

ATAL-Degrémont-China State Joint Venture

Contract No. DC/2008/03  
Design, Build and Operate Pillar  
Point Sewage Treatment Works:  
*Second Monthly EM&A Report*

December 2010

**Environmental Resources Management**

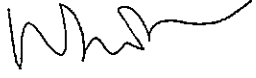
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Point Sewage Treatment Works:  
*Second Monthly EM&A Report*

December 2010

Reference 0119806

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	<u>Frank Wan</u>
Signed:	<u></u>
Position:	<u>Partner</u>
Certified by:	<u></u> (Environmental Team Leader - Winnie Ko)
Certified by:	<u></u> (Registered Landscape Architect (R078) - Christina Ip)
Date:	<u>12 January 2011</u>

Your Ref:  
Our Ref: 60017423/C/enfl/11011201

**By Hand & By Fax (2833 9162)**

Drainage Services Department  
Sewage Services Branch  
Harbour Area Treatment Scheme Division  
5/F., Western Magistracy,  
2A Pok Fu Lam Road,  
Hong Kong.

Attn: Mr. Eddie S.K. LEUNG (T:2159 3413)

12 January 2011

Dear Sir,

**Contract No. CV/2008/03  
Design, Build and Operate  
Pillar Point Sewage Treatment Works**

**Monthly EM&A Report for December 2010**

Reference is made to Environmental Team (ET)'s revised draft of the Monthly EM&A Report for December 2010 provided by email dated 12 January 2011. We have no further comment.

We hereby verify the said Monthly EM&A Report as having complied with the requirement as set out in the EM&A Manual in accordance with the condition 3.6 of Environmental Permit No. EP-321/2008.

Should you have any queries, please feel free to contact the undersigned at 3105 8537.

For and on behalf of  
AECOM Asia Co. Ltd.



Y T Tang  
Independent Environmental Checker

c.c. AECOM – Mr. Tim Lee  
ERM – Ms. Winnie Ko  
ATAL– Degremont–China State JV – Mr. C.Y. Fong

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## EXECUTIVE SUMMARY

The construction works of *DC/2008/03 of Design, Build and Operate Pillar Point Sewage Treatment Works (the Project)* commenced on 13 November 2010. This is the second monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 December 2010 in accordance with the EM&A Manual.

### Summary of Construction Works undertaken during Reporting Month

Works undertaken in the reporting month include:

- Site formation in P2;
- Pipe piling in P2;
- Tree transplanting preparation work in P1 and P2;
- Formation of site access in P2;
- Sheet piling in P2;
- Ground investigation in P2;
- Dewatering well installation in P2;
- Foundation works for tower crane in P2; and
- Interim operation of PPSTW in P1.

### Environmental Monitoring and Audit Progress

A summary of the monitoring activities undertaken in this reporting period is listed below:

- |   |         |
|---|---------|
| • 24-hour TSP Monitoring at each monitoring station (AM1 and AM2) | 6 sets  |
| • 1-hour TSP Monitoring at each monitoring station (AM1 and AM2)  | 18 sets |
| • Joint Environmental Site Inspection                             | 5 times |
| • Landscape & Visual Monitoring                                   | 1 time  |

### Air Quality

Six sets of 24-hour TSP and eighteen sets of 1-hr TSP measurements were carried out at each of the designated monitoring stations during the reporting period. No exceedance was recorded during the reporting period.

### Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction wastes). A total of 9,316 tonnes of public fill were delivered to the fill bank and 240 kg of metals, paper/cardboard and plastics were sent to recyclers in the reporting period. No general refuse and chemical waste was disposed of in the reporting period.

### Environmental Site Inspection

Five weekly joint environmental site inspections were carried out by the representatives of the Contractor, the SOR and the Environmental Team (ET).

Details of the audit findings and implementation status of the mitigation measures are presented in *Section 7.1*.

### Landscape & Visual

Landscape and visual monitoring was conducted on 31 December 2010. Details of the audit findings and implementation status of the mitigation measures are presented in *Sections 3.2* and *7.2*.

### Environmental Exceedance/Non-conformance/Compliant/Summons and Prosecution

No exceedance was recorded during the reporting period.

No non-compliance event was recorded during the reporting period.

No environmental complaint and summons/prosecution was received in this reporting period.

### Future Key Issues

Works to be undertaken in the next reporting month include:

- Site formation in P2;
- Pipe piling in P2;
- Tree transplant from P1 and P2 to nursery;
- Sheet piling works in P2;
- Erection of tower crane in P2; and
- Interim operation of PPSTW in P1.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoff, waste management and landscaping issues.

# 1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by ATAL – Degrémont – China State Joint Venture (ADC-JV) (the Contractor) as an Environmental Team (ET) to undertake Environmental Monitoring and Audit (EM&A) programme for the Contract No. *DC/2008/03 of Design, Build and Operate Pillar Point Sewage Treatment Works (the Project)*.

## 1.1 PURPOSE OF THE REPORT

This is the second EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 31 December 2010.

## 1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

### Section 1 : **Introduction**

details the scope and structure of the report.

### Section 2 : **Project Information**

summarises background and scope of the Project, site description, project organization, construction programme, the construction works undertaken and the status of Environmental Permits (EP)/licences over the construction phase of the Project.

### Section 3 : **Environmental Monitoring Requirements**

summarises the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event/Action Plans, environmental mitigation measures as recommended in the approved EIA report, EP and relevant environmental requirements stated in the Contract Specification.

### Section 4 : **Implementation Status on Environmental Mitigation Measures**

summarises the implementation of environmental protection measures during the reporting period.

### Section 5 : **Monitoring Results**

summarises the monitoring results obtained in the reporting period.

### Section 6 : **Waste Management**

summarises the quantity of public fill and construction waste generated in the reporting period



Section 7 : **Environmental Site Inspection**

summarises the audit findings of the weekly site inspections undertaken within the reporting period.

Section 8 : **Environmental Non-conformance**

summarizes any exceedance of environmental performance standard, and environmental complaints and environmental summons received within the reporting period.

Section 9 : **Further Key Issues**

summarises the impact forecast and monitoring schedule for the next reporting month.

Section 10 : **Review of the EM&A Data and Predictions**

compares monitoring data and waste quantity against predictions in the approved Project EIA report.

Section 11 : **Conclusions**

## 2.1 BACKGROUND

The existing Pillar Point Sewage Treatment Works (PPSTW) is located at the north of the Tuen Mun River Trade Terminal and bounded by Lung Mun Road at the north. It is a preliminary treatment works with screenings and grit removal processes and the treated effluent is discharged to the sea (North Western Water Control Zone) via the twin submarine outfalls. The *Review of the Tuen Mun and Tsing Yi Sewerage Master Plan* (RTMTYSMP) commissioned in February 1999, recommended to expand the sewage treatment capacity and upgrade the plant to chemically enhanced primary treatment (CEPT) with disinfection in order to cater for the projected ultimate population and planned developments in the Tuen Mun area, and to improve the effluent quality and hence to reduce the pollution loadings to the receiving water.

The upgrading to the PPSTW comprises the following works:

- expanding the treatment capacity of the existing PPSTW to cope with the increased peak wet weather sewage flow in Tuen Mun area;
- upgrading the sewage treatment level of the existing PPSTW to incorporate chemical treatment with disinfection at minimum removal rates of 70%, 55% and 99.9% for suspended solids (SS), biochemical oxygen demand (BOD) and *E.coli*, respectively;
- upgrading existing septic waste reception facilities at PPSTW; and
- providing and upgrading ancillary facilities including the administration building, workshop, laboratory, odour control facilities, sludge handling and dewatering facilities, access roads and minor landscaping works within the STW for the operation and maintenance of the upgraded STW.

The potential environmental impacts of the Project have been studied in the “*Upgrading of Pillar Point Sewage Treatment Works*” (EIAO Register No: AEIAR-145/2008). The EIA was approved on 10 June 2008 under the *Environmental Impact Assessment Ordinance* (EIAO) and an Environmental Permit (EP-321/2008) for the works was granted on 17 November 2008. Under the requirements of Condition 3.1 of EP-322/2008, EM&A programme as set out in the EM&A Manual is required to be implemented.

The construction works commenced on 13 November 2010 and are scheduled to be completed by 2014.

## 2.2 GENERAL SITE DESCRIPTION

The open area adjacent to the existing PPSTW has been designated for the upgrading works. The layout of the upgrading works is illustrated in *Annex A*.

## 2.3 CONSTRUCTION ACTIVITIES

A summary of the major construction activities undertaken in this reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Annex B*. The construction programme of the Project in the reporting month and the upcoming 3 months is presented in *Annex L*.

**Table 2.1** *Summary of Construction Activities Undertaken in Reporting Period*

<b>Construction Activities Undertaken</b>
• Site formation in P2
• Pipe piling in P2
• Tree transplanting preparation work in P1 & P2
• Formation of site access in P2
• Sheet piling in P2
• Ground investigation in P2
• Dewatering well installation in P2
• Foundation works for tower crane in P2
• Interim operation of PPSTW in P1

## 2.4 PROJECT ORGANISATION AND MANAGEMENT STRUCTURE

The project organization chart and contact details are shown in *Annex C*.

## 2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in *Table 2.2*.

**Table 2.2** *Summary of Environmental Licensing, Notification and Permit Status*

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Environmental Permit	EP-321/2008	Throughout the Contract	Permit granted on 17 November 2008.
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	Ref No. 308136	Throughout the Contract	-
Water Discharge License	WT00008027-2010	Until 31 December 2015	Wastewater discharge licence was awarded by EPD on 7 December 2010.
Construction Noise Permit	GW-RW0588-10	1 December 2010 – 30 May 2011	-

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Chemical Waste Producer Registration	5213-421-A2620- 01	Throughout the Contract	Licence approved on 28 October 2010

### 3.1 AIR QUALITY MONITORING

#### 3.1.1 Monitoring Location

The proposed air quality monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in *Table 3.1* and shown in *Annex D*. The proposed locations (AM1 and AM2) have been agreed with the Drainage Services Department (DSD), Environmental Protection Department (EPD) and the Independent Environmental Checker (IEC).

**Table 3.1 Construction Phase Air Monitoring Locations**

Monitoring ID	Air Quality Monitoring Station
AM1	Tuen Mun EMSD Servicing Vehicle Station
AM2	River Trade Terminal Office

#### 3.1.2 Monitoring Parameter and Frequency

The construction phase air quality monitoring was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 1-hour and 24-hour TSP levels were monitored at the frequency and duration stated in *Table 3.2*. The construction phase TSP monitoring was conducted as per the schedule presented in *Annex E*.

**Table 3.2 Construction Phase Air Quality Monitoring Parameters and Frequency**

Parameter	Frequency
24-hour TSP	Once every day 6 days
1-hour TSP	3 times every 6 days

#### 3.1.3 Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 3.3*.

**Table 3.3 Action and Limit Levels for Air Quality**

Parameter	Air Monitoring Station	Action Level, $\mu\text{gm}^{-3}$	Limit Level, $\mu\text{gm}^{-3}$
24-hour TSP	AM1	183	260
	AM2	192	260
1-hour TSP	AM1	343	500
	AM2	383	500

#### 3.1.4 Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring stations. The performance specification of HVS complied with the standard method "Determination of Suspended Particulate

Matter in the Atmosphere (High Volume Method)" as stipulated in US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). Table 3.4 summarises the equipment that were deployed for the 24-hour and 1-hour TSP monitoring respectively.

**Table 3.2 TSP Monitoring Equipment**

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
<i>24-hr and 1-hr TSP</i>	
AM1	GMW GS-2310 (S/N 7580), CM-AIR-43 (S/N 9833620)
AM2	GMW GS-2310 (S/N 1247), CM-AIR-43 (S/N 9833620)

### 3.1.5 Monitoring Methodology

The setup locations of the HVSs at monitoring stations were listed in Table 3.1. All HVSs were free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind were provided at AM1 and AM2;
- a minimum of 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

#### *Preparation of Filter Papers*

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25°C and not variable by more than  $\pm 3^\circ\text{C}$ ; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

#### *Field Monitoring*

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;

- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate record sheet was set into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m<sup>3</sup>min<sup>-1</sup> which were within the range specified in the EM&A Manual (ie 0.6 – 1.7 m<sup>3</sup>min<sup>-1</sup>);
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folder in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

#### *Maintenance and Calibration*

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipments were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration records for the HVSs are given in *Annex G*.

### *Wind Data Monitoring*

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological station at Tuen Mun of the Hong Kong Observatory (HKO) and were presented in *Annex F*.

#### **3.1.6 *Event and Action Plan***

The Event/Action Plan (EAP) for air quality monitoring is presented in *Annex H*.

#### **3.2 *LANDSCAPE AND VISUAL MONITORING***

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the approved EIA Report are fully achieved. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

#### **3.3 *ENVIRONMENTAL MITIGATION MEASURES AND ENVIRONMENTAL REQUIREMENTS IN CONTRACT***

All relevant environmental mitigation measures listed in the EIA Report and the EM&A Manual as well as the specific environmental requirements stated in Contract Specification are summarised in *Annex I*. A summary of the key environmental mitigation measures implemented as per the Contract Requirements is also presented in *Annex I*.



#### ***IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS***

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, EM&A Manual and EP. The implementation status of the measures during the reporting period is summarised in *Annex I*.

**5.1*****AIR QUALITY***

A total of six sets of 24-hour and eighteen sets of 1-hour TSP measurements were carried out at each of the monitoring stations (AM1 and AM2) during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex F*. The weather conditions during the monitoring period were sunny. The local impacts near the monitoring stations of AM1 and AM2 were mainly associated with vehicular emissions. No exceedance of Action and Limit Level of 1-hr and 24-hr TSP was recorded during the reporting period.

Waste generated from this Project includes inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction waste). Construction waste comprises of general refuse, metals and paper/cardboard packaging materials. Metals generated from the Project are also grouped into construction waste as the materials were not disposed of with other public fill. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 5.1*. The public fill and construction waste generated from the Project were disposed of at the Tuen Mun Area 38 Fill Bank and WENT Landfill, respectively. 100 kg of metals, 120 kg of paper/cardboard packaging and 20kg of plastics were sent to recyclers for recycling during the reporting period.

**Table 6.1** *Quantities of Waste Generated from the Project*

Month / Year	Quantity		
	C&D Materials Disposed of at Public Fill (inert) <sup>(a)</sup>	C&D Materials Disposed of at Landfill (Non-inert) (Construction waste) <sup>(b) (c)</sup>	Chemical Waste
December 2010	9,316 tonnes	0 kg	0 kg

**Notes:**

(a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated soil. No public fill was reused in this Project during the reporting period. The public fill were disposed of at the Tuen Mun Area 38 Fill Bank.

(b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project are grouped into construction wastes as the materials were not disposed of with the public fill. Construction wastes other than metals and paper/cardboard packaging were disposed of at WENT Landfill. 100 kg of metals, 120 kg of paper/cardboard packaging and 20kg of plastics were recovered and sent to recyclers for recycling during the reporting period.

(c) No general refuse was disposed at the WENT landfill in the reporting period.

### 7.1 WEEKLY SITE AUDITS

Joint site inspections were conducted by the representatives of the Contractor, SOR and the ET on 3, 10, 17, 23 and 31 December 2010. The IEC was also present during the joint inspection on 23 December 2010. There was no non-compliance recorded during the site inspections.

Major findings observed during the reporting period were summarised as follows:

3 December 2010

- Turbid water was observed to be flowing into nearby gullies outside the site boundary immediate south of the P2 site. The Contractor was recommended to implement all wastewater generating activities within the site area to avoid discharge of untreated wastewater to nearby storm drains or outside works area.
- Impervious sheets for shielding dust and dirt from piling activities were erected as supporting means for nearby “to-be-transplanted” trees. The Contractor was recommended to utilize other supporting means for the impervious sheet to avoid damages to existing trees on site.
- Stagnant water was observed in the plugged drainage channels in the south-western corner of P2 site. The Contractor was recommended to clear all stagnant water on site as soon as possible to avoid mosquito breeding as part of a good housekeeping practice.

10 December 2010

- Shotcreting works in the middle of site were observed to be generating dust without mitigation measures. The cement feeder for shotcreting was also not enclosed on 3-sides. The Contractor was recommended to erect screens near shotcreting works to avoid dust dispersion. The cement feeder for shotcreting should also be enclosed on 3-sides with impervious sheets to avoid dust dispersion and subsequently deteriorate air quality in the works area. Mitigation measures were expected to complete within 3 working days.
- Tyre tracks with soil and dirt were observed near the site entrance/exit in the south-western corner of site and on the site access road. The Contractor was recommended to implement wheel-wash for all construction vehicles to avoid carrying over soil and dirt to outside site boundary within 3 working days.
- Construction materials were observed to be placed underneath retained trees along the southern boundary of site. The Contractor was recommended to remove the materials from the retained trees as soon as

possible to avoid damages to trees. Proper fencing should also be erected to provide buffer distance between trees and nearby works.

17 December 2010

- Waste chemical drums and chemical drums were stored on site without proper spillage containment measures. The Contractor was recommended to provide spillage containment measures for the temporary storage of chemicals and chemical wastes on site within 3 working days.
- General wastes were observed to be placed on ground without waste skips. The Contractor was recommended to provide waste skips in designated locations on site for proper storage of general wastes within 3 working days.
- A pool of stagnant water was observed near the south-western corner of the site. The Contractor was recommended to remove the water as soon as possible to avoid mosquito breeding as part of a good housekeeping practice within 3 working days.

23 December 2010

- Drums of chemicals were observed to be placed on the ground near the small excavator. Some oil stains were also observed on the ground around the excavator, and an oil-pump was placed on the excavator without and spillage containment measures. The Contractor was recommended to provide spillage containment measures for the temporary storage of chemical, oily equipment and chemical wastes on site within 3 working days. Oil stains should also be cleared and disposed of as chemical waste as soon as possible.
- Inert C& D materials were observed to be mixed with non-inert materials at a designated material storage area. The Contractor was recommended to implement waste sorting on site to achieve waste reduction within 3 working days. Toolbox talks should also be provided to brief workers on proper waste management practices and arrangements on site.
- Construction trucks were observed to be leaving site without implementing wheel wash measures. The Contractor was recommended to strictly implement wheel wash manually all the time during construction of the wheel-wash facilities to avoid dust, dirt and mud from being carried over to outside works area.
- Tree supporting measures for transplanted trees at the tree nursery were observed to vary from guidelines in the Particular Specification (PS). The Contractor was recommended to implement tree supportive measures within 3 working days as recommended in the PS to ensure transplanted trees were well protected and retained at the nursery.

31 December 2010

- Water from works area in P2 was observed to be pumped directly into the storm drainage. Although the water was observed to be clear, the

Contractor was recommended to divert all site discharge to sedimentation/treatment tanks prior to further discharge into drains.

- A diesel generator near the Contractor's office was observed to be placed on the ground without drip tray. The Contractor was recommended to provide drip tray for the generator to ensure potential spillages are properly contained without contaminating nearby soils before the next site inspection.

Follow-up actions were undertaken as reported by the Contractor and observed in the next weekly site inspections conducted in the reporting period.

## 7.2

### *LANDSCAPE AND VISUAL MONITORING*

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved. Site inspection on landscape and visual mitigation measures was conducted by Registered Landscape Architect (RLA) on 31 December 2010, and it was confirmed that most of the necessary landscape and visual mitigation measures as summarised in *Annex I* were implemented by the Contractor. Major findings during the landscape and visual audit by the RLA were summarised as follow:

31 December 2010

- To-be-transplanted trees in P1 were observed to be uprooted. The roots were becoming dry, and some trees were observed to be skewed. The Contractor was recommended to transplant the trees immediately or to implement suitable mitigation measures before the next site inspection (ie erect trees to original position cover exposed roots with soil and erect proper fencing around the to-be-transplanted trees to avoid further damages) so that the to-be-transplanted trees can be properly maintained.
- Construction materials were placed near retained trees along the southern boundary of P2. The Contractor was recommended to arrange relevant protective measures for the retained trees (ie protection fencing and hessian armouring) as in section 26 of the Particular Specifications of the Contract in order to maintain health of retained trees on site.
- Tree supporting measures for transplanted trees at the tree nursery were observed to vary from guidelines in the Particular Specification (PS). The Contractor was recommended to implement tree supportive measures within 3 working days as recommended in the PS to ensure transplanted trees were well protected and retained at the nursery.

The Contractor was recommended to implement follow-up actions and the status of the follow-up actions will be reviewed in the first weekly site inspections in the next reporting period.

Key landscape and visual mitigation measures implemented in the reporting period include:

- Set up of a temporary tree nursery;
- Control dust and erosion of exposed soil;
- Stockpiling of topsoil for future reuse;
- Maintain existing tree record inventory; and
- Re-use existing top soil for new planting areas.

**8.1.1** *Summary of Monitoring Exceedance*

No exceedances of Action and Limit Levels of 1-hr and 24-hr TSP were recorded during the reporting period.

**8.1.2** *Summary of Environmental Non-Compliance*

No non-compliance event was recorded during the reporting period.

**8.1.3** *Summary of Environmental Complaint*

No complaint was received during the reporting period. The cumulative summons/prosecution log is shown in *Annex K*.

**8.1.4** *Summary of Environmental Summons and Successful Prosecution*

No summons was received during the reporting period. The cumulative summons/prosecution log is shown in *Annex K*.



### 9.1.1 *Key Issues for the Coming Month*

Works to be undertaken for the coming monitoring period are summarised in *Table 9.1*.

**Table 9.1** *Construction Works to be Undertaken in the Next Reporting Period*

<b>Work to be taken</b>
• Site formation in P2
• Pipe piling in P2
• Tree transplant P1 and P2 to nursery
• Sheet piling works in P2
• Erection of tower crane in P2
• Interim operation of the PPSTW in P1

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoff, waste management and landscaping issues.

### 9.1.2 *Monitoring Schedule for the Next Reporting Period*

The tentative schedule of TSP monitoring for the next reporting period was presented in *Annex E*. Environmental monitoring will be conducted at the same monitoring locations in the next reporting period. The monitoring programme has been reviewed and was considered as adequate to cater for the nature of works in progress.

### 9.1.3 *Construction Programme for the Next Three Months*

The most updated construction programme for the Project is presented in *Annex L*.

### 10.1 AIR QUALITY

Since the EIA only have qualitative assessment of dust impact during construction phase, the comparison was made between the monitoring results from the start of the Project and the Hong Kong Air Quality Objectives (HKAQO) (Table 10.1).

**Table 10.1 Comparison of the HKAQO and Air Quality Monitoring Results**

Monitoring Station	HKAQO, $\mu\text{g m}^{-3}$	Measured 24-hour TSP Monitoring Results, $\mu\text{g m}^{-3}$ (a) (b)	
	24 hour <sup>(1)</sup>	Average	Range
AM1	260	80	70 - 100
AM2	260	88	78 - 102

**Notes:**

(a) Only 24-hour TSP monitoring results were compared as there is no 1 hour TSP criterion in HKAQO.

(b) Average and range of data were calculated between the commencement of construction works and this reporting month.

The monitoring results show that the average and range of 24-hour TSP levels recorded since the commencement of the construction works were well below the 24-hour TSP criterion in the HKAQO. Recommended mitigation measures in Section 3.7.1.1 of EIA were implemented throughout the construction period and were considered effective.

### 10.2 WASTE MANAGEMENT

The estimated amount of waste generated in this Project and the accumulated quantities of waste generated up to this reporting month are presented in Table 10.2. Recommended mitigation measures in Sections 7.5.1.1 to 7.5.1.9 of the EIA were implemented during the construction stage and will continue to be implemented during the construction phase of the Project.

**Table 10.2** *Quantity of Actual Amount of C&D Materials, General Wastes and Chemical Wastes Generated and EIA Estimation*

Type of Material	Estimated Amount of Public Fill and Construction Waste in EIA (inert & non-inert)	Accumulated Actual Amount of Public Fill and Construction Waste Recorded <sup>(a)</sup> <sup>(b)</sup> (inert & non-inert)
Amount of C&D Materials Arising	61,489 m <sup>3</sup>	10,909.4 m <sup>3</sup>
Amount of C&D Materials Reused on site	14,926m <sup>3</sup>	0 m <sup>3</sup>
Amount of C&D Materials Sent to Public Fills	46,563m <sup>3</sup>	10,909.4 m <sup>3</sup>
General Refuse	Small	0 kg
Chemical Waste	Small	0 kg

**Notes:**

(a) The actual amount of C&D Materials was recorded since the commencement of construction works.

(b) Density conversion factor of 1.06 for soil and stones (Ref No. 17 05 04) from Scotland Business Waste Survey 2006 by the Scotland Environmental Protection Agency

**10.3**

**CONCLUSION OF REVIEW**

The EIA predictions and the monitoring results since the commencement of construction works have been reviewed. The EIA concluded that the Project would not cause adverse impacts to the environment, and the monitoring results also indicated that the construction of the Project has not caused adverse impacts to the environment so far. Mitigation measures recommended in the EP, EIA and EM&A Manual will continue to be implemented during the construction phase of the Project.

The EM&A Report presents the EM&A works undertaken during the period from 1 to 31 December 2010 in accordance with EM&A Manual and the requirements of EP (EP-321/2008).

No exceedance of Action and Limit Levels of 24-hour TSP and 1-hour TSP was recorded at the monitoring stations during the reporting period.

Monthly landscape and visual monitoring was conducted in the reporting period. Most of the necessary landscape and visual mitigation measures recommended in the EIA Report were implemented by the Contractor. Follow-up actions would be implemented by the Contractor to improve protection measures on retained or to-be transplanted trees.

No non-compliance event was recorded during the reporting period.

No complaint and summons/prosecution was received during the reporting period.

The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

## Location of Project

**PROPOSED FACILITIES AND BUILDINGS**

**SECTION 1 INLET PUMPING STATION AND PRELIMINARY TREATMENT WORKS**

- ① INLET CHAMBER
- ② COARSE SCREENS AND INLET PUMPING STATION
- ③ FINE SCREEN CHANNELS
- ④ GRIT CHAMBERS
- ⑤ INLET FLOWMETER CHAMBER
- ⑥ PTW MCC ROOM

- ⑦ BLOWER ROOM
- ⑧ SCREENING SKIP HOUSE
- ⑨ ODOR DUCT SUPPORTING BRIDGE
- ⑩ SEPTIC WASTE RECEPTION STATION
- ⑪ WEIGHBRIDGE
- ⑫ ELECTRICAL BUILDING 1

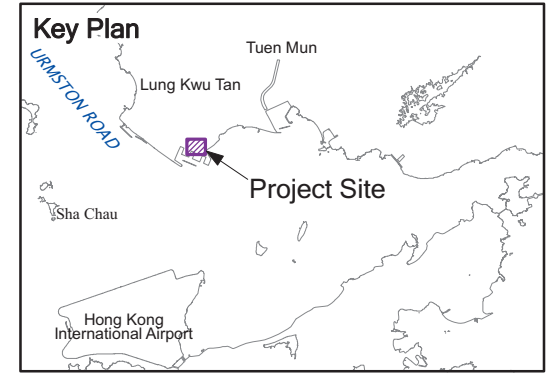
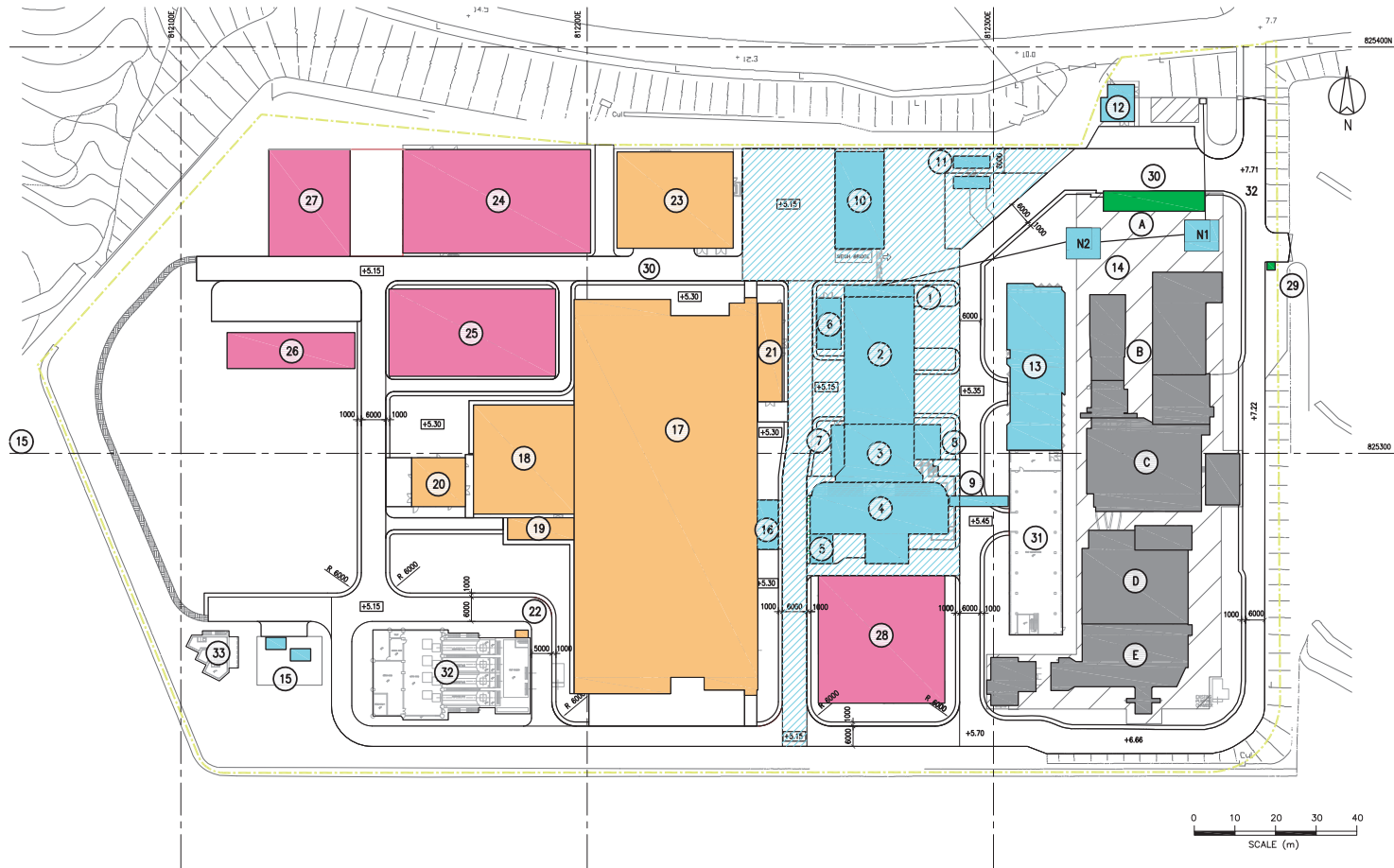
- ⑬ ADMINISTRATION BUILDING
- ⑭ INLET CHAMBERS
- ⑮ PAYMENT FLOWMETER CHAMBER
- ⑯ CEPT INLET CHAMBER

**SECTION 2 CEPT TANKS UV DISINFECTION**

- ⑰ CEPT TANKS
- ⑱ UV DISINFECTION CHANNELS
- ⑲ REUSE WATER PUMP ROOM
- ⑳ ELECTRICAL BUILDING 3
- ㉑ ELECTRICAL BUILDING 2
- ㉒ OUTFALL PUMPING STATION CONNECTION CHAMBER
- ㉓ CHEMICAL BUILDING

**SECTION 3 SLUDGE TREATMENT & HANDLING AND ODOUR CONTROL**

- ㉔ SLUDGE DEMATERING BUILDING
- ㉕ DEODORISATION UNITS (B)
- ㉖ SLUDGE SKIP STORAGE BUILDING
- ㉗ SLUDGE SKIP LOADING AREA
- ㉘ DEODORISATION UNITS (A)



**SECTION 4 EXISTING BUILDINGS TO BE DEMOLISHED**

- Ⓐ ADMINISTRATION BUILDING
- Ⓑ INLET SCREW PUMPING STATION AND MOTOR HOUSE
- Ⓒ COARSE SCREENS
- Ⓓ BLOWER HOUSE AND GRIT CHANNELS
- Ⓔ FINE SCREEN CHANNELS AND FLOWMETER CHAMBER

**SECTION 5 EXTERNAL WORKS**

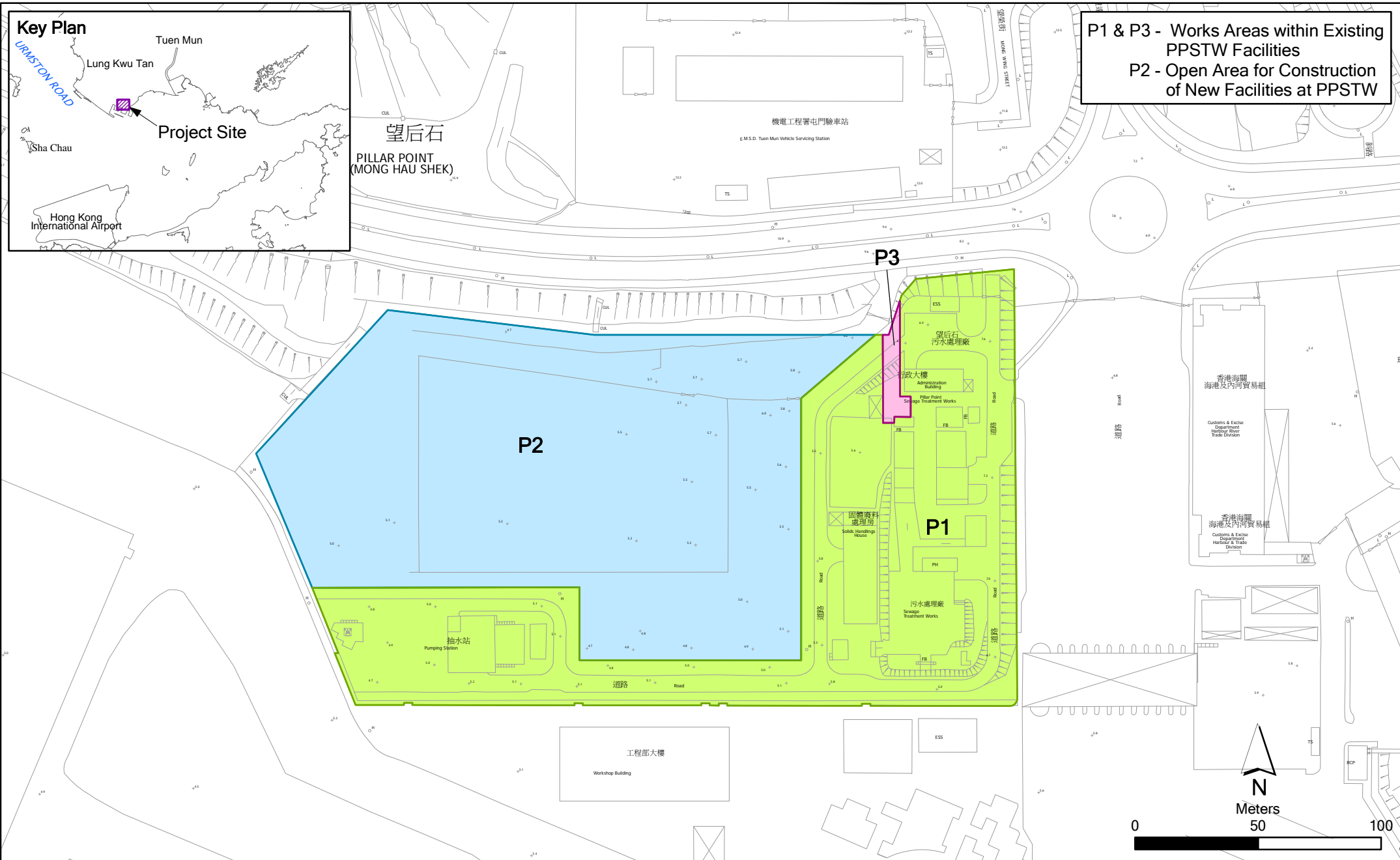
- ⑳ GATE HOUSE
- ㉑ CAR PARK

**EXISTING BUILDING TO BE RETAINED**

- ㉒ EXISTING SOLID HANDLING BUILDING
- ㉓ EXISTING OUTFALL PUMPING STATION
- ㉔ EXISTING TERMINAL MANHOLE

Annex B

## Works Location



P1 & P3 - Works Areas within Existing PPSTW Facilities  
P2 - Open Area for Construction of New Facilities at PPSTW

Annex B

Location of Works Areas

File: 0119806\_location of works.mxd  
Date: 15/12/2010

Environmental  
Resources  
Management

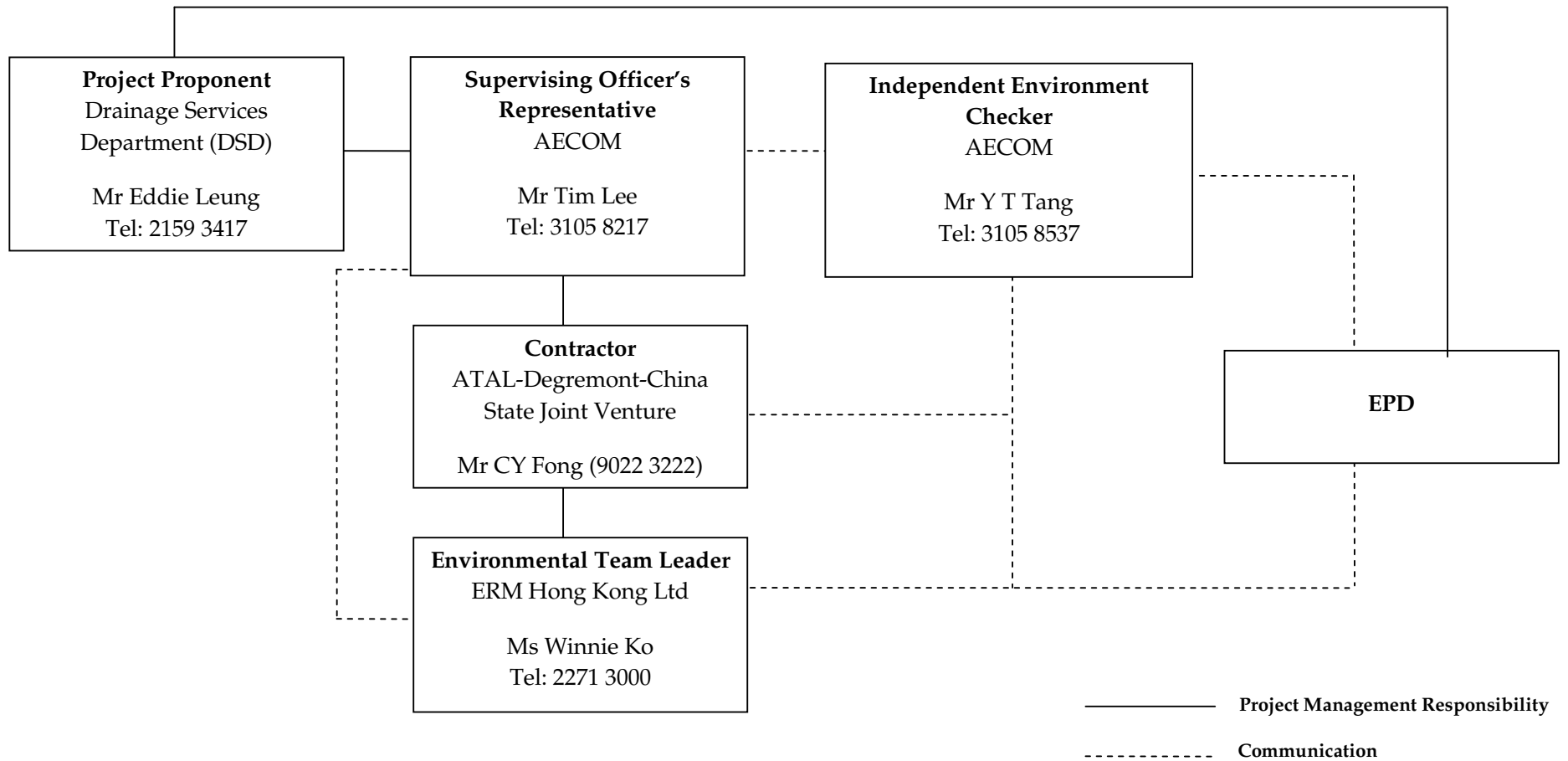




Annex C

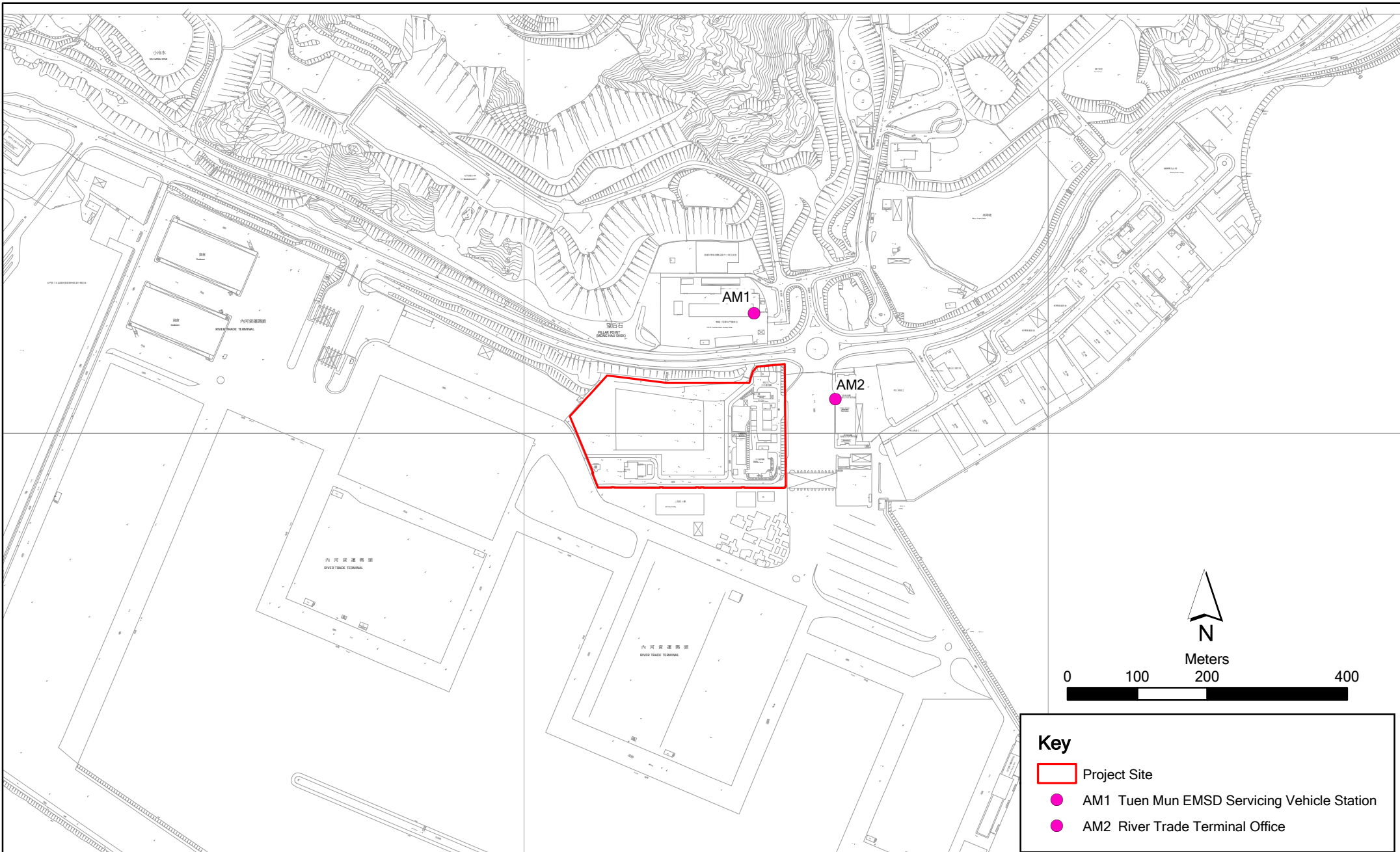
## Project Organization Chart with Contact Details

***Project Organization During Construction Phase (with contact details)***



Annex D

## Locations of Air Quality Monitoring Stations



**Key**

- Project Site
- AM1 Tuen Mun EMSD Servicing Vehicle Station
- AM2 River Trade Terminal Office

Annex D

Contract No. DC/2008/03 Design, Build and Operate of Pillar Point Sewage Treatment Works

File: 0119806\_Site Boundary.mxd  
Date: 15/12/2010

**Environmental  
Resources  
Management**



Annex D

## Locations of Air Quality Monitoring Stations



AM1 – Tuen Mun EMSD Servicing Vehicle Station



AM2 - River Trade Terminal Office

Annex E

## Monitoring Schedule of Reporting Month and Next Month

**Contract No. DC/2008/03 - Design, Build and Operate Pillar Point Sewage Treatment Works  
(Tuen Mun EMSD Servicing Vehicle Station (AM1) & River Trade Terminal Office (AM2))  
December 2010**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Dec	2-Dec	3-Dec	4-Dec
			3X1-hr & 1X 24-hr TSP			
5-Dec	6-Dec	7-Dec	8-Dec	9-Dec	10-Dec	11-Dec
		3X1-hr & 1X 24-hr TSP				
12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec
	3X1-hr & 1X 24-hr TSP					3X1-hr & 1X 24-hr TSP
19-Dec	20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	25-Dec
					3X1-hr & 1X 24-hr TSP	Christmas Holiday
26-Dec	27-Dec	28-Dec	29-Dec	30-Dec	31-Dec	
	Christmas Holiday			3X1-hr & 1X 24-hr TSP		



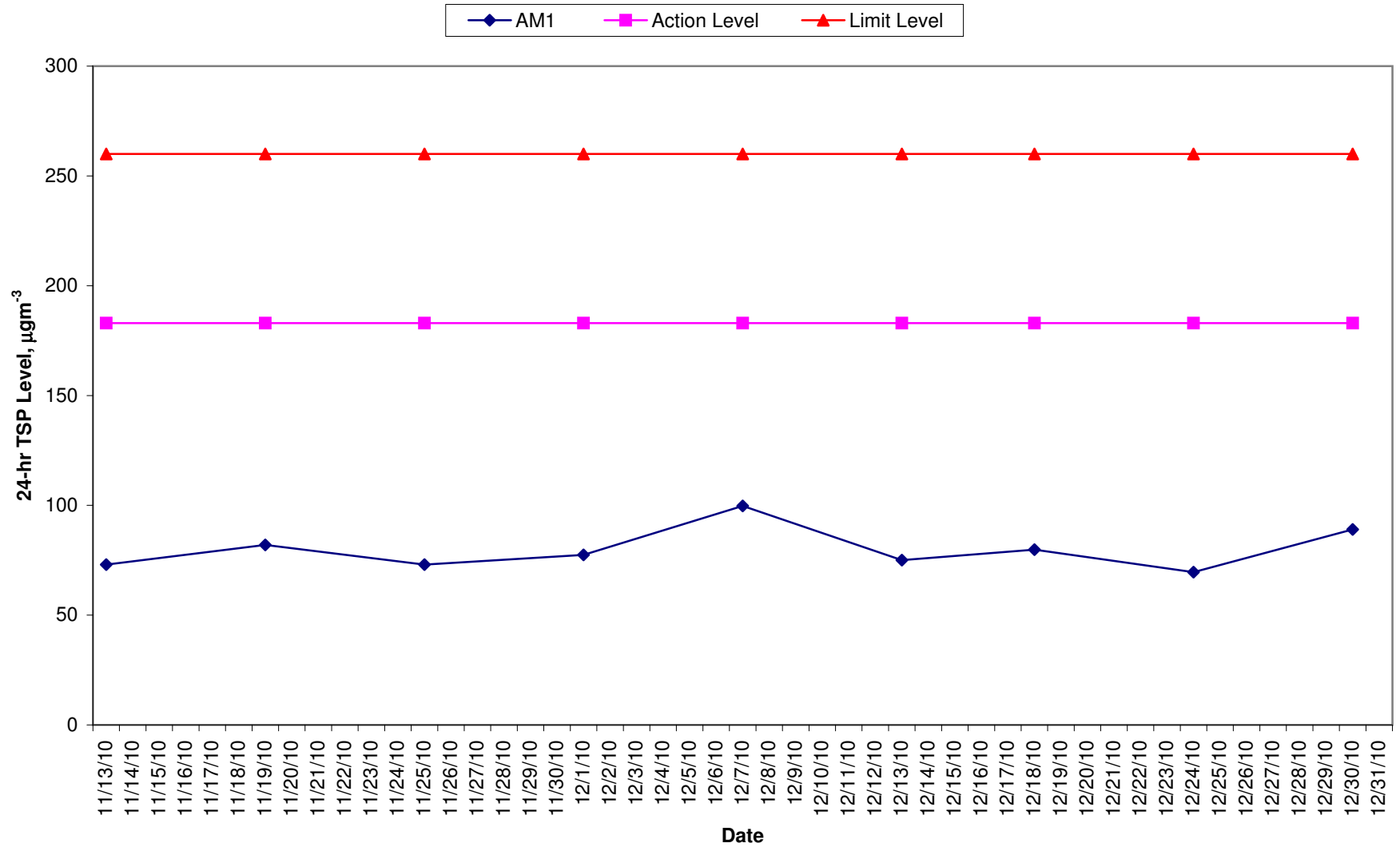
**Contract No. DC/2008/03 - Design, Build and Operate Pillar Point Sewage Treatment Works  
(Tuen Mun EMSD Servicing Vehicle Station - AM1 & River Trade Terminal Office - AM2)  
January 2011**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Jan
						New Year Holiday
2-Jan	3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan
			3X1-hr & 1X 24-hr TSP			
9-Jan	10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan
		3X1-hr & 1X 24-hr TSP				
16-Jan	17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan
	3X1-hr & 1X 24-hr TSP					3X1-hr & 1X 24-hr TSP
23-Jan	24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan
					3X1-hr & 1X 24-hr TSP	
30-Jan	31-Jan					

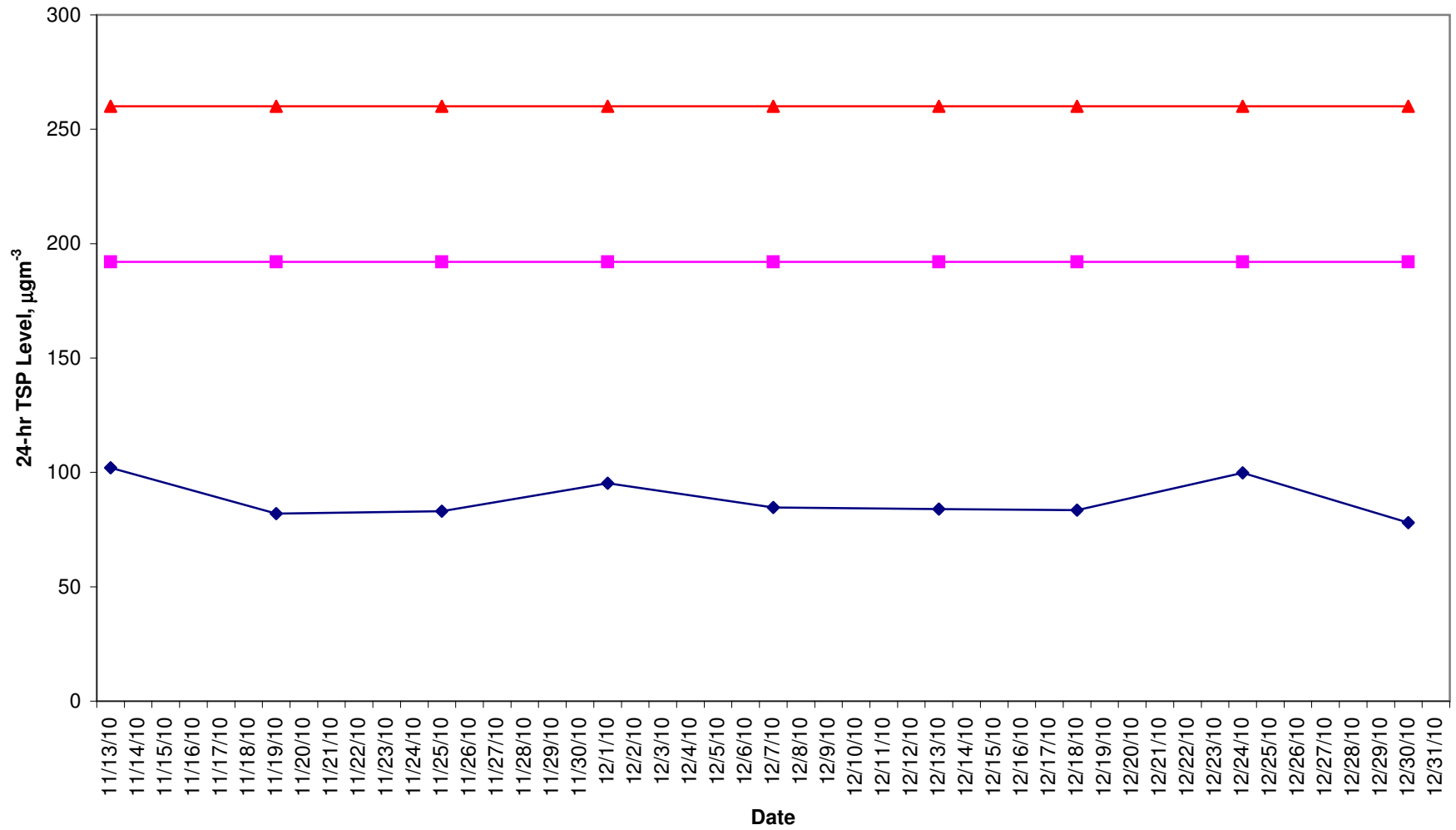
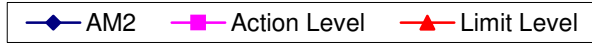
Annex F

## 24-hour and 1-hour TSP Monitoring Results

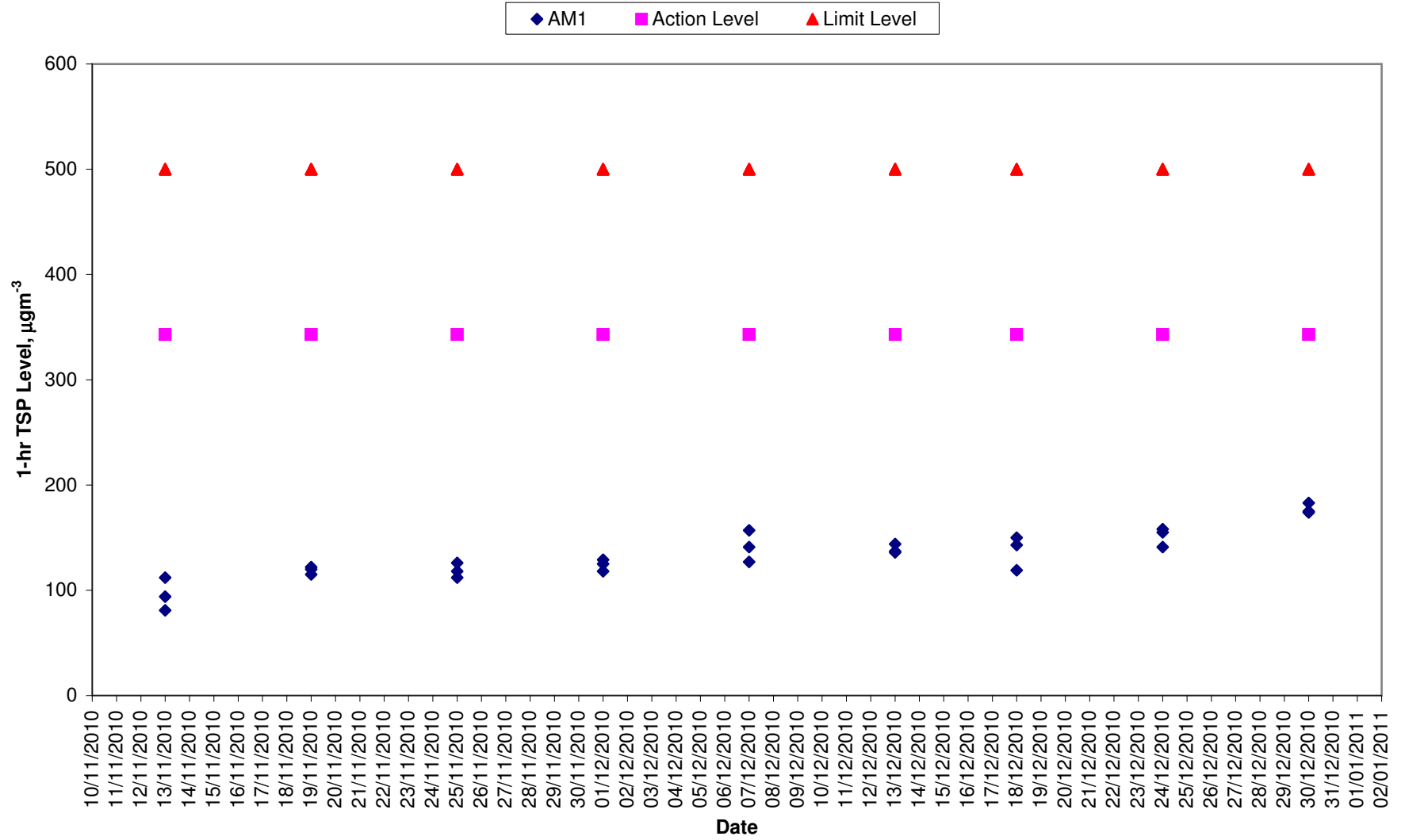
### 24-hr TSP Levels AM1 (Tuen Mun EMSD Vehicle Servicing Station)



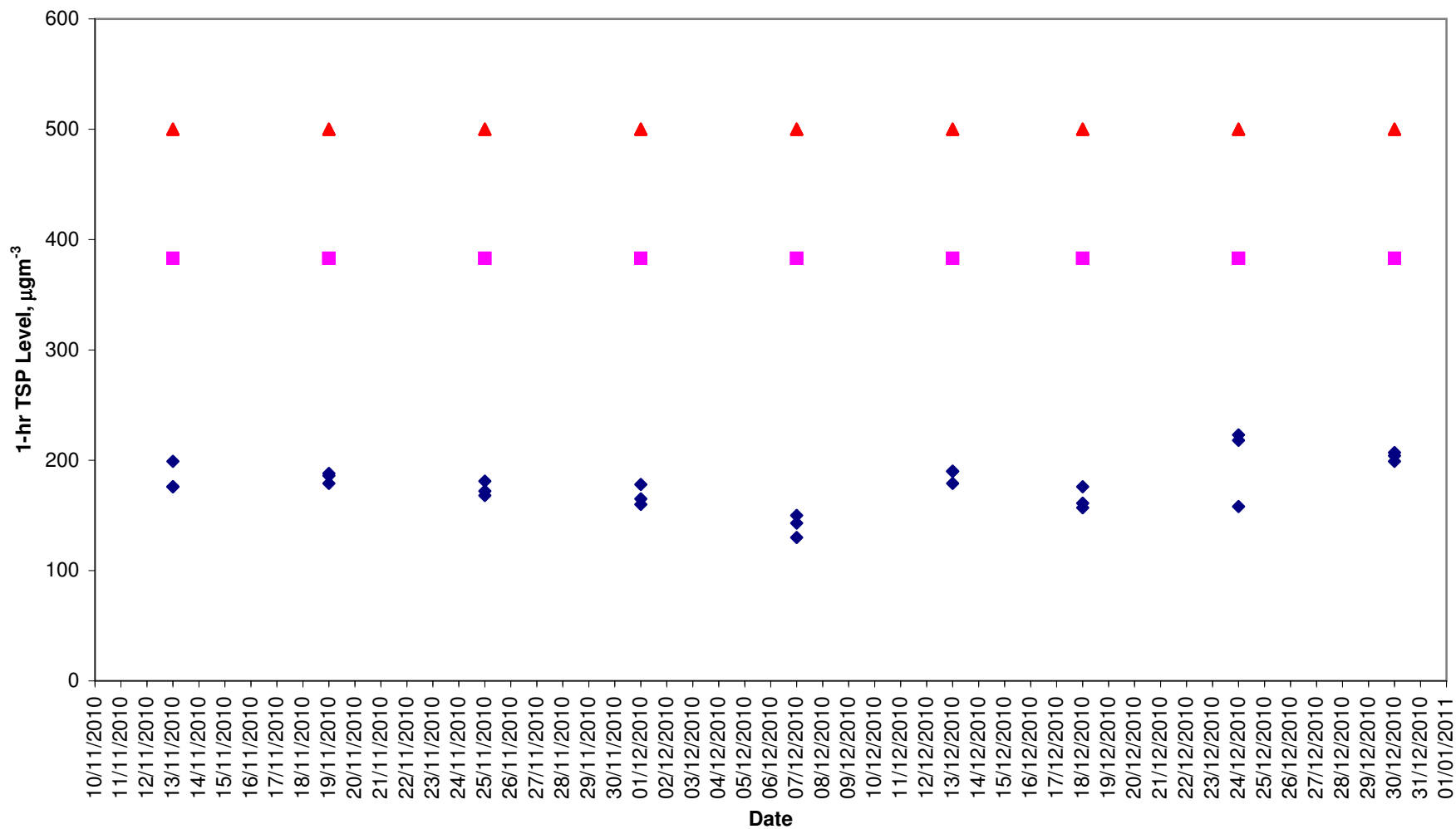
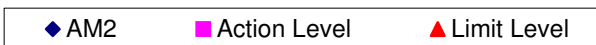
**24-hr TSP Levels  
AM2 (River Trade Terminal Office)**



### 1-hr TSP Levels AM1 (Tuen Mun EMSD Vehicle Servicing Station)



### 1-hr TSP Levels AM2 (River Trade Terminal Office)



## Annex F - 24-hour and 1-hour TSP Monitoring Results

### 1-hour TSP Monitoring Results

#### Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Site Conditions / Observations / Remarks	Temperature ( $^{\circ}\text{C}$ )	Wind Speed * (m/s)	Sampler ID	Filter ID
1-Dec-10	9:10	10:10	Sunny	118	343	500	Construction work in progress	20	*	7580	7642
	10:10	11:10	Sunny	125	343	500	Construction work in progress	21	*	7580	7643
	11:10	12:10	Sunny	129	343	500	Construction work in progress	22	*	7580	7644
7-Dec-10	13:00	14:00	Sunny	157	343	500	Construction work in progress	20	*	7580	7655
	14:00	15:00	Sunny	141	343	500	Construction work in progress	20	*	7580	7656
	15:00	16:00	Sunny	127	343	500	Construction work in progress	20	*	7580	7657
13-Dec-10	13:00	14:00	Sunny	137	343	500	Construction work in progress	22	*	7580	7714
	14:00	15:00	Sunny	136	343	500	Construction work in progress	22	*	7580	7715
	15:00	16:00	Sunny	144	343	500	Construction work in progress	22	*	7580	7716
18-Dec-10	13:15	14:15	Sunny	143	343	500	Construction work in progress	15	*	7580	7843
	14:15	15:15	Sunny	150	343	500	Construction work in progress	15	*	7580	7844
	15:15	16:15	Sunny	119	343	500	Construction work in progress	16	*	7580	7845
24-Dec-10	13:10	14:10	Sunny	158	343	500	Construction work in progress	21	*	7580	7859
	14:10	15:10	Sunny	155	343	500	Construction work in progress	22	*	7580	7860
	15:10	16:10	Sunny	141	343	500	Construction work in progress	23	*	7580	7861
30-Dec-10	13:10	14:10	Sunny	175	343	500	Construction work in progress	19	*	7580	7876
	14:10	15:10	Sunny	174	343	500	Construction work in progress	20	*	7580	7877
	15:10	16:10	Sunny	183	343	500	Construction work in progress	20	*	7580	7878
			<b>Min.</b>	<b>118</b>							
			<b>Max.</b>	<b>183</b>							
			<b>Average</b>	<b>145</b>							

\* Wind Speed data is presented in the Meteorological Data table

## Annex F - 24-hour and 1-hour TSP Monitoring Results

### 1-hour TSP Monitoring Results

#### Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Site Conditions / Observations / Remarks	Temperature ( $^{\circ}\text{C}$ )	Wind Speed * (m/s)	Sampler ID	Filter ID
1-Dec-10	9:00	10:00	Sunny	160	383	500	Construction work in progress	21	*	1247	7590
	10:00	11:00	Sunny	178	383	500	Construction work in progress	22	*	1247	7639
	11:00	12:00	Sunny	165	383	500	Construction work in progress	22	*	1247	7640
7-Dec-10	13:00	14:00	Sunny	143	383	500	Construction work in progress	20	*	1247	7651
	14:00	15:00	Sunny	130	383	500	Construction work in progress	20	*	1247	7652
	15:00	16:00	Sunny	150	383	500	Construction work in progress	20	*	1247	7653
13-Dec-10	13:00	14:00	Sunny	179	383	500	Construction work in progress	22	*	1247	7638
	14:00	15:00	Sunny	190	383	500	Construction work in progress	22	*	1247	7711
	15:00	16:00	Sunny	190	383	500	Construction work in progress	22	*	1247	7712
18-Dec-10	13:00	14:00	Sunny	157	383	500	Construction work in progress	15	*	1247	7839
	14:00	15:00	Sunny	176	383	500	Construction work in progress	16	*	1247	7840
	15:00	16:00	Sunny	161	383	500	Construction work in progress	16	*	1247	7841
24-Dec-10	13:00	14:00	Sunny	158	383	500	Construction work in progress	21	*	1247	7855
	14:00	15:00	Sunny	218	383	500	Construction work in progress	22	*	1247	7856
	15:00	16:00	Sunny	223	383	500	Construction work in progress	22	*	1247	7857
30-Dec-10	13:00	14:00	Sunny	204	383	500	Construction work in progress	19	*	1247	7872
	14:00	15:00	Sunny	199	383	500	Construction work in progress	20	*	1247	7873
	15:00	16:00	Sunny	207	383	500	Construction work in progress	20	*	1247	7874
				<b>Min.</b>	<b>130</b>						
				<b>Max.</b>	<b>223</b>						
				<b>Average</b>	<b>177</b>						

\* Wind Speed data is presented in the Meteorological Data table



## Annex F - 24-hour and 1-hour TSP Monitoring Results

### 24-hour TSP Monitoring Results

#### Station AM1

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			TSP Conc. (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Observations / Remarks	Sampler ID	Filter ID		
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average								
1-Dec-10	12:10	2-Dec-10	12:10	Sunny	2.7907	2.9234	10304.18	10328.18	24.00	1.19	1.19	1.19	77	183	260	Construction work in progress	7580	7645		
7-Dec-10	16:00	8-Dec-10	16:00	Sunny	2.8006	2.9715	10331.18	10355.18	24.00	1.19	1.19	1.19	100	183	260	Construction work in progress	7580	7658		
13-Dec-10	16:10	14-Dec-10	16:10	Sunny	2.9012	3.0298	10358.18	10382.18	24.00	1.19	1.19	1.19	75	183	260	Construction work in progress	7580	7717		
18-Dec-10	16:15	19-Dec-10	16:15	Sunny	2.8235	2.9603	10385.18	10409.18	24.00	1.19	1.19	1.19	80	183	260	Construction work in progress	7580	7846		
24-Dec-10	16:10	25-Dec-10	16:10	Sunny	2.8506	2.9698	10412.18	10436.18	24.00	1.19	1.19	1.19	70	183	260	Construction work in progress	7580	7862		
30-Dec-10	16:10	31-Dec-10	16:10	Sunny	2.8555	3.0081	10439.18	10463.18	24.00	1.19	1.19	1.19	89	183	260	Construction work in progress	7580	7903		
												Min.	70							
												Max.	100							
												Average	82							

### 24-hour TSP Monitoring Results

#### Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			TSP Conc. (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Observations / Remarks	Sampler ID	Filter ID		
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average								
1-Dec-10	12:00	2-Dec-10	12:00	Sunny	2.8041	2.9674	18297.20	18321.20	24.00	1.19	1.19	1.19	95	192	260	Construction work in progress	1247	7641		
7-Dec-10	16:00	8-Dec-10	16:00	Sunny	2.8991	3.0441	18324.20	18348.20	24.00	1.19	1.19	1.19	85	192	260	Construction work in progress	1247	7654		
13-Dec-10	16:00	14-Dec-10	16:00	Sunny	2.8867	3.0305	18351.20	18375.20	24.00	1.19	1.19	1.19	84	192	260	Construction work in progress	1247	7713		
18-Dec-10	16:00	19-Dec-10	16:00	Sunny	2.8469	2.9900	18378.20	18402.20	24.00	1.19	1.19	1.19	84	192	260	Construction work in progress	1247	7842		
24-Dec-10	16:00	25-Dec-10	16:00	Sunny	2.8566	3.0277	18405.20	18429.20	24.00	1.19	1.19	1.19	100	192	260	Construction work in progress	1247	7858		
30-Dec-10	16:00	31-Dec-10	16:00	Sunny	2.8592	2.9933	18432.20	18456.20	24.00	1.19	1.19	1.19	78	192	260	Construction work in progress	1247	7875		
												Min.	78							
												Max.	100							
												Average	88							

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tuen Mun Station				
		Range of Air Temperature (°C) #	Range of Relative Humidity (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
12/1/2010	Sunny	16.3 - 23.5	65 - 81	0.0	1.7 - 3.6	N
12/2/2010	Sunny	16.7 - 24.8	52 - 89	0.0	1.7 - 3.6	N
12/7/2010	Sunny	14.7 - 20.9	42 - 66	0.0	1.9 - 5.6	N
12/8/2010	Sunny	12.2 - 20.2	21 - 46	0.0	0 - 5.8	N
12/13/2010	Sunny	19.3 - 25.8	85 - 94	0.0	0 - 3.3	SW
12/14/2010	Sunny	19.4 - 24.1	73 - 97	0.0	1.1 - 3.6	N
12/18/2010	Sunny	5.5 - 18.5	46 - 77	0.0	0 - 3.6	NW
12/19/2010	Sunny	12.5 - 21.7	67 - 80	0.0	0.4 - 2.8	S
12/24/2010	Sunny	14.2 - 24.6	66 - 84	0.0	0 - 5.8	SE
12/25/2010	Sunny	9.3 - 19.2	69 - 82	0.0	0 - 6.1	N
12/30/2010	Sunny	12.1 - 22.2	39 - 85	0.0	0.7 - 6.7	NE
12/31/2010	Sunny	10.7 - 18.1	29 - 47	0.0	0.4 - 6.9	NE

\* - Data is retrieved from the Hong Kong Observatory as automatic data from Tuen Mun is not available by the due time of this report

# - Data is retrieved from the Lau Fau Shan station as automatic data from Tuen Mun is not available by the due time of this report

Annex G

## Calibration Reports for HVSs



TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE.  
 VILLAGE OF CLEVELAND, OH 45002  
 513.467.9000  
 877.263.7610 TOLL FREE  
 513.467.9009 FAX  
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 10, 2010 Rootsometer S/N 9833620 Ta (K) - 296  
 Operator Tisch Orifice I.D. - 1785 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORIFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3960	3.2	2.00
2	NA	NA	1.00	0.9840	6.4	4.00
3	NA	NA	1.00	0.8790	7.9	5.00
4	NA	NA	1.00	0.8390	8.7	5.50
5	NA	NA	1.00	0.6940	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9900	0.7092	1.4102	0.9957	0.7133	0.8881
0.9858	1.0018	1.9943	0.9915	1.0076	1.2560
0.9837	1.1191	2.2296	0.9894	1.1256	1.4042
0.9827	1.1713	2.3385	0.9884	1.1781	1.4728
0.9774	1.4084	2.8203	0.9830	1.4165	1.7762
Qstd slope (m) = 2.01637			Qa slope (m) = 1.26262		
intercept (b) = -0.02316			intercept (b) = -0.01458		
coefficient (r) = 0.99996			coefficient (r) = 0.99996		
y axis = SQRT[H2O (Pa/760) (298/Ta)]			y axis = SQRT[H2O (Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)  
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]  
 Qa = Va/Time

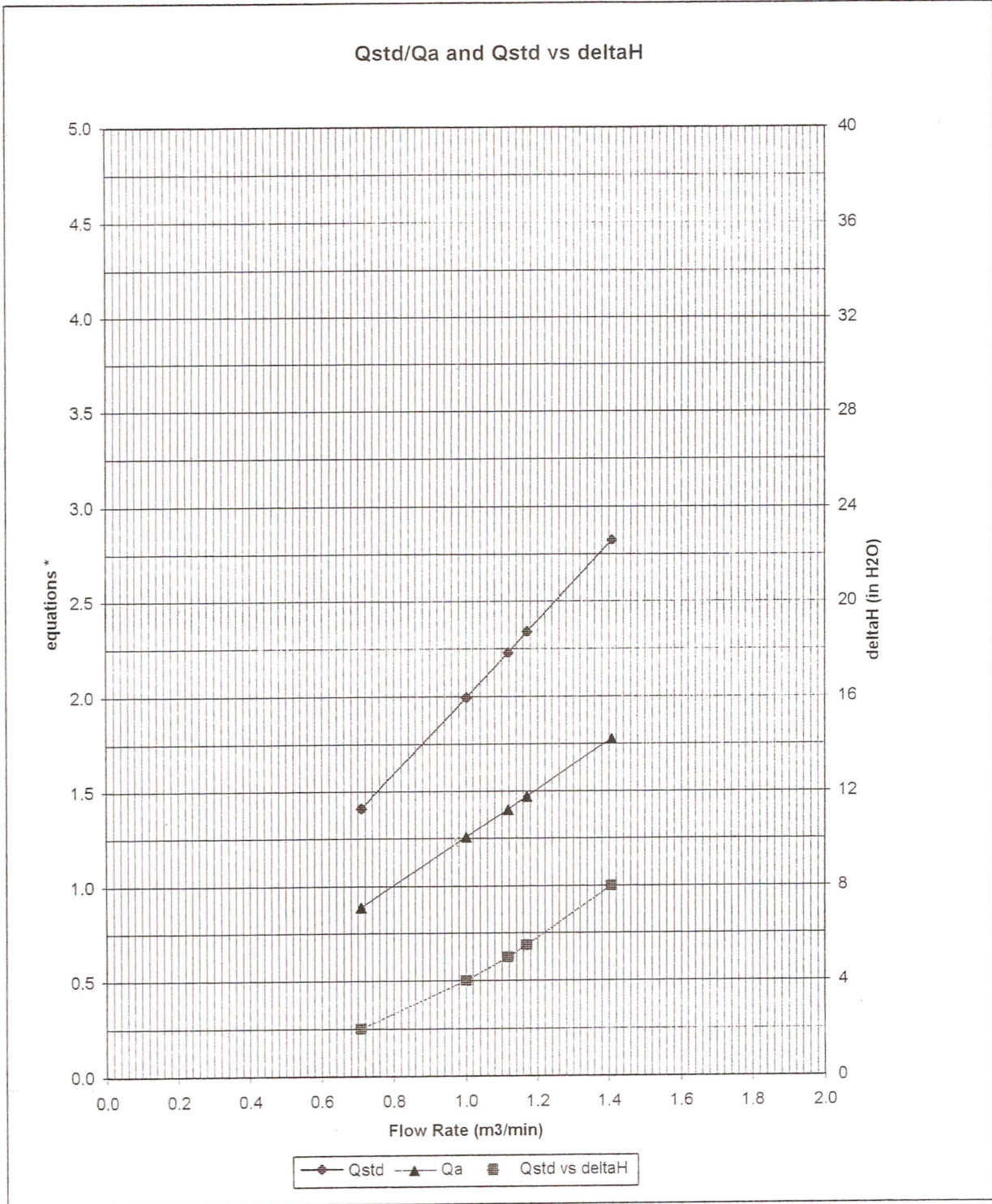
For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O (Pa/760) (298/Ta))] - b}  
 Qa = 1/m{ [SQRT H2O (Ta/Pa)] - b}



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AIR POLLUTION MONITORING EQUIPMENT



\* y-axis equations:

Qstd series:

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

Qa series:

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

#1785

High-Volume TSP Sampler  
5-Point Calibration Record

Location : EMSD(24 hr TSP)  
 Calibrated by : P.F.Yeung  
 Date : 29/11/2010

Sampler

Model : GMWS-2310 ACCU-VOL  
 Serial Number : S/N 7580

Calibration Office and Standard Calibration Relationship

Serial Number : 1785  
 Service Date : 10 May 2010  
 Slope (m) : 2.01637  
 Intercept (b) : -0.02316  
 Correlation Coefficient(r) : 0.99996

Standard Condition

Pstd (hpa) : 1013  
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1011  
 Ta(K) : 298

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.2	3.355	1.675	63	63.2
2   13 holes	9.8	3.138	1.568	58	58.1
3   10 holes	7.4	2.727	1.364	48	48.1
4   7 holes	5.2	2.286	1.145	38	38.1
5   5 holes	3.5	1.875	0.942	28	28.1

Sampler Calibration Relationship

Slope(m):47.735 Intercept(b): -16.789 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 03/12/2010

High-Volume TSP Sampler  
5-Point Calibration Record

Location : River Trade  
Calibrated by : K.T.Ho  
Date : 29/11/2010

Sampler

Model : GMWS-2310 ACCU-VOL  
Serial Number : S/N 1247

Calibration Office and Standard Calibration Relationship

Serial Number : 1785  
Service Date : 10 May 2010  
Slope (m) : 2.01637  
Intercept (b) : -0.02316  
Correlation Coefficient(r) : 0.99996

Standard Condition

Pstd (hpa) : 1013  
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1011  
Ta(K) : 298

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.4	3.384	1.690	61	61.1
2   13 holes	9.6	3.106	1.552	55	55.1
3   10 holes	7.6	2.764	1.382	48	48.1
4   7 holes	5.0	2.241	1.123	37	37.1
5   5 holes	3.2	1.793	0.901	28	28.1

Sampler Calibration Relationship

Slope(m):41.928 Intercept(b):9.835 Correlation Coefficient(r):0.9999

Checked by: Magnum Fan

Date: 03/12/2010

Annex H

## Event/Action Plan for Air Quality Monitoring



**Table H1**      *Event Action Plan for Air Quality Monitoring*

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Supervising Officer Representative (SOR)	Contractor
<i>Action Level</i>				
Exceedance for one sample	<ul style="list-style-type: none"> <li>Identify source, investigate the causes of complaint and propose remedial measures;</li> <li>Inform IEC and SOR;</li> <li>Repeat measurement to confirm findings;</li> <li>Increase monitoring frequency to daily.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor’s working method.</li> </ul>	<ul style="list-style-type: none"> <li>Notify Contractor and DSD.</li> </ul>	<ul style="list-style-type: none"> <li>Rectify any unacceptable practice;</li> <li>Amend working methods if appropriate.</li> </ul>
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> <li>Identify source;</li> <li>Inform IEC and SOR;</li> <li>Advise the SOR on the effectiveness of the proposed remedial measures;</li> <li>Repeat measurements to confirm findings;</li> <li>Increase monitoring frequency to daily;</li> <li>Discuss with IEC and Contractor on remedial actions required;</li> <li>If exceedance continues, arrange meeting with IEC and SOR;</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor’s working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise the ET on the effectiveness of the proposed remedial measures;</li> <li>Supervise Implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor and DSD;</li> <li>Ensure remedial measures properly implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ul>

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Supervising Officer Representative (SOR)	Contractor
<i>Limit Level</i>				
Exceedance for one sample	<ul style="list-style-type: none"> <li>Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>Inform IEC, SOR, DSD and EPD;</li> <li>Repeat measurement to confirm finding;</li> <li>Increase monitoring frequency to daily;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD, DSD and SOR informed of the results.</li> </ul>	<ul style="list-style-type: none"> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise the SOR on the effectiveness of the proposed remedial measures;</li> <li>Supervise implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>Ensure remedial measures properly implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ul>
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> <li>Notify IEC, SOR, DSD and EPD;</li> <li>Identify source;</li> <li>Repeat measurement to confirm findings;</li> <li>Increase monitoring frequency to daily;</li> <li>Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>Arrange meeting with IEC and SOR to discuss the remedial actions to be taken;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD, DSD and SOR informed of the results;</li> <li>If exceedance stops, cease additional monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss amongst SOR, ET, and Contractor on the potential remedial actions;</li> <li>Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Ensure remedial measures properly implemented;</li> <li>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ul>	<ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by the SOR until the exceedance is abated.</li> </ul>

Annex I

## Implementation Schedule of Mitigation Measures

**Annex I Summary of Mitigation Measures Implementation Schedule**

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Summary of Environmental Mitigation Measures in the EIA and EM&amp;A Manual</i>			
<i>Construction Phase</i>			
Air Quality	Dust mitigation measures stipulated in <i>the Air Pollution Control (Construction Dust) Regulation</i> shall be incorporated to control Post emission. Notice shall be given to authority prior to commencing of work.	Work sites / during construction period	Δ. Notice of works commencement was submitted to EPD on 3 August 2010.
Water Quality	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. It is recommended to install perimeter channels in the works areas to intercept runoff as site boundary prior to the commencement of any earthwork. To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. Drainage channels are also required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance can ensure the normal operation of these facilities throughout the construction period. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Work site/During the construction period	√
Water Quality	There is a need to apply to EPD for a discharge license under the WPCO for discharging effluent from the construction site. The discharge quality is required to meet the requirements specified in the discharge license. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimize water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD.	Work site/During the construction period	Δ. Discharge licence was awarded by EPD on 7 December 2010.
Water Quality	The construction programme should be properly planned to minimize soil excavation, if any, in rainy seasons. This prevents soil erosion from	Work site/During the construction period	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimize dust emission. In areas where a large amount of exposed soil exists, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from any stream course so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work. It is suggested that haul roads should be paved with concrete and the temporary access roads protected using crushed stone or gravel, wherever practicable. Wheel washing facilities should be provided at all site exists to ensure that earth, mud and debris would not be carried out of the works areas by vehicles.</p>		
Water Quality	<p>Good sites practices should be adopted to clean the rubbish and litter on the construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.</p>	Work site/During the construction period	√
Water Quality	<p>The presence of construction workers generates sewage. It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30m from any watercourse. A licensed water collector should be deployed to clean the chemical toilets on a regular basis. The construction workers can also make use of the existing toilet facilities within the PPSTW as necessary.</p>	Work site/During the construction period	√
Water Quality	<p>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Regular environmental audit on the construction phase of the project. Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site.</p>	Work site/During the construction period	√
Waste Management	<p>Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation</p>	Work site/During the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	should be observed and complied with for control of chemical wastes.		
Waste Management	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and stumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Work site/ During the construction period	√
Waste Management	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with the chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> <li>• Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>• Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>• Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</li> </ul>	Work site/ During the construction period	Δ
Waste Management	<p><i>Good Site Practices</i> Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> <li>• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site</li> <li>• Training of site personnel in proper waste management and chemical handling procedures</li> <li>• Provision of sufficient waste disposal points and regular collection of waste</li> <li>• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers</li> </ul>	Work site/ During the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<ul style="list-style-type: none"> <li>• Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>• Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.</li> </ul>		
Waste Management	<p><i>Waste Reduction Measures</i></p> <p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>• Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force</li> <li>• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	Work site/ During planning & design stage, and construction stage	Δ
Waste Management	<p><i>General Refuse</i></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work site / During the construction period	Δ
Waste Management	<p><i>Construction and Demolition Material</i></p> <p>In order to minimise the impact resulting from collection and transportation of C&amp;D material for off-site disposal, the excavated</p>	Work site / During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>material generated from site formation works for the proposed new facilities and units at the STW should be reused on-site as far as practicable. The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses.</p>		
Waste Management	<p>Mitigation measures and good site practices should be followed to control potential environmental impact from handling and transportation of C&amp;D material. The mitigation measures include:</p> <ul style="list-style-type: none"> <li>• Where it is unavoidable to have transient stockpiles of C&amp;D material pending collection for disposal, the transient stockpiles shall be located away from waterfront or storm drains as far as possible.</li> <li>• Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric.</li> <li>• Skip hoist for material transport should be totally enclosed by impervious sheeting.</li> <li>• Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site</li> <li>• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.</li> <li>• The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle.</li> <li>• All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.</li> <li>• The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading.</li> </ul>	Work site / During design stage & construction period	Δ
Waste Management	<p>When disposing C&amp;D material at a public filling facility, it shall be noted that the material shall only consist of earth, building debris and broken rock and concrete. The material shall be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal</p>	Work site/ During design stage & construction period	√



Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor. In order to monitor the disposal of the surplus C&amp;D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work with reference to the ETWB TCW No. 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Materials" as attached in Appendix 7-1. An Independent Environmental Checker should be responsible for auditing the results of the system.</p>		
Waste Management	<p><i>Chemical Waste</i></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p>	Work site / During the construction period	Δ
Landscape & Visual	<p><u>Temporary Tree Nurseries</u></p> <p>Temporary tree nurseries may be set up for the transplanted tree and proposed trees at an early stage to allow small trees to grow during the construction periods. By the time when planting area becomes available, trees mature and increase in trunk &amp; spread size. They will require minimal pruning and suffer much less damage during transplanting when comparing the travel distance from an on-site nursery to an off-site nursery.</p> <p>Besides, these trees may also be positioned as visual mitigation during</p>	Work site/ During design stage & construction period	√. A tree nursery has been set up off-site near the site office.

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	the construction period.		
Landscape & Visual	<p><u>No-intrusion Zone</u></p> <p>To maximize protection to existing trees and ground vegetation, construction contracts may designate “No-intrusion Zone” to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the “no-intrusion zone”, even for non-direct construction activities and storage of equipment.</p>	Work site/ During design stage & construction period	Δ
Landscape & Visual	<p><u>Hoarding</u></p> <p>Hoarding or boundary fencing for construction shall be considered. It should be sensitively designed, subtle, camouflaged and more ‘permeable’ so that they fit into the existing environment when looking from outside.</p>	Work site/ During design stage & construction period	√
Landscape & Visual	<p><u>Dust and Erosion Control for Exposed Soil</u></p> <p>Excavation works and demolition of existing building blocks and which will be highly visible form surrounding areas should be well planned and with precautions to suppress dust. Exposed soil shall be covered or ‘camouflaged’ and watered often. Areas that are expected to be left with bare soil for a long period of time after excavation shall be properly covered with suitable protective fabric. Silt and erosion shall be controlled by ground barriers around the slope cutting area..</p>	Work site/ During design stage & construction period	√
Landscape & Visual	<p><u>Existing Tree Record Inventory</u></p> <p>All retained trees should be record photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</p>	Work site/ During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	<p><u>Construction Light</u></p> <p>All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC users. The Contractor shall consider other security measures which shall minimize the visual impacts.</p>	Work site / During design stage & construction period	√
Landscape & Visual	<p><u>Tree Transplanting</u></p> <p>Apart from the 18 numbers of "<i>Leucaena leucocephala</i>", which are proposed to be felled in accordance with ETWB TCW No. 3/2006, all the affected trees shall be transplanted. Where practicable, trees shall be directly transplanted to permanent on-site locations. The location of the transplanted tree is shown in <b>Figure 8.9.1</b>.</p>	Work site / During design stage & construction period	Δ. Tree transplantation in progress.
Landscape & Visual	<p><u>Tree Compensation Ratio</u></p> <p>The total number of compensatory trees planted in the project area shall not be less than 1:1 ratios by new trees. Required numbers and locations of compensatory trees shall be determined and agreed with Government during the tree felling application process under ETWCTC 3/2006. Compensatory trees shall be at least heavy standard size to create "immediate" greening effect. 81 numbers of "<i>Cassia surattensis</i>" will be provided as the additional compensatory planting for loss of greenery in the area due to removal of the affected trees. The location of the additional compensatory planting is shown in <b>Figure 8.9.1</b>.</p>	Work site / During design stage & construction period	N/A
Landscape & Visual	<p><u>Re-use of Existing Soil and Advance formation of Planting Area</u></p> <p>Existing topsoil shall be re-used where possible for new planting areas within the project. Advance formation of planting area and early implementation of the plating works can minimize adverse impact on trees. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary.</p>	Work site / During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	<p><u>Establishment Period</u></p> <p>12 month establishment period for the soft landscape works will be allowed in the main contract. Most construction contracts in Hong Kong require the Contractor to carry out routine horticultural operations, including watering, pruning, weeding, pest control, replacement of dead plants etc. to ensure healthy establishment of new planting during a 12 month establishment period. This period also serves as a kind of warranty / guarantee on the quality of the plants supplied and installed by the Contractor. Monthly monitoring during the first year of establishment period is recommended.</p>	Work site/ During operation period	N/A. To be implemented during operation phase of Project.
Landscape & Visual	<p><u>Re-instatement of excavated Area</u></p> <p>All excavated area and disturbed area for utilities diversion, temporary road diversion, and pipeline works will be reinstated to former conditions, subject to applicable Government Standards.</p>	Work site / During design stage & operation period	N/A. To be implemented during operation phase of Project.
Landscape & Visual	<p><u>Appearance and Greening for the proposed structures</u></p> <p>Compatible design, construction materials and surface finishes of the proposed structure should match with the nearby existing external appearance of PPSTW buildings for achieving visual uniformity. Finishing materials shall have due consideration to form, basic color, color/ tone variation, micro-and macro-texture, and reflectivity/ light absorbance to avoid glare. Planting, such as turf, low groundcovers and climbers, may also be planted on top of these elements to provide greening and aesthetic effect.</p>	Work site / During design stage & operation period	N/A. To be implemented during operation phase of Project.
<i>Summary of Key Environmental Mitigation Measures in Contract Requirements</i>			
Air Quality	Only Ultra-low-sulphur diesel (ULSD) should be used for all diesel-operated plants and equipments on site	Work sites / during construction period	√
Air Quality and Noise	Plants and equipments of good operation conditions should be used on site.	Work sites / during construction period	√
Noise	No diesel hammers should be used for piling works	Work sites / during construction period	√
Noise	Construction Noise Permits (CNP) should be applied for works conducted outside non-restricted hours.	Work sites / during construction period	√
Noise	Quiet construction equipments and the quietest practicable working	Work sites / during construction period	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	methodologies should be adopted for works whenever feasible. Noise labels should be provided for air compressors. Hoods and cover panels of generators and air compressors should be closed during operation. Noise labels should be provided for air compressors and hand-held percussive breakers.		
Waste Management	Temporary works construction on site should minimize the use of timber to reduce the quantity of C&D waste generated during works period.	Work sites / during construction period	√
Landscape and Visual	Retained or to-be-transplanted trees on site should be properly protected from physical damages and soil compacts with temporary fencing or hessian armouring whenever feasible.	Work sites / during construction period	Δ

Remark:

- √ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by ATAL-Degrémont-China State JV
- Δ Deficiency of Mitigation Measures but rectified by ATAL-Degrémont-China State JV
- N/A Not Applicable in Reporting Period

Annex J

## Waste Flow Table

**Contract No. : DC/2008/03 - Design, Build and Operate Pillar Point Sewage Treatment Works**

**Monthly Summary Waste Flow Table**

Month	Actual Quantities of Inert C&D Materials (Public Fill) Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Rocks & Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	kilogram	kilogram
Nov 2010	2,248	0	0	0	2,248	60	100	0	0	0
Dec 2010	9316	0	0	0	9316	100	120	20	0	0 (see Note 3)
<b>Total</b>	<b>11,564</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11,564</b>	<b>160</b>	<b>220</b>	<b>20</b>	<b>0</b>	<b>0</b>

- Notes:
- (1) Metal and paper/cardboard packaging were collected by recycler for recycling.
  - (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material collected by recycler for recycling.
  - (3) No general refuse was sent to landfill in the reporting month.

Annex K

Environmental Complaint,  
Environmental Summons  
and Persecution Log



*Annex K Cumulative Complaint and Summons/Prosecutions Log*

<b>Reporting Month</b>	<b>Number of Complaints in Reporting Month</b>	<b>Number of Summons/Prosecutions in Reporting Month</b>
November 2010	0	0
December 2010	0	0
Overall Total	0	0

Annex L

## Construction Programme of the Project





Activity ID	Description	Original Duration	Cal	Early Start	Early Finish	Total Float	2010						2011													
							NOV		DEC		JAN		FEB		NOV		DEC		JAN		FEB					
							15	22	29	06	13	20	27	03	10	17	24	31	07	14	21	28	05	12	19	26
DPD803040	Admin Bldg: AIP E&M Checking and Approval	42	2	30SEP2010 A	29NOV2010	28d	DPD803040																			
DPD803100	Admin Bldg: E&M Equipment Submission	40	2	29DEC2010	06FEB2011	21d	DPD803100																			
DPD803200	Admin Bldg: E&M Equipment Approval	70	2	07FEB2011	17APR2011	21d	DPD803200																			
DPD803300	Admin Bldg: DDA E&M Detail Arrangement Drawing	40	2	20JAN2011	28FEB2011	355d	DPD803300																			
DPD803400	Admin Bldg: DDA E&M Detail Drg Check & Approval	70	2	01MAR2011	09MAY2011	355d	DPD803400																			
DPD804100	Admin Bldg: DDA Building Services Submission	63	2	29DEC2010	01MAR2011	297d	DPD804100																			
DPD804200	Admin Bldg: DDA Building Services Check&Approval	70	2	02MAR2011	10MAY2011	354d	DPD804200																			
DPD804300	Admin Bldg: DDA Building Services Drg Submission	65	2	31JAN2011	05APR2011	297d	DPD804300																			
DPD902130	Elect Bldg 1: AIP Civil GA Drg Submission	20	3	25NOV2010 A	22DEC2010	26d	DPD902130																			
DPD902140	Elect Bldg 1: AIP Civil Checking and Approval	36	2	23DEC2010	27JAN2011	38d	DPD902140																			
DPD902250	Elect Bldg 1: DDA Fdn / Structural Submission	40	3	28JAN2011	28MAR2011	24d	DPD902250																			
DPD902380	Elect Bldg 1: DDA Architectural Submission	15	3	22FEB2011	14MAR2011	193d	DPD902380																			
DPD902400	Elect Bldg 1: DDA Landscape Submission	15	3	22FEB2011	14MAR2011	193d	DPD902400																			
DPD902815	Elect Bldg 1: AIP E&M Checking and Approval	42	2	30SEP2010 A	29NOV2010	97d	DPD902815																			
DPD902820	Elect Bldg 1: E&M Equipment Submission	60	2	18DEC2010	15FEB2011	45d	DPD902820																			
DPD902830	Elect Bldg 1: E&M Equipment Checking & Approval	70	2	16FEB2011	26APR2011	45d	DPD902830																			
DPD902840	Elect Bldg 1: E&M Detail Arrangement Drawing	60	2	18DEC2010	15FEB2011	64d	DPD902840																			
DPD902850	Elect Bldg 1: E&M Detail Arrang't Drg Approval	70	2	16FEB2011	26APR2011	165d	DPD902850																			
DPD903330	Elect Bldg 2/3: AIP Civil GA Drg Submission	20	3	03DEC2010	31DEC2010	20d	DPD903330																			
DPD903340	Elect Bldg 2/3: AIP Civil Check and Approval	35	2	01JAN2011	04FEB2011	29d	DPD903340																			
DPD903450	Elect Bldg 2/3: DDA Fdn / Structural Submission	56	2	05FEB2011	01APR2011	29d	DPD903450																			
DPD903570	Elect Bldg 2/3: DDA Architectural Submission	15	3	21FEB2011	11MAR2011	204d	DPD903570																			
DPD903590	Elect Bldg 2/3: DDA Landscape Submission	15	3	21FEB2011	11MAR2011	204d	DPD903590																			
DPD903820	Elect Bldg 2/3: AIP E&M Checking and Approval	42	2	30SEP2010 A	29NOV2010	36d	DPD903820																			
DPD903830	Elect Bldg 2/3: E&M Equipment Submission	50	2	30NOV2010	18JAN2011	36d	DPD903830																			
DPD903840	Elect Bldg 2/3: E&M Equip't Checking & Appr	70	2	19JAN2011	29MAR2011	36d	DPD903840																			
DPD903850	Elect Bldg 2/3: DDA E&M Detail Arrangement Drg	50	2	25DEC2010	12FEB2011	67d	DPD903850																			
DPD903860	Elect Bldg 2/3: DDA E&M Detail Drg Approval	70	2	13FEB2011	23APR2011	431d	DPD903860																			
DPD916103	Mis: AIP E&M Checking and Approval	42	2	06OCT2010 A	28DEC2010	112d	DPD916103																			
DPD916105	Mis: AIP Civil GA Drg Submission	42	2	04OCT2010 A	03JAN2011	48d	DPD916105																			
DPD916106	Mis: AIP Civil Checking and Approval	35	2	04JAN2011	07FEB2011	48d	DPD916106																			
DPD916234	Mis: AIP Aesthetic&Landscape Approval	54	2	04JAN2011	26FEB2011	165d	DPD916234																			
DPD916236	Mis: DDA Civil Works Submission	40	3	08FEB2011	04APR2011	34d	DPD916236																			
DPD916365	Mis: DDA Landscape Submission	20	3	07FEB2011	07MAR2011	112d	DPD916365																			
DPD916368	Mis: DDA Landscape Checking & Approval	70	2	08MAR2011	17MAY2011	165d	DPD916368																			
DPD916810	Mis: AIP &M Submission	30	2	27SEP2010 A	29NOV2010	-5d	DPD916810																			
DPD916820	Mis: AIP E&M Checking and Approval	70	2	30NOV2010	07FEB2011	-5d	DPD916820																			
DPD916830	Mis: E&M Equipment Submission	90	2	08FEB2011	08MAY2011	-5d	DPD916830																			
DPD916850	Mis: E&M Detail Arrangement Drg Submission	90	2	08FEB2011	08MAY2011	-5d	DPD916850																			
<b>Statutory Submission</b>																										
<b>Submission and Approval</b>																										
SS0100050	DSD &ASD - GBP Submission and Approval	60	2	29NOV2010	27JAN2011	355d	SS0100050																			
SS0100100	DSD &ASD - Approve Architectural Design & Finish	0	2		27JAN2011	355d	SS0100100																			
SS0100190	DSD, AFCD & ASD - Landscape Submission /Approval	60	2	04JAN2011	04MAR2011	878d	SS0100190																			
SS0100200	DSD, AFCD& ASD - Approval for Landscaping Design	0	2		04MAR2011	878d	SS0100200																			
SS0100220	DSD, Lands - Tree Transplant Submit /Approval	28	2	11SEP2010 A	12DEC2010	0	SS0100220																			
SS0100230	DSD, LCSD & Lands - Approval for Tree Transplant	0	2		12DEC2010	0	SS0100230																			
SS0100290	GEO - Geotechnical Submission and Approval	60	2	01NOV2010 A	23JAN2011	1d	SS0100290																			
SS0100300	GEO - Approval for Geotechnical Matters	0	2		23JAN2011	1d	SS0100300																			
SS0100700	WSD & ASD - Approve Water Supply/Plumbing issue	60	2	29NOV2010	27JAN2011	731d	SS0100700																			
SS0100800	FSD - Approve Fire Safety / Services Aspects	60	2	29NOV2010	27JAN2011	48d	SS0100800																			
SS0100810	EPD - Register of Changes under Environ. Permit	35	1	13SEP2010 A	29DEC2010	21d	SS0100810																			
<b>Civil and Structural Works</b>																										
<b>Chemically Enhanced Primary Treatment System</b>																										
<b>Building and Structures</b>																										
CCC200110	CEPT Tank: Temporary Earth Lateral Support	100	1	13NOV2010 A	17JAN2011	6d	CCC200110																			
CCC200115	CEPT Tank: Commencement of Mini-pile	0	1	25JAN2011		0	CCC200115																			
CCC200120	CEPT Tank: Mini-pile and Testing	85	1	25JAN2011	16MAY2011	0	CCC200120																			
CCC200125	CEPT Tank: Bulk Excavation Phase 1	52	1	08NOV2010 A	31JAN2011	0	CCC200125																			
<b>New Preliminary Treatment Works</b>																										
<b>Building and Structures</b>																										
CCC100110	PTW : Temporary Earth Lateral Support	80	1	22NOV2010 A	30DEC2010	0	CCC100110																			
CCC100113	PTW: Bulk Excavation Phase 1	20	1	31DEC2010	24JAN2011	0	CCC100113																			
CCC100115	PTW: Commencement of Mini-pile	0	1	25JAN2011		0	CCC100115																			
CCC100120	PTW: Mini-pile Construction and Testing	54	1	25JAN2011	02APR2011	0	CCC100120																			

Start date 14JUL2010  
Finish date 20DEC2013  
Data date 29NOV2010  
Run date 29DEC2010  
Page number 3A  
Project name WP01  
c Primavera Systems, Inc.

**PPSTW Three Months Rolling Programme - December 2010 to February 2011**

Early bar  
Progress bar  
Critical bar  
Summary bar  
Start milestone point  
Finish milestone point