



The EIA Ordinance Register Office
Environmental Protection Department
27th floor, Southern Centre
130 Hennessy Road
Wanchai
Hong Kong

Your reference:

Our reference: HKDSD201/50/106143

Date: 22 November 2019

BY HAND

Dear Sirs

Agreement No. SP 01/2015
Environmental Monitoring and Audit for Advance Works for Shek Wu Hui Sewage
Treatment Works – Further Expansion Phase 1A
Monthly EM&A Report for October 2019

On behalf of Drainage Services Department, we are pleased to submit herewith three hard copies and two electronic copies of the captioned report in accordance with Condition 3.4 of the Further Environmental Permit No. FEP-02-474/2013.

Should you have any queries, please do not hesitate to contact the undersigned or our Ms Katherine Chu on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/CWKK/lhmh

Encl.


cc DSD – Ms Konica Cheung (email: wycheung@dsd.gov.hk) – w/ encl.
DSD – Mr Fong Mo (email: mfong@dsd.gov.hk) – w/o encl.
Wellab – Dr Priscilla Choy (email: priscilla.choy@wellab.com.hk) – w/o encl.

Drainage Services Department

Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A

Monthly EM&A Report

(October 2019)

Verified by : Mr. Adi Lee 

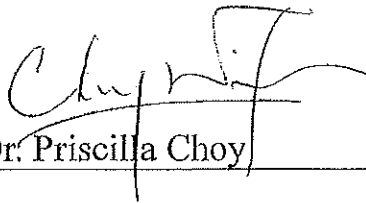
Position : Independent Environmental Checker

Date : 14 November 2019

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

Monthly EM&A Report

(October 2019)

Certified by : 
Dr. Priscilla Choy

Position : Environmental Team Leader of
Contract No. DE/2014/01

Date : 14 November 2019

Table of Contents

1.	EXECUTIVE SUMMARY	1
1.1	Summary of Major Construction Works taken in the Reporting Period.....	1
1.2	Environmental Monitoring and Audit Activities	1
1.3	Environmental Complaint	2
1.4	Site Inspection	2
1.5	Reporting Changes	2
1.6	Future Key Issues	3
2.	INTRODUCTION.....	4
2.1	Background	4
2.2	Project Programme	5
2.3	Purpose of the Report	5
2.4	Project Organization.....	5
3.	ENVIRONMENTAL MONITORING AND AUDIT	7
4.	WASTE MANAGEMENT	10
5.	IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS...	11
6.	CONCLUSION AND RECOMMENDATION	12
6.1	Conclusion.....	12
6.2	Recommendation.....	12

List of Tables

Table 2.1	Summary of Awarded Works Contracts
Table 2.2	Key Project Contacts
Table 3.1	Summary of Major Construction Activities in the Reporting Period
Table 3.2	Summary of 1-Hour TSP Monitoring Results in the Reporting Period
Table 3.3	Summary of 24-Hour TSP Monitoring Results in the Reporting Period
Table 3.4	Summary of Construction Noise Monitoring Results in the Reporting Period
Table 3.5	Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month
Table 4.1	Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DC/2013/09
Table 4.2	Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DE/2014/01
Table 5.1	Summary of Environmental Licenses and Permits for Contract No. DC/2013/09
Table 5.2	Summary of Environmental Licenses and Permits for Contract No. DE/2014/01

List of Appendix

Appendix A	Monthly EM&A Report for Contract No. DE/2014/01
------------	---

1. EXECUTIVE SUMMARY

This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the Contractor's ET of Contract No. DE/2014/01 under FEP No. FEP-02/474/2013 in October 2019 (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 under the Project 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	The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD.
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"> • Installation of chemical dosing system in Chemical Rooms; • Installation of FRP walkway at G/F of MBR Facility Building; • T & C for Pre-Treatment Screen Chamber; • T & C for Bioreactor No. 1; • T & C for Membrane Filtration System; and • PLC Signal Test and Control Test.

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	36	0	0
	24-hour TSP	10	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 ET and the Contractor were carried out on the following dates during the reporting period.

Contract No. DC/2013/09: No site inspection was carried out in the reporting period

Contract No. DE/2014/01: 2, 9, 16, 24 and 31 October 2019

- 1.4.2 IEC conducted site audit on 24 October 2019. No environmental non-compliance was identified in the reporting period.

1.5 Reporting Changes

- 1.5.1 The EM&A Programme of Contract No. DC/2013/09 was handed over to the ET of Contract No. DE/2014/01 since August 2018. Thus, the Monthly EM&A Report starting from September 2018 onwards will present the EM&A works undertaken by the ET of Contract No. DE/2014/01.

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	The construction works have been certified as substantially completed by DSD.	N/A	N/A
DE/2014/01	<ul style="list-style-type: none"> • Installation of FRP walkway at G/F of MBR Facility Building. • Installation of chemical dosing system in Chemical Rooms. • T & C for Pre – Treatment Screen Chamber. • T & C for Membrane Filtration System. • T & C for Bioreactor NO.1 • PLC Signal Test and Control Test. 	<ul style="list-style-type: none"> • Leakage from chemicals containers • Waste accumulation on site 	<ul style="list-style-type: none"> • Waste should be stored and disposed properly to avoid accumulation and leakage • Accumulated waste to be recycled on-site whenever possible

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. On 15 February 2018, FEP No. FEP-02/474/2013 was issued by EPD to DSD covering the upgrading works of SWHSTW Phases 1A, 1B and 2.
- 2.1.7 With the issue of FEP No. FEP-02/474/2013, DSD has surrendered FEP No. FEP-01/474/2013 on 15 August 2018 which covering Phase 1A works only.

2.2 Project Programme

Two construction works contracts of the Project, i.e. civil works and E&M works, were commenced in October 2015 and October 2017 respectively. The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD and the remaining work is completed by the end of July 2018. The works of Contract No. DE/2014/01 is completed in early 2019 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)	Wellab Limited (Wellab)

2.3 Purpose of the Report

- 2.3.1 The Environmental Monitoring and Audit (EM&A) programme for Contract No. DC/2013/09 and No. 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 Contractor’s ET of Contract No. DE/2014/01 in October 2019 (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	Ms. Konica Cheung	2594 7463
	A New R 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. Fong Mo	2594 7329
	A New R 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
	Wellab	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-02/474/2013. As per the EP Conditions, EM&A Report for Works Contract No. DE/2014/01 prepared by the Contractor’s ET is provided in *Appendix A*.
- 3.2 The EM&A Report provides 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	The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD.
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"> • Installation of chemical dosing system in Chemical Rooms; • Installation of FRP walkway at G/F of MBR Facility Building; • T & C for Pre-Treatment Screen Chamber; • T & C for Bioreactor No. 1; • T & C for Membrane Filtration System; and • PLC Signal Test and Control Test.

- 3.4 As the major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD and the remaining work is completed by the end of July 2018, air quality and construction noise monitoring have been handed over to the ET of Contract No. DE/2014/01.
- 3.5 Impact monitoring for air quality and construction noise were conducted in accordance with the Updated EM&A Manual in the reporting period. The monitoring results conducted by the ET of Contract No. DE/2014/01 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 Monthly EM&A Report of Contract No. DE/2014/01 as provided in *Appendix A*.

3.6 No Action and Limit Level exceedance of air quality and construction noise monitoring was recorded during 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	56.3 – 117.5	286	500	No
AM2	Fu Tei Au	52.1 – 107.3	276	500	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 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)
AM1a	SWHSTW site boundary	46.4 – 137.3	147	260	No
AM2b	Northeast Side of SWHSTW site boundary	47.9 – 100.0	155	260	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 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	58.9 – 61.4	When one documented complaint is received	75	No
NM2	Fu Tei Au	58.8 – 59.1		75	No

Note:

- (1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 in accordance with the Updated EM&A Manual.

- 3.7 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*.
- 3.8 Regular site inspections were conducted by the Contractor’s ET 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. The site inspection for Contract No. DC/2013/09 was ceased upon received EPD’s reply letter on 24 August 2018. Joint site inspections for Contract No. DE/2014/01 were carried out on 2, 9, 16, 24 and 31 October 2019 during the reporting period. In addition, IEC conducted site audit on 24 October 2019. No environmental non-compliance was identified in the reporting period.

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 the Contractor 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 Table of Contract No. DE/2014/01 is presented in the EM&A Report as provided in *Appendix A*. 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)	24.00	0	24.00	--
Hard Rock and Large Broken Concrete (Inert) (in '000m ³)	2.26	0	2.26	--
Reused in this Project (Inert) (in '000m ³)	3.67	0	3.67	--
Reused in other Projects (Inert) (in '000m ³)	2.23	0	2.23	--
Disposal as Public Fill (Inert) (in '000m ³)	15.93	0	15.93	--
Metals (in '000kg)	142.00	0	142.00	--
Paper / Cardboard Packing (in '000kg)	0.07	0	0.07	--
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in '000m ³)	1.19	0	1.19	--

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)	0.062	0.031	0.331	Lau Choi Kee Papers Co. Ltd (35 Po Wan Road, Sheung Shui, NT)
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in tonne)	263.28	1.01	378.38	NENT

5. IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

5.1 The Contractor has implemented all mitigation measures and requirements as stated in the EIA Reports, EM&A Manuals, EP No. EP-474/2013 and FEP No. FEP-02/474/2013. 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-02/474/2013 (Valid from 15 February 2018)
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-02/474/2013 (Valid from 15 February 2018)
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 Contractor's ET of Contract No. DE/2014/01 in October 2019 (the reporting period).
- 6.1.2 The EM&A Programme of Contract No. DC/2013/09 was handed over to the ET of Contract No. DE/2014/01 since August 2018. Thus, the Monthly EM&A Report starting from September 2018 onwards will present the EM&A works undertaken by the ET of Contract No. DE/2014/01.
- 6.1.3 No Action and Limit Level exceedance of 1-hour and 24-hour TSP monitoring was recorded during the reporting period.
- 6.1.4 No Action and Limit Level exceedance of construction noise monitoring was recorded during the reporting period.
- 6.1.5 Joint site inspections to evaluate the site environmental performance by the RE, the ET and the Contractors were carried out on the following dates during the reporting period.
- Contract No. DC/2013/09: No site inspection was carried out in the reporting period
Contract No. DE/2014/01: 2, 9, 16, 24 and 31 October 2019
- 6.1.6 IEC conducted site audit on 24 October 2019. No environmental non-compliance was identified in the reporting period.
- 6.1.7 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

- 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 license.

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.

APPENDIX A

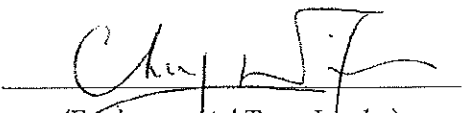
MONTHLY EM&A REPORT FOR CONTRACT NO. DE/2014/01

Jardine Engineering Corporation, Limited

**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
October 2019**

(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.

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

WELLAB LTD
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2898 7388 Fax: (852) 2898 7076
Email: info@wellab.com.hk

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	1
Introduction	1
Environmental Monitoring Works	1
Environmental Licenses and Permits	2
Environmental Mitigation Implementation Schedule	2
Key Information in the Reporting Month	2
Site Inspection Conducted by Government Department.....	2
Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons...2	2
Future Key Issues	3
1. INTRODUCTION	4
Background	4
Project Organizations	5
Summary of EM&A Requirements.....	5
2. AIR QUALITY	6
Monitoring Requirements	6
Monitoring Locations.....	6
Monitoring Parameters, Frequency and Duration.....	6
Monitoring Equipment	6
Monitoring Methodology and QA/QC Procedure	7
Results and Observations	9
3. NOISE.....	11
Monitoring Requirements	11
Monitoring Locations.....	11
Monitoring Parameters, Frequency and Duration.....	11
Monitoring Equipment	11
Monitoring Methodology and QA/QC Procedures	11
Results and Observations	12
4. ENVIRONMENTAL AUDIT	14
Site Audits.....	14
Implementation Status of Environmental Mitigation Measures	14
Review of Environmental Monitoring Procedures	14
Status of Environmental Licensing and Permitting	14
Status of Waste Management.....	15
Implementation Status of Event Action Plans	15
Site Inspection Conducted by Government Department.....	15
Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons.15	15
5. FUTURE KEY ISSUES	17
Key Issues for the Coming Month	17
Monitoring Schedule for the Next Reporting Period	17
Construction Program for the Next Reporting Period.....	17
6. CONCLUSIONS AND RECOMMENDATIONS	18
Conclusions	18
Recommendations for Future Reporting Months:	18

LIST OF TABLES

Table I	Summary Table for Non-compliance (Exceedances) Recorded in the Reporting Month
Table II	Summary Table for Key Information in the Reporting Month
Table 1.1	Key Project Contacts
Table 2.1	Locations for Air Quality Monitoring
Table 2.2	Impact Dust Monitoring Parameters, Frequency and Duration
Table 2.3	Summary of Monitoring Equipment
Table 3.1	Locations for Noise Monitoring Stations
Table 3.2	Noise Monitoring Parameters, Frequency and Duration
Table 4.1	Observations of Site Audit
Table 4.2	Summary of Environmental Licensing and Permit Status
Table 4.3	Quantities of Waste Generated from the Reporting Month
Table 5.1	Future Key Issue for the next Reporting Month

LIST OF FIGURES

Figure 1	General Location Plan of the Project
Figure 2	Locations of Air Quality Stations
Figure 3	Locations of Noise Monitoring Stations
Figure 4	Project Organization Chart

LIST OF APPENDICES

A	Action and Limit Levels for Air Quality and Noise
B	Environmental Monitoring Schedules
C	Copies of Calibration Certificates
D	1-hour and 24-hour TSP Monitoring Results and Graphical Presentations
E	Noise Monitoring Results and Graphical Presentations
F	Summary of Exceedance
G	Site Audit Summary
H	Summary of Amount of Waste Generated
I	Event Action Plans
J	Environmental Mitigation Implementation Schedule (EMIS)
K	Complaint Log
L	Construction Programme

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
SWHSTW	Shek Wu Hui Sewage Treatment Works

EXECUTIVE SUMMARY**Introduction**

1. This is the 25th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Wellab 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 Environmental Permit (Permit No. FEP-02/474/2013).
2. The site activities undertaken in the reporting month included:
 - Installation of chemical dosing system in Chemical Rooms;
 - Installation of FRP walkway at G/F of MBR Facility Building;
 - T & C for Pre-Treatment Screen Chamber;
 - T & C for Bioreactor No.1;
 - T & C for Membrane Filtration System; and
 - PLC Signal Test and Control Test.

Environmental Monitoring Works

3. From August 2018 onward, the environmental monitoring works of the Project were conducted by the ET of Contract No. DE/2014/01, which took over all the monitoring stations from Contract No. DC/2013/09 under the same FEP. The impact monitoring methodology conducted by DE/2014/01 will follow the requirements of the Updated EM&A Manual for Shek Wu Hui Sewage Treatment Works.
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 (Exceedances) 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	
DE/2014/01	AM1	1-hr TSP	0	0	0	0	N/A
	AM1a	24-hr TSP	0	0	0	0	N/A
	AM2	1-hr TSP	0	0	0	0	N/A
	AM2b	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 at the monitoring station of AM1a and AM2b 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-02/474/2013); 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 J**.

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	---
Reporting Changes	---	---	---	---	---
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 was received during the reporting period. No prosecution, reporting changes and notification of summons were received or reported since the commencement of the Project.

14. There were no environmental complaint received since the commencement of the Project. The Complaint Log is presented in **Appendix K**.

Future Key Issues

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

- Leakage from chemicals containers.
- Waste accumulation on site.

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 Environmental Permit (Permit No. FEP-02/474/2013), which was issued on 15th February 2018 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 DE/2014/01 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:
 - Installation of chemical dosing system in Chemical Rooms;
 - Installation of FRP walkway at G/F of MBR Facility Building;
 - T & C for Pre-Treatment Screen Chamber;
 - T & C for Bioreactor No. 1;
 - T & C for Membrane Filtration System; and
 - PLC Signal Test and Control Test.
- 1.6 Wellab 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 monthly EM&A report summarizing the EM&A works conducted for the Project in October 2019.

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
Wellab	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089
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 during this reporting month.

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 Four designated monitoring stations, AM1, AM1a, AM2 and AM2b 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.
- 2.3 The 24-hour TSP monitoring at RE's Site Office (AM2a) was relocated to the alternative monitoring station (AM2b) on 9th September 2019 due to the removal of RE's Site Office.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
AM1	DE/2014/01	No. 31 Wai Loi Tsuen
AM2		Fu Tei Au
AM1a		Southeast Side of SWHSTW site boundary
AM2b		Northeast Side of SWHSTW site boundary

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 is shown in **Appendix B**.

Table 2.2 Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency
AM1	1-hour TSP	0700-1900 hrs	three times every 6 days
AM2			
AM1a	24-hour TSP	0000-2400 hrs	once every 6 days
AM2b			

Monitoring Equipment

- 2.5 **Table 2.3** summarizes the equipment used in the impact air quality monitoring programme. The high volume sampler for 24-hour TSP monitoring at AM1 has been relocated to the alternative monitoring station of AM1a. The copies of their calibration certificates is shown in **Appendix C**.

Table 2.3 Summary of Monitoring Equipment

Equipment	Model and Make
HVS	Tisch Model no. TE-5170
Handheld Particle Counter	Met One Instruments Model no. AEROCET-831
Calibrator	Tisch Model TE-5025A

Monitoring Methodology and QA/QC Procedure

- 2.6 The monitoring methodology and QA/QC procedures for impact air quality monitoring are presented as follow:
- 2.7 The general weather conditions (i.e. sunny, cloudy or rainy) were recorded by the field staff's observation on the monitoring day. The wind data is adopted from the website of Hong Kong Observatory (Ta Kwu Ling weather stations).

1 Hour TSP Monitoring Procedures with Laser Dust Monitor

- 2.8 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:
- The 1-hour dust meter is placed at least 1.3 meters above ground.
 - Remove the red rubber cap from the AEROCET-831 inlet nozzle.
 - Turn on the power switch that is located on the right side of the AEROCET-831.
 - On power up the product intro screen is displayed for 3 seconds. The intro screen displays the product name and firmware version.
 - Then the main counter screen will be displayed.
 - Press the START button. Internal vacuum pump start running. After 1 minute the pump will stop and the 0.5 μ m and 5 μ m channels will show the cumulative counts of particles larger than 0.5 μ m and 5 μ m per cubic foot.
 - The AEROCET-831 is now checked out and ready for use.
 - To switch off the AEROCET-831 power to stop the measuring after 1 hour sampling.
 - Information such as sampling date, time, and displayed value and site condition were recorded during the monitoring period.

Maintenance/Calibration

- 2.9 The following maintenance/calibration was required for the direct dust meters:
- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

*24 Hours TSP Monitoring with High Volume Sampler*Instrumentation

- 2.10 High Volume Sampler (HVS) completed with appropriate sampling inlets was employed for air quality monitoring. Each sampler comprised of a motor, a filter holder, a flow

controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

2.11 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filer Preparation

2.12 Fiberglass filters, which have a collection efficiency of larger than 99% of particles of 0.3 μm in diameter, were used. A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Wellab's monitoring team.

2.13 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than $\pm 5\%$. A convenient working RH was 40%. Wellab Ltd. has a comprehensive quality assurance and quality control programme.

Operating/Analytical Procedures

2.14 Operating/analytical procedures for the air quality monitoring were highlighted as follows.

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m^3/min . and 1.4 m^3/min .) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage

at the edges.

- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the Wellab Ltd. for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were returned to Wellab for further analysis of TSP concentrations collected by each filter.

Maintenance and Calibration

- 2.15 The high volume motors and their accessories will be properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- 2.16 All HVSs are calibrated (five point calibration) using TE-5025A Calibration Kit prior to the commencement of the impact monitoring. The five-point calibration would be carried out every two months

Results and Observations

- 2.17 **Table 2.4** summarizes the monitoring results at AM1, AM1a, AM2 and AM2b in the reporting month.

Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Result in the Reporting Period

Air Quality Monitoring Station	Average $\mu\text{g}/\text{m}^3$	Range $\mu\text{g}/\text{m}^3$	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
1 hour TSP				
AM1	81.6	56.3 – 117.5	286	500
AM2	70.8	52.1 – 107.3	276	
24 hours TSP				
AM1a	69.4	46.4 – 137.3	147	260
AM2b	79.5	47.9 – 100.0	155	

- 2.18 The monitoring data and graphical presentations for 1-hour and 24-hour TSP monitoring results are shown in **Appendix D**.
- 2.19 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 F**.
- 2.20 The monitoring works for 1-hour TSP monitoring were conducted as scheduled in the reporting month.

- 2.21 All 24-hour TSP monitoring at the monitoring station of AM1a and AM2b was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 2.22 Action/Limit Level exceedance was not recorded during the reporting period. Summary of exceedance is presented in **Appendix F**.
- 2.23 According to field observations during site inspection, identifiable dust emission sources near the monitoring stations were vehicles movement on Chuk Wan Street.

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	DE/2014/01	No. 31 Wai Loi Tsuen
NM2		Fu Tei Au

Monitoring Parameters, Frequency and Duration

- 3.3 **Table 3.2** summarizes the monitoring parameters, frequency and total duration of monitoring.

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 Equipment

- 3.4 **Table 3.3** summarizes the noise quality monitoring equipment and **Appendix C** shows the copies of calibration certificates for the equipment used during the reporting period.

Table 3.3 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	SVANTEK, Model no: SVAN 957/977 BSWA, Model no: BSWA 801
Calibrator	SVANTEK, Model no: SV 30A

Monitoring Methodology and QA/QC Procedures

- 3.5 The monitoring methodology and QA/QC procedure are presented as follow:
- 3.6 General weather conditions (i.e. sunny, cloudy or rainy) were recorded by field observation during equipment checking.

Field Monitoring

3.7 The monitoring procedures are as follows:

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground. All monitoring stations were conducted at a distance of 1 m away from the exterior of the building façade.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - Frequency weighting : A
 - Time weighting : Fast
 - Measurement time : 30 minutes
- Noise monitoring was carried out 30 minutes during on the monitoring days. Monitoring data was recorded and stored automatically within the sound level meter system. At the end of the monitoring period, noise levels in term of L_{eq} , L_{90} and L_{10} were recorded.
- All the monitoring data within the sound level meter system was downloaded through the computer software, and all these data was checked and reviewed within the computer.
- Since no wind or gusts shall exceed 5m/s or 10m/s respectively during the noise monitoring, a portable anemometer was used to check the wind speed at the monitoring stations. Weather conditions such as fog and rain were avoided during the monitoring.

Maintenance and Calibration

3.8 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The sound level meter and calibrator were checked and calibrated at yearly intervals.

Results and Observations

3.9 **Table 3.4** summarizes the noise monitoring results in the reporting period.

Table 3.4 Summary the Noise Monitoring Results in Reporting Period

0700-1900 hrs. during weekdays		
Noise Monitoring Station	Range, dB(A), L_{eq} (30 min.)	Limit Level, dB(A)
NM1	58.9 – 61.4	75.0
NM2	58.8 – 59.1	75.0

3.10 The monitoring results and graphical presentations can be referred to **Appendix E**.

- 3.11 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in **Appendix F**.
- 3.12 The major noise source identified at the designated noise monitoring stations was vehicles movement on Chuk Wan Street.

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 G**.
- 4.2 Site audits were conducted on 2, 9, 16, 24 and 31 October 2019 by ET after the commencement of construction works for the Contract. A joint site audit with the representative of IEC was carried out on 24 October 2019. 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 J**.
- 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. No	Observations	Follow Up Action
Water Quality	N/A	N/A	--	--
Air Quality	N/A	N/A	--	--
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 conducted by Contract No. DE/2014/01 were reviewed at a regular basis to ensure the monitoring procedures were carried out properly.

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-02/474/2013	15/2/2018	N/A	The FEP was approved on 15/2/2018	Valid
Registered Chemical Waste Producer				
WPN5213-624-T3685-01	3/7/2017	N/A	The application was approved on 3/7/2017	Valid

Permit No.	Valid Period		Details	Status
	From	To		
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 H** and **Table 4.3**.

Table 4.3 Quantities of Waste Generated from the Reporting Month

Type of waste		Quantity	Disposal Location
C&D Materials (inert)		0 m ³	-
C&D Materials (non-inert)	General Refuse	1.01 tonne	NENT
	Chemical Waste	0 kg	-
	Paper/ cardboard	31 kg	Lau Choi Kee Papers Co. Ltd (35 Po Wan Road, Sheung Shui, NT)
	Plastics	0 kg	-
	Metals	0 kg	-

Implementation Status of Event Action Plans

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

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 since the commencement of the Project. There were

no environmental complaint received since the commencement of the Project. The Complaint Log is presented in **Appendix K**.

5. FUTURE KEY ISSUES**Key Issues for the Coming Month**

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

Table 5.1 Future Key Issue for the next Reporting Month

Major Construction Works	Potential Pollution Issues	Mitigation Measures
<ul style="list-style-type: none"> • Installation of FRP walkway at G/F of MBR Facility Building. • Installation of chemical dosing system in Chemical Rooms. • T & C for Pre – Treatment Screen Chamber. • T & C for Membrane Filtration System. • T & C for Bioreactor NO.1 • PLC Signal Test and Control Test. 	<ul style="list-style-type: none"> • Leakage from chemicals containers. • Waste accumulation on site. 	<ul style="list-style-type: none"> • Waste should be stored and disposed properly to avoid accumulation and leakage. • Accumulated waste to be recycled on-site whenever possible.

Monitoring Schedule for the Next Reporting Period

5.2 The tentative environmental monitoring schedules for the next reporting month are shown in **Appendix B**.

Construction Program for the Next Reporting Period

5.3 The tentative construction program is provided in **Appendix L**.

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 DE/2014/01.

1-hour TSP Monitoring

- 6.2 The monitoring works for the Project were covered by the ET of Contract DE/2014/01. 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 DE/2014/01. No Action/Limit Level exceedance was recorded during the 24-hour TSP monitoring.

- 6.4 All 24-hour TSP monitoring at the monitoring station of AM1a and AM2a was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

- 6.5 The monitoring works for the Project were covered by the ET of Contract DE/2014/01. All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

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

Complaint, notification of summons and Prosecution

- 6.7 No environmental complaint was received in the reporting month.

- 6.8 No notification of summons and prosecution were received in the reporting month.

Recommendations for Future Reporting Months:

- 6.9 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;

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. DIMENSIONS SPECIFIED TO MATCH AN IDENTIFIED MEASUREMENT OR SPECIFIED.
2. LEGEND REFERS TO DRAWING NO. DSEMP1619/02.
3. CONTRACTOR TO VERIFY ALL FACILITIES AND EQUIPMENT FOR PROJECT BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.

WORKING AREA OF ADVANCE WORK



NO.	DATE	DESCRIPTION	BY	CHECKED
1	22 APR 2016	ISSUED		
2	22 APR 2016	REVISED		
3	22 APR 2016	REVISED		
4	22 APR 2016	REVISED		
5	22 APR 2016	REVISED		

Contract No. DSEMP1619/02
 Project No. 4400K AND 44010R
 CONTRACT

PROVISION OF ELECTRICAL AND MECHANICAL FACILITIES FOR SHEK WU HUI SEWAGE TREATMENT WORKS - FURTHER EXPANSION PHASE 1A - SOUTH ROAD SEWAGE PUMPING STATION

Drawing Title
 KEY PLAN AND LOCATION PLAN

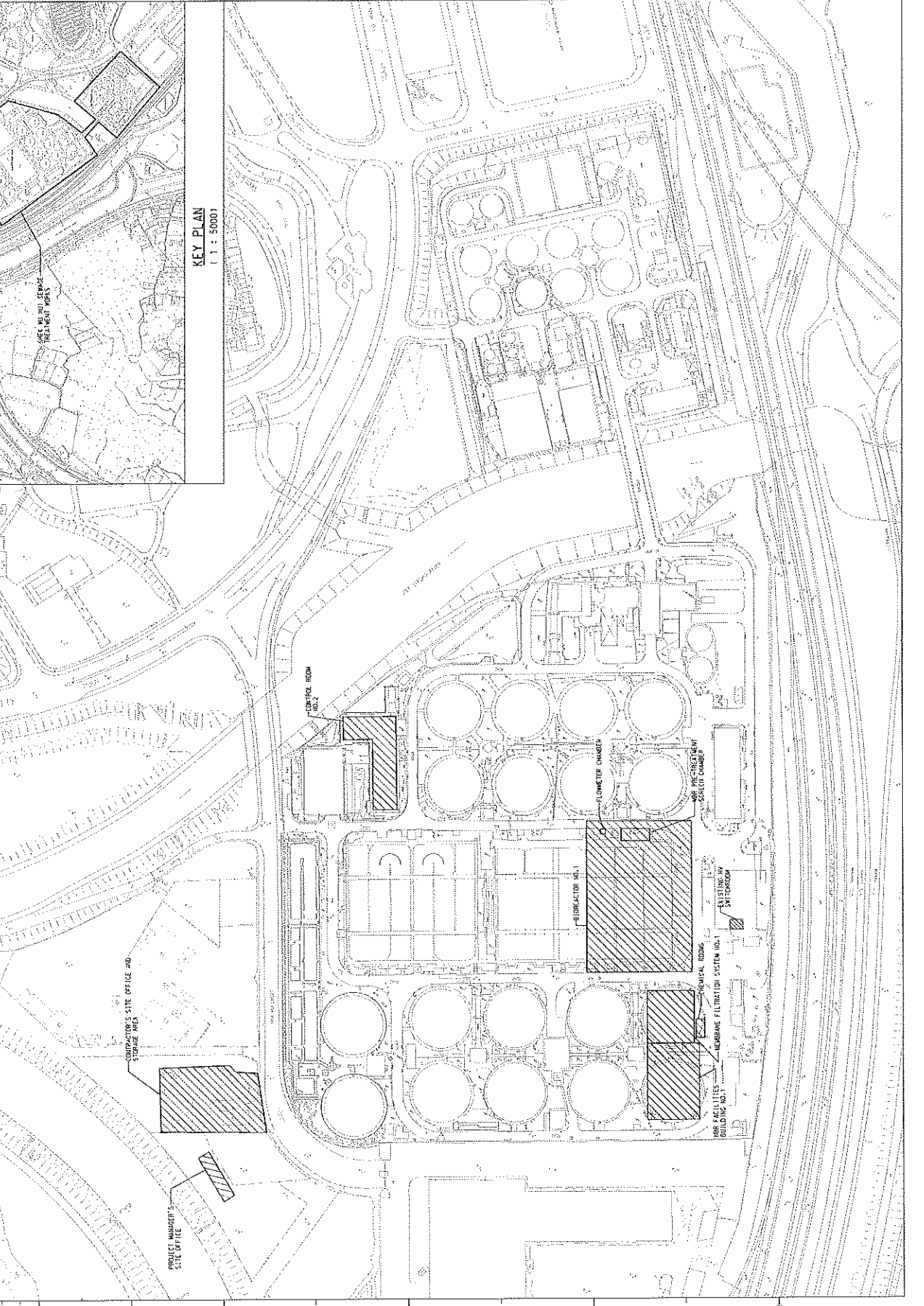
Scale
 1:5000
 AS SHOWN

Office
 ELECTRICAL AND MECHANICAL PROJECTS DIVISION

Drainage Services Department
 Government of the Hong Kong
 Special Administrative Region



31 MARCH 2016



KEY PLAN
 (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)

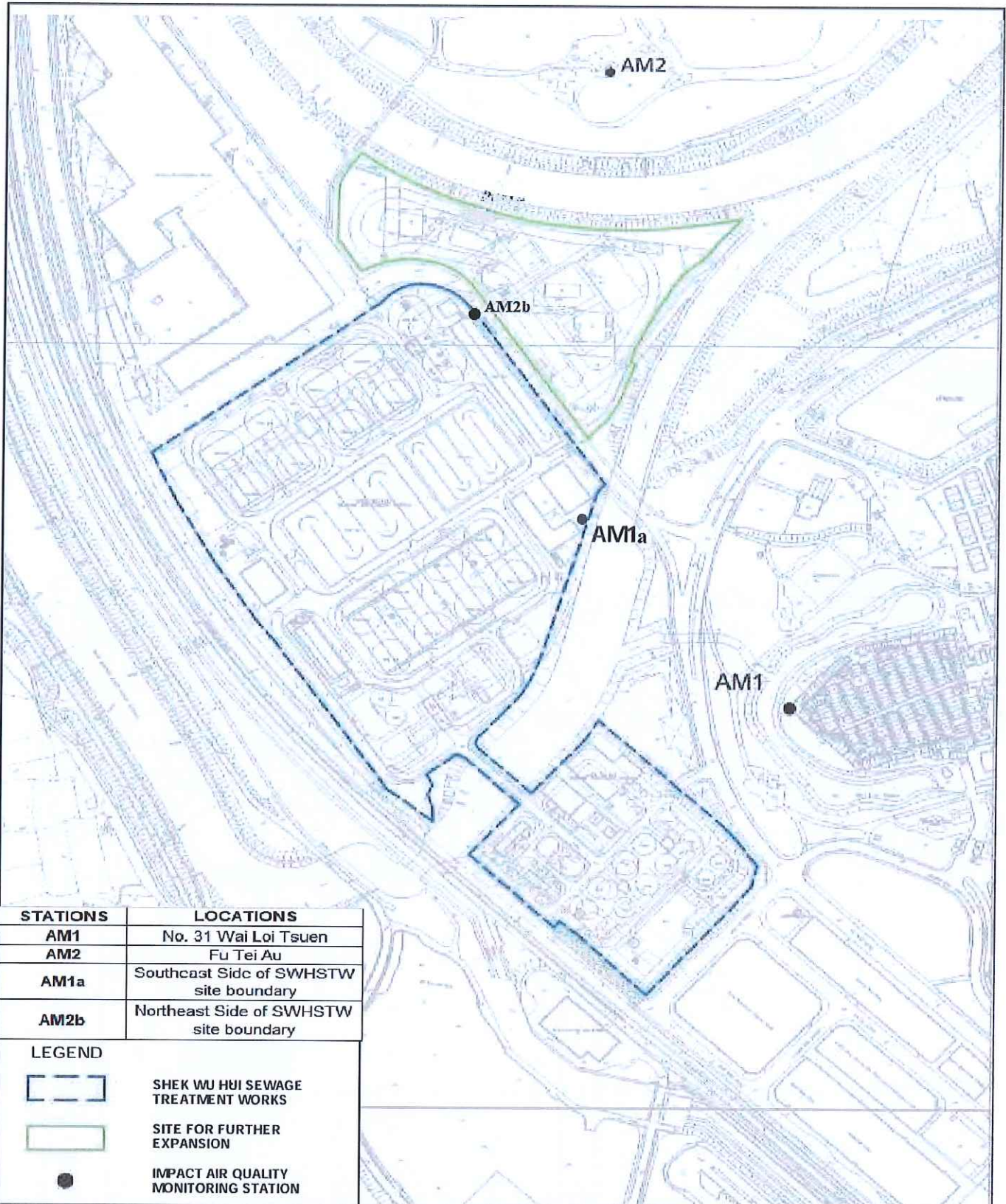
KEY PLAN (1 : 5000)

KEY PLAN (1 : 5000)




KEY PLAN (1 : 5000)


KEY PLAN (1 : 5000)

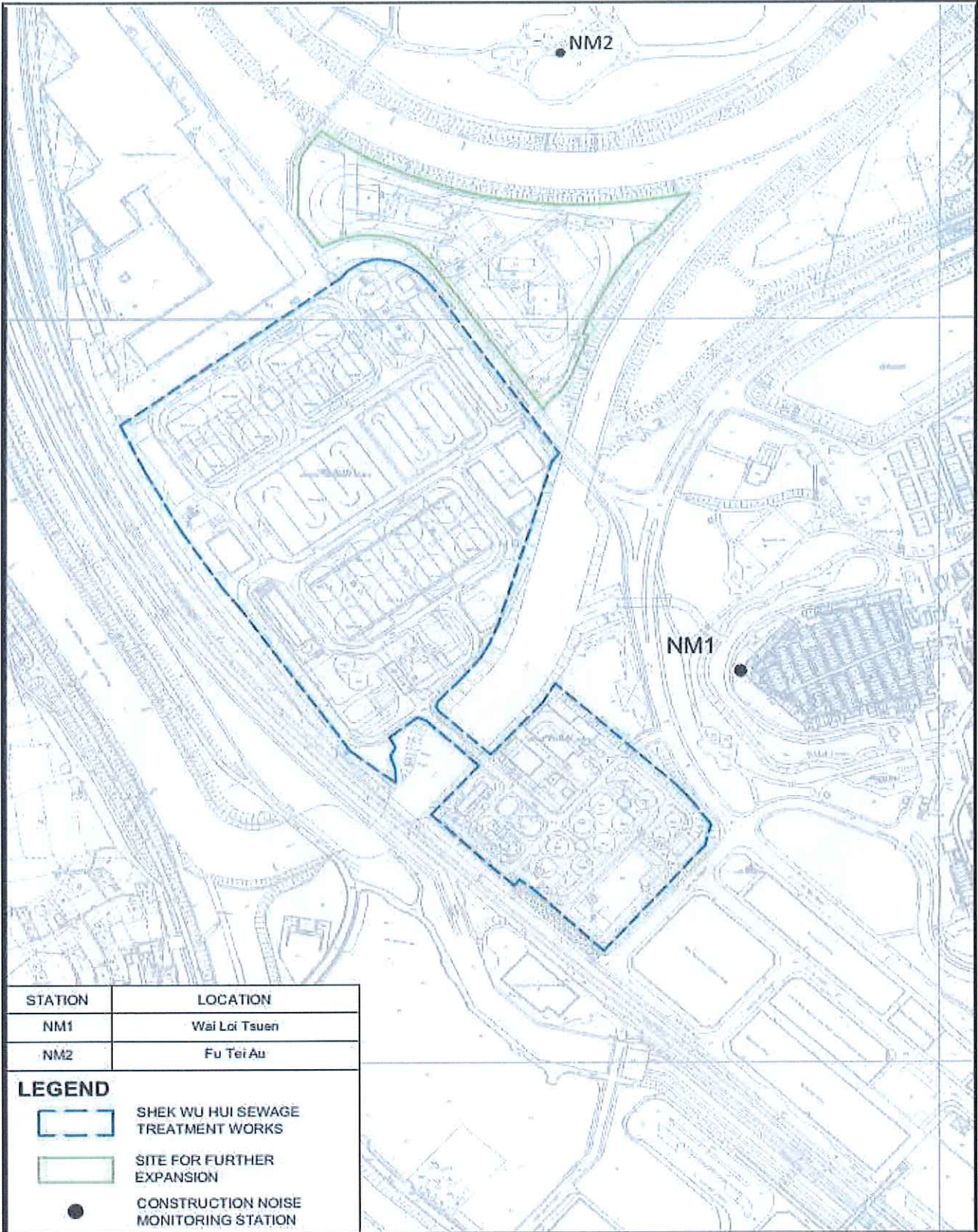
KEY PLAN (1 : 5000)



STATIONS	LOCATIONS
AM1	No. 31 Wai Loi Tsuen
AM2	Fu Tei Au
AM1a	Southcast Side of SWHSTW site boundary
AM2b	Northeast Side of SWHSTW site boundary

LEGEND	
	SHEK WU HUI SEWAGE TREATMENT WORKS
	SITE FOR FURTHER EXPANSION
	IMPACT AIR QUALITY MONITORING STATION


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	Scale	N.T.S	Project No.	MA16002	 consulting . testing . research
	Locations of Impact Air Quality Monitoring Stations	Date	NOV-19	Figures	2_v2	

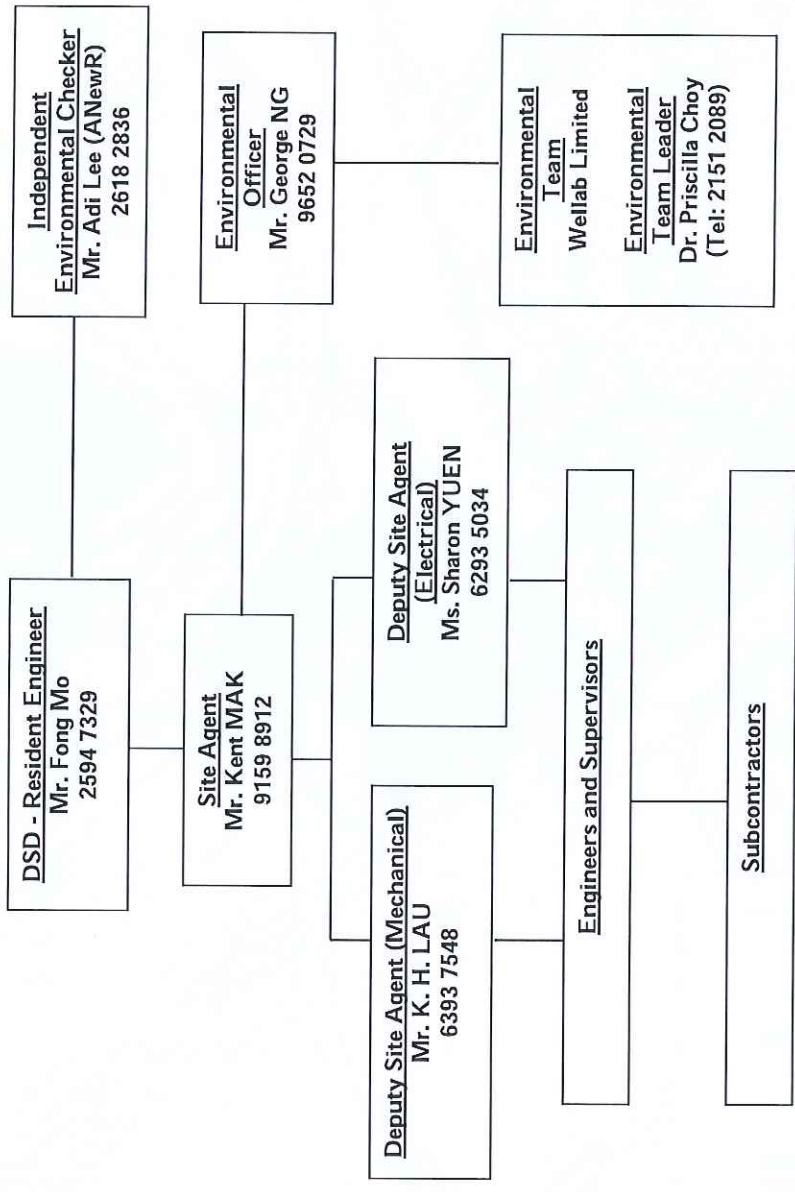


STATION	LOCATION
NM1	Wai Loi Tsuen
NM2	Fu Tei Au

LEGEND

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

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	Scale	Project No.	 consulting . testing . research
	Locations of Impact Noise Monitoring Stations	Date	Figures	
		N.T.S	MA16002	
		Oct-17	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



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

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	N/A	500	N/A
AM1a	N/A	147	N/A	260
AM2	276	N/A	500	N/A
AM2b	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
ENVIRONMENTAL MONITORING
SCHEDULES**

Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities
for Shek Wu Hui Sewage Treatment Works
Impact Air and Noise Monitoring Schedule for October 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct
			24 hr TSP	1 hr TSP X3 Noise	1 hr TSP X3	
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
			24 hr TSP	1 hr TSP X3 Noise		
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
					24 hr TSP	
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
				24 hr TSP		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

- AM1 - No. 31 Wai Loi Tsuen (1hr)
- AM2 - Fu Tei Au (1hr)
- AM1a - Southeast Side of SWHSTW site boundary (24hr)
- AM2b - Northeast Side of SWHSTW site boundary (24hr)

Noise Monitoring Station

- NM1 - No. 31 Wai Loi Tsuen
- NM2 - Fu Tei Au

Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities
for Shek Wu Hui Sewage Treatment Works
Tentative Impact Air and Noise Monitoring Schedule for November 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Nov	2-Nov
					1 hr TSP X3	
3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov
			24 hr TSP	1 hr TSP X3 Noise		
10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov
		24 hr TSP	1 hr TSP X3 Noise			
17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov
		1 hr TSP X3 Noise				
24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov
	24 hr TSP			24 hr TSP		
	1 hr TSP X3 Noise				1 hr TSP X3	

This schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AM1 - No. 31 Wai Loi Tsuen (1hr)
 AM2 - Fu Tei Au (1hr)
 AM1a - Southeast Side of SWHSTW site boundary (24hr)
 AM2b - Northeast Side of SWHSTW site boundary (24hr)

Noise Monitoring Station

NM1 - No. 31 Wai Loi Tsuen
 NM2 - Fu Tei Au

**APPENDIX C
COPIES OF CALIBRATION
CERTIFICATES**

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32048
Date of Issue:	2019-09-12
Date Received:	2019-09-11
Date Tested:	2019-09-12
Date Completed:	2019-09-12
Next Due Date:	2019-11-11

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description : Dust Monitor
 Manufacturer : Met One Instruments
 Model No. : AEROCET-831
 Serial No. : X23807
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 1 minute
 Equipment No. : WA-01-01

Test Conditions:

Room Temperature : 17-22 degree Celsius
 Relative Humidity : 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.048
-------------------------	-------

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
General Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32048A
Date of Issue:	2019-09-12
Date Received:	2019-09-11
Date Tested:	2019-09-12
Date Completed:	2019-09-12
Next Due Date:	2019-11-11

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description : Dust Monitor
 Manufacturer : Met One Instruments
 Model No. : AEROCET-831
 Serial No. : X23808
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 1 minute
 Equipment No. : WA-01-02

Test Conditions:

Room Temperature : 17-22 degree Celsius
 Relative Humidity : 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.069
-------------------------	-------

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
 General Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32048B
Date of Issue:	2019-09-12
Date Received:	2019-09-11
Date Tested:	2019-09-12
Date Completed:	2019-09-12
Next Due Date:	2019-11-11

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23809
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-03

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.099
-------------------------	-------

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
General Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32350
Date of Issue:	2019-10-16
Date Received:	2019-10-14
Date Tested:	2019-10-14
Date Completed:	2019-10-16
Next Due Date:	2019-12-15

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description : Dust Monitor
 Manufacturer : Met One Instruments
 Model No. : AEROCET-831
 Serial No. : X24476
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 1 minute
 Equipment No. : WA-01-05

Test Conditions:

Room Temperature : 17-22 degree Celsius
 Relative Humidity : 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.047
-------------------------	-------

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
 General Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	31950A
Date of Issue:	2019-08-14
Date Received:	2019-08-12
Date Tested:	2019-08-12
Date Completed:	2019-08-14
Next Due Date:	2020-08-13

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Reading, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32049A
Date of Issue:	2019-09-16
Date Received:	2019-09-13
Date Tested:	2019-09-13
Date Completed:	2019-09-16
Next Due Date:	2020-09-15

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
General Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30524C
Date of Issue:	2018-12-17
Date Received:	2018-12-15
Date Tested:	2018-12-15
Date Completed:	2018-12-17
Next Due Date:	2019-12-16

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35927
Equipment No.	: N-13-03

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:


In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32243
Date of Issue:	2019-09-30
Date Received:	2019-09-27
Date Tested:	2019-09-27
Date Completed:	2019-09-30
Next Due Date:	2020-09-29

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
General Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	32243A
Date of Issue:	2019-09-30
Date Received:	2019-09-27
Date Tested:	2019-09-27
Date Completed:	2019-09-30
Next Due Date:	2020-09-29

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for calibration:

Description : Acoustical Calibrator
Manufacturer : SVANTEK
Model No. : SV30A
Serial No. : 24780
Equipment No. : N-09-05

Test conditions:

Room Temperature : 17-22 degree Celsius
Relative Humidity : 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
General Manager

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA16002/10/0008

Station: AM1a - Southeast Side of SWIUSTW site boundary Operator: WK
 Date: 9-Sep-19 Next Due Date: 8-Nov-19
 Equipment No.: A-01-70 Serial No. 3216

Ambient Condition			
Temperature, Ta (K)	304.9	Pressure, Pa (mmHg)	767.1

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0572	Intercept, bc	-0.02285
Last Calibration Date:	25-Feb-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	25-Feb-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X-axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	10.9	3.28	57.73	8.8	2.95
2	8.8	2.95	51.92	7.5	2.72
3	6.7	2.57	45.35	6.1	2.45
4	4.4	2.08	36.83	4.1	2.01
5	3.1	1.75	30.98	2.9	1.69

By Linear Regression of Y on X

Slope, mw = 0.0470 Intercept, bw = 0.2688
 Correlation coefficient* = 0.9974

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 5.32

Remarks: _____

Conducted by: WK Tang Signature: [Signature] Date: 9-9-2019
 Checked by: LEE MAN WAI Signature: [Signature] Date: 9-9-2019

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA16002/45/0008

Station: AM2b - Northeast Side of SW11STW site boundary Operator: WK
 Date: 9-Sep-19 Next Due Date: 8-Nov-19
 Equipment No.: A-01-45 Serial No. 1309

Ambient Condition			
Temperature, Ta (K)	304.9	Pressure, Pa (mmHg)	757.4

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0572	Intercept, bc	-0.02285
Last Calibration Date:	25-Feb-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	25-Feb-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X-axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.8	4.05	71.11	9.7	3.07
2	13.0	3.56	62.60	7.6	2.72
3	9.1	2.98	52.44	5.7	2.36
4	6.3	2.48	43.70	3.6	1.87
5	3.6	1.87	33.13	2.1	1.43

By Linear Regression of Y on X

Slope, mw = 0.0436 Intercept, bw = -0.0014

Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = <u>43 CFM</u>	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point: W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$	<u>3.60</u>

Remarks: _____

Conducted by: W.K. Tam Signature: [Signature] Date: 9/9/19
 Checked by: LEE MAN YU Signature: [Signature] Date: 9/9/2019



RECALIBRATION
DUE DATE:
February 25, 2020

Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 25, 2019	Rootsometer S/N: 438320	Ta: 294 °K	
Operator: Jim Tisch		Pa: 762.0 mm Hg	
Calibration Model #: TE-5025A	Calibrator S/N: 0993		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4070	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8940	7.8	5.00
4	7	8	1	0.8520	8.7	5.50
5	9	10	1	0.7010	12.7	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0120	0.7193	1.4257	0.9958	0.7077	0.8784
1.0079	1.0079	2.0162	0.9917	0.9917	1.2423
1.0059	1.1251	2.2542	0.9898	1.1071	1.3889
1.0047	1.1792	2.3642	0.9886	1.1603	1.4567
0.9993	1.4256	2.8513	0.9833	1.4028	1.7569
QSTD	m= 2.02048		QA	m= 1.26519	
	b= -0.02285			b= -0.01408	
	r= 0.99995			r= 0.99995	

Calculations			
Vstd=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
 145 South Miami Avenue
 Village of Cleves, OH 45002

www.tisch-env.com
 TOLL FREE: (877)263-7610
 FAX: (513)467-9009

**APPENDIX D
1-HOUR AND 24-HOUR TSP
MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

Appendix D - 1-hour TSP Monitoring Results

Location AM1 - No.31 Wai Loi Tsuen			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	9:00	Sunny	56.8
4-Oct-19	10:00	Sunny	60.9
4-Oct-19	11:00	Sunny	56.3
10-Oct-19	9:00	Sunny	76.0
10-Oct-19	10:00	Sunny	72.0
10-Oct-19	11:00	Sunny	79.2
16-Oct-19	9:00	Sunny	87.0
16-Oct-19	10:00	Sunny	83.9
16-Oct-19	11:00	Sunny	78.6
22-Oct-19	9:00	Sunny	93.3
22-Oct-19	10:00	Sunny	79.9
22-Oct-19	11:00	Sunny	82.3
28-Oct-19	9:00	Cloudy	117.5
28-Oct-19	10:00	Cloudy	102.9
28-Oct-19	11:00	Cloudy	96.9
		Minimum	56.3
		Maximum	117.5
		Average	81.6

Location AM2 - Fu Tei Au			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	13:00	Sunny	54.8
4-Oct-19	14:00	Sunny	52.1
4-Oct-19	15:00	Sunny	52.9
10-Oct-19	9:00	Sunny	72.8
10-Oct-19	10:00	Sunny	69.7
10-Oct-19	11:00	Sunny	67.5
16-Oct-19	13:00	Sunny	65.2
16-Oct-19	14:00	Sunny	68.6
16-Oct-19	15:00	Sunny	67.9
22-Oct-19	13:00	Sunny	58.7
22-Oct-19	14:00	Sunny	64.5
22-Oct-19	15:00	Sunny	61.1
28-Oct-19	14:00	Cloudy	107.3
28-Oct-19	15:00	Cloudy	96.7
28-Oct-19	16:00	Cloudy	102.5
		Minimum	52.1
		Maximum	107.3
		Average	70.8

Appendix D- 24-hour TSP Monitoring Results

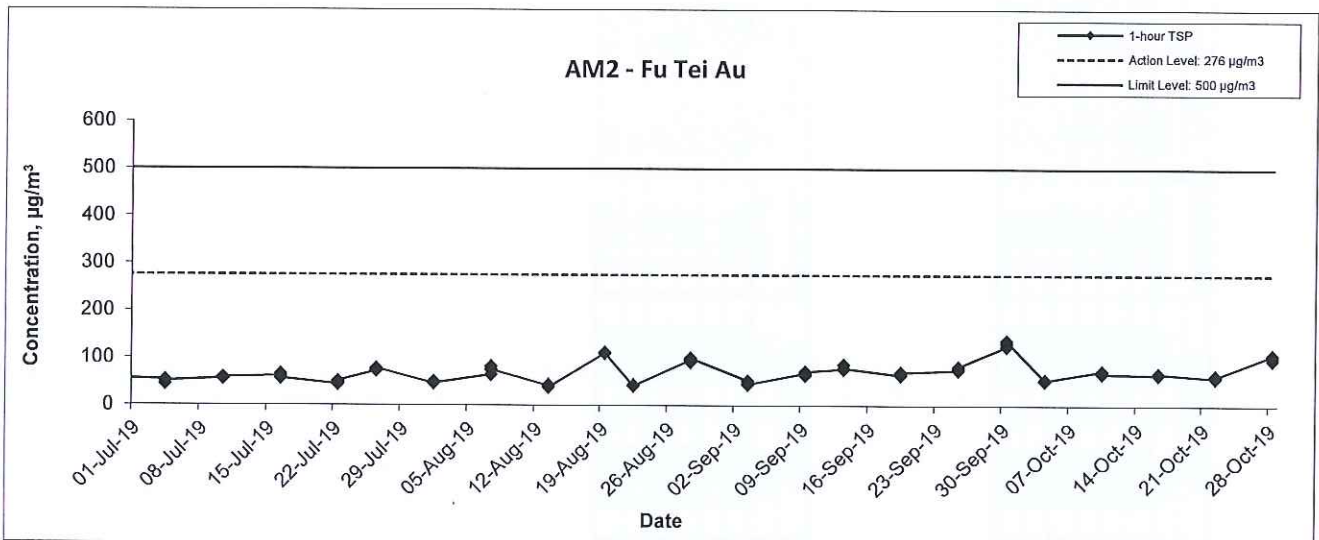
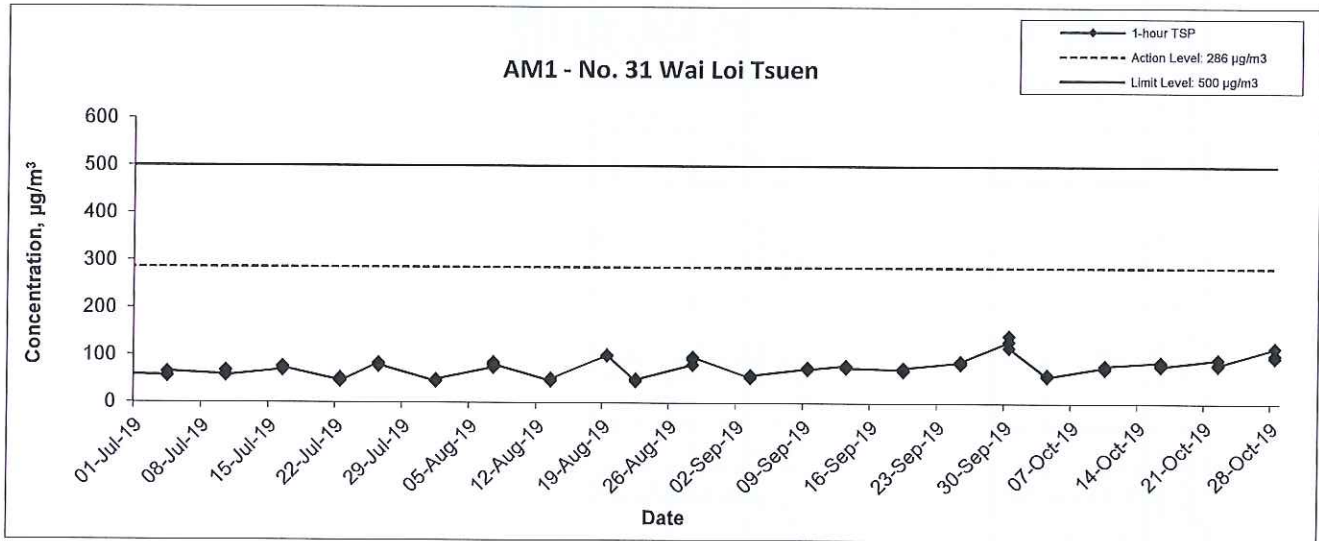
AM1a - Southeast Side of SWHSTW site boundary

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
3-Oct-19	9:00	Sunny	300.5	762.6	3.4770	3.5594	0.0824	17832.6	17856.6	24.0	1.22	1.22	1.22	1758.1	46.9
9-Oct-19	9:00	Cloudy	300.5	764.9	3.5066	3.5883	0.0817	17856.6	17880.6	24.0	1.22	1.22	1.22	1761.1	46.4
15-Oct-19	9:00	Cloudy	297.0	767.9	3.4671	3.5615	0.0944	17880.6	17904.6	24.0	1.23	1.23	1.23	1776.8	53.1
21-Oct-19	9:00	Sunny	297.1	764.4	3.5243	3.6533	0.1290	17904.6	17928.6	24.0	1.23	1.23	1.23	1771.9	72.8
25-Oct-19	9:00	Sunny	298.3	765.8	3.4780	3.5842	0.1062	17928.6	17952.6	24.0	1.23	1.23	1.23	1789.7	60.0
31-Oct-19	9:00	Sunny	295.3	766.4	3.5107	3.7551	0.2444	17952.6	17976.6	24.0	1.24	1.24	1.24	1780.6	137.3
														Min	46.4
														Max	137.3
														Average	69.4

AM1b - Northeast Side of SWHSTW site boundary

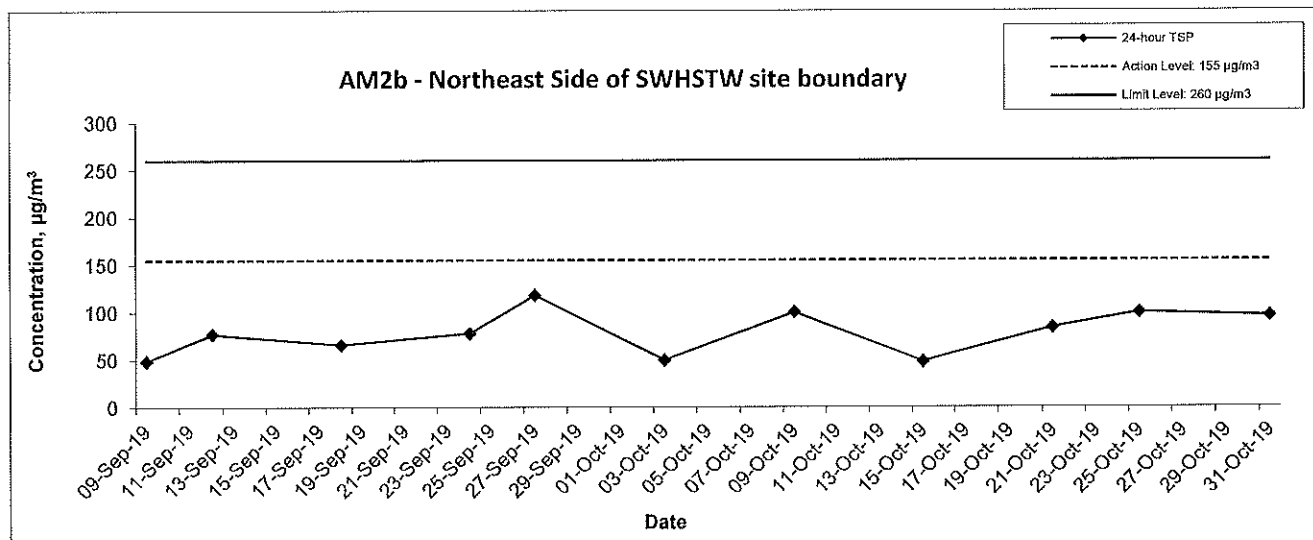
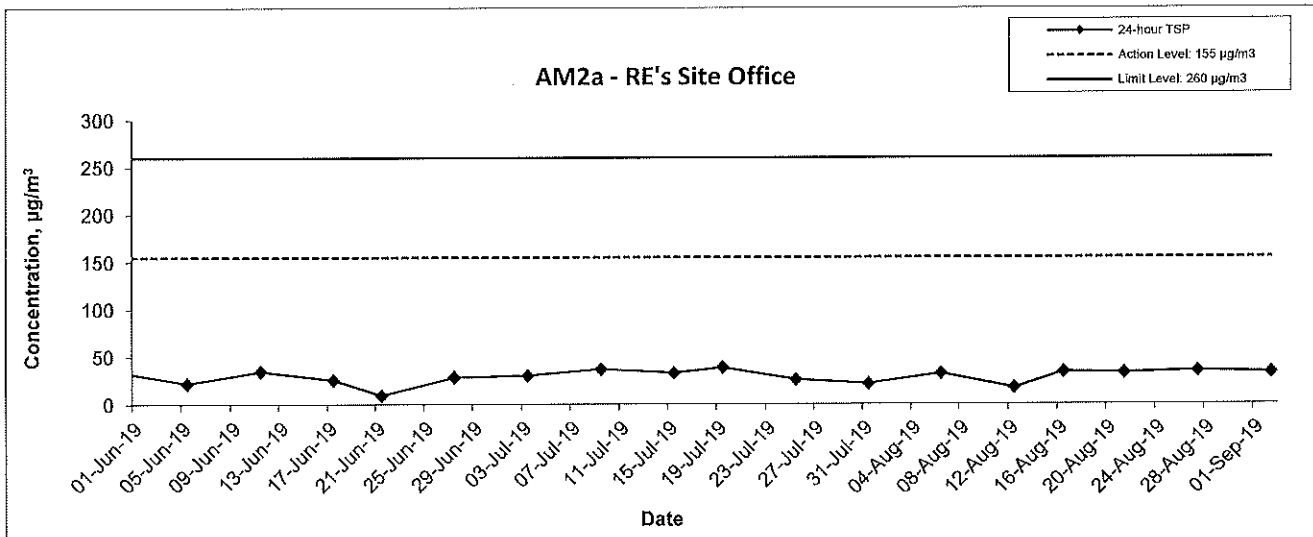
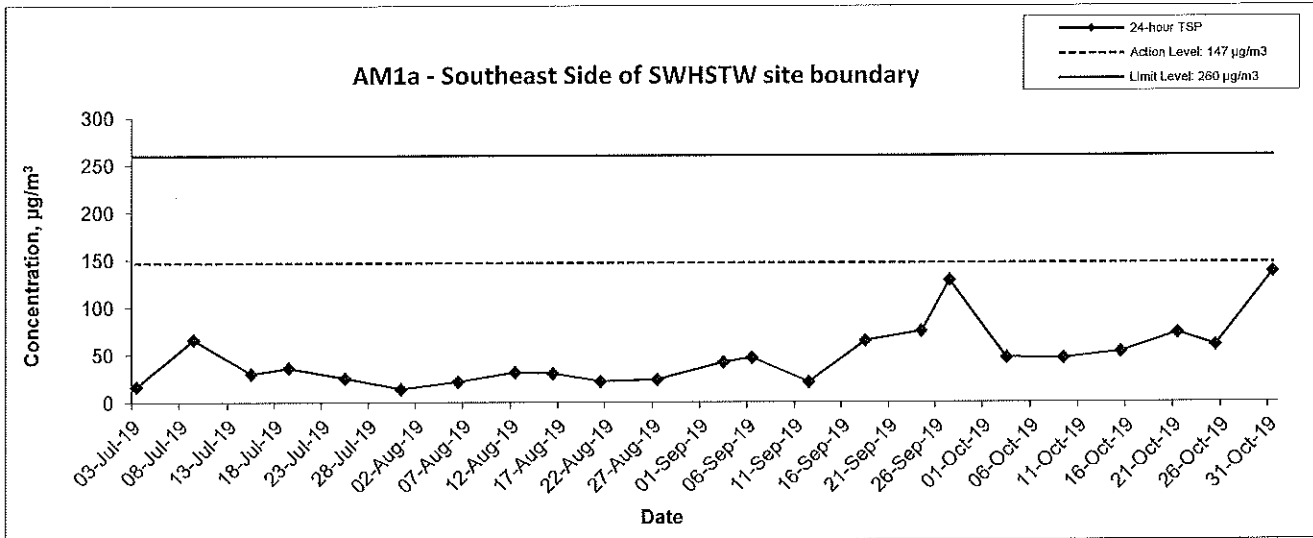
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
3-Oct-19	9:00	Sunny	300.4	762.3	3.5553	3.6429	0.0876	8735.6	8759.6	24.0	1.23	1.23	1.23	1770.3	49.5
9-Oct-19	9:00	Cloudy	300.2	764.6	3.5031	3.6804	0.1773	8759.6	8783.6	24.0	1.23	1.23	1.23	1773.6	100.0
15-Oct-19	9:00	Cloudy	296.7	767.6	3.5409	3.6266	0.0856	8783.6	8807.6	24.0	1.24	1.24	1.24	1787.5	47.9
21-Oct-19	9:00	Sunny	296.8	764.1	3.4546	3.6041	0.1495	8807.6	8831.6	24.0	1.24	1.24	1.24	1783.1	83.8
25-Oct-19	9:00	Sunny	298.0	765.5	3.4483	3.6260	0.1777	8831.6	8855.6	24.0	1.24	1.24	1.24	1781.1	99.8
31-Oct-19	9:00	Sunny	295.0	766.1	3.4919	3.6635	0.1716	8855.6	8879.6	24.0	1.24	1.24	1.24	1790.9	95.8
														Min	47.9
														Max	100.0
														Average	79.5

1-hr TSP Concentration Levels



Title Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA16002	WELLAB 匯力 consulting . testing . research
	Date Oct-19	Appendix D	

24-hr TSP Concentration Levels



Title Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA16002	WELLAB 匯力 consulting . testing . research
	Date Oct-19	Appendix D	

**APPENDIX E
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

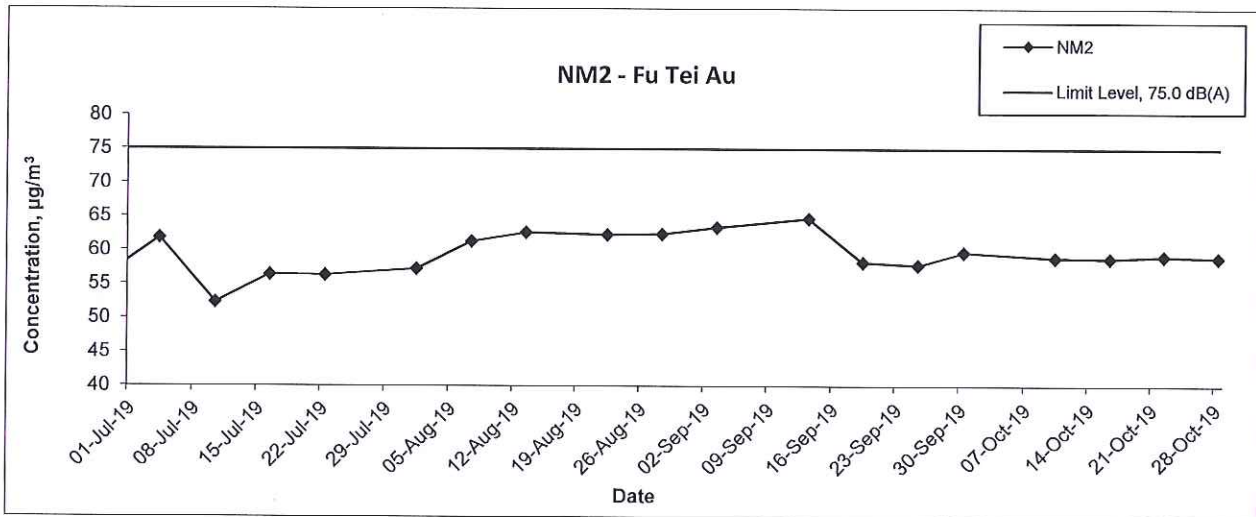
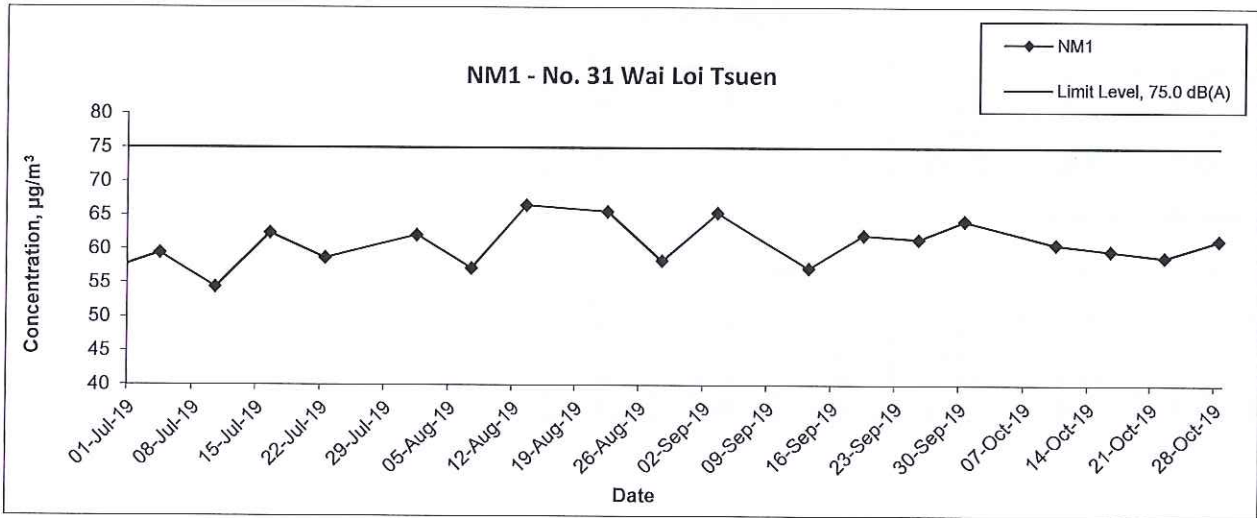
Appendix E - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location NM1 - No.31 Wai Loi Tsuen					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L _{eq}	L ₁₀	L ₉₀
10-Oct-19	9:20	Sunny	60.7	63.2	57.8
16-Oct-19	9:10	Sunny	59.8	62.4	56.2
22-Oct-19	9:30	Sunny	58.9	61.2	55.4
28-Oct-19	9:15	Cloudy	61.4	64.2	58.9

Location NM2 - Fu Tei Au					
Date	Time	Weather	Unit: dB (A) (30-min)		
			Measured Noise Level		
			L _{eq}	L ₁₀	L ₉₀
10-Oct-19	11:30	Sunny	58.9	61.4	54.0
16-Oct-19	11:23	Sunny	58.8	61.6	53.2
22-Oct-19	13:45	Sunny	59.1	62.0	54.7
28-Oct-19	14:10	Cloudy	58.9	60.3	55.7

Noise Levels



Title Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of Noise Monitoring Results	Scale	N.T.S	Project No.	MA16002
	Date	Oct-19	Appendix	E

WELLAB 匯力
 consulting . testing . research

**APPENDIX F
SUMMARY OF EXCEEDANCE**

APPENDIX F – SUMMARY OF EXCEEDANCE

Reporting Month: October 2019

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

**APPENDIX G
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

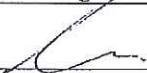
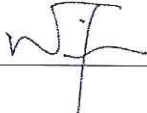
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	191002
Date	2 October 2019 (Wednesday)
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part C - Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Others / Remarks</i></p> <ul style="list-style-type: none">• On previous audit session (Ref. No. 190926), no environmental deficiency was observed during the site inspection.	

	Name	Signature	Date
Recorded by	ChunMing Li		3 October 2019
Checked by	Dr. Priscilla Choy		3 October 2019

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

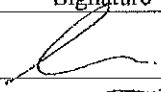

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	191009
Date	9 October 2019 (Wednesday)
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part C - Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Others / Remarks</i></p> <ul style="list-style-type: none">• On previous audit session (Ref. No. 191002), no environmental deficiency was observed during the site inspection.	

	Name	Signature	Date
Recorded by	ChunMing Li		11 October 2019
Checked by	Dr. Priscilla Choy		11 October 2019

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

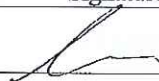
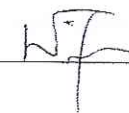
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	191016
Date	16 October 2019 (Wednesday)
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part C - Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Others / Remarks</i></p> <ul style="list-style-type: none">• On previous audit session (Ref. No. 191009), no environmental deficiency was observed during the site inspection.	

	Name	Signature	Date
Recorded by	ChunMing Li		17 October 2019
Checked by	Dr. Priscilla Choy		17 October 2019

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

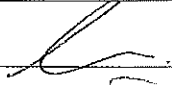
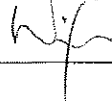
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	191024
Date	24 October 2019 (Thursday)
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part C - Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Others / Remarks</i></p> <ul style="list-style-type: none">• On previous audit session (Ref. No. 191016), no environmental deficiency was observed during the site inspection.	

	Name	Signature	Date
Recorded by	ChunMing Li		25 October 2019
Checked by	Dr. Priscilla Choy		25 October 2019

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


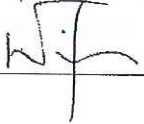
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	191031
Date	31 October 2019 (Thursday)
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part C - Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Others / Remarks</i></p> <ul style="list-style-type: none">• On previous audit session (Ref. No. 191024), no environmental deficiency was observed during the site inspection.	

	Name	Signature	Date
Recorded by	ChunMing Li		1 November 2019
Checked by	Dr. Priscilla Choy		1 November 2019

**APPENDIX H
SUMMARY OF AMOUNT OF WASTE
GENERATED**

Name of Department: Drainage Services Department

Contract No. : DE/2014/01

Monthly Summary Waste Flow Table for 2019

Month	Annual Quantities of Inert C&D Materials Generated Monthly					Annual Quantities of C&D Materials Generated Monthly					
	Total Quantity Generated (in '000m ³)	Hard Rock & 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 '000 kg)	Plastics (see Note 3) (in '000 kg)	Chemicals Waste (in '000 kg)	Others, e.g. general refuse (in '000 kg)
Jan	0	0	0	0	0	0	0	0.016	0	0	4.06
Feb	0	0	0	0	0	0	0	0.009	0	0	2.63
Mar	0	0	0	0	0	0	0	0.028	0	0	3.99
Apr	0	0	0	0	0	0	0	0.015	0	0	9.58
May	0	0	0	0	0	0	0	0	0	0	6.91
Jun	0	0	0	0	0	0	0	0.025	0	0	24.61
Sub-total	0	0	0	0	0	0	0	0.093	0	0	51.78
Jul	0	0	0	0	0	0	0	0.021	0	0	2.89
Aug	0	0	0	0	0	0	0	0.035	0	0	3.63
Sep	0	0	0	0	0	0	0	0.062	0	0	263.28
Oct	0	0	0	0	0	0	0	0.031	0	0	1.01
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	0.242	0	0	322.59

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor

Total Quantity Generated (in '000 m ³)	Hard Rock & Large Broken Concrete (in '000 m ³)	Reused in the Contract (in '000 m ³)	Reused in other Projects (in '000 m ³)	Disposed as Public Fill (in '000 m ³)	Imported Fill (in '000 m ³)	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 '000 kg)
0	0	0	0	0	0	0	0.5	0.5	0.5	340

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 I
EVENT ACTION PLANS

APPENDIX I – Event / Action Plans

Table I-1 Event / Action Plan For Air Quality

ACTION		IEC	ER	CONTRACTOR
EVENT	ET			
ACTION LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	1. Notify Contractor.	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<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 writings; 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.

ACTION					CONTRACTOR	
EVENT	ET	IEC	ER			
LIMIT LEVEL						
1. Exceedance for one sample	<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 failure 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 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate 		
2. Exceedance for two or more consecutive samples	<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 	<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 with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, 	<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 		

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

Table I-2 Event / Action Plan For Construction Noise

ACTION		IEC	ER	CONTRACTOR
EVENT	ET			
Action Level being exceeded	<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 being exceeded	<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.

**APPENDIX J
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

APPENDIX J IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
A S2.4.1.3	<p>Air Quality</p> <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 hardcore; 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; 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 	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	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	<p>material filling line and no overfilling is allowed;</p> <ul style="list-style-type: none"> 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	<p>Good Site Practice:</p> <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	EIAO-TM, NCO
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

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
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; • 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 	<p>Avoid, minimise and mitigate impact on water quality</p>	<p>Contractor</p>	<p>Work Sites</p>	<p>Construction phase of Advance Works and Main Works of Phase 1A</p>	<p>EIAO-TM</p>

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	<ul style="list-style-type: none"> 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. 					
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 PNI/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; 	Minimize waste Generation during construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal Ordinance (WDO)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	<ul style="list-style-type: none"> 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. 					
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 facilities. 	Minimize waste impacts arising from waste storage	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	WDO
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 	Minimize waste impacts from building demolition and new	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO,

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	<p>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.</p> <ul style="list-style-type: none"> • 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. 	building construction				ETWB TCW No. 19/2005
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. • 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 Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

**APPENDIX K
COMPLAINT LOG**

APPENDIX K – COMPLAINT LOG

Reporting Month: October 2019


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 L
CONSTRUCTION PROGRAMME

Activity Name	Activity ID	Activity Start	Activity End	Activity Status	Activity Description
Contract Data					
Standing Date & Completion Date					
AS000019	Contract Data (LCA)	0	28-Dec-15 A		
AS000020	Contract Sharing Date	0	30-Dec-15 A		
AS000110	Digital Contract Portal	0	30-Dec-15 A	23-Oct-18 A	
AS000220	Planned Completion for the whole of the Works	0		29-Dec-19	0

Activity Name	Activity ID	Activity Start	Activity End	Activity Status	Activity Description
Planned Access Date for MBR Facilities	AS001010	0	30-Dec-15 A	27-Apr-16 A	
Planned Access Date for PAKS, Stir, Filter and Chamber's Stir, Filter and Sludge Area	AS001012	0	27-Apr-16 A	27-Apr-16 A	
Planned Access Date for Biomembrator No. 1 - 1st Lane (2nd Half)	AS001020	0	30-Dec-15 A	06-Nov-17 A	
Planned Access Date for Biomembrator No. 1 - 1st Lane (1st Half)	AS001022	0	05-Nov-17 A	06-Nov-17 A	
Planned Access Date for Biomembrator No. 1 - 2nd Lane (1st Half)	AS001024	0	30-Dec-15 A	03-Dec-17 A	
Planned Access Date for Biomembrator No. 1 - 2nd Lane (2nd Half)	AS001026	0	01-Dec-17 A	03-Dec-17 A	
Planned Access Date for Biomembrator No. 1 - 3rd Lane (1st Half)	AS001028	0	30-Dec-15 A	18-Nov-17 A	
Planned Access Date for Biomembrator No. 1 - 3rd Lane (2nd Half)	AS001030	0	19-Nov-17 A	19-Nov-17 A	
Planned Access Date for Biomembrator No. 1 - 4th Lane (1st Half)	AS001032	0	30-Dec-15 A	04-Jan-18 A	
Planned Access Date for Biomembrator No. 1 - 4th Lane (2nd Half)	AS001034	0	16-Jan-18 A	04-Jan-18 A	
Planned Access Date for Biomembrator No. 1 - 5th Lane (1st Half)	AS001036	0	31-May-18 A	31-May-18 A	
Planned Access Date for Biomembrator No. 1 - 5th Lane (2nd Half)	AS001038	0	06-Dec-17 A	06-Dec-17 A	
Planned Access Date for Biomembrator No. 1 - 6th Lane (1st Half)	AS001040	0	20-Sep-17 A	20-Sep-17 A	
Planned Access Date for Biomembrator No. 1 - 6th Lane (2nd Half)	AS001042	0	28-Sep-17 A	28-Sep-17 A	
Planned Access Date for Biomembrator No. 1 - 7th Lane (1st Half)	AS001044	0	03-Nov-17 A	03-Nov-17 A	
Planned Access Date for Biomembrator No. 1 - 7th Lane (2nd Half)	AS001046	0	20-Mar-18 A	20-Mar-18 A	
Planned Access Date for Biomembrator No. 1 - 8th Lane (1st Half)	AS001048	0	20-Feb-18 A	20-Feb-18 A	
Planned Access Date for Biomembrator No. 1 - 8th Lane (2nd Half)	AS001050	0	29-Mar-18 A	29-Mar-18 A	
Planned Access Date for Biomembrator No. 1 - 9th Lane (1st Half)	AS001052	0	28-Jan-18 A	28-Jan-18 A	
Planned Access Date for Biomembrator No. 1 - 9th Lane (2nd Half)	AS001054	0	28-Jun-18 A	28-Jun-18 A	
Planned Access Date for Biomembrator No. 1 - 10th Lane (1st Half)	AS001056	0	26-Jun-18 A	26-Jun-18 A	
Planned Access Date for Biomembrator No. 1 - 10th Lane (2nd Half)	AS001058	0	08-Jan-18 A	08-Jan-18 A	
Planned Access Date for Biomembrator No. 1 - 11th Lane (1st Half)	AS001060	0	11-May-18 A	11-May-18 A	
Planned Access Date for Biomembrator No. 1 - 11th Lane (2nd Half)	AS001062	0	12-Oct-18 A	12-Oct-18 A	
Planned Access Date for Biomembrator No. 1 - 12th Lane (1st Half)	AS001064	0	06-Dec-17 A	06-Dec-17 A	
Planned Access Date for Biomembrator No. 1 - 12th Lane (2nd Half)	AS001066	0	25-Jun-18 A	25-Jun-18 A	
Planned Access Date for Biomembrator No. 1 - 13th Lane (1st Half)	AS001068	0	08-May-18 A	08-May-18 A	
Planned Access Date for Biomembrator No. 1 - 13th Lane (2nd Half)	AS001070	0	29-Mar-18 A	29-Mar-18 A	
Planned Access Date for Biomembrator No. 1 - 14th Lane (1st Half)	AS001072	0	09-May-18 A	09-May-18 A	
Planned Access Date for Biomembrator No. 1 - 14th Lane (2nd Half)	AS001074	0	13-Sep-18 A	13-Sep-18 A	
Planned Access Date for Biomembrator No. 1 - 15th Lane (1st Half)	AS001076	0	12-Oct-18 A	12-Oct-18 A	
Planned Access Date for Biomembrator No. 1 - 15th Lane (2nd Half)	AS001078	0	20-Mar-18 A	20-Mar-18 A	



File Name: DE2014001
Layout: DE101 (Rev. J) - WBS
TASK filter: All Activities

Remaining Work
Critical Activity
Milestone
Actual Progress

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	Revision	Checked	Approved
08-Jan-16	Rev.0	KHLau	KM
12-Jul-17	Rev.E	KHLau	KM
17-Oct-17	Rev.F	KHLau	KM
27-Mar-18	Rev.G	KHLau	KM
14-May-19	Rev.H	KHLau	KM
10-Jun-19	Rev.J	KHLau	KM

Activity ID	Activity Name	Remaining Start Duration	Finish	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
AS001360	Availability of CIP/Cable Ducts	0	03-Nov-17 A															
AS001400	New Access Duct for Other Cable Ducts	0	12-Sep-18 A															
AS001420h	New Access Duct for Chemical RM for Membrane Tank	0	06-Jul-18 A															
AS001422h	New Access Duct for Maintenance Area for Membrane Tank	0	31-Oct-18 A															
AS001440	New Access Duct for 115 Substation No.3	0	13-Jul-18 A															
Key Dates																		
AS002010	Completion of MS/SS/ST/EMM Works including testing and commissioning	0	30-Dec-15 A															
AS002020	Completion of SW/STW - Further Expansion Phase 1A - Advance Works E&M Works including T&C, process commissioning	238	30-Dec-15 A															
Section I																		
AS200010	Contract Completion of the works - Section I	0	30-Dec-15 A															
AS200020	Completion date - Section I (60 days from starting date)	0	29-Sep-16 A															
Time Risk Allowance and Planned Completion																		
AS200040	Planned Completion - Section I	0	29-Sep-16 A															
Section II																		
AS300010	Contract Completion of the works - Section II	0	30-Dec-15 A															
AS300020	Completion date - Section II (60 days from starting date)	0	18-Mar-16 A															
Time Risk Allowance and Planned Completion																		
AS300040	Planned Completion - Section II	0	18-Mar-16 A															
Section III																		
AS400010	Contract Completion of the works - Section III	0	30-Dec-15 A															
AS400020	Completion date - Section III (1020 days from starting date)	0	23-Oct-18 A															
Time Risk Allowance and Planned Completion																		
AS400050	Time Risk Allowance for Completion of Function Test of Section III (2% of installation duration, 625-720 days)	18	06-Dec-19															
AS400060	Planned Completion - Section III	0	23-Dec-19															
Section IV																		
AS500010	Contract Completion of the works - Section IV	0	30-Dec-15 A															
AS500020	Completion date - Section IV (278 days from starting date)	0	28-Jul-17 A															
Time Risk Allowance and Planned Completion																		
AS500030	Time Risk Allowance for Section IV (4% of installation duration, 120 days)	0	22-Jun-17 A															
AS500040	Planned Completion - Section IV	0	28-Jul-17 A															
Activity Schedule No.1 - Preliminaries																		
1.0.1 - Preliminaries																		
Contractor's Site Office Construction																		
AS101010	Construction of Contractor's Site Office & Store	0	22-Jul-16 A															
AS101012	Maintain Contractor's Site Office & Store	215	27-Oct-16 A															
AS101014	Removal of Site Office, Store & Relevant Facilities	21	01-Dec-19															
Site Facilities																		
AS101030	Set up Temp. Electricity Supply, Water Supply	0	18-Aug-10 A															
AS101032	Provision of Temp. Electricity & Water Supply for execution for the Contract	235	27-Oct-16 A															
Permanent Utilities Services																		

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

File Name: DE/2014/01/H

Layout: DE/401 (Rev. J) - WBS

TASK filter: All Activities

Page 2 of 18

Remaining Work

Critical Activity

Milestones

Actual Progress

Date	Revision	Checked	Approved
08-Jan-16	Rev.0	KH Lau	KM
12-Jul-17	Rev.E	KH Lau	KM
17-Oct-17	Rev.F	KH Lau	KM
27-Mar-18	Rev.G	KH Lau	KM
14-May-19	Rev.H	KH Lau	KM
10-Jun-19	Rev.J	KH Lau	KM

Activity ID	Activity Name	Start	Finish	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Section I of Works																		
Activity Schedule No. 2																		
AS201100	Complete Design Calculation of Plant & Material (Refer to P&M Submission Schedule for details)	01 Dec 15A	25 Sep 16A															
AS202100	Complete Civil Requirement Drawings for Flammable Chloride, Precipitation Screen, MF Tanks & MBR (BQ)	01 Dec 15A	28 Mar 16A															
AS202200	Complete Other Civil Requirement Drawings (Refer to Dept. Submission Schedule for details)	01 Dec 15A	22 Sep 16A															
AS203100	Complete Detailed Design and Plant Layout Drawings (Refer to Dept. Submission Schedule for details)	01 Dec 15A	28 Sep 16A															
Section II of Works																		
Activity Schedule No. 3																		
AS301100	Complete Design Calculation of Plant & Material (Refer to P&M Submission Schedule for details)	01 Dec 15A	18 Mar 16A															
AS302100	Complete Civil Requirement Drawings (Refer to Dept. Submission Schedule for details)	01 Dec 15A	18 Mar 16A															
AS303100	Complete Detailed Design and Plant Layout Drawings (Refer to Dept. Submission Schedule for details)	01 Dec 15A	18 Mar 16A															
Section III of Works																		
Plant & Material Procurement																		
Tender and Award of Suppliers - Mechanical - MBR1																		
AS400100	Procurement of BR Feedpumps & Associated Equipment	01 Mar 16A	22 Sep 16A															
AS400110	Procurement of MBR Treatment Screen	01 Mar 16A	21 Jan 16A															
AS400120	Procurement of Wastewater, hugging system	01 Mar 16A	25 Aug 16A															
AS400120a	Procurement of screenings steps	01 Sep 16A	10 Oct 17A															
AS400130	Procurement of backwash/drawback pipeworks and valves	01 Sep 16A	28 Sep 17A															
AS400140	Procurement of MBR system, GSP tank and final pumping system	01 Sep 16A	05 Sep 17A															
AS400150	Procurement of Auxiliary aeration system	01 Jan 16A	28 Sep 16A															
AS400160	Procurement of Other Associated Equip't for MBR Treatment Screen facilities	01 Nov 17A	22 Jan 18A															
Tender and Award of Suppliers - Mechanical - BR1																		
AS400200	Procurement of Aeration Blowers	01 Jan 16A	24 Aug 16A															
AS400210	Procurement of Submersible Mixer	01 Mar 16A	22 Sep 16A															
AS400220	Procurement of Mixed Liquor Return pumps	01 Mar 16A	22 Sep 16A															
AS400230	Procurement of Sludge Return/Sludge Pumps	01 Mar 16A	22 Sep 16A															
AS400240	Procurement of Air Diffusion System	01 Mar 16A	01 Jan 16A															
AS400250	Procurement of associated pipework, ductwork & valves BR1	01 Sep 16A	22 Jan 18A															
AS400260	Procurement of Foam control system and wash water spraying system	01 Jan 16A	22 Sep 16A															
AS400270	Procurement of Other associated equipment for BR1	01 Sep 16A	22 Jan 18A															
Tender and Award of Suppliers - Mechanical - MFS1																		
AS400300	Procurement of Membrane Modules - MFS1	01 Mar 16A	28 Apr 16A															
AS400310	Procurement of Permeate Pumps - MFS1	01 Jan 16A	22 Sep 16A															

Date	Revision	Checked	Approved
08-Jan-16	Rev.0	KHLau	KM
12-Jul-17	Rev.E	KHLau	KM
17-Oct-17	Rev.F	KHLau	KM
27-Mar-18	Rev.G	KHLau	KM
14-May-19	Rev.H	KHLau	KM
10-Jun-19	Rev.J	KHLau	KM

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

File Name: DE2014/01
 Layout: DE401 (Rev. J) - MFS
 TASK filter: All Activities



Activity ID	Activity Name	Start	Finish	Year	2017	2018	2019	2020	2021									
		Month	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
AS-01000a	Install Screening Slips & ERP Block	0	16-Jan-19 A	31-Jan-19 A														
AS-01080	Install M&S system and drain pumping system	0	13-Oct-18 A	31-Jan-19 A														
AS-01100	Install associated pipework and valves	0	17-Feb-18 A	31-Jan-19 A														
AS-01120	Install/Upgrade aeration system	0	08-Oct-18 A	31-Jan-19 A														
AS-01140	Install Oiler associated equipment for MBR Pre-treatment Screen Feedlines	0	02-Jan-19 A	31-Jan-19 A														
AS-01800	Complete Power Cables Laying from Switchboard to Inlet Screen Chamber	0	31-Jan-19 A	31-Jan-19 A														
AS-01900	Site test and commission for MBR pre-treatment System	31	01-Apr-19 A	30-May-19														
AS-01920a	Flow Diversion (PW-10 & XCE-10)	150	11-Dec-18 A	05-Oct-19														
AS-01930j	Provision of PM - Provisional of a Temporary Pump at BR Feed Pump Chamber (Ref. (02)250) in OSD EM@BEI (00)FR	15	20-May-19*	12-Jun-19														
AS-01980j	Installation of Temporary Pump & Associated Pipework / Pumps	42	13-Jun-18	24-Jul-19														
4.2 Works for Bioreactor No. 1 (BR1)																		
Manufacturing, I/T and Delivery																		
AS-02010	Purchase Oiler for Aeration Blowers & master control for aeration system	0	18-Aug-16 A	24-Aug-16 A														
AS-02012	Manufacturing, I/T & Delivery to Site - Aeration Blowers & master control for aeration system	0	01-Jul-16 A	20-Jun-18 A														
AS-02020	Purchase Oiler for Submersible Motors	0	06-Sep-16 A	22-Sep-16 A														
AS-02022	Manufacturing, I/T & Delivery to Site - Submersible Motors	0	14-Oct-16 A	22-Sep-17 A														
AS-02026	Purchase Oiler for Mixed Liquor Return pumps	0	06-Sep-16 A	22-Sep-16 A														
AS-02028	Manufacturing, I/T & Delivery to Site - Mixed Liquor Return pumps	0	14-Oct-16 A	06-Jul-17 A														
AS-02070	Purchase Oiler for Sludge Activated Sludge Pumps	0	06-Sep-16 A	23-Sep-16 A														
AS-02072	Manufacturing, I/T & Delivery to Site - Sludge Activated Sludge Pumps	0	14-Oct-16 A	26-Sep-17 A														
AS-02080	Purchase Oiler for Air Diffusion System	0	02-May-16 A	01-Jun-16 A														
AS-02092	Manufacturing, I/T & Delivery to Site - Air Diffusion System	0	31-Mar-17 A	20-Apr-18 A														
AS-02110	Purchase Oiler for Associated networks, pipeworks and valves	0	13-Nov-17 A	17-Nov-17 A														
AS-02112	Manufacturing, I/T & Delivery to Site - Associated networks, pipeworks and valves	0	18-Nov-17 A	18-Dec-17 A														
AS-02130	Purchase Oiler for foam control system & wash spraying system	0	13-Sep-16 A	22-Sep-16 A														
AS-02132	Manufacturing, I/T & Delivery to Site - Foam control system & wash spraying system	0	14-Oct-16 A	08-Mar-18 A														
AS-02150	Purchase Oiler for Oiler associated equipment for Oiler associated equipment for BR1	0	05-Jun-18 A	22-Jun-18 A														
AS-02152	Manufacturing, I/T & Delivery to Site - Oiler associated equipment for BR1	0	23-Jun-18 A	31-Jul-18 A														
Install, T/C for BR1 (incl. Provision for Health & Safety Requirements)																		
AS-02002	Mobilisation of Works - BR1	0	07-Dec-17 A	21-Dec-17 A														
AS-02050	Install Aeration Blowers & master control system	0	29-Apr-18 A	30-Nov-18 A														
AS-02040	Install Submersible Motors	0	31-Jul-18 A	31-Oct-18 A														
AS-02050	Install Mixed Liquor Return pumps	0	18-Nov-18 A	10-Dec-18 A														
AS-02080	Install Sludge Activated Sludge Pumps	0	31-Jul-18 A	31-Oct-18 A														
AS-02100	Install Air Diffusion Aeration System	0	03-May-18 A	30-Apr-19 A														
AS-02120	Install Associated networks, pipeworks and valves	0	22-Dec-17 A	15-Feb-19 A														
AS-02140	Install Foam control system & wash spraying system	32	31-Jun-19 A	31-Aug-19														
AS-02160	Install Oiler associated equipment for BR1	0	16-Jun-18 A	20-Apr-19 A														
AS-02060	Complete Power Cable Laying from Switchboard to Pumps for BR1	0	30-Apr-19 A	30-Apr-19 A														
AS-02060	Site Testing & Commissioning for BR1	60	30-Apr-18	28-Jun-20														

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

File Name: DE20140101

Layout: DE1401 (Rev. 4) - WBS

TASK Filter: All Activities

Remaining Work

Critical Activity

Milestone

Actual Progress

Page 8 of 18

Approved

Activity ID	Activity Name	Start	Finish	2013	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.3 Works for Membrane Filtration System (MFS)																													
Manufacturing, RVT and Delivery																													
AS/03010	Purchase Order for Membrane Modules	01-Feb-16A	20-Apr-18A																										
AS/03012	Manufacturing, RVT & Delivery to Site - Membrane Modules	01-Mar-16A	02-Aug-18A																										
AS/03020	Purchase Order for Permeate Pumps	01-Sep-16A	23-Sep-17A																										
AS/03032	Manufacturing, RVT & Delivery to Site - Permeate Pumps	07-Oct-16A	14-Jun-18A																										
AS/03050	Purchase Order for Return Activated Sludge Pumps	01-Sep-16A	23-Sep-16A																										
AS/03052	Manufacturing, RVT & Delivery to Site - Return Activated Sludge Pumps	07-Oct-16A	06-Sep-17A																										
AS/03070	Purchase Order for Backwash Pumps (Item Deleted)	01-Aug-16A	31-Aug-16A																										
AS/03072	Manufacturing, RVT & Delivery to Site - Backwash Pumps (Item Deleted)	01-Aug-16A	31-Aug-16A																										
AS/03090	Purchase Order for Air Scouring Blowers	01-Aug-16A	31-Aug-16A																										
AS/03092	Manufacturing, RVT & Delivery to Site - Air Scouring Blowers	01-Aug-16A	30-Jun-18A																										
AS/03110	Purchase Order for Air Compressor	01-Dec-17A	21-Dec-17A																										
AS/03112	Manufacturing, RVT & Delivery to Site - Air Compressor	02-Dec-17A	25-Jun-18A																										
AS/03130	Purchase Order for Chemical Dosing System (M) NOCO dosing pumps	05-Jun-17A	20-Jun-17A																										
AS/03132	Manufacturing, RVT & Delivery to Site - Chemical Dosing System (M) NOCO dosing pumps	05-Jun-17A	17-Apr-18A																										
AS/03150	Purchase Order for Chemical Dosing System (M) Chlor Acid dosing pumps	05-Jun-17A	20-Jun-17A																										
AS/03152	Manufacturing, RVT & Delivery to Site - Chemical Dosing System (M) Chlor Acid dosing pumps	05-Jun-17A	17-Apr-18A																										
AS/03170	Purchase Order for Chemical Dosing System (M) Chemical storage tank	05-Feb-17A	28-Feb-17A																										
AS/03172	Manufacturing, RVT & Delivery to Site - Chemical Dosing System (M) Chemical storage tank	01-Mar-17A	30-Nov-18A																										
AS/03190	Purchase Order for Permeate Detergents, Detergents Pumps for MFS and Cleaning Detergents	02-Aug-17A	05-Sep-17A																										
AS/03192	Manufacturing, RVT & Delivery to Site - Permeate Detergents, Detergents Pumps for MFS and Cleaning Detergents	05-Sep-17A	31-Jul-18A																										
AS/03210	Purchase Order for Wash water pumping system	08-Aug-17A	05-Sep-17A																										
AS/03212	Manufacturing, RVT & Delivery to Site - Wash water pumping system	05-Sep-17A	31-Jul-18A																										
AS/03230	Purchase Order for Associated networks, pipeworks and valves	01-Jun-18A	22-Jun-18A																										
AS/03232	Manufacturing, RVT & Delivery to Site - Associated networks, pipeworks and valves	02-Jun-18A	31-Jul-18A																										
AS/03250	Purchase Order for Cater associated equipment for MFS1	02-Jun-18A	09-Feb-18A																										
AS/03252	Manufacturing, RVT & Delivery to Site - Cater associated equipment for MFS1	09-Feb-18A	30-Nov-18A																										
Install, TPC for MFS1 (incl. Provision for Health & Safety Requirements)																													
AS/03020	Manufacturing of Works - MBR Facilities Building, CP	07-Dec-17A	20-Jan-17A																										
AS/03020A	Manufacturing of Works - MBR Facilities Building, BP	01-Mar-18A	09-Apr-18A																										
AS/03020B	Manufacturing of Works - MBR	02-Apr-18A	09-Apr-18A																										
AS/03020C	Install Membrane Modules, MFS Tank	02-May-18A	25-Jul-18A																										
AS/03040	Install Permeate Pumps No. 1 - No.6, MBR Bldg	04-Aug-18A	17-Aug-18A																										
AS/03060	Install Return Activated Sludge Pumps, No. 1 - No.5, MBR Bldg	01-May-18A	30-Jun-18A																										
AS/03080	Install Backwash Pumps, MBR Bldg (Not required)	03-Dec-17A	30-Dec-17A																										
AS/03100	Install Air Scouring Blowers, MBR Bldg	02-Aug-18A	11-Jun-18A																										
AS/03120	Install Air Compressor, MBR Bldg	01-Aug-18A	30-Sep-18A																										
AS/03140	Manufacturing of Works - Chemical Rooms	07-Jul-18A	20-Jul-18A																										
AS/03142	Install NOCO Dosing Pumps & Storage tank	01-Nov-18A	20-Nov-18A																										

25-May-19 25-Jul-19, Install Membrane Modules, MFS Tank


Date	Revision	Checked	Approved
08-Jan-16	Rev.0	KHLau	KM
12-Jul-17	Rev.E	KHLau	KM
17-Oct-17	Rev.F	KHLau	KM
27-Mar-18	Rev.C	KHLau	KM
14-May-19	Rev.H	KHLau	KM
10-Jun-19	Rev.J	KHLau	KM

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

File Name: DE2014/01.11
 Layout: DE401 (Rev. J) - WBS
 TASK: Filter, All Activities

Remaining Work
 Critical Activity
 Milestone
 Activity Progress

Page 9 of 18



Activity ID	Activity Name	Anticipated Start Date	Finish	2019													
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Preparation of Records of the Site																	
Secondary Stations / Inspection (PS)																	
AS/00550	Prepare & Submit P314 & P301	14 Jul-19	05-Aug-19														
AS/00510	F.S. Inspection	14 Jul-19	04-Sep-19														
AS/00520	Report of Completion on Ventilation System	7 Jul-19	20-Jul-19														
AS/00530	VAC Inspection	14 Jul-19	12-Aug-19														
AS/00540	Issuance of Acceptance Letter	7 Sep-19	11-Sep-19														
AS/00550	Application of D.C. Licence	D	20-Sep-19														
AS/00560	Processing of D.C. Licence Application	31 May-19	31-May-19														
AS/00570	D.C. Inspection & Issue D.C. Licence	31 Jul-19	21-Aug-19														
Secondary Stations / Inspection (MS)																	
AS/00600	Submit WFO46 Pt. 1 & 1a WSD (PS)	01 Oct-18	04-Nov-18														
AS/00610	Approval of WFO46 Pt. 1 & 1a WSD (PS)	31 May-19	20-Jul-19														
AS/00620	Submit WFO46 Pt. 0 to WSD (PS)	7 Jul-19	28-Aug-19														
AS/00630	WSD Inspection (PS)	30 Jul-19	28-Aug-19														
Manufacturing, RT & Delivery																	
AS/00610	Purchase Order for Indoor Lighting	01 Nov-18	23-Nov-18														
AS/00612	Manufacturing, RT & Delivery to Site - Indoor Lighting	01 Nov-18	23-Nov-18														
AS/00630	Purchase Order for Air Conditioning & Ventilation System	01 Feb-18	09-Feb-18														
AS/00632	Manufacturing, RT & Delivery to Site - Air Conditioning & Ventilation System	01 Feb-18	07-Jun-18														
AS/00635	Purchase Order for Outdoor Lighting Installation for relevant area	01 Mar-18	23-Mar-18														
AS/00632	Manufacturing, RT & Delivery to Site - Outdoor Lighting Installation for relevant area	01 Mar-18	23-Jun-18														
AS/00670	Purchase Order for Other B.S. Installation for relevant area	01 Nov-18	23-Nov-18														
AS/00672	Manufacturing, RT & Delivery to Site - Other B.S. Installation for relevant area	01 Nov-18	23-Jun-18														
AS/00690	Purchase Order for F.S. Fitings & Equipment	01 Feb-18	01-Mar-18														
AS/00692	Manufacturing, RT & Delivery to Site - F.S. Fitings & Equipment	01 Feb-18	28-Jun-18														
Install, T&C for Building Services (incl. Provision for Health & Safety Requirements)																	
AS/00620	Install Indoor Lighting - Bulbing, Controls, MGR Building	01 Jul-18	27-Aug-18														
AS/00622	Install Indoor Lighting Fixings, MGR Building	01 Aug-18	15-Sep-18														
AS/00624	Install Indoor Lighting - Bulbing / Controls, Chemical Rooms	01 Jul-18	20-Jan-19														
AS/00626	Install Indoor Lighting Fixings, Chemical Rooms	01 Jul-18	02-Feb-19														
AS/00640	Overhaul of Ventilation System, MGR Building	01 Nov-18	30-Dec-18														
AS/00641	Install Ventilation Fans & Control, MGR Building	01 Dec-18	30-Apr-19														
AS/00642	Complete Ventilation System	D	30-Apr-19														
AS/00643	Install Split Type Air Conditioning, MGR Building	01 Aug-18	28-Feb-19														
AS/00644	M&C Ready	01 Apr-19	30-Apr-19														
AS/00645	Provision of Temp. A/C for B.M. Swerdlow (Not Required)	01 Apr-18	30-Apr-18														
AS/00646	Temporary M&C (Not Required)	01 Apr-18	30-Apr-18														
AS/00648	Install Outdoor Lighting for Pre-treatment Screens & Flowmeter Chamber	01 Feb-19	02-Mar-19														
AS/00651	Install Outdoor Lighting for BTL & its Valley Areas	01 Dec-18	14-Jan-19														

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	Revision	Checked	Approved
08-Jan-16	Rev.0	KHLau	KM
12-Jul-17	Rev.E	KHLau	KM
17-Oct-17	Rev.F	KHLau	KM
27-Mar-18	Rev.G	KHLau	KM
14-May-19	Rev.H	KHLau	KM
10-Jun-19	Rev.J	KHLau	KM

File Name: DE2014/01/1

Layout: DE/401 (Rev. J) - WBS

TASK filter: All Activities

Pages 11 of 16

Activity ID	Activity Name	Start	Finish	Final	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
AS00052	Install Outdoor Lighting for MBR Building & its Vicinity Areas	01-Dec-18 A	15-Nov-18 A																					
AS00053	Install Outdoor Lighting for MSSI & its Vicinity area	30-Oct-18 A	30-Jun-19	54																				
AS00054	Install Outdoor Lighting for Chemical Rooms	01-Jun-19 A	10-Feb-19 A																					
AS00080	Install Other B.S. Switches for Power Supply to Equipment, Pre-treatment Screens & Flowmeter Chamber	02-Oct-18 A	31-Oct-18 A																					
AS00081	Install Other B.S. Switches for Power Supply to Equipment, DRI & its Vicinity Areas	01-Nov-18 A	30-Nov-18 A																					
AS00082	Install Other B.S. Switches for Power Supply to Equipment, MBR Facilities Building	30-Nov-18 A	13-Jun-19 A																					
AS00083	Install Other B.S. Switches for Power Supply to Equipment, MSSI & its Vicinity Areas	14-Jun-19 A	27-Feb-19 A																					
AS00084	Install Other B.S. Switches for Power Supply to Equipment, Clientent Rooms	01-Mar-19 A	20-Apr-19 A																					
AS00080	Testing and Commission of B.S. Installation	01-Apr-19 A	05-Jul-19	85																				
Install TTC for Fire Services (incl. Provision for Health & Safety Requirements)																								
AS00101	Install Trunking & Conduits for AIN System - MBR Facilities Building	02-Jun-18 A	31-Jul-18 A																					
AS00102	Install AFA Fittings & Accessories, Wiring - MBR Facilities Building	01-Aug-18 A	30-Jun-19	97																				
AS00104	Install Trunking & Conduits for AIN System - Chemical Room/D.C. Store	01-Dec-18 A	27-Dec-18 A																					
AS00106	Install AFA Fittings & Accessories, Wiring - Chemical Room/D.C. Store	28-Dec-18 A	03-Jun-19 A																					
AS00108	Install FAS Main Control System	24-Jun-19	30-Jun-19																					
AS00180	Pipework for Sprinkler, HRVIR, MBR Facilities Building	03-Dec-18 A	22-Dec-18 A																					
AS00182	Install Sprinkler Head, Hose Reel & Fire Hydrant - MBR Facilities Building	20-Dec-18 A	20-Jun-19 A																					
AS00184	Install F.S. Pumps and Control - MBR Facilities Building	01-Aug-18 A	14-Oct-18 A																					
AS00240	F.S. Direct Link Connection	05-Jul-19	12-Jul-19	85																				
AS00260	Install Fire (Irregular) for Rebound Areas	16-Jul-19	22-Jul-19	136																				
AS00000	Testing of F.S. System	10-Jul-19	22-Jul-19	85																				
4.7 HV Switchgear, Transformer, LV Switchgear, LV Control Gear etc.																								
Manufacturing, RT and Delivery																								
AS00700	Purchase Order for 11kV HV Switchboard	12-Sep-18 A	21-Sep-18 A																					
AS00702	Manufacturing, RT & Delivery to Site - 11kV HV Switchboard	07-Oct-18 A	11-Jan-18 A																					
AS00700	Purchase Order for 3.3kV HV Switchboard	12-Sep-18 A	21-Sep-18 A																					
AS00702	Manufacturing, RT & Delivery to Site - 3.3kV HV Switchboard	07-Oct-18 A	27-Nov-18 A																					
AS00700	Purchase Order for Transformer	13-Sep-18 A	21-Sep-18 A																					
AS00702	Manufacturing, RT & Delivery to Site - Transformer	07-Oct-18 A	15-Mar-18 A																					
AS00700	Purchase Order for LV Switchboard	13-Sep-18 A	22-Sep-18 A																					
AS00702	Manufacturing, RT & Delivery to Site - LV Switchboard No.1	03-Sep-18 A	18-May-18 A																					
AS00704	Manufacturing, RT & Delivery to Site - LV Switchboard No.2	30-Sep-18 A	28-Jun-18 A																					
AS00706	Manufacturing, RT & Delivery to Site - LV Switchboard No.3	30-Sep-18 A	03-Sep-18 A																					
AS00700	Purchase Order for (B) VSD for Penetrator Pumps	03-Mar-17 A	16-Mar-17 A																					
AS00702	Manufacturing, RT & Delivery to Site - (B) VSD for Penetrator Pumps	17-Mar-17 A	04-Apr-18 A																					
AS00710	Purchase Order for (B) VSD for RAS Pumps	03-Mar-17 A	15-Mar-17 A																					
AS00712	Manufacturing, RT & Delivery to Site - (B) VSD for RAS Pumps	17-Mar-17 A	04-Apr-18 A																					
AS00710	Purchase Order for (B) VSD for SAS Pumps	03-Mar-17 A	15-Mar-17 A																					
AS00712	Manufacturing, RT & Delivery to Site - (B) VSD for SAS Pumps	17-Mar-17 A	04-Apr-18 A																					
AS00710	Purchase Order for (B) VSD for BR Feedpumps	03-Mar-17 A	15-Mar-17 A																					

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

File Name: DE201401/1

Layout: DE1401 (Rev. J) - WBS

TASK filter: All Activities

Remaining Work

Critical Activity


Milestone

Actual Progress

Page 12 of 18

Date	Revision	Checked	Approved
08-Jan-16	Rev.0	KH Lau	KM
12-Jul-17	Rev.E	KH Lau	KM
17-Oct-17	Rev.F	KH Lau	KM
27-Mar-18	Rev.G	KH Lau	KM
14-May-19	Rev.H	KH Lau	KM
10-Jun-19	Rev.J	KH Lau	KM

Activity ID	Activity Name	Milestone / Description	2019												2020		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb
Manufacturing, IWT and Delivery																	
AS400010	Purchase Order for 1 no. 1,500 lpgs Lifting Appliances - 0 For Pre-treatment Screen Chamber	0	08-Feb-17A														
AS400012	Manufacturing, IWT & Delivery to Site - 1 no. 1,500 lpgs Lifting Appliances - 0 For Pre-treatment Screen Chamber	0	15-Feb-17A														
AS400020	Purchase Order for 1 no. 500 lpgs Lifting Appliances - 0 For BR	0	08-Feb-17A														
AS400022	Manufacturing, IWT & Delivery to Site - 1 no. 500 lpgs Lifting Appliances - 0 For BR	0	15-Feb-17A														
AS400050	Purchase Order for 1 no. 3,000 lpgs & 1 no. 4,000 lpgs Lifting Appliances - 0 In CCF of Membrane Facilities Building	0	08-Feb-17A														
AS400052	Manufacturing, IWT & Delivery to Site - 1 no. 3,000 lpgs & 1 no. 4,000 lpgs Lifting Appliances - 0 In CCF of Membrane Facilities Building	0	15-Feb-17A														
AS400070	Purchase Order for 2 nos. 8,500 lpgs Lifting Appliances - 00 In I/F of Membrane Facilities Building	0	08-Feb-17A														
AS400072	Manufacturing, IWT & Delivery to Site - 2 nos. 8,500 lpgs Lifting Appliances - 00 In I/F of Membrane Facilities Building	0	15-Feb-17A														
AS400090	Purchase Order for 2 nos. 5,000 lpgs Lifting Appliances - 0 For MFS1	0	08-Feb-17A														
AS400092	Manufacturing, IWT & Delivery to Site - 2 nos. 5,000 lpgs Lifting Appliances - 0 For MFS1	0	15-Feb-17A														
Install, TIC for Pre-treatment Screen Chamber (incl. Provision for Health & Safety Requirements)																	
AS400020	Installation of Works - MBR Pre-treatment Screen Chamber	0	04-Jun-18A														
AS400022	Install Manual Valve support column, 1,500lpgs S.W.L., Electric Chain Hoist	0	08-Feb-18A														
AS400024	SAT of Lifting Appliances	0	25-Mar-18A														
Install, TIC for Reverse Osmosis (RO) (incl. Provision for Health & Safety Requirements)																	
AS400040	Install Manual 500lpgs S.W.L. Manual Hoist o/w Trolley	0	22-Oct-18A														
AS400042	SAT of Lifting Appliances	0	24-Nov-18A														
Install, TIC for MBR Facilities Building (incl. Provision for Health & Safety Requirements)																	
AS400020	Install Electric Involving Crane for 1 No. 3,000 kg S.W.L. & 1 No. 4,000 S.W.L. - CCF	0	07-Dec-17A														
AS400022	SAT of Lifting Appliances, CCF	0	08-Mar-18A														
AS400080	Install 2 Nos. Electric Involving Crane for 8,500 kg S.W.L. - I/F	0	24-Feb-18A														
AS400082	SAT of Lifting Appliances, I/F	0	31-Mar-18A														
Install, TIC for MFS1 (incl. Provision for Health & Safety Requirements)																	
AS400011	Install 2 Nos. Electric Involving Crane for 5,000 kg S.W.L. - MFS1 Tanks	0	01-Jun-18A														
AS400012	SAT of Lifting Appliances (MFS1 Tanks)	0	22-Oct-18A														
4.9 Cabling, Earthing and Lightning Protection System																	
Manufacturing, IWT and Delivery																	
AS400010	Purchase Order for Cables between IV Switchboard and TX	0	04-Dec-17A														
AS400012	Manufacturing & Delivery to Site - Cables between IV Switchboard and TX	0	08-Dec-17A														
AS400014	Purchase Order for Cables between TW 2.3kV SW and Air Blower	0	04-Dec-17A														
AS400016	Manufacturing of Manufacturing & Delivery to Site - Cables between TW 2.3kV SW and Air Blower	0	08-Dec-17A														
AS400030	Purchase Order for Cables between TX and IV Switchboard	0	04-Dec-17A														
AS400032	Manufacturing & Delivery to Site - Cables between TX and IV Switchboard	0	08-Dec-17A														
AS400050	Purchase Order for Cables between IV Switchboard and Plant	0	04-Dec-17A														
AS400052	Manufacturing & Delivery to Site - Cables between IV Switchboard and Plant	0	08-Dec-17A														
AS400070	Purchase Order for Earthing Sys. - Inlet Screen Chamber, BR1 & MFS1	0	03-Jun-18A														
AS400072	Manufacturing & Delivery to Site - Earthing Sys. - Inlet Screen Chamber, BR1 & MFS1	0	11-Jun-18A														
AS400090	Purchase Order for Lightning Sys. - Inlet Screen Chamber, BR1 & MFS1	0	04-Jun-18A														
AS400092	Manufacturing & Delivery to Site - Lightning Sys. - Inlet Screen Chamber, BR1 & MFS1	0	11-Jun-18A														



File Name: DE201401/1
Layout: DE1401 (Rev. J) - WBS
TASK Filter: All Activities

Page 14 of 18

Remaining Work
Critical Activity
Milestone
Actual Progress

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	Revision	Checked	Approved
08-Jan-16	Rev.0	KH Lau	KM
12-Jul-17	Rev.E	KH Lau	KM
17-Oct-17	Rev.F	KH Lau	KM
27-Mar-18	Rev.G	KH Lau	KM
14-May-19	Rev.H	KH Lau	KM
10-Jun-19	Rev.J	KH Lau	KM

