

Drainage Services Department



Contract No. CM 12/2019

Expansion of Sha Tau Kok Sewage Treatment Works

Environmental Team Services for Construction Phase (2020-2021)

Monthly EM&A Report for June 2020

[July 2020]

	Name	Signature
Prepared & Checked:	Lemon Lam	
Reviewed, Approved & Certified:	Y W Fung	

Version:0	Date: 9 July 2020
<p>Disclaimer</p> <p>This Environmental Monitoring and Audit Report is prepared for Drainage Services Department and is given for its sole benefit in relation to and pursuant to Contract No. CM 12/2019 and may not be disclosed to, quoted to or relied upon by any person other than Drainage Services Department without our prior written consent. No person (other than Drainage Services Department into whose possession a copy of this report comes may rely on this plan without our express written consent and Drainage Services Department may not rely on it for any purpose other than as described above.</p>	

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Drainage Services Department
42/F, Revenue Tower
5 Gloucester Road
Wan Chai
Hong Kong

Your reference:

Our reference: HKDSD206/50/106609

Date: 10 July 2020

Attention: Mr K K Leung

BY EMAIL & POST
(email: kkleung04@dsd.gov.hk)

Dear Sirs

Agreement No.: CM 14/2018
Independent Environmental Checker Services for
Expansion of Sha Tau Kok Sewage Treatment Works
Environmental Monitoring and Audit Monthly Report (June 2020)

We refer to email of 9 July 2020 from AECOM Asia Co. Ltd attaching the Environmental Monitoring and Audit Monthly Report (June 2020).

We have no comment and hereby verify the captioned Report in accordance with Clause 3.4 of the Environmental Permit no. EP-517/2017/A.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Adi Lee at 2618 2831.

Yours faithfully
ANewR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LYMA/CYYH/lhnh

cc DSD – Ms Roxana Yeung (email: hcyung@dsd.gov.hk)
Black & Veatch Hong Kong Limited – Mr Anthony Leung (email: re_em2@dc1803.com.hk)
Black & Veatch Hong Kong Limited – Mr Alaster Chan (email: are_em2@dc1803.com.hk)
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EXECUTIVE SUMMARY

(i) Introduction

This is the 13th EM&A Report prepared by AECOM for the Expansion of Sha Tau Kok Sewage Treatment Works. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (EP No.: EP-517/2017/A) and in accordance with the EM&A Manual during the reporting period from 01/06/2020 to 30/06/2020.

(ii) Summary of Main Works Undertaken and Key Measures Implemented

The main works undertaken during the reporting period are as follows:

- TSTP testing and commissioning
- Set up of submarine outfall drilling rig for TSTP

Implementation of the key mitigation measures during the reporting period are as follow:

- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission.
- All C&D materials generated should be transported and stored at temporary storage area. Cover should be provided during transportation of dusty materials. Suitable materials should be sorted for reuse on-site. Only non-inert C&D material should be disposed off-site to NENT Landfill.
- All dump trucks should be equipped with mechanical covers to prevent the dust emission during transportation when necessary.
- Dust control measures, such as water spraying, should be provided during demolition works when necessary.
- Maintaining of wet surface on access road and keep slow speed in the site.
- Wastewater to be treated by wastewater treatment facilities before discharge.
- Conditions in the Environmental Permit and Discharge License should be followed.
- Fueling of equipment should be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage.
- Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance.
- Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal.

(iii) Summary of Exceedances, Investigation and Follow-up

No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting month.

(iv) Complaint Handling, Prosecution and Public Engagement

No complaints, notification of summons and successful prosecution was received in the reporting period.

No public engagement activity was conducted in the reporting month.

(v) Reporting Change

A revised proposal for changes of the environmental monitoring methodology and requirement (Operation Phase of Odour Monitoring) had submitted to EPD on 28 May 2020 and approved by EPD on 3 June 2020.

(vi) Future Key Issues

The main works will be anticipated in the next reporting period are as follows:

- TSTP Testing and Commissioning
- Casing installation for submarine outfall (Land)

The corresponding mitigation measures to be implemented in the next reporting period are as follow:

- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission.
- All C&D materials generated should be transported and stored at temporary storage area.

Cover should be provided during transportation of dusty materials. Suitable materials should be sorted for reuse on-site. Only non-inert C&D material should be disposed off-site to NENT Landfill.

- All dump trucks should be equipped with mechanical covers to prevent the dust emission during transportation when necessary.
- Dust control measures, such as water spraying, should be provided during demolition works when necessary.
- Maintaining of wet surface on access road and keep slow speed in the site.
- Wastewater to be treated by wastewater treatment facilities before discharge.
- Conditions in the Environmental Permit and Discharge License should be followed.
- Fueling of equipment should be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage.
- Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance.
- Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal.

The following EP submission (EP No.: EP-517/2017/A) was submitted during the reporting month:

The Condition 2.15

The odour commissioning test report was submitted to EPD on 16 June 2020.

The Condition 3.4:

The 12th Monthly EM&A Report (May 2020) was submitted to EPD on 8 June 2020.

1 INTRODUCTION

1.1 Background

- 1.1.1. The Project in Sha Tau Kok mainly comprises of the following items:
- i) Increase the treatment capacity of Sha Tau Kok Sewage Treatment Works (STKSTW) to 5,000 m³/day at Average Dry Weather Flow (ADWF) in Phase 1, with suitable allowance to cater for a further increase of treatment capacity to 10,000 m³/day at ADWF in Phase 2;
 - ii) Construct a Temporary Sewage Treatment Plant (TSTP);
 - iii) Demolish the existing Sha Tau Kok Sewage Pumping Station (STKSPS) and decommission the rising main between STKSPS and STKSTW;
 - iv) Construct a new gravity sewer; and
 - v) Decommission the existing submarine outfall and construct a new one.
- 1.1.2. The Project site will be within the existing STKSTW while the construction of the gravity sewers and demolition of STKSPS will be carried out in Sha Tau Kok Town. The proposed submarine outfall will be constructed by Horizontal Directional Drilling (HDD) method under the seabed of Starling Inlet.
- 1.1.3. The Environmental Impact Assessment (EIA) Report for Expansion of Sha Tau Kok Sewage Treatment Works (Register No: AEIAR-207/2017) was approved on 14 February 2017. A Variation of an Environmental Permit (EP) EP-517/2017/A was issued on 18 October 2019 and it is the current permit for the Project.
- 1.1.4. Fugro Technical Services Limited (FTS) has been appointed to work as the additional services for Environmental Team (ET) services at early stage of construction phase (27 May 2019 to 26 February 2020) to implement the EM&A programme for the Project.
- 1.1.5. Since 27 February 2020, AECOM Asia Co. Ltd (AECOM) has been appointed as the ET to undertake the EM&A programme during construction phase (2020 – 2021) of the Project.
- 1.1.6. The EM&A programme of this Project shall be implemented in accordance with the requirements and procedures set out in the EM&A Manual and the EP No. EP-517/2017/A.
- 1.1.7. A baseline noise monitoring work was conducted between 25 February 2019 and 11 March 2019 and an Environmental Monitoring Report (Noise) Report (Report No.: 0118/18/ED/0259D) had submitted to EPD on 2 April 2019 and was approved by EPD on 21 June 2019.
- 1.1.8. A baseline water quality monitoring was conducted between 26 February 2019 and 23 Mar 2019 and an Environmental Monitoring Report (Water) Report (Report No.: 0118/18/ED/0307E) had submitted to EPD on 14 Jun 2019 and comments of report were received from EPD on 21 November 2019. An updated Environmental Monitoring Report (Water) Report (Report No.: 0118/18/ED/0307F) had submitted to EPD on 6 January 2020 and the report was approved by EPD on 2 March 2020.
- 1.1.9. A pre-construction survey on night roosting site for great egret was conducted in October 2019 and a Pre-construction Survey Report (Report No.: 0118/18/ED/0382 03) had submitted to EPD on 12 December 2019 and the report was found in order by Agriculture, Fisheries and Conservation Department on 30 December 2019.
- 1.1.10. The construction phase and EM&A programme of the Project commenced on 27 May 2019.

1.2 Scope of Report

- 1.2.1 This is the 13th EM&A Report prepared by AECOM for the Expansion of Sha Tau Kok Sewage Treatment Works. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (Condition 3.4 of EP No.: EP-517/2017/A) and in accordance with the EM&A Manual during the reporting period from 01/06/2020 to 30/06/2020.

1.3 Project Organization

1.3.1 The project organization structure is shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 1.2**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
DSD Drainage Services Department	Engineer	Gary Leung	2594 7594
ER Black & Veatch Hong Kong Limited	Resident Engineer	Anthony Leung	2946 8708
IEC ANewR Consulting Limited	Independent Environmental Checker	James Choi	2618 2836
Contractor Build King – Kum Shing J.V.	Environmental Officer	Jimmy Wong	6576 7729
ET AECOM Asia Company Limited	ET Leader	Y W Fung	3922 9393

1.4 Construction Programme and Activities

1.4.1 The construction phase of the Project under the EP commenced on 27 May 2019.

1.4.2 Details of the construction works undertaken during the reporting period are listed below:

- TSTP testing and commissioning
- Set up of submarine outfall drilling rig for TSTP

1.4.3 The Construction Programme is shown in **Appendix B**.

1.4.4 The general layout plan of the Project site is shown in **Figure 1**.

1.5 Status of Environmental Licences, Notification and Permits

1.5.1 The environmental licenses and permits for the Project and valid in the reporting period are summarized in **Table 1.2**.

Table 1.2 Summary Status of Environmental License, Notification and Permit

License/ Notification/ Permit	Reference No.	Valid Period	
		From	To
Environmental Permit	EP-517/2017/A	18/10/2019	N/A
Wastewater Discharge License	WT00033567-2019	02/05/2019	31/05/2024
Chemical Waste Producer Registration	5213-652-B2548-01	14/12/2018	N/A
Billing Account	WFG19965	02/01/2019	N/A
Construction Noise Permit	GW-RN0218-20	28/03/2020	14/09/2020

2 ENVIRONMENTAL MONITORING & REQUIREMENTS

2.1 Odour Monitoring

Operation Phase for TSTP

- 2.1.1 In accordance with the EM&A Manual, a commissioning test for the deodorization facilities of the TSTP was performed on 12 June 2020, exhaust air flow rate, temperature of exhaust and H₂S concentration were recorded during the measurement. The measurement details were presented in the odour commissioning test report. The odour commissioning test report was submitted to EPD on 16 June 2020.

2.2 Noise Monitoring

Monitoring Requirements

- 2.2.1 In accordance with the EM&A Manual, impact noise monitoring was conducted for at least once per week during the construction phase of the Project. The Action and Limit levels for construction noise is provided in **Table 2.1**.

Table 2.1 Action and Limit Levels for Construction Noise

Station ID	Noise Sensitive Receivers	Description	Action Level	Limit Level
NM1	NSR 6	Block 45, Sha Tau Kok Chuen	When one documented complaint is received from any one of the noise sensitive receivers	75 dB(A)*
NM2	NSR 8	Building along Shun Lung Street		

Note: *75 dB(A) for residential premises.

Monitoring Equipment

- 2.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 2.2**.

Table 2.2 Noise Monitoring Equipment

Equipment	Brand and Model
Integrated Sound Level Meter	B&K 2238, B&K2250L
Acoustic Calibrator	B&K 4231

Monitoring Locations

- 2.2.3 Monitoring stations NM1 and NM2 were set up at the proposed locations in accordance with EM&A Manual. **Figure 2** shows the location of the monitoring stations. **Table 2.3** describes the details of the monitoring stations.

Table 2.3 Location of Impact Noise Monitoring Stations

Station ID	Noise Sensitive Receivers	Description	Type of measurement
NM1	NSR 6	Block 45, Sha Tau Kok Chuen	Free-field
NM2	NSR 8	Building along Shun Lung Street	Free-field

Note: For Free-field measurement, a correction of +3dB(A) should be made to the measured results.

Monitoring Parameters and Frequency

- 2.2.4 **Table 2.4** summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 2.4 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. L _{eq} , L ₁₀ and L ₉₀ would be recorded.	At least once per week

Monitoring Methodology

2.2.5 Monitoring Procedure

- (a) Free-field measurement was made at monitoring stations NM1 and NM2. For free-field measurement, a correction factor of +3 dB (A) would be applied.
- (b) The sound level meter was set on a tripod at a point 1m from the exterior of the façade of the sensitive receivers building and at a height of 1.2 m above the ground for free-field measurements at monitoring stations.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - (i) frequency weighting: A
 - (ii) time weighting: Fast
 - (iii) time measurement: L_{eq(30-minutes)} during 07:00 – 1900 on normal weekdays
- (e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (f) During the monitoring period, the L_{eq}, L₁₀ and L₉₀ were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (g) Noise measurement would be paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations would be recorded when intrusive noise was unavoidable.
- (h) The wind speed at the monitoring station was checked with the portable wind speed meter. Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

2.2.6 Maintenance and Calibration

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- (c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix C**.

Monitoring Results and Observations

2.2.7 The schedule for environmental monitoring in the reporting period is provided in **Appendix D**.

2.2.8 The monitoring results for construction noise are summarized in **Table 1.2** and the monitoring data is provided in **Appendix E**.

Table 2.5 Summary of Construction Noise Monitoring Results in the Reporting Period

Station ID	Construction Noise Level, dB(A)*, L _{eq} (30 min)	Baseline Level, dB(A)	Limit Level, dB(A)
NM1	59.1 – 63.0	65	75
NM2	55.9 - 61.5	65	75

Note: *A correction of +3 dB(A) was made to the free field measurements.
Leq (30min) was measured at 0700-1900 hours on normal weekdays.

2.2.9 No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting month.

2.2.10 The event and action plan is annexed in **Appendix F**.

Other factor influencing the monitoring results

2.2.11 Major noise sources during noise monitoring in the reporting period were mainly road traffic noise.

2.3 Water Quality Monitoring

2.3.1 In accordance with the recommendations of the EIA, water quality EM&A is required during the installation, maintenance and removal of sheetpiles and sediment removal works for construction of diffuser and, during operation of the TSTP and expanded STKSTW.

2.3.2 No construction of diffuser and water quality monitoring in the reporting period.

2.4 Waste Management Status

2.4.1 Auditing of waste management practices during regular site inspections will confirm that the waste generated during construction are properly, stored, handled and disposed of. The construction Contractor(s) will be responsible for the implementation of any mitigation measures to reduce waste or redress issues arising from the waste materials.

2.4.2 The C&D waste under this contract should be disposal of at North East New Territories (NENT) Landfill and Tseung Kwan O Area 137 Fill Bank (TKO137FB).

2.4.3 Monthly summary of waste flow table is detailed in **Appendix G**.

2.5 Landscape and Visual

2.5.1 Inspections of the implementation of landscape and visual mitigation measures were conducted on 10 and 24 June 2020. The observations and recommendations made during the audit sessions are summarized in **Table 4.1**. A summary of the mitigation measures implementation schedule is provided in **Appendix H**. The event and action plan is annexed in **Appendix F**.

3 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix H**. The implementation of the key mitigation measures during the reporting period is presented in **Appendix I**.

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1 Site Inspection

- 4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix H**.
- 4.1.2 In the reporting period, 5 site inspections were carried out on 3, 10, 17, 24 and 30 June 2020. A joint site inspection with IEC was carried out on 24 June 2020. No non-compliance was recorded during the site inspections. Details of observations recorded during the site inspections are presented in **Table 4.1**.

Table 4.1 Observations and Recommendations of Site Inspection

Parameters	Date	Observations and Recommendations	Follow up
Water Quality	17 Jun 2020	<ul style="list-style-type: none"> The Contractor was reminded to bund the excavated materials by sandbags to prevent potential surface runoff to the drainage system. 	The item was rectified by the Contractor on 22 Jun 2020.
	30 Jun 2020	<ul style="list-style-type: none"> The Contractor was reminded to clean up the drainage channel frequently to prevent potential surface runoff from the site. 	The item was rectified by the Contractor on 6 Jul 2020.
Air Quality	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Waste/ Chemical Management	N/A	N/A	N/A
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

4.2 Summary of Complaints, Notification of Summons, Successful Prosecutions and Public Engagement Activities

- 4.2.1 No complaints, notification of summons and successful prosecution was received in the reporting period.
- 4.2.2 No public engagement activities were conducted in the reporting period.
- 4.2.3 Statistics on complaints, notifications of summons, successful prosecutions and public engagement activities are summarized in **Appendix J**.

5 FUTURE KEY ISSUES

5.1 Construction Programme for the Coming Month

5.1.1 The major construction works for the Project in the coming month will be:

- TSTP testing and commissioning
- Casing installation for submarine outfall (Land)

5.2 Key Issues for the Coming Month

5.2.1 Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

5.2.2 The anticipated impact of major work activities within the site and the recommended mitigation measures are shown in **Appendix I**.

5.3 Monitoring Schedule for the Coming Month

5.3.1 The tentative schedule for environmental monitoring in July 2020 is provided in **Appendix D**.

6 CONCLUSIONS

6.1.1 No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting month.

6.1.2 5 environmental site inspections were carried out in the reporting month. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

6.1.3 No complaints, notification of summons and successful prosecution was received in the reporting period.

FIGURES

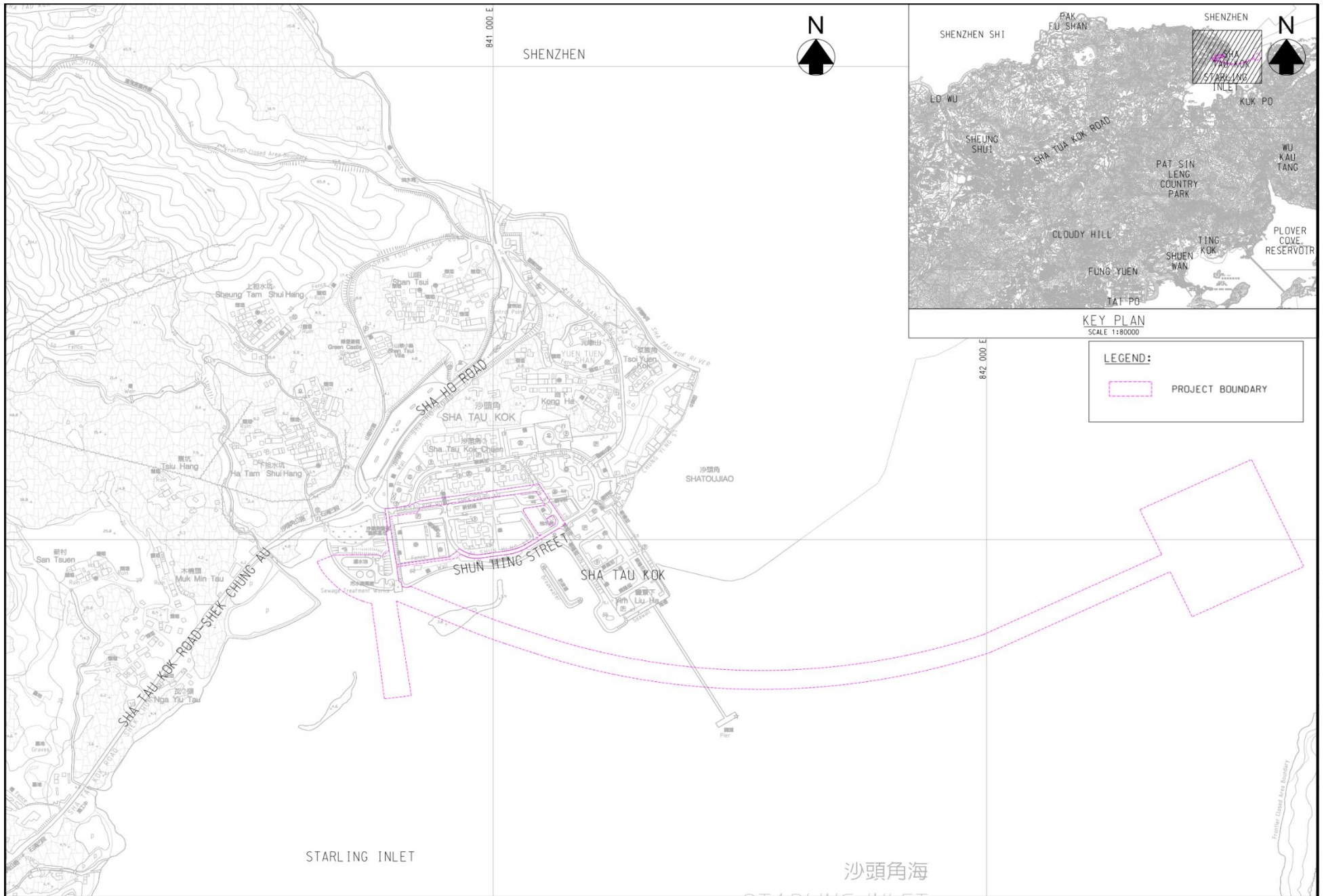


Figure 1.1 General Layout Plan

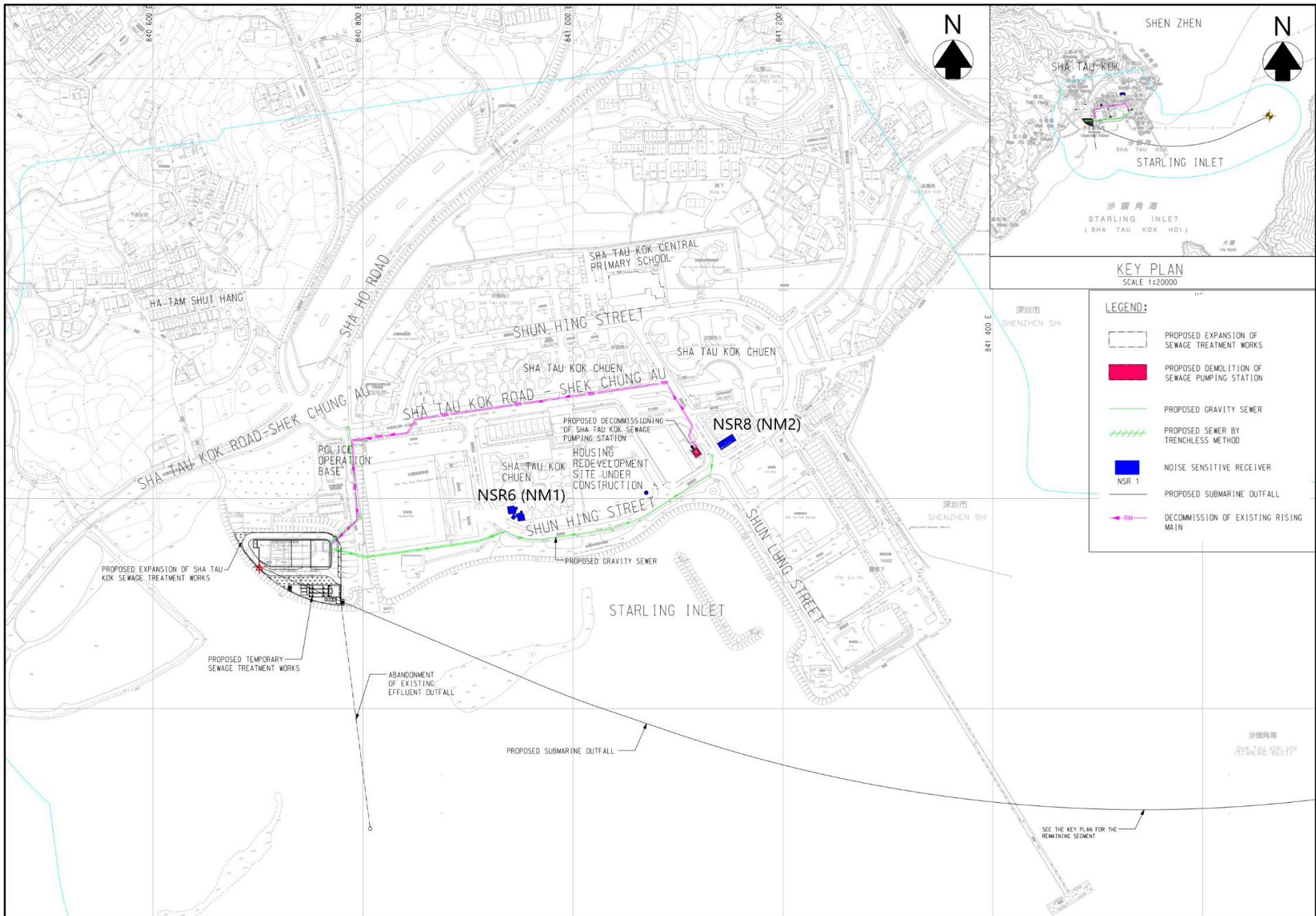
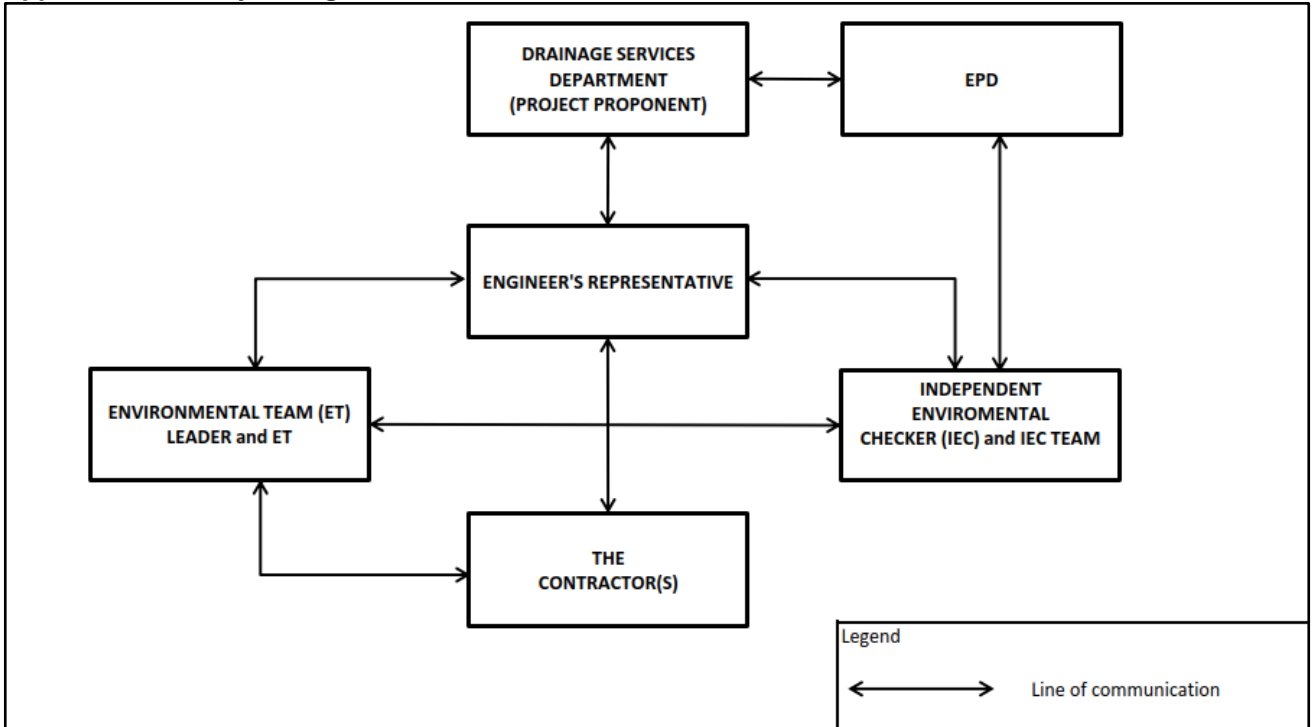


Figure 2.1 Location of Noise Monitoring Stations

APPENDIX A

Project Organization Structure

Appendix A Project Organization Structure



Note: Detailed key personnel contact names and telephone numbers refer to Table 1.1.

APPENDIX B

Construction Programme

APPENDIX C

Calibration Certificates of Monitoring Equipment

Appendix C Calibration Certificates of Monitoring Equipment



綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.

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12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860
Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.: 19CA0912 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone
Manufacturer:	B & K	B & K
Type/Model No.:	2238	4188
Serial/Equipment No.:	2800927	2791211
Adaptors used:	-	-

Item submitted by

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 12-Sep-2019

Date of test: 16-Sep-2019

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2020	CIGISMEC
Signal generator	DS 360	61227	26-Dec-2019	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsness of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

Feng Junqi

Date: 16-Sep-2019

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 19CA0912 01 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Linearity range for SPL	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
	Single 100µs rectangular pulse	Pass	0.3	
Peak response	Crest factor of 3	Pass	0.3	
R.M.S. accuracy	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
	Single burst 10 ms at 4 kHz	Pass	0.4	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	SPL	Pass	0.3	
Overload indication	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip
16-Sep-2019

- End -

Checked by:

Date:

Shek Kwong Tai
16-Sep-2019

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0318 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366	2665582	17190
Adaptors used:	-	-	-

Item submitted by

Customer Name: AECOM ASIA CO LTD
Address of Customer: -
Request No.: -
Date of receipt: 18-Mar-2020

Date of test: 19-Mar-2020

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2020	CIGISMEC
Signal generator	DS 360	33873	10-May-2020	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of $\pm 20\%$.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:


Feng Junqi

Date: 19-Mar-2020

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 20CA0318 01 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Frequency weightings			
Time weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Peak response	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
R.M.S. accuracy	Single 100µs rectangular pulse	Pass	0.3	
	Crest factor of 3	Pass	0.3	
Time averaging	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Pulse range	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date: 19-Mar-2020

Fung Chi Yip

- End -

Checked by:

Date: 19-Mar-2020

Shek Kwong Tat

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0330 01

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: B & K
Type/Model No.: 4231
Serial/Equipment No.: 3006428
Adaptors used: -

Item submitted by

Customer: AECOM
Address of Customer: -
Request No.: -
Date of receipt: 30-Mar-2020

(N. 004.037)

Date of test: 31-Mar-2020

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	03-May-2020	SCL
Preamplifier	B&K 2673	2239857	17-May-2020	CEPREI
Measuring amplifier	B&K 2610	2346941	05-Jun-2020	CEPREI
Signal generator	DS 360	33873	10-May-2020	CEPREI
Digital multi-meter	34401A	US36087050	08-May-2020	CEPREI
Audio analyzer	8903B	GB41300350	13-May-2020	CEPREI
Universal counter	53132A	MY40003662	10-May-2020	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

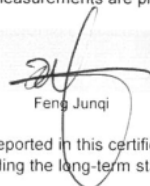
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory:


Feng Junqi

Date: 31-Mar-2020 c Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.

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Tel: (852) 2873 6860
Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.: 19CA1017 01-02 Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: B & K
Type/Model No.: 4231
Serial/Equipment No.: 3014024 / N004.04
Adaptors used: -

Item submitted by

Customer: AECOM ASIA CO LIMITED
Address of Customer: -
Request No.: -
Date of receipt: 17-Oct-2019

Date of test: 21-Oct-2019

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	03-May-2020	SCL
Preamplifier	B&K 2673	2239857	17-May-2020	CEPREI
Measuring amplifier	B&K 2610	2346941	05-Jun-2020	CEPREI
Signal generator	DS 360	61227	10-May-2020	CEPREI
Digital multi-meter	34401A	US36087050	08-May-2020	CEPREI
Audio analyzer	8903B	GB41300350	13-May-2020	CEPREI
Universal counter	53132A	MY40003662	10-May-2020	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:


Feng Junqi

Date: 21-Oct-2019

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

APPENDIX D

EM&A Monitoring Schedules

Appendix D EM&A Monitoring Schedules

**Expansion of Sha Tau Kok Sewage Treatment Works
Environmental Monitoring Schedule for June 2020**

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

**Expansion of Sha Tau Kok Sewage Treatment Works
Tentative Environmental Monitoring Schedule for July 2020**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jul	2-Jul	3-Jul	4-Jul
5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul
	Impact Noise					
12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul
	Impact Noise					
19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
		Impact Noise	Water Quality Mid-Ebb 13:46 Odour	Effluent Quality	Water Quality Mid-Ebb 15:13 Effluent Quality	Effluent Quality
26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
Effluent Quality	Water Quality Mid-Flood 11:17 Effluent Quality	Effluent Quality	Water Quality Mid-Flood 13:59 Effluent Quality	Impact Noise Odour Effluent Quality	Water Quality Mid-Ebb 9:46 Effluent Quality	

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

APPENDIX E

Noise Monitoring Results and their Graphical Presentations

Appendix E Noise Monitoring Results and their Graphical Presentations

Construction Noise Monitoring Results

Daytime Noise Monitoring Results at NM 1 (Block 45, Sha Tau Kok Chuen)

Date	Weather Condition	Measured Noise Level for 30-min [MNL], dB(A)*				Baseline Noise Level [BNL], dB(A)	Construction Noise Level [CNL]#, dB(A)		Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq					
3-Jun-20	Sunny	10:10	53.8	61.3	60.9	65	60.9	Measured<Baseline	75	N
9-Jun-20	Sunny	10:05	59.0	64.0	63.0	65	63.0	Measured<Baseline	75	N
15-Jun-20	Sunny	10:00	59.0	67.5	66.0	65	59.1	Measured<Baseline	75	N
23-Jun-20	Sunny	10:40	56.5	61.0	59.2	65	59.2	Measured<Baseline	75	N
30-Jun-20	Sunny	14:50	58.8	63.8	62.2	65	62.2	Measured<Baseline	75	N

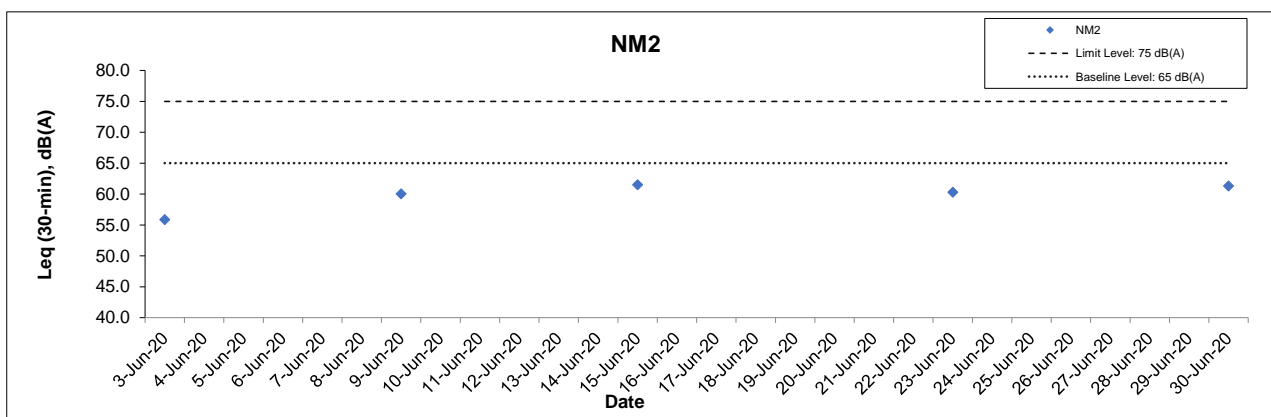
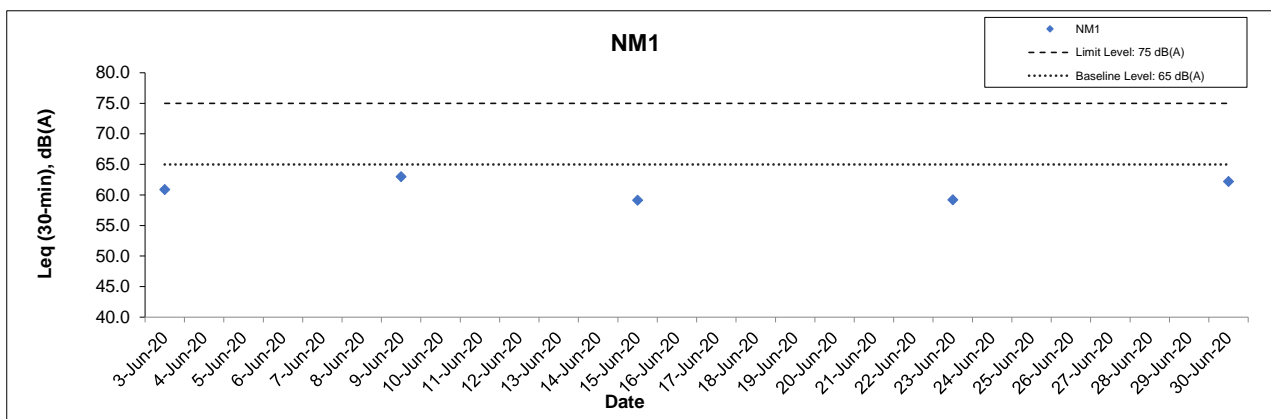
Daytime Noise Monitoring Results at NM 2 (Building along Shun Lung Street)

Date	Weather Condition	Measured Noise Level for 30-min [MNL], dB(A)*				Baseline Noise Level [BNL], dB(A)	Construction Noise Level [CNL]#, dB(A)		Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq					
3-Jun-20	Sunny	10:45	62.0	67.0	65.5	65	55.9	Measured<Baseline	75	N
9-Jun-20	Sunny	10:40	60.5	67.5	66.2	65	60.0	Measured<Baseline	75	N
15-Jun-20	Sunny	10:35	59.5	68.0	66.6	65	61.5	Measured<Baseline	75	N
23-Jun-20	Sunny	11:17	57.5	61.5	60.3	65	60.3	Measured<Baseline	75	N
30-Jun-20	Sunny	15:55	57.2	63.0	61.3	65	61.3	Measured<Baseline	75	N

*A correction of +3 dB(A) was made to the free field measurements.

CNL = $10 \log (10^{\text{MNL}/10} - 10^{\text{BNL}/10})$

Graphical Presentations of Construction Noise Monitoring Results



APPENDIX F

Event and Action Plan

Appendix F Event and Action Plan

EVENT	ACTION			
	ET	IEC	ER	Contractor
<i>Construction Noise</i>				
Action Level	<ol style="list-style-type: none"> 1. Carry out investigation to identify the source and cause of the complaint/ exceedance(s) 2. Notify IEC, ER, and Contractor and report the results of investigation to the Contractor, ER and the IEC 3. Discuss with the Contractor and IEC for remedial measures required 4. If the complaint is related to the Project, conduct additional monitoring for checking mitigation effectiveness and report the findings and results to the IEC, ER and the Contractor 	<ol style="list-style-type: none"> 1. Review the analyzed 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 Exceedance in writing. 2. Require Contractor to propose remedial measures for the analyzed noise problem. 3. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals, if required, to the IEC and ER 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Carry out investigation to identify the source and cause of the exceedance 2. Notify IEC, ER, Project Proponent, EPD and Contractor 3. Repeat measurements to confirm findings 4. Provide investigation report to IEC, ER, EPD and Contractor of the exceedances 5. If the exceedance is related to the Project, assess effectiveness by additional monitoring. 6. Report the remedial action implemented and the additional monitoring results to IEC, EPD, ER and Contractor 7. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Review the analyzed results submitted by the ET 2. Discuss the potential remedial measures with ER, ET Leader and Contractor 3. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 4. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of Exceedance in writing. 2. Require the Contractor to propose remedial measures for the analyzed noise problem. 3. Ensure remedial measures are properly implemented. 4. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor, in agreement with the Project Proponent, to stop that activity 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 and RE within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the Project Proponent until the exceedance is abated.
<i>Landscape and Visual</i>				
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Inform the Contractor, IEC and ER; 2. Discuss remedial actions with IEC, ER and Contractor 3. Monitor remedial actions until rectification has been completed 	<ol style="list-style-type: none"> 1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Identify source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	<ol style="list-style-type: none"> 1. Identify source(s) 2. Inform the Contractor, IEC and ER; 3. Discuss inspection frequency 4. Discuss remedial actions with IEC, ER and Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Identify source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

Notes:

ET – Environmental Team, IEC – Independent Environmental Checker; ER = Engineering Representatives

APPENDIX G

Waste Flow Table

Appendix G Waste Flow Table

Monthly Summary Waste Flow Table for 2020 (year)

Name of Person completing the record: Jimmy Wong (EO)

Project : Expansion of Sha Tau Kok Sewage Treatment Works Phase 1 and Village Sewerage in Tong To Contract No.: DC/2018/03

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
	Total Quantity Generate	Hard Rock and Large	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan	0.158	0.000	0.000	0.000	0.158	0.000	0.000	0.000	0.000	0.000	0.011
Feb	0.067	0.000	0.000	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.002
Mar	0.109	0.000	0.000	0.000	0.109	0.000	0.000	0.000	0.000	0.000	0.014
Apr	0.353	0.000	0.000	0.000	0.353	0.000	0.000	0.000	0.000	0.000	0.015
May	0.047	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.023
Jun	0.028	0.000	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.007
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.762	0.000	0.000	0.000	0.762	0.000	0.000	0.000	0.000	0.000	0.072

- Notes:
- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
 - (3) Broken concrete for recycling into aggregates.

APPENDIX H

**Implementation Schedule of Environmental Mitigation
Measures**

Appendix H Environmental Mitigation Implementation Schedule

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
Air Quality				
S3.7.1	Land site/ During Construction	C	- Dust control measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be implemented during the construction of the Project to control potential fugitive dust emissions.	^
			- Regular water spraying on exposed area.	^
			- Vehicle wheel-washing and body washing facilities shall be provided at the site entrance.	^
			- Shielding or covering with impervious sheet of stockpiled materials or exposed area when it is not used to reduce dust nuisance	^
			- Site practices such as regular maintenance and checking of the diesel-driven PMEs should be adopted to avoid any black smoke emissions and to reduce gaseous emissions	^
			- Open trench construction of the gravity sewers, each work front should be around 20m to 30m in length to control potential dust emission.	N.O
S3.6.1			- The existing sewage pumping station and rising mains should be cleaned and flushed out properly to clear away any remaining potential sources of odour emission, such as sewage sludge from the facilities. The decommissioning including removal of the pumping station and rising mains should take place after the cleaning and flushing out.	N.O Remark: No decommissioning including removal of the pumping station and rising mains in reporting period.)
S3.9.1			- Regular site inspections on a weekly basis shall be carried out in order to confirm that the mitigation and control measures are properly implemented and are working effectively to ensure proper control of construction dust and gaseous emissions.	^
-			- Non-road Mobile Machinery (NRMM) properly labelled.	^
Noise				
S4.8	Noise Control / During construction	C	- Use of quiet PME / quiet construction method	^
			- Movable noise barriers of 3 m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a superficial surface density of at least 7 kg m ⁻² and have no openings or gaps.	N.O
			- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase;	^
			- Silencers or mufflers on construction equipment should be utilised and properly maintained during the construction phase;	^
			- 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 work 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; and	^
			- Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	N.O
			- The construction activities should be planned and carried out in sequence rather than simultaneously at each location. Therefore, only one unit of each type of equipment should be operated at any one time.	^
			- Open trench construction of the gravity sewers, each work front should be around 20m to 30m in length.	N.O

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S4.11	During construction	C	- Designated monitoring stations as defined in EM&A Manual/During construction phase	^
Water Quality				
S5.9.2	Marine Dredging/ During construction	C	- The trenchless HDD construction of outfall pipeline should proceed from the landside* . Also, the construction of diffuser should be conducted after the dry excavation of marine sediment in the cofferdam. (Remark: *Pursuant to Clause 2.11 of the Environmental Permit EP-517/2017/A, the HDD or equivalent method should submit to the Director for approval before the commencement of construction of the submarine outfall.)	N.A
S5.9.3			- Furthermore, a number of standard measures and good site practices should be implemented to avoid / minimize the potential impacts from marine construction. These measures include: • All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment; • All vessels must have a clean ballast system; • No soil waste is allowed to be disposed overboard.	N.A
S5.9.3	Marine Dredging/ During construction	C	- No discharge of sewage/grey wastewater should be allowed. Wastewater from potentially contaminated area on working vessels should be minimized and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system	N.A
S5.9.4	Land site & drainage/ During construction	C	- <u>General Construction Activities</u> Standard site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to reduce surface runoff, minimize erosion, and also to retain and reduce any SS prior to discharge.	^
			- Silt removal facilities such as silt traps or sedimentation facilities should be provided to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94.	^
			- All drainage facilities and erosion and sediment control structures should be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be removed regularly.	^
			- Earthworks to form the final surfaces should be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	^
			- Appropriate surface drainage should be designed and provided where necessary.	^
			- The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.	^
			- Oil interceptors should be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	^
S5.9.4	Land site & drainage/ During construction	C	- Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge, if any, should be adequately designed for the controlled release of storm flows. The temporary diverted drainage, if any, should be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	^
S5.9.5	Land site & drainage/ During construction	C	- Appropriate infiltration control, such as cofferdam wall, should be adopted to limit groundwater inflow to the excavation works areas in the Project site. Groundwater pumped out from excavation area should be discharged into the storm system via silt removal facilities.	N.O

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S5.9.6	Land site & drainage/ During construction	C	- If needed, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	^
S5.9.7			- <u>Spillage of Chemicals</u> Site drainage should be well maintained and good construction practices should be observed to ensure that oil, fuels, solvents and other chemicals are managed, stored and handled properly and do not enter the nearby streams or marine water.	^
S5.12.1	Marine Dredging/ During construction	C	- Marine water quality monitoring at selected WSRs is recommended for installation, maintenance and removal of sheetpile and sediment removal works under this Project. Site audit would also be conducted throughout the marine and land-based construction under this Project. Details environmental monitoring procedures and audit requirements are provided in the standalone EM&A manual.	N.A
Waste Management & Land Contamination				
S6.6.1	During construction	C	- An Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 – “Environmental Management on Construction Sites” should be prepared by the main Contractor of each construction contract upon appointment. The EMP should describe the arrangements for avoidance, reduction, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities.	^
S6.6.3	During construction	C	- An appropriate person, such as site agent or environmental officer should be nominated, to be responsible for good site practices, arrangement for collection and effective disposal of all wastes generated at the site to an approved facility. Training of construction staff should be undertaken by the Contractor about the concept of site cleanliness and appropriate waste management procedures. Requirements for staff training should be included in the EMP.	^
S6.6.4	During construction	C	- Good planning and site management practices should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Regular cleaning and maintenance of the waste storage area should be provided.	^
S6.6.5	During construction	C	- A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented in accordance with DEVB TCW No. 6/2010. In order to monitor the disposal of C&D materials and solid wastes at public fill reception facilities and landfills and to control fly-tipping, a trip-ticket system should be included.	^
S6.6.6	During construction	C	- Imported soft fill and rocks, if required, should be sourced from CEDD’s fill bank, other projects or other approved sources instead of using new materials. Approval from the Engineer and all other relevant parties should be obtained by the Contractor before importation of the fill materials.	N.O
S6.6.7	During construction	C	- All waste materials should be segregated into categories covering: •inert C&D materials suitable for public filling facilities; •recyclable materials / waste •remaining non-inert C&D materials for landfill; • spent bentonite for public filling facilities; •chemical waste; and • general refuse for landfill	^
S6.6.9	During construction	C	- Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.	^
S6.6.11	During construction	C	- The reuse of inert C&D materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials.	N.A
S6.6.12	During construction	C	- Prior to export of material from the site, the potential for it to be reused should be assessed. Most C&D materials can easily be reused with minimum processing. Waste separation methods should be followed to ensure that C&D waste is separated at source. Suitable soft materials should be used for landscaping and grading of embankments. Fine material should be separated out and used as topsoil.	N.A
S6.6.13	During construction	D & C	- Use of recycled aggregates whenever possible	N.A

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S6.6.14, S6.6.30	During construction	C	- All C&D materials should be sorted on-site into inert and non-inert components by the Contractor. Non-inert C&D materials (C&D waste) such as wood, glass and plastic should be reused and recycled before disposal to a designated landfill as a last resort. Inert C&D materials (public fill) should be reused onsite or in other projects approved by relevant parties before disposed of at public fill reception facilities. Steel and other metals if any should be recovered from C&D materials and recycled.	^
S6.6.15	During construction	C	- Good quality reusable topsoil should be stockpiled for later landscaping works. Stockpiles should be less than 2m in height, formed to a safe angle of repose and hydroseeded or covered with tarpaulin to prevent erosion during the rainy season and to minimise dust generation.	^
S6.6.16	During construction	C	- Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact.	^
S6.6.17	During construction	C	- The public fill to be disposed to public fill reception facilities must consist entirely of inert construction materials. Disposal of C&D waste to landfill must not have more than 50% by weight of inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.	^
S6.6.18	During construction	C	- In order to avoid dust or odour impacts, any vehicles leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the construction site.	^
S6.6.20	During construction	C	- With reference to the Sediment Quality Report in the EIA, only Category L sediment was identified. In accordance with ETWB TCW No. 34/2002, Type 1 – Open Sea Disposal should be adopted for the disposal of 3,040 m ³ excavated sediment during construction of the proposed outfall diffuser. The location of marine disposal site should be sought with MFC/CEDD. The Contractor shall obtain a Marine Dumping Permit in accordance with the Dumping at Sea Ordinance. The Contractor should provide separate submissions (e.g. Sediment Sampling and Testing Plan / Sediment Quality Report) to EPD / DASO authority when applying for the marine dumping permit under the Dumping at Sea Ordinance.	N.A
S6.6.21	During construction	C	- Bentonite slurry used in the drilling works should be treated and recycled at the works area in STKSTW. Any bentonite that is not suitable for recycling should be suitably dewatered before disposed of at public fill reception facilities.	^
S6.6.22 & S6.6.37	During construction and operation	C & O	- Where the construction/ operation processes produce chemical waste, the Contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD.	^
S6.6.23 & S6.6.37	During construction	C	- Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.	^
S6.6.24 & S6.6.37	During construction	C	- Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, safely stored and securely closed. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.	^

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S6.6.25 & S6.6.37	During construction	C	- Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.	^
S6.6.26 & S6.6.37	During construction	C	- Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.	^
S6.6.27	During construction	C	- The registered chemical waste producer (i.e. the Contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.	^
S6.6.28	During construction	C	- No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.	^
S6.6.29	During construction	C	- All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.	^
S6.6.32	During construction	C	- General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the Contractor at the works area to facilitate the collection of refuse by licensed waste collector. The removal of waste from the site should be arranged on a daily or at least on every second day by the Contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.	^
S6.6.33	During construction	C	- The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	^
Ecology				
S7.7.3	All area / During construction	C	- Erect fences along the boundary of the works area before the commencement of works to prevent vehicle movements and encroachment of personnel onto adjacent areas.	^
			- Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.	^
			- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the surrounding habitats through proper management of waste disposal.	^
			- To avoid/ minimise the potential disturbance on the Night Roosting Site for Great Egret if confirmed to be continuing their usage before the construction activities, major noisy works such as concrete breaking should not be undertaken within an area of 100m from the Night Roosting Site after 16:00 under normal working hours. (i.e. 16:00 to 07:00 of the following day).	N.A
			- Strong artificial lighting should not be used in the area at night to avoid disturbance to the roosting ardeids.	N.O

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
Landscape & Visual				
Table 9.6 of EM&A Manual	To protect existing landscape resources during construction stage	C	<p>Preservation of Existing Vegetation:</p> <ul style="list-style-type: none"> - Existing trees designated to be retained in-situ should be properly protected. Tree protection measures to be undertaken shall be in accordance with DEVB TC(W) 7/2015 on "Tree Preservation" and Guidelines on Tree Preservation during Development" by DEVB. This may include the clear demarcation and fencing-off of tree protection zones, tight site supervision and monitoring to prevent tree damage by construction activities, and periodic arboricultural inspection and maintenance to uphold tree health. A total of around 108 nos. of trees should be retained in-situ within the tree survey area. - Under current proposal, no tree is recommended to be transplanted since the trees in conflict with the proposed works are not suitable to be transplanted. However, should transplantation be proposed in the detailed design stage after an update tree survey, the recommended final recipient sites should be adjacent to their current locations. Enough time should be reserved for tree transplantation works to increase the survival rate of the transplanting trees. To ensure the survival of transplanted trees, protection work should be considered. The tree transplantation proposal shall be submitted to relevant authorities for approval together with the formal tree removal application. Tree transplanting works shall be undertaken in accordance with Guidelines on Tree Transplanting by DEVB. 	^
	To reduce construction disturbance during construction stage	C	<p>Control of Site Construction Activities:</p> <ul style="list-style-type: none"> - Construction site controls shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities are minimised. These construction site controls should include but not limited to the following: <ul style="list-style-type: none"> •Storage of materials should be carefully arranged to minimise potential landscape and visual impact. •The location and appearance of site accommodation should be carefully designed to minimize potential landscape and visual impact. •Site lighting should be carefully designed to prevent light spillage, •Extent of the works area and construction period should be minimised as far as practicable. •Screen hoarding with compatible design to blend into the surrounding natural environment should be considered (Screen hoarding may not be practicable for works of upgrading existing rising mains due to the spatial constraints of the works area along the Shun Hing Street). •Temporary works areas should be reinstated at the earliest possible opportunity. 	^
Table 9.7 of EM&A Manual	To reduce landscape and visual impact during construction	D & C	<p>Suitable design of the proposed TSTP:</p> <ul style="list-style-type: none"> - Colour of natural tones and non-reflective building materials shall be used for any outward facing building facades to avoid visual and glare disturbance - Responsive lighting design <ul style="list-style-type: none"> •Directional and full cut off lighting is recommended within the boundaries of STKSTW to minimise light spillage to the surroundings; •Minimise geographical spread of lighting, only applying for safety at the key access points of the STKSTW; and - Limited lighting intensity to meet the minimum safety and operation requirement. 	^
Cultural Heritage				
S10.3.50	During construction	C	- Undertake trenchless excavation in the vicinity of the Tin Hau Temple and provide a buffer zone of 10m between the works area for the open cut section and the Tin Hau Temple.	N.O

EIA Ref	Objective & Address	Stage (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S10.3.51			- A condition survey and vibration impact assessment should be undertaken and if construction vibration monitoring and structural strengthening measures are required.	N.A
S10.3.52			- Vibration and settlement monitoring should also be undertaken during the construction works to ensure that safe levels of vibration are not exceeded, if it is recommended in the condition survey report.	N.A
S10.3.53			- If the maximum level is exceeded all works must stop and the structure must be examined to determine if it has been damaged. The contractor must also take measures, such as using smaller pneumatic drills to ensure that the levels are reduced to acceptable limits.	N.A
S10.3.54			- If at any time during the construction period the foundation of the structure is affected by the works; the works shall be immediately suspended and the AMO notified. If the works cause any damage to the structures, the proponent should be responsible for the restoration and repair at their own cost. A method statement should be submitted to AMO for comment and the works should be under AMO's supervision.	N.O
S10.3.55			- Protective covering should be provided as an additional mitigation measure to the Tin Hau Temple.	N.O

Remarks: ^ Compliance of mitigation measure
/ Recommendation was made during site audit but not improved/ rectified by the Contractor in reporting period.
x Non-compliance of mitigation measure
N.A Not Applicable at this stage as no such site activities were conducted in the reporting period
N.O Not Observed during site inspection in the reporting period.

APPENDIX I

Proactive Environmental Protection Proforma

Appendix I Proactive Environmental Protection Proforma

Reporting Period	01/06/2020 – 30/06/2020
Construction Works	<ul style="list-style-type: none"> • Testing and Commissioning • Set up of Submarine Outfall Drilling Rig
Anticipated Impacts	Dust, Noise and water quality impact.
Corresponding Mitigation Measures	<ul style="list-style-type: none"> • All construction plants / machineries will be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission. • All C&D materials generated will be transported and stored at temporary storage area. Cover will be provided during transportation of dusty materials. Suitable materials will be sorted for reuse on-site. Only non-inert C&D material will be disposed off-site to NENT Landfill. • All dump trucks will be equipped with mechanical covers to prevent the dust emission during transportation when necessary. • Dust control measures, such as water spraying, will be provided during demolition works when necessary. • Maintaining of wet surface on access road and keep slow speed in the site. • Wastewater to be treated by wastewater treatment facilities before discharge. • Conditions in the Environmental Permit and Discharge License should be followed. • Fueling of equipment will be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage. • Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance. • Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal. • Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.

Coming Month	01/07/2020 – 31/07/2020
Construction Works	<ul style="list-style-type: none"> • Testing and Commissioning • Casing Installation for Submarine Outfall (Land)
Anticipated Impacts	Dust, Noise and water quality impact.
Corresponding Mitigation Measures	<ul style="list-style-type: none"> • All construction plants / machineries will be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission. • All C&D materials generated will be transported and stored at temporary storage area. Cover will be provided during transportation of dusty materials. Suitable materials will be sorted for reuse on-site. Only non-inert C&D material will be disposed off-site to NENT Landfill. • All dump trucks will be equipped with mechanical covers to prevent the dust emission during transportation when necessary. • Dust control measures, such as water spraying, will be provided during demolition works when necessary. • Maintaining of wet surface on access road and keep slow speed in the site. • Wastewater to be treated by wastewater treatment facilities before discharge. • Conditions in the Environmental Permit and Discharge License should be followed. • Fueling of equipment will be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage. • Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance. • Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal. • Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.

APPENDIX J

**Cumulative Statistics on Complaints, Notification of
Summons, Successful Prosecutions and Public Engagement
Activities**

Appendix J Cumulative Statistics on Complaints, Notifications of Summons, Successful Prosecutions and Public Engagement Activities

Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Received By	Nature of Complaint	Investigation/ Mitigation Action	Status
-	-	-	-	-	-	-

Remark:

** No Complaints, Notifications of Summons or Successful Prosecutions was received in the reporting period.*

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions and Public Engagement Activities

Reporting Period	Complaints	Notifications of Summons and Prosecutions	Public Engagement Activities
This Month	0	0	0
Cumulative Project-to-Date	0	0	0