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AIR QUALITY MANAGEMENT PLAN (POINT SOURCES)

3	02/11/2016	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

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ATTACHMENT OF REVIEWER'S SIGNATURE

NO	Name	Position	Signature
1	Pholavit Thiebpattama	Overall Project Director	
2	Le Duy Dong	HSE Manager	
3	Kitti Phadungchiwit	Manager of Package A	
4	Somsak Sombatboriboon	Manager of Package BCD	
5	Wason Srisupap	Manager of Package E	
6	Nisit Jintawong	Manager of Package F & H	
7	Amnat Pheerawat	Manager of Package G	
8	Saran Janjira	Project Engineer	
9	Jittinun Dokmaithes	Project Engineer	
10	Pacharavalee Thipdech	Project Engineer	
11	Nampon Arttaweeporn	Project Engineer	
12	Unchalee Mulalee	Project Engineer	
13	Nukool Phiwtaeng	Project Engineer	
14	Siridao Techapermphon	Project Engineer	
15	Jirapol Kosolwadhana	HR Director	
16	Pham Hung Thinh	CSR Manager	
17	Huynh Tan Khiem	Project Engineer	
18	Pham Hong Phuong	Overall Project Coordinator	

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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	02/11/2016	all	all	all	Updated to reflect project changes

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ACRONYMS


BOC	Balance of Complex
CO	Carbon Monoxide
CTU	Central Utility Plant
EHS	Environmental, Health and Safety
ESIA	Environmental and Social Impact Assessment
HCL	Hydrogen Chloride
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
NO ₂	Nitrogen Dioxide
O ₃	Ozone
Pb	Lead
PM _{2.5}	Particulate Matter smaller than 2.5 micrometers
PM ₁₀	Particulate Matter smaller than 10 micrometers
PP	Polypropylene
PS	Performance Standard
QVCN	National Technical Regulation
SO ₂	Sulphur Dioxide
TSP	Total Suspended Particulates

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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.

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this Air Quality (Point Sources) Management Plan (MP) is to set out *[insert contractor name here]* approach to manage and mitigate the residual impacts to air quality from point sources that they have control over, as identified in Chapter 9 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 Air Quality (Point Sources) MP is based on relevant regulations, guidelines and standards at the time of writing of the ESIA dated 2016. Should the contractors activities change or new regulations, guidelines or standards apply the contractor will review, amend and resubmit this Air Quality (Point Sources) MP to LSP.


[Note to contractor: If your onsite activities do not have the potential to impact air quality from point sources, you do not need to complete this template but will need to provide justification as to why it is not applicable, e.g., you will be not be using machinery or vehicles onsite, etc.]

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 main Project components comprise of two areas:

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

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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.

1.3 AIR POLLUTION SOURCES

The potential point sources of air pollution during construction are as follows:

- Batching plant and rock crushers/sorters; and
- Machinery and vehicles.


The construction schedule for the point sources of air pollution 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 point sources of air pollution, as noted above]

1.4 APPLICABLE STANDARDS

The applicable ambient air quality standards associated with the point sources during construction are as follows:

- QCVN 05:2013/BTNMT National technical regulations on ambient air quality (the applicable standards are shown in Annex B);
- Circular No. 16/2009/TT-BTNMT dated October, 7, 2009 of MoNRE on guiding the implementation of National technical regulations on environmental protection; and
- IFC General Environmental, Health and Safety (EHS) Guidelines - Air emissions and ambient air quality (2007).

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2 *ROLES AND RESPONSIBILITIES*

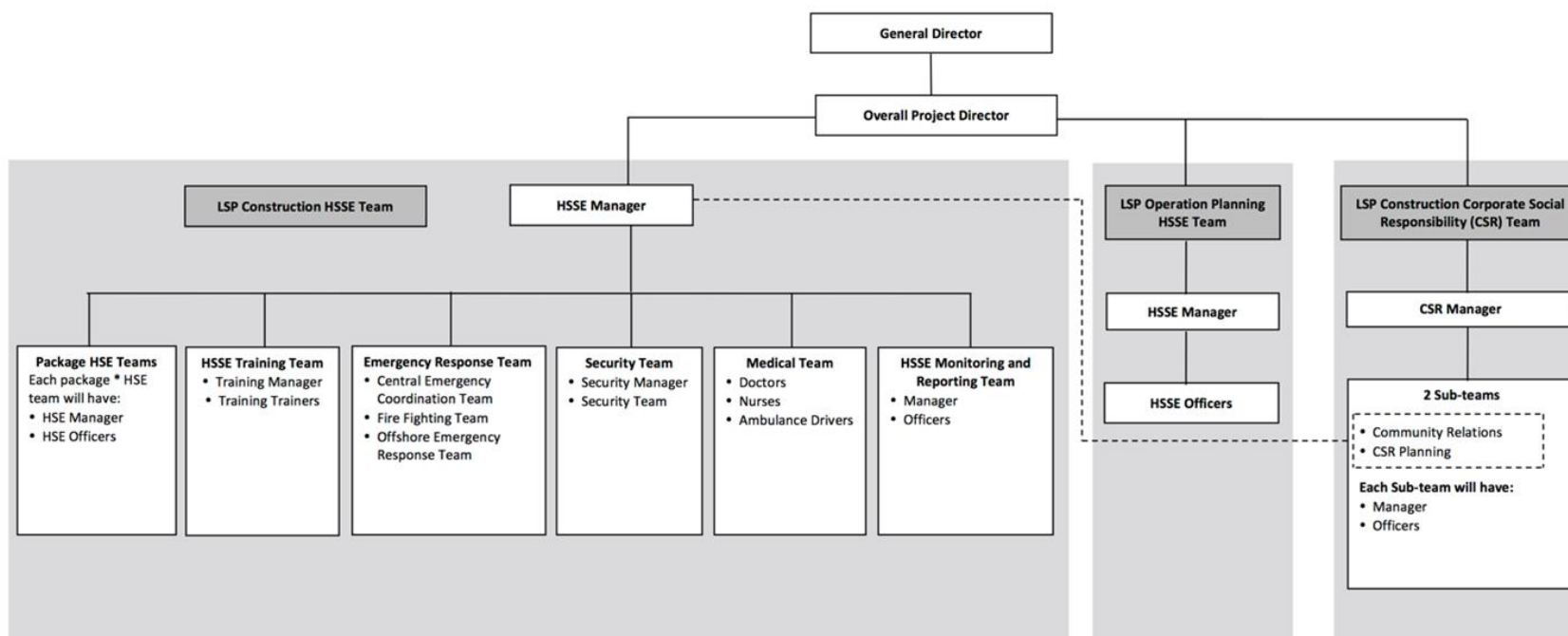
2.1 *INTRODUCTION*

Having an appropriate organisational structure in place, with all people having defined roles and responsibilities, is essential to ensuring the overall success of this Air Quality (Point Sources) 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 LSP Construction Health, Safety and Environment Management Plan (ref: LSP-1S01-005).

2.2 *LSP CONSTRUCTION HSSE TEAM*

LSP's health, safety, security and environmental (HSSE) team will lead the management of HSSE issues concerned with air quality impacts from point sources. The LSP organisational chart to implement the requirements of this Air Quality (Point Sources) MP is shown in **Figure 1** 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).

Figure 1. LSP's Health, Safety, Security and Environmental Team



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 site of the Hydrocarbon Jetties and construction jetty which are under the scope of the Contractor Package A and Package I 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 site for construction jetty, Complex truck scale, and Blown film system

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

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2.3

CONTRACTORS HSSE TEAM

The contractors HSSE team has established this Air Quality (Point Sources) MP in accordance with the applicable standards. The contractors HSSE team will manage their contractors and suppliers in accordance with this Air Quality (Point Sources) 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 Air Quality (Point Sources) 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 Air Quality (Point Sources) MP and achieve compliance with all relevant standards. A description of the key roles and their responsibilities are provided in *Table 2.1*, including the primary communication channel between LSP and contractor HSE teams. Employee contact details for each role associated with this Air Quality (Point Sources) MP are provided in Annex C.



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Table 2.1 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 Air Quality (Point Sources). Delete roles that are not appropriate. Include additional roles where required.]

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3 MITIGATION / MANAGEMENT PROCEDURES

The mitigation / management procedures noted in this section provides the approach to managing point sources of pollution that could potentially impact air quality in relation to construction activities. The contractor is committed to implementing the identified mitigation / management procedures in order to not cause exceedance of the applicable ambient air quality standards, and to avoid impacts on 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 impacts to air quality 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 Air Quality (Point Sources) MP accordingly.

Based on the outcomes of monitoring, plus the outcomes of the socio-economic baseline surveys, a number of sensitive receptors were identified for incorporation into modelling and impact assessment. These are shown in **Figure 2** below and described below:

- Residential house at K1, in Village 2;
- Residential house at K2, in Village 1;
- Residential house at K3;
- Residential house at K4, in Rach Gia.

All of these above identified receptors are considered to have high sensitivity to changes in air quality caused by the Project.


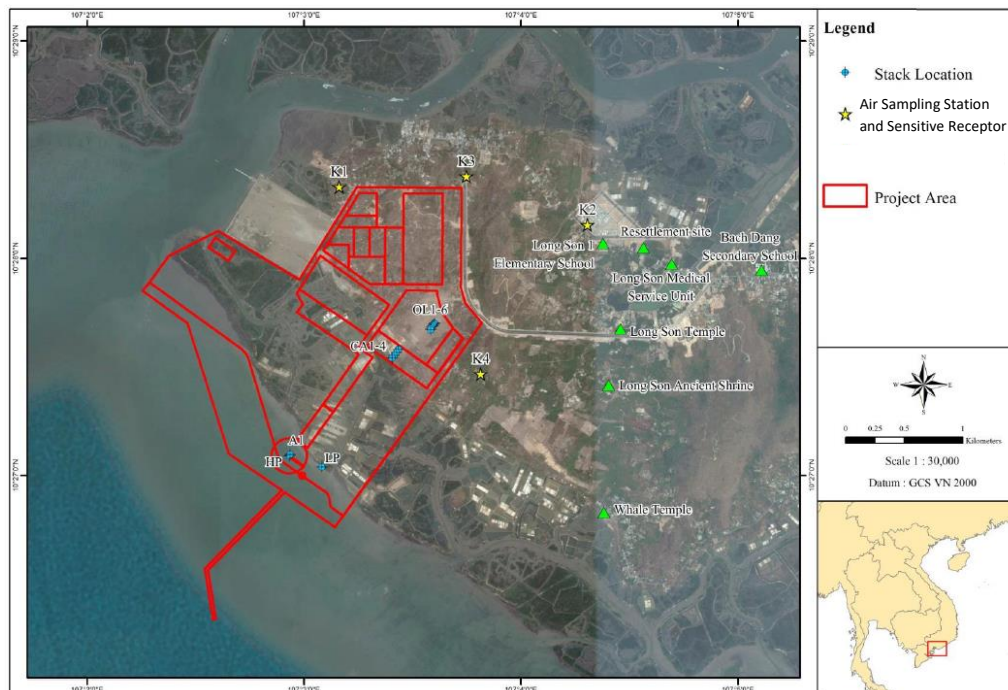
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Figure 2: Sensitive Receptors for Air Quality Impact Assessment



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.




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Table 3.1 Mitigation / Management Procedures

Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	Contractors Responsibility	Related Plans
Impacts due to Fugitive Dust from Soil Disturbance during the Construction Phase	1.1	Batching plants and rock crushers/sorters (where utilised) to be fitted with filters/sprays to assist with dust suppression, except for where it can be adequately demonstrated that there is sufficient separation distance from sensitive receptors, or other mitigation measures are appropriate to reduce dust and particulate emissions to a negligible level.		-
Impacts due to Air Pollution from Machinery and Vehicles during the Construction Phase	1.2	Use low sulfur fuels for machinery and vehicles as applicable.		-
	1.3	Diesel engines and vehicles should be maintained in good condition to reduce fuel use and minimise the emission of pollutants.		-
	1.4	Locate diesel generator or power units away from sensitive receptors, as far as practicable to do so. Sensitive receptors include: residential houses, schools, medical facilities, temples, and offices.		-
Impacts due to Transportation activities during the Construction Phase	1.5	Use low sulfur fuels for machinery and vehicles.		-
	1.6	Undertake scheduled maintenance to reduce fuel use and poor air quality.		-

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Aspect, Potential Impact / Issue	Mitigation Reference	Mitigation and / or Management Procedures	Contractors Responsibility	Related Plans
Greenhouse Gas Emissions on Climate Change during the Construction Phase	1.7	Procure more fuel-efficient and/or electric engines where feasible.		-
	1.8	Develop and implement preventive maintenance plan for power generators, machines, and engines to ensure combustion efficiency.		-
	1.9	Develop vehicle maintenance plan.		-

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4 MONITORING

4.1 LSP HSSE TEAM

An ambient air quality monitoring plan has been developed to track the effectiveness of the mitigation measures during construction. Details of LSP's 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 exceedances of the applicable ambient air quality standards.

It should be noted that LSP's Community Grievance Management Plan (LSP Doc. No. LSP-1S03-0001) ensures community concerns are responded to and managed appropriately, including issues of air quality.

4.2 CONTRACTORS TEAM

In order to assess the effectiveness of the mitigation / management measures and identify the need for further action, the contractors air quality 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.



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Table 4.1 Monitoring Programme

Aspect, Potential Impact / Issue	Reference of Relevant Mitigation Measure *	Sampling Location	Sampling Parameters	Sampling Frequency	Applicable Standards	Responsibility	Reporting
Fugitive dust emissions	1.1	Batching plant and rock crushers/sorters under contractors control	Visual inspection of clean filters/sprays before start-up. Visual inspection of dust generation during operation of batching plant and rock crushers/sorters	Daily – during start-up and operation of batching plant and rock crushers/sorters	N/A – based on visual assessment		Daily (refer to Annex D for report example)
Air pollution from machinery and vehicles	1.2, 1.3, 1.4, 1.5	Machinery and Vehicles under contractors control	Visual inspection for smoke emissions from machinery and vehicles. Review of their fuel reports	Daily – during start-up of machinery and vehicles	N/A		Daily (refer to Annex D for report example)
Impacts due to Transportation activities	1.6, 1.8, 1.9	Machinery and Vehicles under contractors control	Maintenance activity for machinery and vehicles undertaken	Weekly review of maintenance records	N/A		Weekly
Greenhouse Gas Emissions on Climate Change	1.7	Vehicles under contractors control	Review of vehicle fuel efficiency data for proposed vehicles	Once prior to vehicles being used onsite	N/A		Specialist Contractor Report – Vehicle Fuel Efficiency Report

* See Table 3-1 for mitigation measure.

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5 AUDITING AND REPORTING

An Auditing and Reporting Programme is required to ensure that the mitigation / management measures are appropriate in controlling the identified air quality impacts from point sources.

5.1 LSP HSSE TEAM

To ensure compliance with the requirements of this Air Quality (Point Sources) 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.



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Table 5.1 Auditing and Reporting Programme

Inspection / Auditing Interval	Reference of Relevant Mitigation Measure*	Responsibility	Scope of Inspection / Audit	Report Submission / Record Keeping
Daily Inspection (Internal)	1.1, 1.2, 1.3, 1.4, 1.5	Contractor's Onsite EHS Officer	Review the submitted daily monitoring reports to assess the compliance status of relevant operations that may give rise to impacts to air quality and provide support to identifying appropriate corrective actions and ensuring they are: introduced in a timely manner; appropriate; and effective	Archive Daily Monitoring 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
Weekly Review of Daily Inspection Reports / maintenance records (Internal)	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9	Contractor's General Manager	A week report is to be provided to the Contractor's Onsite General Manager, which is to include: the compliance status of relevant operations that may give rise to impacts to air quality; identifying any non-compliances that have arisen over the previous week; detailing the corrective actions that have been taken when a failure has been noted; and noting the appropriateness and effectiveness of any corrective actions	Archive Weekly 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

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Inspection / Auditing Interval	Reference of Relevant Mitigation Measure*	Responsibility	Scope of Inspection / Audit	Report Submission / Record Keeping
Vehicle Fuel Efficiency Report (Internal)	1.7	Contractor's General Manager	Review Vehicle Fuel Efficiency Report prior to vehicles being used onsite to determine if more efficient vehicles can be used.	<p>Archive Vehicle Fuel Efficiency Report in an orderly manner for external auditing</p> <p>All Vehicle Fuel Efficiency Reports are to be maintained at the project site for as long as the Contractor is working at the site</p>
Biannual Inspection (External)	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	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	<p>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</p> <p>All reports are to be maintained at the project site for as long as the Contractor is working at the site</p>

* See Table 3-1 for mitigation measure.

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ANNEX A – CONSTRUCTION SCHEDULE FOR THE POINT SOURCES OF AIR POLLUTION


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

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ANNEX B – AMBIENT AIR QUALITY STANDARDS

National Technical Regulation on Ambient Air Quality

Parameters	1 hour Average (µg/m ³)	8-hour Average (µg/m ³)	24-hour Average (µg/m ³)	Annual Average (µg/m ³)
QCVN 05:2013/BTNMT				
Sulphur Dioxide (SO ₂)	350	-	125	50
Carbon Monoxide (CO)	30,000	10,000	-	-
Nitrogen Dioxide (NO ₂)	200	-	100	40
Total Suspended Particulates (TSP)	300	-	200	100
Particulate Matter 10 (PM ₁₀)	-	-	150	50
Particulate Matter 2.5 (PM _{2.5})	-	-	50	25
Lead (Pb)	-	-	1.5	0.5
Ozone (O ₃)	200	120	-	-

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ANNEX C – EMPLOYEE CONTACT DETAILS ASSOCIATED WITH MANAGEMENT PLAN

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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 Air Quality (Point Sources). Delete roles that are not appropriate. Include additional roles where required.]

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ANNEX D – DAILY REPORTING FORM

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[Note to contractor: The below table provides an example of the details to be included on a Daily Reporting Form.]

Date of Observation	Contact Details / Role of Individual Reporting the Emissions	Details of Observation / Location	Mitigation Action to be Taken	Date Mitigation Action was Implemented