



**Lam Environmental Services
Limited**

Contract No: SD 6/2020
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works
Monthly EM&A Report (December 2021)

CONTRACT NO: SD 6/2020

**CONSTRUCTION OF SAN SHEK WAN SEWAGE TREATMENT WORKS
ASSOCIATED SUBMARINE OUTFALL AND PUI O SEWERAGE WORKS**

UNDER ENVIRONMENTAL PERMIT NO. EP-538/2017

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

**DECEMBER 2021
REVISION 3**

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EXECUTIVE SUMMARY

- i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – **December 2021** of Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works under Environmental Permit no. EP-538/2017 (Hereafter as “the Project”). The construction works of the Project was commenced on **3 November 2021** and the tentative completion date is **Q1 2026**. The EM&A report presenting the environmental monitoring findings and information recorded during the period of **01 December 2021 to 31 December 2021**. The cut-off date of reporting is at the end of each reporting month.
- ii. In the reporting month, the principal work activities conducted are as follow:
 - **Ground investigation works and preliminary drilling works at San Shek Wan Sewage Treatment Works (SSWSTW) and Pui O Sewage Pumping Station (POSPPS)**
 - **Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen**

Exceedances of Action/Limit Levels

Noise Monitoring

- iii. Noise monitoring was conducted at **five (5)** noise monitoring stations N12a, N12b, N13, N14 and N17 once per week in the reporting month.
- iv. **No action or limit level exceedance was recorded in construction noise level in this reporting period.**

Water Quality Monitoring

- v. **No** water quality monitoring was conducted at **six (6)** monitoring stations three days per week in the reporting month **due to no marine-based construction works**.

Complaint log

- vi. **No** environmental complaint regarding the construction works was recorded in the reporting period.

Notifications of Any Summons and Successful Prosecutions

- vii. **No** environmental notification of any summons and successful prosecution regarding the construction works was recorded in the reporting period.

Reporting Changes



viii. There are no particular reporting changes.

Future Key Issues

ix. In coming reporting 3 months, the scheduled construction activities and the recommended mitigation measures are listed as follows:

Key Construction Works	Recommended Mitigation Measures
• Ground investigation works and preliminary drilling works at SSWSTW and POSPS • Tree pruning, digging recipient site preparation and transplanting works • Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen • Site formation for POSPS and horizontal directional drilling (HDD) works setup at SSWSTW	• Proper water pollution control measures to be taken to prevent untreated effluent discharge from site work • Dust control during dust generating works; • Implementation of proper noise pollution control; • Tree protection works and protection of existing village planting within the Project Site; and • Proper waste handling, recycling and storage.



1 Introduction

1.1 Scope of the Report

- 1.1.1. Lam Environmental Services Limited (LES) has been appointed to work as the Environmental Team (ET) under Environmental Permit (EP) no. EP-538/2017 to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Outlying Islands Sewerage Stage 2 - South Lantau Sewerage Works (Register No.: AEIAR-210/2017).
- 1.1.2. In accordance with Clause 3.4 stated in EP-538/2017, 4 hard copies and 1 electronic copy of Monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of each reporting month.
- 1.1.3. According to Section 12.2 of the Project EM&A Manual, the Monthly EM&A Report should be submitted within 10 working days of the end of each reporting month, with the first report due in the month after construction commences.

1.2 Structure of the Report

Section 1 *Introduction* – details the scope and structure of the report.

Section 2 *Environmental Status* – construction programme, works undertaken during the month with illustrations, drawing showing the project area, environmental sensitive receivers and monitoring locations.

Section 3 *Implementation Status* – Advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the EIA Report and summarised in the updated implementation schedule.

Section 4 *Monitoring Results* – summarizes the monitoring results obtained in the reporting period, including monitoring methodology, name of laboratory and equipment used and calibration details, parameters monitored, monitoring locations (and depth), monitoring date, frequency, and duration.

Section 5 *Report on Complaints, Notification of Summons and Successful Prosecutions*

Record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;



Record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;

Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and

Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to non-compliance.

Section 6 ***Others*** – An account of the future key issues as reviewed from the works programme and work method statements.

Section 7 ***Conclusion***

2 Environmental Status

2.1 Construction Programme

- 2.1.1 The proposed sewerage works will collect the sewage generated from the unsewered areas of Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin in South Lantau (i.e. within the Project Catchment Area) and convey it to a proposed sewage treatment works at San Shek Wan for treatment and disposal into outer bay of Pui O/ Chi Ma Wan via a submarine outfall.
- 2.1.2 The entire Project are divided into three contracts. Contract No. DC/2020/20 (the Contract) would have the following implementations as demonstrated in [Figure 2.1](#).
- 2.1.3 The major components of the Project under Environmental Permit (EP) (EP No. EP-538/2017) comprises: (i) construction of sewage treatment works at San Shek Wan (SSWSTW) and associated submarine outfall; (ii) construction of sewage pumping station at Pui O (POSPS); (iii) village sewage works at Pui O; and (iv) trunk sewers and rising mains on carriageways.
- 2.1.4 **No** construction programme with fine tuning of construction activities showing the inter-relationship with environmental protection/ mitigation measures for the month.

2.2 Works undertaken during the month

- 2.2.1 In the reporting month, the principal work activities conducted are as follow:
- Ground investigation works and pre-drilling works at SSWSTW and POSPS
 - Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen

The locations of works are shown in [Figure 2.2](#).

2.3 Drawing showing the project area, environmental sensitive receivers and monitoring locations

- 2.3.1 Noise and water monitoring location plans with sensitive receivers are shown in [Figure 2.3](#) and [Figure 2.4](#).

3. Implementation Status

3.1 Advice on the implementation status of environmental protection and pollution control/mitigation measures

3.1.1 Mitigation measures according to the environmental mitigation implementation schedule in Annex A of EM&A Manual were generally implemented by the Contractor. Hence, the EM&A programme was considered effective and shall be maintained.

3.2 Environmental Mitigation Measures

3.2.1 Environmental mitigation measures mentioned the EIA Report were weekly reviewed and recorded in Weekly Environmental Site Audit Checklist. Also, a summary of the current status on submissions and measures mentioned in Environmental Permit (EP-538/2017) are shown in **Table 3.1**.

Table 3.1 Summary of submission status under EP-538/2017

EP Condition	Submission	Date of Latest Submission to EPD^ / EPD Approval#
Condition 2.10	Waste Management Plan (Rev. 5)	19 Nov 2021^
Condition 2.11	Submission of Preservation and/or Transplantation Plan for Plant Species of Conservation Importance (Rev. 7)	25 June 2021^
Condition 2.12	Submission of Compensatory Woodland Planting Plan (Rev. 5)	2 July 2021^
Condition 2.13	Silt Curtain Deployment Plan (Stage 1)	19 Nov 2021^
Condition 2.14	Landscape Mitigation Plan	To be confirmed
Condition 2.15	Construction Noise Mitigation Plan	29 Dec 2021^

3.3 Environmental monitoring requirements and contractual requirements

3.3.1 A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in **Table 3.2**.

Table 3.2 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project



Permits and/or Licences	Permit. No. / Account No.	Issued Date	Valid Period & Expiry Date (dd-mm-yyyy to dd-mm-yyyy)	Status
Notification of Works Under APCO	466408	14 Apr 2021	N/A	Valid
Discharge Licence	POPS: WT00039820-2021	31 Dec 2021	31-12-2021 to 31-12-2026	Valid
	SSWSTW: WT00039636-2021	30 Dec 2021	30-12-2021 to 31-12-2026	
Billing account under Waste Disposal Ordinance	Account No.: 7040411	05 May 2021	N/A	Valid
Registration as a Chemical Waste Producer	0000-931-K3428-01	13 May 2021	N/A	Valid
Construction Noise Permit	GW-RS0921-21	26 Nov 2021	29-11-2021 to 28-05-2022	Valid

Note: Only include those valid or under application; fill in "N/A" for non-applicable item(s).

3.4 Site Inspection and Audit Reports

- 3.4.1 Within this reporting month, weekly environmental site inspection were conducted on **07, 17, 21 and 28 December 2021**. IEC attended the joint site audit on **17 December 2021**.
- 3.4.2 **No** non-compliance was found during the site inspection while reminders on environmental measures were recommended. Results and findings of these inspections in this reporting month are listed below in **Table 3.3**.

Table 3.3 Summary of Environmental Inspections

Inspection Date	Reminder and Recommendations	Close-out Date / Status
7 Dec 2021	1. Existing trees within the Site should be properly fenced off the Tree Protection Zone and no waste within. 2. To implement dust control measures when conduct dust generating works. 3. Remove water pond regularly	7 Dec 2021
17 Dec 2021	1. Water ponding on tray should be removed. 2. Proper sorting recycle materials in recycle bins	21 Dec 2021
21 Dec 2021	Site conditions are generally in order	N/A



28 Dec 2021	1. Recyclables should be sorted in recycle bins properly. 2. Larvicide ovitrap should be properly used. Dusty stockpile should be covered	28 Dec 2021
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4. Monitoring Results

4.1 Noise Monitoring

MONITORING METHODOLOGY

4.1.1 Monitoring Procedure

- (a) The impact noise monitoring should be carried out at all the designated monitoring stations when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations.
- (b) The monitoring station shall normally be at a point 1m from the exterior of the sensitive receiver's building façade and be at a position 1.2m above the ground.
- (c) Façade measurements were made at the monitoring locations. For free-field measurement, a correction factor of +3 dB (A) would be applied.
- (d) The battery condition was checked to ensure the correct functioning of the meter.
- (e) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
- (f) Frequency weighting: A, Time weighting: Fast, Measurement time set: continuous 5 mins
- (g) Prior and after to the noise measurement, the meter was checked using the acoustic calibrator for 94dB (A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than ± 1 dB (A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

NAME OF LABORATORY AND EQUIPMENT USED AND CALIBRATION DETAILS

- 4.1.2 Noise monitoring was performed using sound level meter at the designated monitoring locations. The sound level meters shall comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator shall be deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 4.1**.

Table 4.1 Noise Monitoring Equipment

Equipment	Brand and Model	Series Number
Integrated Sound Level Meter	Larson Davis LxT1	0003737
Acoustic Calibrator	Honglim HLES-02	2016611465

- 4.1.3 The calibration certificates of the noise monitoring equipment are attached in [Appendix 4.1](#).

4.1.4 Calibration Details

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.

- (b) The sound level meter and calibrator were calibrated at yearly intervals.

PARAMETERS MONITORED

- 4.1.5 The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{eq} (30min) should be used as the monitoring parameter. Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.
- 4.1.6 For impact monitoring for construction of village sewers / rising main, noise monitoring should be undertaken on weekly basis. One set of L_{eq} (30min) noise level as six consecutive L_{eq} (5min) between 07:00-19:00 hours on normal weekdays.

MONITORING STATIONS

- 4.1.7 The noise monitoring stations for the Project are listed and shown in **Table 4.2**, impact noise monitoring was conducted at five (5) noise monitoring stations N12a, N12b, N13, N14 and N17 once per week in the reporting month.

Table 4.2 Noise Monitoring Station

Monitoring Station ID ⁽¹⁾	Monitoring Location	Measurement Type	Level (in terms of no. of floor)
N01a	Shui Hau Village	Free-Field	G/F
N01c	Shui Hau Village	Free-Field	G/F
N03a	Tong Fuk Village	Free-Field	G/F
N05a	Residences at Cheung Fu Street	Free-Field	G/F
N07	Government Holiday Bungalows	Free-Field	G/F
N08	Cheung Sha Ha Tsuen	Free-Field	G/F
N10	Cheung Sha Sheung Tsuen	Façade	G/F
N11b	San Shek Wan – Ming Garden	Free-Field	G/F
N12a	Lo Uk Tsuen	Free-Field	G/F
N12b	Lo Uk Tsuen	Façade	G/F
N13	Pui O San Wai Tsuen	Façade	G/F
N14	South Lantau Community Centre	Free-Field	G/F
N15b	Pui O Lo Wai Tsuen	Façade	G/F
N16a	Residences at Ham Tin	Free-Field	G/F
N16b	Residences at Ham Tin	Free-Field	G/F
N17	Bui O Public School	Façade	R/F

Remarks (1): Fine adjustment of noise monitoring stations at all locations was proposed as per EP Condition 3.1.



MONITORING DATE, TIME, FREQUENCY AND DURATION

- 4.1.8 For daytime construction work on normal weekdays, monitoring of $L_{eq(30min)}$ should be carried out at each station at 0700-1900 hours on normal weekdays at a frequency of once a week. Impact monitoring schedule can be referred to [Appendix 4.2](#).

NOISE MONITORING RESULTS

- 4.1.9 Noise monitoring results measured in this reporting period are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in [Appendix 4.3](#).
- 4.1.10 One set of $L_{eq(30min)}$ was recorded 77.3 dB(A) at N12b (Lo Uk Tsuen) on 23 December 2021. Construction noise sources and other noise sources are recorded during the noise measurement. Construction noise sources include grinder, handheld breaker and excavator in Lo Uk Tsuen sewer works; non-project related traffic noise at South Lantau Road was also recorded. The construction noise level was 67.4 dB(A) when factor out baseline level of 76.8 dB(A), which is below limit level.
- 4.1.11 No action or limit level exceedance was recorded in construction noise level in this reporting period.



4.2 Water Quality Monitoring

MONITORING METHODOLOGY

4.2.1 Monitoring Procedure

- (a) The condition near the monitoring stations shall be observed and recorded on the data log sheet.
- (b) Check of sensors and electrodes with certified standard solutions before each use.
- (c) Wet bulb calibration for a DO meter should be carried out before measurement.
- (d) Water depth should be recorded by detector before sampling.
- (e) Sample would be taken using bucket sampler at surface level.
- (f) Transfer the sampled water carefully into cleaned water bottles (2x 1000ml) provided by the laboratory at the spot after the collection of the water sample for the subsequent laboratory Suspended Solid testing.
- (g) Transfer the sampled water from the bucket sampler to the rinsed water container for in-situ measurement (In case of the in-situ measurement cannot be carried at spot due to safety and adverse weather condition, sampled water from the bucket sampler will be transfer to cleaned water bottles provided by laboratory. Then, In-situ measurement will be conducted at a safe location which sampled water inside cleaned water bottle will be transfer to the rinsed water container for in-situ measurement) In-situ measurement shall be measured in duplicate.
- (h) Parameters including Water Temperature (°C), pH (units), Salinity (ppt), DO (mg/L), DO saturation (%) will be measured by the Multifunctional Meter and Turbidity (NTU) will be measured by turbid meter. (Water Temperature and Salinity will be measured as reference parameters)
- (i) Record the result on the data log sheet and record any special finding during / after in-situ measurement.
- (j) The water sample bottles will be stored in a cool box (at cooled to 4°C without being frozen), which shall be delivered to HOKLAS laboratory (ALS Technichem (HK) Pty Ltd) for further testing to determine the level of SS.

NAME OF LABORATORY AND EQUIPMENT USED AND CALIBRATION DETAILS

LABORATORY MEASUREMENT / ANALYSIS

- 4.2.2 Analysis of suspended solids will be carried out in a HOKLAS accredited laboratory, which is ALS Technichem (HK) Pty Ltd.

EQUIPMENT USED

Dissolved Oxygen, pH And Temperature Measuring Equipment

- 4.2.3 Multifunctional Meter and Turbid Meter are used at each designated monitoring station. They are capable of measuring:

- (a) a dissolved oxygen level in the range of 0-20mg/L and 0-200% saturation (Detection Limit: 0.1mg/L)
- (b) a temperature of 0-45 degree Celsius (Detection Limit: 0.1 degree Celsius)
- (c) turbidity level between 0-1000NTU (Detection Limit: 0.1NTU)
- (d) salinity in the range of 0-40ppt (Detection Limit: 0.1ppt)
- (e) pH value in range of 0.0 – 14.0 (Detection Limit: 0.1units)

Other monitoring equipment namely water depth meter, water current meter, dGPS positioning device, water sampler listed below were also deployed,

- (a) Water depth meter (Range: 0.6 -100m, Resolution: 0.1m)
- (b) Water current meter (Range: 0-360°, Detection Limit: 1mm/s)
- (c) dGPS positioning device (Resolution: Horizontal: 0.25m; Vertical: 0.50 m)
- (d) Water sampler (Horizontal discrete type, Capacity: 2.2L)

Sampler Container and Storage

- 4.2.4 A water sampler, Water samples for suspended solids measurement should be collected in high-density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to ALS Technichem (HK) Pty Ltd. as soon as possible after collection for analysis.

Water Depth Detector

- 4.2.5 A portable, battery-operated echo sounder shall be used for the determination of water depth at each designated monitoring station. This unit can either be handheld or affixed to the bottom of the workboat, if the same vessel is to be used throughout the monitoring programme.

CALIBRATION DETAILS

4.2.6 Maintenance and Calibration

- (a) The responses of sensors and electrodes of the water quality monitoring equipment were cleaned and checked at regular intervals.
- (b) DO meter (Multifunctional Meter) and turbid meter was certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at three monthly intervals.

- 4.2.7 Brand and model of the equipment are given in **Table 4.3**.

Table 4.3 Water Quality Monitoring Equipment

Equipment	Brand and model	Series Number
Multifunctional Meter	Sonde YSI Professional Plus	17F100236
Turbid meter	Xin Rui WGZ-3B	1807079

- 4.2.8 Due to no marine-based construction works, water quality monitoring was not conducted. Calibration certificates of the water quality monitoring equipment to be attached in [Appendix 4.1](#) will be prepared in the upcoming reporting month during commencement of monitoring.

PARAMETERS MONITORED

- 4.2.9 In construction phase, the levels of dissolved oxygen (DO), temperature, turbidity and salinity should be measured in situ while suspended solids (SS) is determined by laboratory analysis.

MONITORING STATIONS

- 4.2.10 Water quality monitoring involves 6 monitoring stations. Reviewing the location of the outfall constructed under the scope of Contract DC/2020/02, water quality impact of the localized dredging works during construction phase can be effectively monitored around the nearfield stations SR4, SR5, SR15 within 500m radius of the outfall location and SR6 is already outside the 500m radius together with CE and CF can effectively act as control stations to monitor the extent of the dredging impact, whereas the farfield SR9, SR10 and SR12 are located at least 3km away from the sewage outfall location. As such, water quality monitoring at Station SR9, SR10 and SR12 were cancelled. The locations of water quality monitoring station are shown in **Table 4.4**.

Table 4.4 Marine Water Quality Stations for Water Quality Monitoring

Station	Description	Easting	Northing
CE	Upstream control station at ebb tide	810900	807690
CF	Upstream control station at flood tide	815720	807980
SR4 ⁽¹⁾	Ecological Sensitive Receiver (Coral Communities) at Pui O Wan	814938	810975
SR5	Ecological Sensitive Receiver (Coral Communities) at Pui O Wan	814326	810540
SR6	Gazetted Bathing Beach at Lower Cheung Sha	810553	810475
SR15	Gazetted Bathing Beach at Pui O and Ecologically Important Stream at Pui O	816037	810722

Remarks (1): Fine adjustment of water quality monitoring stations at SR4, SR9 and SR12 was proposed as per EP Condition 3.1, and baseline monitoring was conducted at corresponding fine adjusted locations.

MONITORING DATE, TIME, FREQUENCY AND DURATION

- 4.2.11 The levels of dissolved oxygen (DO), temperature, turbidity and salinity were measured in situ while suspended solids (SS) is determined by laboratory analysis at all the monitoring stations in **Table 4.4** three times a week.

- 4.2.12 In association with the water quality parameters, other relevant data shall also be recorded, such as monitoring location / position, time, water temperature, DO saturation, weather conditions, and any special phenomena underway near the monitoring station.
- 4.2.13 Impact Monitoring shall be carried out three days per week, at mid-flood and mid-ebb tides (within ± 1.75 hour of the predicted time). The interval between two sets of monitoring shall not be less than 36 hours. The monitoring period should avoid concurrent marine project in the vicinity.
- 4.2.14 The sampling frequency of at least three days per week should be undertaken when the highest dust impact occurs. Upon completion of the construction works, the monitoring exercise at the designated monitoring locations should be continued for four weeks in the same manner as the impact monitoring. In case exceedance of Action/Limit Level is recorded, the frequency shall be increased as per the Event and Action Plan.
- 4.2.15 To ensure the robustness of in-situ measurement, parameters shall be measured in duplicate. In case the difference between duplicates is larger than 25%, a third set of measurement shall be carried out.

MONITORING RESULTS

- 4.2.16 [Due to no marine-based construction works in the reporting period, no water quality monitoring was conducted.](#) Water quality monitoring results to be measured in the upcoming reporting period will be reviewed and summarized.

4.3 Waste Management

- 4.3.1 The quantities of waste for disposal in the Reporting Period are summarized in **Table 4.5**. The Monthly Summary Waste Flow Table is shown in [Appendix 4.4](#).

Table 4.5 Summary of Quantities of Waste Material (as of December 2021)

Waste Type	Quantity this month	Quantity (Project commencement to the end of last month)	Cumulative Quantity-to-Date
Hard Rock and Large Broken Concrete (Inert) (in '000m ³)	0	0	0
Reused in this Contract (Inert) (in '000m ³)	0	0	0
Reused in other Projects (Inert) (in '000m ³)	0	0	0



Waste Type	Quantity this month	Quantity (Project commencement to the end of last month)	Cumulative Quantity-to-Date
Disposal as Public Fill (Inert) (in '000m ³)	0.03927	0.81236	0.85163
Metals (in '000kg)	0.00188	0.00142	0.00330
Paper / Cardboard Packing (in '000kg)	0.00372	0.00806	0.01178
Plastics (in '000kg)	0.00170	0.00296	0.00466
Chemical Wastes (in '000kg)	0	0	0
General Refuses (in '000kg)	7.47	113.13	120.60

*: Further breakdown into sub-group if considered applicable;

*: Please also provide daily dumping report for our records.

*: Delete as appropriate



5. Complaints, Notification of Summons and Prosecution

- 5.1.1 No environmental complaint, notification of summons and successful prosecution regarding construction works was recorded in the reporting period.
- 5.1.2 Cumulative statistic on complaints and successful prosecutions are summarized in **Table 5.1** and **Table 5.2** respectively.

Table 5.1 Cumulative Statistics on Complaints

Reporting Period	No. of Complaints
December 2021	0
Project commencement to the end of last reporting month	-
Total	0

Table 5.2 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	-	0	0
Noise	-	0	0
Water	-	0	0
Waste	-	0	0
Other	-	0	0
Total	-	0	0

6. Others

6.1.1 In coming reporting 3 months, the scheduled construction activities are listed as follows:

- Ground investigation works and pre-drilling works at SSWSTW and POSPS
- Tree pruning, digging recipient site preparation and transplanting works
- Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen
- Site formation for POSPS and HDD works setup at SSWSTW
- Trial pits at South Lantau Road and Chi Ma Wan Road

6.1.2 The scheduled construction activities and the recommended mitigation measures for the coming 3 months are listed in **Table 6.1**. The major construction activities for the next 3 months are summarized in Three Months Rolling Programme – Dec 2021 to Feb 2022 in [Appendix 6.1](#).

Table 6.1 Construction Activities and Recommended Mitigation Measures in Coming Reporting 3 Months

Key Construction Works	Recommended Mitigation Measures
• Ground investigation works and preliminary drilling works at SSWSTW and POSPS • Tree pruning, digging recipient site preparation and transplanting works • Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen • Site formation for POSPS and HDD works setup at SSWSTW	• Proper water pollution control measures to be taken to prevent untreated effluent discharge from site work • Dust control during dust generating works; • Implementation of proper noise pollution control; • Tree protection works within the Project Site; and • Proper waste handling, recycling and storage.



7 Conclusion

7.1 Noise Monitoring.

7.1.1 No action or limit level exceedance was recorded in construction noise level in this reporting period.

7.2 Water Quality Monitoring

7.2.1 Due to no marine-based construction works in the reporting period, no water quality monitoring was conducted.

7.3 Review of the Reasons for and the Implications of Non-compliance

7.3.1 No environmental non-compliance was recorded in the reporting month.

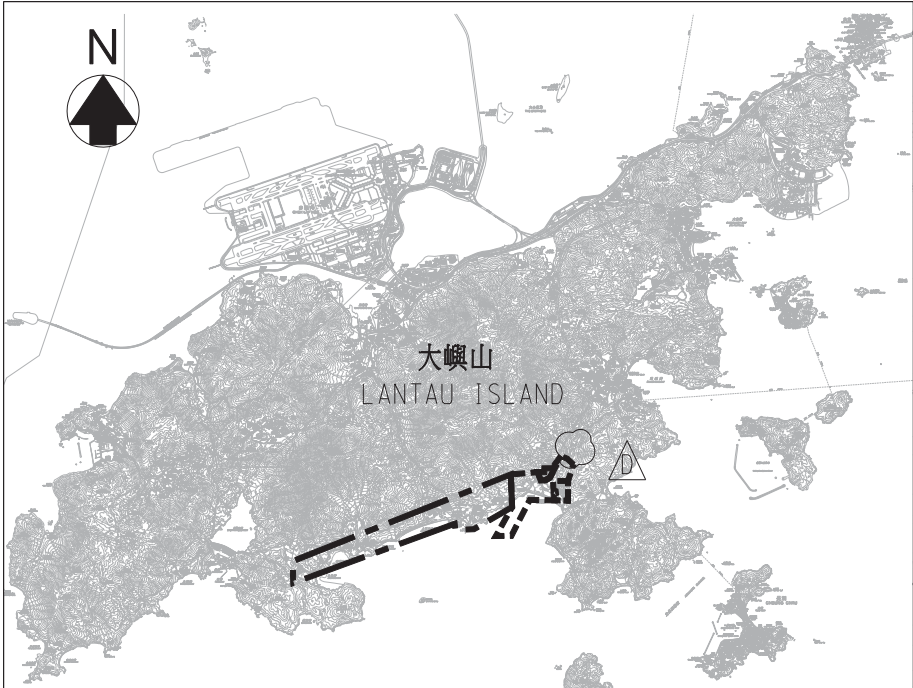
7.4 Summary of action taken in the event of and follow-up on non-compliance

7.4.1 There was no particular action taken since no non-compliance was recorded in the reporting period.

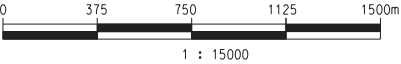
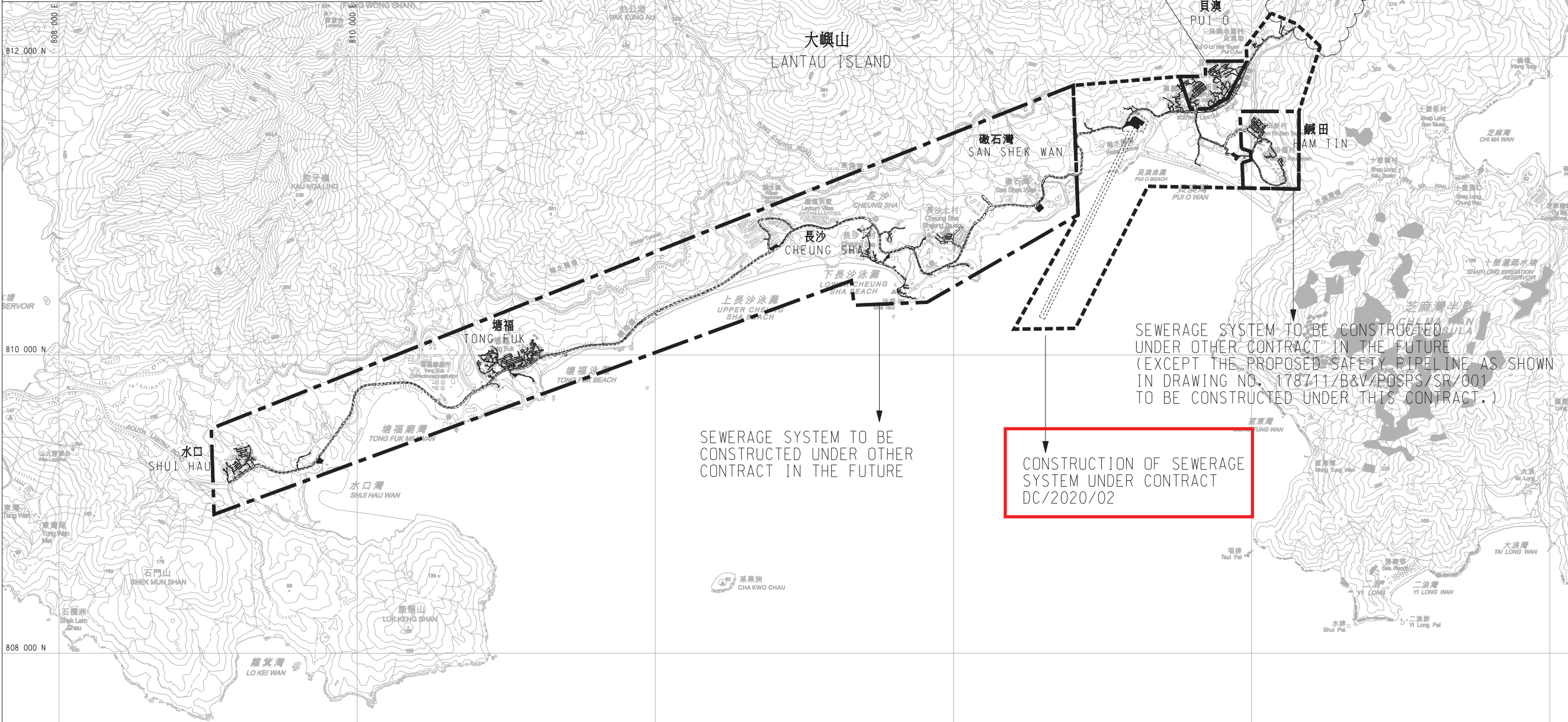


Figure 2.1

Master Layout Plan



SITE PLAN
1:100000



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D	11/20	TENDER ADDENDUM NO.6	BL
C	11/20	TENDER ADDENDUM NO.5	BL
B	11/20	TENDER ADDENDUM NO.4	BL
A	09/20	TENDER ADDENDUM NO.2	TFL
Revision	Date	Description	Initial
	Designed	Checked	Drawn
Initial	TFL	BL	SZ
Date	04/20	04/20	04/20

Approved

Contract no.
DC/2020/02

Contract title
CONSTRUCTION OF SAN SHEK WAN
SEWERAGE TREATMENT WORKS,
ASSOCIATED SUBMARINE OUTFALL
AND PUI O SEWERAGE WORKS

Drawing title
SOUTH LANTAU SEWERAGE
WORKS – MASTER LAYOUT PLAN

Drawing no. 178711/B&V/GN/001	Revision D
----------------------------------	---------------

Scale
1 : 15000

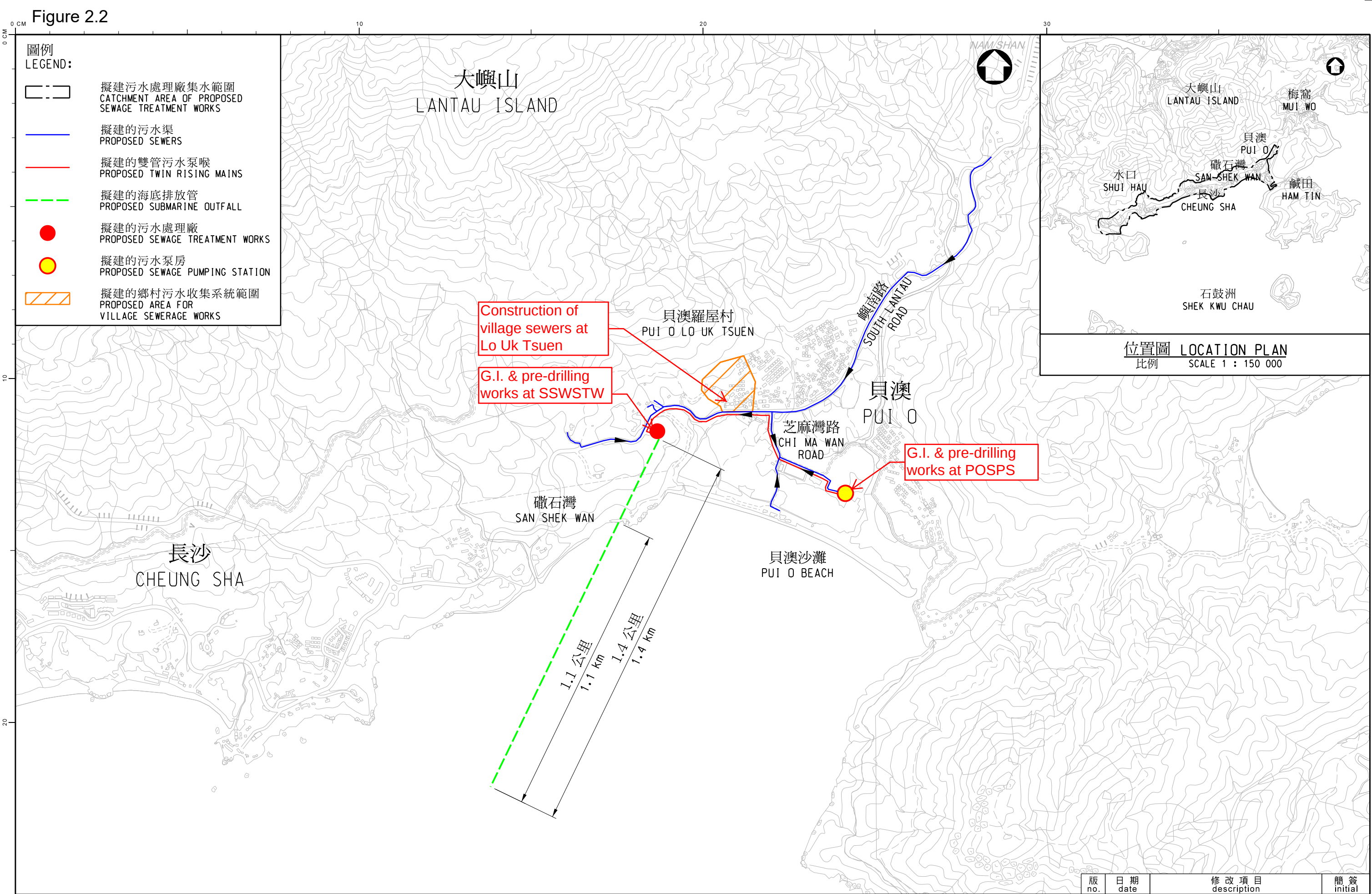
香港特別行政區政府渠務署
THE GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司



Figure 2.2

Contract Layout Plan



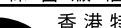
圖則名稱 drawing title	繪畫 drawn		日期 date	圖則編號 drawing no.	比例 scale
	SIGNED W. H. CHAN		27 APR 2020	DVD/2020/001	1:12 500
	核對 checked		日期 date		
	SIGNED Ir K. S. CHAN		27 APR 2020	保留版權 COPYRIGHT RESERVED	
	批核 approved		日期 date	 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	
SIGNED Ir L. CHEN		27 APR 2020			
部門 office 特別職務部 SPECIAL DUTY DIVISION					



Figure 2.3

Locations of Noise Monitoring Station

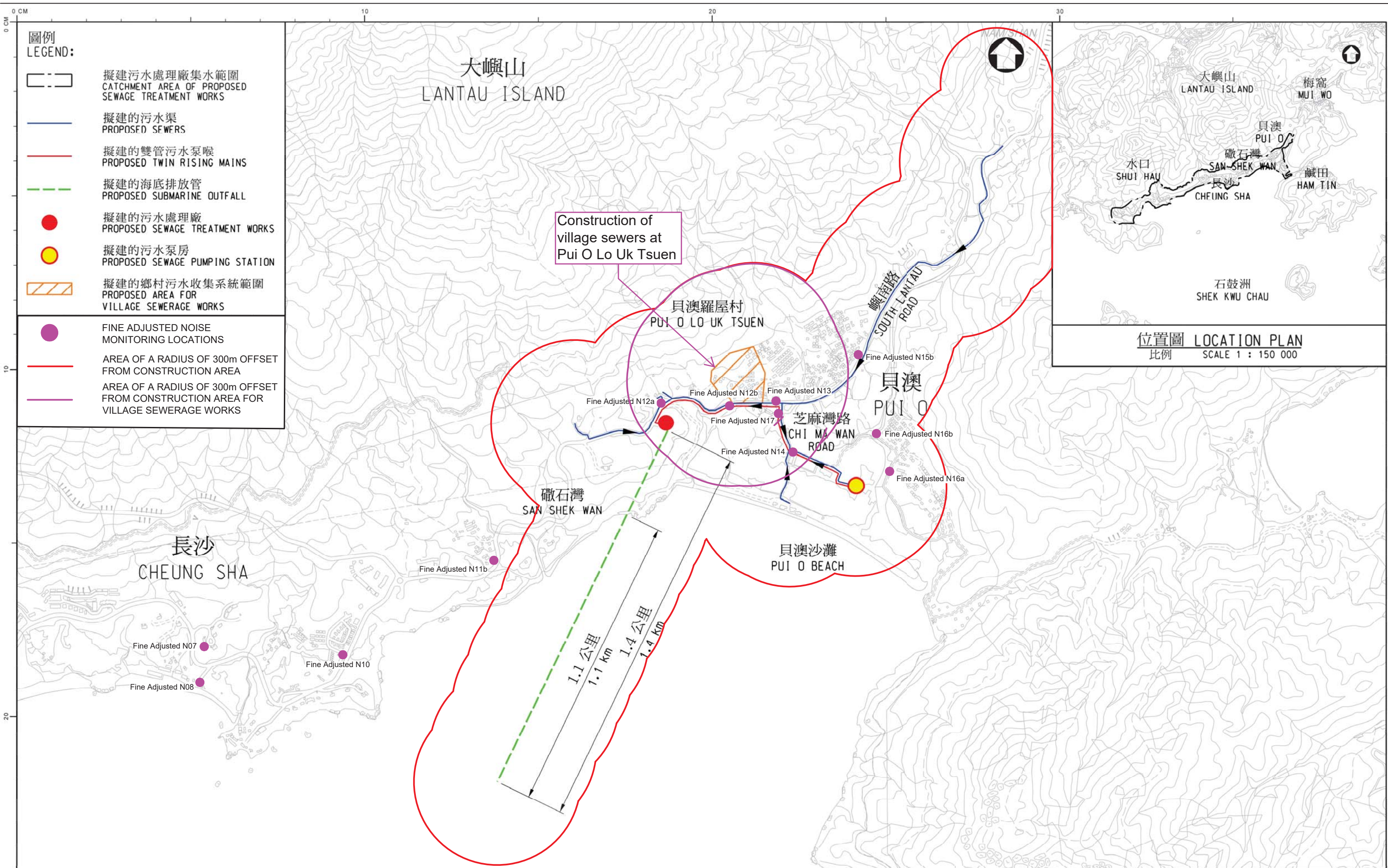
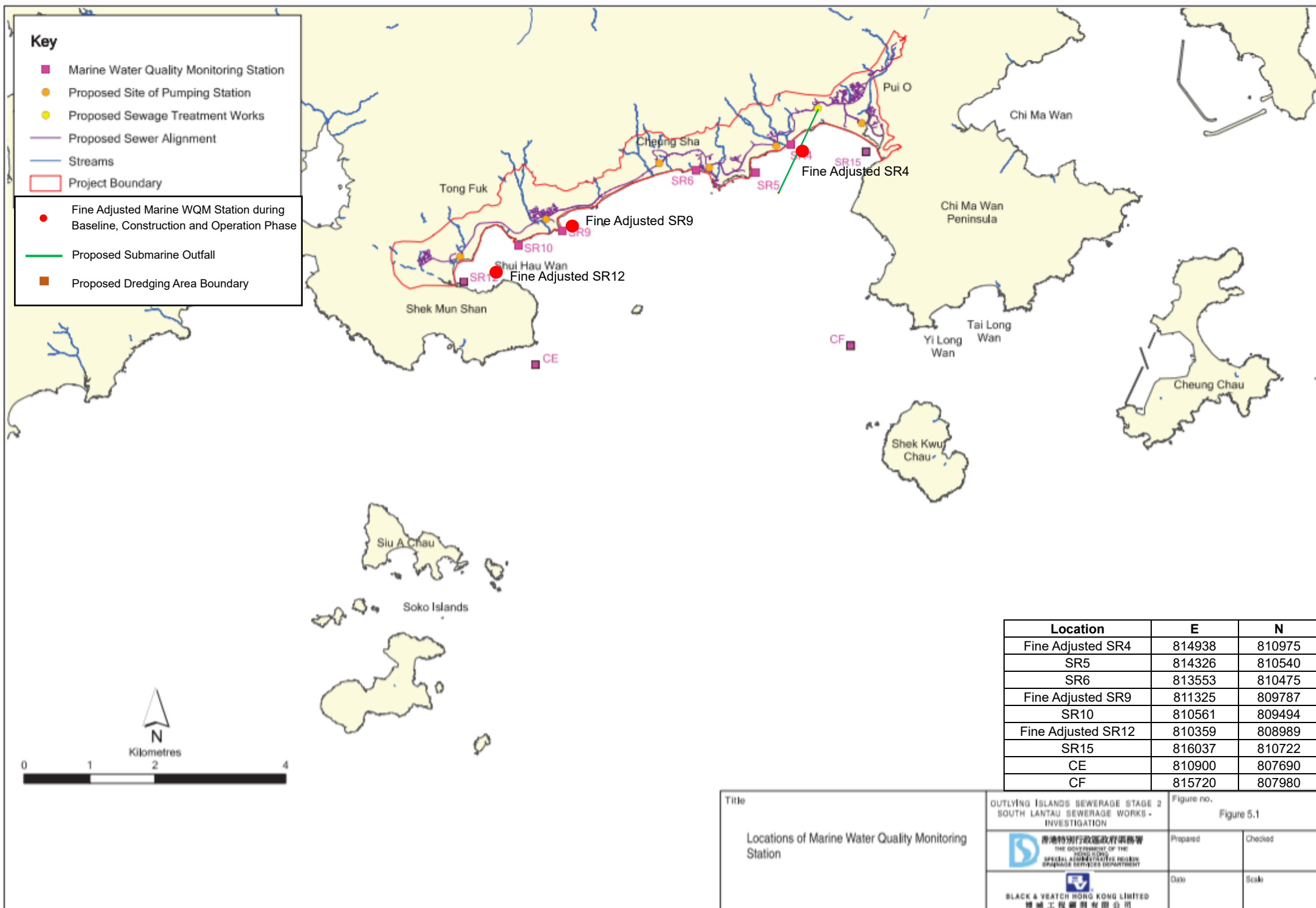




Figure 2.4

Locations of Water Quality Monitoring Stations





Appendix 4.1

Copies of Calibration Certificates



CERTIFICATE OF CALIBRATION

Certificate No.: 21CA0326 03-02

Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	Larson Davis	,	PCB
Type/Model No.:	LxT1	,	377B02
Serial/Equipment No.:	0003737	,	171529
Adaptors used:	-	,	-

Item submitted by

Customer Name:	Lam Environmental Services Limited.
Address of Customer:	-
Request No.:	-
Date of receipt:	26-Mar-2021

Date of test: 31-Mar-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2021	CIGISMEC
Signal generator	DS 360	33873	19-May-2021	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

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

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:

Feng Junqi

Date: 07-Apr-2021

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

21CA0326 03-02

Page 2 of 2

1, Electrical Tests

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

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Linearity range for SPL	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
	Single Burst Fast	Pass	0.3	
Time weightings	Single Burst Slow	Pass	0.3	
	Single 100µs rectangular pulse	Pass	0.3	
Peak response	Crest factor of 3	Pass	0.3	
R.M.S. accuracy	Single burst 5 ms at 2000 Hz	Pass	0.3	
Time weighting I	Repeated at frequency of 100 Hz	Pass	0.3	
	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
	Single burst 10 ms at 4 kHz	Pass	0.4	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	SPL	Pass	0.3	
Overload indication	Leq	Pass	0.4	

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

Calibrated by:

Date:

Fung Chi Yip
31-Mar-2021

- End -

Checked by:

Date:

Chan Yuk Yiu
07-Apr-2021

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



Test Data for Sound Level Meter

Page 1 of 5

Sound level meter type: LxT1 Serial No. 0003737 Date 31-Mar-2021
Microphone type: 377B02 Serial No. 171529

Report: 21CA0326 03-02

SELF GENERATED NOISE TEST

The noise test is performed in the most sensitive range of the SLM with the microphone replaced by an equivalent impedance.

Noise level in A weighting 11.3 dB
Noise level in C weighting 14.9 dB
Noise level in Lin 21.5 dB

LINEARITY TEST

The linearity is tested relative to the reference sound pressure level using a continuous sinusoidal signal of frequency 4 kHz. The measurement is made on the reference range for indications at 5 dB intervals starting from the 94 dB reference sound pressure level. And until within 5 dB of the upper and lower limits of the reference range, the measurements shall be made at 1 dB intervals. (SLM set to LEQ/SPL)

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	74.0	74.0	0.7	0.0	0.0
69.0	69.0	69.0	0.7	0.0	0.0
64.0	63.9	63.9	0.7	-0.1	-0.1
59.0	59.0	59.0	0.7	0.0	0.0
54.0	54.0	54.0	0.7	0.0	0.0
49.0	48.9	48.9	0.7	-0.1	-0.1
44.0	43.9	43.9	0.7	-0.1	-0.1
39.0	38.9	38.9	0.7	-0.1	-0.1
34.0	33.9	33.9	0.7	-0.1	-0.1
33.0	32.9	32.9	0.7	-0.1	-0.1



Test Data for Sound Level Meter

Page 2 of 5

Sound level meter type: LxT1 Serial No. 0003737 Date 31-Mar-2021
Microphone type: 377B02 Serial No. 171529

Report: 21CA0326 03-02

32.0	31.9	31.9	0.7	-0.1	-0.1
31.0	30.9	30.9	0.7	-0.1	-0.1
30.0	29.9	29.9	0.7	-0.1	-0.1

Measurements for an indication of the reference SPL on all other ranges which include it

Other ranges	Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
20-120	94.0	94.0	0.7	0.0

Measurements on all level ranges for indications 2 dB below the upper limit and 2 dB above the lower limit

Ranges	Reference/Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
20-120	30.0	29.9	0.7	-0.1
	118.0	118.0	0.7	0.0

FREQUENCY WEIGHTING TEST

The frequency response of the weighting networks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.5	1.5	1.5	-0.1
63.1	94.0	67.8	67.7	1.5	1.5	-0.1
125.9	94.0	77.9	77.8	1.0	1.0	-0.1
251.2	94.0	85.4	85.3	1.0	1.0	-0.1
501.2	94.0	90.8	90.7	1.0	1.0	-0.1
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.6	3.0	6.0	-0.1

Frequency weighting C:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	91.0	1.5	1.5	0.0
63.1	94.0	93.2	93.1	1.5	1.5	-0.1
125.9	94.0	93.8	93.7	1.0	1.0	-0.1
251.2	94.0	94.0	93.9	1.0	1.0	-0.1
501.2	94.0	94.0	94.0	1.0	1.0	0.0



Test Data for Sound Level Meter

Page 3 of 5

Sound level meter type: LxT1 Serial No. 0003737 Date 31-Mar-2021
Microphone type: 377B02 Serial No. 171529

Report: 21CA0326 03-02

1995.0	94.0	93.8	93.8	1.0	1.0	0.0
3981.0	94.0	93.2	93.2	1.0	1.0	0.0
7943.0	94.0	91.0	91.0	1.5	3.0	0.0
12590.0	94.0	87.8	87.7	3.0	6.0	-0.1

Frequency weighting Lin:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	93.9	1.5	1.5	-0.1
63.1	94.0	94.0	93.9	1.5	1.5	-0.1
125.9	94.0	94.0	93.9	1.0	1.0	-0.1
251.2	94.0	94.0	93.9	1.0	1.0	-0.1
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	93.9	1.5	3.0	-0.1
12590.0	94.0	94.0	94.0	3.0	6.0	0.0

TIME WEIGHTING FAST TEST

Time weighting F is tested on the reference range with a single sinusoidal burst of duration 200 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	115.0	114.9	1.0	1.0	-0.1

TIME WEIGHTING SLOW TEST

Time weighting S is tested on the reference range with a single sinusoidal burst of duration 500 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	111.9	111.8	1.0	1.0	-0.1

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range.

Positive polarities: (Weighting Z, set the generator signal to single, Lzpeak)

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	119.5	2.0	0.5



Test Data for Sound Level Meter

Page 4 of 5

Sound level meter type: LxT1 Serial No. 0003737 Date 31-Mar-2021
Microphone type: 377B02 Serial No. 171529

Report: 21CA0326 03-02

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	119.5	2.0	0.5

RMS ACCURACY TEST

The RMS detector accuracy is tested on the reference range for a crest factor of 3.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz. (Set to INT)

	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
Time weighting	dB	dB	indication(dB)	+/- dB	dB
Slow	116.0+6.6	116.0	115.8	0.5	-0.2

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)

Test frequency: 2000 Hz
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

Ref. Level	Single burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	111.2	111.1	2.0	-0.1

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	117.3	117.1	1.0	-0.2

TIME AVERAGING TEST

This test compares the SLM reading for continuous sine signals with readings obtained from a sine tone burst sequence having the same RMS level. The test level is 30 dB below the upper limit of the linearity range and repeated for Type 1 SLM with 40 dB below the upper limit of the linearity.

Frequency of tone burst: 4000 Hz

Duration of tone burst: 1 ms

Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks
msec	dB	dB	dB	+/- dB	dB	
1000	90.0	90.0	89.9	1.0	-0.1	60s integ.
10000	80.0	80.0	79.9	1.0	-0.1	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz

Integration time: 10 sec



Test Data for Sound Level Meter

Page 5 of 5

Sound level meter type: LxT1 Serial No. 0003737 Date 31-Mar-2021
Microphone type: 377B02 Serial No. 171529

Report: 21CA0326 03-02

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	88.0	58.0	57.9	1.7	-0.1

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	88.0	68.0	67.9	1.7	-0.1

OVERLOAD INDICATION TEST

For SLM capable of operating in a non-integrating mode.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz.

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
115.0	114.0	111.0	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:
The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz
Integration time: 10 sec
Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
121.7	120.7	80.7	80.6	2.2	-0.1

ACOUSTIC TEST

The acoustic test of the complete SLM is tested at the frequency 125 Hz and 8000 Hz using a B&K type 4226 Multifunction Acoustic Calibrator. The test is performed in A weighting.

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
Hz	dB	Measured (dB)	+	-	dB
1000	94.0	94.0	0.0	0.0	0.0
125	77.9	78.0	1.0	1.0	0.1
8000	92.9	91.1	1.5	3.0	-1.8

-----END-----



CERTIFICATE OF CALIBRATION

Certificate No.: 21CA1021 05-01

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Honglim Co., Ltd.
Type/Model No.: HLES-02
Serial/Equipment No.: 2016611465
Adaptors used: -

Item submitted by

Customer: Lam Environmental Services Limited.
Address of Customer: -
Request No.: -
Date of receipt: 21-Oct-2021

Date of test: 25-Oct-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	04-May-2022	SCL
Preamplifier	B&K 2673	2239857	31-May-2022	CEPREI
Measuring amplifier	B&K 2610	2346941	01-Jun-2022	CEPREI
Signal generator	DS 360	33873	27-May-2022	CEPREI
Digital multi-meter	34401A	US36087050	27-May-2022	CEPREI
Audio analyzer	8903B	GB41300350	28-May-2022	CEPREI
Universal counter	53132A	MY40003662	02-Jun-2022	CEPREI

Ambient conditions

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

Test specifications

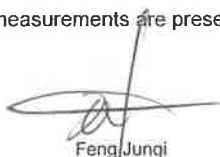
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results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

Test results

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

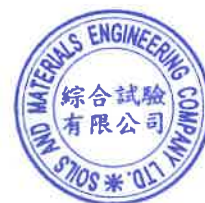
Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:


Feng Junqi

Date: 26-Oct-2021

Company Chop:



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

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.: 21CA1021 05-01

Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μ Pa)			
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.01	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.017 dB

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 1003.7 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz TND = 1.5 %

Estimated expanded uncertainty 0.7 %

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

Calibrated by:

Date:

Fung Chi Yip

25-Oct-2021

- End -

Checked by:

Date:

Chan Yuk Yiu

26-Oct-2021

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



CERTIFICATE OF CALIBRATION

Certificate No.: 21CA1021 05-02

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Honglim Co., Ltd.
Type/Model No.: HLES-02
Serial/Equipment No.: 2019612534
Adaptors used:

Item submitted by

Customer: Lam Environmental Services Limited
Address of Customer:
Request No.:
Date of receipt: 21-Oct-2021

Date of test: 25-Oct-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	04-May-2022	SCL
Preamplifier	B&K 2673	2239857	31-May-2022	CEPREI
Measuring amplifier	B&K 2610	2346941	01-Jun-2022	CEPREI
Signal generator	DS 360	33873	27-May-2022	CEPREI
Digital multi-meter	34401A	US36087050	27-May-2022	CEPREI
Audio analyzer	8903B	GB41300350	28-May-2022	CEPREI
Universal counter	53132A	MY40003662	02-Jun-2022	CEPREI

Ambient conditions

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

Test specifications

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

Test results

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

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

Approved Signatory:


Feng Junqi

Date: 26-Oct-2021

Company Chop:



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

**CERTIFICATE OF CALIBRATION**

(Continuation Page)

Certificate No.: 21CA1021 05-02

Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μ Pa)			
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.02	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.011 dB

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 998.27 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz TND = 0.4 %

Estimated expanded uncertainty 0.7 %

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

Calibrated by:

Fung Chi Yip

Date: 25-Oct-2021

- End -

Checked by:

Chan Yuk Yiu

Date: 26-Oct-2021

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



Appendix 4.2
Impact Monitoring Schedule



Contract No. SD 6/2020
Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works
Environmental Team Services (2021 - 2022)
Impact Monitoring Schedule
Dec 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28 Nov	29 Nov	30 Nov	01 Dec	02 Dec	03 Dec	04 Dec
		Noise Monitoring				
05 Dec	06 Dec	07 Dec	08 Dec	09 Dec	10 Dec	11 Dec
		Noise Monitoring				
12 Dec	13 Dec	14 Dec	15 Dec	16 Dec	17 Dec	18 Dec
				Noise Monitoring		
19 Dec	20 Dec	21 Dec	22 Dec	23 Dec	24 Dec	25 Dec
				Noise Monitoring		
26 Dec	27 Dec	28 Dec	29 Dec	30 Dec	31 Dec	01 Jan
		Noise Monitoring				

Remark:

Noise Monitoring to be conducted at the designated monitoring stations when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations; and
 Water Quality Monitoring to be scheduled upon the commencement of marine construction work site and conducted during marine construction works.

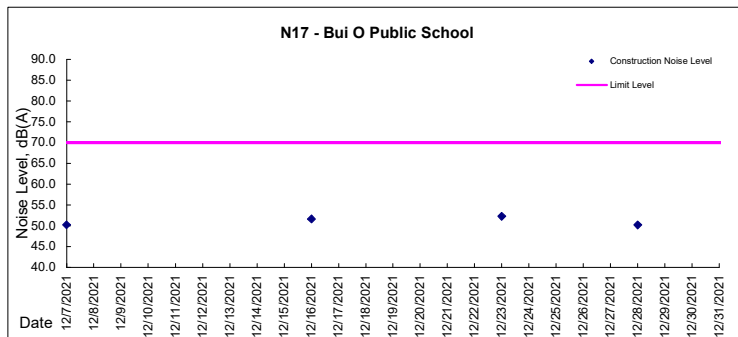
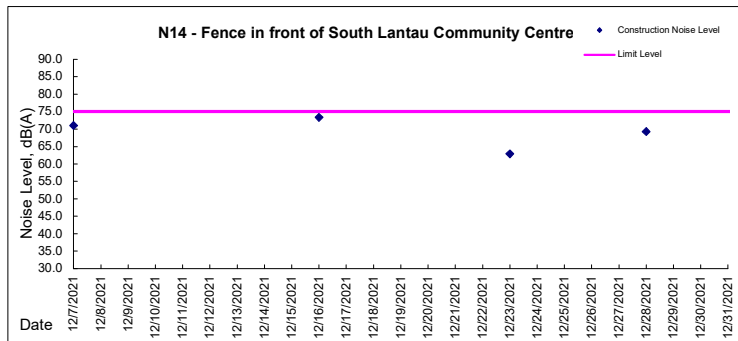
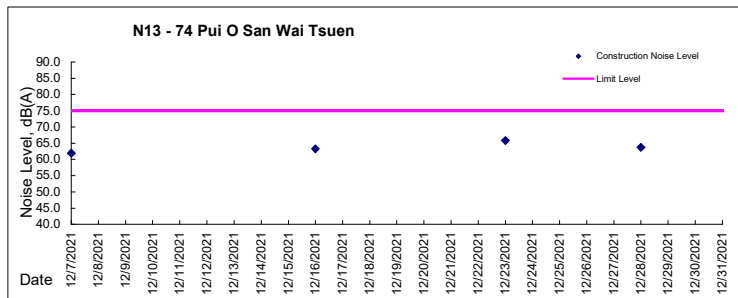
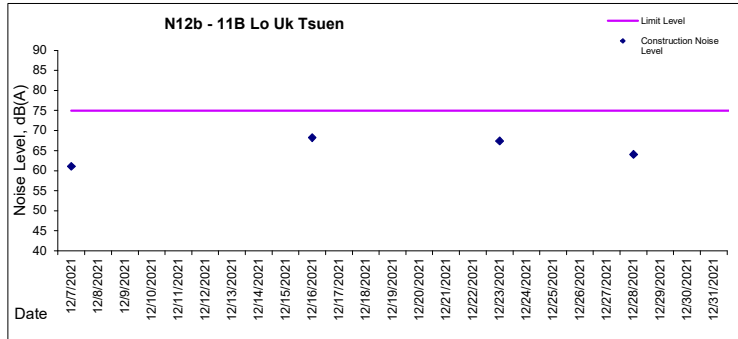
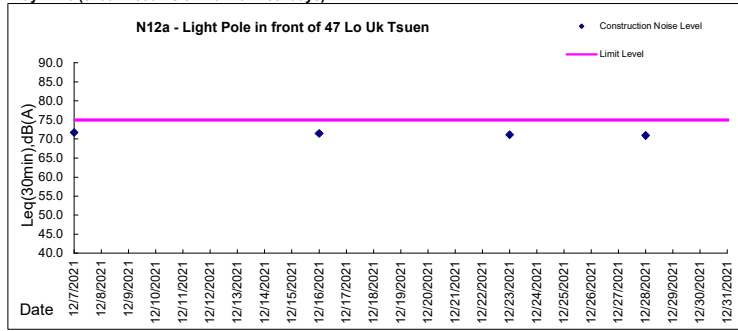


Appendix 4.3

Noise Monitoring Results and Graphical Presentations

Graphic Presentation of Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)





Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: N12a - Light Pole in front of 47 Lo Uk Tsuen

Date	Weather	Time	Measurement Noise Level			Average Noise Level	Baseline Level	Construction Noise Level	Limit Level
			Leq	L10	L90	Leq	Leq	Leq	Leq
			Unit: dB(A), (5-min)			Unit: dB(A), (30-min)			
7 Dec 2021	Fine	10:45	74.1	78.4	51.4	71.7	73.3	<Baseline Level	75
		10:50	69.5	73.8	50.7				
		10:55	70.4	73.9	47.3				
		11:00	72.9	76.1	49.2				
		11:05	69.9	74.1	50.6				
		11:10	71.6	76.0	49.0				
16 Dec 2021	Sunny	10:41	69.4	73.4	49.0	71.5	73.3	<Baseline Level	75
		10:46	67.7	72.6	49.8				
		10:51	74.1	77.5	50.3				
		10:56	71.5	75.6	48.8				
		11:01	70.7	75.1	52.0				
		11:06	72.7	75.4	52.1				
23 Dec 2021	Cloudy	14:21	70.0	74.8	46.7	71.1	73.3	<Baseline Level	75
		14:26	71.3	75.7	46.2				
		14:31	68.7	73.6	46.8				
		14:36	70.8	74.4	47.9				
		14:41	71.8	75.1	49.4				
		14:46	72.9	76.4	49.0				
28 Dec 2021	Sunny	13:06	70.7	74.9	47.2	71.0	73.3	<Baseline Level	75
		13:11	70.2	74.5	50.0				
		13:16	71.6	76.3	50.8				
		13:21	70.9	74.9	49.9				
		13:26	72.2	75.3	54.3				
		13:31	69.6	74.3	49.5				



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: N12b - 11B Lo Uk Tsuen

Date	Weather	Time	Measurement Noise Level			Average Noise Level	Baseline Level	Construction Noise Level	Limit Level
			Leq	L10	L90	Leq	Leq	Leq	Leq
			Unit: dB(A), (5-min)			Unit: dB(A), (30-min)			
7 Dec 2021	Fine	11:25	63.8	65.3	57.8	61.1	76.8	<Baseline Level	75
		11:30	64.2	68.5	45.3				
		11:35	56.6	60.5	39.9				
		11:40	59.3	60.7	42.2				
		11:45	59.9	61.0	40.1				
		11:50	55.8	59.2	42.2				
16 Dec 2021	Sunny	10:01	71.1	76.6	56.9	68.2	76.8	<Baseline Level	75
		10:06	73.5	75.8	58.0				
		10:11	59.9	63.0	55.9				
		10:16	61.0	63.7	56.0				
		10:21	60.8	63.8	56.0				
		10:26	61.3	64.6	56.2				
23 Dec 2021	Cloudy	11:11	79.7	83.3	65.1	77.3	76.8	67.4	75
		11:16	80.0	82.9	70.5				
		11:21	79.2	82.1	68.5				
		11:26	72.5	76.6	58.2				
		11:31	70.0	74.9	58.7				
		11:36	72.1	75.5	65.6				
28 Dec 2021	Sunny	10:31	68.1	72.4	51.6	64.0	76.8	<Baseline Level	75
		10:36	60.8	62.8	46.2				
		10:41	65.7	71.5	48.2				
		10:46	62.6	67.1	46.4				
		10:51	57.7	60.9	44.9				
		10:56	61.3	62.5	44.7				



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: N13 - 74 Pui O San Wai Tsuen

Date	Weather	Time	Measurement Noise Level			Average Noise Level	Baseline Level	Construction Noise Level	Limit Level
			Leq	L10	L90	Leq	Leq	Leq	Leq
			Unit: dB(A), (5-min)			Unit: dB(A), (30-min)			
7 Dec 2021	Fine	14:35	60.2	64.0	48.8	61.9	73.6	<Baseline Level	75
		14:40	64.8	69.2	51.9				
		14:45	59.2	63.6	49.9				
		14:50	62.0	65.8	52.2				
		14:55	61.0	64.5	52.6				
		15:00	61.9	65.6	52.6				
16 Dec 2021	Sunny	11:21	63.3	66.4	53.0	63.2	73.6	<Baseline Level	75
		11:26	63.0	62.8	44.7				
		11:31	67.0	71.1	51.5				
		11:36	64.9	68.3	42.9				
		11:41	54.3	57.0	41.9				
		11:46	51.9	55.8	41.5				
23 Dec 2021	Cloudy	10:36	65.9	70.0	54.5	65.8	73.6	<Baseline Level	75
		10:41	67.4	70.3	54.6				
		10:46	61.4	65.3	52.2				
		10:51	62.3	67.1	53.0				
		10:56	66.1	68.8	55.8				
		11:01	68.0	67.6	63.3				
28 Dec 2021	Sunny	11:05	61.3	64.3	52.0	63.7	73.6	<Baseline Level	75
		11:10	62.7	66.4	54.9				
		11:15	61.5	65.2	54.7				
		11:20	63.0	66.1	55.8				
		11:25	66.6	67.4	57.0				
		11:30	64.7	67.6	56.8				



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: N14 - Fence in front of South Lantau Community Centre

Date	Weather	Time	Measurement Noise Level			Average Noise Level	Baseline Level	Construction Noise Level	Limit Level
			Leq	L10	L90	Leq	Leq	Leq	Leq
			Unit: dB(A), (5-min)			Unit: dB(A), (30-min)			
7 Dec 2021	Fine	13:20	68.8	67.7	53.6	71.0	62.2	70	75
		13:25	66.9	66.5	52.6				
		13:30	72.9	77.2	55.6				
		13:35	67.1	68.6	54.0				
		13:40	68.5	71.5	53.9				
		13:45	75.0	68.9	60.0				
16 Dec 2021	Sunny	14:26	73.6	74.5	71.5	73.3	62.2	73	75
		14:31	73.8	74.8	72.3				
		14:36	73.5	74.3	71.8				
		14:41	73.5	74.8	71.6				
		14:46	73.1	74.1	71.9				
		14:51	72.4	73.5	71.4				
23 Dec 2021	Cloudy	13:07	62.5	62.7	45.0	62.9	62.2	55	75
		13:12	61.7	60.6	44.7				
		13:17	60.8	61.8	46.6				
		13:22	60.0	63.5	47.7				
		13:27	60.7	63.3	49.5				
		13:32	67.1	63.0	45.9				
28 Dec 2021	Sunny	13:41	68.0	71.0	59.7	69.3	62.2	68	75
		13:46	71.2	74.5	61.0				
		13:51	72.2	75.1	62.4				
		13:56	69.4	70.8	62.3				
		14:01	65.1	68.8	56.7				
		14:06	65.2	68.5	55.7				



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: N17 - Bui O Public School

Date	Weather	Time	Measurement Noise Level			Average Noise Level	Baseline Level	Construction Noise Level	Limit Level
			Leq	L10	L90	Leq	Leq	Leq	Leq
			Unit: dB(A), (5-min)			Unit: dB(A), (30-min)			
7 Dec 2021	Fine	14:00	50.1	52.0	44.1	50.2	62.3	<Baseline Level	70
		14:05	49.4	51.7	45.0				
		14:10	49.4	52.0	42.9				
		14:15	50.8	53.9	44.4				
		14:20	50.8	53.8	43.8				
		14:25	50.6	52.4	44.3				
16 Dec 2021	Sunny	13:46	51.2	53.3	46.9	51.7	62.3	<Baseline Level	70
		13:51	51.0	52.9	47.0				
		13:56	50.8	53.6	46.9				
		14:01	51.8	53.8	48.0				
		14:06	52.4	55.2	47.4				
		14:11	52.5	54.7	48.6				
23 Dec 2021	Cloudy	9:56	50.4	53.4	44.7	52.3	62.3	<Baseline Level	70
		10:01	50.6	53.1	45.9				
		10:06	49.3	51.7	46.4				
		10:11	52.7	54.7	44.5				
		10:16	55.8	59.5	46.6				
		10:21	51.5	54.5	45.3				
28 Dec 2021	Sunny	10:11	52.4	54.7	47.6	50.2	62.3	<Baseline Level	70
		10:16	51.8	55.1	43.6				
		10:21	47.3	49.8	43.1				
		10:26	49.4	51.3	43.0				
		10:31	49.7	52.5	44.4				
		10:36	48.3	51.1	43.5				



Appendix 4.4

Monthly Summary Waste Flow Table

Drainage Services Department
Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works

Monthly Summary Waste Flow Table for 2021

Month	Actual Quantities if Inert C&D Material Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (a) (in '000m ³)	Hard Rocks and Large Broken Concrete (b) (in '000m ³)	Reused in the Contract (c) (in '000m ³)	Reused in other Projects (d) (in '000m ³)	Disposed as Public Fill (a-b-c-d) (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000kg)	Paper/card-board packaging (in '000kg)	Plastics [see Note 3] (in '000kg)	Chemical waste (in '000kg)	Others. e.g. general refuse (in '000kg)
Jan	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Feb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Apr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun	0.29	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	23.03
Sub-total	0.29	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	23.03
July	0.26	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00
Aug	0.19	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	17.95
Sept	0.05	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	28.84
Oct	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.07
Nov	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	6.24
Dec	0.04	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	7.47
Total	0.85	0.00	0.00	0.00	0.85	0.00	0.00	0.01	0.00	0.00	120.60

Notes:

- (1) The inert C&D material except slurry and bentonite are disposed at Mui Wo Temporary Public Fill Bank (MW-PFRF)
- (2) The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank (TKO137FB)
- (3) The non-inert waste is disposed at NENT or Outlying Islands Transfer Facilities
- (4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material



Appendix 6.1

Three Months Rolling Programme – January 2022 to March 2022



Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	December 2021				January 2022				February 2022				March 2022				April 2022			
						05	12	19	26	02	09	16	23	30	06	13	20	27	06	13	20		27	03	
Monthly Programme for Dec 2021						1505	19-Mar-21 A	10-Aug-26	0																
Project Contractual Dates						153	04-Sep-21 A	12-Apr-22	-61																
Access Date of Each Portion						0	01-Jan-22	01-Jan-22	-188	01-Jan-22, Access Date of Each Portion															
CD-2000	Contract Access date of Portion A, B1, C1, D1, D3,E1, E2, E3 and W1 (90 days)	0	01-Jan-22*		-188	E3 and W1 (90 days)																			
NCE						153	04-Sep-21 A	12-Apr-22	-61																
NCE for PM of 12 nos inspection pits at South Lantau Road, Lo Uk Tsuen and Chi Ma Wan Road						153	04-Sep-21 A	12-Apr-22	-61																
NCE-006f	Revision & accept Excavation Permit (XP) application and TTA for South Lantau Road (assume with waiver)	90	04-Sep-21 A	16-Jan-22	-74																				
NCE-006f10	Revision & accept Excavation Permit (XP) application and TTA for Chi Ma Wan Road (assume with waiver)	90	04-Sep-21 A	16-Jan-22	-157																				
NCE-006g	Inspection pits works at South Lantau Road (TP15 > 14 > 20 > 12 > 10 & 11)	70	17-Jan-22	12-Apr-22	-61																				
NCE-006h	Inspection pits works at Chi Ma Wan Road (TP6 > 7 > 9)	60	17-Jan-22	30-Mar-22	-129																				
Preliminary Works						445	19-Mar-21 A	04-May-23	217																
PW-1000	Preliminary works	0	19-Mar-21 A	04-May-23	190																				
Subletting of Major Subcontract Package						86	01-Nov-21 A	02-Mar-22	602	02-Mar-22, Subletting of Major Subcon															
SUB-1035	Sublet piling works	61	01-Jan-22	02-Mar-22	-83	Sublet piling works																			
SUB-1047	Sublet marine diffuser Works	35	11-Jan-22	14-Feb-22	618	Sublet marine diffuser Works																			
SUB-1115	Sublet ELS, earth works and road works	30	06-Dec-21 A	15-Jan-22	-72																				
SUB-1125	Sublet Marine works (inc. temp. marine platform)	30	01-Nov-21 A	22-Jan-22	-64																				
Submissions for the whole works						443	19-Apr-21 A	24-Nov-22	318																
SU-1010	Temporary water tapping application & installation	60	19-Apr-21 A	31-Jan-22	-53																				
SU-1020	Temporary power supply tapping & installation	60	19-Apr-21 A	31-Jan-22	-53																				
SU-1030	Prepare, submit, revision & accept Tree Survey, tree preservation , transplant and removal plan	90	05-Jul-21 A	31-Jan-22	9																				
SU-1040	Prepare, submit, revision & accept Excavation Permit (XP) application and TTA for South Lantau Road (assume with waiver)	210	01-May-21 A	16-Jan-22	-82																				
SU-1042	Prepare, submit, revision & accept Excavation Permit (XP) application and TTA for CMWR Lo Uk Section (assume with waiver)	210	01-May-21 A	16-Jan-22	-83																				
SU-1043	Prepare, submit, revision & accept Excavation Permit (XP) application and TTA for CMWR Lo Wai Section (assume with waiver)	240	02-Nov-21 A	22-May-22	577																				
SU-1045	Prepare, submit, revision & accept Excavation Permit (XP) application and TTA for CMWR SSWTW Section (assume with waiver)	240	02-Nov-21 A	22-May-22	92																				
SU-1050	Application for discharge license for site drain (EPD)	90	29-Apr-21 A	31-Jan-22	123																				
Design						304	04-Oct-21 A	24-Nov-22	242																
Civil						304	04-Oct-21 A	24-Nov-22	242																
General						76	08-Oct-21 A	18-Feb-22	43	18-Feb-22, General															
CSD						49	01-Jan-22	18-Feb-22	52	01-Jan-22, 18-Feb-22, CSD															
Design changing emergency discharge pipe constructed by HDD method						49	01-Jan-22	18-Feb-22	52	01-Jan-22, 18-Feb-22, Design changing emergency discharge p															
SU-2190	Prepare and submit of design changing emergency discharge pipe constructed by HDD method	28	01-Jan-22	28-Jan-22	52	ucted by HDD method																			
SU-2210	Approve design changing emergency discharge pipe constructed by HDD method	21	29-Jan-22	18-Feb-22	52	emergency discharge pipe constructed by HDD method																			
Conforming						38	08-Oct-21 A	10-Jan-22	-41	10-Jan-22, Conforming															
ELS temporary works designs for village and road sewage						21	08-Oct-21 A	10-Jan-22	-77	10-Jan-22, ELS temporary works designs for village and road sewage															
SU-2220	Approval of ELS temporary works designs for village and road sewage	21	08-Oct-21 A	10-Jan-22	-77																				
Marine Temp. platform for HDD1						21	16-Nov-21 A	10-Jan-22	-42	10-Jan-22, Marine Temp. platform for HDD1															
SU-2230	Approve Marine Temp. support frame for casing	21	16-Nov-21 A	10-Jan-22	-42																				
POSPS						239	04-Oct-21 A	01-Aug-22	43																
Civil						163	04-Oct-21 A	30-Jun-22	75																
ELS works - Pump Station						145	01-Dec-21 A	21-Feb-22	123	21-Feb-22, ELS works - Pump Station															
SU-2080	Prepare and submit ELS works - Pump Station	56	01-Dec-21 A	31-Jan-22	123																				
SU-2250	Approve ELS works - Pump Station	21	01-Feb-22	21-Feb-22	123					Approve ELS works - Pump Station															
Foundation Checking and revised foundation Plan - Pump Station						51	04-Oct-21 A	05-Mar-22	-109	05-Mar-22, Foundation Checking ar															
SU-2085	Foundation design review by PM after Management meenting on 1 Dec 2021	35	01-Dec-21 A	13-Jan-22	-82																				
SU-2090	Prepare and submit Foundation Checking and revised foundation Plan - Pump Station	35	04-Oct-21 A	12-Feb-22	-109																				
SU-2260	Approve Foundation Checking and revised foundation Plan - Pump Station	21	13-Feb-22	05-Mar-22	-109	prove Foundation Checking and revised foundation Plan - Pump Station																			
Structure - Pump Station						56	04-Oct-21 A	30-Jun-22	75																
SU-2100	Prepare and submit Structure - Pump Station	56	04-Oct-21 A	30-Jun-22	75																				
E&M						239	06-Nov-21 A	01-Aug-22	13																
Approval in principal						21	06-Nov-21 A	31-Jan-22	114	31-Jan-22, Approval in principal															
AIP Submission						21	06-Nov-21 A	31-Jan-22	-109	31-Jan-22, AIP Submission															

	Summary		Critical Remaining Work		Finish Constraint
	Actual LOE		Milestone		No Predecessors
	Remaining LOE		Crit Milestone		No Successors
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	Remaining Work		Start Constraint		

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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	December 2021				January 2022				February 2022				March 2022				Planned 2022
						05	12	19	26	02	09	16	23	30	06	13	20	27	06	13	20	
Pui O Pump Station	EM-3150	AIP for E&M works for Pui O Pump Station approval	21	06-Nov-21 A	31-Jan-22	-109																
	Treatment Process (Mechanical, Deodorization)		21	06-Nov-21 A	31-Jan-22	114									31-Jan-22, Treatment Process (Mechanical, Deodorization)							
	EM-3200	AIP for Treatment Process (Mechanical, Deodorization) approval	21	06-Nov-21 A	31-Jan-22	114																
	Electrical, Control & Monitoring System		21	06-Nov-21 A	31-Jan-22	98									31-Jan-22, Electrical, Control & Monitoring System							
	EM-3220	AIP for Electrical, Control & Monitoring System approval	21	06-Nov-21 A	31-Jan-22	98																
	Building Service (MV, EL, FS, PD & ELV)		21	06-Nov-21 A	31-Jan-22	98									31-Jan-22, Building Service (MV, EL, FS, PD & ELV)							
	EM-3240	AIP for Building Service (MV, EL, FS, PD & ELV) approval	21	06-Nov-21 A	31-Jan-22	98																
	DDA		182	01-Feb-22	01-Aug-22	13									01-Feb-22							
	DDA Submission		182	01-Feb-22	01-Aug-22	13									01-Feb-22							
	EM-1020	Detailed Design Approval (DDA) for E&M works for Pui O Pump Station submission	182	01-Feb-22	01-Aug-22	13	DDA) for E&M works for Pui O Pump Station submission															
	Treatment Process (Mechanical, Deodorization and Chemical)		81	01-Feb-22	22-Apr-22	114									01-Feb-22							
	EM-1021	DDA for Treatment Process (Mechanical, Deodorization and Chemical) Submission	81	01-Feb-22	22-Apr-22	114	s (Mechanical, Deodorization and Chemical) Submission															
	Electrical Power Supply System		97	01-Feb-22	08-May-22	98									01-Feb-22							
	EM-1022	DDA for Electrical Power Supply System Submission	97	01-Feb-22	08-May-22	98	DDA for Electrical Power Supply System Submission															
	UPS System		97	01-Feb-22	08-May-22	98									01-Feb-22							
	EM-1023	DDA for UPS System Submission	97	01-Feb-22	08-May-22	98					DDA for UPS System Submission											
	Earthing and Lightning		97	01-Feb-22	08-May-22	98									01-Feb-22							
	EM-1024	DDA for Earthing and Lightning Submission	97	01-Feb-22	08-May-22	98					DDA for Earthing and Lightning Submission											
	System Control Philosophy		97	01-Feb-22	08-May-22	98									01-Feb-22							
	EM-1025	DDA for System Control Philosophy Submission	97	01-Feb-22	08-May-22	98	DDA for System Control Philosophy Submission															
PLC & SCADA System		97	01-Feb-22	08-May-22	98									01-Feb-22								
EM-1026	DDA for PLC & SCADA System Submission	97	01-Feb-22	08-May-22	98	DDA for PLC & SCADA System Submission																
Building Service (MV, EL, FS, PD, ELV)		97	01-Feb-22	08-May-22	98									01-Feb-22								
EM-1027	DDA for Building Service (MV, EL, FS, PD, ELV) Submission	97	01-Feb-22	08-May-22	98	DA for Building Service (MV, EL, FS, PD, ELV) Submission																
SSWTW			359	06-Nov-21 A	24-Nov-22	299																
SU-2170	Obtain revised SSWTW GA, piling schedule, loading plan from PM	0	01-Jan-22		87	loading plan from PM																
Civil			98	22-Feb-22	30-May-22	35									22-Feb-22							
ELS works - Treatment Plant			98	22-Feb-22	30-May-22	-17									22-Feb-22							
SU-2135	Prepare and submit ELS works - Treatment Plant	98	22-Feb-22	30-May-22	-17					Prepare and submit ELS works - Treatment Plant												
Foundation Checking and Revised foundation Plan - Treatment Plant			98	22-Feb-22	30-May-22	35									22-Feb-22							
SU-2140	Prepare and submit Foundation Checking and Revised foundation Plan - Treatment Plant	98	22-Feb-22	30-May-22	35	e and submit Foundation Checking and Revised foundation Plan - Treatment Plant																
E&M			359	06-Nov-21 A	24-Nov-22	299																
AIP			21	06-Nov-21 A	31-Jan-22	361									31-Jan-22, AIP							
AIP Submission			21	06-Nov-21 A	31-Jan-22	190									31-Jan-22, AIP Submission							
EM-3330	AIP for E&M works for Treatment Plant approval	21	06-Nov-21 A	31-Jan-22	190																	
Deodorisation (Mechanical)			21	06-Nov-21 A	31-Jan-22	361									31-Jan-22, Deodorisation (Mechanical)							
EM-3370	AIP for Deodorisation (Mechanical) approval	21	06-Nov-21 A	31-Jan-22	361																	
Electrical Power Supply			21	06-Nov-21 A	31-Jan-22	187									31-Jan-22, Electrical Power Supply							
EM-3380	AIP for Electrical Power Supply approval	21	06-Nov-21 A	31-Jan-22	187																	
Control & Monitoring System			21	06-Nov-21 A	31-Jan-22	299									31-Jan-22, Control & Monitoring System							
EM-3390	AIP for Control & Monitoring System approval	21	06-Nov-21 A	31-Jan-22	299																	
Building Service (MV, EL, FS, PD & ELV)			21	06-Nov-21 A	31-Jan-22	299									31-Jan-22, Building Service (MV, EL, FS, PD & ELV)							
EM-3400	AIP for Building Service (MV, EL, FS, PD & ELV) approval	21	06-Nov-21 A	31-Jan-22	299																	
DDA			328	01-Jan-22	24-Nov-22	299	01-Jan-22															
DDA Submission			297	01-Feb-22	24-Nov-22	190					01-Feb-22											
EM-3000	DDA for E&M works for Treatment Plant submission	297	01-Feb-22	24-Nov-22	190	DDA for E&M works for Treatment Plant submission																
Preliminary Treatment (Mechanical)			158	01-Jan-22	07-Jun-22	332	01-Jan-22															
EM-3010	DDA for Preliminary Treatment (Mechanical) submission	158	01-Jan-22	07-Jun-22	332	mechanical) submission																
Secondary Treatment & Membrane Filtration (Mechanical)			205	01-Jan-22	24-Jul-22	422	01-Jan-22															
EM-3020	DDA for Secondary Treatment & Membrane Filtration (Mechanical) submission	205	01-Jan-22	24-Jul-22	422	mechanical) submission																
Sludge Treatment (Mechanical)			263	01-Jan-22	20-Sep-22	364	01-Jan-22															
EM-3030	DDA for Sludge Treatment (Mechanical) submission	263	01-Jan-22	20-Sep-22	364	mechanical) submission																

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	Actual LOE		Milestone		No Predecessors
	Remaining LOE		Crit Milestone		No Successors
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	December 2021				January 2022				February 2022				March 2022				April 2022					
						05	12	19	26	02	09	16	23	30	06	13	20	27	06	13	20	27	03				
	Deodorisation (Mechanical)	235	01-Feb-22	23-Sep-22	361					01-Feb-22																	
	EM-3040	DDA for Deodorisation (Mechanical) submission	235	01-Feb-22	23-Sep-22	361					DDA for Deodorisation (Mechanical) submission																
	Electrical Power Supply System		158	01-Feb-22	08-Jul-22	187					01-Feb-22																
	EM-3050	DDA for Electrical Power Supply System submission	158	01-Feb-22	08-Jul-22	187					DDA for Electrical Power Supply System submission																
	UPS System		297	01-Feb-22	24-Nov-22	299					01-Feb-22																
	EM-3060	DDA for UPS System submission	297	01-Feb-22	24-Nov-22	299					DDA for UPS System submission																
	Earthing and Lightning System		158	01-Feb-22	08-Jul-22	438					01-Feb-22																
	EM-3070	DDA for Earthing and Lightning System submission	158	01-Feb-22	08-Jul-22	438					DDA for Earthing and Lightning System submission																
	System Control Philosophy		263	01-Feb-22	21-Oct-22	333					01-Feb-22																
	EM-3080	DDA for System Control Philosophy submission	263	01-Feb-22	21-Oct-22	333					DDA for System Control Philosophy submission																
	PLC & SCADA System		263	01-Feb-22	21-Oct-22	333					01-Feb-22																
	EM-3090	DDA for PLC & SCADA System submission	263	01-Feb-22	21-Oct-22	333					DDA for PLC & SCADA System submission																
	Building Service (MV)		297	01-Feb-22	24-Nov-22	299					01-Feb-22																
	EM-3100	DDA for Building Service (MV) submission	297	01-Feb-22	24-Nov-22	299					DDA for Building Service (MV) submission																
	Building Service (EL)		263	01-Feb-22	21-Oct-22	333					01-Feb-22																
	EM-3110	DDA for Building Service (EL) submission	263	01-Feb-22	21-Oct-22	333					DDA for Building Service (EL) submission																
	Building Service (FS)		235	01-Feb-22	23-Sep-22	361					01-Feb-22																
	EM-3120	DDA for Building Service (FS) submission	235	01-Feb-22	23-Sep-22	361					DDA for Building Service (FS) submission																
	Building Service (PD)		297	01-Feb-22	24-Nov-22	299					01-Feb-22																
	EM-3130	DDA for Building Service (PD) submission	297	01-Feb-22	24-Nov-22	299					DDA for Building Service (PD) submission																
ELV System (CCTV, Access Control and Burglar)		297	01-Feb-22	24-Nov-22	299					01-Feb-22																	
EM-3140	DDA for ELV System (CCTV, Access Control and Burglar) submission	297	01-Feb-22	24-Nov-22	299					V System (CCTV, Access Control and Burglar) submission																	
Civil Requirement		0	01-Jan-22	01-Jan-22	87					01-Jan-22																	
EM-2030	Civil Requirement for SSWTW foundation design (loading distribution, opening for plant mobilization) provided by ATAL	0	01-Jan-22		87					n) provided by ATAL																	
Site Safety and Environmental Management		330	07-Dec-21 A	26-Nov-22	423																						
SU-2010	Prepare & Submit Sediment sampling and Test Plan SSTP to EPD-(diffuser works)	120	01-Jan-22	30-Apr-22	423	EPD-(diffuser works)																					
SU-2030	Prepare, submit and approval of EP by EPD-(diffuser works)	60	30-Jun-22	28-Aug-22	423																						
SU-2050	Prepare, submit and approval of MDN by Marine Dept-(diffuser works)	90	29-Aug-22	26-Nov-22	423																						
SU-2060	Prepare, submit and approval of MDN by Marine Dept-(HDD's steel frame erection works)	60	07-Dec-21 A	10-Jan-22	-17																						
Construction works		1480	30-Jun-21 A	10-Aug-26	0																						
CLP and UU coordination- by others		1090	02-Aug-21 A	10-Sep-25	29																						
CLP-0000	CLP works	1090	02-Aug-21 A	10-Sep-25	29																						
CLP-1010	Obtain Temp. Electricity and Temp. water by others	30	25-Sep-21 A	04-Feb-22	-44																						
CLP-2000	Permanent Electricity coordination with CLP	180	05-Aug-21 A	15-Jun-22	331																						
CLP-2010	CLP apply XP for new lay cable for the POSPS and SSWTP	182	16-Jun-22	20-Jan-23	331																						
CLP-3000	Early Liaise with CLP before the procurement of E&M equipment	180	03-Jan-22	11-Aug-22	530	ement of E&M equipment																					
CLP-4000	Liaise with CLP to inspection the Transformer room after Related E&M works delivered on site-POSPS	60	05-Aug-21 A	21-Mar-22	949																						
CLP-4010	Liaise with CLP to inspection the Transformer room after Related E&M works delivered on site-SSWTP	60	05-Aug-21 A	21-Mar-22	957																						
Section 1 Sewerage installation (Portion A, B1 & B2 / Area A, B1 & B2)		677	30-Jun-21 A	11-Oct-23	-129																						
S1-1000	Section 1 Sewerage installation (Portion A, B1 & B2 / Area A, B1 & B2)	533	30-Jun-21 A	11-Oct-23	-129																						
Trunk Sewers and Rising Mains Outside village and to POSPS (Area A)		680	30-Jun-21 A	11-Oct-23	-129																						
A-1000	TTA application for Area A (TTA with 24hrs permit)	60	30-Jun-21 A	15-Jan-22	-69																						
A-1040	Construct Sewers, Rising mains at Chi Ma Wan Road : 8 no TTA, 53~58 working days per TTA, total 455WD	455	31-Mar-22	11-Oct-23	-129	Construct Sewers, Rising mains at Chi Ma Wan Road : 8 no TTA, 53~58 working days per TTA, total 455WD																					
The village Sewerage in Pui O Lo Uk Tsuen		360	18-Nov-21 A	02-Mar-23	52																						
Portion B1		352	18-Nov-21 A	22-Feb-23	28																						
B1-1040	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.468m, 48mh, 2wf)	352	18-Nov-21 A	22-Feb-23	28																						
Portion B2		346	03-Jan-22	02-Mar-23	6					03-Jan-22																	
B2-1020	Trial pits, mobilization and water barrier/ fencing/ all necessary signage	17	03-Jan-22	21-Jan-22	6	g/ all necessary signage																					
B2-1040	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.300m, 30mh, 1wf)	329	22-Jan-22	02-Mar-23	6	ackfill and testing (approx.300m, 30mh, 1wf)																					
Portion B2 / Area B22 (Chi Ma Wan Beach)		242	07-Dec-21 A	27-Oct-22	154																						
B22-1005	Obtain LCSD/RC consent	16	03-Jan-22	20-Jan-22	296	Obtain LCSD/RC consent																					
B22-1010	Trial pit before long trench (3 manholes x 12 days)	36	21-Jan-22	07-Mar-22	298	l pit before long trench (3 manholes x 12 days)																					

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	Actual LOE		Milestone		No Predecessors
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						05	12	19	26	02	09	16	23	30	06	13	20	27	06	13	20		27	03	
B22-1020	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.100m, 4mh, 1wf)	60	22-Feb-22	07-May-22	298	construction of manhole together with backfill and testing (approx.100m, 4mh, 1wf)																			
	B22-1040	Obtain PMI for additional GI on Pui O beach road	16	07-Dec-21 A	15-Jan-22	35																			
	B22-1050	Mobilization and additional GI (2 nos)	21	17-Jan-22	12-Feb-22	35	Mobilization and additional GI (2 nos)																		
	B22-1060	GI review, design confirmation, subletting and plants delivery	210	14-Feb-22	27-Oct-22	35	GI review, design confirmation, subletting and plants delivery																		
Section 2 Pui O Sewage Pumping Station and nearby Sewage works		554	05-Jul-21 A	29-Aug-23	-94																				
S2-1000	Pui O sewage Pumping Station and nearby Sewage works (Sectional Completion date 2)	554	05-Jul-21 A	29-Aug-23	-94																				
Construction of Pui O Sewage Pumping Station (Area D, section 2)		265	25-Dec-21 A	22-Nov-22	23	25-Dec-21 A																			
Stage 1		265	25-Dec-21 A	22-Nov-22	23	25-Dec-21 A																			
Pump Station		229	25-Dec-21 A	11-Oct-22	-89	25-Dec-21 A																			
SPS-1020	Tree pruning, digging Recipient site preparation and transplanting works for T113 & T114	42	03-Jan-22	23-Feb-22	-80	g works for T113 & T114																			
SPS-1023	Erection of water barrier and site formation earth works	30	17-Jan-22	23-Feb-22	-60	water barrier and site formation earth works																			
SPS-1035	Obtain Gi information to verify foundation design (Log and Testing in Lab)	30	25-Dec-21 A	31-Jan-22	-81	Testing in Lab)																			
SPS-1037	Predrilling works (7 nos, 1wf, 5 days per drill)	35	07-Mar-22	20-Apr-22	-89	Predrilling works (7 nos, 1wf, 5 days per drill)																			
SPS-1040	Piling works (26 nos socket-H piles, 4 days/pile, 1 wf)	104	30-Mar-22	05-Aug-22	-89	Piling works (26 nos socket-H piles, 4 days/pile, 1 wf)																			
SPS-1050	Piling testing	21	06-Aug-22	30-Aug-22	-56																				
SPS-1060	Sheetpiling (approx.1110 m2, sheetpile installation 50 m2/day)	23	06-Aug-22	01-Sep-22	-58																				
SPS-1065	OW and DW installation and pumping test	54	06-Aug-22	11-Oct-22	-89																				
Sewers and Rising Mains		223	24-Feb-22	22-Nov-22	23	24-Feb-22																			
SPS-1070	Excavation, sewer laying, construction of manhole and outfall structure, backfill and testing (approx.147m, 11mh, 1wf)	223	24-Feb-22	22-Nov-22	23	tion of manhole and outfall structure, backfill and testing (approx.147m, 11mh, 1wf)																			
SPS-1080	Excavation, construction of rising main and optical fibre together with backfill and testing (approx.140m, 1wf)	125	24-Feb-22	27-Jul-22	121	of rising main and optical fibre together with backfill and testing (approx.140m, 1wf)																			
Section 3 SSWSTW, HDD and Submarine outfall & POSPS		1403	01-Sep-21 A	10-Aug-26	0																				
S3-1000	SPS, SSWSTW and HDD works	1333	23-Dec-21 A	10-Aug-26	-108	d HDD works																			
Remaining Pui O Sewage Pumping Station (Area D, section 3)		322	04-Mar-22	31-Mar-23	996	04-Mar-22																			
SPS-4000	E&M, BS and ABWF procurement	182	23-Aug-22	31-Mar-23	400																				
Statutory Submission & Approval		140	04-Mar-22	22-Aug-22	1178	04-Mar-22																			
SPS-7000	Power Meter Application	140	04-Mar-22	22-Aug-22	1178	Power Meter Application																			
SSWSTW		328	18-Nov-21 A	27-Jan-23	105																				
Stage 1 Preparation works for HDD and SSWSTW		80	18-Nov-21 A	26-Mar-22	-43	26-Mar-22																			
STW-1010	Mobilization of labours and plants (Existing Open Storage)	6	03-Jan-22	08-Jan-22	-108	s (Existing Open Storage)																			
STW-1014	Site clearance and existing hoarding dismantle (Existing Open Storage)	12	10-Jan-22	22-Jan-22	-78	ismantle (Existing Open Storage)																			
STW-1016	Tree transplant for T742, T751 & T758	63	10-Jan-22	26-Mar-22	-108	transplant for T742, T751 & T758																			
STW-1018	Water barrier and temp. drain (HDD Area)	30	10-Jan-22	16-Feb-22	-30	mrier and temp. drain (HDD Area)																			
STW-1060	Remobilization GI works (4 nos, 2wf, 5 days per drill) (inside the areas occupied by the HDD works)	20	18-Nov-21 A	13-Jan-22	-14																				
STW-9930	Obtain Gi information to verify foundation design (Log and Testing in Lab)	30	14-Jan-22	21-Feb-22	-14	ation design (Log and Testing in Lab)																			
Stage 2 Works outside HDD area		281	17-Feb-22	27-Jan-23	105	17-Feb-22																			
STW-1020	Site Clearance, erection of hoarding and tree felling stage 2 (3528m2 on woodland & 239nr tree, 100m2/day and 4 nr/day)	98	17-Feb-22	17-Jun-22	-12	elling stage 2 (3528m2 on woodland & 239nr tree, 100m2/day and 4 nr/day)																			
STW-1030	Tree pruning, digging Recipient site preparation and transplanting woks for T392	21	17-Feb-22	12-Mar-22	65	e pruning, digging Recipient site preparation and transplanting woks for T392																			
STW-2010	Sheetpile (Area not affected by HDD) (approx.3600m2, 50m2/day)	72	11-Aug-22	05-Nov-22	171																				
STW-2015	Soil nail and slope modification works for feature 14NW-A/C97 & 14NW-A/C98 (200 nos & 171 nos)	124	11-Aug-22	07-Jan-23	10																				
STW-2020	Predrill works (Area not affected by HDD, approx. 11nos, 4day/nos, 1wf)	44	02-Dec-22	27-Jan-23	-108																				
Submarine Outfall		235	01-Sep-21 A	20-Jul-22	-34																				
HDD2-1010	Liaise with existing Shek Pik Supply Tunnel	60	01-Sep-21 A	31-Jan-22	-22																				
HDD		161	18-Nov-21 A	20-Jul-22	-34																				
Preparation		99	23-Dec-21 A	06-May-22	-74	23-Dec-21 A																			
On Shore [Land]		81	24-Jan-22	06-May-22	-108	24-Jan-22																			
HDD-1240	Furniture and paving removal	6	24-Jan-22	29-Jan-22	-78	Furniture and paving removal																			
HDD-1330	Formation earth works from +50.4mPD to +48mPD (~6000m3), (23 trips x 6m3 24Ttrucks = 134m3 per day x 45 working days)	45	31-Jan-22	26-Mar-22	-78	x 6m3 24Ttrucks = 134m3 per day x 45 working days)																			
HDD-1340	Erection of temporary platform and footing construction for HDD	30	28-Mar-22	06-May-22	-108	Erection of temporary platform and footing construction for HDD																			
Off Shore [Sea]		80	23-Dec-21 A	09-Apr-22	-55	23-Dec-21 A																			
HDD-1000	Initial Site survey on sea (after SQE plan, SU-2070)	30	23-Dec-21 A	10-Jan-22	-24	an, SU-2070)																			
HDD-1010	Procurement, Prefabrication and delivery of temporary support frame for casing	30	24-Jan-22	02-Mar-22	-53	nd delivery of temporary support frame for casing																			
HDD-1020	Mobilization and install silt curtain for temporary marine platform	12	19-Feb-22	04-Mar-22	-55	Mobilization and install silt curtain for temporary marine platform																			

	Summary		Critical Remaining Work		Finish Constraint
	Actual LOE		Milestone		No Predecessors
	Remaining LOE		Crit Milestone		No Successors
	Actual Work		Actual Milestone		
	Remaining Work		Start Constraint		

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3 Months Rolling Programme --- Jan 2022 to Mar 2022
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Contract No. DC/2020/02
Construction of San Shek Wan Sewage Treatment Works,
Associated Submarine Outfall and Pui O Sewerage Works



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	December 2021				January 2022				February 2022				March 2022				April 2022					
						05	12	19	26	02	09	16	23	30	06	13	20	27	06	13	20	27	03				
HDD-1030	HDD-1030	Construction of temporary support frame (after MDN)	30	05-Mar-22	09-Apr-22	-55					Construction of temporary support frame (after MDN)																
	Procurement		161	06-Dec-21 A	20-Jul-22	-34																					
	HDD-1360	HDD plant design, fabrication and modification	40	06-Dec-21 A	14-Jan-22	-34																					
	HDD-1370	HDD material procurement such as casing and betonite, etc	28	06-Dec-21 A	07-Jan-22	-13																					
	HDD-1380	PE pipe manufacturing and delivery to HK	150	15-Jan-22	20-Jul-22	-34																					
	Delivery to HK		58	18-Nov-21 A	31-Jan-22	-19					31-Jan-22, Delivery to HK																
	HDD-1390	Submission to the Ministry of Commerce for HDD equipment	58	18-Nov-21 A	14-Jan-22	-19																					
	HDD-1400	Customs clearance and plant delivery to HK, such as HDD rig, mud tank, drilling fluid processing system, etc	11	15-Jan-22	27-Jan-22	-19																					
	HDD-1410	Customs clearance and plant delivery to HK, such as casing, driller, drill Pipe, reamer, etc	11	19-Jan-22	31-Jan-22	-19																					
	Construction		51	15-Feb-22	19-Apr-22	-55					15-Feb-22																
	1st tunnel		51	15-Feb-22	19-Apr-22	-55					15-Feb-22																
	Sea side (HDD Rig 2)		51	15-Feb-22	19-Apr-22	-55					15-Feb-22																
	HDD-1040	Working barge maintainance & arrival in place	25	15-Feb-22*	15-Mar-22	-34					Working barge maintainance & arrival in place																
	HDD-1045	Barge HDD preparation work	5	11-Apr-22	19-Apr-22	-55					Barge HDD preparation work																
	Remaining Trunk Sewers, Rising Mains & Emergency Discharge Pipe			1016	02-Nov-21 A	07-May-25	263																				
R-1000	Remaining Truck Sewers, Rising Mains & Emergency Discharge Pipe	990	03-Jan-22	07-May-25	263					Emergency Discharge Pipe																	
Portion C1 / SSWTW Section			240	02-Nov-21 A	21-May-22	571																					
C1-1000	TTA application for Portion C1/ SSWTW Section West (Plan ID 1303703) (TTA with 24hrs permit)	240	02-Nov-21 A	21-May-22	571																						
Portion C1 / Lo Wai Tsuen Section			240	02-Nov-21 A	21-May-22	467																					
C3-1000	TTA application for Portion C1/ Lo Wai Tsuen Section (Plan ID 1303702) (TTA with 24hrs permit)	240	02-Nov-21 A	21-May-22	467																						
Portion C1 / Remain Section			240	03-Jan-22	24-Oct-22	457					03-Jan-22																
C2-1000	TTA application for Portion C1/ SSWTW Section East (Plan ID 1303703) (TTA with 24hrs permit)	240	03-Jan-22	24-Oct-22	457					TTA with 24hrs permit)																	

	Summary		Critical Remaining Work		Finish Constraint
	Actual LOE		Milestone		No Predecessors
	Remaining LOE		Crit Milestone		No Successors
	Actual Work		Actual Milestone		
	Remaining Work		Start Constraint		

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