
 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 1 of 25
LSP Doc. No : LSP-1S01-0011		


SURFACE WATER (MARINE) MANAGEMENT PLAN

3	15/08/2016	Updated based on changes to project configuration	MFC		
2	22/04/2015	Response LSP's Comments	ERM	See attachment of reviewer's signature	
1	23/02/2015	Response LSP's Comments	ERM	See attachment of reviewer's signature	
0	14/01/2015	Issue For Review	ERM	See attachment of reviewer's signature	
REV.	DATE (dd/mm/yyyy)	DESCRIPTION	PREPARED	CHECKED	APPROVED

 <u>Long Son Petrochemicals Co., Ltd</u>	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 2 of 25
LSP Doc. No : LSP-1S01-0011		


ATTACHMENT OF REVIEWER'S SIGNATURE

NO	Name	Position	Signature
1	Pholavit Thiebattama	Overall Project Director	
2	Le Duy Dong	HSE Manager	
3	Kitti Phadungchiwit	Manager of Package A	
4	Somsak Sombatboriboon	Manager of Package BCD	
5	Nisit Jintawong	Manager of Package F & H	
6	Amnat Pheerawat	Manager of Package G	
7	Unchalee Mulalee	Project Engineer	
8	Jirapol Kosolwadhana	HR Director	
9	Pham Hung Thinh	CSR Manager	
10	Huynh Tan Khiem	Project Engineer	
11	Pham Hong Phuong	Overall Project Coordinator	

 <u>Long Son Petrochemicals Co., Ltd</u>	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 3 of 25
LSP Doc. No : LSP-1S01-0011		


REVISION LOG

Rev.	Date (dd/mm/yyyy)	Revised Detail			
		Item	Page	Article	Description
0	14/01/2015	all	all	all	Issue For Review
1	23/02/2015	all	all	all	Response LSP's Comments
2	22/04/2015	all	all	all	Response LSP's Comments
3	16/08/2016	all	all	all	Updated based on changes to project configuration

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 4 of 25
LSP Doc. No : LSP-1S01-0011		


CONTENTS

ACRONYMS	5
1 INTRODUCTION	7
1.1 PURPOSE AND SCOPE	7
1.2 PROJECT OVERVIEW	7
1.3 SOURCES OF IMPACTS ON SURFACE WATER (MARINE)	8
1.4 APPLICABILITY	8
1.5 APPLICABLE STANDARDS	8
2.1 INTRODUCTION	9
2.2 LSP CONSTRUCTION HSSE TEAM	9
2.3 CONTRACTOR HSSE TEAM	11
2.4 DESCRIPTION OF ROLES AND RESPONSIBILITIES	11
3 MITIGATION / MANAGEMENT PROCEDURES	13
4 MONITORING	15
4.1 LSP HSSE TEAM	15
4.2 CONTRACTORS TEAM	15
5 AUDITING AND REPORTING	17
5.1 LSP HSSE TEAM	17
5.2 CONTRACTORS TEAM	17
ANNEX A - CONSTRUCTION SCHEDULE FOR THE SOURCES OF SURFACE WATER (MARINE) IMPACTS	19
ANNEX B - APPLICABLE WASTEWATER STANDARDS	21
ANNEX C - EMPLOYEE CONTACT DETAILS ASSOCIATED WITH MANAGEMENT PLAN	24

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 5 of 25
LSP Doc. No : LSP-1S01-0011		

ACRONYMS


ASP	Air Separation Plant
BOC	Balance of Complex
CTU	Central Utility Plant
EHS	Environmental, Health and Safety
ESIA	Environmental and Social Impact Assessment
HDPE	High Density Polyethylene
HSE	Health, Safety and Environment
HSSE	Health, Safety, Security and Environment
IFC	International Finance Corporation
LLDPE	Linear Low Density Polyethylene
LSP	Long Son Petrochemical
MONRE	Ministry of Natural Resources and Environment
MP	Management Plan
PP	Polypropylene
QCVN	National Technical Regulation

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 6 of 25
LSP Doc. No : LSP-1S01-0011		

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.

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 7 of 25
LSP Doc. No : LSP-1S01-0011		

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this Surface Water Management Plan (MP) (Marine) is to set out *[insert contractor name here]* approach to manage and mitigate the residual impacts on surface water (marine) that they have control over, as identified in Chapter 12 of the project's Environmental and Social Impact Assessment (ESIA) and Long Son Petrochemical's (LSP) Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).

It should be noted the information in this Surface Water (Marine) MP is based on relevant regulations, guidelines and standards at the time of writing of the ESIA dated December 2014. Should the contractors activities change or new regulations, guidelines or standards apply the contractor will review, amend and resubmit this Surface Water (Marine) MP to LSP.


[Note to contractor: If your onsite activities are not associated with surface water (marine), you do not need to complete this template but you will need to provide justification as to why it is not applicable, e.g. you will not be undertaking activities associated with the potential sources of impacts on surface water (marine) detailed in Section 1.3]

1.2 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 (2) 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

 <u>Long Son Petrochemicals Co., Ltd</u>	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 8 of 25
LSP Doc. No : LSP-1S01-0011		

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.

1.3 SOURCES OF IMPACTS ON SURFACE WATER (MARINE)

The potential source of impact on surface water (marine) during construction is from wastewater discharge associated with hydrotesting and flushing. The construction schedule for hydrotesting and flushing during construction is shown in Annex A.

[Note to contractor: Contractor to insert Gantt chart of construction schedule in Microsoft Project Office format in Annex A, which should include a breakdown of the tasks that give rise to the sources of impacts on surface water (marine), as noted above]


1.4 APPLICABILITY

This MP applies to managing the impacts to surface water quality (marine) during the land preparation and construction phase. Updates will be made to the document prior to the commencement of operations.

1.5 APPLICABLE STANDARDS

The applicable surface water (marine) standards during construction are as follows and the applicable wastewater quality standards are provided in Annex B:

- QCVN 08-MT:2015/BTNMT: National technical regulations on surface water quality;
- QCVN 09-MT:2015/BTNMT: National technical regulations on ground water quality;
- QCVN 10-MT:2015/BTNMTL: National technical regulations on marine water quality;
- QCVN 40:2011/BTNMT: National Technical Regulation on Industrial Wastewater;
- QCVN 14:2008/BTNMT: National Technical Regulation on Domestic Wastewater Discharge;

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 9 of 25
LSP Doc. No : LSP-1S01-0011		

- Decree No. 149/2004/ND-CP: Government Decree on Regulation on Licensing of Water Resources Exploitation, Extraction and Utilisation and Wastewater Discharge in Water Sources;
- IFC General EHS Guidelines: Environmental Wastewater and Ambient Water Quality (April 2007);
- IFC General EHS Guidelines: Water Conservation (April 2007);
- IFC General EHS Guidelines: Construction and Decommissioning (April 2007);
- IFC EHS Guidelines for Water and Sanitation (December 2007);
- IFC EHS Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing (April 2007); and
- IFC EHS Guidelines for Thermal Power Plants (December 2008).

2 ROLES AND RESPONSIBILITIES

2.1 INTRODUCTION

Having an appropriate organisational structure in place, with all people having defined roles and responsibilities, is essential to ensuring the overall success of this Surface Water (Marine) MP. This section provides details of LSP's and the contractor's organisational structure with regards to onsite delivery of the LSP project, and the various roles and responsibilities of those people in relation to delivering the clients EHS expectations, including meeting the requirements of the Construction Health, Safety and Environment Management Plan.

2.2 LSP CONSTRUCTION HSSE TEAM

LSP's health, safety, security and environmental (HSSE) team will lead the management of HSSE issues concerned with surface water (marine). The LSP organisational chart to implement the requirements of this Surface Water (Marine) MP is shown in the figure below. The specific roles and responsibilities are shown in Chapter 5 of the LSP Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).



Long Son Petrochemicals Co., Ltd

LSP Doc. No : LSP-1S01-0011

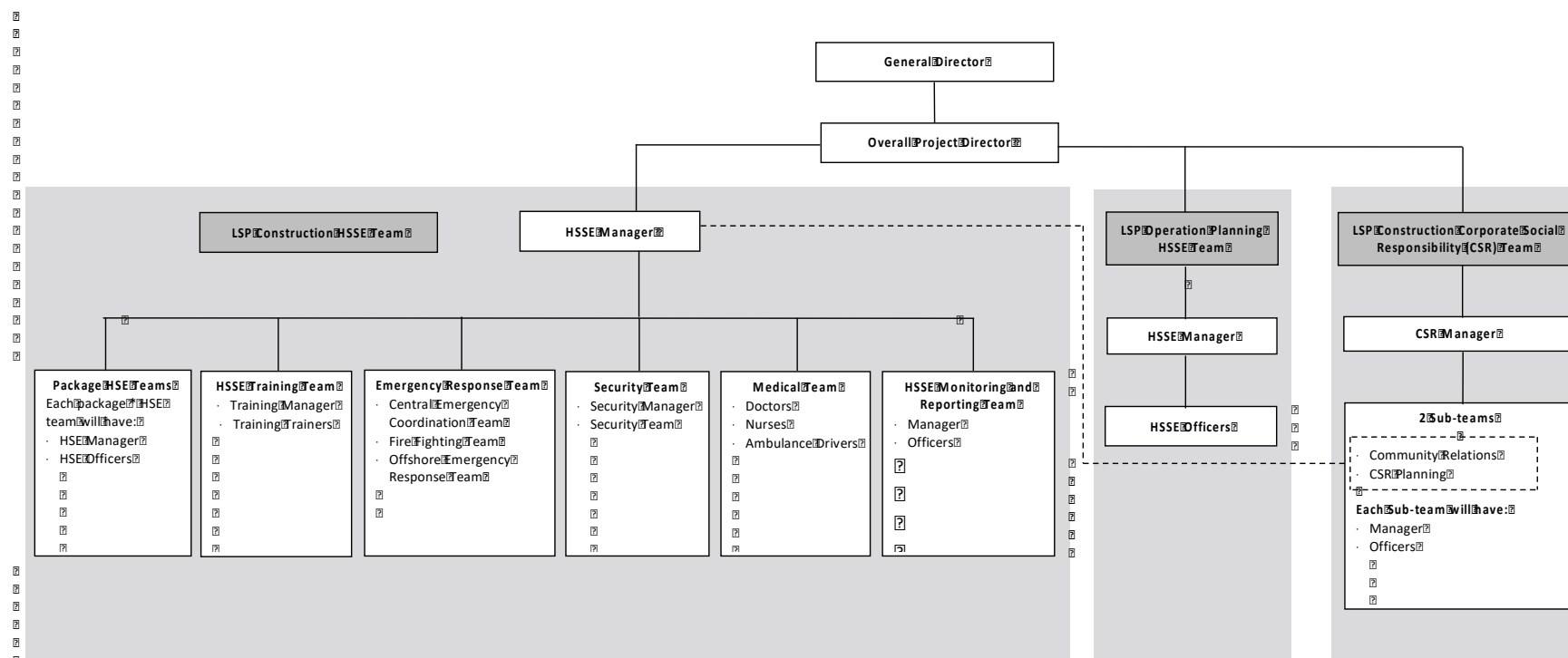
Long Son Petrochemicals Co., Ltd.

HSSE Department

Rev. 3


Surface Water (Marine) Management Plan

Page: 10 of 25



Note:

- Package A: Defines Plant, Tank Farm, Complex Interconnecting pipelines/pipe racks, Land development in the tank farm area, Topsides facilities in hydrocarbon jetties, Complex Wastewater Treatment Unit and H2S flare/LP flare system
- Package B/C/D: Polyolefins Plant (HDPE/PP/LLDPE)
- Package E: Sea Port (excluding Top site in the Hydrocarbon jetties and construction jetties which are under the scope of the Contractor Package A and Package B respectively)
- Package G: Central Utility Plant (including Steam Generation Unit and Water Plant)
- Package H: Common Infrastructure in 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 site for construction jetties, Complex Truck Scale, and Blowdown System
- Package L: Land development work in the whole complex except tank farm area

 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1S01-0011	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 11 of 25

2.3 **CONTRACTOR HSSE TEAM**

The contractors HSSE team has established this Surface Water (Marine) MP in accordance with the applicable standards. The contractors HSSE team will manage their contractors and suppliers in accordance with this Surface Water (Marine) MP and liaise with the appropriate personnel within LSP's HSSE to ensure compliance with the overall aims of LSP's Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).

The contractors onsite organisational chart to implement the requirements of this Surface Water (Marine) MP is shown in the figure below.

[Note to contractor: Contractor to insert organisational chart for onsite team].

2.4 **DESCRIPTION OF ROLES AND RESPONSIBILITIES**

The contractor has committed to providing the necessary human resources to ensure that the organisational structure noted above can work to implement this Surface Water (Marine) MP and achieve compliance with all relevant standards. A description of the key roles and their responsibilities are provided in the *Table 1.1*, including the primary communication channel between LSP and contractor HSE teams. Employee contact details for each role associated with this Surface Water (Marine) MP are provided in Annex C.



 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1501-0011	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 12 of 25

Table 1.1 EHS Roles and Responsibilities within Contractor's Project Team

Role	Responsibilities
General Manager (Contractor)	
Senior Site Engineer (Contractor)	
Site Supervisor / Foreman (Contractor)	
Site EHS Officer (Contractor)	
Emergency Response Co-ordinator (Contractor)	
[Other]	
[Other]	

[Note to Contractor: Insert a description of the responsibilities of each role, with regards to the management of EHS and surface water (marine). Delete roles that are not appropriate. Include additional roles where required.]

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 13 of 25
LSP Doc. No : LSP-1S01-0011		

3 **MITIGATION / MANAGEMENT PROCEDURES**

The mitigation/management procedures noted in this section provides the approach to managing the potential surface water (marine) impacts during construction. The contractor is committed to implementing the identified mitigation/management procedures in order to not cause exceedance of the applicable surface water standards, and to avoid impacts on coastal ecosystems and the local community.

The mitigation/management measures that are relevant to *[insert contractors name here]* onsite activities are shown in *Table 3.1*.

The mitigation/management procedures were identified within the ESIA as being appropriate for the environmental impacts resulting from the anticipated construction activities. Should surface water (marine) impacts arise from the contractors activities, following the implementation of the procedures noted in *Table 3.1*, the contractor will review the need for additional measures to be taken and update this Surface Water (Marine) MP accordingly.

Note to contractor: Delete mitigation/management measures which are not applicable or outside of your control. Insert the name of the responsible party from Table 2-1 for each mitigation/management measure.



 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1S01-0011	Long Son Petrochemicals Co., Ltd.		
	HSSE Department		Rev. 3
	Surface Water (Marine) Management Plan		Page: 14 of 25

Table 3.1 Mitigation / Management Procedures

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	Contractors Responsibility	Related Plans
Impacts on Marine Water Quality from Hydrotesting and Flushing Wastewater Discharge during the Construction Phase	1.1	a) If discharged to water, the volume and composition of the test water, as well as the stream flow or volume of the receiving water body, should be considered in selecting an appropriate discharge site to ensure that water quality will not be adversely affected outside of the defined mixing zone; b) Use a high quality water source. Source waters with high levels of salt content (especially sodium or chlorides) should be avoided, if possible; c) Avoid or minimize the use of additives if possible by minimizing the time that test water remains in the equipment or pipelines; d) If chemical use is necessary, select effective chemicals with the lowest toxicity, biodegradability, bioavailability, and bioaccumulation potential; e) Use the same water for multiple tests to minimize volume of hydrotesting and flushing water; f) Use pressurized air or an insert gas to push the hydrotest water upon completion of the tests rather than the products; and g) If storing hydrotesting and flushing water before treating or discharging, it is recommended to use clean tanks or suitably lined pond (as agreed with LSP).		Soil and Groundwater Management Plan (ref: LSP-1S01-0012)

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 15 of 25
LSP Doc. No : LSP-1S01-0011		

4 MONITORING

4.1 LSP HSSE TEAM

A surface water (marine) monitoring plan has been developed to track the effectiveness of the mitigation measures during construction. Details of LSP's environmental monitoring plan are provided in Chapter 7 of LSP's Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).

LSP may request additional monitoring if the monitoring programme records exceeds the surface water quality standards.

4.2 CONTRACTORS TEAM

In order to assess the effectiveness of the mitigation/management measures and identify the need for further action, the contractors surface water (marine) monitoring programme outlined in *Table 4.1* will be followed.

Should the monitoring programme note any non-compliances with the MP, 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 on the daily report against the relevant activity.

Note to contractor: Delete rows that are not applicable or outside of your control and, in the second column, only include the reference to relevant mitigation/management measures. Insert the name of the responsible party from Table 2-1 for each of the separate monitoring requirements.



 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1501-0011	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 16 of 25

Table 4.1 Monitoring Programme

Aspect, Potential Impact / Issue	Reference of Relevant Mitigation Measure *	Sampling Location	Sampling Parameters	Sampling Frequency	Applicable Standards	Responsibility	Reporting
Impacts on Marine Water Quality from Hydrotesting and Flushing Wastewater Discharge during the Construction Phase	1.1	At the holding tank/lined pond	TSS, Metals, Oils and greases	<p>Before any batch-discharges – one grab sample each time</p> <p>If results are in compliance discharge to sea</p> <p>If results are not in compliance transfer to offsite wastewater treatment facility</p>	Refer to Project Standard for Treated Wastewater in Annex B		Laboratory Report

* See Table 3-1 for mitigation measure.

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Page: 17 of 25
LSP Doc. No : LSP-1S01-0011		

5 AUDITING AND REPORTING

An Auditing and Reporting Programme is required to ensure that the mitigation / management measures are appropriate in controlling the identified surface water (marine) impacts

5.1 LSP HSSE TEAM

To ensure compliance with the requirements of this Surface Water (Marine) MP, internal inspections and audits will be undertaken by LSP. The LSP auditing and reporting programme is shown in Chapter 9 of the LSP Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).

5.2 CONTRACTORS TEAM

The programme will comprise of the following:

- Internal Audit and Reporting Programme to be undertaken by the contractor's EHS Officer; and
- External Audit and Reporting Programme, to be conducted by the LSP's representative.

The scope of the internal auditing and reporting programme to be undertaken by the contractor is shown in *Table 5.1*.

Note to contractor: In the second column, only include the reference to relevant mitigation/management measures. Ensure the job title for the responsible party is correct for your organisation.



 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1S01-0011	Long Son Petrochemicals Co., Ltd.		
	HSSE Department		Rev. 3
	Surface Water Management Plan (Terrestrial)		Page: 18 of 25


Table 5.1 Auditing and Reporting Programme

Inspection / Auditing Interval	Reference of Relevant Mitigation Measure*	Responsibility	Scope of Inspection / Audit	Report Submission / Record Keeping
Pre discharge report	1.1	Contractor's Onsite EHS Officer	Review of laboratory results. If results are in compliance discharge to sea. If results are not in compliance transfer to offsite wastewater treatment facility	Archive Report in an orderly manner for external auditing All reports are to be maintained at the project site for as long as the Contractor is working at the site
Biannual Inspection (External)	1.1	LSP's Representative	LSP's Representative will review the Contractor's onsite activities to assess compliance with the management plan and review all records of the Contractor's internal audit programme to review historic compliance and the use of appropriate corrective actions	A copy of the External Audit Report is 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


* See Table 3-1 for mitigation measure.

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A
LSP Doc. No : LSP-1S01-0011		


***ANNEX A - CONSTRUCTION SCHEDULE FOR THE SOURCES OF SURFACE WATER
(MARINE) IMPACTS***

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A
LSP Doc. No : LSP-1S01-0011		

[Note to contractor: Contractor to insert Gantt chart of construction schedule in Microsoft Project Office format in Annex A]


 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A
LSP Doc. No : LSP-1S01-0011		

ANNEX B - APPLICABLE WASTEWATER STANDARDS

 Long Son Petrochemicals Co., Ltd LSP Doc. No : LSP-1S01-0011	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A

Parameter	Unit	Vietnamese Standards ¹	IFC LVOC Effluent Guideline ²	IFC Thermal Power Plant Effluent Guideline ³	Project Standards for Treated Wastewater ⁴
Temperature	°C	40	Temperature increases ≤ 3	Site specific requirement to be established by the EA.	Temperature ≤ 40 and Temperature increase ≤ 3
Colour	Pt/Co	150	-	-	150
pH	-	5.5 to 9	6-9	6-9	6-9
BOD ₅ (20°C)	mg/l	58.50	25	-	25
COD	mg/l	175.50	150	-	150
Total Suspended Solids	mg/l	117.0	30	50	30
Arsenic	mg/l	0.1170	-	0.5	0.117
Mercury	mg/l	0.01170	0.01	0.005	0.005
Lead	mg/l	0.5850	0.5	0.5	0.5
Cadmium	mg/l	0.1170	0.1	0.1	0.1
Chromium (total)	mg/l	-	0.5	0.5	0.5
Chromium (VI)	mg/l	0.1170	0.1	-	0.1
Chromium (III)	mg/l	1.170	-	-	1.170
Copper	mg/l	2.340	0.5	0.5	0.5
Zinc	mg/l	3.510	2	1	1
Nickel	mg/l	0.5850	0.5	-	0.5
Manganese	mg/l	1.170	-	-	1.170
Iron	mg/l	5.850	-	1	1
Total cyanide	mg/l	0.1170	-	-	0.1170
Total phenol	mg/l	0.5850	0.5	-	0.1170
Oil&Grease	mg/l	11.70	10	10	10
Sulphide	mg/l	0.5850	1	-	0.5850
Fluoride	mg/l	11.70	-	-	11.70
Ammonium (as N)	mg/l	11.70	-	-	11.70
Total nitrogen	mg/l	46.80	10	-	10
Total phosphorus (as P)	mg/l	7.020	2	-	2
Residual Chlorine	mg/l	2.340	-	0.2	0.2
Total organochlorine pesticides	mg/l	0.1170	-	-	0.1170
Total organophosphorus pesticides	mg/l	1.170	-	-	1.170
Total PCB	mg/l	0.01170	-	-	0.01170
Benzene	mg/l	-	0.05	-	0.05
1,2 Dichloroethane (EDC)	mg/l	-	1	-	1
Adsorbable Organic	mg/l	-	1	-	1

CONFIDENTIAL: THIS DOCUMENT IS CONFIDENTIAL AND MUST NOT BE COPIED OR REPRODUCED EXCEPT WITH THE EXPRESS PERMISSION OF LONG SON PETROCHEMICALS CO., LTD.

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A
LSP Doc. No : LSP-1S01-0011		


Parameter	Unit	Vietnamese Standards ¹	IFC LVOC Effluent Guideline ²	IFC Thermal Power Plant Effluent Guideline ³	Project Standards for Treated Wastewater ⁴
Halogens (AOX)					
Coliform	bacteria /100ml	5000	-	-	5000
Gross α activity	Bq/l	0.1	-	-	0.1
Gross β activity	Bq/l	1	-	-	1

Note: ¹ Vietnamese Standards from QCVN 40:2011/BTNMT National Technical Regulation on Industrial Wastewater Quality. With a discharge flow of 743 m³/hr, the discharge wastewater factor Kf=0.9; and with discharge to Ganh Rai Bay, the receiving water body factor Kq=1.3. The factors are not applicable to temperature, pH, colour, coliform, gross α activity and gross β activity. Ganh Rai Bay is characterised as a coastal water body used for aquatic life protection.


² According to Environmental, Health and Safety (EHS) Guidelines for Large Volume Petroleum-based Organic Chemicals Manufacturing

³ According to Environmental, Health and Safety (EHS) Guidelines for Thermal Power Plants

⁴ The more stringent value between QCVN 40:2011/BTNMT and IFC standards

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex A
LSP Doc. No : LSP-1S01-0011		

ANNEX C - EMPLOYEE CONTACT DETAILS ASSOCIATED WITH MANAGEMENT PLAN

 Long Son Petrochemicals Co., Ltd	Long Son Petrochemicals Co., Ltd.	
	HSSE Department	Rev. 3
	Surface Water (Marine) Management Plan	Annex C
LSP Doc. No : LSP-1S01-0011		

Role	Responsibilities	Contact Details*
General Manager (Contractor)		<ul style="list-style-type: none"> Mobile Number: Email:
Senior Site Engineer (Contractor)		<ul style="list-style-type: none"> Mobile Number: Email:
Site Supervisor / Foreman (Contractor)		<ul style="list-style-type: none"> Mobile Number: Email:
Site EHS Officer (Contractor)		<ul style="list-style-type: none"> Mobile Number: Email:
Emergency Response Co-ordinator (Contractor)		<ul style="list-style-type: none"> Mobile Number: Email:
[Other]		
[Other]		

*Any change in respect to employees, the contact details will need to amended as soon as the role has been reassigned.

[Note to Contractor: Insert a description of the responsibilities of each role, with regards to the management of EHS and surface water (marine). Delete roles that are not appropriate. Include additional roles where required.]