

ATAL-Degrémont-China State Joint Venture

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

June 2012

**Environmental Resources Management**

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June 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: _____ 14 June 2012 _____

Your Ref:  
Our Ref: 60017423/C/jwym12061205

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

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

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

12 June 2012

Dear Sir,

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

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

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for May 2012 provided by email dated 12 June 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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## CONTENTS

1	<b>INRODUCTION</b>	1
1.1	<b>PURPOSE OF THE REPORT</b>	1
1.2	<b>STRUCTURE OF THE REPORT</b>	1
2	<b>PROJECT INFORMATION</b>	3
2.1	<b>BACKGROUND</b>	3
2.2	<b>GENERAL SITE DESCRIPTION</b>	3
2.3	<b>CONSTRUCTION ACTIVITIES</b>	4
2.4	<b>PROJECT ORGANISATION AND MANAGEMENT STRUCTURE</b>	4
2.5	<b>STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS</b>	4
3	<b>ENVIRONMENTAL MONITORING REQUIREMENTS</b>	5
3.1	<b>AIR QUALITY MONITORING</b>	5
3.1.1	<i>Monitoring Location</i>	5
3.1.2	<i>Monitoring Parameter and Frequency</i>	5
3.1.3	<i>Action and Limit Levels</i>	5
3.1.4	<i>Monitoring Equipment</i>	6
3.1.5	<i>Monitoring Methodology</i>	6
3.1.6	<i>Event and Action Plan</i>	8
3.2	<b>LANDSCAPE AND VISUAL MONITORING</b>	8
3.3	<b>ENVIRONMENTAL MITIGATION MEASURES AND ENVIRONMENTAL REQUIREMENTS IN CONTRACT</b>	8
4	<b>IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS</b>	9
5	<b>MONITORING RESULTS</b>	10
5.1	<b>AIR QUALITY</b>	10
6	<b>WASTE MANAGEMENT</b>	11
7	<b>ENVIRONMENTAL INSPECTIONS</b>	12
7.1	<b>WEEKLY SITE AUDITS</b>	12
7.2	<b>LANDSCAPE AND VISUAL MONITORING</b>	13
8	<b>ENVIRONMENTAL NON-CONFORMANCE</b>	15
8.1.1	<i>Summary of Monitoring Exceedance</i>	15
8.1.2	<i>Summary of Environmental Non-Compliance</i>	15
8.1.3	<i>Summary of Environmental Complaint</i>	15
8.1.4	<i>Summary of Environmental Summon and Successful Prosecution</i>	15
9	<b>FUTURE KEY ISSUES</b>	16

9.1.1	<i>Key Issues for the Coming Month</i>	16
9.1.2	<i>Monitoring Schedule for the Next Reporting Period</i>	16
9.1.3	<i>Construction Programme for the Next Three Months</i>	16
10	<b>REVIEW OF THE EM&amp;A DATA AND EIA PREDICTIONS</b>	17
10.1	<i>AIR QUALITY</i>	17
10.2	<i>WASTE MANAGEMENT</i>	17
10.3	<i>CONCLUSION OF REVIEW</i>	18
11	<b>CONCLUSIONS</b>	19

#### **LIST OF TABLES**

Table 2.1	Summary of Construction Activities Undertaken in Reporting Period
Table 2.2	Summary of Environmental Licensing, Notification and Permit Status
Table 3.1	Construction Phase Air Monitoring Locations
Table 3.2	Construction Phase Air Quality Monitoring Parameters and Frequency
Table 3.3	Action and Limit Levels for Air Quality
Table 3.4	TSP Monitoring Equipment
Table 6.1	Quantities of Waste Generated from the Project
Table 9.1	Construction Works to be Undertaken in the Next Reporting Period
Table 10.1	Comparison of the HKAQO and Air Quality Monitoring Results
Table 10.2	Quantity of Actual Amount of C&D Materials, General Wastes and Chemical Wastes Generated and EIA Estimation

#### **LIST OF ANNEXES**

Annex A	Location of Project
Annex B	Works Location
Annex C	Project Organization Chart and Contact Detail
Annex D	Locations of Air Quality Monitoring Stations
Annex E	Monitoring Schedule of the Reporting Month and Next Month
Annex F	24-hour and 1-hour TSP Monitoring Results
Annex G	Calibration Reports for HVSs
Annex H	Event / Action Plan for Air Quality Monitoring
Annex I	Implementation Schedule of Mitigation Measures
Annex J	Waste Flow Table
Annex K	Environmental complaint, Environmental Summons and Prosecution Log
Annex L	Construction Programme for the Project

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

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

Works undertaken in the reporting month include:

- Drainage pipe work and constructing ground floor slab, wall and the first floor slab at the Admin Building;
- Constructing foundation and water tank at the Sludge Dewatering Building;
- Water test, constructing wall and floor slab at the CEPT and the PTW area of P2;
- Constructing trench, wall, roof slab and finishing work at the Electrical Building No. 1;
- Excavating, blinding and constructing manhole at the UV building; and
- Constructing roof slab and wall at the Septic Waste Reception Station.

### 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 of 2,336 tonnes of public fill were delivered to the fill bank and 2,000 tonnes of inert C&D materials were reused on site. 100 tonnes of rocks & broken concrete were generated in May. No plastic or paper/cardboard packaging was recovered. However 40 kg of metals were

sent to recyclers in the reporting period. 75.19 tonnes general refuse were disposed of in the reporting period. No chemical waste was disposed of in 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 25 May 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 first floor slab, wall, column and beam at the Admin Building;
- Constructing foundation and water tank 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, constructing wall and roof slab at the Electrical Building No.1;
- Constructing roof slab and wall at the Septic Waste Reception Station;
- Constructing wall and roof at the Reuse Water Pump Room;
- Excavating and backfilling at the DOUA and the Chemical Building; and
- Backfilling 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 19<sup>th</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 May 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>• Drainage pipe work and constructing ground floor slab, wall and the first floor slab at the Admin Building;</li><li>• Constructing foundation and water tank at the Sludge Dewatering Building;</li><li>• Water test, constructing wall and floor slab at the CEPT and the PTW area of P2;</li><li>• Constructing trench, wall, roof slab and finishing work at the Electrical Building No. 1;</li><li>• Excavating, blinding and constructing manhole at the UV building; and</li><li>• Constructing roof slab and wall at the Septic Waste Reception Station.</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.
Construction Noise Permit	GW-RW031-12	28 January 2012 – 27 July 2012	-
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*

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
<i>24-hr and 1-hr TSP</i>	
AM1	GMW GS-2310 (S/N 7580), CM-AIR-43 (S/N 9833620)
AM2	GMW GS-2310 (S/N 1252), CM-AIR-43 (S/N 9833620)

### 3.1.5 *Monitoring Methodology*

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

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

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

#### *Preparation of Filter Papers*

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

### *Field Monitoring*

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the four 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. 100 tonnes of rocks & broken concrete were generated in May. No plastic nor paper / cardboard packing was sent to recyclers for recycling during the reporting period. However, 40 kg of metals 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
May 2012	2,336 tonnes	75.19tonnes	0 L

**Notes:**

(a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated soil. A total 4,336 tonnes of public fill were generated, in which 2,336 tonnes were disposed of at the Tuen Mun Area 38 Fill Bank with 2,000 tonnes of inert C&D materials reused on site. 100 tonnes of rocks & broken concrete were generated in May. 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. 75.19 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. No plastic or paper/cardboard packaging but 40 kg of metals were recovered and 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 4, 11, 18 and 25 May 2012. The IEC was also present at the joint inspection on 25 May 2012.

Major observations during the reporting period were summarised as follows:

4 May 2012

- The tree protection zones for the retained tree nos. 179, 142 and 139 were not in place during site inspection at P2. The Contractor was reminded to install the tree protection zone within 3 working days. The Contractor was also suggested to put notices on the tree protection zones to remind workers not to remove the tree protection zones and keep the zones free from refuses or construction materials.
- General waste and construction materials were observed in the tree protection zones of the retained tree nos. 175, 174, 146, 148, 150, 151, 152 and T01 at P2. The Contractor was reminded to remove the general waste and construction materials from the tree protection zones in order to protect the retained tree. The Contractor was also suggested to put notices on the tree protection zones to remind workers not to put general refuse and construction materials in the tree protection zones.
- Algae were observed in sedimentation tank next to the wheel washing bay near Gate 2 at P2. The Contractor was reminded to clean the tank regularly to prevent growth of algae.

11 May 2012

- Stagnant water was observed in the unused sedimentation tank near Sludge Dewatering Building at P2. The Contractor was reminded to remove the stagnant water to avoid mosquito breeding.

18 May 2012

- An unused machine on the drip tray without tarpaulin sheet covered was observed in storage area of P2. The Contractor was reminded to cover the machine and drip tray with tarpaulin sheet to avoid accumulation of water in the drip tray and overflow of contaminated water during raining.
- Muddy untreated effluent was observed being directly discharged from the CEPT tanks into the drainage channel. The Contractor was seriously urged to stop discharge immediately. It should be noted that according to the discharge license issued under the WPCO, direct discharge of effluent without treatment is an environmental offence.

- Muddy untreated effluent was observed being directly discharged from two pipes of the Sludge Dewatering Building into the drainage channel. The Contractor was seriously urged to stop discharge immediately. It should be noted that according to the discharge license issued under the WPCO, direct discharge of effluent without treatment is an environmental offence.
- Water flow in the two sets of sedimentation drums near the Sludge Dewatering Building at P2 was observed short-circuited without any retention, which would cause insufficient treatment of the muddy water. The short-circuit flow should be rectified and in addition, the Contractor may consider to install filter medium in the two sets of sedimentation drums to enhance the suspended solids removal efficiency.

25 May 2012

- Water dripping from a tap and stagnant water were observed besides the site boundary at P2. The Contractor was reminded to turn off the water tap when it is unused to avoid accumulating of water on the ground.
- Stagnant water with algae was observed in the drainage channel at the Sludge Dewatering Building. The Contractor was reminded to remove the stagnant water.

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

A separate reminder on discharge of untreated water was issued to the Contractor by ET on 24 May 2012. The Contractor has agreed to improve wastewater sand/silt removal facilities and control practice on site. It will be checked in the following site inspections.

## 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 25 May 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:

25 May 2012

- Tree no. R149 fell at T1. Inadequate drainage would account for the planting failure. Water that could not be drained readily away from the planting hole may draw the roots and impede their development and anchorage in the soil. The Contractor was reminded to provide adequate drainage to all the transplanted trees at T1 and rectify the fallen tree as soon as possible.
- Irrigation at T1 was found to have been conducted improperly. Excessive water was found to have accumulated at the root flare of some trees, while soil around the planting hole of the other trees was found to have dried out. Both situations (i.e. flooding and drought) can adversely affect the health condition of the trees. The Contractor was reminded to review irrigation arrangement to meet the water requirements of the transplanted trees.
- No tree protection zone for tree no. T142 was provided. The Contractor was reminded to set up the tree protection zone as soon as possible. It is noted that all tree protective measures should be regularly checked and maintained by the Contractor.

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 *ENVIRONMENTAL NON-CONFORMANCE*

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**

---

**Work to be taken**

---

- Constructing the first floor slab, wall, columns and beams at the Admin Building;
  - Constructing foundation and water tank 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
  - Constructing wall and roof slab, and finishing work at the Electrical Building No.1;
  - Constructing roof slab and wall at the Septic Waste Reception Station;
  - Constructing wall and roof at the Reuse Water Pump Room;
  - Excavating and backfilling at the DOUA and the Chemical Building; and
  - Backfilling for the whole site.
- 

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	80	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)</sup> <sup>(d)</sup> (inert & non-inert)
Amount of C&D Materials Arising	61,489 m <sup>3</sup>	77,600 m <sup>3</sup>	89,841.7 m <sup>3</sup>
Amount of C&D Materials Reused on other site	-	-	3,163.9 m <sup>3</sup>
Amount of C&D Materials Reused on site	14,926 m <sup>3</sup>	18,000 m <sup>3</sup>	4496.7 m <sup>3</sup>
Amount of C&D Materials Sent to Fill Banks	46,563m <sup>3</sup>	59,600 m <sup>3</sup>	82,181.1 m <sup>3</sup>
General Refuse	Small	-	428.66 tonnes
Chemical Waste	Small	-	810 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 May 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

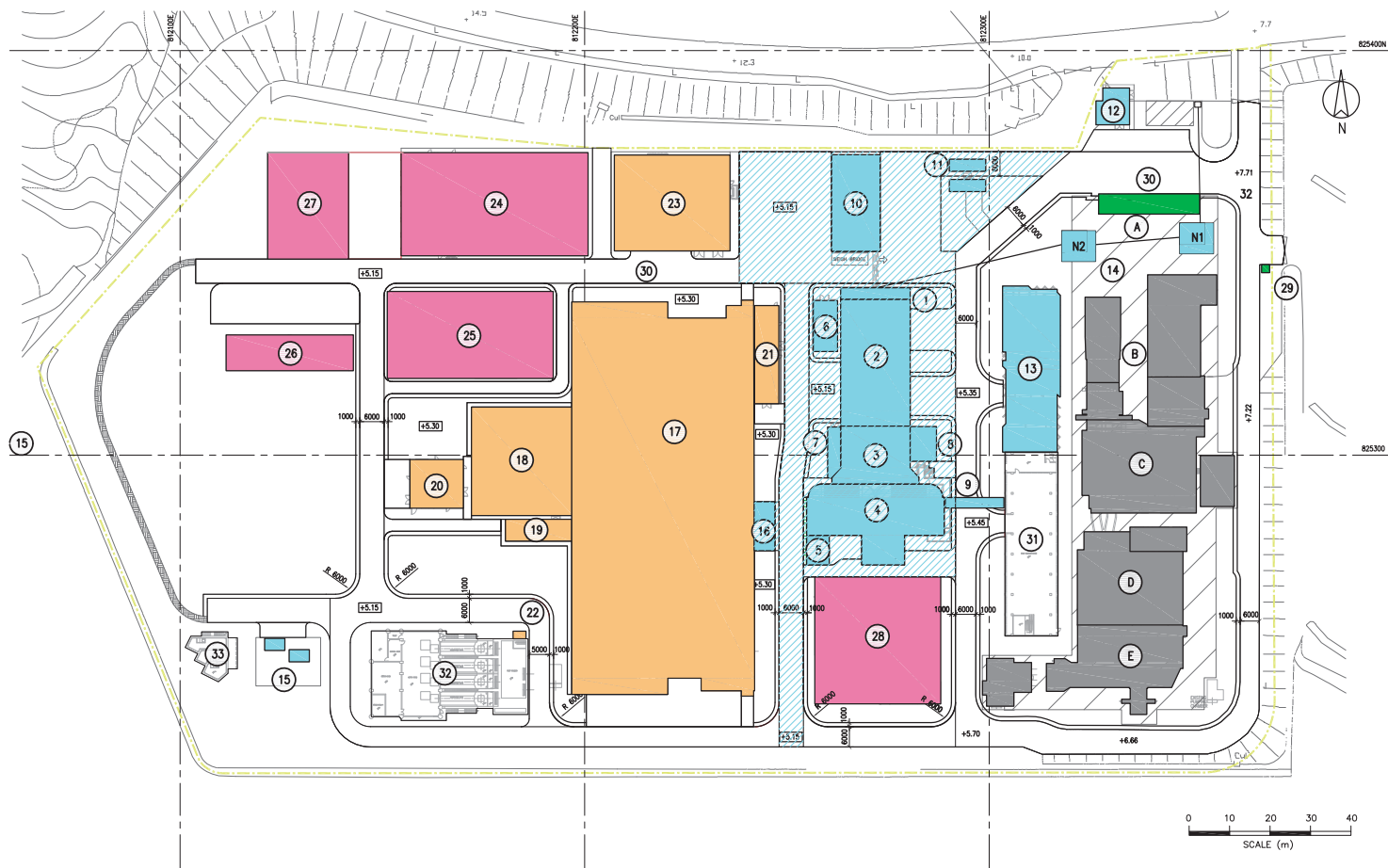
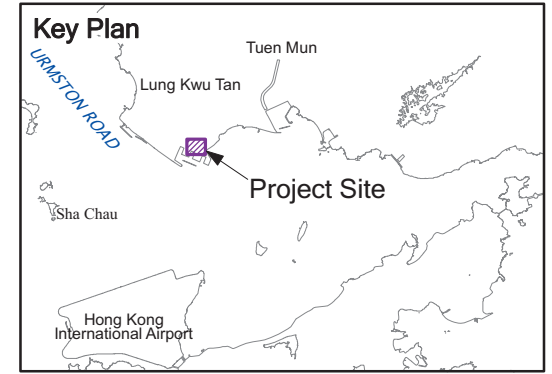
- ⑬ ADMINISTRATION BUILDING
- ⑭ INLET CHAMBERS
- ⑮ PAYMENT FLOWMETER CHAMBER
- ⑯ CEPT INLET CHAMBER

**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**

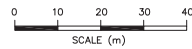
- Ⓐ ADMINISTRATION BUILDING
- Ⓑ INLET SCREW PUMPING STATION AND MOTOR HOUSE
- Ⓒ COARSE SCREENS
- Ⓓ BLOWER HOUSE AND GRIT CHANNELS
- Ⓔ FINE SCREEN CHANNELS AND FLOWMETER CHAMBER

**SECTION 5 EXTERNAL WORKS**

- ⑳ GATE HOUSE
- ㉑ CAR PARK

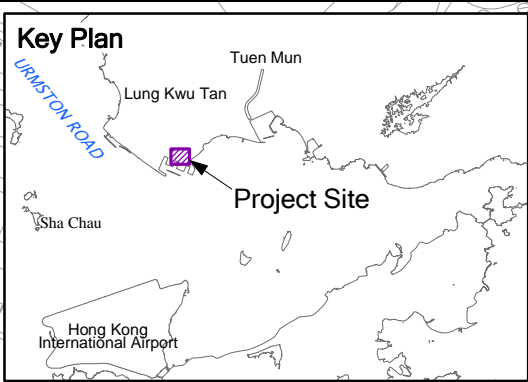
**EXISTING BUILDING TO BE RETAINED**

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

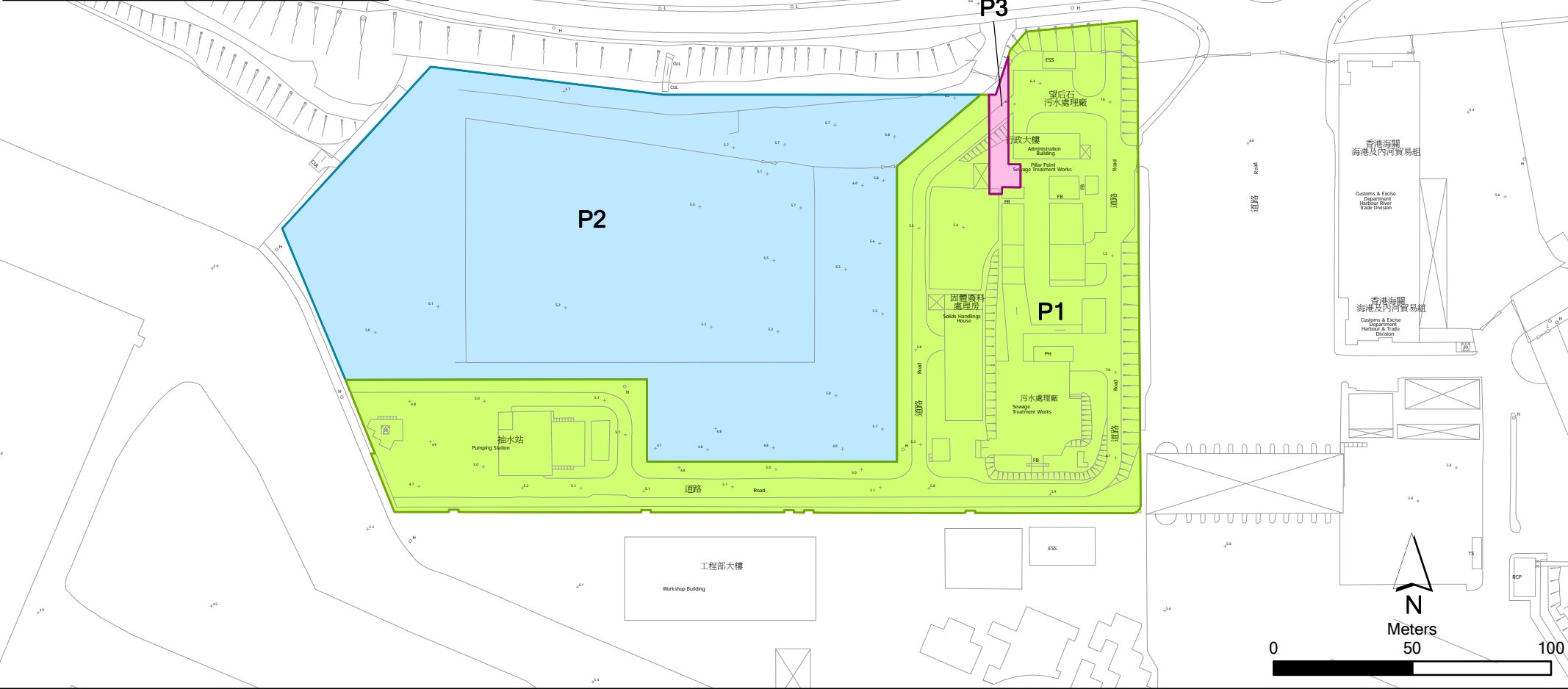


Annex B

## 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

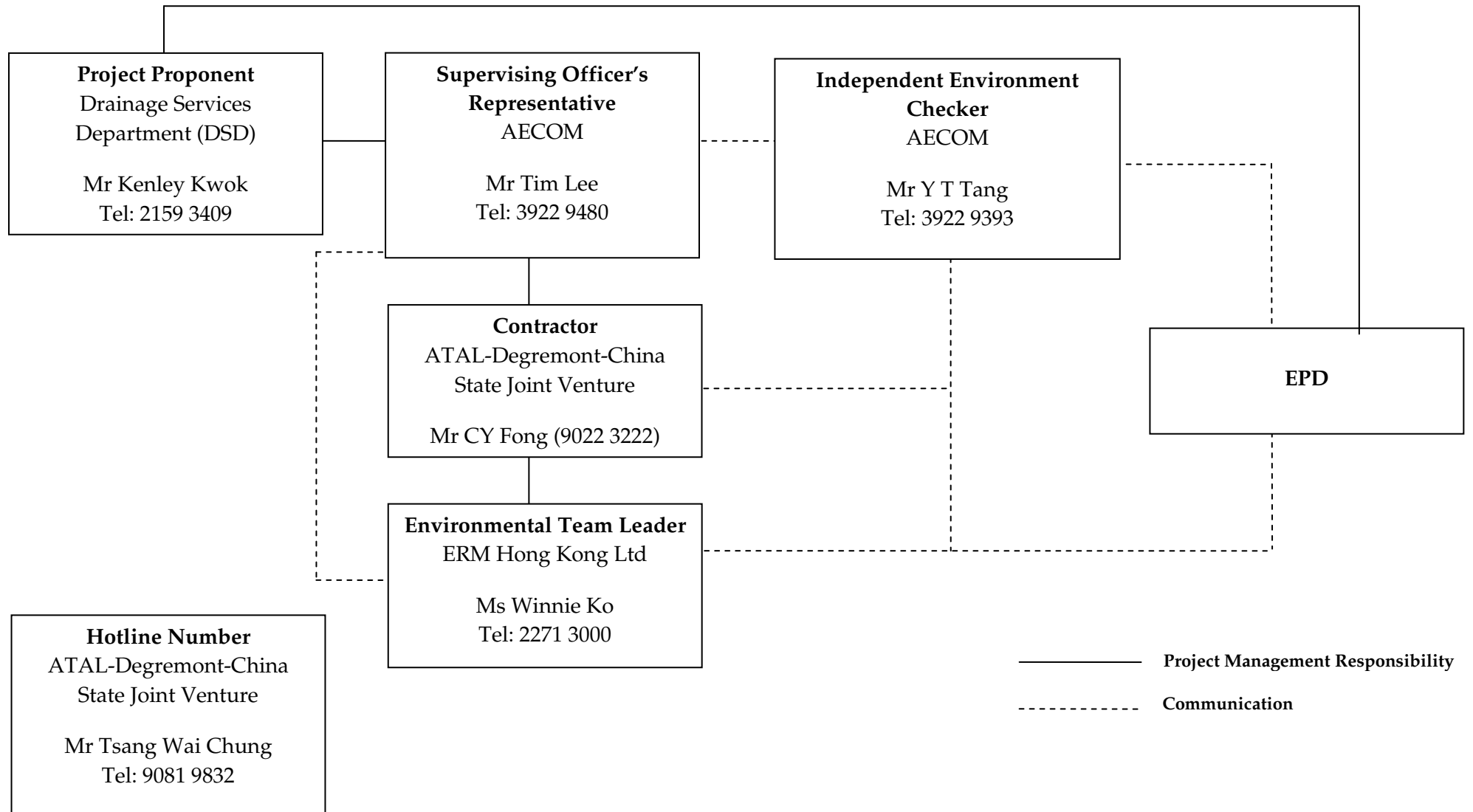
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Date: 15/12/2010

**Environmental Resources Management**

Annex C

## Project Organization Chart with Contact Details

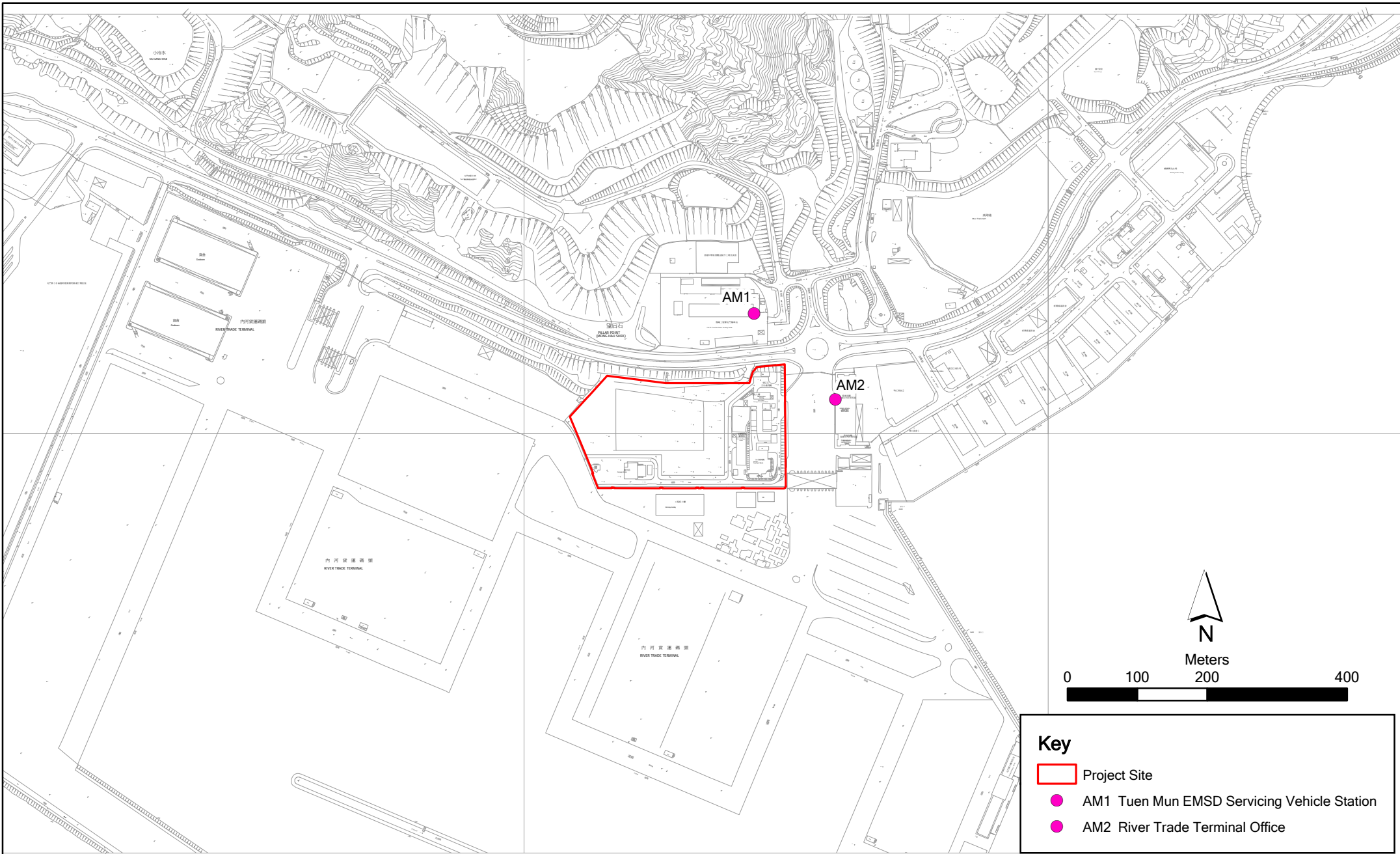
Project Organization During Construction Phase (with contact details)





Annex D

## Locations of Air Quality Monitoring Stations



**Key**

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

Annex D

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

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

**Environmental  
Resources  
Management**





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)  
May 2012**

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

**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)  
June 2012**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jun	2-Jun
					3X1-hr & 1X 24-hr TSP	
3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	8-Jun	9-Jun
				3X1-hr & 1X 24-hr TSP		
10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun	16-Jun
			3X1-hr & 1X 24-hr TSP			
17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun	23-Jun
		3X1-hr & 1X 24-hr TSP				
24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun
	3X1-hr & 1X 24-hr TSP					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
3-May-12	13:10	14:10	Sunny	81	343	500	Construction work in progress	30.5	*	7580	3668
	14:10	15:10	Sunny	90	343	500	Construction work in progress	31	*	7580	3669
	15:10	16:10	Sunny	98	343	500	Construction work in progress	31.5	*	7580	3670
9-May-12	13:10	14:10	Sunny	85	343	500	Construction work in progress	31	*	7580	3685
	14:10	15:10	Sunny	103	343	500	Construction work in progress	31.5	*	7580	3686
	15:10	16:10	Sunny	93	343	500	Construction work in progress	32.5	*	7580	3687
15-May-12	13:10	14:10	Fine	144	343	500	Construction work in progress	30	*	7580	3813
	14:10	15:10	Fine	144	343	500	Construction work in progress	30.5	*	7580	3814
	15:10	16:10	Fine	161	343	500	Construction work in progress	31.5	*	7580	3815
21-May-12	13:10	14:10	Sunny	112	343	500	Construction work in progress	27	*	7580	3830
	14:10	15:10	Sunny	98	343	500	Construction work in progress	27.5	*	7580	3831
	15:10	16:10	Sunny	102	343	500	Construction work in progress	28.5	*	7580	3832
26-May-12	13:10	14:10	Fine	137	343	500	Construction work in progress	29	*	7580	3847
	14:10	15:10	Fine	110	343	500	Construction work in progress	29.5	*	7580	3848
	15:10	16:10	Fine	125	343	500	Construction work in progress	30	*	7580	3849
				<b>Min.</b>	<b>81</b>						
				<b>Max.</b>	<b>161</b>						
				<b>Average</b>	<b>112</b>						

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



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

### 1-hour TSP Monitoring Results

#### Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Site Conditions / Observations / Remarks	Temperature ( $^{\circ}\text{C}$ )	Wind Speed * (m/s)	Sampler ID	Filter ID
3-May-12	13:00	14:00	Sunny	101	383	500	Construction work in progress	30.5	*	1252	3664
	14:00	15:00	Sunny	107	383	500	Construction work in progress	31	*	1252	3665
	15:00	16:00	Sunny	92	383	500	Construction work in progress	31.5	*	1252	3666
9-May-12	13:00	14:00	Sunny	79	343	500	Construction work in progress	31	*	1252	3681
	14:00	15:00	Sunny	98	343	500	Construction work in progress	31.5	*	1252	3682
	15:00	16:00	Sunny	83	343	500	Construction work in progress	32.5	*	1252	3683
15-May-12	13:00	14:00	Fine	156	383	500	Construction work in progress	30	*	1252	3809
	14:00	15:00	Fine	167	383	500	Construction work in progress	30.5	*	1252	3810
	15:00	16:00	Fine	178	383	500	Construction work in progress	31.5	*	1252	3811
21-May-12	13:00	14:00	Sunny	118	383	500	Construction work in progress	27	*	1252	3826
	14:00	15:00	Sunny	108	383	500	Construction work in progress	27	*	1252	3827
	15:00	16:00	Sunny	109	383	500	Construction work in progress	28.5	*	1252	3828
26-May-12	13:00	14:00	Fine	127	383	500	Construction work in progress	29	*	1252	3843
	14:00	15:00	Fine	102	383	500	Construction work in progress	29.5	*	1252	3844
	15:00	16:00	Fine	123	383	500	Construction work in progress	30	*	1252	3845
				<b>Min.</b>	<b>79</b>						
				<b>Max.</b>	<b>178</b>						
				<b>Average</b>	<b>117</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								
3-May-12	16:10	4-May-12	16:10	Sunny	2.7040	2.8415	12710.18	12734.18	24.00	1.24	1.24	1.24	77	183	260	Construction work in progress	7580	3671		
9-May-12	16:10	10-May-12	16:10	Sunny	2.7001	2.8321	12737.18	12761.18	24.00	1.23	1.23	1.23	75	183	260	Construction work in progress	7580	3688		
15-May-12	16:10	16-May-12	16:10	Fine	2.7061	2.8509	12764.18	12788.18	24.00	1.23	1.23	1.23	82	183	260	Construction work in progress	7580	3816		
21-May-12	16:10	22-May-12	16:10	Sunny	2.7068	2.8395	12791.18	12815.18	24.00	1.23	1.23	1.23	75	183	260	Construction work in progress	7580	3833		
26-May-12	16:10	27-May-12	16:10	Fine	2.6906	2.8410	12818.18	12842.18	24.00	1.23	1.23	1.23	85	183	260	Construction work in progress	7580	3850		
												Min.	75							
												Max.	85							
												Average	79							

### 24-hour TSP Monitoring Results

#### Station AM2

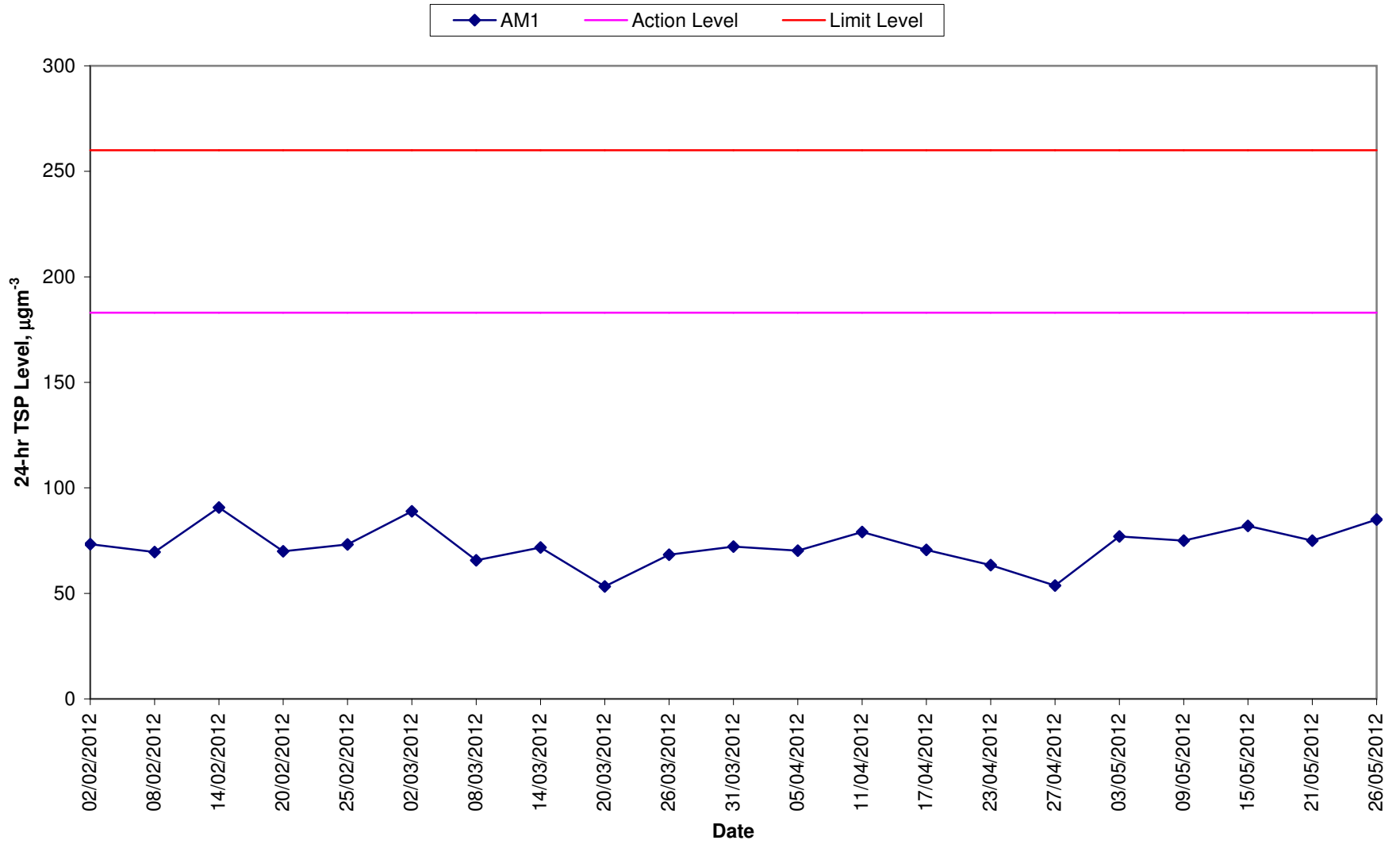
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m <sup>3</sup> /min)			TSP Conc. (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Observations / Remarks	Sampler ID	Filter ID		
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average								
3-May-12	16:00	4-May-12	16:00	Sunny	2.7168	2.8411	20727.20	20751.20	24.00	1.20	1.20	1.20	72	192	260	Construction work in progress	1252	3667		
9-May-12	16:00	10-May-12	16:00	Sunny	2.7073	2.8299	20754.20	20778.20	24.00	1.21	1.21	1.21	70	192	260	Construction work in progress	1252	3684		
15-May-12	16:00	16-May-12	16:00	Fine	2.7068	2.8655	20781.20	20805.20	24.00	1.21	1.21	1.21	91	192	260	Construction work in progress	1252	3812		
21-May-12	16:00	22-May-12	16:00	Sunny	2.6934	2.8411	20808.20	20832.20	24.00	1.21	1.21	1.21	85	192	260	Construction work in progress	1252	3829		
26-May-12	16:00	27-May-12	16:00	Fine	2.6809	2.8345	20835.20	20859.20	24.00	1.21	1.21	1.21	88	192	260	Construction work in progress	1252	3846		
												Min.	70							
												Max.	91							
												Average	81							

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
5/3/2012	Sunny	30.0	75 - 86	Trace	9.0	S
5/4/2012	Sunny	29.0	78 - 97	35.7	9.0	SE
5/9/2012	Sunny	31.0	64 - 91	0.0	7.0	SW
5/10/2012	Sunny	31.0	67 - 96	6.1	9.0	S
5/15/2012	Fine	30.0	81 - 97	22.1	9.0	S
5/16/2012	Fine	28.0	88 - 98	14.4	8.0	S
5/21/2012	Sunny	27.0	71 - 92	Trace	12.0	SE
5/22/2012	Sunny	27.0	65 - 81	Trace	9.0	SE
5/26/2012	Fine	28.0	85 - 98	0.0	9.0	SE
5/27/2012	Fine	28.0	81 - 98	5.8	9.0	SE

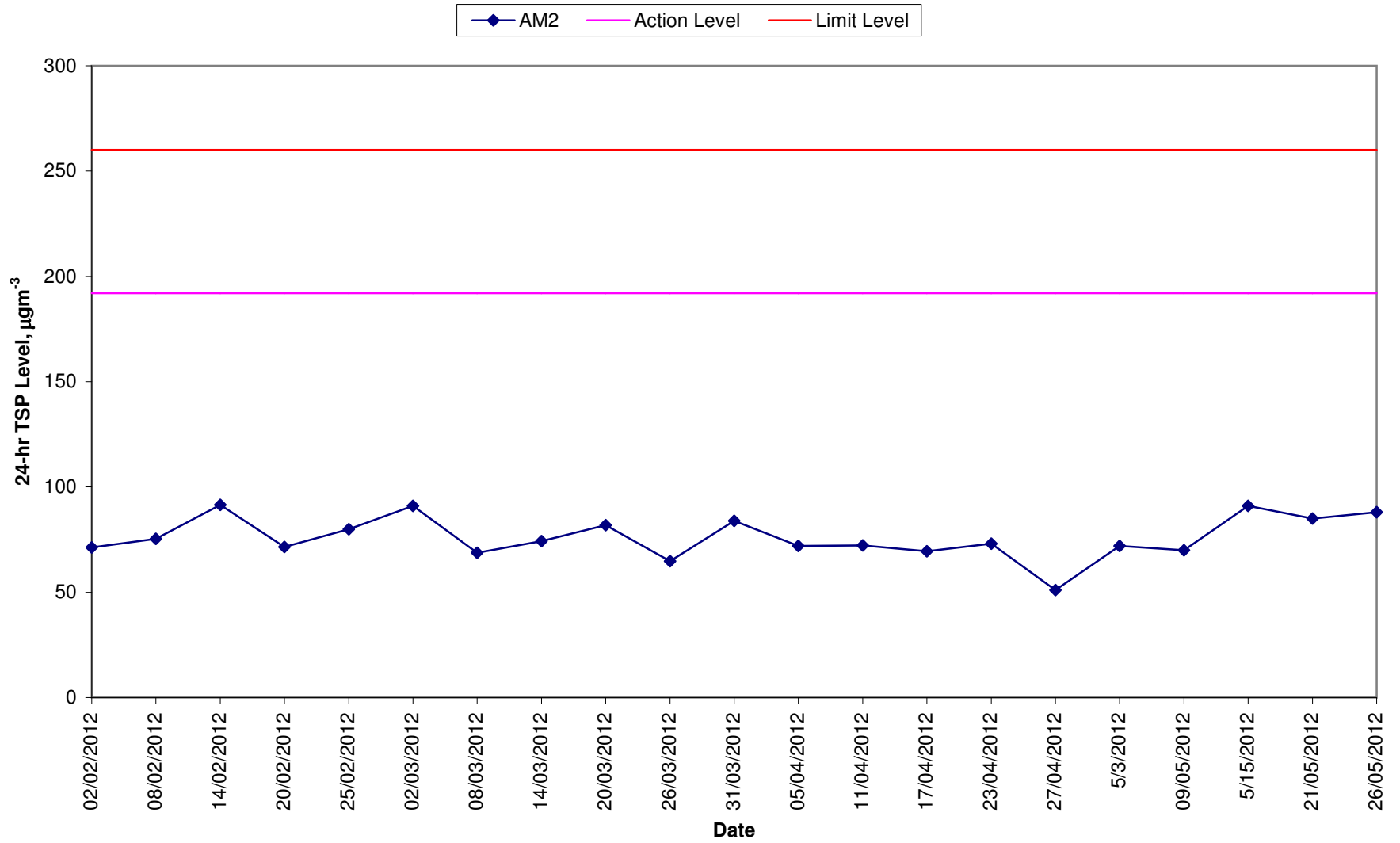
# Annex F TSP Monitoring Results

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



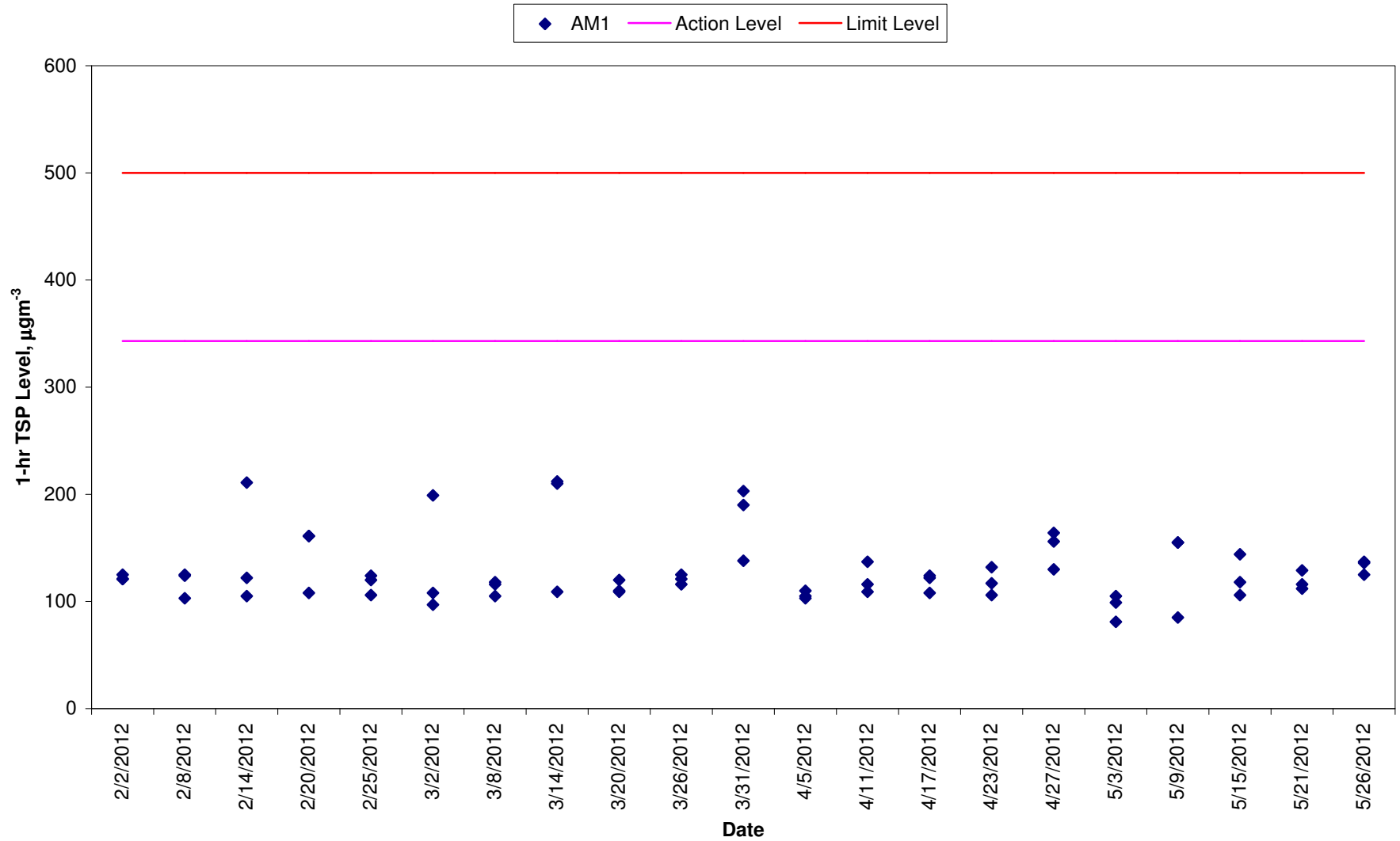
# Annex F TSP Monitoring Results

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



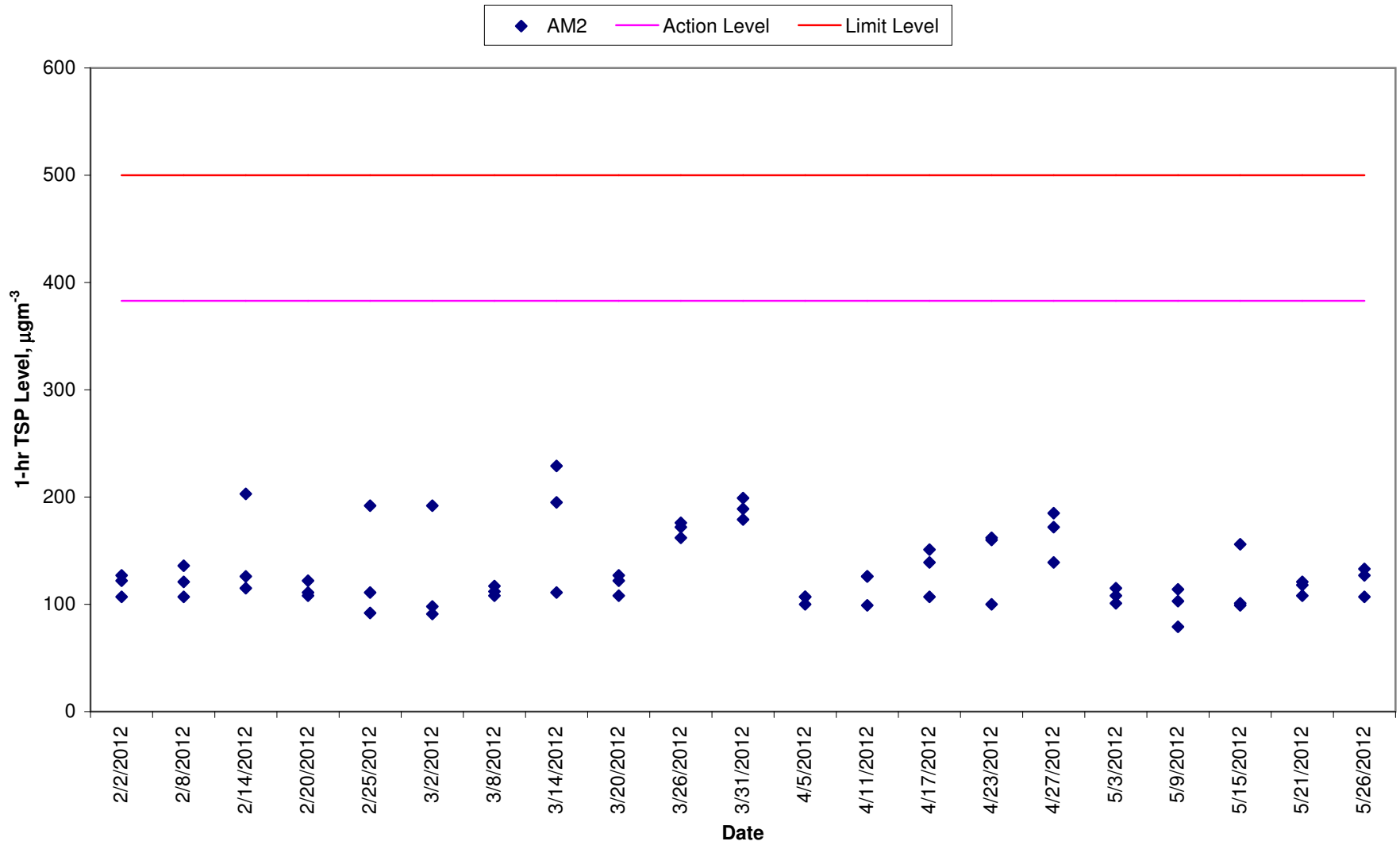
# Annex F TSP Monitoring Results

## 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



### *TSP Monitoring Equipment*

<b>Monitoring Station ID</b>	<b>Location</b>	<b>Monitoring Equipment</b>		<b>Last Calibration Date</b>	<b>Next Calibration Date</b>
<i>24-hr and 1-hr TSP</i>		<b>HVS</b>	<b>Calibrator</b>		
AM1	Tuen Mun EMSD Vehicle Servicing Station	GMW GS-2310 (S/N 7580)	CM-AIR-43 (S/N 1785)	04 May 2012	04 July 2012
AM2	River Trade Terminal Office	GMW GS-2310 (S/N 1252)	CM-AIR-43 (S/N 1785)	04 May 2012	04 July 2012

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

Annex H

## Event/Action Plan for Air Quality Monitoring

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

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

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

Annex I

## Implementation Schedule of Mitigation Measures

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
<i>Summary of Environmental Mitigation Measures in the EIA and EM&amp;A Manual</i>			
<i>Construction Phase</i>			
Air Quality	Dust mitigation measures stipulated in <i>the Air Pollution Control (Construction Dust) Regulation</i> shall be incorporated to control Post emission. Notice shall be given to authority prior to commencing of work.	Work sites / during construction period	Δ. Notice of works commencement was submitted to EPD on 3 August 2010.
Water Quality	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. It is recommended to install perimeter channels in the works areas to intercept runoff as site boundary prior to the commencement of any earthwork. To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. Drainage channels are also required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance can ensure the normal operation of these facilities throughout the construction period. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Work site/During the construction period	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 &	<u>Construction Light</u>	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	Rocks & Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	tonne	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>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	0	5,684(see Note 5, 7)	2,863 (see Note 7)	50	30	15	0	5.78
<b>Sub-total</b>	<b>44,261</b>	<b>0</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	0	11 (see Note 5, 7)	6,282 (see Note 7)	45	25	10	360 (see Note 7)	8.83
Jun 2011	4,587 (see Note 7)	0	0	0 (see Note 7)	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>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>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	0	64	0	285	20	150	0	0	49.01
<b>Sub-total</b>	<b>9,654</b>	<b>0</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	0	30	0	3,341	150	0	0	0	48.72

Month	Actual Quantities of Inert C&D Materials (Public Fill) Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Rocks & Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	Litre	tonne
Mar 2012	6,460	0	3,000	0	3,460	30	0	0	0	41.1
April 2012	3,774	0	3,000	0	774	40	0	0	0	40.01
<b>Sub-total</b>	<b>13,605</b>	<b>0</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	100	2,000	0	2,336	40	0	0	0	75.19
<b>Total</b>	<b>161,715</b>	<b>100</b>	<b>8,094</b>	<b>5,695</b>	<b>147,926</b>	<b>1,280</b>	<b>1,070</b>	<b>250</b>	<b>810</b>	<b>428.66</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.

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

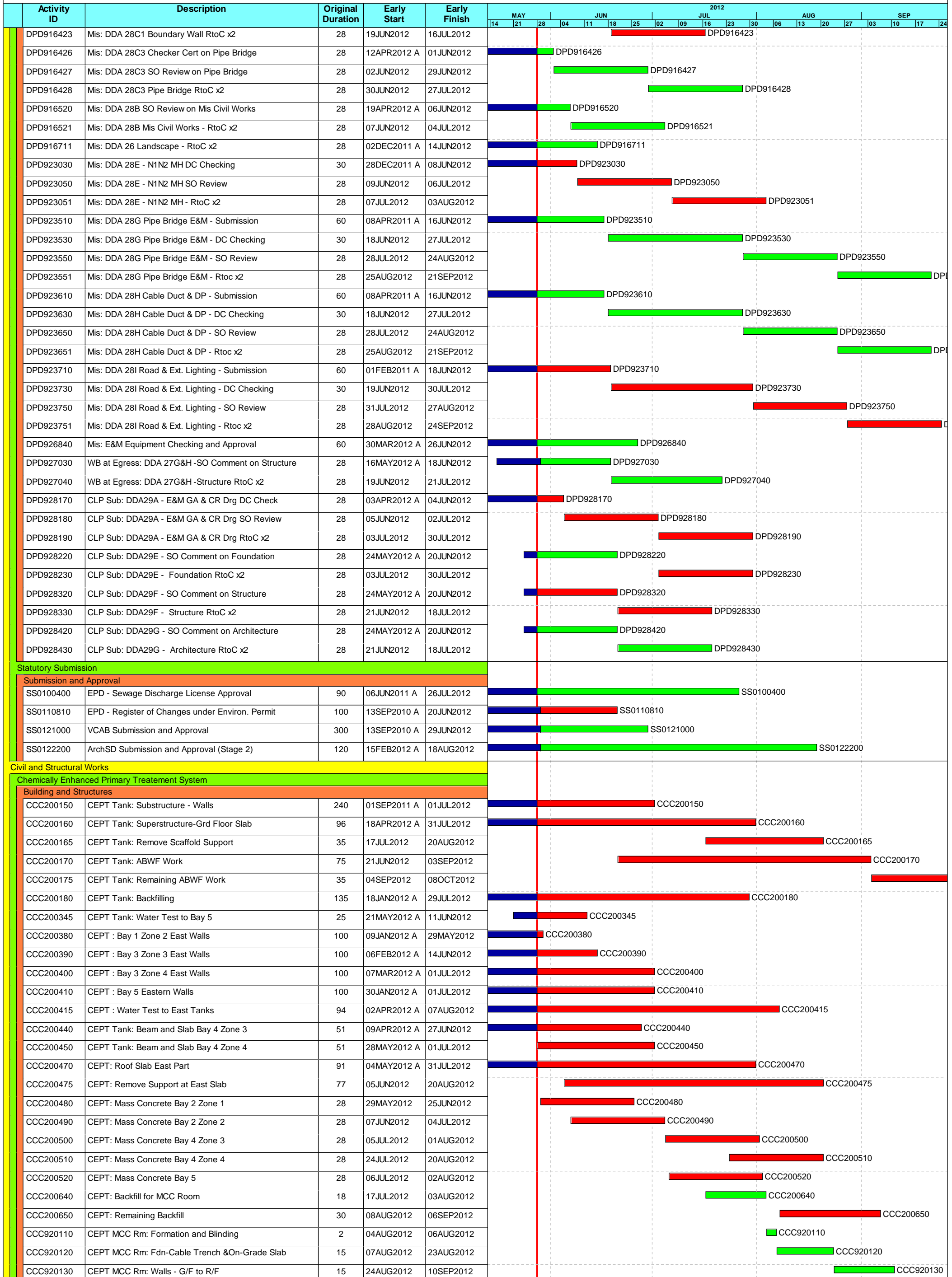
<b>Reporting Month</b>	<b>Number of Complaints in Reporting Month</b>	<b>Number of Summons/Prosecutions in Reporting Month</b>
April 2012	0	0
May 2012	0	0
Overall Total	0	0

Annex L

## Construction Programme of the Project



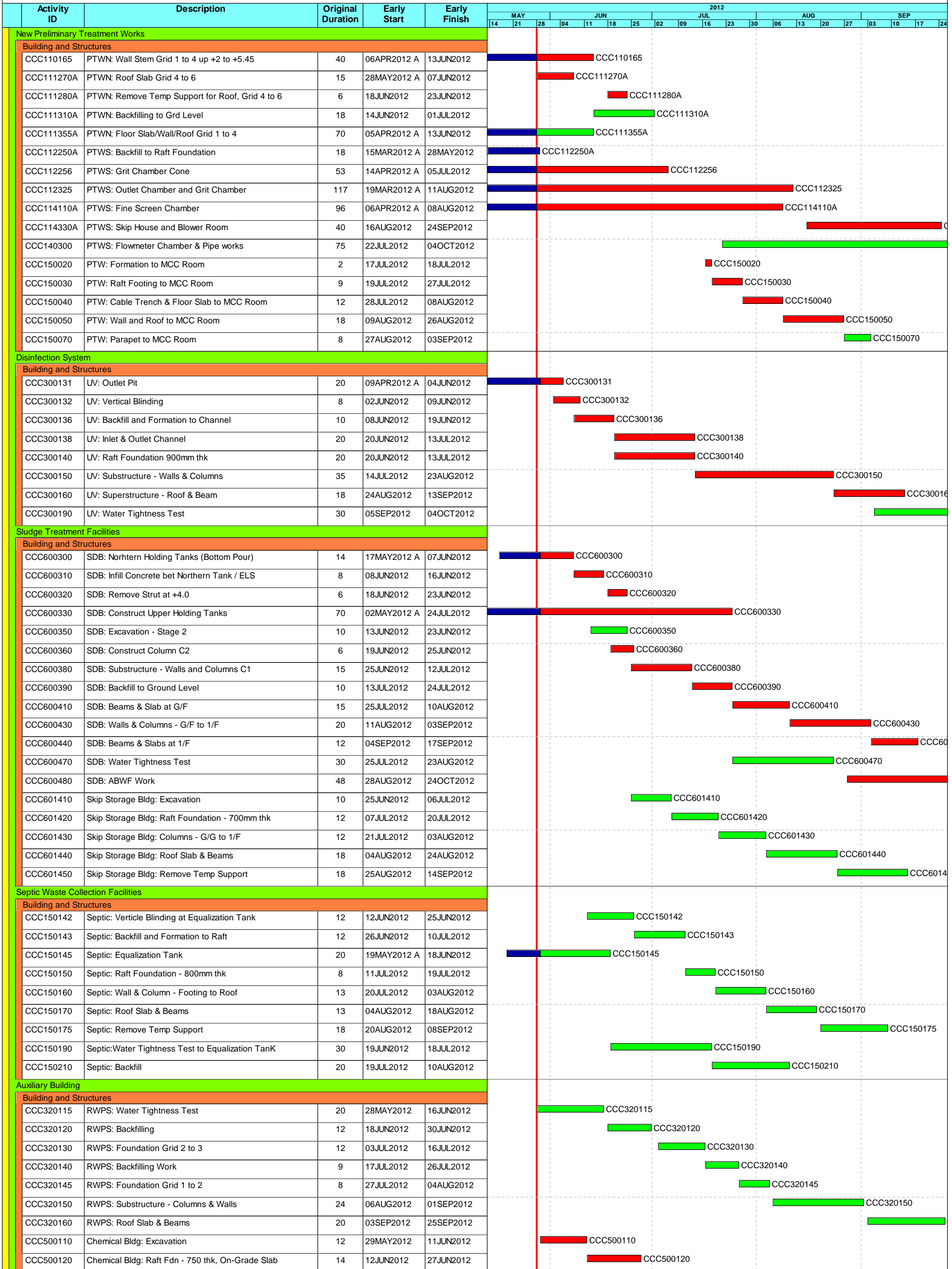
Activity ID	Description	Original Duration	Early Start	Early Finish	2012																			
					MAY			JUN			JUL			AUG			SEP							
					14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	03	10	17	24
<b>Preliminaries</b>																								
<b>General Requirements</b>																								
<b>Contract Preliminaries</b>																								
PLW005310	Operation Plan - Submission	66	14JUL2011 A	01JUN2012	PLW005310																			
PLW005320	Operation Plan - Approval	90	02JUN2012	30AUG2012	PLW005320																			
PLW007100	Submit Variation to Discharge Permit	90	01MAR2011 A	26JUL2012	PLW007100																			
PLW007200	EPD Approval Variation to Discharge Permit	90	27JUL2012	24OCT2012	PLW007200																			
<b>Design and Design Checking of Permanent Works</b>																								
<b>Submission and Consent</b>																								
<b>Submission and Approval</b>																								
DPD010361	DDA1: Design Memorandum - RtoC x2	28	23SEP2011 A	19JUN2012	DPD010361																			
DPD040360	DDA4: Plant Layout Drawing- SO review	28	01DEC2011 A	19JUN2012	DPD040360																			
DPD040361	DDA4: Plant Layout Drawing- RtoC x2	28	20JUN2012	17JUL2012	DPD040361																			
DPD072361	DDA7B: Control Philosophy.- RtoC x2	28	22DEC2011 A	16JUN2012	DPD072361																			
DPD077730	DDA8C: Pipe/Duct Supp. design- DC Checking	30	30MAR2012 A	30MAY2012	DPD077730																			
DPD077760	DDA8C: Pipe/Duct Supp. design- SO review	28	31MAY2012	27JUN2012	DPD077760																			
DPD077761	DDA8C: Pipe/Duct Supp. design- RtoC x2	28	28JUN2012	25JUL2012	DPD077761																			
DPD081161	DDA9A-D: Elect. sys design- RtoC x2	28	24AUG2011 A	16JUN2012	DPD081161																			
DPD084360	DDA9K: Renewable Energy Design- SO review	28	20APR2012 A	17JUN2012	DPD084360																			
DPD084361	DDA9K: Renewable Energy Design- RtoC x2	28	18JUN2012	15JUL2012	DPD084361																			
DPD084510	DDA9L Elect Typ. Inst. Drg - DC Checking	28	14APR2012 A	01JUN2012	DPD084510																			
DPD084540	DDA9L Elect Typ. Inst. Drg - SO Review	28	02JUN2012	29JUN2012	DPD084540																			
DPD084550	DDA9L Elect Typ. Inst. Drg - RtoC x2	28	30JUN2012	27JUL2012	DPD084550																			
DPD085210	DDA10F BS Installation Drg - DC Checking	28	26APR2012 A	21JUN2012	DPD085210																			
DPD085240	DDA10F BS Installation Drg - SO Review	28	22JUN2012	19JUL2012	DPD085240																			
DPD085250	DDA10F BS Installation Drg - RtoC x2	28	20JUL2012	16AUG2012	DPD085250																			
DPD090310	DDA11: T&C Plan- prep. Submission	90	01APR2011 A	21JUN2012	DPD090310																			
DPD090330	DDA11: T&C Plan- DC Checking	30	22JUN2012	02AUG2012	DPD090330																			
DPD090360	DDA11: T&C Plan- SO review	28	06AUG2012	02SEP2012	DPD090360																			
DPD090361	DDA11: T&C Plan- RtoC x2	28	03SEP2012	30SEP2012	DPD090361																			
DPD103151	PTW: DDA 13A Elect Dwg - RtoC x2	28	27JUL2011 A	19JUN2012	DPD103151																			
DPD153151	Septic: DDA14A Elect Dwg - RtoC x2	28	23AUG2011 A	21JUN2012	DPD153151																			
DPD153351	Septic: DDA14C BS Dwg - SO RtoC x2	28	28SEP2011 A	23JUN2012	DPD153351																			
DPD173720	WB & Access: DDA 27D CR DC Checking	30	08JUL2011 A	22JUN2012	DPD173720																			
DPD173740	WB & Access: DDA 27D CR SO Rew & Appr.	28	23JUN2012	20JUL2012	DPD173740																			
DPD173741	WB & Access: DDA 27D CR SO RtoC x2.	28	21JUL2012	17AUG2012	DPD173741																			
DPD203151	CEPT: DDA 15A Elect Dwg - RtoC x2	28	12SEP2011 A	21JUN2012	DPD203151																			
DPD203351	CEPT: DDA 15C BS Dwg - RtoC x2	28	18OCT2011 A	23JUN2012	DPD203351																			
DPD303151	UV: DDA 17A Elect Dwg - RtoC x2	28	10OCT2011 A	16JUN2012	DPD303151																			
DPD303351	UV: DDA 17C BS Dwg - RtoC x2	28	29SEP2011 A	16JUN2012	DPD303351																			
DPD323151	RWPS: DDA 21A Elect Dwg - RtoC x2	28	07DEC2011 A	17JUN2012	DPD323151																			
DPD323351	RWPS: DDA 21C BS Dwg - SO RtoC x2	28	24NOV2011 A	17JUN2012	DPD323351																			
DPD503151	Chemical: DDA 22A Elect Dwg - RtoC x2	28	29OCT2011 A	17JUN2012	DPD503151																			
DPD503251	Chemical: DDA 22B Mech Dwg - RtoC x2	28	30JUL2011 A	01JUN2012	DPD503251																			
DPD503351	Chemical: DDA 22C BS Dwg - RtoC x2	28	08MAR2012 A	23JUN2012	DPD503351																			
DPD503551	Chemical: DDA 22D E&MCR Dwg - SO rtoC x2	28	04NOV2011 A	23JUN2012	DPD503551																			
DPD601330	Sludge: DDA 16H Architectural - RtoC x2	28	21OCT2011 A	19JUN2012	DPD601330																			
DPD603151	Sludge: DDA 16A Elect Dwg - RtoC x2	28	10SEP2011 A	21JUN2012	DPD603151																			
DPD603351	Sludge: DDA 16C BS Dwg - RtoC x2	28	07SEP2011 A	19JUN2012	DPD603351																			
DPD703151	DOU: DDA 18A Elect Dwg - RtoC x2	28	03DEC2011 A	17JUN2012	DPD703151																			
DPD703351	DOU: DDA 18C BS Dwg - RtoC x2	28	12OCT2011 A	17JUN2012	DPD703351																			
DPD703551	DOU: DDA 18D E&MCR Dwg - RtoC x2	28	24AUG2011 A	17JUN2012	DPD703551																			
DPD803351	Admin Bldg: DDA 23C BS Dwg - RtoC x2	28	23SEP2011 A	17JUN2012	DPD803351																			
DPD803551	Admin Bldg: DDA 23B E&MCR Dwg - RtoC x2	28	23SEP2011 A	10JUN2012	DPD803551																			
DPD903461	EB3/MCCs: DDA 20E Foundation - RtoC x2	28	09NOV2011 A	29MAY2012	DPD903461																			
DPD903851	EB3/MCCs: DDA 20A Elect Dwg - RtoC x2	28	24DEC2011 A	16JUN2012	DPD903851																			
DPD903881	EB3/MCCs: DDA 20C BS Dwg - RtoC x2	28	24NOV2011 A	16JUN2012	DPD903881																			
DPD903896	EB3/MCCs: DDA 20D E&M CR Dg - RtoC x2	28	12SEP2011 A	16JUN2012	DPD903896																			
DPD903954	Refurbish: AIP 22A E&M GA Drg - SO Rew & Appr.	28	07FEB2011 A	23JUN2012	DPD903954																			
DPD904010	Refurbish: DDA 25 E SO Review SHB	28	21MAY2012 A	14JUN2012	DPD904010																			
DPD904011	Refurbish: DDA 25 E SHB - RtoC x2	28	15JUN2012	12JUL2012	DPD904011																			
DPD904160	Refurbish: DDA 25A-D E&M - Submission	60	17JAN2011 A	29MAY2012	DPD904160																			
DPD904170	Refurbish: DDA 25A-D E&M - DC Checking	30	30MAY2012	10JUL2012	DPD904170																			
DPD904180	Refurbish: DDA 25A-D E&M - SO Review	28	11JUL2012	17AUG2012	DPD904180																			
DPD904181	Refurbish: DDA 25A-D E&M - RtoC x2	28	20AUG2012	26SEP2012	DPD904181																			
DPD916316	Mis: DDA 28B1 MH & Pipe Works RtoC x2	28	25APR2012 A	16JUN2012	DPD916316																			
DPD916414	Mis: DDA 28B3 SO Review on Watermain	28	19APR2012 A	06JUN2012	DPD916414																			
DPD916416	Mis: DDA 28B3 Watermain RtoC x2	28	07JUN2012	04JUL2012	DPD916416																			
DPD916422	Mis: DDA 28C1 SO Review on Boundary Wall	28	23MAY2012 A	18JUN2012	DPD916422																			



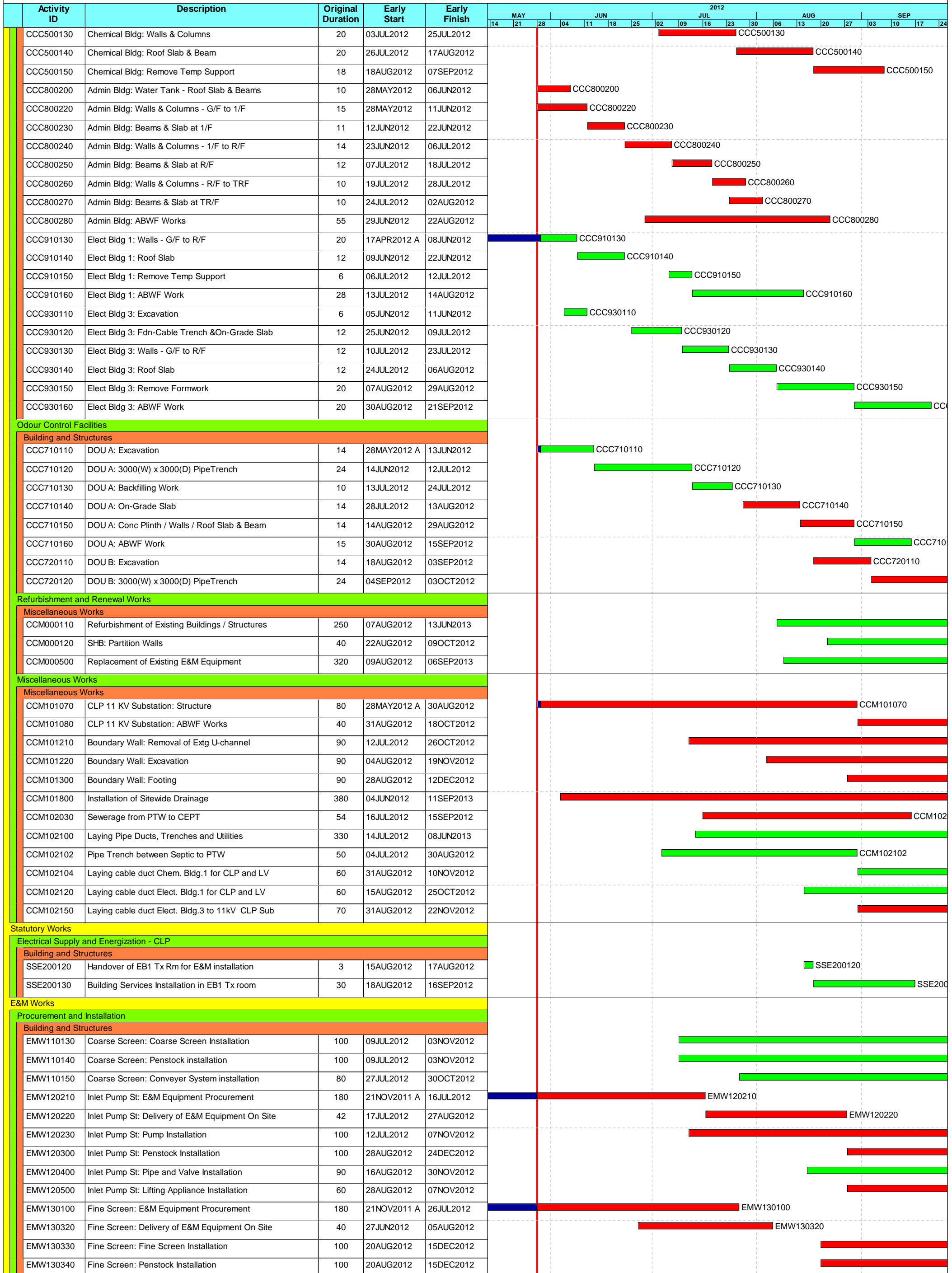
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Finish date 19JAN2014  
Data date 28MAY2012  
Run date 04JUN2012  
Page number 2A  
Project name WP6B  
c Primavera Systems, Inc.

**PPSTW Three Months Rolling Programme - June to August 2012**

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







Start date 14JUL2010  
Finish date 19JAN2014  
Data date 28MAY2012  
Run date 04JUN2012  
Page number 4A  
Project name WP6B  
c Primavera Systems, Inc.

**PPSTW Three Months Rolling Programme - June to August 2012**

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

Activity ID	Description	Original Duration	Early Start	Early Finish	2012																			
					MAY	JUN			JUL			AUG			SEP									
					14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	03	10	17	24
EMW130360	Fine Screen: Lifting Appliance Installation	60	20AUG2012	30OCT2012																				
EMW140410	Grit: E&M Equipment Procurement	180	21NOV2011 A	26JUL2012																				
EMW140413	Grit: Grit Blower Manufacturing	120	16DEC2011 A	26JUN2012																				
EMW140420	Grit: Delivery of E&M Equipment On Site	42	02JAN2012 A	26JUN2012																				
EMW140423	Grit: Grit Blower Deliver to site	40	27JUN2012	05AUG2012																				
EMW140430	Grit: Grit System Installation	100	20AUG2012	15DEC2012																				
EMW140440	Grit: Penstock Installation	100	20AUG2012	15DEC2012																				
EMW152100	Septic Station: Delivery of E&M Equipment	180	03JUN2012	29NOV2012																				
EMW161000	Access & WB System Equipment Procurement	120	06JUN2012	26OCT2012																				
EMW200151	CEPT: Lifting App. Maunf. deliver to site	60	21FEB2012 A	06JUL2012																				
EMW201000	CEPT: Penstock & Stop Log Installation	120	03JUL2012	21NOV2012																				
EMW201600	CEPT: Reactor System Installation	120	03AUG2012	22DEC2012																				
EMW202100	CEPT: Lifting Appliance Installation	45	07JUL2012	28AUG2012																				
EMW301100	UV: E&M Equipment Procurement	180	01FEB2012 A	26JUN2012																				
EMW302100	UV: Delivery of E&M Equipment	42	27JUN2012	07AUG2012																				
EMW311100	UV: UVMCC Equipment Procurement	150	01MAR2012 A	04SEP2012																				
EMW311200	UV: UVMCC Delivery of Mat'l & Equipment	50	05SEP2012	24OCT2012																				
EMW711100	DOU A: E&M Equipment Procurement	180	18JAN2012 A	15AUG2012																				
EMW712100	DOU A: Delivery of E&M Equipment on Site	35	16AUG2012	19SEP2012																				
EMW802100	Admin Bldg : SCADA Eq. Procurement	70	28APR2012 A	05AUG2012																				
EMW802150	Admin Bldg : ELV Eq. Procurement	60	27JUN2012	25AUG2012																				
EMW802200	Admin Bldg : Deliver of SCADA Eq. On site	15	06AUG2012	20AUG2012																				
EMW802250	All Area:: Delivery of ELV Eq. On site	30	26AUG2012	24SEP2012																				
EMW802300	Admin Bldg : SCADA Equipment Installation	90	23AUG2012	20NOV2012																				
EMW802302	Admin Bldg : SCADA Installation - Rack and conso	30	23AUG2012	21SEP2012																				
EMW808000	Admin Bldg: Temp Control Connection to Extg PTW	10	10AUG2012	21AUG2012																				
EMW808010	Decommission Control of PTW at Extg Admin Bldg	6	22AUG2012	28AUG2012																				
EMW808020	Remove E&M Equipment at Extg Admin Bldg	12	29AUG2012	11SEP2012																				
EMW808030	Disconnect Utilities at Extg Admin Bldg	12	29AUG2012	11SEP2012																				
EMW811100	SHB Bldg: E&M Equipment Procurement	60	28MAY2012	26JUL2012																				
EMW811200	SHB Bldg: Delivery of E&M Eq. On site	60	01AUG2012	29SEP2012																				
EMW941100	Elect Bldg 1: Mat'l & Equipment Procurement	180	15NOV2011 A	16JUL2012																				
EMW941200	Elect Bldg 1 : Delivery of Mat'l & Equipment	40	17JUL2012	25AUG2012																				
EMW941340	Elect Bldg 1: Install LV & Local Control Panel	40	27AUG2012	13OCT2012																				
EMW941510	Elect Bldg 1: Cable Containment Installation	40	15AUG2012	02OCT2012																				
EMW941650	Elect Bldg 1: BS Installation in new extension	40	27AUG2012	13OCT2012																				
EMW942100	CB Main SW Rm: Mat'l & Equipment Procurement	160	20MAR2012 A	04SEP2012																				
EMW942200	CB Main SW Rm Delivery of Mat'l & Equipment	40	05SEP2012	14OCT2012																				