ATAL-Degrémont-China State Joint Venture

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

April 2015

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April 2015

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 No. 034 (99) - Kenneth Ng)

Date: 2 April 2015

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

Attn: Mr. Edwin Lau (T: 2159 3409)

13 April 2015

Dear Sir,

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

Monthly EM&A Report for March 2015

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for March 2015 provided by email dated 8, 10 and 13 April 2015. 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/B.

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 (Fax No. 2404 3310)
ERM – Ms. Winnie Ko (Fax No. 2723 5660)
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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 53rd monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 March 2015 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, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Sludge Skip Storage Building, Existing Solid Handling Building, Weighbridge and Existing Outfall Pumping Station;
- Outstanding E&M works at Electrical buildings No.1, No.3, No.4, and Deodorisation Unit Portion B;
- T&C at Deodorisation Unit Portion A, and Payment Flow Meter Chamber;
- Installation of E&M equipment at Weighbridge;
- Construct irrigation system and planting at overall site;
- Chamber reinstatement at Payment Flow Meter Chamber; and
- Planting at Existing PTW.

Environmental Monitoring and Audit Progress

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

- 24-hour TSP Monitoring at each monitoring station (AM1 and AM2) — 6 sets
- 1-hour TSP Monitoring at each monitoring station (AM1 and AM2) — 18 sets
- Joint Environmental Site Inspection — 4 times
- Landscape & Visual Monitoring — Once

Air Quality

6 sets of 24-hour TSP and 18 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, 678.52 tonnes of inert C&D material were generated from the Project, of which 5 tonnes were reused in this Contract and the remaining 673.52 tonnes were disposed as public fill. 1.00 kg of metals, 2.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, SOR and the Environmental Team (ET). The IEC was also present at the joint inspection on 20 March 2015. 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 27 March 2015. 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, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Sludge Skip Storage Building, Existing Solid Handling Building, Weighbridge and Existing Outfall Pumping Station;
- Outstanding E&M works at Deodorisation Unit Portion B, Electrical buildings No.1, No.3 and No.4;
- T&C at Deodorisation Unit Portion A and Payment Flow Meter Chamber;
- Installation of E&M equipment at Weighbridge;
- Construct irrigation system and planting at overall site;
- Chamber reinstatement at Payment Flow Meter Chamber; and
- Planting at Existing PTW.

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

1 INRODUCTION

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 53rd EM&A report which summarises the monitoring results and audit findings for the EM&A programme during the reporting period from **1** to **31 March 2015**.

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 PROJECT INFORMATION

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 30 May 2014 (EP-321/2008/B). Under the requirements of Condition 3.1 of EP-321/2008/B, 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 May 2015.

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, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Sludge Skip Storage Building, Existing Solid Handling Building, Weighbridge and Existing Outfall Pumping Station;
• Outstanding E&M works at Electrical buildings No.1, No.3, No.4, and Deodorisation Unit Portion B;
• T&C at Deodorisation Unit Portion A, and Payment Flow Meter Chamber;
• Installation of E&M equipment at Weighbridge;
• Construct irrigation system and planting at overall site;
• Chamber reinstatement at Payment Flow Meter Chamber; and
• Planting at Existing PTW.

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/B	Throughout the Contract	Permit granted on 30 May 2014
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	Ref No. 308136	Throughout the Contract	-
Water Discharge License	WT00017778-2013	22 November 2013 - 31 October 2015	Wastewater discharge licence was issued by EPD on 22 November 2013.
Construction Noise Permit	GW-RW0642-14	1 October 2014 – 31 March 2015	Superseded by GW-RW0076-15

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	GW-RW0076-15	4 March 2015 – 3 August 2015	-
Chemical Waste Producer Registration	5213-421-A2620-01	Throughout the Contract	Licence approved on 28 October 2010

3 ENVIRONMENTAL MONITORING REQUIREMENTS

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)
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 ± 3°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 $m^3 min^{-1}$ which were within the range specified in the EM&A Manual (ie 0.6 to 1.7 $m^3 min^{-1}$);

- 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*.

4 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 6 sets of 24-hour and 18 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 were fine/cloudy. 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
March 2015	678.52 tonnes	3.00 kg	40.00 tonnes	0 L

Notes:

(a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 678.52 tonnes of inert C&D waste were generated from the Project, of which 5.00 tonnes were reused in this Contract and the remaining 673.52 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) 1.00 kg of metals, 2.00 kg of papers/ cardboard packing and 0.00 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 ENVIRONMENTAL INSPECTIONS

7.1 WEEKLY SITE AUDITS

Joint site inspections were conducted by representatives of the Contractor, the SOR and the ET on 6, 12, 20, and 27 March 2015. The IEC was also present at the joint inspection on 20 March 2015.

Major observations during the reporting period are summarised as follows:

6 March 2015

- Tree tag was observed to be missing from retained trees near the terminal manhole. The Contractor was reminded to provide new tree tags for the retained trees;
- Dead branches were observed on retained tree N04. The Contractor was reminded to provide pruning.

12 March 2015

- General refuse and construction materials were observed near the planting area. The Contractor was reminded to arrange for collection and keep good housekeeping.

20 March 2015

- Sand and debris were observed in the drainage near the demolition area. The Contractor was reminded to clear the drainage and prevent blockage of the drainage system;
- Retained tree 131 was observed to be falling. The Contractor was reminded to provide tree staking for supporting;
- Construction materials were observed to be accumulated near retained trees 130 and 131. The Contractor was reminded to keep good housekeeping;
- Retained tree 130 was observed to be in a poor condition. The Contractor was reminded to check the health condition of 130;
- Plastic bag and rope were observed to be hung on retained tree R35. The Contractor was reminded to remove it; and
- Soil stockpiles were observed to be exposed. The Contractor was reminded to cover the stockpiles with tarpaulin.

27 March 2015

- Soil stockpile was observed to be exposed near the entrance. The Contractor was reminded to cover it with tarpaulin;
- Construction materials were observed to be accumulated near retained trees 130 and 131. The Contractor was reminded to keep good housekeeping;

- Retained tree 130 and 132 was observed to be in a poor condition. The Contractor was reminded to check the health condition of 130 and 132; and

- Plastic bag and rope were observed to be hung on retained tree R35. The Contractor was reminded to remove it.

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 31 March 2015. 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 follows:

31 March 2015

Construction material was found inside the tree protection zones of the retained trees R01, N01 and N02 (*Photos 1* and *2*). The Contractor was reminded to remove refuse from the tree protection zone.

Photo 1


Photo 1.1

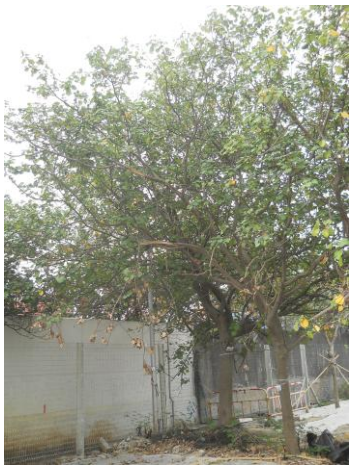


Photo 1.2

Photo 2

Photo 2.1

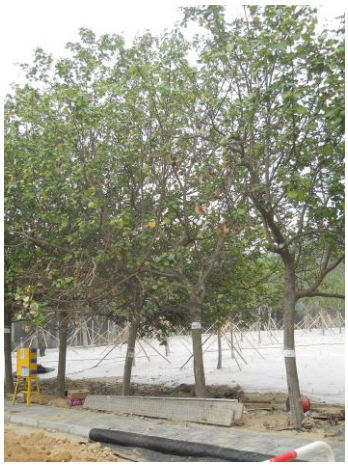


Photo 2.2

Two trees no. 130 and 132 (*Photos 3* and *4*) were observed in very poor health condition. The Contractor was recommended to provide sufficient watering and carry out necessary maintenance works for the trees and consult their landscape contractor to check the health condition of the tree / or replace the tree immediately

Photo 3

Photo 3.1

Photo 3.2

Photo 4

Photo 4.1

Photo 4.2

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

Construction Activities Undertaken
• Construct finishing works at the Administration Building, Sludge Dewatering Building, PTW, CEPT, UV Building, Septic Waste Reception Station, Reuse Water Pump Room, Chemical Building, Sludge Skip Storage Building, Existing Solid Handling Building, Weighbridge and Existing Outfall Pumping Station;
• Outstanding E&M works at Deodorisation Unit Portion B, Electrical buildings No.1, No.3 and No.4;
• T&C at Deodorisation Unit Portion A and Payment Flow Meter Chamber;
• Installation of E&M equipment at Weighbridge;
• Construct irrigation system and planting at overall site;
• Chamber reinstatement at Payment Flow Meter Chamber; and
• Planting at Existing PTW.

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 REVIEW OF THE EM&A DATA AND EIA PREDICTIONS

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 assessment criteria in the approved EIA Report (see *Table 10.1*).

Table 10.1 Comparison of the HKAQO and Air Quality Monitoring Results

Monitoring Station	Corresponding ASR in EIA	Assessment Criteria in the approved EIA Report, μg m^{-3}	Measured 24-hour TSP Monitoring Results, μg m^{-3} (a) (b)	
		24 hour (a)	Average	Range
AM1	A1	260	74	50 – 119
AM2	A7	260	79	47 – 113

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	136,221.91	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	24,357.00	m^3
Amount of C&D Materials Sent to Fill Banks	46,563.00 m^3	59,600.00 m^3	108,700.27	m^3
General Refuse	Small	-	2,238.33	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/m^3.

(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.

11 CONCLUSIONS

This EM&A Report presents the EM&A programme undertaken during the reporting period from 1 to 31 March 2015 in accordance with EM&A Manual and requirements of EP (EP-321/2008/B).

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

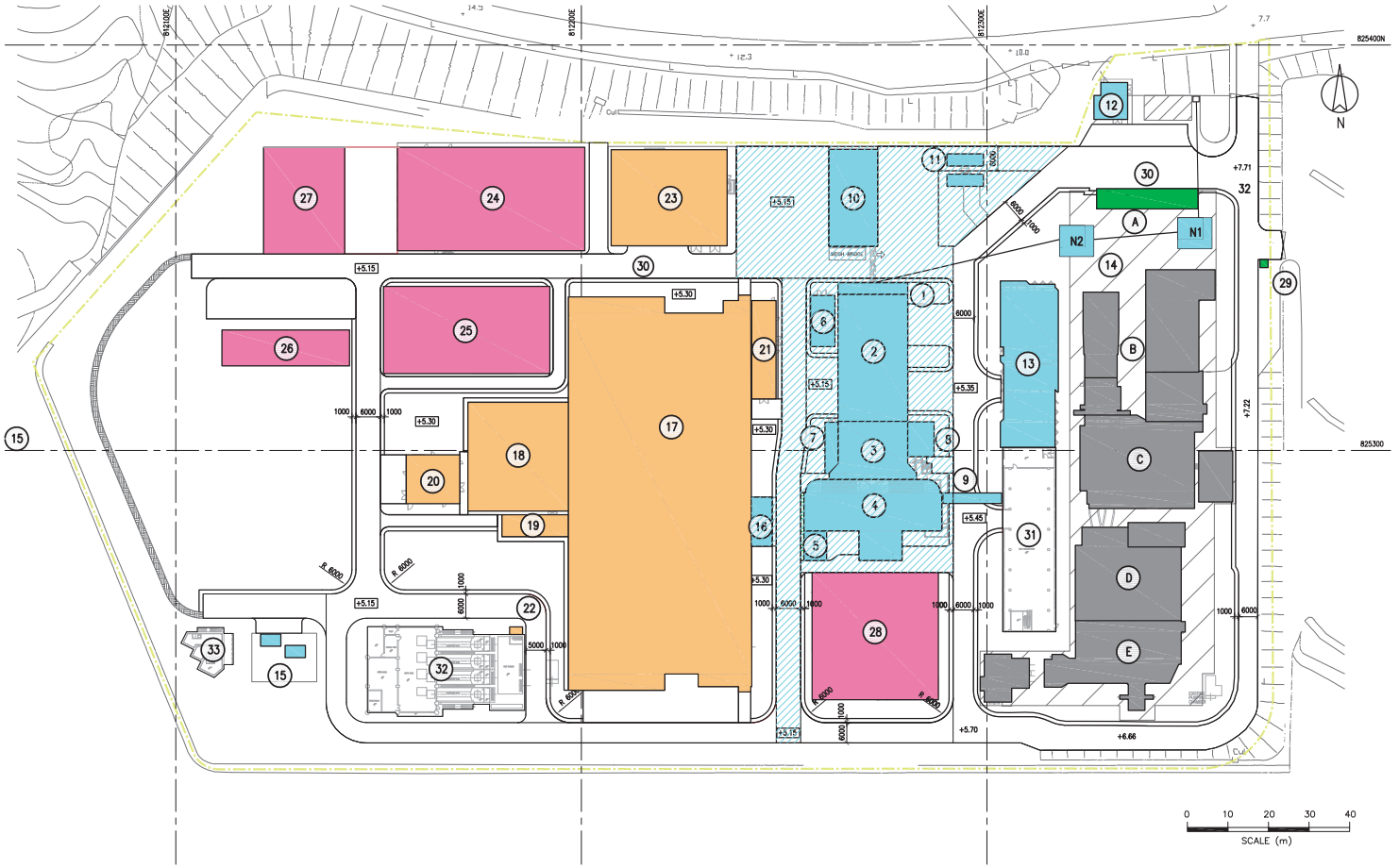
1. INLET CHAMBER
2. COARSE SCREENS AND INLET PUMPING STATION
3. FINE SCREEN CHANNELS
4. GRIT CHAMBERS
5. INLET FLOWMETER CHAMBER
6. PTW MCC ROOM
7. BLOWER ROOM
8. SCREENING SKIP HOUSE
9. ODOR DUCT SUPPORTING BRIDGE
10. SEPTIC WASTE RECEPTION STATION
11. WEIGHBRIDGE
12. ELECTRICAL BUILDING 1
13. ADMINISTRATION BUILDING
14. INLET CHAMBERS
15. PAYMENT FLOWMETER CHAMBER
16. CEPT INLET CHAMBER

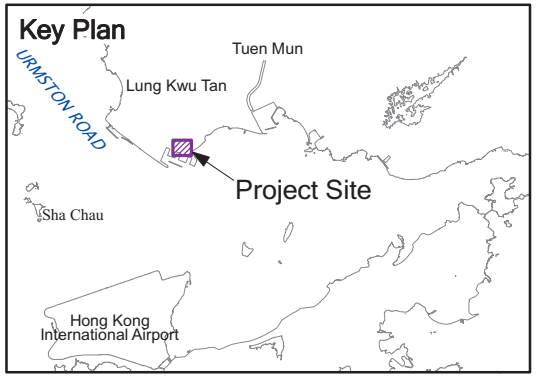
SECTION 2 CEPT TANKS UV DISINFECTION

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 DEWATERING 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

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

SECTION 5 EXTERNAL WORKS

- 29 GATE HOUSE
- 30 CAR PARK

EXISTING BUILDING TO BE RETAINED

- 31 EXISTING SOLID HANDING BUILDING
- 32 EXISTING OUTFALL PUMPING STATION
- 33 EXISTING TERMINAL MANHOLE

Annex A

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

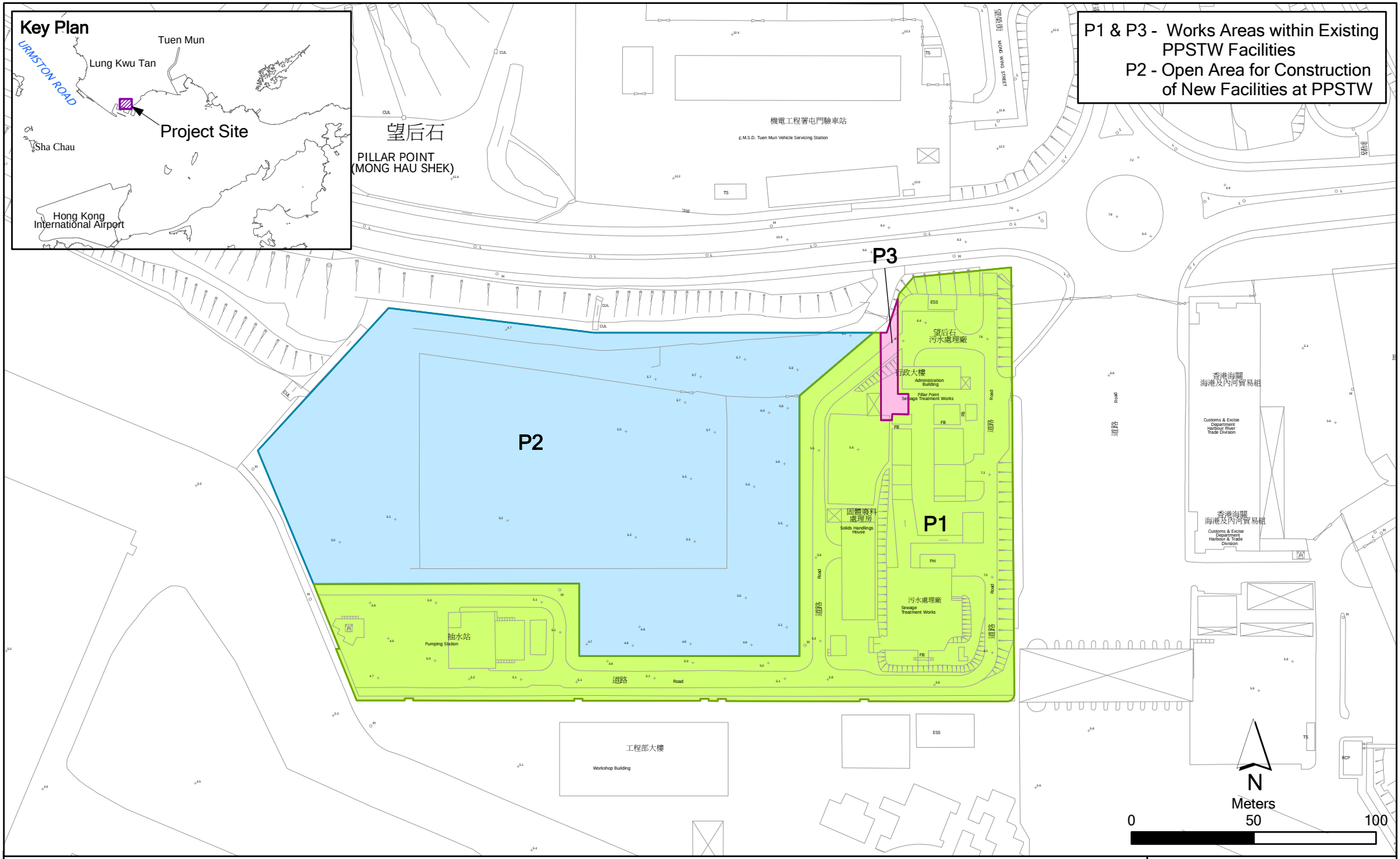
FILE: 0119806c
DATE: 20/12/2010

Environmental Resources Management

ERM

Annex B

Works Location



Annex B

Location of Works Areas

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

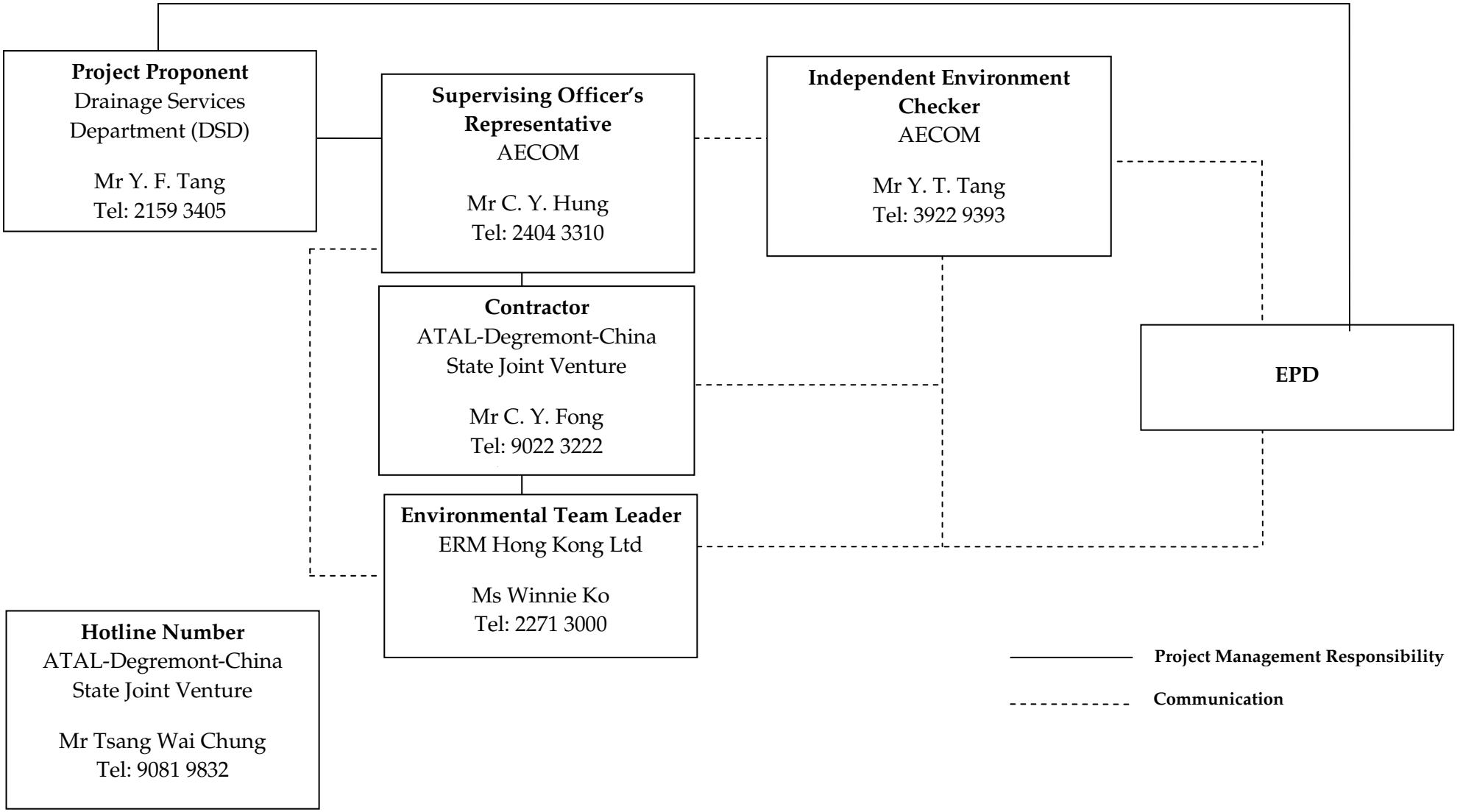
Environmental Resources Management

ERM

Annex C

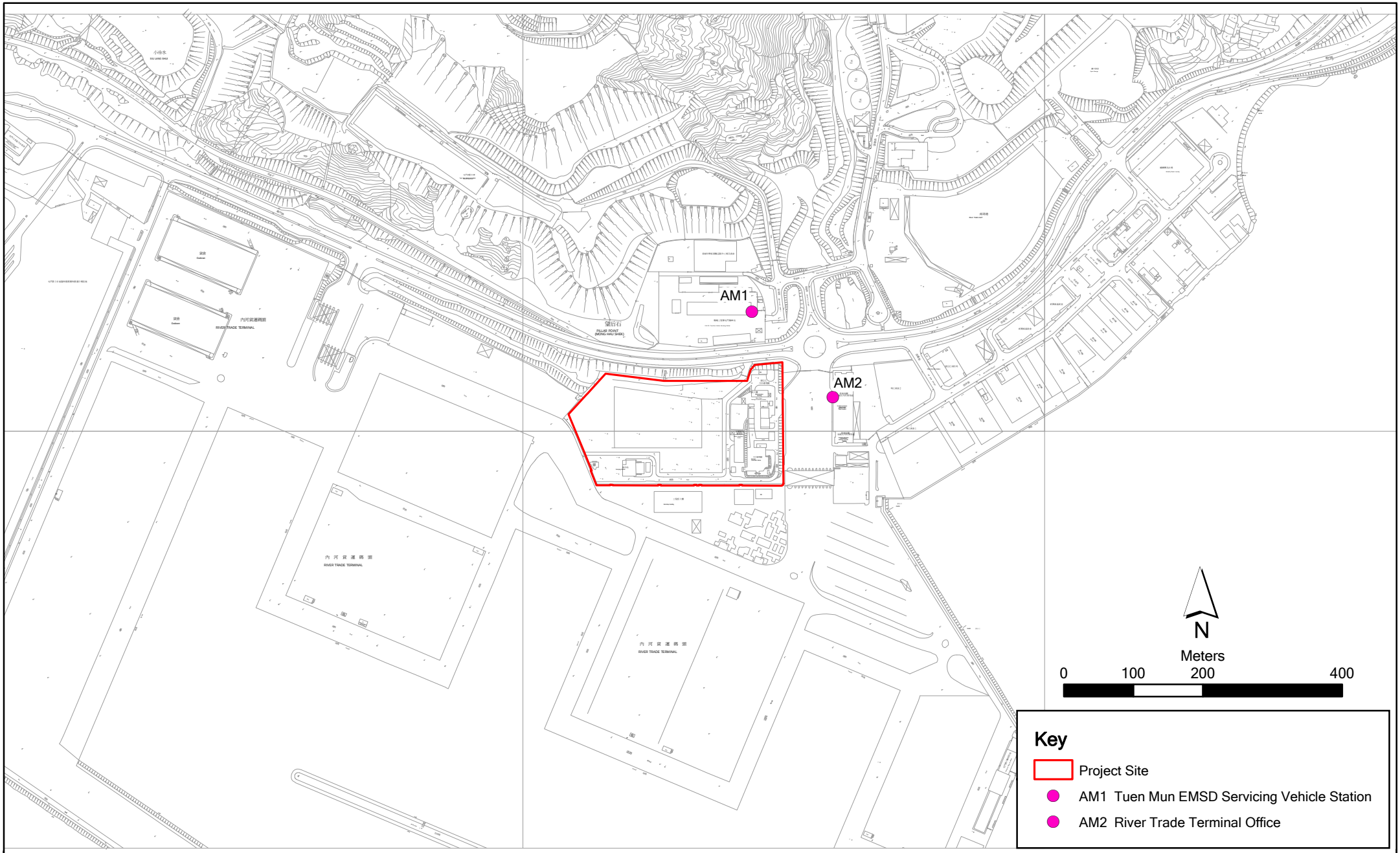
Project Organization Chart with Contact Details

Project Organization During Construction Phase (with contact details)



Annex D

Locations of Air Quality Monitoring Stations



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

ERM

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)
March 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar
	3X1-hr & 1X 24-hr TSP					3X1-hr & 1X 24-hr TSP
8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar
					3X1-hr & 1X 24-hr TSP	
15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar
				3X1-hr & 1X 24-hr TSP		
22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar
			3X1-hr & 1X 24-hr TSP			
29-Mar	30-Mar	31-Mar				
		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)
April 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Apr	2-Apr	3-Apr	4-Apr
				3X1-hr & 1X 24-hr TSP	Public Holiday	Public Holiday
5-Apr	6-Apr	7-Apr	8-Apr	9-Apr	10-Apr	11-Apr
	Public Holiday	Public Holiday	3X1-hr & 1X 24-hr TSP			
12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr
	3X1-hr & 1X 24-hr TSP				3X1-hr & 1X 24-hr TSP	
19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr
				3X1-hr & 1X 24-hr TSP		
26-Apr	27-Apr	28-Apr	29-Apr	30-Apr		
			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**
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM1	Tuen Mun EMSD Vehicle Servicing Station	GMW GS-2310 (S/N 7580)	CM-AIR-43 (S/N 0438320)	02 January 2015	02 March 2015
AM1	Tuen Mun EMSD Vehicle Servicing Station	GMW GS-2310 (S/N 7580)	CM-AIR-43 (S/N 0438320)	02 March 2015	02 May 2015
AM2	River Trade Terminal Office	GMW GS-2310 (S/N 1252)	CM-AIR-43 (S/N 0438320)	02 January 2015	02 March 2015
AM2	River Trade Terminal Office	GMW GS-2310 (S/N 1252)	CM-AIR-43 (S/N 0438320)	02 March 2015	02 May 2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	EMSD
Calibrated by	:	K.T.Ho
Date	:	02/01/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1022
Ta(K)	:	288

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.450	1.662	56	57.22
2	13 holes	9.4	3.133	1.509	50	51.09
3	10 holes	7.2	2.742	1.321	42	42.91
4	7 holes	4.6	2.191	1.056	30	30.65
5	5 holes	2.6	1.647	0.794	20	20.43

Sampler Calibration Relationship

Slope(m):42.939 Intercept(b): -14.013 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 10/01/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	EMSD
Calibrated by	:	K.T.Ho
Date	:	02/03/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	291

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.365	1.621	52	52.75
2	13 holes	9.2	3.077	1.483	46	46.66
3	10 holes	6.8	2.645	1.275	38	38.55
4	7 holes	4.2	2.079	1.002	28	28.40
5	5 holes	2.2	1.505	0.725	18	18.26

Sampler Calibration Relationship

Slope(m): 38.246 Intercept(b): -9.780 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 08/03/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : River Trade
Calibrated by : P.F.Yeung
Date : 02/01/2015

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 2454
Service Date : 24 Mar 2014
Slope (m) : 2.07593
Intercept (b) : -0.00102
Correlation Coefficient(r) : 0.99996

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

Calibration Condition
Pa (hpa) : 1022
Ta(K) : 288

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.450	1.662	66	67.43
2	13 holes	9.4	3.133	1.509	58	59.26
3	10 holes	7.6	2.817	1.357	50	51.09
4	7 holes	4.6	2.191	1.056	36	36.78
5	5 holes	2.6	1.647	0.794	22	22.48

Sampler Calibration Relationship

Slope(m):51.235 Intercept(b): -17.961 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 10/01/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : River Trade
Calibrated by : P.F.Yeung
Date : 02/03/2015

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 2454
Service Date : 24 Mar 2014
Slope (m) : 2.07593
Intercept (b) : -0.00102
Correlation Coefficient(r) : 0.99996

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

Calibration Condition
Pa (hpa) : 1018
Ta(K) : 291

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.365	1.621	64	64.92
2	13 holes	9.0	3.043	1.467	56	56.81
3	10 holes	7.0	2.684	1.293	48	48.69
4	7 holes	4.2	2.079	1.002	35	35.51
5	5 holes	2.2	1.505	0.725	20	20.29

Sampler Calibration Relationship

Slope(m): 49.037 Intercept(b): -14.663 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 08/03/2015

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 758.19

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	1.4740	3.2	2.00
2	NA	NA	1.00	1.0340	6.4	4.00
3	NA	NA	1.00	0.9240	7.9	5.00
4	NA	NA	1.00	0.8820	8.8	5.50
5	NA	NA	1.00	0.7270	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0103	0.6854	1.4245
1.0061	0.9730	2.0146
1.0040	1.0866	2.2524
1.0028	1.1370	2.3623
0.9976	1.3722	2.8491

Qstd slope (m) = 2.07593
intercept (b) = -0.00102
coefficient (r) = 0.99996

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9958	0.6755	0.8791
0.9916	0.9590	1.2433
0.9895	1.0709	1.3900
0.9884	1.1206	1.4579
0.9832	1.3524	1.7583

Qa slope (m) = 1.29991
intercept (b) = -0.00063
coefficient (r) = 0.99996

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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145 SOUTH MIAMI AVE
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45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

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	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258		0.9958	0.6886	0.8784
1.0078	0.9785	2.0163		0.9916	0.9627	1.2422
1.0057	1.0955	2.2543		0.9895	1.0779	1.3888
1.0047	1.1443	2.3644		0.9885	1.1258	1.4566
0.9994	1.3805	2.8515		0.9833	1.3582	1.7568
Qstd slope (m) =		2.09532		Qa slope (m) =		1.31205
intercept (b) =		-0.03812		intercept (b) =		-0.02349
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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 (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-03-2015	13:10	14:10	Cloudy	144	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5440
	14:10	15:10	Cloudy	149	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5441
	15:10	16:10	Cloudy	162	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5442
07-03-2015	13:10	14:10	Cloudy	108	343	500	Construction work in progress/Vehicular emissions	17.0	*	7580	5457
	14:10	15:10	Cloudy	105	343	500	Construction work in progress/Vehicular emissions	17.0	*	7580	5458
	15:10	16:10	Cloudy	112	343	500	Construction work in progress/Vehicular emissions	17.0	*	7580	5459
13-03-2015	13:10	14:10	Cloudy	112	343	500	Construction work in progress/Vehicular emissions	19.0	*	7580	5505
	14:10	15:10	Cloudy	112	343	500	Construction work in progress/Vehicular emissions	19.0	*	7580	5506
	15:10	16:10	Cloudy	108	343	500	Construction work in progress/Vehicular emissions	19.0	*	7580	5507
19-03-2015	13:10	14:10	Fine	90	343	500	Construction work in progress/Vehicular emissions	24.0	*	7580	5521
	14:10	15:10	Fine	95	343	500	Construction work in progress/Vehicular emissions	24.0	*	7580	5522
	15:10	16:10	Fine	116	343	500	Construction work in progress/Vehicular emissions	24.0	*	7580	5523
25-03-2015	13:10	14:10	Cloudy	109	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5535
	14:10	15:10	Cloudy	94	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5536
	15:10	16:10	Cloudy	108	343	500	Construction work in progress/Vehicular emissions	20.0	*	7580	5537
31-03-2015	13:10	14:10	Cloudy	121	343	500	Construction Work in Progress	25.0	*	7580	5601
	14:10	15:10	Cloudy	128	343	500	Construction Work in Progress	25.0	*	7580	5602
	15:10	16:10	Cloudy	122	343	500	Construction Work in Progress	25.0	*	7580	5603
			Min.	**90**							
			Max.	**162**							
			Average	**115**							

* 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 ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-03-2015	13:00	14:00	Cloudy	156	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5436
	14:00	15:00	Cloudy	124	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5437
	15:00	16:00	Cloudy	125	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5438
07-03-2015	13:00	14:00	Cloudy	116	383	500	Construction work in progress/Vehicular emissions	17.0	*	1252	5453
	14:00	15:00	Cloudy	113	383	500	Construction work in progress/Vehicular emissions	17.0	*	1252	5454
	15:00	16:00	Cloudy	129	383	500	Construction work in progress/Vehicular emissions	17.0	*	1252	5455
13-03-2015	13:00	14:00	Cloudy	117	383	500	Construction work in progress/Vehicular emissions	19.0	*	1252	5501
	14:00	15:00	Cloudy	112	383	500	Construction work in progress/Vehicular emissions	19.0	*	1252	5502
	15:00	16:00	Cloudy	118	383	500	Construction work in progress/Vehicular emissions	19.0	*	1252	5503
19-03-2015	13:00	14:00	Fine	109	383	500	Construction work in progress/Vehicular emissions	24.0	*	1252	5525
	14:00	15:00	Fine	78	383	500	Construction work in progress/Vehicular emissions	24.0	*	1252	5526
	15:00	16:00	Fine	99	383	500	Construction work in progress/Vehicular emissions	24.0	*	1252	5527
25-03-2015	13:00	14:00	Cloudy	114	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5531
	14:00	15:00	Cloudy	117	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5532
	15:00	16:00	Cloudy	101	383	500	Construction work in progress/Vehicular emissions	20.0	*	1252	5533
31-03-2015	13:00	14:00	Cloudy	119	383	500	Construction Work in Progress	25.0	*	1252	5605
	14:00	15:00	Cloudy	135	383	500	Construction Work in Progress	25.0	*	1252	5606
	15:00	16:00	Cloudy	141	383	500	Construction Work in Progress	25.0	*	1252	5607
			Min.	**78**							
			Max.	**156**							
			Average	**115**							

* 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	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
02-03-2015	16:10	03-03-2015	16:10	Cloudy	2.8635	2.9772	25620.20	25644.20	24	1.30	1.30	1.30	61	183	260	Construction work in progress/Vehicular emissions	7580	5443
07-03-2015	16:10	08-03-2015	16:10	Cloudy	2.8740	2.9836	25647.20	25671.20	24	1.30	1.30	1.30	59	183	260	Construction work in progress/Vehicular emissions	7580	5460
13-03-2015	16:10	14-03-2015	16:10	Cloudy	2.8053	2.9304	25674.20	25698.20	24	1.30	1.30	1.30	67	183	260	Construction work in progress/Vehicular emissions	7580	5508
19-03-2015	16:10	20-03-2015	16:10	Fine	2.7930	2.9102	25699.20	25723.20	24	1.24	1.24	1.24	66	183	260	Construction work in progress/Vehicular emissions	7580	5524
25-03-2015	16:10	26-03-2015	16:10	Cloudy	2.7942	2.9445	25728.20	25752.20	24	1.30	1.30	1.30	80	183	260	Construction work in progress/Vehicular emissions	7580	5538
31-03-2015	16:10	01-04-2015	16:10	Cloudy	2.8597	3.0019	25753.20	25777.20	24	1.24	1.24	1.24	80	183	260	Construction work in progress/Vehicular emissions	7580	5604
												Min.	**59**					
												Max.	**80**					
												Average	**66**					

24-hour TSP Monitoring Results

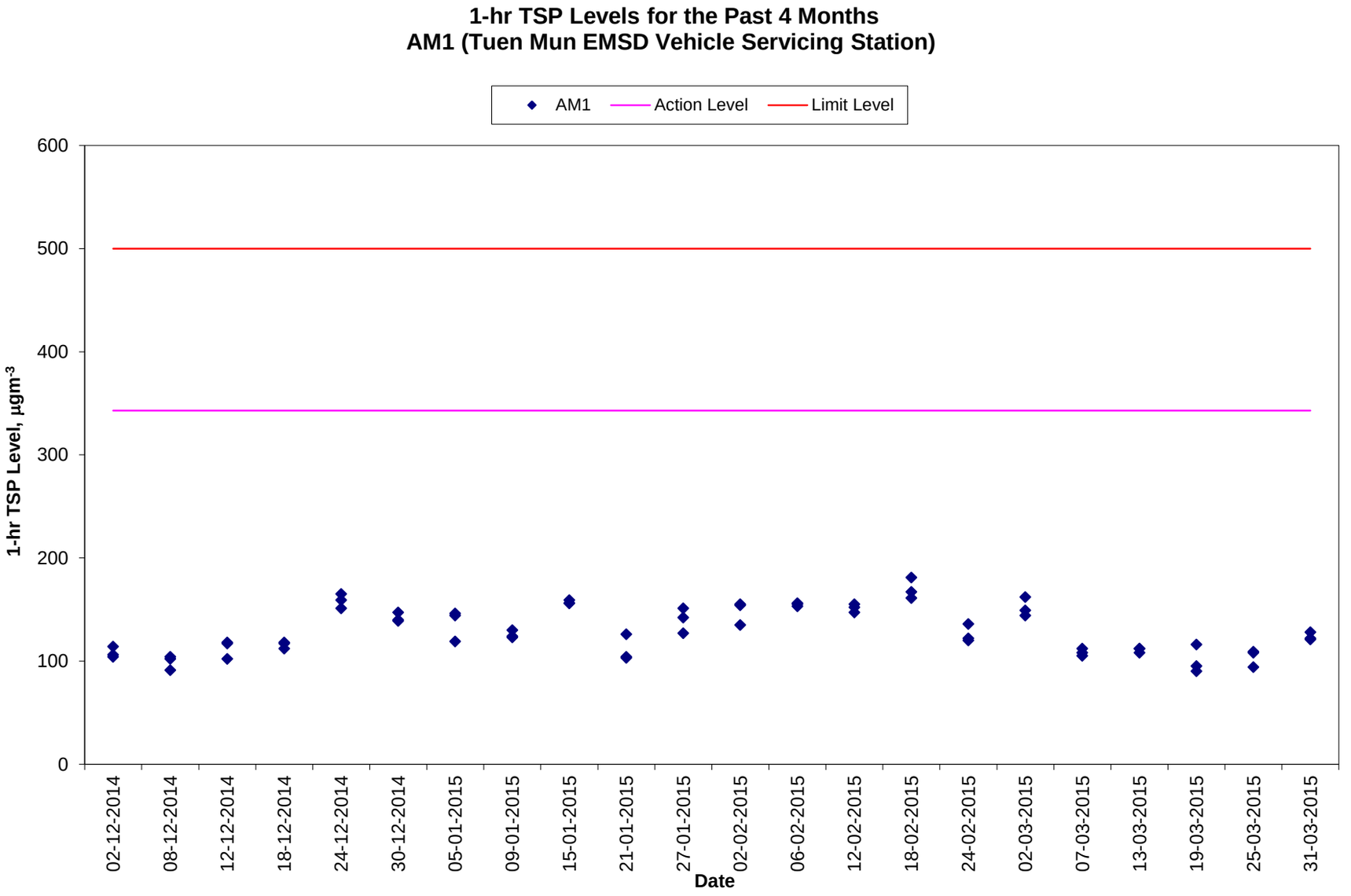
Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
02-03-2015	16:00	03-03-2015	16:00	Cloudy	2.8835	3.0475	25618.20	25642.20	24	1.24	1.24	1.24	92	192	260	Construction work in progress/Vehicular emissions	1252	5439
07-03-2015	16:00	08-03-2015	16:00	Cloudy	2.8981	3.0011	25645.20	25669.20	24	1.24	1.24	1.24	58	192	260	Construction work in progress/Vehicular emissions	1252	5456
13-03-2015	16:00	14-03-2015	16:00	Cloudy	2.8012	2.9127	25672.20	25696.20	24	1.24	1.24	1.24	62	192	260	Construction work in progress/Vehicular emissions	1252	5504
19-03-2015	16:00	20-03-2015	16:00	Fine	2.7940	2.8924	25701.20	25725.20	24	1.30	1.30	1.30	53	192	260	Construction work in progress/Vehicular emissions	1252	5528
25-03-2015	16:00	26-03-2015	16:00	Cloudy	2.7985	2.9300	25726.20	25750.20	24	1.24	1.24	1.24	74	192	260	Construction work in progress/Vehicular emissions	1252	5534
31-03-2015	16:00	01-04-2015	16:00	Cloudy	2.8407	3.0015	25755.20	25779.20	24	1.30	1.30	1.30	86	193	260	Construction work in progress/Vehicular emissions	1252	5608
												Min.	**53**					
												Max.	**92**					
												Average	**68**					

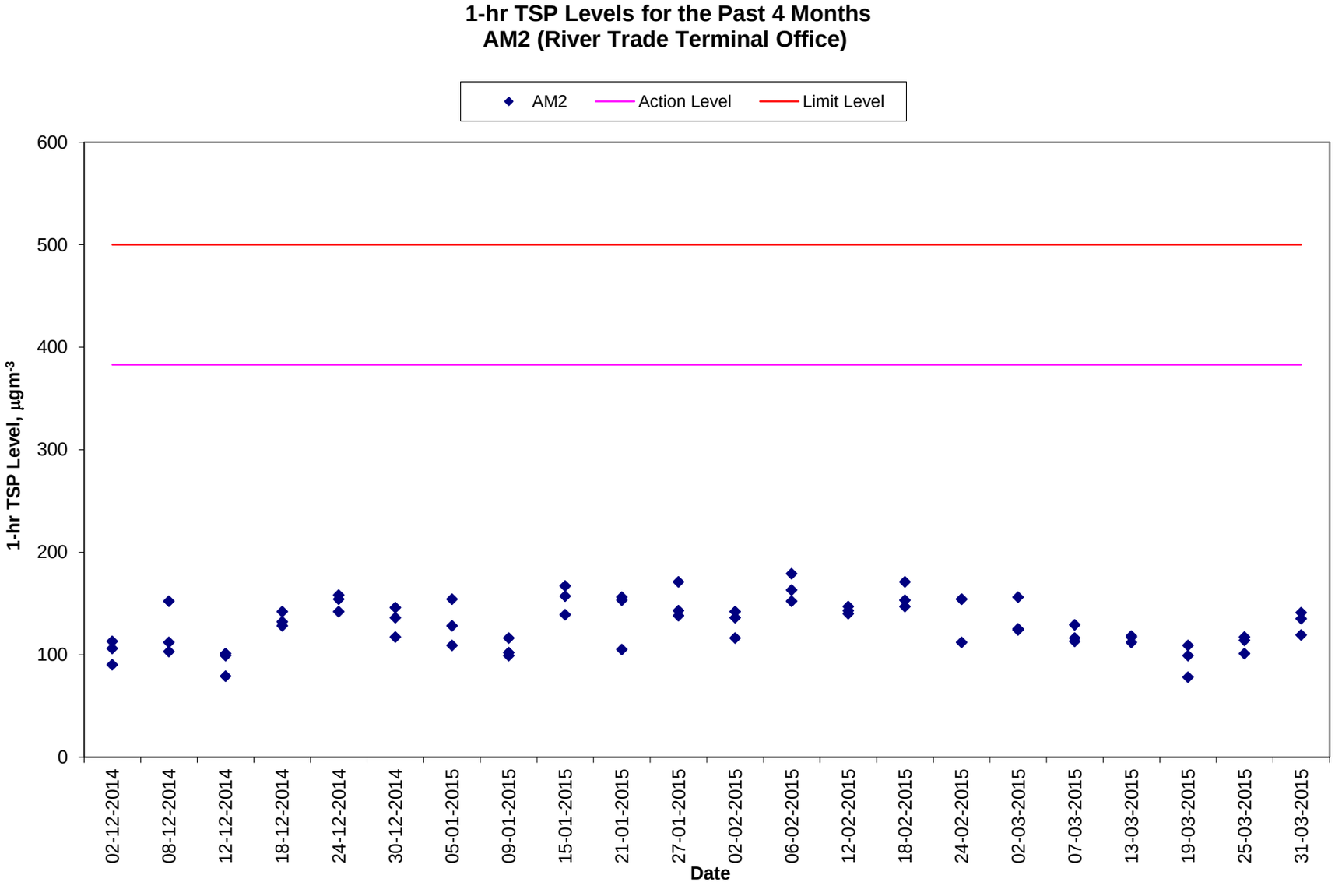
Meteorological Data Extracted from the Hong Kong Observatory

				Tuen Mun Station				
Date	Weather	Min. Temp	Max. Temp	Average Air Temperature (°C)	Range of Relative Humiditiy (%)	Total Rainfall (mm)	Range of Wind Speed (km/h)	Wind Direction
02-03-2015	Cloudy	17.3	20.3	18.8	78-91	Trace	0-18	SW/W
03-03-2015	Cloudy	17.5	22.6	20.1	80-95	0.2	0-19	NW
07-03-2015	Cloudy	15.1	20.0	17.6	86-94	0.2	0-14	S
08-03-2015	Cloudy	17.9	21.3	19.6	80-91	Trace	0-19	S
13-03-2015	Cloudy	15.4	19.6	17.5	71-83	0.0	0-18	SE
14-03-2015	Cloudy	19.1	21.7	20.4	74-89	Trace	0-19	SE
19-03-2015	Fine	22.2	28.8	25.5	79-96	0.0	0-18	S
20-03-2015	Fine	21.5	29.1	25.3	66-95	0.0	0-18	SE
25-03-2015	Cloudy	16.8	19.4	18.1	73-81	Trace	0-20	SE/E
26-03-2015	Cloudy	17.1	20.9	19.0	72-96	4.2	0-10	NE/N
31-03-2015	Cloudy	22.4	26.6	24.5	82-95	Trace	0-18	SE/S
01-04-2015	Cloudy	22.9	26.6	24.8	75-95	0.0	1-21	SE

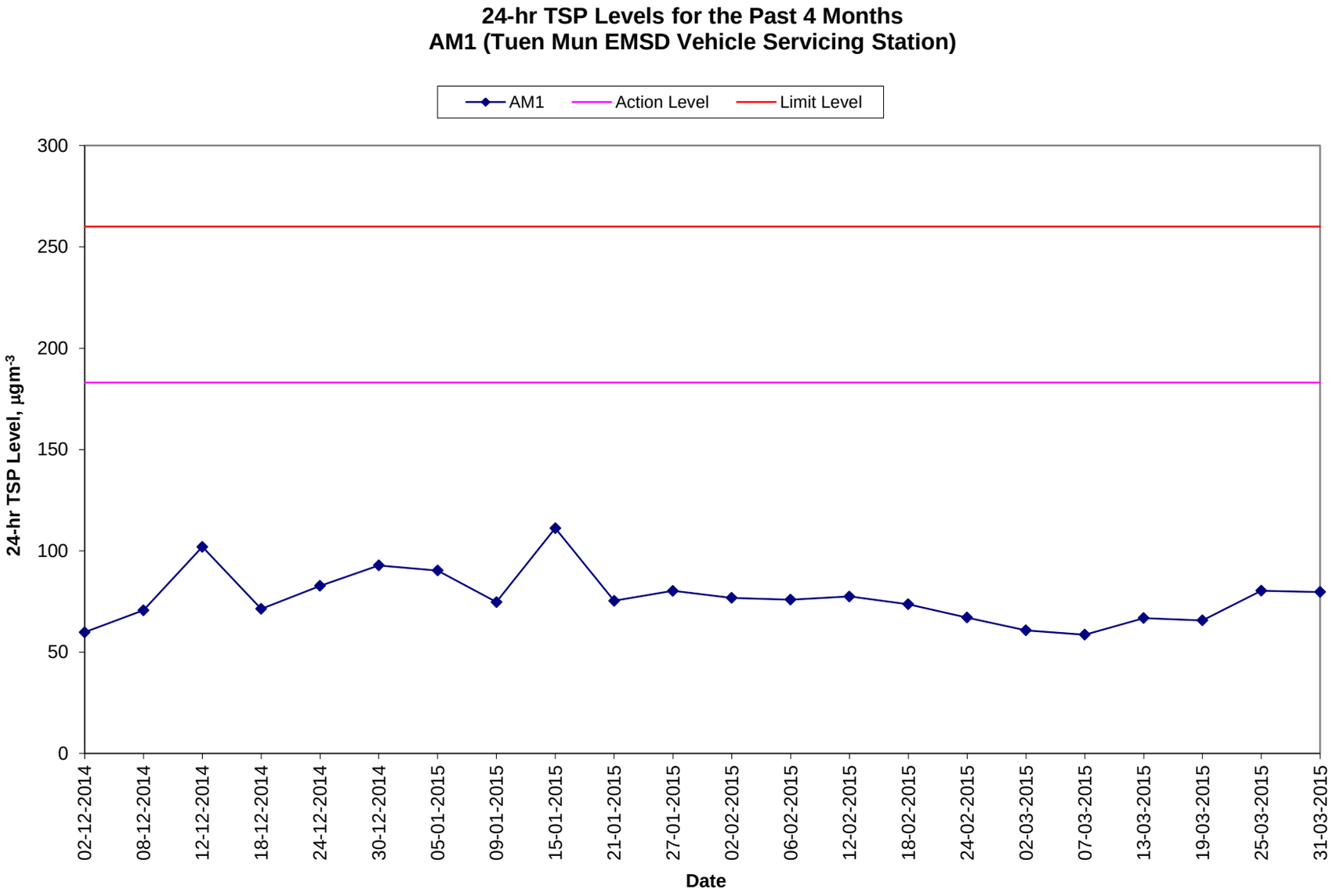
Annex G TSP Monitoring Results



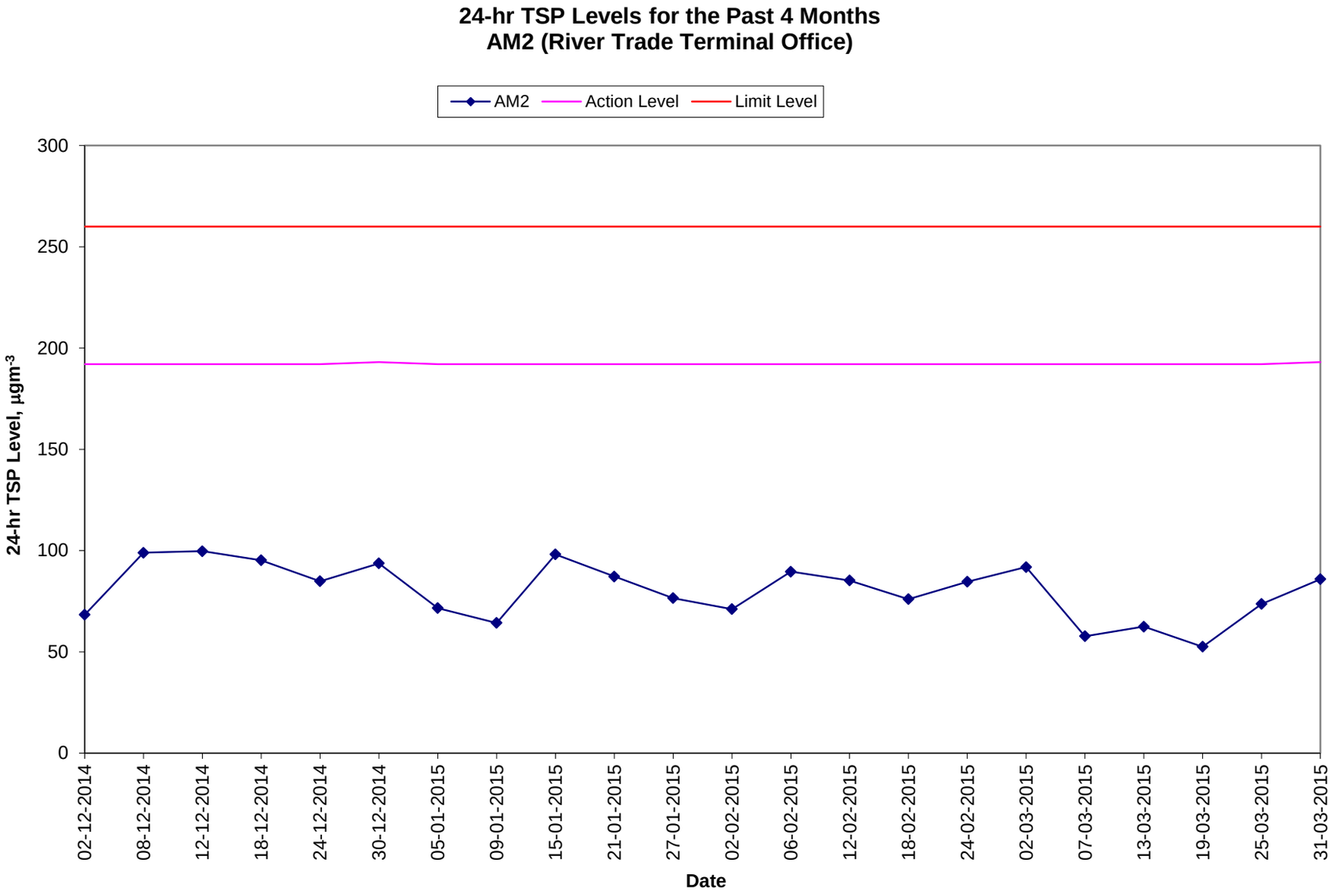
Annex G TSP Monitoring Results



Annex G TSP Monitoring Results



Annex G TSP Monitoring Results



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
Action Level				
Exceedance for one sample	• 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.	• Check monitoring data submitted by ET; • Check Contractor's working method.	• Notify Contractor and DSD.	• Rectify any unacceptable practice; • Amend working methods if appropriate.
Exceedance for two or more consecutive samples	• 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.	• 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.	• Confirm receipt of notification of exceedance in writing; • Notify Contractor and DSD; • Ensure remedial measures properly implemented.	• 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
Limit Level				
Exceedance for one sample	• 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.	• 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.	• Confirm receipt of notification of exceedance in writing; • Notify Contractor; • Ensure remedial measures properly implemented.	• 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	• 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.	• 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.	• 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.	• 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
Summary of Environmental Mitigation Measures in the EIA and EM&A Manual			
Construction Phase			
Air Quality	Dust mitigation measures stipulated in *the Air Pollution Control (Construction Dust) Regulation* 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 minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly	Work site/During the construction period	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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 crashed 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.		
Water Quality	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.	Work site/During the construction period	√
Water Quality	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.	Work site/During the construction period	√
Water Quality	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.	Work site/During the construction period	√
Waste Management	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 should be observed and complied with for control of chemical wastes.	Work site/During the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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	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: • 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	*Good Site Practices* Recommendations for good site practices during the construction activities include: • 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 transporting wastes in enclosed containers • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Work site/During the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	• Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.		
Waste Management	*Waste Reduction Measures* 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: • 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	*General Refuse* 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.	Work site / During the construction period	<>
Waste Management	*Construction and Demolition Material* In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated 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	Work site / During design stage & construction period	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses.		
Waste Management	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: • 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	When disposing C&D material at a public filling facility, it shall be noted that the material shall only consist of earth, building debris and broken rock and concrete. The material shall be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered to be unsuitable by 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	Work site/During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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.		
Waste Management	*Chemical Waste* 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.	Work site / During the construction period	√
Landscape & Visual	<u>Temporary Tree Nurseries</u> 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. Besides, these trees may also be positioned as visual mitigation during the construction period.	Work site/During design stage & construction period	√. A tree nursery has been set up off-site near the site office.
Landscape & Visual	<u>No-intrusion Zone</u>	Work site/During design stage & construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	To maximise 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.	period	
Landscape & Visual	Hoarding 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.	Work site/During design stage & construction period	√
Landscape & Visual	Dust and Erosion Control for Exposed Soil 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..	Work site/During design stage & construction period	√
Landscape & Visual	Existing Tree Record Inventory 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.	Work site/During design stage & construction period	√
Landscape & Visual	Construction Light	Work site / During design stage & construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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.		
Landscape & Visual	Tree Transplanting Apart from the 18 numbers of "*Leucaena leucocephala*", 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**.	Work site / During design stage & construction period	√.
Landscape & Visual	Tree Compensation Ratio 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 "*Cassia surattensis*" 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**.	Work site / During design stage & construction period	N/A
Landscape & Visual	Re-use of Existing Soil and Advance formation of Planting Area 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.	Work site / During design stage & construction period	√
Landscape & Visual	Establishment Period	Work site/During operation period	N/A. To be implemented during operation phase of Project.

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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.		
Landscape & Visual	Re-instatement of excavated Area All excavated area and disturbed area for utilities diversion, temporary road diversion, and pipeline woks will be reinstated to former conditions, subject to applicable Government Standards.	Work site / During design stage & operation period	N/A. To be implemented during operation phase of Project.
Landscape & Visual	Appearance and Greening for the proposed structures Compatible design, construction materials and surface finishes of the proposed structure should match with the nearby existing external appearance of PPSTW buildings for achieving visual uniformity. Finishing materials shall have due consideration to form, basic color, color/tone variation, micro-and macro-texture, and reflectivity/light absorbance to avoid glare. Planting, such as turf, low groundcovers and climbers, may also be planted on top of these elements to provide greening and aesthetic effect.	Work site / During design stage & operation period	N/A. To be implemented during operation phase of Project.
Summary of Key Environmental Mitigation Measures in Contract Requirements			
Air Quality	Only Ultra-low-sulphur diesel (ULSD) should be used for all diesel-operated plants and equipments on site	Work sites / during construction period	√
Air Quality and Noise	Plants and equipments of good operation conditions should be used on site.	Work sites / during construction period	√
Noise	No diesel hammers should be used for piling works	Work sites / during construction period	√
Noise	Construction Noise Permits (CNP) should be applied for works conducted outside non-restricted hours.	Work sites / during construction period	√
Noise	Quiet construction equipments and the quietest practicable working methodologies should be adopted for works whenever feasible. Noise labels should be provided for air compressors. Hoods and cover panels	Work sites / during construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	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 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
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)

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
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	100.00	0.00	1100.00	1146.64	100.00	60.00	10.00	0.00	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	120.00	0.00	700.00	753.73	50.00	60.00	8.00	0.00	63.95
September 2013	748.43	50.00	0.00	650.00	698.43	40.00	60.00	5.00	0.00	41.28
October 2013	1701.99	45.00	0.00	1500.00	1656.99	20.00	60.00	5.00	0.00	34.79
Sub-total	3324.15	215.00	0.00	2850.00	3109.15	110.00	180.00	18.00	0.00	140.02
November 2013	1602.35	60.00	0.00	1490.00	1542.35	18.00	60.00	50.00	0.00	36.44
December 2013	1357.16	80.00	0.00	1100.00	1277.16	35.00	60.00	50.00	0.00	16.84
January 2014	714.34	20.00	0.00	690.00	694.34	16.00	60.00	97.00	0.00	27.82
Sub-total	3,673.85	160.00	0.00	3,280.00	3,513.85	69.00	180.00	197.00	0.00	81.10
February 2014	944.11	20.00	0.00	900.00	924.11	50.00	60.00	1120.00	0.00	7.66
March 2014	1200.95	50.00	0.00	1100.00	1150.95	40.00	50.00	5.00	0.00	19.78
April 2014	1803.58	50.00	0.00	1700.00	1753.58	40.00	30.00	5.00	0.00	12.13
Sub-total	3948.64	120.00	0.00	3700.00	3828.64	130.00	140.00	1130.00	0.00	39.57
May 2014	576.53	50.00	0.00	500.00	526.53	40.00	30.00	5.00	0.00	14.07
June 2014	707.48	30.00	0.00	640.00	677.48	30.00	20.00	0.00	0.00	11.65
July 2014	675.82	20.00	0.00	640.00	655.82	20.00	10.00	0.00	0.00	25.28
Sub-total	1959.83	100.00	0.00	1780.00	1859.83	90.00	60.00	5.00	0.00	51.00
August 2014	758.68	10.00	0.00	740.00	748.68	10.00	5.00	0.00	0.00	14.77

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
September 2014	1171.44	20.00	0.00	1145.00	1151.44	20.00	10.00	0.00	0.00	15.71
October 2014	448.84	20.00	0.00	415.00	428.84	20.00	5.00	0.00	0.00	8.32
Sub-total	2378.96	50.00	0.00	2300.00	2328.96	50.00	20.00	0.00	0.00	38.8
November 2014	768.33	10.00	0.00	740.00	758.33	10.00	5.00	0.00	0.00	30.89
December 2014	766.77	10.00	0.00	740.00	756.77	5.00	3.00	0.00	0.00	17.94
January 2015	575.41	10.00	0.00	550.00	545.41	3.00	3.00	0.00	0.00	12.23
Sub-total	2110.51	30.00	0.00	2030.00	2060.51	18.00	11.00	0.00	0.00	61.06
February 2015	374.73	5.00	0.00	360.00	369.73	2.00	2.00	0.00	0.00	15.68
March 2015	678.52	5.00	0.00	665.00	673.52	1.00	2.00	0.00	0.00	40.00
Total	245199	43844	5695	38991	195660	2792	2223	1752	810	2238

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 2011based 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 though the licensed chemical waste collector, Dunwell Ind. (Holdings) Ltd, with the waste collection licence number 7111-757-W0015-WC.
(7) The waste flow data for April, May and June 2011 was updated in August 2011 based on SOR's comments and has been confirmed by the Contractor.
(8) The waste flow data of chemical waste for August 2011 was updated in October 2011 based on Contractor's revised waste flow summary.
(9) The waste flow data of general refuse for September 2011 was updated in November 2011 based on Contractor's revised waste flow summary.
(10) The waste flow data of C&D material for October 2011 was updated in December 2011 based on Contractor's revised waste flow summary.
(11) The waste flow data of C&D material for August 2011 was updated in January 2011 based on SOR's comments and has been confirmed by the Contractor.
(12) The waste flow data of metal and paper/cardboard packaging for June 2011 was revised in August 2012.
(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.

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
September 2013	0	0
October 2013	0	0
November 2013	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
December 2014	0	0
January 2015	0	0
February 2015	0	0
March 2015	0	0
Overall Total	**0**	**0**

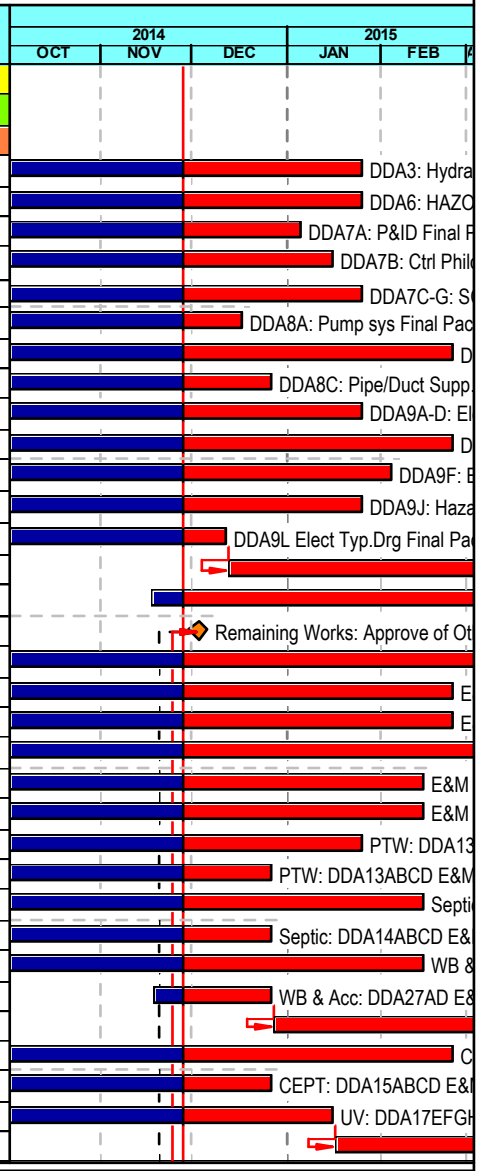
Annex L

Construction Programme of the Project

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

ATAL - Degremont - China State Joint Venture

Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Actual Start	Actual Finish
Design and Design Checking of Permanent Works								
Submission and Consent								
Submission and Approval								
DPD030395	DDA3: Hydraulic Design- Final Package & Approv	100	01OCT2013	26JAN2015	01OCT2013	17MAY2014	01OCT2013	
DPD063175	DDA6: HAZOP Report- SO rew. Final Package	28	31DEC2011	26JAN2015	31DEC2011	17MAY2014	31DEC2011	
DPD071397	DDA7A: P&ID Final Package Appr / No comment	120	19JUN2012	06JAN2015	19JUN2012	17MAY2014	19JUN2012	
DPD072397	DDA7B: Ctrl Philosophy Final Pack. Apr/No Com.	120	17AUG2014	16JAN2015	17AUG2014	17MAY2014	17AUG2014	
DPD073397	DDA7C-G: SCADA sys Final Pack. Apr/No Com.	120	29FEB2012	26JAN2015	29FEB2012	17MAY2014	29FEB2012	
DPD077197	DDA8A: Pump sys Final Pack. Apr/No Com.	120	19JUN2012	17DEC2014	19JUN2012	17MAY2014	19JUN2012	
DPD077397	DDA8B: Odour Duct Final Pack. Apr/No Com.	120	30SEP2014	25FEB2015	30SEP2014	17MAY2014	30SEP2014	
DPD077797	DDA8C: Pipe/Duct Supp. Final Pack. Apr/No Com.	120	05OCT2012	27DEC2014	05OCT2012	17MAY2014	05OCT2012	
DPD081197	DDA9A-D: Elect. sys dgn Final Pack. Apr/No Com.	120	17JUN2014	26JAN2015	17JUN2014	17MAY2014	17JUN2014	
DPD081597	DDA9E: UPS Final Pack. Apr/No Com.	120	01AUG2014	25FEB2015	01AUG2014	17MAY2014	01AUG2014	
DPD081797	DDA9F: E&L sys Final Pack. Apr/No Com.	120	31AUG2014	05FEB2015	31AUG2014	17MAY2014	31AUG2014	
DPD084197	DDA9J: Hazardous Zone Final Pack. Apr/No Com.	120	12AUG2012	26JAN2015	12AUG2012	17MAY2014	12AUG2012	
DPD084595	DDA9L Elect Typ.Drg Final Pack. Subm.	60	17MAY2014	12DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD084597	DDA9L Elect Typ.Drg Final Pack. Apr/No Com.	120	13DEC2014	11APR2015	18JAN2014	17MAY2014		
DPD085297	DDA10F BS Ins dwg Final Pack. Apr/No Com.	120	17NOV2014	07MAR2015	17NOV2014	17MAY2014	17NOV2014	
DPD090900	Remaining Works: Approve of Other DDA submission	0		02DEC2014		17MAY2014		
DPD093100	E&M CMS Subm (Mechanical) Approval	150	01JUN2013	07MAR2015	01JUN2013	17MAY2014	01JUN2013	
DPD093300	E&M CMS Subm (SCADA) Approval	150	01JUN2013	25FEB2015	01JUN2013	17MAY2014	01JUN2013	
DPD093400	E&M CMS Subm (Control & Instr.) Approval	150	01JUN2013	25FEB2015	01JUN2013	17MAY2014	01JUN2013	
DPD093500	E&M CMS Subm (BS-MVAC) Approval	150	01JUN2013	07MAR2015	01JUN2013	17MAY2014	01JUN2013	
DPD093600	E&M CMS Subm (BS-FS) Approval	150	01JUN2013	15FEB2015	01JUN2013	17MAY2014	01JUN2013	
DPD093800	E&M CMS Subm (BS-P&D.) Approval	150	01JUN2013	15FEB2015	01JUN2013	17MAY2014	01JUN2013	
DPD104100	PTW: DDA13EFGH Civil Final Pack. Subm.	120	31JAN2012	26JAN2015	31JAN2012	17MAY2014	31JAN2012	
DPD104500	PTW: DDA13ABCD E&M Final Pack. Subm.	120	02JAN2012	27DEC2014	02JAN2012	17MAY2014	02JAN2012	
DPD154100	Septic: DDA14EFGH Civil Final Pack. Subm.	120	31MAY2012	15FEB2015	31MAY2012	17MAY2014	31MAY2012	
DPD154500	Septic: DDA14ABCD E&M Final Pack. Subm.	120	06AUG2012	27DEC2014	06AUG2012	17MAY2014	06AUG2012	
DPD176100	WB & Acc: DDA27EF Civil Final Pack. Subm.	90	27NOV2012	15FEB2015	27NOV2012	17MAY2014	27NOV2012	
DPD176500	WB & Acc: DDA27AD E&M Final Pack. Subm.	60	18NOV2014	27DEC2014	18NOV2014	17JAN2014	18NOV2014	
DPD176600	WB & Acc: DDA27AD E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD214100	CEPT: DDA15EFGH Civil Final Pack. Subm.	120	06APR2012	25FEB2015	06APR2012	17MAY2014	06APR2012	
DPD214500	CEPT: DDA15ABCD E&M Final Pack. Subm.	120	30MAR2012	27DEC2014	30MAR2012	17MAY2014	30MAR2012	
DPD314100	UV: DDA17EFGH Civil Final Pack. Subm.	120	11JAN2012	16JAN2015	11JAN2012	17JAN2014	11JAN2012	
DPD314200	UV: DDA17EFGH Civil Final Pack. Apr/No Com.	120	17JAN2015	16MAY2015	18JAN2014	17MAY2014		



Start date	14JUL2010
Finish date	30DEC2015
Data date	28NOV2014
Run date	10DEC2014
Page number	1A
Project name	RP01
c Primavera Systems, Inc.	

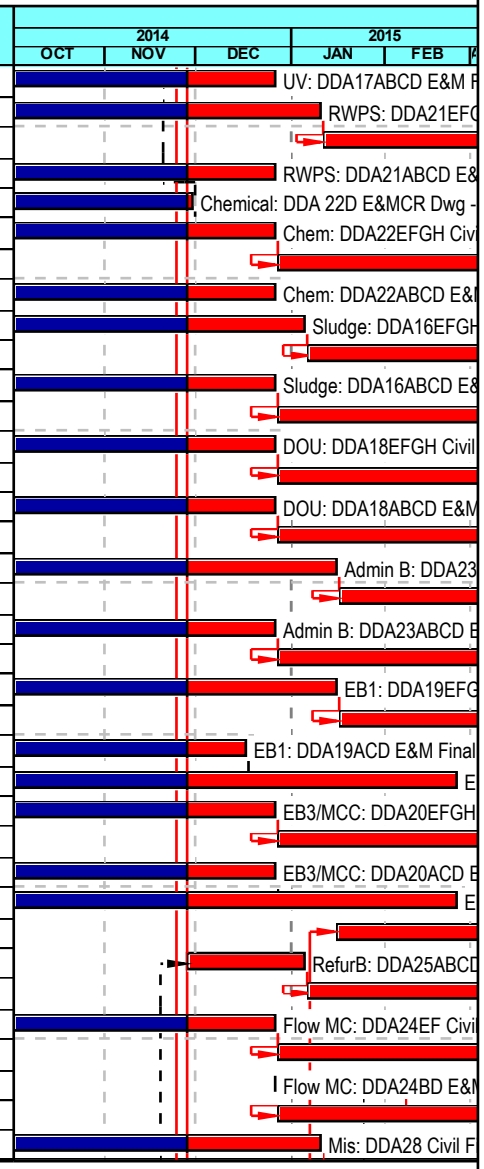
PPSTW Remaining Works Programme After Substantial Completion - Rev.1 28 Nov 2014 (Three Months Rolling)

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

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

ATAL - Degremont - China State Joint Venture

Activity ID	Description	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Actual Start	Actual Finish
DPD314500	UV: DDA17ABCD E&M Final Pack. Subm.	120	18JUL2012	27DEC2014	18JUL2012	17MAY2014	18JUL2012	
DPD334100	RWPS: DDA21EFGH Civil Final Pack. Subm.	120	30NOV2011	11JAN2015	30NOV2011	17JAN2014	30NOV2011	
DPD334200	RWPS: DDA21EFGH Civil Final Pack. Apr/No Com.	120	12JAN2015	11MAY2015	18JAN2014	17MAY2014		
DPD334500	RWPS: DDA21ABCD E&M Final Pack. Subm.	120	16JUL2012	27DEC2014	16JUL2012	17MAY2014	16JUL2012	
DPD503551	Chemical: DDA 22D E&MCR Dwg - SO rtoC x2	28	04NOV2011	30NOV2014	04NOV2011	17MAY2014	04NOV2011	
DPD514100	Chem: DDA22EFGH Civil Final Pack. Subm.	120	04MAY2012	27DEC2014	04MAY2012	17JAN2014	04MAY2012	
DPD514200	Chem: DDA22EFGH Civil Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD514500	Chem: DDA22ABCD E&M Final Pack. Subm.	120	23JUL2012	27DEC2014	23JUL2012	17MAY2014	23JUL2012	
DPD614100	Sludge: DDA16EFGH Civil Final Pack. Subm.	120	16OCT2012	06JAN2015	16OCT2012	17JAN2014	16OCT2012	
DPD614200	Sludge: DDA16EFGH Civil Final Pack. Apr/No Com.	120	07JAN2015	06MAY2015	18JAN2014	17MAY2014		
DPD614500	Sludge: DDA16ABCD E&M Final Pack. Subm.	120	17MAY2014	27DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD614600	Sludge: DDA16ABCD E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD714100	DOU: DDA18EFGH Civil Final Pack. Subm.	120	09MAR2012	27DEC2014	09MAR2012	17JAN2014	09MAR2012	
DPD714200	DOU: DDA18EFGH Civil Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD714500	DOU: DDA18ABCD E&M Final Pack. Subm.	120	17MAY2014	27DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD714600	DOU: DDA18ABCD E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD804100	Admin B: DDA23EFGH Civil Final Pack. Subm.	120	17MAY2014	16JAN2015	17MAY2014	17JAN2014	17MAY2014	
DPD804200	Admin B: DDA23EFGH Civil Final Pack. Apr/No Com.	120	17JAN2015	16MAY2015	18JAN2014	17MAY2014		
DPD804500	Admin B: DDA23ABCD E&M Final Pack. Subm.	120	17MAY2014	27DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD804600	Admin B: DDA23ABCD E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD905100	EB1: DDA19EFGH Civil Final Pack. Subm.	90	17MAY2014	16JAN2015	17MAY2014	17JAN2014	17MAY2014	
DPD905200	EB1: DDA19EFGH Civil Final Pack. Apr/No Com.	120	17JAN2015	16MAY2015	18JAN2014	17MAY2014		
DPD905500	EB1: DDA19ACD E&M Final Pack. Subm.	90	26JUL2012	17DEC2014	26JUL2012	17MAY2014	26JUL2012	
DPD905600	EB1: DDA19ACD E&M Final Pack. Apr/No Com.	120	07AUG2012	25FEB2015	07AUG2012	17MAY2014	07AUG2012	
DPD906100	EB3/MCC: DDA20EFGH Civil Final Pack. Subm.	120	17MAY2014	27DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD906200	EB3/MCC: DDA20EFGH Civil Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD906500	EB3/MCC: DDA20ACD E&M Final Pack. Subm.	120	25SEP2012	27DEC2014	25SEP2012	17MAY2014	25SEP2012	
DPD906600	EB3/MCC: DDA20ACD E&M Final Pack. Apr/No Com.	120	26OCT2012	25FEB2015	26OCT2012	17MAY2014	26OCT2012	
DPD907100	RefurB: DDA25EFG Civil Final Pack. Subm.	60	16JAN2015	16MAR2015	18JAN2014	18MAR2014		
DPD907500	RefurB: DDA25ABCD E&M Final Pack. Subm.	120	28NOV2014	06JAN2015	28NOV2014	17JAN2014	28NOV2014	
DPD907600	RefurB: DDA25ABCD E&M Final Pack. Apr/No Com.	120	07JAN2015	06MAY2015	18JAN2014	17MAY2014		
DPD908100	Flow MC: DDA24EF Civil Final Pack. Subm.	120	01JUL2014	27DEC2014	01JUL2014	17JAN2014	01JUL2014	
DPD908200	Flow MC: DDA24EF Civil Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD908500	Flow MC: DDA24BD E&M Final Pack. Subm.	90	07FEB2015	27DEC2014	07FEB2015	17JAN2014	07FEB2015	
DPD908600	Flow MC: DDA24BD E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD918100	Mis: DDA28 Civil Final Pack. Subm.	120	28JUL2014	11JAN2015	28JUL2014	17JAN2014	28JUL2014	



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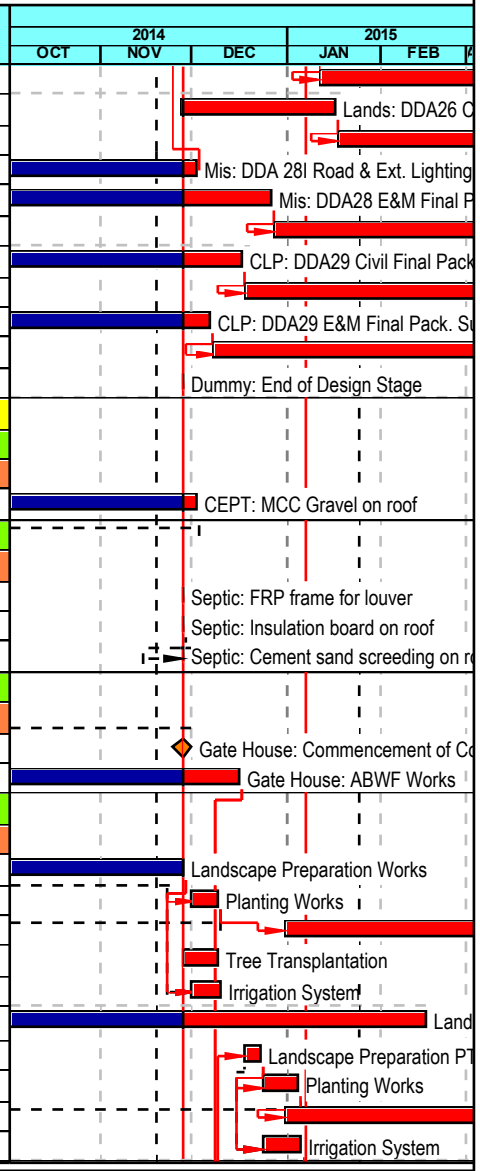
DPD918200	Mis: DDA28EF Civil Final Pack. Apr/No Com.	120	12JAN2015	11MAY2015	18JAN2014	17MAY2014		
DPD918300	Lands: DDA26 Civil Final Pack. Subm.	120	27NOV2014	17JAN2015	27NOV2014	17JAN2014	27NOV2014	
DPD918400	Lands: DDA26EF Civil Final Pack. Apr/No Com.	120	18JAN2015	17MAY2015	18JAN2014	17MAY2014		
DPD923751	Mis: DDA 28I Road & Ext. Lighting - Rtoc x2	28	11JAN2012	02DEC2014	11JAN2012	17MAY2014	11JAN2012	
DPD929100	Mis: DDA28 E&M Final Pack. subm	180	17MAY2014	27DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD929200	Mis: DDA28 E&M Final Pack. Apr/No Com.	120	28DEC2014	26APR2015	18JAN2014	17MAY2014		
DPD929300	CLP: DDA29 Civil Final Pack. Subm.	60	17MAY2014	17DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD929400	CLP: DDA29 Civil Final Pack. Apr/No Com.	120	18DEC2014	16APR2015	18JAN2014	17MAY2014		
DPD929500	CLP: DDA29 E&M Final Pack. Subm.	60	17MAY2014	07DEC2014	17MAY2014	17JAN2014	17MAY2014	
DPD929600	CLP: DDA29 E&M Final Pack. Apr/No Com.	120	08DEC2014	06APR2015	18JAN2014	17MAY2014		
DPD999910	Dummy: End of Design Stage	1	28NOV2014	28NOV2014	17MAY2014	17MAY2014		
Civil and Structural Works								
Chemically Enhanced Primary Treatement System								
Building and Structures								
CCC156660B	CEPT: MCC Gravel on roof	6	21JUL2014	02DEC2014	21JUL2014	17MAY2014	21JUL2014	
Septic Waste Collection Facilities								
Building and Structures								
CCC170740B	Septic: FRP frame for louver	1	28NOV2014	28NOV2014	28NOV2014	28NOV2014		
CCC170900B	Septic: Insulation board on roof	1	28NOV2014	28NOV2014	28NOV2014	28NOV2014		
CCC170910B	Septic: Cement sand screeding on roof	2	28NOV2014	28NOV2014	28NOV2014	28NOV2014		
Auxiliary Building								
Building and Structures								
CCC970105	Gate House: Commencement of Construction	0	28NOV2014		18MAY2014			
CCC970160	Gate House: ABWF Works	20	27SEP2014	16DEC2014	27SEP2014	28FEB2014	27SEP2014	
Landscaping Wroks								
Miscellaneous Works								
CMT995350	Landscape Preparation Works	30	22MAY2014	28NOV2014	22MAY2014	20APR2013	22MAY2014	
CMT995360	Planting Works	7	01DEC2014	09DEC2014	22APR2013	29APR2013		
CMT995370	Establishment Works	365	31DEC2014	30DEC2015	18MAY2013	17MAY2014		
CMT995390	Tree Transplantation	8	28NOV2014	09DEC2014	09MAY2014	17MAY2014		
CMT995410	Irrigation System	8	01DEC2014	10DEC2014	09MAY2014	17MAY2014		
CMT995510	Landscape Softworks (East Area)	120	22MAY2014	16FEB2015	22MAY2014	17MAY2014	22MAY2014	
CMT995750	Landscape Preparation PTW Area	4	18DEC2014	23DEC2014	08MAY2013	11MAY2013		
CMT995760	Planting Works	7	24DEC2014	05JAN2015	13MAY2013	21MAY2013		
CMT995770	Establishment Works	365	31DEC2014	30DEC2015	18MAY2013	17MAY2014		
CMT995810	Irrigation System	8	24DEC2014	06JAN2015	06MAR2014	14MAR2014		



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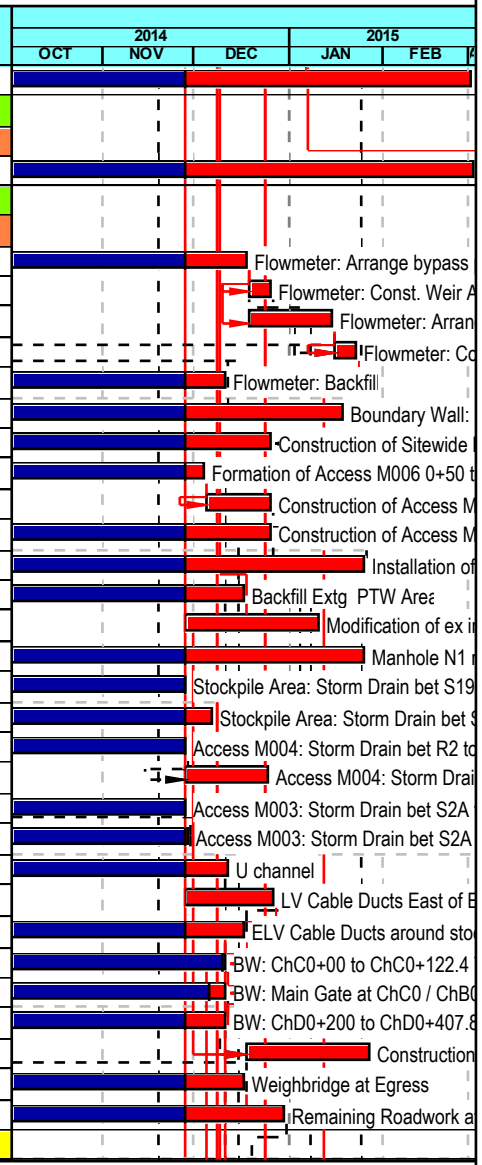
CMT995910	Landscape Softworks (ex PTW Area)	120	15JUL2014	02MAR2015	15JUL2014	17MAY2014	15JUL2014	
Refurbishment and Renewal Works								
Miscellaneous Works								
CCM000110	Refurbishment of Existing Buildings / Structures	150	10FEB2014	03MAR2015	10FEB2014	03MAR2014	10FEB2014	
External Works								
Miscellaneous Works								
CWM101088	Flowmeter: Arrange bypass pipe A	15	22SEP2014	18DEC2014	22SEP2014	18MAR2014	22SEP2014	
CWM101090	Flowmeter: Const. Weir A at Extg Outfall Manhole	6	19DEC2014	26DEC2014	18APR2014	25APR2014		
CWM101109	Flowmeter: Arrange bypass pipe B	20	19DEC2014	15JAN2015	19MAR2014	17APR2014		
CWM101110	Flowmeter: Const. Weir B at Extg Outfall Manhole	6	16JAN2015	23JAN2015	18APR2014	25APR2014		
CWM101120	Flowmeter: Backfill	12	26JUN2014	11DEC2014	26JUN2014	16MAY2014	26JUN2014	
CWM101500	Boundary Wall: Provision of New U-channel	60	23JAN2014	19JAN2015	23JAN2014	17MAY2014	23JAN2014	
CWM101600	Construction of Sitewide Roadworks	60	28NOV2013	26DEC2014	28NOV2013	24MAR2014	28NOV2013	
CWM101685	Formation of Access M006 0+50 to 0+110	15	19SEP2014	04DEC2014	19SEP2014	06MAR2014	19SEP2014	
CWM101688	Construction of Access M006 0+50 to 0+110	15	05DEC2014	26DEC2014	07MAR2014	24MAR2014		
CWM101689	Construction of Access M001	30	31MAY2014	26DEC2014	31MAY2014	17MAY2014	31MAY2014	
CWM101800	Installation of Sitewide Drainage	380	02JUN2012	26JAN2015	02JUN2012	23APR2014	02JUN2012	
CWM103310	Backfill Extg PTW Area	75	15JUL2014	17DEC2014	15JUL2014	07MAY2013	15JUL2014	
CWM103410	Modification of ex inlet Chamber	45	28NOV2014	11JAN2015	03APR2014	17MAY2014		
CWM200620E	Manhole N1 remaining works	60	17SEP2014	26JAN2015	17SEP2014	17MAY2014	17SEP2014	
CWM215110E	Stockpile Area: Storm Drain bet S19 /CP20 to S20	51	23JAN2014	28NOV2014	23JAN2014	17MAY2014	23JAN2014	
CWM215120E	Stockpile Area: Storm Drain bet S20 to S21	30	16FEB2014	07DEC2014	16FEB2014	17MAY2014	16FEB2014	
CWM216020E	Access M004: Storm Drain bet R2 to R1	24	14FEB2014	28NOV2014	14FEB2014	26APR2014	14FEB2014	
CWM216030E	Access M004: Storm Drain bet R1 to S3	28	28NOV2014	25DEC2014	20APR2014	17MAY2014		
CWM216120E	Access M003: Storm Drain bet S2A to CP2A / CP2B	25	14FEB2014	28NOV2014	14FEB2014	17MAY2014	14FEB2014	
CWM216130E	Access M003: Storm Drain bet S2A to CP2E / CP2D	25	26FEB2014	29NOV2014	26FEB2014	17MAY2014	26FEB2014	
CWM217000E	U channel	125	12OCT2013	12DEC2014	12OCT2013	17MAY2014	12OCT2013	
CWM225205E	LV Cable Ducts East of Extg PTW after demolish	30	28NOV2014	27DEC2014	28MAR2014	26APR2014		
CWM226300E	ELV Cable Ducts around stockpile area	24	21DEC2013	17DEC2014	21DEC2013	24MAR2014	21DEC2013	
CWM229020	BW: ChC0+00 to ChC0+122.4 Type B	30	21FEB2014	11DEC2014	21FEB2014	09APR2014	21FEB2014	
CWM229200	BW: Main Gate at ChC0 / ChB0 Type B	7	27FEB2014	11DEC2014	27FEB2014	09APR2014	27FEB2014	
CWM229450	BW: ChD0+200 to ChD0+407.89 Type B	30	27FEB2014	11DEC2014	27FEB2014	09APR2014	27FEB2014	
CXT995340	Construction of Car Park	28	18DEC2014	28JAN2015	10APR2014	17MAY2014		
CXT995425	Weighbridge at Egress	40	23SEP2014	17DEC2014	23SEP2014	13MAR2014	23SEP2014	
CXT995430	Remaining Roadwork at Access M001 and M003	18	15SEP2014	30DEC2014	15SEP2014	24MAR2014	15SEP2014	
Statutory Works								



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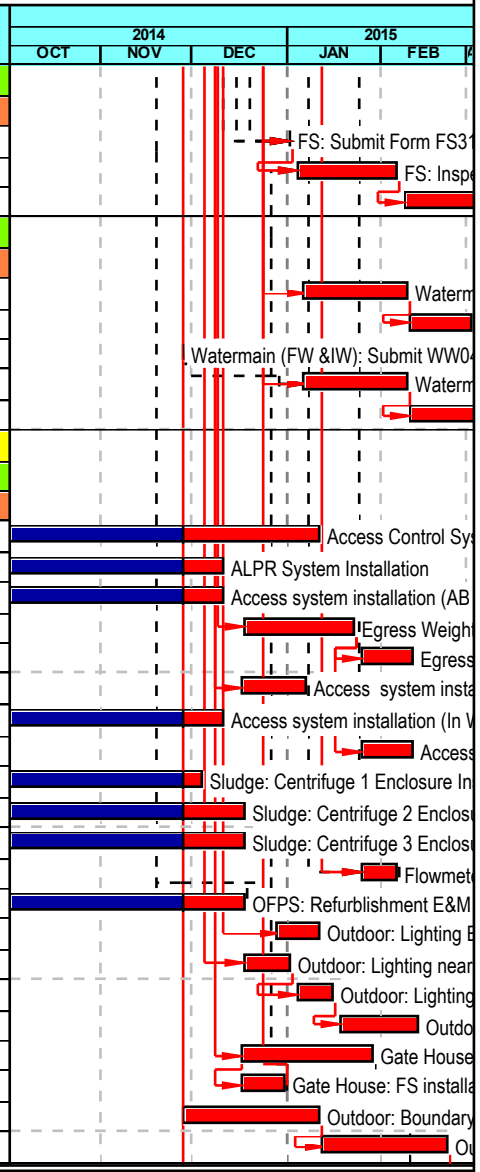
Fire Services - FSD								
Building and Structures								
SSF200510	FS: Submit Form FS314 & FS501 (2)	1	02JAN2015	02JAN2015	13MAR2014	13MAR2014		
SSF200520	FS: Inspection and re-inspection (2)	25	05JAN2015	06FEB2015	14MAR2014	12APR2014		
SSF200530	FS: Approval Certificate (2)	25	09FEB2015	13MAR2015	14APR2014	17MAY2014		
Plumbing - WSD								
Building and Structures								
SSP200550	Watermain (PW2,CW2,GW2): WSD Insp & Re-insp.	25	07JAN2015	10FEB2015	26MAR2014	28APR2014		
SSP200560	Watermain(PW2,CW2,GW2): WW046 Part 5	15	11FEB2015	03MAR2015	29APR2014	17MAY2014		
SSP203510	Watermain (FW &IW): Submit WW046 Part 4	1	28NOV2014	28NOV2014	14MAR2014	14MAR2014		
SSP203520	Watermain (FW&IW): WSD Inspection and Re-insp'	25	07JAN2015	10FEB2015	15MAR2014	14APR2014		
SSP203530	Watermain (FW&OW): WW046 Part 5	24	11FEB2015	16MAR2015	15APR2014	17MAY2014		
E&M Works								
Procurement and Installation								
Building and Structures								
EMW163000	Access Control System Installation	55	15NOV2013	12JAN2015	15NOV2013	17MAY2014	15NOV2013	
EMW164000	ALPR System Installation	55	15NOV2013	11DEC2014	15NOV2013	17MAY2014	15NOV2013	
EMW165030	Access system installation (AB)	14	22MAR2014	11DEC2014	22MAR2014	17MAY2014	22MAR2014	
EMW165100	Egress Weight Bridge System Installation	25	18DEC2014	23JAN2015	14MAR2014	12APR2014		
EMW165120	Egress WB Electrical & Control installation	14	26JAN2015	12FEB2015	14APR2014	03MAY2014		
EMW165130	Access system installation in Gate House	14	17DEC2014	07JAN2015	30APR2014	17MAY2014		
EMW165210	Access system installation (In WB)	14	22MAR2014	11DEC2014	22MAR2014	17MAY2014	22MAR2014	
EMW165310	Access system installation (Out WB)	14	26JAN2015	12FEB2015	30APR2014	17MAY2014		
EMW603116	Sludge: Centrifuge 1 Enclosure Installation	15	20AUG2014	04DEC2014	20AUG2014	07MAY2014	20AUG2014	
EMW603126	Sludge: Centrifuge 2 Enclosure Installation	15	20AUG2014	18DEC2014	20AUG2014	07MAY2014	20AUG2014	
EMW603136	Sludge: Centrifuge 3 Enclosure Installation	15	20AUG2014	18DEC2014	20AUG2014	03MAY2014	20AUG2014	
EMW821140	Flowmeter: Flowmeter - Verification	10	26JAN2015	06FEB2015	26APR2014	10MAY2014		
EMW9449810	OFPS: Refurblishment E&M equipment	80	01APR2014	18DEC2014	01APR2014	17MAY2014	01APR2014	
EMW951020	Outdoor: Lighting East of PTW Area	10	29DEC2014	12JAN2015	07MAY2014	17MAY2014		
EMW951040	Outdoor: Lighting near existing OFPS	10	18DEC2014	02JAN2015	26MAR2014	07APR2014		
EMW951050	Outdoor: Lighting West of Skip Hse Area	10	05JAN2015	16JAN2015	08APR2014	22APR2014		
EMW951070	Outdoor: Lighting Test	20	19JAN2015	13FEB2015	23APR2014	17MAY2014		
EMW952010	Gate House: E&M Installation	30	17DEC2014	29JAN2015	01MAR2014	04APR2014		
EMW952050	Gate House: FS installation	10	17DEC2014	31DEC2014	01MAR2014	12MAR2014		
EMW953005	Outdoor: Boundary Wall CCTV mount detl. & Mat.	30	28NOV2014	12JAN2015	10FEB2014	15MAR2014		
EMW953010	Outdoor: Boundary Wall CCTV Installation	30	13JAN2015	23FEB2015	17MAR2014	24APR2014		



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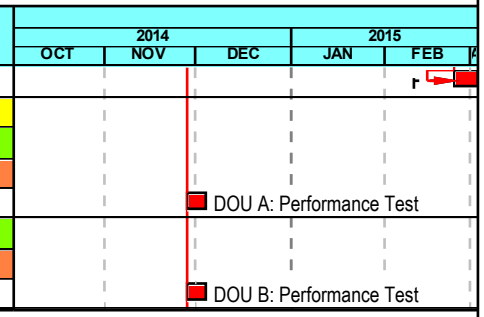
EMW953020	Outdoor: Boundary Wall CCTV Test & Commissioning	7	24FEB2015	04MAR2015	25APR2014	03MAY2014		
Testing and Commissioning								
DOU A								
Building and Structures								
EMT715100	DOU A: Performance Test	7	28NOV2014	04DEC2014	11MAY2014	17MAY2014		
DOU B								
Building and Structures								
EMT725100	DOU B: Performance Test	7	28NOV2014	04DEC2014	11MAY2014	17MAY2014		



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