

ATAL-Degrémont-China State Joint Venture

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

September 2013

Environmental Resources Management

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Point Sewage Treatment Works:
Thirty-fourth Monthly EM&A Report

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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 (R127) – Tai Kai Wai)
Date:	13 September 2013

Your Ref:
Our Ref: 60017423/C/iyys13091101

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)

11 September 2013

Dear Sir,

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

Monthly EM&A Report for August 2013

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for August 2013 provided by email dated 9 and 11 September 2013. 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/A.

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. C Y Hung
ERM – Ms. Winnie Ko
ATAL–Degremont–China State JV – Mr. C.Y. Fong

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EXECUTIVE SUMMARY

The construction works of *DC/2008/03 of Design, Build and Operate Pillar Point Sewage Treatment Works (the Project)* commenced on 13 November 2010. This is the 34th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 August 2013 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting Month

Works undertaken in the reporting month included:

- Construct finishing works at the Administration Building, Sludge Dewatering Building, Septic Waste Reception Station, Sludge Skip Storage Building, PTW, CEPT, Reuse Water Pump Room, Existing Solid Handling Building and Chemical Building;
- Construct staircase and fins wall at Sludge Dewatering Building;
- Install E&M equipment at the Administration Building, Sludge Dewatering Building, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Electrical buildings No.1, No.3 and No.4;
- Install BS and DO duct at the Deodorisation Units Portion A and Deodorisation Units Portion B;
- Construct drainage, cable ducts, water mains and boundary walls and installation of pipe bridge at P2;
- Conduct preparation works for Payment Flow Meter at Payment Flow Meter Chamber;
- Construct excavation and structural works in Empty Sludge Skip Storage Area;
- Construct walls and roofs at Sludge Skip Storage Building; and
- Construct backfilling and drainage works for the whole site.

Environmental Monitoring and Audit Progress

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

- 24-hour TSP Monitoring at each monitoring station (AM1 and AM2) 5 sets
- 1-hour TSP Monitoring at each monitoring station (AM1 and AM2) 15 sets
- Joint Environmental Site Inspection 5 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). In total, 873.73 tonnes of inert C&D material were generated from the Project, of which 120 tonnes were reused in this Contract and the remaining was disposed as public fill. 50.00 kg of metals, 60.00 kg of papers/

cardboard packing and 8.00 kg of plastics were sent to recyclers for recycling during the reporting period.

Environmental Site Inspection

Five weekly joint environmental site inspections were carried out by the representatives of the Contractor, 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 16 August 2013. 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:

- Construct finishing works at the Administration Building, Sludge Dewatering Building, Septic Waste Reception Station, Sludge Skip Storage Building, UV Building, PTW, CEPT, Reuse Water Pump Room, Existing Solid Handling Building and Chemical Building;
- Construct staircase and fins wall at Sludge Dewatering Building;
- Install E&M equipment at the Administration Building, Sludge Dewatering Building, PTW, CEPT, UV Building, Septic Waste Reception Station, Existing Solid Handling Building, Reuse Water Pump Room, Chemical Building, Electrical buildings No.1, No.3 and No.4;
- Install BS and DO duct at the Deodorisation Units Portion A and Deodorisation Units Portion B;
- Construct drainage, cable ducts, water mains and boundary walls and installation E&M Duct laying at P2;
- Conduct preparation works for Payment Flow Meter at Payment Flow Meter Chamber;
- Construct structural works in Empty Sludge Skip Storage Area;
- Construct walls and roofs at Sludge Skip Storage Building; and
- Construct backfilling and drainage works for the whole site.

environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs, 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 34th EM&A report which summarises the monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 31 August 2013.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1: **Introduction**

It details the scope and structure of the report.

Section 2: **Project Information**

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

Section 3: **Environmental Monitoring Requirements**

It summarises the environmental monitoring requirements including monitoring parameters, programmes, methodologies, frequency, 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**

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

Section 5: **Monitoring Results**

It summarises the monitoring results obtained in the reporting period.

Section 6: **Waste Management**

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

Section 7: **Environmental Site Inspection**

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

Section 8: **Environmental Non-conformance**

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

Section 9: **Further Key Issues**

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

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

It compares the monitoring data and waste quantity against the 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 in the north. It is a preliminary treatment works with screening and grit removal processes and the treated effluent is 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 that the sewage treatment capacity be expanded and the plant be upgraded to chemically enhanced primary treatment (CEPT) with disinfection. This is to cater for the projected ultimate population and planned developments in the Tuen Mun area, and to improve the effluent quality reducing 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 the 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. A variation of an Environmental Permit was granted on 23 April 2013 (EP-321/2008/A). Under the requirements of Condition 3.1 of EP-321/2008/A, 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 month is presented in *Annex L*.

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

Construction Activities Undertaken	
•	Construct finishing works at the Administration Building, Sludge Dewatering Building, Septic Waste Reception Station, Sludge Skip Storage Building, PTW, CEPT, Reuse Water Pump Room, Existing Solid Handling Building and Chemical Building;
•	Construct staircase and fins wall at Sludge Dewatering Building;
•	Install E&M equipment at the Administration Building, Sludge Dewatering Building, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Electrical buildings No.1, No.3 and No.4;
•	Install BS and DO duct at the Deodorisation Units Portion A and Deodorisation Units Portion B;
•	Construct drainage, cable ducts, water mains and boundary walls and installation of pipe bridge at P2;
•	Conduct preparation works for Payment Flow Meter at Payment Flow Meter Chamber;
•	Construct excavation and structural works in Empty Sludge Skip Storage Area;
•	Construct walls and roofs at Sludge Skip Storage Building; and
•	Construct backfilling and drainage works for the whole site.

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/A	Throughout the Contract	Permit granted on 23 April 2013
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	Ref No. 308136	Throughout the Contract	-

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Water Discharge License	WT00008027-2010	Till 31 December 2015	Wastewater discharge licence was issued by EPD on 7 December 2010.
Construction Noise Permit	GW-RW0466-13	28 July 2013 - 27 January 2014	
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 average TSP	Once every 6 days
1-hour average 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, μgm^{-3}	Limit Level, μgm^{-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 was performed using High Volume Samplers (HVS) with appropriate sampling inlets 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 0438320)
AM2	GMW GS-2310 (S/N 1252), CM-AIR-43 (S/N 0438320)

3.1.5 *Monitoring Methodology*

The setup locations of the HVSs 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 was nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and 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, implemented 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 area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- 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;
- the shelter lid was closed and secured with an aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate record sheet was inserted into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 and 1.37 m³ min⁻¹ which were within the range specified in the EM&A Manual (ie 0.6 to 1.7 m³ min⁻¹);
- 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 folded in half l so that only surfaces with collected particulate matter were in contact;
- the filter was 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, eg. motor brushes were replaced routinely and electrical wiring was checked to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment 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 F*.

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 G*.

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 the relevant environmental mitigation measures listed in the EIA Report and EM&A Manual as well as the specific environmental requirements stated in the 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 MONITORING RESULTS

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 and 1-hour TSP together with the wind data and graphical presentations for the past 4 months are presented in *Annex G*. The weather conditions during the monitoring period 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 the 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 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 the 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*.

Table 6.1 *Quantities of Waste Generated from the Project*

Month / Year	Quantity			
	Total Inert C&D Materials Generated ^(a)	Non-inert C&D Materials ^(b)		
		C&D Materials Recycled ^(c)	C&D Waste Disposed of at Landfill ^(d)	Chemical Waste
August 2013	873.73 tonnes	118.00 kg	63.95 tonnes	0 L

Notes:

(a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated soil. In total, 873.73 tonnes of inert C&D waste were generated from the Project, of which 120.00 tonnes were reused in this Contract and the remaining 753.73 tonnes were disposed as public fill. 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 were grouped into construction wastes as the materials were not disposed of with others at the public fill.

(c) 50.00 kg of metals, 60.00 kg of papers/ cardboard packing and 8.00 kg of plastics were sent to recyclers for recycling during the reporting period

(d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at WENT Landfill by subcontractors.

7.1*WEEKLY SITE AUDITS*

Joint site inspections were conducted by representatives of the Contractor, the SOR and the ET on 2, 9, 16, 23 and 30 August 2013. The IEC was also present at the joint inspection on 30 August 2013.

Major observations during the reporting period are summarised as follows:

2 August 2013

- A few storm drainages within the site were still observed clogged. The Contractor was reminded to maintain proper drainages for the surface runoff especially during rainy season.
- Construction materials were observed storing under the retained tree R22. The Contractor was reminded to remove the construction materials from the tree.

9 August 2013

- A few storm drainages within the site were still observed clogged. The Contractor was further reminded to maintain proper drainages for the surface runoff especially during rainy season. Tree tags were observed missing for retained trees R29, R11, R12, R13, T07, T08, T03 and T04. The Contractor was reminded to provide tree tags for these trees.
- Tree tags were observed missing for retained tree 126, 127, 128 and 129. The Contractor was reminded to provide tree tags for these trees.

16 August 2013

- No observation during this site audit.

23 August 2013

- Dark smoke was observed emitted from the hydraulic excavator at the entrance. The Contractor was reminded to well maintain the equipment and ensure that dark smoke from the plant is avoided.

30 August 2013

- Storm drainages within the site were observed without silt removal measure. The Contractor was reminded to provide silt removal measure to treat the surface runoff before discharge.
- Storm drainages were observed being too close to the wheel washing bay. The Contractor was reminded to fully sealed the drainage manholes and ensure the waste water is treated before discharge.

Follow-up actions resulting from the last site inspections were taken as reported by the Contractor and their results were observed in the site inspections conducted in the reporting period.

7.2

LANDSCAPE AND VISUAL MONITORING

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved. A review of the landscape and visual mitigation measures was performed on 16 August 2013. 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 are summarised as follow:

16 August 2013

- Weeds were observed around the trees in P2 area. The Contractor was remained to remove all the weeds from the protection zone.

8 ENVIRONMENTAL NON-CONFORMANCE

8.1.1 *Summary of Monitoring Exceedance*

No exceedances of the Action and Limit Levels of 1-hr and 24-hr TSP was 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 environmental complaint 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 undertaken
<ul style="list-style-type: none"> • Construct finishing works at the Administration Building, Sludge Dewatering Building, Septic Waste Reception Station, Sludge Skip Storage Building, UV Building, PTW, CEPT, Reuse Water Pump Room, Existing Solid Handling Building and Chemical Building; • Construct staircase and fins wall at Sludge Dewatering Building; • Install E&M equipment at the Administration Building, Sludge Dewatering Building, PTW, CEPT, UV Building, Septic Waste Reception Station, Existing Solid Handling Building, Reuse Water Pump Room, Chemical Building, Electrical buildings No.1, No.3 and No.4; • Install BS and DO duct at the Deodorisation Units Portion A and Deodorisation Units Portion B; • Construct drainage, cable ducts, water mains and boundary walls and installation E&M Duct laying at P2; • Conduct preparation works for Payment Flow Meter at Payment Flow Meter Chamber; • Construct structural works in Empty Sludge Skip Storage Area; • Construct walls and roofs at Sludge Skip Storage Building; and • Construct backfilling and drainage works for the whole site.

Potential environmental impacts arising from the above construction activities will be mainly associated with dust, construction noise, site runoffs, 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 for the nature of works in progress.

9.1.3 *Construction Programme for the Next Three Months*

The most up-to-date construction programme for the Project is presented in *Annex L*.

10.1 AIR QUALITY

Since the EIA has only included a qualitative assessment of dust impact during the 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, $\mu\text{g m}^{-3}$	Measured 24-hour TSP Monitoring Results, $\mu\text{g m}^{-3}$ (a) (b)	
		24 hour (a)	Average	Range
AM1	A1	260	71	66 - 76
AM2	A7	260	70	68 - 71

Notes:

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

(b) The average and range of data were calculated from the period between the commencement of the construction works and this reporting month.

The monitoring results show that the average and range of the 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 the EIA. With reference to the C&D Material Assessment (Contractor's General Submission (CSF) No.: DC200803/CSF/SAF/060026/A), the difference in quantities is mainly due to the differences in excavation depths and the 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 Amount of C&D Materials, General Wastes and Chemical Wastes Actually Generated and Estimated in the EIA and C&D Material Assessment*

Type of Material	Estimated Amount of Public Fill and Construction Waste in the EIA (inert & non-inert)	Estimated Amount of Public Fill and Construction Waste in C&D Material Assessment (CSF No.: DC200803/CSF/SAF/060026/A) ^(c)	Accumulated Actual Amount of Public Fill and Construction Waste Recorded ^(a) ^(b) (inert & non-inert)
Amount of C&D Materials Arising	61,489.00 m ³	77,600.00 m ³	126,458.22 m ³
Amount of C&D Materials Reused on other site	-	-	3,163.89 m ³
Amount of C&D Materials Reused on site	14,926.00 m ³	18,000.00 m ³	24,043.89 m ³
Amount of C&D Materials Sent to Fill Banks	46,563.00 m ³	59,600.00 m ³	99,250.12 m ³
General Refuse Small		-	1,835.05 tonnes
Chemical Waste Small		-	810.00 L

Notes:

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

(b) The density of soil and rock (bulked) is 1.8 tonnes/m³.

(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) because of the new plant & facility layout.

10.3

CONCLUSION OF THE REVIEW

The EIA predictions and monitoring results since the commencement of the construction works have been reviewed. The EIA concluded that the Project would not cause adverse impacts to the environment, and monitoring results have also confirmed that 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 August 2013 in accordance with EM&A Manual and requirements of EP (EP-321/2008/A).

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 of 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 the 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

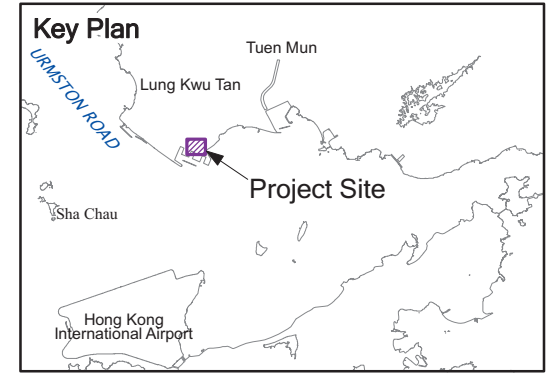
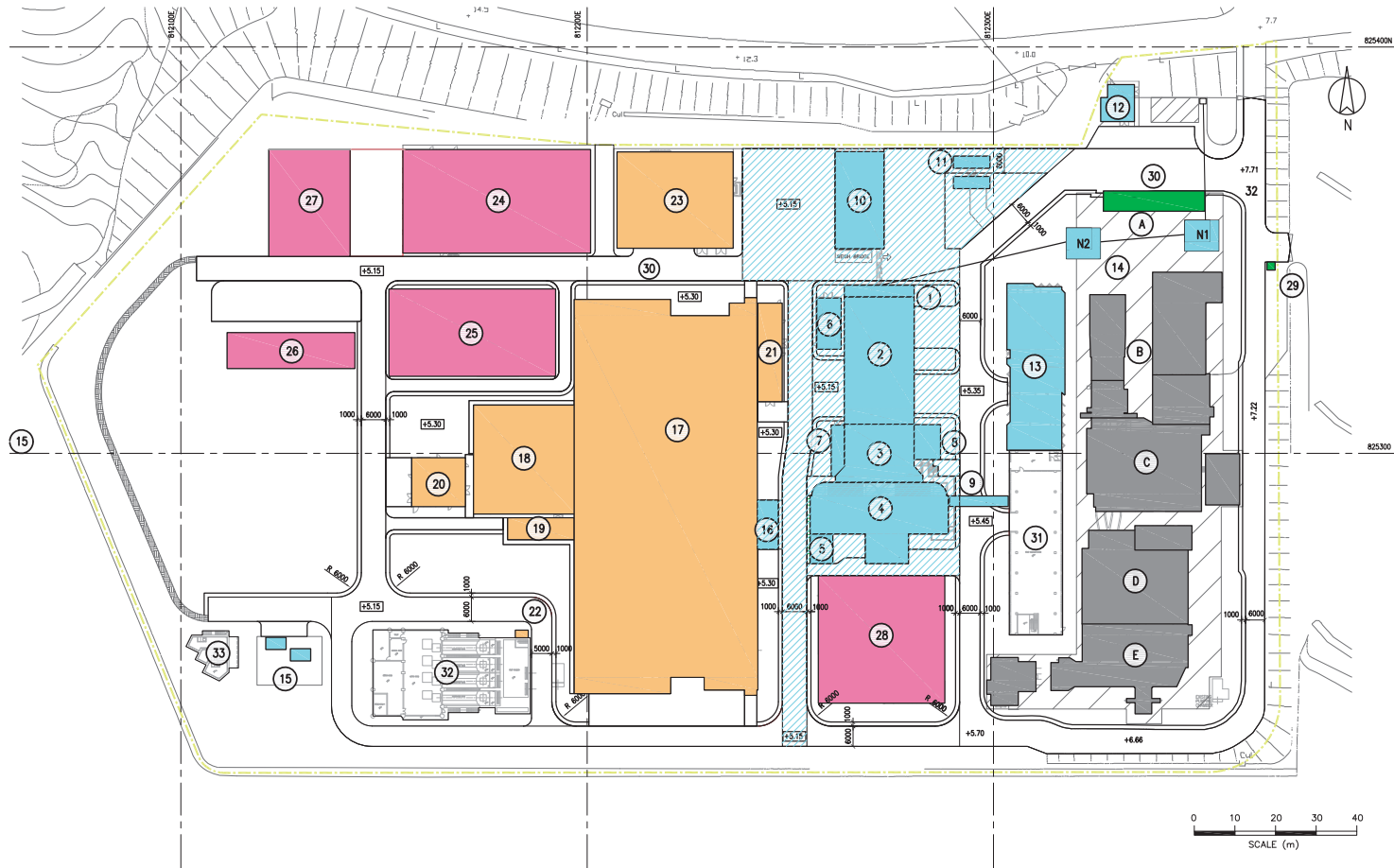
- ⑬ ADMINISTRATION BUILDING
- ⑭ INLET CHAMBERS
- ⑮ PAYMENT FLOWMETER CHAMBER
- ⑯ CEPT INLET CHAMBER

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

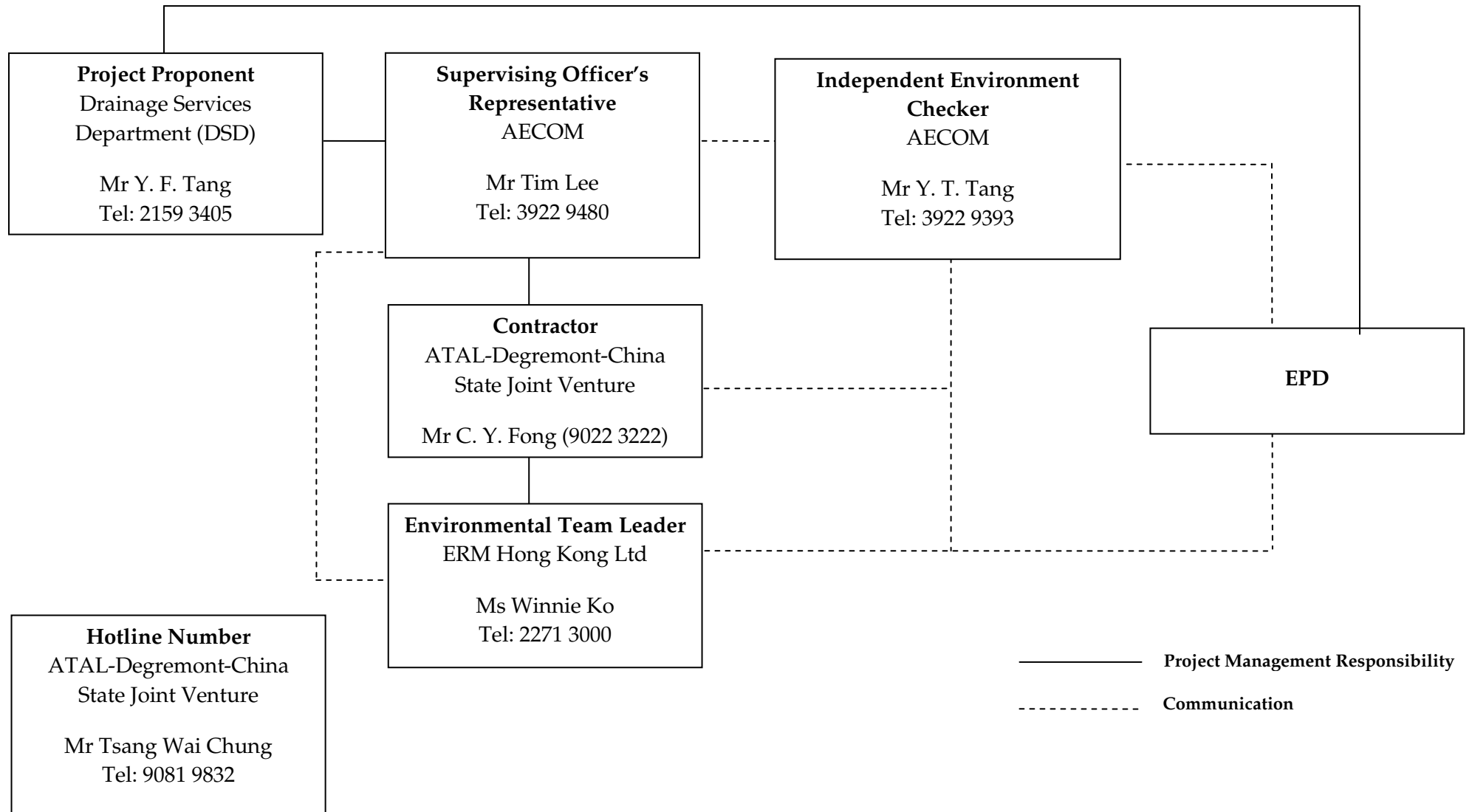
Annex B

Works Location

Annex C

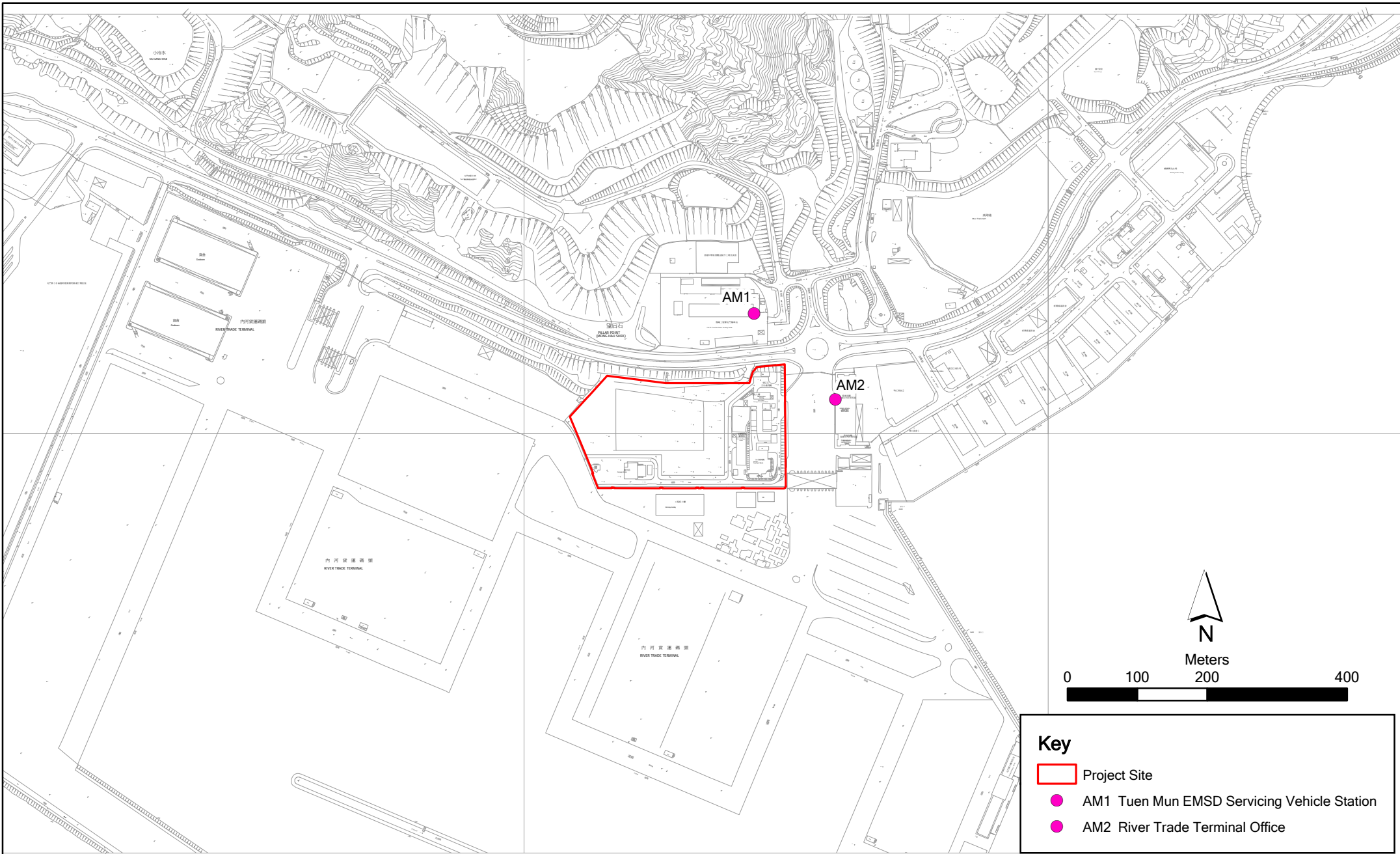
Project Organization Chart with Contact Details

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)
August 2013**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01-Aug	02-Aug	03-Aug
04-Aug	05-Aug	06-Aug	07-Aug	08-Aug	09-Aug	10-Aug
		3X1-hr & 1X 24-hr TSP				
11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug
	3X1-hr & 1X 24-hr TSP				3X1-hr & 1X 24-hr TSP	
18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug
				3X1-hr & 1X 24-hr TSP		
25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug
			3X1-hr & 1X 24-hr TSP			

**Contract No. DC/2008/03 - Design, Build and Operate Pillar Point Sewage Treatment Works
(Tuen Mun EMSD Servicing Vehicle Station - AM1 & River Trade Terminal Office - AM2)
September 2013**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
		3X1-hr & 1X 24-hr TSP				
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
	3X1-hr & 1X 24-hr TSP				3X1-hr & 1X 24-hr TSP	
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
				3X1-hr & 1X 24-hr TSP	Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
			3X1-hr & 1X 24-hr TSP			
29-Sep	30-Sep					
	3X1-hr & 1X 24-hr TSP					

Annex F

Calibration Reports for HVSs

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
<i>24-hr and 1-hr TSP</i>		HVS	Calibrator		
AM1	Tuen Mun EMSD Vehicle Servicing Station	GMW GS-2310 (S/N 7580)	CM-AIR-43 (S/N 0438320)	03 July 2013	03 September 2013
AM2	River Trade Terminal Office	GMW GS-2310 (S/N 1252)	CM-AIR-43 (S/N 0438320)	03 July 2013	03 September 2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : EMSD
 Calibrated by : K.T.Ho
 Date : 03/07/2013

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.4	3.335	1.608	55	54.3
2 13 holes	9.6	3.060	1.477	48	47.4
3 10 holes	7.4	2.687	1.298	41	40.5
4 7 holes	4.6	2.118	1.027	30	29.6
5 5 holes	2.7	1.6229	0.790	20	19.8

Sampler Calibration Relationship

Slope(m):41.458 Intercept(b): -13.087 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan

Date: 05/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : River Trade
 Calibrated by : P.F.Yeung
 Date : 03/07/2013

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.4	3.335	1.608	66	65.2
2 13 holes	9.4	3.028	1.462	58	57.3
3 10 holes	7.6	2.723	1.317	50	49.4
4 7 holes	4.7	2.141	1.038	37	36.5
5 5 holes	2.6	1.593	0.775	23	22.7

Sampler Calibration Relationship

Slope(m): 50.408 Intercept(b): -20.267 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan

Date: 05/07/2013



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
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 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Dec 26, 2012 Rootsmeter S/N 0438320 Ta (K) - 295
 Operator Tisch Orifice I.D. - 2323 Pa (mm) - 753.11

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4440	3.2	2.00
2	NA	NA	1.00	1.0240	6.4	4.00
3	NA	NA	1.00	0.9120	8.0	5.00
4	NA	NA	1.00	0.8720	8.8	5.50
5	NA	NA	1.00	0.7200	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9967	0.6902	1.4149	0.9957	0.6896	0.8851
0.9925	0.9693	2.0010	0.9915	0.9683	1.2517
0.9903	1.0858	2.2372	0.9893	1.0847	1.3995
0.9893	1.1345	2.3464	0.9883	1.1334	1.4678
0.9840	1.3666	2.8299	0.9830	1.3652	1.7702
Qstd slope (m) = 2.09107			Qa slope (m) = 1.30939		
intercept (b) = -0.02838			intercept (b) = -0.01775		
coefficient (r) = 0.99996			coefficient (r) = 0.99996		
y axis = SQRT[H2O(Pa/760)(298/Ta)]			x axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Annex G

24-hour and 1-hour TSP Monitoring Results

Annex G - 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Site Conditions / Observations / Remarks	Temperature ($^{\circ}\text{C}$)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-08-2013	13:10	14:10	Sunny	102	343	500	Construction work in progress	30.0	*	7580	8023
	14:10	15:10	Sunny	96	343	500	Construction work in progress	30.0	*	7580	8024
	15:10	16:10	Sunny	103	343	500	Construction work in progress	30.0	*	7580	8025
12-08-2013	13:10	14:10	Sunny	104	383	500	Construction work in progress	30.0	*	7580	8046
	14:10	15:10	Sunny	96	383	500	Construction work in progress	30.0	*	7580	8047
	15:10	16:10	Sunny	106	383	500	Construction work in progress	30.0	*	7580	8048
16-08-2013	13:10	14:10	Cloudy	92	343	500	Construction work in progress	27.0	*	7580	8069
	14:10	15:10	Cloudy	96	343	500	Construction work in progress	27.0	*	7580	8070
	15:10	16:10	Cloudy	95	343	500	Construction work in progress	27.0	*	7580	8071
22-08-2013	13:10	14:10	Cloudy	95	343	500	Construction work in progress	28.0	*	7580	8092
	14:10	15:10	Cloudy	91	343	500	Construction work in progress	28.0	*	7580	8093
	15:10	16:10	Cloudy	85	343	500	Construction work in progress	28.0	*	7580	8094
28-08-2013	13:10	14:10	Sunny	96	343	500	Construction work in progress	30.0	*	7580	8119
	14:10	15:10	Sunny	93	343	500	Construction work in progress	30.0	*	7580	8120
	15:10	16:10	Sunny	106	343	500	Construction work in progress	30.0	*	7580	8121
				Min.	85						
				Max.	106						
				Average	97						

* Wind Speed data is presented in the Meteorological Data table

Annex G - 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
06-08-2013	13:00	14:00	Sunny	105	383	500	Construction work in progress	30.0	*	1252	8019
	14:00	15:00	Sunny	103	383	500	Construction work in progress	30.0	*	1252	8020
	15:00	16:00	Sunny	93	383	500	Construction work in progress	30.0	*	1252	8021
12-08-2013	13:00	14:00	Sunny	106	383	500	Construction work in progress	30.0	*	1252	8042
	14:00	15:00	Sunny	109	383	500	Construction work in progress	30.0	*	1252	8043
	15:00	16:00	Sunny	95	383	500	Construction work in progress	30.0	*	1252	8044
16-08-2013	13:00	14:00	Cloudy	91	383	500	Construction work in progress	27.0	*	1252	8065
	14:00	15:00	Cloudy	82	383	500	Construction work in progress	27.0	*	1252	8066
	15:00	16:00	Cloudy	94	383	500	Construction work in progress	27.0	*	1252	8067
22-08-2013	13:00	14:00	Cloudy	106	383	500	Construction work in progress	28.0	*	1252	8088
	14:00	15:00	Cloudy	102	383	500	Construction work in progress	28.0	*	1252	8089
	15:00	16:00	Cloudy	102	383	500	Construction work in progress	28.0	*	1252	8090
28-08-2013	13:00	14:00	Sunny	89	383	500	Construction work in progress	30.0	*	1252	8115
	14:00	15:00	Sunny	91	383	500	Construction work in progress	30.0	*	1252	8116
	15:00	16:00	Sunny	85	383	500	Construction work in progress	30.0	*	1252	8117
			Min.	82							
			Max.	109							
			Average	97							

* Wind Speed data is presented in the Meteorological Data table

Annex G - 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 ³ /min)			TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID	
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average							
06-08-2013	16:10	07-08-2013	16:10	Sunny	2.7114	2.8404	14843.18	14867.18	24	1.23	1.23	1.23	73	183	260	Construction work in progress	7580	8026	
12-08-2013	16:10	13-08-2013	16:10	Sunny	2.8164	2.9341	14870.18	14894.18	24	1.23	1.23	1.23	66	183	260	Construction work in progress	7580	8049	
16-08-2013	16:10	17-08-2013	16:10	Cloudy	2.7656	2.9001	14897.18	14921.18	24	1.23	1.23	1.23	76	183	260	Construction work in progress	7580	8072	
22-08-2013	16:10	23-08-2013	16:10	Cloudy	2.7547	2.8779	14924.18	14948.18	24	1.23	1.23	1.23	70	183	260	Construction work in progress	7580	8095	
28-08-2013	16:10	29-08-2013	16:10	Sunny	2.8257	2.9506	14951.18	14975.18	24	1.23	1.23	1.23	71	183	260	Construction work in progress	7580	8122	
												Min.	66						
												Max.	76						
												Average	71						

24-hour TSP Monitoring Results

Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m ³ /min)			TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID	
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average							
06-08-2013	16:00	07-08-2013	16:00	Sunny	2.7795	2.9001	22861.20	22885.20	24	1.24	1.24	1.24	68	192	260	Construction work in progress	1252	8022	
12-08-2013	16:00	13-08-2013	16:00	Sunny	2.7903	2.9161	22888.20	22912.20	24	1.24	1.24	1.24	70	192	260	Construction work in progress	1252	8045	
16-08-2013	16:00	17-08-2013	16:00	Cloudy	2.7435	2.8696	22915.20	22939.20	24	1.24	1.24	1.24	71	192	260	Construction work in progress	1252	8065	
22-08-2013	16:00	23-08-2013	16:00	Cloudy	2.7548	2.8821	22942.20	22966.20	24	1.24	1.24	1.24	71	192	260	Construction work in progress	1252	8091	
28-08-2013	16:00	29-08-2013	16:00	Sunny	2.8066	2.9321	22969.20	22993.20	24	1.24	1.24	1.24	70	192	260	Construction work in progress	1252	7872	
												Min.	68						
												Max.	71						
												Average	70						

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
06-08-2013	Sunny	30.0	64-87	0.0	N/A	S-SE
07-08-2013	Sunny	30.0	72-91	0.5	N/A	N/A
12-08-2013	Sunny	30.0	51-85	Trace	N/A	S-SE
13-08-2013	Sunny	29.0	70-98	48.4	N/A	SE-NE
16-08-2013	Cloudy	27.0	83-91	5.3	N/A	N/A
17-08-2013	Rainy	27.0	77-98	35.6	11.0	S
22-08-2013	Cloudy	28.0	75-97	20.1	13.0	SE
23-08-2013	Cloudy	27.0	79-91	26.0	N/A	N/A
28-08-2013	Sunny	30.0	62-89	57.7	N/A	N/A
29-08-2013	Sunny	30.0	69-88	0.0	N/A	N/A

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

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

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&A Manual</i>			
<i>Construction Phase</i>			
Air Quality	Dust mitigation measures stipulated in <i>the Air Pollution Control (Construction Dust) Regulation</i> shall be incorporated to control Post emission. Notice shall be given to authority prior to commencing of work.	Work sites / during construction period	Notice of works commencement was submitted to EPD on 3 August 2010.
Water Quality	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. It is recommended to install perimeter channels in the works areas to intercept runoff as site boundary prior to the commencement of any earthwork. To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. Drainage channels are also required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance can ensure the normal operation of these facilities throughout the construction period. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Work site/During the construction period	<>
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	√ 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	√

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

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>transporting wastes in enclosed containers</p> <ul style="list-style-type: none"> • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. 		
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"> • 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. • 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 • Proper storage and site practices to minimise the potential for damage or contamination of construction materials. • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. 	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&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work 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&D material for off-site disposal, the excavated</p>	Work site / During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>material generated from site formation works for the proposed new facilities and units at the STW should be reused on-site as far as practicable. The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses.</p>		
Waste Management	<p>Mitigation measures and good site practices should be followed to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include:</p> <ul style="list-style-type: none"> • Where it is unavoidable to have transient stockpiles of C&D material pending collection for disposal, the transient stockpiles shall be located away from waterfront or storm drains as far as possible. • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric. • Skip hoist for material transport should be totally enclosed by impervious sheeting. • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site • 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. • 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. • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. • The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading. 	Work site / During design stage & construction period	√
Waste Management	<p>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</p>	Work site/ During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	<p>and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor. In order to monitor the disposal of the surplus C&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 & spread size. They will require minimal pruning and suffer much less damage during transplanting when comparing the travel distance from an on-site nursery to an off-site nursery.</p> <p>Besides, these trees may also be positioned as visual mitigation during</p>	Work site/ During design stage & construction period	√. A tree nursery has been set up off-site near the site office.

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	<p><u>Construction Light</u></p> <p>All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC users. The Contractor shall consider other security measures which shall minimize the visual impacts.</p>	Work site / During design stage & construction period	√
Landscape & Visual	<p><u>Tree Transplanting</u></p> <p>Apart from the 18 numbers of "<i>Leucaena leucocephala</i>", which are proposed to be felled in accordance with ETWB TCW No. 3/2006, all the affected trees shall be transplanted. Where practicable, trees shall be directly transplanted to permanent on-site locations. The location of the transplanted tree is shown in Figure 8.9.1.</p>	Work site / During design stage & construction period	√.
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 Figure 8.9.1.</p>	Work site / During design stage & construction period	N/A
Landscape & Visual	<p><u>Re-use of Existing Soil and Advance formation of Planting Area</u></p> <p>Existing topsoil shall be re-used where possible for new planting areas within the project. Advance formation of planting area and early implementation of the plating works can minimize adverse impact on trees. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary.</p>	Work site / During design stage & construction period	√

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

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

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 Generated (see Note 13)					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated (see Note 13)				
	Total Quantity Generated	Reused in the Contract	Reused in other Projects	Hard Rocks & Large Broken Concrete	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	2,248.00	0.00	0.00	55.00	2248.00	60.00	100.00	0.00	0.00	18.05 (see Note 4)
Dec 2010	11,314.00 (see Note 4)	0.00	0.00	225.00	11314.00	100.00	120.00	20.00	0.00	28.40 (see Note 4)
Jan 2011	58,383.00 (see Note 4)	0.00	0.00	3,000.00	58,382.90	250.00	280.00	60.00	0.00	4.59 (see Note 4)
Sub-total	71,945.00	0.00	0.00	3280.00	71944.90	410.00	500.00	80.00	0.00	51.04
Feb 2011	12,855.00	0.00	0.00	1,050.00	12,854.70	100.00	150.00	50.00	0.00	2.43 (see Note 4)
Mar 2011	22,859.00	0.00	0.00	1,500.00	22,858.70	150.00	180.00	55.00	0.00	9.02
Apr 2011	8,547.00 (see Note 7)	0.00	5,684.00(see Note 5, 7)	550.00	2,863.30	50.00	30.00	15.00	0.00	5.78
Sub-total	44,261.00	0.00	5684.00	3100.00	38576.70	300.00	360.00	120.00	0.00	17.23
May 2011	6,293.00 (see Note 7)	0.00	11.00 (see Note 5, 7)	425.00	6,282.00 (see Note 7)	45.00	25.00	10.00	360.00 (see Note 7)	8.83
Jun 2011	4,587.00 (see Note 7)	0.00	0.00 (see Note 7)	313.00	4,586.00 (see Note 7)	40.00	30.00	15.00	0.00	7.10
Jul 2011	523.00	0.00	0.00	25.00	522.90	15.00	5.00	10.00	0.00	7.20
Sub-total	11,403.00	0.00	11.00	763.00	11391.50	100.00	60.00	32.00	360.00	23.13
Aug 2011	571.00 (see Note 11)	0.00	0.00	50.00	571.00 (see Note 11)	0.00	0.00	15.00	450.00 (see Note 8)	6.12
Sept 2011	235.00	0.00	0.00	25.00	235	20.00	0.00	0.00	0.00	12.15 (see Note 9)
Oct 2011	5,705.00 (see Note 10)	0.00	0.00	650.00	5,705.00 (see Note 10)	100.00	0.00	0.00	0.00	2.98
Sub-total	6,511.00	0.00	0.00	725.00	6511.00	120.00	0.00	15.00	450.00	21.25
Nov 2011	6,294.00	0.00	0.00	775.00	6,294.00	50.00	0.00	0.00	0.00	44.84
Dec 2011	3,011.00	0.00	0.00	263.00	3,011.00	20.00	0.00	0.00	0.00	17.14
Jan 2012	349.00	64.00	0.00	25.00	284.60	20.00	150.00	0.00	0.00	49.01

Month	Actual Quantities of Inert C&D Materials (Public Fill) Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Reused in the Contract	Reused in other Projects	Hard Rocks & Large Broken Concrete	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
Sub-total	9,654.00	64.00	0.00	1063.00	9589.60	90.00	150.00	0.00	0.00	110.99
Feb 2012	3,371.00	30.00	0.00	2,810.00	3,341.00	150.00	0.00	0.00	0.00	48.72
Mar 2012	6,460.00	3,000.00	0.00	625.00	3,459.70	30.00	0.00	0.00	0.00	41.10
Apr 2012	3,774.00	3,000.00	0.00	250.00	774.40	40.00	0.00	0.00	0.00	40.01
Sub-total	13,605.00	6,030.00	0.00	3685.00	7575.10	220.00	0.00	0.00	0.00	129.83
May 2012	7,936.00	5,600.00	0.00	750.00	2,336.20	40.00	0.00	10.00	0.00	75.19
Jun 2012	13,091.00	7,500.00	0.00	875.00	5,590.80	40.00	35.50	8.00	0.00	66.74
Jul 2012	11,972.00	8,600.00	0.00	825.00	3,372.50	40.00	36.40	5.00	0.00	100.50
Sub-total	32,999.00	21,700.00	0.00	2450.00	11299.50	120.00	70.90	23.00	0.00	242.43
Aug 2012	11,660.00	11,000.00	0.00	950.00	659.80	30.00	10.00	6.00	0.00	78.77
Sept 2012	3,055.00	1,500.00	0.00	920.00	1,555.38	30.00	40.00	5.00	0.00	118.80
Oct 2012	2,657.00	200.00	0.00	500.00	2,457.01	30.00	59.40	8.00	0.00	124.04
Sub-total	17,372.00	12,700.00	0.00	2370.00	4672.19	90.00	109.40	19.00	0.00	321.61
Nov 2012	2,691.00	250.00	0.00	750.00	2,441.01	50.00	25.00	10.00	0.00	128.08
Dec 2012	4,319.00	400.00	0.00	200.00	3,919.13	60.00	20.00	15.00	0.00	165.28
Jan 2013	4,442.00	100.00	0.00	200.00	4,341.56	200.00	40.00	20.00	0.00	111.23
Sub-total	11,452.00	750.00	0.00	1150.00	10701.70	310.00	85.00	45.00	0.00	404.59
Feb 2013	1,286.00	85.00	0.00	50.00	1,201.23	180.00	35.00	16.00	0.00	99.44
Mar 2013	900.00	900.00	0.00	120.00	0.00	120.00	45.00	10.00	0.00	97.43
Apr 2013	680.00	680.00	0.00	300.00	0.00	22.00	50.00	15.00	0.00	80.21
Sub-total	2866.00	1665.00	0.00	470.00	1201.23	322.00	130.00	41.00	0.00	277.08
May 2013	1443.37	100.00	0.00	1020.00	1343.37	40.00	43.00	9.00	0.00	46.88 (see Note 16)
June 2013	1993.06	50.00	0.00	850.00	1943.06	100.00	60.00	5.00	0.00	53.89

July 2013	1246.64	100	0	1100	1146.64	100	60	10	0	71.15
Sub-total	4683.07	250.00	0.00	2970.00	4433.07	240.00	163.00	24.00	0.00	171.92
August 2013	873.73	120	0	700	753.73	50	60	8	0	63.95
Total (see Note 17)	227624.80	43279.00	5695.00	22726.00	178650.22	2372.00	1688.30	410.00	810.00	1835.05

- 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 2012 based on SOR's comments and has been confirmed by the Contractor.
 - (12) The waste flow data of metal and paper/cardboard packaging for June 2011 was revised in August 2012.
 - (13) The quantity of inert and non-inert C&D material generated from May 2012 to December and imported fill material was updated by the Contractor on 6 November 2012.
 - (14) The quantity of Rocks & Broken Concrete from November 2010 to November 2012 was updated by the Contractor on 12 December 2012.
 - (15) The quantity of C&D material reused in this Contract in Oct, Nov and Dec 2012 were updated by the Contractor on 5 January 2013.
 - (16) The quantity of general refuse in this Contract for May 2013 was updated by the Contractor in June 2013.
 - (17) The quantity of total including which for last reporting period has been updated.

Annex K

Environmental Complaint,
Environmental Summons
and Persecution Log

Annex K Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
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

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
Overall Total	0	0

Annex L

Construction Programme of the Project

Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Level	Calendar	Gantt Chart														
										2013						2014								
										J	A	S	O	N	D	J	F	M	A	M	J			
Preliminaries																								
General Requirements																								
Contract Preliminaries																								
PLW005320	Operation Plan - Approval	10	07AUG2012	06AUG2013	07AUG2012	14AUG2013	8d	03	2	Operation Plan - Approval														
PLW006100	O&M Manual for the Upgrade Works	90	15JAN2013 A	25OCT2013	15JAN2013 A	16APR2014	173d	03	2	O&M Manual for the Upgrade Works														
PLW006200	As-built Drawing for Upgrade Works	90	22SEP2013	20DEC2013	17JAN2014	16APR2014	117d	03	2	As-built Drawing for Upgrade Works														
PLW007100	Submit Variation to Discharge Permit	500	01MAR2011	15SEP2013	01MAR2011	17DEC2013	93d	03	2	Submit Variation to Discharge Permit														
PLW007200	EPD Approval Variation to Discharge Permit	90	16SEP2013	14DEC2013	18DEC2013	17MAR2014	93d	03	2	EPD Approval Variation to Discharge Permit														
Design and Design Checking of Permanent Works																								
Submission and Consent																								
Submission and Approval																								
DPD081161	DDA9A-D: Elect. sys design- RtoC x2	28	24AUG2011	04AUG2013	24AUG2011	04AUG2013	0	03	2	DDA9A-D: Elect. sys design- RtoC x2														
DPD904180	Refurbish: DDA 25A~D E&M - SO Review	28	14JAN2013 A	31JUL2013	14JAN2013 A	19JUL2013	-8d	03	3	Refurbish: DDA 25A~D E&M - SO Review														
DPD904181	Refurbish: DDA 25A~D E&M - RtoC x2	28	01AUG2013 *	09SEP2013	22JUL2013	28AUG2013	-8d	03	3	Refurbish: DDA 25A~D E&M - RtoC x2														
DPD916316	Mis: DDA 28B1 MH & Pipe Works RtoC x2	28	25APR2012 A	04AUG2013	25APR2012 A	14AUG2013	10d	03	2	Mis: DDA 28B1 MH & Pipe Works RtoC x2														
DPD923051	Mis: DDA 28E - N1N2 MH - RtoC x2	28	25APR2012 A	04AUG2013	25APR2012 A	10AUG2013	6d	03	2	Mis: DDA 28E - N1N2 MH - RtoC x2														
DPD923650	Mis: DDA 28H Cable Duct & DP - SO Review	28	04OCT2012	30JUL2013	04OCT2012	30JUL2013	0	03	2	Mis: DDA 28H Cable Duct & DP - SO Review														
DPD923651	Mis: DDA 28H Cable Duct & DP - RtoC x2	28	31JUL2013	27AUG2013	31JUL2013	27AUG2013	0	03	2	Mis: DDA 28H Cable Duct & DP - RtoC x2														
Civil and Structural Works																								
Chemically Enhanced Primary Treatment System																								
Building and Structures																								
CCC200175	CEPT Tank Remaining ABWF Work	84	18JAN2013 A	26AUG2013	18JAN2013 A	12AUG2013	-12d	02	1	CEPT Tank: Remaining ABWF Work														
New Preliminary Treatment Works																								
Building and Structures																								
CCC114460A	PTWS: Waterproofing & Screeding on Roof	12	01AUG2013	14AUG2013	19JUN2013	03JUL2013	-36d	03	1	PTWS: Waterproofing & Screeding on Roof														
CCC114480A	PTWS: Door / Louver	5	28FEB2013 A	31JUL2013	28FEB2013 A	18JUN2013	-36d	03	1	PTWS: Door / Louver														
CCC150200	PTW: Remaining ABWF	90	01AUG2013	16NOV2013	19JUN2013	04OCT2013	-36d	02	1	PTW: Remaining ABWF														
CCC160585	PTW: Steel Structure for Pipe Bridge	50	27APR2013 A	20AUG2013	27APR2013 A	20AUG2013	0	02	1	PTW: Steel Structure for Pipe Bridge														
CCC160590	PTW: Handover Pipe Bridge to E&M	0		20AUG2013		20AUG2013	0	02	1	PTW: Handover Pipe Bridge to E&M														
Sludge Treatment Facilities																								
Building and Structures																								
CCC600510	SDB: Remaining ABWF Work	60	29JUL2013	08OCT2013	25OCT2013	06JAN2014	73d	02	1	SDB: Remaining ABWF Work														
CCC601430	Skip Storage Bldg: Columns - G/G to 1/F	12	28JUN2013 A	29JUL2013	28JUN2013 A	13JUL2013	-13d	02	1	Skip Storage Bldg: Columns - G/G to 1/F														

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Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Level	Calendar	Calendar														
										2013						2014								
										J	A	S	O	N	D	J	F	M	A	M	J			
CCC601440	Skip Storage Bldg: Roof Slab & Beams	18	30JUL2013	19AUG2013	15JUL2013	03AUG2013	-13d	02	1	█ Skip Storage Bldg: Roof Slab & Beams														
CCC601450	Skip Storage Bldg: Remove Temp Support	18	20AUG2013	09SEP2013	05AUG2013	24AUG2013	-13d	02	1	█ Skip Storage Bldg: Remove Temp Support														
CCC601460	Skip Storage Bldg: ABWF Work	30	05OCT2013	09NOV2013	26AUG2013	30SEP2013	-33d	02	1	█ Skip Storage Bldg: ABWF Work														
Septic Waste Collection Facilities																								
Building and Structures																								
CCC150220	Septic: Remaining ABWF Works	40	28MAY2013	03SEP2013	28MAY2013	03SEP2013	0	02	1	█ Septic: Remaining ABWF Works														
Auxiliary Building																								
Building and Structures																								
CCC320180	RWPS: ABWF Works	15	29JUL2013	14AUG2013	29JUL2013	14AUG2013	0	02	1	█ RWPS: ABWF Works														
CCC320200	RWPS: Remaining ABWF	60	15AUG2013	26OCT2013	25OCT2013	06JAN2014	58d	03	1	█ RWPS: Remaining ABWF														
CCC500230	Chemical Bldg: ABWF at Tank Compound	60	29JUL2013	08OCT2013	25OCT2013	06JAN2014	73d	02	1	█ Chemical Bldg: ABWF at Tank Compound														
CCC800310	Admin Bldg: Remaining ABWF Works	75	29JUL2013	26OCT2013	09OCT2013	08JAN2014	60d	02	1	█ Admin Bldg: Remaining ABWF Works														
CCC910180	Elect Bldg 1: Remaining ABWF Work	60	13NOV2012	30AUG2013	13NOV2012	30OCT2013	49d	02	1	█ Elect Bldg 1: Remaining ABWF Work														
CCC930180	Elect Bldg 3: Remaining ABWF Work	50	29JUL2013	25SEP2013	13SEP2013	13NOV2013	40d	02	1	█ Elect Bldg 3: Remaining ABWF Work														
CCC970110	Gate House: Excavation	6	29JUL2013	03AUG2013	20JUL2013	26JUL2013	-7d	02	1	█ Gate House: Excavation														
CCC970120	Gate House: Foundation	10	05AUG2013	15AUG2013	27JUL2013	07AUG2013	-7d	02	1	█ Gate House: Foundation														
CCC970130	Gate House: Backfilling Work	5	16AUG2013	21AUG2013	08AUG2013	13AUG2013	-7d	02	1	█ Gate House: Backfilling Work														
CCC970140	Gate House: Superstructure	30	22AUG2013	26SEP2013	14AUG2013	17SEP2013	-7d	02	1	█ Gate House: Superstructure														
CCC970150	Gate House: Remove Temp Support	18	27SEP2013	19OCT2013	18SEP2013	10OCT2013	-7d	02	1	█ Gate House: Remove Temp Support														
CCC970160	Gate House: ABWF Works	20	21OCT2013	12NOV2013	11OCT2013	04NOV2013	-7d	02	1	█ Gate House: ABWF Works														
External Works																								
Miscellaneous Works																								
CWM101070	Flowmeter: Temporary shut down of OPS	10	28JUL2013	06AUG2013	28JUL2013	06AUG2013	0	03	2	█ Flowmeter: Temporary shut down of OPS														
CWM101080	Flowmeter: Replace Pipeline 1	16	28JUL2013	12AUG2013	09JUL2013	24JUL2013	-19d	03	2	█ Flowmeter: Replace Pipeline 1														
CWM101090	Flowmeter: Const. Weir 1 at Extg Outfall Manhole	16	28JUL2013	12AUG2013	09JUL2013	24JUL2013	-19d	03	2	█ Flowmeter: Const. Weir 1 at Extg Outfall Manhole														
CWM101100	Flowmeter: Replace Pipeline 2	16	03SEP2013	18SEP2013	15AUG2013	30AUG2013	-19d	03	2	█ Flowmeter: Replace Pipeline 2														
CWM101110	Flowmeter: Const. Weir 2 at Extg Outfall Manhole	16	03SEP2013	18SEP2013	15AUG2013	30AUG2013	-19d	03	2	█ Flowmeter: Const. Weir 2 at Extg Outfall Manhole														
CWM101120	Flowmeter: Backfill	12	12OCT2013	26OCT2013	28OCT2013	09NOV2013	12d	03	1	█ Flowmeter: Backfill														
CWM101220	Boundary Wall: Excavation	90	10DEC2012	08OCT2013	10DEC2012	13NOV2013	30d	02	1	█ Boundary Wall: Excavation														
CWM101300	Boundary Wall: Footing	90	14JAN2013 A	26OCT2013	14JAN2013 A	01NOV2013	5d	02	1	█ Boundary Wall: Footing														
CWM101400	Boundary Wall: Backfilling	45	09OCT2013	30NOV2013	09OCT2013	30NOV2013	0	02	1	█ Boundary Wall: Backfilling														
CWM101760	Removal of Existing Weighbridge	6	29JUL2013	03AUG2013	20AUG2013	26AUG2013	19d	03	1	█ Removal of Existing Weighbridge														
CWM101790	Construction of Weighbridge	40	22AUG2013	09OCT2013	05JUL2013	20AUG2013	-41d	03	1	█ Construction of Weighbridge														

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										2013					2014						
										J	A	S	O	N	D	J	F	M	A	M	J
CWM102070	Connection to extg Pump Station	95	29JUL2013	19NOV2013	12JUL2013	02NOV2013	-14d	03	1	Connection to extg Pump Station											
CWM102075	Handover part for Penstock Installation	0	13SEP2013		28AUG2013		-14d	03	1	Handover part for Penstock Installation											
CWM102100	Laying Pipe Ducts, Trenches and Utilities	360	05JUN2012 A	18SEP2013	05JUN2012 A	07SEP2013	-9d	02	1	Laying Pipe Ducts, Trenches and Utilities											
CWM102160	Laying LV cable duct	100	18FEB2013 A	21OCT2013	18FEB2013 A	30OCT2013	8d	02	1	Laying LV cable duct											
CWM102170	Laying ELV cable duct	116	18FEB2013 A	26OCT2013	18FEB2013 A	26OCT2013	0	03	1	Laying ELV cable duct											
CWM102180	Sitewide Watermain	84	26APR2013 A	15OCT2013	26APR2013 A	07SEP2013	-29d	03	1	Sitewide Watermain											
CWM200450B	Construct Base and Chamber Wall of N1	37	26APR2013 A	07SEP2013	26APR2013 A	25JUL2013	-44d	03	4	Construct Base and Chamber Wall of N1											
CWM200460B	Benching for overflow pipe inside N1	5	08SEP2013	12SEP2013	26JUL2013	30JUL2013	-44d	03	4	Benching for overflow pipe inside N1											
CWM200470B	Apply Poly-shield	7	13SEP2013	19SEP2013	31JUL2013	06AUG2013	-44d	03	4	Apply Poly-shield											
CWM200470C	Pre-loading Test	10	20SEP2013	29SEP2013	07AUG2013	16AUG2013	-44d	03	4	Pre-loading Test											
CWM200480B	Clearance of N1 Chamber	2	30SEP2013	01OCT2013	17AUG2013	18AUG2013	-44d	03	4	Clearance of N1 Chamber											
CWM200500B	Sealing of pipe connection opening	6	30SEP2013	05OCT2013	14SEP2013	19SEP2013	-16d	03	4	Sealing of pipe connection opening											
CWM200610B	Backfill and Remove Sheet Piling N2 to N1	24	02OCT2013	25OCT2013	26SEP2013	19OCT2013	-6d	03	4	Backfill and Remove Sheet Piling N2 to N1											
Statutory Works																					
Plumbing - WSD																					
Building and Structures																					
SSP200505	Design Consent from WSD (FS & FW)	0		05AUG2013 *		19AUG2013	12d	03	1	Design Consent from WSD (FS & FW)											
SSP200510	Watermain (PW): Submit WW046 Part 4	1	24AUG2013	24AUG2013	01AUG2013	01AUG2013	-20d	03	1	Watermain (PW): Submit WW046 Part 4											
SSP200520	Watermain (PW): WSD Inspection and Re-inspection	25	05SEP2013	05OCT2013	02AUG2013	30AUG2013	-29d	03	1	Watermain (PW): WSD Inspection and Re-inspection											
SSP200530	Watermain(PW): WW046 Part 5	24	07OCT2013	04NOV2013	31AUG2013	28SEP2013	-29d	03	1	Watermain(PW): WW046 Part 5											
SSP201510	Watermain (FS1): Submit WW046 Part 4	1	06SEP2013	06SEP2013	20AUG2013	20AUG2013	-15d	03	1	Watermain (FS1): Submit WW046 Part 4											
SSP201520	Watermain(FS1): WSD Inspection and Re-inspection	25	07SEP2013	08OCT2013	21AUG2013	18SEP2013	-15d	03	1	Watermain(FS1): WSD Inspection and Re-inspection											
SSP201530	Watermain (FS1): WW046 Part 5	24	09OCT2013	06NOV2013	19SEP2013	19OCT2013	-15d	03	1	Watermain (FS1): WW046 Part 5											
Telecommunication																					
Building and Structures																					
SST200610	Handover Plant Room and Cable Duct to Telecom Co	6	19SEP2013	26SEP2013	09SEP2013	14SEP2013	-9d	03	1	Handover Plant Room and Cable Duct to Telecom Co											
SST200620	Telecom Co to Install Cable and Equipment	45	27SEP2013	10NOV2013	15SEP2013	29OCT2013	-12d	03	2	Telecom Co to Install Cable and Equipment											
E&M Works																					
Procurement and Installation																					
Building and Structures																					
EMW001100	Penstocks for Manholes N2	26	26AUG2013	25SEP2013	26AUG2013	25SEP2013	0	03	1	Penstocks for Manholes N2											
EMW001100A	N2 Penstock Test	7	26SEP2013	04OCT2013	26SEP2013	04OCT2013	0	03	1	N2 Penstock Test											
EMW001110	Penstocks for Manholes N1 / bypass	28	02OCT2013	04NOV2013	19AUG2013	19SEP2013	-36d	03	1	Penstocks for Manholes N1 / bypass											

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Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Level	Calendar	2013							2014						
										J	A	S	O	N	D	J	F	M	A	M	J		
EMW001200	Penstock at connection to outfall PS	22	13SEP2013	10OCT2013	28AUG2013	23SEP2013	-14d	03	1														
EMW001200A	Penstocks at connection to OFPS Test	7	11OCT2013	19OCT2013	16OCT2013	23OCT2013	3d	03	1														
EMW155100	EB1-PTW: Control System Installation	60	04JUN2013 A	14AUG2013	04JUN2013 A	22AUG2013	7d	03	1														
EMW163000	Access Control System Installation	80	06JUN2013 A	14AUG2013	06JUN2013 A	22AUG2013	7d	03	1														
EMW164000	ALPR System Installation	80	06JUN2013 A	31AUG2013	06JUN2013 A	22AUG2013	-8d	03	1														
EMW171500	PTW: SCADA System Installation	65	04JUN2013 A	20AUG2013	04JUN2013 A	04SEP2013	13d	03	1														
EMW207100	CEPT: SCADA System Installation	70	27MAR2013	16AUG2013	27MAR2013	25JUL2013	-19d	03	1														
EMW211700	CEPT: EB2_CEPTMCC Energization	10	26JUL2013 A	08AUG2013	26JUL2013 A	08AUG2013	0	03	1														
EMW305100	UV: Control System Installation (ref)	40	20JUN2013 A	02AUG2013	20JUN2013 A	02SEP2013	26d	03	1														
EMW307100	UV: SCADA system Installation	60	24JUN2013 A	26AUG2013	24JUN2013 A	17AUG2013	-7d	03	1														
EMW308100	UV: BS system Installation	60	25MAY2013	30JUL2013	25MAY2013	30JUL2013	0	03	1														
EMW322400	RWPS: DAF Installation	60	27JUN2013 A	06SEP2013	27JUN2013 A	16AUG2013	-18d	03	1														
EMW322450	RWPS: Pump & Pipework Installation	55	27JUN2013 A	31AUG2013	27JUN2013 A	09AUG2013	-19d	03	1														
EMW322600	RWPS: BS Installation	30	03AUG2013	06SEP2013	03AUG2013	06SEP2013	0	03	1														
EMW323520	RWPS: RWMCC EB3 Power Cable Laying	60	30JUL2013	09OCT2013	24JUN2013	02SEP2013	-30d	03	1														
EMW323530	RWPS: ALL Cable Test and Termination	30	03SEP2013	09OCT2013	30JUL2013	02SEP2013	-30d	03	1														
EMW323700	RWPS: RWMCC at EB3 Energization	3	10OCT2013	12OCT2013	03SEP2013	05SEP2013	-30d	03	1														
EMW604100	Sludge: Power Supply System Installation (Ref)	55	25MAY2013	06AUG2013	25MAY2013	27JUL2013	-8d	02	1														
EMW607100	Sludge: SCADA system Installation	100	05JUN2013 A	25SEP2013	05JUN2013 A	25SEP2013	0	03	1														
EMW609400	Sludge: SDMCC Install LV & Centrifuge LCP	20	17JUN2013 A	14AUG2013	17JUN2013 A	14AUG2013	0	03	1														
EMW609520	Sludge: SDMCC Cable Laying from EB2	30	14JUL2013 A	15AUG2013	14JUL2013 A	15AUG2013	0	03	1														
EMW609530	Sludge: SDMCC Cable Test and Termination	30	15JUL2013 A	20AUG2013	15JUL2013 A	24JUL2013	-23d	03	1														
EMW609700	Sludge: SDMCC Energization	3	21AUG2013	23AUG2013	25JUL2013	27JUL2013	-23d	03	1														
EMW715100	DOU A: Control System Installation	50	27MAY2013	05AUG2013	27MAY2013	24AUG2013	17d	03	1														
EMW717100	DOU A: SCADA System Installation	50	15JUL2013 A	31AUG2013	15JUL2013 A	04SEP2013	3d	03	1														
EMW723500	DOU B: Odour Duct connection	70	21AUG2013	13NOV2013	13JUL2013	04OCT2013	-33d	03	1														
EMW724100	DOU B: Power & Cable Installation (MCC to Eq)	70	27MAY2013	31AUG2013	27MAY2013	03AUG2013	-24d	03	1														
EMW725100	DOU B: Control & Cable Installation (MCC to Eq)	60	27MAY2013	31AUG2013	27MAY2013	03AUG2013	-24d	03	1														
EMW727100	DOU B: SCADA System Installation	50	09AUG2013	08OCT2013	29JUN2013	27AUG2013	-34d	03	1														
EMW728100	DOU B: BS System Installation	50	22MAY2013	06SEP2013	22MAY2013	06SEP2013	0	03	1														
EMW802250	All Area:: Delivery of ELV Eq. On site	30	15NOV2012	28JUL2013	15NOV2012	28JUL2013		03	2														
EMW802250A	All Area: Delivery of ELV Eq. On site (non crit)	20	28MAY2013	29JUL2013	28MAY2013	28JUN2013	-31d	03	2														
EMW802300	Admin Bldg : SCADA Equipment Installation	75	29APR2013 A	08AUG2013	29APR2013 A	28JUN2013	-34d	03	1														

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Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Level	Calendar	2013												2014											
										J A S O N D						J F M A M J						J A S O N D						J F M A M J					
										J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
EMW802304	Admin Bldg : SCADA Installation - Workstation	25	27MAY2013	20AUG2013	27MAY2013	20AUG2013	0	03	1	Admin Bldg : SCADA Installation - Workstation																							
EMW802306	Admin Bldg : SCADA Installation - Wiring & Conn	24	27JUN2013 A	24AUG2013	27JUN2013 A	24AUG2013	0	03	1	Admin Bldg : SCADA Installation - Wiring & Conn																							
EMW802350	Admin Bldg : ELV Equipment Installation	90	15APR2013 A	20AUG2013	15APR2013 A	20AUG2013	0	03	1	Admin Bldg : ELV Equipment Installation																							
EMW803290B	Admin Bldg Service: Main cable laying from EB1	30	08JUL2013 A	08AUG2013	08JUL2013 A	13AUG2013	4d	03	1	Admin Bldg Service: Main cable laying from EB1																							
EMW803290C	Admin Bldg Service: Main cable Termination	6	09AUG2013	15AUG2013	14AUG2013	20AUG2013	4d	03	1	Admin Bldg Service: Main cable Termination																							
EMW821110	Flowmeter: E&M Installation (Ref.)	48	13AUG2013	09OCT2013	27JUL2013	21SEP2013	-14d	03	1	Flowmeter: E&M Installation (Ref.)																							
EMW821140	Flowmeter: Flowmeter - Verification	10	12OCT2013	24OCT2013	23SEP2013	04OCT2013	-16d	03	1	Flowmeter: Flowmeter - Verification																							
EMW821210	Flowmeter: E&M Aux. Installation (Ref)	48	13AUG2013	09OCT2013	26AUG2013	23OCT2013	11d	03	1	Flowmeter: E&M Aux. Installation (Ref)																							
EMW941730	Elect Bldg 1: Removal of existing LVSBA1	20	29JUL2013	20AUG2013	22JAN2014	19FEB2014	146d	03	1	Elect Bldg 1: Removal of existing LVSBA1																							
EMW941740	Elect Bldg 1: new LVSBA1 reinstate and testing	20	21AUG2013	12SEP2013	20FEB2014	14MAR2014	146d	03	1	Elect Bldg 1: new LVSBA1 reinstate and testing																							
EMW942710	CB Main SW Rm CEPT MCC Energization	10	26JUL2013 A	06AUG2013	26JUL2013 A	06AUG2013	0	03	1	CB Main SW Rm CEPT MCC Energization																							
EMW942720	CB Main SW Rm Chemical MCC Energization	10	26JUL2013 A	06AUG2013	26JUL2013 A	06AUG2013	0	03	1	CB Main SW Rm Chemical MCC Energization																							
EMW942730	CB Main SW Rm Sludge MCC Energization	10	27JUL2013 A	06AUG2013	27JUL2013 A	27JUL2013	-8d	03	1	CB Main SW Rm Sludge MCC Energization																							
EMW942740	CB Main SW Rm DOUA MCC Energization	10	26JUL2013 A	06AUG2013	26JUL2013 A	26JUL2013	-9d	03	1	CB Main SW Rm DOUA MCC Energization																							
EMW943730	Elect Bldg 3: Energization of DOUB SWRS	7	26JUL2013 A	30JUL2013	26JUL2013 A	24AUG2013	22d	03	1	Elect Bldg 3: Energization of DOUB SWRS																							
Testing and Commissioning																																	
PTW Testing and Commissioning																																	
Building and Structures																																	
EMT102310	PTW Phase 2: Dry Test of Coarse Screen System	25	21JUL2013 A	14AUG2013	21JUL2013 A	05AUG2013	-9d	03	2	PTW Phase 2: Dry Test of Coarse Screen System																							
EMT102320	PTW Phase 2: Dry Testing of Inlet Pump System	25	28JUL2013 A	01AUG2013	28JUL2013 A	05JUL2013	-27d	03	2	PTW Phase 2: Dry Testing of Inlet Pump System																							
EMT102330	PTW Phase 2: Dry Testing of Fine Screen System	25	28JUL2013	21AUG2013	12JUL2013	05AUG2013	-16d	03	2	PTW Phase 2: Dry Testing of Fine Screen System																							
EMT102340	PTW Phase 2: Dry Testing of Grit System	25	28JUL2013	21AUG2013	12JUL2013	05AUG2013	-16d	03	2	PTW Phase 2: Dry Testing of Grit System																							
EMT103410	PTW Phase 3: Wet Testing of PTW CS FS & GC	30	22AUG2013	20SEP2013	06AUG2013	04SEP2013	-16d	03	2	PTW Phase 3: Wet Testing of PTW CS FS & GC																							
EMT103412	PTW Phase 3: Wet Testing Inlet Pump	30	02AUG2013	31AUG2013	06JUL2013	04AUG2013	-27d	03	2	PTW Phase 3: Wet Testing Inlet Pump																							
EMT103415	PTW Phase 3: Remove Recirculation System	1	01SEP2013	01SEP2013	05AUG2013	05AUG2013	-27d	03	2	PTW Phase 3: Remove Recirculation System																							
EMT103420	PTW Phase 3: Manual Testing of PTW-system	30	02SEP2013	01OCT2013	06AUG2013	04SEP2013	-27d	03	2	PTW Phase 3: Manual Testing of PTW-system																							
EMT103430	PTW Phase 3: Automatic Testing of Sub-system	30	02OCT2013	31OCT2013	05SEP2013	04OCT2013	-27d	03	2	PTW Phase 3: Automatic Testing of S																							
CEPT Testing and Commissioning																																	
Building and Structures																																	
EMT201600	CEPT Tank Phase 1: Densadeg 5 Insp & test	60	27MAY2013	01SEP2013	27MAY2013	01SEP2013	0	03	2	CEPT Tank Phase 1: Densadeg 5 Insp & test																							
EMT202100	CEPT Tank: Phase 2 - Dry Test of Individual Eq't	30	22JUL2013 A	24AUG2013	22JUL2013 A	21AUG2013	-3d	03	2	CEPT Tank: Phase 2 - Dry Test of Individual Eq't																							
EMT203100	CEPT Tank Phase 3: Wet Testing of Individual Eq't	30	23AUG2013	21SEP2013	15AUG2013	13SEP2013	-8d	03	2	CEPT Tank Phase 3: Wet Testing of Individu																							
EMT203200	CEPT Tank Phase 3: Manual Test Sub-system	30	02SEP2013	01OCT2013	25AUG2013	23SEP2013	-8d	03	2	CEPT Tank Phase 3: Manual Test Sub-sys																							

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										2013					2014						
										J	A	S	O	N	D	J	F	M	A	M	J
EMT203300	CEPT Tank Phase 3: Automatic Test Sub-system	30	16OCT2013	14NOV2013	24SEP2013	23OCT2013	-22d	03	2	■ CEPT Tank Phase 3: Automatic Test Sub-system											
UV Disinfection Facilities																					
Building and Structures																					
EMT301100	UV: Phase 1 - Installation Inspection	50	22JUL2013 A	16AUG2013	22JUL2013 A	19JUL2013	-28d	03	2	■ UV: Phase 1 - Installation Inspection											
EMT302100	UV: Phase 2 - Dry Test of Individual Eq't	30	17AUG2013	15SEP2013	20JUL2013	18AUG2013	-28d	03	2	■ UV: Phase 2 - Dry Test of Individual Eq't											
EMT303100	UV: Phase 3 - Wet Test of Individual Eq't	30	16SEP2013	15OCT2013	19AUG2013	17SEP2013	-28d	03	2	■ UV: Phase 3 - Wet Test of Individual Eq't											
EMT303200	UV: Phase 3 -Manual Testing of Sub-system	30	01OCT2013	30OCT2013	03SEP2013	02OCT2013	-28d	03	2	■ UV: Phase 3 -Manual Testing of Sub-system											
EMT303300	UV: Phase 3 - Auto Testing of Sub-system	30	16OCT2013	14NOV2013	18SEP2013	17OCT2013	-28d	03	2	■ UV: Phase 3 - Auto Testing of Sub-system											
Reuse Water Pumping Station																					
Building and Structures																					
EMT321100	RWPS: Phase 1 - Installation Inspection	20	07SEP2013	26SEP2013	17AUG2013	05SEP2013	-21d	03	2	■ RWPS: Phase 1 - Installation Inspection											
EMT322100	RWPS: Phase 2 - Dry Test of Individual Eq't	30	13OCT2013	11NOV2013	06SEP2013	05OCT2013	-37d	03	2	■ RWPS: Phase 2 - Dry Test of Individual Eq't											
Chemical Building																					
Building and Structures																					
EMT502100	Chemical: Phase 2 - Dry Test of Individual Eq't	30	26JUL2013 A	24AUG2013	26JUL2013 A	18AUG2013	-6d	03	2	■ Chemical: Phase 2 - Dry Test of Individual Eq't											
EMT503100	Chemical: Phase 3 - Wet Test of Individual Eq't	30	08SEP2013	07OCT2013	19AUG2013	17SEP2013	-20d	03	2	■ Chemical: Phase 3 - Wet Test of Individual Eq't											
EMT503200	Chemical: Phase 3 -Manual Testing of Sub-system	30	09OCT2013	07NOV2013	18SEP2013	17OCT2013	-21d	03	2	■ Chemical: Phase 3 -Manual Testing of Sub-system											
EMT503300	Chemical: Phase 3 - Auto Testing of Sub-system	30	24OCT2013	22NOV2013	18SEP2013	17OCT2013	-36d	03	2	■ Chemical: Phase 3 - Auto Testing of Sub-system											
Sludge Dewatering and Skip Storage																					
Building and Structures																					
EMT601100	Sludge: Phase 1 - Installation Inspection	30	03AUG2013	01SEP2013	28JUN2013	27JUL2013	-36d	03	2	■ Sludge: Phase 1 - Installation Inspection											
EMT601110	Sludge: Phase 1 - Sludge System Insp.	30	28JUL2013 A	26AUG2013	28JUL2013 A	27JUL2013	-30d	03	2	■ Sludge: Phase 1 - Sludge System Insp.											
EMT601120	Sludge: Phase 1 - Polymer System Insp.	30	28JUL2013 A	26AUG2013	28JUL2013 A	13JUL2013	-44d	03	2	■ Sludge: Phase 1 - Polymer System Insp.											
EMT601130	Sludge: Phase 1 - Centrifuge Inspection	30	28JUL2013 A	26AUG2013	28JUL2013 A	27JUL2013	-30d	03	2	■ Sludge: Phase 1 - Centrifuge Inspection											
EMT601140	Sludge: Phase 1 - Convey. sys. Inspection	30	28JUL2013 A	26AUG2013	28JUL2013 A	27JUL2013	-30d	03	2	■ Sludge: Phase 1 - Convey. sys. Inspection											
EMT602100	Sludge: Phase 2 - Dry Test of Individual Eq't	30	02SEP2013	01OCT2013	28JUL2013	26AUG2013	-36d	03	2	■ Sludge: Phase 2 - Dry Test of Individual Eq't											
EMT603100	Sludge: Phase 3 - Wet Test of Individual Eq't	30	02OCT2013	31OCT2013	27AUG2013	25SEP2013	-36d	03	2	■ Sludge: Phase 3 - Wet Test of Individual Eq't											
EMT603200	Sludge: Phase 3 -Manual Testing of Sub-system	30	12OCT2013	10NOV2013	06SEP2013	05OCT2013	-36d	03	2	■ Sludge: Phase 3 -Manual Testing of Sub-system											
Septic Waste Collection facilities																					
Building and Structures																					
EMT151100	Septic Station: Phase 1- Installation Inspection	30	15JUL2013 A	13AUG2013	15JUL2013 A	08JUL2013	-36d	03	2	■ Septic Station: Phase 1- Installation Inspection											
EMT152100	Septic Station: Phase 2 - Dry Test Indiv Eq't	30	15AUG2013	13SEP2013	09JUL2013	07AUG2013	-37d	03	2	■ Septic Station: Phase 2 - Dry Test Indiv Eq't											
EMT153100	Septic Station: Phase 3 - Wet Test of Indiv Eq't	30	14SEP2013	13OCT2013	08AUG2013	06SEP2013	-37d	03	2	■ Septic Station: Phase 3 - Wet Test of Indiv Eq't											

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										J A S O N D J F M A M J												J A S O N D J F M A M J											
EMT153200	Septic Station: Phase 3 - Manual Test Sub-system	30	29SEP2013	28OCT2013	23AUG2013	21SEP2013	-37d	03	2	Septic Station: Phase 3 - Manual Test																							
EMT153300	Septic Station: Phase 3 - Auto Test Sub-system	30	19OCT2013	17NOV2013	12SEP2013	11OCT2013	-37d	03	2	Septic Station: Phase 3 - Auto Test																							
DOU A																																	
Building and Structures																																	
EMT711100	DOU A: Phase 1 - Installation Inspection	40	15JUL2013 A	23AUG2013	15JUL2013 A	26JUL2013	-28d	03	2	DOU A: Phase 1 - Installation Inspection																							
EMT712100	DOU A: Phase 2 - Dry Test of Individual Eq't	30	24AUG2013	22SEP2013	27JUL2013	25AUG2013	-28d	03	2	DOU A: Phase 2 - Dry Test of Individual Eq't																							
EMT713100	DOU A: Phase 3 - Wet Test of Individual Eq't	30	23SEP2013	22OCT2013	26AUG2013	24SEP2013	-28d	03	2	DOU A: Phase 3 - Wet Test of Individual Eq't																							
EMT713200	DOU A: Phase 3 -Manual Testing of Sub-system	30	03OCT2013	01NOV2013	05SEP2013	04OCT2013	-28d	03	2	DOU A: Phase 3 -Manual Testing of Sub-system																							
EMT713300	DOU A: Phase 3 - Auto Testing of Sub-system	30	11OCT2013	09NOV2013	05SEP2013	04OCT2013	-36d	03	2	DOU A: Phase 3 - Auto Testing of Sub-system																							
DOU B																																	
Building and Structures																																	
EMT720220	DOU B: Phase 1 - Installation Inspection	40	21AUG2013	29SEP2013	16JUL2013	24AUG2013	-36d	03	2	DOU B: Phase 1 - Installation Inspection																							
EMT722100	DOU B: Phase 2 - Dry Test of Individual Eq't	20	05OCT2013	24OCT2013	25AUG2013	13SEP2013	-41d	03	2	DOU B: Phase 2 - Dry Test of Individual Eq't																							
EMT723100	DOU B: Phase 3 - Wet Test of Individual Eq't	30	09OCT2013	07NOV2013	28AUG2013	26SEP2013	-42d	03	2	DOU B: Phase 3 - Wet Test of Individual Eq't																							
EMT723200	DOU B: Phase 3 - Manual Testing of Sub-system	30	19OCT2013	17NOV2013	07SEP2013	06OCT2013	-42d	03	2	DOU B: Phase 3 - Manual Testing of Sub-system																							
EMT723300	DOU B: Phase 3 - Auto Testing of Sub-system	30	26OCT2013	24NOV2013	12SEP2013	11OCT2013	-44d	03	2	DOU B: Phase 3 - Auto Testing of Sub-system																							
Building Services																																	
Building and Structures																																	
EMT831000	Admin BS: Phase 1 - Installation Inspection	30	20JUL2013 A	26AUG2013	20JUL2013 A	30AUG2013	4d	03	2	Admin BS: Phase 1 - Installation Inspection																							
EMT832000	Admin BS: Phase 2 - Dry Test of Individual Eq't	30	17AUG2013	15SEP2013	21AUG2013	19SEP2013	4d	03	2	Admin BS: Phase 2 - Dry Test of Individual Eq't																							
EMT833000	Admin BS: Phase 3 - Wet Test of Individual Eq't	30	06SEP2013	05OCT2013	10SEP2013	09OCT2013	4d	03	2	Admin BS: Phase 3 - Wet Test of Individual Eq't																							
EMT835000	Admin BS: Phase 3 -Manual Testing of Sub-system	30	21SEP2013	20OCT2013	25SEP2013	24OCT2013	4d	03	2	Admin BS: Phase 3 -Manual Testing of Sub-system																							

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