

Atkins China Limited Chief Resident Engineer's Office No. 17 Cheung Chau Sai Tai Road Cheung Chau, New Territories Hong Kong

Attn: Mr. Elwyn Lo - Chief Resident Engineer

Your Reference

Contract No. CM 04/2021

**Our Reference** AFK/EC/TC/LL/kl/ T601424122/L091 Independent Environmental Checker for Environmental Monitoring Works for **Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities** 

Mott MacDonald 3/F Manulife Tower 348 Kwun Tong Road Kwun Tong Kowloon

Environmental Permit No. EP-488/2014/A

Monthly EM&A Report for October 2024 (Rev. 1)

14 November 2024

Hong Kong

By Email

Dear Sir,

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I refer to the Monthly EM&A Report for October 2024 (Rev. 1) under the captioned Project, which was certified on 14 November 2024 by the Environmental Team Leader appointed under Condition 2.1 of Environmental Permit No. EP-488/2014/A (hereafter referred to as "EP").

I hereby verify the abovementioned submission in accordance with EP Conditions 1.9 and 4.4.

Should you have any queries regarding the captioned or require any further information, please contact the undersigned at 2828 5751.

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED

Liz Lo

Independent Environmental Checker

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Encl.

c.c. DSD

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Mr. Kevin Li Mr. Alvin Lei / By Email By Email

By Email

Mr. Lawrence Lam







**Contract No. DC/2019/07** 

#### Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 – Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities

### 39th Monthly Environmental Monitoring and Audit Report - October 2024

#### Document No.

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	Reviewed by:	Certified by:
Name	Tandy TSE	Kevin LI
Position	Environmental Team Member	Environmental Team Leader
Signature	6	K;
Date:	14/11/2024	14/11/2024

#### **REVISION HISTORY**

REV.	DESCRIPTION OF MODIFICATION	DATE
0	First Issue for Comments	11 November 2024
1	Updated in accordance with IEC's comments	14 November 2024

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#### **EXECUTIVE SUMMARY**

- A.1 Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP-488/2014/A) to DSD for the Project.
- A.2 Upon the requirement of the Environmental Permit (EP), the Monthly EM&A Monitoring Report shall be submitted to the DEP within 10 working days after the end of the reporting month. The submissions shall be verified by the Independent Environmental Checker (IEC) and complied with the requirements set out in the Environmental Monitoring and Audit (EM&A) Manual before submission to the DEP as stipulated in Condition 4.4 of the EP.
- A.3 The commencement date of the Project was 6 August 2021. Impact environmental monitoring of 24-hour TSP, 1-hour TSP and noise was conducted as stipulated in Condition 4.2 of the EP. This is the 39<sup>th</sup> Monthly EM&A Report for the Project summarizing the monitoring results and audit findings of the EM&A programme at selected locations at and around Cheung Chau during the reporting period from 1 to 31 October 2024.
- A.4 Key activities carried out in this reporting period for the Project included the followings:
  - Trial Pit and Ground Investigation
  - Construction of MBR Treatment Facilities
  - MVAC Installation Works
  - Lifting Appliance Installation for Sludge Digestor Building
  - FS Installation
  - Construction of Preliminary Treatment Facilities
  - Laying of Underground Pipes, Utilities and Construction of Manholes
  - Mechanical Installation of MBR
  - Temporary Diversion Works from Inlet Chamber to Preliminary Treatment Facilities
  - Lifting Appliance Installation for Membrane Bioreactor Building
- A.5 The major environmental impacts brought by the above construction works include:
  - Construction dust and noise generation from construction works and piling works
  - Wastewater generated from construction activities
  - Waste generation from the construction activities
- A.6 The key environmental mitigation measures implemented for the Project in this reporting period associated with the above construction works include:
  - Dust suppression by regular wetting and water spraying for construction works
  - Reduction of noise from equipment and machinery on-site
  - Mitigation measures preventing seepage of muddy water
  - Sorting and storage of general refuse and construction waste
- A.7 Six (6) sessions of air monitoring were carried out at all designated monitoring locations. No exceedance of Action or Limit Level was recorded.
- A.8 Five (5) sessions of noise monitoring were carried out at all designated monitoring locations. No exceedance of Action or Limit Level was recorded.
- A.9 Results of the monitoring for air quality and airborne noise are given in **Table A** and **Table B** as follows:

**Table A - Monitoring Results (Dust)** 

	Dust in μg/m <sup>3</sup>				
Locations	Ave	Average Rai		inge	
	TSP-1hr	TSP-24hr	TSP-1hr	TSP-24hr	
A1a	62	130	51 - 74	73 – 217	
A2a	57	113	48 - 63	73 - 147	

**Table B - Monitoring Results (Noise)** 

	Noise in dB(A)	
Locations	Average	Range
	L <sub>eq (30 min)</sub> (7:00-19:00)	L <sub>eq (30 min)</sub> (7:00-19:00)
N2a	67.1	66.1 - 67.8
N3a	67.7	65.6 - 70.4

s: +3 dB(A) free-field corrections have been made to N3a.

- A.10 According to Section 4.3.3 of the EM&A Manual, Site inspection shall be carried out by the ET and attention shall be paid to the mitigation measures recommended for water pollution control. Weekly site inspections were carried out and no non-compliance was spotted during the reporting month.
- A.11 According to the EM&A Manual section 4.4.1, baseline water quality monitoring should be carried out prior to the operation of the upgraded Cheung Chau STW to establish a baseline ambient condition. A six-month baseline water quality covering both dry and wet seasons is commenced in June 2024. Baseline water quality monitoring was carried out on 21 and 28 in October 2024.
- A.12 Waste management mitigation measures were properly implemented in the reporting period.
- A.13 For cultural heritage impact, as this Project does not involve proposed sewers works, according to Section 6.1.5 of the EM&A Manual, no EM&A requirement is considered necessary during the construction and operational phase of upgrading of Cheung Chau STW and Pak She SPS.
- A.14 The recommended landscape and visual mitigation measures were properly implemented in the reporting period.
- A.15 Weekly site inspections of the construction work by ET were carried out on 8, 15, 22 and 28 October 2024.

- A.16 No environmental complaint was received during the reporting period.
- A.17 No notification of summons or prosecution was received in the reporting period.
- A.18 A map of the construction site and monitoring locations are shown in **Appendix A**.
- A.19 The summary of permit / licences for this Project is presented in **Table C** below:

Table C - Summary of Permit / Licences

Nature	Number	Issue Date	Expiry Date
Environmental Permit	EP-488/2014/A	13/05/2021	N/A
Notification pursuant to Air Pollution Control (Construction Dust) Regulation	462303	26/11/2020	N/A
Waste Disposal	7039094	7/12/2020	N/A
Billing Account	7040870	15/10/2024	10/01/2025
Chemical Waste Producer	5213-920-B2500-05	31/12/2020	N/A
Effluent Discharge Licence under Water Pollution Control Ordinance	WT00038597-2021	20/08/2021	31/08/2026

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#### 1. Introduction

#### 1.1. BACKGROUND

- 1.1.1. Drainage Services Department (DSD) has contracted Build King Civil Engineering Limited (BK) to carry out the Outlying Islands Sewerage Stage 2 Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities under Contract No. DC/2019/07.
- 1.1.2. Acuity Sustainability Consulting Limited (ASCL) is commissioned by BK to undertake the Environmental Team (ET) services as required and/or implied, both explicitly and implicitly, in the Environmental Permit (EP), Environmental Impact Assessment Report (EIA Report) (Register No. AEIAR-181/2013) and Environmental Monitoring and Audit Manual (EM&A Manual) for the Project; and to carry out the Environmental Monitoring and Audit (EM&A) programme in fulfillment of the EIA Report's EM&A requirements under Agreement No. CE 15/2010 (DS).

#### 1.2. PROJECT DESCRIPTION

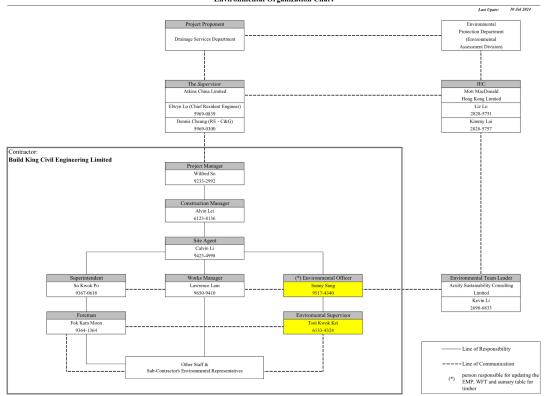
- 1.2.1 The purpose of the Project is to upgrade the sewerage collection, treatment and disposal facilities in Cheung Chau in order to cater for the projected ultimate population and planned developments in Cheung Chau to meet the increased demand and to achieve more stringent effluent quality standards. The key elements of the proposed works for the Project will include as follows:
  - Expansion of the sewage treatment capacity and upgrading of the treatment level of the existing Cheung Chau Sewage Treatment Works (Cheung Chau STW) to secondary treatment level; and
  - Expansion of the pumping capacity of the existing Pak She Sewage Pumping Station (Pak She SPS).

#### 1.3. PROJECT ORGANIZATION STRUCTURE

#### 1.3.1 The Project organization structure is presented in **Figure 1.1**.

**Figure 1.1 Project Organization Structure** 

Contract No.: DC/2019/07 Outlying Islands Sewerage, Stage 2 — Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities Environmental Organization Chart



Party	Role	Contact Person	Phone No.
Drainage Services Department HKSAR (DSD)	Project Proponent	QIU Yujiing, Eugene	2594 7298
Supervisor / Supervisor's Representative (Atkins China Limited)	Resident Engineer	Dennis Cheung	2675 3910
Environmental Team (Acuity Sustainability Consulting Limited)	Environmental Team Leader	Kevin Li	2698 6833
Independent Environmental Checker (Mott MacDonald Hong Kong Limited)	Independent Environmental Checker	Liz Lo	2828 5751
Contractor	Site Agent	Calvin Li	9423 4998
(Build King Construction Limited)	Environmental Officer Environmental Supervisor	Sunny Sung Tsui Kwok Kei	9517 4340 6133 4324

#### 1.4. SUMMARY OF CONSTRUCTION WORKS

1.4.1 Details of the major construction activities undertaken in this and the next reporting periods are shown below. The construction programme is presented in **Appendix B**.

Key activities carried out in this reporting period for the Project included the followings:

- Trial Pit and Ground Investigation
- Construction of MBR Treatment Facilities
- MVAC Installation Works
- Lifting Appliance Installation for Sludge Digestor Building
- FS Installation
- Construction of Preliminary Treatment Facilities
- Laying of Underground Pipes, Utilities and Construction of Manholes
- Mechanical Installation of MBR
- Temporary Diversion Works from Inlet Chamber to Preliminary Treatment Facilities
- Lifting Appliance Installation for Membrane Bioreactor Building

Key activities to be carried out in the next reporting period for the Project included the followings:

- Trial Pit and Ground Investigation
- Construction of MBR Treatment Facilities
- MVAC Installation Works
- Lifting Appliance Installation for Sludge Digestor Building
- FS Installation
- Construction of Preliminary Treatment Facilities
- Laying of Underground Pipes, Utilities and Construction of Manholes
- Mechanical Installation of MBR
- Temporary Diversion Works from Inlet Chamber to Preliminary Treatment Facilities
- Lifting Appliance Installation for Membrane Bioreactor Building

#### 1.5. PURPOSE OF THE REPORT

- 1.5.1 According to the EM&A Manual for the Project, monitoring for air quality and noise should be conducted throughout the construction period of the Project.
- 1.5.2 The EM&A requirements for environmental monitoring are set out in the EM&A Manual. Environmental aspect of construction noise and air quality were identified as the key issues requiring implementation of monitoring programme during the construction phase of the Project.
- 1.5.3 This report summarizing the monitoring results and audit findings of the EM&A programme during the reporting period from 1 October to 31 October 2024.

#### 2. AIR QUALITY

#### 2.1. AIR QUALITY PARAMETERS

- 2.1.1 The air quality parameters to be monitored includes:
  - 24-hour TSP:
  - 1-hour TSP; and the

#### 2.2. MONITORING CRITERIA

- 2.2.1 Dust monitoring was carried out at the designated monitoring location at least once in every six-days to obtain 24-hour TSP samples. One-hour TSP sampling shall also be done at least 3 times in every six-days while the highest dust impact occurs.
- 2.2.2 Before commencing the impact monitoring, the ET Leader shall inform the IEC of the impact monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the impact monitoring results.
- 2.2.3 In case of non-compliance with the air quality criteria, additional monitoring as specified in the Action Plan shall be conducted within 24 hours after the result is obtained. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified.

#### 2.3. MONITORING REQUIREMENTS AND EQUIPMENT

- 2.3.1 1-hour and 24-hour TSP levels were measured to indicate the impacts of construction dust on air quality. The 24-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the Title 40 of the United States Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.
- 2.3.2 High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:
  - (i) 0.6 1.7 m<sup>3</sup> per minute adjustable flow range;
  - (ii) equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
  - (iii) installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
  - (iv) capable of providing a minimum exposed area of 406 cm<sup>2</sup>;
  - (v) flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
  - (vi) equipped with a shelter to protect the filter and sampler;
  - (vii) incorporated with an electronic mass flow rate controller or other equivalent devices;
  - (viii) equipped with a flow recorder for continuous monitoring;
  - (ix) provided with a peaked roof inlet;
  - (x) incorporated with a manometer;
  - (xi) able to hold and seal the filter paper to the sampler housing at horizontal position;
  - (xii) easily changeable filter; and
  - (xiii) capable of operating continuously for a 24-hour period.

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- 2.3.3 The ET is responsible for provision of the monitoring equipment. They shall ensure that sufficient number of HVSs with an appropriate calibration kit is available for carrying out the impact monitoring, and ad hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc., shall be clearly labelled.
- 2.3.4 Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The concerned parties such as ER shall properly document the calibration data for future reference. All the data shall be converted into standard temperature and pressure condition.
- 2.3.5 If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, he shall submit sufficient information to the ER to prove that the instrument is capable of achieving a comparable result to the HVS. The instrument shall also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method.

#### Laboratory Measurement / Analysis

- 2.3.6 A clean laboratory with constant temperature and humidity control and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory shall be HOKLAS accredited.
- 2.3.7 Filter paper of size  $8" \times 10"$  shall be labelled before sampling. It shall be a clean filter paper with no pinholes and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.
- 2.3.8 After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity-controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

2.3.9 1-hour TSP levels and 24-hour TSP had been measured with direct reading dust meters and High Volume Samplers respectively. The details of equipment used for monitoring are listed in **Table 2.1**, and the calibration certificates are presented in **Appendix C**.

**Table 2.1 Equipment Used for Air Quality Monitoring** 

Equipment	Model	Serial Number
Portable Dust Meter – 1-hour	SIBATA Digital Dust Indicator	2Y6550
TSP	(Model: LD-5R)	2Y6549
High Volume Samplers – 24-	Tisch TE-5170X High Volume	1048
hour TSP	Air Sampler	1085
Calibrator Kit	Tisch TE-5025A Calibration Kit	3465

#### 2.4. Monitoring Locations

- 2.4.1 The ET agreed with the ER and the IEC on the position of the HVS for the installation of the monitoring equipment. When positioning the samplers, the following points were noted:
  - (i) a horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
  - (ii) no two samplers shall be placed less than 2 meters apart;
  - (iii) the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
  - (iv) a minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samplers;
  - (v) a minimum of 2 meters separation from any supporting structure, measured horizontally is required;
  - (vi) no furnace or incinerator flue is nearby;
  - (vii) airflow around the sampler is unrestricted:
  - (viii) the sampler is more than 20 meters from the dripline;
  - (ix) any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring
  - (x) permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
  - (xi) a secured supply of electricity is needed to operate the samplers.

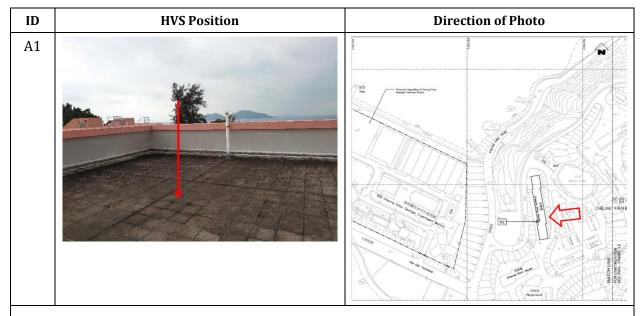
2.4.2 The proposed dust monitoring station is presented in **Table 2.2** and the respective locations are shown in Figure 2.1 of the EM&A Manual.

**Table 2.2 Proposed Dust Monitoring Stations** 

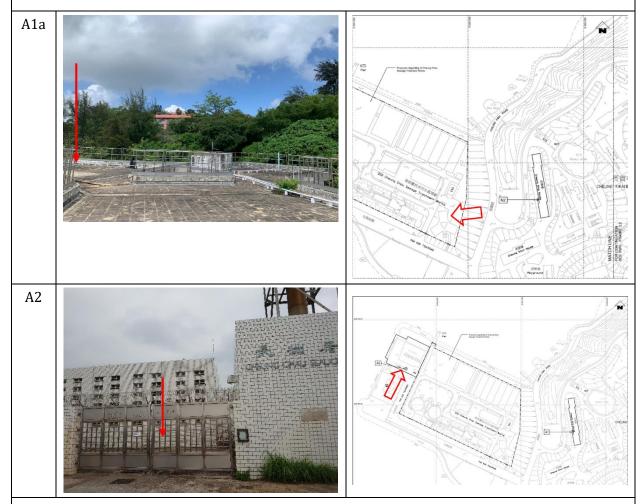
ID No.	Location	Nature of Use	Remarks
A1	Cheung King House, Cheung Kwai Estate	Residential	Specified in the EM&A Manual but proposed to change location
A1a	The admin building inside the construction site	Institutional	Proposed alternative location to replace A1
A2	Cheung Chau Slaughter House	Slaughter house	Specified in the EM&A Manual but proposed to change location
A2a	The existing outfall pumping station inside the construction site	Institutional	Proposed alternative location to replace A2

- 2.4.3 As secured electricity supply was not able to be provided at Monitoring Station A1, Monitoring Station A1a was then proposed. The proposed Monitoring Station A1a is the Admin Building inside the construction site. It is located at a similar direction as A1 from the construction site, but much closer to any major dust emission source than A1.
- 2.4.4 Monitoring Station A2 is now abandoned, only limited access can be granted and power supply cannot be guaranteed which may not feasible to be a monitoring location. An alternative location A2a, which is the existing outfall pumping station Building inside the construction site. Location A2a is about 30 meters away from the Cheung Chau slaughter house and closer to the dust emission source.
- 2.4.5 The proposed alternative monitoring locations meet the guidelines and requirements specified in Section 2.4.1 and 2.4.2 of the EM&A Manual. **Table 2.3** shows the photographs of the air monitoring locations.

Table 2.3 Photo of Proposed HVS Position at Dust Monitoring Stations



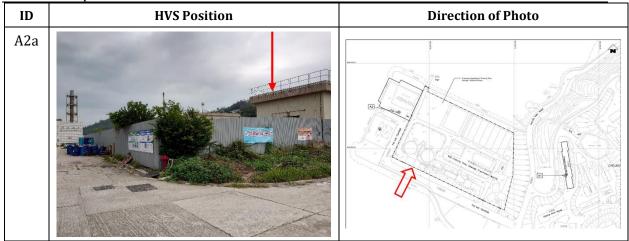
The proposed Monitoring Station A1a is the Admin Building inside the construction site. It is located at a similar direction as A1 from the construction site, but much closer to any major dust emission source than A1.



Because Monitoring Station A2 is now abandoned, only limited access can be granted and power supply cannot be guarunteed which may not feasible to be a monitoring location.

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#### 2.5. RESULTS AND ANALYSIS

2.5.1 The 1-hour TSP and 24-hour TSP measurement data are shown in <u>Appendix D</u> and summarized in **Table 2.4** and **Table 2.5** respectively.

**Table 2.4 Summary of 1-hour TSP Monitoring Results** 

Monitori	ng Location	Average(μg/m3)	Range(μg/m3)
	A1a	62	51 – 74
	A2a	57	48 - 63

Table 2.5 Summary of 24-hour TSP Monitoring Results

Monitoring Location	Average(μg/m3)	Range(μg/m3)
A1a	130	73 - 217
A2a	113	73 - 147

#### 2.6. Environmental Quality Performance Limits

2.6.1 The baseline monitoring results formed the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 24-hour TSP and 1-hour TSP. **Table 2.6** shows the air quality criteria, namely Action and Limit levels to be used.

Table 2.6 Action / Limit Levels for Air Quality

Parameters	Action Level	Limit Level
1-hour TSP Level in μg/m³	For baseline level $\leq 200 \mu\text{g/m}^3$ $AL = (BL * 1.3 + LL)/2$ For baseline level $> 200 \mu\text{g/m}^3$ $AL = LL$	260 μg/m³

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Parameters	Action Level	Limit Level
24-hour TSP Level in μg/m³	For baseline level ≤ 384 μg/m³ AL = (BL * 1.3 + LL)/2 For baseline level > 384 μg/m³ AL = LL	500 μg/m³

2.6.2 The derived Action/Limit Levels are presented in **Table 2.7**.

Table 2.7 Derived Action / Limit Levels for Air Quality

Parameters	Monitoring Location	Action Level μg/m <sup>3</sup>	Limit Level μg/m <sup>3</sup>
1-hour TSP Level	A1a	151	260
in μg/m³	A2a	154	260
24-hour TSP Level in μg/m³	A1a	270	F00
	A2a	271	500

#### 2.7. EVENT AND ACTION PLAN

2.7.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in **Table 2.8** shall be carried out.

Table 2.8 Event and Action Plan for Air Quality (Construction Dust)

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

#### 3. Noise

#### 3.1. MONITORING CRITERIA

- 3.1.1 Impact monitoring was conducted once a week between 07:00-19:00 hours on normal weekdays.
- 3.1.2 **Table 3.1** summarizes the monitoring parameters, frequency and duration of the noise monitoring.

Table 3.1 Noise Monitoring Parameters, Time, Frequency and Duration

Time	Duration	Interval	Parameters
Daytime: 0700-1900 hrs	Once per week	Continuously in $L_{\text{eq }5\text{min}}/L_{\text{eq }30\text{min}}$ (average of 6 consecutive $L_{\text{eq }5\text{min}}$ )	$ m L_{eq~5min}$ , $ m L_{eq~30min}$ , $ m L_{10}~\&~L_{90}$

#### 3.2. MONITORING REQUIREMENTS AND EQUIPMENT

- 3.2.1 Sound level meters and calibrators shall comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specification as referred to in the Technical Memorandum (TM) issued under the Noise Control Ordinance.
- 3.2.2 Sound level meters were calibrated using a portable calibrator prior to and following each noise measurement. Where the difference between the calibration levels is greater than 1.0 dB(A), the measurement shall be repeated. Calibrated hand-held anemometers were supplied for the measurement of wind speeds during noise monitoring periods.
- 3.2.3 Noise measurements should not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.
- 3.2.4 The details of equipment used for impact monitoring are listed in **Table 3.2**, and the calibration certificates are presented in <u>Appendix E</u>.

**Table 3.2 Equipment Used for Noise Monitoring** 

Equipment	Model	Serial Number
Sound Level Meter	SVANTEK 971	C132269
Acoustic Calibrator	Rion NC-75	34524163

#### 3.3. Monitoring Location

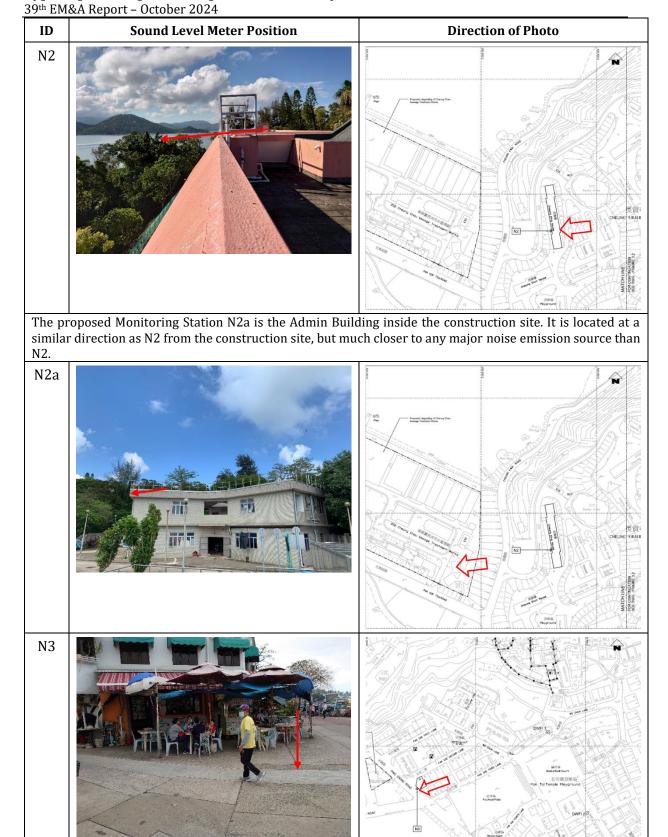
3.3.1 According to the environmental findings detailed in the EIA report, the designated locations for the construction noise monitoring are listed in **Table 3.3** and shown in Figure 3.1 – 3.8 of the EM&A Manual.

Table 3.3 Noise Monitoring Stations for Noise Monitoring

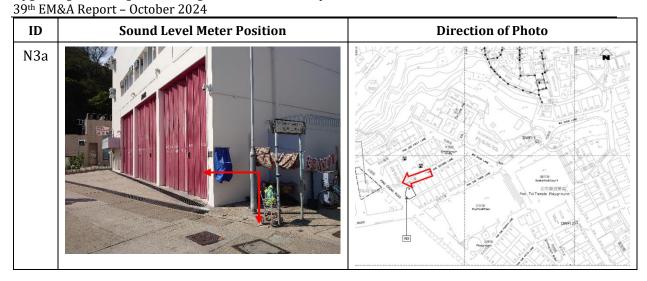
ID No.	Location	Nature of Uses	Remarks	Façade/Free-field
N2	Cheung King House, Cheung Kwai Estate	Residential	Specified in the EM&A Manual but proposed to change location	Façade
N2a	Admin Building inside the Construction Site	Institutional	Proposed alternative location to replace N2	Façade
N3	No. 1A Pak She Second Lane	Residential	Specified in the EM&A Manual but proposed to change location	Free-field
N3a	Cheung Chau Fire Station	Fire Station	Proposed alternative location to replace N3	Free-field

- 3.3.2 For this Contract, only N2 and N3 need to be monitored since all the other monitoring stations specified in the EM&A Manual are for sewers works but this Contract does not include sewers works.
- 3.3.3 The proposed Monitoring Station N2a is the Admin Building inside the construction site. It is located at a similar direction as N2 from the construction site, but much closer to any major noise emission source than N2.
- 3.3.4 According to Figure 3.3 of the EM&A Manual, Location N3 is placed in front of a restaurant on Ping Chong Road. It may pose potential danger to pedestrians, cyclists, drivers and the equipment. A proposed monitoring location N3a, which is about 5 m away from the original monitoring location. N3a is at the corner of the Cheung Chau Fire Station. This location is safer and meets the guidelines and requirements specified in Section 3.4.1 and 3.4.2 of the EM&A Manual.
- 3.3.5 The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. **Table 3.4** showed photographs and indications of the proposed position of sound level meters to be placed for the baseline and impact monitoring.

Table 3.4 Photo of Proposed Sound Level Meter Position at Noise Monitoring Stations



According to Figure 3.3 of the EM&A Manual, Location N3 is placed in front of a restaurant on Ping Chong Road. It may pose potential danger to pedestrians, cyclists, drivers and the equipment.



#### 3.4. RESULTS AND ANALYSIS

3.4.1 The noise monitoring was carried out in October 2024. The measurement data are shown in Appendix F and summarized in **Table 3.5**.

**Table 3.5 Summary of Noise Monitoring Results** 

Monitoring Location	Time Period	Average[dB(A))	Range[dB(A))
N2a	Daytime (0700-1900)	67.1	66.1 - 67.8
N3a	Daytime (0700-1900)	67.7	65.6 - 70.4

s: +3 dB(A) free-field corrections have been made to the data of N3a.

#### 3.5. Environmental Quality Performance Limits

3.5.1 The Action and Limit levels for construction noise are shown in **Table 3.6**. All NSRs identified in the Project are classified with an Area Sensitivity Rating (ASR) A in accordance with the Technical Memorandum on Noise from Construction Work Other Than Percussive Piling.

**Table 3.6** Action / Limit Levels for Construction Noise

Time Period	Action	Limit
07:00-19:00 hours on normal weekdays;	When one or more documented complaints are received	75dB(A)

#### 3.6. EVENT AND ACTION PLAN

3.6.1 Should non-compliance of the noise monitoring criteria occur, actions in accordance with the Action Plan in **Table 3.7** shall be carried out.

**Table 3.7 Event and Action Plan for Construction Noise** 

Event	ET	IEC	ER	CONTRACTOR
Action Level	Notify ER, IEC and Contractor;     Carry out investigation;     Report the results of investigation to the IEC, ER and Contractor;     Discuss with the IEC and contractor and formulate remedial measures; and	Review the investigation results submitted by the ET;     Review the proposed remedial measures by the Contractor and advise the ER accordingly; and     Advise the ER on the effectiveness of the proposed remedial measures.	Confirm receipt of notification of failure in writing;     Notify Contractor;     In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; and     Supervise the implementation of remedial measures.	Submit noise mitigation proposals to IEC and ER; and     Implement noise mitigation proposals.
Limit Level	Notify IEC, ER, EPD & Contractor;     Identify source and investigate the cause of exceedance;     Repeat measurement to confirm findings;     Increase monitoring frequency;     Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;     Discuss with the IEC, Contractor and ER on remedial measures required;     Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and     If exceedance stops, cease additional monitoring.	Discuss amongst ER, ER and Contractor on the notential Discuss amongst ET, ER and Contractor on the potential remedial actions; and acuons wrienever necessary to assure their effectiveness and advise the ER accordingly.	Confirm receipt of notification of failure in writing;     Notify Contractor;     In consolidation with the EIC, agree with the Contractor on the remedial measures to be implemented;     Supervise the implementation of remedial measures; and     If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	Take immediate action to avoid further exceedance;     Submit proposals for remedial actions to IEC and ER within 3 working days of notification;     Implement the agreed proposals;     Submit further proposal if problem still not under control; and     Stop the relevant portion of works as determined by ER, until the exceedance is abated.

#### 4. WATER QUALITY

- 4.1 As suggested in Section 4.3 of the EM&A Manual, regular site audit was carried out to ensure that the recommended mitigation measures were properly implemented during the construction phase of upgrading of Cheung Chau STW and Pak She SPS. Site audit included site inspections and compliance audits were conducted in the reporting period.
- 4.2 Site inspections were carried out by the ET on 8, 15, 22 and 28 October 2024. No major deficiency was observed and the implementation of recommended for water pollution control was considered satisfactory.
- 4.3 The Contractor was reminded to make sure any effluent discharge from construction activities of the Project site should meet the requirements stipulated in the discharge license and monitoring of the treated effluent quality from the Works Areas should be carried out in accordance with the Water Pollution Control Ordinance license that is under the ambit of the relevant regional EPD office.
- 4.4 According to the Specific Conditions B2 in Part B of the discharge licence issued under WPCO, a sample of discharge was taken on 17 October 2024 for testing. The test results were under the limitations of the requirements. The quality of the discharge compliant with the requirements of the discharge licence.
- 4.5 According to the EM&A Manual section 4.4.1, marine water quality monitoring should be carried out during the operational phase of the Project is to quantify the variability of pollutant concentrations in the marine waters. Measured pollutant concentrations are to be compared to the relevant Water Quality Objectives and to the baseline data to identify any significant impact on water quality from the operation of upgraded Cheung Chau STW (DP component). Baseline water quality monitoring should be carried out at all monitoring stations prior to the operation of the upgraded Cheung Chau STW to establish a baseline ambient condition.
- 4.6 A six-month baseline water quality covering both dry and wet seasons is commenced in June 2024. Baseline water quality monitoring was carried out on 21 and 28 in October 2024. Water monitoring locations are shown in Table 4.1. Table 4.2 showing the baseline water quality monitoring schedule in October 2024. Any update on the monitoring schedule shall notify the IEC and EPD. A baseline water quality monitoring report will be submitted after finished the baseline monitoring. The baseline water quality monitoring report shall be verified by the IEC.

Table 4.1: Water Quality Monitoring Locations

Locations	Station	Easting	Northing
Cheung Chau STW	w1	820151.20	808236.90
Cheung Chau Wan	w2	820579.40	807761.65
Tung Wan	w3	821221.73	808130.84
Kwun Yam Wan	w4	821469.22	807804.01
Tai Kwai Wan	w5	820493.00	808822.31
Chi Ma Wan	w6	817649.00	811487.00

Table 4.2: Baseline Water Quality Monitoring Schedule in October 2024

Month	Dates of Water	Tidal Period	Sampling
	Sampling		Time
	21	Ebb Tide: 13:11 – 16:41	13:11 – 16:41
October		Flood Tide: 06:01 – 13:11	08:00 - 11:21
	20	Ebb Tide: 06:39 – 13:14	08:11 - 11:41
	28	Flood Tide: 13:14 – 20:07	15:55 – 18:25

#### 5. WASTE MANAGEMENT

5.1 The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes, and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are presented in **Table 5.1**.



#### Contract No: DC/2019/07

Build King Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities

Name of Department: Drainage Services Department
Project Title:
Contract No./Work Order No.:
Project Title:
Contractor:
Trip Ticket Account (Main Account):
Trip Ticket Account (Vessel Account):
Marine Dumping Permit (Type 1 - Open Sea Disposal):
Marine Dumping Permit (Type 2 - Confined Marine Disposal):
EP/MD/23-043

PO2/2019/07

Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities

Po39094

7040870

7040870

FP/MD/23-041

Marine Dumping Permit (Type 1 - Open Sea Disposal):
EP/MD/23-043

#### Table 5.1 Monthly Summary Waste Flow Table for 2024 (in Weight)

(All quantities shall be rounded off to 3 decimal places Actual Quantities of Inert C&D Materials Generated / Imported (in '000 kg) Actual Quantities of Other C&D Materials / Wastes Generated Paper/ Cardboard Type 1 - Open Sea Type 2 - Confined Total Quantities Chemical Waste Others (i) g. General Refu sposed as Public Fill mported C&D Mar Packaging (f) 0.0000 0.0000 0.0000 25.4400 0.0000 0.0000 44.9600 0.0000 0.0000 0.0000 0.0000 0.0000 26.8400 0.0000 Mar-2024 40.6700 0.0000 0.0000 0.0000 18.1100 0.0000 0.0000 0.0000 0.0000 0.0000 22.5600 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 5.6000 0.0000 0.0000 24.6400 0.0000 0.0000 0.0000 Apr-2024 30.2400 May-2024 817.6600 0.0000 0.0000 783.0000 0.0000 0.0000 0.0000 0.0000 34,6600 0.0000 0.0000 0.0000 0.0000 Jun-2024 47.2800 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 47.2800 0.0000 0.0000 Jul-2024 38.3400 0.0000 0.0000 0.0000 0.0000 0.7600 0,0000 0,0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1855.0000 0.0000 0.0000 0.0000 0.0000 0.0000 54.8500 0.0000 0.0000 Aug-2024 1909.8500 Sep-2024 0.0000 0.0000 0.0000 0.8500 0.0000 0.0000 0.0000 0.0000 16.7800 0.0000 0.0000 Oct-2024 19.1800 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 19.1800 0.0000 0.0000 Nov-2024 0.0000

(All quantities sl	nall be rounded off to	3 decimal places)											
Year		Actual Quar	ntities of Inert C&D Mater	rials Generated / Imported	(in '000 kg)			Actual Quantities	Marine Dumping				
	Total Quantities Generated	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported C&D Material	Metal	Paper/ Cardboard Packaging	Plastic (bottles/containers, plastic sheets/ foams from package material)	Chemical Waste	Others (e.g. General Refuse etc.)	Type 1 - Open Sea Disposal	Type 2 - Confined Marine Disposal
	[a+b+c+d+e+f+g+h+i)	(a)	(b)	(c)	(d)		(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in m <sup>3</sup> )	(in m <sup>3</sup> )
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	858.3600	0.0000	0.0000	0.0000	786.3000	0.0000	0.0000	0.0000	0.0000	0.0000	72.0600	0.0000	0.0000
2022	17081.7200	0.0000	0.0000	0.0000	17032.3700	0.0000	0.0000	0.0000	0.0000	0.0000	49.3500	525.0000	203.0000
2023	49757.9100	0.0000	0.0000	0.0000	49610.8700	0.0000	0.0000	0.0000	0.0000	0.2000	146.8400	835.0000	1350.0000
2024	4554.2500	0.0000	0.0000	0.0000	4300.3000	0.0000	0.0000	0.0000	0.0000	0.0000	253.9500	0.0000	0.0000
2025	0.0000												
2026	0.0000												
Total	72252.2400	0.0000	0.0000	0.0000	71729.8400	0.0000	0.0000	0.0000	0.0000	0.2000	522.2000	1360.0000	1553.0000

Remark:

1) Density of C&D material to be

2 metric ton/m3

3) Density of Chemical Waste to be

0.88 metric ton/m3

2) Density of General Refuse to be

1.6 metric ton/m3

- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Sites.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
  (3) The summary table shall be submitted to the Project Manager monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.20(8)

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#### 6. LANDSCAPE & VISUAL

- 6.1 The EIA Report has recommended landscape and visual mitigation measures to be undertaken during construction and operational phases of the upgrading of Cheung Chau STW under this Project. The implementation and maintenance of landscape mitigation measures were checked to ensure that they are fully realized and that potential conflicts between the proposed landscape measures and any other project works and without compromise to the intention of the mitigation measures.
- Regular audits were carried out to ensure all the recommended landscape and visual mitigation measures were effectively implemented.
- 6.3 The EM&A Manual proposed mitigation measures were checked on a regular basis to ensure compliance with the intended aims of the EIA.

#### 7. SITE INSPECTION AUDIT

- 7.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting period, site inspections were carried out on 8, 15, 22 and 28 October 2024. A joint site inspection with IEC was carried out on 28 October 2024.
- 7.2 Environmental deficiencies were observed during weekly site inspections. Key observations during the site inspections and during the reporting period are summarized in **Table 7.1**.

**Table 7.1 Site Observations** 

Date	Environmental Observations	Follow-up Status	Reminders				
8 October 2024	NIL	NIL	<ol> <li>Materials should be stored away from tree protection zone.</li> <li>Chemicals on site should be properly labelled.</li> </ol>				
15 October 2024	1. Dusty materials should be cleared on haul road. Frequency of watering should be increased to avoid dusty condition onsite.	1. Dusty materials were cleared.	NIL				
22 October 2024	<ol> <li>Permit copy should be posted at the entrance of the site.</li> <li>Stone breaker should be put on tarpaulin.</li> </ol>	<ol> <li>Permit copy was posted.</li> <li>Stone breaker was removed.</li> </ol>	NIL				
28 October 2024	NIL	NIL	NIL				

7.3 According to the EIA Study Report, Environmental Permit, contract documents and EM&A Manual, the mitigation measures detailed in the documents should be implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in **Appendix G**.

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#### 8. Environmental Non-conformance

- **8.1.** Summary of Exceedances
- 8.1.1 No exceedance of Action and Limit Levels of air quality and construction noise was recorded in the reporting month.
- **8.2.** Summary of Environmental Complaint
- 8.2.1 No environmental complaint was recorded in the reporting month.
- 8.3. SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION
- 8.3.1 There was no successful environmental prosecution or notification of summons received since the Project commencement.

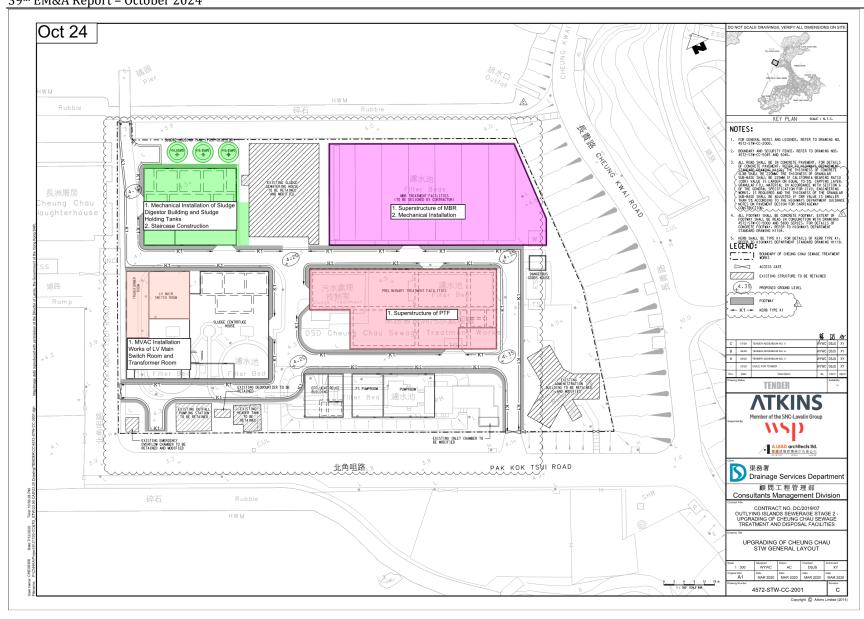
Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 -Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39<sup>th</sup> EM&A Report – October 2024

#### 9. CONCLUSION

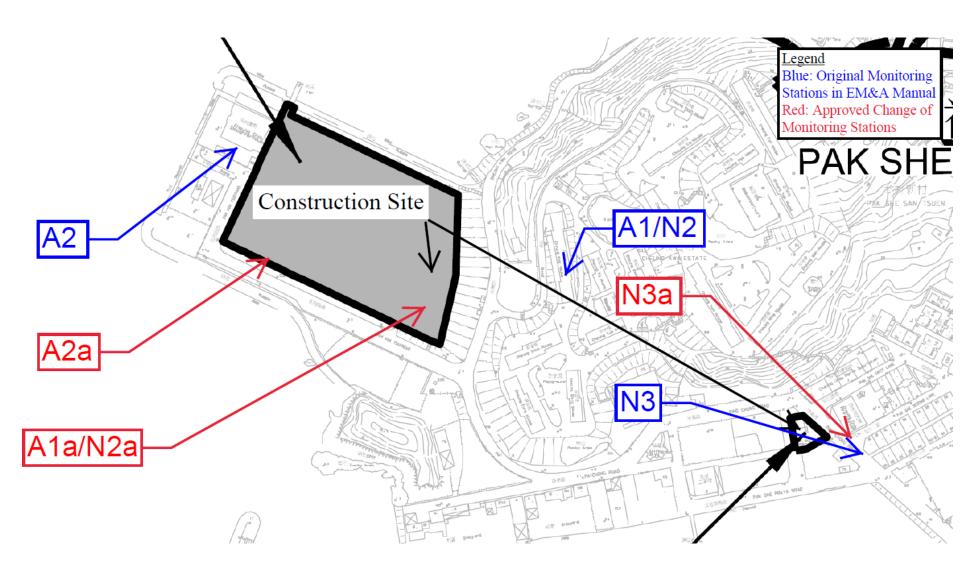
- 9.1 This is the 39<sup>th</sup> Monthly EM&A Report for the Project which summarizes the key findings of the programme during the reporting period from 1 to 31 October 2024 in accordance with the EM&A Manual and the requirement under EP-488/2014/A.
- 9.2 Six (6) sessions of air and five (5) sessions of noise monitoring were carried out at the monitoring locations sited at Cheung Chau in the reporting month.
- 9.3 Site audits were conducted as mitigation measures recommended for water pollution control and landscape and visual impact monitoring in the reporting period. Proper mitigation measures were implemented.
- 9.4 Weekly environmental site inspections were conducted during the reporting period. Only minor deficiencies were observed during site inspections. The environmental performance of the project was therefore considered satisfactory.
- 9.5 A six-month baseline water quality covering both dry and wet seasons is commenced in June 2024 to establish a baseline ambient condition. Baseline water quality monitoring was carried out on 21 and 28 in October 2024.
- 9.6 No exceedance of Action or Limit Level was recorded in the reporting period.
- 9.7 No environmental complaint was received in the reporting period.
- 9.8 No notification of summons or prosecution was received during the reporting period.

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# APPENDIX A Location Plan and Noise and Dust Monitoring Stations



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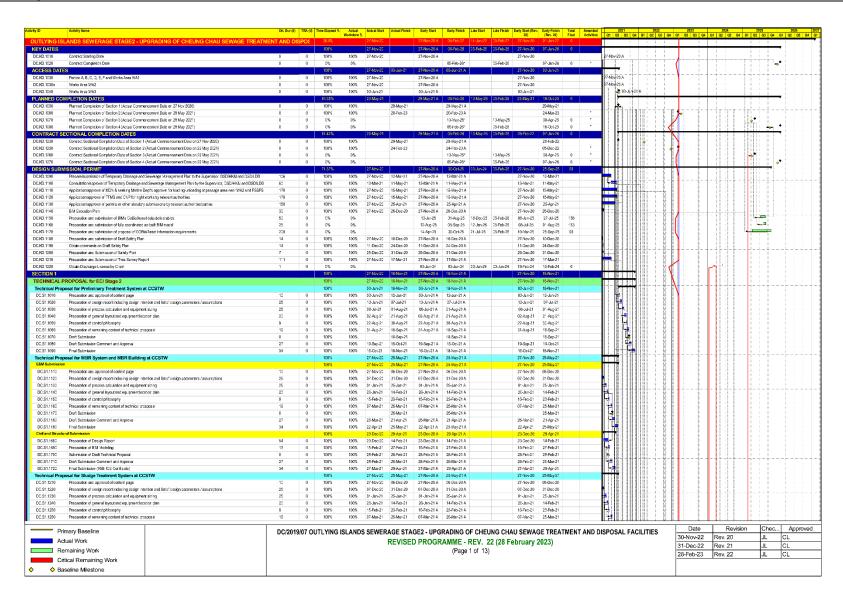


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## APPENDIX B Construction Programme

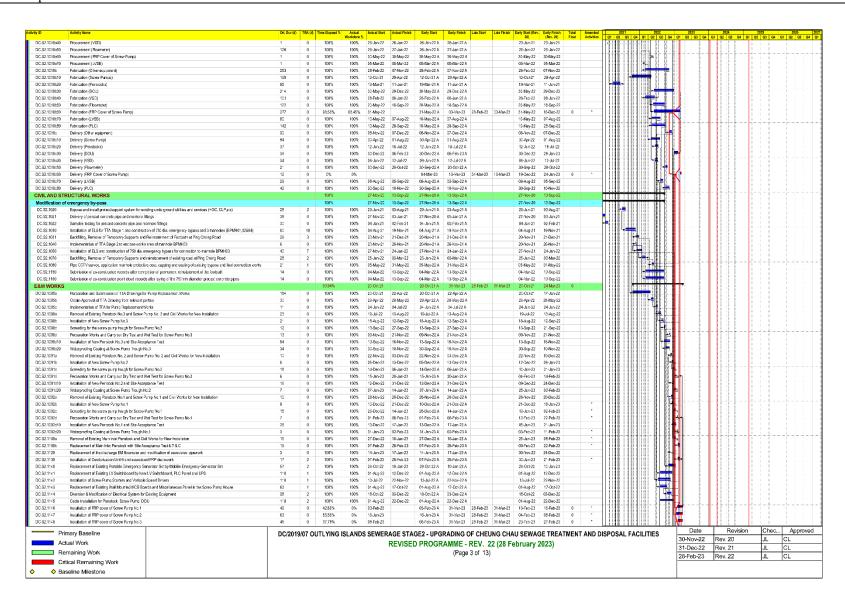




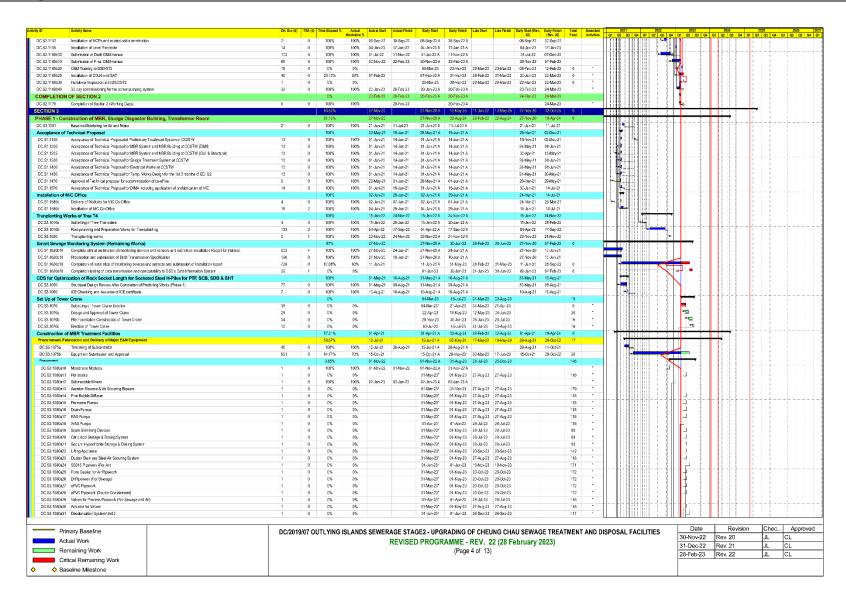


rty ID	Activity Name	Ori. Dur (d)	TRA (d)	Time Elapsed %	Actual Workdone %	Actual Start	Actual Finish	Early Start	Early Finish	Late Start	Late Finish Early Start (Re 20)	(Rev. 20)	Total Amende Float Activitie	d s Q1 C	2021 2022 2 03 Q4 Q1 Q2 Q3	Q4 Q1 Q2 C	23 Q4 Q1	2024 Q2 Q3 Q4	2025 Q1 Q2 Q3	2026 Q4 Q1 Q2 Q	3 04
DC.81.1270	Draft Submission	0	0	100%	100%		25-Mar-21		25-Mar-21 A			25-Mar-21		13							
DC.S1.1280	Draft Submission Comment and Asprova	27	0	100%	100%	28-Mar-21	21-Agr-21	26-Mar-21 A	21-Apr-21 A		26-Mar-21	21-Apr-21		11			200				
DC.S1.1290 Technical Prope	Final Submission	34	-0	100%	100%	22-Apr-21 27-Nov-22	25-May-21 25-May-21	22-Apr-21 A 27-Nov-20 A	25-May-21 A 25-May-21 A		22-Apr-21 27-Nov-20	25-May-21 25-May-21		- 7					1 1 1		
DC.S1.1310	sal for Electrical Works at CCSTW Preparation and approval of content page	10	- 0	100%	100%	27-Nov-20	06-Dec-20	27-Nov-20 A	08-Dec-20 A		27-Nov-20	06-Dec-20		- 1111					1 1 1		
DC.S1.1320	Preparation of design report including design intention and fist of design parameters / assumptions	25	- 0	100%	100%	07-Dao-20	31-Dec-20	07-Dec-20 A	31-Dec-20 A		07-Dec-20	31-Dec-20		- 111			1				
DC.S1.1330	Proparation of process calculation and equipment sizing	25	0	100%	100%	01-Jan-21	25-Jan-21	01-Jan-21 A	25-Jan-21 A		01-Jan-21	25-Jan-21		<b>4</b>			1	11:1-1-			
DC.S1.1340	Preparation of general layout and equipment location plan	20	0	100%	100%	28-Jan-21	14-Feb-21	26-Jan-21 A	14-Feb-21 A		28-Jan-21	14-Feb-21									
DC.S1.1350	Preparation of control philosophy	20	0	100%	100%	15-Feb-21	06-Mar-21	15-Feb-21 A	06-Mar-21 A		15-Feb-21	08-Mar-21		1-2			ì				
DC.\$1.1380	Pregaration of remaining content of technical prosposal	19	0	100%	100%	07-Mar-21	25-Mar-21	07-Mar-21 A	25-Mar-21 A		07-Mar-21	25-Mar-21		별			1		1 1 1		
DC.\$1.1870	Draft Submission	0	0	100%	100%		25-Mar-21		25-Mar-21 A			25-Mar-21		1-7			j				
DC.S1.1380	Dish Submission Comment and Approva	27	-0	100%	100%	26-Mar-21	21-Apr-21	26-Mar-21 A	21-Apr-21 A		26-Mar-21	21-Apr-21		- 1							
DC.S1.1330	Final Submission	34	-0	100%	100%	22-Apr-21	25-May-21	22-Apr-21 A	25-May-21 A		22-Apr-21	25-May-21									
Technical Prope	sal for Temp. Works Design for the 1st 3months of ECI S2			100%		18-Jan-21	23-May-21	16-Jan-21 A	23-May-21 A		16-Jan-21	23-May-21					ì				
DC.S1.1410a DC.S1.1410b	Preparation and approval of Technical Prosposal for ELS Design of Studge Digister Building  Preparation and approval of Technical Proposal for ELS Design of LV Main Switch Rm, Transformer Rm & WAS Storage Tanks	87	0	100%	100% 100%	18-Jan-21 18-Jan-21	23-Mar-21 23-Mar-21	16-Jan-21 A 16-Jan-21 A	23-Mar-21 A 23-Mar-21 A		18-Jan-21 18-Jan-21	23-Mar-21 23-Mar-21									
DC.S1.1410c	Preparation and approval of Fechnical Proposal for ELS Design of MBR Treatment Facilities	67	0	100%	100%	18-Jan-21	23-Mar-21	16-Jan-21 A	23-Mar-21 A		18-Jan-21	23-Mar-21									
DC.S1.1410d	Preparation and approval of Technical Proposal for ELS of 750mm clameter emergency bypass diversion at PSSPS	67	0	100%	100%	18-Jan-21	23-Mar-21	16-Jan-21 A	23-Mar-21 A		18-Jan-21	23-Mar-21		441							
DC.S1.1420	Dia† Sutmission	0	0	100%	100%		23-Mar-21		23-Mer-21 A			23-Mar-21		1 2			-		1 1 1		
DC.S1.1430	Draft Submission Commert and Approva	27	0	100%	100%	24-Mar-21	19-Apr-21	24-Mar-21 A	19-Apr-21 A		24-Mar-21	19-Apr-21					ž.				
DC.S1.1440	Final Sutmission	34	0	100%	100%	20-Apr-21	23-May-21	20-Apr-21 A	23-May-21 A		20-Apr-21	23-May-21		-							
Technical Prope	sal for Accommodation for the Project Manager's, Supervisor's & Contractor's Co-Office			100%		27-Nov-20	25-Mar-21	27-Nov-20 A	25-Mar-21 A		27-Nov-20	25-Mar-21		-							-
DC.S1.1460	EC: Stage 1 - Technical proposal for accommedation for the Project Manager's Supervision's & Contractor's co-office	119	0	100%	100%	27-Nov-20	25-Mar-21	27-Nov-20 A	25-Mar-21 A		27-409-20	25-Mar-21				i i i	1				
Technical Prope	sal for DfMA including application of prefabrication and MiC			100%		28-Jan-21	29-Jun-21	26-Jan-21 A	29-Jun-21 A		26-Jan-21	29-Jun-21		1			§				
C.S1.1480	Preparation and approval of content page	48	0	100%	100%	28-Jan-21	12 Mar-21	26-Jan-21 A	12-Mar-21 A		28-Jan-21	12-Mar-21				ğ 🖟 📗	0				
DC.S1.1490	Preparation of design memorandum for Civil DfMA	30	0	100%	100%	13-Mar-21	11-Apr-21	13-Mar-21 A	11-Apr-21 A		13-Mar-21	11-Apr-21			444444	4-11	4-4-1	1 4 - 1 -	أسلسال		111
DC.S1.1500	Preparation of cesign memorandum for E&Id DfMA	30	0	100%	100%	13-Mar-21	11-Apr-21	13-Mar-21 A	11-Apr-21 A		13-Mar-21	11-Apr-21		_  ``			j				
DC.S1.1530 DC.S1.1540	Preparation of remaining content of technical prosposal	19	0	100%	100% 100%	12-Apr-21	30-Apr-21	12-Apr-21 A	30-Apr-21 A		12-Apr-21	30-Apr-21		11			1				
DC.S1.1640 DC.S1.1650	Draf Submission Draf Submission Commert and Approva	24	0	100%	100% 100%	01-May-21	30-Agr-21 24-May-21	0144ay-21 A	30-Apr-21 A 24-Way-21 A		01-May-21	30-Apr-21 24-May-21		-   1			9				
DC:S1:1580 DC:S1:1580	Drait Submission Common) and Approva  Final Submission	38	0	100%	100%	25-May-21	29-Jun-21	25 Atay-21 A	24-May-21 A 29-Jun-21 A		01-May-21 25-May-21	29-May-21 26-Jun-21		-     T		ğ H	3				
ITE PREPARA	TION WORKS	0.0	9	100%	100 10	27-Nov-21	15 May 21	27-Nov-20 A	15-Way-21-4		27-Nov-20	25-301-21 15-May-21		#++#	FI						
C S1.1580u	Design of MIC Co-Office	15	- 0	100%	100%	06-Mar-21	23-Mar-21	06-Mar-21 A	23-Mar-21 A		95-Mar-21	23-Mar-21		- 1			1				
C S1.1580b	Fabrication of MC Co-O lico	44	0	100%	100%	28-Jan-21	23-Mar-21	28-Jan-21 A	23-Mar-21 A		28-Jan-21	23-Mar-21		11			i I				
C.S1.1590	Site clearance, set up site hearding, provision of temporary fence, and erection of project signboard	184	6	100%	100%	27-Nov-20	15 May-21	27-Nov-20 A	15-May-21 A		27-Nov-20	15-May-21		-							
C.S1.1800	Structural Condition Survey	34	2	100%	100%	10-Apr-21	15 May-21	10-Apr-21 A	15-May-21 A		10-Apr-21	15 May 21			+ 1	ğ 🖡 📗	1				
C S1.1630	Ground Investigation (45 nos., 3 rig. 2team) with relevant subletting and site setup	82	6	100%	100%	20-Jan-21	10-May-21	20-Jan-21 A	10-May-21 A		20-Jan-21	10-May-21		1+++							
C S1.1640	Setup of monitoring and instrumentation system	119	a	100%	100%	92-Jan-21	08-May-21	62-Jan-21 A	08-May-21 A		02-Jan-21	08-May-21		1		ğ [ ]	i I				
DC S1.1660	Initial site survey record	55	L	100%	100%	27-Nov-20	25-Jan-21	27-Nov-20 A	25-Jan-21 A		27-Nov-20	25-Jan-21					1				
C S1.1670	Conduct UU detection and issuance of UU detection report	25	2	100%	100%	21-Dec-20	19-Jan-21	21-Dec-20 A	19-Jan-21 A		21-Dec-20	19-Jan-21		7		9 1 1					
C S1.1671s	Installation of Piezometer PS1 to PS3	45	- 0	100%	100%	31-Mar-21	15-May-21	31-Mar-21 A	15-May-21 A		31-Mar-21	15-May-21		1		ğ. <b>     </b>	4-4-1		-4-4-4		4-4
Raw Sewerage DC.91.1610a	Sampling Survey	42		100%	Ancelo	27-Nov-20	06-Feb-21	27-Nov-20 A	06-Feb-21 A		27-Nov-20	08-Feb-21 10-Dec-20									
DC.S1.16108 DC.S1.1610b	Conduct initial Recommissance Visit Submit Recommissance Visit	13	0	100%	100% 100%	27-Nov-20 11-Dec-20	10-Dec-20 15-Dec-20	27-Nov-20 A 11-Dec-20 A	10-Dec-20 A 15-Dec-20 A		27-Nov-20 11-Dec-20	15-Dec-20				9 6 1					
DC.S1.1610c	Approval of Report of Initial Reconnaissance Visit	7	0	100%	100%	18-Dec-20	22-Dec-20	16-Dec-20 A	22-Dec-20 A		16-Dec-20	22-Dec-20					1				
DC.S1.1610d	Preciation sor < for Ray Sevage Sampling	7	0	100%	100%	23-Dec-20	29-Dec-20	23-Dec-20 A	29-Dec-20 A		23-Dec-20	29-Dec-20					5				
DC.S1.1610e	Conduct Ray Sevage Sampling	14	0	100%	100%	30-Dec-20	12-Jan-21	30-Den-20 A	12-Jan-21 A		30-Den-20	12-Jan-21		#11		ğı fi tiriri	1-1-1				
DC.S1.1610f	Submission of Survey Report	21	0	100%	100%	13-Jan-21	02-Feb-21	13-Jan-21 A	02-Feb-21 A		13-Jan-21	02-Feb-21		+ 1							
DC.S1.1610g	Comment and Approval of Survey Report	2	0	100%	100%	03-Feb-21	04-Feb-21	03-Feb-21 A	04-Feb-21 A		03-Feb-21	04-Feb-21		H		9 6 1					
DC.S1.1610h	Submission of Final Survey Report	2	9	100%	100%	05-Feb-21	06-Feb-21	05-Feb-21 A	06-Fab-21 A		05-Feq-21	08-Feb-21					1				
	Monitoring System			100%		27-Nov-20	10-Jan-21	27-Nov-20 A	10-Jan-21 A		27-409-20	10-Jan-21					5				
C.S1.1620a	Carry out site investigation and submit Reconnais since Survery Report	42	3	100%	100%	27-Nov-20	10-Jan-21	27-Nov-20 A	10-Jan-21 A		27-Nov-20	10-Jan-21		_ [ ]			į.				
	OF SECTION 1			0%		29-May-21	29-May-21	29-May-21 A	29-May-21 A		29-May-21	29-Msy-21									
C.S1.1850	Completion of Section 1 (Working Days)	0	- 0	100%	100%	63.11 65	29-May-21	0711 000	29-May-21 A	40.5 1.00		29-May-21 24-Mar-23			5						
ECTION 2 - Up	grading the existing Pak She Sewage Pumping Station (PSSPS)			80.20%		67.000002		27-N09-20 A	31-88F23	70 F80-23	51-68F-23 27-309-20	29-M31-23		<b>4</b>			i i				
ROCUREME	IT, FABRICATION and DELIVERY of MAJOR E&M EQUIPMENT			98,09% 450K	4000	19-Mar-21	DE Aug C1	194001/21 A	15-82F-23	26-F0b-23	15-mar-23 27-Nov-20	28-Jan-23	0			4-44					4-4
C SZ 1005s C SZ 1005b	Tendering of Subscentrator  Equipment Subscent	45 141	0	100% 100%	100% 100%	12-Jul-21	25-Aug-21 14-Jan-22	12-Jul-21 A	25-Aug-21 A 14-Jan-22 A		12-Jul-21	25-Aug-21 22-Jan-22		-			§				
C SZ.10050 IC SZ.10050	Equipment Submission and Approval (Other equipment)  Equipment Submission and Approval (Scree Pumps)	40	0	100%	100%	28-Aug-21 31-Aug-21	09-Oct-21	26-Aug-21 A 31-Aug-21 A	14-Jan-22 A 09-Oct-21 A		26-Aug-21 26-Aug-21	22-Jan-22 04-Oct-21				ă 🗐 📗	3				
C 82.10054	Equipment Submission and Approval (Gorde Pumps)	189	0	100%	100%	31-Aug-21	08-Mar-22	31-Aug-21 A	08-Mar-22 A		27-Nov-20	31-Mar-21				8 1 1	9				
G 82.1005e	Equipment Submission and Approval (PCUI)	131	0	100%	100%	31-Oct-21	11-Mar-22	31-Oct-21 A	11-Mar-22 A		27-Nov-20	11-Mar-21		Щ.1		i i i					
G S2.1005f	Equipment Submission and Approval (VSD)	91	0	100%	100%	30-Nov-21	01-Mar-22	30-Nov-21 A	01-Mar-22 A		27-Nov-20	22-Jan-21		#411		8-61	1-1-1	11111			
C S2.1005g	Equipment Submission and Approval (Flowmeter)	172	0	100%	100%	93-Deo-21	24-May-22	03-Dec-21 A	24-May-22 A		27-Nov-20	17-May-21		+ $+$ $1$		<u>i i i i</u>	ž.				
3 SZ.1005h	Equipment Submission and Approval (FRP Cover of Screw Pump)	100	0	100%	100%	29-Feb-22	08-Jun-22	28-Feb-22 A	08-Jun-22 A		27-Nov-20	06-Mar-21		144		4 11					
C S2.1005i	Equipment Submission and Approval (LVSB)	95	0	100%	100%	03-Jan-22	11-Apr-22	03-Jan-22 A	11-Apr-22 A		28-Feb-22	13-Apr-22			<del>     </del>  -	\$ E	§				
C SZ.1010s	Procurement (Other equipment)	6	9	100%	100%	08-Jan-22	14-Jan-22	08-Jan-22 A	14-Jan-22 A		08-Jan-22	14-Jan-22									
C SZ.1010a10	Procurement (Sciele Pumps)	7	9	100%	100%	24-Sep-21	24-Sep-21	24-Sep-21 A	24-Sep-21 A		05-OcH21	11-0ct-21			<b>H</b>		5				
OC S2.1010s20	Procurement (Perstocks)	1	0	100%	100%	03-Jan-22	04-Jan-22	03-Jan-22 A	04-Jan-22 A		17-Mar-21	18-Mar-21					2				
C S2.1010s30	Procurement (DOU)	2	0	100%	100%	20-Mar-22	21-Mar-22	20-Mar-22 A	21-Mar-22 A		20-Mar-22	2"-Mar-22				8 H H	§	11 11 1	11 1 1		
- Prin	nary Baseline	DC/2019	9/07 OI	ITI YING I	SI ANDS	SEWER	AGE STA	GE2 - IIPGI	RADING O	E CHEU	NG CHAU SEWA	GE TREAT	MENT AND	DISPOS	AL FACILITIES	Da	ate	Revision	on Che	ес Арр	roved
	aal Work	D 0/2013												_,0, 00		30-Nov	√-22 F	Rev. 20	JL	CL	
	REVISED PROGRAMME - REV. 22 (28 February 2023)												31-Dec	:-22 F	Rev. 21	JL	CL				
Rei	naining Work								(Page :	2 of 13)						28-Feb		Rev. 22	JL	CL	_
Crit	cal Remaining Work															20100	II.		INF	lor.	
	-																				
△ Par	eline Milestone																				

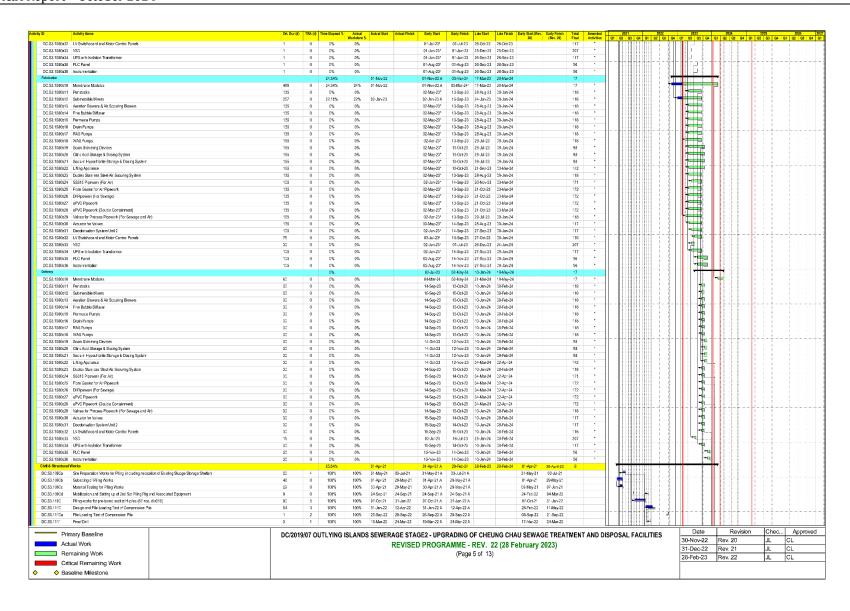




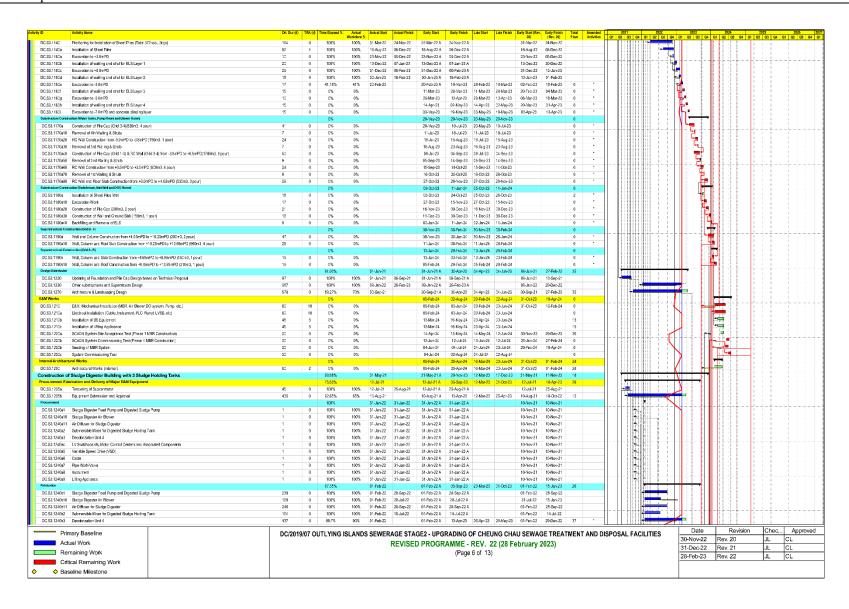




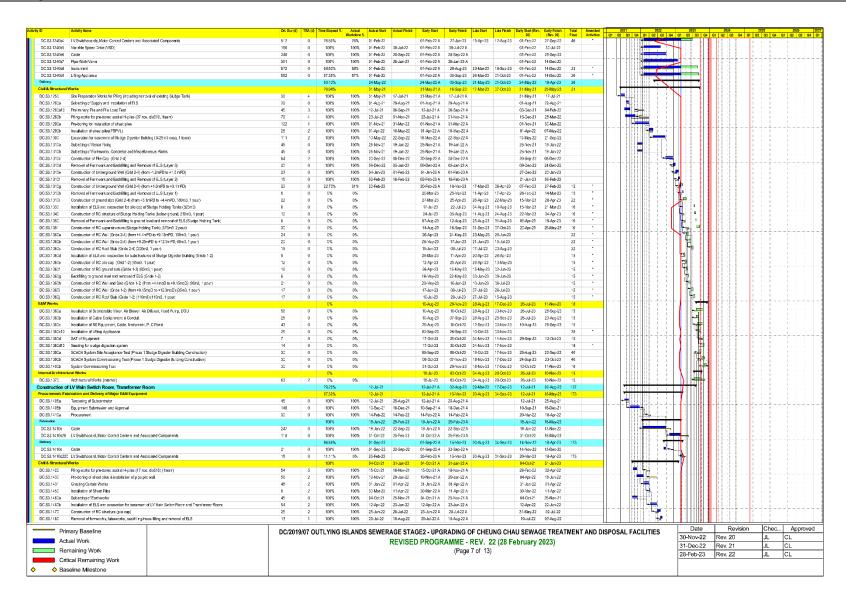












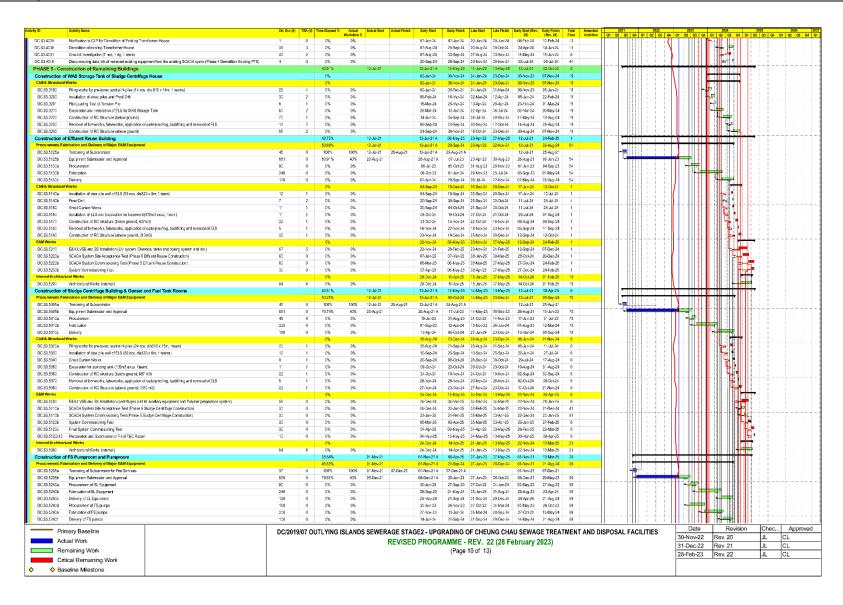


(ID	Activity Name	Orl. Dur (d)	TRA (d)	Time Elapsed %	Actual Workdone %	Actual Start	Actual Finish	Early Start	Early Finish	Late Start	Late Finish	Early Start (Rev. 20)	Early Finish (Rev. 20)	Total Am Float Act	inded ivities	2021	Q4 Q1	2022 Q2 Q1	04 01	2023 02 03 0	04 01	Q2 Q3 Q4	4 01 02	025 03 0	2026 Q1 Q2
DC.S3.149Ca	Subjetting of Finishing Works	181	0	100%	100%	19-Jul-22	31-Jan-23	19-Jul-22 A	31-Jan-23 A			19-Jul-22	31-Jan-23			u. u.		-							
DC.88.1490b	Construction of RC Structure (Remaining)	103	2	100%	100%	15-Aug-22	19-Dec-22	15-Aug-22 A	19-Dec-22 A			15-Aag-22	19-Dec-22					-	<b>-</b>						
SM Works	In the same and th	-		1.88%		25-Feb-23		25-Feb-23 A	02-Aug-23		17-Dec-23	16-Feb-23	02-Aug-23	137	-		ЩЦ.	-4-4	- H.			144		ļļ	
DC.S3.1500 DC.S3.1500b	Installation of other E&M equipments Installation of Electrical System	70 70	2	D% D%	9% 9%			D1-Apr-23 D1-Apr-23			17-Nov-23 17-Nov-23	19-Apr-23	03-Jul-23	115				1 1 1	l di	#					
DC.53.1500s	Installation of BCADA.	35	- 0	DN-	0%			15-Vev-23	28-Jun-23		17-Nov-23			120						4	.				
DC.83.1500d	Installation of BS System	45	- 0	D%	0%			03-Yey-23		23-Sep-23	17-Nov-23			120						<b>-</b>	.				
DC.83.1510	Site Acceptance Test	30	0	0%	0%			04-Jul-23	02-Aug-23		17-Dec-23	04-Jul-23	02-Aug-23	137				1 1 1		144	.		- 1		
EEM Works at Trans	Inner Room			2.38%		25-Feb-23		25-Feb-23 A	30-Jun-23	22-Jul-23	17-Nov-23	16-Feb-23	20-Jun-23	140						<del>   </del>	.				
DC.\$3.1530a	Installation of BS equipment at CLP Transformer Room	34	2	5.58%	0%	25-Feb-23		25-Feb-23 A	12-Apr-23	22-Jul-23	30-Aug-23	16-Feb-23	29-Mar-23	116					-		.				
DC:S3.1530b	She Acceptance Test	4	-0	0%	0%			13-Apr-23		31-Aug-23		30-Mar-23	02-Apr-23	140					(#)		.		-		
DC:S3.1530c	CLP Inspection and Delect Rectification	9	0	D%-	0%			17-Apr-23		04-Sep-23		03-Apr-23	20-Apr-23	116					11		.				
DC:S3:1530d DC:S3:1530d10	CLP Re-inspection and Minor Defect Rectification	12	0	D% D%	0% 0%			27-Apr-23	02-May-23		18-Sep-23	21-Apr-23	25-Apr-23	116			HH H -	بالمالمة	-   -   -	1		14-1-		1-1	
DC:S3.1530010 DC:S3.1530e	Temporary Reinstatement of Access for CLP's Works Handover to CLP for CLP's Works	45	- 0	0%	0%			17-Apr-23 03-Way-23	29-Jun-23	05-Sep-23 19-Sep-23	16-Nov-23	28-Apr-23	19-Jun-23	116					11.	<b>—</b>	.				
DC.83.1530f	Encertaing	1	0	0%	0%			30-Jun-23	30-Jun-23	17-Nov-23		20-Jun-23	20-Jun-23	116				1 1 1		IIII	.				
Internal Architect				45.1%		01-Feb-23		01-Feb-23 A	31-Har-23		22-Aug-23	01-Feb-23	24-Mar-23	115					+						
DC.83.1550	Architectural Works (Internal)	48	5	45.1%	33%	01-Feb-23		01-Feb-23 A	31-Har-23	21-Jul-23	22-Aug-23	01-Feb-23	24-Mar-23	115					- <b>-</b>		.				
DC.SS.1560	Architectural Works for CLP Transformer Room (Internal)	42	- 1	53.49%	100%	01-Feb-23		01-Feb-23 A	22-Har-23	09-Mar-23	31-Mar-23	01-Feb-23	15-Feb-23	8	^		11111	1777	- <del>                                     </del>				7	111	
	f Underground Utilities			D%				18-Sep-23	30-Oct-23	09-Oct-23	17-Nov-23	14-Jun-23	25-Jul-23	16					71						
DC.S3.1600	Construction of Drainage and Severage System. Fire Services, Electrical & Plumping Undergound Utilities	32	2	D%	0%			18-Sep-23		09-Oct-23		14-Jun-23	25-Jul-23	16						447	1				
	Ige Digestion System	88	2	97.68% 100%	1000	24-Jun-22 24-Jun-22	10-Oct-22	24-Jun-22 A	30-Dec-23	18-040-23	30-Dec-23	24-Jun-22	29-Nov-23	0					$\mathbb{I}$			1111			
DC.S3.1700 DC.S3.1710	Construction of Temporary Studge Digestion System 18C Temporary Flow Diversion and isolate existing serebic studge digestor and relevant buildings	8	3	100%	100% 100%	24-Jun-22 11-Oct-22	20-Oct-22	24-Jun-22 A 11-Oct-22 A	10-0ct-22 A 20-0ct-22 A			24-Jun-22 11-Oct-22	10-Oct-22 20-Oct-22					E	$\perp$ 1						
DC.S3.1710 DC.S3.1720	Removal of Temporary Stridge Digestion System	10	0	100% 0%	0%	11-06/22	2000122	18-Dec-23	30-Dec-23*	18-Den-23	30-Dec-23	13-Nov-23	29-Nov-23	0	-1			1   [	1/						
	Clearance at the area of Proposed Preliminay Treatment Facilities			100%		20-Oct-22	24-Nov-22	20-Oct-22 A	24-Nov-22 A	70000	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	20-Oct-22	09-Dec-22					:	<del>-</del>   \						
Demolition wor				100%		20-Oct-22	24 Nov-22	20-Oct-22 A	24-Nov-22 A			20-Oct-22	09-Dec-22						~  \				- 1	11	
DC.83.2010	Demolition of existing Aerobic Studge Digestor	29	0	100%	100%	21-Oct-22	24 Nov-22	21-Oct-22 A	24-Nov-22 A			21-Oct-22	09-Dec-22					±/	- 1						
DC.S3.2020	Demolition of existing Blower and Pump House	29	0	100%	100%	21-Oct-22	24-Nov-22	21-Ost-22 A	24-Nav-22 A			21-Oct-22	09-Dec-22							1111				111	
DC.S3.2030	Devroition of existing Genset Room	29	0	100%	100%	21-Ont-22	24-Nov-22	21-0:t-22 A	24-Nov-22 A			21-Oct-22	09-Den-22								.		- 1		
DC.S3.2040	Disconnecting data link of removed existing equipment from the existing SCADA system	7	0	100%	100%	20-Ost-22	26-Oct-22	20-Ost-22 A	26-Oct-22 A			20-Oct-22	26-Oct-22												
HASE 3 - Con	struction of Preliminary Treatment Facilities			53.12% 53.31%		12-Jul-21		12-Jul-21 A	06-Aug-24	28-Feb-23	06-Aug-24	12-Jul-21	23-Apr-24	0				1 1 1							
	Preliminary Treatment Facilities prication and Delivery of Major E&M Equipment			51.25% 61.25%		12-Jul-21 12-Jul-21		12-Jul-21 A 12-Jul-21 A		28-Feb-23 21-Mar-23	02-Aug-24 08-Jun-24	12-Jul-21 12-Jul-21	19-Apr-24 14-Dep-22	90							_	+-1-1-		4-4	
DC.SS.3005a	Tendering of Subcontrator	45	- 0	100%	100%	12-Jul-21	25-Aug-21	12-Jul-21 A	25-Aug-21 A	21-1/81-23	ua-Jun-24	12-Jul-21	25-Aug-21	50		-					.				
DC.83.3005b	Equipment Submission and Approval	544	- 0	83.09%	50%	03-Dec-21	Lorage	03-Dec-21 A	30-War-231	21-Mar-23	20-Jun-23	03-Dec-21	14-Dec-22	21			-		4	-	.				
Procurement				0%				01-Jun-23	01-Dec-23	14-0:1-23	11-Feb-24			72				1 1	$\sqrt{}$	++++	- 1				
DC:83.3015	Stoping	1	- 0	0%	0%			01-Aug-23*	01-Aug-23	02-Dec-23	02-Dec-23			123				: : :	N		.      :		-		
DC.83.3025	Perstock	1	0	0%	0%			01-Aug-23*		02-Dec-23				123	•					H					
DC:S3.5035	Mechanical Bar Screen - Coarse Screen	1	0	0%	0%			01-Aug-23*			02-Dec-23			120	*					H					
DC:S3.5045	Screw Conveyor	1	0	0%	0%			01-Aug-23*		02-Dec-23				123	*					H	.		-		
DC.S3.5055	Screw Compactor	1	0	D% D%	0% 0%			01-Aug-23*		02-Dec-23				123						H	.				
DC:S3:3065 DC:S3:3075	Submersible Pump Submersible Je. Mixer	1	9	0%	0%			01-Aug-23* 01-Aug-23*		02-Dec-23 02-Dec-23				123			H H -		-	-151-1	-   -  -				
DC 83.3085	Gri Punc	1	0	D'S	0%			01-Aug-23*	01-Aug-23					123						Hi I	.		1		
DC.S3.3095	Gri Classifer & Gri Mixer	1	0	0%	0%			01-Aug-23*	01-Aug-23					123							.		1		
DC.S3.3105	Mechanical Filter Mean	1	0	0%	0%			01-Aug-23*	01-Aug-23											Ш	.				
DC.S3.3115	Lifting Appliance	1	0	0%	0%			03-Jul-23*	03-Jul-23	06-Dec-23	06-Dec-23			136	*					All I	.				
DC:S3.3125	OI Skimmer Pump	1	0	0%	0%			01-Aug-23*	01-Aug-23		02-Dec-23			123	•				-1-1-	111			-		
DC.S3.3135	Deciderization Unit (DOU1)	1	0	0%	0%			01-Aug-23*	01-Aug-23		02-Dec-23			123					11	H					
DC.S3.3145	LV Switchtopard/MCC	1	0	D%	0%			01-Aug-23*	01-Aug-23	13-Duc-23	13-Dec-23			134				: : : !		HI					
DC:S3:3155 DC:S3:3165	VSD UPS with Isolation Transformer	1	0	D% D%	0%			01-Aug-23* 02-Oct-23*	01-Aug-23 02-Oct-23	13-Dec-23	13-Dec-23 11-Feb-24			134					$\perp$	HI.					
DC:S3:3166 DC:S3:3176	OPS with tactation Transformer PLC Panel	1	0	0%	0%			02-061-23* 01-Dep-23*	02-0ci-23 01-Dec-23		11-Feb-24 06-Feb-24			132	. []					ШҐ		1 11-1			
DC.S3.3185	Instrumentation	1	0	0%	0%			01-Jun-23*	01-Jun-23		14-Oct-23			135	.				+1						
Fabrication				0%				02-Jun-23	09-Feb-24	15-Oct-23	09-May-24			80						<del>                                      </del>	#1				
DC:S3.3195	Stoplog	125	0	0%	0%			02-Aug-23	04-Dec-23		05-Apr-24			123	•			: : : :	11	1					
DC:S3:3206	Pensitok	125	0	D%	0%			02-Aug-23	04-Dec-23					123			ШШ							1 1	
DC:S3.3216	Machanical Bar Screen - Coarse Screen	125	0	D%	0%			02-Aug-23		03-Duc-23				123	. []				- [ ] "		3				
DC.S3.3226	Screw Conveyor	125	0	D%	0%			02-Aug-23		03-Duo-23				123	: 1				11		3				
DC.S3.3235	Screw Compactor	125 125	0	D%	0%			02-Aug-23		03-Dec-23				123	:						3				
DC:83.3245 DC:83.3255	Submersible Pump Submersible Je: Mixer	125	0	0%	0%			02-Aug-23 02-Aug-23	04-Dec/23	03-Dec-23 03-Dec-23				123	: 11				11	Ш	3				
DC.83.3265	Submerable Jet Mixer Grit Punic	125	0	0%	0%			02-Aug-23 02-Aug-23		03-Dec-23							BHH-			-					
DC.S3.3275	Gri Change & Gri Mixer	125	0	0%	0%			02-Aug-23		03-Dec-23				123	-			1 1 1		<del>    </del>	4				
DC:S3.3286	Machanical Filter Mesn	125	0	D%	0%			02-Aug-23	04-Dec-23					123	. []			: : :		1					
DC:S3.3295	Lifting Appliance	155	0	DN-	0%			04-Jul-23		07-Dec-23				156	. []			: : : !		1		1 11 1			
DC:S3.3305	OI Skimmer Pump	125	-0	D%	D3v			02-Aug-23	04-Dec-23					123	. []			1 1 1			<b>4</b>	1111		1.1	
DC:S3.3315	Deodorization Unit (DOU1)	125	0	D%	D%			02-Aug-23	04-Dec-23					123	.				11	1	4			111	
DC.83.3325	LV Switchcount/MCC	125	0	0%	0%			02-Aug-23	04-Dec-23	14-Dec-23	16-Apr-24			134	٠ 🏻				Ш	1			i		11
Driv	nary Baseline	DC/204/	2/07 (2)	ITI VINC I	CI AND	CEMED	AGE STA	GES LIBO	DADING	E CUE	NG CUA	II SEWA	E TDEAT	MENT AL	ID DIG	יאפסם	EACIL	TIES	Т	Date	$\top$	Revis	sion	Chec	Арг
		DC/2015	9101 O	JILTING I	SLAND			GE2 - UPG						MICNI AP	וכוח חו	FUSAL	FAUILI	IICO	30	-Nov-22	2 R	ev. 20		JL	CL
Act	ual Work	1					REVISED	PROGR	AMME -	REV. 2	2 (28 Fe	bruary 2	2023)							-Dec-22		ev. 21		JL	CL
Rei	maining Work	1							(Page	8 of 13)										-Feb-23		ev. 22		JL	CL
Crit	ical Remaining Work	1							. •	,									20	~1 UU-ZJ	<u></u>	JV. ZZ		I <sub>I</sub> L	TOF
	-	1																							
△ Par	seline Milestone																								

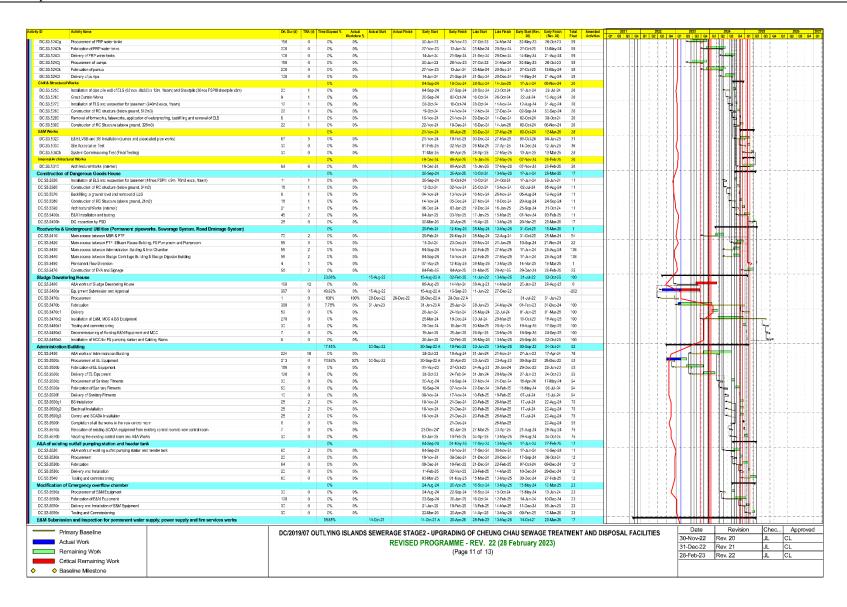


	Activity Name	Ori. Dur (d)	TRA (d)	Time Elapsed 5	Actual Actual Start Workdome S.	Actual Finish Early Start	Early Finish	Late Start	Late Finish	Early Start (Rev. Early Finish Total 20) (Rev. 20) Float	Amended Activities	2021 Q1 02 03 Q4 Q1 03	2022	2023	2024 2025 2026 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
C.S3.3335	VSD CSV	125	0	0%	morrations %	02-Aug-23	04-Dec-23	14-Dec-23	16-Apr-24	20) [Nav. 20) Float 134	•	Q: UZ U3 U4 01 03		1	Q1 Q2 Q3 U4 U1 U2 U3 Q4 Q1 Q2 Q3
C.S3.3345	UPS with Isolation Transformer	65	0	0%	0%	03-Det-23	06-Dec-23	12-Feb-24	16-Apr-24	132	•				
S3.5355	PLC Parel	70	0	0%	0%	02-Dec-23	09-Feb-24	07-Feb-24		67	•			Ш	
3.3365	Instrumentation	195	0	DN-	P%	02-Jun-23	03-Dec-23			135	•				
ath.				DN-		04-Dec-23		D6-Apr-24	08-Jun-24	90			1 1 1 1 1		
.S3.3375 .S3.3385	Stoplog Per stock	30 30	0	D% D%	0% 0%	95-Dec-23	03-Jan-24 03-Jan-24	D6-Apr-24 D6-Apr-24	05-May-24 05-May-24	123 123	-:-				
.83.3395	Mechanical Bar Screen - Coarse Screen	30	0	0%	0%	95-Dec-23 95-Dec-23		06-Apr-24	05-May-24	123			1 1 1 1 1		
\$3.3405	Screw Conveyor	30	0	0%	0%	05-Dec-23		06-Apr-24	05-May-24	123			1 11 11		
\$3.8415	Screw Compactor	30	0	0%	0%	05-Dec-23		06-Apr-24	05-May-24	123			1 1 1 1 1		
\$3.8425	Submersible Pump	30	0	0%	0%	05-Dec-23		08-Apr-24	05-May-24	123					
S3.3435	Submersible Jet Mixer	32	0	DN-	0%	05-Dec-23	03-Jan-24	06-Apr-24	05-May-24	123					
\$3.3445	Grit Pump	32	0	DN-	0%	05-Dec-23	03-Jan-24	D6-Apr-24	05-May-24	123			1 1 1 1 1		
S3.3455	Grit Classifier & Grit felixer	32	0	D%	0%	05-Dec-23	03-Jan-24	06-Apr-24	05-May-24	123	•			11111	
\$3.3465	Mechanical Filter Mesh	30	0	0%	0%	05-Dec-23	03-Jan-24	06-Apr-24	05-May-24	123					
33.3475	Lifting Appliance	30	0	0%	0%	06-Dec-23		10-May-24		156	:				<del></del>
33.3485	OI Skimmer Pump	30	0	0%	0%	05-Dec-23	03-Jan-24	06-Apr-24	05-May-24	123	-:-		1 1 1 1 1		
33.3495 33.3505	Deorbrization Unit (DOU1) LV Switchcos of MCC	30 30	0	0% 0%	0%	05-Dec-23 05-Dec-23	03-Jan-24 03-Jan-24	06-Apr-24 17-Apr-24	05-May-24	123	-	H - -     - -	4-4-1-4-	4444	<b>II</b> -   -  - -
3,3515	VSD VSD	30	0	DN-	0%	05-Det-23	03-Jar-24	17-Apr-24	16-hlay-24 16-hlay-24	134	-		1 1 1 1		
3.3525	UPS with Isolation Transformer	30	0	DN-	0%	07-Dec-23		17-Apr-24	16-blay-24	134	-				
3.3535	PLC Panel	32	0	DN-	0%	10-Feb-24	10-Har-24	17-Apr-24	16-hay-24	87			1 1 1 1		<b>  - </b>
3.3545	Instrumentation	32	0	0%	0%	04-Dec-23		17-Apr-24	16-May-24	135				ШН	
Structural	Works	155		18,03%	25-Nov-22	25-Nov-22 /	04-May-24	28-Feb-23	04-May-24	25-Nov-22 20-Jan-24 0			++	++++	<del>                                      </del>
.3020	Pre-boring Works for Sheet Pile Wall Installation	113	0	80.18%	51% 25-Nov-22	25 Nov-22 /	25-Apr-23	28-Feb-23		25-Nov-22 15-Mar-23 0	•		- <del>    -</del>	1111	
3040	Installation of Sheet Pile Wall	24	0	0%	0%	31-Mar-23		31-Mar-23		09-Feo-23 27-Mar-23 0			4,-		
.3050a	Excevation to +2.5 mPD	7	0	0%	0%	04-Yay-23	11-May-23	04-May-23	11-hlay-23	0	•		1 14	4010	
3050a10	Installation of 1st Wailing & Struts	14	0	D%	0%	06-Yay-23		06-May-23		0	*		قع ل الله لا الله	TILL	
3050a20	Excevation to +0.5mPD (approx. 50m3 rock excevation)	7	0	D%	0%	23-Vay-23		23-May-23		ů.				ווווני	
9050430	Installation of 2nd Weiling & Struis	14	0	0%	0%	01-Jun-23		01-Jun-23	16-Jun-23	0	•		1       1		
3050a40	Excavation to -3 5mPD (approx 1000m3 rock excavation)	18	0	0%	0%	17-Jun-23	07-Jul-23	17-Jun-23		0	:		1 1 1 1 1	411	
3050250	Installation to 3rd Walling & Struts	14	0	0%	0%	08-Jul-23		08-341-23	24-Jul-23	0	-:-			H	
3050a60 3050a70	Excavation to -5mPD (approx. 950m3 rock excavation)	18	0	0%	0%	25-Jul-23 12-Aun-23		25-Jil-23	11-Aug-23	0				¢,	
3050e/0 3050e80	Installation to 4th Wailing & Stude  Exceleration to -8 075mPD and Blinding Layer (approx. 950m3 rock exceleration)	16	0	D% D%	0%	12-Aug-23 25-Aug-23		12-Aug-23 25-Aug-23		0	-			ם :	
3050aB0 3860	Excevation to 4 9/4mPD and Blinding Layer (approx. 960m3 rock escavation)  Plate Load Test (Total 3 nos.)	10	0	D% D%	0%	25-Aug-23 13-Sep-23				30-dun-23 11-dul-23 0	-			4171	
.3080	Construction of Pile Cap (Crid E to Crid H) (1200m3, 6 pounts)	30	0	D%:	0%	15-Sep-23 28-Sep-23		28-Sep-23		12-Jul-23 27-Ont-23 0				ÇIII 🖟 📗	
.3080a	Removed of 4th Walling and Shuls	6	0	D%	0%	06-Nor-23		D6-Nov-23					1 1 1 1		
.3062Б	Construction of Pile Cap (Grid A to Grid E) and R.C. Wall to -3.5mPD (Grid E to Grid H) (920m3, 5 pours)	25	0	D%	0%	13-Nor-23				0		H		1114	
.3683c	Removal of Srd Wailing and Struis	8	0	0%	0%	12-Dec-23		12-Dec-23		0				11119	
3.3080d	Construction of RC Well (from -3.5mP3 to +0.5mP3) (380m3, 2 pours)	18	0	0%	0%	19-Dec-23		19-Dec-23		0				11119	
3080e	Removal of 2nd Weiling and Struts	6	0	0%	0%	12-Jan-24	18-Jan-24	12-J±n-24	18-Jan-24	0					
i.3080f	Construction of RC Wall (from +0.5mPG to +2.5mPG)	18	0	0%	0%	19-Jan-24	08-Feb-24	19-Jan-24	08-Feb-24	0	•				
i.3080g	Removal of 1st Visiting and Struts	6	0	0%	0%	09-Feb-24	19-Feb-24	09-Feb-24	19-Feb-24	0	•				PULL
3082h	Construction of RC Ground State (from +2.5mPD to +4.6mPD)	21	0	D%	D%	20-Feb-24		20-Feb-24		0	•			HILL	
3.30BCi	Construction of RC Well and MCC Room Stab (from +4.6mPG to +9.35mpB)	23	0	DN-	P%	14-Mar-24	10-Apr-24	14-Mar-24	10-Apr-24	0	•			Ш	
3100	Construction of RC Well and Roof Stab (from +9.35 to +13.55)	23	0	DW-	P%	11-Apr-24	04-May-24		04-May-24	99-Nov-23 20-Jan-24 9			r	Ш	
lorks				0%		05-Yey-24	02-Aug-24	06-May-24	02-Aug-24	22-Jen-24 19-Apr-24 0				11111	
3.3120	E&N, Mechanida Installation (Mixers, Inter Pumps, Grit removal system, DO systems and etc.)	48 48	2	0%	0%	06-Vay-24		06-May-24		22-Jan-24 20-Mar-24 0				ШН	
3.3120a 3.3120b	Electrical Installation (Citale, Instrument PLC Planet LVSB, etc) Installation of BS Equipment	48 25	0	0%	0%	05-Yay-24 18-Yau-24	21-Jun-24	17-May-24 09-1in-24		12	-			Ш	
3120b10	Installation of Lifting Addience	25	0	0% 0%	0%	18-98y-24 18-98y-24	11-Jur-24	09-Jun-24	0.0 10. 1.	22					
3123010 33133a	Installation of Litting Appliance SCADA System Site Acceptance Test (Phase 3 PTF Construction)	30	0	DN-	0%	18-98y-24 14-98y-24	11-Jur-24 12-Jur-24	09-Jin-24 04-Jin-24	03-Jul-24	22-Jan-24 20-Feb-24 21					
.3132b	SCADA System Commissioning Test (Phase 3 PTF Construction)	32	0	DN-	0%	13-Jun-24	12-Jul-24	D4-Jul-24	03-30F24 02-Aug-24	21-Fe0-24 21-Mar-24 21		#		11111	
3143b	System Commissioning Test	32	0	D%	0%	04-Jul-24			02-Aug-24	21-Mar-24 19-Apr-24 0				Ш	[ La =
	tural Works	177		0%		06-Yay-24	17-Jul-24	23-May-24		22-Jan-24 08-Apr-24 14				11111	II I
3110	Architectural Works (internal)	58	2	0%	0%	06-Yay-24		23-May-24		22-Jan-24 08-Apr-24 14			1 1 <b>1</b>		<del>                                     </del>
	w Diversion			0%		14-Mar-24	06-Aug-24	08-Apr-24	06-Aug-24	02-Dec-23 23-Apr-24 0			1     1	Ш	<del>       </del>
550a	Installation of Temporary Sludge Thickening System	92	8	0%	0%	19-Mar-24	22-Jul-24	08-Apr-24	06-Aug-24	05-Dec-23 10-Apr-24 13				ШН	
3150	Temporary WAS Pipe Construction from MBR to Studge Digestor Building with temp pre-thickening system	23	2	D%	0%	14-Mar-24		08-May-24		02-Dec-23 29-Dec-23 42				ШН	<b>H</b> -1 <b>-1</b>
3150	Temporary sewerage pipe from existing manhole FMH7000149 to manhole FMH21 to isolate Infet Chamber	42	3	D%	0%	06-Yay-24		09-May-24		22-Jan-24 16-Mar-24 3					
3170	Temporary Row Diversion to isolate existing preliminary treatment system	2	1	DN-	0%	03-Aug-24		03-Aug-24		20-Apr-24 23-Apr-24 0			1 1	Ш	<b>       </b>
	0-month performance verification (At least 9 months before End of S3)			DS/		07-Aug-24		07-Aug-24		24-Apr-24 18-Jan-25 0			1.14.1.1	441.44	
180	33-month performance verification (At least 9 months before End of S3) (Period from (thito 9th month)	274	0	D%	0%	07-Aug-24			07-May-26				1 1 (		
uction o	of Underground Utilities			DS		06-Vay-24	22-Jun-24		03-Jul-24	22-Jan-24 11-Mar-24 8			\ \	Ш	
250	Construction underground utilities for MBR Treatment Facilities and Perlimnary Treatment Facilities	35	2	D%	0%	06-Vay-24		16-May-24		22-Jan-24 11-Mar-24 8					
4 - Den	nolition of existing Preliminary Treatment System			DN/		07-Jun-24	18-Cc1-24	20-Jin-24	09-Nov-24	06-Feb-24 09-Jul-24 22				Ш	
1010 1020	Demoktion of existing rifet pumping station, preliminary treatment facilities & primary sediment tank Modification of finist Chamber	24 55	4	D% D%	0%	07-Aug-24 07-Aug-24		07-Aug-24 29-Aug-24	03-Sep-24 09-Nov-24	24-Apr-24 15-Jun-24 0 25-Apr-24 05-Jul-24 19			++ <b>/</b> ++		
D/-	mary Baseline	DOMONE	V07 C1	ITI VINC	ISI ANDS SEWED	AGE STACES UP	CDADING	חב כיובי	ING CUA	HI SEWAGE TREATMENT	AND D	ISBOSAL FACILITIE	e	Date	Revision Chec App
		DC/2019	וט זענ	UILTING						AU SEWAGE TREATMENT	AND DI	ISPUSAL FAUILITE		Nov-22	Rev. 20 JL CL
Act	ual Work				I	REVISED PROG	RAMME -	REV. 2	2 (28 Fe	ebruary 2023)				Dec-22	Rev. 21 JL CL
Rei	maining Work							9 of 13)		• •					
	tical Remaining Work						1. 294	,					28-	Feb-23	Rev. 22 JL CL
ull 🚤	near receiving TYOIN	1													
	seline Milestone														

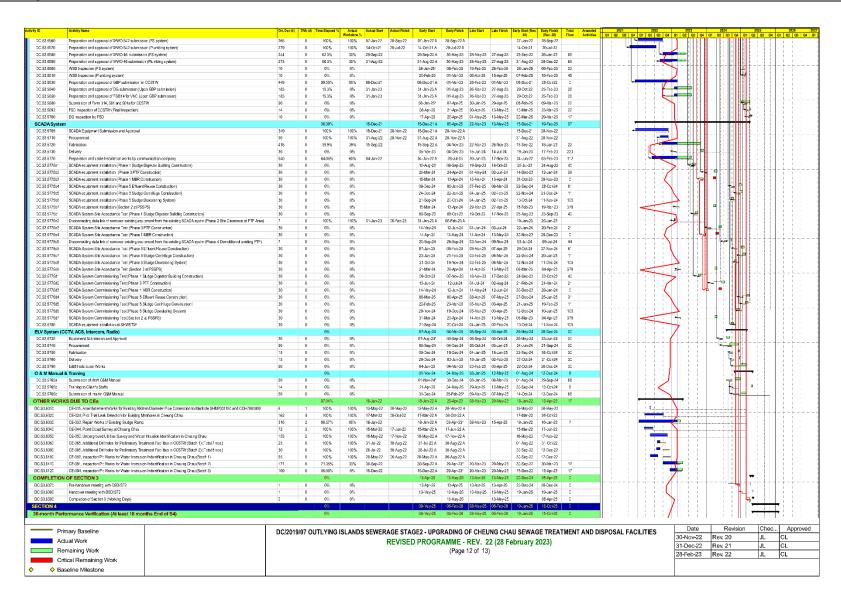




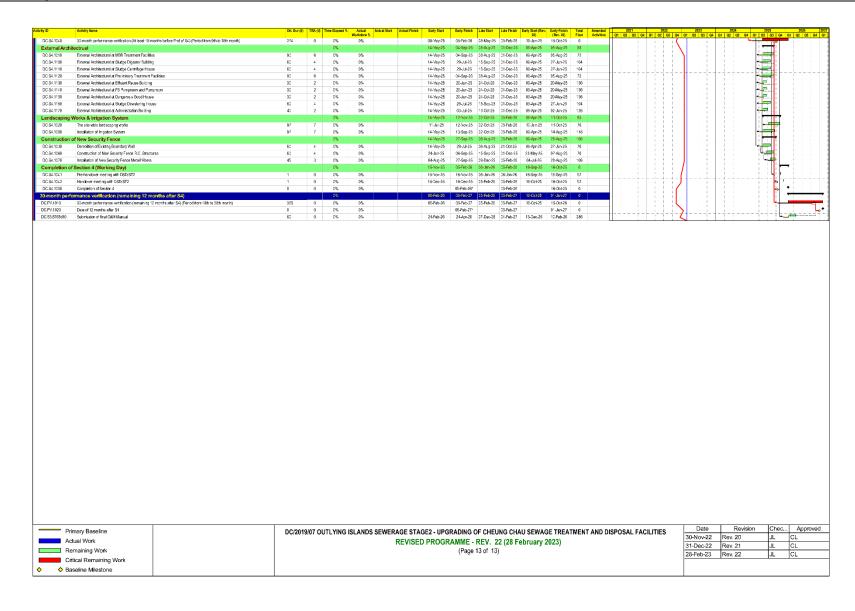












Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39th EM&A Report -October 2024

# APPENDIX C Calibration Certificates (Air Monitoring)



RECALIBRATION DUE DATE:

January 15, 2025

## Certificate of Calibration

Calibration Certification Information

Cal. Date: January 15, 2024 Rootsmeter S/I

Rootsmeter S/N: 438320

Ta: 294 Pa: 755.9 °K mm Hg

Operator: Jim Tisch

Calibration Model #: TE-5025A

Calibrator S/N: 3465

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4350	3.3	2.00
2	3	4	1	1.0180	6.4	4.00
3	5	6	1	0.9090	8.0	5.00
4	7	8	1	0.8670	8.9	5.50
5	9	10	1	0.7150	12.9	8.00

		Data Tabulat	tion		
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	√∆H(Ta/Pa) (y-axis)
1.0037	0.6995	1.4200	0.9956	0.6938	0.8820
0.9996	0.9819	2.0081	0.9915	0.9740	1.2473
0.9975	1.0973	2.2452	0.9894	1.0885	1.3945
0.9963	1.1491	2.3547	0.9882	1.1398	1.4626
0.9909	1.3859	2.8399	0.9829	1.3747	1.7639
	m=	2.06920		m=	1.29570
QSTD[	b=	-0.02547	QA	b=	-0.01582
	r=	0.99999	~ '	r=	0.99999

	Calculation	ıs		
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)	
Qstd=	Vstd/ΔTime	Qa= Va/ΔTime		
	For subsequent flow rat	e calculatio	ns:	
Qstd=	$1/m \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) \cdot b$	Qa=	$1/m\left(\left(\sqrt{\Delta H(Ta/Pa)}\right)-b\right)$	

	Standard Conditions
Tstd:	298.15 °K
Pstd:	760 mm Hg
	Key
ΔH: calibrator	manometer reading (in H2O)
ΔP: rootsmete	er manometer reading (mm Hg)
Ta: actual abs	olute temperature (°K)
Pa: actual bar	ometric 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





## HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

	Site Information							
Location:	The admin buliding inside the construction site	Site ID:	A1a	Date:	26-Sep-2024			
Serial No:	1048	Model:	TE-5170X	Operator:	Andy Li			

## **Ambient Condition**

Actual Pressure during Calibration (P <sub>a</sub> ) (mm Hg):		Actual Temperature during Calibration (T <sub>a</sub> ) (deg K):	289.8
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## **Calibration Orifice**

Model:	TE-5025A	Slope (m <sub>c</sub> ):	2.06920
Serial No.:	3465	Intercept (b <sub>c</sub> ):	-0.02547
Calibration Due Date:	15-Jan-25	Corr. Coeff:	0.99999

## **Calibration Data**

Plate or	ΔH₂O	Qa, X-Axis	I, CFM	IC, Y-Axis
Test #	(in)	(m³/min)	(chart)	(corrected)
18	10.00	1.571	61.0	62.22
13	7.90	1.398	57.0	58.14
10	5.10	1.126	49.0	49.98
7	3.80	0.973	47.0	47.94
5	1.90	0.692	41.0	41.82

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

25.0379 23.4252 b=\_ Corr. Coeff: 0.9950

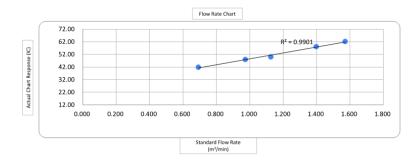
## Calculations

Qa =  $1/m_c*[Sqrt (\Delta H_2O*(P_a/P_{Std})*(T_{Std}/T_a))-b_c]$  $IC = I*(Sqrt(P_a/P_{Std})*(T_{Std}/T_a))$ 

Oa = actual flow rate IC = corrected chart response
I = actual chart response
m<sub>c</sub> = calibrator slope

 $b_c$  = calibrator intercept

$$\begin{split} m &= sampler slope \\ b &= sampler intercept \\ T_{Std} &= 298 \ deg \ K \\ P_{Sd} &= 760 \ mm \ Hg \\ T_a &= actual \ temperature \ during \ calibration \ (deg \ K) \\ P_a &= actual \ pressure \ during \ calibration \ (mm \ Hg) \end{split}$$



Checked by Tandy Tse

26-Sep-2024 Date:



## HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

## Site Information

	Oite information							
Location:	The existing ourtfall pumping station inside the construction site	Site ID:	A2a	Date:	26-Sep-2024			
Serial No:	1085	Model:	TE-5170X	Operator:	Andy Li			

## **Ambient Condition**

, unitalities										
Actual Pressure during Calibration (P <sub>a</sub> ) (mm Hg):	768.9	Actual Temperature during Calibration (T <sub>a</sub> ) (deg K):	289.8							

## Calibration Orifice

Model:	TE-5025A	Slope (m <sub>c</sub> ):	2.06920
Serial No.:	3465	Intercept (b <sub>c</sub> ):	-0.02547
Calibration Due Date:	15-Jan-25	Corr. Coeff:	0.99994

## Calibration Data

Plate or	ΔH <sub>2</sub> O	Qa, X-Axis	I, CFM	IC, Y-Axis
Test #	(in)	(m³/min)	(chart)	(corrected)
1	10.50	1.610	62.0	63.24
2	7.80	1.389	57.0	58.14
3	5.00	1.115	51.0	52.02
4	3.10	0.880	45.0	45.90
5	2.00	0.709	39.0	39.78

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m=	25.4697	b= 22.76	Corr. Coeff	0.9962

## Calculations

 $Qa = 1/m_c * [Sqrt (\Delta H_2O*(P_a/P_{Std})*(T_{Std}/T_a))-b_c]$ 

 $IC = I*(Sqrt (P_a/P_{Std})*(T_{Std}/T_a))$ 

Qa = actual flow rate IC = corrected chart response I = actual chart response

m<sub>c</sub> = calibrator slope

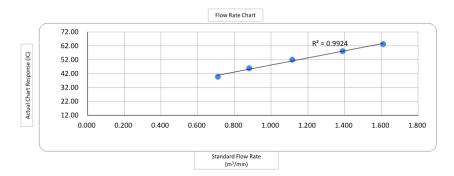
b<sub>c</sub> = calibrator intercept

m = sampler slope b = sampler intercep

b = sampler intercept T<sub>Std</sub> = 298 deg K

 $P_{Std}$  = 760 mm Hg  $T_a$  = actual temperature during calibration (deg K)

P<sub>a</sub> = actual pressure during calibration (mm Hg)



Checked by Tandy Tse
Senior Environemntal Consultant

Date: 26-Sep-2024



## Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

## Information of Calibrated Equipement

Verification Test Date:	19-Mar-24	to	24-Mar-24	Next Verification Test Date:	24-Mar-25
Unit-under-Test- Model No.:		Sibata LD-5R		-	
Unit-under-Test Serial No.:		2Y6549		-	
Our Report Refrence No.:	PRT-24-HVS-0024		24	-	
Calibration Location:	E			Emax	
· ·					•

## **Standard Equipment Information**

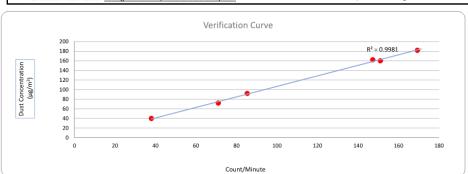
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5025A
Equipment serial no.:	1085	3465
Last Calibration Date:	19-Mar-24	15-Jan-24
Next Calibration Date:	2-Apr-24	14-Jan-25

### Equipement Vertification Result

	Equipement Vertification Result									
Verification		Duration		Results from	Calibrated Equipement	Results from Standard Equipment				
Test No.	Date	Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration (μg/m³) y-axis			
1	19/3/2024	7339.85	7342.85	180.00	26514	147	162			
2	19/3/2024	7342.85	7345.85	180.00	27180	151	160			
3	19/3/2024	7345.85	7348.85	180.00	30474	169	182			
4	24/3/2024	7349.74	7352.74	180.00	6840	38	40			
5	24/3/2024	7352.76	7355.76	180.00	15354	85	92			
6	24/3/2024	7355.77	7358.77	180.00	12780	71	72			

## Linear Regression of y on x







 Checked By:
 Tandy Tse
 Lawly
 Date:
 29-03-2024





## Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Information	of Calibr	ated Fau	inomont	

Verification Test Date:	19-Mar-24	to	24-Mar-24	Next Verification Test Date:	24-Mar-25
Unit-under-Test- Model No.:		Sibata LD-5R		-	
Unit-under-Test Serial No.:	2Y6550			-	
Our Report Refrence No.:	R	PT-24-HVS-00	28	-	
Calibration Location:	- 1			- Emax	
· ·					-

## Standard Equipment Information

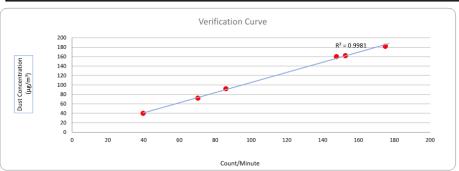
_	Standard Equipment information							
ſ	Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator					
١	Standard Equipment Model No.:	TE-5170X	TE-5025A					
١	Equipment serial no.:	1048	3465					
ı	Last Calibration Date:	19-Mar-24	15-Jan-24					
١	Next Calibration Date:	2-Apr-24	14-Jan-25					

## **Equipement Vertification Result**

Verification		Duration		Results from	Calibrated Equipement	Results from Standard Equipment	
Test No.	Date	Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration (μg/m³) y-axis
1	19/3/2024	7339.85	7342.85	180.00	27486	153	162
2	19/3/2024	7342.85	7345.85	180.00	26586	148	160
3	19/3/2024	7345.85	7348.85	180.00	31500	175	182
4	24/3/2024	7349.74	7352.74	180.00	7146	40	40
5	24/3/2024	7352.76	7355.76	180.00	15480	86	92
6	24/3/2024	7355.77	7358.77	180.00	12654	70	72

## Linear Regression of y on x





Operated By:

Andy Li
Project Technician Environmental

Date: 29-03-2024

Checked By:

Tandy Tse Senior Consultant, Environmental

Date: 29-03-2024

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39th EM&A Report -October 2024

## APPENDIX D Monitoring Data (Air)

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 -Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39<sup>th</sup> EM&A Report -October 2024

Location: A1a

Monitoring Period: October 2024

Parameter: TSP 1-hour

Major Dust Source Construction activities and daily operation of the sewerage

treatment plant

Date	Weather	Start Time	1st Hour (μg/m³)	2 <sup>nd</sup> Hour (μg/m³)	3 <sup>rd</sup> Hour (μg/m³)
2/10/2024	Sunny	15:51	67	65	61
7/10/2024	Sunny	14:12	56	53	62
14/10/2024	Sunny	14:06	51	58	59
21/10/2024	Sunny	14:21	68	74	66
22/10/2024	Sunny	15:26	70	65	68
28/10/2024	Fine	13:32	61	60	57
		Average		62	
		Range		51 - 74	

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39th EM&A Report -October 2024

Location: A2a

Monitoring Period: October 2024

Parameter: TSP 1-hour

Major Dust Source Construction activities and daily operation of the sewerage

treatment plant

Date	Weather	Start Time	1st Hour (μg/m³)	2 <sup>nd</sup> Hour (μg/m³)	3 <sup>rd</sup> Hour (μg/m³)	
2/10/2024	Sunny	15:31	48	55	60	
7/10/2024	Sunny	13:57	61	51	57	
14/10/2024	Sunny	13:51	63	56	55	
21/10/2024	Sunny	14:06	51	56	62	
22/10/2024	Sunny	15:09	63	55	60	
28/10/2024	Fine	13:17	54	53	59	
		Average		57		
		Range	48 - 63			

Figure D.1 Measured 1-Hour TSP at the admin building inside the construction site (A1a)

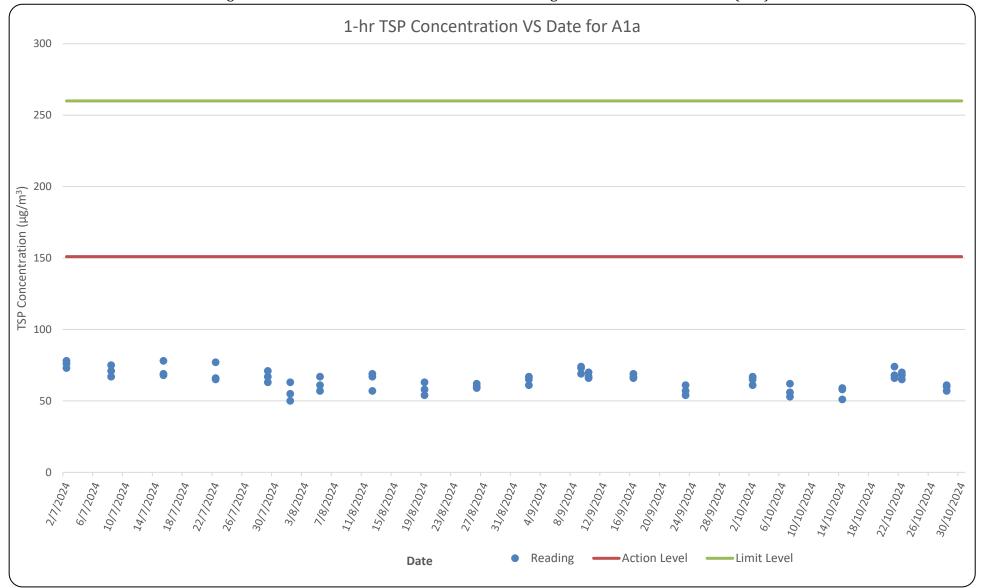
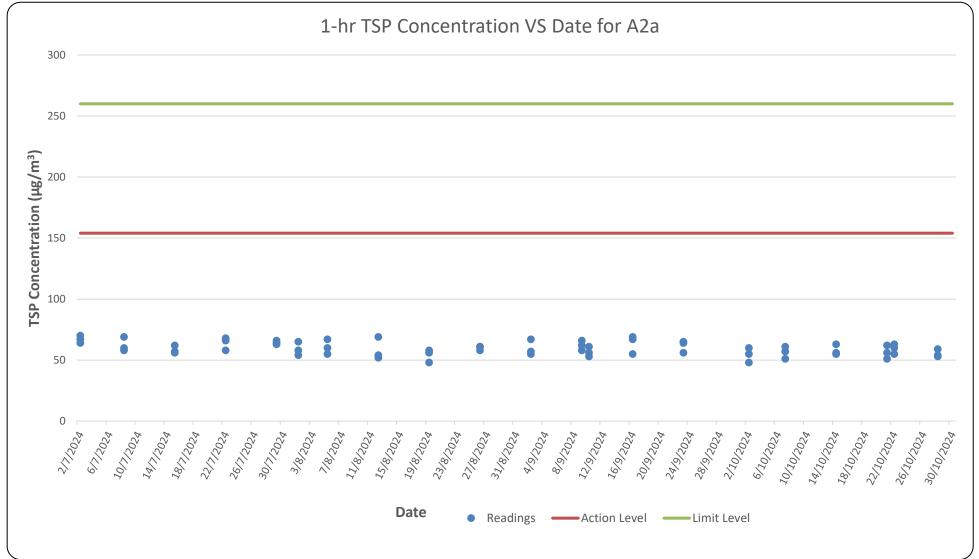


Figure D.2 Measured 1-Hour TSP at the existing outfall pumping station inside the construction site (A2a)



Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39<sup>th</sup> EM&A Report -October 2024

Location: A1a

Parameter: TSP 24-hour

Major dust source Construction activities and daily operation of the sewerage treatment plant

Major dust source Routine operation of the Sewage Treatment Plant

Start Date	Avg Air Temp	Avg Atmospheric Pressure	Weather Condition	Elapse	e Time	Sampling Time	Flow Rate	Standard Air Volume	Filter Weight (g)		Particulate weight	Conc.
	(°C)	(mm Hg)		Initial (min)	Final (min)	Actual (min)	(m³/min)	(m³)	Initial	Final	(g)	(μg/m³)
2/10/2024	26.8	1011.6	Sunny	364984	366484	1500	0.63	946	2.7123	2.8499	0.1376	145
7/10/2024	28.8	1014.3	Sunny	366484	367965	1481	0.63	933	2.6928	2.7955	0.1027	110
14/10/2024	28.1	1013.6	Sunny	367965	369439	1474	0.63	929	2.7166	208160	0.0994	107
21/10/2024	28.1	1014.4	Sunny	369439	370939	1500	0.84	1267	2.7057	2.9812	0.2755	217
22/10/2024	25.3	1013.1	Sunny	370939	372439	1500	1.06	1596	2.7057	2.9070	0.2013	126
28/10/2024	25.6	1010.6	Fine	372439	373939	1500	0.63	949	2.7120	2.7817	0.0697	73
											Average	130
											Range	73 - 217

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 -Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39<sup>th</sup> EM&A Report -October 2024

Location: A2a

Parameter: TSP 24-hour

Major Site Activities Construction activities and daily operation of the sewerage treatment plant

Major dust source Routine operation of the Sewage Treatment Plant

Start Date	Avg Air Temp	Avg Atmospheric Pressure	Weather Condition	Elapse	e Time	Sampling Time	Flow Rate	Standard Air Volume	Filter Weight (g)		Particulate weight	Conc.
	(°C)	(mm Hg)		Initial (min)	Final (min)	Actual (min)	(m³/min)	(m³)	Initial	Final	(g)	(μg/m³)
2/10/2024	26.8	1011.6	Sunny	583385	584885	1500	0.55	828	2.7006	2.7962	0.0956	115
7/10/2024	28.8	1014.3	Sunny	584885	586372	1487	0.67	994	2.7039	2.8088	0.1049	106
14/10/2024	28.1	1013.6	Sunny	586372	587841	1469	0.51	753	2.7003	2.8108	0.1105	147
21/10/2024	28.1	1014.4	Sunny	587841	589341	1500	1.06	1592	2.7084	2.9075	0.1991	125
22/10/2024	25.3	1013.1	Sunny	589341	590841	1500	1.11	1661	2.7127	2.9007	0.1880	113
28/10/2024	25.6	1010.6	Fine	590841	592341	1500	1.18	1770	2.7021	2.8304	0.1283	73
											Average	113
											Range	73 - 147

Figure D.3 Measured 24-Hour TSP at the admin building inside the construction site (A1a)

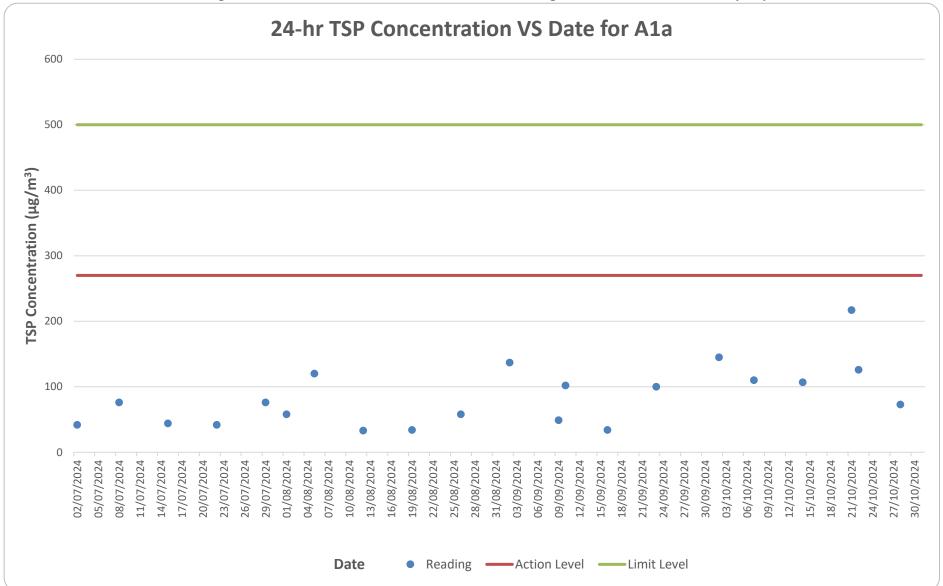
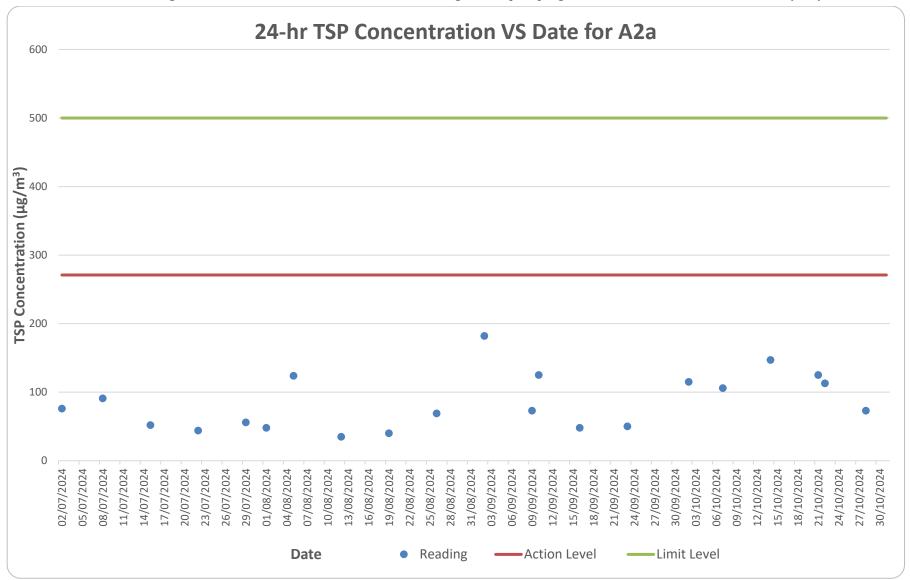


Figure D.4 Measured 24-Hour TSP at the existing outfall pumping station inside the construction site (A2a)



Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities  $39^{th}$  EM&A Report – October 2024

## APPENDIX E Calibration Certificates (Noise)



## Certificate of Calibration

for

Description:

Sound Level Calibrator

Manufacturer:

RION

Type No.:

NC-75

Serial No.:

34524163

## Submitted by:

Customer:

Aurecon Hong Kong Limited

Address:

Unit 1608, 16/F, Tower B, Manulife Financial Centre,

223-231 Wai Yip Street, Kwun Tong,

Kowloon, Hong Kong

	Upon	receipt	for calibratio	n, the instrument	was	found	to	be:
--	------	---------	----------------	-------------------	-----	-------	----	-----

Within

☐ Outside

## the allowable tolerance.

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

 The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Calibrated by:

Calibration Technician

Certified by:

Mr. Ng Yan Wa Laboratory Manager

Date of issue: 24 July 2024

Certificate No.: APJ24-010-CC001

Page 1 of 2

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong Tel: (852) 2668 3423 Fax:(852) 2668 6946

Homepage: http://www.aa-lab.com

E-mail: inquiry@aa-lab.com



## 1. Calibration Precautions:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

## 2. Calibration Specifications:

Calibration check

## 3. Calibration Conditions:

Air Temperature:	23.4 °C
Air Pressure:	1005 hPa
Relative Humidity:	56.7 %

## 4. Calibration Equipment:

Test Equipment	Туре	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV240081	HOKLAS
Sound Level Meter	RION NA-28	30721812	AV230128	HOKLAS

## 5. Calibration Results

## 5.1 Sound Pressure Level

Nominal value	Accept lower level	Accept upper level	Measured value
dB	dB	dB	dB
94.0	93.6	94.4	93.9

Note

The values given in this certification only related to the values measured at the time of the calibration.



Certificate No.: APJ24-010-CC001

Page 2 of 2

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Homepage: http://www.aa-lab.com E-mail: inquiry@aa-lab.com



## Certificate of Calibration

for

Description: Sound Level Meter

Manufacturer: SVANTEK

Type No .: SVAN 971 (Serial No.: C132269) Microphone: ACO 7052E (Serial No.: 90332)

Preamplifier: SV-18 (Serial No.: 103808)

Submitted by:

Customer: Aurecon Hong Kong Limited

Address: Unit 1608, 16/F, Tower B, Manulife Financial Centre,

223-231 Wai Yip Street,

Kwun Tong, Kowloon, Hong Kong

Upon receipt for calibration, the instrument was found to be:

☑ Within (31.5Hz – 4kHz)

☐ Outside

the allowable tolerance.

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

The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Date of issue: 24 July 2024

Certificate No.: APJ23-155-CC003

Mr. Ng Yan Wa Laboratory Manager

Page 1 of 4

Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street, Fo Tan, Shatin, N.T., Hong Kong Tel: (852) 2668 3423 Fax:(852) 2668 6946

E-mail: inquiry@aa-lab.com Homepage: http://www.aa-lab.com



## 1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

## 2. Calibration Conditions:

 Air Temperature:
 23.4 °C

 Air Pressure:
 1005 hPa

 Relative Humidity:
 56.7 %

## 3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV240081	HOKLAS

## 4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)		Appl	ied value	UUT Reading,	IEC 61672 Class 1		
Range, dB	Freq. V	Veighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
35-138.8	dBA	SPL	Fast	94	1000	94.0	±0.4

## Linearity

Sett	ing of Uni	t-under-t	est (UUT)	App	lied value	UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
				94		94.0	Ref
35-138.8	dBA	SPL	Fast	104	1000	104.0	±0.3
				114		114.0	±0.3

## Time Weighting

Sett	ing of U	Jnit-under-t	est (UUT)	Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq.	Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
35-138.8	dBA	SPL	Fast	94	1000	94.0	Ref
33-130.0	UDA	SFL	Slow	94	NR TESTING LAB	94.0	±0.3

Certificate No.: APJ23-155-CC003

Page 2 of 4

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Frequency Response

## Linear Response

Setting of Unit-under-test (UUT)			Appl	ied value	UUT Reading,	IEC 61672 Class 1		
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					31.5	94.5	±2.0	
						63	94.4	±1.5
9			125	94.3	±1.5			
35-138.8	4D	dB SPL	Fast	94	250	94.4	±1.4	
33-130.0	QD.				500	94.2	±1.4	
					1000	94.0	Ref	
					2000	93.5	±1.6	
					4000	93.3	±1.6	

## A-weighting

Sett	Setting of Unit-under-test (UUT) Applied value			lied value	UUT Reading,	IEC 61672 Class 1		
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB	
					31.5	55.2	-39.4 ±2.0	
						63	68.2	-26.2 ±1.5
35-138.8 dBA SPL Fast		125	78.2	-16.1 ±1.5				
	Fast	94	250	85.6	-8.6 ±1.4			
			500	91.0	-3.2 ±1.4			
			1000	94.0	Ref			
			2000	94.7	+1.2 ±1.6			
					4000	94.4	+1.0±1.6	

## C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class	
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
35-138.8		BC SPL	Fast	94	31.5	91.5	-3.0 ±2.0
					63	93.6	-0.8 ±1.5
					125	94.1	-0.2 ±1.5
	dBC				250	94.2	-0.0 ±1.4
	UDC				500	94.2	-0.0 ±1.4
					1000	94.0	Ref
					2000	93.3	-0.2 ±1.6
					4000	92.6	-0.8 ±1.6



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Certificate No.: APJ23-155-CC003

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Homepage: http://www.aa-lab.com E-mail: inquiry@aa-lab.com



## 5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.05
	63 Hz	± 0.05
	125 Hz	± 0.05
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

## Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)\*L shall not be liable for any loss or damage resulting from the use of the equipment.



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Certificate No.: APJ23-155-CC003

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Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities  $39^{th}$  EM&A Report – October 2024

## APPENDIX F Monitoring Data (Noise)

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 -Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39th EM&A Report - October 2024

Location: N2a

Monitoring Period: October 2024

Parameter: Noise

Major Noise Source: Construction activities and daily operation of the sewerage

treatment plant

Date	Weather	Start Time	$\mathbf{L}_{\mathbf{eq}}$	L <sub>10</sub>	L <sub>90</sub>
3/10/2024	3/10/2024 Sunny		67.0	69.0	63.9
8/10/2024	Sunny	14:55	66.1	69.1	63.4
15/10/2024	Sunny	14:41	67.5	70.1	64.5
23/10/2024	Sunny	16:27	67.8	70.2	64.4
29/10/2024	Sunny	14:33	67.2	69.9	64.3
		Average	67.1		
Range			66.1 - 67.8		

Contract No. DC/2019/07 Environmental Monitoring Works for Outlying Islands Sewerage Stage 2 - Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities 39<sup>th</sup> EM&A Report – October 2024

Location: N3a

Monitoring Period: October 2024

Parameter: Noise

Major Noise Source: Construction activities and daily operation of the sewerage

treatment plant

Other Factors Many noisy vehicles passed by during monitoring

Date	Weather	Start Time	$\mathbf{L}_{eq}$	L <sub>10</sub>	L <sub>90</sub>
3/10/2024	Sunny	14:05	66.4	68.6	53.9
8/10/2024	Sunny	13:26	65.6	68.5	52.4
15/10/2024	Sunny	13:20	70.4	73.0	52.5
23/10/2024	Sunny	14:20	66.1	68.7	52.2
29/10/2024	Sunny	13:30	68.3	70.6	54.6
		Average	67.7		
		Range	65.6 – 70.4		

Remarks: +3 dB(A) free-field corrections have been made to N3a.

Figure F.1 Measured daytime (0700-1900) noise level at the admin building inside the construction site (N2a) **Impact Construction Noise Level at N2a** 80 70 Leq (30min) dB(A) 201/2024 18/2/2 11872/2 108 21/2014 37.88 8/8/20/2 42/10/2024 1610192 <sup>2</sup>1.10 <sup>2</sup>1.10 <sup>2</sup>1.10 <sup>2</sup>1.10 11/2/2 71/10/2 91/10/24 31/2024 81/1/2/2 48702 13.88 16/8/202 \$3 BOOK 200 A 88 800 pt 68000 21/2/24 155 16,8% 11/0/24 1187074 3/10/202 9707 91050 15.10.2024

Measured Level

Limit Level

Date

Figure F.2 Measured daytime (0700-1900) noise level at Cheung Chau Fire Station (N3a) **Impact Construction Noise Level at N3a** 80 70 65 Leq (30min) dB(A) 45 71/20/102 3717024 SILON 871702 1802 3/9/2024 9/8/2024 1810/2024 11/2/2 1187074 10/8/202 13/8/8/ 16/8/9/ 19/8/20 2187074 55 88 55 800 2000 318 27 Sp. 1200 pt. 1200 SH SON 30/8/02/20 310/202 6705054 12.10.20 15/10/2024 9.10,2024 Measured Level Date

s: +3 dB(A) free-field corrections have been made to the data in the graph.

# APPENDIX G Implementation Schedule

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	
Construction Phase (U	pgrading Works of Cheung Chau STW and Pak She SPS	(DP Component))			•	•	
S.3.5.5	Appropriate dust control measures should be implemented during the construction stage in accordance with the requirements in the Air Pollution Control (Construction Dust) Regulation. Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level of 500 µg/m³. These measures include, but are not limited to, the following:  • Adoption of good site practices;  • Avoid practices likely to raise dust level;  • Frequent cleaning and damping down of stockpiles and dusty areas of the site;  • Covering the exposed areas with tarpaulin;  • Reducing drop height during material handling;  • Provision of wheel-washing facilities for site vehicles leaving the site;  • Regular plant maintenance to minimize exhaust emission; and  • Sweep up dust and debris at the end of each shift.	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√ 		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All the dust control measures as recommended in the Air Pollution Control (Construction Dust) Regulation, where applicable, should be implemented. Typical dust control measures include:	Air Quality (fugitive dust) Control during Construction Phase	Contractors		<b>√</b>		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
				D	С	0	
S.3.10.1	Watering every 1.5 hours on active works areas and paved haul roads to reduce dust emissions by 90.9% (e.g. watering intensity at 0.5 litres/m². Actual application shall depend on the site condition and weather conditions).	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		EIA, Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Watering every hour on unpaved areas and stockpiles of dusty materials (if no tarpaulin is provided) to reduce dust emissions by 90% (e.g. watering intensity at 1.5 litre/m² during the first hour, subsequent application at 0.2 litre/m². Actual application shall depend on the site condition and weather conditions).	Air Quality (fugitive dust) Control during Construction Phase	Contractors		1		EIA, Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Use of frequent watering for particularly dusty construction areas and areas close to ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Vehicle washing facilities should be provided at every vehicle exit point	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	recommended measures & in main concerns to address	Who to implement the measures?	impl	ion / Tim ementati Measures	on of	What requirements or standards for the measures to achieve?
			measures?	D	С	0	
S.3.10.1	Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Stockpiles of imported material kept on site shall be contained within hoarding, dampened and/or covered during dry and windy weather	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Material stockpiled alongside trenches should be covered with tarpaulins	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	
S.3.10.1	Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or spayed with water to maintain the entire surface wet during the non-working hours	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to keep the dusty materials wet	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Water sprays shall be used during the delivery and handling of sands aggregates and the like	Air Quality (fugitive dust) Control during Construction Phase	Contractors		√		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All demolished items that may emit dust particles should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition	Air Quality (fugitive dust) Control during Construction Phase	Contractors		<b>V</b>		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	
S.3.10.1	Good site practices for concrete batching plant  Every stock of more than 20 bags of cement or dry pulverized fuel ash(PFA) should be cover entirely by impervious sheeting or placed in an area sheltered on the top and the sides.  Cement or dry PFA delivered in bulk should stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.  Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with effective fabric filter or equivalent air pollution control system (Maximum TSP emission factor of Silos and Mising Tower: 50mg/m³)	Air Quality (fugitive dust) Control during Construction Phase	Contractors		1		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation  Best Practical Means for Cement Works (Concrete Batching Plant) BPM 3/2(93)

EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase (U	pgrading Works of Cheung Chau STW and Pak She SPS	(DP Component))	•		•
S.4.4.12	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Mobile plant should be sited as far away from NSRs as possible.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements

EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.13	Use of quiet plant (PME):  Generator Poker, vibratory, hand-held Breaker, excavator mounted (hydraulic) Excavator Tracked Mobile Crane Vibratory Compactor Dumper Air compressor Concrete Pump Pilling Rig	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.14	Temporary site hoardings of 2.4 m high are recommended for the works at the Pak She SPS. The hoardings will be erected along the works boundary facing the NSRs. The PME involved in the works would be screened by the erected site hoardings. Without direct line of sight from the affected NSRs, a noise reduction of 10 dB(A) could be achieved provided that the hoardings have no openings or gaps and have a surface mass of at least 7 kg/m². Nonetheless, a -5 dB(A) screening correction for site hoardings has been applied as a more conservative approach.	Noise control during construction	Contractors	At Pak She SPS during the entire construction period	EIA
S.4.4.23	For NSRs which would be affected by more than one Works Types, good scheduling works is recommended to minimize the cumulative construction noise impacts due to different Works Types.	Noise control during construction	Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements

EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.29	In order to prevent potential cumulative construction noise impacts to NSRs, the works at Tai Kwai Wan San Tsuen are recommended to be scheduled to avoid concurrent works at the areas near Tai Kwai Wan of the Improvement of Fresh Water Supply to Cheung Chau project.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.30	The contractor shall liaise with "Replacement and Rehabilitation of Water Mains Stage 4, Mains on Hong Kong and Islands – Investigation, Design and Construction" contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.31	The contractor shall liaise with Improvement to Existing Roads and Drains in Cheung Chau Old Town, Remaining Engineering Works Stage 3 works contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the											
			measures?	D	С	0	measures to achieve?											
Construction Phase (	pgrading Works of Cheung Chau STW and Pak She SPS (DP Com	ponent) and Sewers Work	s (non-DP Compo	nent))	•													
S.5.7.1	Practices outlined in ProPECC PN 1/94 Construction Site Drainage are recommended, as highlighted below:	Water Quality Control	Contractors		√		WPCO;     TM –Effluent											
	Perimeter channels are to be installed in works areas to intercept runoff at the site boundary prior to the commencement of any earthworks. Surface runoff should be discharged into storm drains via sand/ silt removal facilities with an adequate capacity;	e e						Standards for Effluents Discharged into Drainage and Sewerage										
	Works programme should be designed to minimize works areas to reduce soil exposure and site runoff;						Systems, Inland and Coastal Water											
	Silt removal facilities, channels and manholes should be maintained and cleaned regularly to ensure their proper functions;																	
	Works programme should be carefully planned to minimize the scale of soil excavation during the rainy season;	d d																
	Earthworks surfaces should be well compacted and subsequent permanent works or surface protection measures should be carried out immediately;																	
	<ul> <li>All vehicles should be washed before they leave the construction site to avoid earth, mud, and debris being carried off from the site. Wash-water should be treated to remove sand and silt at least on a weekly basis to ensure the continued efficiency of the washing facility;</li> </ul>																	

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?		to impl measu		What requirements or standards for the
			medsures?	D	С	0	measures to achieve?
(cont)	<ul> <li>Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric materials during storms;</li> <li>For sections of pipes that need to be laid underneath water courses with the open cut method, site works should be carried out during the dry season with a temporary drainage diversion; and;</li> <li>Any construction works along Hak Pai Road immediately by the Kwun Yam beach and Cheung Chau Tung Wan beach should be avoided during the swimming season.</li> </ul>	Water Quality Control	Contractors		√ ·		WPCO;      TM –Effluent     Standards for     Effluents     Discharged into     Drainage and     Sewerage     Systems, Inland     and Coastal     Water
S.5.7.2 and S.5.7.3	Mitigations Measures for General Construction Activities:  Good site practices should be adopted to regularly clean the construction sites to avoid rubbish, debris and litter from entering to nearby water bodies; and  Good construction and site management practices should be implemented to ensure that litter, fuels, and solvents would not enter the public drainage systems.	Water Quality Control	Contractors		<b>V</b>		WPCO;      TM –Effluent     Standards for     Effluents     Discharged into     Drainage and     Sewerage     Systems, Inland     and Coastal     Water

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
			measures?	D	С	0	measures to achieve?
S.5.7.4	Domestic sewage generated by workforce would be collected and discharged to the STW for proper treatment. Portable toilets should be provided by the Contractor, where necessary, to handle sewage from the workforce. The Contractor should also be responsible for waste disposal.	Water Quality Control	Contractors		<b>V</b>		WPCO;      TM –Effluent     Standards for     Effluents     Discharged into     Drainage and     Sewerage     Systems, Inland     and Coastal     Water
S.5.7.5 and S.5.7.6	Mitigations Measures for Spillage of Chemicals:     Registration to EPD as a Chemical Waste Producer if chemical wastes are generated and need to be disposed of;     Illegal disposal of chemicals should be strictly prohibited; and     Oils and fuels should only be used and stored in the designated area which has polluting prevention facilities.	Water Quality Control	Contractors		√		WPCO;     TM –Effluent     Standards for     Effluents     Discharged into     Drainage and     Sewerage     Systems, Inland     and Coastal     Water

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	When to implement the measures?			What requirements or standards for the
			measures?	D	С	0	measures to achieve?
Construction Phase (U	Jpgrading Works of Cheung Chau STW and Pak She SPS (DP Comp	oonent) and Sewers Work	s (non-DP Compor	nent))			-
S.6.6.1	The Contractor shall prepare a Waste Management Plan in accordance with the requirements set out in the ETWB TCW No. 19/2005, Waste Management on Construction Site, for the ER's approval. The WMP shall include monthly and yearly Waste Flow Tables that indicate the amounts of waste generated, recycled and disposed of (including final disposal site).	Waste management during construction	Contractors		√		ETWB TCW No. 19/2005, Waste Management on Construction Sites
S.6.6.1	The Contractor's waste management practices and effectiveness shall be audited by the Engineer's Representative on regular basis.	Waste management during construction	DSD		√		Waste Disposal Ordinance
S.6.6.1	The Contractor shall provide training for site staff concept of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	Waste management during construction	Contractors		√		Waste Disposal Ordinance
S.6.6.1	Sufficient waste disposal points and regular collection of waste shall be provided.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.1	Trucks with covering for the open-box bed and enclosed container shall be used to minimise windblown litter and dust during transportation of waste.	Waste management during construction	Contractors		√		Waste Disposal Ordinance
S.6.6.1	Regular cleaning and maintenance programme for drainage systems, pumps and oil interceptors.	Waste management during construction	Contractors		√		Waste Disposal Ordinance

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
		concerns to address	ineasures:	D	С	0	measures to achieve?
S.6.6.1	Separation of chemical wastes for special handling and appropriate treatment at a Chemical Waste Treatment Facility (CWTF).	Waste management during construction	Contractors		1		Waste Disposal (Chemical Waste) (General) Regulation
S.6.6.1	Encourage collection of aluminium cans, paper and plastic bottles by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the workforce.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.1	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.1	A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed.	Waste management during construction	Contractors		√		Waste Disposal Ordinance
S.6.6.1	Plan and stock construction materials to minimise amount of waste generated and avoid unnecessary generation of waste.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.2	Alternatives C&D materials such as steel frameworks and plastic fencing can be considered to increase the chances for reuse.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.3	In order to minimise the potential environmental impacts resulting from collection and transportation of C&D materials for off-site disposal, the excavated materials comprising fill materials should be reused on-site as backfilling materials as far as practicable.	Waste management during construction	Contractors		√		Waste Disposal Ordinance

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
		concerns to address		D	С	0	measures to achieve?
S.6.6.4	C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill sites. A suitable area should be designated within the site for temporary stockpiling of C&D materials and to facilitate the sorting process. In order to monitor the disposal of C&D materials at the designated public fill reception facility and landfill and to control fly-tipping, a trip ticket system should be included. Reference can be made to Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010 for details.	Waste management during construction	Contractors		٧		Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010, Waste Disposal Ordinance
S.6.6.5	The C&D materials to be disposed of at public filling reception facilities shall be only materials consist of brick, concrete, cement plaster, soil and inert building debris. The materials shall be free from plastics, chemical waste, industrial metals and other materials that are considered unsuitable at the facility.	Waste management during construction	Contractors		1		Waste Disposal Ordinance
S.6.6.6	General refuse should be stored in enclosed bins or compaction units separate from C&D materials. A reputable waste collector should be employed by the contractor to remove general refuse from the site regularly, separately from C&D materials. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light materials. In addition, a sufficient number of enclosed bins shall be provided on site for containment of general refuse to prevent visual impacts and nuisance to the sensitive surrounding.	Waste management during construction	Contractors		1		Waste Disposal Ordinance

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
		concerns to address	measures:	D	С	0	measures to achieve?
S.6.6.7	For the disposal of chemical wastes produced at the construction site, the Contractor is required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the chemical characteristics of the chemical waste, such as explosives, flammable oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall also use a licensed waste collector engaged to transport and dispose of the chemical wastes in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Waste management during construction	Contractors		<b>V</b>		Waste Disposal (Chemical Waste) (General) Regulation
S.6.6.8	Chemical toilets to be provided on-site shall be regularly cleaned and the night-soil collected and transported by a licensed contractor to a Government Sewage Treatment Works facility for disposal.	Waste management during construction	Contractors		√		Waste Disposal Ordinance
EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measure & main concerns to	Who to implement the		en to im e meas	plement ures?	What requirements or standards for the
		address	measures?	D	С	0	measures to achieve?
Construction Phas	e (Upgrading Works of Cheung Chau STW (DP Component))						
Table 11.8	Visual Screen/Hoarding  Decorative hoarding or boundary fence for construction sites shall be considered, and designed to be compatible to the surroundings.	To minimise the potential visual impacts	Contractors		1		N/A

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?		to impl measur	What requirements or standards for the measures to achieve?
Table 11.8	Protection to Existing Trees within Works Areas  All existing trees which are not in direct conflict with the proposed works will be retained. The existing trees proposed to be retained shall be properly maintained and protected by means of fencing to prevent vehicular or pedestrian intrusion that may potentially damage tree canopies, trunks and root zones. Detailed tree protection specifications shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and tree monitoring system. For trees with high preservation value, individual tree assessments and continuous tree monitoring reports shall be provided by a certified Arborist, Landscape Architect or related professional during construction. All retained trees shall be recorded photographically at the commencement of contract.  Root pruning to the retained trees should be prohibited. Retained trees should be well-preserved by setting up a tree protection zone throughout the construction period for protecting the retained trees from damages.  To maximize protection to existing trees and ground vegetation, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the "no-intrusion zone", even for non-direct construction activities and storage of equipment.	Landscape mitigation measures	DSD and Contractors	1	1	EIA, Annex 10 and Annex 18 of EIAO- TM

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to	Who to implement the	When to implement the measures?			What requirements or standards for the	
		address	measures?	D	С	0	measures to achieve?	
Table 11.8	Tree Transplanting  Existing trees to be affected shall be directly transplanted to the proposed tree receiving sites, or to temporary tree nurseries alternatively. Temporary tree nurseries may be set up for the transplanted tree and proposed trees at an early stage to allow small trees to grow during the construction stage. By the time when planting area becomes available, trees have been mature and required minimal pruning and suffer much less damage during transplanting. The construction programme should also allow sufficient time for root pruning and root ball preparation prior to transplanting, if necessary, and transplanting operations to be carried out in planting season.  Tree pruning such as topping, lion tailing would be prohibited as far as possible. Also, frequent keep watering would be necessary for transplanting trees. The proposed tree preservation measures during construction would be carried out and approved by the competent persons.	Landscape mitigation measures	DSD and Contractors	√	√		EIA, Annex 10 and Annex 18 of EIAO- TM	
Table 11.8	Construction Light  Security floodlight for construction areas shall be controlled, such as equipped with adjustable shield, frosted diffusers and reflective covers, at night to avoid excessive glare to the nearby areas and residents.  Other security measures shall also be considered to minimize the visual impacts by construction light.	To reduce the night-time glare effect to the surrounding environs.	Contractors		V		EIA, Annex 10 and Annex 18 of EIAO- TM	

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	to impl measur C	What requirements or standards for the measures to achieve?
Table 11.8	Dust and Erosion Control for Exposed Soil  Excavation works and demolition of existing building blocks shall be well planned with precautions to suppress dust. Exposed soil shall be covered or watered often. Areas that are expected to be left with bare soul for a long period of time after excavation shall be properly covered with suitable protective fabric. Suitable drainage shall be provided around construction sites to avoid discharge of contaminants and sediments into sensitive water-based habitats.	To minimise the disturbance to existing landscape resources and minimise the impacts on the visual amenity of the area	Contractors	$\sqrt{}$	EIA, Annex 10 and Annex 18 of EIAO- TM
Table 11.8	Reinstatement of Works Areas  The affected works areas shall be properly reinstated to the satisfaction of relevant government departments.	Landscape mitigation measures	Contractors	√	EIA, Annex 10 and Annex 18 of EIAO- TM

APPENDIX H
Summary of All Complaints Received,
Notification of Summons and Successful
Prosecutions

#### Statistical Summary of Environmental Complaints

Donauting Davied	<b>Environmental Complaints Statistics</b>						
Reporting Period	Frequency	Nature	Follow-up Actions				
1 October 2024 - 31 October 2024	0	N/A	N/A				
Cumulative	1*	Water	N/A				

<sup>\*</sup>Follow-up action is mentioned in Complaint Investigation Report of the Complaint Log No. C-001 submitted on 21 Dec 2023.

#### Statistical Summary of Environmental Summons

Deporting Devied	Environmental Summons Statistics						
Reporting Period	Frequency	Nature	Follow-up Actions				
1 October 2024 - 31 October 2024	0	N/A	N/A				
Cumulative	0	N/A	N/A				

### Statistical Summary of Environmental Prosecution

	<b>Environmental Prosecution Statistics</b>						
Reporting Period	Frequency	Nature	Follow-up Actions				
1 October 2024 - 31 October 2024	0	N/A	N/A				
Cumulative	0	N/A	N/A				

## APPENDIX I

EM&A Monitoring Schedules in the Reporting Period and the Next Reporting Period (Tentative)



	Impac	t Monitoring Schedule for Upgra	ding of Cheung Chau Sewage Colle	ection, Treatment and Disposal Fa	acilities	
_		_	Oct-24	I	<b> -</b> •	
Sun		Tue		Thu 3	Fri 4	Sat
		1	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for	4	5
i	7	8	9	10	11	12
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				
13	14	15	16	17	18	19
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				
20	21	22	23	24	25	26
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	& A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a			
27	28	29	30	31		
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				



	Ir	npact Monitoring Schedule for Upgr	ading of Cheung Chau Sewage Collec	tion, Treatment and Disposal Facilit	ies	
			Nov-24			
Sun	Mon	Tue	Wed	Thu	Fri 1	Sat 2
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				
3	4  24-hour TSP monitoring for A1a & A2a  1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a	6	7	8	9
10	11	12	13	14	15	16
		24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a			
17	18	19	20	21	22	23
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				
24	25	26	27	28	29	30
	24-hour TSP monitoring for A1a & A2a 1-hour TSP monitoring for A1a & A2a	Daytime Noise monitoring for N2a & N3a				