

ATAL-Degrémont-China State Joint Venture

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

August 2012

**Environmental Resources Management**

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Point Sewage Treatment Works:  
*Twenty-first Monthly EM&A Report*

August 2012

Reference 0119806

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	Frank Wan
Signed:	
Position:	Partner
Certified by:	 (Environmental Team Leader – Winnie Ko)
Certified by:	 (Registered Landscape Architect (R078) - Christina Ip)
Date:	12 August 2012

Your Ref:  
Our Ref: 60017423/C/llmc12081004

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

Drainage Services Department  
Sewage Services Branch  
Harbour Area Treatment Scheme Division  
5/F., Western Magistracy,  
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Hong Kong.

Attn: Mr. Kenley C.K. KWOK (T: 2159 3409)

10 August 2012

Dear Sir,

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

**Monthly EM&A Report for July 2012**

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for July 2012 provided by email dated 7 and 10 August 2012. 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 3922 9393.

Yours faithfully,

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 21<sup>st</sup> monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 July 2012 in accordance with the EM&A Manual.

### Summary of Construction Works undertaken during the Reporting Month

Works undertaken in the reporting month include:

- Constructing second floor slab, wall, column and beam at the Administration Building;
- Constructing foundation, water tank and backfilling at the Sludge Dewatering Building;
- Constructing wall and floor slab at the PTW area of P2;
- Water test and constructing wall and floor slab at the CEPT area of P2;
- Constructing wall, roof slab and finishing work at the Electrical Building No. 1;
- Constructing manhole and trench walls at the UV building;
- Constructing roof slab, backfilling and water test at the Septic Waste Reception Station;
- Constructing roof and wall at the Reuse Water Pump Room;
- Excavating and backfill at the DOUA and Chemical building;
- Constructing floor slab and trench at Electrical building No.3 and No.4; and
- Backfilling for the whole site;

### 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) 5 sets
- 1-hour TSP Monitoring at each monitoring station (AM1 and AM2) 15 sets
- Joint Environmental Site Inspection 4 times
- Landscape & Visual Monitoring Once

### Air Quality

5 sets of 24-hour TSP and 15 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 3,972 tonnes of inert C&D material were generated, in which

3,372 tonnes were disposed of at the Tuen Mun Area 38 Fill Bank and 600 tonnes of inert C&D materials reused on site. 50 tonnes of rock & broken concrete were generated in July. 40 kg of metal and 20 kg of paper/cardboard packing were sent to recyclers for recycling during the reporting period. 20 kg of plastics were sent to recyclers for recycling during the reporting period.

#### Environmental Site Inspection

Four 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

Review on landscape and visual mitigation measures was performed on 20 July 2012. 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 summon/prosecution was received in this reporting period.

#### Future Key Issues

Works to be undertaken in the next reporting month include:

- Constructing the root slab, wall, columns and beams at the Administration Building;
- Constructing structure, water tank and backfilling at the Sludge Dewatering Building;
- Constructing wall and floor slab at the PTW area of P2;
- Water test, constructing wall and floor slab at the CEPT area of P2
- Finishing work at the Electrical Building No.1;
- Constructing manhole and trench walls at the UV building;
- Constructing floor slab, water test and backfilling at the Septic Waste Reception Station;
- Constructing wall and roof at the Reuse Water Pump Room;
- Backfill and constructing raft slab at the DOUA and the Chemical Building;
- Constructing floor slab and trench at the Electrical building No.3 and No.4; and
- Backfilling and drainage works for the whole site.

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 the Environmental Team (ET) to undertake the 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 21<sup>st</sup> 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 July 2012.

## 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**

summarises 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 the 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 to the north of the Tuen Mun River Trade Terminal and is abutting the Lung Mun Road to its north. It is a preliminary treatment works with screening and grit removal processes with treated effluent discharged to the sea (North Western Water Control Zone) via a twin submarine outfall. 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 to 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 pollution loadings to the receiving waters.

The upgrading of 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% of 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, an 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 for completion 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 the 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**

Construction Activities Undertaken
<ul style="list-style-type: none"><li>• Constructing second floor slab, wall, column and beam at the Admin Building;</li><li>• Constructing foundation, water tank and backfilling at the Sludge Dewatering Building;</li><li>• Constructing wall and floor slab at the PTW area of P2;</li><li>• Water test and constructing wall and floor slab at the CEPT area of P2;</li><li>• Constructing wall, roof slab and finishing work at the Electrical Building No. 1;</li><li>• Constructing manhole and trench walls at the UV building;</li><li>• Constructing roof slab, backfilling and water test at the Septic Waste Reception Station;</li><li>• Constructing roof and wall at the Reuse Water Pump Room;</li><li>• Excavating and backfill at the DOUA and Chemical building;</li><li>• Constructing floor slab and trench at Electrical building Nos.3 and No.4; and</li><li>• Backfilling for the whole site.</li></ul>

### 2.4 PROJECT ORGANISATION AND MANAGEMENT STRUCTURE

The project organisation 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**

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
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	Till 31 December 2015	Wastewater discharge licence was issued by EPD on 7 December 2010.

<b>Permit/ Licences/ Notification</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Construction Noise Permit	GW-RW031-12	28 January 2012 – 27 July 2012	Superseded by GW-RW0535-12
	GW-RW0535-12	28 July 2012 – 27 January 2013	-
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 given 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 has been conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. 1-hour and 24-hour TSP levels have been monitored at the frequency and duration stated in *Table 3.2*. The construction phase TSP monitoring has been 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 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 3.4** *TSP Monitoring Equipment*

<b>Monitoring Station</b>	<b>Monitoring Equipment (HVS and Calibrator)</b>
<i>24-hr and 1-hr TSP</i>	
AM1	GMW GS-2310 (S/N 7580), CM-AIR-43 (S/N 0438320)
AM2	GMW GS-2310 (S/N 1252), CM-AIR-43 (S/N 0438320)

### 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 and 1.37 m<sup>3</sup> min<sup>-1</sup> which were within the range specified in the EM&A Manual (ie 0.6 to 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 approved 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 5 sets of 24-hour and 15 sets of 1-hour TSP measurements were taken 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 for the past 4 months are presented in *Annex F*. The weather conditions during the monitoring period were ranged from sunny to rainy. 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.

Wastes generated from this Project include 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 others at public fill. Reference has been made to the Monthly Summary Waste Flow Table prepared by the Contractor (see *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 6.1*. The public fill and construction waste generated from the Project have been disposed of at the Tuen Mun Area 38 Fill Bank and WENT Landfill, respectively. 50 tonnes of rocks & broken concrete were generated in July. 40 kg of metals was sent to recyclers for recycling during the reporting period. 20 kg of papers/ cardboard packing and 20 kg 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 Fill Banks (inert) <sup>(a)</sup>	C&D Materials Disposed of at Landfill (Non-inert) (Construction waste) <sup>(b) (c)</sup>	Chemical Waste
July 2012	3,372 tonnes	100.5tonnes	0 L

**Notes:**

- (a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated soil. A total 3,972 tonnes of inert C&D waste were generated, in which 3,372 tonnes were disposed of at the Tuen Mun Area 38 Fill Bank and 600 tonnes of inert C&D materials reused on site. 50 tonnes of rocks & broken concrete were generated in July. The detailed waste flow is presented in *Annex J*.
- (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 others at the public fill. 100.5 tonnes of general refuse is recorded in the reporting month. Construction wastes other than metals and paper/cardboard packaging were disposed of at WENT Landfill. 40 kg of metals was sent to recyclers for recycling during the reporting period. 20 kg of papers/ cardboard packing and 20 kg of plastics were sent to recyclers for recycling during the reporting period.
- (c) General refuse was disposed of at WENT by subcontractors.

### 7.1 WEEKLY SITE AUDITS

Joint site inspections were conducted by representatives of the Contractor, the SOR and the ET on 6, 13, 20 and 27 July 2012. The IEC was also present at the joint inspection on 27 July 2012.

Major observations during the reporting period were summarised as follows:

6 July 2012

- Labels for retained trees at P2 next to tree nos. 175, 182 and 265 were observed missing. The Contractor was reminded to re-tag the trees and conduct regular checking, especially after adverse weather.
- The branches of retained tree nos. 142 and 146 at P2 were observed broken. The Contractor was reminded to avoid operating heavy machinery near the trees. The Contractor was also reminded to have close monitoring on the condition of the trees and implement proper measures to protect the trees on site.
- Oil spillages and oily water were observed on the top of two chemical drums near the stockpile area at P2. The Contractor was reminded to clear and dispose them as chemical waste properly. Also, the chemical drums were observed without drip trays. The Contractor was reminded to provide drip trays to all chemical drums on site and cover them with impervious sheet when unused.
- Overflow was observed from the chemical enhanced sedimentation facility near the Inlet Pumping Station during the site inspection. The Contractor was reminded to adjust the influent flow according to the performance of the facility regularly. The Contractor was also reminded to maintain proper function of the facility.

13 July 2012

- A pile of plastic pipes were stored at the space between the retained trees nos. 19 and 20. The Contractor was reminded to remove the pile away from the trees and no material storage should be allowed to be stored near the trees.
- The Chemical drums near the stockpile covered by impervious sheet were observed without drip trays. The Contractor was reminded to provide drip trays to all chemical drums on site and cover them with impervious sheet when unused.

- Stagnant water was observed near the sludge dewatering building. The Contractor was reminded to clear the stagnant water to prevent breeding of mosquito.

20 July 2012

- Piles of plastic pipes and sand bag were stored at the space between the retained trees nos.15 and 21. The Contractor was reminded to remove the piles away from the trees and no material storage should be allowed to be stored near the trees.
- The Chemical drums near the stockpile were observed being stored without drip trays and impervious sheet. The Contractor was reminded to provide drip trays to all chemical drums on site and cover them with impervious sheet when unused.

27 July 2012

- Piles of plastic pipes and sand bag were still stored at the space between the retained trees nos.15 and 21. The Contractor was reminded to remove the piles away from the trees and no material storage should be allowed to be stored near the trees.
- The Chemical drums near the stockpile were still observed being stored without drip trays and impervious sheet. The Contractor was reminded to provide drip trays to all chemical drums on site and cover them with impervious sheet when unused.
- Peeled-off bark and broken branch were observed on trees T142 and T146. The Contractor was reminded to avoid operating heavy machinery near the trees, to fence-off the trees and provide briefing to workers on the proper care of the trees within construction site. Also the Contractor was reminded to prune the broken branches to avoid potential danger.
- Silt was observed on the ground next to the chemical enhanced sedimentation tank near gate 1. The Contractor was reminded to remove the silt to prevent runoff of silt into the manhole and/or bunding should be provided around the manhole.
- Three trees without labels were found at T1 tree nursery area. The Contractor was reminded to tag tree labels on all the trees.
- Climbers were still found on the main trunk of T181. The Contractor was reminded to remove the climbers.
- Tree T14 at P2, tree no. 381 and an unlabeled tree next to tree no. 381 at T1 were observed felled on the ground after typhoon. The Contractor was recommended that it should be inspected by the Contractor's certified arborist as soon as possible and remediation actions should be undertaken as per the arborist's recommendation.

- Silty water discharge to the planting area was observed near Gate no. 1. The Contractor was requested to block the discharge immediately and was reminded to divert the discharge to the sedimentation tank.
- Excavated material was found mixing with general refuse in the waste skip located near Gate no. 2. The Contractor was reminded to implement on-site sorting properly.
- Barriers and wooden board were placed close to the Tree no. 146. The Contractor was reminded to remove all material/waste away from the root zone of the tree.
- Drums of chemical stored near the workshop were placed in bare ground. The Contractor was reminded to place chemical inside the drip tray to retain any leaked chemical.

Follow-up actions were taken 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. A review of landscape and visual mitigation measures was performed on 20 July 2012. The IEC was present at the joint inspection on 27 July 2012. It was confirmed that most of the necessary landscape and visual mitigation measures as summarised in *Annex I* were implemented by the Contractor. The major findings were summarised as follow:

20 July 2012

- Three trees without labels were found at T1 tree nursery area. The Contractor was reminded to tag tree labels on all the trees.
- Climbers were found on the main trunk of T181. The Contractor was reminded to remove the climbers.
- Two trees including T142 and T146 were observed broken. Peeled-off bark and broken branch were observed. The Contractor was reminded to avoid operating heavy machinery near the trees, to fence-off the trees and provide briefing to workers on the proper care of the trees within construction site. Also the Contractor was reminded to prune the broken branches to avoid potential danger.

The Contractor was reminded to implement the follow-up actions and that 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 of 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 Summon and Successful Prosecution*

No summon 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>
<ul style="list-style-type: none"> <li>• Constructing the root slab, wall, columns and beams at the Admin Building;</li> <li>• Constructing structure, water tank and backfilling at the Sludge Dewatering Building;</li> <li>• Constructing wall and floor slab at the PTW area of P2;</li> <li>• Water test, constructing wall and floor slab at the CEPT area of P2</li> <li>• Finishing work at the Electrical Building No.1;</li> <li>• Constructing manhole and trench walls at the UV building;</li> <li>• Constructing floor slab, water test and backfilling at the Septic Waste Reception Station;</li> <li>• Constructing wall and roof at the Reuse Water Pump Room;</li> <li>• Backfill and constructing raft slab at the DOUA and the Chemical Building;</li> <li>• Constructing floor slab and trench at the Electrical building No.3 and No.4; and</li> <li>• Backfilling and drainage works for the whole site.</li> </ul>

Potential environmental impacts arising from the above construction activities will mainly be 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 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 has included only qualitative assessment of dust impact during construction phase, a comparison was made between the monitoring results from the start of the Project and the Hong Kong Air Quality Objectives (HKAQO) (see *Table 10.1*).

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

Monitoring Station	Corresponding ASR in EIA	HKAQO, ug m <sup>-3</sup>	Measured 24-hour TSP Monitoring Results, ug m <sup>-3</sup> (a) (b)	
		24 hour (1)	Average	Range
AM1	A1	260	73	53 - 100
AM2	A7	260	79	51 - 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 have been well below the 24-hour TSP criterion in the HKAQO. Recommended mitigation measures in *Section 3.7.1.1* of EIA have been implemented throughout the construction period and were considered effective.

### 10.2 WASTE MANAGEMENT

The estimated amount of waste generated from the Project and the cumulative quantities of waste generated up to this reporting month are presented in *Table 10.2*. The amount of inert C&D material sent to public fills is higher than the estimated amount in EIA. With reference to the C&D Material Assessment (Contractor's General Submission (CSF) No.: DC200803/CSF/SAF/060026/A), the difference in quantity is mainly due to differences in excavation depths and excavation methods in the Contract Works and that assumed in the Reference Design. Recommended mitigation measures in *Sections 7.5.1.1* to *7.5.1.9* of the EIA will continue to be implemented during the construction stage.

**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)	Estimated Amount of Public Fill and Construction Waste in C&D Material Assessment (CSF No.: DC200803/CSF/SAF/060026/A) <sup>(c)</sup>	Accumulated Actual Amount of Public Fill and Construction Waste Recorded <sup>(a) (b) (d)</sup> (inert & non-inert)
Amount of C&D Materials Arising	61,489 m <sup>3</sup>	77,600 m <sup>3</sup>	95710.0 m <sup>3</sup>
Amount of C&D Materials Reused on other site	-	-	3163.9 m <sup>3</sup>
Amount of C&D Materials Reused on site	14,926 m <sup>3</sup>	18,000 m <sup>3</sup>	5385.6 m <sup>3</sup>
Amount of C&D Materials Sent to Fill Banks	46,563m <sup>3</sup>	59,600 m <sup>3</sup>	87160.6 m <sup>3</sup>
General Refuse	Small	-	595.9 tonnes
Chemical Waste	Small	-	810.0 L

**Notes:**

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

(b) The density of soil and rock (bulked) is 1.8 tonnes/m<sup>3</sup>.

(c) The estimated amount of C&D material generated from the Contract Works was revised in the C&D Material Assessment and submitted to the SO on 9 September 2010 (CSF No.: DC200803/CSF/SAF/060026/A) due to the new plant & facility layout.

**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 have also indicated the same so far. Mitigation measures recommended in the EP, EIA and EM&A Manual will continue to be implemented throughout the construction phase of the Project.

This EM&A Report presents the EM&A programme undertaken during the reporting period from 1 to 31 July 2012 in accordance with EM&A Manual and 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 are required by the Contractor to improve protection measures on the 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 of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures in the coming periods.

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

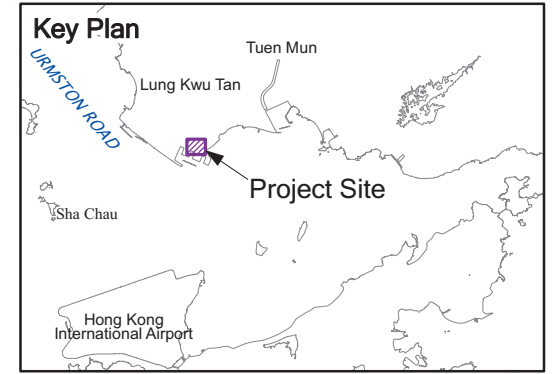
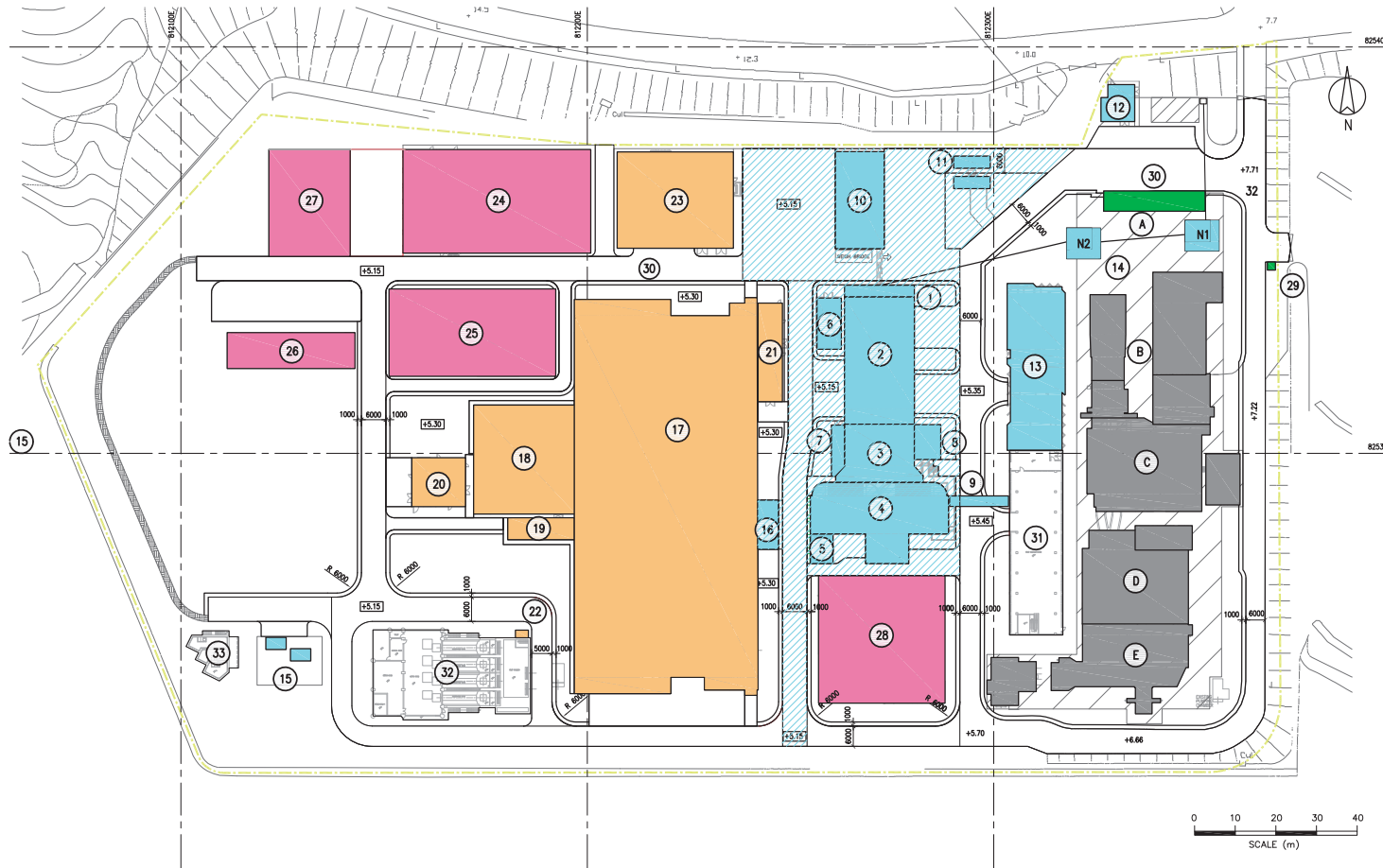
- ⑬ ADMINISTRATION BUILDING
- ⑭ INLET CHAMBERS
- ⑮ PAYMENT FLOWMETER CHAMBER
- ⑯ CEPT INLET CHAMBER

**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**

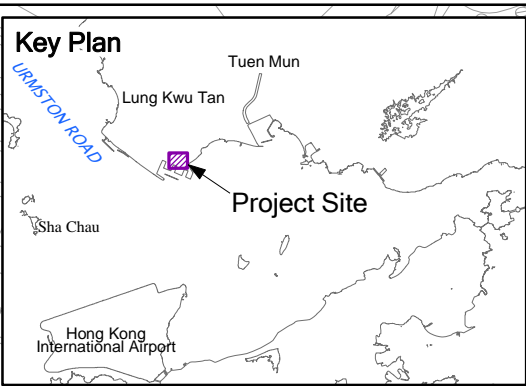
- ⑳ GATE HOUSE
- ㉑ CAR PARK

**EXISTING BUILDING TO BE RETAINED**

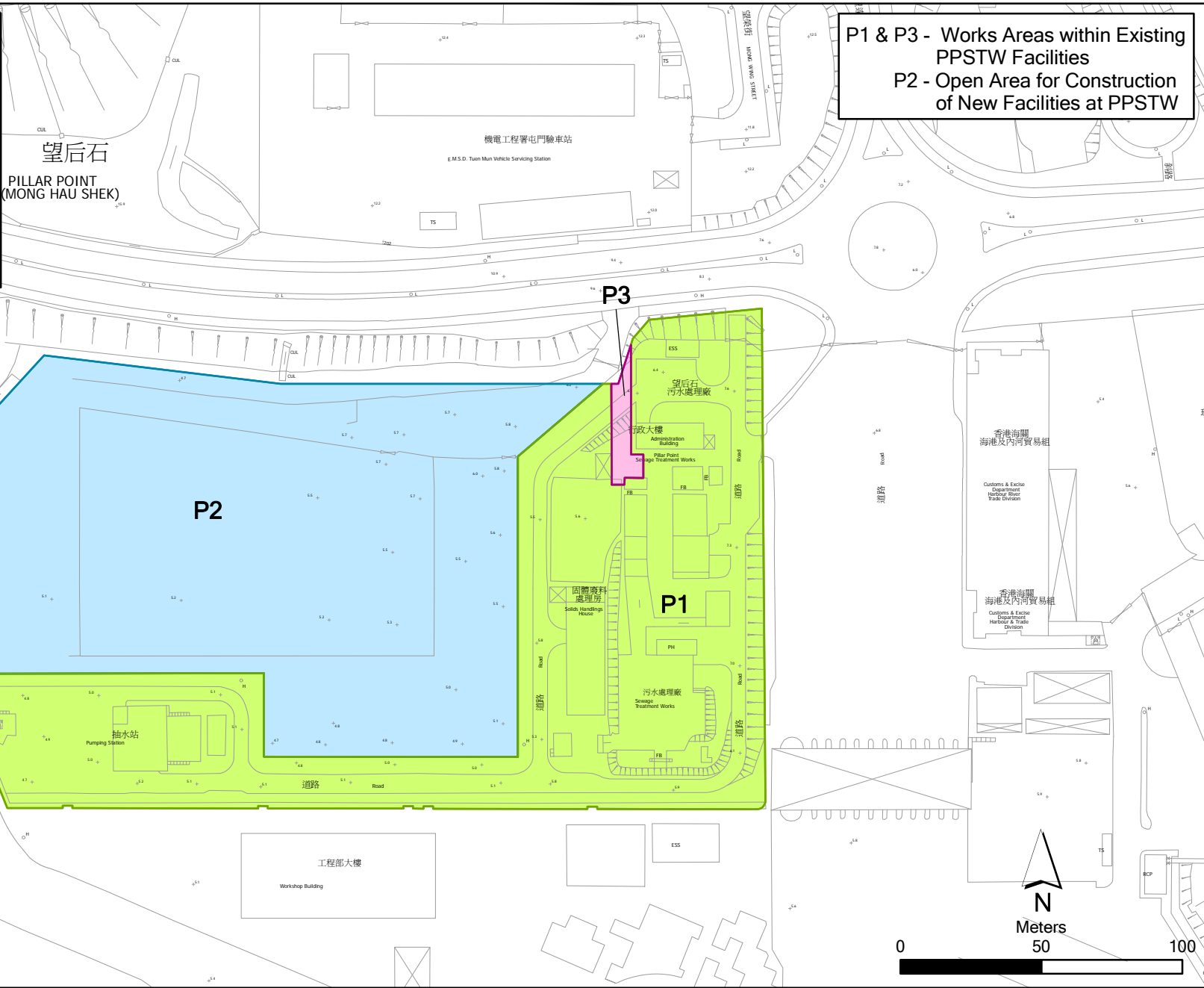
- ㉒ EXISTING SOLID HANDLING BUILDING
- ㉓ EXISTING OUTFALL PUMPING STATION
- ㉔ EXISTING TERMINAL MANHOLE

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

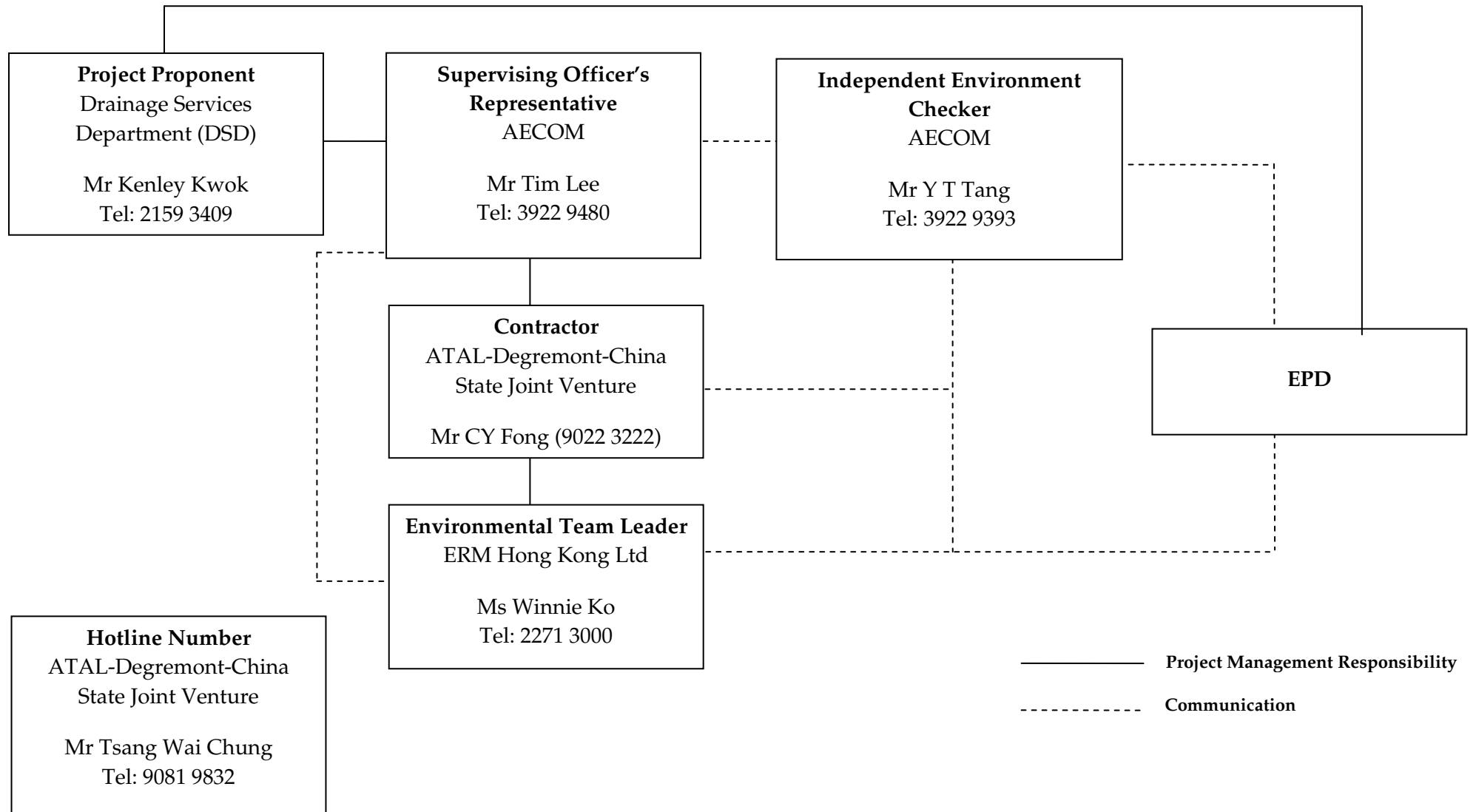




Annex C

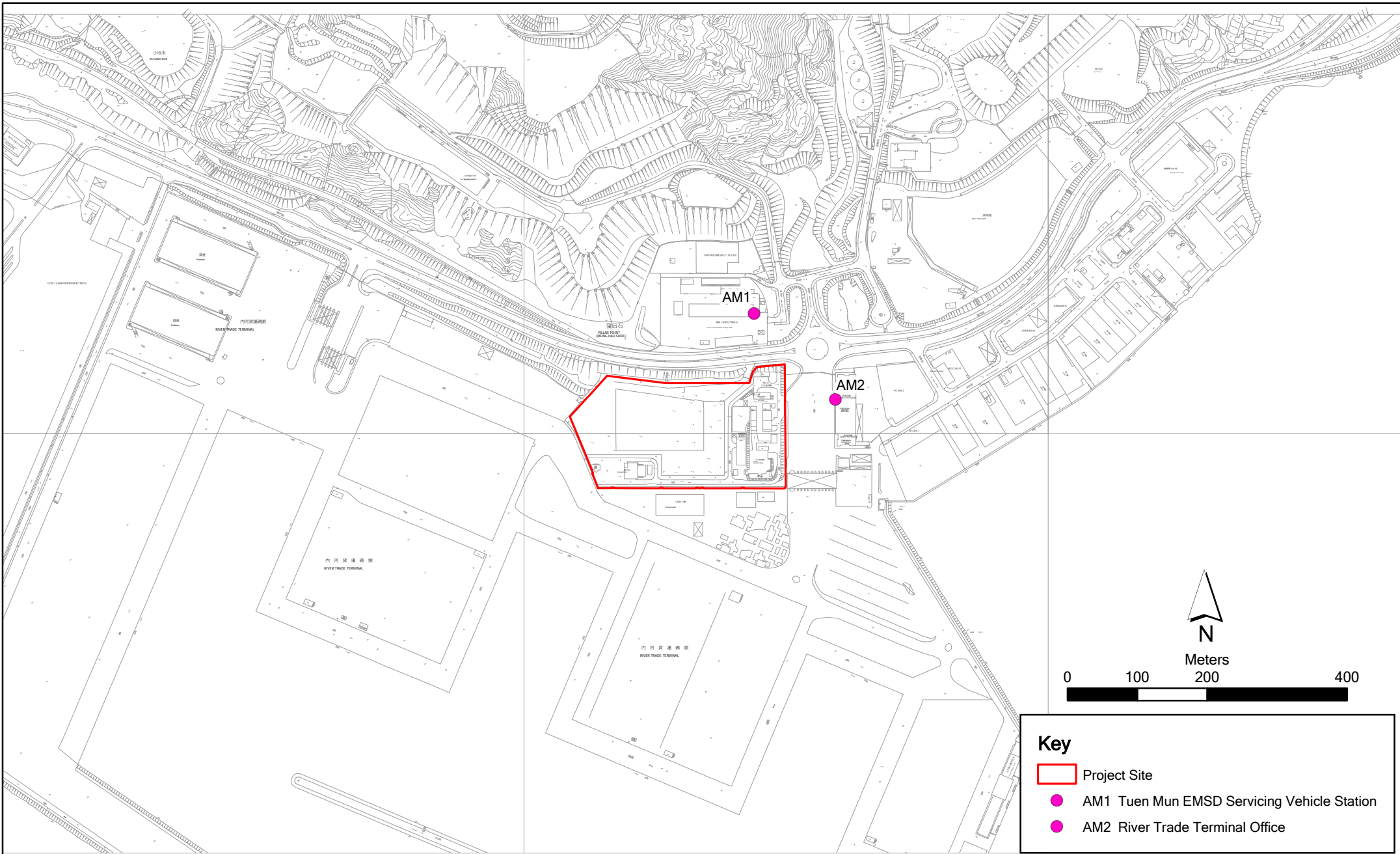
## Project Organization Chart with Contact Details

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**





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)  
July 2012**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul
	Public holiday				3X1-hr & 1X 24-hr TSP	
8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul
				3X1-hr & 1X 24-hr TSP		
15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
			3X1-hr & 1X 24-hr TSP			
22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
		3X1-hr & 1X 24-hr TSP				
29-Jul	30-Jul	31-Jul				
	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)  
August 2012**

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



Annex F

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

## 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
06/07/2012	13:10	14:10	Sunny	104	343	500	Construction work in progress	31	*	7580	4590
	14:10	15:10	Sunny	107	343	500	Construction work in progress	31	*	7580	4591
	15:10	16:10	Sunny	106	343	500	Construction work in progress	31.5	*	7580	4592
12/07/2012	13:10	14:10	Sunny	99	343	500	Construction work in progress	32	*	7580	4604
	14:10	15:10	Sunny	98	343	500	Construction work in progress	32.5	*	7580	4661
	15:10	16:10	Sunny	114	343	500	Construction work in progress	33	*	7580	4662
18/07/2012	13:10	14:10	Fine	81	343	500	Construction work in progress	31	*	7580	4677
	14:10	15:10	Fine	96	343	500	Construction work in progress	31	*	7580	4678
	15:10	16:10	Fine	98	343	500	Construction work in progress	31	*	7580	4679
24/07/2012	10:55	11:55	Rainy	99	343	500	Construction work in progress	27	*	7580	4738
	11:55	12:55	Rainy	103	343	500	Construction work in progress	27	*	7580	4734
	12:55	13:55	Rainy	84	343	500	Construction work in progress	27.5	*	7580	4735
30/07/2012	13:10	14:10	Sunny	107	343	500	Construction work in progress	31.5	*	7580	4743
	14:10	15:10	Sunny	108	343	500	Construction work in progress	32	*	7580	4744
	15:10	16:10	Sunny	111	343	500	Construction work in progress	32.5	*	7580	4745
				<b>Min.</b>	<b>81</b>						
				<b>Max.</b>	<b>114</b>						
				<b>Average</b>	<b>101</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 (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed* (m/s)	Sampler ID	Filter ID
06/07/2012	13:00	14:00	Sunny	108	383	500	Construction work in progress	31	*	1252	4586
	14:00	15:00	Sunny	110	383	500	Construction work in progress	31	*	1252	4587
	15:00	16:00	Sunny	97	383	500	Construction work in progress	31.5	*	1252	4588
12/07/2012	13:00	14:00	Sunny	124	343	500	Construction work in progress	32	*	1252	4603
	14:00	15:00	Sunny	104	343	500	Construction work in progress	32.5	*	1252	4605
	15:00	16:00	Sunny	122	343	500	Construction work in progress	33	*	1252	4606
18/07/2012	13:00	14:00	Fine	94	383	500	Construction work in progress	31	*	1252	4673
	14:00	15:00	Fine	89	383	500	Construction work in progress	31	*	1252	4674
	15:00	16:00	Fine	88	383	500	Construction work in progress	31	*	1252	4675
24/07/2012	10:45	11:45	Rainy	86	383	500	Construction work in progress	27	*	1252	4729
	11:45	12:45	Rainy	96	383	500	Construction work in progress	27	*	1252	4730
	12:45	13:45	Rainy	96	383	500	Construction work in progress	27.5	*	1252	4731
30/07/2012	13:00	14:00	Sunny	111	383	500	Construction work in progress	31.5	*	1252	4739
	14:00	15:00	Sunny	114	383	500	Construction work in progress	32	*	1252	4740
	15:00	16:00	Sunny	107	383	500	Construction work in progress	32.5	*	1252	4741
				<b>Min.</b>	<b>86</b>						
				<b>Max.</b>	<b>124</b>						
				<b>Average</b>	<b>103</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									
06/07/2012	16:10	7-Jul-12	16:10	Sunny	2.7014	2.8406	13007.18	13031.18	24.00	1.23	1.23	1.23	79	183	260	Construction work in progress	7580	4593			
12/07/2012	16:10	13-Jul-12	16:10	Sunny	2.8289	2.9552	13034.18	13058.18	24.00	1.23	1.23	1.23	71	183	260	Construction work in progress	7580	4663			
18/07/2012	16:10	19-Jul-12	16:10	Fine	2.8499	2.9771	13061.18	13085.18	24.00	1.23	1.23	1.23	72	183	260	Construction work in progress	7580	4680			
24/07/2012	13:55	25-Jul-12	13:55	Cloudy	2.8004	2.9221	13088.18	13112.18	24.00	1.23	1.23	1.23	69	183	260	Construction work in progress	7580	4736			
30/07/2012	16:10	31-Jul-12	16:10	Sunny	2.7998	2.9290	13115.18	13139.18	24.00	1.23	1.23	1.23	73	183	260	Construction work in progress	7580	4746			
													Min.	69							
													Max.	79							
													Average	73							

### 24-hour TSP Monitoring Results

#### Station AM2

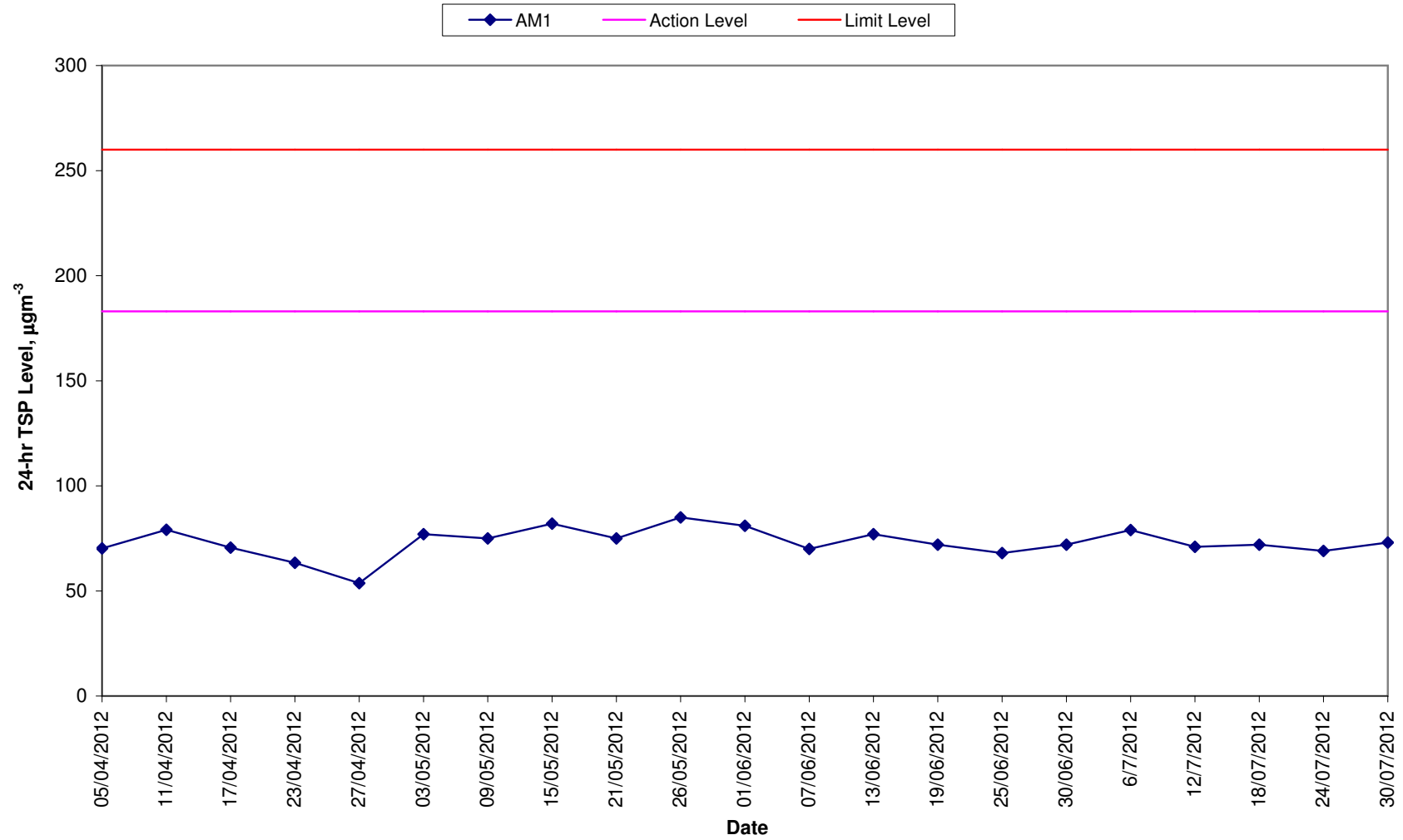
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			TSP Conc. (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Observations / Remarks	Sampler ID	Filter ID			
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average									
06/07/2012	16:00	7-Jul-12	16:00	Sunny	2.6904	2.8300	21024.20	21048.20	24.00	1.20	1.20	1.20	81	192	260	Construction work in progress	1252	4589			
12/07/2012	16:00	13-Jul-12	16:00	Sunny	2.8419	2.9710	21051.20	21075.20	24.00	1.20	1.20	1.20	72	192	260	Construction work in progress	1252	4660			
18/07/2012	16:00	19-Jul-12	16:00	Fine	2.8523	2.9806	21078.20	21102.20	24.00	1.20	1.20	1.20	74	192	260	Construction work in progress	1252	4676			
24/07/2012	13:45	25-Jul-12	13:45	Cloudy	2.8034	2.9225	21105.20	21129.20	24.00	1.20	1.20	1.20	69	192	260	Construction work in progress	1252	4732			
30/07/2012	16:00	31-Jul-12	16:00	Sunny	2.7935	2.9292	21132.20	21156.20	24.00	1.20	1.20	1.20	79	192	260	Construction work in progress	1252	4742			
													Min.	69							
													Max.	81							
													Average	75							

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tuen Mun Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
7/6/2012	Sunny	29.1	75 - 91	0.8	9.0	SE
7/7/2012	Sunny	29.8	63 - 95	2.7	12.0	SE
7/12/2012	Sunny	30.2	59 - 85	1.3	9.0	S
7/13/2012	Sunny	29.4	70 - 93	9.0	11.0	S
7/18/2012	Fine	28.9	68 - 98	34.3	9.0	SE
7/19/2012	Fine	30.6	60 - 88	Trace	6.0	SE
7/24/2012	Cloudy	27.4	86 - 97	99.5	24.0	N
7/25/2012	Cloudy	26.4	89 - 98	82.3	20.0	SE
7/30/2012	Sunny	29.9	51 - 88	0.0	6.0	S
7/31/2012	Sunny	29.4	63 - 89	9.5	6.0	S

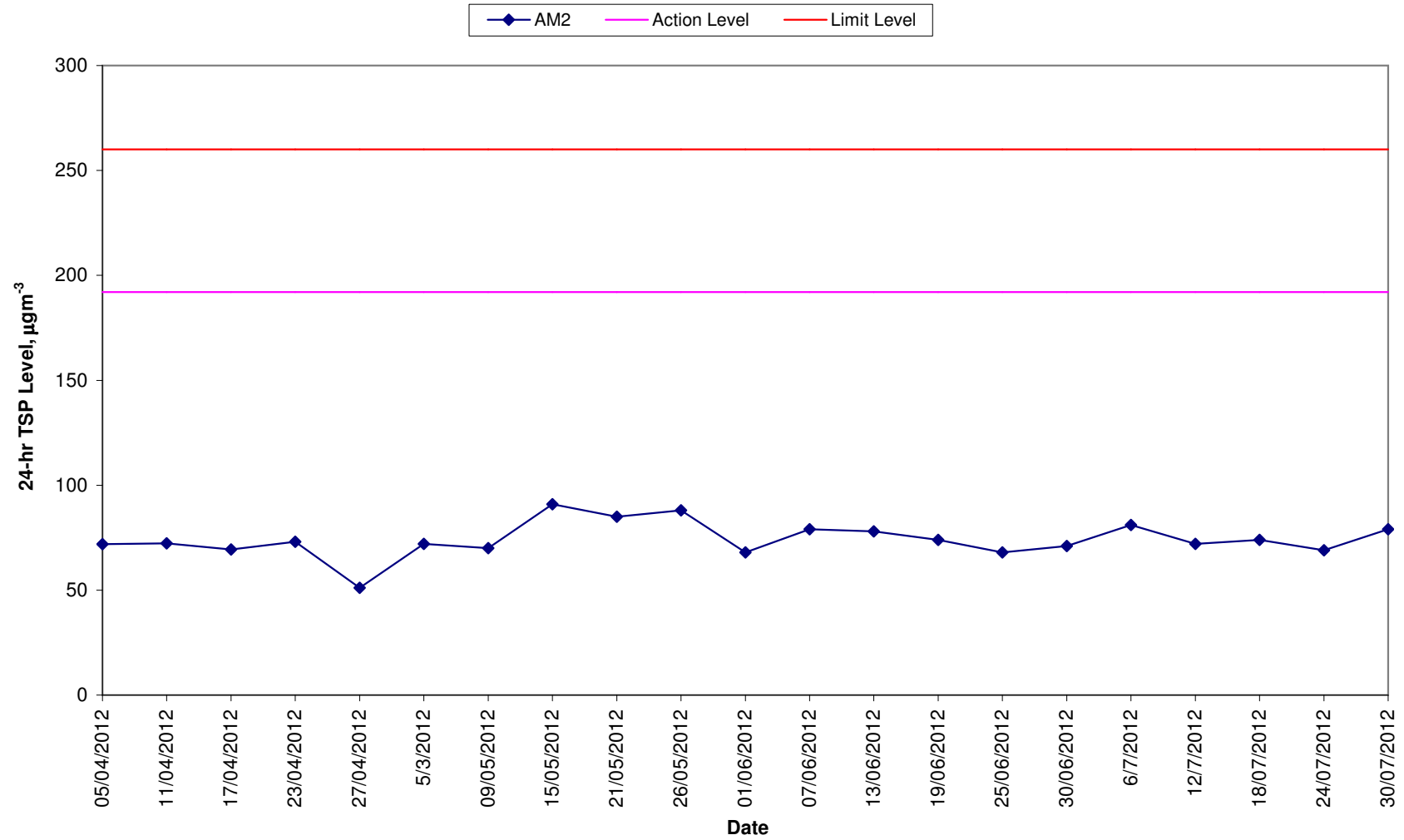
# Annex F TSP Monitoring Results

## 24-hr TSP Levels for the Past 4 Months AM1 (Tuen Mun EMSD Vehicle Servicing Station)



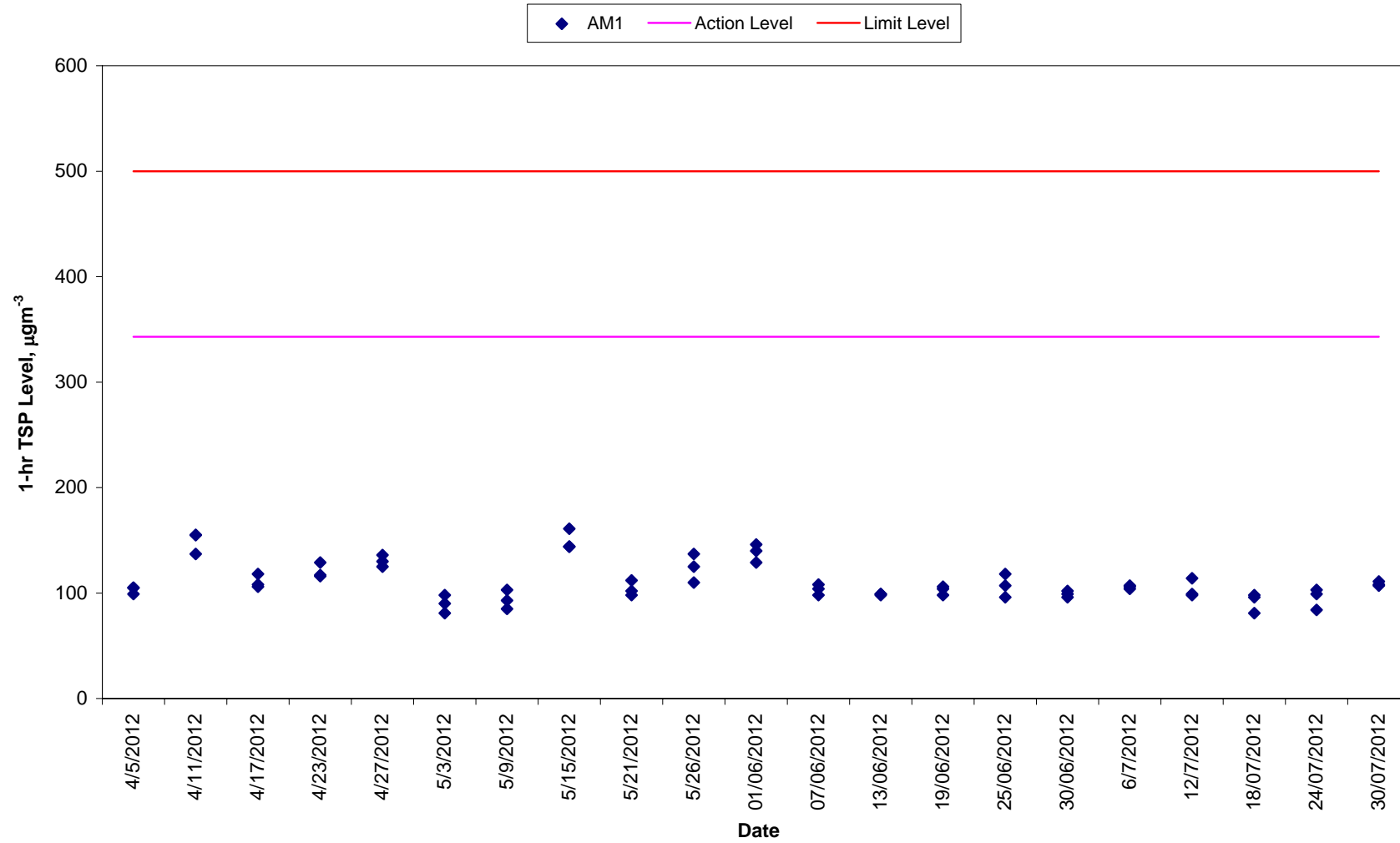
# Annex F TSP Monitoring Results

## 24-hr TSP Levels for the Past 4 Months AM2 (River Trade Terminal Office)



# Annex F TSP Monitoring Results

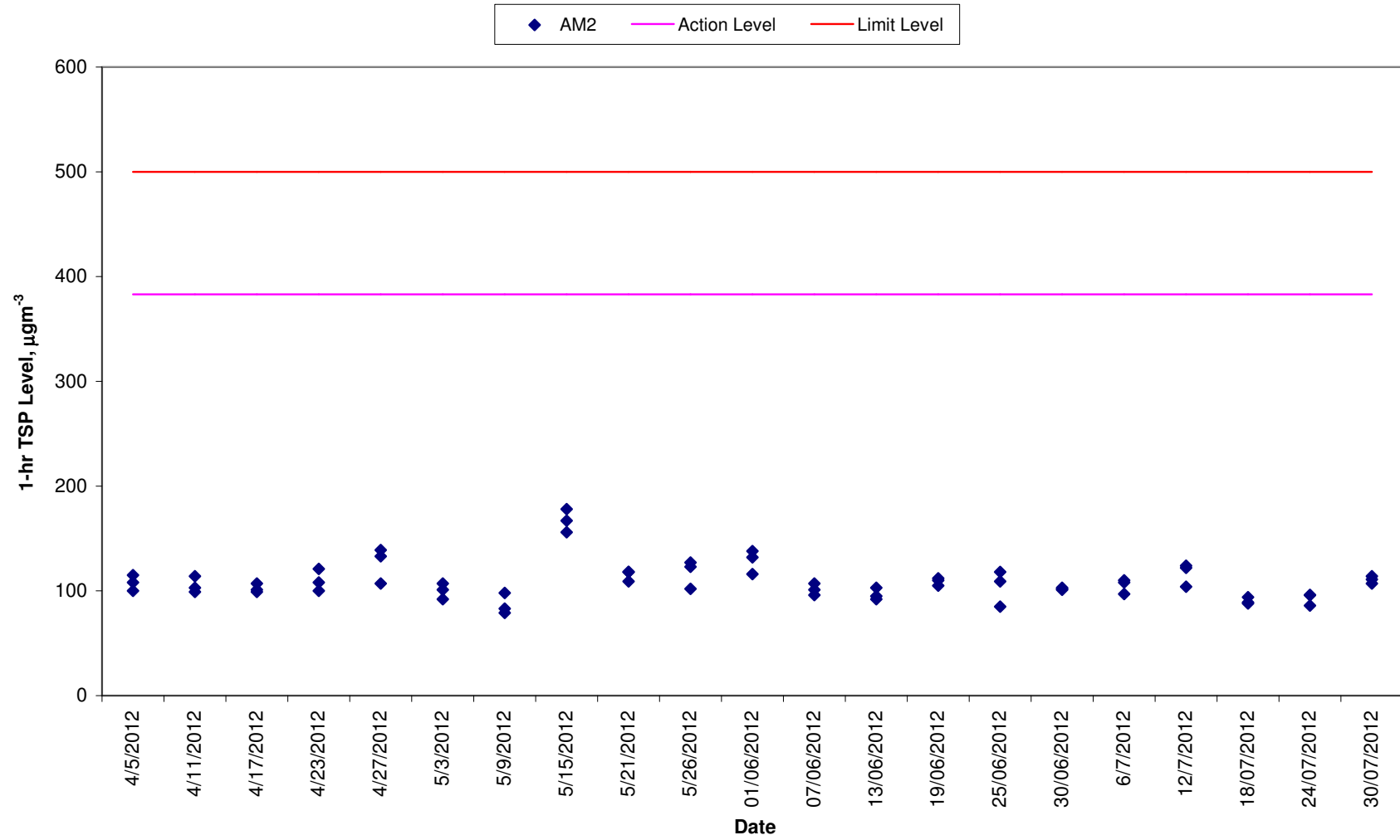
## 1-hr TSP Levels for the Past 4 Months AM1 (Tuen Mun EMSD Vehicle Servicing Station)





# Annex F TSP Monitoring Results

## 1-hr TSP Levels for the Past 4 Months AM2 (River Trade Terminal Office)



Annex G

## Calibration Reports for HVSs

High-Volume TSP Sampler  
5-Point Calibration Record

Location : EMSD  
 Calibrated by : P.F.Yeung  
 Date : 04/05/2012

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 1378  
 Service Date : 22 Feb 2012  
 Slope (m) : 1.99405  
 Intercept (b) : -0.00397  
 Correlation Coefficient(r) : 0.99999

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007  
 Ta(K) : 302

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.3	3.329	1.671	53	52.5
2   13 holes	9.5	3.053	1.533	48	47.5
3   10 holes	7.1	2.639	1.326	40	39.6
4   7 holes	4.5	2.101	1.058	30	29.7
5   5 holes	2.6	1.597	0.807	20	19.8

Sampler Calibration Relationship

Slope(m):37.804 Intercept(b): -10.517 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 10/05/2012

High-Volume TSP Sampler  
5-Point Calibration Record

Location : River Trade  
 Calibrated by : P.F.Yeung  
 Date : 04/05/2012

Sampler

Model : GMWS-2310 ACCU-VOL  
 Serial Number : S/N 1252

Calibration Office and Standard Calibration Relationship

Serial Number : 1378  
 Service Date : 22 Feb 2012  
 Slope (m) : 1.99405  
 Intercept (b) : -0.00397  
 Correlation Coefficient(r) : 0.99999

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007  
 Ta(K) : 302

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.2	3.315	1.663	64	63.4
2   13 holes	9.1	2.988	1.500	56	55.5
3   10 holes	7.3	2.676	1.345	49	48.5
4   7 holes	4.6	2.124	1.070	36	35.7
5   5 holes	2.6	1.597	0.807	23	22.8

Sampler Calibration Relationship

Slope(m):47.164 Intercept(b): -15.066 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 10/05/2012

High-Volume TSP Sampler  
5-Point Calibration Record

Location : EMSD  
Calibrated by : P.F.Yeung  
Date : 04/07/2012

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 1378  
Service Date : 22 Feb 2012  
Slope (m) : 1.99405  
Intercept (b) : -0.00397  
Correlation Coefficient(r) : 0.99999

Standard Condition

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

Calibration Condition

Pa (hpa) : 1006  
Ta(K) : 301

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.4	3.341	1.677	54	53.4
2   13 holes	9.6	3.066	1.539	48	47.5
3   10 holes	7.4	2.692	1.352	41	40.6
4   7 holes	4.6	2.122	1.066	30	29.7
5   5 holes	2.7	1.626	0.817	20	19.8

Sampler Calibration Relationship

Slope(m):38.753 Intercept(b): -11.815 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan

Date: 10/07/2012

High-Volume TSP Sampler  
5-Point Calibration Record

Location : River Trade  
 Calibrated by : P.F.Yeung  
 Date : 04/07/2012

Sampler

Model : GMWS-2310 ACCU-VOL  
 Serial Number : S/N 1252

Calibration Orifice and Standard Calibration Relationship

Serial Number : 1378  
 Service Date : 22 Feb 2012  
 Slope (m) : 1.99405  
 Intercept (b) : -0.00397  
 Correlation Coefficient(r) : 0.99999

Standard Condition

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

Calibration Condition

Pa (hpa) : 1006  
 Ta(K) : 301

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	11.4	3.341	1.677	66	65.3
2   13 holes	9.6	3.066	1.539	59	58.4
3   10 holes	7.4	2.692	1.352	50	49.5
4   7 holes	4.6	2.122	1.066	36	35.6
5   5 holes	2.7	1.626	0.817	23	22.8

Sampler Calibration Relationship

Slope(m):49.202 Intercept(b): -17.185 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 10/07/2012

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	<> 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	Δ
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	Δ
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	√
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	√
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	√
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 material generated from site formation works for the proposed new</p>	Work site / During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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.		
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	√
Waste Management	When disposing C&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 and vegetable matter, and other material considered to be unsuitable by	Work site/ During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>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	√
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 the construction period.</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
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	<>
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	√
Landscape &	<p><u>Construction Light</u></p>	Work site / During design stage & construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Visual	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.	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	√
Landscape &	<u>Establishment Period</u>	Work site/During operation period	N/A. To be implemented during

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Visual	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.		operation phase of Project.
Landscape & Visual	<u>Re-instatement of excavated Area</u>  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.	Work site / During design stage & operation period	N/A. To be implemented during operation phase of Project.
Landscape & Visual	<u>Appearance and Greening for the proposed structures</u> 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.	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 methodologies should be adopted for works whenever feasible. Noise	Work sites / during construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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	<>

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	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 (see Note 3)
				Rocks & Broken Concrete	Total					
tonne	tonne	tonne	tonne		kilogram	kilogram	kilogram	Litre	tonne	
Nov 2010	2,248	0	0	0	2,248	60	100	0	0	18.05 (see Note 4)
Dec 2010	11,314 (see Note 4)	0	0	0	11,314	100	120	20	0	28.4 (see Note 4)
Jan 2011	58,383 (see Note 4)	0	0	0	58,383	250	280	60	0	4.59 (see Note 4)
<b>Sub-total</b>	<b>71,945</b>	<b>0</b>	<b>0</b>	<b>71,945</b>		<b>410</b>	<b>500</b>	<b>80</b>	<b>0</b>	<b>51.04</b>
Feb 2011	12,855	0	0	0	12,855	100	150	50	0	2.43 (see Note 4)
Mar 2011	22,859	0	0	0	22,859	150	180	55	0	9.02
Apr 2011	8,547 (see Note 7)	0	5,684(see Note 5, 7)	0	2,863 (see Note 7)	50	30	15	0	5.78
<b>Sub-total</b>	<b>44,261</b>	<b>0</b>	<b>5,684</b>	<b>38,577</b>		<b>300</b>	<b>360</b>	<b>120</b>	<b>0</b>	<b>17.23</b>
May 2011	6,293 (see Note 7)	0	11 (see Note 5, 7)	0	6,282 (see Note 7)	45	25	10	360 (see Note 7)	8.83
Jun 2011	4,587 (see Note 7)	0	0 (see Note 7)	0	4,587 (see Note 7)	40	30	15	0	7.10
Jul 2011	523	0	0	0	523	15	5	10	0	7.20
<b>Sub-total</b>	<b>11,403</b>	<b>0</b>	<b>11</b>	<b>11,392</b>		<b>100</b>	<b>60</b>	<b>35</b>	<b>360</b>	<b>23.13</b>
Aug 2011	571 (see Note 11)	0	0	0	571 (see Note 11)	0	0	15	450 (see Note 8)	6.12
Sept 2011	235	0	0	0	235	20	0	0	0	12.15 (see Note 9)
Oct 2011	5,705 (see Note 10)	0	0	0	5,705 (see Note 10)	100	0	0	0	2.98
<b>Sub-total</b>	<b>6,511</b>	<b>0</b>	<b>0</b>	<b>6,511</b>		<b>120</b>	<b>0</b>	<b>15</b>	<b>450</b>	<b>21.25</b>
Nov 2011	6,294	0	0	0	6,294	50	0	0	0	44.84
Dec 2011	3,011	0	0	0	3,011	20	0	0	0	17.14
Jan 2012	349	64	0	0	285	20	150	0	0	49.01

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	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 (see Note 3)
				Rocks & Broken Concrete	Total					
tonne	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	Litre	tonne
<b>Sub-total</b>	<b>9,654</b>	<b>64</b>	<b>0</b>	<b>9,590</b>		<b>90</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>110.99</b>
Feb 2012	3,371	30	0	0	3,341	150	0	0	0	48.72
Mar 2012	6,460	3,000	0	0	3,460	30	0	0	0	41.1
April 2012	3,774	3,000	0	0	774	40	0	0	0	40.01
<b>Sub-total</b>	<b>13,605</b>	<b>6,030</b>	<b>0</b>	<b>7,575</b>		<b>220</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>129.83</b>
May 2012	4,336	2,000	0	100	2,336	40	0	0	0	75.19
June 2012	6,591	1,000	0	50	5,591	40	20	20	0	66.74
July 2012	3,972	600	0	50	3,372	40 (see Note 12)	20 (see Note 12)	20	0	100.5
<b>Sub-total</b>	<b>14,899</b>	<b>3,600</b>	<b>0</b>	<b>11,499</b>		<b>120</b>	<b>40</b>	<b>40</b>	<b>0</b>	<b>242</b>
<b>Total</b>	<b>172,278</b>	<b>9,694</b>	<b>5,695</b>	<b>156,889</b>		<b>1,360</b>	<b>1,110</b>	<b>250</b>	<b>810</b>	<b>596</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) General refuse was disposed of at WENT by subcontractors.
  - (4) The waste flow data for November and December 2010, January and February 2011 was updated in March 2011 based on SOR's comments and has been confirmed by the Contractor.
  - (5) The inert C&D materials were reused in the Contract No. EP/SP/58/08 at Tuen Mun Tsang Tsui.
  - (6) Chemical waste was collected through the licensed chemical waste collector, Dunwell Ind. (Holdings) Ltd, with the waste collection licence number 7111-757-W0015-WC.
  - (7) The waste flow data for April, May and June 2011 was updated in August 2011 based on SOR's comments and has been confirmed by the Contractor.
  - (8) The waste flow data of chemical waste for August 2011 was updated in October 2011 based on Contractor's revised waste flow summary.
  - (9) The waste flow data of general refuse for September 2011 was updated in November 2011 based on Contractor's revised waste flow summary.
  - (10) The waste flow data of C&D material for October 2011 was updated in December 2011 based on Contractor's revised waste flow summary.
  - (11) The waste flow data of C&D material for August 2011 was updated in January 2011 based on SOR's comments and has been confirmed by the Contractor.
  - (12) The waste flow data of metal and paper/cardboard packaging for June 2011 was revised in August 2012.

Annex K

Environmental Complaint,  
Environmental Summons  
and Persecution Log



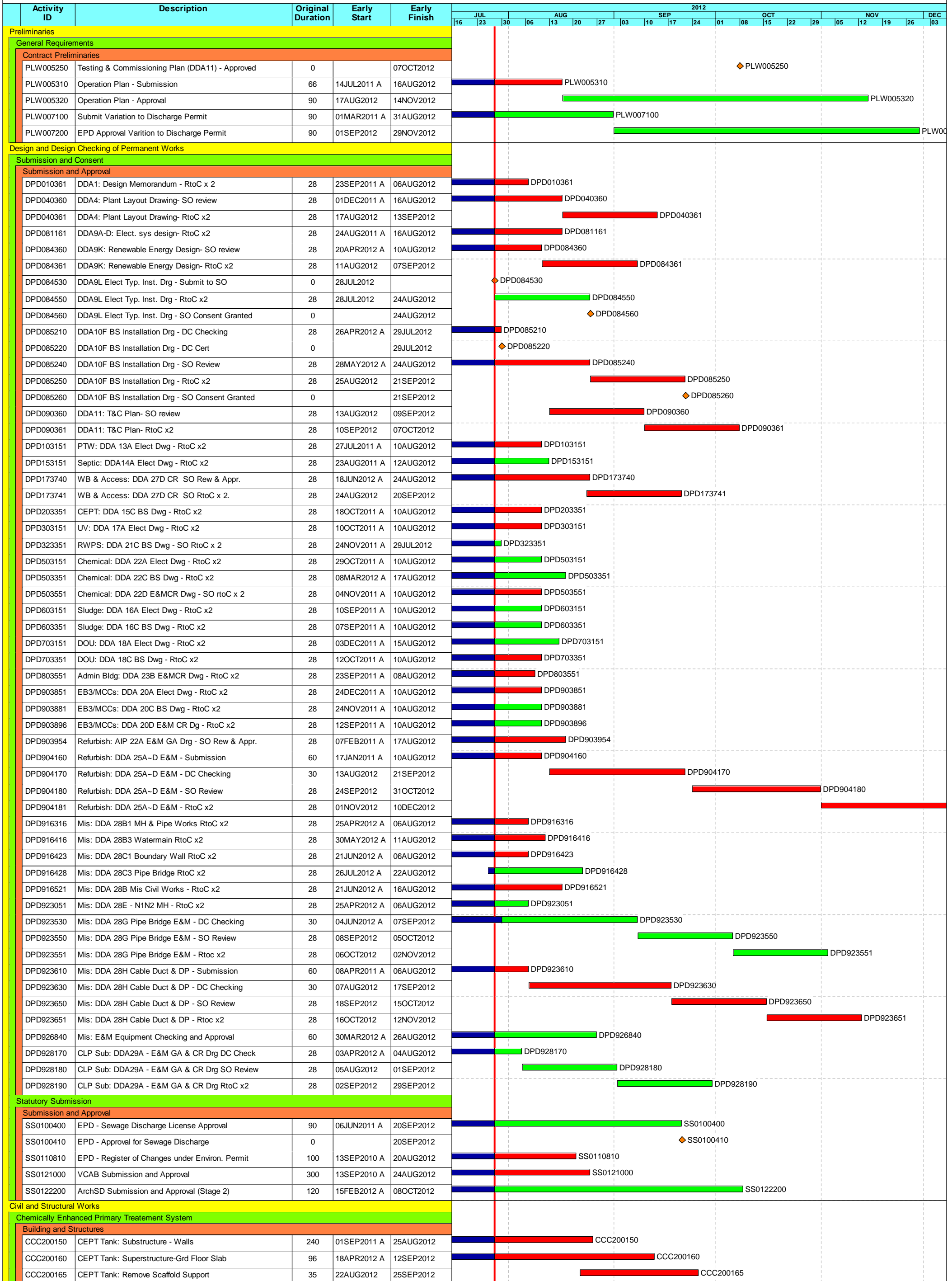
*Annex K Cumulative Complaint and Summons/Prosecutions Log*

<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
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	0	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0

<b>Reporting Month</b>	<b>Number of Complaints in Reporting Month</b>	<b>Number of Summons/Prosecutions in Reporting Month</b>
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
<b>Overall Total</b>	<b>0</b>	<b>0</b>

Annex L

## Construction Programme of the Project



Start date 14JUL2010  
Finish date 09MAR2014  
Data date 28JUL2012  
Run date 07AUG2012  
Page number 1A  
Project name WFB  
c Primavera Systems, Inc.

### PPSTW Three Month Rolling Programme - August to October 2012

Legend:  
Early bar (green)  
Progress bar (blue)  
Critical bar (red)  
Summary bar (purple)  
Start milestone point (diamond)  
Finish milestone point (square)

Activity ID	Description	Original Duration	Early Start	Early Finish	2012																							
					JUL	AUG	SEP	OCT	NOV	DEC																		
					16	23	30	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03			
CCC200170	CEPT Tank: ABWF Work	75	05JUN2012 A	06OCT2012	[Gantt bar for CCC200170]																							
CCC200180	CEPT Tank: Backfilling	135	18JAN2012 A	21SEP2012	[Gantt bar for CCC200180]																							
CCC200390	CEPT : Bay 3 Zone 3 East Walls	100	06FEB2012 A	25AUG2012	[Gantt bar for CCC200390]																							
CCC200400	CEPT : Bay 3 Zone 4 East Walls	100	07MAR2012 A	25AUG2012	[Gantt bar for CCC200400]																							
CCC200410	CEPT : Bay 5 Eastern Walls	100	30JAN2012 A	25AUG2012	[Gantt bar for CCC200410]																							
CCC200415	CEPT : Water Test to East Tanks	94	02APR2012 A	23SEP2012	[Gantt bar for CCC200415]																							
CCC200440	CEPT Tank: Beam and Slab Bay 4 Zone 3	51	09APR2012 A	01AUG2012	[Gantt bar for CCC200440]																							
CCC200450	CEPT Tank: Beam and Slab Bay 4 Zone 4	51	28MAY2012 A	14AUG2012	[Gantt bar for CCC200450]																							
CCC200470	CEPT: Roof Slab East Part	91	04MAY2012 A	12SEP2012	[Gantt bar for CCC200470]																							
CCC200475	CEPT: Remove Support at East Slab	77	28JUN2012 A	25SEP2012	[Gantt bar for CCC200475]																							
CCC200490	CEPT: Mass Concrete Bay 2 Zone 2	28	15JUL2012 A	01AUG2012	[Gantt bar for CCC200490]																							
CCC200500	CEPT: Mass Concrete Bay 4 Zone 3	28	16AUG2012	12SEP2012	[Gantt bar for CCC200500]																							
CCC200510	CEPT: Mass Concrete Bay 4 Zone 4	28	29AUG2012	25SEP2012	[Gantt bar for CCC200510]																							
CCC200520	CEPT: Mass Concrete Bay 5	28	02AUG2012	29AUG2012	[Gantt bar for CCC200520]																							
CCC200650	CEPT: Remaining Backfill	30	24SEP2012	23OCT2012	[Gantt bar for CCC200650]																							
CCC920110	CEPT MCC Rm: Formation and Blinding	2	15AUG2012	16AUG2012	[Gantt bar for CCC920110]																							
CCC920120	CEPT MCC Rm: Fdn-Cable Trench & On-Grade Slab	15	17AUG2012	03SEP2012	[Gantt bar for CCC920120]																							
CCC920130	CEPT MCC Rm: Walls - G/F to R/F	15	04SEP2012	20SEP2012	[Gantt bar for CCC920130]																							
CCC920140	CEPT MCC Rm: Roof Slab	12	07SEP2012	20SEP2012	[Gantt bar for CCC920140]																							
CCC920150	CEPT MCC Rm: Remove Temp Support	20	21SEP2012	10OCT2012	[Gantt bar for CCC920150]																							
CCC920160	CEPT MCC Rm: ABWF Work	26	11OCT2012	05NOV2012	[Gantt bar for CCC920160]																							
CCC920210A	CEPT: Densadeg Tank 2 Hand over	0		01AUG2012	[Milestone for CCC920210A]																							
CCC920220A	CEPT: Densadeg Tank 3 Hand over	0		12SEP2012	[Milestone for CCC920220A]																							
CCC920230A	CEPT: Densadeg Tank 4 Hand over	0		25SEP2012	[Milestone for CCC920230A]																							
CCC920240A	CEPT: Densadeg Tank 5 Hand over	0		27SEP2012	[Milestone for CCC920240A]																							
CCC920250A	CEPT: Hand over Basement Pump Hall (Bay1)	0		06AUG2012	[Milestone for CCC920250A]																							
CCC920260A	CEPT: Hand over Basement Pump Hall (Bay2)	0		01AUG2012	[Milestone for CCC920260A]																							
CCC920270A	CEPT: Hand over Basement Pump Hall (Bay3)	0		06SEP2012	[Milestone for CCC920270A]																							
CCC920280A	CEPT: Hand over Basement Pump Hall (Bay4)	0		15SEP2012	[Milestone for CCC920280A]																							
CCC920290A	CEPT: Hand over Basement Pump Hall (Bay5)	0		26SEP2012	[Milestone for CCC920290A]																							
CCC920300A	CEPT: MCC Room Hand over	0		15OCT2012	[Milestone for CCC920300A]																							
<b>New Preliminary Treatment Works</b>																												
<b>Building and Structures</b>																												
CCC111310A	PTWN: Backfilling to Grd Level	18	20JUL2012 A	08AUG2012	[Gantt bar for CCC111310A]																							
CCC111430A	PTWN: Hand over for E&M Work	0		04AUG2012	[Milestone for CCC111430A]																							
CCC112250A	PTWS: Backfill to Raft Foundation	18	15MAR2012 A	28JUL2012	[Gantt bar for CCC112250A]																							
CCC112325	PTWS: Outlet Chamber and Grit Chamber	117	19MAR2012 A	22SEP2012	[Gantt bar for CCC112325]																							
CCC114110A	PTWS: Fine Screen Chamber	96	06APR2012 A	22SEP2012	[Gantt bar for CCC114110A]																							
CCC114210A	PTWS: Hand over for E&M Works	0		22SEP2012	[Milestone for CCC114210A]																							
CCC114330A	PTWS: Skip House and Blower Room	40	18SEP2012	27OCT2012	[Gantt bar for CCC114330A]																							
CCC114450A	PTWS: Remove Temp Work Support	6	28OCT2012	02NOV2012	[Gantt bar for CCC114450A]																							
CCC114460A	PTWS: Waterproofing & Screeding on Roof	12	28OCT2012	08NOV2012	[Gantt bar for CCC114460A]																							
CCC114470A	PTWS: Painting in Skip House & Blower Rm	7	03NOV2012	09NOV2012	[Gantt bar for CCC114470A]																							
CCC114480A	PTWS: Door / Roller Shutter / Louver	20	03NOV2012	22NOV2012	[Gantt bar for CCC114480A]																							
CCC140300	PTWS: Flowmeter Chamber & Pipe works	75	14AUG2012	27OCT2012	[Gantt bar for CCC140300]																							
CCC150020	PTW: Formation to MCC Room	2	09AUG2012	10AUG2012	[Gantt bar for CCC150020]																							
CCC150030	PTW: Raft Footing to MCC Room	9	11AUG2012	19AUG2012	[Gantt bar for CCC150030]																							
CCC150040	PTW: Cable Trench & Floor Slab to MCC Room	12	20AUG2012	31AUG2012	[Gantt bar for CCC150040]																							
CCC150050	PTW: Wall and Roof to MCC Room	18	01SEP2012	18SEP2012	[Gantt bar for CCC150050]																							
CCC150070	PTW: Parapet to MCC Room	8	19SEP2012	26SEP2012	[Gantt bar for CCC150070]																							
CCC150080	PTW: Remove Temporary Support to MCC Room	5	27SEP2012	01OCT2012	[Gantt bar for CCC150080]																							
CCC150090	PTW: ABWF to MCC Room	24	27SEP2012	20OCT2012	[Gantt bar for CCC150090]																							
CCC150100A	PTW: PTWMCC Room Hand over	0		20OCT2012	[Milestone for CCC150100A]																							
CCC150200	PTW: Remaining ABWF	60	24OCT2012	22DEC2012	[Gantt bar for CCC150200]																							
<b>Disinfection System</b>																												
<b>Building and Structures</b>																												
CCC300131	UV: Outlet Pit	20	09APR2012 A	14AUG2012	[Gantt bar for CCC300131]																							
CCC300138	UV: Inlet & Outlet Channel	20	08JUN2012 A	14AUG2012	[Gantt bar for CCC300138]																							
CCC300150	UV: Substructure - Walls & Columns	35	04AUG2012	13SEP2012	[Gantt bar for CCC300150]																							
CCC300160	UV: Superstructure - Roof & Beam	18	14SEP2012	06OCT2012	[Gantt bar for CCC300160]																							
CCC300165	UV: Remove Temporary Support	18	08OCT2012	27OCT2012	[Gantt bar for CCC300165]																							
CCC300170	UV: ABWF Work	20	19OCT2012	07NOV2012	[Gantt bar for CCC300170]																							
CCC300180	UV: Backfilling	12	27OCT2012	07NOV2012	[Gantt bar for CCC300180]																							
CCC300190	UV: Water Tightness Test	30	26SEP2012	25OCT2012	[Gantt bar for CCC300190]																							
<b>Sludge Treatment Facilities</b>																												
<b>Building and Structures</b>																												
CCC600330	SDB: Construct Upper Holding Tanks	70	02MAY2012 A	31AUG2012	[Gantt bar for CCC600330]																							
CCC600390	SDB: Backfill to Ground Level	10	16AUG2012	27AUG2012	[Gantt bar for CCC600390]																							
CCC600410	SDB: Beams & Slab at G/F	15	28AUG2012	13SEP2012	[Gantt bar for CCC600410]																							
CCC600430	SDB: Walls & Columns - G/F to 1/F	20	14SEP2012	09OCT2012	[Gantt bar for CCC600430]																							
CCC600440	SDB: Beams & Slabs at 1/F	12	10OCT2012	23OCT2012	[Gantt bar for CCC600440]																							
CCC600450	SDB: Walls & Columns - 1/F to R/F	12	24OCT2012	06NOV2012	[Gantt bar for CCC600450]																							
CCC600470	SDB: Water Tightness Test	30	01SEP2012	30SEP2012	[Gantt bar for CCC600470]																							
CCC600480	SDB: ABWF Work	48	03OCT2012	27NOV2012	[Gantt bar for CCC600480]																							
CCC601410	Skip Storage Bldg: Excavation	10	28AUG2012	07SEP2012	[Gantt bar for CCC601410]																							
CCC601420	Skip Storage Bldg: Raft Foundation - 700mm thk	12	08SEP2012	21SEP2012	[Gantt bar for CCC601420]																							
CCC601430	Skip Storage Bldg: Columns - G/G to 1/F	12	22SEP2012	08OCT2012	[Gantt bar for CCC601430]																							
CCC601440	Skip Storage Bldg: Roof Slab & Beams	18	09OCT2012	29OCT2012	[Gantt bar for CCC601440]																							
CCC601450	Skip Storage Bldg: Remove Temp Support	18	30OCT2012	19NOV2012	[Gantt bar for CCC601450]																							

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PPSTW Three Month Rolling Programme - August to October 2012

Legend:  
■ Early bar  
■ Progress bar  
■ Critical bar  
 Summary bar  
◆ Start milestone point  
◆ Finish milestone point

