


Drainage Services Department
**Advance Works for Shek Wu Hui Sewage
Treatment Works – Further Expansion Phase 1A**

Monthly EM&A Report

(December 2017)

Verified by : Mr. Adi Lee 


Position : Independent Environmental Checker

Date : 12 July 2018

Drainage Services Department
**Advance Works for Shek Wu Hui Sewage
Treatment Works – Further Expansion Phase 1A**

Monthly EM&A Report

(December 2017)

Certified by : Mr. T. W. Tam 

Position : Environmental Team Leader of
Contract No. DC/2013/09

Date : 6 July 2018

Drainage Services Department
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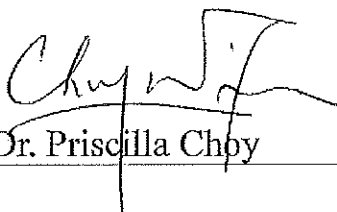

Certified by : Dr. Priscilla Choy
Position : Environmental Team Leader of
Contract No. DE/2014/01
Date : 10 July 2018

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1. EXECUTIVE SUMMARY

This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the ETs of the respective Contractors of Contract No. DC/2013/09 and No. DE/2014/01 under FEP No. FEP-01/474/2013 from 1 to 31 December 2017 (the reporting period).

1.1 Summary of Major Construction Works taken in the Reporting Period

1.1.1 In the reporting period, the major construction works being undertaken by the respective Contractors are summarized in the below table.

Works Contract	Contract Title	Major Construction Works
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	<ul style="list-style-type: none"> • Dismantle and removal of formwork and temporary metal falsework (At membrane facility building) • Construction of plinth and excavation for support of DN900 air main • Remedial Work of Bio-Reactor No.1 • Water Tightness Test of pretreatment screen chamber • Plastering, painting and laying tiles for the internal finishing for membrane facilities building • Installation of Valve for DN600 air main. • Internal finish for membrane facilities building
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	<ul style="list-style-type: none"> • Mechanical installation of lifting appliance at G/F, Membrane Facilities Building. • Provision of lighting and small power installation for 11kV Switchroom. • Installation of temporary generator set.

1.2 Environmental Monitoring and Audit Activities

- 1.2.1 The environmental monitoring activities under the EM&A programme are summarized in the below table. No Action and Limit Level exceedance of air quality and construction noise monitoring was recorded during the reporting period.

Environmental Issue	Environmental Monitoring Parameters / Inspection	Occasions	Action Level Exceedance	Limit Level Exceedance
Air Quality	1-hour TSP	30	0	0
	24-hour TSP	12	0	0
Construction Noise	L _{Aeq} (30min) Daytime	8	0	0

1.3 Environmental Complaint

- 1.3.1 No environmental complaint, notification of summons or successful prosecutions were received during the reporting period. It is summarized in the below table.

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions	Status / Follow-up Actions
DC/2013/09	0	0	0	N/A
DE/2014/01	0	0	0	N/A

1.4 Site Inspection

- 1.4.1 Joint site inspections to evaluate the site environmental performance by the RE, the respective ETs and the Contractors were carried out on the following dates during the reporting period.

Contract No. DC/2013/09: 7, 14, 21 and 27 December 2017

Contract No. DE/2014/01: 7, 15, 19 and 27 December 2017

- 1.4.2 IEC conducted site audit on 27 December 2017. No environmental non-compliance was identified in the reporting period.

1.5 Reporting Changes

- 1.5.1 There were no reporting changes during the reporting period.

1.6 Future Key Issues

1.6.1 Key issues to be considered in the next reporting period for the Project are as follow:

Works Contract	Major Construction Works	Potential Pollution Issues	Mitigation Measures
DC/2013/09	<ul style="list-style-type: none"> • Dismantle and removal of formwork and temporary metal falsework (At membrane facility building) • Excavation, pipe laying of CLP and E&M cable duct • Installation of Structural gantry at BR1 • Remedial Work of Bio-Reactor No.1 • Painting of pretreatment screen chamber • Plastering, painting and laying tiles for the internal finishing for membrane facilities building • Construction of DN900 air main. • Internal and external finishing for membrane facilities building • Installation of falsework and scaffolding at membrane tank. 	<ul style="list-style-type: none"> • Dust impact from excavation work, dusty material handling and during concrete production • Muddy runoff water generated from the dusty material stockpile during rainy days 	<ul style="list-style-type: none"> • Implement dust suppression measures at all times • Implement construction site runoff control practices and measures at all times
DE/2014/01	<ul style="list-style-type: none"> • Provision of switchboards in LV switch room. • Provision of switchboards in 11kV HV switch room. • Mechanical Installation in MBR Pre-treatment Screen Chamber. • Mechanical Installation in Bioreactor No.1 (BR1). 	<ul style="list-style-type: none"> • Storage of chemicals containers • Waste accumulation • Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities 	<ul style="list-style-type: none"> • Drip tray should be provided to chemical containers • Waste should be disposed properly and avoid accumulation • Accumulated materials to be recycled onsite • Wheel washing should be provided to vehicles before leaving the site area

2. INTRODUCTION

2.1 Background

- 2.1.1 The existing Shek Wu Hui Sewage Treatment Works (SWHSTW) is operated and maintained by the Drainage Services Department (DSD). It provides secondary level treatment to sewage collected from Sheung Shui, Fanling and adjacent areas, with design capacity of 93,000m³/day at ADWF.
- 2.1.2 To cope with the latest population growth and new developments in the catchment, further expansion of SWHSTW is planned to be carried out in three phases, namely Phases 1A, 1B and 2. Further Expansion Phase 1A is to cope with the forecast increase in sewage flow from local developments and extension of village sewerage in Sheung Shui, Fanling and adjacent areas. The scope of the Phase 1A Project comprises the followings:
- (a) the construction of proposed treatment facilities to increase the treatment capacity of SWHSTW by at least 40,000m³/day with tertiary treatment level, with suitable allowance to cater for a further increase of treatment capacity by 20,000m³/day in Phase 1B; and
 - (b) modification/upgrading of the existing facilities of SWHSTW.
- 2.1.3 To cope with the projected sewage flow buildup and meet the tight implementation programme, Advance Works for SWHSTW Further Expansion Phase 1A (hereinafter referred as “the Project”) are proposed to be carried out between 2015 and 2018. The Phase 1A Advance Works comprise a civil works contract and an Electrical & Mechanical (E&M) works contract. The civil works Contract No. DC/2013/09 “Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road” is supervised by the Sewerage Projects Division (SPD) of DSD. The E&M works Contract No. DE/2014/01 “Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station” is supervised by the Electrical & Mechanical Projects Division (E&MPD) of DSD.
- 2.1.4 The scope of Phase 1A Advance Works comprises the followings:
- (a) the conversion of one existing bioreactor (BR1) and two existing final sedimentation tanks (FST1 and FST2) into one membrane bioreactor; and
 - (b) the ancillary works.
- 2.1.5 This Project is a part of designated project under item F.2 of Part 1, Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance. The EIA for the further expansion of SWHSTW Phases 1A, 1B and 2 is covered under the EIA Report of NENT NDAs (Register No. AEIAR-175-2013).
- 2.1.6 An Environment Permit (EP) No. EP-474/2013 for the further expansion of SWHSTW Phases 1A, 1B and 2 was issued by EPD to CEDD on 21 November 2013. On 23 January 2014, Further Environmental Permit (FEP) No. FEP-01/474/2013 was issued by EPD to DSD for the further expansion of SWHSTW Phase 1A works.

2.2 Project Programme

Two construction works contracts of the Project, i.e. civil works and E&M works, were awarded in 2015 and 2016 respectively. The construction of the Project commenced in October 2015 and is expected to complete in 2018 tentatively. *Table 2.1* summarises the information of the awarded Works Contracts.

Table 2.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	October 2015	Tsun Yip Waterworks Construction Co Ltd (Tsun Yip)	Action-United Environmental Services & Consulting (AUES)
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	October 2017	Jardine Engineering Corporation Limited (JEC)	Cinotech Consultants Limited (Cinotech)

2.3 Purpose of the Report

- 2.3.1 The Environmental Monitoring and Audit (EM&A) programme for DC/2013/09 and DE/2014/01 commenced in October 2015 and October 2017 respectively. This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ETs from 1 to 31 December 2017 (the reporting period).

2.4 Project Organization

Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in *Table 2.2* below.

Table 2.2 Key Project Contacts

Works Contract	Organization	Role	Name	Tel No.
DC/2013/09	DSD	Resident Engineer	Mr. Michael Leung	2594 7463
	ANewR Consulting Limited	Independent Environmental Checker	Mr. Adi Lee	2618 2836
	Tsun Yip	Site Agent	Mr. Ken Wong	9161 9627
		Environmental Officer	Mr. M. T. Ho	9507 9634
	AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059
DE/2014/01	DSD	Resident Engineer	Mr. Mo Fong	2594 7329
	ANewR Consulting Limited	Independent Environmental Checker	Mr. Adi Lee	2618 2836
	JEC	Project Manager	Mr. Kim Hung Lau	2947 1125
		Environmental Officer	Mr. George Ng	2947 1125
	Cinotech	Environmental Team Leader	Dr. Priscilla Choy	2151 2089

3. ENVIRONMENTAL MONITORING AND AUDIT

- 3.1 The Project has been divided into two construction works contracts which are covered by EP No. EP-474/2013 and FEP No. FEP-01/474/2013. As per the EP Conditions, EM&A Reports for Works Contract No. DC/2013/09 and No. DE/2014/01 prepared by the respective Contractor's ETs are provided in *Appendices A* and *B* respectively.
- 3.2 The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.
- 3.3 A summary of the major construction activities undertaken by the respective Contractors of various Works Contracts during the reporting period are presented in *Table 3.1*.

Table 3.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Contract Title	Major Construction Works
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	<ul style="list-style-type: none"> • Dismantle and removal of formwork and temporary metal falsework (At membrane facility building) • Construction of plinth and excavation for support of DN900 air main • Remedial Work of Bio-Reactor No.1 • Water Tightness Test of pretreatment screen chamber • Plastering, painting and laying tiles for the internal finishing for membrane facilities building • Installation of Valve for DN600 air main. • Internal finish for membrane facilities building
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	<ul style="list-style-type: none"> • Mechanical installation of lifting appliance at G/F, Membrane Facilities Building. • Provision of lighting and small power installation for 11kV Switchroom. • Installation of temporary generator set.

- 3.4 Impact monitoring for air quality and construction noise were conducted in accordance with the Updated EM&A Manual in the reporting period. The air quality and construction noise for this reporting month are summarised in *Tables 3.2* to *3.4*. Details of the monitoring requirements, locations, equipment, methodology and QA/QC procedures are presented in the EM&A Reports as provided in *Appendices A* and *B*.
- 3.5 No Action and Limit Level exceedance of air quality and construction noise monitoring was recorded during the reporting period.
- 3.6 No environmental complaint, notification of summons or successful prosecutions were received during the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in *Table 3.5*.

- 3.7 Regular site inspections were conducted by the respective Contractor's ETs on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-compliance was identified in the reporting period. Joint site inspections for Contract No. DC/2013/09 were carried out on 7, 14, 21 and 27 December 2017 and for Contract No. DE/2014/01 were carried out on 7, 15, 19 and 27 December 2017 during the reporting period. No environmental non-compliance was identified in the reporting period.

Table 3.2 Summary of 1-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration (mg/m ³)	Action Level (mg/m ³)	Limit Level (mg/m ³)	Exceedance due to the Project Construction (Yes/No)
AM1	No. 31 Wai Loi Tsuen	43-82	286	500	No
AM2	Fu Tei Au	45-87	276	500	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DC/2013/09 in accordance with the Updated EM&A Manual.

Table 3.3 Summary of 24-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration (mg/m ³)	Action Level (mg/m ³)	Limit Level (mg/m ³)	Exceedance due to the Project Construction (Yes/No)
AM1	No. 31 Wai Loi Tsuen	47-102	147	260	No
AM2a	RE's Site Office	53-135	155	260	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DC/2013/09 in accordance with the Updated EM&A Manual.

Table 3.4 Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station ID	Location	Noise Level (LAeq,30mins, dB(A))	Action Level (dB(A))	Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
NM1	No. 31 Wai Loi Tsuen	53-55	When one documented complaint is received	>75	No
NM2	Fu Tei Au	49-58		>75	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DC/2013/09 in accordance with the Updated EM&A Manual.

Table 3.5 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
DC/2013/09	0	0	0
DE/2014/01	0	0	0

4. WASTE MANAGEMENT

- 4.1 Waste management was carried out by on-site Environmental Officer or an Environmental Supervisor of respective Contractors from time to time.
- 4.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 4.1* and *4.2* and the Monthly Summary Waste Flow Tables of respective Contracts are presented in the EM&A Reports as provided in *Appendices A* and *B*. Whenever possible, materials were reused on-site as far as practicable.

Table 4.1 Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DC/2013/09

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Total C&D Materials (Inert) (in '000m ³)	20.31	0.23	20.54	Tuen Mun 38
Hard Rock and Large Broken Concrete (Inert) (in '000m ³)	1.67	0.07	1.74	Tuen Mun 38
Reused in this Project (Inert) (in '000m ³)	3.27	0	3.27	--
Reused in other Projects (Inert) (in '000m ³)	2.23	0	2.23	--
Disposal as Public Fill (Inert) (in '000m ³)	13.23	0.17	13.40	Tuen Mun 38
Metals (in '000kg)	141.63	0.37	142.00	Licensed Collector
Paper / Cardboard Packing (in '000kg)	0.02	0.06	0.07	Paper Recyclers
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in '000m ³)	0.77	0.10	0.87	NENT

Table 4.2 Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DE/2014/01

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Total C&D Materials (Inert) (in '000m ³)	0	0	0	--
Hard Rock and Large Broken Concrete (Inert) (in '000m ³)	0	0	0	--
Reused in this Project (Inert) (in '000m ³)	0	0	0	--
Reused in other Projects (Inert) (in '000m ³)	0	0	0	--
Disposal as Public Fill (Inert) (in '000m ³)	0	0	0	--
Metals (in '000kg)	0	0	0	--
Paper / Cardboard Packing (in '000kg)	0	0	0	--
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in tonne)	0	0	0	--

5. IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

- 5.1 The respective Contractors have implemented all mitigation measures and requirements as stated in the EIA Reports, EM&A Manuals, EP No. EP-474/2013 and FEP No. FEP-01/474/2013. Summary of the relevant permits, licenses, and/or notifications on environmental protection for this Project in this reporting period are summarised in *Tables 5.1* and *5.2*.

Table 5.1 Summary of Environmental Licenses and Permits for Contract No. DC/2013/09

Item	Valid License/Permit	License/Permit Number
1	Further Environmental Permit	FEP-01/474/2013
2	Air Pollution Control (Construction Dust) Regulation	N/A
3	Chemical Waste Producer Registration	WPN5213-624-T3148-04
4	Water Pollution Control Ordinance	WT00022503-2015
5	Billing Account for Disposal of Construction Waste	Account Number: 7022898

Table 5.2 Summary of Environmental Licenses and Permits for Contract No. DE/2014/01

Item	Valid License/Permit	License/Permit Number
1	Further Environmental Permit	FEP-01/474/2013
2	Chemical Waste Producer Registration	WPN5213-624-T3685-01
3	Billing Account for Disposal of Construction Waste	Account Number: 7024165

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

- 6.1.1 This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ETs from 1 to 31 December 2017 (the reporting period).
- 6.1.2 No Action and Limit Level exceedance of 1-hour and 24-hour TSP monitoring was recorded during the reporting period.
- 6.1.3 No Action and Limit Level exceedance of construction noise monitoring was recorded during the reporting period.
- 6.1.4 Joint site inspections to evaluate the site environmental performance by the RE, the respective ETs and the Contractors were carried out on the following dates during the reporting period.

Contract No. DC/2013/09: 7, 14, 21 and 27 December 2017

Contract No. DE/2014/01: 7, 15, 19 and 27 December 2017

- 6.1.5 IEC conducted site audit on 27 December 2017. No environmental non-compliance was identified in the reporting period.
- 6.1.6 No documented complaint, notification of summons or successful prosecution was received during the reporting period.

6.2 Recommendation

- 6.2.1 The following recommendations were made for future reporting periods:

Air Quality

- Maintain wet surface on access road
- All vehicles must be used wheel washing facility before off site
- Spray water during breaking works
- A cleaning truck was regularly performed on the public road to prevent fugitive dust emission

Noise

- Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.
- Keep good maintenance of plants
- Shut down the plants when not in used

Water Quality

- Identify any discharge of wastewater from the construction site
- Avoid blockage of U channel and drainage system by sediment
- Avoid water accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed
- Avoid spoilage of run-off from construction site to public area
- The discharge quality must meet the requirements specified in the discharge license

Waste/Chemical Management

- On-site sorting prior to disposal
- Follow requirements and procedures of the "Trip-ticket System"
- Predict required quantity of concrete accurately
- Collect the unused fresh concrete at designated locations in the sites for subsequent disposal

APPENDIX A

MONTHLY EM&A REPORT FOR CONTRACT NO. DC/2013/09

DSD Contract No: DC/2013/09

Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase
1A and Sewerage Works at Ping Che Road
27th Monthly Environmental Monitoring and Audit (EM&A) Report for December 2017

AUES



JOB No.: TCS00757/15

**DSD CONTRACT NO. DC/2013/09 –
ADVANCE WORKS FOR SHEK WU HUI SEWAGE
TREATMENT WORKS – FURTHER EXPANSION PHASE 1A
AND SEWERAGE WORKS AT PING CHE ROAD**

**27TH MONTHLY ENVIRONMENTAL MONITORING AND
AUDIT (EM&A) REPORT – DECEMBER 2017**

PREPARED FOR

TSUN YIP WATERWORKS CONSTRUCTION CO LTD

Date	Reference No.	Prepared By	Certified By
11 January 2018	TCS00757/15/600/R0110v2	 Martin Li (Assistant Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	9 January 2018	First Submission
2	11 January 2018	Amended against IEC's comment

EXECUTIVE SUMMARY

ES.01 This is the 27th Monthly Environmental Monitoring and Audit Report covering the period from 1 to 31 December 2017 (the Reporting Period).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02 Environmental monitoring activities under the EM&A program in this Reporting Period are summarized in the following table.

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	30
	24-hour TSP	12
Construction Noise	L _{Aeq} (30min) Daytime	8
Inspection / Audit	ET Regular Environmental Site Inspection	4
	IEC Monthly Environmental Site Audit	1

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.03 No exceedance of air quality and construction noise monitoring were recorded in this Reporting Period. No Notification of Exceedance (NOE) was therefore issued. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	-	-
	24-hour TSP	0	0	0	-	-
Construction Noise	L _{Aeq} (30min)	0	0	0	-	-

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT

ES.04 No environmental complaint was recorded or received in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.05 No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables.

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

REPORTING CHANGE

ES.06 There were no reporting changes in the Reporting Period.

SITE INSPECTION BY EXTERNAL PARTIES

ES.07 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor was carried out on 7, 14, 21 and 27 December 2017. Furthermore, IEC attend site inspection was on 27 December 2017. No non-compliance was noted.

FUTURE KEY ISSUES

- ES.08 As dry season is approached, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.
- ES.09 Air quality mitigation measures including wheel wash facilities, watering of haul roads and covering of dusty materials with tarpaulin sheet, etc. should be properly maintained. Moreover, the contractor should be to prevent mosquito breeding on site.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 The existing Shek Wu Hui Sewage Treatment Works (hereafter referred as “SWHSTW”) with secondary level treatment to sewage collected from Sheung Shui, Fanling and adjacent areas is operated and maintained by Drainage Services Department (hereafter referred as “DSD”). Based on the preliminary design of the Project, the scope of works for the Project comprises the following major components:

- (a) Demolition of the existing Inlet Works and construction of the new Inlet Works, including inlet pumping station, screening and degritting facilities;
- (b) Demolition of 4 existing circular Primary Sedimentation Tanks (PSTs) and construction of new rectangular PSTs;
- (c) Construction of new pre-membrane screens;
- (d) Modification of existing Bioreactor (BR) 1 and 2 to suit the proposed membrane bioreactor (MBR) process;
- (e) Construction of a new standby Bioreactor;
- (f) Demolition of 4 existing circular Final Sedimentation Tanks (FSTs) and construction of new Membrane Tanks and Membrane Facility Building;
- (g) Reconstruction of sludge treatment facilities, including thickening, anaerobic digestion, biogas handling, sludge holding and dewatering facilities; and
- (h) Other ancillary works.

1.1.2 According to the Project implementation programme, the construction of most of the above proposed works (hereinafter referred to as “Main Works”) will be commencement in 2016 and completion in 2022. Furthermore, Advance Works as part of the above proposed works will carry out before Main Works commencement. The Advance Works will be commencement in third quarter of 2015 and comprise the following major components:

- (a) Modification of BR1, through upgrading of electrical and mechanical (E&M) equipment and minor civil works, to suit the proposed MBR process;
- (b) Demolition of FSTs 1 and 2 and construction of Membrane Tanks and the first phase of Membrane Facility Building; and
- (c) Tree felling and transplanting, to facilitate timely construction of the new Inlet Works during the implementation of Main Works (under review).

1.1.3 The general layout of Advance Works and Main Works of SWHSTW Further Expansion Phase 1A show in **Appendix A**. Subsequent to Further Expansion Phase 1A, the SWHSTW will be further expanded under separate projects (namely Further Expansion Phase 1B and Phase 2).

1.1.4 In July 2015, Tsun Yip Waterworks Construction Co Ltd (hereinafter referred as “Tsun Yip” or “the Contractor”) has awarded the DSD Contract No. DC/2013/09 – **Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road** (hereinafter referred as “the Contract”). The Contract is the Advance Works for Shek Wu Hui Sewage Treatment Works as part of SWHSTW Further Expansion which is a Designated Project under Environmental Permit number FEP-01/474/2013 (hereinafter referred as “the FEP-01/474/2013” or “the EP”).

1.1.5 The works under the Contract at Shek Wu Hui Sewage Treatment Works will be included the conversion of one existing bioreactor and two existing final sedimentation tanks into one membrane bioreactor. Moreover, construction of about 1.5 kilometres length of sewers at Ping Che Road and other ancillary works will be undertaken. The works of Contract are scheduled to be conduct about 25 months. Layout plan of the Contract is shown in **Appendix B**.

1.1.6 Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) was

appointed by the Contractor as an Environmental Team (hereinafter referred as “the ET”) to implement the relevant EM&A program in accordance with the Updated EM&A Manual, as well as the associated duties.

1.1.7 As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Hence baseline monitoring including air quality and noise were carried out between **28 August 2015** and **12 September 2015** at the proposed locations before construction work commencement. The “Baseline Monitoring Report (TCS00757/15/600/R0014 Version 2)” had submitted to EPD by the DSD before commencement of major construction works and approved by the IEC on 24 September 2015. Further to Tsun Yip’s instructions, the EM&A program was commenced on 1 October 2015 and the monitoring schedule had been issued to relevant parties on 29 September 2015.

1.1.8 This is the 27th Monthly EM&A Report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 December 2017**.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

SECTION 1	INTRODUCTION
SECTION 2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
SECTION 3	SUMMARY OF MONITORING REQUIREMENTS
SECTION 4	MONITORING METHODOLOGY
SECTION 5	IMPACT MONITORING RESULTS
SECTION 6	WASTE MANAGEMENT
SECTION 7	SITE INSPECTIONS
SECTION 8	ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE
SECTION 9	IMPLEMENTATION STATUSES OF MITIGATION MEASURES
SECTION 10	CONCLUSIONS AND RECOMMENDATION

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.1.1 Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in *Appendix C*.

2.2 CONSTRUCTION PROGRESS

2.1.2 3-Month Rolling Programme of the Project is enclosed in *Appendix D* and the major construction activities undertaken in this Reporting Month are illustrated in *Appendix B* and listed below:-

- Dismantle and removal of formwork and temporary metal falsework (At membrane facility building)
- Construction of plinth and excavation for support of DN900 air main
- Remedial Work of Bio-Reactor No.1
- Water Tightness Test of pretreatment screen chamber
- Plastering, painting and laying tiles for the internal finishing for membrane facilities building
- Installation of Valve for DN600 air main.
- Internal finish for membrane facilities building

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.1.3 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this Reporting Period is presented in *Table 2-1*.

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Notified EPD on 30 July 2015
2	Chemical waste Producer Registration (WPN: 5213-624-T3148-04)	Application date: 19/08/2015 Date approved: 18/9/2015
3	Water Pollution Control Ordinance (Discharge License: WT00022503-2015)	Application date: 19/08/2015 Date approved: 18/9/2015
4	Billing Account for Disposal of Construction Waste (Account Number: 7022898)	Granted on 02/09/2015

2.1.4 In accordance with the Further EP No. FEP-01/474/2013 Condition 2.3, an Updated Environmental Monitoring and Audit (EM&A) Manual (TCS00757/15/600/R0012v3) which certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC), has submitted to DSD and EPD endorsement.

2.1.5 Baseline Monitoring Report (TCS00757/15/600/R0014v2) as certified by the ETL and verified by the IEC was submitted to the EPD on 24 September 2015 for endorsement.

3 SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

3.1.1 The Environmental Monitoring and Audit requirements are set out in the Updated EM&A manual. Environmental issues such as air quality and construction noise were identified as the key issues during the construction phase of Advance Works of the Project.

3.1.2 A summary of EM&A programme of construction phase are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

3.2.1 The EM&A programme of construction phase shall cover the following environmental issues:

- Air quality; and
- Construction noise

3.2.2 A summary of the monitoring parameters is presented in *Table 3-1* below

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> • 1-hour TSP by Real-Time Portable Dust Meter; and • 24-hour TSP by High Volume Air Sampler.
Construction Noise	<ul style="list-style-type: none"> • $L_{eq(30min)}$ during normal working hours; and • $L_{eq(15min)}$ for the construction works undertaken in Restricted Hours, if necessary.

3.3 MONITORING LOCATIONS

3.3.1 According to the *Updated EM&A Manual* of Advance Works which submitted to EPD on 25 August 2015, three air quality sensitive receivers and two construction noise sensitive receivers are proposed to monitor the environmental performance of the Contract. The proposed monitoring locations are summarized in *Table 3-2* and shown in *Appendix E*.

Table 3-2 Proposed Air Quality and Construction Noise Monitoring Locations

Aspect	Station ID	Location	Parameter
Air Quality	AM1	No. 31 Wai Loi Tsuen	1- hour and 24- hour TSP
	AM2	Fu Tei Au	1- hour
	AM2a	RE's Site Office	24- hour TSP
Noise	NM1	No. 31 Wai Loi Tsuen	$L_{eq(30min)}$
	NM2	Fu Tei Au	$L_{eq(30min)}$

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 The requirements of baseline monitoring are stipulated in *Sections 2.1.7 and 3.2.5* of the *Updated EM&A Manual* and presented as follows.

Air Quality Monitoring

3.4.2 Monitoring frequency for air quality baseline monitoring is as follows:

- 1-Hour TSP 3 sets of 1-hour TSP monitoring shall be carried out once in every six days.
- 24-Hour TSP 24-hour shall be carried out once in every six days.

Noise Monitoring

3.4.3 Construction noise monitoring should be carried out at the designated monitoring station when there are Project-related construction activities being undertaken within a radius of 300m from the monitoring stations. The monitoring frequency should depend on the scale of the

construction activities. An initial guide on the monitoring is to obtain one set of 30-minute measurement at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.

- 3.4.4 If construction works are extended to include works during the hours of 1900 - 0700, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under NCO shall be obtained by the Contractor.

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

- 3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve.
- 3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.
- 3.5.3 All equipment as used air quality monitoring is listed in *Table 3-3*.

Table 3-3 Air Quality Monitoring Equipment

Equipment	Model
24-Hr TSP	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
1-Hour TSP	
Portable Dust Meter	Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter

Wind Data Monitoring Equipment

- 3.5.4 According to the Updated EM&A Manual Sections 2.1.3.8, alternative methods to obtain representative wind data was proposed by the ET. Meteorological information as extracted from “the Hong Kong Observatory Ta Kwu Ling Station” is alternative method to obtain representative wind data. For Ta Kwu Ling Station, it is located nearby the Project site. Moreover, this station is situated the sea level above 15mPD. The station’s wind data monitoring equipment is set above the existing ground ten meters in compliance with the general setting up requirement. Furthermore, this station can also provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In a lot of Hong Kong development projects, weather information extracted from Hong Kong Observatory is a common alternative method if installation of weather station is not allowed.

Noise Monitoring

- 3.5.5 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s^{-1} .
- 3.5.6 Noise monitoring equipment to be used for impact monitoring is listed in *Table 3-4*.

Table 3-4 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL - 52
Calibrator	Rion NC - 74
Portable Wind Speed Indicator	Testo Anemometer

- 3.5.7 Sound level meters listed above comply with the *International Electrotechnical Commission Publications 651: 1979 (Type 1)* and *804: 1985 (Type 1)* specifications, as recommended in TM issued under the NCO. The acoustic calibrator and sound level meter to be used in the baseline monitoring will be calibrated yearly.

3.6 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

- 3.6.1 According to the baseline monitoring results and the Updated EM&A Manual, the air quality and construction noise criteria were set up, namely Action and Limit levels are listed in *Tables 3-5 & 3-6* as below.

Table 3-5 Action and Limit Levels for 24-Hr TSP and 1-Hr TSP Air Quality, $\mu\text{g m}^{-3}$

Monitoring Stations	Action Level ($\mu\text{g/m}^3$)		Limit Level ($\mu\text{g/m}^3$)	
	1-hour	24-hour	1-hour	24-hour
AM1	286	147	500	260
AM2	276	NA	500	NA
AM2a	NA	155	NA	260

Table 3-6 Action and Limit Levels for Construction Noise

Monitoring Stations	Action Level	Limit Level in dB(A)
Time Period: 0700-1900 hours on normal weekdays		
NM1 and NM2	When one documented complaint is received	> 75* dB(A)

Note: (*) Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

3.7 EVENT ACTION PLAN

- 3.7.1 If non-compliance or exceedance of the Action/Limit Levels is occurred, actions shall be taken in accordance with the Event Action Plan in *Appendix F*.

4 MONITORING METHDOLOGY

4.1 AIR QUALITY MONITORING

Monitoring Location

- 4.1.1 The detailed information of air quality monitoring stations referred to *Table 3-2* and the graphical plot of monitoring locations shown in *Appendix E* in this report.

Monitoring Equipment

- 4.1.2 All the monitoring equipment to be used in the EM&A program as listed in *Table 3-3* has been agreed with the IEC.

Monitoring Procedures

1-hour TSP

- 4.1.3 The 1-hour TSP monitor, a Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter was used for baseline monitoring, which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consisted of the following:
- A pump to draw sample aerosol through the optic chamber where TSP is measured;
 - A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
 - A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

- 4.1.4 The 1-hour TSP meter used is within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter was follow manufacturer's Operation and Service Manual. A valid calibration certificate is attached in *Appendix G*.

24-hour TSP

- 4.1.5 The equipment used for 24-hour TSP measurement is a Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (HVS) consists of the following:
- An anodized aluminum shelter;
 - A 8"x10" stainless steel filter holder;
 - A blower motor assembly;
 - A continuous flow/pressure recorder;
 - A motor speed-voltage control/elapsed time indicator;
 - A 7-day mechanical timer, and
 - A power supply of 220v/50 hz
- 4.1.6 Prior to 24-hour TSP monitoring, the HVS was calibrated in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). The 24-hour TSP Monitoring using the HVS was also processed in accordance with the manufacturer's Operations Manual. A valid calibration certificate of the calibration kit with the certificate of HVS calibrated is attached in *Appendix G*.
- 4.1.7 24-hour TSP was collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keeps all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.

4.2 CONSTRUCTION NOISE MONITORING

Monitoring Location

- 4.2.1 The detailed information of construction noise monitoring stations referred to *Table 3-2* and the graphical plot of monitoring locations shown in *Appendix E* in this report.

Monitoring Equipment

- 4.2.2 All the monitoring equipment to be used in the EM&A program as listed in *Table 3-3* has been agreed with the IEC.
- 4.2.3 Sound level meter listed in *Table 3-4* is complied with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO). A valid of calibration certificates including sound level meter and an acoustic were shown in *Appendix G*.

Monitoring Procedures

- 4.2.4 The noise measurement was performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) in six consecutive Leq(5 min) measurements were used as the monitoring parameter throughout the baseline monitoring period.
- 4.2.5 During the monitoring, the sound level meter was mounted on a tripod at a height of about 1.2 m and placed at the monitoring locations and oriented such that the microphone was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for the measurement. For construction noise monitoring, all monitoring stations were conducted 1 m from the exterior of the building façade.
- 4.2.6 Prior to noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The calibration level from before and after the noise measurement agrees to within 1.0dB.
- 4.2.7 During the noise measurement, a portable wind speed meter was used to check wind speed (m/s). For impact noise monitoring, no wind speed was exceeding 5m/s or gusts exceeding 10m/s. Also, noise measurement in time was no fog and rain.

4.3 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 4.3.1 The monitoring data were handled by the ET's in-house data recording and management system.
- 4.3.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory results were input directly into the computerized database and checked by personnel other than those who input the data.
- 4.3.3 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

5 IMPACT MONITORING RESULTS**5.1 GENERAL**

- 5.1.1 Air quality and construction noise monitoring scheduled in the Reporting Period is enclosed in *Appendix H* and the monitoring results are shown in the following sub-sections.

5.2 RESULTS OF AIR QUALITY MONITORING

- 5.2.1 The results for 24-hour and 1-hour TSP are summarized in *Tables 5-1 to 5-2*. The 24-hour TSP data are shown in *Appendix I* and graph plots including 1-hour TSP and 24-hour TSP are shown in *Appendix J*.

Table 5-1 Summary of 1-Hour TSP Monitoring Results, $\mu\text{g}/\text{m}^3$

DATE	AM1				AM2			
	Start Time	1 st Meas.	2 nd Meas.	3 rd Meas.	Start Time	1 st Meas.	2 nd Meas.	3 rd Meas.
4-Dec-17	9:18	68	76	82	13:19	81	81	87
9-Dec-17	9:21	69	67	72	13:16	72	75	76
15-Dec-17	13:08	62	66	67	9:13	52	51	50
21-Dec-17	9:31	66	63	63	13:11	55	45	45
27-Dec-17	9:34	43	46	50	13:07	45	47	54
Average (Range)	64 (43 - 82)				61 (45 - 87)			

Table 5-2 Summary of 24-hour TSP Monitoring Results, $\mu\text{g}/\text{m}^3$

Date	AM1	AM2a
1-Dec-17	66	65
7-Dec-17	102	135
13-Dec-17	100	115
19-Dec-17	58	53
23-Dec-17	47	103
29-Dec-17	57	66
Average (Range)	72 (47 - 102)	89 (53 - 135)

- 5.2.2 As shown in *Tables 5-1* and *5-2*, the 24-hour and 1-hour TSP monitoring results were below the Action/ Limit Level. No Notification of Exceedances (NOE) of air quality criteria or corrective action was therefore required.
- 5.2.3 The meteorological data during the Reporting Month is summarized in *Appendix K*.
- 5.2.4 Construction dust assessment for short term impact was undertaken in the EIA study. In view of the current contract, monitoring locations AM1 and AM2a are not an ASR during the EIA study and therefore no prediction was made. For 1-hour TSP monitoring location AM2, it is very near the assessment point FLN-E13 in the EIA. According to the EIA prediction, the predicted result for Tier 2 in assessment year 2018 is $91.0\mu\text{g}/\text{m}^3$ for 1-hour TSP and the cumulative 1-hour concentrations would comply with the respective criteria and adverse short-term construction dust impact is not anticipated. It is concluded that the overall 1-hour TSP monitoring result in the Reporting Period is comparable to the EIA prediction.

5.3 RESULTS OF CONSTRUCTION NOISE MONITORING

5.3.1 In the Reporting Period, a total of 8 event noise measurements were carried out at the two designated locations. During construction noise monitoring, the sound level meter was set in 1m from the exterior of the building façade. Therefore, no façade correction (+3dB(A)) is added according to acoustical principles and EPD guidelines. The construction noise monitoring results at the designated locations are summarized in *Table 5-3*. The detailed noise monitoring data are presented in *Appendix I* and the relevant graphical plots are shown in *Appendix J*.

Table 5-3 Summary of Construction Noise Monitoring Results, dB(A)

Date	NM1		NM2	
	Time of Measurement	($L_{eq30min}$)	Time of Measurement	($L_{eq30min}$)
4-Dec-17	9:51	53	13:28	49
15-Dec-17	13:18	55	9:28	50
21-Dec-17	9:42	54	13:16	50
27-Dec-17	9:39	54	13:09	58
Limit Level	75 dB(A)			

5.3.2 As shown in *Table 5-3*, the noise level measured at the designated monitoring locations are well below 75dB(A). Furthermore, there was no noise complaints (Action Level exceedance) received by the RE, Contractors or DSD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.

6 WASTE MANAGEMENT

6.1 GENERAL WASTE MANAGEMENT

6.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

6.2 RECORDS OF WASTE QUANTITIES

6.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

6.2.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 6-1* and *6-2* and the Monthly Summary Waste Flow Table is shown in *Appendix L*. Whenever possible, materials were reused on-site as far as practicable.

Table 6-1 Summary of Quantities of Inert C&D Materials for the Project

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Total C&D Materials (Inert) (in '000m ³)	20.31	0.23	20.54	--
Hard Rock and Large Broken Concrete (Inert) (in '000 m ³)	1.67	0.07	1.74	Tuen Mun 38
Reused in this Project (Inert) (in '000 m ³)	3.27	0.00	3.27	--
Reused in other Projects (Inert) (in '000 m ³)	2.23	0.00	2.23	CV/2015/03*
Disposal as Public Fill (Inert) (in '000 m ³)	13.23	0.17	13.40	Tuen Mun 38

Remark: The figures were rounded off to two decimal places.

* Contract No. CV/2015/03 Site Formation and Infrastructural Works near Tong Hang Road and Tsz Tin Road in Area 54, Tuen Mun

Table 6-2 Summary of Quantities of C&D Wastes for the Project

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Metals ('000kg)	141.63	0.37	142.00	Licensed Collector
Paper / Cardboard Packing ('000kg)	0.02	0.06	0.07	Paper Recyclers
Plastics ('000kg)	0.00	0.00	0.00	--
Chemical Wastes ('000kg)	0.00	0.00	0.00	--
General Refuses ('000m ³)	0.77	0.10	0.87	NENT

Remark: The figures were rounded off to two decimal places.

7 SITE INSPECTION**7.1 REQUIREMENTS**

7.1.1 According to the Updated EM&A Manual, the environmental site inspection shall be formulated by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

7.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

7.2.1 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor has been carried out on **7, 14, 21 and 27 December 2017**. Furthermore, IEC attend site inspection was on **27 December 2017**. No non-compliance was noted.

7.2.2 Observations for the site inspections and monthly audit within this Reporting Period are summarized in *Table 7-1*.

Table 7-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
28 November 2017	<ul style="list-style-type: none"> Chemical containers were observed on the ground near BR 1. The Contractor was advised to place chemical containers inside drip tray. Empty cement bags were observed at BR 1. The Contractor was advised to dispose of it regularly and place inside garbage bags. The Contractor was reminded to dispose accumulation of construction waste near main building regularly. 	<ul style="list-style-type: none"> Chemical containers were removed from site area. Last observation closed. Empty cement bags were disposed. Last observation closed. Not required for reminder.
7 December 2017	<ul style="list-style-type: none"> Dry unpaved haul road was observed next to main building. The Contractor was advised to spray water regularly. 	<ul style="list-style-type: none"> Water spraying was implemented at site. Last observation closed.
14 December 2017	<ul style="list-style-type: none"> Chemical containers were observed near generator at BR1. The Contractor was advised to place chemical containers inside drip tray. 	<ul style="list-style-type: none"> Chemical containers were removed from site. Last observation closed.
21 December 2017	<ul style="list-style-type: none"> Stockpiles of empty cement bags were observed on the ground near main building. The Contractor was advised to dispose it regularly. 	<ul style="list-style-type: none"> The empty cement bags was disposed from site. Last observation closed.
27 December 2017	<ul style="list-style-type: none"> The Contractor was reminded to provide water spray on site regularly to reduce dust generation. 	<ul style="list-style-type: none"> Not required for reminder.

7.2.3 In the Reporting Period, the overall environmental performance was considered satisfactory.

8 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE**8.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION**

8.1.1 No environmental complaint, summons and prosecution was received in this reporting period. The statistical summary table of environmental complaint is presented in *Tables 8-1, 8-2* and *8-3*.

Table 8-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

Table 8-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

Table 8-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 to 31 December 2017	0	0	NA

9 IMPLEMENTATION STATUS OF MITIGATION MEASURES

9.1 GENERAL REQUIREMENTS

- 9.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the Updated EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in *Appendix M*.
- 9.1.2 The Contract under the Project shall be implementing the required environmental mitigation measures according to the Updated EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by the Contract in this Reporting Period are summarized in *Table 9-1*.

Table 9-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	<ul style="list-style-type: none"> Wastewater to be treated by the filtration systems i.e. sedimentation tank before to discharge.
Air Quality	<ul style="list-style-type: none"> Maintain wet surface on access road All vehicles must be used wheel washing facility before off site Spray water during breaking works A cleaning truck was regularly performed on the public road to prevent fugitive dust emission
Noise	<ul style="list-style-type: none"> Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. Keep good maintenance of plants Shut down the plants when not in used.
Waste and Chemical Management	<ul style="list-style-type: none"> On-site sorting prior to disposal Follow requirements and procedures of the “Trip-ticket System” Predict required quantity of concrete accurately Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	<ul style="list-style-type: none"> The site was generally kept tidy and clean.

- 9.1.3 Based on monitoring results including air quality and construction noise, it is considered that the environmental mitigation measures implemented by the Contractor in this Reporting Period are effective.

9.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 9.2.1 Construction activities listed below will be undertaken in the coming month for the Contract of the Project.
- Dismantle and removal of formwork and temporary metal falsework (At membrane facility building)
 - Excavation, pipe laying of CLP and E&M cable duct
 - Installation of Structural gantry at BR1
 - Remedial Work of Bio-Reactor No.1
 - Painting of pretreatment screen chamber
 - Plastering, painting and laying tiles for the internal finishing for membrane facilities building
 - Construction of DN900 air main.
 - Internal and external finishing for membrane facilities building
 - Installation of falsework and scaffolding at membrane tank.

9.3 KEY ISSUES FOR THE COMING MONTH

9.3.1 Key issues to be considered in the coming month for the Contract include:

- Implementation of dust suppression measures at all times;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Ensure dust suppression measures are implemented properly;
- Implementation of construction noise preventative control measures;
- Management of chemical wastes;
- Follow-up of improvement on general waste management issues; and

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

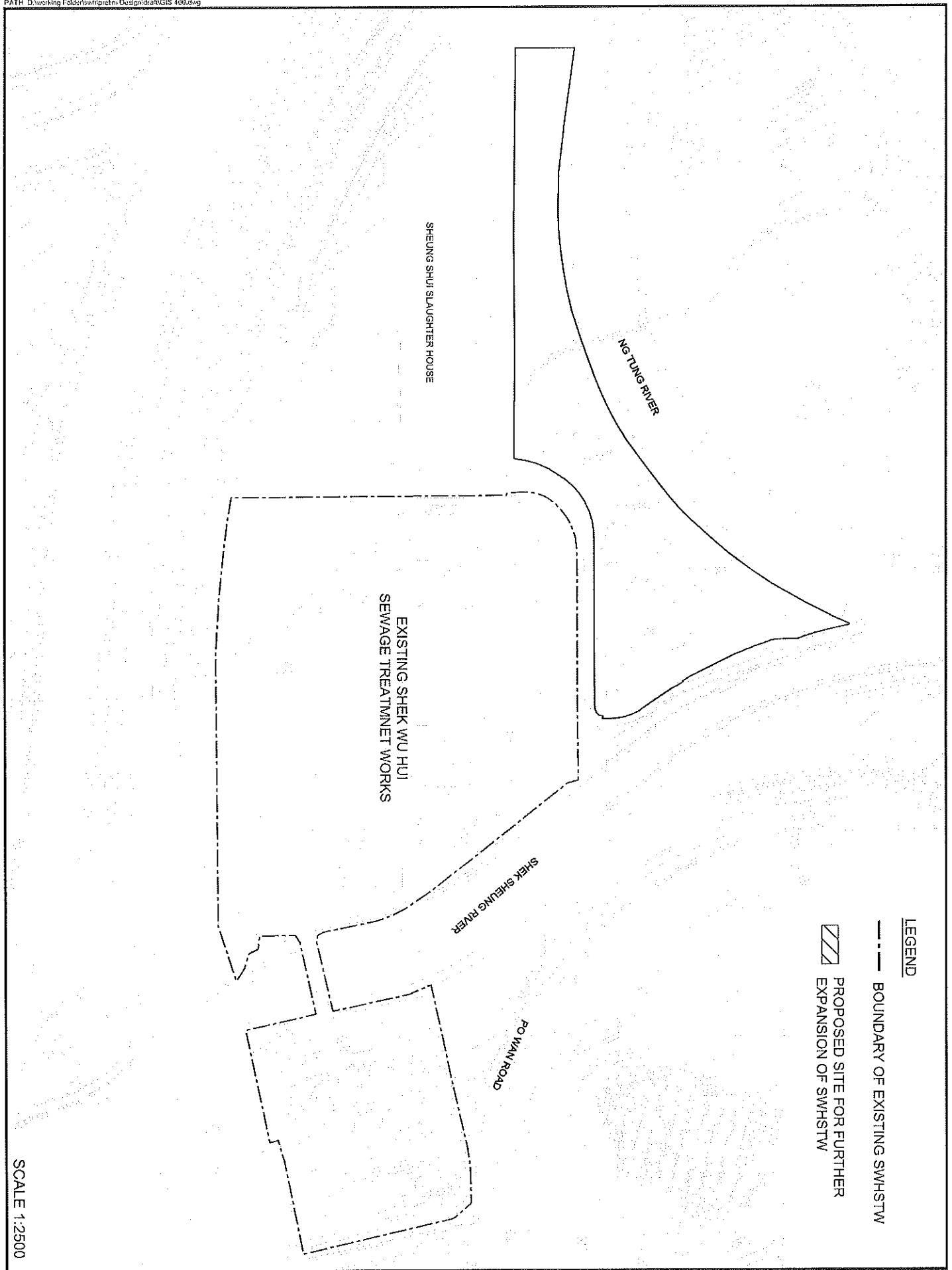
- 10.1.1 This is the 27th Monthly EM&A report, covering the construction period from **1 to 31 December 2017**.
- 10.1.2 No 24-hour or 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.
- 10.1.3 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOEs or the associated corrective actions were therefore issued.
- 10.1.4 No documented complaint, notification of summons or successful prosecution was received.
- 10.1.5 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor was carried out on **7, 14, 21 and 27 December 2017**. Furthermore, IEC attend site inspection was on **27 December 2017**. No non-compliance was noted.

10.2 RECOMMENDATIONS

- 10.2.1 As dry season has approached, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.
- 10.2.2 Moreover, air quality mitigation measures including wheel wash facilities, watering of haul roads and covering of dusty materials with tarpaulin sheet, etc. should be properly maintained.
- 10.2.3 To control the site performance on waste management, Tsun Yip shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. Tsun Yip is also reminded to implement the recommended environmental mitigation measures according to the Updating Environmental Monitoring and Audit Manual.

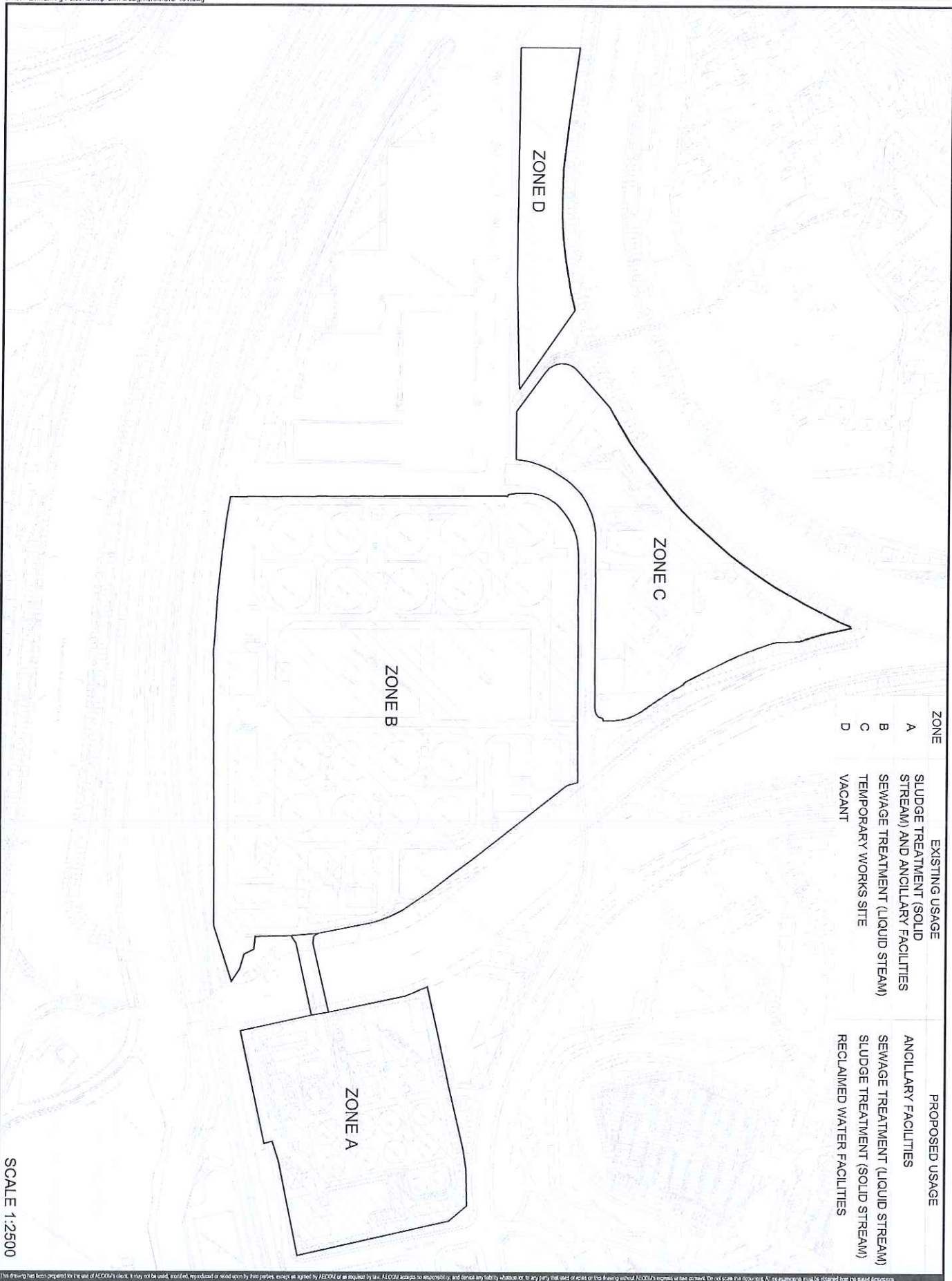
Appendix A

GENERAL LAYOUT OF ADVANCE WORKS AND MAIN WORKS OF SWHSTW FURTHER EXPANSION PHASE 1A



SCALE 1:2500

LEGEND
 - - - BOUNDARY OF EXISTING SWHSTW
 [Hatched Box] PROPOSED SITE FOR FURTHER EXPANSION OF SWHSTW



AGREEMENT NO. CE 40/2012 (DS)
 SHEK WU HUI SEWAGE TREATMENT WORKS
 - FURTHER EXPANSION PHASE 1A
 - INVESTIGATION

PREFERRED SITE UTILIZATION
 ACCORDING TO BRIEF

AECOM

Drawing 60284037/EM&AM/401

Project No.: 60284037 Date: FEB. 2014

Appendix B

LAYOUT PLAN OF ADVANCE WORKS

NOTES

1. ALL LINES SHOWN TO INDICATE AND SHOW.
2. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE SPECIFICATIONS AND THE REQUIREMENTS OF THE LOCAL AUTHORITY FOR THE WORKS TO BE UNDERTAKEN.
3. WORKMAN IS TO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES AND TO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
4. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE SPECIFICATIONS AND THE REQUIREMENTS OF THE LOCAL AUTHORITY FOR THE WORKS TO BE UNDERTAKEN.
5. WORKMAN IS TO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES AND TO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.

LEGEND

- 1. SITE BOUNDARY
- 2. EXISTING STRUCTURE TO BE DEMOLISHED
- 3. EXISTING STRUCTURE TO BE MODIFIED
- 4. PROPOSED STRUCTURE
- 5. PORTION A OF THE SITE

NO.	REVISION	DATE
1	ISSUED FOR TENDER	12 DEC 2014
2	REVISED FOR TENDER	12 DEC 2014
3	REVISED FOR TENDER	12 DEC 2014
4	REVISED FOR TENDER	12 DEC 2014
5	REVISED FOR TENDER	12 DEC 2014

DRAWN BY: *CHD*
 CHECKED BY: *CHD*
 DATE: 12 DEC 2014
 PROJECT NO: SPB/438805
 SHEET NO: 438805

ADVANCE WORKS FOR SHEK WU HUI
 SEWERAGE TREATMENT WORKS
 FURTHER EXPANSION PHASE 1A AND
 SEWERAGE WORKS AT PING CHEE ROAD

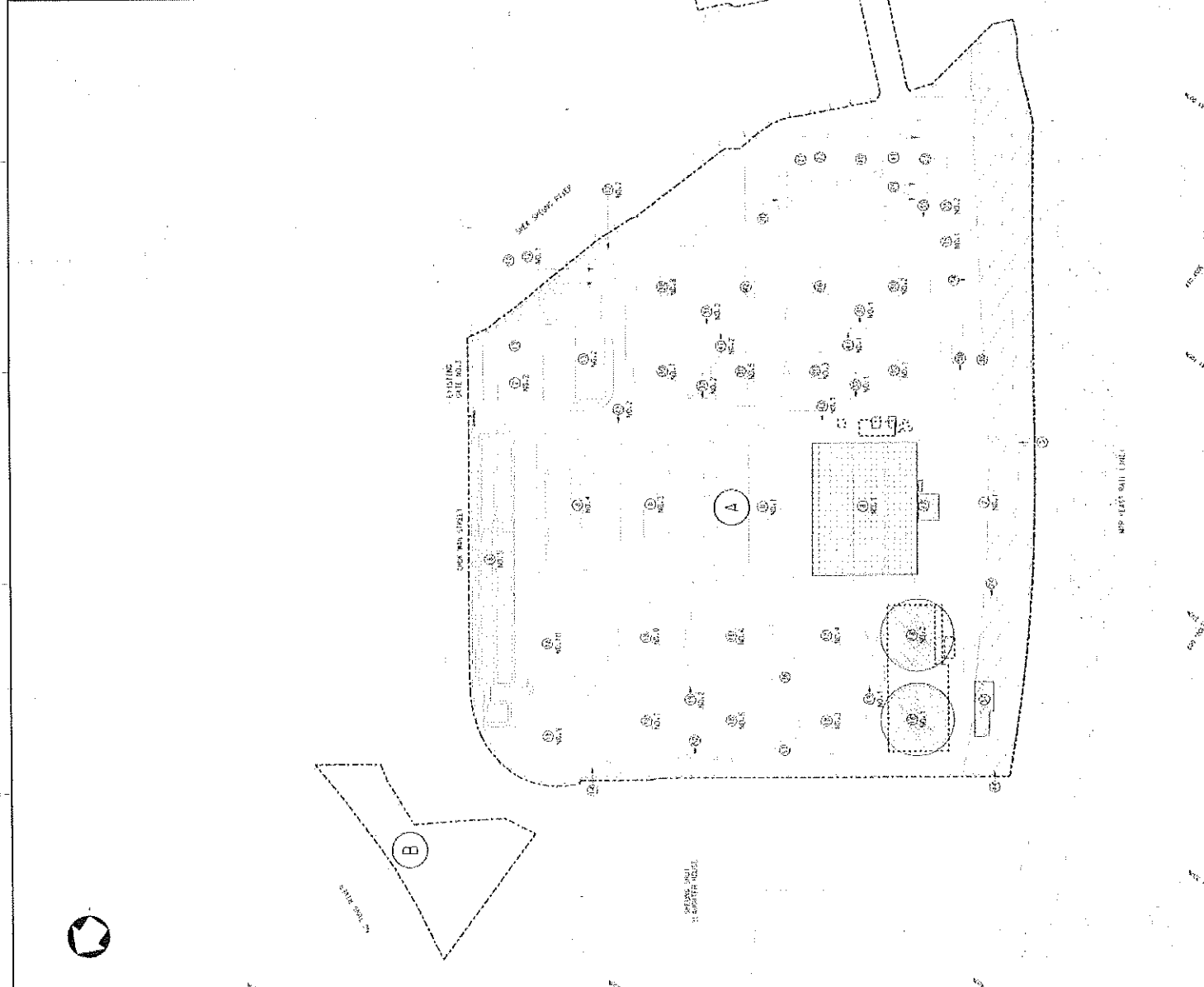
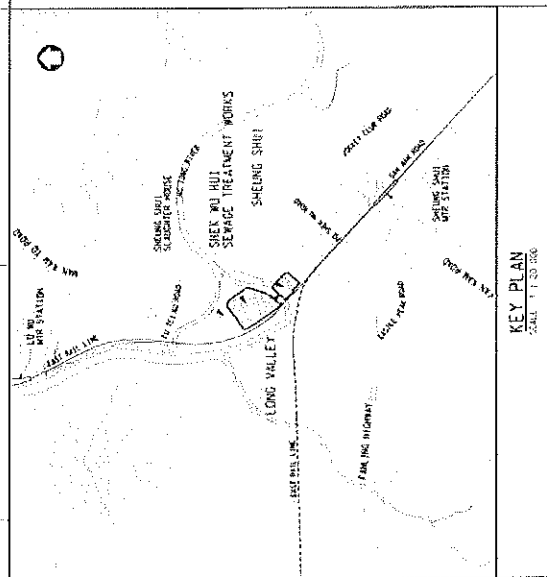
DRAWING SHEET
 PORTION A -
 PORTIONS OF THE SITE

SHEET NO: DSP/DC1309/11021
 DATE: 12 DEC 2014

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SEWERAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
 GOVERNMENT OF THE
 HONG KONG
 SPECIAL ADMINISTRATIVE REGION



NOTES

1. ALL DRUGS KEPT TO HONG KONG THIS DATE.
2. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE LOCATION OF THE EXISTING AND PROPOSED SEWERAGE WORKS IN THE VICINITY OF THE SHERK WU HUI SEWAGE TREATMENT WORKS.
3. PORTION 1 IS THE EXISTING WORKS. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE SHERK WU HUI SEWAGE TREATMENT WORKS.
4. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE SHERK WU HUI SEWAGE TREATMENT WORKS.
5. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE SHERK WU HUI SEWAGE TREATMENT WORKS.

LEGEND :

- 1. SITE BOUNDARY
- 2. EXISTING STRUCTURE TO BE DEMOLISHED
- 3. EXISTING STRUCTURE TO BE MAINTAINED
- 4. PROPOSED STRUCTURE
- 5. PORTION 1 OF THE SITE

FOR TENDER PURPOSES ONLY

NO.	DATE	REVISION
1	12 DEC 2014	ISSUED FOR TENDER
2	12 DEC 2014	ISSUED FOR TENDER
3	12 DEC 2014	ISSUED FOR TENDER
4	12 DEC 2014	ISSUED FOR TENDER
5	12 DEC 2014	ISSUED FOR TENDER
6	12 DEC 2014	ISSUED FOR TENDER
7	12 DEC 2014	ISSUED FOR TENDER
8	12 DEC 2014	ISSUED FOR TENDER
9	12 DEC 2014	ISSUED FOR TENDER
10	12 DEC 2014	ISSUED FOR TENDER

PROJECT NO: DC/2013/09
 PROJECT PO: 438805
 CONTRACT NO: 438805

ADVANCE WORKS FOR SHERK WU HUI SEWAGE TREATMENT WORKS - FURTHER EXPANSION PHASE 1A AND SEWERAGE WORKS AT PING CHEE ROAD

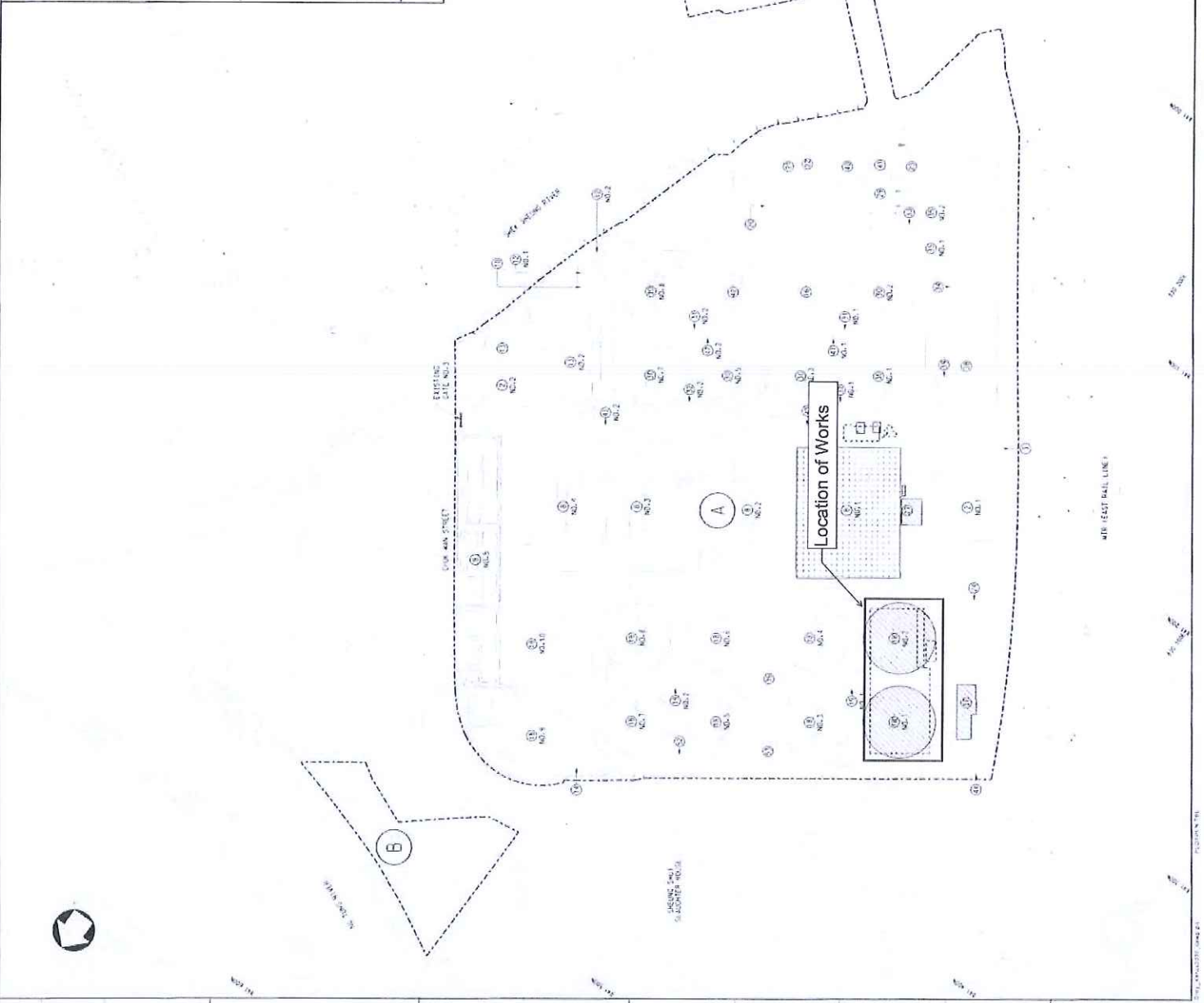
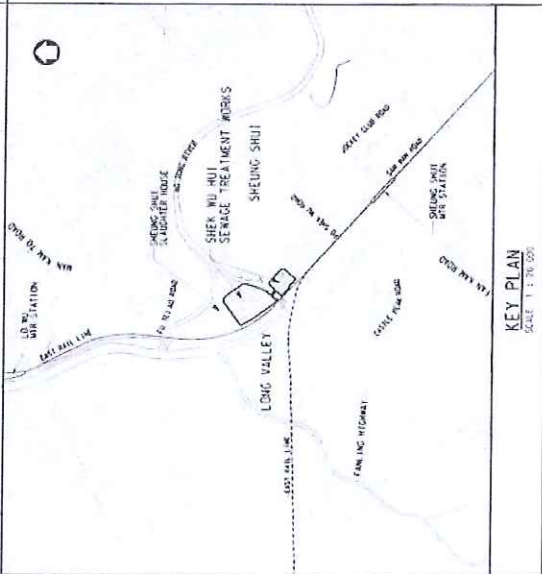
PORTION 1 -
 PORTIONS OF THE SITE

DCP/DC1309/11021A
 1:1,000
 AS SHOWN

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SEWERAGE PROJECTS DIVISION

SEWERAGE PROJECTS DIVISION
 DRAINAGE SERVICES DEPARTMENT
 GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION



Appendix C

ORGANIZATION STRUCTURE AND CONTACT DETAILS OF RELEVANT PARTIES



TSUN YIP

(WATERWORKS CONSTRUCTION COMPANY) LTD.

Tsun Yip Waterworks Construction Company Limited

進業水務建築有限公司

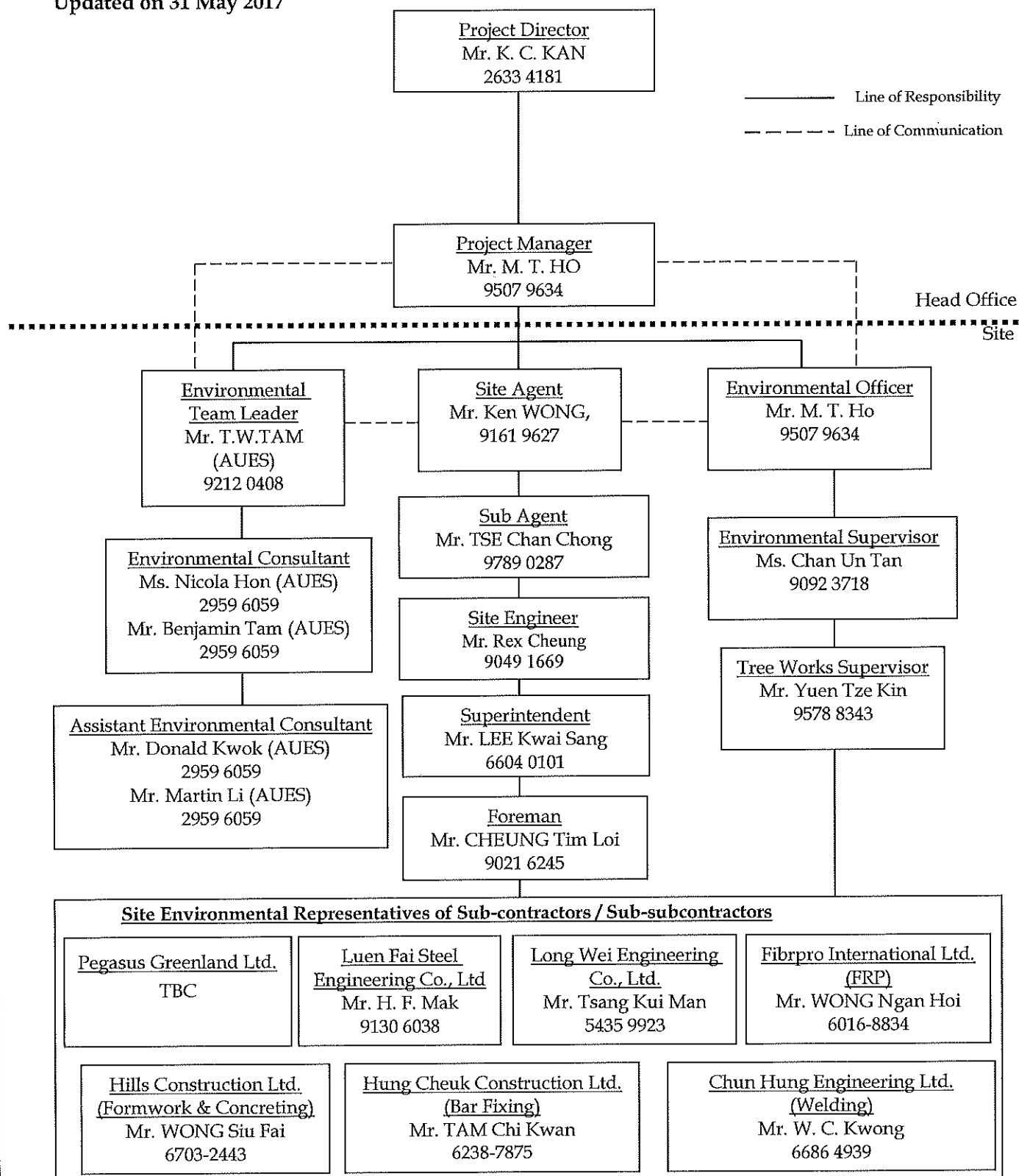
Contract No. DC/2013/09

Advance Works for Shek Wu Hui Sewage Treatment Works

- Further Expansion Phase 1A and Sewerage Works at Ping Che Road

SITE ENVIRONMENTAL TEAM ORGANIZATION CHART

Updated on 31 May 2017



DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

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Contact Details of Relevant Parties

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Resident Site Engineer	Mr. Michael Leung	2594 7463	2827 8700
ANewR	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648
Tsun Yip	Project Director	Mr. K. C. KAN	2633 4181	2633 4691
Tsun Yip	Project Manager	Mr. M. T. HO	9507 9634	2633 4691
Tsun Yip	Site Agent	Mr. Ken WONG	9161 9627	2633 4691
Tsun Yip	Environmental Officer	Mr. M.T.HO	9507 9634	2633 4691
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079
AUES	Assistant Environmental Consultant	Mr. Martin Li	2959 6059	2959 6079

Legend:

DSD (Employer & Resident Site Engineer) – Drainage Service Department

Tsun Yip (Main Contractor) – Tsun Yip Waterworks Construction Co Ltd

ANewR (IEC) – ANewR Consulting Limited

AUES (ET) – Action-United Environmental Services & Consulting

DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road
27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

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Appendix D

3-MONTH ROLLING PROGRAM

		Dec-2017																															Jan-2018																															Feb-2018																															Mar-2018																														
Item	Description	Duration (Days)	% of Completion	Start	Finished																																																																																																																								
Shek Wu Hui Sewage Treatment Works - Section II																																																																																																																													
1	Modification of Borecrafter No.1	427		31/10/16	31/12/17																																																																																																																								
1.1	Design and Material Delivery of FRP Baffle Wall and Walkway	136	100%	31/10/16	15/03/17																																																																																																																								
1.2	Installation of FRP Baffle Wall	110	100%	04/02/17	24/05/17																																																																																																																								
1.3	Installation of FRP Walkway (for Pipe CHE 0469)	70	100%	01/05/17	09/07/17																																																																																																																								
1.4	Installation of FRP Walkway (for Pipe CHD 96-165)	70	100%	01/05/17	09/07/17																																																																																																																								
1.5	Installation of Structural Gantry	30	0%	11/12/17	09/01/18																																																																																																																								
1.6	Cutting of Existing partition wall of BR1	10	100%	25/07/17	03/08/17																																																																																																																								
1.7	Installation of DN800 Puddle Flange Pipe	36	100%	04/08/17	08/09/17																																																																																																																								
1.8	Installation of FRP Pipe support of DN600 air main	70	100%	10/07/17	17/09/17																																																																																																																								
1.9	Construction of Concrete Pump Pit	40	100%	17/08/17	25/09/17																																																																																																																								
1.10	Repairing of Existing Joint and Concrete or Screeding (including Curing)	60	100%	07/08/17	05/10/17																																																																																																																								
1.11	Painting Waterproofing lining of Wall and Floor of BR1	87	70%	06/10/17	31/12/17																																																																																																																								
2	Portion B - Construction of Membrane Facilities Building (P1 SanPD - P10.0mmPD)	92		25/09/17	25/12/17																																																																																																																								
2.1	Rebar Fixing for the concrete plinths	14	90%	01/11/17	14/11/17																																																																																																																								
2.2	Erection of Formwork for the concrete plinths	14	90%	15/11/17	28/11/17																																																																																																																								
2.3	Concreting for the concrete plinths	3	90%	29/11/17	01/12/17																																																																																																																								
2.4	Water Tightness Test for the Permanent Storage Tank	14	0%	02/12/17	15/12/17																																																																																																																								
2.5	G/F Internal Finishing	39	100%	25/09/17	02/11/17																																																																																																																								
2.5.1	Installation of Trench Support and Cover	14	80%	25/09/17	08/10/17																																																																																																																								
2.5.2	Plastering	14	100%	25/09/17	08/10/17																																																																																																																								
2.5.3	Tiling	7	90%	09/10/17	15/10/17																																																																																																																								
2.5.4	Painting	14	100%	16/10/17	29/10/17																																																																																																																								
2.5.5	Floor Screeding	4	50%	30/10/17	02/11/17																																																																																																																								
2.6	Basement Internal Finishing	25	100%	06/11/17	30/11/17																																																																																																																								
2.6.1	Plastering	7	50%	06/11/17	12/11/17																																																																																																																								
2.6.2	Tiling	7	60%	13/11/17	19/11/17																																																																																																																								
2.6.3	Painting	7	20%	20/11/17	26/11/17																																																																																																																								
2.6.4	Floor Screeding	4	0%	27/11/17	30/11/17																																																																																																																								
2.7	First Floor Internal Finishing	25	100%	01/12/17	25/12/17																																																																																																																								
2.7.1	Plastering	7	100%	01/12/17	07/12/17																																																																																																																								
2.7.2	Tiling	7	0%	08/12/17	14/12/17																																																																																																																								
2.7.3	Painting	7	100%	15/12/17	21/12/17																																																																																																																								
2.7.4	Floor Screeding	4	0%	22/12/17	25/12/17																																																																																																																								

Item	Description	Duration (Days)	% of Completion	Start	Finished	Dec-2017	Jan-2018	Feb-2018	Mar-2018
Shek Wu Hui Sewage Treatment Works - Section II									
2.8	Roof Finishes	32	0%	01/01/18	01/02/18				
2.8.1	Installation of Rubber Waterproof Membrane	7	0%	01/01/18	08/01/18				
2.8.2	Installation of Insulation Board	7	0%	09/01/18	16/01/18				
2.8.3	Applying Cement Sand Screeding with 1:100 fall	7	0%	17/01/18	24/01/18				
2.8.4	All Deck Coating	7	0%	25/01/18	01/02/18				

Item	Description	Duration (Days)	% of Completion	Start	Finished	Dec-2017	Jan-2018	Feb-2018	Mar-2018
Shek Wu Hui Sewage Treatment Works - Section II									
3	Membrane Tank	46		04/12/17	18/01/18				
3.1	Water Tightness Test	7	100%	04/12/17	10/12/17				
3.2	Erection of falsework and working platform for column and maintenance platform construction	7	60%	04/12/17	10/12/17				
3.3	Rebar Fixing for the column & slab (level up to +1.00mPD)	7	0%	11/12/17	17/12/17				
3.4	Erection of formwork for the column & slab	7	0%	18/12/17	24/12/17				
3.5	Concreting for the column & slab	1	0%	25/12/17	25/12/17				
3.6	Curing of Concrete and Dismantle of Formwork	14	0%	26/12/17	08/01/18				
3.7	Dismantle of Falsework & Working Platform	7	0%	09/01/18	15/01/18				
3.8	Installation of FRP handrailing & construction of maintenance platform	10	0%	09/01/18	18/01/18				
3.9	Painting, Waterproofing lining of Wall and Floor of FR1	21	0%	20/12/17	09/01/18				
4	Flow Meter Chamber	59		15/10/17	13/12/17				
4.1	Excavation and ELS Installation	20	100%	15/10/17	03/11/17				
4.2	Concreting the blinding layer	3	100%	04/11/17	06/11/17				
4.3	Rebar Fixing for the base slab	7	100%	07/11/17	13/11/17				
4.4	Concreting for the base slab	1	100%	14/11/17	14/11/17				
4.5	Installation of the dummy pipe	2	100%	15/11/17	16/11/17				
4.6	Installation of formwork	5	100%	17/11/17	21/11/17				
4.7	Rebar Fixing for the wall	7	100%	22/11/17	28/11/17				
4.8	Installation of internal formwork	4	100%	29/11/17	02/12/17				
4.9	Concreting for the wall	1	100%	03/12/17	03/12/17				
4.10	Removal of shepile and backfilling	10	100%	04/12/17	13/12/17				
5	VO10 - Construction of CLP Cable Duct and Draw Pit (Membrane Building to CLP connection point) 170m	225		20/04/17	30/11/17				
5.1	Excavation and Installation of shepile	90	100%	20/04/17	18/07/17				
5.2	HDPE Cable Duct Piping	65	100%	19/07/17	21/09/17				
5.3	Construction of Cable Draw Pit	70	100%	22/09/17	30/11/17				

Legend

Completed

In Progress

Chinese Trade

Contract No. DC/2013/09
Advance Works for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A and Sewerage Works at Ping Che Road
3-Month Rolling Programme (Shek Wu Hui Sewage Treatment Works - Section 3) in December 2017

Item	Description	Duration (Days)	% of Completion	Start	Finished	Dec-2017	Jan-2018	Feb-2018	Mar-2018
Shek Wu Hui Sewage Treatment Works - Section 3									
1	6x150mm Cable Duct Installation and Draw Pit Construction	557	26%	22/06/16	30/12/17	100%	100%	100%	100%
1.1	V.O.9 - Duct Laying (FST8 to FST6 - 69m)	58	100.0%	22/06/16	18/08/16	100%	100%	100%	100%
1.2	V.O.12 - Remaining CLP cable duct laying (MFB to Compressor Room)	90	0.0%	20/09/17	18/12/17	100%	100%	100%	100%
1.3	V.O.12 - Remaining cable duct laying (MFB to Compressor Room)	90	25.0%	24/06/17	21/09/17	100%	100%	100%	100%
1.4	V.O.12 - Remaining Duct Laying (MFB to FST No.3)	50	0.0%	11/11/17	30/12/17	100%	100%	100%	100%
1.5	V.O.12 - Remaining Duct Laying (outside BR1 to MT)	90	20.0%	22/09/17	20/12/17	100%	100%	100%	100%
2	Road Works	29	0%	15/01/18	12/02/18	100%	100%	100%	100%
2.1	Laying Sub-Base Material	7	0.0%	15/01/18	22/01/18	100%	100%	100%	100%
2.2	Laying Road Surface Concrete with Fabric Reinforcement	7	0.0%	23/01/18	29/01/18	100%	100%	100%	100%
2.3	Construction of Road Kerb	7	0.0%	30/01/18	06/02/18	100%	100%	100%	100%
2.4	Construction of Manholes, Gullies and Other Miscellaneous Works	7	0.0%	06/02/18	12/02/18	100%	100%	100%	100%

Legend



In Progress



Completed

DSD Contract No: DC/2013/09

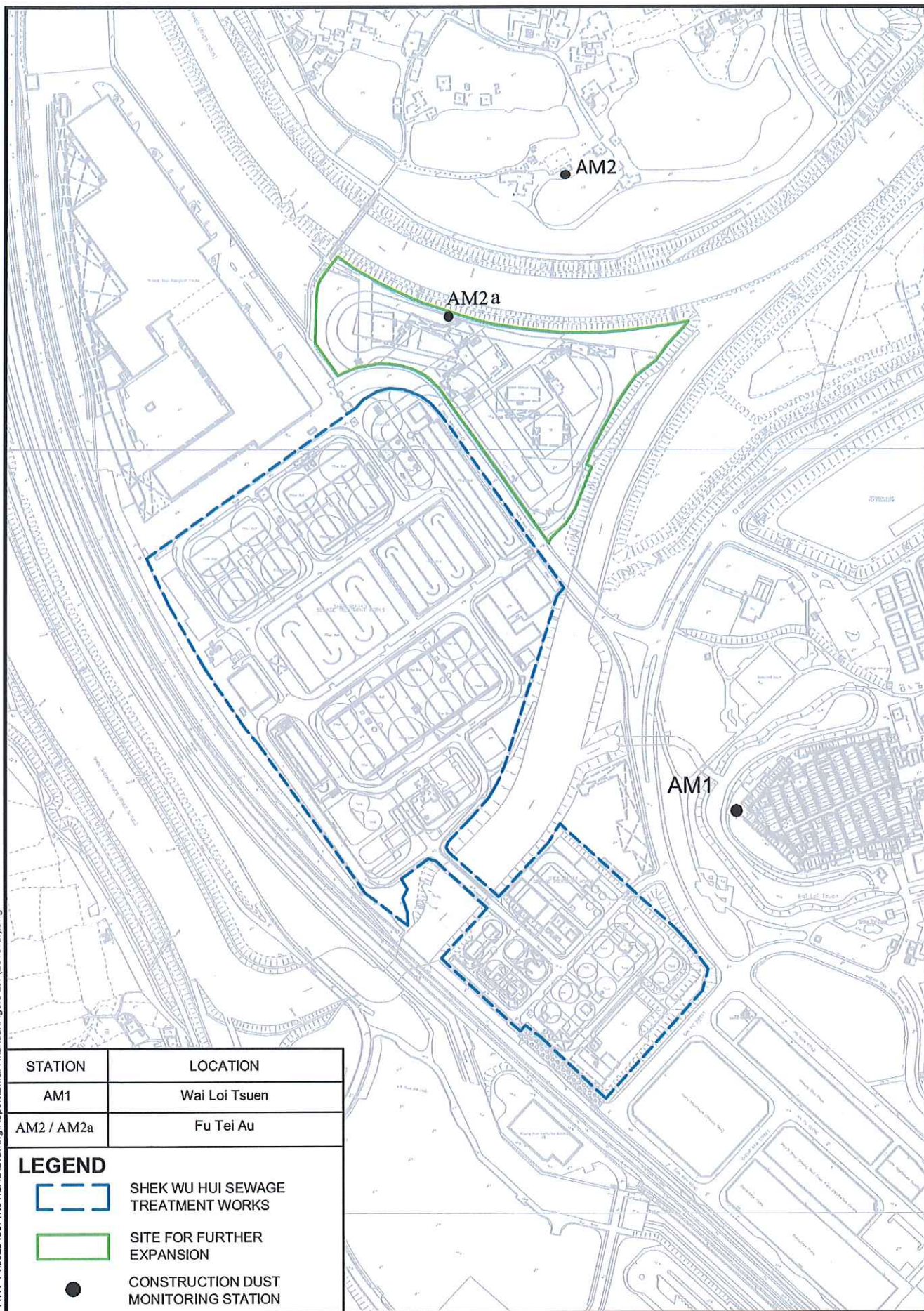
*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

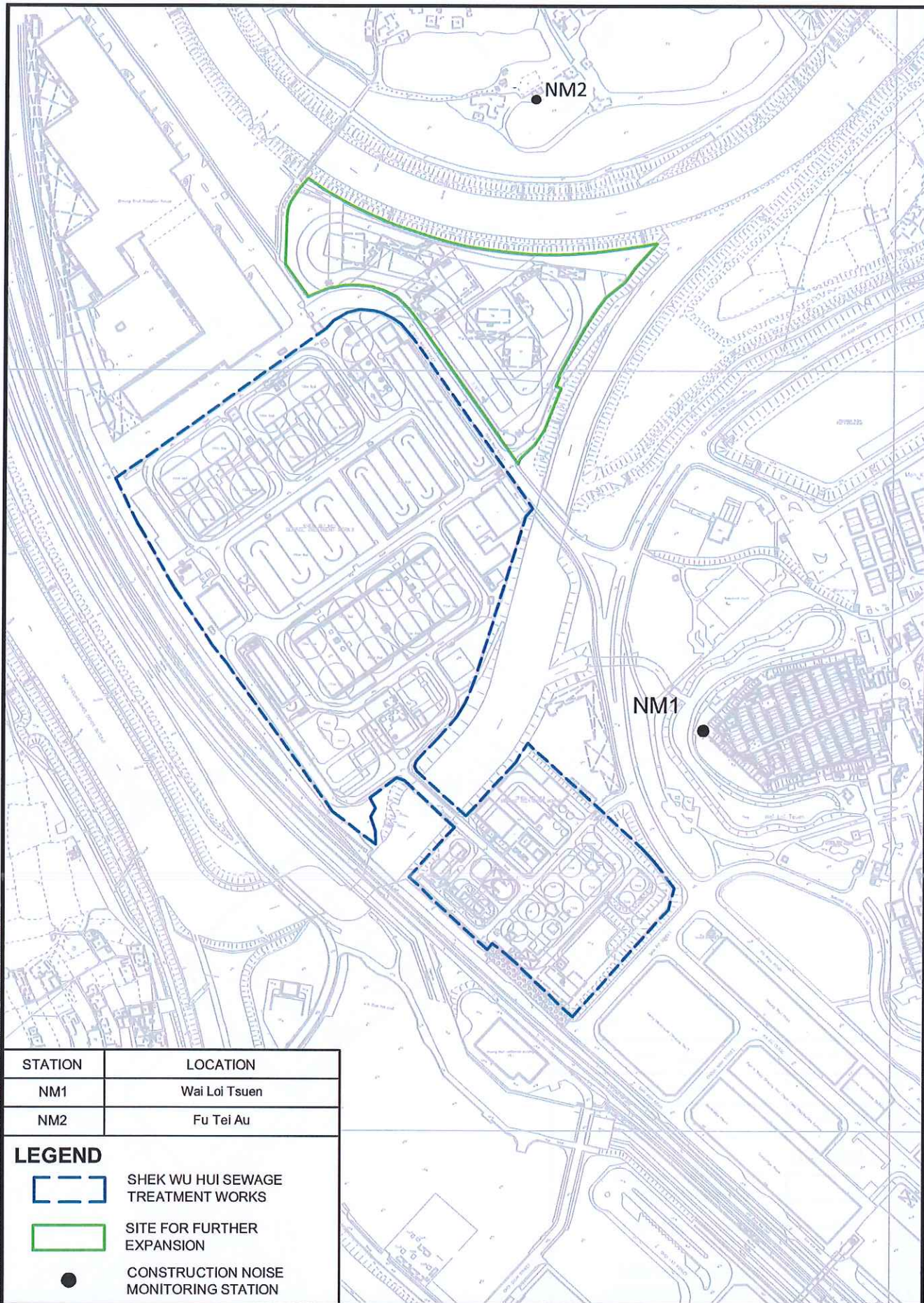
*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

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Appendix E

PROPOSED MONITORING LOCATIONS





STATION	LOCATION
NM1	Wai Loi Tsuen
NM2	Fu Tei Au

LEGEND

-  SHEK WU HUI SEWAGE TREATMENT WORKS
-  SITE FOR FURTHER EXPANSION
-  CONSTRUCTION NOISE MONITORING STATION

AGREEMENT NO. CE 40/2012 (DS)
 SHEK WU HUI SEWAGE TREATMENT WORKS
 - FURTHER EXPANSION PHASE 1A
 - INVESTIGATION

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

AECOM

Project No.: 60284037 Date: FEB. 2014

Drawing No.
 60284037/EM&AM/407

DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

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Appendix F

EVENT ACTION PLAN

Event and Action Plan for Construction Dust

Event	Action				Contractor
	ET	IEC	ER		
Action level being exceeded by one sampling	<ol style="list-style-type: none">1. Identify source, investigate the causes of complaint and propose remedial measures;2. Inform IEC and ER;3. Repeat measurement to confirm findings;4. Increase monitoring frequency to daily.	<ol style="list-style-type: none">1. Check monitoring data submitted by ET;2. Check Contractor's working method.	<ol style="list-style-type: none">1. Notify Contractor.	<ol style="list-style-type: none">1. Rectify any unacceptable practice;2. Amend working methods if appropriate.	
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none">1. Identify source;2. Inform IEC and ER;3. Advise the ER on the effectiveness of the proposed remedial measures;4. Repeat measurements to confirm findings;5. Increase monitoring frequency to daily;6. Discuss with IEC and Contractor on remedial actions required;7. If exceedance continues, arrange meeting with IEC and ER;8. If exceedance stops, cease additional monitoring.	<ol style="list-style-type: none">1. Check monitoring data submitted by ET;2. Check Contractor's working method;3. Discuss with ET and Contractor on possible remedial measures;4. Advise the ET on the effectiveness of the proposed remedial measures;5. Supervise Implementation of remedial measures.	<ol style="list-style-type: none">1. Confirm receipt of notification of exceedance in writing;2. Notify Contractor;3. Ensure remedial measures properly implemented.	<ol style="list-style-type: none">1. Submit proposals for remedial actions to IEC within three working days of notification;2. Implement the agreed proposals;3. Amend proposal if appropriate.	
Limit level being exceeded by one sampling	<ol style="list-style-type: none">1. Identify source, investigate the causes of exceedance and propose remedial measures;2. Inform Contractor, IEC, ER, and EPD;3. Repeat measurement to confirm finding;4. Increase monitoring frequency to daily;5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	<ol style="list-style-type: none">1. Check monitoring data submitted by ET;2. Check Contractor's working method;3. Discuss with ET and Contractor on possible remedial measures;4. Advise the ER on the effectiveness of the proposed remedial measures;5. Supervise implementation of remedial measures.	<ol style="list-style-type: none">1. Confirm receipt of notification of exceedance in writing;2. Notify Contractor;3. Ensure remedial measures properly implemented.	<ol style="list-style-type: none">1. Take immediate action to avoid further exceedance;2. Submit proposals for remedial actions to IEC within three working days of notification;3. Implement the agreed proposals;4. Amend proposal if appropriate.	
Limit level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none">1. Notify IEC, ER, Contractor and EPD;2. Identify source;3. Repeat measurement to confirm findings;4. Increase monitoring frequency to daily;5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;8. If exceedance stops, cease additional monitoring.	<ol style="list-style-type: none">1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;3. Supervise the implementation of remedial measures.	<ol style="list-style-type: none">1. Confirm receipt of notification of exceedance in writing;2. Notify Contractor;3. In consolidation with the IEC, agree measures to be implemented;4. Ensure remedial measures properly implemented;5. 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.	<ol style="list-style-type: none">1. Take immediate action to avoid further exceedance;2. Submit proposals for remedial actions to IEC within three working days of notification;3. Implement the agreed proposals;4. Resubmit proposals if problem still not under control;5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.	

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. 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. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

AUES

Appendix G

VALID CALIBRATION CERTIFICATES

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : No. 31 Wai Loi Tsuen				Date of Calibration: 1-Nov-17			
Location ID : AM1				Next Calibration Date: 1-Jan-18			
				Technician: Fai So			
CONDITIONS							
Sea Level Pressure (hPa)		1017.2		Corrected Pressure (mm Hg)		762.9	
Temperature (°C)		23.0		Temperature (K)		296	
CALIBRATION ORIFICE							
Make->		TISCH		Qstd Slope ->		2.11965	
Model->		5025A		Qstd Intercept ->		-0.02696	
Serial # ->		1941					
CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.20	12.2	1.669	51	51.44	Slope = 23.7849 Intercept = 11.1108 Corr. coeff. = 0.9986
13	5.00	5.50	10.5	1.550	47	47.41	
10	3.90	4.20	8.1	1.363	43	43.37	
7	2.10	2.10	4.2	0.985	34	34.29	
5	1.70	1.00	2.7	0.792	30	30.26	
Calculations :				<div style="text-align: center;"> FLOW RATE CHART </div>			
Qstd = $1/m[\text{Sqrt}(\text{H2O}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})) - b]$							
IC = $I[\text{Sqrt}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})]$							
Qstd = standard flow rate							
IC = corrected chart responses							
I = actual chart response							
m = calibrator Qstd slope							
b = calibrator Qstd intercept							
Ta = actual temperature during calibration (deg K)							
Pstd = actual pressure during calibration (mm Hg)							
For subsequent calculation of sampler flow:							
$1/m((I)[\text{Sqrt}(298/\text{Tav})(\text{Pav}/760)] - b)$							
m = sampler slope							
b = sampler intercept							
I = chart response							
Tav = daily average temperature							
Pav = daily average pressure							

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : RE's Site Office		Date of Calibration: 1-Nov-17	
Location ID : AM2a		Next Calibration Date: 1-Jan-18	
Technician: Fai So			

CONDITIONS			
Sea Level Pressure (hPa)	1017.2	Corrected Pressure (mm Hg)	762.9
Temperature (°C)	23.0	Temperature (K)	296

CALIBRATION ORIFICE			
Make->	TISCH	Qstd Slope ->	2.11965
Model->	5025A	Qstd Intercept ->	-0.02696
Serial # ->	1941		

CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.90	6.40	12.3	1.676	53	53.46	Slope = 27.0571 Intercept = 7.2389 Corr. coeff. = 0.9979
13	5.40	5.10	10.5	1.550	48	48.42	
10	4.00	4.00	8.0	1.354	43	43.37	
7	2.20	2.00	4.2	0.985	34	34.29	
5	1.30	1.30	2.6	0.777	28	28.24	

Calculations :

Qstd = $1/m[\text{Sqrt}(\text{H2O}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})) - b]$

IC = $I[\text{Sqrt}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})]$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$1/m((I)[\text{Sqrt}(298/\text{Tav})(\text{Pav}/760)] - b)$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

FLOW RATE CHART

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.777	28.24
0.985	34.29
1.354	43.37
1.550	48.42
1.676	53.46



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 1941 Pa (mm) - 750.57

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	1.4600	3.2	2.00
2	NA	NA	1.00	1.0410	6.4	4.00
3	NA	NA	1.00	0.9280	7.9	5.00
4	NA	NA	1.00	0.8840	8.7	5.50
5	NA	NA	1.00	0.7290	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9967	0.6827	1.4149	0.9957	0.6820	0.8851
0.9925	0.9534	2.0010	0.9915	0.9524	1.2517
0.9904	1.0672	2.2372	0.9894	1.0661	1.3995
0.9894	1.1192	2.3464	0.9884	1.1181	1.4678
0.9840	1.3499	2.8299	0.9830	1.3485	1.7702
Qstd slope (m) = 2.11965			Qa slope (m) = 1.32729		
intercept (b) = -0.02696			intercept (b) = -0.01686		
coefficient (r) = 0.99991			coefficient (r) = 0.99991		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

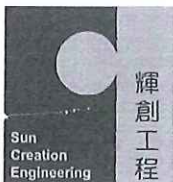
CALCULATIONS

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}



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C172287

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0924)

Date of Receipt / 收件日期 : 24 April 2017

Description / 儀器名稱 : Sound Level Meter (EQ015)

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00142581

Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 April 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

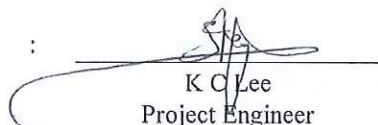
測試



H T Wong
Technical Officer

Certified By

核證



K C Lee
Project Engineer

Date of Issue

簽發日期

2 May 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C172287

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L _A	A	Fast	94.00	1	94.3	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 130	L _A	A	Fast	94.00	1	94.3 (Ref.)
				104.00		104.3
				114.00		114.3

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L _A	A	Fast	94.00	1	94.3	Ref.
			Slow			94.3	± 0.3

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Certificate of Calibration

校正證書

Certificate No. : C172287
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.1	-16.1 ± 1.5
					250 Hz	85.6	-8.6 ± 1.4
					500 Hz	91.0	-3.2 ± 1.4
					1 kHz	94.3	Ref.
					2 kHz	95.5	+1.2 ± 1.6
					4 kHz	95.3	+1.0 ± 1.6
					8 kHz	93.3	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.4	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.5
					250 Hz	94.3	0.0 ± 1.4
					500 Hz	94.3	0.0 ± 1.4
					1 kHz	94.3	Ref.
					2 kHz	94.1	-0.2 ± 1.6
					4 kHz	93.5	-0.8 ± 1.6
					8 kHz	91.4	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C172287

證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 06015

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Website/網址: www.suncreation.com

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1716578
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 20-APR-2017
		DATE OF ISSUE	: 25-APR-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories

Position

Richard Fung

General Manager

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

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Tel. +852 2610 1044 Fax +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1716578
SUB-BATCH : 1
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
PROJECT : -----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1716578-001	S/N: 366418	AIR	20-APR-2017	S/N: 366418

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
Manufacturer: Sibata LD-3B
Serial No. 366418
Equipment Ref: EQ108
Job Order: HK1716578

Standard Equipment:

Standard Equipment: Higher Volume Sampler
Location & Location ID: AUES office (calibration room)
Equipment Ref: HVS 018
Last Calibration Date: 23 February 2017

Equipment Verification Results:

Calibration Date: 16 March 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr02min	09:58 ~ 12:00	17.8	1016.4	0.037	2059	16.9
2hr07min	12:05 ~ 14:12	17.8	1016.4	0.031	1694	13.3
2hr02min	14:20 ~ 16:22	17.8	1016.4	0.026	1351	11.0

Sensitivity Adjustment Scale Setting (Before Calibration) 680 (CPM)

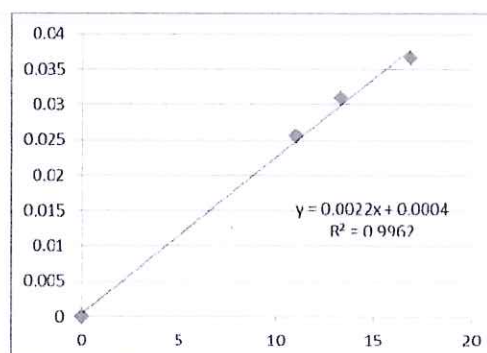
Sensitivity Adjustment Scale Setting (After Calibration) 681 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9981

Date of Issue 20 March 2017



Remarks:

1. Strong Correlation ($R > 0.8$)
 2. Factor 0.0022 should be apply for TSP monitoring
- *If $R < 0.5$, repair or re-verification is required for the equipment

Operator: Martin Li Signature:  Date: 20 March 2017

QC Reviewer: Ben Tam Signature:  Date: 20 March 2017

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung		Date of Calibration: 23-Feb-17	
Location ID : Calibration Room		Next Calibration Date: 23-May-17	

CONDITIONS			
Sea Level Pressure (hPa)	1017.4	Corrected Pressure (mm Hg)	763.05
Temperature (°C)	17.9	Temperature (K)	291

CALIBRATION ORIFICE			
Make->	TISCH	Qstd Slope ->	2.00411
Model->	5025A	Qstd Intercept ->	-0.03059
Calibration Date->	14-Mar-16	Expiry Date->	14-Mar-17

CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.797	56	56.79	Slope = 36.1509 Intercept = -8.0555 Corr. coeff. = 0.9984
13	5	5	10.0	1.616	49	49.69	
10	3.8	3.8	7.6	1.410	43	43.61	
8	2.4	2.4	4.8	1.124	33	33.47	
5	1.4	1.4	2.8	0.862	22	22.31	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

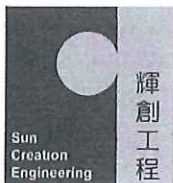
For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure

FLOW RATE CHART

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.862	22.31
1.124	33.47
1.410	43.61
1.616	49.69
1.797	56.79



輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C173480
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0924)

Date of Receipt / 收件日期 : 20 June 2017

Description / 儀器名稱 : Sound Calibrator (EQ083)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34246492
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$
Line Voltage / 電壓 : ---

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 June 2017


TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

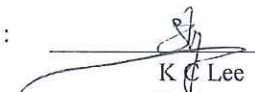
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試

: 
H T Wong
Technical Officer

Certified By
核證

: 
K C Lee
Engineer

Date of Issue :
簽發日期

30 June 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準，局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C173480
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C163709
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.002	1 kHz $\pm 1\%$	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

AUES

Appendix H

IMPACT MONITORING SCHEDULE

Impact Monitoring Schedule for Reporting Month – December 2017

Date		Dust Monitoring		Noise Monitoring
		1-hour TSP	24-hour TSP	
FRI	1-DEC-17		✓	
SAT	2-DEC-17			
SUN	3-DEC-17			
MON	4-DEC-17	✓		✓
TUE	5-DEC-17			
WED	6-DEC-17			
THU	7-DEC-17		✓	
FRI	8-DEC-17			
SAT	9-DEC-17	✓		
SUN	10-DEC-17			
MON	11-DEC-17			
TUE	12-DEC-17			
WED	13-DEC-17		✓	
THU	14-DEC-17			
FRI	15-DEC-17	✓		✓
SAT	16-DEC-17			
SUN	17-DEC-17			
MON	18-DEC-17			
TUE	19-DEC-17		✓	
WED	20-DEC-17			
THU	21-DEC-17	✓		✓
FRI	22-DEC-17			
SAT	23-DEC-17		✓	
SUN	24-DEC-17			
MON	25-DEC-17			
TUE	26-DEC-17			
WED	27-DEC-17	✓		✓
THU	28-DEC-17			
FRI	29-DEC-17		✓	
SAT	30-DEC-17			
SUN	31-DEC-17			

✓	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Air Quality	1-hour TSP	AM1 and AM2
	24-hour TSP	AM1 and AM2a
Construction Noise		NM1 and NM2

Impact Monitoring Schedule for next Reporting Period – January 2018

Date		Dust Monitoring		Noise Monitoring
		1-hour TSP	24-hour TSP	
MON	1-JAN-18			
TUE	2-JAN-18	✓		✓
WED	3-JAN-18			
THU	4-JAN-18		✓	
FRI	5-JAN-18			
SAT	6-JAN-18			
SUN	7-JAN-18			
MON	8-JAN-18	✓		✓
TUE	9-JAN-18			
WED	10-JAN-18		✓	
THU	11-JAN-18			
FRI	12-JAN-18			
SAT	13-JAN-18	✓		
SUN	14-JAN-18			
MON	15-JAN-18			
TUE	16-JAN-18		✓	
WED	17-JAN-18			
THU	18-JAN-18			
FRI	19-JAN-18	✓		✓
SAT	20-JAN-18			
SUN	21-JAN-18			
MON	22-JAN-18		✓	
TUE	23-JAN-18			
WED	24-JAN-18			
THU	25-JAN-18	✓		✓
FRI	26-JAN-18			
SAT	27-JAN-18		✓	
SUN	28-JAN-18			
MON	29-JAN-18			
TUE	30-JAN-18			
WED	31-JAN-18	✓		✓

✓	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Air Quality	1-hour TSP	AM1 and AM2
	24-hour TSP	AM1 and AM2a
Construction Noise		NM1 and NM2

DSD Contract No: DC/2013/09

*Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion
Phase 1A and Sewerage Works at Ping Che Road*

*27th Monthly Environmental Monitoring and Audit (EM&A) Report for December
2017*

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Appendix I

24-HOUR TSP AND CONSTRUCTION NOISE MONITORING DATA

24-Hr TSP Monitoring Data for AM1

DATE	SAMPLE NUMBER	ELAPSED TIME		CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m³/min)	AIR VOLUME (std m³)	FILTER WEIGHT (g)		24-Hr TSP (µg/m³)
		INITIAL	FINAL	MIN	MAX	AVG					INITIAL	FINAL	
1-Dec-17	21827	16531.87	16555.50	21	23	22.0	19.3	1020	0.47	666	2.6425	2.6868	66
7-Dec-17	21948	16555.50	16579.20	22	23	22.5	18.8	1020.4	0.49	700	2.5843	2.6554	102
13-Dec-17	21970	16579.20	16602.87	22	23	22.5	18.2	1020.3	0.49	700	2.5684	2.6384	100
19-Dec-17	22009	16602.87	16626.50	21	23	22.0	17.5	1021.1	0.47	671	2.5726	2.6116	58
23-Dec-17	22036	16626.50	16650.10	22	23	22.5	17.2	1020.8	0.49	701	2.5835	2.6161	47
29-Dec-17	22003	16650.10	16673.70	23	24	23.5	16.8	1020.2	0.54	762	2.5616	2.6052	57

24-Hr TSP Monitoring Data for AM2a

DATE	SAMPLE NUMBER	ELAPSED TIME		CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m³/min)	AIR VOLUME (std m³)	FILTER WEIGHT (g)		24-Hr TSP (µg/m³)
		INITIAL	FINAL	MIN	MAX	AVG					INITIAL	FINAL	
1-Dec-17	21828	13166.40	13190.40	38	42	40.0	19.3	1020	1.23	1771	2.6573	2.7721	65
7-Dec-17	21949	13190.40	13214.42	39	41	40.0	18.8	1020.4	1.23	1775	2.5737	2.8125	135
13-Dec-17	21971	13214.42	13238.42	39	42	40.5	18.2	1020.3	1.25	1803	2.5948	2.8022	115
19-Dec-17	22010	13238.42	13262.50	38	40	39.0	17.5	1021.1	1.20	1731	2.5733	2.6642	53
23-Dec-17	22035	13271.72	13295.72	42	42	42.0	17.2	1020.8	1.31	1888	2.5688	2.7627	103
29-Dec-17	21918	13295.72	13319.73	39	41	40.0	16.8	1020.2	1.24	1782	2.5444	2.6618	66

Noise Measurement Results (dB) of NM1

Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq _{30min}
4-Dec-17	9:51	51.8	59.4	49.6	52.9	60.7	51.4	53.6	61.6	52.8	53.9	59.6	52.5	54.8	58.7	52.6	52.6	59.3	51.8	53
15-Dec-17	13:18	55.6	60.2	50.3	54.1	58.3	50.1	54.6	60.7	50.2	55.6	61.2	51.4	54.9	60.7	50.5	54.1	58.7	51.6	55
21-Dec-17	9:42	53.2	58.7	49.4	54.5	58.2	49.6	54.1	60.7	50.3	54.8	60.6	50.7	53.3	58.1	50.6	53.7	58.9	51.4	54
27-Dec-17	9:39	53.3	54.4	46.1	55.8	57.8	47.5	52.5	53.6	46.6	53.2	54.0	45.0	54.2	55.9	46.9	55.2	56.1	46.4	54

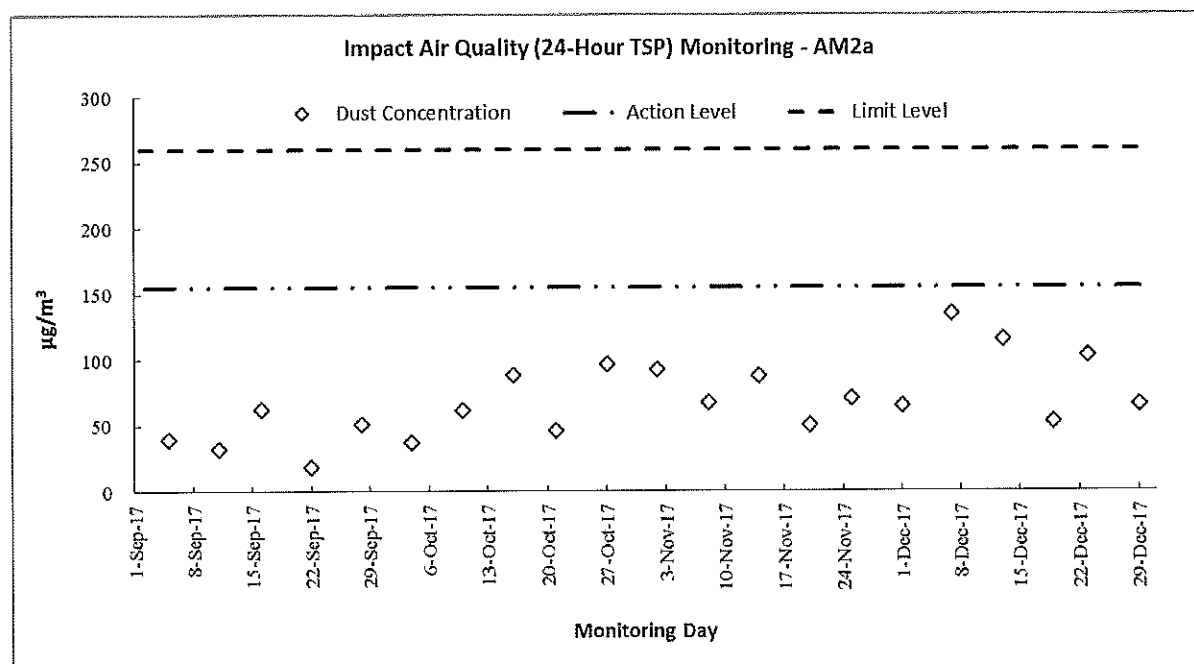
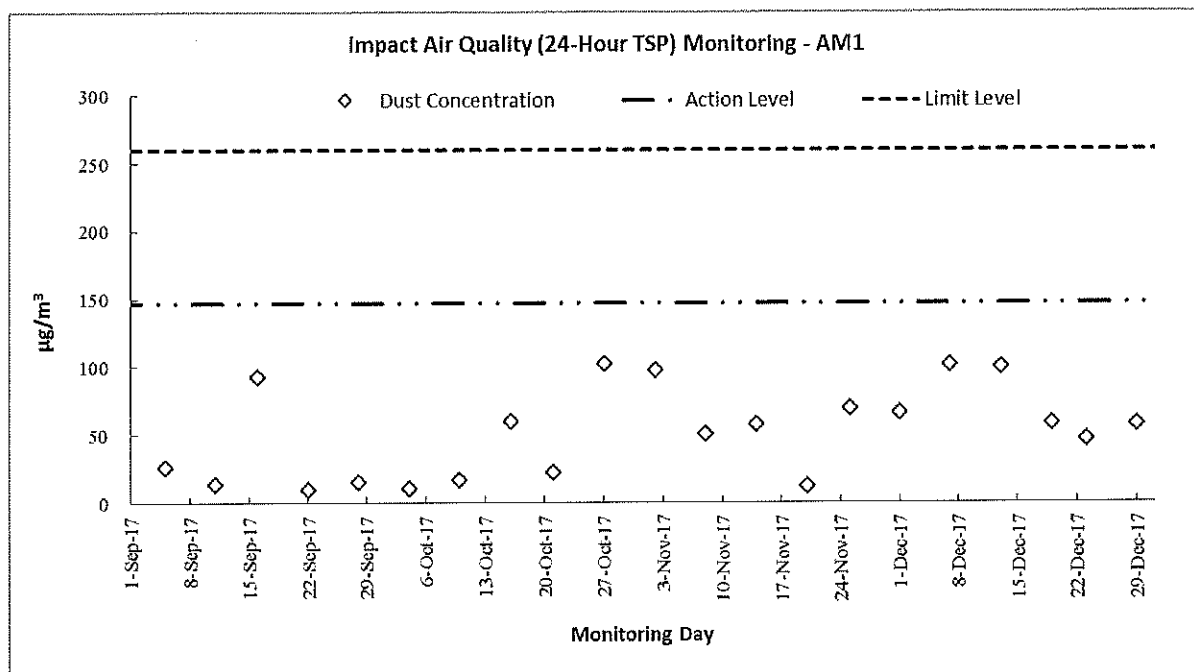
Noise Measurement Results (dB) of NM2

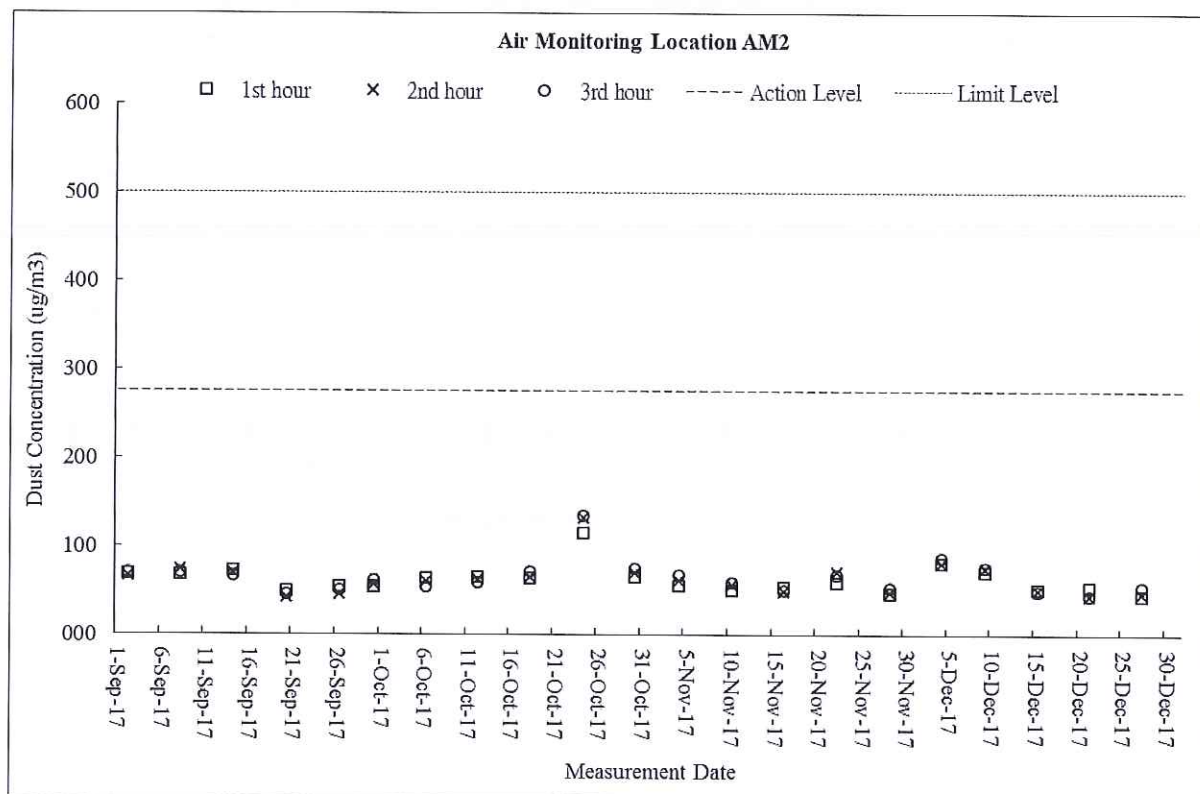
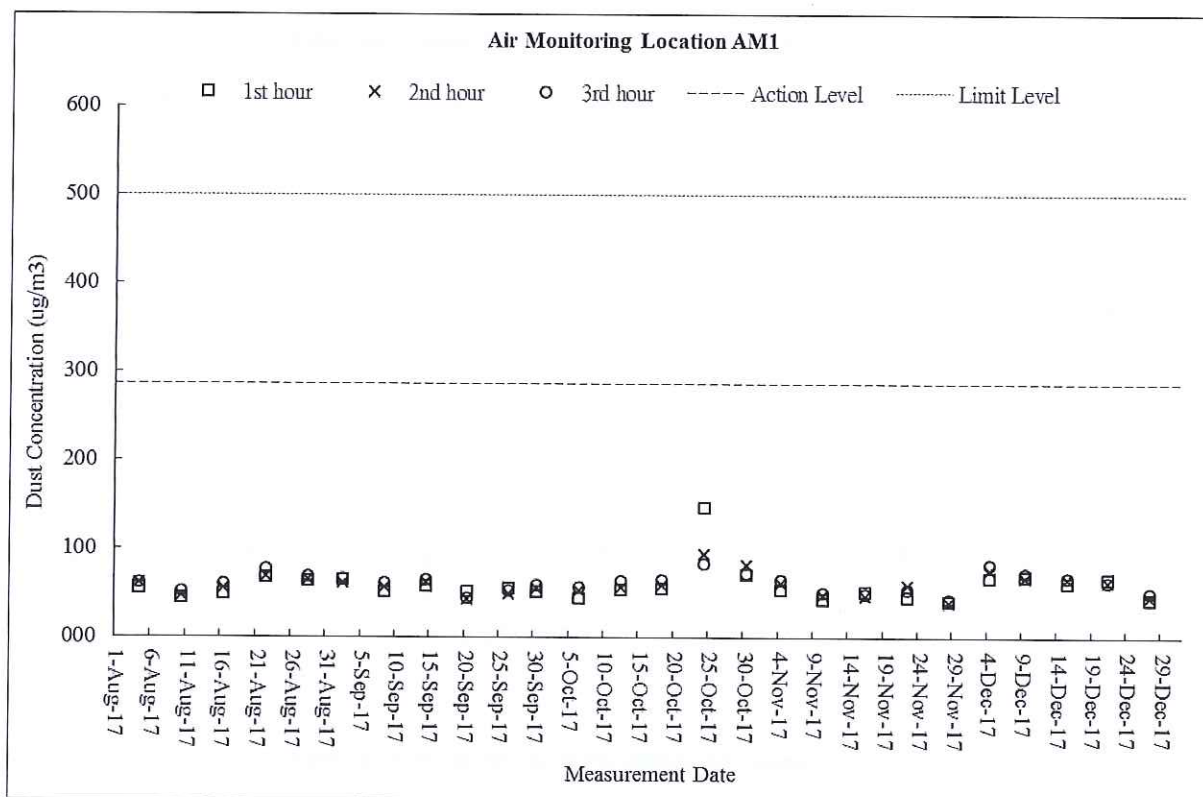
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq _{30min}
4-Dec-17	13:28	50.6	55.1	47.2	49.4	53.2	46.8	48.2	53.1	47.2	47.1	50.3	45.1	48.3	51.2	45.3	47.9	50.3	46.2	49
15-Dec-17	9:28	50.3	53.1	46.6	51.7	54.8	47.6	50.2	53.6	48.1	48.3	51.2	45.5	47.6	50.3	46.9	48.2	51.6	47.7	50
21-Dec-17	13:16	49.2	54.8	47.1	50.3	53.9	48.2	51.6	53.8	47.3	50.1	52.6	45.3	49.8	51.7	47.2	48.6	50.3	46.2	50
27-Dec-17	13:09	65.4	52.3	45.4	45.8	46.4	44.5	45.5	46.0	44.3	46.3	48.9	44.2	48.6	48.8	43.7	44.9	46.9	42.7	58

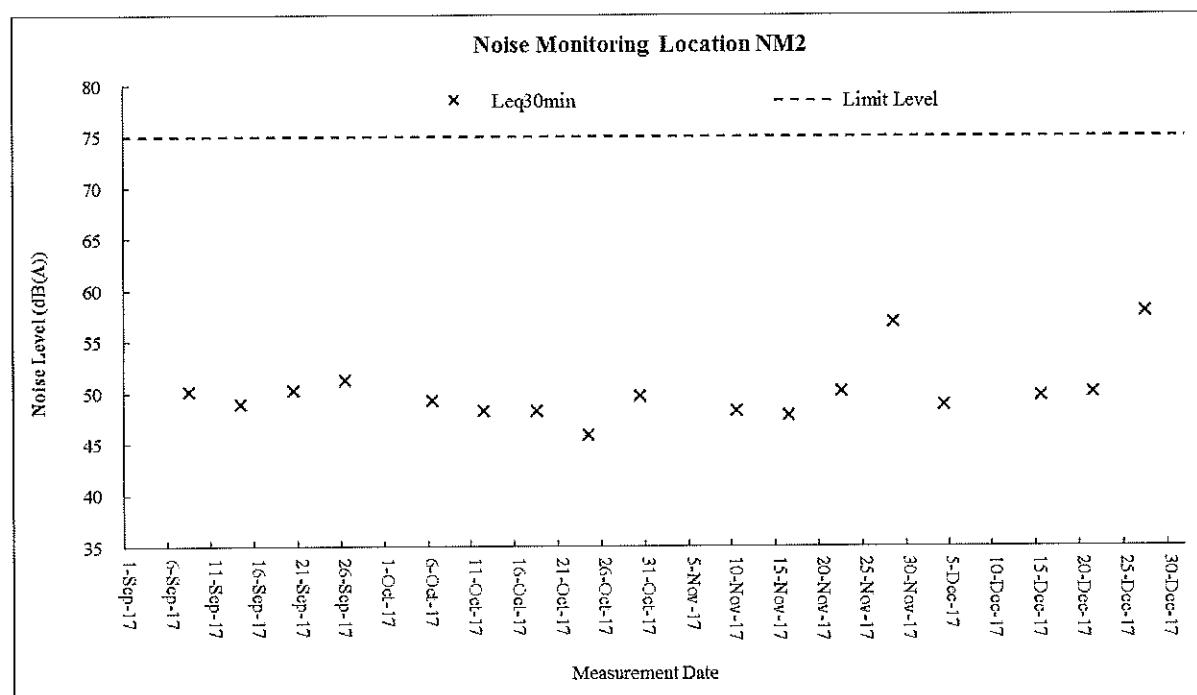
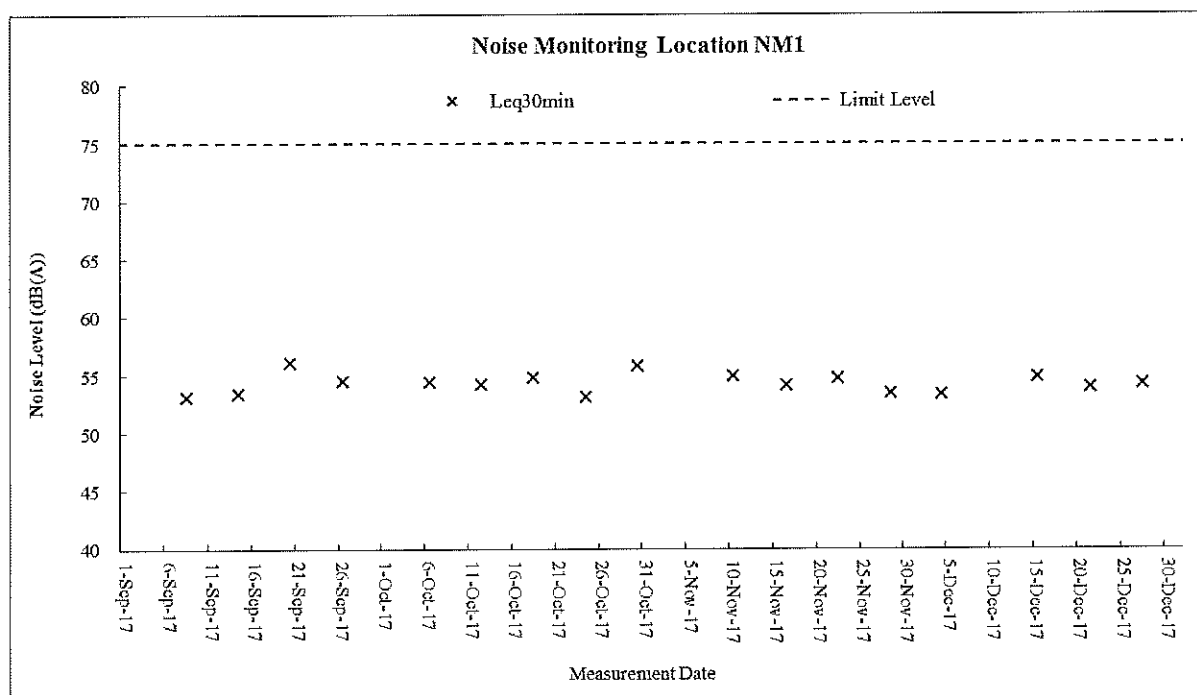
Remark: Loading and unloading operation was noted during the first five-minute of noise monitoring at NM2 on 27 December 2017 which caused the 1st Leq(5min) higher than the corresponding L10

Appendix J

GRAPHICAL PLOTS

Air Quality – 24-Hour TSP

Air Quality – 1-Hour TSP

Construction Noise

Appendix K

METEOROLOGICAL DATA DURING THE REPORTING MONTH (TA KWU LING STATION)

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Dec-17	Fri	Fine and dry in the afternoon.	Trace	21.4	11.3	64.7	N/NW
2-Dec-17	Sat	Cloudy periods tonight.	0	19.8	10.2	60	NW
3-Dec-17	Sun	Moderate east to northeasterly winds	0	20.4	3.7	73.5	N/NW
4-Dec-17	Mon	Cloudy periods tonight.	0	18.9	8.2	72.2	N/NW
5-Dec-17	Tue	Moderate east to northeasterly winds	0	16.8	6.5	68.7	N/NW
6-Dec-17	Wed	Cloudy periods tonight.	0	18.5	6.4	67	E/NE
7-Dec-17	Thu	Fine and very dry. Moderate to fresh northerly winds.	0	16.9	4.5	68	E/NE
8-Dec-17	Fri	Fine and very dry. Moderate to fresh northerly winds.	0	16.9	11.5	41.7	N
9-Dec-17	Sat	Moderate to fresh easterly winds.	0	13.5	11.0	50	NW
10-Dec-17	Sun	Moderate to fresh easterly winds.	0	15.3	5.3	52	N/NW
11-Dec-17	Mon	Moderate east to northeasterly winds	0	17.8	6.5	54.2	N/NW
12-Dec-17	Tue	Fine and dry in the afternoon.	Trace	18.1	5.5	62.5	N/NW
13-Dec-17	Wed	Cloudy periods tonight.	Trace	19.1	7.4	71	E/NE
14-Dec-17	Thu	Moderate east to northeasterly winds	Trace	20.4	8	69	E/NE
15-Dec-17	Fri	Cloudy periods tonight.	0	20.9	7.3	73.5	E/NE
16-Dec-17	Sat	Fine and very dry. Moderate to fresh northerly winds.	0	14.6	7.2	56	NE
17-Dec-17	Sun	Fine and very dry. Moderate to fresh northerly winds.	0	10.7	13.9	55.5	N/NW
18-Dec-17	Mon	Fine and very dry. Moderate to fresh northerly winds.	0	11.8	9.8	46.2	N/NW
19-Dec-17	Tue	Fine and very dry. Moderate to fresh northerly winds.	0	12.9	13.5	31.7	N
20-Dec-17	Wed	Fine and very dry. Moderate to fresh northerly winds.	0	14.6	14.4	27	N
21-Dec-17	Thu	Fine and dry in the afternoon.	0	12.5	9.7	48.5	E/NE
22-Dec-17	Fri	Cloudy periods tonight.	0	16.2	8	59.2	E/NE
23-Dec-17	Sat	Moderate east to northeasterly winds	0	19.4	9	49.5	NE
24-Dec-17	Sun	Cloudy periods tonight.	0	18.7	10	57.1	E
25-Dec-17	Mon	Fine and very dry. Moderate to fresh northerly winds.	0	17.6	8.7	56.2	NE
26-Dec-17	Tue	Fine and very dry. Moderate to fresh northerly winds.	0	20.1	9.1	60.2	E
27-Dec-17	Wed	Moderate to fresh easterly winds.	0	18.5	6.5	64.2	E/NE
28-Dec-17	Thu	Moderate to fresh easterly winds.	Trace	18	5	74	E/NE
29-Dec-17	Fri	Moderate to fresh easterly winds.	0	19.9	7.2	70	E/NE
30-Dec-17	Sat	Bright periods in the afternoon.	0	19.5	6.4	71.0	NE
31-Dec-17	Sun	Mainly cloudy with one or two light rain patches.	Trace	16.8	5.7	80	E

Appendix L

MONTHLY SUMMARY WASTE FLOW TABLE

Monthly Summary Waste Flow Table

Department:	Drainage Services Department	Contract No.:	DC/2013/09
Contract Title:	Advance Works for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A and Sewerage Works at Ping Che Road		
Commencement Date:	21-Jul-15	Estimated completion Date:	19-Aug-16
		Estimated Contract Sum:	1.56M

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m ³)	Hard Rock and Large Broken Concrete (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuse (in '000m ³)
Jan 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Feb 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mar 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Apr 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
May 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
June 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
July 15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug 15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep 15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
Oct 15	0.035	0.028	0.000	0.000	0.007	0.000	43.790	0.000	0.000	0.000	0.014
Nov 15	1.119	0.263	0.001	0.000	0.855	0.273	44.170	0.000	0.000	0.000	0.000
Dec 15	1.300	0.744	0.001	0.000	0.555	6.123	25.550	0.000	0.000	0.000	0.026
Total	2.454	1.035	0.002	0.000	1.417	6.396	113.510	0.000	0.000	0.000	0.051

Notes: (1) The waste flow table should cover the whole construction period of the Contract.

(2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.

(3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.

(4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.

(5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(6) Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table

Department: Drainage Services Department Contract No.: DC/2013/09
 Contract Title: Advance Works for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A and Sewerage Works at Ping Che Road
 Commencement Date: 21-Jul-2015 Estimated completion Date: 19-Aug-2017 Estimated Contract Sum: 1.56M

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m ³)	Hard Rock and Large Broken Concrete (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuse (in '000m ³)
Jan-16	0.335	0.111	0.060	0.000	0.164	0.000	0.000	0.000	0.000	0.000	0.000
Feb-16	2.377	0.089	0.050	2.228	0.010	0.000	0.000	0.000	0.000	0.000	0.008
Mar-16	0.141	0.015	0.050	0.000	0.076	0.000	0.000	0.000	0.000	0.000	0.007
Apr-16	0.160	0.010	0.050	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.023
May-16	0.334	0.000	0.010	0.000	0.324	0.000	0.000	0.000	0.000	0.000	0.026
Jun-16	2.517	0.024	0.300	0.000	2.193	0.000	0.000	0.000	0.000	0.000	0.013
Sub-total	5.863	0.249	0.520	2.228	2.866	0.000	0.000	0.000	0.000	0.000	0.076
Jul-16	3.284	0.000	0.150	0.000	3.134	0.000	0.000	0.000	0.000	0.000	0.002
Aug-16	0.396	0.005	0.100	0.000	0.291	0.000	4.720	0.000	0.000	0.000	0.012
Sep-16	0.529	0.000	0.100	0.000	0.429	0.000	0.000	0.000	0.000	0.000	0.008
Oct-16	1.151	0.000	0.300	0.000	0.851	0.000	0.000	0.000	0.000	0.000	0.013
Nov-16	0.266	0.000	0.100	0.000	0.166	0.000	14.700	0.000	0.000	0.000	0.028
Dec-16	0.520	0.022	0.100	0.000	0.398	0.000	0.000	0.000	0.000	0.000	0.019
Total	12.008	0.275	1.370	2.228	8.135	0.000	19.420	0.000	0.000	0.000	0.158

Notes: (1) The waste flow table should cover the whole construction period of the Contract

(2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.

(3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.

(4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.

(5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Monthly Summary Waste Flow Table

Department: Drainage Services Department Contract No.: DC/2013/09
 Contract Title: Advance Works for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A and Sewerage Works at Ping Che Road
 Commencement Date: 2015-7-21 Estimated completion Date: 2017-8-19 Estimated Contract Sum: 1.56M

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m ³)	Hard Rock and Large Broken Concrete (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuse (in '000m ³)
Jan	0.304	0.089	0.100	0.000	0.115	0.000	0.000	0.000	0.000	0.000	0.023
Feb	0.660	0.000	0.400	0.000	0.260	0.000	1.830	0.000	0.000	0.000	0.051
Mar	0.325	0.076	0.200	0.000	0.050	0.000	1.190	0.015	0.000	0.000	0.029
Apr	1.100	0.000	0.200	0.000	0.900	0.000	0.620	0.000	0.000	0.000	0.029
May	0.600	0.000	0.100	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.019
June	0.600	0.000	0.200	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.031
Sub-total	3.590	0.165	1.200	0.000	2.225	0.000	3.640	0.015	0.000	0.000	0.182
July	0.344	0.000	0.100	0.000	0.244	0.000	0.000	0.000	0.000	0.000	0.041
Aug	0.461	0.011	0.400	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.067
Sep	0.602	0.016	0.000	0.000	0.586	0.000	0.000	0.000	0.000	0.000	0.082
Oct	0.515	0.106	0.100	0.000	0.309	0.000	5.060	0.000	0.000	0.000	0.063
Nov	0.331	0.062	0.000	0.000	0.268	0.000	0.000	0.000	0.000	0.000	0.126
Dec	0.234	0.068	0.000	0.000	0.166	0.000	0.370	0.059	0.001	0.000	0.100
Total	6.077	0.428	1.800	0.000	3.848	0.000	9.070	0.074	0.001	0.000	0.662

Notes: (1) The waste flow table should cover the whole construction period of the Contract.

(2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.

(3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.

(4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.

(5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Appendix M

IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES (ISEMM)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Air Quality Impact						
S2.4.1.3	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:</p> <ul style="list-style-type: none"> Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty material remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; 	To minimize the dust impact	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Air Pollution Control Ordinance (APCO) and Air Pollution Control (Construction Dust) Regulation

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Air Quality Impact	<ul style="list-style-type: none"> Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 					

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Noise Impact						
S3.4.1.1	Use of movable barrier, enclosure, acoustic mat and quiet plant. Use of wooden frames barrier with a small-cantilevered upper portion of superficial density not less than 14kg/m ² on a skid footing with 25mm thick internal sound absorptive lining.	To minimize construction noise impact arising from the Project at the affected noise sensitive receivers (NSRs)	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	ELAO-TM, Noise Control Ordinance (NCO)
S3.4.1.2	Good Site Practice: <ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. Mobile plant, if any, should be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction period of Advance Works and Main Works of Phase 1A	ELAO-TM, NCO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Ecological Impact						
S4.2.1.1	Solid dull green noise/visual barriers of at least 2m high shall be erected and maintained between active works area and all areas of ecological importance.	Minimize noise and human disturbances during construction phase.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.2	Avoid unnecessary lighting.	Minimize mortality impacts on birds.	Design Contractor/ Plant Operator	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.3	Good construction site practice to minimise dust generation should be followed on all construction sites. Measures to avoid, minimise and mitigate impacts on air quality are detailed in this schedule	Minimize dust generation from construction sites.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.4	<p>The following measures to avoid, minimise and mitigate impact on water quality during construction phase shall be implemented</p> <ul style="list-style-type: none"> • Temporary sewerage and drainage to be designed and installed to collect wastewater and prevent it from entering water bodies; • Proper locations well away from nearby water bodies should be used for temporary storage of materials (i.e. equipment, filling materials, chemicals and fuel) and temporary stockpiles of construction debris and spoil, and these should be identified before commencement of works; • To prevent muddy water entering nearby water bodies, work sites close to nearby water bodies should be isolated, using such items as sandbags or silt curtains with lead edge at bottom and properly supported props. Other protective measures should also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the work sites; • Construction debris and spoil should be covered and/or properly disposed of as soon as possible to avoid these being washed into nearby water bodies; • Proper locations for discharge outlets of temporary wastewater treatment facilities well away from sensitive receivers should be identified; 	Avoid, minimise and mitigate impact on water quality	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
	Ecological Impact <ul style="list-style-type: none"> Adequate lateral support should be erected where necessary in order to prevent soil/mud from slipping into water bodies; Site boundaries should be clearly marked and any works beyond the boundary strictly prohibited; Regular water monitoring and site audit should be carried out at adequate points along any watercourses where construction works are underway upstream within their catchments and also on the Ng Tung, Sheung Yue and Shek Sheung Rivers. If the monitoring and audit results show that pollution occurs, adequate measures including temporarily cessation of works should be considered; Excavation profiles should be properly designed and executed with attention to the relevant requirements for environment, health and safety; Where soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table by installing well points or similar means; Stockpiling sites should be lined with impermeable sheeting and bundled. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of contaminated soil to minimize contaminated runoff and construction materials should be properly covered and located away from nearby water bodies; and Supply of suitable clean backfill material after excavation, if required. Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated run-off, and truck bodies and tailgates should be sealed to prevent discharge during transport or during wet season; Speed control for the trucks carrying contaminated materials should be enforced; Vehicle wheel washing facilities at construction sites' exit points should be established and used, where necessary; and Other measures as detailed in this schedule. 					

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Water Quality Impact						
S5.2.2.1	Construction Site Runoff Practices and measures provided in the Practice Note for Professional Persons on Construction Site Drainage, (PROPECC PN1/94) should be followed where applicable.	Control construction runoff	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO
S5.2.2.2 – S5.2.2.3	<p>Sewage from Workforce</p> <ul style="list-style-type: none"> • Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. • 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 construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures 	Handling of site sewage	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Waste Management						
S6.2.2.1	<p>Good Site Practices and Waste Reduction Measures:</p> <ul style="list-style-type: none"> Nomination of an approved person, such as a site manager, to be responsible for the implementation of 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 site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; Provision of sufficient waste disposal points and regular collection for disposal; 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; An Environmental Management Plan (EMP) should be prepared by the contractor and submitted to the Engineer for approval. 	Minimize waste generation during construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal Ordinance (WDO)
S6.2.3.1	<p>Waste Reduction Measures:</p> <ul style="list-style-type: none"> Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; Proper storage and site practices to minimize the potential for damage and contamination of construction materials; Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); and Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 	Reduce waste generation	Contractor	Work Sites	Prior to the commencement of construction of Advance Works and Main Works of Phase 1A	WDO
S6.2.4.1 - S6.2.4.2	<p>Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> Waste, such as soil, should be handled and stored well to ensure secure 	Minimize waste impacts arising from waste storage	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	WDO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Waste Management						
S6.2.5.2	<p>containment, thus minimizing the potential of pollution;</p> <ul style="list-style-type: none"> Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and Different locations should be designated to stockpile each material to enhance reuse. Remove waste in timely manner; Employ the trucks with cover or enclosed containers for waste transportation; Obtain relevant waste disposal permits from the appropriate authorities; and Disposal of waste should be done at licensed waste disposal facilities. <p>C&D Materials from Site Formation</p> <ul style="list-style-type: none"> Maintain temporary stockpiles and reuse excavated fill material for backfilling; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt “selective demolition” technique to demolish the existing structure and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; and Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified. 					Land (Miscellaneous Provisions) Ordinance, WDO, ETWB TCW No. 19/2005
S6.2.5.3	<p>C&D Material from Buildings Demolition and New Building Construction</p> <ul style="list-style-type: none"> The Contractor should recycle as much as possible of the C&DM on-site. Public fill and C&DM waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. For example, concrete and masonry can be crushed and used as fill, and steel reinforcing bar can be used by scrap steel mills. Different areas of the work sites should be designated for such segregation and storage. The use of wooden hoardings shall not be allowed. An alternative material, such as metal, aluminium or alloy etc, could be used. Government has developed a charging policy for the disposal of waste to landfill at present. It will provide additional incentive to reduce the volume of generated waste and ensure proper segregation to allow 	Minimize waste impacts from excavated and C&D materials	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO, ETWB TCW No. 19/2005

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Waste Management						
	reuse of the inert material on site when implemented. <ul style="list-style-type: none"> In order to minimize the impacts of the demolition works, the generated wastes must be cleared as quickly as possible after demolition. Therefore, the demolition and clearance works should be undertaken simultaneously. To facilitate proper segregation of inert and non-inert C&D material arising from demolition works, selective demolition method should be adopted. 					
S6.2.5.4	Chemical Waste <ul style="list-style-type: none"> If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation 	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical General) Regulation, Code of Practice on the Labelling and Storage of Chemical Waste
S6.2.5.5	General Refuse <ul style="list-style-type: none"> General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. A reputable waste collector should be employed to remove general refuse on a daily basis. 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical General) Regulation, Code of Practice on the Labelling and Storage of Chemical Waste

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Landscape and Visual						
S7.3.1.1	<p>Good Site Practices</p> <ul style="list-style-type: none"> For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to. With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites. 	Minimize the impact to the landscape and visual	Contractor	Work Sites	Prior to construction and construction phase	
S7.3.2.1	<p>MM4 - Tree Protection & Preservation</p> <ul style="list-style-type: none"> Existing trees to be retained within the Project Site should be carefully protected during construction. In particular Old and Valuable Trees (OVTs) will be preserved according to ETWB TC (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained. 	Protect and Preserve Trees	Designer / Contractor	Work Sites	Prior to construction and construction phase	ETWB TCW No. 10/2013, 29/2004 and 3/2006
S7.3.2.1	<p>MM5 - Tree Transplantation</p> <ul style="list-style-type: none"> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final 	Transplant Trees where suitable for transplantation	Designer / Contractor	Work Sites where possible. Otherwise consider offsite locations	Prior to construction, construction phase and operation phase	WB TCW No. 10/2013, 3/2006 and 2/2004

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Landscape and Visual						
	locations of transplanted trees should be agreed prior to commencement of the work.					
S7.3.2.1	MM17 - Light Control <ul style="list-style-type: none"> Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase. Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase. 	To minimize glare impact to adjacent VSRs.	Designer / Contractor	Work Sites and/or the Plant	Construction phase and operation phase	

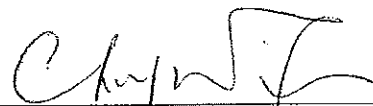
Jardine Engineering Corporation Ltd.

**Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities
for Shek Wu Hui Sewage Treatment Works –
Further Expansion Phase 1A –
Advance Works and Ng Chow South Road
Sewage Pumping Station**

**Monthly Environmental
Monitoring and Audit Report
December 2017**

(Version 1.0)

Certified By


(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
DSD	Drainage Services Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan
SCISTW	Shek Wu Hui Sewage Treatment Works

EXECUTIVE SUMMARY

Introduction

1. This is the 3rd Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract No. DE/2014/01 “Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station” (The Project) which documents the key information of EM&A and environmental monitoring works undertaken by other Contract at the Shek Wu Hui Sewage Treatment Works under Phase 1A with same Environmental Permit (Permit No. FEP-01/474/2013).
2. The site activities undertaken in the reporting month included:
 - Mechanical installation of lifting appliance at G/F, Membrane Facilities Building.
 - Provision of lighting and small power installation for 11kV Switchroom.
 - Installation of temporary generator set.

Environmental Monitoring Works

3. The environmental monitoring works of the Project were conducted by the ET of Contract DC/2013/09 at the SWHSTW under Phase 1A with same Environmental Permit in accordance with the Updated EM&A Manual for Contract DE/2014/01 which has been submitted and verified by IEC. The current impact monitoring methodology conducted by DC/2013/09 under the requirements of the Updated EM&A Manual for Shek Wu Hui Sewage Treatment Works, are also applicable for the installation works of DE/2014/01 since the two Contracts have shared the same site areas and will execute their works under the same EP.
4. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
5. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

Table I Summary Table for Non-compliance Recorded in the Reporting Month

Monitored By	Monitoring Station	Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
			Action Level	Limit Level	Action Level	Limit Level	
DC/2013/09	AM1	1-hr TSP	0	0	0	0	N/A
		24-hr TSP	0	0	0	0	N/A
	AM2	1-hr TSP	0	0	0	0	N/A
	AM2a	24-hr TSP	0	0	0	0	N/A
	NM1	Noise	0	0	0	0	N/A
	NM2		0	0	0	0	N/A

1-hour TSP Monitoring

6. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

7. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

8. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A include the Environmental Permit (EP no. FEP-01/474/2013); Registered as a Chemical Waste Producer and Billing account for Disposal of Construction Waste for the Project.

Environmental Mitigation Implementation Schedule

10. According to the Updated EM&A Manual, air quality, noise and waste management would be the key environmental issues and mitigation measures shall be implemented during the construction phase. Details of the implementation of mitigation measures are provided in the **Appendix F**.

Key Information in the Reporting Month

11. Summary of key information in the reporting month is tabulated in **Table II**

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Status of submissions under EP	---	---	---	---	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Site Inspection Conducted by Government Department

12. No site inspection for Contract DE/2014/01 was conducted by Government Department in the reporting month.

Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons

13. No environmental complaint, prosecution, reporting changes and notification of summons were received or reported for the Project in the reporting month.
14. There were no environmental complaint and prosecution received since the commencement of the Project. The Complaint Log is presented in **Appendix G**.
15. No notification of summons and prosecution was received by the Contractor in the reporting month.

Future Key Issues:

16. Major site activities for the coming two months include:
- Provision of switchboards in LV switch room.
 - Provision of switchboards in 11kV HV switch room.
 - Mechanical Installation in MBR Pre-treatment Screen Chamber.
 - Mechanical Installation in Bioreactor No.1 (BR1).
17. The environmental concerns in the coming months are mainly on chemicals storage,; the efficiency and maintenance of drainage system, noise from the operation of construction machinery on-site, waste management and the maintenance of equipment to prevent oil leakage within the construction work areas.

1. INTRODUCTION

Background

- 1.1 The Project ‘Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station’ under Contract No: DE/2014/01 mainly comprises the Design, manufacture, supply, delivery, installation, inspection, testing and commissioning of E&M installations for the Advance Works in the SWHSTW. The general location plan of the Project is shown in **Figure 1**.
- 1.2 The Project is under North East New Territories New Development Areas and is part of the designated project with Register No. : AEIAR-175/2013. The current works under the Project and other Contracts at SWHSTW are covered by the same Environmental Permit (Permit No. FEP-01/474/2013), which was issued on 23rd January 2014 by the Environmental Protection Department (hereinafter called EPD) to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.
- 1.3 The environmental monitoring works on air quality and noise were covered by the ET of Contract DC/2013/09 for the Project.
- 1.4 The Jardine Engineering Corporation, Limited was commissioned by the DSD to undertake the construction of the Contract No. DE/2014/01 “Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station”.
- 1.5 The site activities undertaken in the reporting month included:
 - Mechanical installation of lifting appliance at G/F, Membrane Facilities Building.
 - Provision of lighting and small power installation for 11kV Switchroom.
 - Installation of temporary generator set.
- 1.6 Cinotech Consultants Limited was commissioned and appointed by The Jardine Engineering Corporation Limited as the Environmental Team (ET) of Contract No. DE/2014/01 under Condition 2.1 of the FEP. The Environmental Monitoring and Audit (EM&A) works were conducted and reported during the reporting month according to the Updated EM&A Manual of this designated project.
- 1.7 This is the 3rd monthly EM&A report summarizing the EM&A works conducted for the Project in December 2017.

Project Organizations

- 1.8 The contacts of the Project are shown in **Table 1.1** and the Project Organization Chart is shown in **Figure 4**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.
Drainage Service Department	Resident Site Engineer	Mr. Fong Mo	Resident Engineer	2594 7329

Party	Role	Name	Position	Phone No.
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089
		Ms. Cecilia Yang	Project Coordinator	2157 3880
ANewR	Independent Environmental Checker	Mr. Adi Lee	Independent Environmental Checker	2618 2836
The Jardine Engineering Corporation, Limited	Contractor	Mr. Kim Hung Lau	Project Manager	2947 1125
		Mr. George Ng	Environmental Officer	2947 1125

Summary of EM&A Requirements

- 1.9 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:
- All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event Action Plans;
 - Environmental mitigation measures, as recommended in the project EIA study final report; and
 - Environmental requirements in contract documents.
- 1.10 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 4** of this report.
- 1.11 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely air quality, noise and audit works conducted for the Project in December 2017. For the methodology and QA/QC procedures of the monitoring parameters, please refer to the respective monthly reports for the other contract at SWHSTW.

2. AIR QUALITY

Monitoring Requirements

- 2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

- 2.2 Three designated monitoring stations, AM1, AM2 and AM2a were selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations and **Figure 2** indicated their positions in relation to the site boundary.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
AM1	DC/2013/09	No. 31 Wai Loi Tsuen
AM2		Fu Tei Au
AM1		No. 31 Wai Loi Tsuen
AM2a		RE's Site Office

Monitoring Equipment

- 2.3 The details of the monitoring equipment and copies of the calibration certificates used during the reporting month could be referred to the monthly EM&A reports of Contract DC/2013/09.

Monitoring Parameters, Frequency and Duration

- 2.4 **Table 2.2** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period could refer to the respective monthly reports.

Table 2.2 Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency
AM1	1-hour TSP	0700-1900 hrs	At least three times every 6 days
AM2			
AM1	24-hour TSP	0000-2400 hrs	At least once every 6 days
AM2a			

Monitoring Methodology and QA/QC Procedure

- 2.5 The monitoring methodology and QA/QC procedure could be referred to the monthly report of Contract DC/2013/09.

Results and Observations

- 2.6 The monitoring results at AM1, AM2 and AM2a in reporting month could be referred to the monthly report of Contract DC/2013/09. The monitoring results has been checked by

the ET of Contract DC/2013/09 and verified by the IEC.

- 2.7 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix B**.
- 2.8 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix B**.
- 2.9 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results could be referred to Appendix I and Appendix J of the monthly report of Contract DC/2013/09.
- 2.10 According to field observations during site inspection, identifiable dust sources near the monitoring stations were mainly from construction works and vehicles movement operating for the Project.

3. NOISE

Monitoring Requirements

- 3.1 Two noise monitoring station, namely NM1 and NM2 were designated in the Updated EM&A Manual for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

- 3.2 Noise monitoring was conducted at the designated monitoring stations as listed in **Table 3.1** and **Figure 3** indicated their positions in relation to the site boundary

Table 3.1 Location of Noise Monitoring Stations

Monitoring Station	Monitored By	Location of Measurement
NM1	DC/2013/09	No. 31 Wai Loi Tsuen
NM2		Fu Tei Au

Monitoring Equipment

- 3.3 The details of the monitoring equipment and copies of the calibration certificates used during the reporting month could be referred to the monthly EM&A reports of Contract DC/2013/09.

Monitoring Parameters, Frequency and Duration

- 3.4 **Table 3.2** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule for the reporting period could refer to the respective monthly reports.

Table 3.2 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NM1	L ₁₀ (30 min.) dB(A) L ₉₀ (30 min.) dB(A) L _{eq} (30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week
NM2			

Monitoring Methodology and QA/QC Procedures

- 3.5 The monitoring methodology and QA/QC procedure could be referred to the monthly report of Contract DC/2013/09.

Results and Observations

- 3.6 The monitoring results at NM1 and NM2 in the reporting month could be referred to the monthly report of Contract DC/2013/09. The monitoring results has been checked by the ET of Contract DC/2013/09 and verified by the IEC.

- 3.7 The monitoring results and graphical presentations could be referred to Appendix I and Appendix J of the monthly report of Contract DC/2013/09.
- 3.8 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in **Appendix B**.
- 3.9 The major noise sources identified at the designated noise monitoring stations were mainly from construction works and vehicles movement operating for the Project.

4. ENVIRONMENTAL AUDIT

Site Audits

- 4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix C**.
- 4.2 Site audits were conducted on 7th, 15th, 19th, 27th December 2017 by ET after the commencement of construction works for the Contract. A joint site audit with the representative of IEC was carried out on 27th December 2017. The details of observations during site audit can refer to **Table 4.1**.

Implementation Status of Environmental Mitigation Measures

- 4.3 Details of the implementation of mitigation measures are provided in the **Appendix F**.
- 4.4 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.1**.

Table 4.1 Observations of Site Audit

Parameters	Date	Ref. Number	Observations	Follow Up Action
Water Quality	N/A	N/A	--	--
Air Quality	7/12/2017	171207-R01	Contractor was reminded to provide wheel washing to the vehicles at the site exit in order to keep site entrance clean and free from dust.	Wash water for wheel washing was provided. JEC has reminded subcontractors to wash wheels of vehicles before the vehicles leave site.
Noise	N/A	N/A	--	--
Waste/ Chemical Management	N/A	N/A	--	--
Permit/ Licenses	N/A	N/A	--	--

Review of Environmental Monitoring Procedures

- 4.5 The monitoring works was conducted by the monitoring teams of Contracts DC/2013/09. The monitoring procedures were reviewed by its respective ET.

Status of Environmental Licensing and Permitting

- 4.6 All permits/licenses obtained for the Contract DE/2014/01 are summarized in **Table 4.2**.

Table 4.2 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit				
FEP-01/474/2013	23/1/2014	N/A	The FEP was approved on 23/1/2014	Valid
Registered Chemical Waste Producer				
WPN5213-624-T3685-01	3/7/2017	N/A	The application was approved on 3/7/2017	Valid
Billing Account for Disposal of Construction Waste				
A/C No.7024165	4/2/2016	N/A	The application was approved on 4/2/2016	Valid

Status of Waste Management

- 4.7 The amount of wastes generated by the activities of the Project in the reporting month is shown in **Appendix D**.

Implementation Status of Event Action Plans

- 4.8 The Event Action Plans for air quality and noise are presented in **Appendix E**.

1-hr TSP

- 4.9 No Action/Limit Level exceedance was recorded.

24-hr TSP

- 4.10 No Action/Limit Level exceedance was recorded.

Construction Noise

- 4.11 No Action/Limit Level exceedance was recorded.

Landscape and Visual

- 4.12 No non-compliance was recorded.

Site Inspection Conducted by Government Department

- 4.13 No site inspection for Contract DE/2014/01 was conducted by Government Department in the reporting month.

Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons

- 4.14 No environmental complaint, prosecution, reporting changes and notification of summons were received or reported for the Project in the reporting month.
- 4.15 There were no environmental complaint and prosecution received since the commencement of the Project. The Complaint Log is presented in **Appendix G**.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key environmental issues in the coming month include:

- Accumulated materials to be recycled on-site;
- Noise from operation of equipment and machinery on-site;
- Storage of chemicals/fuel and chemical waste/waste oil on-site;
- Silty surface runoff generated from the site area during raining; and
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities.

Monitoring Schedule for the Next Month

- 5.2 The tentative environmental monitoring schedules for the next reporting month are shown in the monthly reports of Contract DC/2013/09 (Appendix H).

Construction Program for the Next Month

- 5.3 The tentative construction program is provided in **Appendix H**.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring and audit works were performed in the reporting month for the Project. The results were checked and reviewed by the ET of Contract DC/2013/09.

1-hour TSP Monitoring

- 6.2 The monitoring works for the Project were covered by the ET of Contract DC/2013/09. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

- 6.3 The monitoring works for the Project were covered by the ET of Contract DC/2013/09. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

- 6.4 The monitoring works for the Project were covered by the ET of Contract DC/2013/09. All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

- 6.5 Weekly environmental site audits were conducted by the ET of Contract No. DE/2014/01 at the site area of Contract No. DE/2014/01 during the reporting month. No non-compliance was recorded.

Complaint, notification of summons and Prosecution

- 6.6 No environmental complaint, notification of summons and prosecution was received in the reporting month.

Recommendations for Future Reporting Months:

- 6.7 The following recommendations were made for future reporting months:

Air Quality

- To regularly maintain the machinery and vehicles on site;
- To follow up any exceedance caused by the construction works;
- Non-Road Mobile Machinery (NRMM) labels must be demonstrated on the registered equipment for inspection.

Noise

- To inspect the noise source inside the site;

- To follow up any exceedance caused by the construction works;
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.
- To provide adequate lubricant on mechanical equipment to reduce frictional noise; and
- To well maintain the mechanical equipment/ machineries to avoid abnormal noise nuisance.

Water Quality

- To identify any discharge of wastewater from the construction site;
- To avoid blockage of U channel and drainage system by sediment;
- To avoid water accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed; and
- To avoid spoilage of run-off from construction site to public area.
- The discharge quality must meet the requirements specified in the discharge licence.

Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide proper storage area or drip trays for oil and chemical containers on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment;
- To avoid improper handling or storage of oil drum on site.

FIGURES

NOTES :

1. GENERAL NOTES REFER TO DRAWING NO. DEM1619/001.
2. LEGEND REFER TO DRAWING NO. DEM1619/001.
3. DRAINAGE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE PROJECT CONSTRUCTION.



WORKING AREA OF ADVANCE WORKS

REV.	DATE	DESCRIPTION	BY	CHECKED
1	22 APR 2015	DESIGNED	Y. Y. WONG	22 APR 2015
2	22 APR 2015	DRAWN	C. T. CHUNG	22 APR 2015
3	22 APR 2015	DESIGNED	C. T. CHUNG	22 APR 2015
4	22 APR 2015	CHECKED	Y. Y. WONG	22 APR 2015
5	22 APR 2015	APPROVED	Y. Y. WONG	22 APR 2015

PROJECT NO.	440025 AND 002024
FILE NO.	440025 AND 002024
CONTRACT NO.	440025 AND 002024
CONTRACT	440025 AND 002024

PROVISION OF ELECTRICAL AND MECHANICAL FACILITIES FOR SIEK KUI JUI SEWAGE TREATMENT PLANT - ADVANCE WORKS AND ROAD SOUTH ROAD SEWAGE PUMPING STATION
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KEY PLAN

Scale	1:1000
AS SHOWN	

Drawing No.	DEM1619/002
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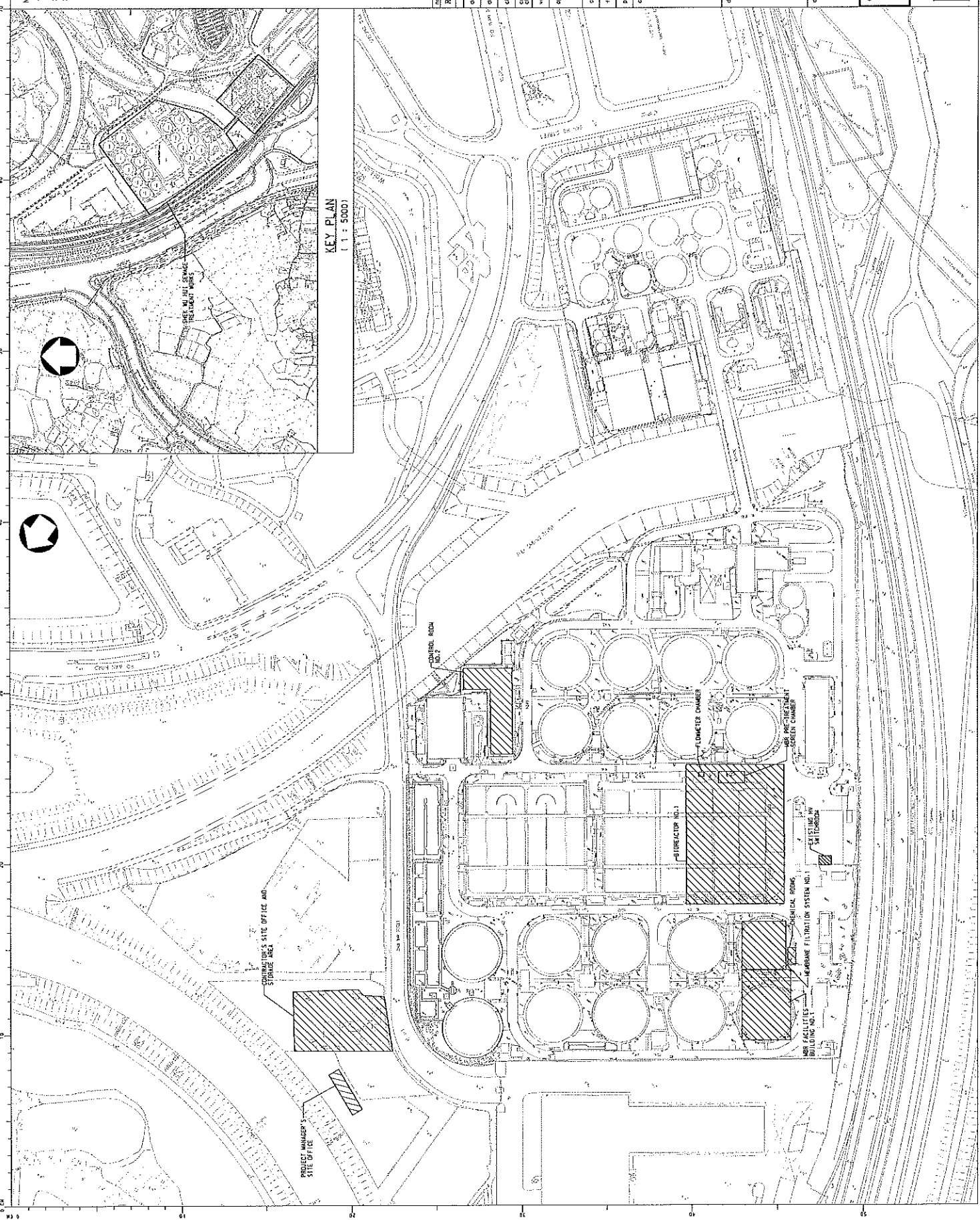
Office	ELECTRICAL AND MECHANICAL PROJECTS DIVISION
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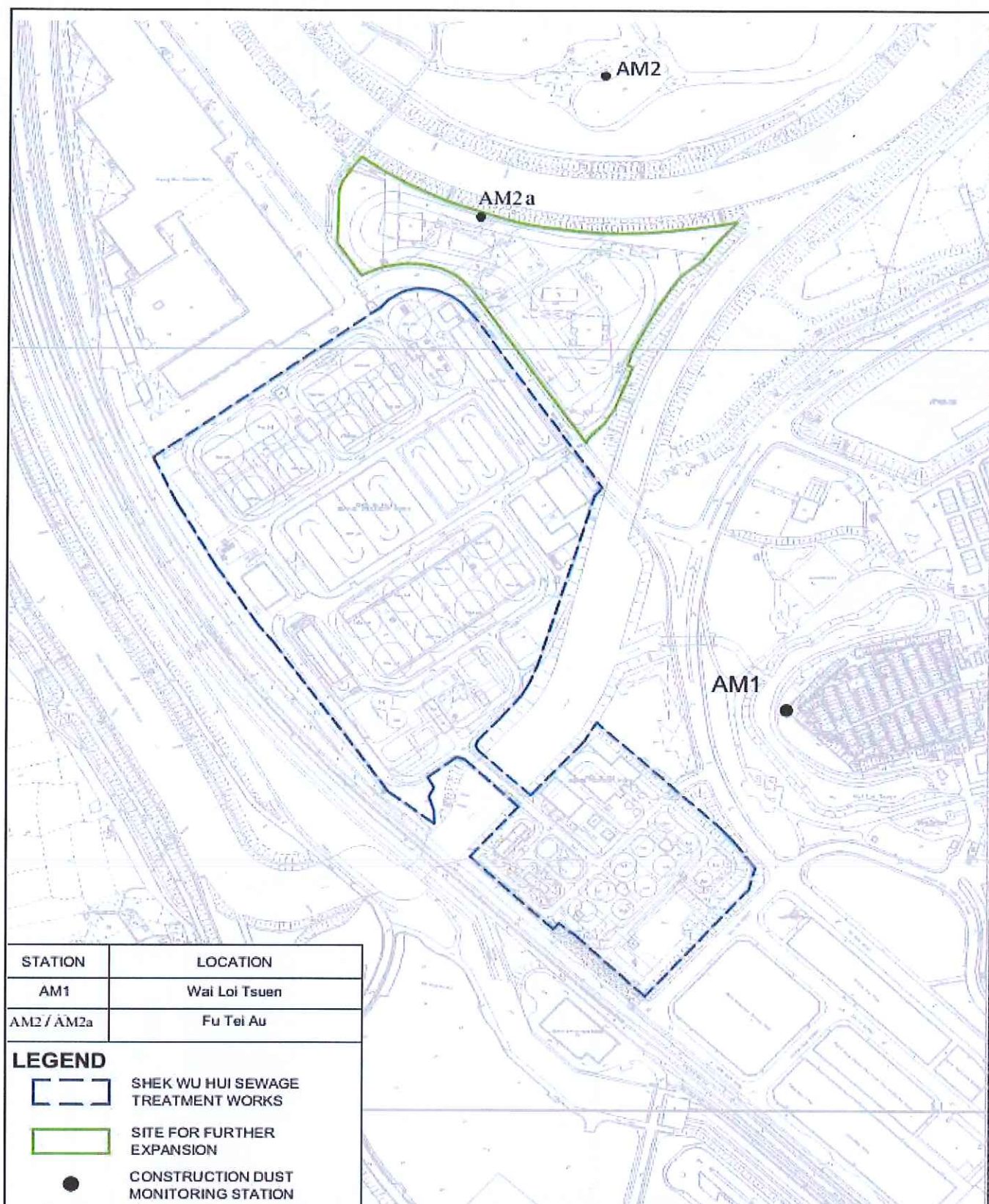
Drainage Services Department

Government of the Hong Kong

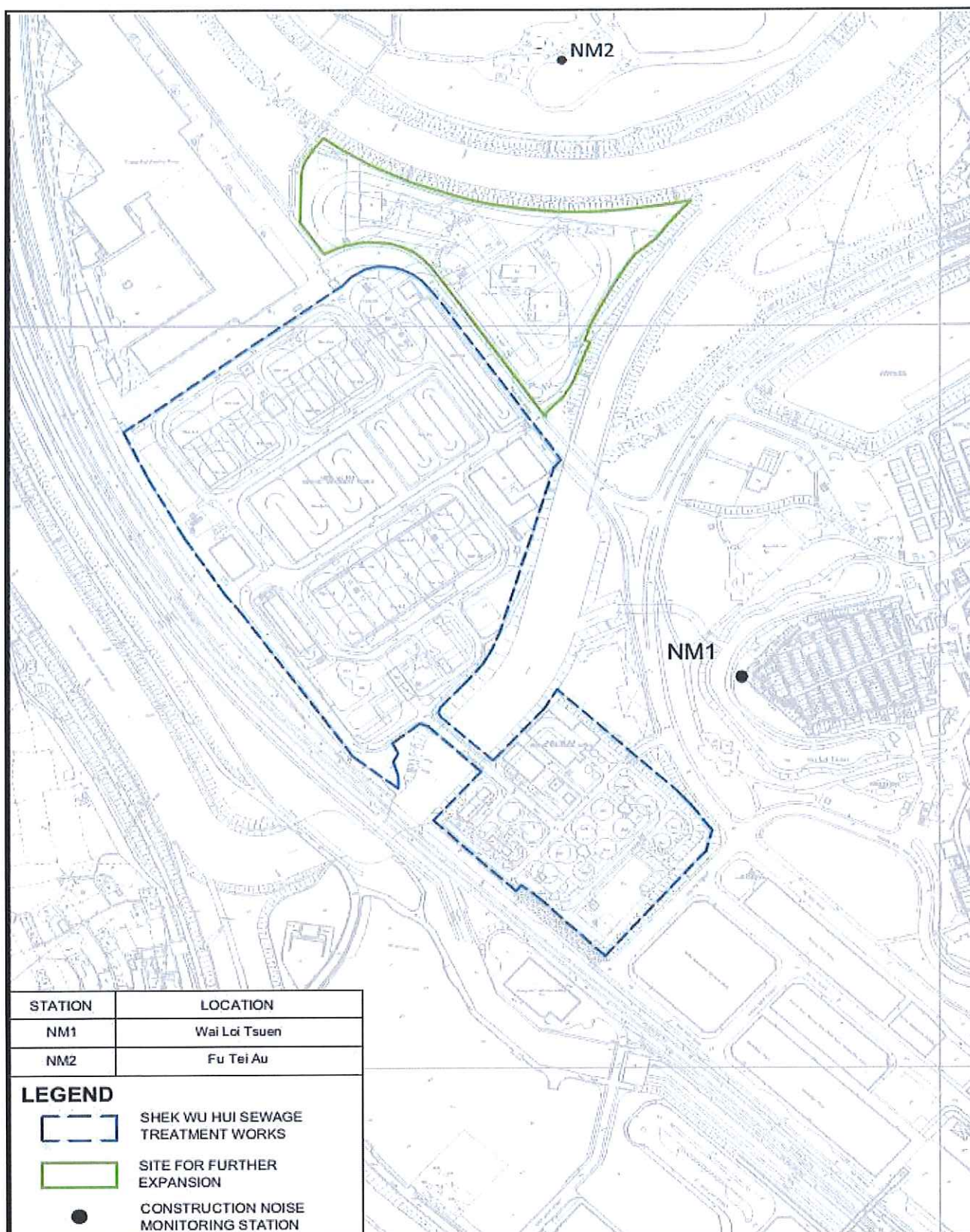
Special Administrative Region

AT 1/1000 SCALE

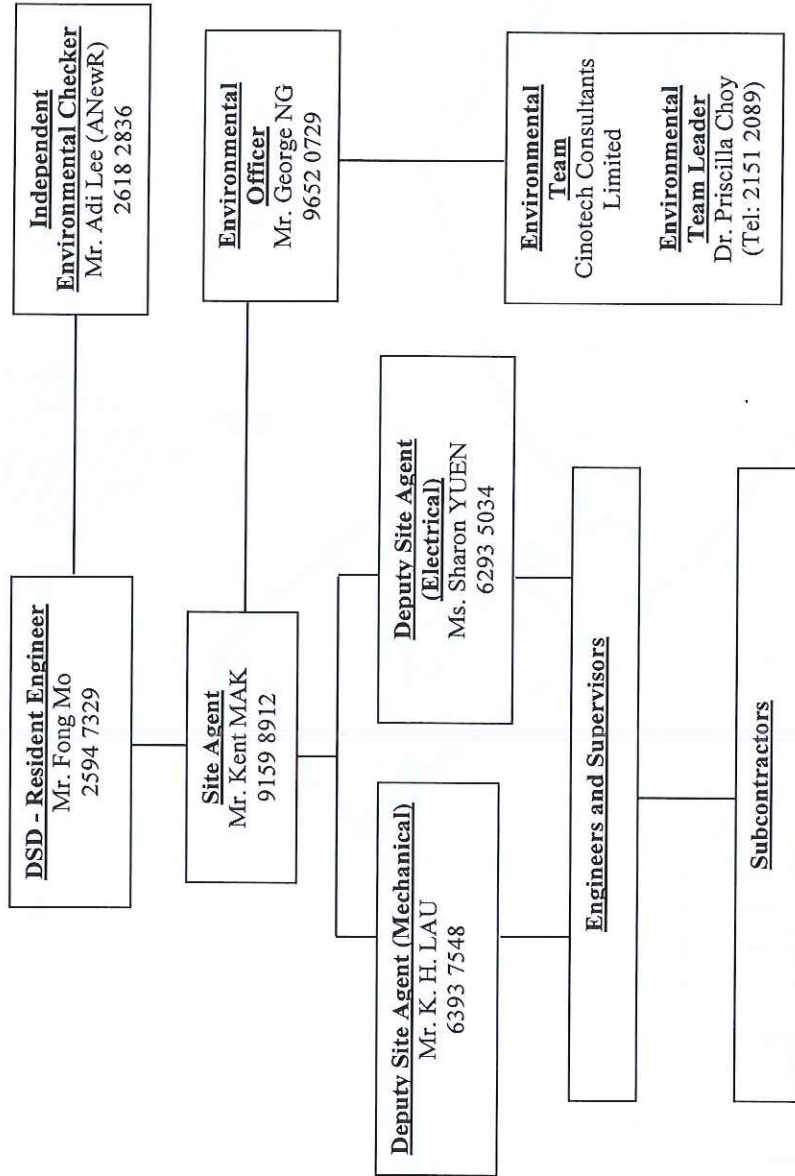




Title	Contract No. DE/2014/01		Scale	Project No.	CINOTECH
	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station		N.T.S	MA16002	
	Locations of Impact Air Quality Monitoring Stations		Date	Figures	
			Oct-17	2	



Title	Contract No. DE/2014/01		Scale	Project	CINOTECH
	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station		N.T.S	No. MA16002	
	Locations of Impact Noise Monitoring Stations		Date Oct-17	Figures 3	



Title

Contract No. DE/2014/01

Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station

Project Organization Chart

Scale

N.T.S

Project No.

MA16002

Version

v.1

Figure

4

CINOTECH

**APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR
QUALITY AND NOISE**

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP

Monitoring Stations	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour	24-hour	1-hour	24-hour
AM1	286	147	500	260
AM2	276	N/A	500	N/A
AM2a	N/A	155	N/A	260

Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
NM1	0700-1900 hours on normal weekdays	When one documented complaint is received	>75*
NM2			

Note: (*) Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

APPENDIX B
SUMMARY OF EXCEEDANCE

APPENDIX B – SUMMARY OF EXCEEDANCE

Reporting Month: December 2017

- a) Exceedance Report for 1-hr TSP (NIL)**
- b) Exceedance Report for 24-hr TSP (NIL)**
- c) Exceedance Report for Construction Noise (NIL)**

APPENDIX C
SITE AUDIT SUMMARY

Contract No: DE/2014/01

Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station

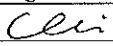

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	171207
Date	7 December 2017 (Thursday)
Time	16:00-17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
171207-R01	<p>Part C - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none">Contractor was reminded to provide wheel washing to the vehicles at the site exit in order to keep site entrance clean and free from dust. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F - Waste / Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others / Remarks</p> <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:171128), no major environmental deficiencies were observed during the site inspection.	D3,4

	Name	Signature	Date
Recorded by	Cecilia Yang		7 December 2017
Checked by	Dr. Priscilla Choy		7 December 2017

Contract No: DE/2014/01

Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	171215
Date	15 December 2017 (Friday)
Time	16:00-17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part C - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F - Waste / Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others / Remarks</p> <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:171207), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Cecilia Yang	<i>Ceci</i>	15 December 2017
Checked by	Dr. Priscilla Choy	<i>WJC</i>	15 December 2017

Contract No: DE/2014/01

Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station

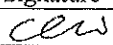

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	171219
Date	19 December 2017 (Tuesday)
Time	14:00-15:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part C - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F - Waste / Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others / Remarks</p> <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:171215), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	Cecilia Yang		19 December 2017
Checked by	Dr. Priscilla Choy		19 December 2017

Contract No: DE/2014/01

Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station

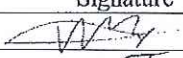

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	171227
Date	27 December 2017 (Wednesday)
Time	09:30-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part C - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F - Waste / Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others / Remarks</p> <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:171219), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	Victor Wong		27 December 2017
Checked by	Dr. Priscilla Choy		27 December 2017

**APPENDIX D
SUMMARY OF THE AMOUNT OF
WASTE GENERATED**

Name of Department: Drainage Services Department

Contract No. : DE/2014/01

Monthly Summary Waste Flow Table for 2017

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly					
	Total Quantity Generated (in '000m³)	Hard Rock & Large Broken Concrete (in '000m³)	Reused in the Contract (in '000m³)	Reused in other Projects (in '000m³)	Disposed as Public Fill (in '000m³)	Imported Fill (in '000m³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000 kg)	Plastics (see Note 3) (in '000 kg)	Chemicals Waste (in '000 kg)	Others, e.g. general refuse (in tonne)	
Jan												
Feb												
Mar												
Apr												
May												
June												
Sub-total												
July												
Aug												
Sept												
Oct	0	0	0	0	0	0	0	0	0	0	0	
Nov	0	0	0	0	0	0	0	0	0	0	0	
Dec	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m ³)
0	0	0	0	0	0	0	1	1	0.5	1

Notes: (1) The performance targets are given in PS Clause 6.21.8(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m³. (PS Clause 6.21.7(4)(b) refers).

APPENDIX E
EVENT ACTION PLANS

APPENDIX E – Event / Action Plans

Table E-1 Event / Action Plan For Air Quality

EVENT	ACTION			IEC	ER	CONTRACTOR
	ET					
ACTION LEVEL						
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.		
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.		

EVENT	ACTION			CONTRACTOR
	ET	IEC	ER	
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues,	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by

ACTION				
EVENT	ET	IEC	ER	CONTRACTOR
	taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	the ER until the exceedance is abated

Table E-2 Event / Action Plan For Construction Noise

ACTION					CONTRACTOR
EVENT	ET	IEC	ER		
Action Level being exceeded	<div>1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness</div>	<div>1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.</div>	<div>1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.</div>	<div>1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.</div>	
Limit Level being exceeded	<div>1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.</div>	<div>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.</div>	<div>1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. 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.</div>	<div>1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</div>	

APPENDIX F
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

APPENDIX F IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
A	Air Quality					
S2.4.1.3	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:</p> <ul style="list-style-type: none"> Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty material remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; 	To minimize the dust impact	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Air Pollution Control Ordinance (APCO) and Air Pollution Control (Construction Dust) Regulation

	<ul style="list-style-type: none">Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;Any skip hoist for material transport should be totally enclosed by impervious sheeting;Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.					
B	Noise					
S3.4.1.1	Use of movable barrier, enclosure, acoustic mat and quiet plant. Use of wooden frames barrier with a small-cantilevered upper portion of superficial density not less than 14kg/m ² on a skid footing with 25mm thick internal sound absorptive lining.	To minimize construction noise impact arising from the Project at the affected noise sensitive receivers (NSRs)	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM,
S3.4.1.2	Good Site Practice: <ul style="list-style-type: none">Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction period of Advance Works and Main Works of Phase 1A	EIAO-TM, NCO

	<p>construction program.</p> <ul style="list-style-type: none">• Mobile plant, if any, should be sited as far away from NSRs as possible.• Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.• Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.• Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.						
C	Ecological Impact						
S4.2.1.2	Avoid unnecessary lighting.	Minimize mortality impacts on birds.	Design/ Contractor/ Plant Operator	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM	
S4.2.1.3	Good construction site practice to minimise dust generation should be followed on all construction sites. Measures to avoid, minimise and mitigate impacts on air quality are detailed in this schedule	Minimize dust generation from construction sites.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM	
S4.2.1.4	<p>The following measures to avoid, minimise and mitigate impact on water quality during construction phase shall be implemented</p> <ul style="list-style-type: none">• Temporary sewerage and drainage to be designed and installed to collect wastewater and prevent it from entering water bodies;• Proper locations well away from nearby water bodies should be used for temporary storage of materials (i.e. equipment, filling materials, chemicals and fuel) and temporary stockpiles of construction debris and spoil, and these should be identified before commencement of works;• To prevent muddy water entering nearby water bodies, work sites close to nearby water bodies should be isolated, using such items as sandbags or silt curtains with lead edge at bottom and properly supported props. Other protective	Avoid, minimise and mitigate impact on water quality	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM	

	<p>measures should also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the work sites;</p> <ul style="list-style-type: none"> • Construction debris and spoil should be covered and/or properly disposed of as soon as possible to avoid these being washed into nearby water bodies; • Proper locations for discharge outlets of temporary wastewater treatment facilities well away from sensitive receivers should be identified; • Adequate lateral support should be erected where necessary in order to prevent soil/mud from slipping into water bodies; • Site boundaries should be clearly marked and any works beyond the boundary strictly prohibited; • Regular water monitoring and site audit should be carried out at adequate points along any watercourses where construction works are underway upstream within their catchments and also on the Ng Tung, Sheung Yue and Shek Sheung Rivers. If the monitoring and audit results show that pollution occurs, adequate measures including temporarily cessation of works should be considered; • Excavation profiles should be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Where soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table by installing well points or similar means; • Stockpiling sites should be lined with impermeable sheeting and banded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of contaminated soil to minimize contaminated runoff and construction materials should be properly covered and located away from nearby water bodies; and • Supply of suitable clean backfill material after excavation, if required. • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated run-off, and truck bodies and tailgates should be sealed to prevent discharge during transport or during wet 					
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	<ul style="list-style-type: none"> • season; • Speed control for the trucks carrying contaminated materials should be enforced; • Vehicle wheel washing facilities at construction sites' exit points should be established and used, where necessary; and • Other measures as detailed in this schedule. 						
D	Water Quality Impact						
S5.2.2.1	Construction Site Runoff Practices and measures provided in the Practice Note for Professional Persons on Construction Site Drainage, (PROPECC PN1/94) should be followed where applicable.	Control construction runoff	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO	
S5.2.2.2–S5.2.2.3	<p>Sewage from Workforce</p> <ul style="list-style-type: none"> • Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. • 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 construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures 	Handling of site sewage	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO	
E	Waste Management						
S6.2.2.1	<p>Good Site Practices and Waste Reduction Measures:</p> <ul style="list-style-type: none"> • Nomination of an approved person, such as a site manager, to be responsible for the implementation of 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 site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • Provision of sufficient waste disposal points and regular 	Minimize waste Generation during construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal Ordinance (WDO)	

	<p>collection for disposal;</p> <ul style="list-style-type: none"> • 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; • An Environmental Management Plan (EMP) should be prepared by the contractor and submitted to the Engineer for approval. 					
S6.2.3.1	<p>Waste Reduction Measures:</p> <ul style="list-style-type: none"> • Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Proper storage and site practices to minimize the potential for damage and contamination of construction materials; • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; • Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); and • Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 	Reduce waste generation	Contractor	Work Sites	Prior to the commencement of construction of Advance Works and Main Works of Phase 1A	WDO
S6.2.4.1 - S6.2.4.2	<p>Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> • Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; • Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and • Different locations should be designated to stockpile each material to enhance reuse. • Remove waste in timely manner; • Employ the trucks with cover or enclosed containers for waste transportation; • Obtain relevant waste disposal permits from the appropriate authorities; and • Disposal of waste should be done at licensed waste disposal 	Minimize waste impacts arising from waste storage	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	WDO

	facilities.		Minimize waste impacts from building demolition and new building construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO, ETWB TCW No. 19/2005
S6.2.5.3	<p>C&D Material from Buildings Demolition and New Building Construction</p> <ul style="list-style-type: none"> The Contractor should recycle as much as possible of the C&DM on-site. Public fill and C&DM waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. For example, concrete and masonry can be crushed and used as fill, and steel reinforcing bar can be used by scrap steel mills. Different areas of the work sites should be designated for such segregation and storage. The use of wooden hoardings shall not be allowed. An alternative material, such as metal, aluminium or alloy etc, could be used. Government has developed a charging policy for the disposal of waste to landfill at present. It will provide additional incentive to reduce the volume of generated waste and ensure proper segregation to allow reuse of the inert material on site when implemented. In order to minimize the impacts of the demolition works, the generated wastes must be cleared as quickly as possible after demolition. Therefore, the demolition and clearance works should be undertaken simultaneously. To facilitate proper segregation of inert and non-inert C&D material arising from demolition works, selective demolition method should be adopted. 						
S6.2.5.4	<p>Chemical Waste</p> <ul style="list-style-type: none"> If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation 	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	
S6.2.5.5	<p>General Refuse</p> <ul style="list-style-type: none"> General refuse should be stored in enclosed bins separately from construction and chemical wastes. 	Minimize production of the general refuse and avoid odour, pest	Contractor	Work Sites	Construction phase of Advance Works	Waste Disposal (Chemical Waste General) Regulation,	

	<ul style="list-style-type: none"> • Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis. 	and litter impacts			and Main Works of Phase 1A	Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
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**APPENDIX G
COMPLAINT LOG**

APPENDIX G – COMPLAINT LOG

Reporting Month: December 2017

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Remarks: No environmental complaint was received in the reporting month.

APPENDIX H
CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Remaining Start Duration	Finish	Total Float	2017	2018	2019	2020	2021	2022	2023
AS000010	Contract Date (LOA)	0	28-Dec-15 A								
AS000020	Contract Starting Date	0	30-Dec-15 A								
AS000010	Original Contract Period	380	30-Dec-15 A	23-Oct-18	173						
AS000020	Contract Completion Date for the whole of the Works	0		14-Apr-19	0						
Access Data											
AS001010	Mix Site Office and Contractor's Site Office and Storage Area, (within 120 days)	0	30-Dec-15 A	27-Apr-16 A							
AS001012	Planned Access Date for PME Site Office and Contractor's Site Office and Storage Area	0	27-Apr-16 A	27-Apr-16 A							
AS001020	Flowmeter Chamber, MBR Pre-treatment Screen Chamber and its vicinity, (within 560 days)	38	30-Dec-15 A	06-Nov-17	34						
AS001022	Planned Access Date for Flowmeter Chamber, MBR Pre-treatment Screen Chamber and its vicinity	1	06-Nov-17	06-Nov-17	34						
AS001030	Biosensor no.1 (BR1) and its vicinity, (within 560 days)	42	30-Dec-15 A	01-Dec-17	0						
AS001032	Planned Access Date for Biosensor no.1 (BR1) and its vicinity	1	01-Dec-17	01-Dec-17	0						
AS001040	MBR Facilities Building, Membrane Filtration System No.1 (MFS1) and its vicinity, (within 565 days)	48	30-Dec-15 A	19-Nov-17	16						
AS001042	Planned Access Date for MBR Facilities Building, Membrane Filtration System No.1 (MFS1) and its vicinity	1	19-Nov-17	19-Nov-17	21						
AS001050	Ng Chow South Road Sewage Pumping Station - (within 138 days)	0	30-Dec-15 A	04-Jun-16 A							
AS001052	Planned Access Date for Ng Chow South Road Sewage Pumping Station	0	04-Jun-16 A	04-Jun-16 A							
AS001100	New Access Date for MFB -B/F	1	15-Mar-18	15-Mar-18*	24						
AS001120	New Access Date for MFB -C/F	1	19-Nov-17	19-Nov-17*	18						
AS001150	New Access Date for MFB -CLP Rm C	0	28-Sep-17 A	28-Sep-17 A							
AS001180	New Access Date for MFB -CLP Rm D	0	28-Sep-17 A	28-Sep-17 A							
AS001180	New Access Date for MFB -J/F	1	31-Dec-17	31-Dec-17*	11						
AS001200	New Access Date for MFB -L/F	1	31-Dec-17	31-Dec-17*	317						
AS001220	New Access Date for MFB -J/F	1	31-Dec-17	31-Dec-17*	317						
AS001240	New Access Date for MFB -Pumpout & Roof	1	01-Feb-18	01-Feb-18*	265						
AS001320	New Access Date for Pre-treatment Screen Chamber	1	06-Nov-17	06-Nov-17*	24						
AS001320	New Access Date for Flowmeter Chamber	1	30-Nov-17	30-Nov-17*	188						
AS001340	New Access Date for Biosensor No. 1 - 2nd Lane	1	01-Dec-17	01-Dec-17*	0						
AS001342	New Access Date for Biosensor No. 1 - 1st Lane + Swing Zone	1	02-Jan-18	02-Jan-18*	193						
AS001344	New Access Date for Biosensor No. 1 - Post Aerate Zone	1	01-Feb-18	01-Feb-18*	163						
AS001360	New Access Date for Membrane Tanks	1	02-Jun-18	02-Jun-18*	63						
AS001380	New Access Date for CLP Cable Ducts	1	20-Oct-17	20-Oct-17*	78						
AS001400	New Access Date for Other Cable Ducts	1	01-Feb-18	01-Feb-18*	190						
AS001420	New Access Date for Chemical Room	1	30-Apr-18	30-Apr-18*	0						
AS001440	New Access Date for LV Switchroom No.3	1	31-Mar-18	31-Mar-18*	40						
Key Dates											
AS002010	Completion of ACSRSSP E&M Works including testing and commissioning	0	30-Dec-15 A	28-Jul-17 A							
AS002020	Completion of SWHSTW - Further Expansion Phase 1A - Advance Works E&M Works including T&C	562	30-Dec-15 A	14-Apr-19	0						
Section I											
AS000010	Contract Completion of the works - Section I	0	30-Dec-15 A	23-Sep-15 A							
AS000020	Completion date - Section I (272 days from starting date)	0		23-Sep-15 A							
Time Risk Allowance and Planned Completion											
AS000040	Planned Completion date - Section I	0		23-Sep-15 A							
Section II											
AS000010	Contract Completion of the works - Section II	0	30-Dec-15 A	18-Mar-16 A							
AS000020	Completion date - Section II (90 days from starting date)	0		18-Mar-16 A							
Time Risk Allowance and Planned Completion											
AS000040	Planned Completion date - Section II	0		18-Mar-16 A							
Section III											
AS000010	Contract Completion of the works - Section III	562	30-Dec-15 A	14-Apr-19	0						
AS000020	Completion date - Section III (1020 days from starting date)	0		14-Apr-19	0						
Time Risk Allowance and Planned Completion											



File Name: DE2014/01F2
Layout: DE1401 (Rev. F) - WBS
TASK: Filter All Activities

Remaining Work

Critical Activity

Milestones

Actual Progress

Page 1 of 14

Contract No. DE/2014/01

Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works
Further Expansion Phase 1A - Advance Works and
Ng Chow South Road Sewage Pumping Station
Master Programme

Date

Rev.

Checked

Approved

08-Jan-16

Rev. 0

KH Lau KM

28-Feb-16

Rev. A

KH Lau KM

31-May-16

Rev. B

KH Lau KM

25-May-17

Rev. C

KH Lau KM

22-Jun-17

Rev. D

KH Lau KM

12-Jul-17

Rev. E

KH Lau KM

17-Oct-17

Rev. F

KH Lau KM

Activity ID	Activity Name	Remaining Start Duration	Finish	Total # Floor	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012	3013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Activity ID	Activity Name	Remaining Start Duration	Finish	2018	2019	2020	2021	2022	2023
AS-06054	Install Outdoor Lighting for Chemical Rooms	14 27-Aug-18	03-Sep-18						
AS-06050	Install Other B.S. (Switches for Power Supply to Equipment), Pre-treatment Screen & Flowmeter Chamber	30 15-Mar-18	13-Apr-18						
AS-06051	Install Other B.S. (Switches for Power Supply to Equipment), BRT & its Vicinity Areas	30 14-Apr-18	13-May-18						
AS-06052	Install Other B.S. (Switches for Power Supply to Equipment), MBR Facilities Building	45 14-May-18	27-Jun-18						
AS-06053	Install Other B.S. (Switches for Power Supply to Equipment), MBR Facilities Building	45 29-Jun-18	11-Aug-18						
AS-06054	Install Other B.S. (Switches for Power Supply to Equipment), Chemical Rooms	21 20-Aug-18	09-Sep-18						
AS-06050	Testing and Commission of B.S. Installation	21 10-Sep-18	30-Sep-18						
Task 4: For the Switchgear, B.S. and other related activities for Health & Safety Requirements									
AS-06011	Install Taping & Conduits for AFA System - MBR Facilities Building	30 14-Apr-18	13-May-18						
AS-06012	Install AFA Piping & Accessories, Wiring - MBR Facilities Building	60 14-May-18	13-Jun-18						
AS-06013	Install Taping & Conduits for AFA System - Chemical Rooms	7 14-Jul-18	20-Jul-18						
AS-06014	Install AFA Piping & Accessories, Wiring - Chemical Rooms	7 25-Jul-18	27-Jul-18						
AS-06015	Install F.S. Main Control System	7 28-Jul-18	03-Aug-18						
AS-06016	Power to Sprinkler, HRRP - MBR Facilities Building	14 03-Jun-18	15-Jun-18						
AS-06017	Install Sprinkler Head, Hose Reel & Fire Hydrant - MBR Facilities Building	35 16-Jun-18	20-Jul-18						
AS-06018	Install F.S. Pumps and Control - MBR Facilities Building	45 14-Apr-18	29-May-18						
AS-06019	F.S. Direct Link Connection	7 01-Oct-18	07-Oct-18						
AS-06020	Install Fire Extinguisher for Relevant Areas	7 18-Oct-18	24-Oct-18						
AS-06021	Testing of F.S. System	10 08-Oct-18	17-Oct-18						
4.7 HV Switchgear, Transformer, LV Switchgear, LV Control Gear etc.									
AS-07010	Manufacturing, FAT and Delivery	0 12-Sep-16 A	21-Sep-16 A						
AS-07011	Purchase Order for 11kV HV Switchboard	03 07-Oct-16 A	31-Dec-17						
AS-07020	Purchase Order for 3.3kV HV Switchboard	0 13-Sep-16 A	21-Sep-16 A						
AS-07022	Manufacturing, FAT & Delivery to Site - 3.3kV HV Switchboard	152 07-Oct-16 A	29-Feb-18						
AS-07020	Purchase Order for Transformer	0 13-Sep-16 A	21-Sep-16 A						
AS-07022	Manufacturing, FAT & Delivery to Site - Transformer	152 07-Oct-16 A	29-Feb-18						
AS-07070	Purchase Order for L.V. Switchboard	0 13-Sep-16 A	21-Sep-16 A						
AS-07072	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.1	82 20-Sep-16 A	11-Feb-18						
AS-07074	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.2	163 20-Sep-16 A	31-Mar-18						
AS-07076	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.3	213 20-Sep-16 A	30-Apr-18						
AS-07070	Purchase Order for (II) VSD for Permeate Pumps	0 03-Mar-17 A	15-Mar-17 A						
AS-07092	Manufacturing, FAT & Delivery to Site - (II) VSD for Permeate Pumps	135 17-Mar-17 A	11-Feb-18						
AS-07010	Purchase Order for (II) VSD for SAS Pumps	0 03-Mar-17 A	15-Mar-17 A						
AS-07012	Manufacturing, FAT & Delivery to Site - (II) VSD for SAS Pumps	135 17-Mar-17 A	11-Feb-18						
AS-07072	Manufacturing, FAT & Delivery to Site - (III) VSD for SAS Pumps	135 17-Mar-17 A	11-Feb-18						
AS-07150	Purchase Order for (IV) VSD for BR Feedpumps	0 03-Mar-17 A	15-Mar-17 A						
AS-07152	Manufacturing, FAT & Delivery to Site - (IV) VSD for BR Feedpumps	135 17-Mar-17 A	11-Feb-18						
AS-07170	Purchase Order for (V) VSD for Drain Pumps for MFS1	0 03-Mar-17 A	15-Mar-17 A						
AS-07172	Manufacturing, FAT & Delivery to Site - (V) VSD for Drain Pumps for MFS1	135 17-Mar-17 A	11-Feb-18						
AS-07190	Purchase Order for Starter for Motor, Screen & Motor etc.	0 13-Sep-16 A	21-Sep-16 A						
AS-07192	Manufacturing, FAT & Delivery to Site - Starter for Motor, Screen & Motor etc.	135 20-Sep-16 A	11-Feb-18						
Task 5: For the MBR Facilities Building and related activities for Health & Safety Requirements									
AS-07021	Manufacturing, FAT & Delivery to Site - MBR Facilities Building CLP Pm C & D	32 10-Sep-17	20-Nov-17						
AS-07022	Manufacturing, FAT & Delivery to Site - MBR Facilities Building	30 01-Jan-18	30-Jan-18						
AS-07020	Install 11kV HV Switchboard, SAT	45 31-Jan-18	15-Mar-18						
AS-07024	Modifying Existing 11kV HV Switchboard, SAT	21 17-Mar-18	05-Apr-18						
AS-07024	CLP Inspection / Install Motors	10 21-Mar-18	30-Mar-18						
AS-07025	11kV HV Switchboard Energization	0 31-Mar-18	117						
AS-07040	Install 3.3kV HV Switchboard, SAT	30 05-May-18	03-Jun-18						

<div> <div>Remaining Work</div> <div>Critical Activity</div> <div>Milestone</div> <div>Actual Progress</div> </div>	File Name: DE201401F2 Layout: DE1401 (Rev. F) - WBS TASK filter: All Activities	Contract No. DE/2014/01 Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station Master Programme			Date	Rev.	Checked	Approved
					08-Jan-16	Rev. 0	KH Lau	KM
					29-Feb-16	Rev. A	KH Lau	KM
					31-May-16	Rev. B	KH Lau	KM
					25-May-17	Rev. C	KH Lau	KM
<div> <div>Remaining Work</div> <div>Critical Activity</div> <div>Milestone</div> <div>Actual Progress</div> </div>	Page 9 of 14				22-Jun-17	Rev. D	KH Lau	KM
					12-Jul-17	Rev. E	KH Lau	KM
					17-Oct-17	Rev. F	KH Lau	KM

Activity ID	Activity Name	Resourcing Start Duration	Finish	2017	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	2018
A540704	Functional Test - 3.3kV HV Switchboard	18-Jun-18	01-Jul-18	38																										
A540705	Install Transformers (No. 3 & 4)	14-Jul-18	20-Apr-18	6																										
A540706	Install Transformer (No. 1 & 2)	14-Jul-18	04-May-18	6																										
A540706	Install L.V. Switchboard No.1 & MCB Distribution Board, SAT	60-Jul-18	12-Apr-18	4																										
A540707	Install VSD for BR Feedpumps, 2 nos.	31-Aug-18	15-Apr-18	50																										
A540708	Install L.V. Switchboard No.2 & MCB Distribution Board, SAT	45-Sep-18	20-Apr-18	4																										
A540709	Mobilisation of Works - Chemical Rooms	7-Jul-18	27-May-18	4																										
A540704	Install MCB Distribution Board, DB-P6 (Chemical Room 2)	14-Jun-18	10-Jun-18	4																										
A540708	Functional Test - L.V. Switchboard No. 1	30-Jul-18	10-Jul-18	4																										
A540708	L.V. Switchboard No. 1 Ready for Energisation	0-Jul-18	11-Jul-18	4																										
A540709	Functional Test - L.V. Switchboard No. 2	30-Jul-18	19-Jun-18	25																										
A540708	L.V. Switchboard No. 2 Ready for Energisation	0-Jul-18	11-Jul-18	4																										
A540750	Install, T&C of POEMS	60-Jul-18	15-Oct-18	28																										
A540760	Earthing System for MFS1 Completed	0-Jul-18	01-Aug-18	29																										
A540760	Submit WRI to EMSD for Electrical System, MFS1	7-Jul-18	16-Aug-18	29																										
A540764	Power On for MFS1 System	0-Jul-18	01-Aug-18	29																										
Install, T&C for BR1's Vicinity Area (incl. Provision for Health & Safety Requirements)																														
A540703	Mobilisation of Works - BR1's Vicinity area	30-Jul-18	30-Apr-18	40																										
A540704	Construction of Canopy for housing the L.V. Switchboard No.3	75-Jul-18	14-Jul-18	274																										
A540708	Install L.V. Switchboard No.3 (with Canopy)	30-Jul-18	30-May-18	40																										
A540708	Functional Test - L.V. Switchboard No. 3	30-Jul-18	29-Jun-18	40																										
A540708	L.V. Switchboard No. 3 Ready for Energisation	0-Jul-18	30-Jun-18	40																										
A540708	Install MCB Distribution Board, DB-P6 (Power supply for BR1)	7-Jul-18	06-Jul-18	175																										
A540708	Complete Earthing & Lightning System for BR1	0-Jul-18	11-Jul-18	29																										
A540720	Submit WRI to EMSD for Electrical System, BR1	5-Jul-18	15-Jul-18	29																										
A540740	Power On for BR1 System	0-Jul-18	01-Jul-18	29																										
4.6 Lifting Appliances																														
Manufacturing, FAT and Delivery																														
A540810	Purchase Order for 1 no. 1,500 kgs Lifting Appliance - (I) For Pre-treatment Screen Chamber	0-Feb-17	14-Feb-17	70																										
A540810	Delivery & Installation of 1 no. 1,500 kgs Lifting Appliance - (I) For Pre-treatment Screen Chamber	35-Jul-17	03-Nov-17	70																										
A540820	Purchase Order for 1 no. 500 kgs Lifting Appliance - (II) For BR1	0-Feb-17	14-Feb-17	64																										
A540820	Manufacturing, FAT & Delivery to Site - 1 no. 500 kgs Lifting Appliance - (II) For BR1	62-Jul-17	30-Nov-17	64																										
A540850	Purchase Order for 1 no. 4,000 kgs Lifting Appliance - (III) In G/F of Membrane Facilities	0-Feb-17	14-Feb-17	70																										
A540850	Manufacturing, FAT & Delivery to Site - 1 no. 4,000 kgs Lifting Appliance - (III) In G/F of Membrane Facilities	40-Jul-17	17-Nov-17	70																										
A540870	Purchase Order for 2 nos. 8,500 kgs Lifting Appliance - (IV) For MFS1	0-Feb-17	14-Feb-17	20																										
A540870	Manufacturing, FAT & Delivery to Site - 2 nos. 8,500 kgs Lifting Appliance - (IV) In T/F of Membrane	62-Jul-17	30-Nov-17	42																										
A540900	Purchase Order for 2 nos. 5,000 kgs Lifting Appliance - (V) For MFS1	0-Feb-17	14-Feb-17	129																										
A540900	Manufacturing, FAT & Delivery to Site - 2 nos. 5,000 kgs Lifting Appliance - (V) For MFS1	62-Jul-17	31-Dec-17	129																										
Install, T&C for Pre-treatment Screen Chamber (incl. Provision for Health & Safety Requirements)																														
A540820	Mobilisation of Works - MBR Pre-treatment Screen Chamber	14-Nov-17	20-Nov-17	53																										
A540820	Install Material A-chaper support column, 1,500kg S.W.L. Electric Chain Hoist	21-Nov-17	11-Dec-17	53																										
A540824	SAT of Lifting Appliance	14-Dec-17	25-Dec-17	65																										
Install, T&C for Biomembrator No. 1 (BR1) (incl. Provision for Health & Safety Requirements)																														
A540840	Install Manual Storage S.W.L. Manual Hoist 2w Trolley	14-Dec-17	25-Dec-17	53																										
A540900	SAT of Lifting Appliance	14-Dec-17	25-Dec-17	53																										
Install, T&C for MBR Facilities Building (incl. Provision for Health & Safety Requirements)																														
A540900	Install 2 nos. Electric Travelling Crane for 1 no. 3,000 kg S.W.L. & 1 no. 4,000 S.W.L. - G/F	20-Nov-17	24-Dec-17	18																										
A540900	SAT of Lifting Appliance, G/F	29-Dec-17	21-Jan-18	145																										
A540900	Install 2 nos. Electric Travelling Crane for 8,500 kg S.W.L. - 1/F	30-Jul-18	04-Feb-18	11																										
A540900	SAT of Lifting Appliance, 1/F	29-Dec-17	04-Mar-18	11																										
Install, T&C for MFS2 (incl. Provision for Health & Safety Requirements)																														
A540910	Install 2 nos. Electric Travelling Crane for 5,000 kg S.W.L. - MFS1 Tanks	30-Dec-17	06-Mar-18	74																										
A540910	SAT of Lifting Appliance (MFS1) Tanks	29-Dec-17	03-Apr-18	74																										

Remaining Work
 Critical Activity
 TASK filler: All Activities
 Milestone
 Actual Progress

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Contract No. DE/2014/01
Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works
Further Expansion Phase 1A - Advance Works and
Ng Chow South Road Sewage Pumping Station
Master Programme

Date	Rev...	Checked	Approved
08-Jan-16	Rev. 0	KH Lau	KM
29-Feb-16	Rev. A	KH Lau	KM
31-May-16	Rev. B	KH Lau	KM
25-May-17	Rev. C	KH Lau	KM
22-Jun-17	Rev. D	KH Lau	KM
12-Jul-17	Rev. E	KH Lau	KM
17-Oct-17	Rev. F	KH Lau	KM

Activity ID	Activity Name	Remaining Start Duration	Finish	Total Float	2014	2015	2016	2017	2018	2019	2020	2021
4.9 Cabling, Earthing and Lightning Protection System												
AS40010	Purchase Order for Cables between HV Switchboard and TX	14	01-Dec-17	14-Dec-17	27							
AS40012	Purchase Order for Cables between HV Switchboard and TX	120	15-Dec-17	13-Apr-18	89							
AS40014	Purchase Order for Cables between TX & 3.3kV SW, and Air Blower	14	01-Dec-17	14-Dec-17	133							
AS40015	Manufacturing & Delivery to Site - Cables between TX & 3.3kV SW, and Air Blower	120	15-Dec-17	13-Apr-18	133							
AS40016	Manufacturing & Delivery to Site - Cables between TX and LV Switchboard	14	01-Dec-17	14-Dec-17	133							
AS40017	Manufacturing & Delivery to Site - Cables between TX and LV Switchboard	120	15-Dec-17	13-Apr-18	133							
AS40018	Purchase Order for Cables between LV Switchboard and LV Switchboard	14	01-Dec-17	14-Dec-17	62							
AS40019	Manufacturing & Delivery to Site - Cables between LV Switchboard and Plant	120	15-Dec-17	13-Apr-18	62							
AS40020	Purchase Order for Earthing Sys. - Inlet Screen Chamber, BRT & MFS1	14	01-Dec-17	14-Dec-17	73							
AS40021	Manufacturing & Delivery to Site - Earthing Sys. - Inlet Screen Chamber, BRT & MFS1	120	15-Dec-17	13-Apr-18	73							
AS40022	Purchase Order for Lightning Sys. - Inlet Screen Chamber, BRT & MFS1	14	01-Dec-17	14-Dec-17	63							
AS40023	Manufacturing & Delivery to Site - Lightning Sys. - Inlet Screen Chamber, BRT & MFS1	120	15-Dec-17	13-Apr-18	63							
AS40024	Purchase Order for Cables Tray	14	01-Dec-17	14-Dec-17	27							
AS40025	Manufacturing & Delivery to Site - Cables Tray	120	15-Dec-17	13-Apr-18	27							
AS40026	Manufacturing & Delivery to Site - Cables Tray	120	15-Dec-17	13-Apr-18	27							
4.10 Decodorizing System												
AS41001	Purchase Order for Decodorizing system with dehumidifier	0	10-Jul-17	26-Jul-17	104							
AS41002	Manufacturing, FAT & Delivery to Site - Decodorizing system with dehumidifier	115	27-Jul-17	22-Jun-18	170							
AS41003	Purchase Order for S.S. Ducting & Accessories	14	30-Sep-17	10-Oct-17	181							
AS41004	Manufacturing & Delivery to Site - S.S. Ducting & Accessories	120	14-Oct-17	10-Feb-18	181							
AS41005	Manufacturing, FAT & Delivery to Site - S.S. Ducting & Accessories	45	22-Jun-18	08-Mar-19	170							
AS41006	Manufacturing & Delivery to Site - maintenance platforms, stairways, hand railings and covers	60	01-Feb-18	01-Apr-18	59							

<div> <div> <div>Remaining Work</div> <div>Critical Activity</div> <div>Milestones</div> <div>Actual Progress</div> </div> <div> <div>File Name: DE201401F2</div> <div>Layout: DE401 (Rev. F) - WBS</div> <div>TASK filter: All Activities</div> </div> <div> <div>Contract No. DE/2014/01</div> <div>Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works</div> <div>Further Expansion Phase 1A - Advance Works and</div> <div>Ng Chow South Road Sewage Pumping Station</div> <div>Master Programme</div> </div> </div>												
<div> <div> <div>08-Jan-18</div> <div>Rev. 0</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>29-Feb-18</div> <div>Rev. A</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>31-May-17</div> <div>Rev. B</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>25-May-17</div> <div>Rev. C</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>22-Jun-17</div> <div>Rev. D</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>12-Jul-17</div> <div>Rev. E</div> <div>KH Lau</div> <div>KM</div> </div> <div> <div>17-Oct-17</div> <div>Rev. F</div> <div>KH Lau</div> <div>KM</div> </div> </div>												

Activity ID	Activity Name	Remaining Duration	Start Date	Finish Date	Total Float
AS411030	Purchase Order for Maintenance Platform in Basement of MBR Facilities Building	7	25-Jan-18	31-Jan-18	20
AS411031	Manufacturing & Delivery to Site - Maintenance Platform in Basement of MBR Facilities Building	46	01-Feb-18	17-Mar-18	29
AS411050	Purchase Order for FRP covers for Membrane Facilities Tanks	7	03-May-17 A	06-Oct-17	58
AS411052	Manufacturing & Delivery to Site - FRP covers for Membrane Facilities Tanks	100	07-Jun-18	07-Jan-19	58
AS411070	Purchase Order for Steel Cover for Air Blower Opening on 1/F of MBR Bldg.	7	01-Jan-18	07-Jan-18	109
AS411072	Manufacturing & Delivery to Site - Steel Cover for Air Blower Opening on 1/F of MBR Bldg.	120	08-Jan-18	07-May-18	109
AS411073	Install, Test for Maintenance Platform & Covers (incl. Provision for Health & Safety Requirements)	75	07-May-18	20-Jul-18	24
AS411080	Initial FRP covers for Membrane Facilities Tanks	45	23-Mar-18	06-May-18	24
AS411090	Initial FRP covers for Membrane Facilities Tanks	60	15-Jan-18	15-Mar-18	58
AS411091	Initial Steel Cover for Air Blower Opening on 1/F of MBR Bldg.	21	21-Jul-18	10-Aug-18	35
4.12 SCADA					
AS412010	Purchase Order for Proposed SCADA	0	03-Jul-17 A	18-Jul-17 A	171
AS412012	Manufacturing & Delivery to Site - Proposed SCADA	50	19-Jul-17 A	18-Nov-17	73
AS412030	Purchase Order for PLC System	20	20-Sep-17	27-Oct-17	73
AS412032	Manufacturing & Delivery to Site - PLC System	120	20-Oct-17	24-Feb-18	73
AS412050	Purchase Order for Instrumentation in Flowmeter and MBR Pre-treatment Screen Chambers	28	30-Sep-17	27-Oct-17	138
AS412052	Manufacturing & Delivery to Site - Instrumentation in Flowmeter and MBR Pre-treatment Screen Chambers	120	28-Oct-17	24-Feb-18	139
AS412070	Purchase Order for Instrumentation in BRI	28	30-Sep-17	27-Oct-17	163
AS412072	Manufacturing & Delivery to Site - Instrumentation in BRI	120	28-Oct-17	24-Feb-18	163
AS412090	Purchase Order for Instrumentation in MFS & MFB	20	20-Sep-17	27-Oct-17	167
AS412092	Manufacturing & Delivery to Site - Instrumentation in MFS & MFB	120	28-Oct-17	24-Feb-18	167
AS412110	Purchase Order UPS for PLC Systems A	28	30-Sep-17	27-Oct-17	202
AS412112	Manufacturing & Delivery to Site - UPS for PLC Systems A	120	28-Oct-17	24-Feb-18	202
AS412130	Purchase Order UPS for PLC Systems B	28	30-Sep-17	27-Oct-17	202
AS412132	Manufacturing & Delivery to Site - UPS for PLC Systems B	120	28-Oct-17	24-Feb-18	202
Install, Test for SCADA (incl. Provision for Health & Safety Requirements)					
AS412001	Mobilisation of Works - Areas for laying works of optical fibres	7	20-Nov-17	26-Nov-17	133
AS412020	Laying Bare Optical Ethernet Ring	47	20-Nov-17	26-Nov-17	133
AS412021	Sat Up and Demonstrate all the Functionality of the Proposed SCADA/PLC System A	45	25-Feb-18	10-Apr-18	77
AS412022	Modify Existing Master Station at Control Room	45	11-Apr-18	25-May-18	77
AS412023	Install SCADA Master Station	35	26-May-18	26-Jun-18	77
AS412024	Wiring for Control & Monitoring Circuits, Termination - SCADA	30	03-Jun-18	29-Jul-18	77
AS412025	Testing - PLC System	30	03-Jun-18	01-Nov-18	77
AS412040	Install Trunking & Tray - PLC System	21	11-Apr-18	01-May-18	73
AS412042	Install Controller & Associated Component - PLC System	14	02-May-18	15-May-18	122
AS412044	Wiring for Control & Monitoring Circuits, Termination - PLC System	21	10-Aug-18	30-Aug-18	15
AS412046	Testing - PLC System	30	03-Sep-18	02-Oct-18	12
AS412060	Install Instrumentation in Flowmeter, MBR Pre-treatment Screen Chamber	14	29-Jun-18	12-Jul-18	15
AS412061	Install Instrumentation in BRI	14	13-Jul-18	26-Jul-18	15
AS412100	Install Instrumentation in MFS1	14	27-Jul-18	09-Aug-18	15
AS412120	Install UPS for PLC system A	30	10-Aug-18	08-Sep-18	36
AS412140	Install UPS for PLC system B	30	10-Aug-18	08-Sep-18	36
4.13 Supply & Delivery of Miscellaneous Equipment					
AS413010	Supply & Delivery of Telephone set, bell, line and accessories	60	13-Jan-19	13-Mar-19	14
AS413020	Supply & Delivery of Aluminium scaffolding	60	13-Jan-19	13-Mar-19	14
AS413030	Supply and Delivery of Maintenance trolley for Air Chiller	60	13-Jan-19	13-Mar-19	14
AS413040	Supply and Delivery of Portable Gas detector	60	13-Jan-19	13-Mar-19	14
AS413050	Supply and Delivery of Portable ventilation fan	60	13-Jan-19	13-Mar-19	14
AS413060	Supply and Delivery of Foddlit truck and battery charger	60	13-Jan-19	13-Mar-19	14
AS413070	Supply and Delivery of Access and working platforms	60	13-Jan-19	13-Mar-19	14

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TASK filter: All Activities

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Activity ID		Activity Name	Remaining Start Duration	Finish	Total PT	2018												2019												2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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AS410300	Supply and Delivery of Portable drainage pump		60	13-Jan-18	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

