



**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 (March 2022)

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

**MARCH 2022
REVISION 3**

CLIENTS:

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DATE:

14 April 2022

Our ref: 7076811/L28511/AW/KL/TK/rw

14 April 2022

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By Email and Post
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Attention: Mr Silas CHAN

Dear Sir

Contract No. SD 7/2020
Independent Environmental Checker ("IEC") for Environmental Monitoring Work for
South Lantau Sewerage Works
Verification of Monthly EM&A Report (March 2022)

With reference to the Monthly EM&A Report (March 2022) Revision 3 dated 14 April 2022 certified by the ET Leader, please note that we have no adverse comments on the captioned. We herewith verify the captioned in accordance with Condition 3.4 of the Environmental Permit No. EP-538/2017.

Should you have questions please do not hesitate to contact the undersigned at tel. 3995-8140 or by email to kitty.lee@smec.com.

Yours faithfully



Kitty LEE
Independent Environmental Checker

cc	Binnies	-	Mr Clarence CHAK	by email
	Lam	-	Ms Melody CHENG / Mr Raymond DAI	by email
	KLCW-JV	-	Mr Charles TSE	by email



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EXECUTIVE SUMMARY

- i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – **March 2022** 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 March 2022 to 31 March 2022**. 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:
 - **Tree pruning, removal, digging Recipient site preparation and transplanting works at Pui O Sewage Pumping Station (POSPS)**
 - **Maintenance works for tree in holding nursery and Site**
 - **Excavation and site formation works at San Shek Wan Sewage Treatment Works (SSWSTW)**
 - **Excavation, sewer laying, construction of manhole at Pui O Lo Uk Tsuen**
 - **Site formation works for POSPS**
 - **Pre-drilling works at Pui O beach road**

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.**

Ecological Impact Monitoring

- vi. **Transplanting of the trees of *Aquilaris sinensis* was completed on 28 February 2022. Maintenance works for trees in holding nursery have commenced.**
- vii. **Preservation of retain tree of *Aquilaris sinensis* on Project Site.**

Complaint log



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

Notifications of Any Summons and Successful Prosecutions

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

Reporting Changes

- x. Deployment of silt curtain will be subject to actual commencement of marine works.

Future Key Issues

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

Key Construction Works	Recommended Mitigation Measures
<ul style="list-style-type: none">Maintenance and establishment works for transplanted trees in holding nursery.Preservation of existing trees on Project SiteVillage sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk TsuenTrunk Sewers and Rising Mains preparation works outside village and to POSPSSite formation for POSPS and horizontal directional drilling (HDD) works setup at SSWSTW on shoreExcavation and Lateral Support (ELS) works at SSWSTW and POSPS.Commencement of marine works	<ul style="list-style-type: none">Provide caring measures for the health, form and structural conditions for transplant trees including <i>Aquilaris sinensis</i> in holding nursery;Fully implement tree preservation works on site and holding nursery to ensure compliance of relevant legislation and guidelines stated in EM&A Manual.Implementation of proper noise pollution control including use of QPME;Dust control during dust generating works;Adopt surface drainage and sediment control facilities for sewage installation in village and public roads;Vehicle wheel-washing and body washing facilities should be provided at the site entrance;Regular water spraying on exposed area; andProper waste handling, recycling and storage.



Key Construction Works	Recommended Mitigation Measures
	<ul style="list-style-type: none">Silt curtains should be installed to surround the marine dredging area and HDD pilot hole exist area



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:
- Tree pruning, removal, digging Recipient site preparation and transplanting works at Pui O Sewage Pumping Station (POSPS)
 - Protection and maintenance works for trees in holding nursery and Project Site
 - Excavation and site formation works at SSWSTW
 - Excavation, sewer laying, construction of manhole at Pui O Lo Uk Tsuen
 - Site formation works for POSPS
 - Pre-drilling works at Pui O beach road

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.

3.1.2 Ecological mitigation measures – Preservation and protection of trees of *Aquilaris sinensis*. Advices are the following:

- a) Protection and preservation of retain tree *Aquilaris sinensis* (tree no. 370) on Project Site;
- b) Intensive care for transplanted tree *Aquilaris sinensis* (tree no. 392) in holding nursery.

3.1.3 Landscape & Visual mitigation measures – Transplantation of 6 trees no. T113, T114, T742, T751, T758 and T392 have completed on 1st March 2022. Advices are the following:

- a) Strengthened tree protection works, such as support and guying;
- b) Planning for transplant the trees back to permanent location, considering the expected height & breadth increment of the trees.
- c) Planning for compensatory tree planting arrangement.

3.1.4 Retain trees in the Project Site should be protected and preserved in accordance with CEDD G.S. Section 3 and DEVB TC(W) No. 7/2015. In particular, set up of Tree Protection Zone and provision of proper tree label.

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) (electronic copy)	25 Mar 2022^
Condition 2.11	Submission of Preservation and/or Transplantation Plan for Plant Species of Conservation Importance (Rev. 4)	25 June 2021^
Condition 2.12	Submission of Compensatory Woodland Planting Plan (Rev. 5)	2 July 2021^
Condition 2.13	Silt Curtain Deployment Plan (Rev. 6)	31 January 2022^
Condition 2.14	Landscape Mitigation Plan	To be confirmed
Condition 2.15	Construction Noise Mitigation Plan (Rev. 13)	13 February 2022^

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 inspections were conducted on 01, 08, 15, 21 and 29 March 2022. IEC attended the SSEMC meeting held on 21 March 2022. Holding nursery visit for transplanted trees on 31 March 2022.
- 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
1 Mar 2022	Site conditions are generally in order	-
8 Mar 2022	Site conditions are generally in order	-
15 Mar 2022	Reminder for Implement dust control measures for exposed earth area.	21 Mar 2022
21 Mar 2022	<u>Pui O Pumping Station:</u> Remove the waste in pumping pit <u>San Shek Wan Sewage Treatment Works</u> <ul style="list-style-type: none"> - Implement dust control measures for exposed earth area - Reminder for preparation of temporary drainage on site before wet season 	29 Mar 2022
29 Mar 2022	<u>Pui O Pumping Station:</u> <ul style="list-style-type: none"> - Reminder for cleaning the waste in pumping pit regularly - Fully implement tree preservation and protection on site, including provision of tree label and tree status, set up tree protection zone for retain trees <u>San Shek Wan Sewage Treatment Works</u> Fully implement tree preservation and protection on site, including provision of tree label and tree status, set up tree protection zone for retain trees	Tree preservation and protection works are still in process
31 Mar 2022	<u>Off-site transplant trees inspection in holding nursery:</u> <ol style="list-style-type: none"> 1. Soil quality and rootball conditions are not in accordance with CEDD G.S. 3.97(4), (13), Recommended measures: rectify soil and required rootball size for healthy growth of trees. 2. Tree conditions shall be improved. Recommended measures: Remedial measures and intensive care shall be in accordance with CEDD G.S. 3.97 and EM&A recommended "Guideline on Tree Transplanting" promulgated by GLTMS). 3. Mulch to be applied as soon as possible (CEDD G.S. 3.92). 	Pending

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 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 9 monitoring stations. 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	810838	807538
CF	Upstream control station at flood tide	815886	808081
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
SR9 ⁽¹⁾	Ecological Important Stream at Tong Fuk	811325	809787
SR10	Secondary Contact Recreational Zones at South Lantau	810561	809494
SR12 ⁽¹⁾	Proposed Special Site of Scientific Interest (SSSI) at Shui Hau Wan	810359	808989
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 Ecology

MONITORING METHODOLOGY

- 4.3.1 The weekly site audit to be carried out by the ET should include checking whether good site practices are being properly implemented by the Contractor.
- 4.3.2 Impact monitoring of the transplanted *Aquilaris sinensis* at holding nursery and one retain tree of *Aquilaris sinensis* in SSWSTW Project Site, establishment and after-establishment caring measures of the compensatory mixed woodland to ensure the affected tree would not be affected by any unacceptable construction works. The trees would be treated with establishment works immediately after transplanting.

PARAMETERS MONITORED

- 4.3.3 The extent of the work site boundaries should be checked by the ET during the weekly site audit. Any disturbance by the Contractor outside the works area especially any damage to the vegetation and surrounding habitats outside the Project area shall be reported to ER and IEC.
- 4.3.4 To identify any unacceptable construction works for the trees of *Aquilaris sinensis* during transplanting, establishment and after-establishment caring measures of the compensatory mixed woodland.

MONITORING LOCATION

- 4.3.5 The original location of *Aquilaris sinensis* is at SSWSTW ([Figure 2.5](#)). The tree is transplanted to temporary holding nursery ([Figure 2.6](#)) for establishment.
- 4.3.6 Retain tree of *Aquilaris sinensis* at SSWSTW Project Site.

MONITORING DATE, TIME, FREQUENCY AND DURATION

- 4.3.7 The recommended good site practices to be audited once every week as part of the site audit programme. The weekly site audit to be carried out by the ET includes checking whether good site practices are being properly implemented by the Contractor. Results are recorded in Weekly Environmental Site Audit Checklist.
- 4.3.8 Monitoring programme for post-transplantation will be conducted once per month ([31 Mar 2022](#)).

MONITORING RESULTS

- 4.3.9 Results and findings of site audit in this reporting month are listed in **Table 3.3**.



4.4 Waste Management

- 4.4.1 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 February 2022)

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
Disposal as Public Fill (Inert) (in '000m ³)	2.51320	3.23585	5.74905
Metals (in '000kg)	1.55	0.00720	1.55720
Paper / Cardboard Packing (in '000kg)	0	0.02448	0.02448
Plastics (in '000kg)	0	0.00696	0.00696
Chemical Wastes (in '000kg)	0	0	0
General Refuses (in '000kg)	34.82	231.55	266.37

*: 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
March 2022	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:

- Maintenance and establishment works for transplanted trees in holding nursery.
- Preservation of existing trees in Project Site
- Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen
- Trunk Sewers and Rising Mains preparation works outside village and to POSPS
- Site formation for POSPS and horizontal directional drilling (HDD) works setup at SSWSTW on shore
- Excavation and Lateral Support (ELS) works at SSWSTW and POSPS.
- Commencement of marine works

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 - Apr 2021 to Jun 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
<ul style="list-style-type: none"> • Maintenance and establishment works for transplanted trees in holding nursery. • Preservation of existing trees in Project Site • Village sewers (excavation, sewer laying, construction of manhole) at Pui O Lo Uk Tsuen • Trunk Sewers and Rising Mains preparation works outside village and to POSPS • Site formation for POSPS and horizontal directional drilling (HDD) 	<ul style="list-style-type: none"> • Provide caring measures for the health, form and structural conditions for transplant trees including <i>Aquilaris sinensis</i> in holding nursery; • Fully implement tree preservation works on site and holding nursery to ensure compliance of relevant legislation and guidelines stated in EM&A Manual. • Implementation of proper noise pollution control including use of QPME; • Dust control during dust generating works; • Adopt surface drainage and sediment control facilities for sewage installation in village and public roads; • Vehicle wheel-washing and body washing facilities should be provided at the site entrance;



Key Construction Works	Recommended Mitigation Measures
<p>works setup at SSWSTW on shore</p> <ul style="list-style-type: none">Excavation and Lateral Support (ELS) works at SSWSTW and POSPS.Commencement of marine works	<ul style="list-style-type: none">Regular water spraying on exposed area; andProper waste handling, recycling and storage.Silt curtains should be installed to surround the marine dredging area and HDD pilot hole exist area



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 Ecological Impact Monitoring

7.3.1 Maintenance works for transplanted *Aquilaris sinensis* have commenced, preservation and protection of retain *Aquilaris sinensis* at San SSWSTW is in progress.

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

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

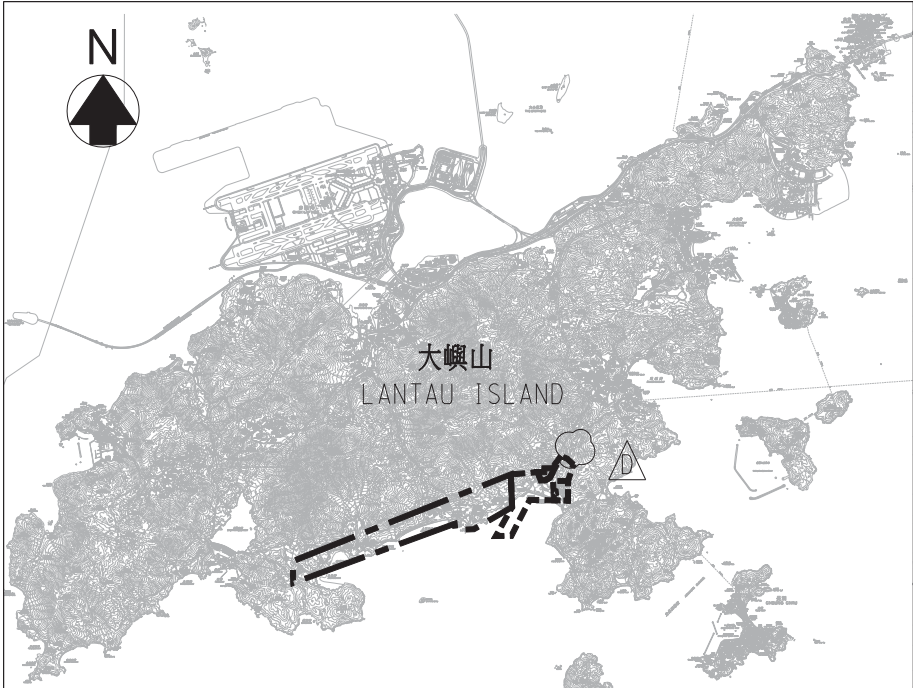
7.5 Summary of action taken in the event of and follow-up on non-compliance

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

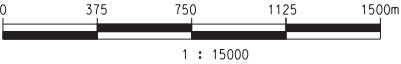
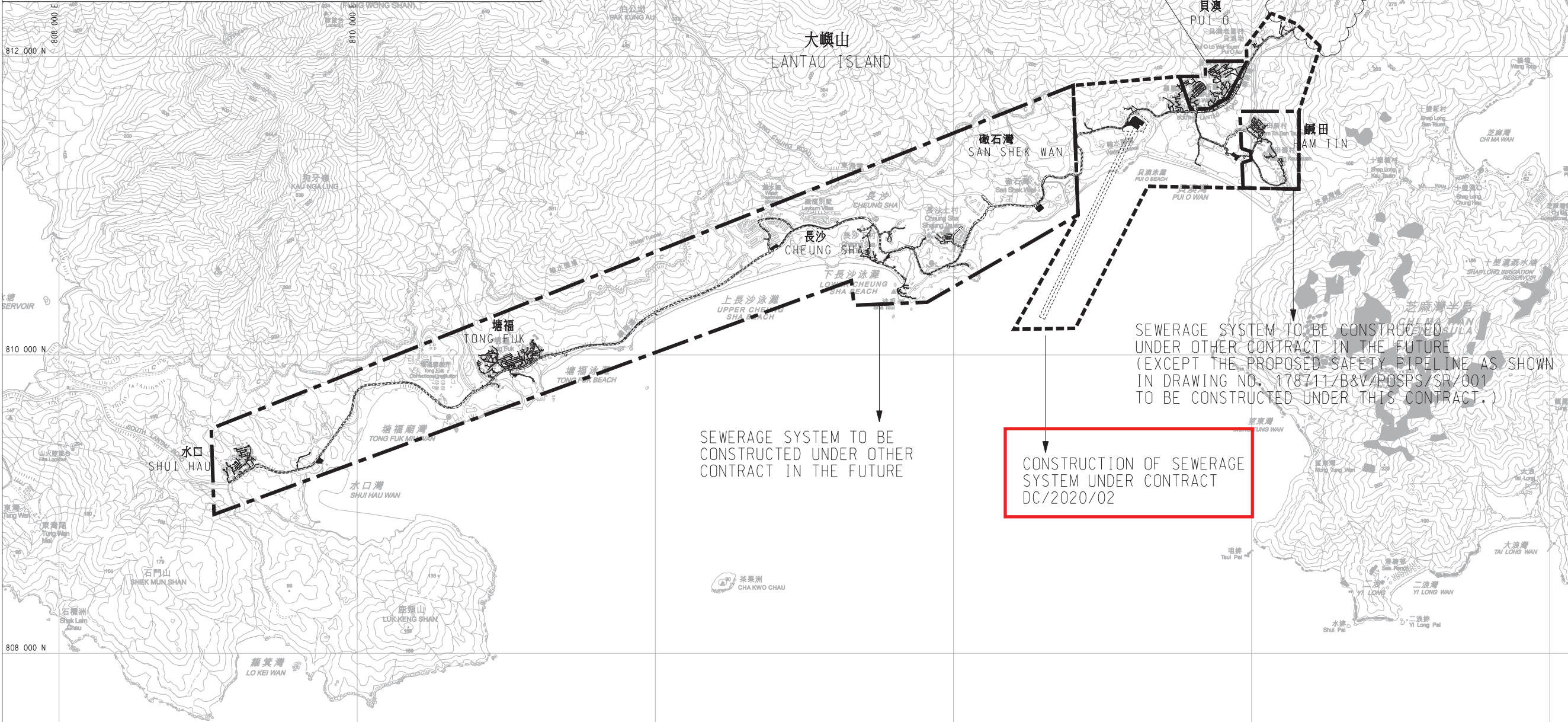


Figure 2.1

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
SEWAGE TREATMENT WORKS,
ASSOCIATED SUBMARINE OUTFALL
AND PUI O SEWAGE WORKS

Drawing title
SOUTH LANTAU SEWAGE
WORKS – MASTER LAYOUT PLAN

Drawing no. 178711/B&V/GN/001	Revision D
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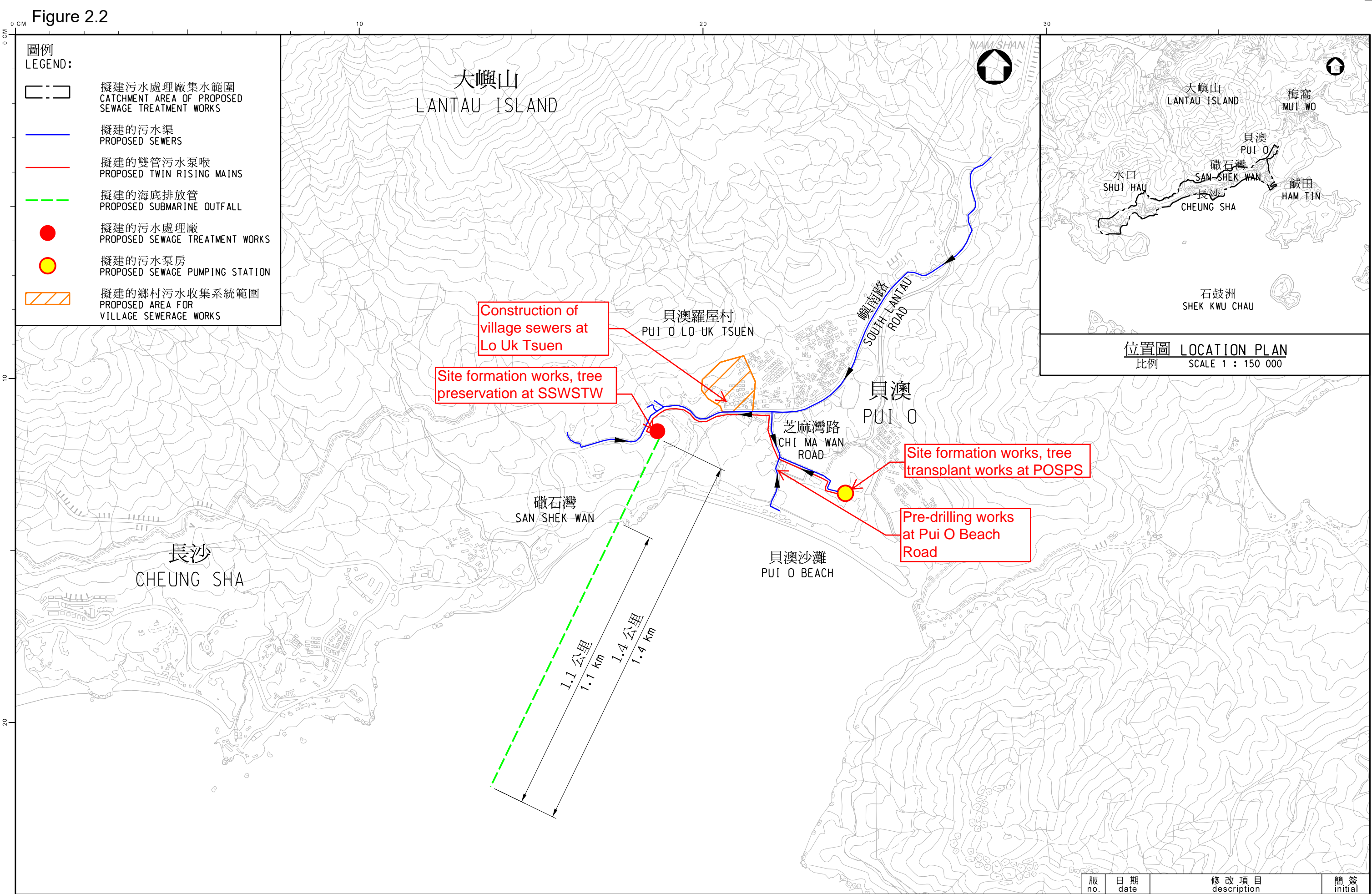
Scale
1 : 15000

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




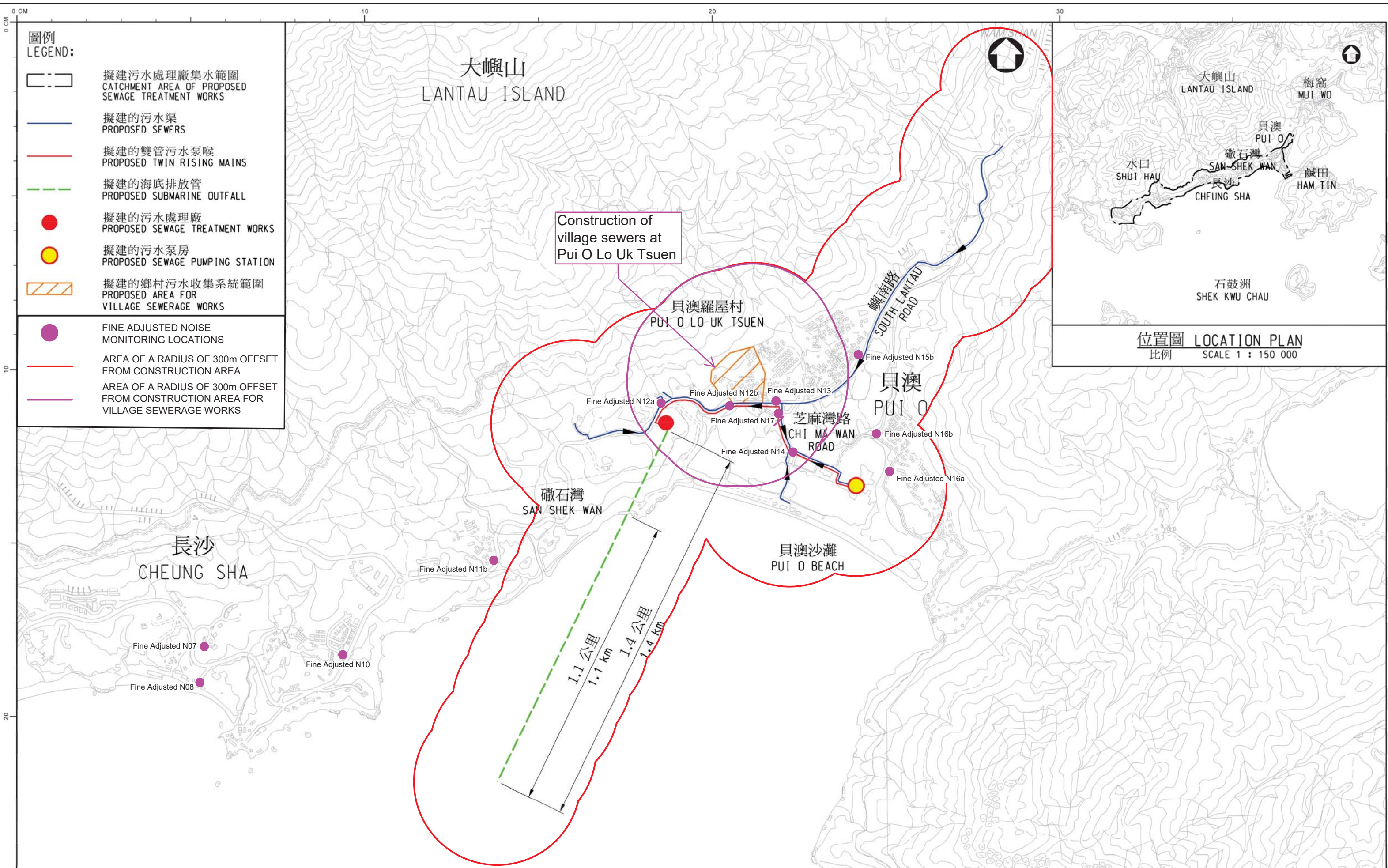
圖則名稱 drawing title 工務工程計劃編號331DS - 離島污水收集系統第2階段 - 南大嶼山污水收集系統工程 PWP ITEM NO.331DS - OUTLYING ISLANDS SEWERAGE, STAGE 2 - SOUTH LANTAU SEWERAGE WORKS	繪畫 drawn SIGNED W. H. CHAN	日期 date 27 APR 2020	圖則編號 drawing no. DVD/2020/001	比例 scale 1:12 500
	核對 checked SIGNED Ir K. S. CHAN	日期 date 27 APR 2020	保留版權 COPYRIGHT RESERVED	
	批核 approved SIGNED Ir L. CHEN	日期 date 27 APR 2020	 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	
	部門 office 特別職務部 SPECIAL DUTY DIVISION			



Figure 2.3

Locations of Noise Monitoring Station



- 圖例
LEGEND:
- 擬建污水處理廠集水範圍
CATCHMENT AREA OF PROPOSED SEWAGE TREATMENT WORKS
 - 擬建的污水渠
PROPOSED SEWERS
 - 擬建的雙管污水泵喉
PROPOSED TWIN RISING MAINS
 - 擬建的海底排放管
PROPOSED SUBMARINE OUTFALL
 - 擬建的污水處理廠
PROPOSED SEWAGE TREATMENT WORKS
 - 擬建的污水泵房
PROPOSED SEWAGE PUMPING STATION
 - 擬建的鄉村污水收集系統範圍
PROPOSED AREA FOR VILLAGE SEWERAGE WORKS
 - FINE ADJUSTED NOISE MONITORING LOCATIONS
 - AREA OF A RADIUS OF 300m OFFSET FROM CONSTRUCTION AREA
 - AREA OF A RADIUS OF 300m OFFSET FROM CONSTRUCTION AREA FOR VILLAGE SEWERAGE WORKS

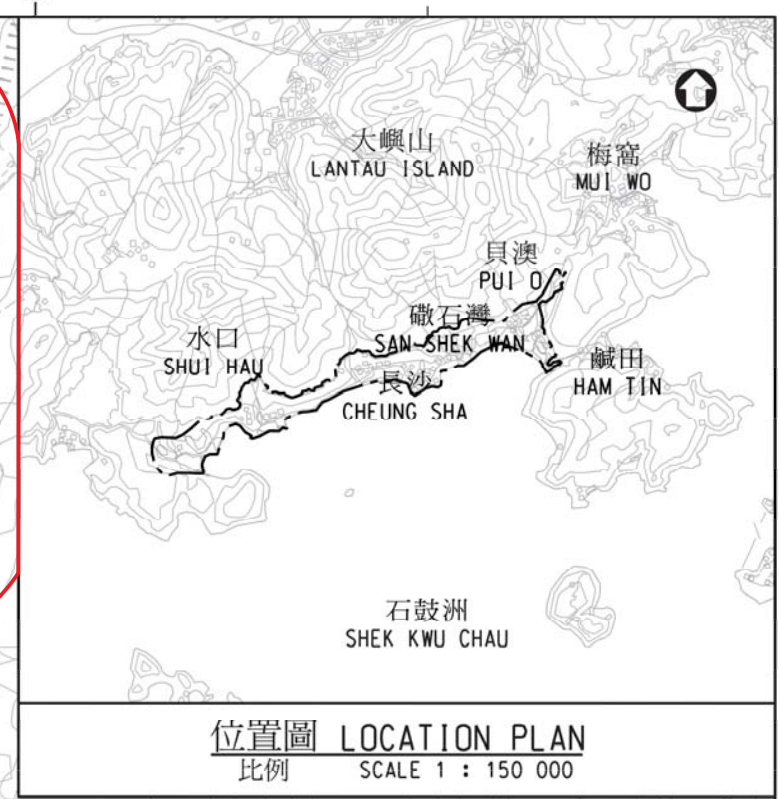




Figure 2.4

Locations of Water Quality Monitoring Stations

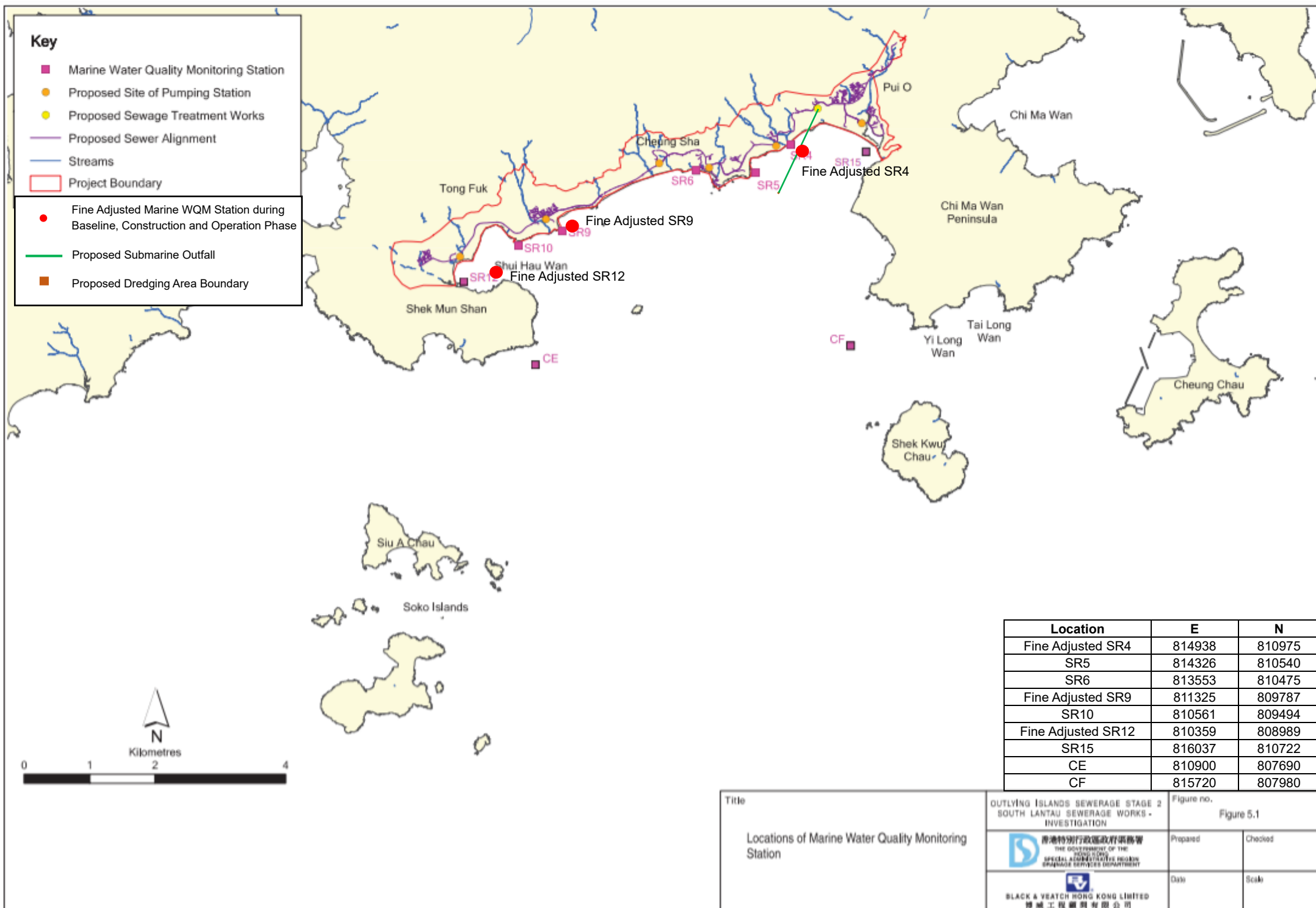




Figure 2.5

Mark up Figure 5.4i extracted from approved EIA Report (AEIAR-210/2017)

Figure 2.5 - Mark up Figure 5.4i extracted from approved EIA Report (AEIAR-210/2017)

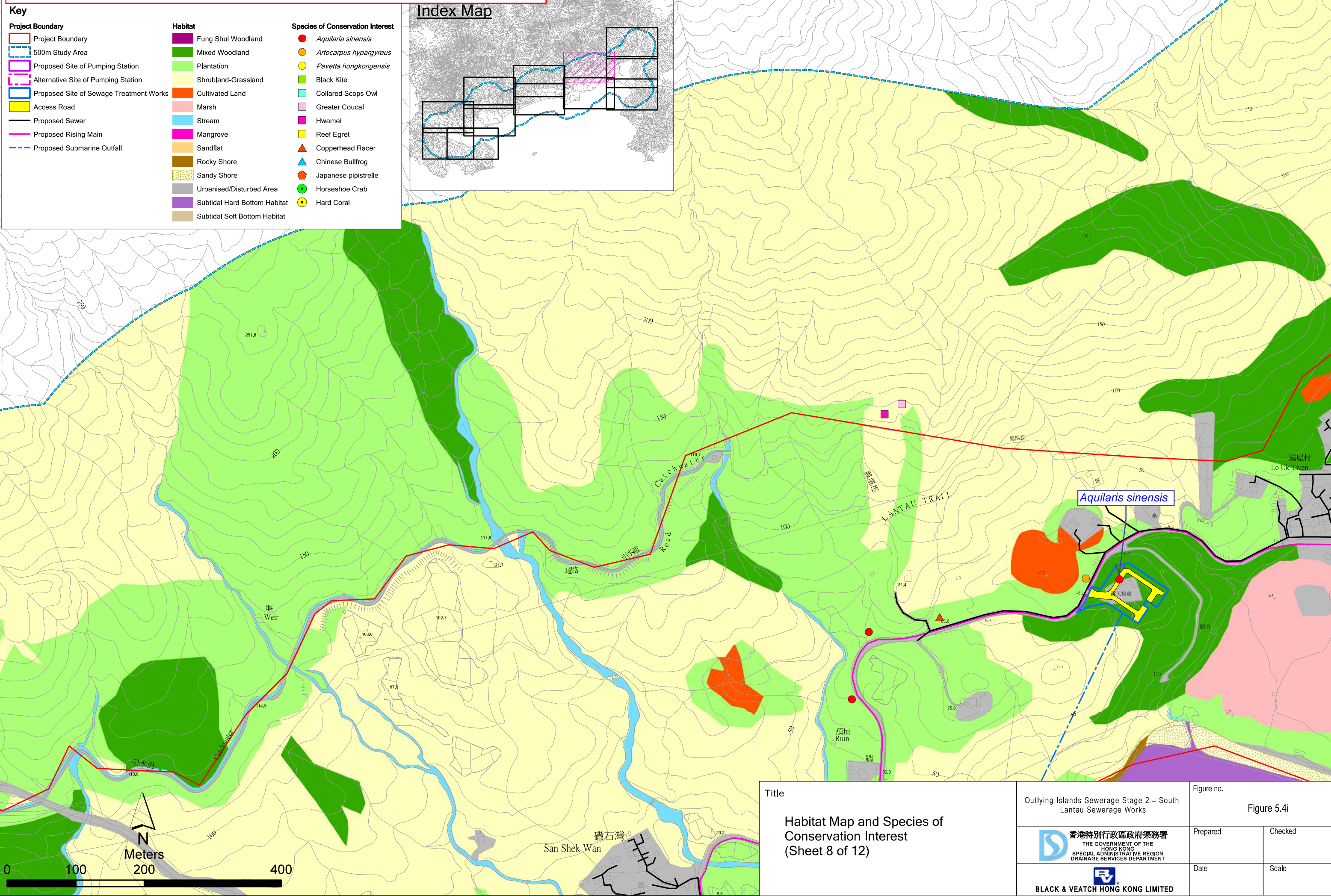
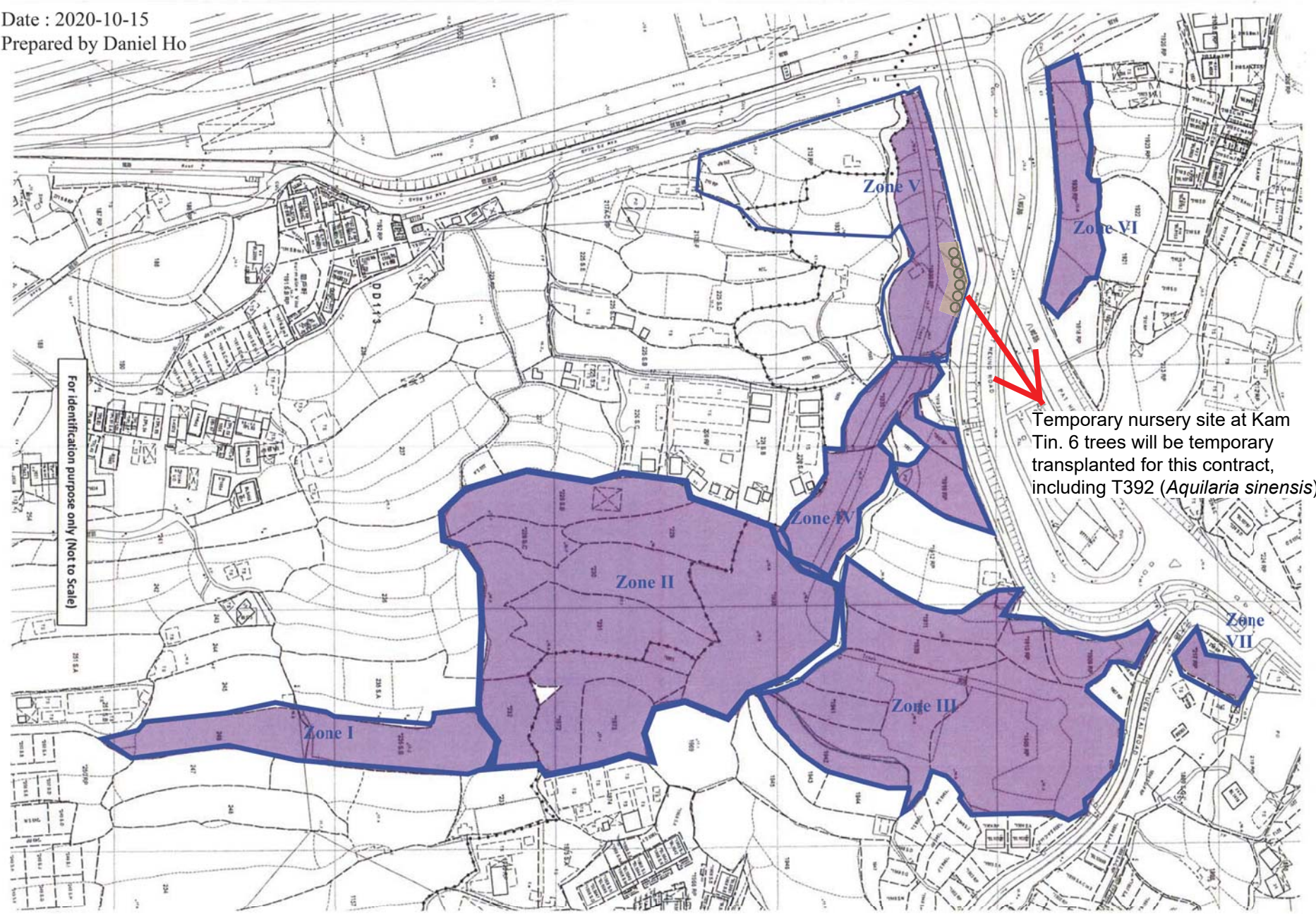





Figure 2.6

Location Plan for Temporary Holding Nursery



COPY RIGHT®

Project : Contract No.: DC/2020/02 Construction of San Shek Wan Sewage Treatment Works, Associated Submarine Outfall and Pui O Sewerage Works		 Toyo Greenland Co., Ltd.	
Drawing Title : Location Plan for 6 nos. Trees on Kam Tin Nursery		Check : Ho Tat Pui, Daniel	Scale : N.T.S.
		Ref: C3109/22/TGD0164	Date : 10 January 2022
			Rev. 00



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)

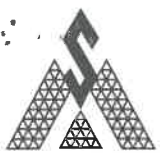
Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	111.9	111.8	1.0	1.0	-0.1

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

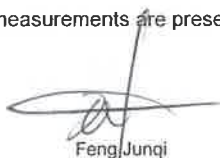
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results 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 hPa 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

Mar 2022

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

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.

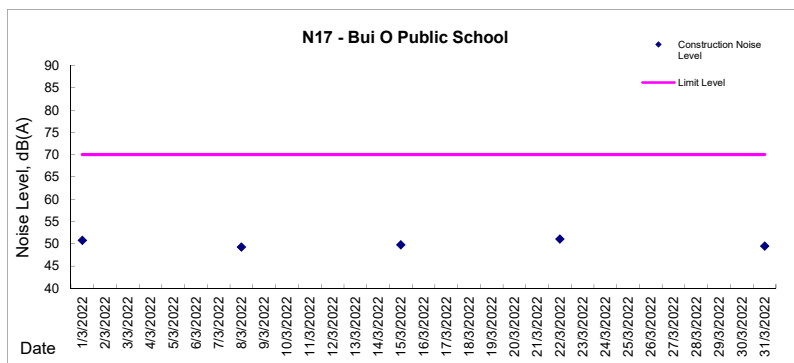
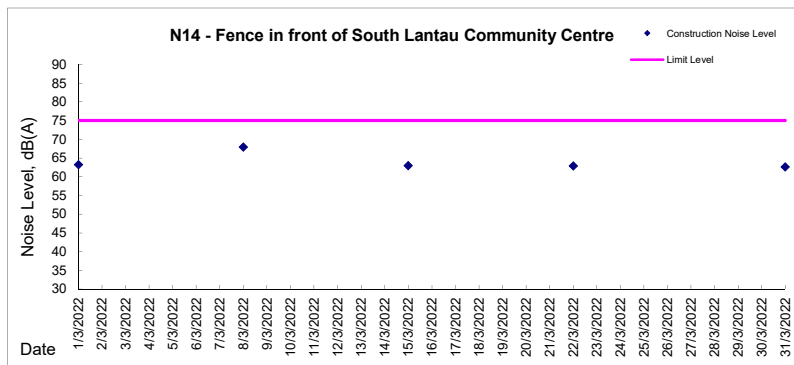
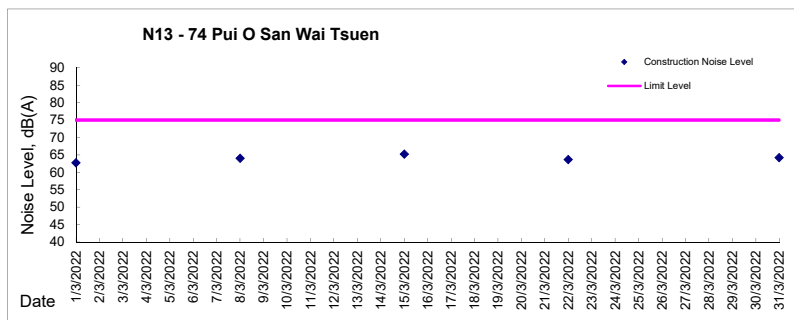
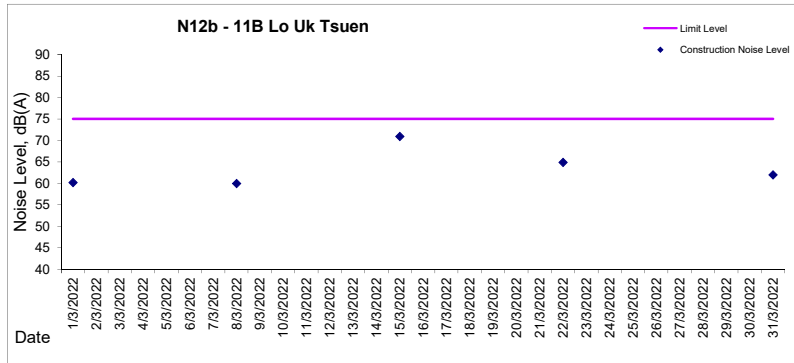
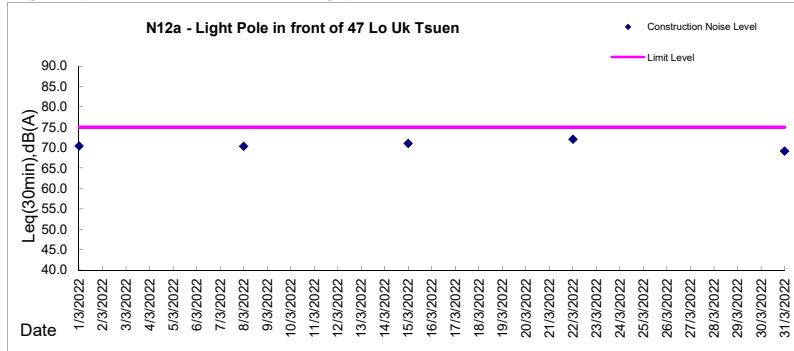


Appendix 4.3

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)			
1 Mar 2022	Sunny	13:01	71.3	75.7	46.5	70.4	73.3	<Baseline Level	75
		13:06	68.4	72.6	45.7				
		13:11	70.5	74.6	48.5				
		13:16	71.6	75.1	51.6				
		13:21	68.0	72.6	48.6				
		13:26	71.1	74.9	51.4				
8 Mar 2022	Sunny	10:36	71.9	75.5	50.8	70.3	73.3	<Baseline Level	75
		10:41	69.7	71.3	46.2				
		10:46	71.2	75.4	48.3				
		10:51	68.8	71.6	43.3				
		10:56	70.0	73.0	58.0				
		11:01	69.4	73.0	51.1				
15 Mar 2022	Sunny	10:26	71.1	74.3	49.1	71.0	73.3	<Baseline Level	75
		10:31	72.5	74.2	48.5				
		10:36	69.7	74.1	54.1				
		10:41	71.1	74.3	50.3				
		10:46	71.7	74.7	47.5				
		10:51	69.1	73.6	49.6				
22 Mar 2022	Sunny	9:36	71.5	75.1	55.6	72.0	73.3	<Baseline Level	75
		9:41	70.8	75.2	47.8				
		9:46	74.1	77.6	47.8				
		9:51	71.2	74.4	50.1				
		9:56	71.3	75.0	47.7				
		10:01	72.4	76.9	50.9				
31 Mar 2022	Sunny	13:36	67.8	72.0	51.5	69.2	73.3	<Baseline Level	70
		13:41	69.8	73.6	50.5				
		13:46	70.4	74.6	50.9				
		13:51	68.1	70.8	49.1				
		13:56	70.5	74.2	50.6				
		14:01	67.2	72.1	50.1				



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)			
1 Mar 2022	Sunny	13:41	61.9	62.5	57.4	60.2	76.8	<Baseline Level	75
		13:46	59.2	61.2	57.0				
		13:51	59.2	61.3	57.1				
		13:56	61.9	62.4	57.1				
		14:01	59.3	61.3	56.5				
		14:06	58.3	59.9	53.2				
8 Mar 2022	Sunny	11:11	58.3	61.2	46.6	60.0	76.8	<Baseline Level	75
		11:16	64.0	62.8	47.0				
		11:21	57.5	59.8	44.1				
		11:26	57.7	61.4	43.5				
		11:31	55.7	57.8	42.7				
		11:36	61.1	61.5	39.9				
15 Mar 2022	Sunny	9:51	70.7	73.2	63.0	70.9	76.8	<Baseline Level	75
		9:56	68.0	70.9	61.1				
		10:01	71.5	72.5	61.8				
		10:06	73.2	72.4	61.0				
		10:11	72.5	73.1	60.1				
		10:16	63.5	67.7	51.2				
22 Mar 2022	Sunny	10:11	61.6	65.1	53.1	64.9	76.8	<Baseline Level	75
		10:16	65.1	68.4	55.4				
		10:21	67.3	71.0	55.8				
		10:26	64.2	65.8	56.7				
		10:31	64.6	66.7	61.2				
		10:36	64.5	66.8	61.9				
31 Mar 2022	Sunny	10:51	62.7	64.9	52.0	62.0	76.8	<Baseline Level	75
		10:56	63.7	65.6	60.5				
		11:01	62.5	65.9	48.4				
		11:06	61.4	65.4	48.2				
		11:11	60.8	62.6	47.2				
		11:16	59.5	63.0	46.8				



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)			
1 Mar 2022	Sunny	11:16	61.3	64.4	53.3	62.7	73.6	<Baseline Level	75
		11:21	61.4	65.5	52.6				
		11:26	61.1	64.6	52.4				
		11:31	61.2	63.8	52.2				
		11:36	66.8	70.2	56.3				
		11:41	59.9	62.7	52.7				
8 Mar 2022	Sunny	13:46	64.6	68.1	56.3	64.0	73.6	<Baseline Level	75
		13:51	63.9	66.3	56.1				
		13:56	62.8	65.1	55.1				
		14:01	61.8	65.4	56.3				
		14:06	63.5	65.9	56.2				
		14:11	66.0	68.7	60.5				
15 Mar 2022	Sunny	13:16	62.9	65.5	55.1	65.2	73.6	<Baseline Level	75
		13:21	63.7	66.9	55.4				
		13:26	67.6	69.9	55.6				
		13:31	67.1	70.0	56.1				
		13:36	64.3	67.7	56.5				
		13:41	63.3	67.3	55.5				
22 Mar 2022	Sunny	10:41	65.5	70.0	57.0	63.7	73.6	<Baseline Level	75
		10:46	63.2	65.7	56.2				
		10:51	60.5	63.0	54.2				
		10:56	61.8	66.0	53.8				
		11:01	65.6	67.6	55.2				
		11:06	63.2	66.6	55.6				
31 Mar 2022	Sunny	11:26	65.2	68.7	57.2	64.2	73.6	<Baseline Level	75
		11:31	63.5	66.6	55.6				
		11:36	63.3	67.4	56.1				
		11:41	65.3	68.6	56.7				
		11:46	60.8	64.0	54.1				
		11:51	65.4	66.4	55.8				



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)			
1 Mar 2022	Sunny	10:06	61.4	64.7	47.9	63.2	62.2	57	75
		10:11	66.8	68.1	46.5				
		10:16	61.1	62.2	44.9				
		10:21	59.3	60.9	44.5				
		10:26	56.7	58.6	47.2				
		10:31	65.9	69.0	47.0				
8 Mar 2022	Sunny	14:26	72.2	60.1	46.9	67.9	62.2	67	75
		14:31	64.1	63.7	46.6				
		14:36	53.3	56.5	46.6				
		14:41	72.0	68.9	46.7				
		14:46	60.3	63.1	46.0				
		14:51	58.0	58.3	44.2				
15 Mar 2022	Sunny	11:06	66.2	67.0	48.2	63.0	62.2	55	75
		11:11	61.8	64.3	48.4				
		11:16	64.1	67.8	47.6				
		11:21	60.2	63.8	45.4				
		11:26	58.9	60.5	45.2				
		11:31	63.0	65.7	46.8				
22 Mar 2022	Sunny	13:01	65.1	65.6	43.7	62.9	62.2	55	75
		13:06	64.4	66.6	45.5				
		13:11	64.6	66.1	46.6				
		13:16	60.2	61.8	45.9				
		13:21	54.8	57.9	44.2				
		13:26	61.8	65.5	45.1				
31 Mar 2022	Sunny	9:36	66.0	67.0	57.3	62.6	62.2	52	75
		9:41	61.2	64.5	53.0				
		9:46	57.7	61.4	48.0				
		9:51	64.4	64.6	47.4				
		9:56	60.4	62.9	47.3				
		10:01	60.3	64.1	48.8				



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)			
1 Mar 2022	Sunny	10:46	49.6	52.6	43.7	50.8	62.3	<Baseline Level	70
		10:51	51.0	52.8	45.5				
		10:56	50.8	52.3	42.7				
		11:01	48.8	51.2	43.1				
		11:06	51.9	50.7	41.3				
8 Mar 2022	Sunny	11:11	51.9	53.2	43.8	49.3	62.3	<Baseline Level	65
		13:06	49.3	51.9	43.1				
		13:11	50.4	53.4	44.7				
		13:16	48.8	50.9	44.2				
		13:21	48.5	50.7	44.2				
15 Mar 2022	Sunny	13:26	49.5	51.7	44.5	49.8	62.3	<Baseline Level	70
		13:31	49.3	52.5	43.7				
		13:56	49.7	53.0	43.3				
		14:01	49.4	52.2	44.1				
		14:06	49.5	52.6	42.9				
22 Mar 2022	Sunny	14:11	49.5	52.7	43.7	51.1	62.3	<Baseline Level	70
		14:16	51.2	52.0	44.1				
		14:21	49.4	51.7	43.4				
		11:16	51.1	53.3	46.9				
		11:21	50.0	52.0	46.4				
31 Mar 2022	Sunny	11:26	50.1	52.9	45.8	49.5	62.3	<Baseline Level	75
		11:31	50.2	53.1	45.4				
		11:36	53.5	54.9	46.5				
		11:41	50.3	52.8	46.1				
		10:16	49.5	49.9	43.7				
		10:21	49.8	52.0	45.3	49.5	62.3	<Baseline Level	75
		10:26	49.0	51.7	45.0				
		10:31	49.0	51.9	44.0				
		10:36	49.1	51.7	44.8				
		10:41	50.4	51.9	45.3				



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 2022

Month	Actual Quantities if Inert C&D Material Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (a)	Hard Rocks and Large Broken Concrete (b)	Reused in the Contract (c)	Reused in other Projects (d)	Disposed as Public Fill (a-b-c-d)	Imported Fill	Metals	Paper/card-board packaging	Plastics [see Note 3]	Chemical waste	Others. e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)
Jan	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	58.35
Feb	2.37	0.00	0.00	0.00	2.37	0.00	0.00	0.00	0.00	0.00	52.60
Mar	2.51	0.00	0.00	0.00	2.51	0.00	1.55	0.00	0.00	0.00	34.82
Apr											
May											
Jun											
Sub-total	4.90	0.00	0.00	0.00	4.90	0.00	1.55	0.01	0.00	0.00	145.77
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	4.90	0.00	0.00	0.00	4.90	0.00	1.55	0.01	0.00	0.00	145.77

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
- (6) Assume the density of fill material is 2 tonne/m³.



Appendix 6.1

Three Months Rolling Programme – April 2022 to June 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	March 2022					April 2022					May 2022					June 2022				
						27	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26		
Monthly Programme for Mar 2022																									
Project Contractual Dates						1556 19-Mar-21 A 29-Aug-26 -124																			
Contractual Dates						11 19-Mar-21 A 30-Mar-21 A																			
CD-1000	Contract Date	0	19-Mar-21 A																						
CD-1010	Starting Date	0	30-Mar-21 A																						
Access Date of Each Portion						278 30-Apr-21 A 01-Apr-22 1458																			
CD-2000	Contract Access date of Portion A, B1, C1, D1, D3,E1, E2, E3 and W1 (90 days)	0	01-Apr-22*		-278	E1, E2, E3 and W1 (90 days)																			
CD-2010	Contract Access date of Portion B2, C2, D2 and D4 (210 days)	0	04-Oct-21 A																						
CD-2020	Access date of Portion A and B1 (90 days)	0	30-Apr-21 A																						
CD-2030	Access date of Works Area W1 (90 days)	0	17-May-21 A																						
CD-2040	Access date of Works Area C1 & D3 (90days) and B2, C2, & D2 (210 days)	0	30-Jul-21 A																						
CD-2050	Simplified Temporary Land Allocation (STLA) access date of Works Area D1 & E1 (90days)	0	10-Aug-21 A																						
Sectional Completion						1055 08-May-23 28-Mar-26 0																			
SC-1000	Section 1 The Trunk Sewers and Rising Mains in Portion A and B1 & B2 in Lo Uk Tsuen (770 days)	0		08-May-23*	0																				
SC-1010	Section 2 Foundation, Substructure and Superstructure of POSPS, Trunk Sewers and Rising Mains in D1&D2 (770 days)	0		08-May-23*	0																				
SC-1020	Section 3 Whole of the works excluding the works in sections 1 and 2(1825 days)	0		28-Mar-26*	0																				
Planned Sectional Completion Date						1091 03-Sep-23 29-Aug-26 -154																			
Sectional Completion Dates						1091 03-Sep-23 29-Aug-26 -154																			
PC-1000	Planned Section 1 completion date	0		11-Oct-23	-156																				
PC-1010	Planned Section 2 completion date	0		03-Sep-23	-118																				
PC-1020	Planned Section 3 completion date	0		29-Aug-26	-154																				
NCE						255 27-Jun-21 A 30-Apr-22 -48																			
NCE-001	No fully access to Portion D1 (90 days) [PGLA on 4 Oct 2021]	99	27-Jun-21 A	03-Oct-21 A																					
NCE-002	No fully access to Portion E1 on access date (90 days) [PGLA on 12 Jan 2022]	199	27-Jun-21 A	11-Jan-22 A																					
NCE-003	No fully access to Portion E2 and E3 on access date (90 days)	219	27-Jun-21 A	01-Apr-22	-151																				
NCE-008a	Delay and Disruption of Works due to Inclement Weather for Oct 2021 (8-9 Oct 2021)	2	08-Oct-21 A	09-Oct-21 A																					
NCE-008b	Delay and Disruption of Works due to Inclement Weather for Oct 2021 (12-13 Oct 2021)	2	12-Oct-21 A	13-Oct-21 A																					
NCE-010	Extra time for GI works for BH-5 (50m dep. on 13/11 and 100m dep. on 22/11) due to unforeseen deep rockhead in POSPS	9	14-Nov-21 A	22-Nov-21 A		head in POSPS																			
NCE-011	Delay and Disruption of Works due to Inclement Weather for Feb 2022 (21-23 Feb 2022)	3	21-Feb-22 A	23-Feb-22 A																					
NCE-012a	Delay and Disruption of Works due to Inclement Weather for Mar 2022 (23-26 Mar 2022)	3	23-Mar-22 A	26-Mar-22 A		2 (23-26 Mar 2022)																			
NCE-012a10	Delay and Disruption of Works due to Inclement Weather for Mar 2022 (28 Mar 2022)	3	28-Mar-22 A	28-Mar-22 A		Mar 2022 (28 Mar 2022)																			
NCE for PMI of 12 nos inspection pits at South Lantau Road, Lo Uk Tsuen and Chi Ma Wan Road						203 29-Jun-21 A 30-Apr-22 -48																			
NCE-006a	Preparation and Issurance of PMI for 12 nos Inspection pits at South Lantau Road, Lo Uk Tsuen and Chi Ma Wan Road by PM	7	29-Jun-21 A	11-Aug-21 A																					
NCE-006b	Received PMI for 12 nos Inspection pits at South Lantau Road, Lo Uk Tsuen and Chi Ma	0	11-Aug-21 A	11-Aug-21 A																					
NCE-006c	JV prepared XP plans	7	11-Aug-21 A	18-Aug-21 A																					
NCE-006d	JV revised XP plans as per PM's comment	7	18-Aug-21 A	25-Aug-21 A																					
NCE-006e	Confirmation and circulation by PM for XP and TTA application	7	25-Aug-21 A	03-Sep-21 A																					
NCE-006f	Revision & accept XP ID 1300556 application and TTA for South Lantau Road	90	04-Sep-21 A	17-Jan-22 A																					
NCE-006f10	Revision & accept XP ID 1300565 application and TTA for Chi Ma Wan Road	90	04-Sep-21 A	19-Jan-22 A																					
NCE-006g	Trai run and Inspection pits works at South Lantau Road	58	18-Feb-22 A	30-Apr-22	-129																				
NCE-006h	Trial run and Inspection pits works at Chi Ma Wan Road	38	16-Feb-22 A	21-Mar-22 A																					
NCE-006i	Inspection pits works at Lo Uk Tsuen (VTP1 & VTP2)	12	29-Sep-21 A	05-Oct-21 A																					
Preliminary Works						601 19-Mar-21 A 31-Mar-24 860																			
PW-1000	Preliminary works	0	19-Mar-21 A	02-Jul-23	115																				
Subletting of Major Subcontract Package						133 01-Apr-22 11-Aug-22 440																			
SUB-1035	Sublet piling works	56	01-Apr-22	26-May-22	-102	Sublet piling works																			
SUB-1039	Sublet structure works	60	11-Apr-22	09-Jun-22	117	Sublet structure works																			
SUB-1047	Sublet marine diffuser Works	35	01-Apr-22	05-May-22	538	Sublet marine diffuser Works																			
SUB-1135	Sublet retaining wall works	60	01-Apr-22	30-May-22	-81	Sublet retaining wall works																			
SUB-1145	Sublet soil nail works	60	01-Apr-22	30-May-22	67	Sublet soil nail works																			
SUB-1155	Sublet ABWF works for POSPS	60	13-Jun-22	11-Aug-22	53	Sublet ABWF works for POSPS																			
Submissions for the whole works						541 05-Jul-21 A 31-Mar-24 860																			

	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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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	March 2022					April 2022					May 2022				June 2022						
						27	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26			
SU-1030	Prepare, submit, revision & accept Tree Survey, tree preservation , transplant and removal plan	90	05-Jul-21 A	30-Apr-22	-130																					
	SU-1043	Prepare, submit, revision & accept XP ID 1303702 application and TTA for SLR Lo Wai Section	240	02-Nov-21 A	23-May-22	487																				
	SU-1045	Prepare, submit, revision & accept XP ID 1303703 application and TTA for SLR SSWTW Section	240	02-Nov-21 A	23-May-22	74																				
	SU-1046	Prepare, submit, revision & accept XP ID 1303704 application and TTA for SLR btw SSWSTW and Lo Uk	240	24-Jan-22 A	31-Mar-24	-6																				
	SU-1047	Prepare, submit, revision & accept XP ID 1307099 application and TTA for SLR San Wai Section	240	24-Jan-22 A	23-Nov-23	61																				
	SU-1048	Prepare, submit, revision & accept XP ID 1307120 application and TTA for SLR WSD POSP north	240	24-Jan-22 A	23-Nov-23	61																				
	SU-1049	Prepare, submit, revision & accept XP ID 1307306 application and TTA for SLR SSWTW west	240	24-Jan-22 A	23-Nov-23	61																				
Design		374	04-Oct-21 A	22-Jan-23	1294																					
Civil		374	04-Oct-21 A	22-Jan-23	1294																					
POSPS		229	04-Oct-21 A	30-Aug-22	35																					
SU-2330	Obtain ABWF details from PM	0	13-Jun-22		53						Obtain ABWF details from PM ◆															
Civil		163	04-Oct-21 A	22-May-22	135						22-May-22, Civil															
ELS works - Pump Station		79	01-Dec-21 A	01-Apr-22	85						01-Apr-22, ELS works - Pump Station															
SU-2080	Prepare and submit ELS works - Pump Station	56	01-Dec-21 A	04-Mar-22 A																						
SU-2250	Approve ELS works - Pump Station	21	05-Mar-22 A	01-Apr-22	85																					
Foundation Checking and revised foundation Plan - Pump Station		122	04-Oct-21 A	15-May-22	-118						15-May-22, Foundation Checking and revised fou															
SU-2085	Foundation design review by PM after Management meenting on 1 Dec 2021	35	01-Dec-21 A	01-Apr-22	-118																					
SU-2090	Prepare and submit Foundation Checking and revised foundation Plan - Pump Station	35	04-Oct-21 A	24-Apr-22	-118																					
SU-2260	Approve Foundation Checking and revised foundation Plan - Pump Station	21	25-Apr-22	15-May-22	-118																					
Structure - Pump Station		56	04-Oct-21 A	22-May-22	135						22-May-22, Structure - Pump Station															
SU-2100	Prepare and submit Structure - Pump Station	56	04-Oct-21 A	01-May-22	135																					
SU-2270	Approve Structure - Pump Station	21	02-May-22	22-May-22	135						Approve Structure - Pump Station															
E&M		183	07-Feb-22 A	30-Aug-22	5																					
DDA		183	07-Feb-22 A	30-Aug-22	5																					
DDA Submission		152	01-Apr-22	30-Aug-22	-16						01-Apr-22															
EM-1020	Detailed Design Approval (DDA) for E&M works for Pui O Pump Station submission	152	01-Apr-22	30-Aug-22	-16						Pui O Pump Station submission															
Treatment Process (Mechanical, Deodorization and Chemical)		112	07-Feb-22 A	20-Jun-22	76						20-Jun-															
EM-1021	DDA for Treatment Process (Mechanical, Deodorization and Chemical) Submission	91	07-Feb-22 A	30-May-22	76																					
EM-3260	DDA for Treatment Process (Mechanical, Deodorization and Chemical) approval	21	31-May-22	20-Jun-22	76						DDA for Treatment Process (Mechanical, Deodorization and Chemical) approval															
Electrical Power Supply System		91	01-Apr-22	30-Jun-22	45						01-Apr-22															
EM-1022	DDA for Electrical Power Supply System Submission	91	01-Apr-22	30-Jun-22	45						Power Supply System Submission															
UPS System		152	01-Apr-22	30-Aug-22	-16						01-Apr-22															
EM-1023	DDA for UPS System Submission	152	01-Apr-22	30-Aug-22	-16						DDA for UPS System Submission															
Earthing and Lightning		36	01-Apr-22	06-May-22	121						01-Apr-22															
EM-1024	DDA for Earthing and Lightning Submission	15	01-Apr-22	15-Apr-22	121						Earthing and Lightning Submission															
EM-3290	DDA for Earthing and Lightning approval	21	16-Apr-22	06-May-22	121						DDA for Earthing and Lightning approval															
System Control Philosophy		91	01-Apr-22	30-Jun-22	45						01-Apr-22															
EM-1025	DDA for System Control Philosophy Submission	91	01-Apr-22	30-Jun-22	45						Control Philosophy Submission															
PLC & SCADA System		82	01-Apr-22	21-Jun-22	75						01-Apr-22															
EM-1026	DDA for PLC & SCADA System Submission	61	01-Apr-22	31-May-22	75						PLC & SCADA System Submission															
EM-3310	DDA for PLC & SCADA System Submission	21	01-Jun-22	21-Jun-22	75						DDA for PLC & SCADA System Submission															
Building Service (MV, EL, FS, PD, ELV)		91	01-Apr-22	30-Jun-22	45						01-Apr-22															
EM-1027	DDA for Building Service (MV, EL, FS, PD, ELV) Submission	91	01-Apr-22	30-Jun-22	45						EL, FS, PD, ELV) Submission															
SSWTW		328	13-Jan-22 A	22-Jan-23	1294																					
SU-2170	Obtain revised SSWTW GA, piling schedule , loading plan from PM	0	01-Apr-22		-20						chedule , loading plan from PM ◆															
Civil		98	01-May-22	06-Aug-22	1463						01-May-22															
ELS works - Treatment Plant		98	01-May-22	06-Aug-22	1463						01-May-22															
SU-2135	Prepare and submit ELS works - Treatment Plant	98	01-May-22	06-Aug-22	1463						Prepare and submit ELS works - Treatment Plant															
Foundation Checking and Revised foundation Plan - Treatment Plant		98	01-May-22	06-Aug-22	-50						01-May-22															
SU-2140	Prepare and submit Foundation Checking and Revised foundation Plan - Treatment Plant	98	01-May-22	06-Aug-22	-50						Foundation Checking and Revised foundation Plan - Treatment Plant															
E&M		328	13-Jan-22 A	22-Jan-23	223																					
DDA		297	01-Apr-22	22-Jan-23	223						01-Apr-22															

	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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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	March 2022					April 2022					May 2022				June 2022			
						27	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26
	DDA Submission	297	01-Apr-22	22-Jan-23	115						01-Apr-22												
EM-3000	DDA for E&Mworks for Treatment Plant submission	297	01-Apr-22	22-Jan-23	115						01-Apr-22												
Preliminary Treatment (Mechanical)		152	01-Apr-22	30-Aug-22	231						01-Apr-22												
EM-3010	DDA for Preliminary Treatment (Mechanical) submission	152	01-Apr-22	30-Aug-22	231						01-Apr-22												
Secondary Treatment & Membrane Filtration (Mechanical)		137	01-Apr-22	15-Aug-22	383						01-Apr-22												
EM-3020	DDA for Secondary Treatment & Membrane Filtration (Mechanical) submission	137	01-Apr-22	15-Aug-22	383						01-Apr-22												
Sludge Treatment (Mechanical)		168	01-Apr-22	15-Sep-22	352						01-Apr-22												
EM-3030	DDA for Sludge Treatment (Mechanical) submission	168	01-Apr-22	15-Sep-22	352						01-Apr-22												
Deodorisation (Mechanical)		168	01-Apr-22	15-Sep-22	352						01-Apr-22												
EM-3040	DDA for Deodorisation (Mechanical) submission	168	01-Apr-22	15-Sep-22	352						01-Apr-22												
Electrical Power Supply System		213	01-Apr-22	30-Oct-22	57						01-Apr-22												
EM-3050	DDA for Electrical Power Supply System submission	213	01-Apr-22	30-Oct-22	57						01-Apr-22												
UPS System		229	01-Apr-22	15-Nov-22	291						01-Apr-22												
EM-3060	DDA for UPS System submission	229	01-Apr-22	15-Nov-22	291						01-Apr-22												
Earthing and Lightning System		183	01-Apr-22	30-Sep-22	337						01-Apr-22												
EM-3070	DDA for Earthing and Lightning System submission	183	01-Apr-22	30-Sep-22	337						01-Apr-22												
System Control Philosophy		213	01-Apr-22	30-Oct-22	307						01-Apr-22												
EM-3080	DDA for System Control Philosophy submission	213	01-Apr-22	30-Oct-22	307						01-Apr-22												
PLC & SCADA System		213	01-Apr-22	30-Oct-22	307						01-Apr-22												
EM-3090	DDA for PLC & SCADA System submission	213	01-Apr-22	30-Oct-22	307						01-Apr-22												
Building Service (MV)		244	01-Apr-22	30-Nov-22	276						01-Apr-22												
EM-3100	DDA for Building Service (MV) submission	244	01-Apr-22	30-Nov-22	276						01-Apr-22												
Building Service (EL)		229	01-Apr-22	15-Nov-22	291						01-Apr-22												
EM-3110	DDA for Building Service (EL) submission	229	01-Apr-22	15-Nov-22	291						01-Apr-22												
Building Service (FS)		229	01-Apr-22	15-Nov-22	291						01-Apr-22												
EM-3120	DDA for Building Service (FS) submission	229	01-Apr-22	15-Nov-22	291						01-Apr-22												
Building Service (PD)		244	01-Apr-22	30-Nov-22	276						01-Apr-22												
EM-3130	DDA for Building Service (PD) submission	244	01-Apr-22	30-Nov-22	276						01-Apr-22												
ELV System (CCTV, Access Control and Burglar)		244	01-Apr-22	30-Nov-22	276						01-Apr-22												
EM-3140	DDA for ELV System (CCTV, Access Control and Burglar) submission	244	01-Apr-22	30-Nov-22	276						01-Apr-22												
Civil Requirement		0	13-Jan-22 A	13-Jan-22 A																			
EM-2030	Civil Requirement for SSWTW foundation design (loading distribution, opening for plant mobilization) provided by ATAL	0	13-Jan-22 A																				
Site Safety and Environmental Management		120	01-Apr-22	29-Jul-22	333						01-Apr-22												
SU-2010	Prepare & Submit Sediment sampling and Test Plan SSTP to EPD-(diffuser works)	120	01-Apr-22	29-Jul-22	333						01-Apr-22												
Construction works		1467	30-Jun-21 A	14-Aug-26	13																		
CLP and UU coordination- by others		1090	02-Aug-21 A	13-Sep-25	12																		
CLP-0000	CLP works	1090	02-Aug-21 A	13-Sep-25	12																		
CLP-2000	Permanent Electricity coordination with CLP	180	05-Aug-21 A	09-Sep-22	275																		
CLP-3000	Early Liaise with CLP before the procurement of E&M equipment	180	01-Apr-22	08-Nov-22	443																		
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)		454	01-Apr-22	11-Oct-23	-129						01-Apr-22												
A-1030	Construct Sewers, Rising mains at South Lantau Road : 8 no TTA, ~54 working days per TTA, total 432WD	432	03-May-22	11-Oct-23	-129																		
A-1040	Construct Sewers, Rising mains at Chi Ma Wan Road : 8 no TTA, ~54 working days per TTA, total 432WD	432	01-Apr-22	13-Sep-23	-107																		
The village Sewerage in Pui O Lo Uk Tsuen		382	18-Nov-21 A	28-Mar-23	30																		
Portion B1		352	18-Nov-21 A	23-Mar-23	3																		
B1-1040	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.468m, 48mh, 2wf)	352	18-Nov-21 A	23-Mar-23	3																		
Portion B2		295	01-Apr-22	28-Mar-23	-26						01-Apr-22												
B2-1020	Trial pits, mobilization and water barrier/ fencing/ all necessary signage	17	01-Apr-22	25-Apr-22	-26																		
B2-1040	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.300m, 30mh, 1wf)	278	26-Apr-22	28-Mar-23	-26																		
Portion B2 / Area B22 (Chi Ma Wan Beach)		217	01-Mar-22 A	22-Dec-22	106																		
B22-1005	Obtain LCSD/RC consent	16	01-Mar-22 A	15-Mar-22 A																			

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

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Associated Submarine Outfall and Pui O Sewerage Works



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	March 2022					April 2022					May 2022				June 2022					
						27	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26		
B22-1010	Trial pit before long trench (3 manholes x 12 days)	36	25-Mar-22 A	23-May-22	247	3 manholes x 12 days																			
	Excavation, sewer laying, construction of manhole together with backfill and testing (approx.100m, 4mh,1wf)	60	27-Apr-22	08-Jul-22	247	e together with backfill and testing (approx.100m, 4mh,1wf)																			
	Mobilization and addiional GI (2 nos)	21	22-Mar-22 A	11-Apr-22	-13	addiional GI (2 nos)																			
	GI review, design confirmation, subleting and plants delivery	210	12-Apr-22	22-Dec-22	-13	n confirmation, subleting and plants delivery																			
Section 2 Pui O Sewage Pumping Station and nearby Sewage works		554	05-Jul-21 A	02-Sep-23	-98																				
S2-1000	Pui O sewage Pumping Station and nearby Sewage works (Sectional Completion date 2)	554	05-Jul-21 A	02-Sep-23	-98																				
Construction of Pui O Sewage Pumping Station (Area D, section 2)		316	25-Dec-21 A	26-Jan-23	52																				
Stage 1		302	25-Dec-21 A	06-Jan-23	66																				
Pump Station		248	25-Dec-21 A	02-Nov-22	-93																				
SPS-1023	Erection of water barrier and site formation earth works	30	14-Mar-22 A	08-Apr-22	-46	earth works																			
SPS-1035	Obtain Gi information to verify foundation design (Log and Testing in Lab)	30	25-Dec-21 A	08-Apr-22	-83																				
SPS-1037	Predrilling works (7 nos, 1wf, 5 days per drill)	35	16-May-22	25-Jun-22	-93	Predrilling works (7 nos, 1wf, 5 days per drill)																			
SPS-1040	Piling works (26 nos socket-H piles, 4 days/pile, 1 wf)	104	09-Jun-22	12-Oct-22	-93	Piling works (26 nos socket-H piles, 4 days/pile, 1 wf)																			
SPS-1050	Piling testing	21	10-Oct-22	02-Nov-22	-93																				
SPS-1060	Sheetpiling (approx.1110 m2, sheetpile installation 50 m2/day)	23	09-Apr-22	10-May-22	-16	10 m2, sheetpile in stallation 50 m2/day)																			
SPS-1065	OW and DW installation and pumping test	54	11-May-22	14-Jul-22	-16	OW and DW installation and pumping test																			
Sewers and Rising Mains		223	09-Apr-22	06-Jan-23	66	09-Apr-22																			
SPS-1070	Excavation, sewer laying, construction of manhole and outfall structure, backfill and testing (approx.147m, 11mh, 1wf)	223	09-Apr-22	06-Jan-23	-14	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	09-Apr-22	08-Sep-22	84	backfill and testing (approx.140m, 1wf)																			
SPS-1100	Testing for rising main and optical fibre	31	09-Sep-22	18-Oct-22	133																				
Stage 2		83	17-Oct-22	26-Jan-23	-93																				
SPS-2000	ELS works (approx. 4000m3, 115m3/day, structing 12day/ layer approx. only)	83	17-Oct-22	26-Jan-23	-93																				
Section 3 SSWSTW, HDD and Submarine outfall & POSPS		1390	01-Sep-21 A	14-Aug-26	13																				
S3-1000	SPS, SSWSTW and HDD works	1333	23-Dec-21 A	14-Aug-26	-112																				
Remaining Pui O Sewage Pumping Station (Area D, section 3)		140	01-Apr-22	20-Sep-22	1171	01-Apr-22																			
Statutory Submission & Approval		140	01-Apr-22	20-Sep-22	1171	01-Apr-22																			
SPS-7000	Power Meter Application	140	01-Apr-22	20-Sep-22	1171	Power Meter Application																			
SSWSTW		223	15-Dec-21 A	26-Nov-22	-124																				
Stage 1 Preparation works for HDD and SSWSTW		57	15-Dec-21 A	30-Apr-22	-39	30-Apr-22, Stage 1 Preparation works for HDD and SSWSTW																			
STW-1018	Water barrier and temp. drain (HDD Area)	30	01-Mar-22 A	08-Apr-22	-124																				
STW-9930	Obtain Gi information to verify foundation design (Log and Testing in Lab)	30	15-Dec-21 A	30-Apr-22	-39																				
Stage 2 Works outside HDD area		190	09-Apr-22	26-Nov-22	-124	09-Apr-22																			
STW-1020	Site Clearance, erect water barrier and tree felling stage 2 (3528m2 on woodland & 239nr tree, 100m2/day and 4 nr/day)	70	09-Apr-22	06-Jul-22	-124	& 239nr tree, 100m2/day and 4 nr/day)																			
STW-2012	Construct North East Retaining Wall [outside HDDarea] and backfilling	90	11-Aug-22	26-Nov-22	-124	Construct North East Retai																			
Submarine Outfall		308	01-Sep-21 A	24-Sep-22	-104																				
HDD2-1010	Liaise with existing Shek Pik Supply Tunnel	60	01-Sep-21 A	01-May-22	-131																				
HDD		234	18-Nov-21 A	24-Sep-22	-104																				
Preparation		72	14-Feb-22 A	27-May-22	-90	27-May-22, Preparation																			
On Shore [Land]		71	14-Feb-22 A	27-May-22	-90	27-May-22, On Shore [Land]																			
HDD-1240	Funiture and paving removal	6	14-Feb-22 A	25-Feb-22 A																					
HDD-1330	Formation earth works from +50.4mPD to +48mPD (~6000m3), (23 trips x 6m3 24Trucks = 134m3 per day x 45 working days)	45	15-Feb-22 A	30-Mar-22 A																					
HDD-1340	Erection of temporary platform and footing construction for HDD	30	31-Mar-22 A	10-May-22	-125	footing construction for HDD																			
HDD-1350	Mud pits excavation	15	11-May-22	27-May-22	-125	Mud pits excavation																			
HDD-1780	Installation of monitoring instrumentation	30	01-Apr-22	11-May-22	-76	on of monitoring instrumentation																			
Off Shore [Sea]		45	01-Mar-22 A	07-May-22	-89	07-May-22, Off Shore [Sea]																			
HDD-1010	Procurement, Prefabrication and delivery of temporary support frame for casing	45	01-Mar-22 A	06-Apr-22	-81																				
HDD-1020	Mobilization and install silt curtain for temporary marine platform	12	01-Apr-22	19-Apr-22	-89	for temporary marine platform																			
HDD-1030	Construction of temporary support frame (after MDN)	15	20-Apr-22	07-May-22	-89	Construction of temporary support frame (after MDN)																			
Procurement		234	06-Dec-21 A	24-Sep-22	-104																				
HDD-1360	HDD plant design, fabrication and modification	40	06-Dec-21 A	08-Apr-22	-104																				
HDD-1370	HDD material procurement such as casing and betonite, etc	28	06-Dec-21 A	14-Apr-22	-106																				
HDD-1380	PE pipe manufacturing and delivery to HK	150	21-Mar-22 A	24-Sep-22	-104	and delivery to HK																			

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						27	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26		
1	Delivery to HK		98	18-Nov-21 A	05-May-22	-106	05-May-22, Delivery to HK																		
	HDD-1390	Submission to the Ministry of Commerce for HDD equipment	58	18-Nov-21 A	08-Apr-22	-101																			
	HDD-1400	Customs clearance and plant delivery to HK, such as HDD rig, mud tank, drilling fluid processing system, etc	11	19-Apr-22	30-Apr-22	-106	rig, mud tank, drilling fluid processing system, etc																		
	HDD-1410	Customs clearance and plant delivery to HK, such as casing, driller, drill Pipe, reamer, etc	11	22-Apr-22	05-May-22	-106	ry to HK, such as casing, driller, drill Pipe, reamer, etc																		
	Construction		83	01-Apr-22	14-Jul-22	-89	01-Apr-22																		
	1st tunnel		83	01-Apr-22	14-Jul-22	-89	01-Apr-22																		
	Land side (HDD Rig 1)		35	28-May-22	09-Jul-22	-125	28-May-22																		
	HDD-1250	Mobilization & Setup of HDD equipments	35	28-May-22	09-Jul-22	-125	Mobilization & Setup of HDD equipments																		
	Sea side (HDD Rig 2)		83	01-Apr-22	14-Jul-22	-89	01-Apr-22																		
	HDD-1040	Working barge maintainance & arrival in place	25	01-Apr-22*	05-May-22	-87	maintainance & arrival in place																		
	HDD-1045	Barge HDD preparation work	5	09-May-22	13-May-22	-89	Barge HDD preparation work																		
	HDD-1046	Mobilization and install silt curtain for casing for HDD works	12	14-May-22	27-May-22	-89	Mobilization and install silt curtain for casing for HDD works																		
	HDD-1050	Casing installation (by HDD rig)	39	28-May-22	14-Jul-22	-89	Casing installation (by HDD rig)																		
	Remaining Trunk Sewers, Rising Mains & Emergency Discharge Pipe		1019	02-Nov-21 A	10-May-25	260																			
	R-1000	Remaining Truck Sewers, Rising Mains & Emergency Discharge Pipe	920	01-Apr-22	10-May-25	260	& Emergency Discharge Pipe																		
	Portion C1 / SSWTW Section		240	02-Nov-21 A	17-Aug-22	498																			
	C1-1000	TTA application for Portion C1/ SSWTW Section (Plan ID 1303703) (TTA with 24hrs permit)	240	02-Nov-21 A	17-Aug-22	498																			
	Portion C1 / Lo Wai Tsuen Section		240	02-Nov-21 A	17-Aug-22	394																			
	C3-1000	TTA application for Portion C1/ Lo Wai Tsuen Section (Plan ID 1303702) (TTA with 24hrs permit)	240	02-Nov-21 A	17-Aug-22	394																			

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