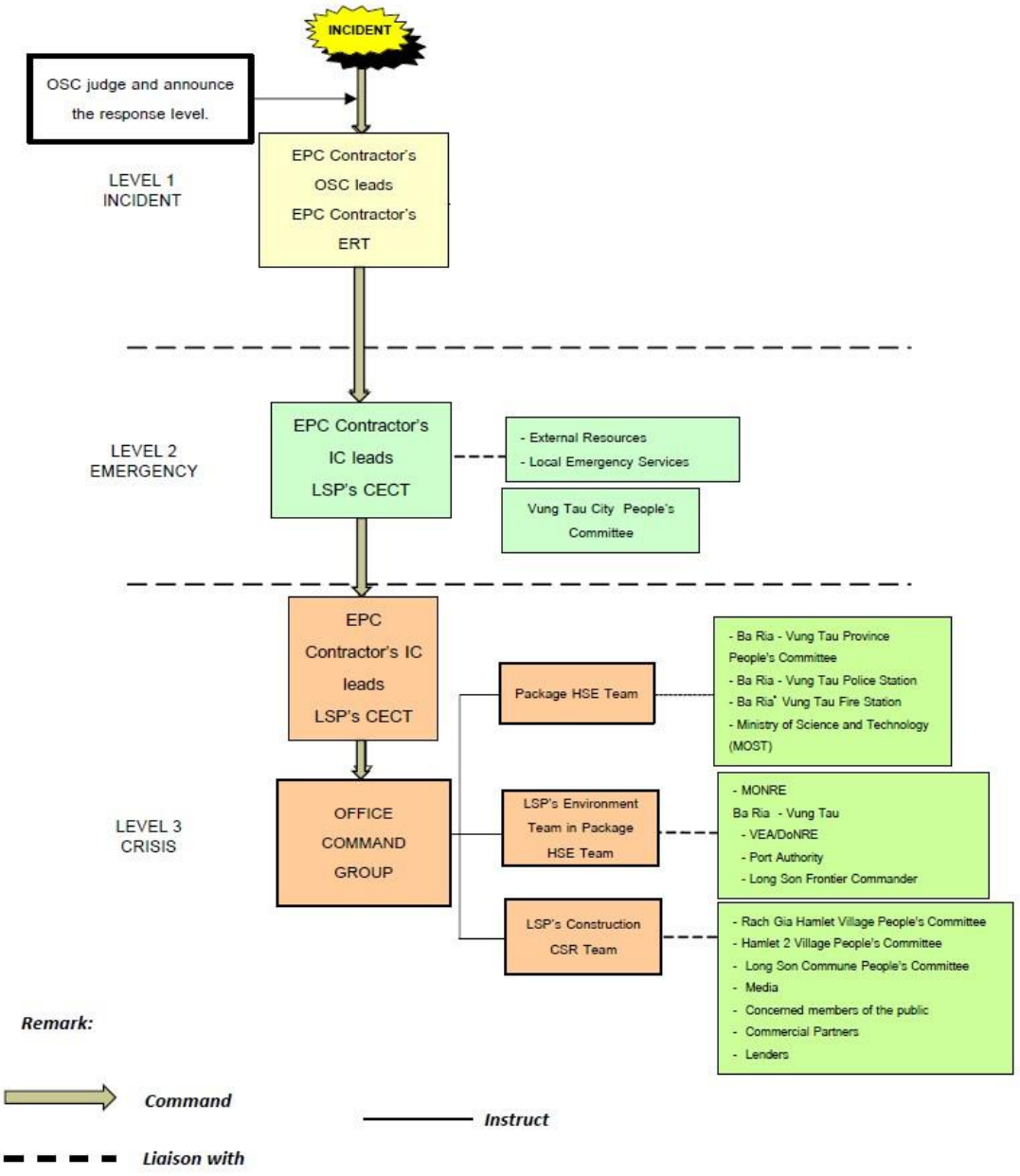
The EPC Contractor shall give incident management and emergency response the following priorities:

1. To secure the safety of personnel on site and the safety of local communities;
2. To ensure that any environmental damage resulting from an emergency incident is kept to the absolute minimum without compromising the safety of personnel;
3. To ensure that any damage to assets resulting from an incident is kept to the absolute minimum without compromising the safety of personnel or endangering the environment.

The EPC Contractor's Incident Management and Emergency Response Plan must have the following key elements:

- A single contact point for all emergency situations;
- An Incident Commander to ensure an appropriate level of response is mobilised;
- An On-Scene Commander to manage initial response at site;
- Suitably trained and equipped on-scene local primary response teams;
- A Medical Emergency Response Team;
- An Incident Management Team in support of the primary response teams; and
- Site Mustering and Evacuation arrangements.

Figure 3.1 Overall Incident Management and Emergency Response Structure



3.2 DEFINITION AND RANKING OF INCIDENTS

Level 1 - Incident

On-scene Commander (OSC) (EPC Contractor HSSE Manager) will judge and announce as Level 1 - Incident.

These are singular occurrences that require an immediate response and dedicated resources to mitigate the effects of the event. These incidents will generally be confined to the operational site and can be managed solely by the EPC Contractor's ERT led by EPC Contractor's OSC. These events will be recorded in an Incident Report (as shown in ***Annex C***).

Level 2 - Emergency

On-scene Commander (OSC) (EPC Contractor HSSE Manager) will judge and announce as Level 2 - Emergency.

If the incident (Level 1) escalates to an emergency situation (Level 2) or some incidents consider as level 2 immediately, which may need external support and resources, the OSC will mobilise the Level 2 Central Emergency Coordination Team (CECT). They will mobilise to the Incident Management Centre (IMC) located in the Project offices. The CECT is led by the Incident Commander (IC).

These are defined as any occurrence that disrupts the normal working of EPC Contractor or affects the local population. Such emergencies may involve:

- Incidents that escalate beyond the site boundary;
- Incidents initiated outside the site boundary but impact on site operations; and
- Incidents occurring away from the site but involving site personnel (e.g. road traffic accidents).

Such emergencies may require assistance from sources external to the site, including assistance from Vung Tau City People's Committee, local police or fire office as required.

Level 3 - Crisis

These are incidents that are so significant in impact and consequences that they require strategic management support at a senior corporate level. Typically incidents that may impact on reputation and/or share price would be regarded as crisis and would result in the mobilisation of the LSP Office Command Group. Assistance from third parties external to the EPC Contractor such as specialist contractors and Government Agencies may be required to contain and manage the situation.

3.3 EXAMPLE OF INCIDENTS, EMERGENCIES AND CRISIS

Table 3.2 gives some examples of incidents, emergencies and crisis. This list is for guidance purposes and is not meant to be exhaustive.

Table 3.2 Examples of Incidents, Emergencies and Crisis

Aspects	Level 1 Incident	Level 2 Emergency	Level 3 Crisis
PEOPLE	Minor injuries, first aid treatment. Minor ailments or ill health requiring local treatment.	Serious but not life threatening injury requiring local hospital treatment. Off-site Road Traffic Accident Outbreak of contagious disease affecting site personnel Missing person Fights with local population	Life threatening injury. Multiple injuries, fatalities. Serious injury or fatality involving local residents. Kidnap / hostage. Riots affecting work areas.
ENVIRONMENT	Local oil spillage	Oil spillage outside boundary, local groundwater contamination.	Major oil spill, anything seriously impacting local residents, etc. Major Environmental damage. Major incidents involving local residents or third

Aspects	Level 1 Incident	Level 2 Emergency	Level 3 Crisis
			parties.
ASSETS	Localised fire	Fire escalating outside of site boundary.	Major fire with partial or complete damage to site.
SECURITY	Local security incidents –theft, mugging. Fighting on site. Drunkenness and narcotics abuse on site.	Fights with indigenous population. Missing person, non-arrival of persons to site. Sabotage or damage to equipment.	Wholesale riots affecting the site. Kidnap or hostage. Large scale theft or fraud.

3.4 RESPONSE LEVELS

LEVEL 1 – EMERGENCY RESPONSE TEAM (ERT)

On-Scene Commander (EPC Contractor HSSE Manager) will judge and announce as LEVEL-1 INCIDENT.

The Level 1 Emergency Response Group (ERT) will be on-site personnel, who become part of the ERT in the case an emergency is raised. The EPC Contractor's ERT is led by EPC Contractor HSSE Manager who assumes the role of On-Scene Commander (OSC). He dictates initial response strategy, deploys available resources and maintains communications with the Central Emergency Co-ordination Team (CECT).

A typical Level 1 EPC Contractor's ERT consists of EPC Contractor personnel (supervisors and others) supported by the team members EPC Contractor and Sub-contractor personnel.

The structure, roles and responsibilities and manpower of the EPC Contractor's ERT will be considered by each EPC Contractor under the supervision and approval by LSP.

LEVEL 2 – CENTRAL EMERGENCY CO-ORDINATION (CECT)

On-Scene Commander (EPC Contractor HSSE Manager) will judge and announce as

LEVEL-2 EMERGENCY.

If the incident escalates to an emergency situation, which may need external support and resources, the OSC will mobilise the Level 2 Central Emergency Co-ordination Team. They will mobilise to the incident management centre located in the Project Offices. The CECT is led by the EPC Contractor Site Manager who assumes the role of Incident Commander (IC).

The IC will maintain communications with the OSC on the incident, its management and resources deployed. In principle, unless the limits of the emergency are known, the IC will alert all the operational support services that might be required, standing them down later if it is subsequently decided that they are not required.

A typical Level 2 CECT consists of the Incident Commander, LSP HSSE Manager (Advisor), Security representative and other EPC Contractor representatives as required.

LEVEL 3 – CENTRAL EMERGENCY CO-ORDINATION TEAM (CECT) AND OFFICE COMMAND GROUP (OCG)

On-Scene Commander (EPC Contractor HSSE Manager) will judge and announce as LEVEL-3 CRISIS.

CECT still leads LEVEL-3 CRISIS at the site.

The primary function of OCG is to ensure all resources needed to manage the emergency are provided and to maintain communications with the CECT. It supports CECT for liaising with external agencies, Government, stakeholders and the Media throughout the emergency situation.

The Level 3 OCG is led by LSP HSSE Manager and will typically comprise HSSE&S Section Managers, Administration Manager, Accounting Manager and other members as required. The OCG is supported by:

- Package HSE Teams;
- LSP's Environment Team in Package HSE Teams; and
- LSP Construction CSR Team.

The Level 3 OCG team will communicate directly with the CECT and initially the Incident Commander. The LSP HSSE Manager will communicate and keep the wider LSP management team advised of the situation.

The IC reports to CECT about the incident and related information initially and CECT has direct communication with OCG. LSP HSSE Manager fully supports OCG making decision for the emergency response.

3.5 RESOURCE ALLOCATION

EPC Contractor shall provide adequate resources and manning to deal with any foreseeable Emergency on site, including medical resources.

Resources to include:

- Medical Centre. Medical facilities shall be in accordance with Vietnam Government Decision (Decision No. 12/2008/QD-BYT Promulgating criteria on medical staff's knowledge and skills and medical equipment for treating injury.);
- Personnel. Staffing levels shall be in accordance with Vietnam Government Decision (Decision No. 12/2008/QD-BYT Promulgating criteria on medical staff's knowledge and skills and medical equipment for treating injury.); and
- Ambulance. Ambulance shall be fit for purpose and kept in good mechanical condition.

Protocols for additional resources shall be developed when secured.

4 PROVISION OF EMERGENCY EQUIPMENT AND FACILITIES

4.1 EMERGENCY EQUIPMENT

First Aid Kits and Fire Extinguishers shall be conspicuously placed at the Medical Centre.

First Aid Facilities should be provided as the following minimum;

- A first aid treatment room that will be equipped with a bed, stretcher, chair, table, heating, lighting, sink with water supply, cabinets and first aid equipment including a portable defibrillator;
- The standard first aid equipment will at least included; Gauze pads (at least 4 x 4 inches); large gauze pads (at least 8 x 10 inches), box adhesive bandages (band-aids), packages of gauze roller bandage at least 2 inches wide, triangular bandages, wound cleaning agent such as sealed moistened towlettes, scissors, tweezers, blankets, adhesive tapes, latex gloves, resuscitation equipment such as resuscitation bag, airway, or pocket mask, elastic wraps, splints, portable defibrillator and the directions for requesting emergency assistance (OSHA, 1910.266 App A, 59 FR 51672, Oct. 12, 1994; 60 FR 47022, Sept. 8, 1995);
- First Aid Boxes for emergency use only. EPC Contractor shall supply a sufficient number of First Aid boxes to suit the site of the workforce and locate them in close to proximity to the work areas;
- Ensure that at least 1 in every 50 workers is trained in First Aid. First Aiders shall be competent people, trained in First Aid at Work. Principal First Aiders shall have attend a 4-day course resulting in the award of a First Aider at Work Certificate;
- First Aiders shall be recognized by posted photographs, detailing name, location, company and contact number. First Aider's safety helmets shall have a self-adhesive green cross sticker affixed to each side. First Aiders high visibility jacket or vest shall also have a green cross on the back.

First Aid Kits shall be maintained by the Medical Team.

At the above locations, the names of personnel on site with Cardiopulmonary Resuscitation (CPR) and / or First Aid Training shall be posted.

It is the responsibility of the EPC Contractor to provide all emergency equipment in adequate number and conduct the training on the using of all emergency equipment and procedures to all construction works including the existing and new employees.

A list of all emergency equipment must be maintained at the Project site and its location drawn on a site plan. An audit of the equipment must be undertaken regularly to ensure it is in place, fit for purpose and ready for use in the event of an emergency.

Details of the emergency equipment and relevant training programs will refer to the LSP Construction HSE Management Plan (LSP-1S01-0005), the Worker Occupational Health and Safety Management Plan (LSP-1S01-0019) and the Worker Training Management Plan (LSP-1S01-0003).

4.2 SPILL RESPONSE EQUIPMENT

The EPC Contractor shall have on-hand enough equipment to control spills and for the clean-up of equipment at the construction site. Standard spill response kits should contain at a minimum the following:

- Oil absorbents;
- Cellulose socks;
- Latex gloves
- Dust masks;
- Disposal bags or containers; and
- Hand wipes.

The EPC Contractor shall have additional clean up equipment readily available to assure containment of spill can be kept intact. Clean up materials for disposal should be accessible within 24 hours as long as spill area can be weather tight and stay contained.

If spill is too large for clean-up equipment or personnel, if spill has entered storm sewer, if run-off has flowed into surface waters or wetlands, or if material is too hazardous to handle, contact the emergency response teams immediately.

4.3 PERSONAL PROTECTION EQUIPMENT

All personnel involved in handling chemicals, fuels, oils and other materials and those involved in clean-up of spills must be provided with appropriate PPE as defined in the

Worker Occupational Health and Safety Management Plan (LSP-1S01-0019). Reference should also be made to safety data sheets of materials on site to ensure additional special PPE is provided.

4.4 INCIDENT MANAGEMENT FACILITIES

4.4.1 Emergency Response Team

The Site offices have dedicated facilities where the On-scene Commander and his ERT would mobilise and co-ordinate the incident response. They are equipped with communications, plot plans and event boards. These facilities are known as the Incident Control Centre (ICC) and should be located in the Construction site.

There is a dedicated emergency response radio channel for use by the ERT and Security teams.

4.4.2 Incident Management Team

A dedicated Level 2 Incident Management Centre (IMC) is located in the Project Offices. Response to emergency situations is co-ordinated from the IMC. It contains appropriate communications equipment and information handling facilities to ensure efficient and effective emergency management. Specifically, the IMC provides:

- Adequate telephones and fax with external numbers;
- Appropriate backup communications equipment;
- Dedicated PCs;
- All appropriate documentation for use during an emergency;
- Layout drawings of the site;
- Current telephone lists and contact directories; and
- Mapping and charts.

4.5 PROTOCOLS FOR THE USE OF EMERGENCY EQUIPMENT AND FACILITIES

The EPC Contractor must develop protocols for the safe use of emergency equipment and facilities that he or his workforce have control over and are likely to use in the event of an emergency.

5 EVACUATION

5.1 SITE ALARM AND ASSEMBLY POINTS

There is to be a single site general alarm, which will be a continuous 'siren' that can be initiated from the Security Control Room. On hearing the alarm all personnel must stop work, make their worksites safe and proceed to their nominated Assembly Points without delay.

The EPC Contractors must identify safe excavation routes and assembly points, within or in close proximity to its work area.

The location of the assembly points and evacuation routes must be depicted clearly on a site, displayed through the work area, appropriately sign posted and be communicated to all staff.

As the project develops the Emergency Plan Muster Points and Evacuation routes must be updated to reflect the Project's current status and associated work activity.

In addition to the general site alarm larger buildings and accommodation areas will have their own independent fire/evacuation alarms, procedures for these locations fall outside the scope of this plan with training and evacuation drills being conducted independently to the emergency response plan. For Offices, indoor workshops, warehouses etc. such plans shall include:

- Preparedness for evacuation in emergency;
- Set up sirens or loudspeakers or other communicating measures;
- Making clear the evacuation routes and muster points;
- Put the evacuation route figures on room walls;
- Carry out evacuation training and exercise periodically; and
- Instruct evacuation routes whenever visitor came.

Prior to the general site alarm being installed, a temporary system of hand held speaker will be used. This will be coordinated by the LSP Construction HSSE Department and will expand in coverage and complexity as the construction works progress.

Installation of the permanent plant alarm systems will be utilised in the latter stages of the project and should be planned to be commissioned as early as possible.

Due the limited risk of any credible paths for site generated incidents to escalate during the construction phase of the Project it is considered highly unlikely that any escalation will affect surrounding communities or organisations however the EPC Contractor HSSE Manager shall consider at an early stage how local authorities, emergency services and neighbouring communities may be alerted in the event of an emergency. He will make emergency phone call directly using the emergency contact list (as shown in ***Annex B***). In otherwise, consideration should be given to the following possibilities:

- Audible alarms, such as fire bells or sirens;
- Fan out telephone call lists;
- Vehicle mounted speakers; and
- Call out via local police/local authority.

Details of external communication with local stakeholders related to the level of incident is described in ***Section 8.2*** of this EPRP.

5.2 EVACUATION OF OUTDOOR WORKSITES

Once all personnel have reported to their assembly points and have been accounted for they must remain at their assembly point. They should remain calm; do not panic; do not use mobile phones and listen to instructions and announcements from the EPC Contractor's HSSE Manager. At assembly points where large numbers of people are mustered the EPC Contractor's HSSE Manager will use hand held megaphones to ensure all personnel can hear instructions.

5.3 EVACUATION FROM INDOOR AREAS

In the case of evacuating indoor areas personnel should leave by the nearest available exit and follow the marked evacuation route to their assembly point outside. They must report to the EPC Contractor's HSSE Manager for head-count and await instructions. Persons must not leave the assembly point until instructed to do so.

Persons must not re-enter buildings until instructed by the EPC Contractor's HSSE Manager.

This will apply to accommodation camps as well as offices, warehouses, workshops and all other Project buildings.

5.4 EMERGENCY DRILLS AND EXERCISES

Total four (4) types of emergency drills and exercises are required for this EPRP. Details of each emergency drills and exercises and the frequency are presented as follows;

- Building and site alarms will be tested weekly at pre-arranged times.
- Personnel will be warned in advance of a test and no action will be required.
- Every three months an evacuation exercise will be held to test the effectiveness of evacuation plans and personnel response. Personnel will be given advance warning of such exercises.
- Every six months a full evacuation exercise will be held.
- For medical emergency medical response drills, the EPC Contractor HSSE Manager will conduct regularly. This will include one major exercise per year which would involve local emergency services (as shown in ***Annex B***).

EPC Contractor will carry out regular emergency exercises to ensure continued familiarity and competence. The exercises should be supplemented by training courses delivered by specialist training providers where appropriate, to maintain effectiveness.

Emergency Response exercises will be conducted quarterly at major mobilization stage, the nature and range of these exercises will reflect the number of persons on site and range of activities being undertaken. Therefore, the number of exercises might escalate as number of construction activities increase.

Regular drills and exercises at all locations will also ensure a state of readiness is maintained. The EPC Contractor HSSE Manager shall maintain a schedule of drills and exercises. These exercises and drill shall be based on the credible scenarios identified plus any other significant or specific event that may arise. Teams or individual sectors of the emergency response team shall be exercised independently to test their specific roles and the whole team together with site evacuation must be undertaken a minimum of four time per year.

Exercises may include Notification Exercise, Table Top Exercise, Limited Exercises and Full Scale Exercises.

In addition, it is recommended that CECT training be undertaken quarterly and include exercises involving one of the following credible scenarios that decided by EPC Contractor HSSE Manager;

- Road Traffic Accident (Onsite);
- Road Traffic Accident (Offsite);
- Multi Casualty Emergency;
- Typhoons and Adverse Weather;
- Chemical/Oil/Sanitary Effluent Spill Response;
- Loss of Radiation Sources/ Equipment;
- Pandemic and Outbreak of Communicable Diseases; and
- Marine Emergency (including vessel collisions and/or sinking).

EPC Contractor shall ensure that local emergency services and communities and neighbouring factories are informed of all exercises and emergency response training prior to the event and where appropriate be encouraged to assist or undertake roles within the scenario. Local emergency response services should wherever possible undertake their given roles in such exercises and be involved in structured debrief sessions after the training has concluded. Major exercises may also involve medical or marine services some distance from the site again these may be involved but EPC Contractor must ensure that careful pre-planning of any involvement is undertaken prior to the event to ensure minimum disruption to day to day operations.

All exercises, drills and evacuations shall be recorded at a single location and EPC Contractor shall submit report on emergency exercise training to LSP Construction HSSE Team quarterly.

6 DECONTAMINATION PROCEDURES

This procedure will be followed in the event of an emergency where a victim or equipment should need to be decontaminated due to a chemical, biological, or radioactive release or spill. The decision whether or not to decontaminate a victim is based on the type and severity of the illness or injury and the nature of contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving treatment. If decontamination does not interfere with essential treatment, it should be performed.

All clothing, equipment or person(s) who have, or have potential, been exposed to hazardous materials must be decontaminated. The decontamination area shall be set-up prior to the mitigation of the incident.

Decontamination can be accomplished by:

- Physically removing contaminants (e.g., liquid rinse, evaporation);
- Inactivating contaminants by chemical detoxification (e.g., neutralizing agents); and
- Disinfecting/sterilizing infectious or biological materials (e.g., bleach solution).

The decontamination procedures shall be initiated by the OSC. To ensure appropriate decontamination procedures are initiated, the EPC Contractor must undertake a risk assessment and establish what exposure is likely under a reasonably foreseeable emergency event and develop written procedures, prior to the work activity being undertaken, that make reference to the following:

- Material Safety Data Sheets;
- The National Fire Protection Association Hazardous Materials Handbook;
- The chemical manufacturer; and
- Other related reference materials.

Once the proper decontamination procedures are determined for the emergency event, the On-Scene Incident Commander shall designate an area to set up the decontamination process. The equipment shall consist of portable wash tubs, sprayers, heavy gauge plastic tarp and disposable scrub brushes.

The following eight steps constitute the decontamination process for personnel involved in the remediation of the incident:

1. All personnel exit the 'contaminated' zone shall place monitoring equipment, hand tools and other equipment in this area. A recovery drum and/or tarp shall be set in place so all tools and equipment can be put aside for further decontamination. All equipment and tools shall be decontaminated when work. Personal protective clothing, self-contained breathing apparatus and/or respirators worn by personnel are excluded at this stage and shall remain worn by personnel.
2. After placing equipment and tools in the recovery drum or on tarps, all persons who have been within the 'contaminated' zone shall be washed down with the appropriate solution, as determined by the Material Safety Data Sheet, while wearing all personal protective equipment. All water used in this step shall be contained in a recovery drum or decontamination pool while this process is carried out and treated as hazardous waste at the completion of the decontamination process.
3. After emergency response personnel are completely washed down, they shall remove their protective clothing. The protective clothing shall be placed in a recovery drum or approved bag and labeled with a tag as to their contents. Support personnel may be required to assist personnel being decontaminated with removing their protective clothing.
4. After removing protective clothing, personnel being decontaminated shall remove their self-contained breathing apparatus or respirators. The breathing apparatus shall be placed on a tarp for further decontamination. For decontamination procedures of breathing apparatus and respirators.
5. Upon removing the personal protective equipment, the emergency response personnel shall remove any clothing that may have become contaminated. The clothing shall be placed in recovery drums or approved bags and labeled as to its contents.
6. Emergency response personnel shall shower thoroughly if it has been determined that personal protective equipment has failed to protect the user.
7. Emergency response personnel and persons that were in the hot zone and warm zone shall receive a post-medical evaluation by a qualified individual if overexposure or injury occurs.

If it is determined that emergency response personnel or persons involved with the incident need further medical attention, transportation shall be arranged by the OSC.

6.1 PERSONAL PROTECTIVE EQUIPMENT

Emergency response personnel shall use appropriate personal protective equipment for each assigned job.

The following personal protective equipment shall be available for use depending on the requirements of the situation and the training of the individual response personnel:

- Positive pressure self-contained breathing apparatus;
- Totally encapsulating chemical protective suits capable of maintaining positive air pressure and capable of preventing inward gas leakage of more than 0.5%;
- Chemical resistant gloves and boots;
- Air purifying half-mask or full-face respirator with appropriate cartridges;
- Chemical resistant total body coverall Tyvek suits;
- Chemical resistant goggles; and
- Personal Alerting Safety System (PASS) device.

6.2 MEDICAL SURVEILLANCE

All members of the ERT shall be placed in the medical surveillance program. Medical examinations and consultations shall be made to each employee on the following schedules:

- Prior to assignment;
- At least once every twelve months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is appropriate;
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months;
- As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation; and
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

7 EMERGENCY RESPONSE PROCEDURES

The following instruction shall be implemented and the detailed are referred in ***Section 9: Mitigation / Management Procedures***.

7.1 INITIAL RESPONSE

Initial response to any incident will be by EPC Contractor personnel who have been trained to fulfil emergency duties such as first aid, basic firefighting and incident management. Normally the first response to any incident will be by the OSC who will decide on the level of response needed.

Typical emergency scenarios may include:

- Fire / explosion from welding and cutting; stored materials, fuels and lube oils; and
- Traffic incidents both on Project premises and on public highways.

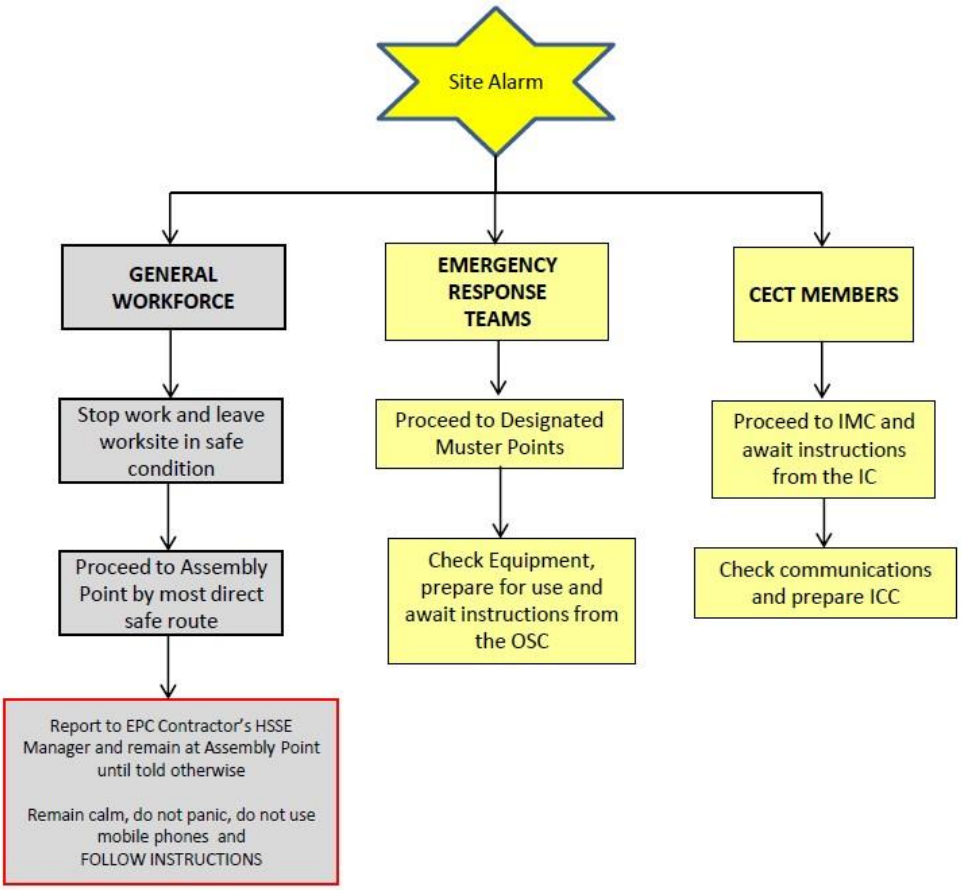
Table 3.2 gives further examples of emergency scenarios.

Initial response actions required by relevant persons is described in the following sections and shown in ***Figure 7.1***.

7.1.1 All Personnel

On hearing the site alarm all personnel must stop work, evacuate their worksite and proceed, without running to their designated Assembly Point immediately. All alarms must be treated as real unless confirmed otherwise. This applies to all personnel working outdoors on site or indoors in buildings, workshops, offices etc. Personnel must present themselves to the EPC Contractor's HSSE Manager to enable a head-count to be reconciled. Personnel shall remain at the assembly point and await further instructions from the EPC Contractor's HSSE Manager. Personnel shall not leave the Site until instructed to do so.

Figure 7.1 Initial Response Actions on Hearing the Site General Alarm



7.1.2 On-Scene Commander

On being notified of an incident the OSC will proceed to the scene to evaluate the situation and initiate the appropriate level of response.

In the event of a major incident he will advise the IC and may instruct the general site alarm to be activated.

7.1.3 Cect Members

On hearing the site general alarm or when notified by the OSC, members of the CECT will proceed to the IMC and await further information and instructions from the IC.

7.1.4 Emergency Response Teams (ERT)

On hearing the site general alarm or when instructed by the OSC will proceed to their designated Muster Points, prepare their equipment in readiness and await instructions from the OSC.

7.1.5 Incident Commander (IC)

On hearing the site general alarm or if advised by the OSC, the IC will proceed immediately to the IMC. He will prepare the IMC for use and may mobilise the CECT.

7.2 FOLLOW UP RESPONSES

The emergency response to the incident will be made by the IC, OSC or external emergency team leader, depending on the level of the incident and the presence of professional emergency responders, e.g. local fire brigade.

8 TRAINING AND COMMUNICATION

8.1 TRAINING

All persons visiting or working on site will receive training in the actions to be undertaken in the event of an emergency. This training will be provided as part of the site induction programme and will include the LSP Construction's employees, EPC Contractor, Sub-contractors, occasional visitors and deliveries. The training content and regularity will change as work activities evolve.

The evacuation route and assembling point will be developed at each stage, and training to all workforces will be undertaken as shown in ***Table 8.1***. This training will be re-enforced by the undertaking site musters and evacuations drills which will organised by the EPC Contractor HSSE Manager in conjunction with the EPC Contractor Site Manager.

All personnel with specific emergency duties will receive induction and training in the EPC Contractor incident management and emergency response procedures. A matrix of required training is given in ***Table 8.1***. In addition to the training specified in ***Table 8.1*** the Incident Commander plus all persons designated to stand-in as Incident Commander and members of Office Command Group, who may have direct contact with the media, shall undergo media awareness training prior to taking up any CECT duties.

Table 8.1 Emergency Response Training Matrix

Ref	Course Title	Workforce (including Subcontractors and Suppliers)	Supervisors	Visitors
ER1	Site Induction	✓	✓	✓
ER2	Media Awareness Training		✓	
ER3	Basic First Aid		✓	
ER4	Casualty Handling			
ER5	Basic fire fighting			
ER6	Spill containment			
ER7	Muster Checker			

ER8	Traffic Control			
	Actual experience of the emergency	✓	✓	✓
	Evacuation route and assembling	✓	✓	✓
	How to act when find the	✓	✓	✓

8.2 COMMUNICATION

Communication for this Project is categorized into two levels by referencing it to the organizational structure as 1) Internal Communication, and 2) External Communication.

8.2.1 Internal Communication

Internal communication is defined as a communication between LSP Construction HSSE Team, LSP Construction Corporate Social Responsibility (CSR) Team and EPC Contractors HSSE Team itself, with regards to emergency preparedness and response issues. The communication might include but not limit to:

- Routine daily, weekly, and monthly communication and monitoring and inspection;
- Formal monthly reporting and meeting to report progress and implementation, as well as follow-up non-compliance issues;
- Urgent communication when needed to address issues of immediate threat to the environment; and
- Conduct quarterly internal audits against the LSP's EPRP (Construction Phase).

Internal communication guidelines are shown in ***Table 8.2*** and ***Table 8.3***, respectively.

Table 8.2 Internal Monitoring/Inspection, Meeting and Auditing Guideline

No.	List	Participant	
		LSP	EPC Contractor
1.	Daily monitoring/inspection		x
2.	Weekly monitoring/inspection		x
3.	Monthly monitoring/inspection Monthly meeting	x	x
4.	Quarterly Internal audit	x	x

5.	Ad-hoc meeting (per case)	x	x

Table 8.3 Internal Reporting Guideline

No.	List	Originator	Receiver
1.	Weekly/monthly inspection report	Subcontractor	EPC Contractor
		EPC Contractor	LSP
2.	Incident report (per case)	EPC Contractor	LSP
3.	Monthly Incident report	EPC Contractor	LSP
4.	Quarterly Incident report	EPC Contractor	LSP
5.	Annual Incident report	EPC Contractor	LSP
6.	Quarterly audit report	LSP	EPC Contractor

Apart from regular self-monitoring/inspections (daily, weekly or monthly) by EPC Contractors, a regular monthly meeting to discuss monitoring and inspections is to be set up with participants from LSP, EPC contractors and, where relevant, subcontractors. The meeting agenda will be prepared before the meeting and inspection.

EPC Contractors and subcontractors (through the EPC Contractor) shall submit a regular inspection report, and incident/accident report (per case) to LSP for review and approval. All reports will be consolidated as EPC Contractor's emergency preparedness and response performance report and finally submitted to the LSP on a monthly basis with the agreed format.

Communications will also include routine daily and weekly communication to address particular issue or problem, or to exchange information by telephone, fax, Email, or formal letter. It also includes urgent communications when needed (e.g. emergency response and incidents) to address issues that present an immediate threat to people, environment, assets and security.

8.2.2 External Communication

External communication is defined as a communication between the Project (LSP and EPC Contractor) and third parties such as Lenders, Vietnam Government or relevant authorities, local communities on emergency preparedness and response issues. External communication may include but not limit to:

- Routine communication and joint monitoring and inspection programs upon request from Lenders and local authorities;

- Urgent communication when needed to address issues of immediate threat to the people, environment, assets and security;
- Public Disclosure (refer to Community Grievance Management Plan (LSP-1S03-0001); and
- External audits.

External communication guidelines are shown in ***Table 8.4*** and ***Table 8.5***, respectively.

Table 8.4 External Monitoring/Inspection, Meeting and Audit Guideline

No.	List	Participant		
		Government/ Lender	LSP	EPC Contractor
1.	Monitoring/inspection upon request	x	x	x
2.	Ad-hoc meeting (per case)	x	x	
3.	Quarterly external audit and report	x	x	x

Table 8.5 External Reporting Guideline

No.	List	Originator	Reviewer/ Approver
1.	Bi-annual HSE report	LSP	Government/Lenders

A regular joint monitoring and inspection meeting should be set up with participants from Government, LSP and EPC Contractors to observe Project implementation against the EPRP (Construction Phase).

Likewise, communications will also include routine daily and weekly communication to address particular issue or problem, or to exchange information by telephone, fax, Email, or formal letter. It also includes urgent communications when needed (e.g. emergency response and incidents) to address issues that present an immediate threat to people, environment, assets and security.

In addition, external communication includes communication established for practical reasons between the EPC Contractors and local authorities for site specific issues to be discussed. Any communication of this type will immediately be reported to the LSP with date, name of persons concerned and subject of discussion. Any external communication (via meeting, letter, site visit, etc.) shall be recorded by EPC Contractors.

8.2.2.1 External Communication with Local Stakeholders

8.2.2.1 (1) Dissemination of Information to Local Stakeholders

Disclosure of information materials will be an important part of the external communication process as the construction activities begin. LSP with the assistance of the EPC Contractor will prepare and disseminate important information about construction activities and the proposed EPRP to support the engagement. Information disclosure will concentrate in Vung Tau City but may be enlarged to Ba Ria – Vung Tau Province for specific wider issues (e.g, flooding, typhoon/tropical storm).

All information material will be provided in Vietnamese and in English and written in non-technical terms to make it easy to understand by the population. The regular contact with the District (Vung Tau City People's Committee) and Commune People's Committees (Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee and Hamlet 2 Village People's Committee) will help to ensure that the information is disseminated to local population. During the construction phase, information shall be disclosed on the following subjects;

- Construction activities;
- Proposed Emergency Preparedness and Response Plans; and
- Complaints and grievances process.

EPC Contractor HSSE manager under the supervision of LSP Construction CSR Team will be responsible for maintaining a comprehensive database of disclosure materials prepared and disseminated by the Project.

8.2.2.1 (2) Project Information Centre

During the construction phase, LSP will open a dedicated information centre in Vung Tau City to disclose project documents and information and act as an interface between LSP, EPC Contractor and the public. The centre will open daily on weekdays and will be staffed by a member of EPC Contractor. All relevant LSP engagement materials with the approval from LSP will be disclosed. Visitors to the centre shall be recorded and monthly statistics kept on the number of visitors, the nature of queries made, where visitors come from.

8.2.2.1 (3) Local Committees

Details of the structures, roles and responsibilities of the local committees for this Project during the construction phase will refer to the Community Grievance Management Plan (LSP-1S03-0001).

8.2.2.1 (4) External Communication Related to the Project's Level of Incidents

Figure 3.1 shows the external communication pathway related to the Project's level of incidents during the construction phase. Only Level 2 (Emergency) and Level 3 (Crisis) requires the external communication the local stakeholders and can describe as follows;

Level 2 (Emergency)

If the situation escalates to Level 2 (Emergency), the Incident Commander (IC) under the supervision of LSP Construction HSSE Manager will contact the local emergency services as follows;

- Vung Tau City Fire Station;
- Vung Tau City Police Station; and
- Vung Tau Port Authority (in case of the offshore emergency situation);

Also, the Vung Tau City People's Committee should be notified about the current situation so they can respond to the emergency situation towards their emergency response plan. LSP may submit the incident report (per case) upon the request of the Vung Tau City People's Committee.

Level 3 (Crisis)

If the situation escalates to Level 3 (Crisis), the Office Command Group (OCG) will take the responsibility to communicate with the external stakeholders. Each section of the OCG will have the different communication targeted groups and can describe as follows:

- Package HSE Team will contact the provincial level emergency services (Ba Ria – Vung Tau Police Station, Ba Ria – Vung Tau Fire Station, Ba Ria – Vung

Tau Province People's Committee) or the national level organization (Division of Standards, Metrology, Quality and Radiation and Nuclear Safety Inspection (Inspection Division No.4), The Ministry Inspectorate, Ministry of Science and Technology; MSOT) (in case of the radiation safety)) to notify the current situation and seek for the responsive procedures;

- LSP's Environment Team in Package HSE Team will contact the environmental regulatory agencies (Ba Ria –Vung Tau Vietnam Environmental Agency; BR-VT VEA, Vung Tau Port Authority and Long Son Frontier Commander) or the national regulatory agency (Ministry of Natural Resources and Environment: MONRE) (in case of specific wider issues, e.g., flooding, typhoon/ tropical storm) to notify the current situation. LSP may submit the incident report (per case) upon the request of these agencies;
- LSP's Construction CSR Team will contact the affected communities (Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee and Hamlet 2 Village People's Committee) to notify them and/or co-ordinate the evacuation procedure towards their emergency response plans. LSP may submit the incident report (per case) upon the request of these agencies; and
- LSP Construction CSR Team will also act as the focal point for information dissemination to the lenders and media. All information about the current situation must be approved by LSP before the dissemination process.

8.2.3 Reporting

Reports from external communication as specified above will be submitted to Vietnamese's relevant authorities and Lender as mentioned in the LSP Construction Health, Safety, and Environment (HSE) Management Plan (LSP-1S01-0005) and can summarize in the following sections.

8.2.3.1 Bi-Annual Report

LSP shall prepare and submit the bi-annual report to the Department of Natural Resources and Environment at Province Level (DONRE), the Department of Health and Department of Labour, Invalid and Social Affairs and other relevant authorities such as people committee at District Level (if necessary) no later than sixty (60) days. The content of Bi annual report will follow the requirement in ***Annex 4*** of Joint Circular No. 01/2011/TTLT-BLDTBXH-BYT.

However, the covering item of annual report could be change as the requirement of the DONRE or Lender that the Project will be reached and complied with those

requirements. In addition, LSP shall prepare and submit bi-annual report with content agreed upfront with Lender if required.

8.2.3.2 Audit Report

Audit report will be described in ***Section 11*** of this EPRP.

8.2.3.3 Communication Language

The formal communication language is Vietnamese and English. This will be applied to all written communication. However, specific language may be used for communications involving construction works.

8.2.4 Grievance Procedure

An effective stakeholder engagement process, which includes providing access to information on a regular basis and conducting consultation to listen to the stakeholder concerns/feedbacks, can substantially help to prevent grievances from arising in the first place. However, sometimes for a project with high potential of emergency risks, grievances of some form or level generally arise. Therefore, a grievance procedure needs to be developed and implemented to ensure that project related grievances can be identified, documented, solved and monitored.

It is important that a document control system is in place to ensure the most up-to-date report is readily available, where and when required, and that copies of previous reports are kept for future reference, throughout the life of the project.

LSP will therefore set up a process to document and trace all incident reports, communications and documents. The LSP will use a computer database to store, track and allow analysis of this information. All documents regarding emergency preparedness and responses of LSP's construction activities and derived from the procedures described in this LSP's EPRP (Construction Phase) will be listed, created, and stored in appropriate files and registered. The list of document to be filed includes (but not limited to):

- LSP's EPRP (Construction Phase), EPC contractor's site-specific EPRP (Construction Phase) and, where relevant, subcontractors' site-specific EPRP (Construction Phase) (including addendums and revised version);

- Law, regulation, and standard;
- All documentation of communication and correspondent;
- Quarterly and annual reports including minutes of meeting;
- Routine inspection reports;
- Audit reports;
- All document relevant to training materials;
- Incident and accident report; and
- Grievance records.

8.2.5 Control of Documents

A Health, Safety and Environment Document Control Register will be established and maintained by LSP Construction's HSSE Team with the following key tasks;

- Document title and registration number;
- Version number;
- Date of issue;
- Date of review; and
- Location of Hard Copy (if justified).

The LSP's EPRP (Construction Phase) and its addendum will be revised accordingly. The reviewed date will be recorded on the document cover.

When documents are reviewed and revised, any changes will be tracked electronically to enable readers to understand the changes.

A hard copy and electronic file of all supporting documents shall be placed in the Obsolete HSSE&S Documents File and listed on the Obsolete HSSE&S Documents Register.

Information to be entered into the Obsolete HSE Documents Register is:

- Obsolete EPRP documents and file number;
- Document title and registration number;
- Issuance date; and
- Withdrawal date.

Distribution of any documentation by electronic file will be done only using Adobe PDF encrypted standard in order to avoid uncontrolled changes in the document. Both on-site and off-site backup files shall be kept for all documents.

It is also the responsibility of EPC contractors and their subcontractors to set up a standardised documentation system and controls. All documents, maps, drawing, procedures etc. in relation to the emergency preparedness and response aspects of the construction of this Project shall be created and filed in the site office and related sites, and can be utilized any time as needed.

9 MITIGATION / MANAGEMENT PROCEDURES

The mitigation / management procedures noted in this section provide the approach to managing the emergency cases during the construction phase. EPC Contractors are committed to implementing the identified mitigation / management procedures in order to not cause exceedance of the applicable standards, and to avoid impacts the can cause the injury or casualty of the labors under the supervision of LSP.

The mitigation /management measures that are relevant to on-site activities are shown in Table 9.19.1 Mitigation/management procedures for off-site traffic/vessel accidents Table 9.1 to Table 9.11.

The mitigation /management procedures were identified in the ESIA as being appropriate for the environmental impacts resulting from the anticipated construction activities should impacts from emergency cases arise from EPC contractor's activities, following the implementation of the procedures noted in Table 9.19.1 Mitigation/Management for off-site traffic/vessel accidents Table 9.1 to Table 9.11, LSP will review the need for additional measures to be taken and update these EPRPs accordingly as the project develops.

These proposed EPRPs should be consulted with the local relevant authorities (Ba Ria – Vung Tau VEA/ DoNRE, Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee, Vung Tau Port Authority, Long Son Frontier Commander, Department of Labour, Invalids, and Social Affairs (DoLISA) in Baria – Vung Tau Province, Vietnam, Vung Tau City Fire Station and Vung Tau City Police Station) associated with the emergency preparedness and response organizations and must be aligned with the local emergency preparedness and response plans.

9.1 MITIGATION / MANAGEMENT PROCEDURES FOR OFFSITE TRAFFIC/VESSEL ACCIDENTS

Table 9.1 Mitigation / Management Procedures for Offsite Traffic/Vessel Accidents

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Offshore Emergency Situations					
Impacts from construction vessel collisions and/or sinking	**Avoidance and Mitigation Measures**				
	1.1	For the dredging vessels, strictly implement the dredging management plan under the section "Unplanned	HSSE Manager	Maintenance Dredging Sub-contractor	• Dredging Management Plan (LSP-1S01-0020)
	1.2	Strictly implement the proposed traffic management plan (marine) and worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Traffic Management Plan (Marine) (LSP-1S01-0018); and • Worker Occupational Health and Safety Management Plan (LSP-1S01-0019)
	1.3	A dedicated safety distance between construction area of marine components and navigation route will be provided to relevant authorities and local fisherman.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.4	The EPC contractor shall coordinate with relevant authorities such as the Southern Vietnam Maritime Safety Corporation and fishermen to disseminate information regarding the construction schedule, construction area, and activities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.5	The EPC contractor shall install buoy, navigation light, or warning sign as appropriate to demarcate the construction area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	1.6	The EPC Contractor and Sub-contractors must develop a vessel-specific EPRP.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.7	Every crew member or visitor must receive an induction on vessel-specific EPRP.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.8	Sufficient personnel trained in first aid will be on site or on board during working hours.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.9	All relevant personnel will be trained in the implementation of the EPRP.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.10	Posters will be displayed on site and on the vessels indicating: • Emergency contact numbers and hierarchy of responsibilities; • Names and phone numbers of appointed personnel trained in first aid; • A map and directions to the local hospital; and The location of muster point, emergency exits and firefighting equipment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.11	Fire extinguishers (CO_2 and water) will be available on every site and vessel and close to where hot works take place.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.12	All escape routes will be clearly defined and kept clear of obstructions at all times.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.13	All fire drill will be executed at least every six months.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	1.14	The EPC Contractor and Sub-contractors will establish one clear line of communication during an emergency.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	1.15	In the event of an emergency, EPC Contractor and Sub- contractors shall implement the EPRP.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.16	In the event of a collision or sinking, EPC Contractor, Sub-contractors and security personnel shall co-ordinate communication with the emergency services and the emergency response teams.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.17	All activities must be suspended to assist with emergency obligations.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.18	Emergency incidents may have a direct impact upon the construction activities, therefore, should such a situation arises, and the following steps must be taken as follows: • Stop all activities; • LSP's HSSE Manager and EPC Contractor HSSE Manager advise the Sub-contractors; • Advise stakeholder and other parties as appropriate; and Ensure incident report (as shown in ***Annex B***) and investigation is conducted by the Sub-contractors and EPC Contractor HSSE Team and submitted to LSP's HSSE Manager.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	1.19	In the event of a fire on a vessel, EPC Contractor, Sub- contractors and security personnel shall co-ordinate the calling of the emergency services and the emergency response teams. All activities must be suspended to assist with emergency obligations	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.20	In the event of a collision outside the Project area, a vessel that may be in danger of sinking must not be allowed within the Project area without the permission of LSP's HSSE Manager and EPC Contractor HSSE Manager.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/ Accident Investigation, Reporting and Record Keeping				
	1.21	Emergency incidents should take precedence over all investigations, recordkeeping and reporting. Ill or injured employees should be provided with the most appropriate medical response for the incident, as soon as possible.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.22	After the ill or injured employee has been provided with the most appropriate first aid care (ambulance, medical facility or on-site first aid), the supervisor or their designee shall initiate an incident investigation to correct hazards and prevent re-occurrence	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.23	An incident report (a shown in ***Annex B***), with as much information as possible should be completed within 24 hours.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	1.24	Additional information can be added to the reports, as it becomes available, and when the injured or ill employee has returned to work or is capable of providing the necessary information.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.25	The EPC Contractor HSSE Manager under the supervision of the LSP Construction HSSE Team shall correct all identified hazards immediately, and prevent reoccurrence of the incident and (when necessary) go over the incident and the corrective actions with the project supervisors and/or the employees.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
Potential Impacts from Onshore Emergency Situations					
Impacts from vehicle accidents	**Avoidance and Mitigation Measures**				
	1.26	Strictly implement towards the proposed traffic management plan (terrestrial) and worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Traffic Management Plan (Terrestrial) (LSP-1S01-0017); and • Worker Occupational Health and Safety Management Plan (LSP-1S01-0019)
	Corrective Actions				
	1.27	Stop work immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.28	Turn off the vehicle, if possible.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.29	Have passengers of the vehicle(s) exit the vehicle and move to a safe place, if possible.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Mitigation		Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	1.30	If there is an injury, follow the procedure for medical emergencies (Refer to).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	1.31	If there is a fuel/chemical spill, follow the procedure for spill emergency (Refer to).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	1.32	Please refer the procedures as mentioned in 1.21, 1.22,	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.2 MITIGATION / MANAGEMENT PROCEDURES FOR MAJOR LABOUR ACCIDENTS

Table 9.2 Mitigation / Management Procedures for Major Labour Accidents

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Offshore Emergency Situations					
Impacts from person falling in to water	**Measures for Slight Injury to Workers**				
	2.1	The first aider on site in the event of an accident will be responsible for assessing the extent of the injury and administer first-aid if required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.2	The first-aider should then report the accident to the EPC Contractor HSSE Manager, who in turn will report to LSP's HSSE Manager and record the incident.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.3	The initial incident report form, the casualty's statement and any witness statements will form the basis of the investigation.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Measures for Serious Injury to Workers				
	2.4	The first aider on site in the event of an accident will be responsible for assessing the extent of the injury and inform the EPC Contractor's OSC. Then, the OSC will call the Emergency Response Teams and the Medical Team. They will then inform the LSP Construction's HSSE Manager.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.5	The first aider or other EPC Contractor personnel shall inform EPC Contractor's OSC in out-of-hours situations. The EPC Contractor's OSC shall contact other members of LSP Construction HSSE Team as they require.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.6	If the injured party is conscious find out the details of whom, if anyone, the casualty wants to be informed about the accident. If the casualty is unconscious, the EPC Contractor's OSC with the assistances of the medical team and ERT will find out from their personnel files details of their next of kin and be ready to give these to the police who will follow the ambulance to the scene. It is likely that the police will want to notify the next of kin about the accident.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.7	Arrange for a member of LSP Construction's HSSE team, preferably LSP Construction's HSSE Manager to follow the casualty to the hospital. Their task is to offer assistance to the casualty after treatment has been given and to advise the LSP Construction HSSE Team of the situation.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.8	EPC Contractor OSC with the assistance of ERT will have initiated an investigation, and the incident file will be completed as persons are contacted and actions undertaken, therefore all personnel must remain on site until they have been spoken to.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.9	Do not start any cleanup operation until authorized to do so by the police and the LSP Construction's HSSE Team if they are involved. It may well be necessary to take certain steps to make the situation safe and to prevent further loss before clearance to do so is given by the authorities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Measures for Worker Fatality				
	2.10	Call the Emergency Response Teams and Medical Team and inform the EPC Contractor's OSC immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.11	The EPC Contractor's OSC will then report the incident to LSP Construction's HSSE Manager and LSP Construction's HSSE Team who shall contact the relevant parties.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.12	The EPC Contractor's OSC will then inform the security team and the security personnel will raise security to appropriate level informing the emergency control room and close/secure all entrances under the supervision of the EPC Contractor's OSC and LSP Construction's HSSE Manager. Access to the Emergency Response Team, LSP Construction's HSSE Team only. Arrange additional security guard as required to secure location.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.13	The Overall Project Director shall report the incident to the relevant departments at LSP head office (i.e. Corporate Communications, Legal, etc.).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.14	Once satisfied that all senior managers are aware of the incident, begin required internal investigation co-operating with LSP Construction HSSE Team and other parties when required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.15	Do not attempt to contact the next of kin – this is a police duty, but be prepared to provide next of kin details to the police.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.16	Do not let witnesses leave – they will be needed to assist with the investigation. If possible, keep witnesses in separate rooms and do not leave them alone.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.17	Do not start any clean-up operation until authorised to do so by the police and the LSP Construction HSSE Team if they are involved. It may well be necessary to take certain steps to make the situation safe and to prevent further loss before clearance to do so is given by authorities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.18	In the event of media interest, if they get in touch, they should be told to contact the police in the first instance. Under no circumstances should the media be spoken to or admitted to the Project site until the Overall Project Director has given permission for them to do so.	HSSE Manager	EPC Contractor HSSE Manager/Sub-ontractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	Measures for Third Party and Others Measures for Third Party and Others				
	2.19	Each construction work place has a trained first-aider on site, in the event of an accident it will initially be their responsibility to assess the extent of the injury, call an ambulance and administer first-aid as required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.20	The first-aider should then report the accident to the EPC Contractor's OSC who in turn will inform the EPC Contractor's ERT and Medical Team and then report the accident to LSP Construction's HSSE Manager.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.21	If the casualty's injuries appear to be serious or fatal, the EPC Contractor's OSC under the supervision of LSP Construction's HSSE Manager will inform the stakeholders as required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.22	In case of a fatality, The EPC Contractor's OSC will contact the security team and security personnel will raise security to appropriate level under the supervision of EPC Contractor's OSC and LSP Construction's HSSE Manager informing the emergency control room and close/secure all entrances. Access to the Emergency Response Team, LSP Construction's HSSE Team only. Arrange additional security guard as required to secure location.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.23	In the event of media interest, if they get in touch, they should be told to contact the police in the first instance. Under no circumstances should the media be spoken to or admitted to the Project site until the Overall Project Director has given permission for them to do so.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.24	The casualty's accident report and any witness statements will form the basis of the investigation which the LSP Construction HSSE team will initiate.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/ Accident Investigation, Reporting and Record Keeping				
	2.25	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
Potential Impacts from Onshore Emergency Situations					
Impacts from major labor accidents and medical emergency	**General Workforce Individual Responsibilities**				
	2.26	Report all injuries to your supervisor.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.27	Report to first aid station / clinic for proper treatment of minor injuries (first aid) immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.28	Trained First-Aiders will be available during all working hours in the First aid clinic.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.29	In case of serious medical emergency, the injured will be taken to the nearest medical facility / hospital (as shown in ***Annex B***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.30	When reporting a medical emergency by telephone or radio: • State name, company, badge number; • Location of emergency; and • Nature of emergency and assistance required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.31	Where safe to do so, stay in the location until assistance	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.32	When a fracture is suspected such as in the case of fall, do not move the injured, wait for paramedic.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Casualty Management				
	2.33	When a person has suffered any injury on site or sudden illness it is the responsibility of the site medical team to manage the casualty in the initial stages, which would normally mean ensuring that person receives first aid and if required, is taken to hospital for treatment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.34	Sub-contractors employing the individual injured must be informed. The Subcontractor will take over management of the casualty after this initial response by the site medical team. This would normally mean that the Subcontractor will arrange for on-going medical attention, family liaison and repatriation if required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Site Medical Facilities				

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.35	The primary (Level 1) healthcare facility is the site clinic covering the entire workforce. Its key functions are: • The provision of emergency response and medical care to resuscitate a casualty; and • Participation in patient transfer to the secondary or tertiary healthcare facility, if required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.36	The site clinic will be adequately equipped to an appropriate standard to manage site accidents and acute illnesses. A comprehensive list of medical equipment will be determined by Occupational Health Provider based upon the proposed worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and Safety Management Plan (LSP- 1S01-0019)
	2.37	Medical Service Company will manage and keep adequate stocks of supplies and required equipment in serviceable condition as per agreed contract conditions.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.38	A fully equipped ambulance with trained drivers must be provided on site.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Measures for Multi Casualty Incidents				
	2.39	In the event of an incident on site resulting in multi casualties, an area has been set aside for use as Triage. This area has equipment which can be deployed in the event. Trained first aiders and medical staff would mobilise the Triage if required. They would be assisted by persons trained in Triage administration and casualty handling	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.40	The secondary (Level 2) healthcare facility is one of the hospitals in Ba RiaVung Tau Province. Ba Ria Hospital is recommended and is used when the capabilities of the site clinic are exceeded. Its key functions are: • The management of inpatient medical and surgical cases requiring investigation and/or treatment; • The emergency resuscitation and stabilization of casualties, in preparation for their referral to a Level 3 facility if necessary; and • Poisonous bites from snakes, insect or other known poisonous creatures.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.41	The Level 3 healthcare facility shall be able to handle critical conditions that exceed the capabilities of the Level 2 facility. Such conditions include, but are not limited to: • Major trauma; • Neurosurgery; severe burns; cardiac surgery; • High-risk pregnancy; complex tropical diseases; • Organ failure and transplant; oncology; and • Major psychoses.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.42	Medical Evacuation (MEDEVAC) Medical staff, EPC Contractor and Sub-contractors may decide to transfer the casualty to another country or to the country of origin of the casualty if the situation demands.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Medical Evacuation (MEDVAC)				

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.43	If an injured person requires more medical treatment than can be offered at site then, once stabilised, they will be transported to the nearest local hospital. Ba Ria Hospital in Vung Tau Province is recommended.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.44	Any decision on MEDEVAC will take into account the available resources, the urgency of the transfer and the medical condition of the casualty.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.45	Transportation could be by ground, by water. The casualty escort could be a doctor, nurse or paramedic and in some cases a certified first-aider, dependent upon the severity of the condition. All should be trained and familiar with the equipment that they are expected to use.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	2.46	Report the injury to the first aider, stating your name, location, nature of emergency and assistance required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.47	Where safe to do so, stay in the location until assistance	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.48	The first aider will co-ordinate the first aid response; the First Aider can give first aid as far as they are capable. If further medical attention is required, then the injured shall be transferred to the nearest hospital for further treatment: • Hospital in Ba Ria – Vung Tau Province: Ba Ria Hospital; • Address: Khu pho 4, Phuoc Hung Ward, Vung Tau City, Ba Ria – Vung Tau, Vietnam; • Emergency Contact Number: 064 382 5178.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.49	When a snake bite happens, try to identify the snake (while not causing additional risk) as a reference to doctors later.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.50	Within two working days from receiving an occupational accident investigation record and the minutes of the meeting about disclosure of the occupational accident investigation record, the first aider must prepare statistics of the occurred occupational accidents and records in a Statistic Book with following principles: • Every occupational accident that has happened to workers must be recorded; • When a worker suffers from multiple occupational accidents, each accident must be separately recorded; and • Every occupational accident that has happened to workers that cause them to take one day off or more must be recorded.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.51	In certain circumstances, the use of a specialist medical evacuation organization may be desirable. In this case, EPC Contractor will have in place a call-off contract with the assistance company or specialist transport company. In certain circumstances, the use of a specialist medical evacuation organization may be desirable. In this case, EPC Contractor will have in place a call-off contract with the assistance company or specialist transport company.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Measures for Electrocution due to Electrical Cable Collision				
	Avoidance and Mitigation Measures				

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	2.52	Strictly implement towards the proposed worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and Safety Management Plan (LSP- 1S01-0019)
	Corrective Actions				
	2.53	Stop work immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.54	Isolate the power source, if possible and safe to do so	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.55	If there is an injury/medical need, follow the procedure for medical emergencies (Refer to 2.39, 2.40, 2.41, 2.42, 2.43, 2.44 and 2.45)	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	2.56	The LSP Construction's HSSE Manager will be informed by EPC Contractor's HSSE Manager and/or Sub- contractors for further action (e.g. stopping power and conduct repair), coordinate authority inspection and facilitate the interface with authorities/media, if required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Drills and Exercises				
	2.57	EPC Contractor HSSE Manager shall conduct regular medical emergency response drills. This shall include one major exercise per year which would involve local emergency services.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	2.58	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.3 MITIGATION / MANAGEMENT PROCEDURES FOR TYPHOONS AND ADVERSE WEATHER

Table 9.3 Mitigation / Management Procedures for Typhoons and Adverse Weather

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Offshore Emergency Situations					
Impacts from typhoons and tropical storm	3.1	EPC Contractor will continuously monitor National and Local meteorological data and issue timely warning to all personnel of adverse weather and issue instructions to stop work as necessary.	HSSE Manager	EPC Contractor HSSE Manager/Sub-ontractors	-
	3.2	The warnings advise of the expected dangerous phenomena, and include advice of what precautionary action must be taken to minimise the risk.	HSSE Manager	EPC Contractor HSSE Manager/Sub-ontractors	-
	3.3	In the event of an impending flash flood, the general emergency call will be given through site communication systems and all personnel must stop work, make their worksites safe and proceed to their assembly points.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.4	In the event of an extreme weather warning being issued, the EPC Contractor HSSE Team under the supervision of the LSP Construction HSSE Team will consult with the vessel sub-contractors, stevedoring companies and other parties to ensure all precautions are undertaken and if required construction activities will cease until storm warning is over.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Typhoons and Tropical Storm Evacuation				

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	3.5	EPC Contractor HSSE Manager will consult with appropriate authorities to determine the severity of local typhoons/tropical storm and update the current local preparedness and local plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.6	Construction materials that can be damaged by typhoons/tropical storm will be moved to enclosed areas.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.7	If the typhoons/tropical storm is severe, construction works will be shut down.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.8	A pre-evacuation area will be designated unless the evacuation is in danger.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.9	EPC Contractor HSSE Manager will broadcast via two-way short band radio and over cell phones, a predetermined alarm and announce the specific egress, gathering area and the typhoons/tropical storm situation. Acknowledgement from each on site team leader and their crews will be required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.10	EPC Contractor HSSE Manager will notify appropriate local authorities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.11	All visitors and sub-contractors will be guided by their key on site contact.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.12	EPC Contractor HSSE Manager will proceed to predetermined evacuation areas, perform a head count and provide further instructions to evacuated personnel.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.13	After all construction labours and employees are accounted for, they will leave the area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.14	Once the typhoons/tropical storm watch has been issued, the construction labours and employees shall	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		implement the following steps: • Stay calm and await instructions from the Emergency • Coordinator or the designated official; • Moor any vessels or boats securely, or move to a safe place if time allows; • Secure any loose items if possible; • Continue to monitor local TV and radio stations for instructions; • Move early out of low-lying areas or from the coast, at the request of officials; • If you are on high ground, away from the coast and plan to stay, secure the building, moving all loose items indoors and boarding up windows and openings; and • Collect drinking water in appropriate containers.			
	3.15	Once the typhoons/tropical storm warning has been issued, the construction labours and employees shall implement the following step: • Be ready to evacuate as directed by the emergency response teams and/or the designated official.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.16	During the typhoons/tropical storm event, the construction labours and employees shall remain indoors and consider the following: • Small interior rooms on the lowest floor and without windows; • Hallways on the lowest floor away from doors and windows; and	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		• Rooms constructed with reinforced concrete, brick, or block with no windows.			
	3.17	It is the responsibility of the EPC Contractor HSSE Manager under the supervision of the LSP Construction HSSE Team to develop a site specific emergency evacuation plan with procedures and emergency equipment placement.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Typhoons/Tropical Storm Reporting and Record Keeping				
	3.18	A report must be prepared for tropical storm event detailing; how the site was evacuated, and any damages to the construction site. This report can then be reviewed to assess the effectiveness of the plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.19	A typhoons/tropical storm review report shall be prepared by an appropriately qualified person(s) and must include: • Identification the properties and infrastructure affected by typhoons/tropical storm during the reportable event; • A comparison of the actual extent, level and duration of the typhoons/tropical storm event against the impacts predicted in the ESIA report; and • Where the actual extent of typhoons/tropical storm exceeds the predicted level with the consequent effect of adversely impacting on the properties, structures and infrastructure, identification of the measures to be implemented to reduce future impacts of	HSSE Manager	EPC Contractor HSSE Manager/Sub-ontractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		typhoons/tropical storm including the timing and responsibilities of the implementation.			
Potential Impacts from Onshore Emergency Situations					
Impacts from typhoons/tropical storm and adverse weather	3.20	EPC Contractor will continuously monitor National and Local meteorological data and issue timely warning to all personnel of adverse weather and issue instructions to stop work as necessary.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.21	The warnings advise of the expected dangerous phenomena, and include advice of what precautionary action must be taken to minimise the risk.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.22	In the event of an extreme weather warning being issued, the EPC Contractor HSSE Team under the supervision of the LSP Construction HSSE Team will consult with the stevedoring companies and other parties to ensure all precautions are undertaken and if required construction activities will cease until storm warning is over.	HSSE Manager	EPC Contractor HSSE Manager/Sub-ontractors	-
	Flood				
	Avoidance and Mitigation Measures				
	3.23	If necessary, Install dike with elevation +3.0 NDL and length of 3,720 meters to prevent seawater affecting to the project area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.24	Regularly inspect the drainage system to prevent debris accumulation.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.25	Monitor the weather forecast during severe weather period.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.26	The Overall Project Director, LSP Construction HSSE Team and EPC Contractor HSSE Team shall meet and	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		discuss all options available to decide on the best management practices for the control of run-off.			
	Storm Water Management				
	3.27	All construction sites shall have a storm water protection plan to limit the discharge of construction materials, waste, including chemicals, cleaning materials, mud and sand into a storm drain and other "navigable" waterways.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.28	The EPC Contractor is responsible for storm water protection on the site, and shall have designated a storm water manager for the duration of the project to monitor and correct the potential problematic discharge	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.29	The runoff water program, because it applies to ground water and water run-off must take into consideration all potential wastes leaving the construction site as follows: • Acid or power washing of buildings must be controlled in a manner acceptable to the relevant regulator authorities (Ba Ria – Vung Tau VEA/ DoNRE, Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee and Hamlet 2 Village People's Committee); • Areas for the washing of vehicles and concrete equipment must be controlled.; and • Oil must be stored in a manner to prevent the	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		release in the case of a spill.			
	3.30	The EPC Contractor shall control run-off with appropriate measures.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	Flood Evacuation				
	3.31	EPC Contractor HSSE Manager will consult with appropriate authorities (Ba Ria – Vung Tau VEA/ DoNRE, Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee and Hamlet 2 Village People's Committee) to determine the severity of local flooding and update the current local preparedness and local plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.32	Flood warning signs must be provided all the construction area (as shown in ***Annex D***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.33	Construction materials that can be damaged by water if submerged will be moved to either enclosed areas or elevated areas above the short-term local sheet flooding to remain dry.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.34	If the flooding is severe, construction works will be shut down.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.35	A pre-evacuation area will be designated unless the evacuation is in danger.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.36	EPC Contractor HSSE Manager a predetermined alarm and announce the specific egress, gathering area and the flooding situation. Acknowledgement from each on site team leader and their crews will be required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	3.37	EPC Contractor HSSE Manager will notify appropriate local authorities (as shown in ***Annex B***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.38	All visitors and sub-contractors will be guided by their key on site contact.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.39	EPC Contractor HSSE Manager will proceed to predetermined evacuation areas, perform a head count and provide further instructions to evacuated personnel.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.40	After all construction labourers and employees are accounted for, they will leave the area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.41	For the labourers or employees who work indoor, the following steps are recommended for: • Be ready to evacuate as directed by the emergency response team and the onsite key personnel; and • Follow the recommended evacuation routes.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Flood Recovery				
	3.42	Be aware of the likelihood of flood damage to the access roads when returning to the construction site. Despite looking stable, water damage to subsurface layer could lead to instability. Drive slowly and carefully.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.43	Ensure a qualified electrician is onsite to check any inundated or water effected power boxes and electrical equipment. Power is to be remained off until assessed by the electrician.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.44	Check for any relocation of equipment, stocks or debris moved by the flood water. Move back to a safe location.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	3.45	Check stockpiles for erosion or losses. Restore erosion or sediment control devices.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.46	Temporary onsite structures or partly constructed buildings must be checked for erosion or other water damage prior to entering them or continuing works.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.47	Check reticulated water and portable wastewater system on site. Water systems may need to be flushed, and portable toilets scheduled for immediate servicing.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Flood Reporting and Record Keeping				
	3.48	A report must be prepared for flood event detailing; how the site was evacuated, the flood depth observed and any damages to the construction site. This report can then be reviewed to assess the effectiveness of the plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.49	A flood review report shall be prepared by an appropriately qualified person(s) and must include: • Identification the properties and infrastructure affected by flooding during the reportable event; • A comparison of the actual extent, level and duration of the flooding event against the impacts predicted in the ESIA report; and • Where the actual extent and level of flooding exceeds the predicted level with the consequent effect of adversely impacting on the properties, structures and infrastructure, identification of the measures to be implemented to reduce future impacts of flooding including the timing	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		and responsibilities of the implementation.			
	Typhoons and Tropical Storm				
	Typhoons and Tropical Storm Evacuation				
	3.50	EPC Contractor HSSE Manager will consult with appropriate authorities (Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee, Vung Tau Port Authority and Long Son Frontier Commander) to determine the severity of local typhoons/tropical storm and update the current local preparedness and local plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.51	Construction materials that can be damaged by typhoons/tropical storm will be moved to enclosed areas.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.52	If the typhoons/tropical storm is severe, construction works will be shut down.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.53	A pre-evacuation area will be designated unless the evacuation is in danger.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.54	EPC Contractor HSSE Manager will use a predetermined alarm and announce the specific egress, gathering area and the typhoons/tropical storm situation. Acknowledgement from each on site team leader and their crews will be required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.55	EPC Contractor HSSE Manager will notify appropriate local authorities (Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee,	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee, Vung Tau Port Authority and Long Son Frontier Commander).			
	3.56	All visitors and sub-contractors will be guided by their key on site contact.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.57	EPC Contractor HSSE Manager will proceed to predetermined evacuation areas, perform a head count and provide further instructions to evacuated personnel.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.58	After all construction laborers and employees are accounted for, they will leave the area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	3.59	When a warning is issued by sirens or other means, the construction laborers and employees seek inside shelter. Consider the following: • Small interior rooms on the lowest floor and without windows; • Hallways on the lowest floor away from doors and windows; • Rooms constructed with reinforced concrete, brick, or block with no windows; • Stay away from outside walls and windows; • Use arms to protect head and neck; and • Remain sheltered until the typhoons/tropical storm threat is announced to be over.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Typhoons/Tropical Storm Reporting and Record Keeping				
	3.60	A report must be prepared for typhoons/tropical storm event detailing; how the site was evacuated, and any damages to the construction site. This report can then be reviewed to assess the	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		effectiveness of the plan.			
	3.61	A typhoons/tropical storm review report shall be prepared by an appropriately qualified person(s) and must include: • Identification the properties and infrastructure affected by typhoons/tropical storm during the reportable event; • A comparison of the actual extent, level and duration of the typhoons/tropical storm event against the impacts predicted in the ESIA report; and • Where the actual extent of typhoons/tropical storm exceeds the predicted level with the consequent effect of adversely impacting on the properties, structures and infrastructure, identification of the measures to be implemented to reduce future impacts of typhoons/tropical storm including the timing and responsibilities of the implementation.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.4 MITIGATION / MANAGEMENT PROCEDURES FOR CHEMICAL/OIL/SANITARY EFFLUENT SPILL

Table 9.4 Mitigation / Management Procedures for Chemical/Oil/Sanitary Effluent Spill

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Offshore Emergency Situations					
Impacts from oil/hydrocarbon spills from the dredging activities	**Avoidance and Mitigation Measures**				
	4.1	EPC Contractor must develop and implement vessel- specific Shipboard Oil Pollution Emergency Program (SOPEP).	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.2	Provide sufficient response materials and locate those in close proximity to storage of hydrocarbons as well as operational areas.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.3	Minimise the use of grease on moving parts.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.4	Have sufficient oil supportive and/or containment booms on board (dredgers and supportive vessels) that are regularly checked for damage and applicability.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.5	Material Safety Data Sheets (MSDSs) will be present on the vessel/ equipment for identification of appropriate spill clean-up and disposal methods.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.6	Identify and replace vulnerable hoses/ pipes/ couplings as a preventive measure.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.7	Assure vessels are equipped with sufficient low-pressure alarms and shutdown systems to minimise hydrocarbon loss to the marine environment in	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		the event of a burst hydraulic hose.			
	4.8	Periodic review of incident-reporting databases in order to identify areas and/or operations with high risk.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.9	Personnel on board vessel trained to deal with spill response.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-contractors	-
	4.10	Carry out vessel drills in accordance with MARPOL 73/78 requirements.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	Hydrocarbon Management				
	4.11	Bunkering procedure to be developed prior to the commencement of dredging activities for the Project.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.12	Adequate training of all relevant staff and crew on procedures related to refuelling and bunkering.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.13	Undertake visual monitoring of hoses, couplings and the sea surface pre-bunkering and during refuelling operations.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-contractors	-
	4.14	Maintain radio contact between refuelling vessels and the fuel supply when refuelling activities are being undertaken.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-contractors	-
	4.15	Install and use dry-break, breakaway couplings or similar technology where practicable during refuelling operations.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-contractors	-
	4.16	Use licensed supplier for fuel transfer and transport.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-contractors	-
	4.17	Monitor fuel levels to identify possible leakages promptly.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub-	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
				contractors	
	4.18	Maintain and regularly inspect hydraulic oil systems, hoses and couplings to minimise the potential for spills.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.19	EPC Contractor shall ensure that any equipment used will be fit for purpose, well maintained, and operated by an appropriately trained person.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.20	Include consideration of the potential for eco-toxicity in the selection process for hydrocarbons.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.21	Have hydrocarbons stored on deck bunded with 110% capacity of the total volume to prevent spillage.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.22	Inspect storage of all hydrocarbons regularly.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	Corrective Actions				
	4.23	All on board spills to be captured, mopped, contained and sent to shore for appropriate disposal. No spill- related (oily) waste products to be discharged to open waters.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.24	Spill response to be activated on occurrence of spill	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.25	Vessel masters to investigate source and cause of spill to prevent reoccurrence.	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	4.26	If necessary, change operation procedures and inform crew (via toolbox etc.).	HSSE Manager	EPC Contractor HSSE Manager/Dredging Sub- contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	4.27	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
Potential Impacts from Onshore Emergency Situations					

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Impacts from sanitary effluent spill	**Corrective Actions**				
	4.28	When there is a spill, immediately stop the flow.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.29	Use spades to collect the contaminated soil into the impermeable bags; note that there should be no contaminated soil left (contaminated soil must be collected to the full horizontal and vertical depth of the impact).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.30	Transfer the filled impermeable bag to the Waste Storage Area for storage (Refer to Waste Management Plan (Non-Hazardous Waste)).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Waste Management Plan (Non-Hazardous Waste) (LSP-1S01-0016)
	4.31	If the spill is larger than one spill kit or person can handle, request another worker to support (e.g. to bring more spill kits).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.32	Use work gloves, safety glasses, long sleeved tops and trousers during the above response process and minimize direct contact with the spilled effluent.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	4.33	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
Impacts from chemical/oil spill	**Corrective Actions**				
	Spill Response Planning				
	4.34	An inventory of all materials and chemicals on site will be held by the EPC Contractor's HSSE manager (refer to the proposed hazardous materials management plan). This will include an up-to-date record of all substances stored on site, giving the maximum quantity likely to be stored.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Hazardous Materials Management Plan (LSP-1S01-0016)

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		Material Safety Data Sheets should be attached for any substances posing a particular risk to health or the environment.			
	4.35	A site plot plan will be prepared and maintained up to date by EPC Contractor and issued to the EPC Contractor's ERT Response Teams (ERT) and CECT showing: • Locations of storage areas, tanks, processing areas with discharges, waste storage etc,; • Drainage systems, channels or other pathways for potential migration of spills. If surface water discharges to soakaways, show their location, depth and construction details; • The location of process areas and any on-site treatment facilities; and • Locations specified in layout drawing for spill treatment materials and their quantities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Cleanup Spills				
	4.36	Worksite supervisors are responsible for ensuring their worksites are clean and safe. Any very small spills (<5lt) of oil or fuel should be cleaned up immediately by those at the worksite using appropriate PPE. Small spills of chemicals should be notified immediately to the EPC Contractor's HSSE Manager acted as the EPC Contractor's OSC who will mobilise the ERT Suppression team to assist.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Containing Spills				
	4.37	Spills involving hazardous materials should first be contained to prevent spread of the material to	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		other areas. This may involve the use of temporary bunding, sand bags, dry sand, earth or proprietary booms/ absorbent pads. Materials or covers to plug or block drains may also be required.			
	4.38	In the event of a spill of flammable substances, fuel, etc, instructions on switching off/ isolating electrical equipment to prevent fire and explosion must be given.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.39	Oil or fuel should be absorbed onto inert carrier material (either sand or proprietary absorbent) to allow the material to be cleared up and removed to a safe place for disposal or further treatment as appropriate.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.40	A sufficient number of spill kits will be held on site. The kits will comprise materials appropriate for the substances to be cleaned up and will be located near to potential sources of spill.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Stabilization/ Dilution to Make Safe				
	4.41	Once the hazardous material has been contained to prevent spread of the material to other areas, the material should be treated wherever possible to render it safe.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.42	Acids and alkalis may be treated with appropriate neutralising agents. Due to the differing properties of the various groups of chemical, an appropriate treatment strategy with suitable chemicals should be established in each case in advance (as an emergency procedure). Reference should also be made to material safety data sheets	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		(MSDS) on site to ensure correct remediation procedures and appropriate PPE use.			
	Clean-up Materials				
	4.43	EPC Contractor HSSE department will review material safety data sheets and make recommendations for appropriate clean up materials to be made available. Sufficient quantities and types of spill control materials to contain any spills should be stored and made available on site at appropriate locations as directed by EPC Contractor Environmental Officer.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	4.44	All used spill control materials, absorbed chemicals, fuel, oils or other materials should be collected and placed in appropriate containers for safe disposal. Disposal must be by an approved local waste management company.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	LSP-1S01-0014 Waste management Plan (Hazardous)
	Incident/Accident Investigation, Reporting and Record Keeping				
	4.45	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.5 MITIGATION / MANAGEMENT PROCEDURES FOR FIRES AND EXPLOSIONS

Table 9.5 Mitigation / Management Procedures for Fires and Explosions

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Onshore Emergency Situations					
Impacts from fires and explosions	**Avoidance and Mitigation Measures**				
	5.1	Strictly implement towards the proposed hazardous materials management plan, the worker's accommodation management plan and the worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Hazardous Materials Management Plan (LSP-1S01-0016); • Workers Accommodation Management Plan (LSP-1S01-0004); and • Worker Occupational Health and • Safety Management Plan (LSP-1S01- 0019)
	5.2	The EPC Contractor and Sub-contractors have to prepare all necessary facilities/ programme for fire/explosion prevention and fighting during implementation of their components. The LSP Construction HSSE Management Team will supervise the compliance of contractor. The proposed plan must be consulted with the local relevant authorities (Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		Committee, Vung Tau City Fire Station and Vung Tau City Police Station) and must be aligned with the local current preparedness and response plan.			
	5.3	Contact municipality or local government to support for fire-fighting truck service when fire occurs (as shown in ***Annex B***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Fire Safety in the Accommodation Camps				
	5.4	Prior to the introduction of hydrocarbons into the site, EPC Contractor's HSSE Manager must provide the highest risk mitigation from fire for workers sleeping areas.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.5	The proposed worker occupational health and safety management plan and worker's accommodation management plan identify the minimum fire safety standards that must be adhered to in workers accommodation: • Building construction materials with inherently non- flammable materials; • Minimum travel distances to final exit doors; • Fire Detection systems installed and monitored 24/7; • Manual Fire Alarm call points; • Emergency lighting on all escape routes; and • Fire Extinguishers immediately available.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and Safety Management Plan (LSP-1S01-0019); and • Workers Accommodation Management Plan (LSP-1S01-0004)
	5.6	All equipment will be tested with records kept in accordance with the proposed worker occupational health and safety management plan and worker's accommodation management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and Safety Management Plan (LSP-1S01-0019); and • Workers Accommodation Management Plan (LSP-1S01-0004)

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	5.7	Good housekeeping standards will be maintained.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.8	Smoking not allowed in rooms.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.9	Cooking not allowed in rooms.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.10	No modification or alternation to electrical equipment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.11	All persons will receive a site induction upon arrival at accommodation sites which will include actions to be taken in case of fire and how to operate a fire extinguisher.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Fire and Explosion Safety in the Workplace				
	5.12	All persons working on site shall receive a site induction on arrival which shall include actions in the event of fire, this induction shall include: • Evacuation procedures from offices and other buildings in event of fire, assembly point procedures; • Actions in the event of site alarm and muster procedures; and • Selection and operation of firefighting equipment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.13	All areas will be provided with fire extinguishers as per project standards and additional fire extinguishers will be provided for higher risk activities i.e. welding and portable generator equipment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.14	Where naked flame hot work is being carried out a nominated fire watcher will be provided, their duties will be to ensure that there are sufficient fire extinguishers at the jobsite and there is no potential	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		for the spread of fire.			
	5.15	Fire watchers will undergo specific training for hazard recognition, raising the alarm and fire extinguisher training.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Other Emergencies				
	5.16	In addition to the provision of firefighting facilities for the construction sites the EPC Contractor and Sub-contractors shall ensure that adequate contingencies are in place for the rescue of casualties from road traffic accidents and other emergencies. This may be by the provision of rescue resources from the local community fire station or by the provision of the Project's own internal rescue equipment.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	Fire and/or Explosion Evacuation				
	5.17	The assemble points and the evacuation routes will be designated.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.18	EPC Contractor HSSE Manager will use a predetermined alarm and announce the specific egress, gathering area and the current fire and/or explosion situation. Acknowledgement from each on site team leader and their crews will be required.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.19	EPC Contractor HSSE Manager will notify appropriate local authorities (Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee, Hamlet 2 Village People's Committee, Vung Tau City Fire Station and Vung Tau City Police Station).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	5.20	All visitors and sub-contractors will be guided by their key on site contact.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.21	EPC Contractor HSSE Manager will proceed the following steps: • Disconnect utilities and equipment unless doing so jeopardizes his/her safety; • Coordinate an orderly evacuation of personnel; • Perform an accurate head count of personnel reported to the designated area; • Determine a rescue method to locate missing personnel; • Provide the Fire Fighting personnel with the necessary information about the facility; and • Perform assessment and coordinate weather forecast office emergency closing procedures.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.22	After all construction laborers and employees are accounted for, they will leave the area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.23	Area monitors must: • Ensure that all employees have evacuated the area; and • Report any problems to the Emergency Response Teams at the assembly areas.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.24	Assist all physically challenged employees in emergency evacuation.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	5.25	When the fire is discovered: • Activate the nearest fire alarm; • Inform EPC Contractor's HSSE Manager who will act as the EPC Contractor's OSC with the assistance of ERT;	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		• If the fire incident escalates to an emergency or crisis situation, which may need external support and resources, the OSC will mobilise the Level 2 Central Emergency Co-Ordination Team. They will mobilise to the incident management centre (IMC) located in the Project Offices; • The CECT will be led by the EPC Contractor Site Manager who assumes the role of Incident Commander (IC). The IC will maintain communications with the OSC on the incident, its management and resources deployed; • The IC will notify the local Fire Department by calling. • The telephone numbers of the local Fire Department are shown in ***Annex B***) in case of the CECT cannot handle the situation; and • If the fire alarm is not available, notify the site personnel about the fire emergency by the following means; o Voice Communication; o Short wave band Radio; and o Phone Call.			
	5.26	Fight the fire only if: • The Fire Department has been notified; • The fire is small and is not spreading to other areas. • Escaping the area is possible by backing up to the nearest exit; and • The fire extinguisher is in working condition and personnel are trained to use it.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	5.27	Upon being notified about the fire mergency, occupants must: • Leave the construction sites using the designated escape routes; • Assemble in the designated area; and • Remain outside until the competent authority (EPC Contractor HSSE Manager) announces that it is safe to re-enter.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	5.28	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.6 MITIGATION / MANAGEMENT PROCEDURES FOR LOSS OF RADIATION SOURCES/ EQUIPMENT

Table 9.6 Mitigation / Management Procedures for Loss of Radiation Sources/ Equipment

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Onshore Emergency Situations					
Impacts from loss of radiation sources/ equipment	**Avoidance and Mitigation Measures**				
	6.1	Strictly implement towards the proposed worker occupational health and safety management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and • Safety Management Plan (LSP-1S01-0019)
	6.2	Handling and using radioactive sources should strictly comply in accordance with Vietnamese Decree No. 50/1998/ND-CP dated July 16, 1998, Vietnamese Standards (TCVN 6866:2002): Radiation protection – Dose limits for radiation workers and public and Circular No. 04/2008/TT-BLDTBXH guiding procedures for registration and verification of machines, equipment and supplies subject to strict labour safety requirements must be registered and verified before being put into use.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	
	Locking of Sources of Radiation				
	6.3	Each radiographic exposure device, source changer and storage container shall be kept locked at all times except when under the	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		direct surveillance of a radiographer or radiographer trainee.			
	6.4	Each radiographic exposure device and source changer shall be locked and the key removed from any keyed lock prior to being moved or transported and also prior to being stored at a given location.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.5	Each sealed source shall be secured in its shielded position by locking the radiographic exposure device or source changer each time the sealed source is returned to its shielded position.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.6	Radiation machines shall be locked and the key removed at all times except when under the direct surveillance of a radiographer or a radiographer trainee.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Storage Precautions				
	6.7	Locked radiographic exposure devices, source changers, storage containers, transport containers that contain sealed sources and radiation machines shall be secured to prevent tampering or removal by unauthorized personnel. The licensee shall store radioactive material in a manner that will minimize danger from explosion or fire.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Receipt, Transfer and Disposal of Sources of Radiation				
	6.8	Each licensee or registrant shall maintain records showing the receipt, transfer and disposal of sources of radiation. These	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		records shall include the followings: • Name of the individual making the record; • Radionuclide; • Number of gigabecquerels or curies and the make; and • Model and serial number of each source of radiation and device.			
	6.9	Records shall be maintained for the relevant authorities' inspection until the radioactive material license or certificate of registration is terminated.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Form and Location of Records				
	6.10	Each record shall be legible throughout the specific retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of reproducing a clear copy throughout the required retention period.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.11	The record may also be stored in electronic media with the capability for producing legible, accurate and complete records during the required retention period.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.12	Records such as letters, drawings and specifications shall include all pertinent information, stamps, initials and signatures.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
	6.13	The licensee or registrant shall maintain adequate safeguards against tampering with and loss of records.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Requirements for Radiography Equipment Using Radiographic Exposure Devices				
	6.14	Each radiographic exposure device shall have attached to it one or more durable, legible, clearly visible label bearing the: • Chemical symbol and mass number of the radionuclide in the device; • Activity of the sealed source and the date on which this activity as last measured; • Model and serial number of the sealed source; and • Licensee's name, address and telephone number.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.15	Each radiographic exposure device, source assembly, or sealed source and all associated equipment shall meet the following criteria: • Manufactured on or before July 1, 1994 and used after January 10, 1996, shall meet the requirements specified in American National Standards Institute (ANSI) N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography" published January 1981, as NBS Handbook 136, exclusive if subsequent amendments or editions. However,	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		equipment used in industrial radiographic operations need not comply with section 8.9.2(c) of the Endurance Test in ANSI N432-1980, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the radiography equipment can realistically exert on the lever or crankshaft of the drive mechanism; and/or • Manufactured after July 1, 1994, and used after January 10, 1996, shall meet the requirements specified in ANSI N43.9-1991, "American National Standard for Gamma Radiography – Specifications for Design and Testing of Apparatus" published 1991, exclusive of subsequent amendments or editions.			
	6.16	Each radiographic exposure device, source changer and storage container shall be provided with a lock or lockable outer container designed to prevent unauthorized or accidental removal or exposure of a sealed source.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.17	Each radiographic exposure device and each transport container shall bear a permanent, durable, legible, clearly visible marking or label(s) which has, as a minimum, the	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		standard radiation caution symbol, and the following wording: CAUTION (OR DANGER) RADIOACTIVE MATERIAL NOTIFY CIVIL AUTHORITIES (OR NAME OF COMPANY)			
	Requirements for Radiography Equipment Using Radiation Machines				
	6.18	The control panel of each radiation machine used in the Project shall be equipped with: • A locking device to prevent the authorized use of the x-ray system or the accidental production of x-rays; and • A device that will give a positive indication of the production of x-rays whenever the radiation machine is energized.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Utilization Logs				
	6.19	Each licensee or registrant shall maintain current logs, which shall be kept available for inspection by the relevant authorities for 5 years from the date of the recorded event, showing for each source of radiation the following information: • A unique identifying number or code (e.g., serial number) for each radiation machine. For each radiographic exposure device, a description, make, model and	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		serial number of the radiographic exposure device, or transport or storage container in which the sealed source is located; • The name of the radiographer using the radiation machine. For radiographic exposure device, the identity and signature of the radiographer to whom assigned; and • The locations where used and dates each source of radiation is removed from storage and returned to storage.			
	Inspection and Maintenance				
	6.20	Each licensee or registrant shall ensure that visual and operability checks for obvious defects in survey instruments, radiation machines, radiographic exposure devices, transport and storage containers, associated equipment, source changers, source guide tubes and crank-out devices are performed at the beginning of each day of use, or work shift, to ensure that: • The equipment is in good working condition; • The sources are adequately shielded; and • Required labelling is present.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.21	Each licensee or registrant shall conduct a program of at least quarterly inspection and maintenance of radiation machines,	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		radiographic exposure devices, transport containers and source changers to assure proper functioning of components. All appropriate parts shall be maintained in accordance with manufacturer's specifications. Records of inspection and maintenance shall be maintained for inspection by the relevant authorities for 5 years.			
	6.22	If any inspection conducted pursuant to subsection 6.20 and 6.21 reveals damage to components, the device shall be labelled as defective and shall be removed from service until repairs have been made.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	General Actions				
	6.23	Identify the location of the radiation sources as well as all the people who may have unknowingly handled it.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.24	Information on the type of sources, its activity and other physical and chemical characteristics must be provided and be essential in assessing its potential hazard for the public.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.25	Efforts to track the sources would normally start at the last known location.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.26	Investigative work must be conducted to retrace the sequence of events.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.27	Reports from the medical community on	HSSE Manager	EPC Contractor HSSE Manager/Sub-	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		possible contaminated or overexposed victims, surveys by Radiation Protection Officer (RPO) and investigation by the police will be all possible sources of information on the source's whereabouts. Details and qualifications of RPO are presented in ***Annex E***.		contractors	
	6.28	Searching for a lost source with radiation monitoring equipment will be effective for a high activity unshielded, high energy gamma source, such as industrial radiography sources.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Specific Actions for Radiographer (Response Initiator)				
	6.29	Initiate a search immediately, using a radiation monitoring instrument. If the source has been lost in transit, retrace the planned route taken by the device and source and search visually and with the aid of radiation monitoring instruments.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.30	If it is concluded that the source is lost or stolen, notify the Radiation Protection Officer (RPO) and/or the regulatory authorities immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Specific Actions for Radiation Protection Officer (RPO)				
	6.31	Initiate emergency plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.32	When the source is found, inspect it for evidence of tampering and monitoring it for shielding damage.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.33	Perform a wipe test for leakage of radioactive	HSSE Manager	EPC Contractor HSSE Manager/Sub-	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		material.		contractors	
	6.34	If the test results are satisfactory, the source is returned to the manufacturer or qualified expert for detailed testing.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.35	If test results are not satisfactory, initiate emergency plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Specific Actions for Emergency Response Manager				
	6.36	Communicate with hospitals, the media and the public, when necessary, to help locate the missing source and, if necessary, warn of potential health effects.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Specific Actions for Radiographer				
	6.37	Immediately inform the RPO, who may require assistance from a qualified expert, manufacturer or the regulatory authorities.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.38	If instructed to do so, and wearing protective clothing (gloves), place the device and ancillary equipment in strong plastic bags to prevent spread of contamination.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	6.39	Place the protective clothing in a plastic bag and seal all bags used and keep the bags in a controlled area.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Incident/Accident Investigation, Reporting and Record Keeping				
	6.40	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.7 MITIGATION / MANAGEMENT PROCEDURES FOR HAZARDOUS MATERIALS RELEASE

Table 9.7 Mitigation / Management Procedures for Hazardous Materials Release

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Onshore Emergency Situations					
Impacts from the release of hazardous materials	**Avoidance and Mitigation Measures**				
	7.1	Strictly implement towards the proposed hazardous materials management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Hazardous Materials Management Plan (LSP-1S01-0016)
	7.2	EPC Contractor shall make LSP or LSP's designee/representative aware of any hazardous materials found on site that were not previously addressed or identified at the beginning of the project.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.3	EPC Contractor shall notify LSP or LSP's designee/representative about any hazardous material incidents on site, regardless of size or quantity.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.4	Hazardous materials shall be contained and labeled in a manner acceptable to the authority having jurisdiction.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.5	Hazardous materials, including paints, adhesives, etc. shall not be left on site, even after a project completion, unless specifically permitted by LSP.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.6	Hazardous materials including chemicals, cleaning agents, including those used for power washing of	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

		buildings and oil shall not be discharged or disposed of; to driveway, ground, road, sewer, storm drain or trash / waste receptacle or any other non-approved manner.			
	7.7	EPC Contractor shall identify, with appropriate environmental assistance, the most appropriate manner in which to properly discard the hazardous material or waste, in accordance with the requirements of the local and national environmental protection requirements.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Pre-emergency Planning and Co-ordination				
	7.8	Arrangements have been made to coordinate LSP's Emergency Response Teams for hazardous materials and applicable emergency services with the local Police Department, Fire Department and the Fire Department's Hazardous Materials Team. Copies of the plan and all revisions shall be submitted on an annual basis or as the plan is amended to the aforementioned authorities. Details of the emergency contact lists are shown in ***Annex B***.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	Communication				
	7.9	Leaks, spills or other types of contamination to air, soil or water which include chemicals, gasoline, hydraulic fluids and oils must be reported immediately.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.10	If the leak or spill is a "Reportable Quantity (RQ)" of a chemical agents or gas (as specified in each MSDS according to CERCLA/SARA 302), spilled directly to water regardless of quantity, or spilled to a direct pathway to water (i.e. storm drain), the owner or	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

		the owner's designee / representative must be notified, the Ba Ria - Vung Tau VEA/ DoNRE, Ba Ria – Vung Tau Provincial People's Committee, Vung Tau City People's Committee, Long Son Commune People's Committee, Rach Gia Hamlet Village People's Committee and Hamlet 2 Village People's Committee shall be notified.			
	Site Characterization and Analysis				
	7.11	The following factors shall be considered during the preliminary evaluation to assist in determining the appropriate plan of action: Whether the incident could involve a fire, spill, release or leak; • The quantity of the material and its harmful nature; • The type of container and its condition; • The location, time and weather conditions; • Any exposures to life, property and the environment; and • Available resources.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.12	During an incident, a more detailed evaluation of the site's specific characteristics shall be performed by emergency response team members. The entry team shall identify existing site hazards to the On-Scene Commander. This information will aid in the selection of appropriate engineering, containment and clean-up controls, as well as the selection of personal protective equipment for remaining response team members and support staff members.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

	Site Control				
	7.13	To prevent employee/visitor contamination and harm during emergency response activities, site control activities including the following shall be used: • Site maps (e.g., blueprints, floor exit plans); • Designation of hot, warm and cold zones. Details of the designation is shown in Annex F; • Communication center (a central location where all communications and plans will originate); and • Emergency decontamination protocol.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.14	The On-Scene Commander shall use information provided from the site characterization and analysis survey to determine the three emergency response zones (Hot Zone, Warm Zone and Cold Zone). The aforementioned zones shall be determined by using the following guidelines: • Hot Zone (Exclusion Zone): The area containing the incident itself, including the product and its container. This area may be immediately dangerous to life and health (IDLH). Personnel permitted in this zone shall be dressed in the appropriate personal protective equipment; • Warm Zone (Contamination Reduction Zone): A larger geographical area surrounding the Hot Zone that is considered safe for workers to enter with limited personal protective equipment unless assigned a task requiring increased protection; and • Warm Zone (Support Zone): The area adjacent to the Warm Zone that is restricted to	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

		administration and emergency response personnel. Minimum personal protective equipment may be required such as protective gloves and coveralls.			
	Monitoring Equipment				
	7.15	Quantitative measurements of hazardous materials within the environment shall be made prior to any entry.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.16	Monitoring shall be conducted at the completion of a response to determine if the area is safe for re-entry.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.17	The appropriate equipment will be used in order to carry out hazardous atmospheric assessments.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Safe Distances and Places of Refuge				
	7.18	Safe distances will be determined by the On-Scene Commander if the hazardous materials incident is a transportation incident or at a fixed site facility other than those listed.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.19	In the event that large numbers of individuals must be evacuated notification will be made to the local relevant emergency services (as shown in ***Annex B***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Site Security				
	7.20	The On-Scene Commander will assign a site security and control officer, which could include but not be limited to the local police station, fire station (as shown in ***Annex B***) and or other responsible person or persons to perform site security and control.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Evacuation Routes and Procedures				
	7.21	In the event that the evacuation of residents of the	HSSE Manager	EPC Contractor HSSE Manager/Sub-	-

		area surrounding the emergency scene is necessary, the evacuation order will be issued by the Incident Commander unless a state of emergency has been declared, in which case the order shall be issued by the EPC Contractor HSSE Team.		contractors	
	7.22	Notification to the public will be made using radio and television broadcasts, mobile public address systems, and door to door canvassing as appropriate.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.23	Evacuation routes shall be selected to avoid exposure to the hazardous material.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.24	In the event that large numbers of individuals must be evacuated, notification will be made to the local relevant emergency services (as shown in ***Annex B***).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Emergency Medical Treatment and First Aid				
	7.25	Available medical personnel shall include at least one Emergency Medical Treatment (EMT) facility.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.26	In the event that emergency response personnel require first aid to exposure to hazardous materials, such treatment will follow standard medical protocols and information from Material Safety Data Sheets.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	7.27	In the event that emergency personnel receive treatment at a hospital, information on the nature of the hazardous material involved will be provided to hospital personnel.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Critique of Response and Follow-Up				
	7.28	A post incident critique will be held as soon as is practical to evaluate the response to the incident. This post incident critique will be held as soon as is practical to evaluate the response to the incident	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

		and make recommendations with regard to additional planning, training and/or equipment. No media representation will be allowed at the critique.			
	Incident/Accident Investigation, Reporting and Record Keeping				
	7.29	Please refer the procedures as mentioned in 1.21, 1.22, 1.23, 1.24 and 1.25.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

9.8 MITIGATION / MANAGEMENT PROCEDURES FOR PANDEMIC AND OUTBREAK OF COMMUNICABLE DISEASES OR FOOD POISONING OF WORKERS

Table 9.8 Mitigation / Management Procedures for Pandemic and Outbreak of Communicable Diseases or Food Poisoning of Workers

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
Potential Impacts from Onshore Emergency Situations					
Impacts from pandemic and the outbreak of communicable diseases	**Avoidance and Mitigation Measures**				
	Preparation of Action Plan				
	8.1	***Table 9.9*** details the actions to be taken in order to position the Project so that it can implement this plan at any time.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Reduced Capacity and Pandemic/ Outbreak Phases				
	8.2	EPC Contractor should carry out a gap analysis to identify the impact of loss of human resources on business critical activities in both the 'Reduced Capacity' and 'Pandemic/ Outbreak Capacity' phases. This process will: • Identify key personnel, processes, systems, assets and suppliers are critical to business survival; • Identify risk or consequence to the business if those systems or processes were lost or unavailable; and • Identify potential gaps/shortfalls at both the 'Reduced Capacity' and 'Pandemic/ Outbreak Capacity' levels.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		Table 9.10 details the actions to be taken in order to reduce the capacity phase.			
	Pandemic/ Outbreak Capacity Phase				
	8.3	***Table 9.11*** details the actions to be taken during the pandemic/ outbreak capacity phase.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	General Avoidance and Mitigation				
	8.4	Strictly implement towards the proposed worker occupational health and safety management plan and worker's accommodation management plan.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health and Safety Management Plan (LSP-1S01-0019); and • Workers Accommodation Management Plan (LSP-1S01-0004)
	8.5	Advise the employees, EPC Contractor and Sub-contractors and visitors on increased personal hygiene measures. Advice should be posted at office entrances, in toilets and wash-rooms.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.6	Vigorously encourage employees who feel unwell to stay at home rather than coming into work and infecting others. Or if in Labour Camp hospitalization should be considered.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.7	Provide enhanced personal cleaning facilities – for example, alcohol based hand gel disinfectant in offices, building entrances, toilets, and disposable paper tissues (together with covered waste bins).	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.8	Increase the frequency and intensity of the site cleaning routine – particularly of surfaces and objects touched frequently by many people. Examples include:	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		• Door handles; Work station items – desk surfaces, telephones, drawer handles and keyboards; and • Waste bins (possible contaminated tissues).			
	8.9	Make sure, during an actual pandemic, that cleaning staff are adequately trained and protected.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.10	Review hand drying methods in washrooms. Adequate hand drying is essential for cleansing hands of microbes. Roller towels, if employed, must be regularly renewed. Cotton towels for multiple uses are unacceptable. The most effective hand drying (from a microbial perspective) is achieved by a combination of disposable paper towels and hot air dryers (either automatic or operated by a large 'elbow button').	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.11	Be prepared to actively discourage some activities during the course of a pandemic e.g.: • Sharing of work stations; • Multiple use of telephones; and • Hand shaking.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.12	Discourage casual visitors to site locations.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	8.13	Covering your nose and mouth when coughing or sneezing, using a tissue when possible.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.14	Disposing of dirty tissues promptly and carefully.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.15	Avoiding non-essential travel and overcrowding	HSSE Manager	EPC Contractor HSSE Manager/Sub-	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		whenever possible.		contractors	
	8.16	Maintaining good basic hygiene, for example washing hands frequently with soap and water to reduce the spread of the virus from hands to face or to other people.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.17	Cleaning hard surfaces (e.g. door handles, meeting room table tops, stair handrails, etc.) frequently using a normal cleaning product.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	8.18	EPC Contractor and Sub-contractors should assist workforce members by: • Ensuring all people are aware of coughing or sneezing etiquette; • Possibly providing additional tissues; • Having an efficient means of disposal for tissues; • Possibly modifying travel policy; • Possibly reducing overcrowding by increasing the flexibility of working hours; • Enhancing maintenance of toilet facilities; • Possibly providing alcohol-based soap as a substitute for soap and water; • Enhancing cleaning service provided by Sub-contractors; • Considering alternate plans for cleaning in the absence of Sub-contractors; and • Increase working remotely/from home.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
Impacts from food poisoning of workers	**Avoidance and Mitigation Measures**				
	8.19	Strictly implement towards the proposed worker occupation health and safety management plan and	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	• Worker Occupational Health

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		worker's accommodation management plan.			and Safety Management Plan (LSP- 1S01-0019); and • Workers Accommodation Management Plan (LSP-1S01-0004)
	Protection Aspects				
	8.20	Special attention must be paid to the services associated with the protection of food, namely: • Water supply; • Waste disposal; and • Vector control.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Corrective Actions				
	8.21	In case the laborers or employees begin manifesting sign of food poisoning, the following steps must be strictly implemented: • Immediately call or see the medical teams; • Determine if they all ate the same thing; and • Advise the responders of the potential source of contamination.	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-
	Pandemic/ Outbreak Reporting and Record Keeping				
	8.22	EPC Contractor under the supervision of the LSP Construction HSSE Team should establish a process for tracking the health status of employees so that at least a certain amount of absenteeism can be forecasted. For instance, EPC Contractor and Sub-contractors should record who is sick and when they became sick so that return dates can be predicted, similarly for those in voluntary	HSSE Manager	EPC Contractor HSSE Manager/Sub-contractors	-

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	LSP Supervision	Contractors Implementation	Related Plans
		quarantine or looking after sick family members. Records should also be maintained of those who have had flu and recovered as these people will be immune in future pandemic/ outbreak waves.			

Table 9.9 Full Capacity of Pre-pandemic and Pre-Outbreak Phase

ITEM	CATEGORY	ACTION	RESPONSIBLE PERSON
1	Plan co-ordination	Ensure Planning Co-ordinator and deputy are identified and operational.	EPC Contractor GM
2	Plan Effectiveness	Test plan during a Business Continuity exercise involving key stakeholders.	EPC Contractor GM
3	Suppliers	Ensure adequate stocks of materials and equipment are procured.	EPC Contractor Procurement Manager
4		Secure necessary critical supplies following stock review.	EPC Contractor Procurement Manager
5		Maintain contact with Sub-contractors to determine availability of resources. Make preparations to bring in additional resources at short notice.	EPC Contractor Procurement Manager
6	Medical	Issue note to EPC Contractor and Sub-contractors personnel to encourage seasonal flu vaccination.	EPC Contractor HSSE Manager
7		Ensure all flu pandemic supplies (e.g., face masks) and other communicable diseases protection are available and of sufficient quantity.	EPC Contractor HSSE Manager
8	Communications	Make sure enough trained staffs are available to maintain communications throughout the Project.	EPC Contractor GM
9	IT Systems	Carry out survey to establish which personnel may be able to work from home during a pandemic and outbreak of communicable diseases and what systems and equipment would be required.	EPC Contractor GM
10	Human Resources (HR)	Develop process to record and monitor sick and infected personnel as well as their dependents.	EPC Contractor HR Manager

Table 9.10 The Actions to be taken in order to Reduce Capacity Phase

ITEM	CATEGORY	ACTION	RESPONSIBLE PERSON
1	Operations	Convene regular meetings of the Pandemic/ Outbreak Contingency Team (P/OCT) to monitor and oversee the situation.	EPC Contractor GM
2	Hygiene	Recruit additional cleaning staff for offices, and other communal places.	EPC Contractor HR Manager
3		Issue posters and other material to remind all personnel to wash hands frequently.	EPC Contractor HSSE Manager
4		Limit face-to-face meetings to a minimum.	EPC Contractor GM
5	PPE	Issue face masks to all personnel.	EPC Contractor HSSE Manager
6	People	Consider option of recalling foreign travellers.	EPC Contractor HR Manager
7		Implement tracking system for infection status of employees.	EPC Contractor HR Manager
8		Explore flexible working arrangements to ensure essential work is covered.	EPC Contractor HR Manager
9		Alert manpower providers of potential need for replacement staff	EPC Contractor HR Manager
10	Communication	Maintain on-going communications with Authorities	EPC Contractor HSSE Manager
11		Ensure workforce is kept up to date with infection status and EPC Contractor actions to deal with a pandemic	EPC Contractor HSSE Manager

Table 9.11 The Actions to be taken during the Pandemic/ Outbreak Capacity Phase

ITEM	CATEGORY	ACTION	RESPONSIBLE PERSON
1	Operations	P/OCT to continue monitoring situation and respond in line with advice from Employer and the Authorities.	EPC Contractor GM
2	Hygiene	Maintain continuous cleaning of work places and communal areas.	EPC Contractor GM
3		Cancel all meetings, use tele-conferencing.	EPC Contractor GM
4		Cancel all visitors to site.	EPC Contractor GM
5	Medical	Manage and ensure appropriate distribution of medical supplies.	EPC Contractor Occupational Health Provider
6	People	Essential personnel only on site. Office based staff to stay away from site.	EPC Contractor GM
7		Monitor workforce levels in all areas and mobilise replacement workers when necessary.	EPC Contractor HR Manager
8		Use whatever flexible working arrangements are needed to ensure essential work is covered.	EPC Contractor HR Manager
9	Communication	Maintain communication with Employer and the Authorities.	EPC Contractor GM
10		Continue to update workforce on the developing situation.	EPC Contractor HSSE Manager

10 MONITORING

The emergency preparedness and response monitoring plan has been developed to track the effectiveness of the mitigation measures during the construction phase.

LSP should undertake additional monitoring if the monitoring program records shows the significance increase of the property damages, the injury and the fatality of the workers.

10.1 LSP HSSE TEAM

In order to assess the effectiveness of the mitigation / management measures and identify the need for further action, LSP's emergency preparedness and response monitoring program outlined in ***Table 10.1*** will be followed.

Should the monitoring program note any non-compliance with the EPRPs, corrective action will be taken to ensure the relevant activity returns to compliance in a timely manner and that any corrective action is appropriate and effective. Any corrective actions undertaken must be recorded and approved.

Table 10.1 Monitoring Programme

Aspect, Potential Impact / Issue	Reference of Relevant Mitigation Measure *	Monitoring Location	Monitoring Parameters	Monitoring Frequency	Applicable Standards	Responsibility	Reporting
Offsite Traffic/Vessel Accidents							
Potential Impacts from Offshore Emergency Situations							
Impacts from construction vessel collisions and/or sinking	1.1	**Refer to the monitoring program as mentioned in the dredging management plan (LSP-1S01-0020).					
	1.2	**Refer to the monitoring programs as mentioned in the traffic management plan (marine) (LSP-1S01-0011) and the worker occupational health and safety management plan (LSP-1S01-0019).					
	1.3, 1.4, 1.5, 1.6, 1.7, 1.8,1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.18,1.19, 1.20, 1.21, 1.22, 1.23, 1.24 and 1.25	At the construction site of seaport	• Incident reporting; • Number of emergencies; • Number of trained first aiders ; and • Vessels and equipment inspection regarding emergency response	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Potential Impacts from Onshore Emergency Situations							
Impacts from vehicle accidents	1.26	*Refer to the monitoring programs as mentioned in the traffic management plan (terrestrial) (LSP-1S01-0010), the worker occupational health and safety management plan (LSP-1S01-0019).					
	1.27, 1.28, 1.29, 1.30, 1.31 and 1.32	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Incident reporting; • Number of emergencies; and • Number of trained first aiders	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Major Labour Accidents							
Potential Impacts from Offshore Emergency Situations							
Impacts from person	2.1, 2.2, 2.3, 2.4, 2.5,	At the construction site of	• Incident reporting;	Every week during	N/A	EPC Contractor	Quarterly or in

falling into water.	2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24 and 2.25	seaport	• Number of emergencies; • Number of trained first aiders ; and • Personal protection equipment inspection regarding emergency response	the construction phase.		HSSE Manager/ Sub-contractors	the event of an incident
Potential Impacts from Onshore Emergency Situations							
Impacts from major labor accidents and medical emergency	2.52	**Refer to the monitoring program as mentioned in the worker occupational health and safety management plan (LSP-1S01-0019).					
	2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.53, 2.54, 2.55, 2.56, 2.57 and 2.58	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Incident reporting; • Number of emergencies; and • Number of the injury and fatality	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Typhoons/ Adverse Weather							
Potential Impacts from Offshore Emergency Situations							
Impacts from typhoons and tropical storm	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18 and 3.19	At the construction site of seaport	• Typhoons/ Tropical storm review reporting; • Number of typhoons/ • tropical storm event; and • Number of the injury, fatality or missing (if	Every time after the finish of tropical storm event.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident

			nessesary)				
Potential Impacts from Onshore Emergency Situations							
Impacts from typhoons/tropical storm	3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, 3.45, 3.46, 3.47, 3.48, 3.49 and 3.50	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Flood review reporting; • Number of flood event; and • Number of the injury, fatality or missing (if necessary)	Every time after the finish of flood event.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Impacts from flooding	3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60 and 3.61	At the construction site of the petrochemical plant and facilities; and Along the transportation routes	Typhoons/ Tropical storm review reporting; Number of typhoons/ tropical storm event; and Number of the injury, fatality or missing (if necessary)	Every time after the finish of tropical storm event.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Chemical/ Oil/ Sanitary Effluent Spill							
Potential Impacts from Offshore Emergency Situations							
Impacts from oil/hydrocarbon spills from the dredging activities	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26 and 4.27	• At the construction dredging area	• Incident reporting; • Number of emergencies; and • Daily vessel logs	Every week during the construction dredging activities.	N/A	EPC Contractor HSSE Manager/ Dredging Contractors	Quarterly or in the event of an incident

Potential Impacts from Onshore Emergency Situations							
Impacts from sanitary effluent spill	4.30	**Refer to the monitoring program as mentioned in the waste management plan (non-hazardous waste) (LSP-1S01-0015).					
	4.28, 4.29, 4.31, 4.32 and 4.33	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Incident reporting; and • Number of emergencies	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Impacts from sanitary effluent spill Impacts from sanitary effluent spill	4.28, 4.29, 4.31, 4.32 and 4.33	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Incident reporting; and • Number of emergencies	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Impacts from chemical/oil spill	4.34	**Refer to the monitoring program as mentioned in the hazardous materials management plan (LSP-1S01-0016).					
	4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44 and 4.45	• At the construction site of the petrochemical plant and facilities; and • Along the transportation routes	• Incident reporting; • Number of emergencies; and • Soil and groundwater analysis result at the spill contaminated site.	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Fires and Explosions							
Potential Impacts from Onshore Emergency Situations							
Impacts from fires and explosions	5.1	**Refer to the monitoring program as mentioned in the hazardous materials management plan (LSP-1S01-0016), the worker's accommodation management plan (LSP-1S01-0004) and the worker occupational health and safety management plan (LSP-1S01-0019).					
	5.5 and 5.6	**Refer to the monitoring program as mentioned in the worker's accommodation management plan (LSP-1S01-0004) and the worker occupational health and safety management plan (LSP-1S01-0019).					
	5.2, 5.3, 5.4, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17,	• At the construction site • of the petrochemical plant and facilities;	• Incident reporting; • Number of emergencies; and	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident

	5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27 and 5.28	• At the worker's accommodation	• Number of the injury and fatality; and • Personal protection equipment inspection regarding emergency response				
Loss of Radiation Sources/ Equipment							
Potential Impacts from Onshore Emergency Situations							
Impacts from loss of radiation sources/ equipment	6.1	**Refer to the monitoring programs as mentioned in the worker occupational health and safety management plan (LSP-1S01-0019).					
	6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30, 6.31, 6.32, 6.33, 6.34, 6.35, 6.36, 6.37, 6.38, 6.39 and 6.40	• At the construction site where radiography will be used for testing for leakage	• Incident reporting; • Number of emergencies; and • Number of the injury and fatality	Every week during the construction phase when the radiography work will implement.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Hazardous Materials Release							
Potential Impacts from Onshore Emergency Situations							
Impacts from the release of hazardous materials	7.1	**Refer to the monitoring program as mentioned in the hazardous materials management plan (LSP-1S01-0016)					
	7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 7.14, 7.15, 7.16, 7.17, 7.18, 7.19, 7.20, 7.21, 7.22, 7.23, 7.24,	• At the construction site of the petrochemical plant and facilities	• Incident reporting; • Number of emergencies; and • Number of the injury and fatality; and • Personal protection equipment inspection	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident

	7.25, 7.26, 7.27, 7.28 and 7.29		regarding emergency response				
Pandemic and Outbreak of Communicable Disease or Food Poisoning of Workers							
Potential Impacts from Onshore Emergency Situations							
Impacts from pandemic and the outbreak of communicable diseases	8.4	**Refer to the monitoring program as mentioned in the workers accommodation management plan (LSP-1S01-0004) and worker occupational health and safety management plan (LSP-1S01-0019).					
	8.1, 8.2, 8.3, 8.5, 8.6, 8.7, 8.8, 8.19, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17 and 8.18	• At the construction site of the petrochemical plant and facilities; and • At the worker's accommodation	• Pandemic/ Outbreak Review reporting; • Number of the sick laborers; and • Pandemic/ Outbreak protection equipment inspection	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident
Impacts from food poisoning of workers	8.19	**Refer to the monitoring program as mentioned in the worker's accommodation management plan (LSP-1S01-0004) and worker occupational health and safety management plan (LSP-1S01-0019).					
	8.20, 8.21 and 8.22	• At the construction site of the petrochemical plant and facilities; and • At the worker's accommodation	• Outbreak Review reporting; • Number of the sick labors; and • Outbreak protection equipment inspection	Every week during the construction phase.	N/A	EPC Contractor HSSE Manager/ Sub-contractors	Quarterly or in the event of an incident

** See Table 9.1 to Table 9.8 for mitigation measure.*

11 AUDITING, REPORTING AND REVIEW

An Auditing, Reporting and Review Program are required to ensure that the mitigation/ management measures are appropriate in controlling the identified emergency situations during the construction phase.

11.1 LSP CONSTRUCTION HSSE TEAM

11.1.1 Auditing and Reporting

To ensure compliance with the requirements of these EPRPs (LSP-1S01-0002), internal inspections and audits will be undertaken by LSP. The scope of the internal auditing and reporting programme to be undertaken by the contractor is shown in ***Table 11.1***.

11.1.2 Plan Review

Management Reviews of these plans may be triggered in the event of significant control weaknesses being identified from audits, re-organisations, changes in the scope of activities, major modifications, new appreciation of technology or as follow up to an incident, etc. during the construction phase.

Management reviews by the LSP Construction HSSE Team will be carried out annually of the LSP Construction HSSE management system. In certain cases, management reviews will be more frequent where the risks warrant it.

Table 11.1 Auditing and Reporting Programme

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
On submission of the monitoring reports from the dredging activities	1.1	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that may give risk to emergency situations and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
On submission of the monitoring reports from the marine traffic activities	1.2	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that may give risk to emergency situations and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
On submission of the monitoring reports from the terrestrial traffic activities	1.26	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that may give risk to emergency situations and provide support to identifying	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
			appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	
On submission of the monitoring reports of the worker occupational health and safety	1.2, 1.26, 2.36, 2.52, 5.1, 5.5, 5.6, 6.1, 8.4 and 8.19	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that may give risk to emergency situations and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
On submission of the monitoring reports of the non-hazardous wastes management	4.30	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that can may give the risk of the leaks or spills of non-hazardous wastes from the storage areas and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
On submission of the monitoring reports of the hazardous materials management	4.34, 5.1, 7.1	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that can may give the risk of fire and explosion of the hazardous	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
			materials from the storage areas and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	
On submission of the monitoring reports of the workers accommodation management	5.1, 5.5, 5.6, 8.4 and 8.19	HSSE Manager	Review the submitted monitoring reports to assess the compliance status of relevant operations that may give risk to emergency situations and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
Quarterly Management Review of construction activities or Incident Report	1.3, 1.4, 1.5, 1.6, 1.7, 1.8,1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.27, 1.28, 1.29, 1.30, 1.31, 1.32, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.53, 2.54, 2.55, 2.56, 2.57, 2.58, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18,	HSSE Manager	Review annual reports or incident report for: construction vessels and vehicles accidents, drowning incidents, chemical/fuel spill, sanitary effluent spill, electrical cable collision and fire explosion to assess their impacts from emergency situations and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
	4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.31, 4.32, 4.33, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 5.2, 5.3, 5.4, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30, 6.31, 6.32, 6.33, 6.34, 6.35, 6.36, 6.37, 6.38, 6.39, 6.40, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 7.14, 7.15, 7.16, 7.17, 7.18, 7.19, 7.20, 7.21, 7.22, 7.23, 7.24, 7.25, 7.26, 7.27, 7.28 and 7.29			
Quarterly Management Review of typhoons/ tropical storm review report or Incident Report	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, .45, 3.46, 3.47, 3.48, 3.49 and 3.50	HSSE Manager	Review annual reports on tropical storm event detailing; how the site was evacuated, and any damages to the construction site and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
Quarterly Management Review of flood review report or Incident Report	3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60 and 3.61	HSSE Manager	Review annual reports on flood event detailing; how the site was evacuated, the flood depth observed and any damages to the	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
			construction site and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	the site
Quarterly Management Review of pandemic/ outbreak review report or Incident Report	8.1, 8.2, 8.3, 8.5, 8.6, 8.7, 8.8, 8.19, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, 8.20, 8.21 and 8.22	HSSE Manager	Review annual reports on a process for tracking the health status of employees and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective.	Archive Monitoring Report in an orderly manner for external auditing All reports are to be maintained at the site
Incident Report, including documented report on all Emergency Drills	1.3, 1.4, 1.5, 1.6, 1.7, 1.8,1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.27, 1.28, 1.29, 1.30, 1.31, 1.32, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.53, 2.54, 2.55, 2.56, 2.57, 2.58, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25,	LSP's Representative	LSP's Representative will review the Contractor's Incident and Emergency Drill reports to assess compliance with the EPRP, to identify improvements to emergency preparedness and emergency response, identify additional risk reduction measures and the appropriate use of emergency equipment and corrective actions	Copies of the documented review and/or correspondence relating to of the Incident and Drill Reports are to be provided to the Contractor for reference and, where necessary, implementation of any identified corrective actions All reports are to be maintained at the project site for as long as the Contractor is working at the site

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
	3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, 3.45, 3.46, 3.47, 3.48, 3.49, 3.50, 3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60, 3.61, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.31, 4.32, 4.33, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 5.2, 5.3, 5.4, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30, 6.31, 6.32, 6.33, 6.34, 6.35, 6.36, 6.37, 6.38, 6.39, 6.40, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 7.14, 7.15, 7.16, 7.17, 7.18, 7.19, 7.20, 7.21, 7.22, 7.23, 7.24, 7.25, 7.26, 7.27, 7.28, 7.29, 8.1, 8.2, 8.3, 8.5, 8.6, 8.7, 8.8, 8.19, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, 8.20, 8.21 and 8.22			
Biannual Inspection (External)	All	LSP's Representative	LSP's Representative will review the Contractor's onsite activities to	A copy of the External Audit Report is to be provided to the

Inspection / Auditing Interval	Reference of Relevant Mitigation	LSP Responsibility	Measure*	Records
			assess compliance with the EPRP and review all records of the Contractor's internal audit programme to review historic compliance and the use of appropriate corrective actions	Contractor for reference and, where necessary, implementation of any identified corrective actions All reports are to be maintained at the project site for as long as the Contractor is working at the site

** See Table 9.1 to Table 9.8 for mitigation measure.*

ANNEX A – SUMMARY OF POTENTIAL IMPACTS OF EMERGENCY SITUATION DURING THE CONSTRUCTION PHASE

1 POTENTIAL IMPACTS FROM OFFSHORE EMERGENCY SITUAUTIONS

1.1 IMPACTS FROM OFFSITE VESSEL COLLISIONS AND/OR SINKING

Project activities including importation of construction materials, disposal of dredged materials during construction and operation of project port require marine transportation. There will be an increase in the number of vessels navigating in-out the port as a result of the project that will increase the risk of collision or maritime incident.

During the construction phase, there will be 12-13 vessels per day including 12 barges for disposal of material and 1 barge for transportation of construction material (once every 8 days).

Project activities including the construction of port structure and dredging may obstruct the navigation of ships. These activities may increase the risk of vessel collisions and or sinking.

The majority collisions or sinking's are caused by human negligence. Such negligence does not necessarily originate with the vessels officers or crews. It can be the fault of persons responsible for controlling the movements and berthing of ships who issue collect information to vessels masters, owners or agents. Collisions can lead to fire or oil/fuel spills involving the vessels.

1.2 IMPACTS FROM PERSONS FALLING INTO WATER

Working under the unsuitable working environments or conditions or in the adverse weather may lead the laborers falling into the water and cause the slightly to serious injury or fatality of the drowning laborers.

1.3 IMPACTS FROM TYPHOONS AND ADVERSE WEATHER

Potential adverse weather events include, but are not limited to:

- Heavy rain;
- Strong wind; or
- Typhoon.

The potential for earthquake, tsunami and heavy flood happening at the site is considered unlikely. The rainy, or monsoon season, generally occurs between May

and October. During this six-month period, approximately 90 to 160 days of high winds and heavy rain may be expected.

Major impacts from the adverse weather can lead to damage to the Project's property, slight to serious injuries or fatality of the construction workers.

2. POTENTIAL IMPACTS FROM ONSHORE EMERGENCY SITUATIONS

2.1 IMPACTS FROM OFFSITE VEHICLE ACCIDENTS

Vehicle accidents may include, but are not limited to:

- Vehicle roll-over; and
- Vehicle crashing into another vehicle, structure or with a person (worker or person from the local community).

Major impacts from the vehicle accidents can lead to, the damage of Project property, slight to serious injuries or fatality of the construction labors.

2.2 IMPACTS FROM TYPHOONS AND ADVERSE WEATHER

Flood

The underlying causes of flooding, heavy rain and high sea levels, are, essentially, uncontrollable. Flooding may post environmental and health impacts both construction and operation period. Flooding in the project area can be caused by heavy and extensive rainfall, coastal flooding for instance large wave, tide, and storm.

During construction, flood can mobilise pollutants such as sediment, oil, chemical and other building materials onsite into surface water and causing harm to aquatic animals.

Property Damage from Tropical Storm and Typhoons

Tropical storms are a natural phenomenon that could result in severe property damage and potentially injury to personnel. Tropical storms develop in the Pacific Ocean and South China Sea and are categorized by wind speed as follows:

- Depression: maximum sustained winds up to 33 knots (61 km/h);

- Tropical storms: maximum sustained winds between 34 and 63 knots (62 - 117 km/h); and
- Cyclone or Typhoon: maximum sustained winds of 64 knots and over (118 km/h and above).

Tropical storms can cause the damage to offshore and onshore facilities. For offshore facilities, strong wind and waves may lead to the collapse of structures including jetties, berth, and breakwater. This may lead to the discharge of chemicals and contaminants into the sea. In addition, the employees working at the port are at risk due to severe condition and may lead to injury or fatalities. For the petrochemical plant, storms may damage equipment or structures. Run-off from the plant may contaminate surface water and soil.

There are between 4 and 6 typhoons strikes to the coast of Vietnam every year. The areas most affected by typhoons are coastal provinces in the North and Centre of Vietnam. However, the project is located in the southern part of Vietnam which is subject to fewer tropical storms and cyclones compared to the central provinces (Le Truong Giang, 2005). However, even if storms do not land directly on Vung Tau, their effects may extend to this area. There were 18 tropical storms consisting of 10 typhoons and 8 depressions affecting this area during the period of 1962-2013 (51 years). Severe devastation from a tropical storm in Ba Ria – Vung Tau province occurred in November 2006 when Typhoon Durian landed directly in the province.

Other significant impacts will refer to ***Section 1.2***.

2.3 IMPACTS FROM CHEMICAL/OIL/SANITARY EFFLUENT SPILL

A spill of chemical/fuel has the potential to cause soil and groundwater contamination, if not controlled and cleaned up timely and properly. Chemical/fuel spills include, but are not limited to, the following:

- Fuel spill during re-fuelling;
- Fuel/oil/grease leaks during vehicle parking or operating; and
- Breaking of fuel tanks on vehicles.

A spill of sanitary effluent has the potential to cause surface water, soil and groundwater contamination and nuisance/health hazard to nearby households, if not controlled and cleaned up timely and properly. Sanitary effluent spills can occur during emptying and transportation of effluent from septic tanks being demolished on site.

2.4 IMPACTS FROM MAJOR HAZARDOUS MATERIAL RELEASE

When hazardous materials are released in the air, water, or on the land they can spread, contaminating even more of the environment and posing greater threats to health. For example, when rain falls on soil at a waste site, it can carry hazardous waste deeper into the ground and the underlying groundwater. If a very small amount of a hazardous substance is released, it may become diluted to the point where it will not cause injury. A hazardous substance can cause injury or death to a person, plant, or animal if:

- A large amount is released at one time;
- A small amount is released many times at the same place;
- The substance does not become diluted; and
- The substance is very toxic.

Coming into contact with a substance is called an exposure. The effects of exposure depend on:

- How the substance is used and disposed of;
- Who is exposed to it;
- The concentration, or dose, of exposure;
- How someone is exposed; and
- How long or how often someone is exposed.

2.5 IMPACTS FROM LOSS OF RADIATION SOURCES/EQUIPMENT

A missing or stolen exposure device containing the radiographic sources can be a significant hazard if laborers or members of the public, who are not aware of the danger of radiation, find it.

Radioactive materials decay spontaneously produces ionizing radiation, which has sufficient energy to strip away electrons from atoms (creating two charged ions) or to break some chemical bonds. Any living tissue in the human body can be damaged by ionizing radiation in a unique manner. The body attempts to repair the damage, but sometimes the damage is of a nature that cannot be repaired or it is too severe or widespread to be repaired. Also mistakes made in the natural repair process can lead to cancerous cells. The most common forms of ionizing radiation are alpha and beta particles, or gamma and X-rays.

In general, the amount and duration of radiation exposure affects the severity or type of health effect. There are two broad categories of health effects: stochastic and non-stochastic.

Stochastic Health Effects

Stochastic effects are associated with long-term, low-level (chronic) exposure to radiation. "Stochastic" refers to the likelihood that something will happen. Increased levels of exposure make these health effects more likely to occur, but do not influence the type or severity of the effect.

Cancer is considered by most people the primary health effect from radiation exposure. Simply put, cancer is the uncontrolled growth of cells. Ordinarily, natural processes control the rate at which cells grow and replace themselves. They also control the body's processes for repairing or replacing damaged tissue. Damage occurring at the cellular or molecular level, can disrupt the control processes, permitting the uncontrolled growth of cells cancer. This is why ionizing radiation's ability to break chemical bonds in atoms and molecules makes it such a potent carcinogen.

Other stochastic effects also occur. Radiation can cause changes in DNA, the "blueprints" that ensure cell repair and replacement produces a perfect copy of the original cell. Changes in DNA are called mutations.

Sometimes the body fails to repair these mutations or even creates mutations during repair. The mutations can be teratogenic or genetic. Teratogenic mutations are caused by exposure of the fetus in the uterus and affect only the individual who was exposed. Genetic mutations are passed on to offspring.

Non-stochastic Health Effects

Non-stochastic effects appear in cases of exposure to high levels of radiation, and become more severe as the exposure increases. Short-term, high-level exposure is referred to as 'acute' exposure.

Many non-cancerous health effects of radiation are non-stochastic. Unlike cancer, health effects from 'acute' exposure to radiation usually appear quickly. Acute health effects include burns and radiation sickness. Radiation sickness is also called 'radiation poisoning.' It can cause premature aging or even death. If the dose is fatal, death usually occurs within two months. The symptoms of radiation sickness include: nausea, weakness, hair loss, skin burns or diminished organ function.

Medical patients receiving radiation treatments often experience acute effects, because they are receiving relatively high "bursts" of radiation during treatment.

2.6 IMPACTS FROM MAJOR LABOUR ACCIDENTS

A medical emergency is a situation in which, due to an acute illness or injury, there is an immediate risk to a person's life or long-term health. Medical emergencies include, but are not limited to, the following:

- Injuries from vehicle accidents;
- Wildlife attacks, e.g. snake bites;
- Heat stress;
- Electrocution; and
- Unexploded-ordnance incidents.

2.7 IMPACTS FROM FIRE AND EXPLOSION

During the construction phase of the Project, there are only limited quantities of hydrocarbons and other flammable materials being held on site, therefore this risk of major escalation by fire or explosion is only limited. There are however large numbers of persons living within accommodation camps who are sleeping or congregating in large numbers in public areas. Whilst the property risk is low the potential for fire involving risks to persons is high.

2.8 IMPACTS FROM PANDEMIC AND THE OUTBREAK OF COMMUNICABLE DISEASES OR FOOD POISONING OF WORKERS

A pandemic is different from an epidemic or seasonal outbreak. Put simply, a pandemic covers a much wider geographical area, often worldwide. A pandemic also infects many more people than an epidemic. An epidemic is specific to one city, region or country, while a pandemic goes much further than national borders.

A pandemic is usually caused by a new virus strain or subtype to which humans either have no immunity against, or very little immunity. If immunity is low or non-existent the virus is much more likely to spread around the world if it becomes easily human transmissible.

Pandemics generally cause much higher numbers of deaths than epidemics. The social disruption, economic loss, and general hardship caused by a pandemic are much higher than what an epidemic can cause.

The World Health Organization (WHO) warns that there is a significant and increased threat of future pandemics.

The Government's Ministry of Health and WHO continuously monitor for outbreaks of novel influenza. It is the Government who will alert the Public to any potential epidemic or pandemic and it is the Government who will lead the emergency response. The Government's emergency response level corresponds to a situation where the risk of a novel influenza virus causing new and serious impact to human health in Vietnam is **high and imminent**. Generally, it depicts a high risk of serious human infections caused by the novel influenza virus in Vietnam and serious infections may be widespread. Illustrative scenarios would be:

- The confirmation of human infection, with serious health outcomes, confirmed in Vietnam, neighbouring countries or in a country with a considerable level of trade and travel relationship with Vietnam; and
- There is evidence of human-to-human transmission sufficient to cause sustained community level outbreaks.

A pandemic has the potential to make 50% of the workforce unavailable for up to 12 weeks. Absenteeism could be higher where there is panic or hysterical concern about infection. Infected staff will be away from the workplace for 2 weeks due to inflection and longer if family members are infected. All levels and functions within the Project will be affected.

During a pandemic suppliers will also be affected and the EPC Contractor will need to ensure there is sufficient robustness in the supply chain to weather a pandemic. Where there is not sufficient confidence in suppliers, action may need to be taken to diversify, increase stockholdings, improve contracts (penalties, bonuses).

ANNEX B – LISTS OF REGULATIOR AUTHORITIES AND EMERGENCY SUPPORT SERVICES

Name	Telephone/Fax		Department	Remark
Division of Standards, Metrology, Quality and Radiation and Nuclear Safety Inspection (Inspection Division No.4), The Ministry Inspectorate, Ministry of Science and Technology (MOST)	Weekdays	T: +844 3555 3906 F: +844 3944 6602	National Regulatory Agency (Radiation Safety)	Email: thanhtra@most.gov.vn
	Weekdays	T: +844 3943 9520 ext. 09050	National Regulatory Agency (Radiation Safety)	Mr. Tran Minh Dung (Chief Inspector) Email: tmdung@most.gov.vn
	Weekdays	T: +844 3556 0669 ext. 09030	National Regulatory Agency (Radiation Safety)	Mr. Mai Chi Thuanh (Deputy Chief Inspector) Email: mcthuan@most.gov.vn
Ministry of Natural Resources and Environment (MONRE)	Weekdays	T: +43 7956 868 F: +43 8359 221	National Regulatory Agency (Environment)	Email: portal@monre.gov.vn
Ba Ria – Vung Tau Provincial Vietnam Environment Administration (BR-VT VEA)	Weekdays	T: 064 625 8122 F: 064 625 8129	Provincial Environment Administration (Sub-unit of DoNRE)	Mr. Lê Tân Cương (Manager) Mr. Nguyễn Dũng (Deputy Manager)
BA Ria – Vung Tau Provincial Department of Natural Resources and Environment (BR-VT DoNRE)	Weekdays	T: +84 64 38 52539 F: +84 64 38 57876	Provincial Environment Administration	Email: sotnmt@baria-vungtau.gov.vn
Long Son Frontier Commander	Weekdays	T: +84 98 284 4056	Military Base	Mr. Vo Van Thoung
Department of Labour, Invalids, and Social Affairs (DoLISA) in Ba Ria – Vung Tau Province, Vietnam	Weekdays	T: 064 385 2205 F: 064 354 0705	Provincial DoLISA	Mr. Thanh Son (Director)
		T: +84 98 326 9999	Provincial DoLISA	Mr. Le Thi Trang Ai (Deputy Director)
Ba Ria – Vung Tau Province People's Committee	Weekdays	T: 064 852 359, 064 852 412 F: 064 385 2324	Provincial People Department	Mr. Nguyen Van Trinh (Chairman)
		T: +84 064 3852539	Natural Resources and Environment Department	-
Vung Tau City People's Committee	Weekdays	T: 064 852 677, 064 857 021	District People Department	Vung Tau City People's Committee
		T: +84 913 863526	District People Department	Mr. Theu Uoie Plieue (Head of People's Committee Office – Vung Tau City)
		T: 064 3852 539	Natural Resources and Environment Department Manager	-
Long Son Commune People's Committee		T: +84 908 178819	Village People Department	Mr. Vo Van Mui (Chairman of People's Committee)

Name		Telephone/Fax	Department	Remark
		T: +84 977 217714	Village People Department	Mr. Ho Vin Chit (Chairman of Fatherland Front)
Rach Gia Hamlet Village People's Committee		T: +84 164 5830236	Village People Department	Mr. Nam (Chairman of People's Committee)
Hamlet 2 Village People's Committee		T: +84 098 8643312	Village People Department	Mr. Hai (Chairman of People's Committee)
ISOS Clinic Onsite Vung Tau City, Vietnam No.1 Le Ngoc Han Street, Ward 1 Vung Tau City, Vietnam		T: +84.64.385.8776 F: +84.64.385.8779	ISOS Doctor Rotational	E-Mail: clinic.vungtau@internationalsos.com
ISOS, Ho Chi Min		T: +84 8 3829 8520 F: +84 8 3829 8524	Primary International SOS Assistance Centre: Ho Chi Minh City	Email: 1hcm.ops@internationalsos.com
ISOS, Bangkok		T: +66 2 205 7777 F: +66 2 254 0272	Secondary International SOS Assistance Centre	Email: bkkops.med@internationalsos.com
Ba Ria – Vung Tau Fire Station		T: +84 64 384 8157	Provincial Fire Station	Emergency Call
Ba Ria – Vung Tau Police Station		T: +84 64 3845 405	Provincial Police Station	Emergency Call
Vung Tau City Fire Station		T: 064114	Fire Station	Emergency Call
Vung Tau City Police Station		T: 064113	Police Station	Emergency Call
Vung Tau Port Authority		T: +84 64 385 6270, +84 64 385 6907 F: +84 64 385 6137	Port Authority	Duong Dinh Huynh (Director)
Le Loi Hospital 22 Le Loi Street. Ward 1, Vung Tau City, Ba Ria – Vung Tau, Vietnam		T: 064 383 2667 F: 064 381 0607	-	Emergency Call
Ba Ria Hospital Khu pho 4, Phuoc Hung Ward, Vung Tau		T: 064 382 5178	-	Emergency Call
Ambulance Call Vung		T: 064115	-	Emergency Call

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ANNEX C – EXAMPLE OF INCIDENT REPORT

Incident Report

To be filled out within 24 hours of incident

☐ Recordable ☐ Non-Recordable

☐ Illness ☐ Injury ☐ Hazardous Incident

☐ Full Time ☐ Part Time ☐ Casual ☐ Student

Name: _____ (Last Name), _____ (First Name) _____ (M.I.) ___/___/___ (Report Date)

Dept: _____ Sub. Dept: _____ Job Title: _____ ___/___/___ (Date of Hire)

INCIDENT DATE: ___/___/___ **INCIDENT TIME:** _____ A.M./P.M.

Room: _____ **Building:** _____ **Area:** _____

BODY PART INJURED: _____ INJURY TYPE: _____ ACCIDENT TYPE: _____

Injury Caused By: _____ Equipment/Manufacturer: _____ Model #: _____ Serial #: _____

Chemical/Cleaning Agent or Hazardous Material Involved: _____ Was Personal Protective Clothing/Equipment Used? _____

If so, what? _____ Property Damage: _____ Describe Damage: _____

INJURY REPORTED TO: _____ **Date:** ___/___/___ **Time:** _____ A.M/P.M.

Task being performed at the time of incident: _____

Employee's supervisor - complete the following

Ambulance Requested: ☐ Yes ☐ No First Aid Provided (excluding ambulance personnel): _____ By Whom: _____

Transported to: _____ **Incident Cause:** ☐ Unsafe Act ☐ Unsafe Condition ☐ Unsafe Equip ☐ No Training ☐ Poor Hskp ☐ Material Handling ☐ Other

Incident Investigated by: ☐ Human Resources ☐ Campus Police ☐ Safety Officer ☐ Supervisor ☐ Other Date of Investigation: ___/___/___

Name of Investigator(s): _____ Time of Investigation: _____ A.M./P.M.

Witnesses: _____

Does Incident Warrant Further Investigation? ☐ Yes ☐ No By Whom? ☐ Dept. Head ☐ Human Resources ☐ Safety Officer ☐ Supervisor

Mandatory Field -
Events and conditions that contributed to the incident: _____

Mandatory Field -
Supervisor recommendation(s) for corrective action: _____

_____ **Employee's Signature** ___/___/___ **Date**

_____ **Supervisor's Signature** ___/___/___ **Date**

_____ **Safety Officer's Signature** ___/___/___ **Date**

_____ **President / CEO's Signature** ___/___/___ **Date**

ANNEX D – EXAMPLE OF FLOOD WARNING SIGNS

Flood Warning Signs	Meaning	Timing	Action
	Flooding is possible. Be prepared.	2 hours to 2 days in advance of flooding.	• Be prepared for flooding; and • Prepare a flood kit.
	Flooding is expected. Immediate action required.	Half an hour to 1 day in advance of flooding	• Act now to protect the property; • Block doors with flood boards or sandbags and cover airbricks and other ventilation holes; • Move valuables to a safe place; • Keep a flood kit ready; and • Move any critical equipment and information a safe location.
	Severe flooding. Danger to life.	When flooding poses a significant threat to life an ddifferent actions to require.	• Be ready to evacuate from the construction site; and • Co-operate with the emergency response team.
WARNING REMOVED	No further flooding is currently expected for the area.	Issued when a flood warning is no longer in force.	• Flood water may sill be around and could be contaminated.

ANNEX E – DUTIES AND RESPONSIBILITIES AND QUALIFICATIONS OF RADIATION PROTECTION OFFICER (RPO)

1 DUTIES AND RESPONSIBILITIES OF RADIATION PROTECTION OFFICER (RPO)

EPC Contractor shall appoint at least one (1) radiation protection officer (RPO) for overseeing the implementation of the radiation safety program and to define the duties and responsibilities. These duties and responsibilities include

- Hazard assessment and drawing up site specific emergency plans;
- Restriction of exposure and maintenance of engineering controls and other equipment provided for such restriction;
- Identification of controlled and supervised areas;
- Control of access to controlled areas;
- Dosimetry and monitoring;
- Adequate monitoring of workplaces;
- Drawing up and reviewing written administrative procedures that define the means of complying with regulatory and other requirements (as shown in ***Section 3*** of this Annex);
- Investigation of abnormally high exposures and overexposures;
- Supervision of radiography;
- Implementation of the maintenance schedule of all safety related equipment;
- Annually organize training course(s) for reviewing radiation safety regulations, updating new basic knowledges on radiation safety then, basing him/her-self;on results of examination and periodical medical check-ups, issue certificates permitting employees to continue working at the construction site
- Organize the medical examination when recruiting radiation personnel;
- Monitor the radiation personnel's health and organize medical examinations
- for them once every 6 months as stipulated by the Ministry of Health;
- Provide radiation personnel with protective means, personal dosemeters and compel them to use such equipment while perform radiation work;
- Make the assessment of personal dose for radiation personnel at least once
- every 3 months at the institutions designated by the State management agency in charge of radiation safety and control under the Ministry of Science, Technology and Environment;
- Keep the records on the radiation personnel's medical check-ups and personal doses for 30 years after they move to perform non-radiation jobs;
- Investigation of causes, consequences remedial actions and accidental
- prevention measures;

- Deciding whether any special restrictions are required with respect to the exposure of declared pregnant female employees;
- Prior examination of any plans for a new fixed facility or for modifications to an existing fixed facility from a radiation safety standpoint; and
- Maintaining required safety documents (as mentioned in Chapter IV: Declaration, Granting of Registration Papers and Licenses, Article 23 to Article 33 under Decree No. 50/1998/ND-CP dated July 16, 1998, issued by the Government of Socialist Republic of Vietnam, detailing the implementation of the Ordinance on Radiation Safety and Control).

In cases where more than one (1) RPO is assigned, the duties and responsibilities of each are well defined. It is essential that someone with adequate knowledge and experience be assigned the role of RPO. The Ministry of Science, Technology and Environment as the regulatory authority has to be notified of these appointments.

2 QUALIFICATIONS OF RADIATION PROTECTION OFFICER (RPO)

The RPO is to assist EPC Contractor in complying with the requirements of the authorization and regulations (as shown in ***Section 3*** of this Annex). Ideally, the RPO is a person whose responsibilities are separate from those of production, has experience as a radiographer and has a line management position enabling close supervision of radiographic work.

The minimal requirements and qualifications for appointment as an RPO are;

- Theoretical training and practical experience as approved by the Ministry of Science, Technology and Environment, to ensure the necessary knowledge of the properties of ionizing radiation and regulations used in industrial radiography; and
- Authority to command sufficient respect from the people doing the work to be able to exercise the necessary supervision of radiation protection and to stop unsafe practices.

3 RELEVANT REGULATIONS AND REQUIREMENTS FOR RADIATION SAFETY

The relevant regulations and requirements for radiation safety are described as follows:

- Decree No. 50/1998/ND-CP dated July 16, 1998, issued by the Government of Socialist Republic of Vietnam, detailing the implementation of the Ordinance on Radiation Safety and Control;
- Vietnamese Standards (TCVN 6866:2002): Radiation protection – Dose limits for radiation workers and public; and
- Circular No. 04/2008/TT-BLDTBXH guiding procedures for registration and verification of machines, equipment and supplies subject to strict labour safety requirements.

4 *ANNUAL DOSE LIMIT OF RADIATION*

According to Article 16 under Decree No. 50/1998/ND-CP dated July 16, 1998, issued by the Government of Socialist Republic of Vietnam, detailing the implementation of the Ordinance on Radiation Safety and Control, it specified the annual dose limit for radiation personnel is 20 mSv, and for people is 1 mSv. These limits include external dose and internal dose, except for the natural radiation background.

ANNEX F – DESIGNATION OF HOT, WARM AND COLD ZONES

1 INTRODUCTION

To reduce the accidental spread of hazardous substances by construction workers from the contaminated area to the clean area, zones should be delineated on the site where different types of operations will occur, and the flow of personnel among the zones should be controlled. The establishment of work zones will help ensure that personnel are properly protected against the hazards present where they are working, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

Hazardous contaminated sites should be divided into as many different zones as needed to meet operational and safety objectives.

This annex described three (3) frequently used zones:

- Hot Zone or Exclusion Zone: the contaminated area;
- Warm Zone or Contamination Reduction Zone (CRZ): the area where decontamination takes place; and
- Cold Zone or Support Zone: the uncontaminated area whore construction workers should not be exposed to hazardous conditions.

Delineation of these three (03) zones should be based on sampling and monitoring results and on an evaluation of potential routes and amount of contaminant dispersion in the event of a release. Movement of personnel and equipment among these three (03) zones should be minimized and restricted to specific Access Control Points to prevent cross-contamination from contaminated areas to clean areas. A schematic representation of the layout of work zones is given in ***Figure 1.1***.

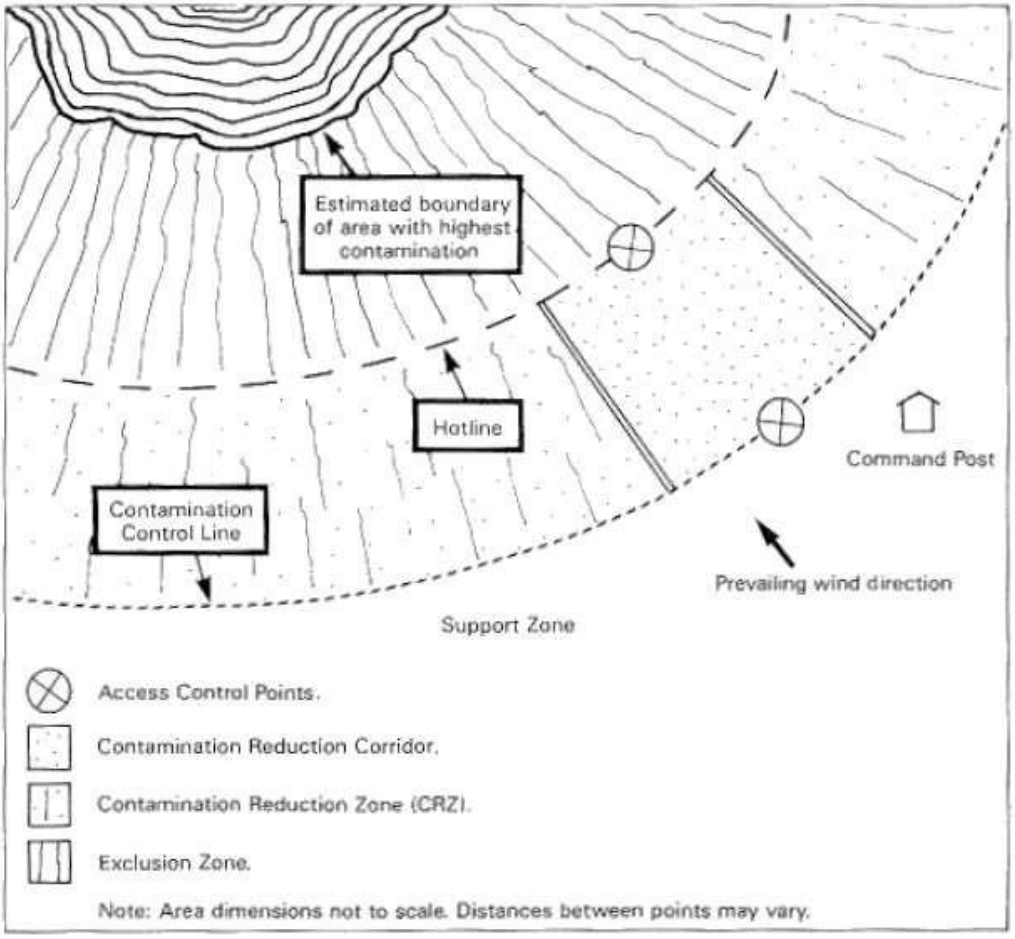
2 HOT ZONE OR EXCLUSION ZONE

The Hot Zone or Exclusion Zone is the area where contamination does or could occur. The primary activities performed in the Exclusion Zone are;

- Site characterization, such as mapping, photographing and sampling;
- Installation of wells for groundwater monitoring; and
- Cleanup work, such as drum movement, drum staging and materials bulking.

The outer boundary of the Exclusion Zone, called the Hotline, should be established according to the criteria listed as follows;

Figure 1. Site Work Zones



- Visually survey the immediate site environments;
- Determine the locations of;
- Hazardous substances;
- Drainage, leachate, and spilled material; and
- Visible discolorations.
- Evaluate data from the initial site survey indicating the presence of;
- Combustible gases;
- Organic and inorganic gases, particulates, or vapors; and
- Ionizing radiation.
- Evaluate the results of soil and water sampling;
- Consider the distances needed to prevent an explosion or fire from affecting personnel outside the Exclusion Zone;

- Consider the physical area necessary for site operations;
- Consider the meteorological conditions and the potential for contaminants to be blown from the area;
- Secure or mark the Hotline; and
- Modify its location, if necessary, as more information becomes available.

It should be clearly marked by lines, placards, hazard tape and/or signs; or enclosed by physical barriers, such as chains, fences, or ropes. Access Control Points should be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment into and out of the zone and to help verify that proper procedures for entering and exiting are followed. If feasible, separate entrances and exits should be established to separate personnel and equipment movement into and out of the Exclusion Zone.

The Exclusion Zone can be subdivided into different areas of contamination based on the known or expected type and degree of hazard or on the incompatibility of waste streams. This allows more flexibility in safety requirements, operations, decontamination procedures, and use of resources.

3 WARM ZONE OR CONTAMINATION REDUCTION ZONE (CRZ)

The Warm Zone or Contamination Reduction Zone (CRZ) is the transition area between the contaminated area and the clean area. This zone is designated to reduce the probability that the clean Cold Zone or Support Zone will become contaminated or affected by other site hazards. The distance between the Exclusion and Support Zones provided by the CRZ, together with decontamination of construction workers and equipment, limits the physical transfer of hazardous substances into clean areas. The boundary between the CRZ and the Exclusion Zone is called the Hotline. The degree of contamination in the CRZ decreases as one moves from the Hotline to the Support Zone, due both to the distance and the decontamination procedures.

Decontamination procedures take place in a designated area within the CRZ called the Contamination Reduction Corridor (CRC). They begin at the Hotline. At least two (2) lines of decontamination stations should be set up within the CRC; one for the personnel and one for heavy equipment. A large operation may require more than two lines. Access into and out of the CRZ from the Exclusion Zone is through Access Control Points; one each for personnel and equipment entrance, one each for personnel and equipment exit, if feasible.

The boundary between the Support Zone and the CRZ, called the Contamination Control Line, separates the possibly low contamination area from the clean Support Zone. Access to the CRZ from the Support Zone is through two Access Control points

if feasible; one each for personnel and equipment. Personnel entering the CRZ should be required to wear the personal protective clothing and equipment prescribed for working in the CRZ. To re-enter the Support Zone, construction workers should remove any protective clothing and equipment worn in the CRZ, and leave through the personnel exit Access Control Point.

The personnel stationed in the CRZ are usually the EPC Contractor HSSE officers, a Personnel Decontamination Station (PSD) Operator, and the ERT personnel. Additional personnel may assist the PDS operator by conducting abbreviated decontamination procedures for sample containers.

The CRZ must be well designed to facilitate;

- Decontamination of equipment, PDS operators, personnel and samples;
- Emergency Response: transport for injured personnel (safety harness, stretcher), first-aid equipment (such as bandages, blankets, eye wash, splints, and water), containment equipment (absorbent, fire extinguisher);
- Equipment re-supply: air tank changes, personal protective clothing and equipment (such as booties and gloves), sampling equipment (such as bottles and glass rods), and tools;
- Sample packaging and preparation for on-site and off-site laboratories;
- Worker temporary rest area: toilet facilities, bench, chair, liquids, and shade.
- Water and other potable liquids should be clearly marked and stored properly to ensure that all glasses and cups are clean. Wash facilities should be located near drinking facilities to allow employees to wash before drinking. Drinking, washing and toilet facilities should be located in a safe area where protective clothing can be removed. Facilities should be cleaned and inspected regularly. Appropriate protective measures should be taken by maintenance workers; and
- Drainage of water and other liquids that are used during decontamination.

Personnel within the CRZ should be required to maintain internal communications, line-of-sight contact with work parties, work party monitoring (e.g., for air time left, fatigue, heat stress, hypothermia), and site security.

4 COLD ZONE OR SUPPORT ZONE

The Support Zone is the location of the administrative and other support functions needed to keep the operations in the Exclusion Zone and CRZ running smoothly. Any function that need not or cannot be performed in a hazardous or potentially hazardous area is performed here. The Command Post Supervisor should be presented in the Support Zone. Other personnel present will depend on the functions being performed, and may include the EPC Contractor HSSE Manager and team members who are preparing to enter or who have returned from the Exclusion Zone.

Personnel may wear normal work clothes within this zone. Any potentially contaminated clothing, equipment, and samples must remain in the CRZ until decontaminated.

Support Zone personnel are responsible for alerting the proper agency in the event of an emergency. All emergency telephone numbers, change for the telephone (if necessary), evacuation route maps, and vehicle keys should be kept in the Support Zone.