

China Harbour Engineering Company Limited

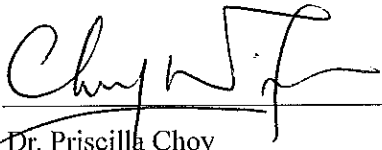
Contract No. DC/2007/20

Harbour Area Treatment Scheme Stage 2A – Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works

Environmental Monitoring and Audit

Monthly Report (Version 1.0)

August 2008

Approved By 
Dr. Priscilla Choy
(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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EXECUTIVE SUMMARY**Introduction**

1. This is the 2nd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for Contract No. DC/2007/20 “Harbour Area Treatment Scheme Stage 2A – Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works” (the Project). This report documents the findings of EM&A Works conducted in August 2008.
2. The construction works for Portions 1 & 2 of the Project were commenced on 18th July 2008.
3. The major site activities undertaken in the reporting month included:
 - Mini-piling works for Day Tank Storage Area & Switch Room No. 2;
 - Proof drilling works for mini-piles at Day Tank Area;
 - Construction of Barge Unloading Area;
 - Construction of Switch Room No. 1; and
 - Installation & Excavation of Shoring System for Wash-out Chamber No. 1.

Environmental Monitoring Works

4. Environmental monitoring for the Project was performed in accordance with the Project EM&A Manual and the monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
5. Summary of the events and action taken in the reporting month is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Month

| Parameter | No. of Exceedance | | No. of Events Due to this Project | Action Taken |
|-----------|-------------------|-------------|-----------------------------------|--------------|
| | Action Level | Limit Level | | |
| 1-hr TSP | 0 | 0 | 0 | N/A |
| 24-hr TSP | 0 | 0 | 0 | N/A |

1-hour TSP Monitoring

6. All 1-hour TSP monitoring was conducted at AM1 as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

7. All 24-hour TSP monitoring was conducted at AM1 as scheduled in the reporting month except that of the 6 August 2008 was rescheduled to 7 August 2008 due to the Typhoon signal no. 8. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

8. Environmental related licenses/permits granted to the Project include the Project Environmental Permit, billing account for Disposal of construction waste, Waste Water Discharge license and Construction Noise Permit.

Key Information in the Reporting Month

9. Summary of key information in this reporting month is tabulated in Table II.

Table II Summary Table for Key Information in the Reporting Month

| Event | Event Details | | Action Taken | Status | Remark |
|---|---------------|---|--|------------|--------|
| | Number | Nature | | | |
| Complaint received | 0 | --- | N/A | N/A | --- |
| Changes to the assumptions and key construction / operation activities recorded | 0 | --- | N/A | N/A | --- |
| Status of submissions under EP | 1 | Monthly EM&A Report for July 08 (Version 1.0) | Submitted to EPD on 12 th August 2008 (EP condition 4.4). | No comment | --- |
| Notifications of any summons & prosecutions | 0 | --- | N/A | N/A | --- |

Future Key Issues

10. Major site activities for the coming month will include:
- Diversion of DN250 Watermain at Day Tank Storage Area;
 - Proof drilling works for mini-piles at Day Tank Area;
 - Static load test for mini-piles at Day Tank Area;
 - Excavation for Day Tank Storage Area and Switch Room No. 2;
 - Construction of Barge Unloading Area;
 - Construction of Switch Room No. 1;
 - Driving H-piles for Chlorination Compound;
 - Excavation & Extension of existing PPC piles for Chlorination Compound;
 - Excavation for Dechlorination Plant in Portion 4; and
 - Construction of Dechlorination Plant.
11. The future environmental concerns will be mainly on ponding water and surface runoff due to the rainy weather; dust emission from concrete breaking and excavation works; and management on waste generated from the works above.

1 INTRODUCTION

Background

- 1.1 “Harbour Area Treatment Scheme Stage 2A – Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works” (hereinafter called the “the Project”) under Contract No. DC/2007/20 is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). A Final Environmental Impact Assessment (EIA) Report has been prepared in July 2007 to consider the key issues of noise, air quality, water quality, ecological, construction waste and human health risk, and identify possible mitigation measures. The Final EIA Report was endorsed by Environmental Protection Department (EPD) on 8 November 2007 and was included in the EIA register under the EIAO as report no. AEIAR-113/2007. Environmental Monitoring and Audit (EM&A) Manual for the Final EIA Report was also included as part of the Final EIA report in the register. An Environmental Permit (EP) No. EP-295/2007 was issued on 3rd December 2007 for the Project “Harbour Area Treatment Scheme – Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works” to the Drainage Services Department (DSD) as Permit Holder. This Project comprises the Construction Phase of the Project “Harbour Area Treatment Scheme – Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works”.
- 1.2 The Project comprises mainly the construction of the advance disinfection facilities (ADF) include:
- (a) Chlorination system - provision of a sodium hypochlorite solution storage farm and associated dosing system; and
 - (b) Dechlorination system - provision of a sodium bisulphite storage and associated dosing system.
- 1.3 The Project site layout plan is shown in **Figure 1.1**.
- 1.4 The Project will be constructed within the existing sewage treatment works on Stonecutters Island (SCISTW), which is providing Chemically Enhanced Primary Treatment (CEPT) for 1.4 million cubic metres of sewage collected each day through deep tunnels from the HATS Stage 1 catchments (i.e. the whole of Kowloon peninsula, Tseung Kwan O, Kwai Chung, Tsing Yi, Chai Wan and Shau Kei Wan). The design treatment capacity of the SCISTW is 1.7 million cubic metres per day. At present, the plant has no disinfection facility and the CEPT treated effluent is now discharged to the waters southwest of Stonecutters Island through a 1.7 km long outfall.
- 1.5 The chlorination system of the disinfection facilities would be located within the site boundary of the existing SCISTW (**Figure 1.1** refers). The dechlorination plant would be located adjacent to the existing chamber no. 15 (**Figure 1.1** refers) at the western end of Container Port Road South.

- 1.6 China Harbour Engineering Company Limited (CHEC) was awarded as the main contractor (hereinafter called “the Contractor”) of the Project. Cinotech Consultants Limited (Cinotech) was commissioned by CHEC as the Environmental Team (ET). Dr. Priscilla CHOY of Cinotech was appointed as the ET Leader of the Project in accordance with EP Condition 2.1. Hyder Consulting Limited (Hyder) was employed by DSD to undertake Independent Checker (IEC) services of the Project and Mr. Antony Wong of Hyder was appointed as the IEC under EP Condition 2.2.
- 1.7 The construction works for Portions 1 & 2 of the Project were commenced on 18th July 2008
- 1.8 This is the 2nd monthly EM&A report summarizing the EM&A works for the Project in August 2008.

Project Organizations

- 1.9 Different parties with different levels of involvement in the project organization include:
- Project Proponent/ Permit Holder – Drainage Services Department (DSD)
 - Engineer’s Representative (ER) – Ove Arup & Partners Hong Kong Ltd. (ARUP)
 - Contractor – China Harbour Engineering Company Limited (CHEC)
 - Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)
 - Independent Environmental Checker (IEC) – Hyder Consulting Limited (Hyder)
- 1.10 The responsibilities of respective parties in construction phase are detailed in Section 1.19 to 1.25 of the Project EM&A Manual.
- 1.11 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

| Party | Role | Name | Position | Phone No. | Fax No. |
|----------|---|--------------------|--|-----------|-----------|
| DSD | Project Proponent/ Permit Holder | Ms. Ada LAI | Engineer | 2159 3411 | 2833 9162 |
| ARUP | Engineer's Representative | Mr. Peter WONG | Resident Engineer | 2407 8221 | 2407 8772 |
| | | Ms. Gary CHEUNG | Resident Engineer | 6201 3158 | |
| | | Mr. Sunny LO | Inspector of Works | 6345 0548 | |
| CHEC | Contractor | Mr. T. K. CHEUNG | Project Manager | 2887 8118 | 2741 2772 |
| | | Mr. Aaron AU | Site Agent | 6345 0754 | |
| | | Ms. Lighting CHAN | Environmental Officer | 2887 8118 | |
| Cinotech | Environmental Team | Dr. Priscilla CHOY | Environmental Team Leader | 2151 2089 | 3107 1388 |
| | | Mr. Robert TSANG | Project Coordinator and Audit Team Leader | 2151 2099 | |
| | | Mr. Henry LEUNG | Monitoring Team Leader | 2151 2087 | |
| Hyder | Independent Environmental Checker | Mr. Antony WONG | Independent Environmental Checker | 2911 2744 | 2805 5028 |
| | | Ms. Karine WONG | Project Manager | 2911 2707 | |
| | | Ms. Selina LEUNG | Independent Environmental Checker Representative | 2911 2733 | |

Construction Programme

1.12 The site activities undertaken in the reporting month were:

- Mini-piling works for Day Tank Storage Area & Switch Room No. 2;
- Proof drilling works for mini-piles at Day Tank Area;
- Construction of Barge Unloading Area;
- Construction of Switch Room No. 1; and
- Installation & Excavation of Shoring System for Wash-out Chamber No. 1.

Summary of EM&A Requirements

1.13 The EM&A programme requires construction phase air quality and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the Final EIA report; and
- Environmental requirements in contract documents.

1.14 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of this report.

1.15 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality and noise as well as audit works for the Project in the reporting month.

2 AIR QUALITY

Monitoring Requirements

- 2.1 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted in accordance with the EM&A Manual to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

- 2.2 According to the EM&A Manual, two designated monitoring stations, AM1 and AM2 were selected for air quality monitoring, as shown in **Figure 1.2**. **Table 2.1** describes the locations of the air quality monitoring stations.

Table 2.1 Locations for Air Quality Monitoring

| Monitoring Stations | Location | Status |
|---------------------|---|--------------------------|
| AM 1 | Rooftop, Block A of Government Dockyard | Impact Monitoring |
| AM 2* | Ngong Shuen Chau Barracks – Group 2 | Proposed to be cancelled |

Remarks: *The proposed cancellation has been verified by IEC and sent to EPD as mentioned in Section 2.15 below.

Monitoring Equipment

- 2.3 **Table 2.2** summarizes the equipment used for the air quality monitoring in the reporting month.

Table 2.2 Air Quality Monitoring Equipment

| Equipment | Model and Make | Qty. |
|-----------------|---|------|
| HVS Sampler | Graseby GMW 2310 HVS, Model GS-2310105-1 | 1 |
| Calibrator | Tisch Environmental, Inc.; Model no. TE-5025A | 1 |
| Wind Anemometer | Davis Weather Monitor II, Model no. 7440 | 1 |

Monitoring Parameters, Frequency and Duration

- 2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact air quality monitoring for the whole construction period.

Table 2.3 Impact Air Quality Monitoring Parameters, Frequency and Duration

| Parameters | Frequency |
|------------|----------------------|
| 1-hr TSP | Three times / 6 days |
| 24-hr TSP | Once / 6 days |

- 2.5 1-hr TSP and 24-hr TSP were only conducted at AM1 in the reporting month.

Monitoring Methodology and QA/QC Procedure

Instrumentation

- 2.6 High volume Samplers (HVS) completed with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

HVS Installation

- 2.7 The following guidelines were adopted during the installation of HVS:
- Sufficient support was provided to secure the samplers against gusty wind.
 - No two samplers were placed less than 2 meters 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 meters of separation from walls, parapets and penthouses was required for rooftop samples.
 - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
 - No furnaces or incineration flues were nearby.
 - Airflow around the samplers was unrestricted.
 - The samplers were more than 20 meters from the drip line.
 - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filters Preparation

- 2.8 Fiberglass filters (G810) were used [Note: these filters have a collection efficiency of larger than 99% for particles of 0.3 mm diameter]. A HOKLAS accredited laboratory, Wellab Ltd. (HOKLAS 083), was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Cinotech's monitoring team.
- 2.9 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than ± 5 %. A convenient working RH was 40%.
- 2.10 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

- 2.11 Operating/analytical procedures for the air quality monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the two HVS were properly set (between 1.1 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard

Title 40, CFR Part 50.

- The power supply was checked to ensure the samplers worked properly.
- On sampling, the samplers were operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the Wellab Ltd. for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

2.12 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipments and necessary power supply are in good working condition.
- All HVS were calibrated (five point calibration) using Calibration Kit prior to the commencement of the baseline monitoring.

Results and Observations

2.13 All 1-hour TSP monitoring at AM1 was conducted as scheduled in the reporting month. The results of 1-hour TSP ranged between $25 \mu\text{g}/\text{m}^3$ and $272 \mu\text{g}/\text{m}^3$. No Action/Limit Level exceedance was recorded.

2.14 All 24-hour TSP monitoring at AM1 was conducted as scheduled in the reporting month except that of the 6 August 2008 was rescheduled to 7 August 2008 due to the Typhoon signal no. 8. The results of 24-hour TSP ranged between $20 \mu\text{g}/\text{m}^3$ and $139 \mu\text{g}/\text{m}^3$. No Action/Limit Level exceedance was recorded.

- 2.15 Due to the sensitive of the military installations within Barracks building, the People's Liberation Army (PLA) had declined ET 's request for setting up the monitoring station AM2. Considering there is no other air sensitive receiver within the EIA study area (500m from the Project site boundary of Portions 3 & 4) and no significant environmental impact form the project is anticipated, the ET Leader proposed to cancel all environmental monitoring works at the designated monitoring station AM2. The proposal has been verified by IEC on 19th August 2008 and provided to EPD on 20th August 2008.
- 2.16 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices D** and **E** respectively.
- 2.17 Wind data monitoring equipment has been installed at Rooftop, Block A of Government Dockyard for logging wind speed and wind direction. These wind data for the reporting month is summarized in **Appendix F**.
- 2.18 The environmental monitoring schedules for the reporting month and also the tentative schedule for the next month are shown in **Appendix C**.

3 NOISE

- 3.1 One construction noise monitoring station, NM1 - Barrack Buildings, was designated in the EM&A Manual.
- 3.2 Due to the sensitive of the military installations within Barracks building, the People's Liberation Army (PLA) had declined ET 's request for setting up the monitoring station NM1. Considering there is no other noise sensitive receiver within the EIA study area (300m from the Project site boundary of Portions 3 & 4) and no significant environmental impact form the project is anticipated, the ET Leader proposed to cancel all environmental monitoring works at the designated monitoring station NM1. The proposal has been verified by IEC on 19th August 2008 and provided to EPD on 20th August 2008.
- 3.3 No construction noise monitoring work was conducted in the reporting month.

4 ENVIRONMENTAL AUDIT

Site Audits

- 4.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 4.2 Site audits were conducted on 7th, 13th, 20th and 27th August 2008 by ET. A joint site audit with the representatives of IEC, ER, the Contractor and the ET was carried out on 13th August 2008. No non-compliance was observed during the site audits.

Review of Environmental Monitoring Procedures

- 4.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- No construction noise monitoring work was conducted in the reporting month.
- According to the observation in weekly site audit sessions, no excessive noise was notified from the Project.

Status of Environmental Licensing and Permitting

- 4.4 All permits/licenses obtained for the Project are summarized in **Table 4.1**.

Status of Waste Management

- 4.5 The Construction and Demolition (C&D) materials generated in the reporting month were mainly excavated materials regard as inert C&D materials that disposed of as Public Fill. The quantities of waste generated in this reporting month are summarized in **Appendix K**. No chemical waste was generated in the reporting month.

Implementation Status of Environmental Mitigation Measures

- 4.6 According to the EIA Report and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. A summary of the EMIS is provided in **Appendix J**.

Table 4.1 Summary of Environmental Licensing and Permit Status

| Permit / License No. | Valid Period | | Details | Status |
|---|--------------|----------|---|--------|
| | From | To | | |
| Environmental Permit (EP) | | | | |
| EP-295/2007 | 03/12/07 | N/A | The Project involves construction and operation of disinfection facilities (chlorination/dechlorination) within the existing Stonecutters Island Sewage Treatment Works. The disinfection facilities include storage, dosing and associated pipeline systems for sodium hypochlorite sodium bisulphite. | Valid |
| Billing Account for Disposal of Construction Waste | | | | |
| 7007138 | 13/05/08 | N/A | Disposal of Construction waste. | Valid |
| Waste Water Discharge License | | | | |
| EP760/269/0133011 | 14/07/08 | 31/07/13 | Discharge of industrial trade effluent and all other wastewater after solid removal arising from Construction site at Stonecutters Island Sewage Treatment Works, Kowloon (Contract No. DC/2007/20 HATS 2A- Construction of Advance Disinfection Facilities at SCISTW) to communal storm drain. | Valid |
| Construction Noise Permit (CNP) | | | | |
| PP-RW0010-08 | 20/05/08 | 19/09/08 | Location: Construction site in Stonecutters Island Sewage Treatment Works at Stonecutters Island, Kowloon. Day and hours for the use of PMEs: 07:00-19:00 on any day not being a general holiday. | Valid |
| PP-RW0021-08 | 20/09/08 | 19/12/08 | Location: Construction site in Stonecutters Island Sewage Treatment Works at Stonecutters Island, Kowloon. Day and hours for the use of PMEs: 07:00-19:00 on any day not being a general holiday. | Valid |

4.7 During the weekly environmental site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 4.2**.

Table 4.2 Observations and Recommendations of Site Audit

| Parameters | Date | Observations | Remedial Actions |
|----------------------|-----------|---|---|
| Water Quality | 13 Aug 08 | Ponding water was observed in the drip tray at Day Tank Storage Area and Wheel washing Bay at Works Area B. The Contractor was reminded to clear it to avoid mosquito breeding. | The situation was observed improved/rectified in audit session 80820. |
| | 27 Aug 08 | Ponding water was observed at Day Tank Storage Area. The Contractor was reminded to clear it to avoid mosquito breeding. | This item will be followed up in the coming audit sessions. |

| Parameters | Date | Observations | Remedial Actions |
|------------------------------------|-----------|--|---|
| <i>Air Quality</i> | 13 Aug 08 | Adequate enclosure (i.e. three sides and top cover) was observed not provided for the cement mixing area. The Contractor was advised to provide adequate enclosure for it and well cover the unused cement with tarpaulin. | The situation was observed improved/rectified in audit session 80820. |
| | 20 Aug 08 | Dried and dusty surfaces were observed around the site area. The Contractor was reminded to provide frequent watering (e.g. 2-3 times per day) to avoid dust emission. | The situation was observed improved/rectified in audit session 80827. |
| <i>Waste / Chemical Management</i> | 7 Aug 08 | General refuse including water bottles and soft drink cans was observed around Day Tank Storage Area. The Contractor was reminded to clean it up. | The situation was observed improved/rectified in audit session 80813. |
| | 27 Aug 08 | Oil stain was observed on the floor at Barge Unloading Area. The Contractor was reminded to clean it up. | This item will be followed up in the coming audit sessions. |

Table 4.3 Observations and Recommendations of Site Audit Followed up for Pervious Month

| Parameters | Date | Observations | Remedial Actions |
|------------------------------------|-----------|--|---|
| <i>Water Quality</i> | 30 Jul 08 | Silt was observed accumulated higher than the sandbags and close to the edge of the Site Area at Daytank Storage Area. The Contractor was advised to provide sufficient sandbags and clean up the floor to prevent silty surface runoff during rain. | The situation was observed improved/rectified in audit session 80807. |
| <i>Waste / Chemical Management</i> | 30 Jul 08 | Oil was observed on the ponding water at Daytank Storage Area. The Contractor was reminded to clean up the oil before discharging into public channel. | The situation was observed improved/rectified in audit session 80807. |

Implementation Status of Event Action Plans

4.8 The Event Action Plans for air quality and noise are presented in **Appendix I**.

1-hr TSP

4.9 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP

4.10 No Action/Limit Level exceedance was recorded in the reporting month.

Summary of Complaint and Prosecution

4.11 No environmental related complaint, prosecution or notification of summons was received in the reporting month.

4.12 There was no environmental complaint, prosecution or notification of summons received since the Project commencement. The Complaint Log is attached in **Appendix M**.

5 FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming months include:

- Surface runoff from the Site area due to construction works and rainy weather;
- Dust emission from concrete breaking, excavation and loading and unloading dusty materials;
- Noise nuisance from operation of equipment and machinery on-site;
- Maintenance of de-silting facilities and drainage system, such as U-channels;
- Formation of ponding/ stagnant water in the site areas;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Larviciding against mosquito breeding in stagnant water should be carried out at least on a weekly basis; and
- Accumulation of C&D waste and general waste on site.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule for the next month is shown in **Appendix C**.

Construction Program for the Next Month

5.3 A tentative construction programme is provided in **Appendix L**. The major construction activities in the coming month will include:

- Diversion of DN250 Watermain at Day Tank Storage Area;
- Proof drilling works for mini-piles at Day Tank Area;
- Static load test for mini-piles at Day Tank Area;
- Excavation for Day Tank Storage Area and Switch Room No. 2;
- Construction of Barge Unloading Area;
- Construction of Switch Room No. 1;
- Driving H-piles for Chlorination Compound;
- Excavation & Extension of existing PPC piles for Chlorination Compound;
- Excavation for Dechlorination Plant in Portion 4; and
- Construction of Dechlorination Plant.

6 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring and audit works were conducted in the reporting month. Site inspections were conducted on a weekly basis. The results were reviewed and checked.

1-hour TSP Monitoring

- 6.2 All 1-hour TSP monitoring was conducted at AM1 as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

- 6.3 All 24-hour TSP monitoring was conducted at AM1 as scheduled in the reporting month except that of the 6 August 2008 was rescheduled to 7 August 2008 due to the Typhoon signal no. 8. No Action/Limit Level exceedance was recorded.

Complaint and Prosecution

- 6.4 No environmental prosecution and complaint was received in the reporting month.

Recommendations

- 6.5 According to the environmental audits performed in the reporting month, the following recommendations were made:

Water Impact

- To ensure proper use and maintenance of the de-silting facilities and drainage system;
- To avoid formation of ponding/ stagnant water on site;
- To carry out larviciding regularly against mosquito breeding;
- To well maintain the drainage system inside and around the Site area; and
- To prevent surface runoff into public area or drainage channel.

Dust Impact

- To provide water spraying regularly on stockpiles of dusty materials, loading/unloading of dusty materials and dried site areas;
- To remain good site practice on handling excavated or dusty material for dust suppression, e.g. covering by impervious materials;
- To check and maintain the mechanical equipments regularly to avoid black smoke emission; and

- To provide adequate enclosure, i.e. three side and top covers, for the cement mixing works for dust suppression.

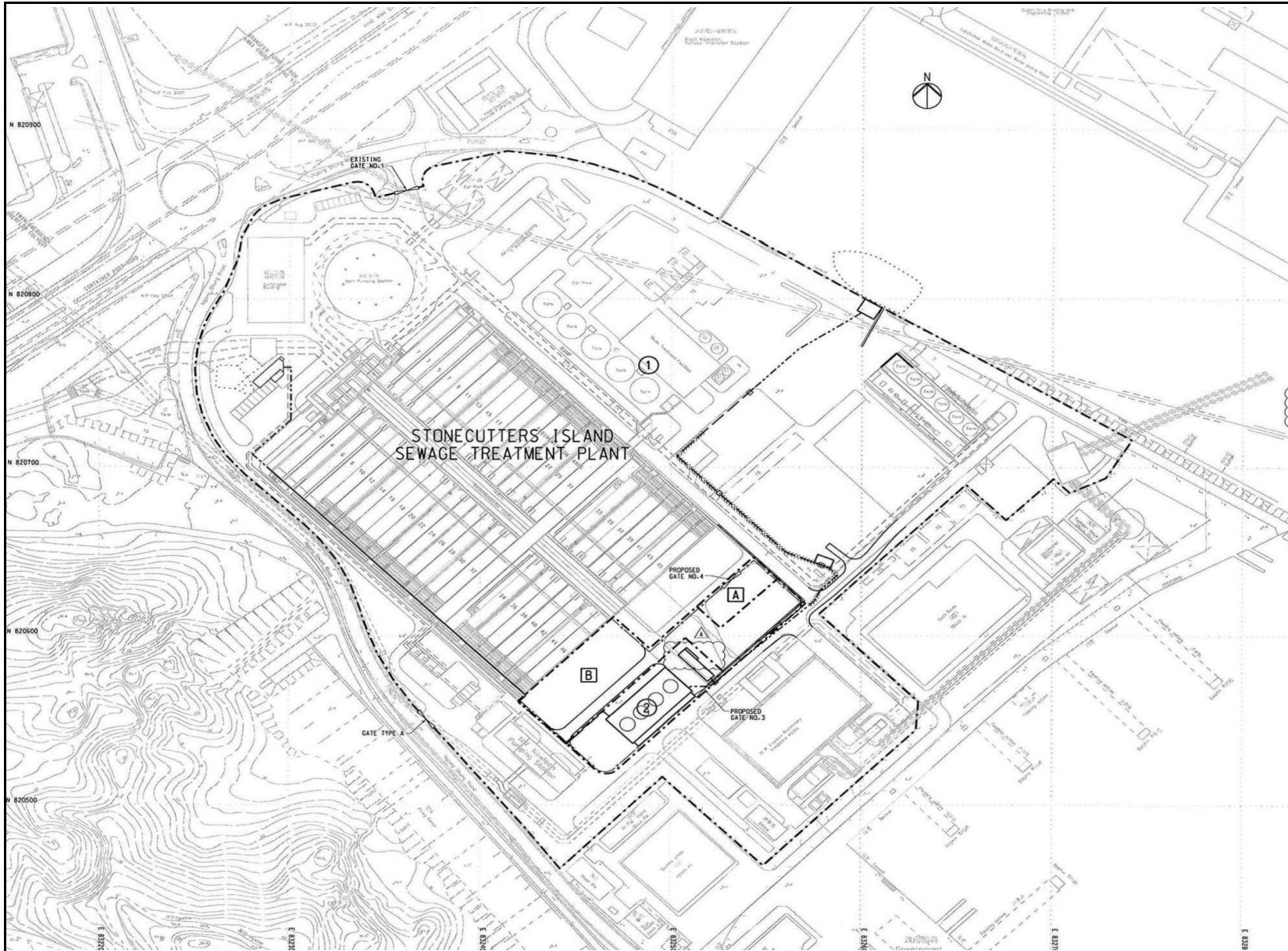
Noise Impact

- To space out noisy equipments and position as far away as possible from sensitive receivers;
- To provide adequate lubricant on mechanical equipments to reduce frictional noise; and
- To well maintain the mechanical equipments / machinery to avoid abnormal noise nuisance.

Waste / Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To provide proper storage area or drip trays for oil containers on site;
- To avoid and check for any accumulation of waste materials or rubbish on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment; and
- To well maintain the equipment and drip tray to avoid oil leakage.

FIGURES



- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. ALL LEVELS REFER TO P.D.H.K. AND ARE IN METRES.
 3. ALL GRIDS REFER TO HONG KONG 1980 GRID.
 4. A PROJECT SIGNBOARD SHALL BE ERRECTED WITHIN WORKS AREA B WITH LOCATION TO BE DETERMINED BY THE ENGINEER.
 5. THE CONTRACTOR SHALL BE PERMITTED TO RETAIN THE WORKS AREAS FOR USE UP TO THE SUBSTANTIAL COMPLETION OF THE WORKS SOLELY FOR THE PURPOSE OF COMPLETING HIS OBLIGATION WITH RESPECT TO THE WORKS OF THIS CONTRACT OR AT SUCH LATER DATE AS THE ENGINEER MAY ADVISE THE CONTRACTOR IN WRITING.

- LEGEND :**
- PORTION / WORKS AREA
 - PORTION 1
 - WORKS AREA A
 - CHAIN LINK FENCE TYPE 1 WITH GATE
 - TWIN DOUBLE-CONTAINMENT PIPES AND TRENCH WITH MULTI-PART COVER
 - TWIN DOUBLE-CONTAINMENT PIPES AND TRENCH WITH PRECAST CONCRETE COVER
 - TWIN DOUBLE-CONTAINMENT PIPES WITHOUT TRENCH
 - SCREENING STRUCTURE MADE OF WATER-FILLED BARRIERS
 - TWO LAYERS GEOMEMBRANE
 - GATE

Contract No. DC/2007/20
 HARBOUR AREA TREATMENT SCHEME STAGE 2A - CONSTRUCTION OF ADVANCE DISINFECTION FACILITIES
 AT STONECUTTERS ISLAND SEWAGE TREATMENT WORKS

Scale
N.T.S

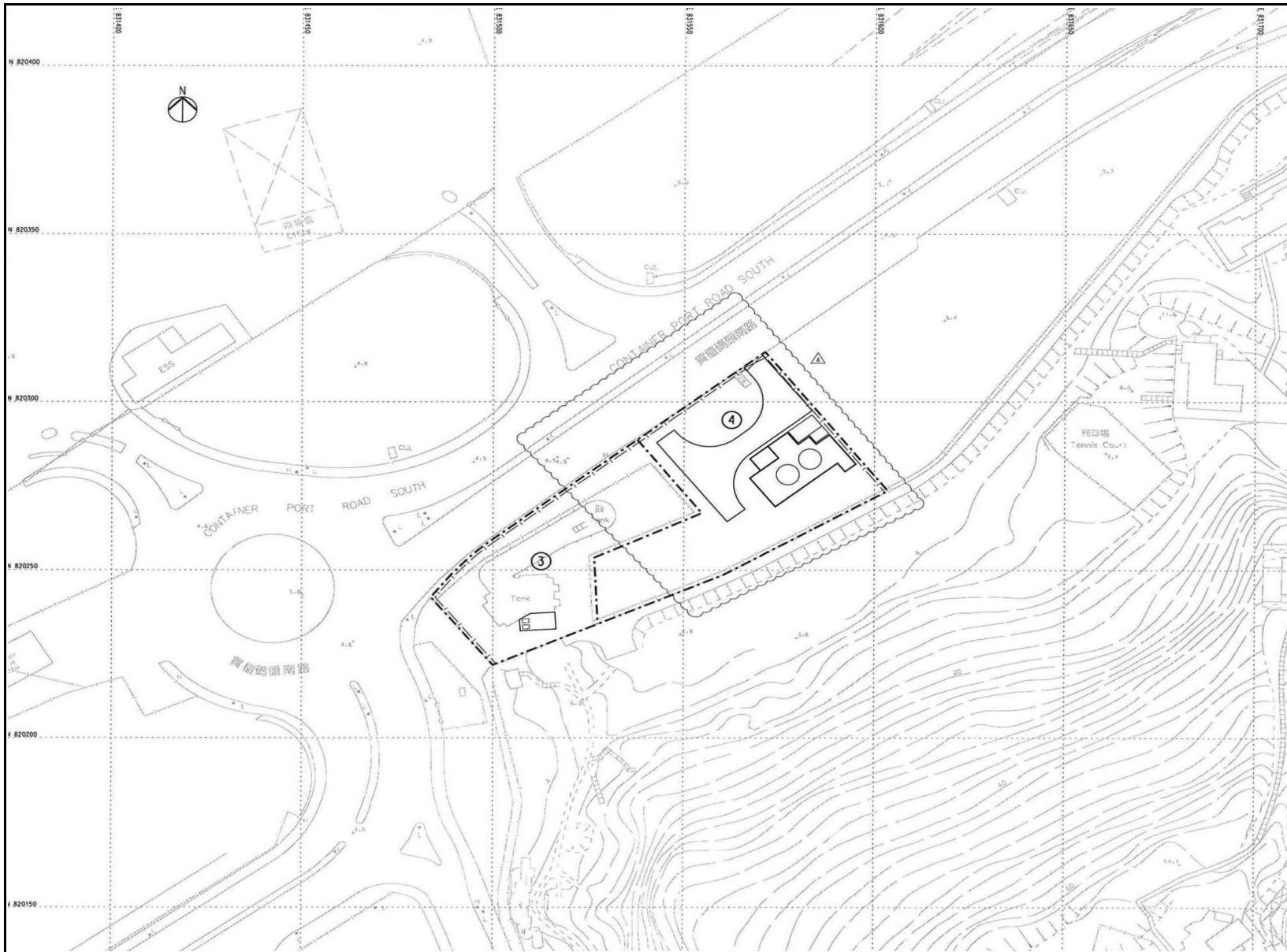
Proposa
No. MA8009

Project Site Layout Plan (Page 1 of 2)

Date
Jun-08

Figure
1.1





- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. GRID LINES ARE HONG KONG GRID 1980.
 3. A PROJECT SIGNBOARD SHALL BE ERRECTED NEAR GATE NO. 5 IN PORTION 4 WITH LOCATION TO BE DETERMINED BY THE ENGINEER.

- LEGEND :**
- PORTION/WORKS AREA
 - 3 PORTION 3
 - HOARDING WITH GATE
 - EXISTING FENCING TO BE DEMOLISHED
 - G GATE

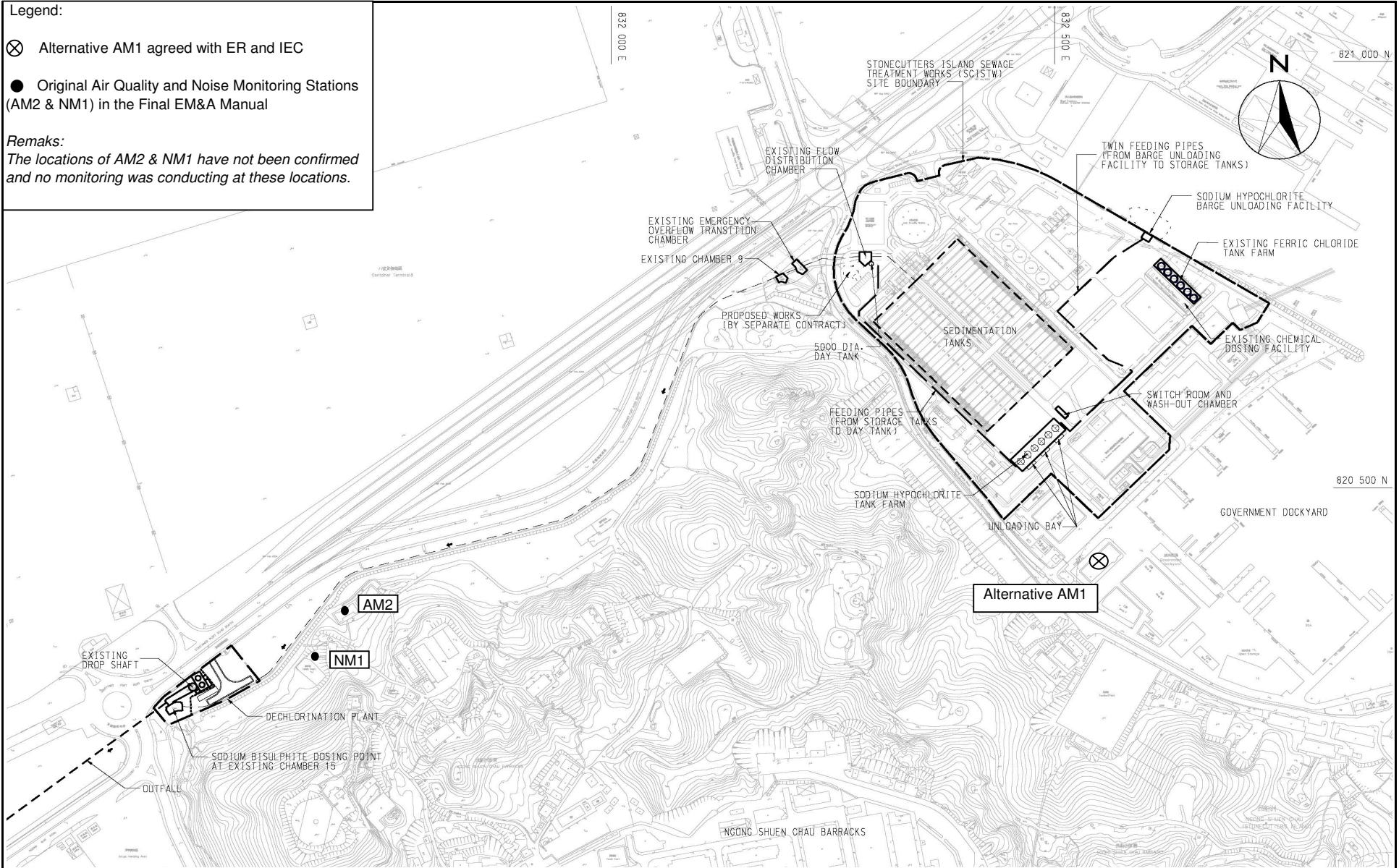
| | | | |
|--|----------------|-----------------------|----------|
| Contract No. DC/2007/20 HARBOUR AREA TREATMENT SCHEME STAGE 2A - CONSTRUCTION OF ADVANCE DISINFECTION FACILITIES AT STONECUTTERES ISLAND SEWAGE TREATMENT WORKS | Scale N.T.S | Proposa No. MA8009 | CINOTECH |
| Project Site Layout Plan (Page 2 of 2) | Date Jun-08 | Figure 1.1 | |


Legend:

- ⊗ Alternative AM1 agreed with ER and IEC
- Original Air Quality and Noise Monitoring Stations (AM2 & NM1) in the Final EM&A Manual

Remarks:

The locations of AM2 & NM1 have not been confirmed and no monitoring was conducting at these locations.



| | | | |
|--|---|---|---|
| <p>Contract No. DC/2007/20 HARBOUR AREA TREATMENT SCHEME STAGE 2A - CONSTRUCTION OF ADVANCE DISINFECTION FACILITIES AT STONECUTTERES ISLAND SEWAGE TREATMENT WORKS</p> | <p>Scale N.T.S</p> | <p>Proposal No. MA8009</p> |  |
| <p>LOCATIONS OF ENVIRONMENTAL MONITORING STATIONS</p> | <p>Date Jul-08</p> | <p>Figure 1.2</p> | |

**APPENDIX A
ACTION AND LIMIT LEVELS**

APPENDIX A - Action and Limit Levels**Table A-1 Action and Limit Levels for 1-Hour TSP**

| Location | Action Level, $\mu\text{g}/\text{m}^3$ | Limit Level, $\mu\text{g}/\text{m}^3$ |
|-----------------|--|---|
| AM1 | 307 | 500 |

Table A-2 Action and Limit Levels for 24-Hour TSP

| Location | Action Level, $\mu\text{g}/\text{m}^3$ | Limit Level, $\mu\text{g}/\text{m}^3$ |
|-----------------|--|---|
| AM1 | 158 | 260 |

**APPENDIX B
COPIES OF CALIBRATION
CERTIFICATES**

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8009/17/0001

Station: Rooftop of Block A, Government Dockyard (24 hr) Operator: WK
 Date: 6-Jun-08 Next Due Date: 5-Aug-08
 Equipment No.: A-01-17 Serial No.: 3460

| Ambient Condition | | | |
|---------------------|-------|---------------------|-------|
| Temperature, Ta (K) | 297.1 | Pressure, Pa (mmHg) | 758.6 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|--------|---------------|--------|
| Equipment No.: | A-04-06 | Slope, mc | 0.0575 | Intercept, bc | 0.0395 |
| Last Calibration Date: | 10-Mar-08 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 9-Mar-09 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|----------------------------|---|---------------------|----------------------|--|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | [ΔH x (Pa/760) x (298/Ta)] ^{1/2} | Qstd (CFM) X - axis | ΔW (HVS), in. of oil | [ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis |
| 1 | 9.6 | 3.10 | 53.23 | 6.0 | 2.45 |
| 2 | 7.5 | 2.74 | 46.97 | 5.0 | 2.24 |
| 3 | 5.6 | 2.37 | 40.49 | 3.5 | 1.87 |
| 4 | 3.5 | 1.87 | 31.87 | 2.2 | 1.48 |
| 5 | 2.1 | 1.45 | 24.53 | 1.3 | 1.14 |

By Linear Regression of Y on X

Slope, mw = 0.0466 Intercept, bw = 0.0014
 Correlation coefficient* = 0.9985

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.01

Remarks: _____

Conducted by: N.K. Tang Signature: [Signature] Date: 6-June 2008.
 Checked by: [Signature] Signature: [Signature] Date: 6/6/2008

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8009/17/0002

Station Rooftop of Block A, Government Dockyard Operator: WK
 Date: 5-Aug-08 Next Due Date: 4-Oct-08
 Equipment No.: A-01-17 Serial No. 3460

| Ambient Condition | | | |
|---------------------|-------|---------------------|-------|
| Temperature, Ta (K) | 302.9 | Pressure, Pa (mmHg) | 753.2 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|--------|---------------|--------|
| Equipment No.: | A-04-06 | Slope, mc | 0.0575 | Intercept, bc | 0.0395 |
| Last Calibration Date: | 10-Mar-08 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 9-Mar-09 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|------------------------------------|--|---------------------|------------------------------|---|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | Qstd (CFM) X - axis | ΔW (HVS), in. of oil | $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis |
| 1 | 9.7 | 3.08 | 52.80 | 6.5 | 2.52 |
| 2 | 7.1 | 2.63 | 45.07 | 4.8 | 2.16 |
| 3 | 5.3 | 2.27 | 38.85 | 3.5 | 1.85 |
| 4 | 3.2 | 1.77 | 30.03 | 2.2 | 1.46 |
| 5 | 2.6 | 1.59 | 27.00 | 1.6 | 1.25 |

By Linear Regression of Y on X
 Slope, mw = 0.0483 Intercept, bw = -0.0215
 Correlation coefficient* = 0.9988

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.32

Remarks: _____

Conducted by: W. K. Tang Signature: [Signature] Date: 5/8/08
 Checked by: [Signature] Signature: [Signature] Date: 5 August 2008



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
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 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENVY.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 10, 2008 Roots-meter S/N 9833640 Ta (K) - 295
 Operator Tisch Orifice I.D. - 0999 Pa (mm) - 746.76

| PLATE OR Run # | VOLUME START (m3) | VOLUME STOP (m3) | DIFF VOLUME (m3) | DIFF TIME (min) | METER DIFF Hg (mm) | ORFICE DIFF H2O (in.) |
|----------------|-------------------|------------------|------------------|-----------------|--------------------|-----------------------|
| 1 | NA | NA | 1.00 | 1.3890 | 3.2 | 2.00 |
| 2 | NA | NA | 1.00 | 0.9850 | 6.3 | 4.00 |
| 3 | NA | NA | 1.00 | 0.8810 | 7.8 | 5.00 |
| 4 | NA | NA | 1.00 | 0.8410 | 8.6 | 5.50 |
| 5 | NA | NA | 1.00 | 0.6950 | 12.5 | 8.00 |

DATA TABULATION

| Vstd | (x axis) Qstd | (y axis) | Va | (x axis) Qa | (y axis) |
|---------------------------|---------------|----------|---------------------------|-------------|----------|
| 0.9917 | 0.7139 | 1.4113 | 0.9957 | 0.7168 | 0.8874 |
| 0.9876 | 1.0026 | 1.9959 | 0.9916 | 1.0067 | 1.2549 |
| 0.9854 | 1.1185 | 2.2315 | 0.9894 | 1.1231 | 1.4030 |
| 0.9844 | 1.1706 | 2.3405 | 0.9884 | 1.1753 | 1.4715 |
| 0.9792 | 1.4090 | 2.8227 | 0.9832 | 1.4147 | 1.7747 |
| Qstd slope (m) = 2.03154 | | | Qa slope (m) = 1.27212 | | |
| intercept (b) = -0.03970 | | | intercept (b) = -0.02496 | | |
| coefficient (r) = 0.99999 | | | coefficient (r) = 0.99999 | | |

y axis = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$

y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$

CALCULATIONS

$V_{std} = \text{Diff. Vol}[(\text{Pa} - \text{Diff. Hg})/760](298/\text{Ta})$
 $Q_{std} = V_{std}/\text{Time}$

$V_a = \text{Diff Vol}[(\text{Pa} - \text{Diff Hg})/\text{Pa}]$
 $Q_a = V_a/\text{Time}$

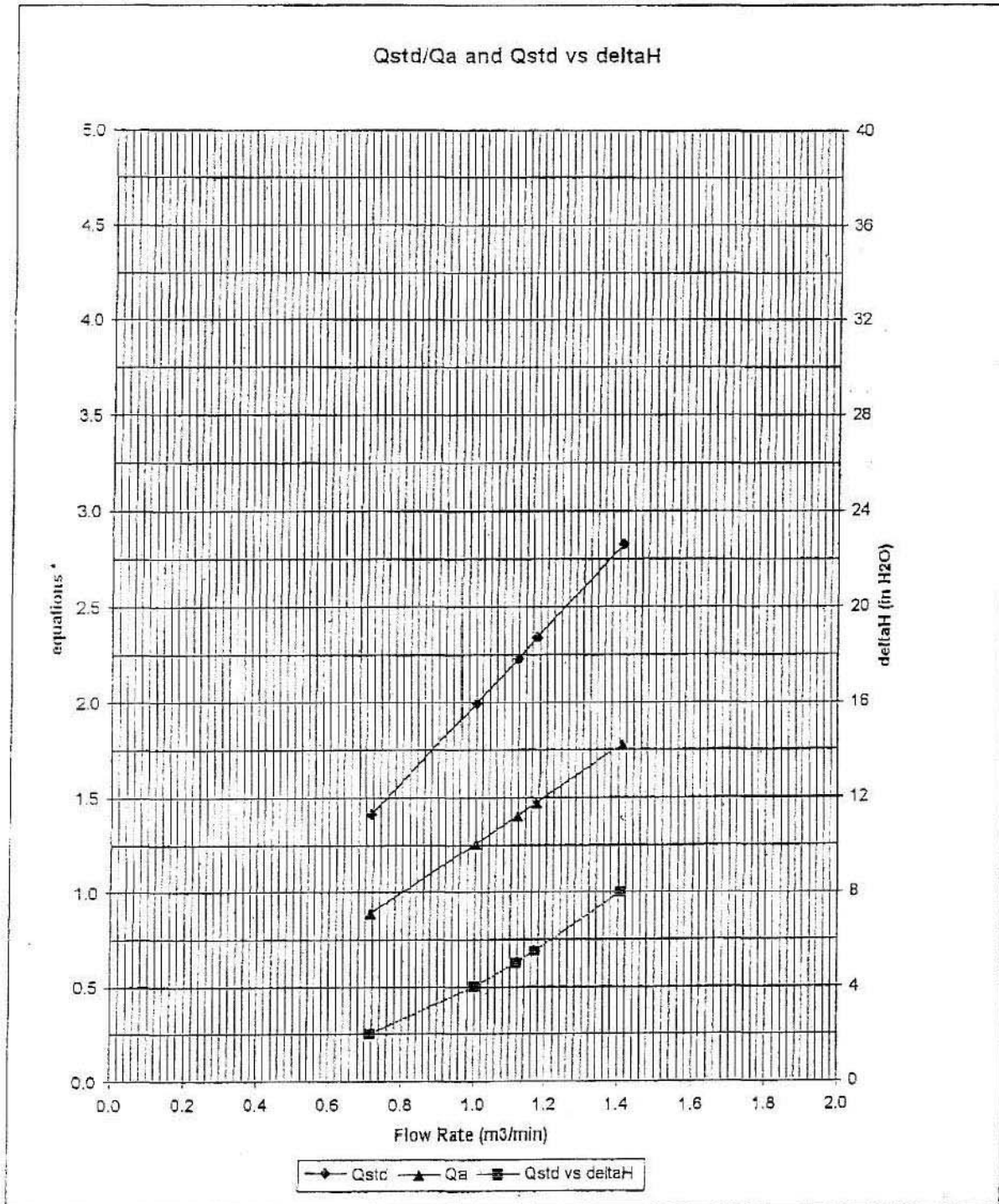
For subsequent flow rate calculations:

$Q_{std} = 1/m\{[\text{SQRT}(\text{H2O}(\text{Pa}/760)(298/\text{Ta}))] - b\}$
 $Q_a = 1/m\{[\text{SQRT}(\text{H2O}(\text{Ta}/\text{Pa}))] - b\}$



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AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:
$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:
$$\sqrt{(\Delta H (T_a / P_a))}$$

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|-------------|
| Test Report No.: | C/06/80602A |
| Date of Issue: | 2008-06-05 |
| Date Received: | 2008-06-02 |
| Date Tested: | 2008-06-03 |
| Date Completed: | 2008-06-05 |

ATTN: Mr. Henry Leung

Page: 1 of 2

Certificate of Calibration

Item for calibration:

| | |
|--------------|----------------------|
| Description | : Weather Monitor II |
| Manufacturer | : Davis Instruments |
| Model No. | : 7440 |
| Serial No. | : MC20813A11 |

Test conditions:

| | |
|-------------------|---------------------|
| Room Temperature | : 22 degree Celsius |
| Relative Humidity | : 56% |

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

| | |
|------------------|-------------|
| Test Report No.: | C/06/80602A |
| Date of Issue: | 2008-06-05 |
| Date Received: | 2008-06-02 |
| Date Tested: | 2008-06-03 |
| Date Completed: | 2008-06-05 |

Page: 2 of 2

Results:

1. Performance check of anemometer

| Air Velocity, m/s | | Difference D (m/s) |
|-------------------------|----------------------|--------------------|
| Instrument Reading (V1) | Reference Value (V1) | D = V1 - V2 |
| 2.00 | 2.00 | 0.00 |

2. Performance check of wind direction sensor

| Wind Direction (°) | | Difference D (°) |
|-------------------------|----------------------|------------------|
| Instrument Reading (W1) | Reference Value (W2) | D = W1 - W2 |
| 0.0 | 0.0 | 0.0 |
| 44.5 | 45.0 | -0.5 |
| 90.5 | 90.5 | 0.0 |
| 136.0 | 135.0 | 1.0 |
| 180.1 | 180.0 | 0.1 |
| 225.6 | 225.0 | 0.6 |
| 270.4 | 270.0 | 0.4 |
| 314.6 | 315.0 | -0.4 |
| 359.5 | 360.0 | -0.5 |

*****END OF REPORT*****

**APPENDIX C
ENVIRONMENTAL MONITORING
SCHEDULES**

Contract No. DC/2007/20
HATS Stage 2A – Construction of Advance Disinfection Facilities at SCISTW
Impact Environmental Monitoring Schedule for August 2008

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------|------------------|------------------|----------------|------------------------------------|------------------|------------------|
| 27-Jul | 28-Jul | 29-Jul | 30-Jul | 31-Jul | 1-Aug | 2-Aug |
| | 1hr TSP at AM1 | | 1hr TSP at AM1 | 24hrs TSP at AM1 | 1hr TSP at AM1 | |
| 3-Aug | 4-Aug | 5-Aug | 6-Aug | 7-Aug | 8-Aug | 9-Aug |
| | | 1hr TSP at AM1 | | 1hr TSP at AM1 24hrs TSP at AM1 | 1hr TSP at AM1 | |
| 10-Aug | 11-Aug | 12-Aug | 13-Aug | 14-Aug | 15-Aug | 16-Aug |
| | | 24hrs TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | |
| 17-Aug | 18-Aug | 19-Aug | 20-Aug | 21-Aug | 22-Aug | 23-Aug |
| | 24hrs TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | | 24hrs TSP at AM1 |
| 24-Aug | 25-Aug | 26-Aug | 27-Aug | 28-Aug | 29-Aug | 30-Aug |
| | 1hr TSP at AM1 | 1hr TSP at AM1 | | 1hr TSP at AM1 | 24hrs TSP at AM1 | |

* The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

AM1 - Air monitoring station at Rooftop of Block A, Government Dockyard

Contract No. DC/2007/20
HATS Stage 2A – Construction of Advance Disinfection Facilities at SCISTW
Tentative Impact Environmental Monitoring Schedule for September 2008

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------|------------------|------------------|------------------------------------|------------------------------------|------------------------------------|------------------|
| 31-Aug | 1-Sep | 2-Sep | 3-Sep | 4-Sep | 5-Sep | 6-Sep |
| | 1hr TSP at AM1 | | | 1hr TSP at AM1 24hrs TSP at AM1 | 1hr TSP at AM1 | |
| 7-Sep | 8-Sep | 9-Sep | 10-Sep | 11-Sep | 12-Sep | 13-Sep |
| | 1hr TSP at AM1 | | 1hr TSP at AM1 24hrs TSP at AM1 | 1hr TSP at AM1 | | |
| 14-Sep | 15-Sep | 16-Sep | 17-Sep | 18-Sep | 19-Sep | 20-Sep |
| | | 24hrs TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | |
| 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep |
| | 24hrs TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | 1hr TSP at AM1 | | 24hrs TSP at AM1 |
| 28-Sep | 29-Sep | 30-Sep | 1-Oct | 2-Oct | 3-Oct | 4-Oct |
| | 1hr TSP at AM1 | 1hr TSP at AM1 | | | 1hr TSP at AM1 24hrs TSP at AM1 | |

* The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

AM1 - Air monitoring station at Rooftop of Block A, Government Dockyard

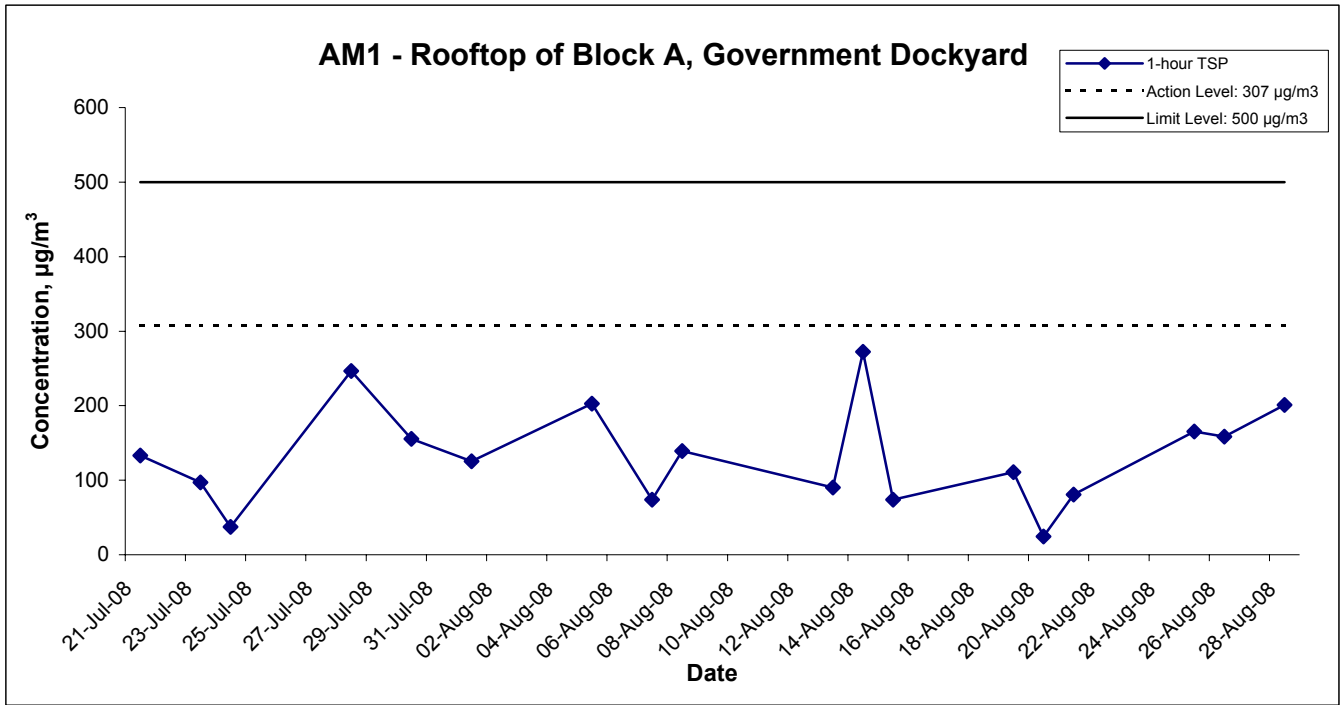
**APPENDIX D
1-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS**

Appendix D - 1-hour TSP Monitoring Results

Station AM1 - Rooftop of Block A, Government Dockyard

| Date | Sampling Time | Weather Condition | Air Temp. (K) | Atmospheric Pressure (Pa) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) |
|-----------|---------------|-------------------|---------------|---------------------------|-------------------|--------|------------------------|-------------|--------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|
| | | | | | Initial | Final | | Initial | Final | | Initial | Final | | | |
| 1-Aug-08 | 10:00 | Sunny | 301.1 | 760.1 | 2.8213 | 2.8304 | 0.0091 | 5374.4 | 5375.4 | 1.0 | 1.21 | 1.21 | 1.21 | 72.5 | 125.6 |
| 5-Aug-08 | 09:00 | Cloudy | 302.4 | 753.6 | 2.8609 | 2.8755 | 0.0146 | 5375.4 | 5376.4 | 1.0 | 1.20 | 1.20 | 1.20 | 72.7 | 200.8 |
| 7-Aug-08 | 10:30 | Cloudy | 299.1 | 754.3 | 2.8403 | 2.8457 | 0.0054 | 5379.2 | 5380.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.2 | 73.7 |
| 8-Aug-08 | 15:05 | Cloudy | 298.5 | 755.6 | 2.8089 | 2.8191 | 0.0102 | 5404.2 | 5405.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.4 | 139.0 |
| 13-Aug-08 | 11:00 | Sunny | 302.5 | 760.2 | 2.7922 | 2.7988 | 0.0066 | 5429.2 | 5430.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.1 | 90.3 |
| 14-Aug-08 | 09:00 | Sunny | 302.4 | 758.4 | 2.8301 | 2.8500 | 0.0199 | 5430.2 | 5431.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 272.4 |
| 15-Aug-08 | 09:00 | Sunny | 302.3 | 756.5 | 2.8240 | 2.8294 | 0.0054 | 5431.2 | 5432.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 74.0 |
| 18-Aug-08 | 09:00 | Sunny | 302.1 | 759.9 | 2.7545 | 2.7626 | 0.0081 | 5456.2 | 5457.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.2 | 110.7 |
| 20-Aug-08 | 09:00 | Sunny | 303.7 | 758.9 | 2.8416 | 2.8434 | 0.0018 | 5457.2 | 5458.2 | 1.0 | 1.22 | 1.22 | 1.22 | 72.9 | 24.7 |
| 21-Aug-08 | 09:00 | Sunny | 302.3 | 756.6 | 2.8438 | 2.8497 | 0.0059 | 5458.2 | 5459.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 80.9 |
| 25-Aug-08 | 10:00 | Sunny | 301.5 | 760.7 | 2.8532 | 2.8653 | 0.0121 | 5483.2 | 5484.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.3 | 165.2 |
| 26-Aug-08 | 09:00 | Sunny | 301.6 | 760.6 | 2.8170 | 2.8286 | 0.0116 | 5484.2 | 5485.2 | 1.0 | 1.22 | 1.22 | 1.22 | 73.3 | 158.4 |
| 28-Aug-08 | 09:00 | Sunny | 303.9 | 752.7 | 2.7783 | 2.7929 | 0.0146 | 5485.2 | 5486.2 | 1.0 | 1.21 | 1.21 | 1.21 | 72.6 | 201.1 |
| | | | | | | | | | | | | | | Min | 24.7 |
| | | | | | | | | | | | | | | Max | 272.4 |
| | | | | | | | | | | | | | | Average | 132.1 |

1-hr TSP Concentration Levels



| | | | |
|--|----------------|-----------------------|--|
| Title Contract No. DC/2007/20 HATS Stage 2A – Construction of Advance Disinfection Facilities at SCISTW Graphical Presentation of 1-hour TSP Monitoring Results | Scale N.T.S | Project No. MA8009 | |
| | Date Aug 08 | Appendix D | |

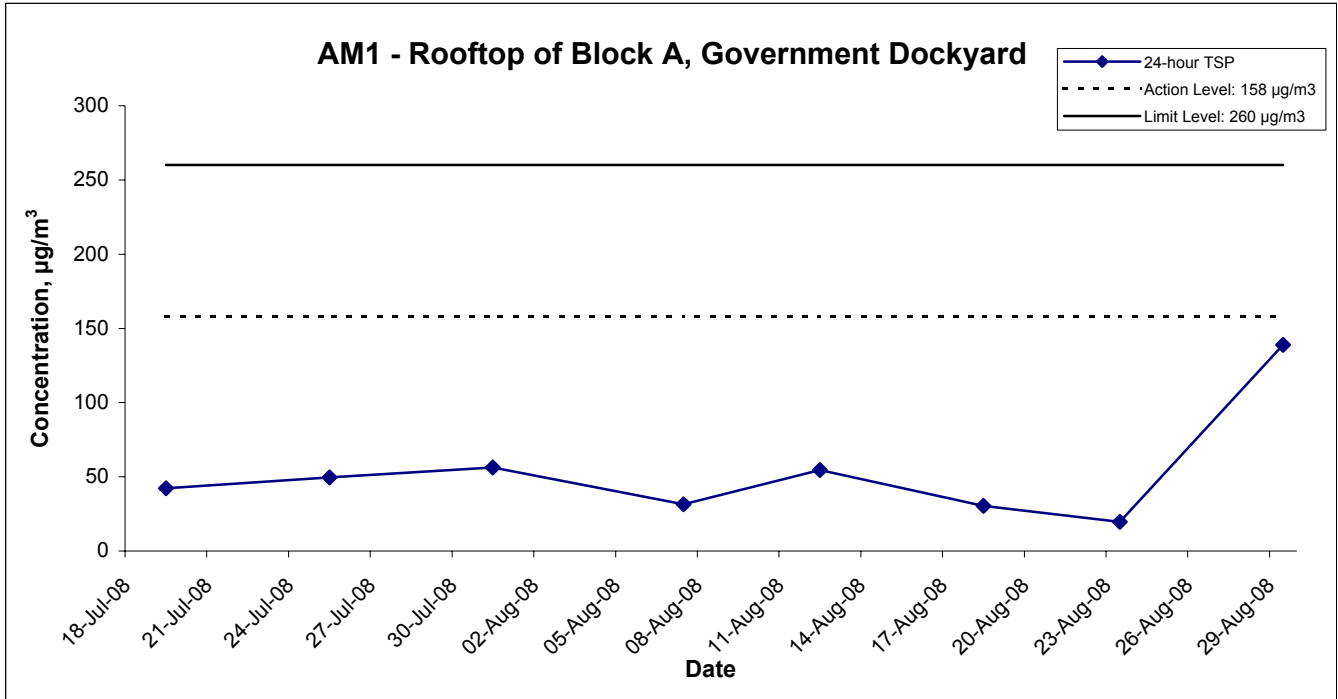
**APPENDIX E
24-HOURS TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS**

Appendix E - 24-hour TSP Monitoring Results

Station AM1 - Rooftop of Block A, Government Dockyard

| Start Date | Weather Condition | Air Temp. (K) | Atmospheric Pressure (Pa) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) |
|------------|-------------------|---------------|---------------------------|-------------------|--------|------------------------|-------------|--------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|
| | | | | Initial | Final | | Initial | Final | | Initial | Final | | | |
| 7-Aug-08 | Cloudy | 300.5 | 754.1 | 2.8172 | 2.8724 | 0.0552 | 5380.2 | 5404.2 | 24.0 | 1.22 | 1.22 | 1.22 | 1753.7 | 31.5 |
| 12-Aug-08 | Sunny | 300.1 | 760.2 | 2.8623 | 2.9586 | 0.0963 | 5405.2 | 5429.2 | 24.0 | 1.22 | 1.22 | 1.22 | 1761.9 | 54.7 |
| 18-Aug-08 | Sunny | 302.1 | 759.9 | 2.7979 | 2.8513 | 0.0534 | 5432.2 | 5456.2 | 24.0 | 1.22 | 1.22 | 1.22 | 1755.7 | 30.4 |
| 23-Aug-08 | Rainy | 297.7 | 756.3 | 2.8111 | 2.8457 | 0.0346 | 5459.2 | 5483.2 | 24.0 | 1.23 | 1.22 | 1.23 | 1764.3 | 19.6 |
| 29-Aug-08 | Sunny | 303.1 | 759.8 | 2.8708 | 3.1142 | 0.2434 | 5486.2 | 5510.2 | 24.0 | 1.22 | 1.22 | 1.22 | 1752.7 | 138.9 |
| | | | | | | | | | | | | | Min | 19.6 |
| | | | | | | | | | | | | | Max | 138.9 |
| | | | | | | | | | | | | | Average | 55.0 |

24-hr TSP Concentration Levels



| | | | |
|---|----------------|-----------------------|----------|
| Title Contract No. DC/2007/20 HATS Stage 2A – Construction of Advance Disinfection Facilities at SCISTW Graphical Presentation of 24-hour TSP Monitoring Results | Scale N.T.S | Project No. MA8009 | CINOTECH |
| | Date Aug 08 | Appendix E | |

APPENDIX F
WIND DATA

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|------------|-------|----------------|-----------|
| 1-Aug-2008 | 0:00 | 0.6 | WSW |
| 1-Aug-2008 | 1:00 | 0.6 | WNW |
| 1-Aug-2008 | 2:00 | 1.0 | W |
| 1-Aug-2008 | 3:00 | 0.6 | WNW |
| 1-Aug-2008 | 4:00 | 1.6 | W |
| 1-Aug-2008 | 5:00 | 2.0 | WNW |
| 1-Aug-2008 | 6:00 | 2.1 | WNW |
| 1-Aug-2008 | 7:00 | 2.0 | W |
| 1-Aug-2008 | 8:00 | 2.3 | N |
| 1-Aug-2008 | 9:00 | 1.8 | N |
| 1-Aug-2008 | 10:00 | 2.3 | WNW |
| 1-Aug-2008 | 11:00 | 3.2 | SSW |
| 1-Aug-2008 | 12:00 | 3.0 | SSW |
| 1-Aug-2008 | 13:00 | 2.0 | SSW |
| 1-Aug-2008 | 14:00 | 1.7 | WNW |
| 1-Aug-2008 | 15:00 | 0.8 | WNW |
| 1-Aug-2008 | 16:00 | 0.7 | N |
| 1-Aug-2008 | 17:00 | 0.6 | N |
| 1-Aug-2008 | 18:00 | 0.6 | WSW |
| 1-Aug-2008 | 19:00 | 0.6 | WSW |
| 1-Aug-2008 | 20:00 | 0.4 | WSW |
| 1-Aug-2008 | 21:00 | 0.4 | WSW |
| 1-Aug-2008 | 22:00 | 0.4 | WSW |
| 1-Aug-2008 | 23:00 | 0.2 | WSW |
| 2-Aug-2008 | 0:00 | 0.2 | WSW |
| 2-Aug-2008 | 1:00 | 0.4 | SSW |
| 2-Aug-2008 | 2:00 | 0.4 | SW |
| 2-Aug-2008 | 3:00 | 0.4 | W |
| 2-Aug-2008 | 4:00 | 0.4 | NW |
| 2-Aug-2008 | 5:00 | 1.5 | SW |
| 2-Aug-2008 | 6:00 | 1.3 | SW |
| 2-Aug-2008 | 7:00 | 1.8 | WNW |
| 2-Aug-2008 | 8:00 | 1.8 | WNW |
| 2-Aug-2008 | 9:00 | 1.3 | WNW |
| 2-Aug-2008 | 10:00 | 1.3 | NW |
| 2-Aug-2008 | 11:00 | 1.5 | WNW |
| 2-Aug-2008 | 12:00 | 1.1 | WNW |
| 2-Aug-2008 | 13:00 | 1.3 | WSW |
| 2-Aug-2008 | 14:00 | 0.8 | WNW |
| 2-Aug-2008 | 15:00 | 0.8 | WNW |
| 2-Aug-2008 | 16:00 | 1.9 | WNW |
| 2-Aug-2008 | 17:00 | 1.9 | WNW |
| 2-Aug-2008 | 18:00 | 1.9 | WNW |
| 2-Aug-2008 | 19:00 | 2.0 | WNW |
| 2-Aug-2008 | 20:00 | 1.6 | WNW |
| 2-Aug-2008 | 21:00 | 1.5 | NW |
| 2-Aug-2008 | 22:00 | 1.5 | SW |
| 2-Aug-2008 | 23:00 | 2.5 | SSW |
| 3-Aug-2008 | 0:00 | 2.2 | WNW |
| 3-Aug-2008 | 1:00 | 2.1 | SSW |
| 3-Aug-2008 | 2:00 | 3.1 | S |
| 3-Aug-2008 | 3:00 | 3.8 | W |
| 3-Aug-2008 | 4:00 | 2.9 | W |
| 3-Aug-2008 | 5:00 | 2.2 | WSW |
| 3-Aug-2008 | 6:00 | 2.5 | WSW |
| 3-Aug-2008 | 7:00 | 2.6 | WSW |
| 3-Aug-2008 | 8:00 | 3.0 | WSW |
| 3-Aug-2008 | 9:00 | 1.7 | SW |
| 3-Aug-2008 | 10:00 | 1.7 | SW |
| 3-Aug-2008 | 11:00 | 1.3 | W |
| 3-Aug-2008 | 12:00 | 1.7 | WNW |
| 3-Aug-2008 | 13:00 | 1.8 | W |
| 3-Aug-2008 | 14:00 | 2.0 | W |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|------------|-------|----------------|-----------|
| 3-Aug-2008 | 15:00 | 1.3 | W |
| 3-Aug-2008 | 16:00 | 0.6 | W |
| 3-Aug-2008 | 17:00 | 0.9 | W |
| 3-Aug-2008 | 18:00 | 1.1 | WNW |
| 3-Aug-2008 | 19:00 | 1.8 | W |
| 3-Aug-2008 | 20:00 | 2.5 | SE |
| 3-Aug-2008 | 21:00 | 1.7 | SW |
| 3-Aug-2008 | 22:00 | 2.0 | SSW |
| 3-Aug-2008 | 23:00 | 2.4 | S |
| 4-Aug-2008 | 0:00 | 2.3 | S |
| 4-Aug-2008 | 1:00 | 1.5 | SSW |
| 4-Aug-2008 | 2:00 | 3.5 | S |
| 4-Aug-2008 | 3:00 | 3.5 | SSW |
| 4-Aug-2008 | 4:00 | 2.9 | SSW |
| 4-Aug-2008 | 5:00 | 2.6 | SSW |
| 4-Aug-2008 | 6:00 | 4.0 | SSW |
| 4-Aug-2008 | 7:00 | 3.5 | W |
| 4-Aug-2008 | 8:00 | 3.5 | W |
| 4-Aug-2008 | 9:00 | 3.5 | W |
| 4-Aug-2008 | 10:00 | 2.7 | WNW |
| 4-Aug-2008 | 11:00 | 2.3 | WSW |
| 4-Aug-2008 | 12:00 | 2.9 | SW |
| 4-Aug-2008 | 13:00 | 2.0 | WSW |
| 4-Aug-2008 | 14:00 | 1.6 | WSW |
| 4-Aug-2008 | 15:00 | 1.8 | WSW |
| 4-Aug-2008 | 16:00 | 1.9 | SW |
| 4-Aug-2008 | 17:00 | 1.8 | WSW |
| 4-Aug-2008 | 18:00 | 1.8 | W |
| 4-Aug-2008 | 19:00 | 1.7 | WSW |
| 4-Aug-2008 | 20:00 | 0.5 | WSW |
| 4-Aug-2008 | 21:00 | 1.5 | SW |
| 4-Aug-2008 | 22:00 | 0.6 | SW |
| 4-Aug-2008 | 23:00 | 0.6 | SW |
| 5-Aug-2008 | 0:00 | 0.7 | SW |
| 5-Aug-2008 | 1:00 | 0.7 | SW |
| 5-Aug-2008 | 2:00 | 0.8 | SW |
| 5-Aug-2008 | 3:00 | 1.5 | SW |
| 5-Aug-2008 | 4:00 | 1.5 | WSW |
| 5-Aug-2008 | 5:00 | 3.3 | WSW |
| 5-Aug-2008 | 6:00 | 3.2 | SW |
| 5-Aug-2008 | 7:00 | 3.1 | SW |
| 5-Aug-2008 | 8:00 | 2.5 | SW |
| 5-Aug-2008 | 9:00 | 4.7 | SW |
| 5-Aug-2008 | 10:00 | 4.8 | SW |
| 5-Aug-2008 | 11:00 | 4.7 | NNE |
| 5-Aug-2008 | 12:00 | 4.8 | NNE |
| 5-Aug-2008 | 13:00 | 4.7 | NNE |
| 5-Aug-2008 | 14:00 | 4.9 | NNE |
| 5-Aug-2008 | 15:00 | 4.8 | NE |
| 5-Aug-2008 | 16:00 | 4.8 | ENE |
| 5-Aug-2008 | 17:00 | 4.7 | ENE |
| 5-Aug-2008 | 18:00 | 5.3 | NE |
| 5-Aug-2008 | 19:00 | 5.7 | ENE |
| 5-Aug-2008 | 20:00 | 5.5 | ENE |
| 5-Aug-2008 | 21:00 | 6.1 | ENE |
| 5-Aug-2008 | 22:00 | 5.6 | NE |
| 5-Aug-2008 | 23:00 | 5.4 | NE |
| 6-Aug-2008 | 0:00 | 5.2 | NE |
| 6-Aug-2008 | 1:00 | 5.4 | ENE |
| 6-Aug-2008 | 2:00 | 5.7 | ENE |
| 6-Aug-2008 | 3:00 | 4.9 | ENE |
| 6-Aug-2008 | 4:00 | 5.2 | ENE |
| 6-Aug-2008 | 5:00 | 5.4 | W |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|------------|-------|----------------|-----------|
| 6-Aug-2008 | 6:00 | 3.5 | ENE |
| 6-Aug-2008 | 7:00 | 4.7 | NNE |
| 6-Aug-2008 | 8:00 | 4.9 | NNE |
| 6-Aug-2008 | 9:00 | 5.3 | ENE |
| 6-Aug-2008 | 10:00 | 7.1 | ENE |
| 6-Aug-2008 | 11:00 | 5.8 | ENE |
| 6-Aug-2008 | 12:00 | 5.6 | ENE |
| 6-Aug-2008 | 13:00 | 6.6 | ENE |
| 6-Aug-2008 | 14:00 | 5.9 | ENE |
| 6-Aug-2008 | 15:00 | 5.8 | ENE |
| 6-Aug-2008 | 16:00 | 5.0 | ENE |
| 6-Aug-2008 | 17:00 | 4.7 | ENE |
| 6-Aug-2008 | 18:00 | 4.9 | SE |
| 6-Aug-2008 | 19:00 | 4.9 | SE |
| 6-Aug-2008 | 20:00 | 4.0 | N |
| 6-Aug-2008 | 21:00 | 3.6 | NNE |
| 6-Aug-2008 | 22:00 | 3.1 | ENE |
| 6-Aug-2008 | 23:00 | 2.9 | ENE |
| 7-Aug-2008 | 0:00 | 2.6 | ENE |
| 7-Aug-2008 | 1:00 | 3.3 | ENE |
| 7-Aug-2008 | 2:00 | 4.4 | ENE |
| 7-Aug-2008 | 3:00 | 4.4 | ENE |
| 7-Aug-2008 | 4:00 | 3.9 | NW |
| 7-Aug-2008 | 5:00 | 4.2 | W |
| 7-Aug-2008 | 6:00 | 4.2 | W |
| 7-Aug-2008 | 7:00 | 3.5 | W |
| 7-Aug-2008 | 8:00 | 4.7 | SSE |
| 7-Aug-2008 | 9:00 | 2.5 | S |
| 7-Aug-2008 | 10:00 | 2.5 | E |
| 7-Aug-2008 | 11:00 | 2.5 | SW |
| 7-Aug-2008 | 12:00 | 2.9 | SW |
| 7-Aug-2008 | 13:00 | 2.9 | W |
| 7-Aug-2008 | 14:00 | 2.7 | W |
| 7-Aug-2008 | 15:00 | 2.5 | WNW |
| 7-Aug-2008 | 16:00 | 2.3 | W |
| 7-Aug-2008 | 17:00 | 1.8 | WNW |
| 7-Aug-2008 | 18:00 | 1.8 | W |
| 7-Aug-2008 | 19:00 | 1.1 | W |
| 7-Aug-2008 | 20:00 | 0.8 | S |
| 7-Aug-2008 | 21:00 | 0.9 | NNE |
| 7-Aug-2008 | 22:00 | 1.5 | E |
| 7-Aug-2008 | 23:00 | 1.6 | NNE |
| 8-Aug-2008 | 0:00 | 2.3 | S |
| 8-Aug-2008 | 1:00 | 2.2 | SSW |
| 8-Aug-2008 | 2:00 | 1.9 | S |
| 8-Aug-2008 | 3:00 | 1.8 | S |
| 8-Aug-2008 | 4:00 | 2.1 | SSW |
| 8-Aug-2008 | 5:00 | 1.9 | N |
| 8-Aug-2008 | 6:00 | 1.6 | W |
| 8-Aug-2008 | 7:00 | 1.5 | NE |
| 8-Aug-2008 | 8:00 | 1.5 | ENE |
| 8-Aug-2008 | 9:00 | 1.4 | ENE |
| 8-Aug-2008 | 10:00 | 1.2 | ENE |
| 8-Aug-2008 | 11:00 | 1.3 | NNE |
| 8-Aug-2008 | 12:00 | 1.3 | NNE |
| 8-Aug-2008 | 13:00 | 1.7 | NNE |
| 8-Aug-2008 | 14:00 | 2.2 | NNE |
| 8-Aug-2008 | 15:00 | 1.8 | NNE |
| 8-Aug-2008 | 16:00 | 1.8 | NNE |
| 8-Aug-2008 | 17:00 | 1.3 | NNE |
| 8-Aug-2008 | 18:00 | 1.2 | NNE |
| 8-Aug-2008 | 19:00 | 2.0 | NNE |
| 8-Aug-2008 | 20:00 | 1.1 | NNE |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 8-Aug-2008 | 21:00 | 1.0 | NNE |
| 8-Aug-2008 | 22:00 | 1.0 | NNE |
| 8-Aug-2008 | 23:00 | 1.0 | NW |
| 9-Aug-2008 | 0:00 | 2.0 | WNW |
| 9-Aug-2008 | 1:00 | 1.5 | WSW |
| 9-Aug-2008 | 2:00 | 1.5 | W |
| 9-Aug-2008 | 3:00 | 1.5 | W |
| 9-Aug-2008 | 4:00 | 2.0 | SSW |
| 9-Aug-2008 | 5:00 | 1.1 | SSW |
| 9-Aug-2008 | 6:00 | 1.0 | W |
| 9-Aug-2008 | 7:00 | 1.0 | W |
| 9-Aug-2008 | 8:00 | 1.1 | W |
| 9-Aug-2008 | 9:00 | 1.6 | WNW |
| 9-Aug-2008 | 10:00 | 1.2 | WNW |
| 9-Aug-2008 | 11:00 | 1.7 | W |
| 9-Aug-2008 | 12:00 | 1.8 | W |
| 9-Aug-2008 | 13:00 | 2.3 | W |
| 9-Aug-2008 | 14:00 | 2.2 | NE |
| 9-Aug-2008 | 15:00 | 1.6 | NNE |
| 9-Aug-2008 | 16:00 | 1.6 | E |
| 9-Aug-2008 | 17:00 | 2.2 | SSE |
| 9-Aug-2008 | 18:00 | 2.1 | S |
| 9-Aug-2008 | 19:00 | 1.4 | SSW |
| 9-Aug-2008 | 20:00 | 1.6 | SSW |
| 9-Aug-2008 | 21:00 | 2.0 | SE |
| 9-Aug-2008 | 22:00 | 1.4 | SSE |
| 9-Aug-2008 | 23:00 | 2.0 | SSE |
| 10-Aug-2008 | 0:00 | 1.4 | SSE |
| 10-Aug-2008 | 1:00 | 1.3 | SW |
| 10-Aug-2008 | 2:00 | 1.4 | W |
| 10-Aug-2008 | 3:00 | 2.0 | W |
| 10-Aug-2008 | 4:00 | 1.6 | WSW |
| 10-Aug-2008 | 5:00 | 1.3 | W |
| 10-Aug-2008 | 6:00 | 1.3 | W |
| 10-Aug-2008 | 7:00 | 1.4 | NE |
| 10-Aug-2008 | 8:00 | 1.7 | WSW |
| 10-Aug-2008 | 9:00 | 1.6 | SW |
| 10-Aug-2008 | 10:00 | 1.6 | WSW |
| 10-Aug-2008 | 11:00 | 2.3 | W |
| 10-Aug-2008 | 12:00 | 1.7 | W |
| 10-Aug-2008 | 13:00 | 1.9 | W |
| 10-Aug-2008 | 14:00 | 2.2 | W |
| 10-Aug-2008 | 15:00 | 1.6 | W |
| 10-Aug-2008 | 16:00 | 1.8 | N |
| 10-Aug-2008 | 17:00 | 1.5 | W |
| 10-Aug-2008 | 18:00 | 1.9 | W |
| 10-Aug-2008 | 19:00 | 1.8 | N |
| 10-Aug-2008 | 20:00 | 1.8 | N |
| 10-Aug-2008 | 21:00 | 2.3 | S |
| 10-Aug-2008 | 22:00 | 2.4 | SE |
| 10-Aug-2008 | 23:00 | 1.8 | SE |
| 11-Aug-2008 | 0:00 | 1.9 | SE |
| 11-Aug-2008 | 1:00 | 2.6 | ENE |
| 11-Aug-2008 | 2:00 | 2.0 | WNW |
| 11-Aug-2008 | 3:00 | 1.4 | WNW |
| 11-Aug-2008 | 4:00 | 1.4 | WNW |
| 11-Aug-2008 | 5:00 | 2.0 | WNW |
| 11-Aug-2008 | 6:00 | 1.6 | ENE |
| 11-Aug-2008 | 7:00 | 2.0 | WNW |
| 11-Aug-2008 | 8:00 | 2.0 | SW |
| 11-Aug-2008 | 9:00 | 2.1 | W |
| 11-Aug-2008 | 10:00 | 1.8 | W |
| 11-Aug-2008 | 11:00 | 2.2 | W |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 11-Aug-2008 | 12:00 | 2.4 | WSW |
| 11-Aug-2008 | 13:00 | 2.3 | WNW |
| 11-Aug-2008 | 14:00 | 1.5 | NNE |
| 11-Aug-2008 | 15:00 | 2.3 | NNE |
| 11-Aug-2008 | 16:00 | 2.2 | NNE |
| 11-Aug-2008 | 17:00 | 1.0 | SSE |
| 11-Aug-2008 | 18:00 | 1.3 | SSE |
| 11-Aug-2008 | 19:00 | 2.0 | SSE |
| 11-Aug-2008 | 20:00 | 2.1 | SSW |
| 11-Aug-2008 | 21:00 | 2.0 | WSW |
| 11-Aug-2008 | 22:00 | 1.4 | WSW |
| 11-Aug-2008 | 23:00 | 2.0 | WSW |
| 12-Aug-2008 | 0:00 | 2.1 | WSW |
| 12-Aug-2008 | 1:00 | 1.2 | W |
| 12-Aug-2008 | 2:00 | 2.0 | WSW |
| 12-Aug-2008 | 3:00 | 2.1 | W |
| 12-Aug-2008 | 4:00 | 1.0 | WSW |
| 12-Aug-2008 | 5:00 | 1.4 | WSW |
| 12-Aug-2008 | 6:00 | 1.4 | WSW |
| 12-Aug-2008 | 7:00 | 2.2 | W |
| 12-Aug-2008 | 8:00 | 2.3 | W |
| 12-Aug-2008 | 9:00 | 1.1 | W |
| 12-Aug-2008 | 10:00 | 2.3 | WNW |
| 12-Aug-2008 | 11:00 | 2.3 | WNW |
| 12-Aug-2008 | 12:00 | 2.3 | WNW |
| 12-Aug-2008 | 13:00 | 2.3 | WNW |
| 12-Aug-2008 | 14:00 | 2.3 | WNW |
| 12-Aug-2008 | 15:00 | 2.2 | W |
| 12-Aug-2008 | 16:00 | 2.1 | W |
| 12-Aug-2008 | 17:00 | 2.1 | W |
| 12-Aug-2008 | 18:00 | 2.1 | W |
| 12-Aug-2008 | 19:00 | 0.9 | W |
| 12-Aug-2008 | 20:00 | 2.0 | W |
| 12-Aug-2008 | 21:00 | 1.2 | W |
| 12-Aug-2008 | 22:00 | 1.3 | W |
| 12-Aug-2008 | 23:00 | 0.9 | SSW |
| 13-Aug-2008 | 0:00 | 0.9 | SW |
| 13-Aug-2008 | 1:00 | 2.0 | SSW |
| 13-Aug-2008 | 2:00 | 1.3 | SSW |
| 13-Aug-2008 | 3:00 | 2.1 | SW |
| 13-Aug-2008 | 4:00 | 2.1 | SW |
| 13-Aug-2008 | 5:00 | 2.1 | NNE |
| 13-Aug-2008 | 6:00 | 2.0 | SE |
| 13-Aug-2008 | 7:00 | 2.1 | SE |
| 13-Aug-2008 | 8:00 | 2.2 | SE |
| 13-Aug-2008 | 9:00 | 1.0 | ENE |
| 13-Aug-2008 | 10:00 | 2.2 | NE |
| 13-Aug-2008 | 11:00 | 2.2 | ENE |
| 13-Aug-2008 | 12:00 | 2.3 | ENE |
| 13-Aug-2008 | 13:00 | 1.3 | NE |
| 13-Aug-2008 | 14:00 | 2.4 | NE |
| 13-Aug-2008 | 15:00 | 2.4 | NNE |
| 13-Aug-2008 | 16:00 | 1.2 | WNW |
| 13-Aug-2008 | 17:00 | 2.3 | NW |
| 13-Aug-2008 | 18:00 | 1.5 | N |
| 13-Aug-2008 | 19:00 | 2.3 | S |
| 13-Aug-2008 | 20:00 | 1.0 | WSW |
| 13-Aug-2008 | 21:00 | 1.3 | SSW |
| 13-Aug-2008 | 22:00 | 2.2 | W |
| 13-Aug-2008 | 23:00 | 1.1 | WSW |
| 14-Aug-2008 | 0:00 | 2.2 | WSW |
| 14-Aug-2008 | 1:00 | 2.2 | SSW |
| 14-Aug-2008 | 2:00 | 2.2 | SW |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 14-Aug-2008 | 3:00 | 2.2 | WSW |
| 14-Aug-2008 | 4:00 | 2.1 | SSW |
| 14-Aug-2008 | 5:00 | 2.1 | S |
| 14-Aug-2008 | 6:00 | 2.1 | SSW |
| 14-Aug-2008 | 7:00 | 2.2 | S |
| 14-Aug-2008 | 8:00 | 1.5 | N |
| 14-Aug-2008 | 9:00 | 2.3 | NNE |
| 14-Aug-2008 | 10:00 | 2.2 | NNW |
| 14-Aug-2008 | 11:00 | 1.5 | NNE |
| 14-Aug-2008 | 12:00 | 2.4 | E |
| 14-Aug-2008 | 13:00 | 2.5 | E |
| 14-Aug-2008 | 14:00 | 2.4 | E |
| 14-Aug-2008 | 15:00 | 2.3 | SE |
| 14-Aug-2008 | 16:00 | 2.3 | SSE |
| 14-Aug-2008 | 17:00 | 2.3 | SE |
| 14-Aug-2008 | 18:00 | 1.1 | ENE |
| 14-Aug-2008 | 19:00 | 1.3 | NE |
| 14-Aug-2008 | 20:00 | 0.9 | ENE |
| 14-Aug-2008 | 21:00 | 0.9 | ENE |
| 14-Aug-2008 | 22:00 | 0.9 | NE |
| 14-Aug-2008 | 23:00 | 2.1 | NE |
| 15-Aug-2008 | 0:00 | 1.3 | NE |
| 15-Aug-2008 | 1:00 | 1.6 | ENE |
| 15-Aug-2008 | 2:00 | 0.9 | SW |
| 15-Aug-2008 | 3:00 | 1.3 | ENE |
| 15-Aug-2008 | 4:00 | 0.9 | N |
| 15-Aug-2008 | 5:00 | 2.1 | SSW |
| 15-Aug-2008 | 6:00 | 2.1 | SSW |
| 15-Aug-2008 | 7:00 | 2.2 | S |
| 15-Aug-2008 | 8:00 | 2.3 | W |
| 15-Aug-2008 | 9:00 | 1.1 | W |
| 15-Aug-2008 | 10:00 | 3.0 | SSE |
| 15-Aug-2008 | 11:00 | 2.6 | SE |
| 15-Aug-2008 | 12:00 | 1.5 | SE |
| 15-Aug-2008 | 13:00 | 1.5 | SE |
| 15-Aug-2008 | 14:00 | 1.5 | SE |
| 15-Aug-2008 | 15:00 | 2.5 | SE |
| 15-Aug-2008 | 16:00 | 1.7 | SE |
| 15-Aug-2008 | 17:00 | 2.5 | NE |
| 15-Aug-2008 | 18:00 | 2.6 | E |
| 15-Aug-2008 | 19:00 | 1.7 | ENE |
| 15-Aug-2008 | 20:00 | 1.2 | ENE |
| 15-Aug-2008 | 21:00 | 2.4 | ENE |
| 15-Aug-2008 | 22:00 | 1.3 | ENE |
| 15-Aug-2008 | 23:00 | 2.5 | NE |
| 16-Aug-2008 | 0:00 | 1.4 | ENE |
| 16-Aug-2008 | 1:00 | 1.4 | ENE |
| 16-Aug-2008 | 2:00 | 1.7 | WSW |
| 16-Aug-2008 | 3:00 | 2.5 | WSW |
| 16-Aug-2008 | 4:00 | 1.2 | W |
| 16-Aug-2008 | 5:00 | 2.5 | W |
| 16-Aug-2008 | 6:00 | 2.5 | WSW |
| 16-Aug-2008 | 7:00 | 2.4 | W |
| 16-Aug-2008 | 8:00 | 1.7 | WSW |
| 16-Aug-2008 | 9:00 | 0.9 | WSW |
| 16-Aug-2008 | 10:00 | 0.9 | SE |
| 16-Aug-2008 | 11:00 | 1.0 | SE |
| 16-Aug-2008 | 12:00 | 1.1 | SE |
| 16-Aug-2008 | 13:00 | 1.2 | SE |
| 16-Aug-2008 | 14:00 | 1.1 | SE |
| 16-Aug-2008 | 15:00 | 1.1 | ESE |
| 16-Aug-2008 | 16:00 | 1.0 | SW |
| 16-Aug-2008 | 17:00 | 1.0 | SW |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 16-Aug-2008 | 18:00 | 1.1 | SW |
| 16-Aug-2008 | 19:00 | 0.9 | SW |
| 16-Aug-2008 | 20:00 | 1.0 | SW |
| 16-Aug-2008 | 21:00 | 1.0 | SW |
| 16-Aug-2008 | 22:00 | 1.0 | SW |
| 16-Aug-2008 | 23:00 | 0.9 | SW |
| 17-Aug-2008 | 0:00 | 1.0 | SSW |
| 17-Aug-2008 | 1:00 | 0.9 | SSW |
| 17-Aug-2008 | 2:00 | 0.8 | SE |
| 17-Aug-2008 | 3:00 | 0.9 | ESE |
| 17-Aug-2008 | 4:00 | 0.9 | ESE |
| 17-Aug-2008 | 5:00 | 0.9 | ESE |
| 17-Aug-2008 | 6:00 | 1.2 | ESE |
| 17-Aug-2008 | 7:00 | 1.3 | E |
| 17-Aug-2008 | 8:00 | 1.4 | E |
| 17-Aug-2008 | 9:00 | 1.3 | E |
| 17-Aug-2008 | 10:00 | 1.3 | E |
| 17-Aug-2008 | 11:00 | 1.5 | E |
| 17-Aug-2008 | 12:00 | 1.2 | E |
| 17-Aug-2008 | 13:00 | 1.3 | E |
| 17-Aug-2008 | 14:00 | 1.2 | ESE |
| 17-Aug-2008 | 15:00 | 1.2 | ESE |
| 17-Aug-2008 | 16:00 | 1.2 | ESE |
| 17-Aug-2008 | 17:00 | 1.3 | ESE |
| 17-Aug-2008 | 18:00 | 1.3 | SSE |
| 17-Aug-2008 | 19:00 | 1.3 | S |
| 17-Aug-2008 | 20:00 | 1.2 | S |
| 17-Aug-2008 | 21:00 | 1.1 | ESE |
| 17-Aug-2008 | 22:00 | 1.0 | ESE |
| 17-Aug-2008 | 23:00 | 1.0 | ESE |
| 18-Aug-2008 | 0:00 | 1.0 | S |
| 18-Aug-2008 | 1:00 | 1.0 | SSE |
| 18-Aug-2008 | 2:00 | 0.9 | SSE |
| 18-Aug-2008 | 3:00 | 1.0 | S |
| 18-Aug-2008 | 4:00 | 1.1 | S |
| 18-Aug-2008 | 5:00 | 1.0 | S |
| 18-Aug-2008 | 6:00 | 1.0 | S |
| 18-Aug-2008 | 7:00 | 1.0 | SSE |
| 18-Aug-2008 | 8:00 | 1.0 | SSW |
| 18-Aug-2008 | 9:00 | 1.1 | SSE |
| 18-Aug-2008 | 10:00 | 1.2 | SE |
| 18-Aug-2008 | 11:00 | 1.3 | SE |
| 18-Aug-2008 | 12:00 | 1.2 | ESE |
| 18-Aug-2008 | 13:00 | 1.1 | SE |
| 18-Aug-2008 | 14:00 | 1.3 | SE |
| 18-Aug-2008 | 15:00 | 1.3 | SSE |
| 18-Aug-2008 | 16:00 | 1.2 | ESE |
| 18-Aug-2008 | 17:00 | 1.2 | E |
| 18-Aug-2008 | 18:00 | 1.2 | SSE |
| 18-Aug-2008 | 19:00 | 1.3 | SSE |
| 18-Aug-2008 | 20:00 | 1.1 | SSE |
| 18-Aug-2008 | 21:00 | 1.0 | ESE |
| 18-Aug-2008 | 22:00 | 1.1 | SE |
| 18-Aug-2008 | 23:00 | 1.0 | ESE |
| 19-Aug-2008 | 0:00 | 1.0 | NE |
| 19-Aug-2008 | 1:00 | 1.0 | E |
| 19-Aug-2008 | 2:00 | 0.9 | ESE |
| 19-Aug-2008 | 3:00 | 1.0 | ESE |
| 19-Aug-2008 | 4:00 | 0.9 | ESE |
| 19-Aug-2008 | 5:00 | 1.1 | ENE |
| 19-Aug-2008 | 6:00 | 1.0 | ENE |
| 19-Aug-2008 | 7:00 | 1.1 | S |
| 19-Aug-2008 | 8:00 | 1.1 | N |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 19-Aug-2008 | 9:00 | 1.3 | N |
| 19-Aug-2008 | 10:00 | 1.2 | N |
| 19-Aug-2008 | 11:00 | 1.3 | WNW |
| 19-Aug-2008 | 12:00 | 1.4 | NNE |
| 19-Aug-2008 | 13:00 | 1.4 | SW |
| 19-Aug-2008 | 14:00 | 1.3 | SSW |
| 19-Aug-2008 | 15:00 | 1.3 | SSW |
| 19-Aug-2008 | 16:00 | 1.3 | SW |
| 19-Aug-2008 | 17:00 | 1.2 | SSW |
| 19-Aug-2008 | 18:00 | 1.5 | SSW |
| 19-Aug-2008 | 19:00 | 1.4 | ENE |
| 19-Aug-2008 | 20:00 | 1.0 | ENE |
| 19-Aug-2008 | 21:00 | 0.9 | E |
| 19-Aug-2008 | 22:00 | 0.9 | NNW |
| 19-Aug-2008 | 23:00 | 0.9 | NNW |
| 20-Aug-2008 | 0:00 | 0.9 | N |
| 20-Aug-2008 | 1:00 | 1.0 | NE |
| 20-Aug-2008 | 2:00 | 1.0 | NE |
| 20-Aug-2008 | 3:00 | 1.0 | ENE |
| 20-Aug-2008 | 4:00 | 1.0 | ENE |
| 20-Aug-2008 | 5:00 | 1.0 | NE |
| 20-Aug-2008 | 6:00 | 0.9 | NE |
| 20-Aug-2008 | 7:00 | 0.9 | NE |
| 20-Aug-2008 | 8:00 | 1.0 | NE |
| 20-Aug-2008 | 9:00 | 1.2 | NE |
| 20-Aug-2008 | 10:00 | 1.3 | ENE |
| 20-Aug-2008 | 11:00 | 1.2 | ENE |
| 20-Aug-2008 | 12:00 | 1.3 | NE |
| 20-Aug-2008 | 13:00 | 1.4 | NE |
| 20-Aug-2008 | 14:00 | 1.3 | NE |
| 20-Aug-2008 | 15:00 | 1.3 | NE |
| 20-Aug-2008 | 16:00 | 1.4 | ENE |
| 20-Aug-2008 | 17:00 | 1.2 | ENE |
| 20-Aug-2008 | 18:00 | 1.0 | NW |
| 20-Aug-2008 | 19:00 | 1.0 | NE |
| 20-Aug-2008 | 20:00 | 1.0 | ENE |
| 20-Aug-2008 | 21:00 | 1.2 | SW |
| 20-Aug-2008 | 22:00 | 1.0 | WSW |
| 20-Aug-2008 | 23:00 | 1.1 | ESE |
| 21-Aug-2008 | 0:00 | 0.9 | ESE |
| 21-Aug-2008 | 1:00 | 0.9 | SW |
| 21-Aug-2008 | 2:00 | 0.9 | SW |
| 21-Aug-2008 | 3:00 | 1.6 | SW |
| 21-Aug-2008 | 4:00 | 0.9 | SW |
| 21-Aug-2008 | 5:00 | 0.9 | SW |
| 21-Aug-2008 | 6:00 | 2.9 | WNW |
| 21-Aug-2008 | 7:00 | 2.9 | WSW |
| 21-Aug-2008 | 8:00 | 2.0 | W |
| 21-Aug-2008 | 9:00 | 3.1 | SSW |
| 21-Aug-2008 | 10:00 | 3.0 | SW |
| 21-Aug-2008 | 11:00 | 4.1 | SSW |
| 21-Aug-2008 | 12:00 | 4.0 | S |
| 21-Aug-2008 | 13:00 | 4.1 | SSW |
| 21-Aug-2008 | 14:00 | 4.7 | SSW |
| 21-Aug-2008 | 15:00 | 4.0 | NW |
| 21-Aug-2008 | 16:00 | 4.1 | NW |
| 21-Aug-2008 | 17:00 | 4.0 | WNW |
| 21-Aug-2008 | 18:00 | 4.7 | WNW |
| 21-Aug-2008 | 19:00 | 4.7 | WNW |
| 21-Aug-2008 | 20:00 | 4.5 | WNW |
| 21-Aug-2008 | 21:00 | 4.1 | W |
| 21-Aug-2008 | 22:00 | 4.1 | W |
| 21-Aug-2008 | 23:00 | 5.2 | WNW |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 22-Aug-2008 | 0:00 | 5.8 | WNW |
| 22-Aug-2008 | 1:00 | 4.1 | W |
| 22-Aug-2008 | 2:00 | 6.3 | WNW |
| 22-Aug-2008 | 3:00 | 5.9 | W |
| 22-Aug-2008 | 4:00 | 4.7 | WNW |
| 22-Aug-2008 | 5:00 | 4.2 | WNW |
| 22-Aug-2008 | 6:00 | 3.5 | WNW |
| 22-Aug-2008 | 7:00 | 6.0 | WNW |
| 22-Aug-2008 | 8:00 | 9.0 | W |
| 22-Aug-2008 | 9:00 | 7.0 | WNW |
| 22-Aug-2008 | 10:00 | 9.5 | WNW |
| 22-Aug-2008 | 11:00 | 12.0 | WNW |
| 22-Aug-2008 | 12:00 | 9.6 | WNW |
| 22-Aug-2008 | 13:00 | 12.2 | WNW |
| 22-Aug-2008 | 14:00 | 12.0 | W |
| 22-Aug-2008 | 15:00 | 10.2 | W |
| 22-Aug-2008 | 16:00 | 10.0 | W |
| 22-Aug-2008 | 17:00 | 6.0 | W |
| 22-Aug-2008 | 18:00 | 3.8 | W |
| 22-Aug-2008 | 19:00 | 1.8 | W |
| 22-Aug-2008 | 20:00 | 5.0 | WNW |
| 22-Aug-2008 | 21:00 | 9.2 | WNW |
| 22-Aug-2008 | 22:00 | 11.8 | WNW |
| 22-Aug-2008 | 23:00 | 11.6 | WNW |
| 23-Aug-2008 | 0:00 | 8.6 | WNW |
| 23-Aug-2008 | 1:00 | 9.4 | WNW |
| 23-Aug-2008 | 2:00 | 8.4 | WNW |
| 23-Aug-2008 | 3:00 | 6.8 | WNW |
| 23-Aug-2008 | 4:00 | 6.2 | W |
| 23-Aug-2008 | 5:00 | 4.8 | WNW |
| 23-Aug-2008 | 6:00 | 4.2 | W |
| 23-Aug-2008 | 7:00 | 3.6 | W |
| 23-Aug-2008 | 8:00 | 5.2 | W |
| 23-Aug-2008 | 9:00 | 5.8 | W |
| 23-Aug-2008 | 10:00 | 4.4 | WNW |
| 23-Aug-2008 | 11:00 | 2.2 | W |
| 23-Aug-2008 | 12:00 | 1.4 | W |
| 23-Aug-2008 | 13:00 | 2.2 | NW |
| 23-Aug-2008 | 14:00 | 3.0 | WNW |
| 23-Aug-2008 | 15:00 | 3.1 | WNW |
| 23-Aug-2008 | 16:00 | 3.1 | WNW |
| 23-Aug-2008 | 17:00 | 3.0 | W |
| 23-Aug-2008 | 18:00 | 3.0 | WNW |
| 23-Aug-2008 | 19:00 | 0.6 | WNW |
| 23-Aug-2008 | 20:00 | 1.8 | WNW |
| 23-Aug-2008 | 21:00 | 1.8 | WNW |
| 23-Aug-2008 | 22:00 | 2.2 | W |
| 23-Aug-2008 | 23:00 | 1.8 | NE |
| 24-Aug-2008 | 0:00 | 2.6 | NE |
| 24-Aug-2008 | 1:00 | 2.9 | W |
| 24-Aug-2008 | 2:00 | 2.2 | N |
| 24-Aug-2008 | 3:00 | 2.9 | NE |
| 24-Aug-2008 | 4:00 | 2.1 | N |
| 24-Aug-2008 | 5:00 | 3.4 | N |
| 24-Aug-2008 | 6:00 | 2.0 | ENE |
| 24-Aug-2008 | 7:00 | 2.2 | ENE |
| 24-Aug-2008 | 8:00 | 3.4 | ENE |
| 24-Aug-2008 | 9:00 | 2.0 | ENE |
| 24-Aug-2008 | 10:00 | 2.8 | E |
| 24-Aug-2008 | 11:00 | 2.8 | ENE |
| 24-Aug-2008 | 12:00 | 2.0 | SE |
| 24-Aug-2008 | 13:00 | 2.9 | SSE |
| 24-Aug-2008 | 14:00 | 1.1 | S |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 24-Aug-2008 | 15:00 | 2.9 | SE |
| 24-Aug-2008 | 16:00 | 1.0 | SW |
| 24-Aug-2008 | 17:00 | 0.9 | NNE |
| 24-Aug-2008 | 18:00 | 2.8 | N |
| 24-Aug-2008 | 19:00 | 1.2 | NW |
| 24-Aug-2008 | 20:00 | 2.1 | NE |
| 24-Aug-2008 | 21:00 | 2.0 | ENE |
| 24-Aug-2008 | 22:00 | 2.0 | SSE |
| 24-Aug-2008 | 23:00 | 2.8 | SE |
| 25-Aug-2008 | 0:00 | 2.8 | WNW |
| 25-Aug-2008 | 1:00 | 1.0 | SW |
| 25-Aug-2008 | 2:00 | 2.9 | WSW |
| 25-Aug-2008 | 3:00 | 1.0 | WSW |
| 25-Aug-2008 | 4:00 | 2.9 | W |
| 25-Aug-2008 | 5:00 | 2.9 | WSW |
| 25-Aug-2008 | 6:00 | 1.0 | W |
| 25-Aug-2008 | 7:00 | 2.9 | WSW |
| 25-Aug-2008 | 8:00 | 2.1 | WSW |
| 25-Aug-2008 | 9:00 | 3.0 | W |
| 25-Aug-2008 | 10:00 | 3.1 | WSW |
| 25-Aug-2008 | 11:00 | 3.2 | WSW |
| 25-Aug-2008 | 12:00 | 2.4 | WSW |
| 25-Aug-2008 | 13:00 | 3.2 | S |
| 25-Aug-2008 | 14:00 | 3.2 | SSW |
| 25-Aug-2008 | 15:00 | 3.2 | WSW |
| 25-Aug-2008 | 16:00 | 3.1 | WNW |
| 25-Aug-2008 | 17:00 | 3.0 | WNW |
| 25-Aug-2008 | 18:00 | 1.0 | W |
| 25-Aug-2008 | 19:00 | 3.0 | S |
| 25-Aug-2008 | 20:00 | 2.3 | SSW |
| 25-Aug-2008 | 21:00 | 2.9 | S |
| 25-Aug-2008 | 22:00 | 2.2 | SSW |
| 25-Aug-2008 | 23:00 | 3.0 | S |
| 26-Aug-2008 | 0:00 | 2.4 | W |
| 26-Aug-2008 | 1:00 | 3.0 | WSW |
| 26-Aug-2008 | 2:00 | 3.1 | WSW |
| 26-Aug-2008 | 3:00 | 2.4 | W |
| 26-Aug-2008 | 4:00 | 3.0 | W |
| 26-Aug-2008 | 5:00 | 3.0 | W |
| 26-Aug-2008 | 6:00 | 1.3 | W |
| 26-Aug-2008 | 7:00 | 3.0 | W |
| 26-Aug-2008 | 8:00 | 3.6 | WSW |
| 26-Aug-2008 | 9:00 | 2.5 | W |
| 26-Aug-2008 | 10:00 | 2.5 | W |
| 26-Aug-2008 | 11:00 | 3.3 | W |
| 26-Aug-2008 | 12:00 | 1.5 | W |
| 26-Aug-2008 | 13:00 | 2.3 | W |
| 26-Aug-2008 | 14:00 | 3.1 | W |
| 26-Aug-2008 | 15:00 | 3.9 | WSW |
| 26-Aug-2008 | 16:00 | 2.5 | W |
| 26-Aug-2008 | 17:00 | 3.2 | SSW |
| 26-Aug-2008 | 18:00 | 0.9 | SSW |
| 26-Aug-2008 | 19:00 | 1.5 | SW |
| 26-Aug-2008 | 20:00 | 1.4 | SW |
| 26-Aug-2008 | 21:00 | 1.3 | W |
| 26-Aug-2008 | 22:00 | 1.0 | W |
| 26-Aug-2008 | 23:00 | 1.0 | W |
| 27-Aug-2008 | 0:00 | 0.7 | W |
| 27-Aug-2008 | 1:00 | 1.0 | W |
| 27-Aug-2008 | 2:00 | 1.5 | WNW |
| 27-Aug-2008 | 3:00 | 1.1 | W |
| 27-Aug-2008 | 4:00 | 2.2 | W |
| 27-Aug-2008 | 5:00 | 1.5 | W |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 27-Aug-2008 | 6:00 | 0.7 | W |
| 27-Aug-2008 | 7:00 | 0.7 | W |
| 27-Aug-2008 | 8:00 | 2.1 | WSW |
| 27-Aug-2008 | 9:00 | 1.5 | W |
| 27-Aug-2008 | 10:00 | 1.3 | W |
| 27-Aug-2008 | 11:00 | 1.9 | WSW |
| 27-Aug-2008 | 12:00 | 1.6 | W |
| 27-Aug-2008 | 13:00 | 1.3 | W |
| 27-Aug-2008 | 14:00 | 1.7 | W |
| 27-Aug-2008 | 15:00 | 1.3 | W |
| 27-Aug-2008 | 16:00 | 2.1 | W |
| 27-Aug-2008 | 17:00 | 2.1 | W |
| 27-Aug-2008 | 18:00 | 1.5 | WSW |
| 27-Aug-2008 | 19:00 | 2.0 | W |
| 27-Aug-2008 | 20:00 | 1.5 | SSE |
| 27-Aug-2008 | 21:00 | 1.5 | --- |
| 27-Aug-2008 | 22:00 | 1.2 | E |
| 27-Aug-2008 | 23:00 | 1.3 | W |
| 28-Aug-2008 | 0:00 | 1.5 | SW |
| 28-Aug-2008 | 1:00 | 0.6 | WSW |
| 28-Aug-2008 | 2:00 | 1.2 | W |
| 28-Aug-2008 | 3:00 | 1.4 | W |
| 28-Aug-2008 | 4:00 | 1.4 | W |
| 28-Aug-2008 | 5:00 | 1.7 | ENE |
| 28-Aug-2008 | 6:00 | 0.8 | ENE |
| 28-Aug-2008 | 7:00 | 1.3 | NE |
| 28-Aug-2008 | 8:00 | 1.3 | ENE |
| 28-Aug-2008 | 9:00 | 1.1 | ENE |
| 28-Aug-2008 | 10:00 | 2.3 | SSE |
| 28-Aug-2008 | 11:00 | 2.3 | SSE |
| 28-Aug-2008 | 12:00 | 1.7 | ENE |
| 28-Aug-2008 | 13:00 | 0.9 | NE |
| 28-Aug-2008 | 14:00 | 1.3 | E |
| 28-Aug-2008 | 15:00 | 1.5 | S |
| 28-Aug-2008 | 16:00 | 1.8 | S |
| 28-Aug-2008 | 17:00 | 1.3 | NNE |
| 28-Aug-2008 | 18:00 | 1.6 | NE |
| 28-Aug-2008 | 19:00 | 1.1 | ENE |
| 28-Aug-2008 | 20:00 | 1.7 | ENE |
| 28-Aug-2008 | 21:00 | 1.6 | N |
| 28-Aug-2008 | 22:00 | 1.6 | ENE |
| 28-Aug-2008 | 23:00 | 1.7 | ENE |
| 29-Aug-2008 | 0:00 | 1.2 | NE |
| 29-Aug-2008 | 1:00 | 1.5 | ENE |
| 29-Aug-2008 | 2:00 | 1.1 | N |
| 29-Aug-2008 | 3:00 | 1.2 | ENE |
| 29-Aug-2008 | 4:00 | 1.0 | ENE |
| 29-Aug-2008 | 5:00 | 1.3 | NE |
| 29-Aug-2008 | 6:00 | 1.3 | ENE |
| 29-Aug-2008 | 7:00 | 2.1 | E |
| 29-Aug-2008 | 8:00 | 1.2 | ENE |
| 29-Aug-2008 | 9:00 | 1.3 | NE |
| 29-Aug-2008 | 10:00 | 1.8 | NE |
| 29-Aug-2008 | 11:00 | 1.7 | NE |
| 29-Aug-2008 | 12:00 | 0.7 | NE |
| 29-Aug-2008 | 13:00 | 1.3 | NNE |
| 29-Aug-2008 | 14:00 | 1.0 | NE |
| 29-Aug-2008 | 15:00 | 1.1 | NNE |
| 29-Aug-2008 | 16:00 | 1.4 | NE |
| 29-Aug-2008 | 17:00 | 0.8 | NE |
| 29-Aug-2008 | 18:00 | 1.7 | NNE |
| 29-Aug-2008 | 19:00 | 1.4 | ENE |
| 29-Aug-2008 | 20:00 | 1.6 | NE |

Appendix F - Wind Data

| Date | Time | Wind Speed m/s | Direction |
|-------------|-------|----------------|-----------|
| 29-Aug-2008 | 21:00 | 1.4 | ENE |
| 29-Aug-2008 | 22:00 | 1.5 | NE |
| 29-Aug-2008 | 23:00 | 1.4 | ENE |
| 30-Aug-2008 | 0:00 | 1.2 | ENE |
| 30-Aug-2008 | 1:00 | 0.7 | ESE |
| 30-Aug-2008 | 2:00 | 1.6 | NE |
| 30-Aug-2008 | 3:00 | 1.2 | NE |
| 30-Aug-2008 | 4:00 | 1.6 | NNE |
| 30-Aug-2008 | 5:00 | 1.2 | N |
| 30-Aug-2008 | 6:00 | 1.1 | NNE |
| 30-Aug-2008 | 7:00 | 0.6 | NE |
| 30-Aug-2008 | 8:00 | 1.1 | NNE |
| 30-Aug-2008 | 9:00 | 0.6 | NE |
| 30-Aug-2008 | 10:00 | 1.2 | ENE |
| 30-Aug-2008 | 11:00 | 0.9 | ESE |
| 30-Aug-2008 | 12:00 | 2.0 | ENE |
| 30-Aug-2008 | 13:00 | 2.0 | WSW |
| 30-Aug-2008 | 14:00 | 1.2 | WSW |
| 30-Aug-2008 | 15:00 | 1.5 | WSW |
| 30-Aug-2008 | 16:00 | 1.5 | SW |
| 30-Aug-2008 | 17:00 | 1.2 | SSW |
| 30-Aug-2008 | 18:00 | 1.5 | WSW |
| 30-Aug-2008 | 19:00 | 2.0 | W |
| 30-Aug-2008 | 20:00 | 2.0 | SW |
| 30-Aug-2008 | 21:00 | 1.3 | SSW |
| 30-Aug-2008 | 22:00 | 1.4 | WSW |
| 30-Aug-2008 | 23:00 | 1.4 | SW |
| 31-Aug-2008 | 0:00 | 2.2 | SW |
| 31-Aug-2008 | 1:00 | 1.8 | WSW |
| 31-Aug-2008 | 2:00 | 1.5 | WSW |
| 31-Aug-2008 | 3:00 | 1.8 | W |
| 31-Aug-2008 | 4:00 | 1.3 | W |
| 31-Aug-2008 | 5:00 | 0.6 | WSW |
| 31-Aug-2008 | 6:00 | 1.2 | WSW |
| 31-Aug-2008 | 7:00 | 0.9 | SSW |
| 31-Aug-2008 | 8:00 | 2.0 | W |
| 31-Aug-2008 | 9:00 | 1.2 | W |
| 31-Aug-2008 | 10:00 | 1.2 | W |
| 31-Aug-2008 | 11:00 | 1.3 | SSW |
| 31-Aug-2008 | 12:00 | 1.4 | ESE |
| 31-Aug-2008 | 13:00 | 1.5 | ESE |
| 31-Aug-2008 | 14:00 | 1.4 | SE |
| 31-Aug-2008 | 15:00 | 2.1 | SSE |
| 31-Aug-2008 | 16:00 | 2.2 | SSE |
| 31-Aug-2008 | 17:00 | 1.4 | SE |
| 31-Aug-2008 | 18:00 | 1.3 | ENE |
| 31-Aug-2008 | 19:00 | 1.9 | SSE |
| 31-Aug-2008 | 20:00 | 1.6 | SSE |
| 31-Aug-2008 | 21:00 | 1.0 | N |
| 31-Aug-2008 | 22:00 | 1.3 | NNE |
| 31-Aug-2008 | 23:00 | 1.0 | NE |

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – Summary of Exceedance

- (A) Exceedance Report for 1-hr TSP
(NIL in the reporting month)**
- (B) Exceedance Report for 24-hr TSP
(NIL in the reporting month)**
- (C) Exceedance Report for Construction Noise
(NIL in the reporting month)**

APPENDIX H
SITE AUDIT SUMMARY

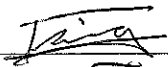

Weekly Site Inspection Record Summary

Inspection Information

| | |
|----------------------------|---------------|
| Checklist Reference Number | 80807 |
| Date | 7 August 2008 |
| Time | 14:45 – 16:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|----------------|------------------|
| - | None | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|----------|--|------------------|
| 80807-01 | <p>Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Waste / Chemical Management</p> <ul style="list-style-type: none"> General refuse including water bottles and soft drink cans was observed around Day Tank Storage Area. The Contractor was reminded to clean it up. <p>Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Others</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Follow-up on previous audit session (Ref. No. 80730), all the environmental deficiencies identified were improved / rectified by the Contractor as observed during the site inspection.</p> | E1i,E1ii,E1iii |

| | Name | Signature | Date |
|-------------|--------------------|--|---------------|
| Recorded by | Robert Tsang |  | 7 August 2008 |
| Checked by | Dr. Priscilla Choy |  | 7 August 2008 |

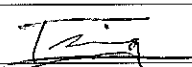

Weekly Site Inspection Record Summary

Inspection Information

| | |
|----------------------------|----------------|
| Checklist Reference Number | 80813 |
| Date | 13 August 2008 |
| Time | 14:00 – 15:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|----------------|------------------|
| - | None | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|----------|---|------------------|
| 80813-02 | <p>Water Quality</p> <ul style="list-style-type: none"> • Ponding water was observed in the drip tray at Day Tank Storage Area and Wheel washing Bay at Works Area B. The Contractor was reminded to clear it to avoid mosquito breeding. | B12 |
| 80813-01 | <p>Air Quality</p> <ul style="list-style-type: none"> • Adequate enclosure (i.e. three sides and top cover) was observed not provided for the cement mixing area. The Contractor was advised to provide adequate enclosure for it and well cover the unused cement with tarpaulin. <p>Noise</p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p>Waste / Chemical Management</p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p>Permit / Licenses</p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p>Others</p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p>Follow-up on previous audit session (Ref. No. 80807), the environmental deficiency identified was improved / rectified by the Contractor as observed during the site inspection.</p> | C12 |

| | Name | Signature | Date |
|-------------|--------------------|--|----------------|
| Recorded by | Robert Tsang |  | 13 August 2008 |
| Checked by | Dr. Priscilla Choy |  | 13 August 2008 |

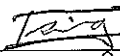

Weekly Site Inspection Record Summary

Inspection Information

| | |
|----------------------------|----------------|
| Checklist Reference Number | 80820 |
| Date | 20 August 2008 |
| Time | 15:05 – 16:15 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|----------------|------------------|
| - | None | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|----------|---|------------------|
| 80820-01 | <p>Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Air Quality</p> <ul style="list-style-type: none"> Dried and dusty surfaces were observed around the site area. The Contractor was reminded to provide frequent watering (e.g. 2-3 times per day) to avoid dust emission. <p>Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Others</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>Follow-up on previous audit session (Ref. No. 80813), all the environmental deficiencies identified were improved / rectified by the Contractor as observed during the site inspection.</p> | C5,C6 |

| | Name | Signature | Date |
|-------------|--------------------|---|----------------|
| Recorded by | Robert Tsang |  | 20 August 2008 |
| Checked by | Dr. Priscilla Choy |  | 20 August 2008 |

Contract No. DC/2007/20

Harbour Area Treatment Scheme Stage 2A –

Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works

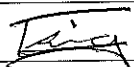

Weekly Site Inspection Record Summary

Inspection Information

| | |
|----------------------------|----------------|
| Checklist Reference Number | 80827 |
| Date | 27 August 2008 |
| Time | 15:00 – 16:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|----------------|------------------|
| - | None | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|----------|--|------------------|
| 80827-02 | <p>Water Quality</p> <ul style="list-style-type: none">• Ponding water was observed at Day Tank Storage Area. The Contractor was reminded to clear it to avoid mosquito breeding. | B12 |
| | <p>Air Quality</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. | |
| | <p>Noise</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. | |
| 80827-01 | <p>Waste / Chemical Management</p> <ul style="list-style-type: none">• Oil stain was observed on the floor at Barge Unloading Area. The Contractor was reminded to clean it up. | E7i |
| | <p>Permit / Licenses</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. | |
| | <p>Others</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. | |
| | <p>Follow-up on previous audit session (Ref. No. 80820), the environmental deficiency identified was improved / rectified by the Contractor as observed during the site inspection.</p> | |

| | Name | Signature | Date |
|-------------|--------------------|--|----------------|
| Recorded by | Robert Tsang |  | 27 August 2008 |
| Checked by | Dr. Priscilla Choy |  | 27 August 2008 |

APPENDIX I
EVENT/ACTION PLANS

APPENDIX I – Event / Action Plan

Table I-1 Event / Action Plan for Air Quality

| EVENT | ACTION | | | |
|--|--|---|--|--|
| | ET | IEC | ER | CONTRACTOR |
| ACTION LEVEL | | | | |
| 1.Exceedance for one sample | <ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Repeat measurement to confirm finding. | <ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; and 2. Check Contractor’s working method. | <ol style="list-style-type: none"> 1. Notify Contractor. | <ol style="list-style-type: none"> 1. Rectify any unacceptable practice; and 2. Amend working methods if appropriate. |
| 2.Exceedance for two or more consecutive samples | <ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Increase monitoring frequency to daily; 4. Discuss with IEC and Contractor on remedial actions required; 5. Assess the effectiveness of Contractor’s remedial actions; 6. If exceedance continues, arrange meeting with IEC and ER; and 7. If exceedance stops, cease additional monitoring. | <ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET; 2. Check Contractor’s working method; 3. Discuss with ET and Contractor on possible remedial measures; and 4. Advise the ER on the effectiveness of the proposed remedial measures. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; and 5. Conduct meeting with ET and IEC if exceedance continues. | <ol style="list-style-type: none"> 1. Discuss with ET and IEC on proper remedial actions; 2. Submit proposals for remedial actions to ER and IEC within 3 working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal if appropriate. |

| EVENT | ACTION | | | |
|--|--|---|--|---|
| | ET | IEC | ER | CONTRACTOR |
| LIMIT LEVEL | | | | |
| 1.Exceedance for one sample | <ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC, ER and EPD; 3. Repeat measurement to confirm finding; and 4. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results. | <ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; and 4. Advise the ER on the effectiveness of the proposed remedial measures. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; and 5. Conduct meeting with ET and IEC if exceedance continues. | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on proper remedial actions; 3. Submit proposals for remedial actions to ER and IEC within 3 working days of notification; and 4. Implement the agreed proposals. |
| 2.Exceedance for two or more consecutive samples | <ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Carry out analysis of Contractor's working procedures to investigate the causes of exceedance; 4. Increase monitoring frequency to daily; 5. Arrange meeting with IEC, ER and Contractor to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results; and 7. If exceedance stops, cease additional monitoring. | <ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ER, ET and Contractor on possible remedial measures; and 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; and 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Discuss with ET, ER and IEC on proper remedial actions; 3. Submit proposals for remedial actions to ER and IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposals for remedial actions if problem still not under control; and 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. |

Table I-2 Event / Action Plan for Construction Noise

| EVENT | ACTION | | | |
|-----------------------------|--|---|---|--|
| | ET | IEC | ER | Contractor |
| Action Level being exceeded | <ol style="list-style-type: none"> 1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; and 5. Increase monitoring frequency to check mitigation effectiveness. | <ol style="list-style-type: none"> 1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Advise the ER on the effectiveness of the proposed remedial measures. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; and 4. Supervise the implementation of remedial measures. | <ol style="list-style-type: none"> 1. Submit noise mitigation proposal to IEC and ER; and 2. Implement noise mitigation proposals. |
| Limit Level being exceeded | <ol style="list-style-type: none"> 1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring. | <ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; and 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; and 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposal for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; and 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. |

**APPENDIX J
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

APPENDIX J - Environmental Mitigation Implementation Schedule (EMIS)

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|--|---|----------------------|------------------------|---|---|-----|--|
| | | | | Des | C | O | Dec | |
| S3.29 | <p>Dust mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation should be incorporated to control dust emission from the site. Control measures relevant to this Project are listed below:</p> <ul style="list-style-type: none"> • Skip hoist for material transport should be totally enclosed by impervious sheeting; • Vehicle washing facilities should be provided at every vehicle exit point; • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore; • Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather; • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines; • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs; • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; • Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Air Pollution Control (Construction Dust) Regulation |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------|--|---|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| | <p>hour is the recommended limit;</p> <ul style="list-style-type: none"> • Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites; and • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. | | | | | | | |
| S4.48 – S4.50 | Use of quiet PME | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Noise Control Ordinance |
| S4.51 | <p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Noise Control Ordinance |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|-------------|--|---|----------------------|------------------------|---|---|-----|---|
| | | | | Des | C | O | Dec | |
| S4.56 & S13 | Noise monitoring should be carried out to ensure that noise mitigation measures would be properly implemented. Details of the monitoring requirements are specified in the EM&A Manual. | Barrack / During the construction period | Contractor | | √ | | | EIAO-TM and Noise Control Ordinance |
| S5.212 | The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. It is recommended to install perimeter channels in the works areas to intercept runoff at site boundary prior to the commencement of any earthwork. To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. Drainage channels are also required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance can ensure the normal operation of these facilities throughout the construction period. Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |
| S5.213 | There is a need to apply to EPD for a discharge licence under the WPCO for discharging effluent from the construction site. The discharge quality is required to meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimise water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|---|---|----------------------|------------------------|---|---|-----|---|
| | | | | Des | C | O | Dec | |
| S5.214 | The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise dust emission. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from any stream courses so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work. It is suggested that haul roads should be paved with concrete and the temporary access roads protected using crushed stone or gravel, wherever practicable. Wheel washing facilities should be provided at all site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |
| S5.215 | Good site practices should be adopted to clean the rubbish and litter on the construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |
| S5.216 | The presence of construction workers generates sewage. It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30 m from any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis. The construction workers can also make use of the existing toilet facilities within the SCISTW as necessary. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|--|---|----------------------|------------------------|---|---|-----|---|
| | | | | Des | C | O | Dec | |
| S5.217 | Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Water Pollution Control Ordinance |
| S5.218 | Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Waste Disposal Ordinance |
| S5.219 | Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM, Waste Disposal Ordinance and Water Pollution Control Ordinance |
| S5.220 | Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: <ul style="list-style-type: none"> Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. Chemical waste containers should be suitably labeled, to notify and warn the personnel who are handling the wastes, to avoid accidents. | Work sites / During the construction period | Contractor | | √ | | | EIAO-TM and Waste Disposal Ordinance |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|---|---|----------------------|------------------------|---|---|-----|---|
| | | | | Des | C | O | Dec | |
| | <ul style="list-style-type: none"> Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. | | | | | | | |
| S10.21 | <p><i>Good Site Practices</i></p> <p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site Training of site personnel in proper waste management and chemical handling procedures Provision of sufficient waste disposal points and regular collection of waste Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. | Work sites / During the construction period | Contractor | | √ | | | Waste Disposal Ordinance (Cap.54) ETWB TCW No. 19/2005 |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|--|---|----------------------|------------------------|---|---|-----|---|
| | | | | Des | C | O | Dec | |
| S10.22 | <p><i>Waste Reduction Measures</i></p> <p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> • Segregation and storage of different types of waste indifferent containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal • Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce • Proper storage and site practices to minimise the potential for damage or contamination of construction materials • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. • A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. | Work sites / During planning & design stage, and construction stage | Contractor | √ | √ | | | |
| S10.24 | <p><i>General Refuse</i></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p> | Work sites / During the construction period | Contractor | | √ | | | Public Health and Municipal Services Ordinance (Cap. 132) |

| EIA Ref | Environmental Protection Measures/Mitigation Measures | Location/Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------|---|--|----------------------|------------------------|---|---|-----|--|
| | | | | Des | C | O | Dec | |
| S10.25 | <p><i>Construction and Demolition Material</i></p> <p>In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated material generated from excavation works for the proposed chlorination plant, dechlorination plant, day tank and pipe trenches should be reused on-site as backfilling material as far as practicable. The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. C&D waste generated from site clearance and dismantling of formwork would require disposal to the designated landfill site. In order to monitor the disposal of C&D material at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.</p> | Work sites / During design stage and construction period | Contractor | √ | √ | | | ETWB TCW No. 33/2002 ETWB TCW No. 19/2005 |
| S10.26 | <p><i>Chemical Waste</i></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p> | Work sites / During the construction period | Contractor | | √ | | | Waste Disposal (Chemical Waste) (General) Regulation |

All recommendations and requirements resulted during the course of EIA/EA Process, including ACE and / or accepted public comment to the proposed project.

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**APPENDIX K
SUMMARY OF WASTE GENERATION
IN THE REPORTING MONTH**

Appendix K

Contract No.: DC/2007/20

Monthly Summary Waste Flow Table For 2008 (year)

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | Actual Quantities of C&D Waste Generated Monthly | | | | |
|------------------|--|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|----------------------------|-----------------------|----------------|-----------------------------|
| | Total Quantity Generated | Broken Concrete (see Note 2) | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 1) | Chemical Waste | Others, e.g. general refuse |
| | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000m ³) |
| Jan | | | | | | | | | | | |
| Feb | | | | | | | | | | | |
| Mar | | | | | | | | | | | |
| Apr | | | | | | | | | | | |
| May | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Jun | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.060 |
| Sub-total | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.060 |
| July | 0.008 | 0.000 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Aug | 1.439 | 0.000 | 0.000 | 0.000 | 1.439 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Sep | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 1.447 | 0.000 | 0.000 | 0.000 | 1.447 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.060 |

- Notes: (1) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 (2) Broken concrete for recycling into aggregates.

APPENDIX L
CONSTRUCTION PROGRAMME

| Activity ID | Activity Description | Orig Dur | Early Start | Early Finish | Total Float | Cal ID | 2008 | | | | | | | | | | | | 2009 | | | | | |
|-----------------------------|--|----------|-------------|--------------|-------------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|------------------------------------|-----|-----|-----|-----|-----|
| | | | | | | | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| 1420 | Internal & External Finishing | 45 | 25/03/09 | 22/05/09 | 20 | 2 | | | | | | | | | | | | | Internal & External Finishing ▲ | | | | | |
| 1430 | Install Elec. Travelling Hoist | 14 | 12/05/09 | 27/05/09 | 20 | 2 | | | | | | | | | | | | | Install Elec. Travelling Hoist | | | | | |
| 1530 | Install the Switch Board | 28 | 12/05/09 | 13/06/09 | 20 | 2 | | | | | | | | | | | | | Install the Switch Board | | | | | |
| 1730 | Install Washout Pump and Pipes | 35 | 29/05/09 | 09/07/09 | 20 | 2 | | | | | | | | | | | | | Install Washout Pump and Pipes | | | | | |
| 1740 | Fire Services & E&M Works | 21 | 15/06/09 | 09/07/09 | 20 | 2 | | | | | | | | | | | | | Fire Services & E&M Works | | | | | |
| 1750 | Test & Commissioning | 21 | 10/07/09 | 03/08/09 | 20 | 2 | | | | | | | | | | | | | Test & Commissioning | | | | | |
| Washout Chamber No.1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1435 | Excavation & Lateral Support Works | 45 | 20/09/08 | 13/11/08 | 20 | 2 | | | | | | | | | | | | | Excavation & Lateral Support Works | | | | | |
| 1440 | Construction of Wash Out Pit No.1 | 60 | 14/11/08 | 29/01/09 | 93 | 2 | | | | | | | | | | | | Construction of Wash Out Pit No.1 | | | | | | |
| 1760 | Install Washout Pump & Pipe | 28 | 30/01/09 | 03/03/09 | 93 | 2 | | | | | | | | | | | | Install Washout Pump & Pipe | | | | | | |
| 1770 | Fire Service & E&M Works | 28 | 04/03/09 | 07/04/09 | 93 | 2 | | | | | | | | | | | | Fire Service & E&M Works | | | | | | |
| 1775 | Test & Commissioning | 21 | 08/04/09 | 07/05/09 | 93 | 2 | | | | | | | | | | | | Test & Commissioning | | | | | | |
| Barge Unloading Area | | | | | | | | | | | | | | | | | | | | | | | | |
| 1450 | Excavation & Lateral Support Works | 30 | 14/11/08 | 18/12/08 | 20 | 2 | | | | | | | | | | | | Excavation & Lateral Support Works | | | | | | |
| 1460 | Construction of Structure | 45 | 19/12/08 | 16/02/09 | 20 | 2 | | | | | | | | | | | | Construction of Structure | | | | | | |
| 1520 | E&M Works | 28 | 17/02/09 | 21/03/09 | 107 | 2 | | | | | | | | | | | | E&M Works | | | | | | |
| 1780 | Mod. LV Switchboards at Ferric Chloride Storage | 14 | 12/03/09 | 28/03/09 | 107 | 2 | | | | | | | | | | | | Mod. LV Switchboards at Ferric Chloride Storage | | | | | | |
| 1790 | Test & Commissioning | 14 | 30/03/09 | 18/04/09 | 107 | 2 | | | | | | | | | | | | Test & Commissioning | | | | | | |
| 1800 | Cons. Extension Bundwall & 200 UC | 28 | 17/02/09 | 21/03/09 | 127 | 2 | | | | | | | | | | | | Cons. Extension Bundwall & 200 UC | | | | | | |
| Others | | | | | | | | | | | | | | | | | | | | | | | | |
| 1482 | Gas & Vib. Delection for Ferric Chloride Storage | 14 | 12/03/09 | 28/03/09 | 121 | 2 | | | | | | | | | | | | Gas & Vib. Delection for Ferric Chloride Storage. | | | | | | |
| 1484 | CCTV System for Ferric Chloride Storage | 14 | 12/03/09 | 28/03/09 | 121 | 2 | | | | | | | | | | | | CCTV System for Ferric Chloride Storage | | | | | | |
| 1486 | Truck Unloading Sys for Ferric Chloride Storage | 14 | 12/03/09 | 28/03/09 | 121 | 2 | | | | | | | | | | | | Truck Unloading Sys for Ferric Chloride Storage | | | | | | |
| 1490 | Demolition of storage struc. | 45 | 17/02/09 | 15/04/09 | 20 | 2 | | | | | | | | | | | | Demolition of storage struc. | | | | | | |
| 1500 | Provision of storage struc. | 90 | 16/04/09 | 03/08/09 | 20 | 2 | | | | | | | | | | | | Provision of storage struc. | | | | | | |
| 1510 | Road Work | 60 | 23/05/09 | 03/08/09 | 20 | 2 | | | | | | | | | | | | Road Work | | | | | | |
| 1810 | Cons. Gate Type A | 30 | 29/06/09 | 03/08/09 | 20 | 2 | | | | | | | | | | | | Cons. Gate Type A | | | | | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| | | | | | | | | | | | | | | | | | |

**APPENDIX M
COMPLAINT LOG**

APPENDIX M – Complaint Log

Reporting Month: August 2008

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|----------|----------|---------------|----------------------|---------------------------------|--------|
| N/A | N/A | N/A | N/A | N/A | N/A |

Remarks: No environmental complaint was received from July 2008 to August 2008.