
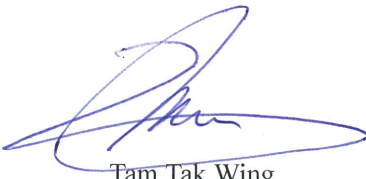


**JOB No.: TCS00670/13**

**AGREEMENT NO. CE 45/2008 (CE)  
LIANTANG/HEUNG YUEN WAI  
BOUNDARY CONTROL POINT AND ASSOCIATED WORKS**

**BASELINE MONITORING REPORT**

**PREPARED FOR  
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
(CEDD)**

<b>Date</b>	<b>Reference No.</b>	<b>Prepared By</b>	<b>Certified By</b>
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1	15 July 2013	First Submission
2	16 July 2013	Amended against IEC's comments on 15 July 2013
3	16 August 2013	Amended against EPD's comments on 2 August 2013

## EXECUTIVE SUMMARY

- ES.01 Civil Engineering and Development Department (hereafter referred as “CEDD”) is the Project Proponent and the Permit Holder of Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works (hereinafter referred as “the Project”), which is a Designated Project to be implemented under Environmental Permit number EP-404/2011 (hereinafter referred as “the EP-404/2011” or “the EP”).
- ES.02 Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned as the Environmental Team for the Project (hereinafter referred as “the ET”) to perform relevant EM&A programme, including baseline and impact environmental monitoring in accordance with the EM&A Manual approved under the Environmental Impact Assessment Ordinance (EIAO).
- ES.03 According to the Approved EM&A Manual, air quality, noise and water quality monitoring should be required to be monitored during the construction phase of the Project. Pursuant to the EP, baseline environmental monitoring is required to be conducted prior to commencement of the construction works under the Project. For the EP stipulation, baseline monitoring including air quality, noise and water quality was conducted from **13 June 2013** to **12 July 2013**. During the baseline monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed.
- ES.04 This report summarizes the key findings and presents the process and rationale behind determining a set of Action and Limit Levels (A/L Levels) of air quality, construction noise and water quality based on the baseline data. These A/L Levels will serve as the yardsticks for assessing the acceptability of the environmental impact during construction phase of the Project Works impact monitoring. They are statistical in nature and derived according to the criteria set out in the Approved EM&A Manual.
- ES.05 Results of the derived Action and Limit Levels for the air quality, noise and water quality are given in **Tables ES-1, ES-2** and **ES-3** as follows.

**Table ES-1 Action and Limit Levels of Air Quality Monitoring**

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1	265	143	500	260
AM2	268	149	500	260
AM3	269	145	500	260
AM4a	267	148	500	260
AM5	268	143	500	260
AM6	269	148	500	260
AM7a	275	156	500	260
AM8	269	144	500	260
AM9a	271	151	500	260

**Table ES-2 Action and Limit Levels of Construction Noise Monitoring**

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A) <sup>Note 1</sup>

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and 65 dB(A) during examination period

Note 2: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

Table ES-3 Action and Limit Levels of Water Quality Monitoring

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*4.23	(**)4.00	(*4.74	(**)4.00	(*4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
		AND 120% of upstream control station of the same day				
	Limit Level	67.6	33.8	12.3	14.0	38.4
AND 130% of upstream control station of the same day						
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
		AND 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
AND 130% of upstream control station of the same day						

**Remarks:**

The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data

<sup>1</sup>The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L

The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data

**Notes:**

All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered necessary.

- ES.6 In cases where exceedance of these criteria occurs, actions should be carried out in accordance with the Event Action Plan as shown the Approved EM&A Manual.

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## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department (hereafter referred as “CEDD”) is the Project Proponent and the Permit Holder of *Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works* (hereinafter referred as “the Project”), which is a Designated Project to be implemented under Environmental Permit number EP-404/2011 (hereinafter referred as “the EP-404/2011” or “the EP”).

1.1.2 The Project consists of two main components: Construction of a Boundary Control Point (hereinafter referred as “BCP”); and Construction of a connecting road alignment. Layout plan of the Project is shown in *Appendix A*.

1.1.3 The proposed BCP is located at the boundary with Shenzhen near the existing Chuk Yuen Village, comprising a main passenger building with passenger and cargo processing facilities and the associated customs, transport and ancillary facilities. The connecting road alignment consists of six main sections:

- 1) Lin Ma Hang to Frontier Closed Area (FCA) Boundary – this section comprises at-grade and viaducts and includes the improvement works at Lin Ma Hang Road;
- 2) Ping Yeung to Wo Keng Shan – this section stretches from the Frontier Closed Area Boundary to the tunnel portal at Cheung Shan and comprises at-grade and viaducts including an interchange at Ping Yeung;
- 3) North Tunnel – this section comprises the tunnel segment at Cheung Shan and includes a ventilation building at the portals on either end of the tunnel;
- 4) Sha Tau Kok Road – this section stretches from the tunnel portal at Wo Keng Shan to the tunnel portal south of Loi Tung and comprises at-grade and viaducts including an interchange at Sha Tau Kok and an administration building;
- 5) South Tunnel – this section comprises a tunnel segment that stretches from Loi Tung to Fanling and includes a ventilation building at the portals on either end of the tunnel as well as a ventilation building in the middle of the tunnel near Lau Shui Heung;
- 6) Fanling – this section comprises the at-grade, viaducts and interchange connection to the existing Fanling Highway.

1.1.4 Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned as an Independent Environmental Team (hereinafter referred as “the ET”) to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Therefore, baseline monitoring was carried out between **13 June 2013** and **12 July 2013** for all parameters including air quality, noise and water quality before construction work commencement.

1.1.5 14 consecutive days of air quality and noise monitoring requirements had been undertaken at the all designated locations from **13 June 2013** to **12 July 2013**; also a 4-weeks water quality monitoring had been carried out at eleven locations as designated in the EM&A Manual from **14 June 2013** to **10 July 2013**. During the baseline monitoring period, there were no construction activities of this project or other external influencing factors of significant concern observed by the ET.

1.1.6 This Baseline Monitoring Report presents the details of the baseline study including project background, monitoring methodology, monitoring results, summary of findings, and Action/Limit (A/L) Levels established for subsequent use in the Project construction phase EM&A program.

### 1.2 REPORT STRUCTURE

1.2.1 The Baseline Monitoring Report is structured into the following sections:-

**Section 1** Introduction

**Section 2** Summaries of Baseline Monitoring Requirement.

**Section 3** Baseline Monitoring Methodology

**Section 4** Baseline Monitoring Results

**Section 5** Conclusion and Recommendation



## 2 SUMMARY OF BASELINE MONITORING REQUIREMENT

### 2.1 GENERAL

2.1.1 The Environmental Monitoring and Audit requirements are set out in the Approved EM&A manual. Environmental issues such as air quality, construction noise and water quality were identified as the key issues during the construction phase of the Project.

2.1.2 This report presents the results obtained during the baseline monitoring program of air, noise and steam/river water between **13 June 2013** and **12 July 2013**. A summary of the baseline EM&A requirements for air, noise and water monitoring are presented in the sub-sections below.

### 2.2 MONITORING PARAMETERS

2.2.1 The EM&A baseline monitoring program shall cover the following environmental issues:

- Air quality;
- Construction noise; and
- Water quality.

2.2.2 A summary of the monitoring parameters is presented in **Table 2-1** below

**Table 2-1 Summary of EM&A Requirements**

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> <li>• 1-hour TSP by Real-Time Portable Dust Meter; and</li> <li>• 24-hour TSP by High Volume Air Sampler.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Leq (30min) in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; and</li> <li>• 3 sets of consecutive Leq (5min) on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday</li> </ul>
Water Quality	<b>In-situ Measurements</b> <ul style="list-style-type: none"> <li>• Dissolved Oxygen Concentration (mg/L);</li> <li>• Dissolved Oxygen Saturation (%);</li> <li>• Turbidity (NTU);</li> <li>• pH unit;</li> <li>• Water depth (m); and</li> <li>• Temperature (°C).</li> </ul>
	<b>Laboratory Analysis</b> <ul style="list-style-type: none"> <li>• Suspended Solids (mg/L)</li> </ul>

### 2.3 MONITORING LOCATIONS

2.3.1 The designated monitoring locations as recommended in the *EM&A Manual* are shown in **Appendix B**. As access to some of the designated monitoring locations was questionable due to safety reason or denied by the landlords, alternative locations have been proposed. The proposal of alternative monitoring locations has been updated in the revised EM&A Programme which verified by IEC and certified by ET prior submitted to EPD on 10 July 2013.

#### Air Quality

2.3.2 Baseline monitoring for air quality should be conducted at nine air sensitive receivers (hereinafter referred as “ASR”) as designated in the approved EM&A Manual. During site visit by the Contractor and ET, access to three designated air monitoring locations namely AM4, AM7 and AM9 were denied by the landlords of the ASR for HVS installation. Therefore, alternative locations namely AM4a, AM7a and AM9a are proposed based on the following criteria:

- 1) At the site boundary or such locations close to the major dust emission source;
- 2) Close to the sensitive receptors;
- 3) Take into account the prevailing meteorological conditions;
- 4) For monitoring location located in the vicinity of the ASRs, care shall be taken to cause minimal disturbance to the occupants during monitoring.
- 5) When positioning the HVS, the following points shall be noted:
  - a. a horizontal platform with appropriate support to secure the samples against gusty



- wind shall be provided;
- b. no two samplers shall be placed less than 2m apart;
- c. the distance between the HVS and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the HVS;
- d. a minimum of 2 m separation from walls, parapets and penthouses is required for HVS at the rooftop;
- e. a minimum of 2 m separation from any supporting structure, measures horizontally is required;
- f. no furnace or incinerator flue is nearby;
- g. airflow around the sampler is unrestricted;
- h. the HVS is more than 20 m from the dripline;
- i. any wire fence and gate to protect the HVS, shall not cause any obstruction during monitoring;
- j. permission must be obtained to set up the HVS and to obtain access to the monitoring stations; and
- k. a secured supply of electricity is needed to operate the HVS.

2.3.3 The proposed alternative locations of air quality monitoring are detailed in **Table 2-2** below.

**Table 2-2 Proposed Alternative Location of Air Quality Monitoring**

Station ID	Location nearby the Work Area	Conclusion and Consideration during site visit
AM4a	LMH to Frontier Closed Area	Alternative location is a village house located at about 160m east side of the original point AM4 in figure 2.1. AM4a is recommended as it is the closest residential location with secured electric access and covering the construction work at east side.
AM7a	Sha Tau Kok Road	Alternative location is the front yard of another village (nameless) aligns to Sha Tau Kok Road – Wo Hang Section proximity to Tai Tong Wu Village. AM7a is about 140m away from the original point AM7 in figure 2.1 but it is more close to the site area. AM7a is recommended as it is located just at the front of the residential area with secured electric access. It is more close to the construction site than original point, i.e. more sensitive.
AM9a	Fanling	Alternative location Nam Wa Po Village House No. 71 is located about 29m away from the original point AM9. AM9a is recommended as it is the closest residential location with secured electric access and covering the construction work area.

2.3.4 The proposed alternative locations are considered capable of effectively representing the baseline conditions at the impact monitoring locations. The proposal on alternative monitoring locations has been submitted to EPD upon agreement of the Engineer and certification by the IEC as stated in previous *Section 2.3.1*.

2.3.5 Hence, the sensitive receivers conducted the baseline air monitoring under the Project is listed in **Table 2-3** and shown in **Appendix C**.

**Table 2-3 Baseline Monitoring Stations - Air Quality**

Station ID	ASR ID in EM&A Manual	Description	Works Area
AM1	TYH	Tsung Yuen Ha Village House No. 63	BCP
AM2	V1	Village House near Lin Ma Hang Road	LMH to Frontier Closed Area
AM3	TKL2	Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village.	LMH to Frontier Closed Area
AM4a	KTW4	A village house located at about 160m east side of the original point AM4	LMH to Frontier Closed Area
AM5	PY1	Ping Yeung Village House	Ping Yeung to Wo Keng Shan
AM6	WKS7	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan
AM7a	NA	Another village (nameless) aligns to Sha Tau Kok Road – Wo Hang Section proximity to	Sha Tau Kok Road

Station ID	ASR ID in EM&A Manual	Description	Works Area
		Tai Tong Wu Village. The location is about 140m away from the original point AM7	
AM8	PKT2	Po Kat Tsai Village No. 4	Po Kat Tsai
AM9a	NWP1	Nam Wa Po Village House No. 71	Fanling

### **Construction Noise**

2.3.6 Ten noise sensitive receivers (hereinafter referred “the NSR”) are designated to be the monitoring stations in the EM&A Manual. They are listed in **Table 2-4** and shown in **Appendix C**.

**Table 2-4 Baseline Monitoring Stations - Construction Noise**

Station ID	ASR ID in EM&A Manual	Description	Works Area
NM1	TYH	Tsung Yuen Ha Village House No. 63	BCP
NM2	V2	Village House near Lin Ma Hang Road	Lin Ma Hang to Frontier Closed Area
NM3	PY2	Ping Yeung Village House (facade facing northeast)	Ping Yeung to Wo Keng Shan
NM4	WKS6	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan
NM5	LT1	Village House, Loi Tung	Sha Tau Kok Road
NM6	TTW2	Tai Tong Wu Village House 2	Sha Tau Kok Rpad
NM7	PKT2	Po Kat Tsai Village	Po Kat Tsai
NM8	TH1	Village House, Tong Hang	Fanling
NM9	KT3	Village House, Kiu Tau Village	Fanling
NM10	NWP1	Nam Wa Po Village House No. 78	Fanling

### **Water Quality**

- 2.3.7 The water quality baseline monitoring should be conducted at monitoring stations recommended in the EM&A Manual. Total eleven water quality monitoring locations including control stations and impact stations were designated for the Project.
- 2.3.8 Water quality monitoring stations WM1-Control, WM2B and WM3 have been identified and confirmed. However, access to other monitoring stations is questionable due to safety reason. Alternative monitoring locations are proposed according to the following criteria:
- 1) at locations close to and preferably at the boundary of the mixing zone of the major site activities as indicated in the EIA report, which are likely to have water quality impacts;
  - 2) close to the sensitive receptors which are directly or likely to be affected;
  - 3) for monitoring locations located in the vicinity of the sensitive receptors, care should be taken to cause minimal disturbance during monitoring;
  - 4) two or more control stations which should be at locations representative of the project site in its undisturbed condition. Control stations should be located, as far as is practicable, both upstream and down-stream of the works area.
- 2.3.9 Moreover, control stations are necessary to compare the water quality from potentially impacted sites with the ambient water quality. Control stations shall be located within the same body of water as the impact monitoring stations but shall be outside the area of influence of the works and, as far as practicable, not affected by any other works.
- 2.3.10 The actual location (coordinate) was carried out baseline water quality monitoring are listed in **Table2-5** and shown in **Appendix C**.

**Table 2-5 Baseline Monitoring Stations - Water Quality**

Station ID	Description	Location Designated in EM&A Manual		Proposed Location		Nature of the location
		Coordinates		Coordinates		
		Easting	Northing	Easting	Northing	
WM1	Downstream of Kong Yiu Channel	833669	845371	833679	845421	upstream 51m
WM1-Control	Upstream of Kong Yiu Channel	834185	845917	834185	845917	NA
WM2A	Downstream of River Ganges	834132	844433	834204	844471	downstream 81m
WM2A-Control	Upstream of River Ganges	835205	844200	835270	844243	upstream 78m
WM2B	Downstream of River Ganges	835435	843395	835433	843397	NA
WM2B-Control	Upstream of River Ganges	835846	843344	835835	843351	downstream 31m
WM3	Downstream of River Indus	836324	842405	836324	842407	NA
WM3-Control	Upstream of River Indus	836763	842426	836763	842400	downstream 26m
WM4	Downstream of Ma Wat Channel	833841	838345	833850	838338	upstream 11m
WM4-Control A	Kau Lung Hang Stream	834039	837669	834028	837695	downstream 28m
WM4-Control B	Upstream of Ma Wat Channel	833769	837406	833760	837395	upstream 15m

2.3.11 The water quality at both original and alternative locations is not anticipated to have significant difference. The proposal of alternative monitoring locations has been submitted to EPD upon agreement of the RE and verified by the IEC as stated in previous Section 2.3.1.

2.3.12 Since the changes of water monitoring locations were not significant (less than 100m), Figure 4.1 of the EM&A Manual would remain unchanged.

## 2.4 MONITORING FREQUENCY AND PERIOD

The requirements of baseline monitoring are stipulated in *Sections 2.1.5, 3.1.4 and 4.1.5* of the approved *EM&A Manual* and presented as follows.

### Air Quality Monitoring

2.4.1 Monitoring frequency for air quality baseline monitoring is as follows:

- 1-Hour TSP 3 sets of 1-Hour TSP monitoring shall be carried out daily for a period of at least two weeks.
- 24-Hour TSP Continuous monitoring of 24-Hour shall be carried out daily for a period of at least two weeks.

### Noise Monitoring

2.4.2 The baseline noise monitoring shall be carried out daily for a period of at least two weeks. The baseline noise levels for the time period between 0700 and 1900 hours on normal weekdays will be measured in terms of Leq (30 minutes). For all other time periods, i.e. restricted time period (19:00 to 07:00 the next morning and whole day on public holidays) (hereinafter referred as “the restricted hours”) will not be included in the baseline monitoring as they do not carry significance with the following rationales:

- Setting A/L Levels for construction noise is not based on baseline noise levels at any monitoring stations (refer to the following *Section 3.6: Action/Limit Levels and Event Action Plan*); and

- No construction activities are to be undertaken during the restricted hours, no construction noise impacts related to the works under the Project are therefore envisaged during the restricted hours.

Water Quality Monitoring

2.4.3 The baseline monitoring frequency shall be 3 days per week, for at least 4 weeks prior to the commencement of construction works. The interval between two sets of monitoring shall not be less than 36 hours.

**2.5 MONITORING EQUIPMENT**

Air Quality Monitoring

2.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve.

2.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

2.5.3 All equipment to be used for baseline air quality monitoring is listed in **Table 2-6**.

**Table 2-6 Air Quality Monitoring Equipment**

Equipment	Model
<b>24-Hr TSP</b>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5028A
<b>1-Hour TSP</b>	
Portable Dust Meter	Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter

Wind Data Monitoring Equipment

2.5.4 According to the approved EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

- The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
- The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
- The wind data monitoring equipment should be re-calibrated at least once every six months.
- Wind direction should be divided into 16 sectors of 22.5 degrees each.

2.5.5 In order to do so, ET has liaised with the landlords of the successful granted HVS installation premises. However, the owners rejected to provide premises for wind data monitoring equipment installation.

2.5.6 In under this situation, the ET proposed alternative methods to obtain representative wind data. Meteorological information as extracted from “the Hong Kong Observatory Ta Kwu Ling Station” is alternative method to obtain representative wind data. For Ta Kwu Ling Station, it is located nearby the Project site. Moreover, this station is situated the sea level above 15mPD. The station’s wind data monitoring equipment is set above the existing ground ten meters in compliance with the general setting up requirement. Furthermore, this station also can be to provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In Hong Kong of a lot development projects, weather information extracted from Hong Kong Observatory is common alternative method if weather station installation not allowed.

Noise Monitoring

- 2.5.7 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s<sup>-1</sup>.
- 2.5.8 Noise monitoring equipment to be used for baseline monitoring is listed in **Table 2-7**.

**Table 2-7 Construction Noise Monitoring Equipment**

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-14
Calibrator	Rion NC-73 / B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

- 2.5.9 Sound level meters listed above comply with the *International Electrotechnical Commission Publications 651: 1979 (Type 1)* and *804: 1985 (Type 1)* specifications, as recommended in TM issued under the NCO. The acoustic calibrator and sound level meter to be used in the baseline monitoring will be calibrated yearly..

Water Quality Monitoring

- 2.5.10 DO and water temperature should be measured in-situ by a DO/temperature meter. The instrument should be portable and weatherproof using a DC power source. It should have a membrane electrode with automatic temperature compensation complete with a cable. The equipment should be capable of measuring:
- a DO level in the range of 0-20 mg/l and 0-200% saturation; and
  - a temperature of between 0 and 45 degree Celsius.
- 2.5.11 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions accordingly to the APHA Standard Methods.
- 2.5.12 The instrument should be portable and weatherproof using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.
- 2.5.13 A portable, battery-operated echo sounder or tape measure will be used for the determination of water depth at each designated monitoring station as appropriate.
- 2.5.14 A water sampler e.g. Kahlsico Water Sampler, which is a transparent PVC cylinder with capacity not less than 2 litres, will be used for water sampling if water depth over than 0.5m. For sampling from very shallow water depths e.g. <0.5 m, water sample collection will be directly from water surface below 100mm use sampling plastic bottle to avoid inclusion of bottom sediment or humus. Moreover, Teflon/stainless steel bailer or self-made sampling buckets maybe used for water sampling. The equipment used for sampling will be depended the sampling location and depth situations.
- 2.5.15 Water samples for laboratory measurement of SS will be collected in high density polythene bottles, packed in ice (cooled to 4 °C without being frozen), and delivered to the laboratory in the same day as the samples were collected.
- 2.5.16 Analysis of suspended solids should be carried out in a HOKLAS or other accredited laboratory. Water samples of about 1L should be collected at the monitoring stations for carrying out the laboratory suspended solids determination. The SS determination work should start within 24 hours after collection of the water samples. The SS analyses should follow the *APHA Standard Methods 2540D* with Limit of Reporting of 2 mg/L.

- 2.5.17 Water quality monitoring equipment used in the baseline monitoring is listed in **Table 2-8**. Suspended solids (SS) analysis is carried out by a local HOKLAS-accredited laboratory, namely *ALS Technichem (HK) Pty Ltd*.

**Table 2-8 Water Quality Monitoring Equipment**

Equipment	Model
Water Depth Detector	Eagle Sonar or tape measures
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends or teflon/stainless steel bailer or self-made sampling bucket
Thermometer & DO meter	YSI 550A Handheld Dissolved Oxygen Instrument
pH meter	The EcoSense <sup>®</sup> pH10A pen-style instrument
Turbidimeter	Hach 2100Q
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-liter plastic cool box with Ice pad

## 2.6 DERIVATION OF ACTION/LIMIT (A/L) LEVELS

- 2.6.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. A summary of derivation of Action/Limit (A/L) Levels for air quality, construction noise and water quality are shown in **Table 2-9**, **2-10** and **2-11** respectively.

**Table 2-9 Derivation of Action and Limit Levels for Air Quality**

Parameter	Action Level	Limit Level
24-hour TSP	For baseline level $\leq 200 \mu\text{g}/\text{m}^3$ : Action level = (Baseline $\times$ 1.3 + Limit level)/2	$> 260 \mu\text{g}/\text{m}^3$
	For baseline level $> 200 \mu\text{g}/\text{m}^3$ : Action level = Limit level	
1-hour TSP	For baseline level $\leq 384 \mu\text{g}/\text{m}^3$ : Action level = (Baseline $\times$ 1.3 + Limit level)/2	$> 500 \mu\text{g}/\text{m}^3$
	For baseline level $> 384 \mu\text{g}/\text{m}^3$ : Action level = Limit level	

**Table 2-10 Derivation of Action and Limit Levels for Construction Noise**

Time Period	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	$> 75^* \text{ dB(A)}$

Note: <sup>(\*)</sup> Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

**Table 2-11 Derivation of Action and Limit Levels for Water Quality**

Parameters	Action	Limit
DO in mg/l	5 percentile of baseline data	4 mg/L or 1 percentile of baseline data
SS in mg/l	95 percentile of baseline data or 120% of upstream control station of the same day	99 percentile of baseline data or 130% of upstream control station of the same day
Turbidity in NTU	95 percentile of baseline data or 120% of upstream control station of the same day	99 percentile of baseline data or 130% of upstream control station of the same day

Notes:

- For DO measurement, non-compliance occurs when monitoring result is lower than the limits.
- For SS and turbidity, non-compliance of water quality results when monitoring results is higher than the limits.
- All the figures given in the table are used for reference only and the EPD may amend the figures whenever necessary.



### 3 BASELINE MONITORING METHDOLOGY

#### 3.1 GENERAL

- 3.1.1 The baseline monitoring program of air, noise and water were conducted between 13 June 2013 and 12 July 2013. During the baseline monitoring period, there were no construction activities of this project or other external influencing factors of significant concern observed by the ET.

#### 3.2 LOCATION OF BASELINE MONITORING

- 3.2.1 Baseline air quality, noise and water quality monitoring has been undertaken at the all monitoring stations between **13 June 2013** and **12 July 2013**; also a 4-week baseline water quality monitoring program has been carried out at eleven designated locations from **14 June 2013** to **10 July 2013**. The detailed information of monitoring stations to be referred to *Tables 2-3, 2-4* and *2-5*, and the graphical plot of monitoring locations is shown in *Appendix C* in this report.

#### 3.3 MONITORING EQUIPMENT AT BASELINE MONITORING

- 3.3.1 All the monitoring equipment to be used in the EM&A program as listed in *Tables 2-6, 2-7* and *2-8* has been agreed with the IEC prior to commencement of the baseline monitoring.

#### 3.4 MONITORING PROCEDURES

##### Air Quality

##### 1-hour TSP

- 3.4.1 The 1-Hour TSP monitor, a Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter was used for baseline monitoring, which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90<sup>0</sup> light scattering. The 1-hour TSP monitor consisted of the following:
- A pump to draw sample aerosol through the optic chamber where TSP is measured;
  - A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
  - A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.
- 3.4.2 The 1-hour TSP meter used is within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter was follow manufacturer's Operation and Service Manual. A valid calibration certificate is attached in *Appendix D*.

##### 24-hour TSP

- 3.4.3 The equipment used for 24-hour TSP measurement is a Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (HVS) consists of the following:
- An anodized aluminum shelter;
  - A 8"x10" stainless steel filter holder;
  - A blower motor assembly;
  - A continuous flow/pressure recorder;
  - A motor speed-voltage control/elapsed time indicator;
  - A 7-day mechanical timer, and
  - A power supply of 220v/50 hz
- 3.4.4 Prior of 24-hour TSP monitoring, the HVS was calibrated in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5028A). The 24-hour TSP Monitoring using the HVS was also processed in accordance with the manufacturer's Operations Manual. A valid calibration certificate of the calibration kit with the



certificate of HVS calibrated is attached in **Appendix D**.

- 3.4.5 24-hour TSP was collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keeps all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.

#### **Construction Noise**

- 3.4.6 Sound level meter listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), which was used for baseline noise monitoring. A valid of calibration certificates including sound level meter and an acoustic were shown in **Appendix D**.
- 3.4.7 The noise measurement was performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) in six consecutive Leq(5 min) measurements were used as the monitoring parameter throughout the baseline monitoring period.
- 3.4.8 During the baseline monitoring, the sound level meter was mounted on a tripod at a height of about 1.2 m and placed at the monitoring locations and oriented such that the microphone was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for the measurement. For the baseline noise monitoring, all monitoring stations were conducted 1 m from the exterior of the building façade.
- 3.4.9 Prior baseline noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The calibration level from before and after the noise measurement agrees to within 1.0dB.
- 3.4.10 During the noise measurement, a portable wind speed meter was used to check wind speed (m/s). For baseline noise monitoring, no wind speed was exceeding 5m/s or gusts exceeding 10m/s. Also, noise measurement in time was no fog and rain.

#### **Water Quality**

- 3.4.11 Water quality monitoring was conducted at the eleven designated locations. The sampling and in-situ measurement process are below:

##### Sampling Procedure

- 3.4.12 A Digital Global Positioning System (GPS) was used to identify the designated monitoring stations. Prior to water sampling, a portable, battery-operated echo sounder or tape measure was used for the determination of water depth at each station. At each station, water samples were collected from 0.1m below water surface or water surface to prevent the river bed sediment for stirring.
- 3.4.13 The sample container was rinsed with a portion of the water sample. The water sample then was transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.
- 3.4.14 Before commencement of the sampling, general information such as the date and time of sampling and weather condition as well as the personnel responsible for the monitoring were be recorded on the monitoring field data sheet.
- 3.4.15 A 'Willow' 33-liter plastic cool box packed with ice was used to preserve the collected water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box was maintained at a temperature as close to 4°C as possible without being frozen. Samples collected were delivered to the laboratory upon collection.

In-situ Measurement

- 3.4.16 YSI 550A Handheld Dissolved Oxygen Instrument was used for water in-situ measures, which automates the measurements and data logging of temperature, dissolved oxygen and dissolved oxygen saturation. Before each round of monitoring, the dissolved oxygen probe was calibrated by the wet bulb method.
- 3.4.17 A portable EcoSense<sup>®</sup> pH10A pen-style instrument was used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1. Standard buffer solutions of pH 7 and pH 10 are used for calibration of the instrument before and after measurement.
- 3.4.18 A portable Hach 2100Q Turbidimeter was used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. StablCal<sup>®</sup> Standards 10NTU and 100NTU are used for calibration of the instrument before and after measurement.
- 3.4.19 The all in-situ measurement equipment was calibrated by HOKLAS accredited laboratory of three month interval. Valid certificates are shown in **Appendix D**.

Laboratory Analysis

- 3.4.20 All water samples were analyzed with Suspended Solids (SS) as specified in the *EM&A Manual* by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS analysis was determined by the laboratory upon receipt of the water samples using *APHA Standard Methods 2540D*. HOKLAS-accreditation certificate of the testing laboratory is provided in **Appendix E**. The SS determination is started within 48 hours upon receipt, which is well within the required maximum sample storage time of the parameter of 7 days.

**3.5 DATA MANAGEMENT AND DATA QA/QC CONTROL**

- 3.5.1 The baseline monitoring data were handled by the ET's in-house data recording and management system.
- 3.5.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory results were input directly into the computerized database and checked by personnel other than those who input the data.
- 3.5.3 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests

## 4 BASELINE MONITORING RESULTS

### 4.1 GENERAL

4.1.1 The baseline monitoring schedules are presented in *Appendix F* and the monitoring results are detailed in the following sub-sections.

### 4.2 RESULTS OF AIR QUALITY MONITORING

4.2.1 Baseline air quality monitoring was carried out from **13 June 2013** to **12 July 2013**. The results for 24-hour and 1-hour TSP are summarized in *Tables 4-1 to 4-9*. The 24-hour TSP data are shown in *Appendix G*.

**Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – AM1**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
29-Jun-13	19	27-Jun-13	12:13	27	28	31
30-Jun-13	23	28-Jun-13	13:15	30	33	31
1-Jul-13	20	29-Jun-13	10:15	27	29	30
2-Jul-13	17	30-Jun-13	12:45	23	22	21
3-Jul-13	16	1-Jul-13	10:55	20	21	23
4-Jul-13	22	2-Jul-13	10:00	22	24	26
5-Jul-13	20	3-Jul-13	13:41	29	23	21
6-Jul-13	17	4-Jul-13	13:45	19	21	25
7-Jul-13	16	5-Jul-13	14:30	13	17	19
8-Jul-13	14	6-Jul-13	13:14	12	13	14
9-Jul-13	19	7-Jul-13	14:30	14	15	17
10-Jul-13	18	8-Jul-13	10:10	25	27	29
11-Jul-13	28	9-Jul-13	14:30	25	27	30
12-Jul-13	24	10-Jul-13	10:50	24	26	29
Average (Range)	<b>20 (14-28)</b>	Average (Range)		<b>23 (12-33)</b>		

**Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – AM2**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
27-Jun-13	32	27-Jun-13	12:25	22	23	25
28-Jun-13	25	28-Jun-13	13:22	33	35	37
29-Jun-13	30	29-Jun-13	10:21	22	24	25
30-Jun-13	24	30-Jun-13	12:40	19	20	21
1-Jul-13	22	1-Jul-13	10:45	18	20	21
2-Jul-13	26	2-Jul-13	10:15	19	21	22
3-Jul-13	22	3-Jul-13	13:54	27	24	29
4-Jul-13	23	4-Jul-13	13:30	15	16	18
5-Jul-13	40	5-Jul-13	14:50	39	40	42
6-Jul-13	26	6-Jul-13	13:00	25	28	29
7-Jul-13	34	7-Jul-13	14:39	18	20	20
8-Jul-13	37	8-Jul-13	10:00	31	33	36
9-Jul-13	33	9-Jul-13	14:21	33	34	36
10-Jul-13	31	10-Jul-13	11:15	33	33	36
Average (Range)	<b>29 (22-40)</b>	Average (Range)		<b>27 (15-42)</b>		

Table 4-3 Summary of 24-hour and 1-hour TSP Monitoring Results – AM3

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
27-Jun-13	23	27-Jun-13	12:30	25	26	28
28-Jun-13	20	28-Jun-13	13:30	48	50	48
29-Jun-13	18	29-Jun-13	10:30	35	37	33
30-Jun-13	20	30-Jun-13	12:30	14	15	13
1-Jul-13	20	1-Jul-13	10:40	15	17	18
2-Jul-13	17	2-Jul-13	13:17	13	15	16
3-Jul-13	19	3-Jul-13	14:15	28	24	32
4-Jul-13	25	4-Jul-13	10:20	17	18	18
5-Jul-13	20	5-Jul-13	09:35	22	27	29
6-Jul-13	24	6-Jul-13	10:00	21	22	22
7-Jul-13	19	7-Jul-13	15:00	32	37	35
8-Jul-13	29	8-Jul-13	11:20	53	49	41
9-Jul-13	30	9-Jul-13	14:15	39	42	44
10-Jul-13	34	10-Jul-13	11:24	30	33	34
Average (Range)	<b>23</b> <b>(17-34)</b>	Average (Range)		<b>29</b> <b>(13-53)</b>		

Table 4-4 Summary of 24-hour and 1-hour TSP Monitoring Results – AM4a

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
13-Jun-13	23	13-Jun-13	10:50	35	35	34
14-Jun-13	22	14-Jun-13	12:12	33	33	36
15-Jun-13	20	15-Jun-13	11:00	33	33	35
16-Jun-13	21	16-Jun-13	10:00	20	21	22
17-Jun-13	22	17-Jun-13	10:22	22	25	31
18-Jun-13	24	18-Jun-13	10:30	13	14	14
19-Jun-13	33	19-Jun-13	10:15	26	27	28
20-Jun-13	37	20-Jun-13	13:04	33	36	37
21-Jun-13	39	21-Jun-13	13:30	13	16	16
22-Jun-13	29	22-Jun-13	10:00	18	19	19
23-Jun-13	30	23-Jun-13	10:45	19	20	22
24-Jun-13	26	24-Jun-13	10:55	20	29	22
25-Jun-13	30	25-Jun-13	11:27	39	42	45
26-Jun-13	26	26-Jun-13	09:45	20	22	24
Average (Range)	<b>27</b> <b>(20-39)</b>	Average (Range)		<b>26</b> <b>(13-45)</b>		

Table 4-5 Summary of 24-hour and 1-hour TSP Monitoring Results – AM5

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
13-Jun-13	24	13-Jun-13	10:45	31	33	33
14-Jun-13	16	14-Jun-13	11:00	35	36	35
15-Jun-13	15	15-Jun-13	13:09	35	37	38
16-Jun-13	17	16-Jun-13	10:09	22	24	23
17-Jun-13	14	17-Jun-13	10:35	31	33	28
18-Jun-13	15	18-Jun-13	13:35	16	17	17
19-Jun-13	33	19-Jun-13	13:20	16	18	19
20-Jun-13	31	20-Jun-13	09:58	24	27	29
21-Jun-13	21	21-Jun-13	10:24	17	19	20

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
22-Jun-13	20	22-Jun-13	09:54	16	18	19
23-Jun-13	17	23-Jun-13	10:53	22	25	26
24-Jun-13	18	24-Jun-13	10:47	28	30	31
25-Jun-13	21	25-Jun-13	11:30	40	46	47
26-Jun-13	19	26-Jun-13	09:47	24	25	25
Average (Range)	<b>20</b> (14-33)	Average (Range)		<b>27</b> (16-47)		

Table 4-6 Summary of 24-hour and 1-hour TSP Monitoring Results – AM6

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
13-Jun-13	24	13-Jun-13	13:12	32	32	34
14-Jun-13	23	14-Jun-13	10:45	29	29	30
15-Jun-13	23	15-Jun-13	11:20	33	34	36
16-Jun-13	25	16-Jun-13	13:30	22	24	25
17-Jun-13	37	17-Jun-13	10:57	29	35	33
18-Jun-13	27	18-Jun-13	13:28	16	17	19
19-Jun-13	39	19-Jun-13	13:15	25	26	28
20-Jun-13	37	20-Jun-13	12:57	38	40	42
21-Jun-13	22	21-Jun-13	13:09	26	28	30
22-Jun-13	21	22-Jun-13	09:40	31	33	35
23-Jun-13	20	23-Jun-13	11:12	20	23	26
24-Jun-13	21	24-Jun-13	10:29	25	26	27
25-Jun-13	39	25-Jun-13	11:05	35	38	40
26-Jun-13	32	26-Jun-13	10:00	26	27	29
Average (Range)	<b>28</b> (20-39)	Average (Range)		<b>29</b> (16-42)		

Table 4-7 Summary of 24-hour and 1-hour TSP Monitoring Results – AM7a

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
13-Jun-13	46	13-Jun-13	13:27	35	37	35
14-Jun-13	55	14-Jun-13	13:00	30	31	33
15-Jun-13	43	15-Jun-13	11:34	33	33	35
16-Jun-13	36	16-Jun-13	13:15	17	18	19
17-Jun-13	38	17-Jun-13	11:16	31	42	34
18-Jun-13	41	18-Jun-13	10:15	18	19	21
19-Jun-13	34	19-Jun-13	09:55	56	58	58
20-Jun-13	36	20-Jun-13	09:45	54	56	59
21-Jun-13	38	21-Jun-13	09:51	33	35	38
22-Jun-13	33	22-Jun-13	09:24	48	52	52
23-Jun-13	34	23-Jun-13	11:30	34	38	39
24-Jun-13	41	24-Jun-13	10:12	30	32	33
25-Jun-13	38	25-Jun-13	10:58	36	40	42
26-Jun-13	40	26-Jun-13	10:09	43	45	46
Average (Range)	<b>40</b> (33-55)	Average (Range)		<b>38</b> (17-59)		

**Table 4-8 Summary of 24-hour and 1-hour TSP Monitoring Results – AM8**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
27-Jun-13	22	27-Jun-13	12:57	29	32	33
28-Jun-13	29	28-Jun-13	14:00	58	60	60
29-Jun-13	23	29-Jun-13	13:52	29	30	32
30-Jun-13	27	30-Jun-13	12:10	23	24	27
1-Jul-13	21	1-Jul-13	10:00	24	27	28
2-Jul-13	17	2-Jul-13	14:00	36	31	39
3-Jul-13	21	3-Jul-13	13:23	27	29	32
4-Jul-13	23	4-Jul-13	10:00	16	17	18
5-Jul-13	27	5-Jul-13	09:50	24	25	28
6-Jul-13	20	6-Jul-13	09:40	19	21	24
7-Jul-13	22	7-Jul-13	15:15	22	23	24
8-Jul-13	21	8-Jul-13	13:00	24	26	30
9-Jul-13	21	9-Jul-13	14:36	26	25	22
10-Jul-13	20	10-Jul-13	10:23	26	27	28
Average (Range)	<b>22 (17-29)</b>	Average (Range)		<b>29 (16-60)</b>		

**Table 4-9 Summary of 24-hour and 1-hour TSP Monitoring Results – AM9a**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
13-Jun-13	55	13-Jun-13	10:30	29	29	30
14-Jun-13	45	14-Jun-13	09:15	35	35	35
15-Jun-13	35	15-Jun-13	13:52	33	35	36
16-Jun-13	36	16-Jun-13	09:30	16	17	18
17-Jun-13	28	17-Jun-13	09:41	31	37	33
18-Jun-13	24	18-Jun-13	10:00	36	29	31
19-Jun-13	20	19-Jun-13	09:30	33	36	37
20-Jun-13	23	20-Jun-13	10:00	35	36	38
21-Jun-13	42	21-Jun-13	09:30	29	31	26
22-Jun-13	21	22-Jun-13	09:00	33	30	34
23-Jun-13	22	23-Jun-13	12:00	24	27	21
24-Jun-13	27	24-Jun-13	10:00	26	29	30
25-Jun-13	43	25-Jun-13	10:45	65	67	69
26-Jun-13	38	26-Jun-13	10:15	30	32	36
Average (Range)	<b>33 (20-55)</b>	Average (Range)		<b>33 (16-69)</b>		

4.2.2 The meteorological data during the baseline monitoring period are summarized in *Appendix H*.

#### Action/Limit Levels for Air Quality

4.2.3 Following the criteria shown in *Table 2-9* of this report, the proposed Action and Limit Levels for 24-hour and 1-hour TSP are listed in *Table 4-10*.

**Table 4-10 Action and Limit Levels for Air Quality Monitoring for all Stations**

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1	265	143	500	260
AM2	268	149	500	260
AM3	269	145	500	260

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM4a	267	148	500	260
AM5	268	143	500	260
AM6	269	148	500	260
AM7a	275	156	500	260
AM8	269	144	500	260
AM9a	271	151	500	260

Note: 1-hour & 24-hour TSP Action Level = (Baseline  $\times$  1.3 + Limit level)/2

### 4.3 RESULTS OF NOISE MONITORING

4.3.1 The baseline noise monitoring was undertaken from **13 June 2013** to **10 July 2013**. The designated locations including NM3, NM4, NM5, NM6, NM8, NM9 and NM10 is the first batch baseline noise monitoring, those locations are commenced on 13 June 2013 and completed on 27 June 2013. Since whole daytime raining was on 15 June 2013, therefore no baseline noise measurement was undertaken at NM3, NM4, NM5, NM6, NM8, NM9 and NM10 in accordance with the noise monitoring criteria. The second batch baseline monitoring for the other designated locations such as NM1, NM2 and NM7, was commenced again on **27 June 2013** and completed on **10 July 2013**. The measurement data are shown in *Appendix F* and summarized in *Table 4-11*.

**Table 4-11 Summaries of Noise Monitoring Results**

Monitoring Station	Normal day (Monday to Saturday): Daytime 0700-1900, Leq(30min)			Public Holiday or Sunday: Daytime 0700-1900, Leq(5min)		
	Mean	Min	Max	Mean	Min	Max
NM1	53	45	60	50	42	60
NM2	57	51	64	48	41	54
NM3	56	51	67	53	48	59
NM4	59	54	66	53	47	64
NM5	56	54	59	56	54	58
NM6	62	58	65	51	49	53
NM7	57	49	63	54	40	61
NM8	61	54	67	59	56	63
NM9	63	58	<b>76</b>	59	49	<b>74</b>
NM10	63	56	70	56	52	60

Note Figures refer to the measurement recorded at the designated station during the entire baseline period for general reference.

4.3.2 The baseline noise monitoring, sound pressure level exceeded the criteria such as 75dB(A) normal daytime and 70dB(A) restricted hour is recorded at monitoring station NM9 only. Review NM9 location, it is situated nearly train railway. The train noise should impact the monitoring station.

#### Action/Limit Levels for Noise

4.3.3 The Action and Limit Levels for construction noise are illustrated in *Table 4-12*.

**Table 4-12 Action and Limit Levels of Construction Noise Monitoring**

Time Period	Action Level	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	> 75* dB(A)

Note: \*Reduces to 70dB(A) for schools and 65dB(A) during the school examination periods.

### 4.4 RESULTS OF WATER QUALITY MONITORING

4.4.1 The baseline water quality monitoring at eleven (11) designated monitoring stations was



performed a 4 weeks as between **14 June 2013** and **10 July 2013**. The monitoring results including Dissolved Oxygen, Turbidity, Suspended Solids and pH at each designated monitoring station are summarized in **Tables 4-13** to **4-15**. Detailed monitoring results including in-situ measurements and laboratory analysis data are shown in **Appendix H**.

**Table 4-13 Summary of Water Quality Monitoring Results - Dissolved Oxygen, mg/L**

Date	Sampling Location										
	WM1	WM1-Control	WM2A	WM2A-Control	WM2B	WM2B-Control	WM3	WM3-Control	WM4	WM4-Control A	WM4-Control B
14-Jun-13	4.28	4.64	4.51	5.62	4.96	4.68	4.08	3.66	4.62	4.78	4.62
17-Jun-13	4.29	3.70	4.07	4.05	4.90	5.47	3.77	3.39	4.07	4.08	4.28
19-Jun-13	4.18	4.27	3.34	5.40	4.57	4.16	4.27	4.12	4.20	4.82	4.73
21-Jun-13	4.73	4.48	4.14	3.86	4.88	4.82	4.19	4.02	4.65	4.28	5.20
24-Jun-13	4.76	4.76	5.38	5.52	6.72	6.91	6.50	5.88	7.01	7.22	5.16
26-Jun-13	6.53	6.43	6.07	5.62	6.47	4.50	5.92	4.89	6.60	6.60	6.61
29-Jun-13	6.49	6.66	7.85	6.51	7.88	5.92	6.91	5.63	7.22	7.01	5.54
2-Jul-13	5.61	4.91	6.35	6.37	7.22	6.11	7.33	5.39	7.25	6.62	6.03
4-Jul-13	4.72	5.83	5.94	5.10	7.76	7.81	5.81	6.84	6.73	5.88	6.12
6-Jul-13	5.54	5.97	5.64	4.40	6.90	5.93	6.13	3.92	6.15	6.13	5.61
8-Jul-13	4.99	5.12	5.45	5.31	6.11	3.64	5.54	4.92	5.66	5.76	4.95
10-Jul-13	5.40	5.48	5.07	6.46	6.25	4.45	5.78	5.06	6.03	6.00	5.48
<b>5%-ile</b>	4.23	4.01	3.74	3.96	4.74	3.92	3.94	3.54	4.14	4.19	4.46
<b>1%-ile</b>	4.19	3.76	3.42	3.88	4.60	3.69	3.80	3.42	4.08	4.10	4.31
<b>Average</b>	5.12	5.18	5.32	5.35	6.22	5.36	5.52	4.81	5.85	5.76	5.36
<b>Min</b>	4.18	3.70	3.34	3.86	4.57	3.64	3.77	3.39	4.07	4.08	4.28
<b>Max</b>	6.53	6.66	7.85	6.51	7.88	7.81	7.33	6.84	7.25	7.22	6.61

**Table 4-14 Summary of Water Quality Monitoring Results – Turbidity, NTU**

Date	Sampling Location										
	WM1	WM1-Control	WM2A	WM2A-Control	WM2B	WM2B-Control	WM3	WM3-Control	WM4	WM4-Control A	WM4-Control B
14-Jun-13	16.30	6.90	4.31	56.30	49.35	60.30	26.95	43.60	7.20	40.95	61.45
17-Jun-13	14.20	5.92	4.66	2.38	2.16	5.25	3.27	6.38	13.90	2.48	9.00
19-Jun-13	19.15	7.65	9.25	7.41	10.01	0.96	14.10	11.20	26.10	21.75	30.15
21-Jun-13	11.50	12.30	3.00	3.13	2.82	2.16	2.39	4.23	39.20	2.51	9.68
24-Jun-13	321.00	689.50	61.50	68.70	53.35	44.05	94.05	77.85	53.65	88.75	146.50
26-Jun-13	11.15	10.05	10.55	4.48	12.50	3.00	2.64	3.30	27.90	7.56	49.30
29-Jun-13	17.10	9.02	2.39	34.50	9.44	0.45	1.41	4.74	10.15	1.29	14.10
2-Jul-13	26.45	15.35	11.40	20.75	0.18	2.00	0.92	2.91	30.20	9.61	22.50
4-Jul-13	17.45	11.35	9.63	13.60	1.12	0.87	6.64	12.25	18.30	6.65	11.00
6-Jul-13	17.80	17.25	3.91	20.45	3.08	1.01	12.55	11.30	17.85	12.55	19.10
8-Jul-13	15.80	10.35	36.00	15.25	1.90	1.29	1.64	4.85	15.05	9.95	12.75
10-Jul-13	71.65	26.50	10.95	18.65	2.08	1.42	1.96	2.01	19.85	6.78	14.40
<b>95%-ile</b>	51.3	22.3	24.9	28.3	11.4	4.2	13.4	11.8	35.2	17.6	40.7
<b>99%-ile</b>	67.6	25.7	33.8	33.3	12.3	5.0	14.0	12.2	38.4	20.9	47.6
<b>Average</b>	22.2	12.6	10.2	14.1	4.5	1.8	4.7	6.3	21.9	8.1	19.2
<b>Min</b>	11.2	5.9	2.4	2.4	0.2	0.5	0.9	2.0	10.2	1.3	9.0
<b>Max</b>	71.7	26.5	36.0	34.5	12.5	5.2	14.1	12.3	39.2	21.8	49.3

Remark: The shaded data are considered as abnormal under the influence of rainstorm.

Table 4-15 Summary of Water Quality Monitoring Results – Suspended Solids, mg/L

Date	Sampling Location										
	WM1	WM1-Control	WM2A	WM2A-Control	WM2B	WM2B-Control	WM3	WM3-Control	WM4	WM4-Control A	WM4-Control B
14-Jun-13	34.5	7.5	7.5	86.0	72.5	99.5	46.0	91.5	12.0	62.0	89.0
17-Jun-13	38.5	18.5	18.0	10.0	7.5	6.5	7.0	22.5	23.5	6.5	7.5
19-Jun-13	20.0	5.5	4.5	4.5	6.5	7.5	12.0	8.5	19.5	13.0	20.5
21-Jun-13	23.5	25.5	5.5	10.0	2.5	3.0	6.0	5.5	47.0	5.0	17.0
24-Jun-13	270.0	447.0	46.5	44.5	27.5	28.0	44.5	34.5	32.0	49.5	188.0
26-Jun-13	12.0	8.0	7.0	4.5	9.5	2.5	4.0	4.0	19.5	9.5	55.0
29-Jun-13	18.5	7.5	3.5	75.0	11.0	2.0	3.5	3.0	14.0	3.5	16.5
2-Jul-13	31.5	9.5	7.5	5.5	3.5	2.0	2.0	2.5	18.5	9.0	15.5
4-Jul-13	16.0	4.0	4.5	4.0	2.0	2.0	5.5	4.5	20.5	8.0	13.5
6-Jul-13	21.0	30.0	10.0	62.5	12.5	3.0	13.0	10.0	30.0	27.0	19.5
8-Jul-13	27.0	5.0	10.5	7.0	2.0	2.0	2.5	7.5	20.5	15.0	18.5
10-Jul-13	67.5	8.5	9.5	7.5	2.0	2.0	3.0	3.5	26.5	4.5	17.0
<b>95%-ile</b>	54.5	28.0	14.6	69.4	11.8	7.1	12.6	16.9	39.4	21.6	39.5
<b>99%-ile</b>	64.9	29.6	17.3	73.9	12.4	7.4	12.9	21.4	45.5	25.9	51.9
<b>Average</b>	27.6	12.2	8.1	19.1	5.9	3.2	5.9	7.2	24.0	10.1	20.1
<b>Min</b>	12.0	4.0	3.5	4.0	2.0	2.0	2.0	2.5	14.0	3.5	7.5
<b>Max</b>	67.5	30.0	18.0	75.0	12.5	7.5	13.0	22.5	47.0	27.0	55.0

Remark: The shaded data are considered as abnormal under the influence of rainstorm.

- 4.4.2 Having reviewed on the monitoring results during the baseline period, abnormally high Turbidity and SS results were found on 14 and 24 June 2013 in which Black Rainstorm Warning and severe rainstorm was hoisted respectively. According to statistics, these “distant” results may indicate faulty data, erroneous procedures, or areas where a certain theory might not be valid, and should be treated as the “outliers” and excluded from statistical calculation of the percentiles for establishment of the Action/ Limit Levels. In order to set up a more stringent limit, these two days data would be discarded before determining the Action/ Limit Level, i.e. when calculating the 95%-ile and 99%-ile of baseline data.
- 4.4.3 According to the EM&A Manual, **EITHER** the 95%-ile and 99%-ile of baseline data **OR** the 120% and 130% of upstream control station of the same day would trigger ‘Exceedance Actions’ of the Event and Action Plan. It is important to point out that the Turbidity and SS data in both control and impact stations may synchronic increase significantly under rainy or typhoon conditions, due to significant increase of the water flow in the monitoring streams to stir up the sediment and significant increase of soil erosion resulting in subsequent increase of Turbidity and SS brought by rain water to the streams etc. In this situation, even though the upstream SS and Turbidity levels indicate full compliance with the 120% and 130% criteria, the exceedances of Action and Limit levels will inevitably trigger ‘Exceedance Actions’. It is considered that the EM&A Manual poses extremely stringent ‘**OR**’ requirements for establishment of environmental performance criteria for SS and turbidity especially during rainy day.
- 4.4.4 It is therefore proposed that that the ‘**OR**’ requirement in the EM&A Manual for Turbidity and SS be relaxed to an ‘**AND**’ condition as follows:  
‘95%-ile of baseline data AND 120% of upstream control station of the same day’ and  
‘99%-ile of baseline data AND 130% of upstream control station of the same day.’
- 4.4.5 Moreover, the baseline SS and turbidity conditions at the monitoring locations may differ significantly during season changes and the environmental performance criteria may need to be reviewed regularly or even re-established if it is evident that the baseline conditions have changed significantly. It is beneficial to the project if the proposed ‘**AND**’ condition is adopted as the environmental performance criteria would also cater to the season changes.

**Action/Limit Levels for Water Quality**

- 4.4.6 The Action and Limit Levels for water quality are illustrated in **Table 4-16**. The proposed

environmental performance criteria are recommended according to *Table 2-11* of this report.

**Table 4-16 Action and Limit Levels for Water Quality Monitoring**

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*)4.23	(**)4.00	(*)4.74	(**)4.00	(*)4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
		<b>AND</b> 120% of upstream control station of the same day				
	Limit Level	67.6	33.8	12.3	14.0	38.4
		<b>AND</b> 130% of upstream control station of the same day				
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
		<b>AND</b> 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
		<b>AND</b> 130% of upstream control station of the same day				

**Remarks:**

The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data

The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L

The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data

**Notes:**

All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered necessary.

**4.5 DISCUSSION AND RECOMMENDATIONS**

**Air Quality**

Possible Influence of Seasonal Changes

4.5.1 The baseline monitoring was conducted from **13 June 2013** to **12 July 2013** during typical Hong Kong wet seasons. The baseline data so collected therefore represent the baseline air quality of the wet season immediately prior to commencement of the Project. They may not reflect the air quality conditions of dry seasons in Hong Kong, which are normally significantly different.

4.5.2 It is therefore recommended that the interpretation of the air quality monitoring data should take into account the influence of the seasonal changes, and the baseline conditions should be regularly reviewed, in particular during seasonal changes.

**Water Quality**

Environmental Performance Criteria of DO, SS, and turbidity

4.5.3 The baseline suspended solids (SS) and turbidity levels reflect typical water quality at the monitoring locations during wet seasons (April to October). The established environmental performance criteria, i.e. Action & Limit Levels, are therefore applicable to the Event and Action Plan in Hong Kong during rainy season immediately prior to the commencement of the construction activities of the Project. Similarly, this applies to dissolved oxygen (DO) which is influenced by the same seasonable changes as SS and turbidity.

## 5 CONCLUSIONS AND RECOMMENTATIONS

### 5.1 CONCLUSIONS

- 5.1.1 The baseline monitoring program was carried out during the period between **13 June 2013** and **12 July 2013** at the designated monitoring locations by the ET according to the approved EM&A Manual. During the baseline monitoring, there were no construction activities undertaken under this Project.
- 5.1.2 Based on the baseline monitoring results, the recommended environmental performance criteria for air quality, construction noise and water quality are summarized as follows:

Recommended Action & Limit Levels of Air Quality				
Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1	265	143	500	260
AM2	268	149	500	260
AM3	269	145	500	260
AM4a	267	148	500	260
AM5	268	143	500	260
AM6	269	148	500	260
AM7a	275	156	500	260
AM8	269	144	500	260
AM9a	271	151	500	260

Recommended Action & Limit Levels of Construction Noise		
Monitoring Location	Action Level	Limit Level
	<b>0700-1900 hours on normal weekdays</b>	
NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A) of Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 70 dB(A) of Leq(30min) for schools and 65 dB(A) during school examination periods

Recommended Action & Limit Levels of Water Quality						
Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*)4.23	(**)4.00	(*)4.74	(**)4.00	(*)4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
	Limit Level	AND 120% of upstream control station of the same day				
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
	Limit Level	AND 120% of upstream control station of the same day				
		AND 130% of upstream control station of the same day				

**Remarks:**

The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data

The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L

The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data

**Notes:**

All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered necessary.

**5.2 RECOMMENDATIONS**

- 5.2.1 The baseline monitoring of air quality, noise and water quality was conducted during typical wet season (April to October) in Hong Kong. It is important to note that influence of seasonal changes should be taken into account when interpreting monitoring data obtained during dry season. Review of the baseline conditions may need to be conducted regularly, in particular during seasonal changes. If the changes in baseline conditions are evident, the environmental performance criteria should be re-established by agreement of the ER and IEC and submitted for EPD endorsement.
- 5.2.2 Due to the Project Liantang/Heung Yuen Wai Boundary Control Point and Associated Works will be divided several contracts and separated different time commencement. Therefore, the all designated stations i.e. air quality, construction noise and water quality performed impact monitoring will depend on the construction to be undertaken working areas.

**Appendix A**

**Layout plan of the Project**

## **Appendix B**

### **Designated Monitoring Locations as Recommended in the Approved EM&A Manual**



## **Appendix C**

### **Sensitive Receivers Location for Baseline Monitoring**

## **Appendix D**

### **Valid Calibration Certificate of Monitoring Equipment**

## **Appendix E**

### **HOKLAS-accreditation Certificate of the Testing Laboratory**

## **Appendix F**

### **Baseline Monitoring Schedules**

**Baseline Air and Noise Monitoring Schedule**

Date		Noise Monitoring	Air Quality	
			1-hour TSP Monitoring	24-hour TSP Monitoring
13-Jun-13	Thu	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
14-Jun-13	Fri	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
15-Jun-13	Sat	<i>Cancelled</i>	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
16-Jun-13	Sun	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
17-Jun-13	Mon	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
18-Jun-13	Tue	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
19-Jun-13	Wed	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
20-Jun-13	Thu	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
21-Jun-13	Fri	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
22-Jun-13	Sat	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
23-Jun-13	Sun	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
24-Jun-13	Mon	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
25-Jun-13	Tue	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
26-Jun-13	Wed	NM3, NM4, NM5, NM6, NM8, NM9 and NM10	AM4a, AM5, AM6, AM7a and AM9a	AM4a, AM5, AM6, AM7a and AM9a
27-Jun-13	Thu	NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9 and NM10	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
28-Jun-13	Fri	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM2, AM3 and AM8
29-Jun-13	Sat	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM2, AM3 and AM8
30-Jun-13	Sun	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
01-Jul-13	Mon	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
02-Jul-13	Tue	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
03-Jul-13	Wed	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
04-Jul-13	Thu	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
05-Jul-13	Fri	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
06-Jul-13	Sat	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
07-Jul-13	Sun	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
08-Jul-13	Mon	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
09-Jul-13	Tue	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
10-Jul-13	Wed	NM1, NM2 and NM7	AM1, AM2, AM3 and AM8	AM1, AM2, AM3 and AM8
11-Jul-13	Thu			AM1
12-Jul-13	Fri			AM1

**Baseline Water Quality Monitoring Schedule**

<b>Scheduled Monitoring Day</b>		
<b>The First Week</b>	14 June 2013	Friday
<b>The Second Week</b>	17 June 2013	Monday
	19 June 2013	Wednesday
	21 June 2013	Friday
<b>The Third Week</b>	24 June 2013	Monday
	26 June 2013	Wednesday
	29 June 2013	Saturday
<b>The Forth Week</b>	2 July 2013	Tuesday
	4 July 2013	Thursday
	6 July 2013	Saturday
<b>The Fifth Week</b>	8 July 2013	Monday
	10 July 2013	Wednesday

## **Appendix G**

### **Meteorological Data during Baseline Monitoring (Ta Kwu Ling Station)**



Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
13-Jun-13	Thu	Cloudy, a few showers, moderate to fresh northeasterly winds.	1.4	24.6	6.4	84.5	N
14-Jun-13	Fri	Cloudy, rain, moderate to fresh easterly winds, strong offshore and on high ground.	30.8	25.5	7.5	87	N/NW
15-Jun-13	Sat	Cloudy, rain, moderate to fresh easterly winds, strong offshore and on high ground.	62	25.7	26.6	98	E
16-Jun-13	Sun	Hot, sunny periods , a few showers, moderate east to southeasterly winds	5.4	27.8	11.4	88.5	E
17-Jun-13	Mon	Hot, sunny periods , a few showers, moderate east to southeasterly winds	6.5	28.7	9.1	85.5	E
18-Jun-13	Tue	Hot, sunny periods, isolated showers, Moderate southeasterly winds.	Trace	29.5	5	85	E
19-Jun-13	Wed	Hot, sunny periods, isolated showers, Moderate southeasterly winds.	0	29.7	5.3	74.7	SW
20-Jun-13	Thu	Hot, sunny periods , a few showers, moderate east to southeasterly winds	0	30.3	6.4	74	S/SW
21-Jun-13	Fri	Hot, sunny periods , a few showers, moderate east to southeasterly winds	0.8	30.1	9	75.7	E
22-Jun-13	Sat	Hot, sunny periods, isolated showers, Moderate southeasterly winds.	15.2	26.9	30	90	E/SE
23-Jun-13	Sun	Cloudy, rain, Moderate to fresh southerly winds.	12.1	28.1	8.1	84	S/SE
24-Jun-13	Mon	Cloudy, rain, Moderate to fresh southerly winds.	57	26.8	6.5	88	E/SE
25-Jun-13	Tue	Hot, isolated showers, moderate to fresh southwesterly winds	0.7	28.4	8.6	85.7	S/SW
26-Jun-13	Wed	Hot, isolated showers, moderate to fresh southwesterly winds	Trace	29.8	10	76.7	S/SW
27-Jun-13	Thu	Hot, isolated showers, moderate to fresh southwesterly winds	1.2	29.9	9.3	75	S/SW
28-Jun-13	Fri	Hot, isolated showers, moderate to fresh southwesterly winds	0.2	29.3	8.2	78.7	S/SW
29-Jun-13	Sat	Fine, hot, moderate to fresh southeasterly winds	Trace	29.8	14	79	S/SW
30-Jun-13	Sun	Fine, hot, moderate to fresh southeasterly winds	0	29.8	14.5	77	S/SW
1-Jul-13	Mon	Fine, very hot, light to moderate southerly winds.	29.5	28.8	13.1	80.7	E
2-Jul-13	Tue	Fine, very hot, light to moderate southerly winds.	0	29.7	11.2	75	SE
3-Jul-13	Wed	Fine, very hot, light to moderate southerly winds.	Trace	29.2	6.5	79	S/SE
4-Jul-13	Thu	Fine, very hot, light to moderate southerly winds.	Trace	29.2	5.6	74.7	SW
5-Jul-13	Fri	Fine, very hot, light to moderate southerly winds.	0	29	4.8	76.5	SW
6-Jul-13	Sat	Cloudy, a few showers, moderate south to southeasterly winds.	4.6	28.2	7.1	81	S/SW
7-Jul-13	Sun	Cloudy, a few showers, moderate south to southeasterly winds.	40.7	28.4	9.3	77.2	E/SE
8-Jul-13	Mon	Hot, sunny periods, moderate south to southeasterly winds.	0.3	28.3	6.1	74	S/SW
9-Jul-13	Tue	Cloudy, showers, Light to moderate south to southeasterly winds.	Trace	27.8	8	79.2	E/NE
10-Jul-13	Wed	Hot, sunny periods, moderate south to southeasterly winds.	14.2	28	8.6	83.5	N/NW
11-Jul-13	Thu	Hot, sunny periods, moderate south to southeasterly winds.	0.3	Maintenance	5.3	Maintenance	S/SE
12-Jul-13	Fri	Fine, very hot. Light to moderate southerly winds.	0	29.1	4.4	79	W/SW

## **Appendix H**

### **Monitoring Results Data**

- **Air Quality (24-hour TSP);**
- **Noise; and**
- **Water Quality**

## **Air Quality (24-hour TSP)**

**24-Hr TSP Monitoring Data for AM1**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
29-Jun-13	25727	6961.39	6983.99	1356.00	35	37	36.0	28.6	1006.1	1.06	1444	3.6189	3.6457	0.0268	19
30-Jun-13	25784	6983.99	7008.33	1460.40	36	37	36.5	28.7	1006.2	1.08	1579	3.6384	3.6751	0.0367	23
1-Jul-13	25768	7008.33	7032.02	1421.40	35	37	36.0	28.7	1006.2	1.06	1513	3.6233	3.6542	0.0309	20
2-Jul-13	25772	7032.02	7056.24	1453.20	36	37	36.5	28.7	1006.4	1.08	1571	3.6402	3.6674	0.0272	17
3-Jul-13	25779	7056.24	7079.61	1402.20	34	35	34.5	28.8	1006.5	1.02	1424	3.6270	3.6502	0.0232	16
4-Jul-13	25731	7079.61	7101.76	1329.00	34	36	35.0	28.7	1006.4	1.03	1371	3.6182	3.6483	0.0301	22
5-Jul-13	25774	7101.76	7125.93	1450.20	34	35	34.5	28.8	1006.3	1.02	1472	3.6302	3.6602	0.0300	20
6-Jul-13	25736	7125.93	7149.58	1419.00	35	36	35.5	28.8	1006.1	1.05	1487	3.6309	3.6560	0.0251	17
7-Jul-13	25743	7149.58	7173.99	1464.60	33	36	34.5	28.8	1006.3	1.02	1487	3.6180	3.6425	0.0245	16
8-Jul-13	25744	7173.99	7197.51	1411.20	32	36	34.0	28.8	1010.8	1.00	1413	3.6215	3.6418	0.0203	14
9-Jul-13	25749	7197.51	7221.15	1418.40	32	34	33.0	29.0	1005.7	0.97	1369	3.6225	3.6490	0.0265	19
10-Jul-13	25788	7221.15	7244.38	1393.80	31	34	32.5	29.0	1005.7	0.95	1323	3.6314	3.6556	0.0242	18
11-Jul-13	25815	7244.38	7268.14	1425.60	33	35	34.0	29.0	1005.8	1.00	1423	3.6305	3.6706	0.0401	28
12-Jul-13	25792	7268.14	7292.17	1441.80	32	34	33.0	29.1	1005.2	0.97	1391	3.6242	3.6580	0.0338	24

**24-Hr TSP Monitoring Data for AM2**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
27-Jun-13	25716	2443.65	2467.52	1432.20	32	34	33.0	28.5	1005.7	0.97	1384	3.6166	3.6603	0.0437	32
28-Jun-13	25725	2467.52	2490.92	1404.00	34	36	35.0	28.5	1006.0	1.03	1449	3.6154	3.6511	0.0357	25
29-Jun-13	25730	2490.92	2514.04	1387.20	33	36	34.5	28.6	1006.1	1.02	1409	3.6164	3.6584	0.0420	30
30-Jun-13	25785	2514.04	2537.39	1401.00	38	40	39.0	28.7	1006.2	1.16	1629	3.6273	3.6660	0.0387	24
1-Jul-13	25769	2537.39	2560.72	1399.80	35	38	36.5	28.7	1006.3	1.08	1513	3.6271	3.6601	0.0330	22
2-Jul-13	25773	2560.72	2584.12	1404.00	36	38	37.0	28.7	1006.4	1.10	1541	3.6176	3.6569	0.0393	26
3-Jul-13	25784	2584.12	2607.31	1391.40	35	37	36.0	28.8	1006.5	1.06	1481	3.6263	3.6583	0.0320	22
4-Jul-13	25732	2607.31	2630.86	1413.00	34	36	35.0	28.7	1006.4	1.03	1458	3.6251	3.6581	0.0330	23
5-Jul-13	25775	2630.86	2654.42	1413.60	33	35	34.0	28.8	1006.3	1.00	1412	3.6238	3.6808	0.0570	40
6-Jul-13	25737	2654.42	2677.77	1401.00	35	36	35.5	28.7	1006.1	1.05	1468	3.6307	3.6684	0.0377	26
7-Jul-13	25742	2677.77	2701.51	1424.40	34	36	35.0	28.8	1006.3	1.03	1470	3.6174	3.6672	0.0498	34
8-Jul-13	25745	2701.51	2725.19	1420.80	32	33	32.5	28.8	1010.8	0.95	1353	3.6136	3.6639	0.0503	37
9-Jul-13	25750	2725.19	2749.15	1437.60	33	34	33.5	29.0	1005.7	0.98	1412	3.6173	3.6634	0.0461	33
10-Jul-13	25794	2749.15	2773.24	1445.40	33	34	33.5	29.0	1005.7	0.98	1419	3.6321	3.6765	0.0444	31

**24-Hr TSP Monitoring Data for AM3**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
27-Jun-13	25717	3328.58	3351.8	1393.20	36	38	37.0	28.5	1005.7	1.10	1529	3.6228	3.6585	0.0357	23
28-Jun-13	25724	3351.80	3375.41	1416.60	35	36	35.5	28.5	1006.0	1.05	1485	3.6197	3.6495	0.0298	20
29-Jun-13	25728	3375.41	3399.28	1432.20	34	36	35.0	28.6	1006.1	1.03	1478	3.6281	3.6545	0.0264	18
30-Jun-13	25786	3399.28	3422.56	1396.80	40	42	41.0	28.7	1006.2	1.23	1716	3.6311	3.6660	0.0349	20
1-Jul-13	25770	3422.56	3445.97	1404.60	40	42	41.0	28.7	1006.3	1.23	1725	3.6216	3.6554	0.0338	20
2-Jul-13	25782	3445.97	3469.54	1414.20	38	40	39.0	28.7	1006.4	1.16	1645	3.6274	3.6548	0.0274	17
3-Jul-13	25781	3469.54	3493.3	1425.60	38	42	40.0	28.8	1006.5	1.20	1704	3.6254	3.6584	0.0330	19
4-Jul-13	25733	3493.30	3517.23	1435.80	39	40	39.5	28.7	1006.4	1.18	1693	3.6295	3.6719	0.0424	25
5-Jul-13	25778	3517.23	3540.9	1420.20	38	40	39.0	28.8	1006.3	1.16	1651	3.6284	3.6622	0.0338	20
6-Jul-13	25738	3540.90	3564.29	1403.40	37	39	38.0	28.7	1006.1	1.13	1586	3.6280	3.6665	0.0385	24
7-Jul-13	25741	3564.29	3588.03	1424.40	38	40	39.0	28.8	1006.3	1.16	1656	3.6279	3.6587	0.0308	19
8-Jul-13	25746	3588.03	3611.17	1388.40	39	41	40.0	28.8	1010.8	1.20	1664	3.6155	3.6639	0.0484	29
9-Jul-13	25751	3611.17	3634.38	1392.60	38	41	39.5	29.0	1005.7	1.18	1641	3.6204	3.6704	0.0500	30
10-Jul-13	25790	3634.38	3658.15	1426.20	38	40	39.0	29.0	1005.7	1.16	1657	3.6237	3.6793	0.0556	34

**24-Hr TSP Monitoring Data for AM4a**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
13-Jun-13	204745	6642.26	6665.62	1401.60	30	32	31.0	27.8	1006.5	0.90	1265	3.6660	3.6948	0.0288	23
14-Jun-13	25631	6665.62	6689.45	1429.80	28	30	29.0	27.8	1006.3	0.84	1196	3.5544	3.5802	0.0258	22
15-Jun-13	25626	6689.45	6713.39	1436.40	25	29	27.0	28.0	1006.0	0.77	1107	3.5544	3.5765	0.0221	20
16-Jun-13	25625	6713.39	6736.78	1403.40	28	30	29.0	28.0	1005.8	0.84	1174	3.5525	3.5775	0.0250	21
17-Jun-13	204741	6736.78	6760.05	1396.20	32	34	33.0	28.1	1005.7	0.97	1350	3.6590	3.6886	0.0296	22
18-Jun-13	25672	6760.05	6783.55	1410.00	32	33	32.5	28.2	1005.8	0.95	1340	3.5400	3.5718	0.0318	24
19-Jun-13	25673	6783.55	6807.63	1444.80	30	32	31.0	28.4	1005.9	0.90	1302	3.5431	3.5860	0.0429	33
20-Jun-13	25685	6807.63	6831.02	1403.40	28	30	29.0	28.5	1005.8	0.84	1172	3.5321	3.5750	0.0429	37
21-Jun-13	25678	6831.02	6854.64	1417.20	28	30	29.0	28.6	1005.5	0.84	1184	3.5414	3.5871	0.0457	39
22-Jun-13	204706	6854.64	6878.2	1413.60	30	31	30.5	28.6	1005.1	0.88	1250	3.6489	3.6851	0.0362	29
23-Jun-13	25695	6878.20	6901.34	1388.40	26	28	27.0	28.6	1004.8	0.77	1068	3.5344	3.5664	0.0320	30
24-Jun-13	25704	6901.34	6924.94	1416.00	29	32	30.5	28.6	1004.7	0.88	1252	3.5924	3.6248	0.0324	26
25-Jun-13	25705	6924.94	6948.78	1430.40	31	32	31.5	28.5	1004.9	0.92	1311	3.5962	3.6356	0.0394	30
26-Jun-13	25711	6948.78	6972.29	1410.60	30	31	30.5	28.5	1005.3	0.88	1247	3.6322	3.6645	0.0323	26

**24-Hr TSP Monitoring Data for AM5**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
13-Jun-13	204746	2127.49	2150.99	1410.00	35	37	36.0	27.8	1006.5	1.07	1504	3.6617	3.6976	0.0359	24
14-Jun-13	25632	2150.99	2174.95	1437.60	36	38	37.0	27.8	1006.3	1.10	1580	3.5481	3.5730	0.0249	16
15-Jun-13	25627	2174.95	2198.62	1420.20	36	37	36.5	28.0	1006.0	1.08	1537	3.5588	3.5824	0.0236	15
16-Jun-13	25624	2198.62	2221.78	1389.60	36	38	37.0	28.0	1005.8	1.10	1527	3.5539	3.5798	0.0259	17
17-Jun-13	204742	2221.78	2244.82	1382.40	38	40	39.0	28.1	1005.7	1.16	1609	3.6615	3.6848	0.0233	14
18-Jun-13	25669	2244.82	2268.02	1392.00	38	40	39.0	28.2	1005.8	1.16	1620	3.5306	3.5554	0.0248	15
19-Jun-13	25674	2268.02	2291.46	1406.40	37	38	37.5	28.4	1005.9	1.11	1567	3.5368	3.5882	0.0514	33
20-Jun-13	25686	2291.46	2315.08	1417.20	38	40	39.0	28.5	1005.8	1.16	1648	3.5280	3.5785	0.0505	31
21-Jun-13	25679	2315.08	2338.08	1380.00	38	40	39.0	28.6	1005.5	1.16	1604	3.5475	3.5804	0.0329	21
22-Jun-13	25691	2338.08	2361.21	1387.80	36	38	37.0	28.6	1005.1	1.10	1522	3.5246	3.5548	0.0302	20
23-Jun-13	25696	2357.21	2384.69	1648.80	38	42	40.0	28.6	1004.8	1.19	1970	3.5386	3.5714	0.0328	17
24-Jun-13	25701	2384.69	2408.4	1422.60	37	40	38.5	28.6	1004.7	1.15	1630	3.5461	3.5759	0.0298	18
25-Jun-13	25706	2408.40	2432.22	1429.20	37	38	37.5	28.5	1004.9	1.11	1591	3.6024	3.6357	0.0333	21
26-Jun-13	25710	2432.22	2455.65	1405.80	36	38	37.0	28.5	1005.3	1.10	1542	3.6196	3.6486	0.0290	19

**24-Hr TSP Monitoring Data for AM6**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
13-Jun-13	25107	13006.54	13030.21	1420.20	40	42	41.0	27.8	1006.5	1.23	1748	3.5564	3.5982	0.0418	24
14-Jun-13	204744	13030.21	13053.3	1385.40	40	42	41.0	27.8	1006.3	1.23	1705	3.6665	3.7063	0.0398	23
15-Jun-13	25628	13053.30	13076.4	1386.00	40	41	40.5	28.0	1006.0	1.21	1682	3.5544	3.5935	0.0391	23
16-Jun-13	25623	13076.40	13100.12	1423.20	41	44	42.5	28.0	1005.8	1.28	1820	3.5449	3.5903	0.0454	25
17-Jun-13	204743	13100.12	13124	1432.80	42	44	43.0	28.1	1005.7	1.29	1855	3.6675	3.7368	0.0693	37
18-Jun-13	25670	13124.00	13147.25	1395.00	42	43	42.5	28.2	1005.8	1.28	1783	3.5335	3.5817	0.0482	27
19-Jun-13	25675	13147.25	13170.92	1420.20	41	42	41.5	28.4	1005.9	1.25	1769	3.5453	3.6139	0.0686	39
20-Jun-13	25687	13170.92	13194.9	1438.80	42	43	42.5	28.5	1005.8	1.28	1838	3.5328	3.6008	0.0680	37
21-Jun-13	25680	13194.90	13218.42	1411.20	41	42	41.5	28.6	1005.5	1.24	1756	3.5466	3.5848	0.0382	22
22-Jun-13	25692	13218.42	13242.3	1432.80	40	41	40.5	28.6	1005.1	1.21	1736	3.5269	3.5633	0.0364	21
23-Jun-13	25697	13242.30	13266.02	1423.20	40	44	42.0	28.6	1004.8	1.26	1794	3.5344	3.5706	0.0362	20
24-Jun-13	25702	13266.02	13290.06	1442.40	41	42	41.5	28.6	1004.7	1.24	1794	3.5522	3.5906	0.0384	21
25-Jun-13	25707	13290.06	13313.51	1407.00	42	43	42.5	28.5	1004.9	1.28	1797	3.6286	3.6978	0.0692	39
26-Jun-13	25712	13313.51	13336.88	1402.20	41	44	42.5	28.5	1005.3	1.28	1791	3.6274	3.6854	0.0580	32

**24-Hr TSP Monitoring Data for AM7a**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
13-Jun-13	204747	12648.81	12672.01	1392.00	38	40	39.0	27.8	1006.5	1.16	1622	3.6612	3.7364	0.0752	46
14-Jun-13	25633	12672.01	12695.19	1390.80	38	41	39.5	27.8	1006.3	1.18	1643	3.5544	3.6441	0.0897	55
15-Jun-13	25628	12695.19	12718.93	1424.40	40	42	41.0	28.0	1006.0	1.23	1752	3.5511	3.6266	0.0755	43
16-Jun-13	25622	12718.93	12742.01	1384.80	40	44	42.0	28.0	1005.8	1.26	1748	3.5465	3.6096	0.0631	36
17-Jun-13	25619	12742.01	12765.02	1380.60	39	43	41.0	28.1	1005.7	1.23	1697	3.5427	3.6072	0.0645	38
18-Jun-13	25671	12765.02	12788.09	1384.20	40	43	41.5	28.2	1005.8	1.25	1724	3.5311	3.6019	0.0708	41
19-Jun-13	25676	12788.09	12811.34	1395.00	40	44	42.0	28.4	1005.9	1.26	1760	3.5426	3.6031	0.0605	34
20-Jun-13	25688	12811.34	12834.37	1381.80	42	43	42.5	28.5	1005.8	1.28	1766	3.5316	3.5957	0.0641	36
21-Jun-13	25681	12834.37	12857.68	1398.60	41	43	42.0	28.6	1005.5	1.26	1763	3.5416	3.6087	0.0671	38
22-Jun-13	25693	12857.68	12881.35	1420.20	40	42	41.0	28.6	1005.1	1.23	1744	3.5275	3.5859	0.0584	33
23-Jun-13	25698	12881.35	12904.64	1397.40	42	44	43.0	28.6	1004.8	1.29	1807	3.5386	3.5999	0.0613	34
24-Jun-13	25703	12904.64	12928.18	1412.40	40	43	41.5	28.6	1004.7	1.24	1757	3.5911	3.6624	0.0713	41
25-Jun-13	25708	12928.18	12952.2	1441.20	41	42	41.5	28.5	1004.9	1.24	1793	3.6124	3.6808	0.0684	38
26-Jun-13	25713	12952.20	12975.96	1425.60	42	43	42.5	28.5	1005.3	1.28	1821	3.6267	3.6995	0.0728	40

**24-Hr TSP Monitoring Data for AM8**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
27-Jun-13	25715	5973.46	5997.52	1443.60	40	42	41.0	28.5	1005.7	1.23	1773	3.6216	3.6600	0.0384	22
28-Jun-13	25723	5997.52	6021.99	1468.20	28	30	29.0	18.5	1006.0	0.85	1250	3.6160	3.6523	0.0363	29
29-Jun-13	25729	6021.99	6045.95	1437.60	40	42	41.0	28.6	1006.1	1.23	1766	3.6204	3.6604	0.0400	23
30-Jun-13	25767	6045.95	6069.24	1397.40	40	42	41.0	28.7	1006.2	1.23	1717	3.6291	3.6760	0.0469	27
1-Jul-13	25771	6069.24	6092.36	1387.20	40	42	41.0	28.7	1006.3	1.23	1704	3.6211	3.6575	0.0364	21
2-Jul-13	25772	6092.36	6115.84	1408.80	42	43	42.5	28.7	1006.4	1.28	1800	3.6201	3.6510	0.0309	17
3-Jul-13	25778	6115.84	6139.57	1423.80	40	42	41.0	28.8	1006.5	1.23	1749	3.6248	3.6608	0.0360	21
4-Jul-13	25734	6139.57	6163.34	1426.20	37	39	38.0	28.7	1006.4	1.13	1612	3.6275	3.6652	0.0377	23
5-Jul-13	25777	6163.34	6186.74	1404.00	40	42	41.0	28.8	1006.3	1.23	1724	3.6243	3.6707	0.0464	27
6-Jul-13	25739	6186.74	6210.45	1422.60	37	40	38.5	28.7	1006.1	1.15	1631	3.6306	3.6625	0.0319	20
7-Jul-13	25740	6210.45	6234.13	1420.80	40	43	41.5	28.8	1006.3	1.24	1768	3.6130	3.6526	0.0396	22
8-Jul-13	25747	6234.13	6257.95	1429.20	38	41	39.5	28.8	1010.8	1.18	1689	3.6140	3.6497	0.0357	21
9-Jul-13	25748	6257.95	6281.7	1425.00	40	42	41.0	29.0	1005.7	1.23	1749	3.6222	3.6585	0.0363	21
10-Jul-13	25789	6281.70	6305.19	1409.40	39	41	40.0	29.0	1005.7	1.19	1684	3.6247	3.6584	0.0337	20

24-Hr TSP Monitoring Data for AM9a															
DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	( $\text{std m}^3$ )	INITIAL	FINAL	(g)	
13-Jun-13	204748	5662.48	5685.69	1392.60	40	42	41.0	27.8	1006.3	1.23	1714	3.6718	3.7653	0.0935	55
14-Jun-13	25618	5685.69	5709.57	1432.80	41	43	42.0	27.8	1006.3	1.26	1810	3.5451	3.6269	0.0818	45
15-Jun-13	25630	5709.57	5733.13	1413.60	40	44	42.0	28.0	1006.0	1.26	1785	3.5523	3.6141	0.0618	35
16-Jun-13	25621	5733.13	5756.86	1423.80	40	42	41.0	28.0	1005.8	1.23	1751	3.5513	3.6146	0.0633	36
17-Jun-13	25620	5756.86	5780.20	1400.40	40	41	40.5	28.1	1005.7	1.21	1699	3.5468	3.5936	0.0468	28
18-Jun-13	25653	5780.20	5804.00	1428.00	39	41	40.0	28.2	1005.8	1.20	1709	3.5233	3.5650	0.0417	24
19-Jun-13	25677	5804.00	5827.14	1388.40	37	40	38.5	28.4	1005.9	1.15	1592	3.5388	3.5700	0.0312	20
20-Jun-13	25690	5827.14	5850.55	1404.60	43	44	43.5	28.5	1005.8	1.31	1841	3.5283	3.5714	0.0431	23
21-Jun-13	25682	5850.55	5874.09	1412.40	42	43	42.5	28.6	1005.5	1.28	1804	3.5352	3.6117	0.0765	42
22-Jun-13	25694	5874.09	5897.82	1423.80	39	41	40.0	28.6	1005.1	1.20	1702	3.5376	3.5736	0.0360	21
23-Jun-13	25699	5897.82	5921.73	1434.60	41	43	42.0	28.6	1004.8	1.26	1808	3.5390	3.5781	0.0391	22
24-Jun-13	25700	5921.73	5944.93	1392.00	42	43	42.5	28.6	1004.7	1.28	1777	3.5418	3.5890	0.0472	27
25-Jun-13	25709	5944.93	5968.78	1431.00	40	42	41.0	28.5	1004.9	1.23	1757	3.6259	3.7019	0.0760	43
26-Jun-13	25714	5968.78	5992.06	1396.80	41	42	41.5	28.5	1005.3	1.24	1738	3.6355	3.7020	0.0665	38



## **Noise**

Noise Measurement Results (dB) of NM1																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
27-Jun-13	10:46	53.2	56.0	48.0	49.9	51.5	48.0	51.1	52.5	48.5	50.5	51.5	48.5	50.3	51.5	48.5	52.6	56.5	48.0	<b>51</b>	NA
28-Jun-13	16:53	56.5	60.8	43.4	55.0	57.3	43.8	52.4	55.3	41.4	50.4	55.8	43.7	55.5	60.8	44.1	55.8	60.8	44.1	<b>55</b>	NA
29-Jun-13	14:50	48.7	59.7	43.3	48.4	55.3	46.1	49.6	52.2	46.3	48.0	49.7	45.8	42.5	44.9	42.0	41.9	44.5	42.5	<b>47</b>	NA
*30-Jun-13	12:55	54.3	59.5	40.5	42.3	44.0	40.0	48.8	51.0	40.5										NA	<b>51</b>
*1-Jul-13	10:50	41.8	44.5	39.5	46.7	53.0	41.0	42.1	42.5	40.0										NA	<b>44</b>
2-Jul-13	10:07	49.3	43.5	38.5	43.7	49.0	37.5	41.0	44.5	37.0	44.7	46.0	40.5	42.5	44.5	39.5	45.1	46.5	39.5	<b>45</b>	NA
3-Jul-13	16:05	51.3	53.5	44.1	47.5	48.9	43.9	50.2	53.6	44.6	53.3	66.3	44.7	49.8	51.6	47.2	56.7	61.2	48.7	<b>53</b>	NA
4-Jul-13	15:33	50.3	51.4	49.1	51.3	53.0	49.4	51.3	52.6	48.9	50.4	51.7	48.7	49.3	50.4	48.2	49.9	51.3	48.4	<b>50</b>	NA
5-Jul-13	17:08	55.0	56.8	47.7	61.0	55.0	46.7	47.4	49.6	44.5	56.3	56.5	44.7	51.9	54.1	48.5	50.8	52.7	48.2	<b>56</b>	NA
6-Jul-13	15:15	58.1	59.5	50.0	55.4	56.5	50.5	59.9	54.5	47.0	50.1	51.0	46.5	51.1	52.0	46.5	50.5	52.0	47.5	<b>56</b>	NA
*7-Jul-13	14:28	59.9	61.6	52.9	57.9	59.8	49.9	57.3	63.2	52.1										NA	59
8-Jul-13	10:15	60.4	61.7	46.6	65.3	68.8	46.9	59.3	62.9	46.0	57.1	61.5	46.8	53.5	57.9	45.2	55.2	60.4	44.1	<b>60</b>	NA
9-Jul-13	16:00	53.9	55.0	51.0	52.7	54.5	50.5	52.3	53.5	50.5	52.3	54.0	50.5	52.8	54.5	50.5	52.1	53.0	50.5	<b>53</b>	NA
10-Jul-13	15:30	52.5	54.8	50.2	57.8	60.9	54.8	55.6	57.3	47.2	52.7	54.7	51.0	50.9	54.7	50.7	51.0	52.3	41.4	<b>54</b>	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM2																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
27-Jun-13	11:29	56.4	56.0	47.5	54.6	57.5	47.5	68.9	63.0	48.0	60.1	61.5	48.0	63.1	60.5	48.0	55.1	57.5	48.5	<b>63</b>	NA
28-Jun-13	16:18	57.7	60.4	45.7	54.2	56.3	45.4	50.2	53.4	43.3	57.3	58.5	46.7	52.8	57.6	44.7	49.1	53.9	46.1	<b>55</b>	NA
29-Jun-13	15:39	58.0	55.2	48.8	52.7	56.6	46.8	48.3	53.9	46.4	57.0	57.5	48.4	55.9	56.5	49.4	55.6	53.4	46.7	<b>56</b>	NA
*30-Jun-13	13:30	40.8	41.0	39.5	41.8	42.5	40.5	41.3	42.0	40.5										NA	<b>41</b>
*1-Jul-13	11:18	52.6	57.0	43.5	46.5	53.5	39.5	49.3	52.0	40.5										NA	<b>50</b>
2-Jul-13	10:57	51.9	53.0	47.5	52.9	54.0	46.0	48.9	49.5	47.0	47.3	49.0	45.0	51.0	52.5	47.5	49.6	51.0	46.5	<b>51</b>	NA
3-Jul-13	15:55	50.2	48.4	45.1	53.7	48.4	45.0	48.2	48.4	45.2	56.9	55.5	45.2	49.7	49.8	44.8	55.8	56.2	46.1	<b>54</b>	NA
4-Jul-13	15:31	63.7	65.5	44.8	66.3	71.7	44.7	66.9	61.0	43.5	59.1	61.5	45.7	55.2	57.2	44.0	64.6	67.2	45.0	<b>64</b>	NA
5-Jul-13	16:30	56.0	58.3	42.1	52.4	54.7	43.3	59.4	60.6	46.0	59.1	64.0	43.5	62.5	65.4	46.6	56.4	59.7	51.7	<b>59</b>	NA
6-Jul-13	15:14	58.9	61.8	54.6	63.7	66.7	49.3	57.9	56.7	48.4	62.0	63.7	48.9	57.8	60.1	48.2	63.1	66.8	49.3	<b>61</b>	NA
*7-Jul-13	14:20	52.0	56.2	51.4	53.6	57.3	50.2	51.5	54.5	49.0										NA	52
8-Jul-13	10:25	54.5	55.0	48.0	51.9	56.6	46.1	53.8	59.7	45.8	51.8	57.0	45.3	57.7	62.5	45.1	54.1	59.4	45.5	<b>54</b>	NA
9-Jul-13	15:54	66.1	64.8	44.5	57.2	58.4	44.3	52.5	55.2	44.8	57.2	60.9	46.0	59.4	60.3	44.6	50.8	51.0	43.4	<b>60</b>	NA
10-Jul-13	15:21	52.5	51.7	41.6	58.0	63.4	42.1	53.5	57.8	47.3	52.9	56.8	42.8	57.4	62.0	43.9	53.3	55.0	44.9	<b>55</b>	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM3																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
13-Jun-13	12:35	51.2	54.5	47.5	57.6	62.0	47.0	54.9	56.5	47.5	56.8	60.0	49.0	73.7	78.0	49.5	66.6	68.0	48.0	67	NA
14-Jun-13	10:32	53.7	55.5	51.0	54.8	57.0	51.0	60.2	63.5	52.5	58.6	61.0	52.0	63.7	66.5	55.0	60.9	66.5	55.0	60	NA
15-Jun-13	Rainy Day																			NA	NA
*16-Jun-13	12:20	55.6	59.5	47.0	58.5	62.0	47.5	50.3	50.5	47.0										NA	56
17-Jun-13	13:31	60.2	60.5	48.5	57.6	58.0	47.0	59.8	61.5	47.5	55.8	57.5	47.5	52.6	50.5	47.0	52.6	52.5	47.5	57	NA
18-Jun-13	11:29	62.2	66.5	49.0	54.7	56.0	48.5	49.8	50.5	48.5	59.7	60.0	48.5	58.0	55.0	48.5	55.4	56.5	48.5	58	NA
19-Jun-13	12:31	56.4	57.0	45.5	51.6	54.5	45.5	54.2	56.0	45.5	54.6	58.5	46.0	54.7	55.5	45.5	47.1	47.5	45.0	54	NA
20-Jun-13	11:10	60.0	64.2	50.5	54.5	57.0	48.9	56.6	62.2	48.8	50.2	52.4	47.7	49.1	50.7	47.7	53.4	56.5	47.8	56	NA
21-Jun-13	12:00	55.2	57.6	46.2	52.8	55.0	46.3	47.5	48.0	45.9	49.3	49.0	46.0	49.9	49.7	46.1	47.4	49.0	46.0	51	NA
22-Jun-13	13:17	56.8	58.0	48.5	53.1	55.5	47.0	49.9	52.0	48.5	50.5	53.5	47.0	52.0	53.5	48.5	54.3	55.5	48.0	53	NA
*23-Jun-13	10:54	52.6	54.0	45.0	53.2	55.5	44.5	47.8	50.0	43.5										NA	52
24-Jun-13	16:48	50.3	54.5	48.0	48.6	51.0	47.0	49.5	51.5	46.5	52.9	55.5	47.5	51.1	52.5	48.0	53.7	55.0	48.0	51	NA
25-Jun-13	11:35	55.8	59.1	43.9	51.9	57.3	42.2	53.4	57.1	42.1	58.3	63.1	47.6	57.4	59.0	42.8	52.2	57.0	42.5	56	NA
26-Jun-13	9:40	60.3	64.3	51.9	55.4	59.6	46.5	48.4	49.3	46.8	47.4	48.8	45.9	49.6	51.9	45.8	50.8	52.7	47.8	55	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM4																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
13-Jun-13	12:15	55.0	56.8	41.4	52.6	55.9	40.8	56.1	58.5	42.9	53.9	58.7	44.7	55.4	58.5	45.9	51.3	55.6	41.0	54	NA
14-Jun-13	10:25	54.8	56.2	42.6	52.6	54.9	41.3	55.9	57.5	43.0	53.4	55.6	42.8	54.0	55.9	43.2	53.6	55.9	42.3	54	NA
15-Jun-13	Rainy Day																			NA	NA
*16-Jun-13	12:18	64.0	66.0	45.1	56.5	57.6	44.6	55.0	57.3	45.5										NA	60
17-Jun-13	13:47	56.3	58.4	53.1	64.9	69.7	53.4	60.6	62.9	53.0	66.6	66.3	53.9	70.8	72.3	55.1	58.4	60.8	52.7	66	NA
18-Jun-13	11:42	64.7	63.8	52.2	59.9	62.6	50.7	58.4	60.3	51.1	60.1	62.3	62.7	65.7	62.7	50.6	67.8	65.9	51.6	64	NA
19-Jun-13	13:26	55.0	56.8	48.8	62.0	61.3	49.2	57.0	62.8	51.0	57.5	61.8	49.5	55.9	59.5	48.7	57.2	60.8	49.3	58	NA
20-Jun-13	11:20	60.2	58.5	51.0	53.0	54.5	51.0	53.0	54.0	50.5	54.1	55.0	50.5	61.0	59.0	51.0	57.3	57.0	51.0	58	NA
21-Jun-13	12:39	58.0	62.0	47.7	61.9	60.7	48.4	54.1	56.2	48.3	54.1	55.7	49.0	52.6	55.2	47.9	60.4	59.5	48.4	58	NA
22-Jun-13	14:09	56.4	58.0	45.5	58.8	59.0	45.0	54.7	56.5	46.5	59.6	60.0	47.5	57.5	58.5	48.5	55.5	57.5	47.0	57	NA
*23-Jun-13	11:23	48.9	50.0	43.0	47.0	49.0	44.5	47.8	49.5	44.5										NA	48
24-Jun-13	13:21	61.4	60.0	49.5	59.5	61.5	47.5	56.8	57.5	46.0	59.6	59.5	45.5	57.2	58.5	49.0	60.4	61.0	48.5	59	NA
25-Jun-13	11:40	65.8	71.0	44.6	60.4	54.8	43.5	54.2	56.5	41.6	65.6	67.1	43.2	57.0	61.1	45.6	60.1	63.0	45.8	62	NA
26-Jun-13	10:20	62.2	62.9	57.4	62.6	64.4	56.3	65.8	67.7	56.5	65.6	65.9	56.7	58.7	62.3	57.4	66.8	69.4	55.5	64	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM5																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
13-Jun-13	11:26	53.4	56.5	47.0	54.2	57.8	46.2	55.9	59.2	48.8	56.5	59.4	42.7	55.2	59.3	44.3	56.7	59.8	43.9	<b>55</b>	NA
14-Jun-13	9:40	54.7	57.2	48.2	52.9	56.3	46.3	52.3	56.0	46.2	53.1	56.8	46.7	53.8	57.0	46.9	54.3	57.2	47.8	<b>54</b>	NA
15-Jun-13	<b>Rainy Day</b>																			NA	NA
*16-Jun-13	11:40	57.0	60.2	50.2	58.0	63.4	44.4	53.6	56.6	42.1										NA	<b>57</b>
17-Jun-13	13:18	54.9	58.5	44.0	60.0	63.0	46.5	59.3	62.5	50.5	58.7	62.5	49.0	57.7	61.0	43.5	58.2	62.0	44.0	<b>58</b>	NA
18-Jun-13	11:47	56.6	60.5	41.5	55.3	59.0	44.0	56.4	60.5	43.5	55.3	59.0	44.5	56.7	60.5	46.5	57.7	61.0	48.0	<b>56</b>	NA
19-Jun-13	13:31	57.6	59.5	46.0	55.4	59.5	45.5	55.5	59.0	48.0	54.1	58.0	46.0	53.5	57.5	45.0	53.5	57.5	45.0	<b>55</b>	NA
20-Jun-13	12:20	58.8	63.0	47.0	57.9	62.0	46.5	55.6	58.5	48.0	55.0	59.0	44.5	51.8	55.5	41.5	47.0	48.0	46.5	<b>56</b>	NA
21-Jun-13	13:15	57.8	61.0	45.0	56.4	59.5	44.5	55.2	59.5	44.5	56.6	60.0	46.5	57.8	61.5	49.0	56.4	60.5	44.5	<b>57</b>	NA
22-Jun-13	14:55	57.2	61.0	47.5	57.1	61.0	47.0	56.4	59.0	46.0	56.0	58.5	46.0	55.7	58.5	45.5	54.8	58.0	44.0	<b>56</b>	NA
*23-Jun-13	11:12	58.3	60.5	51.5	56.1	57.5	51.0	54.9	56.0	50.0										NA	<b>57</b>
24-Jun-13	15:35	57.0	59.5	44.5	56.1	59.5	44.5	55.9	59.0	44.0	59.7	62.5	46.5	55.4	59.0	44.5	55.0	58.5	44.0	<b>57</b>	NA
25-Jun-13	12:39	59.4	60.3	46.2	54.5	54.2	40.1	55.1	58.6	49.8	61.9	67.0	41.1	61.9	66.5	42.7	52.8	58.2	42.9	<b>59</b>	NA
26-Jun-13	14:15	54.3	54.5	45.0	57.7	60.0	53.4	59.6	60.4	45.6	53.9	61.9	44.0	54.7	56.8	47.0	55.9	60.6	46.6	<b>57</b>	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM6																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
13-Jun-13	11:27	63.3	68.0	50.0	61.1	65.0	50.0	62.6	66.5	54.0	61.3	64.5	55.0	59.9	63.5	52.0	60.3	64.0	52.5	<b>62</b>	NA
14-Jun-13	9:47	62.6	67.5	50.0	61.4	66.5	50.0	64.7	68.5	52.0	62.8	68.0	50.5	63.6	68.0	51.5	64.2	68.5	52.5	<b>63</b>	NA
15-Jun-13	<b>Rainy Day</b>																			NA	NA
*16-Jun-13	11:43	52.6	56.0	43.0	51.7	55.5	41.0	52.1	56.0	44.0										NA	<b>52</b>
17-Jun-13	13:59	58.9	61.5	51.0	57.5	60.5	45.5	57.5	60.5	48.5	62.9	66.5	53.0	60.4	64.0	52.5	62.6	66.0	54.5	<b>61</b>	NA
18-Jun-13	13:45	62.8	66.5	56.5	63.4	67.0	55.5	61.3	65.0	53.0	62.7	66.0	54.5	61.8	65.5	54.5	62.8	66.5	54.0	<b>63</b>	NA
19-Jun-13	13:28	61.1	64.5	52.0	61.1	64.5	53.5	60.3	63.5	50.5	61.0	65.0	52.0	59.8	64.0	49.0	60.5	65.0	51.5	<b>61</b>	NA
20-Jun-13	12:10	60.3	64.1	47.9	62.8	66.5	51.8	63.4	67.6	50.0	61.7	65.0	52.3	61.0	64.7	50.4	60.8	63.7	50.8	<b>62</b>	NA
21-Jun-13	13:20	62.4	66.1	51.8	66.1	69.3	53.5	61.9	65.2	52.9	65.4	69.3	52.3	65.7	70.9	55.5	64.6	67.0	53.4	<b>65</b>	NA
22-Jun-13	11:22	61.1	65.5	50.0	62.4	66.0	50.5	60.4	64.5	50.5	61.4	65.5	51.0	63.7	66.0	53.5	62.9	65.5	52.5	<b>62</b>	NA
*23-Jun-13	14:43	52.2	55.0	47.5	50.0	53.5	41.0	49.1	52.5	40.5										NA	<b>51</b>
24-Jun-13	14:17	61.0	64.0	51.5	61.6	64.5	51.5	60.6	64.0	50.0	62.4	65.5	52.5	61.7	64.5	51.5	60.8	63.5	50.5	<b>61</b>	NA
25-Jun-13	12:42	57.6	61.6	48.3	58.8	63.4	41.1	51.1	54.2	42.9	60.9	63.9	44.7	55.8	59.3	45.4	58.1	61.4	42.9	<b>58</b>	NA
26-Jun-13	14:57	58.9	61.8	55.0	58.5	58.7	46.9	58.4	58.8	50.2	61.2	63.7	53.2	63.6	65.9	53.0	58.6	59.5	56.1	<b>60</b>	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM7																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min
27-Jun-13	12:59	51.2	52.6	39.9	50.3	52.8	40.8	54.1	50.8	39.7	57.2	59.8	39.9	61.1	61.0	43.6	52.5	54.8	42.5	56	NA
28-Jun-13	15:30	55.4	59.2	43.6	56.2	55.5	44.7	46.3	49.8	45.0	55.0	59.1	42.1	4.3	58.2	48.7	55.5	58.2	49.1	54	NA
29-Jun-13	13:45	63.8	73.1	49.7	61.1	67.2	44.7	56.0	57.9	48.3	61.4	61.9	54.9	59.6	58.6	54.0	53.1	56.9	52.8	60	NA
*30-Jun-13	14:30	61.3	63.0	55.0	61.4	63.0	55.5	61.3	63.0	55.5										NA	61
*1-Jul-13	11:31	44.8	48.0	39.5	41.2	42.0	39.0	40.1	40.5	39.0										NA	43
2-Jul-13	13:54	55.7	54.5	46.0	54.5	55.0	47.0	52.6	54.8	47.0	57.3	59.5	47.0	55.1	58.0	46.0	53.8	55.5	45.5	55	NA
3-Jul-13	14:50	54.2	56.4	40.0	52.8	55.8	41.9	53.0	56.4	41.2	52.2	52.5	38.5	61.1	65.7	36.9	62.1	59.0	39.5	58	NA
4-Jul-13	16:22	53.7	55.8	36.9	47.1	48.5	33.7	44.1	43.3	33.6	49.3	50.6	34.6	37.5	39.7	34.1	50.2	48.3	34.1	49	NA
5-Jul-13	16:20	53.3	56.6	41.1	56.9	60.9	42.5	60.0	63.4	43.8	52.1	57.1	41.9	53.5	57.4	40.3	51.8	56.5	40.1	56	NA
6-Jul-13	16:00	54.0	56.3	39.4	69.4	71.8	40.7	54.5	54.6	40.0	57.0	59.1	36.8	45.2	44.0	37.3	56.4	55.6	37.2	62	NA
*7-Jul-13	17:00	59.7	61.2	52.6	57.7	59.2	49.6	57.6	63.6	52.1										NA	58
8-Jul-13	15:41	66.3	70.1	55.8	63.9	63.8	62.2	63.1	63.9	62.2	60.4	63.9	43.6	58.4	62.6	42.2	53.6	57.3	41.2	63	NA
9-Jul-13	12:00	54.2	63.5	44.0	51.3	54.5	42.5	59.4	50.5	44.0	50.0	54.5	42.0	54.6	57.5	41.5	50.7	51.5	42.0	55	NA
10-Jul-13	12:24	60.3	60.8	33.6	58.3	54.2	34.4	62.3	55.3	42.1	53.7	54.1	34.1	54.9	54.2	33.6	58.6	44.5	38.6	59	NA

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM8																						
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min	
13-Jun-13	15:50	60.7	65.6	51.3	58.1	60.1	47.9	57.3	61.9	51.4	65.9	67.1	54.5	57.1	59.9	53.3	57.0	61.2	51.8	61	NA	
14-Jun-13	10:40	62.8	64.0	53.7	59.4	65.1	47.4	61.4	67.5	47.0	72.4	74.4	48.9	62.8	64.9	49.6	64.1	65.7	61.8	66	NA	
15-Jun-13		Rainy Day																			NA	NA
*16-Jun-13	13:08	56.4	54.7	49.2	62.5	68.1	48.7	60.3	59.0	50.3										NA	60	
17-Jun-13	16:19	67.1	71.4	54.1	63.9	68.7	52.3	63.4	68.0	53.8	65.0	69.9	50.8	64.7	70.1	51.5	59.1	63.2	52.8	64	NA	
18-Jun-13	15:30	56.3	57.4	54.2	57.5	57.4	54.5	56.4	57.6	56.0	58.8	59.2	56.0	59.2	61.3	54.6	58.9	60.1	54.4	58	NA	
19-Jun-13	15:08	54.6	55.6	45.7	65.2	69.9	48.4	63.4	68.5	47.8	61.9	63.5	47.8	65.7	70.6	49.1	63.1	68.7	47.7	63	NA	
20-Jun-13	10:45	67.4	69.5	62.5	64.6	68.4	61.0	66.8	69.5	61.3	66.5	71.2	63.3	68.1	73.7	64.1	67.3	69.1	66.0	67	NA	
21-Jun-13	14:18	60.8	62.2	47.8	61.7	67.5	46.4	62.3	66.8	46.6	62.4	69.1	46.9	64.7	70.6	46.3	64.1	70.6	46.7	63	NA	
22-Jun-13	15:51	59.2	63.5	52.5	60.9	64.0	51.0	60.1	64.0	52.5	61.4	65.0	52.5	62.6	65.5	53.0	60.8	64.5	52.0	61	NA	
*23-Jun-13	12:36	59.6	63.4	48.6	56.9	63.4	46.3	57.2	60.8	46.3										NA	58	
24-Jun-13	17:26	59.8	62.5	49.5	59.1	62.0	50.5	60.7	63.5	50.0	61.5	64.0	50.0	60.4	63.5	49.5	59.3	61.5	49.0	60	NA	
25-Jun-13	13:30	53.7	59.4	44.7	55.4	57.9	52.8	54.6	55.2	53.7	54.9	62.2	52.5	54.6	54.1	51.0	50.8	51.6	50.3	54	NA	
26-Jun-13	12:00	54.2	57.4	43.4	51.3	56.0	43.5	59.4	63.8	46.5	50.0	53.0	45.5	54.6	58.6	46.6	50.7	56.1	44.9	55	NA	

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM9																						
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min	
13-Jun-13	14:59	63.8	66.9	56.5	62.5	65.8	57.1	60.7	64.0	55.5	61.5	64.8	55.5	58.0	61.3	51.6	58.9	62.4	50.8	<b>61</b>	NA	
14-Jun-13	9:00	57.9	59.7	54.4	57.4	59.5	53.4	57.3	60.8	53.0	58.1	60.4	53.6	60.7	61.7	53.0	64.0	66.5	56.0	<b>60</b>	NA	
15-Jun-13	<b>Rainy Day</b>																				NA	NA
*16-Jun-13	13:40	59.0	62.4	47.2	54.0	57.6	48.7	54.2	58.3	48.5										NA	<b>56</b>	
17-Jun-13	15:45	53.1	57.0	48.0	60.3	65.0	48.5	70.3	72.5	58.0	59.4	60.5	56.5	58.9	60.0	56.5	61.6	62.5	55.5	<b>64</b>	NA	
18-Jun-13	10:15	60.5	61.1	47.4	63.2	67.7	47.4	63.7	67.5	47.9	66.4	68.5	49.1	62.4	66.0	47.5	62.4	68.3	47.8	<b>63</b>	NA	
19-Jun-13	15:06	61.1	65.0	53.0	58.4	61.5	53.5	57.8	60.0	53.5	59.1	63.0	53.0	58.7	61.5	53.5	60.1	62.0	54.0	<b>59</b>	NA	
20-Jun-13	9:50	77.3	79.8	70.6	74.4	79.5	67.1	74.0	78.4	66.6	76.6	79.3	67.5	75.1	76.9	65.8	76.3	79.0	67.7	<b>76</b>	NA	
21-Jun-13	14:52	62.9	65.0	57.5	58.8	62.0	55.0	57.2	59.5	54.5	58.4	60.0	54.5	58.3	61.0	55.5	58.7	60.5	56.0	<b>59</b>	NA	
22-Jun-13	16:48	65.2	67.5	55.0	63.2	65.5	53.5	63.8	66.0	53.0	62.7	65.5	52.5	62.3	65.0	52.5	61.4	64.0	52.0	<b>63</b>	NA	
*23-Jun-13	12:40	48.9	52.0	43.1	73.6	76.5	49.0	62.6	63.0	58.5										NA	<b>69</b>	
24-Jun-13	11:04	67.2	69.5	58.5	65.3	68.0	57.0	65.8	68.0	57.5	64.0	67.5	56.5	64.4	67.5	56.5	63.5	67.0	55.5	<b>65</b>	NA	
25-Jun-13	14:07	62.4	69.0	51.8	61.1	65.5	49.6	67.4	68.9	48.6	60.3	63.2	50.2	61.8	62.0	50.0	62.3	66.8	53.8	<b>63</b>	NA	
26-Jun-13	12:05	67.8	68.8	53.9	69.4	75.2	53.6	66.8	68.5	55.0	62.2	68.7	55.5	62.7	68.8	53.5	68.8	76.6	53.6	<b>67</b>	NA	

Remarks: (\*) Public Holiday or Sunday

Noise Measurement Results (dB) of NM10																						
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	Leq15min	
13-Jun-13	14:13	62.4	65.6	59.9	61.3	62.3	59.6	61.1	62.4	59.6	61.6	62.7	59.5	61.6	62.4	58.7	61.5	62.7	59.9	<b>62</b>	NA	
14-Jun-13	10:00	61.0	63.1	58.7	60.6	62.6	58.3	61.6	62.3	58.3	61.7	63.1	60.0	61.4	62.9	59.2	60.8	62.0	58.7	<b>61</b>	NA	
15-Jun-13	<b>Rainy Day</b>																				NA	NA
*16-Jun-13	13:06	60.1	61.0	56.0	58.9	60.0	56.5	59.3	59.5	56.5										NA	<b>59</b>	
17-Jun-13	16:07	63.4	64.5	61.0	64.4	64.0	61.0	63.9	65.0	62.0	63.4	64.5	61.5	64.6	66.5	62.0	65.1	67.5	62.0	<b>64</b>	NA	
18-Jun-13	9:00	55.5	55.9	51.6	56.6	59.2	52.5	56.9	59.0	52.2	55.7	59.8	52.8	54.7	58.9	51.8	55.1	55.9	51.4	<b>56</b>	NA	
19-Jun-13	15:30	61.7	63.5	59.0	60.7	62.5	57.5	60.7	62.0	58.0	60.5	62.0	57.5	60.7	62.5	57.5	61.7	62.5	58.5	<b>61</b>	NA	
20-Jun-13	9:00	68.2	69.5	65.6	70.0	72.6	66.0	69.4	71.3	65.8	70.4	70.7	66.4	69.8	70.7	66.5	72.7	72.9	67.1	<b>70</b>	NA	
21-Jun-13	14:07	62.4	63.0	59.0	62.9	64.5	59.0	61.2	61.5	59.0	66.7	68.5	58.0	60.7	62.5	56.5	58.8	60.0	57.0	<b>63</b>	NA	
22-Jun-13	17:34	63.7	65.0	57.5	62.3	64.5	56.5	61.6	63.5	56.0	64.9	66.0	59.5	67.1	69.5	60.5	66.6	69.5	60.0	<b>65</b>	NA	
*23-Jun-13	12:06	51.8	55.0	46.0	52.9	54.0	51.5	52.9	53.5	51.5										NA	<b>53</b>	
24-Jun-13	11:49	69.2	71.0	61.0	62.7	65.5	58.5	64.5	67.0	60.0	59.2	63.5	56.5	60.5	63.5	56.5	68.2	70.5	60.5	<b>66</b>	NA	
25-Jun-13	14:11	58.5	62.1	49.7	60.9	65.0	48.9	63.4	66.5	55.3	62.6	65.4	48.3	63.3	67.4	48.3	59.1	60.5	47.9	<b>62</b>	NA	
26-Jun-13	12:47	64.0	66.2	56.8	63.5	65.8	55.6	60.1	58.9	56.3	60.3	62.1	55.6	58.2	58.8	56.1	61.9	65.8	54.2	<b>62</b>	NA	

Remarks: (\*) Public Holiday or Sunday

## **Water Quality**

Date		14-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	11:35	0.25	25.0	25.05	4.24	4.28	62.2	62.85	16.20	16.30	7.7	7.70	35	34.5
			25.1		4.31		63.5		16.40		7.7		34	
WM1-Control	11:22	0.45	25.0	25.00	4.68	4.64	68.7	68.45	6.88	6.90	7.6	7.60	7	7.5
			25.0		4.59		68.2		6.91		7.6		8	
WM2A	12:00	0.20	27.6	27.55	4.48	4.51	68.5	68.65	4.29	4.31	7.7	7.65	8	7.5
			27.5		4.53		68.8		4.33		7.6		7	
WM2A-Control	14:30	0.25	25.3	25.30	5.64	5.62	78.9	78.35	57.50	56.30	7.6	7.65	84	86.0
			25.3		5.59		77.8		55.10		7.7		88	
WM2B	14:45	0.13	25.6	25.60	5.03	4.96	74.7	73.40	50.20	49.35	7.8	7.75	72	72.5
			25.6		4.89		72.1		48.50		7.7		73	
WM2B-Control	15:00	0.12	25.2	25.15	4.71	4.68	69.5	68.60	62.00	60.30	7.6	7.60	101	99.5
			25.1		4.65		67.7		58.60		7.6		98	
WM3	15:10	0.18	25.1	25.10	4.05	4.08	59.0	59.70	26.50	26.95	7.7	7.70	46	46.0
			25.1		4.11		60.4		27.40		7.7		46	
WM3-Control	15:21	0.11	25.5	25.45	3.70	3.66	54.5	53.30	44.50	43.60	7.6	7.65	93	91.5
			25.4		3.62		52.1		42.70		7.7		90	
WM4	16:11	0.18	25.4	25.35	4.53	4.62	58.4	59.05	7.31	7.20	8.0	8.00	13	12.0
			25.3		4.71		59.7		7.08		8.0		11	
WM4-Control A	16:00	0.19	25.1	25.15	4.87	4.78	61.7	60.50	41.70	40.95	8.4	8.40	63	62.0
			25.2		4.69		59.3		40.20		8.4		61	
WM4-Control B	16:11	0.18	25.4	25.40	4.53	4.62	58.4	59.65	63.10	61.45	7.9	7.85	87	89.0
			25.4		4.71		60.9		59.80		7.8		91	



Date		19-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	12:54	0.27	32.2	32.15	4.14	4.18	68.7	69.40	19.00	19.15	8.4	8.35	19	20.0
			32.1		4.22		70.1		19.30		8.3		21	
WM1-Control	13:00	0.38	30.1	30.10	4.33	4.27	71.4	70.55	7.71	7.65	7.9	7.95	5	5.5
			30.1		4.20		69.7		7.59		8.0		6	
WM2A	12:42	0.20	31.0	31.00	3.30	3.34	55.0	55.65	9.17	9.25	7.7	7.70	4	4.5
			31.0		3.38		56.3		9.32		7.7		5	
WM2A-Control	12:15	0.15	26.5	26.60	5.48	5.40	82.9	81.55	7.34	7.41	7.7	7.75	5	4.5
			26.7		5.31		80.2		7.47		7.8		4	
WM2B	12:07	0.03	33.3	33.40	4.64	4.57	78.2	76.90	9.91	10.01	7.9	7.90	7	6.5
			33.5		4.49		75.6		10.10		7.9		6	
WM2B-Control	12:00	0.03	31.2	31.15	4.12	4.16	67.2	67.65	0.93	0.96	7.9	7.90	8	7.5
			31.1		4.20		68.1		0.98		7.9		7	
WM3	11:35	0.30	30.2	30.20	4.23	4.27	68.2	68.85	14.00	14.10	7.8	7.80	12	12.0
			30.2		4.31		69.5		14.20		7.8		12	
WM3-Control	11:48	0.05	29.8	29.85	4.09	4.12	65.2	65.55	11.10	11.20	8.2	8.15	8	8.5
			29.9		4.15		65.9		11.30		8.1		9	
WM4	10:35	0.10	30.1	30.05	4.22	4.20	67.7	67.45	26.00	26.10	7.7	7.75	19	19.5
			30.0		4.17		67.2		26.20		7.8		20	
WM4-Control A	10:48	0.06	28.6	28.65	4.79	4.82	75.2	75.65	21.90	21.75	7.8	7.80	14	13.0
			28.7		4.85		76.1		21.60		7.8		12	
WM4-Control B	11:05	0.05	33.5	33.45	4.68	4.73	79.2	79.85	30.30	30.15	7.8	7.80	21	20.5
			33.4		4.77		80.5		30.00		7.8		20	

Date		17-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	11:15	0.20	27.6	27.65	4.33	4.29	65.5	64.70	14.30	14.20	7.6	7.65	38	38.5
			27.7		4.24		63.9		14.10		7.7		39	
WM1-Control	11:03	0.50	28.3	28.25	3.64	3.70	56.7	57.30	5.83	5.92	7.7	7.70	19	18.5
			28.2		3.75		57.9		6.01		7.7		18	
WM2A	12:00	0.18	28.4	28.40	4.11	4.07	63.8	62.75	4.73	4.66	7.7	7.65	19	18.0
			28.4		4.02		61.7		4.59		7.6		17	
WM2A-Control	15:10	0.33	27.2	27.25	4.13	4.05	63.1	62.55	2.34	2.38	7.6	7.65	10	10.0
			27.3		3.97		62.0		2.41		7.7		10	
WM2B	14:15	0.10	24.8	24.90	4.97	4.90	73.5	72.65	2.12	2.16	7.7	7.70	7	7.5
			25.0		4.83		71.8		2.19		7.7		8	
WM2B-Control	14:20	0.10	24.3	24.35	5.43	5.47	79.1	80.15	5.19	5.25	8.0	7.95	6	6.5
			24.4		5.51		81.2		5.30		7.9		7	
WM3	14:35	0.20	26.1	26.05	3.73	3.77	55.9	56.50	3.20	3.27	8.0	7.95	7	7.0
			26.0		3.80		57.1		3.34		7.9		7	
WM3-Control	14:50	0.05	27.6	27.55	3.36	3.39	51.5	52.10	6.45	6.38	8.1	8.05	22	22.5
			27.5		3.41		52.7		6.31		8.0		23	
WM4	15:35	0.40	27.0	27.05	4.11	4.07	62.7	62.25	13.70	13.90	7.7	7.75	23	23.5
			27.1		4.03		61.8		14.10		7.8		24	
WM4-Control A	15:45	0.18	26.1	26.15	4.05	4.08	64.2	64.65	2.45	2.48	8.3	8.25	6	6.5
			26.2		4.11		65.1		2.51		8.2		7	
WM4-Control B	16:00	0.10	27.3	27.30	4.31	4.28	67.2	66.95	8.93	9.00	8.3	8.25	7	7.5
			27.3		4.24		66.7		9.07		8.2		8	

Date		21-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	10:55	0.13	28.0	28.05	4.79	4.73	74.1	73.80	11.80	11.50	8.3	8.30	24	23.50
			28.1		4.66		73.5		11.20		8.3		23	
WM1-Control	10:45	0.14	30.3	30.25	4.45	4.48	71.8	72.00	12.40	12.30	7.8	7.85	26	25.50
			30.2		4.51		72.2		12.20		7.9		25	
WM2A	11:20	0.20	30.3	30.30	4.10	4.14	65.4	65.75	2.97	3.00	7.5	7.55	5	5.50
			30.3		4.18		66.1		3.03		7.6		6	
WM2A-Control	11:45	0.27	30.3	30.30	3.82	3.86	61.2	61.45	3.14	3.13	8.3	8.25	10	10.00
			30.3		3.90		61.7		3.11		8.2		10	
WM2B	12:39	0.05	31.0	31.05	4.93	4.88	80.2	79.85	2.79	2.82	7.7	7.75	3	2.50
			31.1		4.82		79.5		2.84		7.8		2	
WM2B-Control	12:22	0.05	25.9	25.90	4.80	4.82	71.7	71.80	2.13	2.16	7.9	7.85	3	3.00
			25.9		4.84		71.9		2.19		7.8		3	
WM3	13:06	0.40	31.0	31.05	4.15	4.19	67.4	67.85	2.36	2.39	7.8	7.80	6	6.00
			31.1		4.22		68.3		2.41		7.8		6	
WM3-Control	12:55	0.05	30.0	29.95	3.98	4.02	63.6	63.80	4.27	4.23	7.5	7.55	6	5.50
			29.9		4.05		64.0		4.19		7.6		5	
WM4	13:47	0.41	33.7	33.60	4.68	4.65	78.2	77.95	39.90	39.20	7.7	7.75	46	47.00
			33.5		4.61		77.7		38.50		7.8		48	
WM4-Control A	14:16	0.26	36.3	36.40	4.24	4.28	74.8	75.20	2.49	2.51	8.0	7.95	4	5.00
			36.5		4.32		75.6		2.53		7.9		6	
WM4-Control B	14:03	0.23	24.6	24.60	5.23	5.20	90.1	89.95	9.72	9.68	7.6	7.65	17	17.00
			24.6		5.17		89.8		9.64		7.7		17	

Date		24-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	11:35	0.25	25.0	25.05	4.71	4.76	68.9	69.00	324.00	321.00	7.7	7.65	275	270.0
			25.1		4.80		69.1		318.00		7.6		265	
WM1-Control	11:26	0.45	24.8	24.80	4.79	4.76	69.9	69.20	692.00	689.50	7.6	7.65	457	447.0
			24.8		4.72		68.5		687.00		7.7		437	
WM2A	10:50	0.50	24.2	24.25	5.41	5.38	78.2	78.05	62.10	61.50	7.7	7.70	48	46.5
			24.3		5.34		77.9		60.90		7.7		45	
WM2A-Control	12:10	0.50	24.5	24.50	5.49	5.52	79.6	79.75	68.90	68.70	7.9	7.85	44	44.5
			24.5		5.55		79.9		68.50		7.8		45	
WM2B	12:30	0.19	25.0	25.05	6.76	6.72	99.8	99.65	53.50	53.35	7.7	7.75	26	27.5
			25.1		6.67		99.5		53.20		7.8		29	
WM2B-Control	12:39	0.14	24.7	24.70	6.96	6.91	102.1	101.80	44.20	44.05	7.5	7.55	28	28.0
			24.7		6.85		101.5		43.90		7.6		28	
WM3	13:16	0.53	25.8	25.80	6.52	6.50	97.2	97.00	94.40	94.05	7.6	7.60	45	44.5
			25.8		6.48		96.8		93.70		7.6		44	
WM3-Control	12:51	0.20	25.6	25.65	5.92	5.88	87.6	87.35	78.20	77.85	7.3	7.35	33	34.5
			25.7		5.84		87.1		77.50		7.4		36	
WM4	14:56	0.54	26.0	26.05	7.07	7.01	105.4	104.65	53.20	53.65	7.7	7.70	32	32.0
			26.1		6.95		103.9		54.10		7.7		32	
WM4-Control A	15:05	0.40	25.2	25.20	7.25	7.22	106.9	106.45	88.20	88.75	7.4	7.40	49	49.5
			25.2		7.18		106.0		89.30		7.4		50	
WM4-Control B	15:15	0.22	27.7	27.65	5.13	5.16	78.6	78.90	147.00	146.50	7.4	7.45	189	188.0
			27.6		5.19		79.2		146.00		7.5		187	

Date		26-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	13:00	0.30	28.2	28.20	6.56	6.53	101.7	101.10	11.00	11.15	7.4	7.45	12	12.0
			28.2		6.49		100.5		11.30		7.5		12	
WM1-Control	13:10	0.38	28.2	28.15	6.40	6.43	99.0	99.55	9.99	10.05	7.4	7.40	8	8.0
			28.1		6.45		100.1		10.10		7.4		8	
WM2A	13:26	0.16	28.2	28.15	6.02	6.07	92.6	93.05	10.70	10.55	7.2	7.20	7	7.0
			28.1		6.11		93.5		10.40		7.2		7	
WM2A-Control	13:48	0.20	26.5	26.55	5.58	5.62	87.4	87.70	4.44	4.48	7.1	7.10	5	4.5
			26.6		5.65		88.0		4.51		7.1		4	
WM2B	14:07	0.05	28.7	28.70	6.41	6.47	100.4	100.75	12.60	12.50	7.3	7.25	9	9.5
			28.7		6.52		101.1		12.40		7.2		10	
WM2B-Control	14:20	0.05	24.2	24.25	4.46	4.50	64.6	64.90	3.03	3.00	7.2	7.20	3	2.5
			24.3		4.53		65.2		2.97		7.2		2	
WM3	14:35	0.08	31.6	31.55	5.98	5.92	97.6	97.25	2.57	2.64	6.9	6.95	4	4.0
			31.5		5.85		96.9		2.71		7.0		4	
WM3-Control	15:15	0.05	26.8	26.80	4.96	4.89	74.7	74.45	3.26	3.30	7.2	7.20	4	4.0
			26.8		4.81		74.2		3.33		7.2		4	
WM4	11:55	0.80	28.5	28.55	6.63	6.60	103.0	102.70	28.00	27.90	7.5	7.45	20	19.5
			28.6		6.57		102.4		27.80		7.4		19	
WM4-Control A	11:42	0.10	26.9	26.95	6.67	6.60	101.8	101.15	7.50	7.56	8.2	8.15	10	9.5
			27.0		6.53		100.5		7.62		8.1		9	
WM4-Control B	11:22	0.05	28.2	28.20	6.67	6.61	103.2	102.90	49.20	49.30	7.9	7.90	56	55.0
			28.2		6.55		102.6		49.40		7.9		54	

Date		29-Jun-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	15:45	0.20	30.0	29.95	6.43	6.49	102.6	103.05	17.00	17.10	7.0	7.00	18	18.5
			29.9		6.55		103.5		17.20		7.0		19	
WM1-Control	15:36	0.80	30.9	30.90	6.69	6.66	107.5	106.95	9.09	9.02	7.0	7.05	7	7.5
			30.9		6.62		106.4		8.95		7.1		8	
WM2A	11:02	0.30	26.9	26.80	7.91	7.85	105.8	105.25	2.40	2.39	7.4	7.45	3	3.5
			26.7		7.78		104.7		2.37		7.5		4	
WM2A-Control	11:35	0.37	27.3	27.35	6.43	6.51	98.6	99.05	34.90	34.50	7.1	7.05	72	75.0
			27.4		6.59		99.5		34.10		7.0		78	
WM2B	11:55	0.05	30.2	30.15	7.92	7.88	125.6	123.85	9.35	9.44	7.6	7.55	10	11.0
			30.1		7.84		122.1		9.52		7.5		12	
WM2B-Control	12:09	0.04	25.6	25.65	5.87	5.92	86.2	87.30	0.42	0.45	7.6	7.60	<2	<2.0
			25.7		5.96		88.4		0.48		7.6		<2	
WM3	12:26	0.02	29.6	29.60	6.97	6.91	110.2	109.85	1.42	1.41	7.1	7.05	4	3.5
			29.6		6.84		109.5		1.39		7.0		3	
WM3-Control	13:50	0.05	27.2	27.25	5.55	5.63	84.0	85.05	4.79	4.74	6.9	6.95	2	3.0
			27.3		5.71		86.1		4.68		7.0		4	
WM4	13:28	0.05	32.1	32.15	7.25	7.22	119.5	118.60	10.20	10.15	7.1	7.10	14	14.0
			32.2		7.18		117.7		10.10		7.1		14	
WM4-Control A	13:45	0.07	29.3	29.25	7.09	7.01	110.9	110.05	1.26	1.29	7.4	7.45	3	3.5
			29.2		6.93		109.2		1.31		7.5		4	
WM4-Control B	13:55	0.03	34.8	34.75	5.51	5.54	94.3	94.70	14.00	14.10	7.1	7.15	15	16.5
			34.7		5.57		95.1		14.20		7.2		18	

Date		2-Jul-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	10:40	0.32	30.0	30.10	5.63	5.61	90.2	90.10	26.60	26.45	6.9	6.95	32	31.5
			30.2		5.59		90.0		26.30		7.0		31	
WM1-Control	10:10	0.93	29.8	29.85	4.87	4.91	81.9	82.10	15.40	15.35	7.1	7.10	10	9.5
			29.9		4.95		82.3		15.30		7.1		9	
WM2A	14:45	0.15	29.5	29.50	6.40	6.35	97.5	97.30	11.50	11.40	6.8	6.85	8	7.5
			29.5		6.29		97.1		11.30		6.9		7	
WM2A-Control	11:45	0.30	26.5	28.05	6.41	6.37	100.7	100.30	20.70	20.75	6.8	6.85	5	5.5
			29.6		6.33		99.9		20.80		6.9		6	
WM2B	15:10	0.10	29.1	29.10	7.26	7.22	114.1	113.30	0.18	0.18	7.0	7.00	4	3.5
			29.1		7.17		112.5		0.17		7.0		3	
WM2B-Control	15:20	0.10	29.5	29.55	6.17	6.11	95.2	95.00	1.98	2.00	6.9	6.95	<2	<2.0
			29.6		6.05		94.8		2.01		7.0		<2	
WM3	16:05	0.25	27.8	27.75	7.31	7.33	111.4	111.55	0.88	0.92	6.7	6.75	2	2.0
			27.7		7.34		111.7		0.95		6.8		2	
WM3-Control	15:45	0.05	27.1	27.15	5.43	5.39	84.2	84.00	2.88	2.91	6.6	6.65	2	2.5
			27.2		5.35		83.8		2.94		6.7		3	
WM4	12:20	0.42	29.5	29.55	7.23	7.25	114.8	114.80	30.30	30.20	7.1	7.05	18	18.5
			29.6		7.27		114.8		30.10		7.0		19	
WM4-Control A	12:40	0.27	28.9	28.95	6.64	6.62	104.7	104.60	9.63	9.61	7.3	7.30	9	9.0
			29.0		6.60		104.5		9.58		7.3		9	
WM4-Control B	12:55	0.24	29.7	29.65	6.07	6.03	96.5	96.35	22.60	22.50	7.1	7.15	16	15.5
			29.6		5.98		96.2		22.40		7.2		15	

Date		4-Jul-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	14:32	0.27	29.8	29.85	4.75	4.72	62.3	62.00	17.60	17.45	7.1	7.10	16	16.0
			29.9		4.69		61.7		17.30		7.1		16	
WM1-Control	14:22	0.30	28.9	28.95	5.80	5.83	74.9	75.00	11.30	11.35	7.1	7.15	4	4.0
			29.0		5.85		75.1		11.40		7.2		4	
WM2A	14:55	0.23	29.6	29.60	5.88	5.94	76.9	76.95	9.69	9.63	7.0	7.05	4	4.5
			29.6		6.00		77.0		9.57		7.1		5	
WM2A-Control	11:32	0.40	30.1	30.05	5.08	5.10	66.8	66.80	13.70	13.60	7.1	7.05	4	4.0
			30.0		5.11		66.8		13.50		7.0		4	
WM2B	10:51	0.05	30.4	30.35	7.72	7.76	103.2	103.45	1.15	1.12	7.3	7.30	2	<2.0
			30.3		7.80		103.7		1.09		7.3		<2	
WM2B-Control	11:00	0.03	27.6	27.65	7.83	7.81	105.3	104.95	0.83	0.87	7.6	7.65	<2	<2.0
			27.7		7.78		104.6		0.90		7.7		<2	
WM3	11:13	0.37	30.1	30.05	5.76	5.81	75.7	75.90	6.56	6.64	7.6	7.60	6	5.5
			30.0		5.85		76.1		6.71		7.6		5	
WM3-Control	10:40	0.05	27.4	27.45	6.88	6.84	86.6	87.30	12.30	12.25	7.8	7.80	4	4.5
			27.5		6.79		88.0		12.20		7.8		5	
WM4	12:25	0.40	29.8	29.80	6.70	6.73	87.1	87.10	18.40	18.30	7.3	7.35	21	20.5
			29.8		6.75		87.1		18.20		7.4		20	
WM4-Control A	12:32	0.13	29.4	29.45	5.83	5.88	76.7	76.75	6.56	6.65	7.6	7.55	10	8.0
			29.5		5.92		76.8		6.73		7.5		6	
WM4-Control B	12:40	0.22	30.6	30.55	6.16	6.12	81.8	81.70	11.10	11.00	7.3	7.35	14	13.5
			30.5		6.07		81.6		10.90		7.4		13	



Date		6-Jul-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	12:50	0.37	27.3	27.35	5.56	5.54	69.6	69.60	17.90	17.80	6.7	6.75	21	21.0
			27.4		5.51		69.6		17.70		6.8		21	
WM1-Control	12:45	0.22	27.1	27.10	5.91	5.97	73.8	73.95	17.30	17.25	6.7	6.70	32	30.0
			27.1		6.02		74.1		17.20		6.7		28	
WM2A	11:45	0.24	26.9	26.95	5.60	5.64	69.5	69.55	3.88	3.91	7.0	6.95	10	10.0
			27.0		5.68		69.6		3.94		6.9		10	
WM2A-Control	11:25	0.29	26.9	26.90	4.34	4.40	54.0	54.10	20.60	20.45	7.0	7.00	66	62.5
			26.9		4.45		54.2		20.30		7.0		59	
WM2B	12:05	0.03	27.9	27.85	6.93	6.90	87.6	87.55	3.05	3.08	6.7	6.75	11	12.5
			27.8		6.87		87.5		3.11		6.8		14	
WM2B-Control	12:10	0.02	28.1	28.05	5.90	5.93	75.1	75.10	1.03	1.01	7.0	7.05	3	3.0
			28.0		5.95		75.1		0.98		7.1		3	
WM3	13:05	0.37	27.2	27.25	6.10	6.13	76.3	76.35	12.60	12.55	7.8	7.75	14	13.0
			27.3		6.16		76.4		12.50		7.7		12	
WM3-Control	13:10	0.14	27.6	27.60	3.88	3.92	48.6	48.70	11.40	11.30	6.8	6.85	11	10.0
			27.6		3.96		48.8		11.20		6.9		9	
WM4	10:40	0.36	26.7	26.70	6.20	6.15	76.8	76.70	17.80	17.85	7.3	7.30	31	30.0
			26.7		6.09		76.6		17.90		7.3		29	
WM4-Control A	10:47	0.21	27.3	27.30	6.10	6.13	76.3	76.30	12.60	12.55	7.8	7.75	26	27.0
			27.3		6.15		76.3		12.50		7.7		28	
WM4-Control B	10:56	0.29	27.8	27.80	5.64	5.61	71.4	71.35	19.20	19.10	7.4	7.45	20	19.5
			27.8		5.57		71.3		19.00		7.5		19	

Date		8-Jul-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	11:06	0.25	28.8	28.80	5.01	4.99	64.1	64.05	15.90	15.80	7.1	7.10	26	27.0
			28.8		4.97		64.0		15.70		7.1		28	
WM1-Control	10:55	0.20	28.5	28.55	5.18	5.12	66.0	65.90	10.40	10.35	6.9	6.95	5	5.0
			28.6		5.05		65.8		10.30		7.0		5	
WM2A	11:35	0.29	28.7	28.75	5.40	5.45	68.6	68.60	35.90	36.00	7.0	7.00	10	10.5
			28.8		5.50		68.6		36.10		7.0		11	
WM2A-Control	12:03	0.08	28.6	28.60	5.37	5.31	68.8	68.75	15.30	15.25	7.1	7.10	7	7.0
			28.6		5.24		68.7		15.20		7.1		7	
WM2B	12:14	0.03	29.5	29.45	6.14	6.11	79.9	79.90	1.83	1.90	7.4	7.35	2	<2.0
			29.4		6.08		79.9		1.96		7.3		<2	
WM2B-Control	12:28	0.02	30.1	30.05	3.56	3.64	46.7	46.80	1.33	1.29	6.8	6.85	<2	<2.0
			30.0		3.71		46.9		1.25		6.9		<2	
WM3	13:42	0.30	29.8	29.85	5.60	5.54	73.3	73.20	1.61	1.64	6.6	6.65	3	2.5
			29.9		5.48		73.1		1.66		6.7		2	
WM3-Control	13:50	0.08	33.4	33.35	4.94	4.92	68.9	68.90	4.88	4.85	6.6	6.60	10	7.5
			33.3		4.90		68.9		4.81		6.6		5	
WM4	12:50	0.40	31.9	31.90	5.70	5.66	77.6	77.55	15.10	15.05	7.0	7.00	21	20.5
			31.9		5.62		77.5		15.00		7.0		20	
WM4-Control A	15:00	0.10	31.1	31.05	5.79	5.76	77.1	77.05	10.00	9.95	7.4	7.35	16	15.0
			31.0		5.73		77.0		9.89		7.3		14	
WM4-Control B	15:10	0.25	29.3	29.35	4.91	4.95	63.6	63.65	12.80	12.75	6.9	6.95	18	18.5
			29.4		4.99		63.7		12.70		7.0		19	

Date		10-Jul-13												
Location	Time	Depth (m)	Temp (°C)		DO, mg/L		DOS (%)		Turbidity, NTU		pH, pH Value		SS, mg/L	
WM1	11:08	0.37	26.9	26.95	5.37	5.40	66.0	66.15	72.50	71.65	7.2	7.20	68	67.5
			27.0		5.42		66.3		70.80		7.2		67	
WM1-Control	10:58	0.26	26.3	26.35	5.55	5.48	68.4	68.15	27.10	26.50	7.1	7.10	9	8.5
			26.4		5.41		67.9		25.90		7.1		8	
WM2A	11:45	0.32	26.9	26.90	5.11	5.07	63.6	63.40	10.80	10.95	6.9	6.95	10	9.5
			26.9		5.03		63.2		11.10		7.0		9	
WM2A-Control	12:06	0.16	26.3	26.35	6.54	6.46	80.0	79.70	18.80	18.65	6.9	6.90	7	7.5
			26.4		6.37		79.4		18.50		6.9		8	
WM2B	02:19	0.02	27.8	27.85	6.31	6.25	79.9	79.70	2.05	2.08	7.2	7.20	<2	<2.0
			27.9		6.19		79.5		2.11		7.2		<2	
WM2B-Control	12:25	0.03	24.8	24.75	4.37	4.45	52.7	52.45	1.39	1.42	6.7	6.70	<2	<2.0
			24.7		4.52		52.2		1.45		6.7		<2	
WM3	11:36	0.01	27.8	27.75	5.75	5.78	72.3	72.40	1.98	1.96	6.4	6.45	3	3.0
			27.7		5.81		72.5		1.93		6.5		3	
WM3-Control	11:35	0.12	27.4	27.45	5.10	5.06	64.1	63.95	2.04	2.01	6.3	6.35	3	3.5
			27.5		5.02		63.8		1.97		6.4		4	
WM4	13:17	0.22	28.4	28.35	6.09	6.03	76.9	76.65	20.10	19.85	6.8	6.80	27	26.5
			28.3		5.96		76.4		19.60		6.8		26	
WM4-Control A	13:22	0.04	27.7	27.70	5.96	6.00	75.2	75.35	6.87	6.78	7.1	7.05	4	4.5
			27.7		6.03		75.5		6.69		7.0		5	
WM4-Control B	13:32	0.05	27.6	27.60	5.41	5.48	68.2	68.40	14.50	14.40	6.8	6.85	18	17.0
			27.6		5.55		68.6		14.30		6.9		16	

## **Appendix I**

### **Laboratory Data Report**

- **Air Quality - 24-hour TSP**
- **Water Quality – Suspended Solids**

## **Air Quality - 24-hour TSP**

## **Water Quality – Suspended Solids**