PAUL Y. – CREC(HK) JOINT VENTURE

Contract No. CV/2004/13

Temporary Construction Waste Sorting Facilities at Tseung Kwan O Area 137 and Tuen Mun Area 38

Monthly EM&A Report No. 40 (for the month February 2009 at Tseung Kwan O Area 137)

[3/2009]

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EXECUTIVE SUMMARY

Introduction

This is the fortieth monthly Environmental Monitoring and Audit (EM&A) report prepared by Maunsell Environmental Management Consultants Limited (MEMCL), which changed the name to ENSR Asia (HK) Ltd. (ENSR) on 1 May 2007 for the "Temporary Construction Waste Sorting Facility at Tseung Kwan O Area 137" (the Project). This report documents the findings of EM&A Works conducted during the impact period in February 2009 for Tseung Kwan O Area 137.

As advised by the Contractor, the project commenced on 12 November 2005. The construction activities in February 2009 were:

- Operation of Combined Reception and Exit Office (CREO);
- Operation of Construction Waste Sorting Facilities (CWSF) by mechanical sorting plant;
- Disposal of sorted waste to Landfill and Fill Bank;
- Maintenance work for haul road; and
- Operation of sorting facility at Area B3.

Environmental Monitoring Works

Air Quality

1-hr TSP Monitoring

All the monitoring data complied with the AL levels in the reporting month. The 1-hr TSP monitoring results remained at an acceptable level during the construction and operation of the temporary CWSF.

24-hr TSP Monitoring

All the monitoring data complied with the AL levels in the reporting month. The 24-hr TSP monitoring results remained at an acceptable level during the construction and operation of the temporary CWSF.

Complaints, Non-compliance and Prosecutions

No complaint, non-compliance or prosecution was received in the reporting month.

Permits and Licences

No new permit or license was obtained in the reporting month.

Environmental Site Inspection

There were 4 site inspections conducted in February 2009. Fugitive dust generated from loading and unloading activities in Area A and VGF tipping hall was observed. The Contractor was reminded to increase the frequency of water spraying during loading and unloading activities.

Stagnant water accumulated in pot holes near CREO in Area B1 and office in Area A was observed. The Contractor was reminded to remove the stagnant water and repair the pot holes.

General refuse was observed accumulated along the haul road in Area B1, inside the u-channel and desilting pits along the haul road in Area B2 and near trapezoidal channel in Area A. The Contractor was reminded to clear and dispose of the general refuse properly.

Chemical waste containers were observed without appropriate label in designated storage area. The Contractor was reminded to securely attach an appropriate label at the suitable part of chemical waste containers.

Future Key Issues

The weather is expected to be wet and windy in the forthcoming month and as such, the Contractor should provide preventive measures to prevent surface runoff, such as bunding around the site boundaries, to ensure that a functional temporary drainage system is in place around the site. The Contractor should also maintain sufficient dust suppression measures for vehicle movement along haul roads, and during dumping and sorting activities by mechanical plants.

It is also recommended to implement all necessary preventive measures to avoid oil leakage on ground/soil, such as provision of drip trays for all oil drums/chemical containers and placement of tarpaulin sheets on the ground during maintenance of equipment on site. In the event of any oil leakage problem, the Contractor should properly remove the leaked oil and handle the contaminated soil as chemical waste.

1. INTRODUCTION

Background

1.1 Maunsell Environmental Management Consultants Limited (MEMCL), which changed the name to ENSR Asia (HK) Ltd. (ENSR) on 1 May 2007 was commissioned by Paul Y. – CREC(HK) Joint Venture to undertake the Environmental Monitoring and Audit (EM&A) works for the construction phase of the Temporary Construction Waste Sorting Facility (CWSF) at Tseung Kwan O Area 137 (TKO 137) (hereafter called "the Project").

1.2 An Environmental Permit (No.: EP-134/2002/F) was granted to the Project on 26 January 2006. The scale and scope of this project as stated in the EP include:

- Site clearance;
- Construction of a temporary storm water system;
- Stockpiling of 6 million m^3 of public fill;
- Setting up two barging points: one at the Tseung Kwan O Basin (TKO Basin) and one at the Construction and Demolition Material Sorting Facility (C&DMSF) for transporting the stockpiled public fill by barges;
- Setting up a temporary barging point at the existing Explosives Off-loading Barging Point located in the south-eastern part of Area 137 for the period of May 2004 to December 2004 for transporting the stockpiled public fill by barge;
- Construction and operation of a C&DMSF;
- Setting up a Construction and Demolition Material Crushing Facility at the TKO Basin; and
- Remove the temporary fill bank.

1.3 Under the EP, construction and operation of the construction and demolition material sorting facility is within the scope. Therefore, the said activities in the temporary CWSF in TKO 137 are under the governance of the EP.

1.4 In accordance with the Particular Specification of the Project, baseline monitoring was not required. However, the baseline conditions as well as action and limit levels of the Project was established based on the baseline data collected by Fill Bank at TKO 137.

Scope of Report

1.5 This is the fortieth monthly Environmental Monitoring and Audit (EM&A) Report under Contract CV/2004/13 – Temporary Construction Waste Sorting Facilities at Tseung Kwan O Area 137 and Tuen Mun Area 38. This report presents a summary of the environmental monitoring and inspection works, list of activities, and mitigation measures carried out by the ET for the temporary CWSF at TKO 137 in February 2009.

Project Organization

1.6 The project organization is shown in Appendix A.

1.7 The key personnel contact names and numbers are summarised in Table 1.1

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
CEDD	Engineer	Mr. H C Tang	2762 5602	2714 0113
IEC *(MateriaLab)*	IEC	Mr. Joseph Poon	2450 8238	2450 6138
Contractor *(Paul Y - CREC(HK) JV)*	Project Manager	Mr. Joe Au	9378 3331	2623 9426
	Site Agent	Mr. Y T Wong	9475 6376	--
ET *(ENSR)*	ET Leader	Mr. Y T Tang	2893 1551	2891 0305

Summary of Construction Works

1.8 The construction phase of the Project commenced on 12 November 2005. As informed by the Contractor, the activities during this reporting month included:

- Operation of Combined Reception and Exit Office (CREO);
- Operation of Construction Waste Sorting Facilities (CWSF) by mechanical sorting plant;
- Disposal of sorted waste to Landfill and Fill Bank;
- Maintenance work for haul road; and
- Operation of sorting facility at Area B3.

1.9 The general layout plan of the Project sites showing the contract areas are shown in Figure 1.1.

1.10 The construction programme is provided in Appendix B.

Summary of EM&A Requirements

1.11 Air quality monitoring is required under the Particular Specification of the Project. The description and detailed monitoring requirements for air quality are provided in Section 2 of this Report.

1.12 Environmental site inspection is required by the ET on a weekly basis. Detailed inspection requirements are provided in Section 3 of this Report.

2. AIR QUALITY

Monitoring Requirements

2.1 In accordance with the Particular Specification of the Project, ET is required to conduct 1-hr and 24-hr TSP monitoring at the temporary CWSF in TKO 137 during the construction and operation periods to ensure the activities in the Project does not generate dust which exceeds the acceptable level. Appendix C shows the Action and Limit Levels for the environmental monitoring works.

Monitoring Equipment

2.2 High volume sampler (HVS - Model GS-2310 Accu-vol) complete with the appropriate sampling inlets was installed for 24-hr TSP sampling. The HVS is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). A portable dust meter was used for the 1-hr TSP monitoring. Table 2.1 summarises the equipment used.

Table 2.1 Air Quality Monitoring Equipment

Equipment	Model
HVS	GS 2310 Accu-vol system
Calibrator	GMW 25
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD-3
Calibrator – Dust Meter	Rupprecht & Patashnick TEOM®

Monitoring Parameter, Frequency and Schedule

2.3 The monitoring parameters and frequency are summarised in Table 2.2. The monitoring schedule for the reporting period is shown in Appendix D.

Table 2.2 Frequency of Air Quality Monitoring

Parameters	Frequency
24-hour TSP	Once/week
1-hour TSP	Three times/week

Monitoring Locations

2.4 The location for the air quality monitoring station TKO2 is provided in Table 2.3 and depicted in Figure 2.1.

Table 2.3 Air Quality Monitoring Stations

Station ID	Identity/Description
TKO2	Combined Reception & Exit Office in Area B1

Monitoring Methodology

24-hour TSP Monitoring

Operating/Analytical Procedures

2.5 Operating/analytical procedures for the operation of HVS are as follows:

- The sampler was placed on a horizontal platform with appropriate supporting structure such that:

  - no two samplers were placed less than 2 metres apart.
  - the distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
  - a minimum of 2 metres separation from walls, parapets and penthouses was required for the rooftop samplers.
  - a minimum of 2 metres separation from any supporting structure, measured horizontally was required.
  - airflow around the sampler was unrestricted.
  - no furnaces or incineration flues were operating near the sampler.
  - the sampler was more than 20 metres from the dripline.
  - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

- Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

- For TSP sampling, fibreglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

- After sampling, the filter was transferred from the filter holder of the HVS to a sealable plastic bag and sent to the laboratory for weighing. The elapsed time was also recorded.

- Before weighing, all filters were conditioned for 24 hours before weighing under temperature of 25℃ ±3℃ and the relative humidity (RH) < 50% ±5%, preferably 40%.

- All measurement procedures in section 4.3 to 4.9 of the EM&A Manual were followed during the reporting period.

Maintenance

2.6 Proper maintenance would be provided for the HVS:

- The HVS motors and their accessories have been properly maintained. Appropriate maintenance such as routine motor brushes replacement (time interval for replacement is about 500 hours) and electrical wiring checking have been conducted to ensure that the equipment and necessary power supply were in good working condition.

1-hour TSP Monitoring

Measuring Procedures

2.7 The sampler was placed with appropriate supporting structure. The requirements of the location of the sampler were the same as HVS and were presented in Section 2.5 of this report.

2.8 The measuring procedures of the 1-hour dust meter were in accordance with the Manufacturer's Instruction Manual as follows:

- Set POWER to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).

- Push the knob at MEASURE position.

- Push "O-ADJ" button. (Then meter's indication is 0).
- Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
- Pull out the knob and return it to MEASURE position.
- Push "START" button.
- All measurement procedures in section 4.3 to 4.9 of the approved EM&A Manual were followed during the impact monitoring period.

Maintenance

2.9 Air suction inlet was normally closed unless in operation. Regular cleaning of the air suction inlet was provided.

Wind Data

2.10 Historically, the meteorological data for Fill Bank operations at the site was obtained from the in-situ wind station for TKO 137 under previous contracts. Therefore, such practice would be maintained to ensure consistence of meteorological data for the contract in the Fill Bank.

Calibration Details

24-hour TSP Monitoring

2.11 The HVS was calibrated upon installation on site and prior to commissioning. Subsequent calibration would be provided at 2-month intervals using GMW-25 Calibration Kit. The flow rate of the HVS with mass flow controller was calibrated using an orifice calibrator. Five-point calibration was adopted.

2.12 The HVS was calibrated on 13 February 2009 Calibration details are provided in Appendix E. The next calibration will be conducted by 13 April 2009.

1-hour TSP Monitoring

2.13 The 1-hour TSP meters were checked at 3-month intervals to confirm normal operation of the equipment and calibrated at 1-year interval throughout all stages of the air quality impact monitoring.

2.14 The 1-hour TSP meters were calibrated on 16 June 2008 and the next calibration will be conducted by 14 June 2009.

Results and Observations

2.15 In the reporting month, all the 1-hr and 24-hr TSP monitoring events were carried out in accordance with the schedule.

2.16 The actual monitoring program for February 2009 is presented in Appendix D. All monitoring data and graphical presentations of the monitoring results are provided in Appendix F. Table 2.4 lists out all 1-hr TSP monitoring results and Table 2.5 lists out all the 24-hr TSP monitoring results.

Table 2.4 Summary of 1-hr TSP Monitoring Results

Date	TKO2				Monitoring Status
	1st 1-hr TSP ($\mu g/m^3$)	2nd 1-hr TSP ($\mu g/m^3$)	3rd 1-hr TSP ($\mu g/m^3$)	Exceedance[1]	
07/02	104.4	103.3	100.5	X	Regular
13/02	97.4	98.3	96.3	X	Regular
19/02	88.3	83.0	81.5	X	Regular
25/02	95.1	90.5	92.1	X	Regular

1. *L* – limit level exceedance; *A* - action level exceedance; X – not an exceedance

Table 2.5 Summary of 24-hr TSP Monitoring Results

Date	TKO2		Monitoring Status
	24-hr TSP ($\mu g/m^3$)	Exceedance[1]	
06/02	152.6	X	Regular
12/02	132.7	X	Regular
18/02	114.8	X	Regular
24/02	96.5	X	Regular

1. *L* – limit level exceedance; *A* - action level exceedance; X – not an exceedance

2.17 There was no exceedance of 1-hour and 24-hour TSP monitoring recorded in the reporting month.

2.18 Besides the construction activities inside the Project site, other potential dust sources included the dump truck traffic, dumping and manual sorting of inert waste inside the Fill Bank of TKO 137.

2.19 Wind data, including wind speed and wind direction, are annexed in Appendix G.

3. ENVIRONMENTAL SITE INSPECTION

3.1 Environmental site inspections are required to inspect the construction activities and operation of the temporary CWSF in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented.

3.2 There were 4 site inspections conducted in February 2009 for the temporary CWSF at TKO 137 on 4, 10, 18 and 25 February 2009.

Site Inspections

3.3 Site inspections were carried out by ET to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. After the site inspection, the Contractor was notified of the ET's observations and recommendations. A corrective action plan detailing the environmental observations had also been prepared by the ET. The Contractor then completed this plan to propose/report their remedial works. This corrective action plan submission procedure was adopted for each subsequent ET's inspection to notify all the relevant parties of the Contractor's follow up actions. The site inspection summaries are attached in Appendix H. Particular observations are described as follows:

Air Quality

- Fugitive dust generated from loading and unloading activities in Area A and VGF tipping hall was observed. The Contractor was reminded to increase the frequency of water spraying during loading and unloading activities.
- Automatic wheel washing facilities were installed at the site egress of the Project.
- Vehicles were travelling below the speed limit in the temporary CWSF. There were sufficient speed limit signs on site to advise the drivers.

Noise

- The major noise source was vehicle movement in the temporary CWSF. Since the nearby NSRs were remote from the temporary CWSF, the noise impact was minimal. There was no specific observation noted regarding noise issue.

Water Quality

- Stagnant water accumulated in pot holes near CREO in Area B1 and office in Area A was observed. The Contractor was reminded to remove the stagnant water and repair the pot holes.
- Besides the afore-said issues, it was recommended to arrange maintenance for the silt traps at the wheel washing bays before and after rainstorms so as to ensure their maximum treatment capacities.

Chemical and Waste Management

- General refuse was observed accumulated along the haul road in Area B1, inside the u-channel and desilting pits along the haul road in Area B2 and near trapezoidal channel in Area A. The Contractor was reminded to clear and dispose of the general refuse properly.

- Chemical waste containers were observed without appropriate label in designated storage area. The Contractor was reminded to securely attach an appropriate label at the suitable part of chemical waste containers.

- The Contractor provided waste skips to collect general refuse and would dispose of them regularly to the SENT Landfill.

Landscape and Visual

- Hoarding was erected at the site egress and aligned along the site boundary in connection with the Fill Bank at TKO 137.

Review of Environmental Monitoring Procedures

3.4 The monitoring works conducted by the ET were inspected regularly. The observations for the monitoring works were recorded and summarised as follows:

- The monitoring team recorded the observations around the monitoring stations within and outside of the construction site.

- The monitoring team recorded the temperature, air pressure and general weather condition on the monitoring day.

Assessment of Environmental Monitoring Results

3.5 All monitoring results were audited against the A/L levels and any exceedances would be validated.

3.6 The monitoring results in this reporting period were comparable with the established action and limit levels.

Advice on the Solid and Liquid Waste Management Status

3.7 As advised by the Contractor, there were disposal of sorted inert waste, non-inert waste and chemical waste in the reporting month. The actual amounts of different types of waste generated by the activities of the Project in the month are shown in Table 3.1.

Table 3.1 Actual Amounts of Waste Generated in February 2009

Waste Type	Actual Amount	Disposal Locations
Public fill collected	34428.14 ton	-
Sorted waste (inert material)	7992.75 ton	TKO Fill Bank
Sorted waste (non-inert material)	29608.13 ton	SENT Landfill
Recycling (Metal)	0 ton	Recycling companies
Non-inert C&D waste	0 ton	SENT Landfill
Inert C&D waste	0 ton	TKO Fill Bank
Chemical waste	200 L	Chemical Waste Treatment Centre

3.8 The Contractor should provide sufficient drip trays for all the oil drums/chemical containers. Besides, these drip trays should be covered by tarpaulin sheet to minimize rainfall accumulation.

3.9 The Contractor should use suitable containers with proper labels to store chemical wastes inside a designated chemical waste store in accordance with Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. The Contractor should also advise their workers of the proper

procedures in handling the chemical waste. All the trip tickets for chemical waste disposal were properly kept in the site office. Disposal of chemical waste was undertaken in the reporting month.

3.10 The Contractor should provide sufficient preventive measures during equipment maintenance works so as to avoid oil leakage on the ground. In the event of any oil leakage, the Contractor should clean up the polluted soil and handle all the materials using for this cleaning works as chemical waste.

Environmental Licences and Permits

3.11 No new environmental license and permit was obtained in the reporting month.

3.12 The status of all permits/licences obtained/in use during the reporting period are summarised in Table 3.2.

Table 3.2 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Remarks
		From	To	
Environmental Permit	EP-134/2002/F	26/1/06	-	(Valid) • Site clearance • Construction of a temporary storm water system • Stockpiling of 6 million m^3 of public fill • Setting up two barging points for transporting the stockpiled public fill by barges • Setting up a temporary barging point at the existing Explosive Off-loading Barging Point for the period of May 2004 to December 2004 for transporting the stockpiled public fill by barge • Construction and operation of a Construction and Demolition Material Sorting Facility (C&DMSF) • Setting up a Construction and Demolition Material Crushing Facility at the TKO Basin • Remove the temporary fill bank
Registration as a Chemical Waste Producer	5213-839-P2896-01	25/1/06	--	(Registered)
Certificate of Approval – Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations	--	4/9/06	--	(Approved)
Effluent Discharge License	RE/D1180/839/1	13/11/06	30/11/11	(Valid)

Implementation Status of Environmental Mitigation Measures

3.13 An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix I. Most of the necessary mitigation measures were implemented properly. Any deficiencies were noted in the remarks of the schedule.

Summary of Exceedances of the Environmental Quality Performance Limit

3.14 There was no exceedance of 1-hour and 24-hour TSP monitoring recorded in the reporting month.

3.15 The event action plans are attached in Appendix J.

Summary of Complaints, Notifications of Summons and Successful Prosecutions

3.16 No complaint, notification of summons and prosecutions was received in the reporting month. A summary of environmental complaints and prosecutions was given in Table 3.3 and the cumulative statistics of complaints is presented in Appendix M.

Table 3.3 Summary of Environmental Complaints and Prosecutions

Complaints logged		Summons served		Successful Prosecution	
February 2009	*Cumulative*	*February 2009*	*Cumulative*	*February 2009*	*Cumulative*
0	24	0	0	0	0

4. FUTURE KEY ISSUES

Construction Programme for the Coming Months

4.1 The construction programme for the Project is shown in Appendix B.

4.2 The activities to be conducted in the next two months included:

- Operation of Combined Reception and Exit Office (CREO);
- Operation of Construction Waste Sorting Facilities (CWSF) by mechanical sorting plant;
- Disposal of sorted waste to Landfill and Public Fill Reception Facilities;
- Maintenance work for haul road; and
- Operation of Area B3.

Key Issues for Coming Month

4.3 Key issues to be considered in the coming month include:

- Chemical and waste management;
- Treatment of runoff and wastewater prior to discharge;
- Dust generated from loading and unloading activities; and
- Dust generated from dump trucks traffic.

4.4 The following mitigation measures are required:

Air Quality Impact

- To prohibit any open burning on site;
- To provide adequate water spraying on haul roads and working platforms;
- To operate and maintain automatic wheel washing facilities properly;
- To dampen the fill material prior to unloading or movement;
- To provide road sweeping on all paved haul roads and the public roads outside site egress;
- To provide proper maintenance for equipment and vehicles on site;
- To ensure implementation of the dust mitigation measures for the construction activities, if any;
- To maintain proper operation of the mist spraying systems;
- To ensure vehicle speed below 10 km/hr in the temporary CWSF;
- To investigate any other dust sources around the air sensitive receivers; and
- To follow up any exceedance, if any, caused by the temporary CWSF operation.

Noise Impact

- To identify the noise sources inside and outside of the site;
- To follow up any exceedance caused by the temporary CWSF operation;
- To switch off equipment if not in use;
- To operate silent equipment; and
- To re-schedule the work activities in the event of valid noise exceedance.

Water Quality Impact

- To operate and maintain the wastewater treatment facility for the site toilet;
- To provide covers for the drip trays to avoid stagnant water ponding due to rainfall;
- To ensure cleanliness of oil interceptor bypass tank and all the drainage channels;
- To maintain the existing silt trap to ensure sufficient treatment of wheel wash water frequently;
- To maintain the drainage system in the temporary CWSF; and

- To avoid formation of any stagnant water or provide insecticide to avoid mosquito breeding in the temporary CWSF.

Chemical and Waste Management

- To remove waste from the site regularly;
- To properly store and handle chemical wastes on site;
- To implement trip ticket system for all the imported public fill and general refuse disposal;
- To provide and manage sufficiently sized drip trays for diesel drums or chemical containers;
- To maintain proper housekeeping at the workshop area;
- To provide all the preventive measures during equipment maintenance;
- To remove the oil stains in the event of leakage and handle all the materials using for this cleaning works as chemical waste; and
- To identify C&D material by packaging, labelling, storage, transportation and disposal in accordance with statutory regulations.

Monitoring Schedule for the Coming Months

4.5 The tentative schedule for environmental monitoring programme for March 2009 is shown in Appendix L.

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

5.1 Environmental monitoring of air quality (1-hr TSP and 24-hr TSP) for the Project was performed in February 2009. There was no exceedance of 1-hour and 24-hour TSP monitoring recorded in the reporting month.

5.2 Environmental site inspections were conducted 4 times in the reporting month. Fugitive dust generated from loading and unloading activities in Area A and VGF tipping hall was observed. The Contractor was reminded to increase the frequency of water spraying during loading and unloading activities. The Contractor was also reminded to remove the stagnant water and repair the pot holes, clear and dispose of the general refuse properly and securely attach an appropriate label at the suitable part of chemical waste containers.

5.3 No complaint, non-compliance, notifications of summons or prosecutions was received in the reporting month.

Recommendations

5.4 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality

- Ensure the frequency of water spraying on haul roads, unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke;
- Provide water spraying onto the truckloads during inspection of fill material;
- Conduct road sweeping on the public road and the main haul roads outside and near the site egress by the road sweeper;
- Undertake water spraying on stockpiling area by water bowers;
- Erect adequate speed limit signs to advise the truck drivers of the speed limit;
- Operate mist spraying systems and automatic water sprinklers in the temporary CWSF;
- Implement the dust mitigation measures for the construction activities;
- Designate proper haul roads to ensure effective water spraying; and
- Ensure all vehicles to be washed before leaving the site egress by provision, operation and maintenance of automatic wheel washing facilities.

Construction Noise

- Conduct noisy activities at a farther location from the NSR.

Water Quality

- Maintain the drainage system, including the trapezoidal channels;
- Operate and maintain the treatment system for the site toilet; and
- Remove the stagnant water or provide pesticide for the stagnant water in the permanent desilting chambers, if any.

Chemical and Waste Management

- Remove waste materials from site regularly to avoid accumulation;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;

- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the workshop area;
- Ensure sufficient tarpaulin sheets are provided to cover drip trays;
- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any, and
- Provide a proper chemical waste store.

Landscape and Visual

- Erect all the site hoardings/chaining fences in accordance with agreed design at proper location.