

Our Ref : 382766/(DC/2018/08)/M45/110/(802804)

Your Ref :

14 January 2022

Distribution List

Dear Sirs,

**Contract No. DC/2018/08
Inter-reservoirs Transfer Scheme –
Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
Monthly Environmental Monitoring and Audit (EM&A) Report
(December 2021)**

I write to inform you that the monthly EM&A Reports for December 2021 have been certified by the ET leader and verified by the IEC in accordance with Condition 4.3 of the EP. The report will be submitted to EPD separately.

Please note that the following measures have been taken to enhance the EM&A programme:

- Proposed changes to EM&A programme
- Enhancement of records of water monitoring and noise monitoring

Should you have any queries, please contact my Resident Engineer Mr. Irving Sze at 3959 7366.

Yours faithfully,



Wilson Lam
Chief Resident Engineer

Distribution List:

SE/DP2, DSD

E/NTE (Headworks 1), WSD

- Attn: Mr. N.F. Wan, Antony

- Attn: Mr. Anthony Lau

WL/JS/cc
WJL

Our ref: 14-01-2022

14-01-2022

By email: cre.wilsonlam@hkirts.com

Binnies Hong Kong Limited
Unit No. 2507-2509, 25/F, The Octagon,
No. 6 Sha Tsui Road,
Tsuen Wan, N.T.
(Attn: Wilson Lam)

Dear Mr. Lam,

Re: Contract No. CM 10/2018

Independent environmental checker services for inter-reservoirs transfer scheme (IRTS)

– water tunnel between Kowloon byewash reservoir and lower shing mun reservoir

30th Monthly EM&A Report (Rev. 2)

Reference is made to the submission of the 30th Monthly EM&A Report (Rev. 2) and provided to us via email dated on 13-01-2022 for our review and comment.

The ET Leader and ET are reminded that according to condition 2.2 of the Environmental Permit No. EP-345/2009/A the ET and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with the relevant EM&A requirements as contained in the EM&A Manual.

A verification process has been carried out to review the submission in connection with the Environmental Permit and EM&A Manual submitted by the ET. Please be informed that IEC has comments on the captioned submission.

- Pursuant to Sections 5.3.6, concern has been raised on the sample condition when delivered to the laboratory for SS testing. Such information was yet to be provided in the SS test reports. A sufficient description on the sample condition when delivered to the laboratory are better to be available in the SS test reports for the sake of clarify.
- Analysis of SS was not carried out with reference to the testing method and detection limit stated in Section 5.3.9 of EM&A Manual.
- Pursuant to Sections 5.3.9, 5.3.10 and 5.3.13 of EM&A manual, SS results were released in HOKLAS endorsed reports in the reporting month. None of the SS results were obtained from HOKLAS endorsed reports since the project commencement.

IEC hereby writes to verify the captioned submission in accordance with Condition 2.1 of the Environmental Permit No. EP-345/2009/A.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

嘉誠管理顧問有限公司

Ka Shing management consultant Limited



Yours faithfully,

For and on behalf of

Ka Shing Management Consultant Limited

Douglas Wong

Dr. Wong

Independent Environmental Checker

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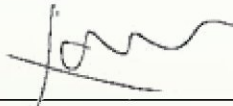
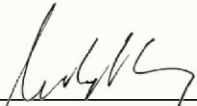





30th Monthly EM&A Report (Rev. 2)
December 2021

for

**Inter-Reservoir Transfer Scheme –
Water Tunnel Between Kowloon Byewash Reservoir
and Lower Shing Mun Reservoir
(Contract No.: DC/2018/08)**

	Prepared by:	Checked by:	Certified by:
Name	Kelvin LAU	Tandy TSE	Kevin LI
Position	Environmental Team Member	Environmental Team Member	Environmental Team Leader
Signature			
Date	13 January 2022	13 January 2022	13 January 2022

Revision History

Rev.	Description	Date
2	Updated Appendix K and Section 3.6 as per IEC's comments	13 January 2022
1	Updated Section 5.2 and Appendix K as per IEC's comments.	12 January 2022
0	1 st Submission for Comments	5 January 2022

EXECUTIVE SUMMARY

- E1. Acuity Sustainability Consulting Limited (ASCL) has been commissioned by Bouygues Travaux Publics to undertake the assignment as the Environmental Team (ET) for the Designated Project of West Kowloon Drainage Improvement – Inter-reservoirs Transfer Scheme (IRTS) (the Project), with Contract No. DC/2018/08.
- E2. This is the 30th Monthly Environmental Monitoring and Audit (EM&A) Report presents EM&A works undertaken in the period from 1 to 31 December 2021. EM&A works were performed in accordance with the approved EM&A Manual and conditions stipulated in the amended Environmental Permit EP-345/2009/A.
- E3. According to the approved EM&A Manual, construction noise and water quality monitoring are required to be performed during the construction phase of the Project. Five (5) sessions of construction noise impact monitoring at NM1 and NM2 for daytime except general holidays and Sundays; four (4) sessions of construction noise impact monitoring at NM1 for daytime during general holidays and Sundays and five (5) sessions of construction noise impact monitoring at NM1 for all days during evening. Fourteen (14) sessions of impact water quality monitoring at all approved monitoring points in the reporting period.
- E4. After the joint water sampling inspection with the ER, the IEC representative, the Contractor and the ET on 15 October 2021, on days when very shallow flow (<11cm of water depth) were observed at the control points, actions will be taken to collect samples at the sampling locations.
- E5. No exceedance was recorded for noise and water quality monitoring in the reporting period.
- E6. Joint weekly site inspections were conducted by representative of ET, Contractor and Engineer on 7, 14, 21 and 28 December 2021. Details of the audit findings and implementation status are presented in Section 5.
- E7. No complaint regarding environmental issue was received in the reporting period.
- E8. No notification of summons nor prosecution have been received since the commencement of the Project.
- E9. The variation of Environmental Permit was issued on 11 November 2020. The amendments incorporated into the Environmental Permit are summarized as follow:
- “Location of Designated Project” changed;
 - Location of cofferdam changed;
 - Content of earth bund added;
 - More plant species of conservation importance added.
- E10. Construction works undertaken in the reporting period include the following:

Works Area	Major Site Activities
Portion A & D	<ul style="list-style-type: none">• Pipe piling works (Stage 2B ELS)
Portion C	<ul style="list-style-type: none">• Mined tunnel construction works

E11. Construction works to be undertaken in the next reporting period include the following:

Works Area	Major Site Activities
Portion A	<ul style="list-style-type: none">• Pipe piling works (Stage 2B ELS)
Portion C	<ul style="list-style-type: none">• Mined tunnel construction works

E12. The Contractor was reminded that all works to be undertaken within the water gathering ground of Lower Shing Mun Reservoir (LSMR) and Kowloon Byewash Reservoir (KBR) must fulfill statutory environmental requirements, especially in watercourse protection.

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1. INTRODUCTION

- 1.1 Acuity Sustainability Consulting Limited (ASCL) has been commissioned by Bouygues Travaux Publics to undertake the assignment as the Environmental Team (ET) for the contract of West Kowloon Drainage Improvement – Inter-reservoirs Transfer Scheme (IRTS) (the Project), with Contract No. DC/2018/08. The Project comprises the following principal works elements:
- Construction of a new water tunnel, with about 2.8 km in length and 3m in diameter, from KBR to LSMR;
 - Construction of an intake structure at KBR and an isolation system;
 - Construction of an outfall structure at LSMR with an energy dissipater; and
 - All associated civil, structural, geotechnical, electrical and mechanical works, including landscaping, permanent and temporary accesses as may be necessary for the completion of the works elements listed above.
- 1.2 The Project site consists of the intake site at KBR and the outfall site at the Lower Shing Mun Reservoir. The layout of the Project site is presented in **Appendix A**.
- 1.3 This project is a Designated Project under Part I of Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO). An Environmental Permit (EP), with Permit No. EP345/2009, was granted to the Water Supplies Department (WSD) for permitting the construction and operation of this Project. Subsequently, the EP was amended and a variation of EP, with Permit No. EP345/2009/A, was granted to the WSD on 11 November 2020.
- 1.4 The commencement date of construction of the Project was 12 July 2019. No major works except site clearance and preparation was performed before the commencement date of construction.
- 1.5 This is the 30th Monthly Environmental Monitoring and Audit (EM&A) Report presenting results and findings of all EM&A work required in the approved EM&A Manual for the period from 1 to 31 December 2021.
- 1.6 All project information since the commencement of work under EP including Monthly EM&A Reports is made available to the public via internet access at the website: <https://www.epd.gov.hk/eia/register/permit/latest/vep5822020.htm>
- 1.7 As part of the EM&A programme, baseline monitoring is required for determining the ambient environmental conditions. Baseline monitoring including background noise and water quality were conducted in periods from 3 May 2019 to 22 June 2019 in accordance to the approved EM&A Manual before commencement of construction works. The

corresponding Baseline Monitoring Report has been compiled by the ET and verified by the Independent Environment Checker (IEC) prior submitting to the Environmental Protection Department.

1.8 Project organization structure is presented in Figure 1.1.

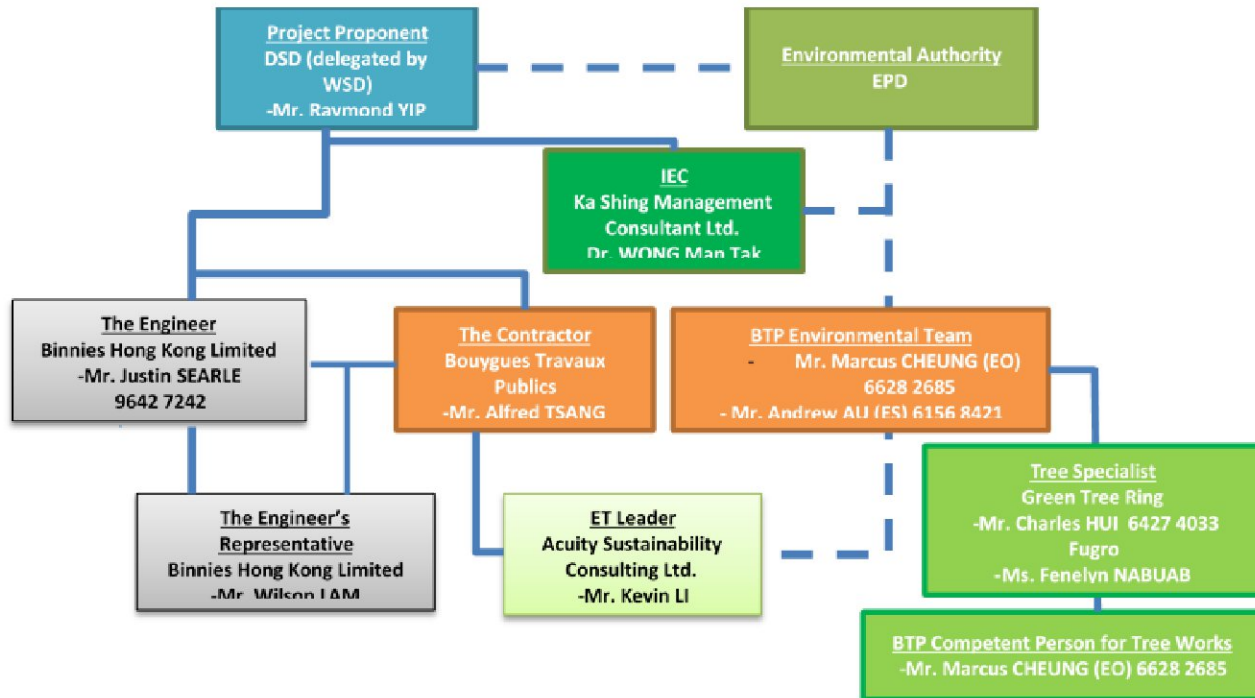


Figure 1.1 Project Organization Chart

1.9 Contact details of key personnel are presented in Table 1.1 below.

Table 1.1 Contact Details of Key Personnel

Party	Position	Name	Contact No.
Bouygues Travaux Publics	Site Agent	Mr. Alfred Tsang	3959 7317
Acuity Sustainability Consulting Limited	Environmental Team Leader	Mr. Kevin Li	2698 6833
Ka Shing Management Consultant Limited	Independent Environment Checker	Dr. Douglas Wong	2618 2166

1.10 Details of major construction activities undertaken in this reporting period are shown in Table 1.2 below. The construction programme is presented in **Appendix B**.

Table 1.2 Summary of Construction Activities Undertaken in the Reporting Period

Works Area	Major Site Activities
Portion A & D	<ul style="list-style-type: none"> • Pipe piling works (Stage 2B ELS)
Portion C	<ul style="list-style-type: none"> • Mined tunnel construction works

1.11 A summary of status of environmental legislations related licences, permits and/or notifications is presented in Table 1.3.

Table 1.3 Summary of Environmental Licences and Permits of the Project

Type of Permit / License	Date of Application	Reference Number	Status	Duration
Environmental Permit	N/A	EP-345/2009	Valid	Along project
Chemical Waste Producer	22-Feb-2019	WPN5218-733-B2557-01	Approved.	Along project
Notification of The Air Pollution Control (Construction Dust) Regulation	1-Mar-2019	442711	Completed (No approval required)	Along project
Billing Account of Trip Ticket System	25-Feb-2019	703344617	Approved on 13 March 2019	Along project
Effluent Discharge License for LSMR	4-Apr-2019	WT00034164-2019	Approved	Until 31-Jul-2024
Effluent Discharge License for KBR	30-Sep-2019	WT00035821-2020	Approved	Along project (Until 31-May-2025)
Construction Noise Permit for works at Portion A	9-Sep-2021	GW-RN0694-21	Approved (Revision submitted to EPD on 17-Dec-2021)	29-Sep-2021 to 27-Mar-2022
Construction Noise Permit for works at Portion C	15-Nov-2021	GW-RN0866-21	Approved	14-Dec-2021 to 13-Jun-2022
Construction Noise Permit for works at Tai Po Road	25-Oct-2021	GW-RN0804-21	Approved	13-Nov-2021 to 12-May-2022

Remark: Information for table 1.3 will be updated by the Contractor.

1.12 Contract documents required under conditions stipulated in the amended Environmental Permit are summarized in Table 1.4.

Table 1.4 Documents Submission Required in the amended Environmental Permit

Document	EP Condition No.	Timeframe	Status	Remarks
Landscape Plan	2.4 & 2.5	Submission of document shall be done no later than 6 months after commencement of construction.	The document was submitted to EPD on 9 January 2020.	Submission date to be updated with DSD.
Condition Survey Report for Historic Structures	2.6	Document shall be deposited to the authority before commencement of construction.	The document was deposited to EPD on 3 June 2019.	N.A.
Baseline Monitoring Report	4.2	Submission of document shall be done at least two weeks before commencement of construction.	The document was submitted to EPD on 28 June 2019.	1 st Revision was submitted to EPD on 6 August 2019.

2. ENVIRONMENTAL MONITORING REQUIREMENTS AND PROGRAMME

2.1 The Environmental Monitoring and Audit requirements are set out in the approved EM&A Manual. Construction noise and water quality were identified as key environmental issues during the construction phase. A summary of the requirements for conducting impact noise and water quality monitoring is presented in the sub-sections below.

Monitoring Parameters, Time and Frequency

2.2 Impact monitoring parameters are summarized in Table 2.1 below.

Table 2.1 – Summary of Impact Monitoring Parameters

Environmental Aspect	Parameters	Frequency
Noise	<ul style="list-style-type: none"> • 1 no. of $L_{eq}(30min)$ noise measurements between 0700-1900 hours on any normal weekdays • 3 nos. of consecutive $L_{eq}(5min)$ noise measurement between 0700-1900 hours on general holidays or Sunday (if worksare undertaken) • 3 nos. of consecutive $L_{eq}(5min)$ noise measurement between 1900-2300 hours (if evening worksare undertaken) • 3 nos. of consecutive $L_{eq}(5min)$ noise measurement between 2300-0700 hours (if nighttime worksare undertaken) 	<ul style="list-style-type: none"> • Once per week
Water Quality	<ul style="list-style-type: none"> • Dissolved Oxygen (mg/L) • Dissolved Oxygen Saturation (%) • pH Value • Turbidity (NTU) • Temperature (° C) • Suspended Solids (mg/L) 	<ul style="list-style-type: none"> • 3 times per week • Interval between two sets of monitoring shall not be less than 36 hours

Monitoring Locations

Noise

- 2.3 According to Section 4.4 of the approved EM&A Manual, the two most representative and affected noise sensitive receivers (NSRs) were designated as monitoring stations. Details regarding the two noise monitoring stations are shown in Table 2.2. Layout plans showing the monitoring locations are presented in **Appendix C**.

Table 2.2 – Designated Noise Monitoring Location

Location ID (ID in EM&A Manual)	Type of NSR	Location	Description
NM1 (LG)	Residential	Tower 1, Lakeview Garden	The closest NSR to the Outfall Site (LSMR)
NM2 (VH)	Residential	4 ½ Milestone, Tai Po Road	The closest NSR to the Intake Site (KBR)

Water Quality

- 2.4 According to Section 5.4 of the approved EM&A Manual, water quality monitoring should be performed at designated monitoring stations. Details regarding the four designated water quality monitoring stations are shown in Table 2.3.

Table 2.3 – Original Water Quality Monitoring Location

ID	Description	Location
C1	Control Point near Intake Site	Stepped channel by-passing KBR
D1	Impact Monitoring Point near Intake Site	Junction of stepped channel and overflow channel of KBR
C2	Control Point near Outfall Site	Natural Stream directing to Lower Shing Mun Reservoir
D2	Impact Monitoring Point near Outfall Site	Overflow channel of Lower Shing Mun Reservoir

- 2.5 As conditions of designated water quality monitoring locations have been changed since the issuing of the approved EM&A Manual, location C1, D1 and D2 are no longer feasible for conducting water quality monitoring. Therefore, the three locations were proposed to relocating to alternative monitoring locations. The proposal of alternative monitoring location was approved by EPD on 20 May 2019. Details regarding the approved water quality monitoring stations are shown in Table 2.4. Layout plans showing the original and approved monitoring locations are attached in **Appendix C**.

Table 2.4 – Approved Water Quality Monitoring Location

ID	Description	Location
C1b	Control Point near Intake Site	Overflow channel of Kowloon Reception Reservoir (KRR)
D1b	Impact Monitoring Point near Intake Site	KBR
C2	Control Point near Outfall Site	Natural Stream directing to LSMR
D2a	Impact Monitoring Point near Outfall Site	LSMR

Monitoring Equipment

Noise

- 2.6 As referenced to the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the International Electrical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring.
- 2.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0dB. The acoustic calibrator to be used shall meet IEC 942, 1988 Class 1 specifications. Annual calibration of all sound level meters and acoustic calibrators shall be conducted by a laboratory in Hong Kong or the manufacturer in compliance with national standards as recommended by the manufacturer of the sound level meter and acoustic calibrator.

Water Quality

- 2.8 DO and water temperature should be measured in-situ by a DO/temperature meter. The equipment should be portable and weather proof using a DC power source. It should have a membrane electrode with automatic temperature compensation complete with a cable. The equipment should be capable of measuring:
- A DO level in the range of 0-20 mg/l and 0-200% saturation; and
 - A temperature of between 0 and 45 degree Celsius.
- 2.9 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions (e.g. Orion Model 250A or an approved similar instrument) accordingly to the Standard Methods, APHA.
- 2.10 Turbidity should be measured in situ by the nephelometric method. The instrument should be portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment should be capable of measuring turbidity between 0-1000 NTU.

- 2.11 A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends should be used. If the approved water sampler could not be used in shallow water (<11 cm), a water bucket or a small bottle made of inert material (e.g. plastic) was used instead.
- 2.12 In-situ monitoring instruments should be checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals.

Environmental Quality Performance Limits (Action/Limit Levels)

- 2.13 The baseline results form basis for determining the environmental acceptance criteria for the impact monitoring. Derived Action/Limit Levels for noise and water quality are summarised in Table 2.5 and 2.6 respectively.

Table 2.5 – Action/Limit Levels for Construction Noise Monitoring

Time Period	Action Level	Limit Level, dB(A)
Daytime (0700-1900) except general holidays and Sunday <i>*Measurements in L_{eq} (30min)</i>	When one documented compliant is received	75
Daytime (0700-1900) during general holidays and Sundays and all days during Evening (1900-2300 hrs) <i>*Measurements in L_{eq} (5min)</i>		60
Night-time (2300 – 0700 hrs) <i>*Measurements in L_{eq} (5min)</i>		45

Table 2.6 – Action/Limit Levels for Water Quality Monitoring

Parameter	Performance Criteria	Monitoring Location	
		D1b	D2a
Dissolved Oxygen (mg/L)	Action Level	6.1	6.3
	Limit Level	5.8	6.1
pH Value	Action Level	8.8	9.0
	Limit Level	≤ 6.5 OR ≥ 8.9	≤ 6.5 OR ≥ 9.2
Turbidity (NTU)	Action Level	19.5	13.1
		OR 120% of upstream control station of the same day	
	Limit Level	23.4	18.9
		OR 130% of upstream control station of the same day	
Suspended Solids (mg/L)	Action Level	9.0	22.0
		OR 120% of upstream control station of the same day	
	Limit Level	13.0	25.0
		OR 130% of upstream control station of the same day	

Remarks:

1. Non-compliance occurs when monitoring result of Dissolved Oxygen is lower than the limits.
2. Non-compliance occurs when monitoring result of pH value is higher than the Action Levels or when the result does not fall into the pH range of the Limit Levels.
3. Non-compliance occurs when monitoring results of Turbidity and Suspended Solids is higher than the limits.

Event / Action Plan

- 2.14 Should there be any triggering of Action Levels, or exceedance of Limit Levels, the Event / Action Plan established in the approved EM&A Manual should be followed. The Event / Action Plan is attached in **Appendix G**.

3. IMPACT MONITORING METHODOLOGY AND RESULTS

Equipment Used

- 3.1 Equipment used in impact noise and water quality monitoring during the reporting period is summarized in Table 3.1 below. Calibration certificates of equipment used are attached in **Appendix D**.

Table 3.1 – Equipment Used in the Reporting Period

Environmental Aspect	Equipment	Model
Noise	Sound Level Meter	NTi Audio XL2
	Calibrator	Svantek SV 33B
	Portable Anemometer	RS PRO RS-90
Water Quality	Multifunctional Meter	HORIBA U-53 Multiparameter Water Quality Meter

Monitoring Procedure

Noise

- 3.2 Field measurement procedures for each set of the noise level measurement are as followed:
- i. Record the field condition including weather conditions and any other potential source of interference;
 - ii. Turn the power of sound level meter on;
 - iii. Check the general condition of the sound level meter and the battery status;
 - iv. Mount the sound level meter onto a tripod of 1.2 m height;
 - v. Check the distance of the probe from closest facade;
 - vi. Adjust the orientation of probe so that it is facing the project site;
 - vii. Calibrate the sound level meter by using acoustic calibrator;
 - viii. Select the period of measurement to be 30 minutes;
 - ix. Select the appropriate displaying unit, dB(A);
 - x. Collect and record the sampled data;
 - xi. Calibrate the sound level meter by using acoustic calibrator. Repeat procedure ii. to xi. if the difference in calibration level is more than 1.0 dB.
- 3.3 All noise measurements were performed in the absence of fog, rain and wind with a speed exceeding 5m/s or wind with gusts exceeding 10m/s. Wind speed was checked with portable wind speed meter.

Water Quality

- 3.4 Field measurement procedures for each set of the water quality measurement are as followed:
- i. The DO probe of the multifunctional meter is checked by wet bulb method; the pH and turbidity probes are checked against standard solutions. Record the checking result;
 - ii. Record the field condition including weather conditions and any other potential source of interference;
 - iii. Lower the sampler into water body and rinse it with water in the target water body;
 - iv. Fill the sampler until adequate sample is collected. Replicate sample at each monitoring location is required;
 - v. Rinse the bottles by the sample before transferring samples into containing bottles;
 - vi. Rinse the probe of multimeter with distilled water;
 - vii. Measure and record temperature, turbidity, pH value and DO of each bottle of sample;
 - viii. Bottles containing sample is stored temporarily in insulation box with ice until reaching the laboratory;
- 3.5 Analysis of SS was carried out in a HOKLAS accredited laboratory. Standard test method, APHA 2540D, in accordance to American Public Health Association: Standard Methods for the Examination of Water and Wastewater APHA was adopted. According to the standard, 1000 mL of sample should be obtained and the reporting limit should be 2.5 mg/L.
- 3.6 After confirmed with the laboratories, all samples were received in chilled condition and complied with EM&A requirement Section 5.3.6.

Data Management and QA/QC

- 3.7 The monitoring data were handled by the ET's in-house data recording and management system. Laboratory responsible for laboratory analysis would follow QA/QC requirements as set out under HOKLAS scheme.
- 3.8 The in-situ monitoring data measured in the equipment were recorded by both field operators and by the equipment itself. Laboratory analysis results were directly issued by the designated laboratory. All data were then input into a computerized database which is properly maintained by the ET. Cross checking between results was performed by other personnel.

Noise Monitoring Result

- 3.9 Construction noise monitoring was performed at during the reporting period. No work was conducted during restricted hours at KBR as confirmed by the Contractor, therefore no noise monitoring was performed during restricted hours at NM2 in the reporting period.

- 3.10 Evening time construction work has been conducted since 25 March 2020. Evening time monitoring was conducted on 1, 9, 15, 22 and 29 December 2021 at NM1. The evening time construction noise monitoring data is presented in Table 3.2

Table 3.2 Summary of Evening Time Noise Monitoring Result

Monitoring Location	Time Period	Leq(5min), dB(A)			Limit Level, dB(A)
		Mean	Max	Min	
NM1	All days during Evening (1900-2300)	53.0	55.6	49.3	60

No night time work was conducted in the reporting period as confirmed by the Contractor.

- 3.11 Daytime during general holidays and Sundays construction work was conducted on 5, 12, 19 and 26 December 2021. Construction noise monitoring was also conducted in the same days. The daytime during general holidays and Sundays construction noise monitoring data is presented in Table 3.4.

Table 3.4 Summary of Daytime during General Holidays and Sundays Noise Monitoring Result

Monitoring Location	Time Period	Leq(5min), dB(A)			Limit Level, dB(A)
		Mean	Max	Min	
NM1	Daytime (0700-1900) during general holidays and Sundays	53.8	56.7	51.7	60

- 3.12 Five (5) sessions of construction noise impact monitoring at NM1 and NM2 for daytime except general holidays and Sundays. The noise monitoring data is presented in **Appendix E** and results are summarized in Table 3.5.

Table 3.5 Summary of Construction Noise Monitoring Results

Monitoring Location	Time Period	Leq(30min), dB(A)			Limit Level, dB(A)
		Mean	Max	Min	
NM1	Daytime (0700 – 1900) except general holidays and Sunday	58.6	63.2	53.3	75
NM2		56.7	59.2	55.2	

- 3.13 No construction noise related complaint was received in the reporting period. There was no Action / Limit Levels exceedance of construction noise recorded in the reporting period.

3.14 Weather conditions were mainly cloudy with sunny intervals during daytime measurements, and mainly a clear sky with occasional cloud coverage during evening and night time measurements. Summary of meteorological data is presented in **Appendix E**.

Water Quality Monitoring Result

3.15 Water quality monitoring was performed at approved monitoring locations, i.e. C1b, D1b, C2 and D2a, during the reporting period.

3.16 Fourteen (14) sessions of water quality monitoring were performed at each of the approved monitoring locations. The water quality monitoring data is presented in **Appendix F** and results are summarized in Table 3.6.

Table 3.6 Summary of Water Quality Monitoring Results

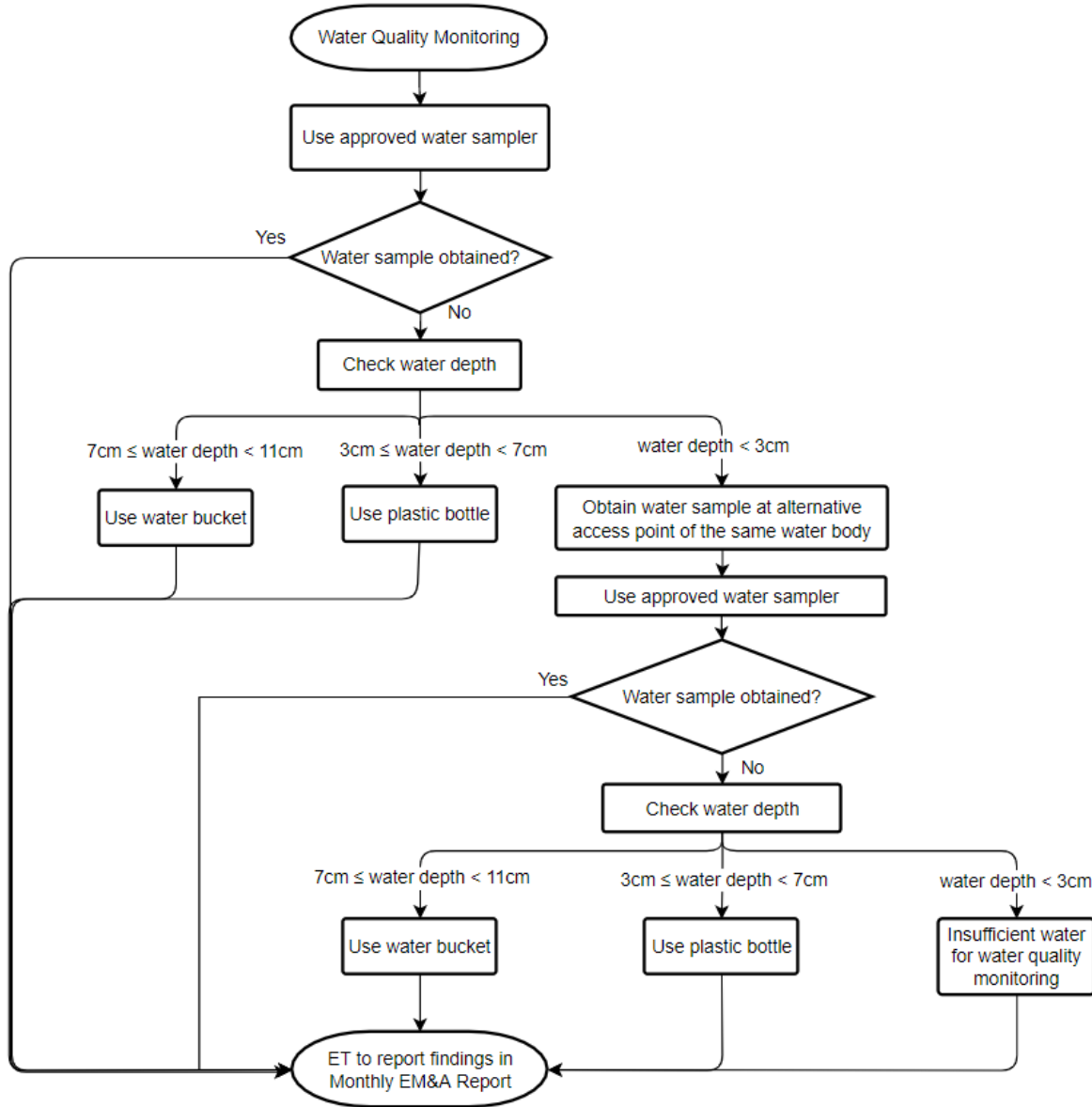
Parameters		C1b	D1b	C2	D2a
pH Value	Mean	7.8	7.4	7.0	7.4
	Max	8.6	7.9	7.1	7.8
	Min	6.7	6.7	6.9	6.8
Dissolved Oxygen (mg/L)	Mean	7.4	7.5	7.5	7.5
	Max	8.0	8.0	7.8	8.0
	Min	7.1	7.1	7.3	7.1
Dissolved Oxygen Saturation (%)	Mean	80.6	81.8	84.0	82.9
	Max	92.6	91.3	87.3	90.8
	Min	67.6	68.1	80.6	74.3
Turbidity (NTU)	Mean	7.5	6.4	15.2	4.8
	Max	17.3	9.2	16.0	7.6
	Min	1.0	3.3	14.4	2.1
Suspended Solids ¹ (mg/L)	Mean	12.8	4.3	5.4	3.4
	Max	55.0	9.0	8.8	7.0
	Min	2.5	2.5	2.5	2.5

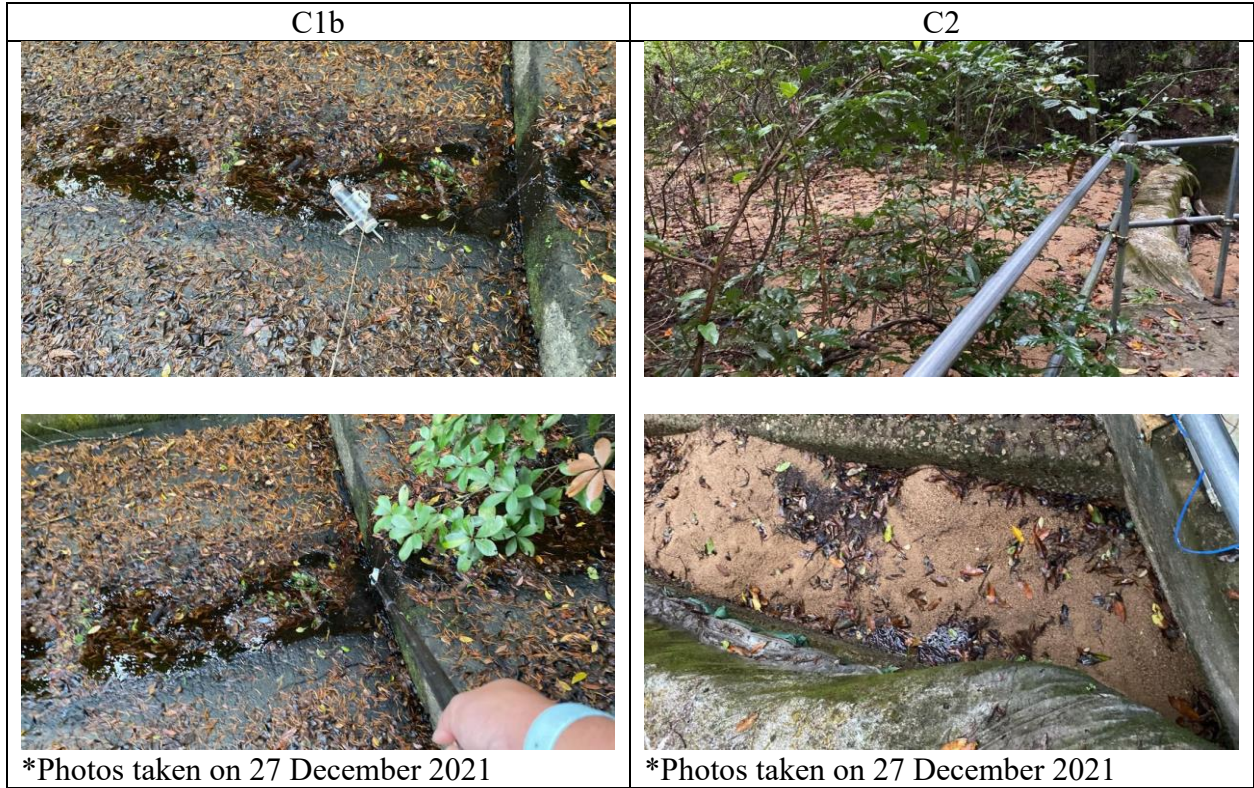
Remarks:

1. Lower detection limit of Suspended Solids is 2.5. Data lower than such limit is regarded as 2.5 in result presentation.

3.17 The water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) changes in time. Due to the access constraint, water sampling could only be done at the boundary of the water body. Hence, the actual sampling location of D2a is subject to the actual water level of the reservoir and was determined on-site at locations close to the site.

3.18 After the joint water sampling inspection with the ER, the IEC representative, the Contractor and the ET on 15 October 2021, on days when very shallow flow (<11cm of water depth) were observed at the control points, actions will be taken to collect samples at the sampling locations. At the control point C1b, a small plastic bottle was used to collect samples according to the flow chart below. At the control point C2, samples were collected from another access to the water body.





3.19 Weather conditions during monitoring were mainly cloudy with sunny intervals.

4. WASTE MANAGEMENT

4.1 An on-site environmental coordinator, i.e. Environmental Officer, has been employed by the Contractor to coordinate and supervise the project waste management works.

4.2 Waste arisen from the construction works are classified into the followings:

- Construction and demolition (C&D) material;
- Chemical waste; and
- General refuse.

4.3 Waste disposal record provided by the Contractor is summarized in Table 4.1.

Table 4.1 Summary of Waste Disposal

Reporting period	Quantity					
	Inert C&D Materials (in'000m ³)	Chemical Waste (in'000L)	Non-inert C&D Materials			
			Others, e.g. General Refuse disposed at Landfill (in'000m ³)	Recycled materials		
				Paper/card board (in'000kg)	Plastics (in'000kg)	Metals (in'000kg)
December 2021	0.0797	0.8	0.01460	0	0	0

4.4 The Monthly Summary Waste Flow Table is presented in **Appendix H**.

5. SITE INSPECTION

- 5.1 Joint weekly site inspections were conducted by representative of ET, Contractor and Engineer so as to monitoring the implementation of proper environmental pollution control and mitigation measures. Four (4) site inspections were performed in the reporting period.
- 5.2 One joint site inspection with IEC was also undertaken on 7 December 2021. Minor deficiencies were observed during weekly site inspection. Inspection findings are summarized in Table 5.1.

Table 5.1 Weekly Inspection Findings

Date	Location	Observation(s)	Follow-up Status
7 December 2021	LSMR	1. Drip tray should be given to chemical containers.	1. Chemical containers have been collected by licensed collector.
16 December 2021	LSMR	No environmental deficiency was observed.	N.A.
21 December 2021	LSMR	1. More than 20 bags of cement should be properly covered.	1. The cement bags have been well covered by tarpaulin.
28 December 2021	LSMR	No environmental deficiency was observed.	N.A.

6. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

- 6.1 No exceedance was recorded for noise and water quality monitoring in the reporting period.
- 6.2 There was no environmental related complaint received in the reporting period.
- 6.3 There was no notification of summon and successful prosecution for breaches of current environmental protection/pollution control legislation in the reporting period.
- 6.4 The Cumulative statistics on complaints, notifications of summons and successful prosecutions is presented in **Appendix K**.

7. IMPLEMENTATION STATUS OF MITIGATION MEASURES

7.1 The Contractor has been implementing environmental mitigation measures set out in the approved EM&A Manual subject to the actual site condition. The implementation schedule is presented in **Appendix I**. Mitigation measures generally implemented by the Contractor in the reporting period are summarized in Table 7.1.

Table 7.1 Implemented Environmental Mitigation Measures in the Reporting Period

Environmental Aspect	Mitigation Measures Implemented
Air Quality	<ul style="list-style-type: none"> • Water spraying at works area before, during and after operation • Restricting heights from which materials were to be dropped • All vehicles were washed to remove dusty materials immediately before leaving the site • Erection of hoarding of not less than 2.4m in height • Covering dusty materials stockpile entirely with impervious tarpaulin • Spraying dusty materials with water immediately prior to any loading, unloading or transfer operation
Construction Noise	<ul style="list-style-type: none"> • The Contractor had been submitting method statement to the Engineer Representative for the approval of working method, equipment and noise mitigation measures to be used before commencing any work • Unused equipment was switched off • Regular maintenance of plants and equipment
Water Quality	<ul style="list-style-type: none"> • Provision of desilting facilities within works area capable of controlling discharge of SS to comply with WPCO/TM-DSS • Preparing of Contingency Plan which detailing the response and procedures when there was accidental spillage • Provision of channels, earth bunds and sand bags barriers for directing surface runoff to desilting facilities • Existing manholes were covered • Portable chemical toilets were provided on-site and licensed contractor was employed for the collection and disposal process • Two layers of silt curtain were deployed to separate the works area from water gathering ground • Oil and grease removal materials were provided • Exposed slopes were either shotcreted or covered by impervious tarpaulin

Waste Management	<ul style="list-style-type: none"> • Provision of on-site coordinator for waste management • Excavated material was reused on site as far as practicable to minimize off-site disposal • Sorting of waste materials into inert/non-inert type on-site • Trip Ticket System was implemented for control of C&D waste disposal • Covered bins were provided for the containment of general refuse • Toolbox talks were provided to workers for enhancing their awareness
Ecology	<ul style="list-style-type: none"> • Clear definition of site boundary was provided • <i>Pavetta hongkongensis</i> had been transplanted on-site • Eating, leaving food and feeding wildlife are forbidden in works area • Fishing was forbidden in works area • Litter was removed off-site regularly • Unused equipment was switched off
Landscape and Visual	<ul style="list-style-type: none"> • Retained trees were protected • Hoarding erected was compatible with surrounding setting
Cultural Heritage	<ul style="list-style-type: none"> • Condition survey was conducted prior to the commencement of construction • Vibration monitoring had been implemented in accordance with recommendations in the condition survey report

8. ENVIRONMENTAL FORECASTING

8.1 As advised by the Contractor, major construction works to be performed in the next reporting month, i.e., January 2022, include the followings:

Works Area	Major Site Activities
Portion A	<ul style="list-style-type: none">• Pipe piling works (Stage 2B ELS)
Portion C	<ul style="list-style-type: none">• Mined tunnel construction works

8.2 The Contractor is reminded to properly implement mitigation measures for each specified works. The Contractor should also carefully program the drainage diversion and TBM launching platform works so as to critically protect the water gathering ground of LSMR during construction.

8.3 Tentative schedule of impact construction noise and water quality monitoring for the next reporting month, i.e., January 2022, is presented in **Appendix J**. Monitoring will be performed at same locations presented in above sections.

9. CONCLUSION AND RECOMMENDATIONS

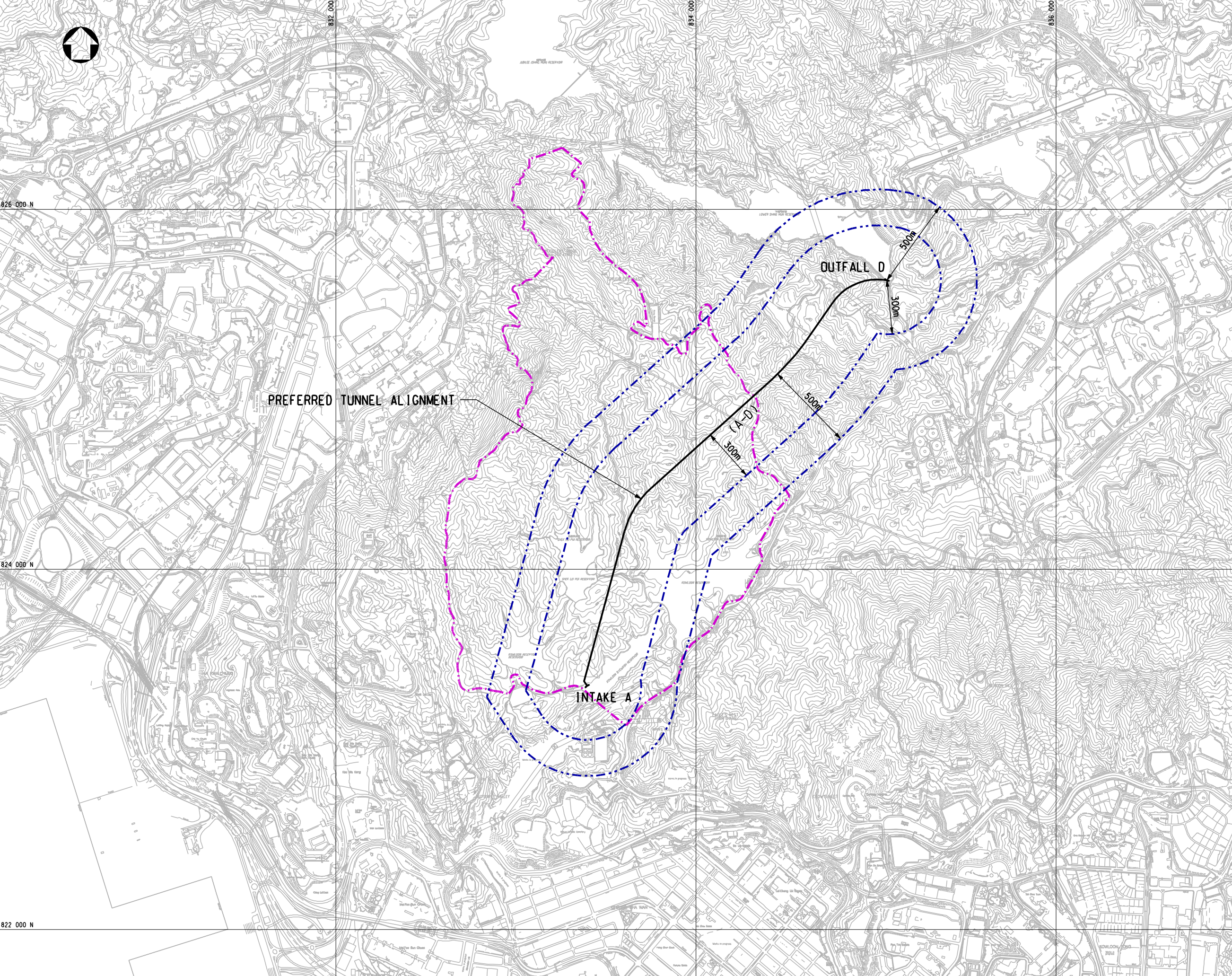
- 9.1 This is the 30th Monthly Environmental Monitoring and Audit (EM&A) Report presents EM&A works undertaken in the period of 1 to 31 December 2021. EM&A works were performed in accordance with the approved EM&A Manual and conditions stipulated in the amended Environmental Permit EP-345/2009/A.
- 9.2 Impact monitoring for construction noise and water quality were performed in the reporting period.
- 9.3 After the joint water sampling inspection with the ER, the IEC representative, the Contractor and the ET on 15 October 2021, on days when very shallow flow (<11cm of water depth) were observed at the control points, actions will be taken to collect samples at the sampling locations.
- 9.4 Similar to predictions from the EIA report, no project-related exceedance was identified from the EM&A programme of the reporting month.
- 9.5 As per Section 10.3.3 of the EM&A Manual, the number and location of monitoring stations and parameters were reviewed. No significant change was observed on the surrounding environment (i.e., no new stream or water way, no new sensitive receiver and no better alternative monitoring locations which suit the descriptions in Section 5.4.2 of the EM&A Manual) or the nature of works in progress. The current monitoring locations remain to be representative; the current water quality control monitoring locations are the nearest upstream accessible stream before passing through the construction site and merging with the water body; and the current monitoring parameters have covered the possible environmental impact arising from the nature of works in progress. No change is suggested to be made to the current EM&A programme. No change in surrounding environment and nature of works in progress was noted from the Contractor and Supervisor.
- 9.6 Weekly site inspections were performed during the reporting period.
- 9.7 No complaint regarding environmental issue was received in the reporting period.
- 9.8 No notification of summons nor prosecution have been received since the commencement of the Project.
- 9.9 The Contractor is reminded that all works to be undertaken within the water gathering ground of LSMR and KBR must fulfill statutory environmental requirements, especially in watercourse protection.

- 9.10 The Contractor is reminded to review the visual impact due to the appearance of permanent intake and outfall structure and include in the latest Landscape Plan for authorities' approval.

Appendix A
Project Site Layout Plan




LEGEND:
 - - - - - KAM SHAN COUNTRY PARK BOUNDARY
 - - - - - STUDY AREA



826 000 N
824 000 N
822 000 N

832 000 E
834 000 E
836 000 E

Rev	Date	Drawn/Description	Ch'kd/App'd

Client
 THE GOVERNMENT OF THE HONG KONG
 SPECIAL ADMINISTRATIVE REGION
 WATER SUPPLIES DEPARTMENT

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Project
 Agreement No. CE55/2006(EP)
 Inter-reservoirs Transfer Scheme (IRTS)
 Water Tunnel between Kowloon Byewash
 Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment
 Investigation

Title
 THE PREFERRED SCHEME

Designed	HN/PW	Eng.Chk.	PW
Drawn	VN	Coordination	PW
Dwg.Chk.	HN	Approved	AFK

Scale	Project	Status
1:10000@A1	240564	INF

Drawing No.	FIGURE 1-1
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Appendix B

Latest Construction Programme

IRTS: 3 Month Rolling Programme (Dec 21 ~ Feb 22)

Layout : 4 -IRT-Rolling Y21M11D29a
 TASK filters: 3 Month Rolling, Level of Effort.
 Data Date : 29-Nov-21

Activity ID	Activity Name	Dur	Start	Finish	2021		2022		
					Nov 33	Dec 34	Jan 35	Feb 36	Mar 37
IRTS - 3M Rolling Programme (Y21M11D29a-1)									
Preliminaries and General Requirements									
Procurement of Consultants and Sub-Contractors									
Sub-Contractors									
Pro_SCon_1700	Subcontract Enhancement works at Kam Shan Country park works *(P3)	38	01-Dec-21	17-Jan-22					
Tai Po Road Site (TGLA No. TST453)									
TPR_GW-1040	General Site Storage	891	02-Jul-19A	23-Sep-22					
CSD Submission									
CSD 1 - Outfall Structure									
Alternative Works (Subject to approval of Structure Design)									
CSD1_OF_1000	Pre-bored H pile *(link changed: erector removal to concurrent gripper dismantle)	67	16-Oct-21A	10-Jan-22					
CSD1_OF_2000	Pile loading test	10	11-Jan-22	21-Jan-22					
CSD1_OF_3000	Pipe pile Wall Stage 2B	55	04-Nov-21A	10-Jan-22					
CSD1_OF_4000	Excavation ,water and strut installation (1st layer)	42	14-Jan-22	10-Mar-22					
CSD1_OF_5000	Excavation ,water and strut installation (2st layer)	42	28-Feb-22	21-Apr-22					
CSD1_OF_5010	Temp.Drainage Diversion	15	28-Feb-22	16-Mar-22					
CSD 2 - Alternative Alignment & Intake Structure									
Alternative Works (Subject to approval of alternative tunnel alignment)									
CSD_PF_2210-25	*Lay Invert Segment (by TBM team)	26	16-Dec-21	10-Jan-22					
CSD_PF_2210-30	Mined Tunnel Construction - Lining	37	28-Dec-21	16-Feb-22					
CSD_PF_2220	Cut and Cover Construction	19	17-Feb-22	10-Mar-22					
CSD_PF_2225	Internal Staircase Construction	30	04-Jan-22	14-Feb-22					
CSD_PF_2230	E&M Installation	48	17-Dec-21	21-Feb-22					
TB_Ds_1600	Remove Bulkhead and Cutterhead	11	25-Nov-21A	15-Dec-21					
Compensation Event									
CE-054 & CE-056: Feasibility Study & DDA for Maintenance Walkway at KBR									
CE-054 Design Submissions									
CE054-2120	DDAComment/ Approval for Extension of Spillage Drainage Channel	24	28-Oct-21A	28-Dec-21					
CE054-2190	DDAComment/ Approval for Ladder & Platform at Intake Structure	28	10-Nov-21A	15-Dec-21					
CE054-2210	Ready for Procurement	0		28-Dec-21					◆ Ready for Procurement,
CE-056 Construction Works at KBR									
KBR Maintenance Access									
CE056-2050	Tree Felling/ Entrance/ GFRPHandral	67	09-Oct-21A	29-Jan-22					
Spillage Channel									
CE056-3030	Rock Breaking for Formation	14	27-Nov-21A	04-Jan-22					
CE056-3040	Concreting Works	47	05-Jan-22	07-Mar-22					
Slope Upgrading Work									
CE056-4010	No Fined Concrete & Tiling	50	11-Feb-22	11-Apr-22					

█ Actual Level of Effort █ Critical Remaining Work
█ Actual Work ◆ Milestone
█ Remaining Work

Contract No. DC/2018/08 : Inter-Reservoirs Transfer Scheme
 Water Tunnel Between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir

Date	Revision	Checked	Approved
29-Nov-21	Rolling Y21M11D29a	A.Tsang	

IRTS: 3 Month Rolling Programme (Dec 21 ~ Feb 22)

Layout : 4 -IRT-Rolling Y21M11D29a
 TASK filters: 3 Month Rolling, Level of Effort.
 Data Date : 29-Nov-21

Activity ID	Activity Name	Dur	Start	Finish	2021		2022			
					Nov	Dec	Jan	Feb	Mar	
					33	34	35	36	37	
CE-064: Permanent Diversion of Twin 1200mm dia.Drainage Pipes										
CE064 Design Submissions										
CE064-2020	Prepare & Submit Temp.Drainage Diversion DDAwith ICE 1st Submission	24	15-Sep-21A	15-Dec-21		Prepare & Submit Temp.Drainage Diversion DDAwith ICE 1st Submission				
CE064-2030	DDAReview & Comment	27	16-Dec-21	19-Jan-22			DDAReview & Comment			
Tunneling Works										
Design Submission										
Mined Tunnel Permanent Works Design										
MTD_KB_4040	Review and Acceptance	15	23-Nov-21A	09-Dec-21		Review and Acceptance				
Site Works										
LSMR (North Portal) & TBM										
LSMR : TBM Tunnel Excavation										
LSMR : TBM Power and Water Supply										
TBM_WtrS_2300	Notification to CLP for Removal of the transformer and Other Electrical Equipment *(P5)	120	29-Jan-22	04-Jul-22				Notification to CLP for Removal of the transformer and Other Electrical Equipment *(P5)		
TBM Dismantling										
TB_Ds_1500	Remove Main Drive	5	22-Nov-21A	15-Dec-21		Remove Main Drive				
TB_Ds_1700	Tunnel Services Removal and Tunnel Cleaning	20	26-Nov-21A	28-Jan-22		Tunnel Services Removal and Tunnel Cleaning				
Intake Structure at Kowloon Byewash Reservoir										
KBR Intake : E&M for Electric Actuated Penstocks and Automatic Flow Control System										
KBR Intake : E&M Installation of Automatic Flow Control System & Others										
KB_ISW_3600	Supply and Delivery of E&M Materials / Equipments *(P1a)	120	11-Aug-21 A	12-Feb-22		Supply and Delivery of E&M Materials / Equipments *(P1a)				
KB_ISW_3610	Excavation Permit Application & Works for Power Supply Cables	77	06-Oct-21A	07-Jan-22		Excavation Permit Application & Works for Power Supply Cables				
KB_ISW_3700	E&M Installation *(P1a)	56	14-Feb-22	23-Apr-22			E&M Installation *(P1a)			
KBR Intake : E&M Installation of Electrical Actuated Penstocks										
KB_ISW_3840	Testing and Commissioning of Penstock *(P1a)	10	20-Nov-21A	22-Mar-22					Testing and Commissioning of Penstock *(P1a)	
KBR Intake : E&M Design for Lifting Crane										
KBR_EMD_1380	Review and Acceptance	18	06-Dec-21	28-Dec-21		Review and Acceptance				
KBR Intake : E&M Installation of Lifting Crane										
KB_ISW_3850	Supply and Delivery of Lifting Crane *(P1a)	56	29-Dec-21	11-Mar-22			Supply and Delivery of Lifting Crane *(P1a)			
Outfall Structure at Lower Shing Mun Reservoir (Conforming Design)										
LSMR Outfall : Design Submission										
LSMR Outfall : Stage 2B Pipe Pile Wall for Outfall										
LSM_OSD_1300	Review and Acceptance	63	13-Mar-21A	24-Dec-21		Review and Acceptance				
LSMR Stage 1 - C&C Tunnel.										
LSM_OSW_1100	Construct C&C Tunnel	24	29-Jan-22	04-Mar-22			Construct C&C Tunnel			
LSM_OSW_1200	Backfill	8	05-Mar-22	14-Mar-22			Backfill			
LSMR Stage 2 - Outfall Structure & Remaining C&C Tunnel.										
LSMR Outfall Excavation										
LSM_OSW_1380	Pipe Pile Wall Stage 2B (180 Piles/3 rigs/ 6 piles/day)	52	22-Oct-21A	29-Dec-21		Pipe Pile Wall Stage 2B (180 Piles/3 rigs/ 6 piles/day)				
LSM_OSW_1400	Excavation, water and strut installation 1st layer	16	30-Dec-21	18-Jan-22			Excavation, water and strut installation 1st layer			
LSM_OSW_1500	Excavation, water and strut installation 2nd layer	20	19-Jan-22	17-Feb-22			Excavation, water and strut installation 2nd layer			

█ Actual Level of Effort █ Critical Remaining Work
█ Actual Work ◆ Milestone
█ Remaining Work

Contract No. DC/2018/08 : Inter-Reservoirs Transfer Scheme
 Water Tunnel Between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir

Date	Revision	Checked	Approved	2 of 3
29-Nov-21	Rolling Y21M11D29a	A.Tsang		

IRTS: 3 Month Rolling Programme (Dec 21 ~ Feb 22)

Layout : 4 -IRT-Rolling Y21M11D29a
 TASK filters: 3 Month Rolling, Level of Effort.
 Data Date : 29-Nov-21

Activity ID	Activity Name	Dur	Start	Finish	2021		2022		
					Nov	Dec	Jan	Feb	Mar
					33	34	35	36	37
LSM_OSW_1600	Excavation, waler and strut installation 3rd layer	20	18-Feb-22	12-Mar-22					Excavation, waler and strut
Slope Upgrading Works									
KBR Slope Stabilization Works.									
KBR_Slp_Slp_1000.	Cut Slope for Intake	18	17-Feb-22*	09-Mar-22				Cut Slope for Intake	
Landscaping Works									
Enhancement Works of Kam Shan Country Park-Design									
KBR_EHW_1300	1st Submission-Enhancement works at Kam Shan Country Park-Design Preparation & Submission *(P1c)	28	18-Jan-22	25-Feb-22*			1st Submission-Enhancement works at Kam Shan		
KBR_EHW_1400	Review and Comments *(P1c)	18	26-Feb-22	18-Mar-22				Review and Cont	

█ Actual Level of Effort █ Critical Remaining Work
█ Actual Work ◆ Milestone
█ Remaining Work

Contract No. DC/2018/08 : Inter-Reservoirs Transfer Scheme
 Water Tunnel Between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir

Date	Revision	Checked	Approved
29-Nov-21	Rolling Y21M11D29a	A.Tsang	


Appendix C
Monitoring Locations



- LEGEND:**
- STUDY AREA BOUNDARY
 - PREFERRED TUNNEL ALIGNMENT
 - + NOISE SENSITIVE RECEIVER
 - C COMMERCIAL
 - CDA COMPREHENSIVE DEVELOPMENT AREA
 - G/IC GOVERNMENT/INSTITUTION/COMMUNITY
 - GB GREEN BELT
 - I INDUSTRIAL
 - O OPEN SPACE
 - OU OTHER SPECIFIED USES
 - RIA1 RESIDENTIAL (GROUP A)
 - RIA2 RESIDENTIAL (GROUP B)
 - RIA3 RESIDENTIAL (GROUP C)
 - RIA4 RESIDENTIAL (GROUP E)
 - V VILLAGE TYPE DEVELOPMENT

Rev	Date	Drawn/Description	Ch'kd/App'd

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Project

Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

THE STUDY AREA AND
REPRESENTATIVE NSRs (INTAKE END)

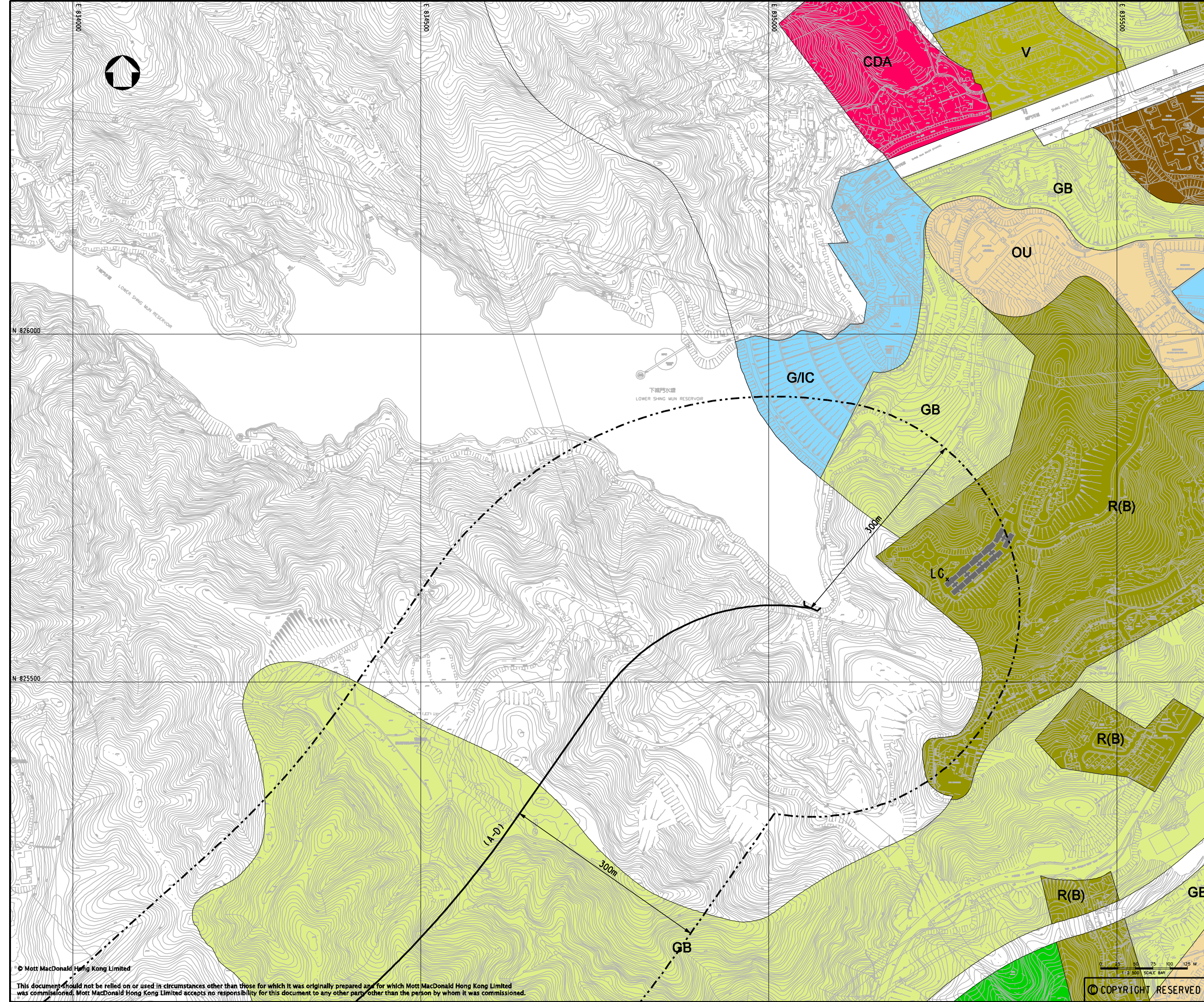
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Drawn	VN	Coordination	PW
Dwg.Chk.	HN	Approved	AFK
Scale	Project	Status	
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Drawing No.	CAD File	Rev	
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FIGURE 4-1



LEGEND:

- STUDY AREA BOUNDARY
- - - PREFERRED TUNNEL ALIGNMENT
- + NOISE SENSITIVE RECEIVER
- C COMMERCIAL
- CDA COMPREHENSIVE DEVELOPMENT AREA
- G/IC GOVERNMENT/INSTITUTION/COMMUNITY
- GB GREEN BELT
- I INDUSTRIAL
- O OPEN SPACE
- OU OTHER SPECIFIED USES
- R(A) RESIDENTIAL (GROUP A)
- R(B) RESIDENTIAL (GROUP B)
- R(C) RESIDENTIAL (GROUP C)
- R(E) RESIDENTIAL (GROUP E)
- V VILLAGE TYPE DEVELOPMENT

Rev	Date	Drawn/Description	Ch'kd/App'd

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Project
 Agreement No. CE55/2006(EP)
 Inter-reservoirs Transfer Scheme (IRTS)
 Water Tunnel between Kowloon Byewash
 Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment
 Investigation

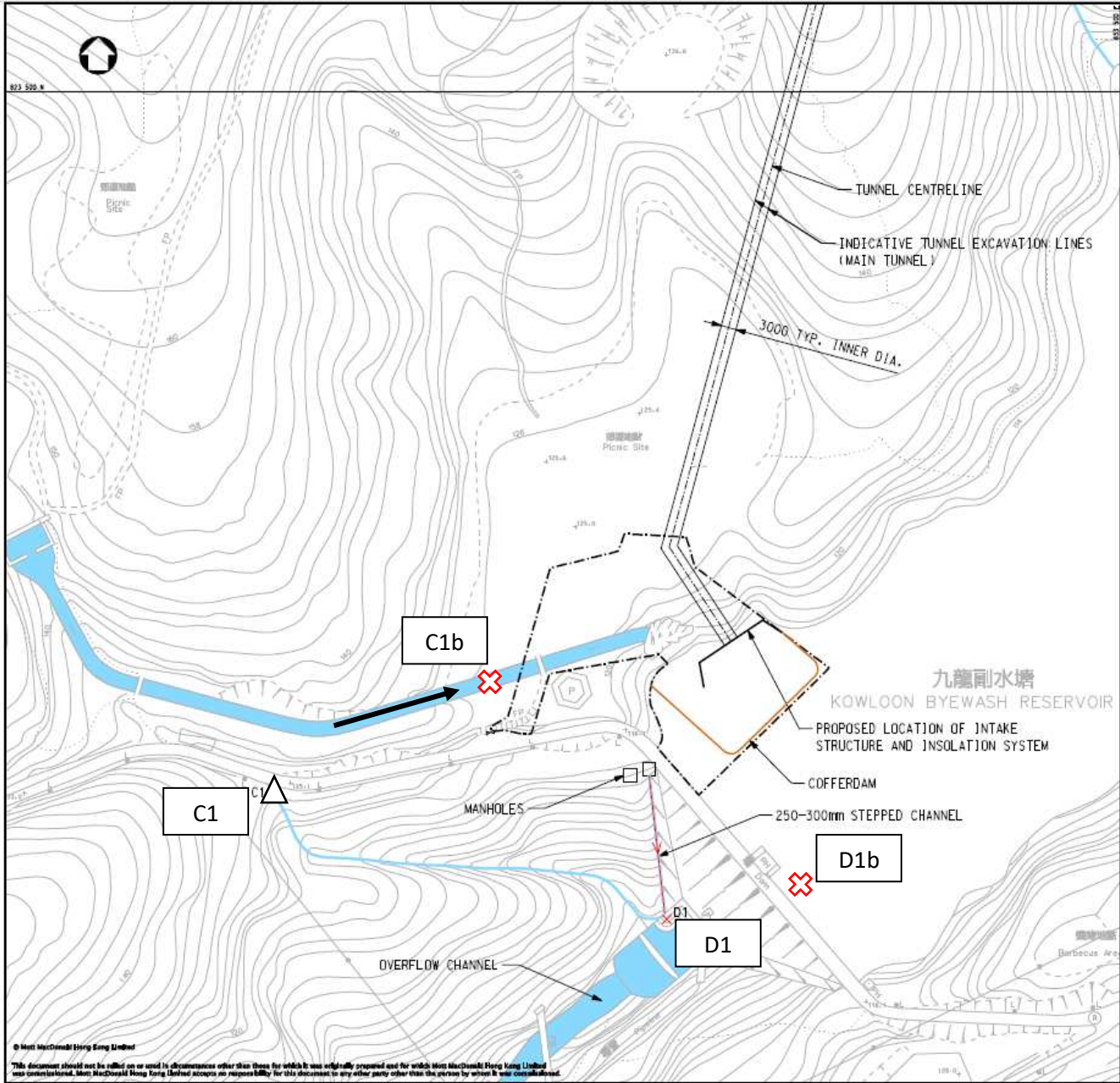
Title
 PROPOSED LOCATION OF NOISE
 MONITORING STATION AT OUTFALL END

Designed	HN/PW	Eng.Chk.	PW
Drawn	VN	Coordination	PW
Dwg.Chk.	HN	Approved	AFK
Scale	Project	Status	
1:2500@A1	240564	INF	
Drawing No.	CAD File	Rev	
	\\240564\report1\env\env-a-082\FIGURE-4-2.dgn		

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FIGURE 4-2



NOTE:
DESIGN DETAILS OF THE COFFERDAM WILL BE DETERMINED BY THE CONTRACTOR.

- LEGEND:
- WORKSITE AREA
 - WATERCOURSE
 - INDICATIVE LOCATION OF COFFERDAM
 - FLOW PATH OF TREATED EFFLUENT
 - POINT OF EFFLUENT DISCHARGE / MONITORING STATION D1
 - CONTROL STATION AT INTAKE SITE
 - Proposed Alternative Water Monitoring Station

REV	NO	DATE	DESCRIPTION	BY	CHKD
F1	REV 01	10/01/2011	ISSUE FOR AMENDMENT	FL	APL
F2	REV 02	10/01/2011	ISSUE FOR AMENDMENT	FL	APL
F1	REV 03	10/01/2011	FIRST ISSUE	FL	APL
Rev	Drawn	Checked	Drawn/Checked	DATE	APPROVED

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Project:
Agreement No. GESS/2006/EP1
Inter-reservoir Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

PROPOSED WATER QUALITY MONITORING
STATION AT INTAKE END

Designed	FL	Checked	FL
Drawn	MDG	Approved	FL
Sup/Chk	FL	Approved	APL

Scale: 1:5000A1
Project No: 240564
Sheet No: 2/2
Drawing No: FIGURE 5-1

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Appendix D

Calibration Certificates of Equipment Used



Certificate of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *NTi Audio*
Type No.: *XL2 (Serial No.: A2A-17638-E0)*
Microphone: *ACO 7052 (Serial No.:68746)*
Preamplifier: *NTi Audio M2211 MA220 (Serial No.:7014)*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit C, 11/F., Ford Glory Plaza, No. 37-39 Wing Hong Street,
 Cheung Sha Wan, Kowloon*

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

- Within
- Outside


the allowable tolerance.


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

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

Date of receipt: 22 March 2021

Date of calibration: 24 March 2021

Calibrated by: 
 Calibration Technician

Certified by: 
 Mr. Ng Yan Wa
 Laboratory Manager

Date of issue: 24 March 2021

Certificate No.: APJ20-185-CC001



1. Calibration Precaution:

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

2. Calibration Conditions:

Air Temperature: 23.2°C
 Air Pressure: 1006 hPa
 Relative Humidity: 57.6%

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV200041	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	±0.4	

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
			104		104.1	±0.3	
			114		114.1	±0.3	

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA SPL	Fast	94	1000	94.1	Ref	
		Slow			94.1	±0.3	

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	94	Fast	31.5	94.1	±2.0
					63	94.2	±1.5
					125	94.2	±1.5
					250	94.1	±1.4
					500	94.2	±1.4
					1000	94.1	Ref
					2000	94.3	±1.6
					4000	94.6	±1.6
					8000	92.8	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	94	Fast	31.5	54.7	-39.4±2.0
					63	68.0	-26.2±1.5
					125	78.1	-16.1±1.5
					250	85.5	-8.6±1.4
					500	91.0	-3.2±1.4
					1000	94.1	Ref
					2000	95.5	+1.2±1.6
					4000	95.6	+1.0±1.6
					8000	91.8	-1.1±2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	94	Fast	31.5	91.1	-3.0±2.0
					63	93.3	-0.8±1.5
					125	94.0	-0.2±1.5
					250	94.1	-0.0±1.4
					500	94.2	-0.0±1.4
					1000	94.1	Ref
					2000	94.1	-0.2±1.6
					4000	93.8	-0.8±1.6
					8000	89.8	-3.0±2.1; -3.1

5. Calibration Results Applied

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

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	63 Hz	± 0.05
	125 Hz	± 0.05
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:


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



MAXLAB

ACK

CALIBRATION CERTIFICATE

<i>Certificate Information</i>		
Date of Issue	20-Mar-2021	Certificate Number MLCN210569S
<i>Customer Information</i>		
Company Name	Acuity Sustainability Consulting Limited	
Address	Unit C, 11/F., Ford Glory Plaza, Nos. 37-39 Wing Hing Street, Cheung Sha Wan, Kowloon, HK	
<i>Equipment-under-Test (EUT)</i>		
Description	Sound Calibrator	
Manufacturer	Svantek	
Model Number	SV 33B	
Serial Number	83042	
Equipment Number	--	
<i>Calibration Particular</i>		
Date of Calibration	20-Mar-2021	
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-23 1357(MLTE190) / MLEC20/05/02 / 26-May-21	
Calibration Procedure	MLCG00, MLCG15	
Calibration Conditions	Laboratory	Temperature 23 °C ± 5 °C
		Relative Humidity 55% ± 25%
	EUT	Stabilizing Time Over 3 hours
		Warm-up Time Not applicable
		Power Supply Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results were within EUT specification.	
<i>Approved By & Date</i>		
		K.O. Lo 20-Mar-2021
<i>Statements</i>		
<ul style="list-style-type: none"> * Calibration equipment used for this calibration are traceable to national / international standards. * The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement. * MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT. * The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited. 		



MAXLAB

Certificate No. MLCN210569S

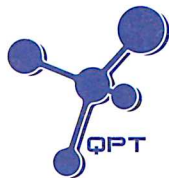
<i>Calibration Data</i>				
EUT Setting	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
114 dB	114.0 dB	0.0 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By : Dan
Date : 20-Mar-21

Checked : K.O. Lo
Date : 20-Mar-21

Page 2 of 2



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA100007
Date of Issue : 05 October 2021
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : UHB5F2BB
Date of Received : Sep 28, 2021
Date of Calibration : Sep 29, 2021
Date of Next Calibration^(a) : Dec 28, 2021

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.
Oxidation-Reduction Potential	APHA 22e 2580 B

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	3.82	-0.18	Satisfactory
7.42	7.43	0.01	Satisfactory
10.01	10.03	0.02	Satisfactory

Tolerance of pH should be less than ± 0.20 (pH unit)

(2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
15	15.1	0.1	Satisfactory
25	25.1	0.1	Satisfactory
33.5	33.1	-0.4	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) The results relate only to the calibrated equipment as received
^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.


LEE Chun-ning
Senior Chemist



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA100007
Date of Issue : 05 October 2021
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.65	0.56	-0.09	Satisfactory
1.91	1.79	-0.12	Satisfactory
3.30	3.34	0.04	Satisfactory
6.98	6.99	0.01	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.18	1.80	Satisfactory
20	20.70	3.50	Satisfactory
30	31.45	4.83	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.00	--	Satisfactory
10	10.5	5.0	Satisfactory
20	20.3	1.5	Satisfactory
100	106	6.0	Satisfactory
800	788	-1.5	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

(6) Oxidation-Reduction Potential

Expected Reading (mV)	Displayed Reading (mV)	Tolerance (mV) ^(g)	Results
229	231	2	Satisfactory

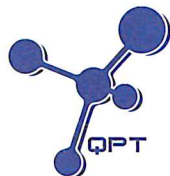
Tolerance limit of Oxidation-Reduction Potential should be less than ± 10 (mV)

~ END OF REPORT ~

Remark(s): -

^(f) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.



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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA100064
Date of Issue : 02 November 2021
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : HORIBA U-53 Multi Parameters
Manufacturer : HORIBA
Serial Number : S2A98W8H
Date of Received : Oct 26, 2021
Date of Calibration : Oct 26, 2021
Date of Next Calibration^(a) : Jan 25, 2022

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.03	0.03	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.19	0.18	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16	16.24	0.24	Satisfactory
25	25.10	0.10	Satisfactory
33	32.95	-0.05	Satisfactory

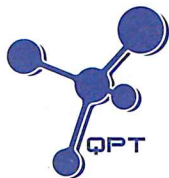
Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) The results relate only to the calibrated equipment as received
^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

LEE Chun-ning
Senior Chemist



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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA100064
Date of Issue : 02 November 2021
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
2.96	3.30	0.34	Satisfactory
3.41	3.76	0.35	Satisfactory
4.87	5.12	0.25	Satisfactory
7.92	8.00	0.08	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.47	4.70	Satisfactory
20	21.32	6.60	Satisfactory
30	32.20	7.33	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.30	--	Satisfactory
10	10.8	8.0	Satisfactory
20	21.8	9.0	Satisfactory
100	109	9.0	Satisfactory
800	790	-1.3	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s): -

^(f) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

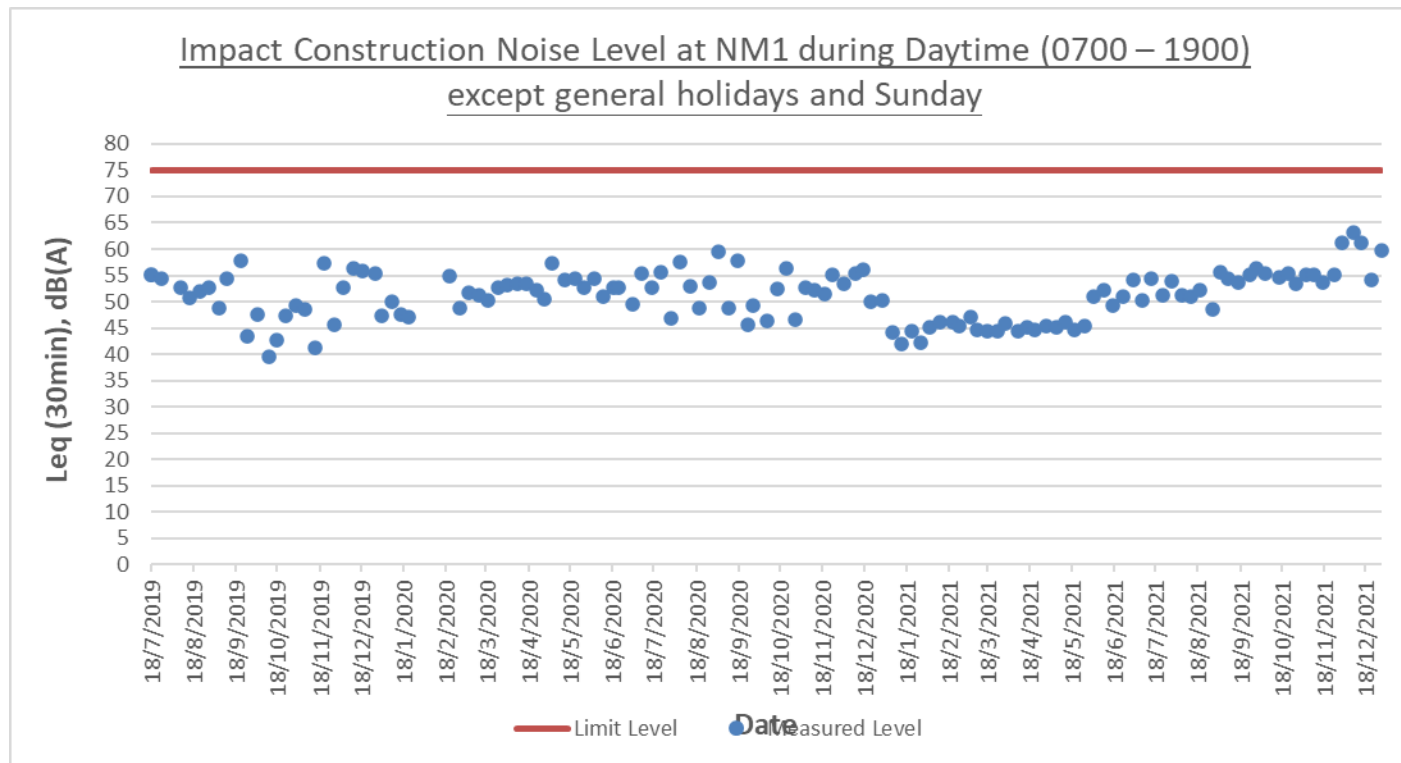
Appendix E
Impact Noise Monitoring Data

Impact Noise Monitoring Data

NM1 – Lakeview Garden

Daytime (0700 – 1900) except general holidays and Sunday

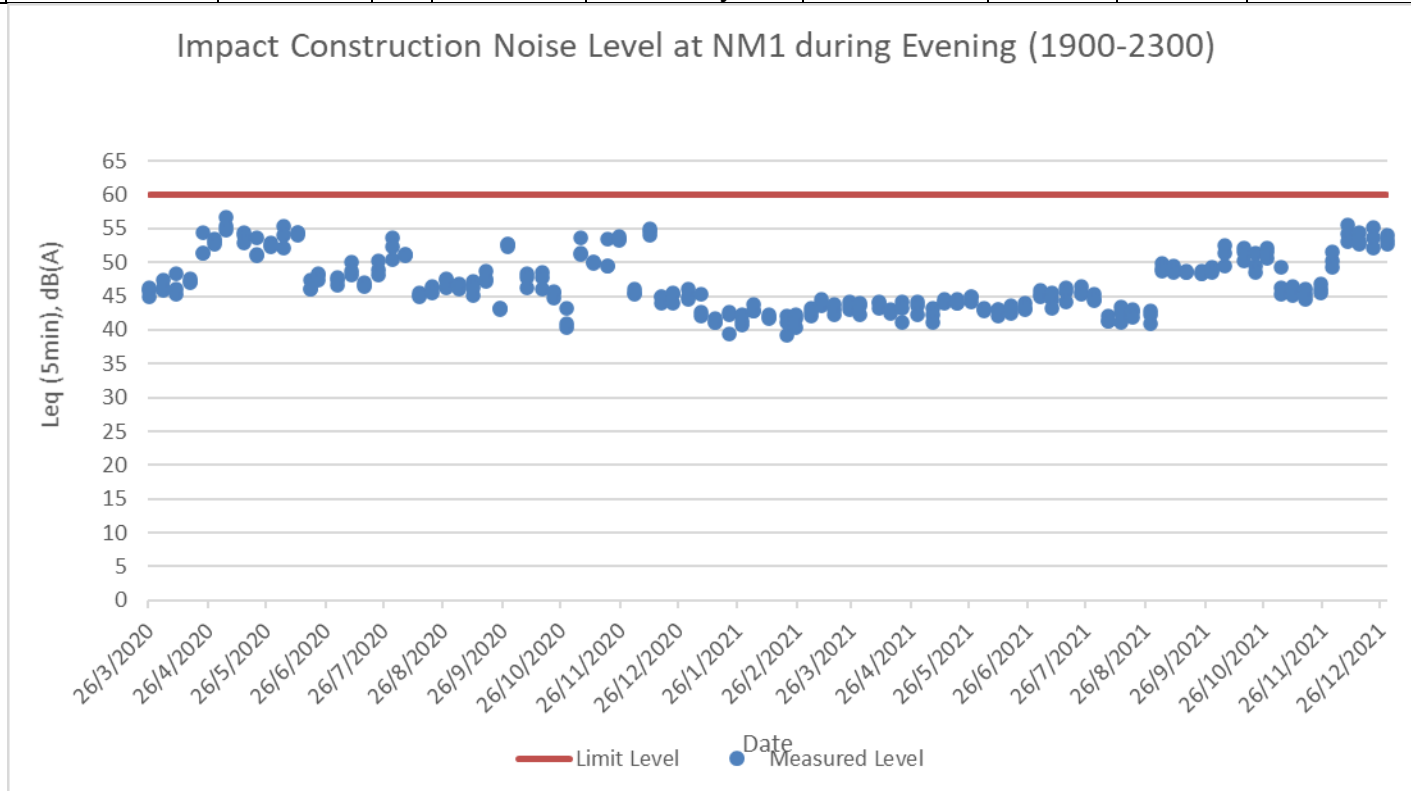
Date	Location	Time		Weather	Leq (30min)	L10	L90	Wind Speed	Temperature
01/12/2021	NM1	10:00	- 10:30	sunny	61.2	66.2	54.3	1.8 m/s	21.6 °C
09/12/2021	NM1	09:30	- 10:00	sunny	63.2	67.2	60.3	2.1 m/s	23.2 °C
15/12/2021	NM1	13:00	- 13:30	sunny	61.3	67.7	56.3	1.6 m/s	22.5 °C
22/12/2021	NM1	11:00	- 11:30	sunny	54.2	61.3	50.2	1.8 m/s	24.7 °C
29/12/2021	NM1	17:00	- 17:30	fine	59.7	63.2	52.7	0.0 m/s	22.6 °C



All days during Evening (1900-2300)

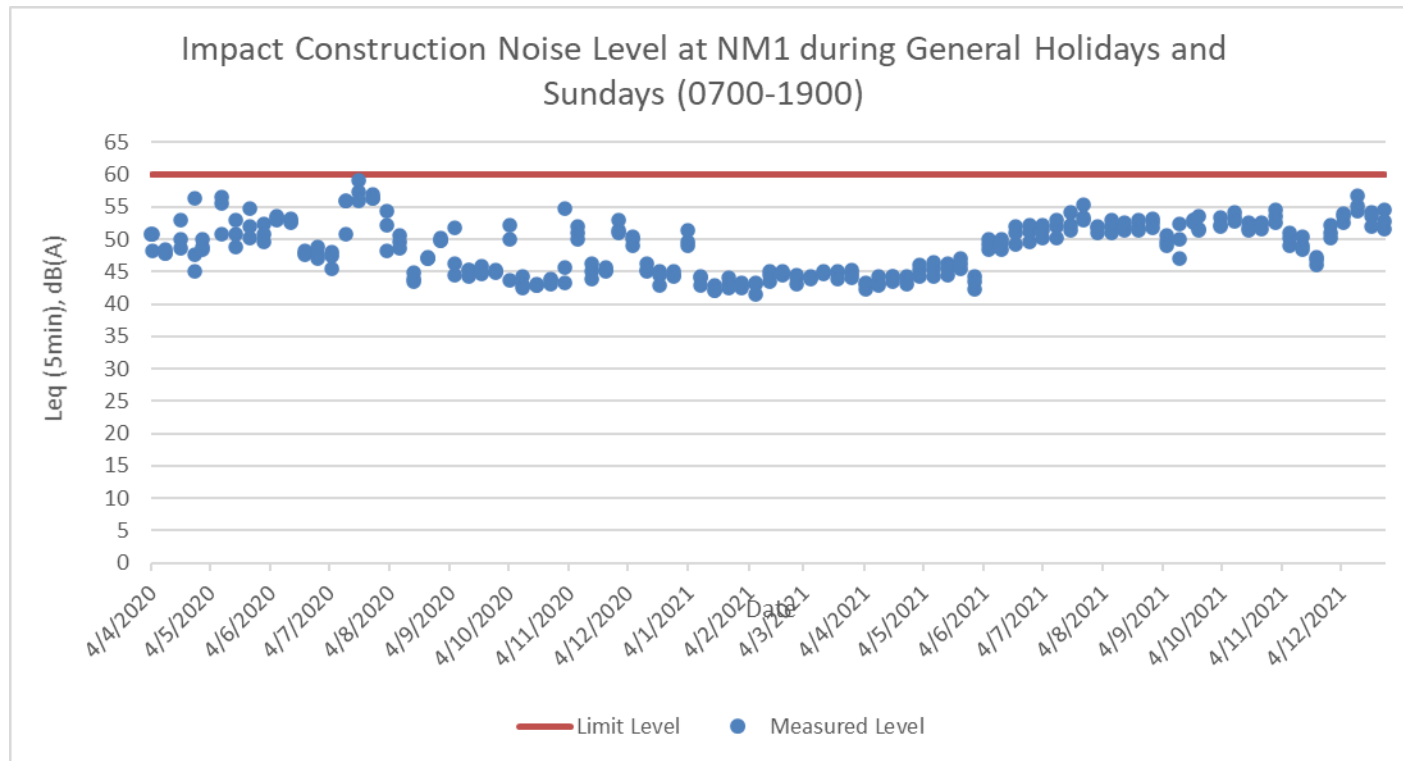
Date	Location	Time			Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Wind Speed	Temperature
01/12/2021	NM1	20:00	-	20:05	cloudy	50.2	57.1	46.2	2.1 m/s	20.6 °C
01/12/2021	NM1	20:05	-	20:10	cloudy	51.6	56.9	47.2		
01/12/2021	NM1	20:10	-	20:15	cloudy	49.3	54.3	45.6		
09/12/2021	NM1	22:30	-	22:35	cloudy	54.2	61.3	50.7	1.6 m/s	20.6 °C
09/12/2021	NM1	22:35	-	22:40	cloudy	53.1	60.7	48.2		
09/12/2021	NM1	22:40	-	22:45	cloudy	55.6	63.2	47.7		
15/12/2021	NM1	20:00	-	20:05	cloudy	53.1	61.6	47.2	2.0 m/s	19.9 °C
15/12/2021	NM1	20:05	-	20:10	cloudy	52.6	60.9	45.6		
15/12/2021	NM1	20:10	-	20:15	cloudy	54.4	62.6	46.6		
22/12/2021	NM1	21:00	-	21:05	cloudy	55.2	62.5	48.2	0.0 m/s	23.8 °C
22/12/2021	NM1	21:05	-	21:10	cloudy	53.6	61.9	49.2		
22/12/2021	NM1	21:10	-	21:15	cloudy	52.2	60.7	44.2		
29/12/2021	NM1	22:15	-	22:20	cloudy	52.6	59.6	47.2	0.0 m/s	20.4 °C
29/12/2021	NM1	22:20	-	22:25	cloudy	54.1	60.2	50.2		
29/12/2021	NM1	22:25	-	22:30	cloudy	53.3	61.2	49.1		

Impact Construction Noise Level at NM1 during Evening (1900-2300)



Daytime (0700-1900) during general holidays and Sundays

Date	Location	Time			Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Wind Speed	Temperature
05/12/2021	NM1	16:00	-	16:05	sunny	52.7	56.3	45.1	2.1 m/s	19.1 °C
05/12/2021	NM1	16:05	-	16:10	sunny	54.0	58.2	49.2		
05/12/2021	NM1	16:10	-	16:15	sunny	53.6	57.1	46.7		
12/12/2021	NM1	13:00	-	13:05	sunny	54.3	59.3	49.3	0.0 m/s	25.2 °C
12/12/2021	NM1	13:05	-	13:10	sunny	55.2	61.2	47.3		
12/12/2021	NM1	13:10	-	13:15	sunny	56.7	62.6	51.1		
19/12/2021	NM1	15:00	-	15:05	sunny	54.1	61.3	50.2	1.7 m/s	19.3 °C
19/12/2021	NM1	15:05	-	15:10	sunny	53.6	60.7	47.6		
19/12/2021	NM1	15:10	-	15:15	sunny	52.0	59.1	48.1		
26/12/2021	NM1	16:15	-	16:20	sunny	51.7	56.3	45.7	1.7 m/s	12.0 °C
26/12/2021	NM1	16:20	-	16:25	sunny	52.8	59.1	43.2		
26/12/2021	NM1	16:25	-	16:30	sunny	54.6	60.7	50.1		

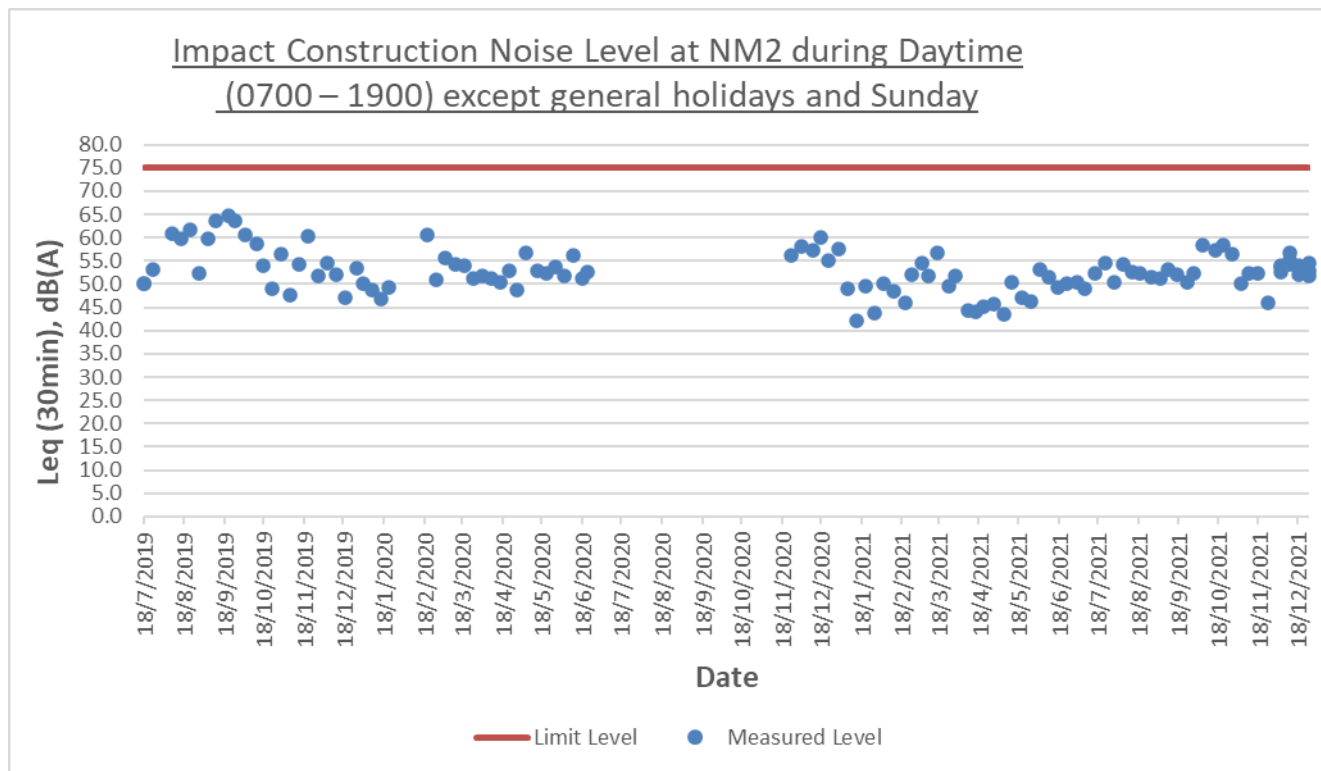


Impact Noise Monitoring Data

NM2 – 4 ½ Milestone, Tai Po Road

Daytime (0700 – 1900) except general holidays and Sunday

Date	Location	Time			Weather	Leq (30min)	L10	L90	Wind Speed	Temperature
01/12/2021	NM2	13:00	-	13:30	sunny	59.2	63.6	54.1	1.6 m/s	24.2 °C
09/12/2021	NM2	10:54	-	11:24	sunny	60.3	65.1	55.2	1.6 m/s	21.6 °C
15/12/2021	NM2	14:30	-	15:00	sunny	57.2	64.2	50.6	0.9 m/s	25.9 °C
22/12/2021	NM2	11:40	-	12:10	sunny	55.6	63.1	49.2	4.3 m/s	28.3 °C
29/12/2021	NM2	11:20	-	11:50	fine	56.1	61.4	50.1	2.1 m/s	26.1 °C



Note 1: Period without data implied that no works were conducted at the monitoring location and no noise monitoring was needed for the location.

Appendix F

Impact Water Quality Monitoring Data

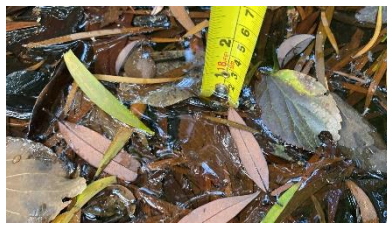
Location	Date	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
C1b	1/12/2021	C1b	12:42	21.7	7.2	7.4	83.7	13.4	10.0	Small Plastic Bottle
	1/12/2021	C1b#	12:44	21.7	7.2	7.2	82.3	12.8	14.0	
	3/12/2021	C1b	14:03	21.3	6.7	7.1	80.2	13.1	6.2	
	3/12/2021	C1b#	14:05	21.2	6.7	7.1	80.2	12.2	6.5	
	7/12/2021	C1b	18:39	20.7	7.8	7.6	84.2	12.6	8.0	
	7/12/2021	C1b#	18:46	20.7	7.7	7.7	86.3	12.4	7.6	
	9/12/2021	C1b	10:18	24.1	7.4	7.4	88.5	4.3	4.2	
	9/12/2021	C1b#	10:20	24.1	7.5	7.6	90.8	5.7	2.9	
	11/12/2021	C1b	17:11	24.2	7.6	7.8	92.6	4.7	9.7	
	11/12/2021	C1b#	17:13	24.2	7.6	7.4	87.8	5.1	11.6	
	13/12/2021	C1b	11:10	18.5	8.6	8.0	85.3	4.8	9.0	
	13/12/2021	C1b#	11:12	18.5	8.6	7.1	75.7	4.0	11.0	
	15/12/2021	C1b	9:21	19.8	8.0	7.3	79.4	2.1	11.0	
	15/12/2021	C1b#	9:24	19.8	8.0	7.4	80.9	2.8	12.0	
	17/12/2021	C1b	10:10	20.0	7.8	7.1	77.6	2.7	32.0	
	17/12/2021	C1b#	10:12	20.1	7.8	7.3	79.9	2.8	29.0	
	20/12/2021	C1b	10:12	15.9	8.2	7.4	74.5	16.9	46.0	
	20/12/2021	C1b#	10:14	15.9	8.1	7.2	72.9	17.3	55.0	
	22/12/2021	C1b	9:09	18.8	7.9	7.6	81.4	2.9	7.0	Small Plastic Bottle
	22/12/2021	C1b#	9:12	18.9	8.0	7.6	81.7	3.2	8.0	
	24/12/2021	C1b	8:45	17.9	8.1	7.1	75.3	14.8	22.0	
	24/12/2021	C1b#	8:50	17.9	8.1	7.4	77.9	15.2	20.0	
	27/12/2021	C1b	9:42	11.5	8.2	7.8	71.9	6.6	3.0	
	27/12/2021	C1b#	9:44	11.5	8.3	7.4	67.6	6.6	3.0	
	29/12/2021	C1b	10:54	20.8	7.4	7.4	82.6	4.5	2.5	
	29/12/2021	C1b#	10:56	20.8	7.5	7.4	82.7	4.5	2.5	
	31/12/2021	C1b	10:00	17.2	7.7	7.5	78.0	1.0	2.5	
31/12/2021	C1b#	10:02	17.2	7.8	7.3	75.8	1.0	2.5		

C1b on Days with Insufficient Water Available for Water Sampler

1/12/2021



3/12/2021



7/12/2021



9/12/2021




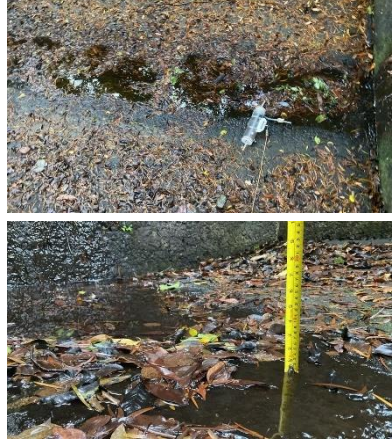



11/12/2021



13/12/2021

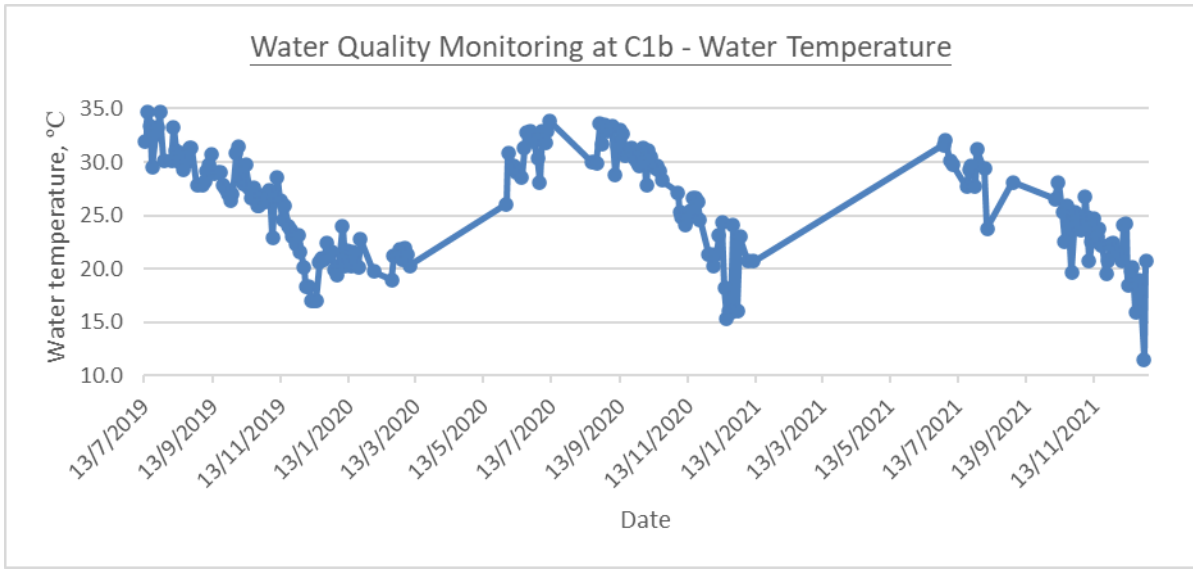


15/12/2021	17/12/2021	20/12/2021
 	 	  

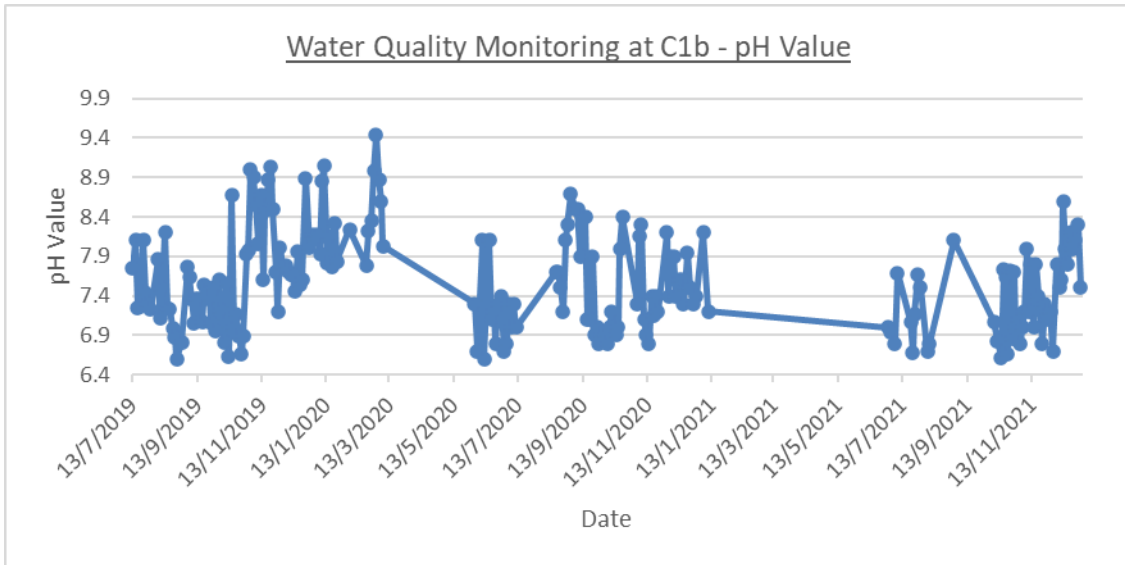
22/12/2021	24/12/2021	27/12/2021
		
29/12/2021	31/12/2021	
		

Location	Date	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
D1b	1/12/2021	D1b	13:41	20.9	7.0	7.1	79.5	7.9	2.7	Water Sampler
	1/12/2021	D1b#	13:51	20.9	7.1	7.3	82.0	7.8	2.5	
	3/12/2021	D1b	14:11	19.6	6.9	7.8	85.0	8.6	2.5	
	3/12/2021	D1b#	14:13	19.6	6.9	7.8	85.2	8.8	2.5	
	7/12/2021	D1b	13:21	20.0	7.2	7.3	80.2	6.1	3.3	
	7/12/2021	D1b#	13:25	19.9	7.2	7.3	79.5	5.7	4.0	
	9/12/2021	D1b	10:39	19.7	6.8	7.1	78.0	5.6	3.2	
	9/12/2021	D1b#	10:42	19.7	6.7	7.3	79.7	5.0	3.5	
	11/12/2021	D1b	17:16	23.8	7.2	7.5	88.8	6.5	5.9	
	11/12/2021	D1b#	17:18	23.7	7.3	7.7	91.3	6.1	6.6	
	13/12/2021	D1b	11:23	19.2	7.9	7.5	81.3	8.5	7.0	
	13/12/2021	D1b#	11:26	19.4	7.8	7.3	79.2	9.2	6.0	
	15/12/2021	D1b	9:28	19.8	7.6	7.6	82.9	5.8	4.0	
	15/12/2021	D1b#	9:30	19.8	7.6	7.2	78.3	5.9	4.0	
	17/12/2021	D1b	10:22	20.1	7.5	7.9	86.5	5.2	5.0	
	17/12/2021	D1b#	10:24	20.1	7.5	7.8	85.8	4.6	5.0	
	20/12/2021	D1b	10:34	18.7	7.5	8.0	85.6	6.9	8.0	
	20/12/2021	D1b#	10:36	18.7	7.4	7.8	83.4	6.3	9.0	
	22/12/2021	D1b	9:18	19.3	7.6	7.3	79.4	7.2	4.0	
	22/12/2021	D1b#	9:23	19.2	7.5	7.3	78.8	8.2	4.0	
	24/12/2021	D1b	9:08	18.8	7.6	7.3	78.4	5.8	5.0	
	24/12/2021	D1b#	9:11	18.7	7.6	7.5	80.6	6.4	6.0	
	27/12/2021	D1b	9:54	13.6	7.6	7.1	68.1	8.0	2.5	
	27/12/2021	D1b#	9:59	13.3	7.6	7.2	69.0	8.0	2.5	
	29/12/2021	D1b	10:59	20.2	7.3	7.8	86.0	3.9	3.0	
	29/12/2021	D1b#	11:01	20.2	7.3	7.8	85.6	3.4	3.0	
	31/12/2021	D1b	10:15	19.0	7.6	8.0	85.9	3.3	2.5	
	31/12/2021	D1b#	10:17	19.0	7.5	8.0	86.1	3.4	2.5	

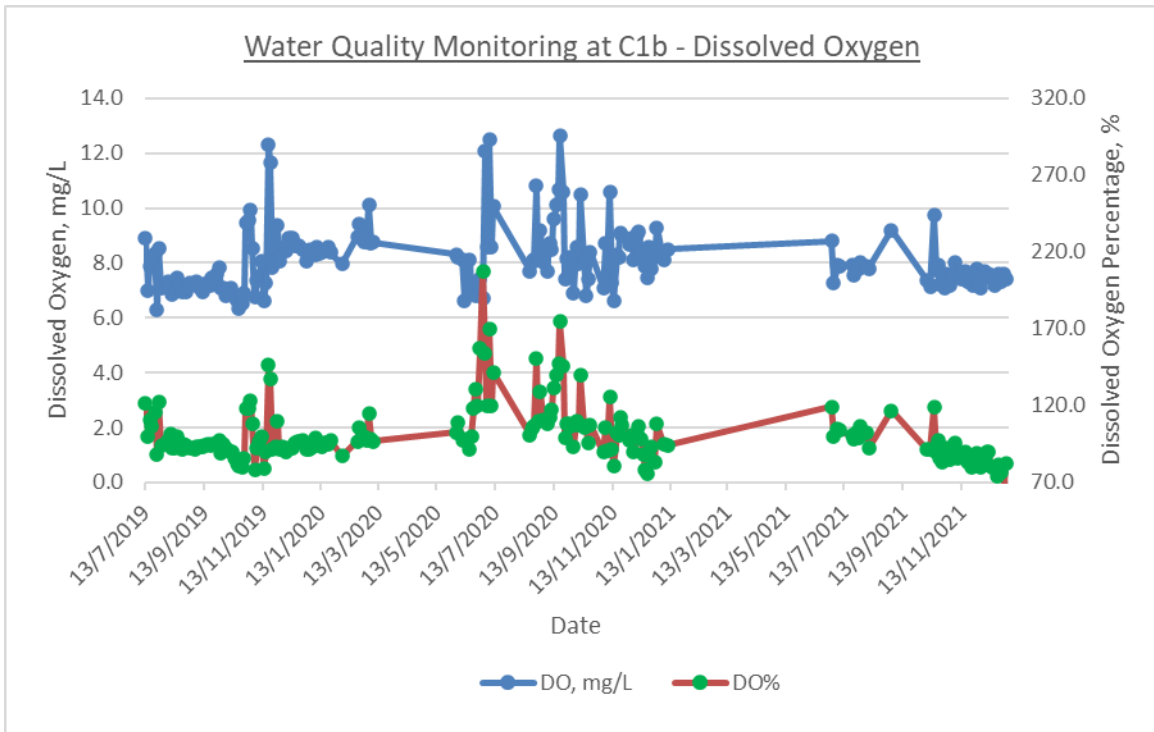
C1b



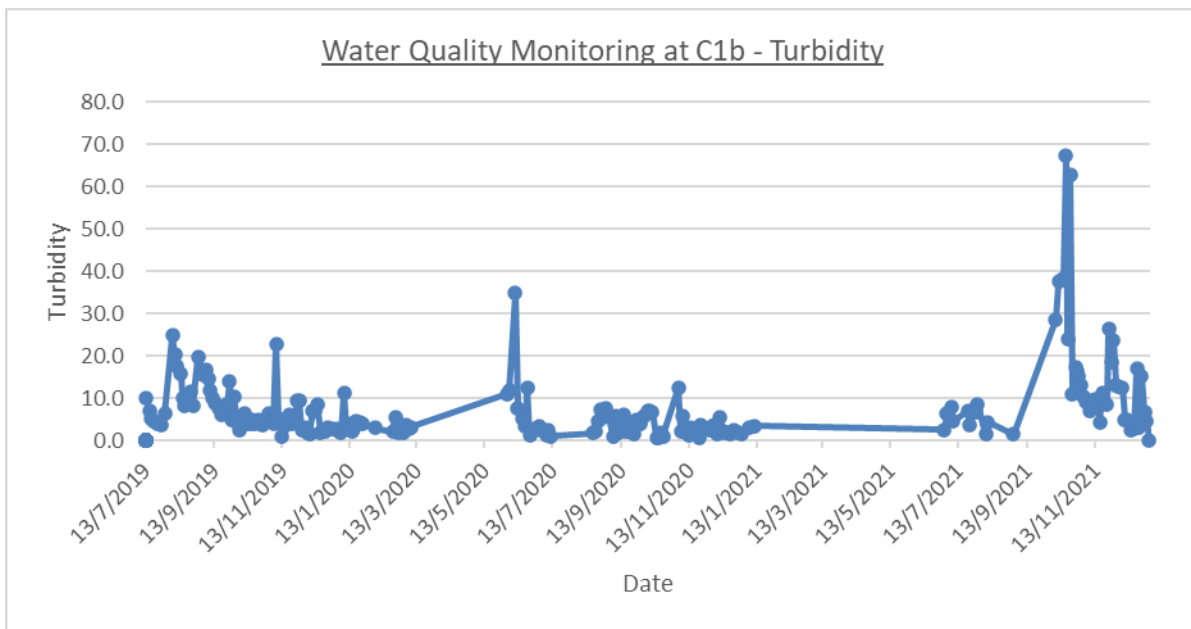
Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection



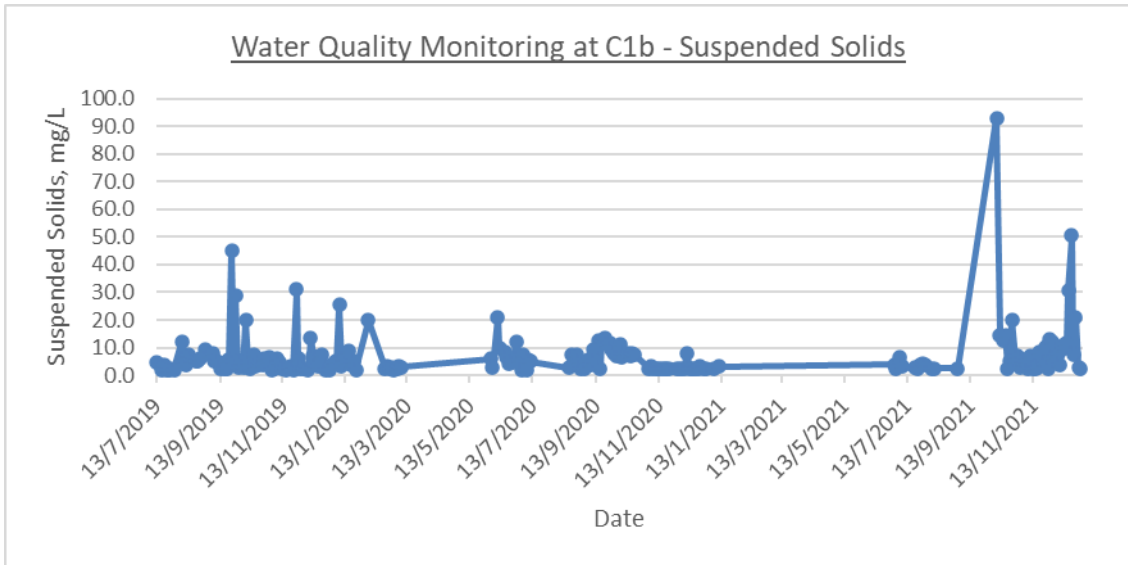
Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection



Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection

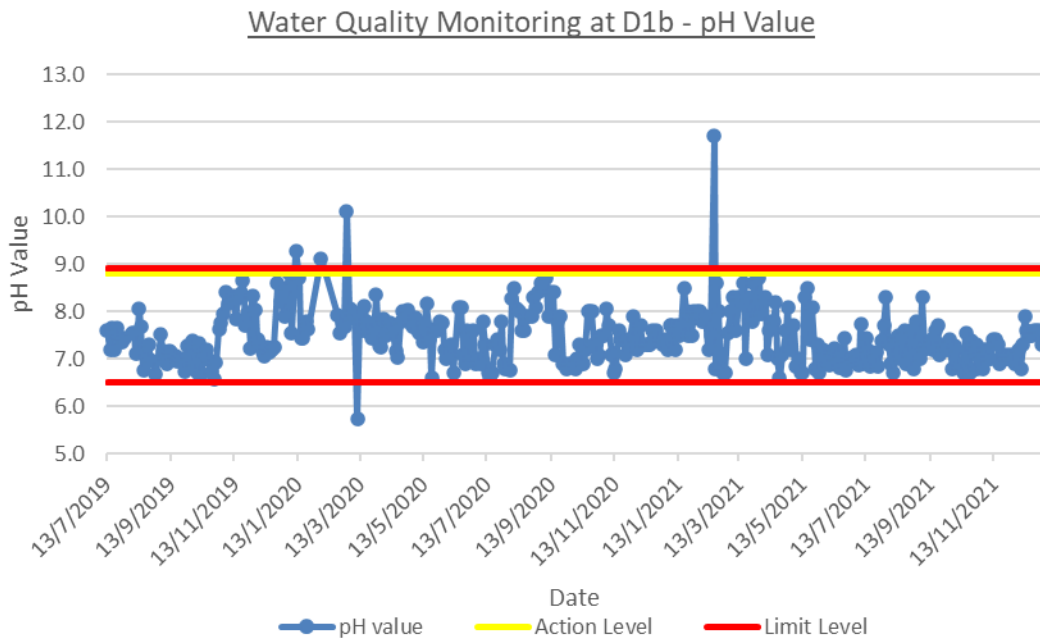
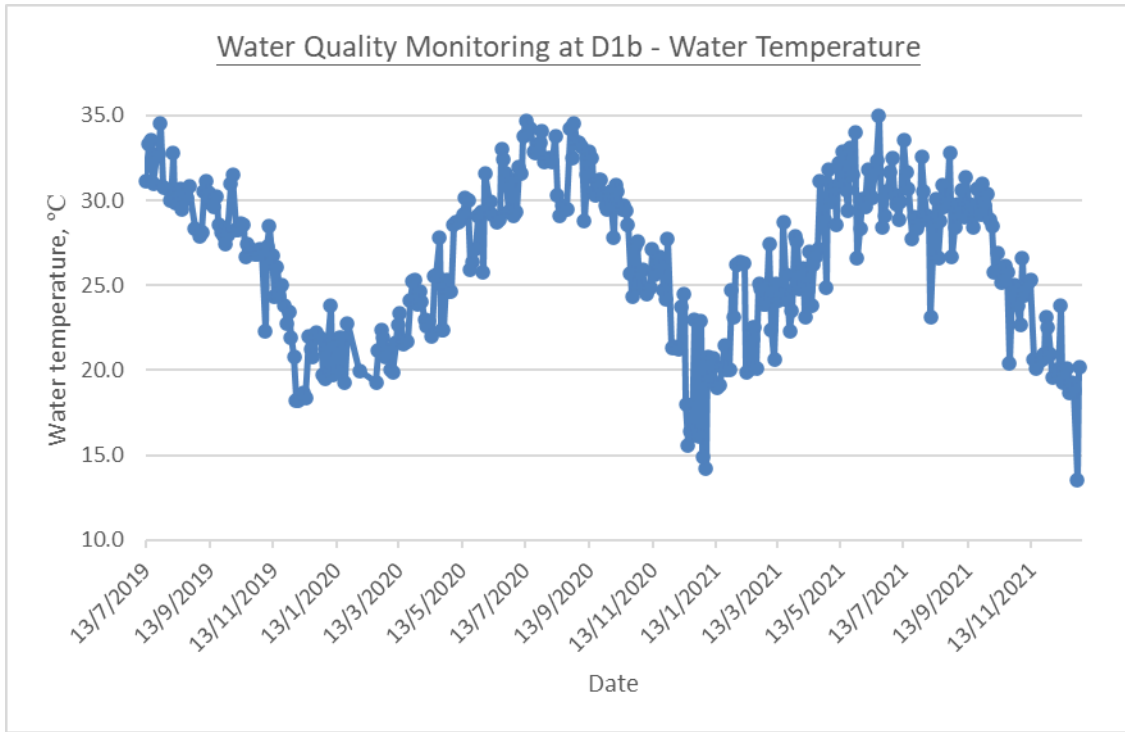


Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection

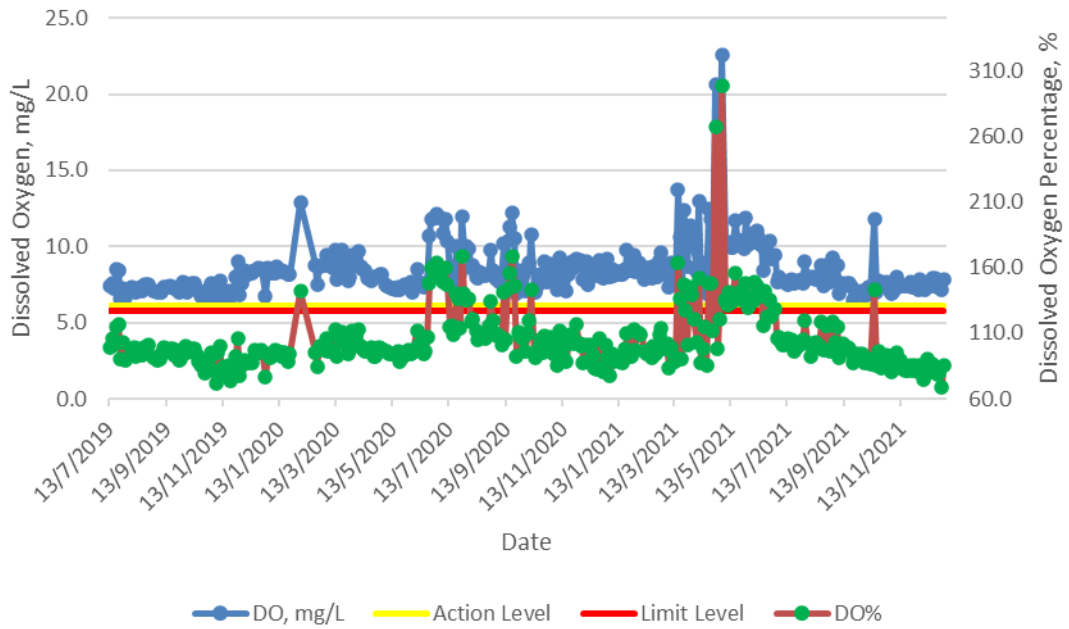


Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection

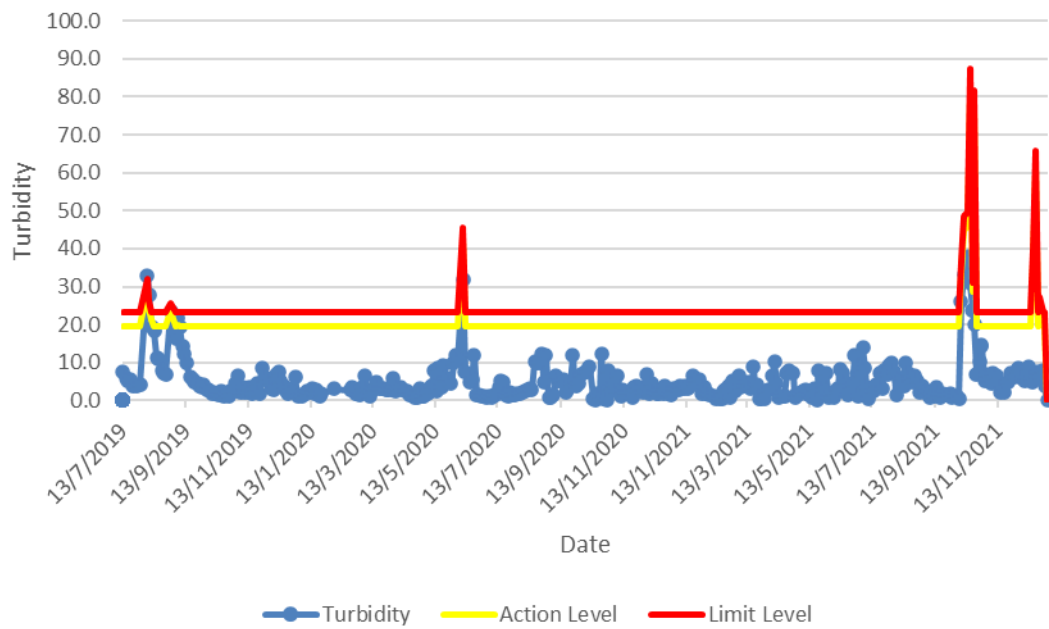
D1b



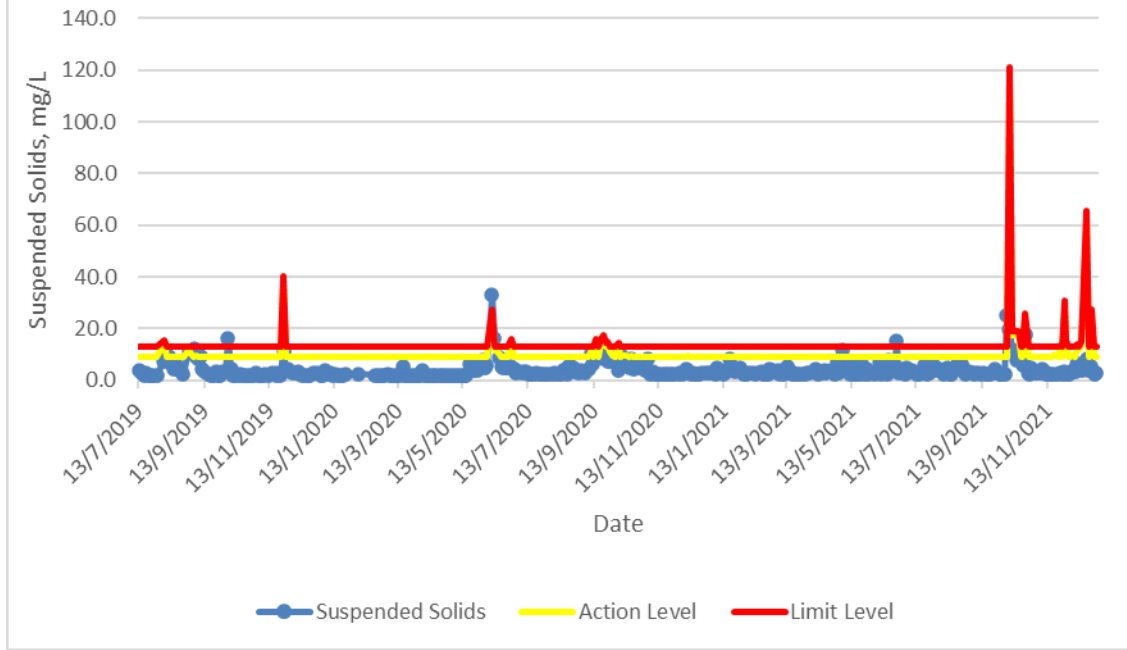
Water Quality Monitoring at D1b - Dissolved Oxygen



Water Quality Monitoring at D1b - Turbidity



Water Quality Monitoring at D1b - Suspended Solids

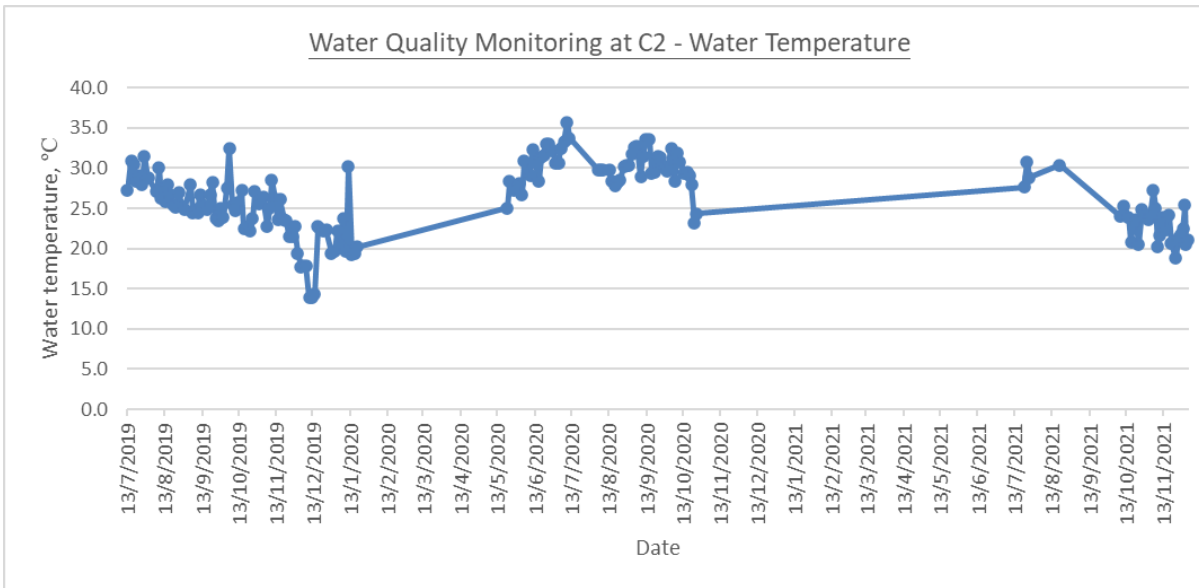


Location	Date	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
C2	1/12/2021	C2	11:09	20.5	7.1	7.3	80.6	14.4	7.8	Water Sampler
	1/12/2021	C2#	11:11	20.5	7.1	7.4	82.5	14.9	8.8	
	3/12/2021	C2	8:56	21.0	6.9	7.8	87.3	16.0	2.5	
	3/12/2021	C2#	8:58	21.0	6.9	7.6	85.7	15.5	2.5	
	7/12/2021	C2	/	/	/	/	/	/	/	/
	7/12/2021	C2#	/	/	/	/	/	/	/	
	9/12/2021	C2	/	/	/	/	/	/	/	
	9/12/2021	C2#	/	/	/	/	/	/	/	
	11/12/2021	C2	/	/	/	/	/	/	/	
	11/12/2021	C2#	/	/	/	/	/	/	/	
	13/12/2021	C2	/	/	/	/	/	/	/	
	13/12/2021	C2#	/	/	/	/	/	/	/	
	15/12/2021	C2	/	/	/	/	/	/	/	
	15/12/2021	C2#	/	/	/	/	/	/	/	
	17/12/2021	C2	/	/	/	/	/	/	/	
	17/12/2021	C2#	/	/	/	/	/	/	/	
	20/12/2021	C2	/	/	/	/	/	/	/	
	20/12/2021	C2#	/	/	/	/	/	/	/	
	22/12/2021	C2	/	/	/	/	/	/	/	
	22/12/2021	C2#	/	/	/	/	/	/	/	
	24/12/2021	C2	/	/	/	/	/	/	/	
	24/12/2021	C2#	/	/	/	/	/	/	/	
	27/12/2021	C2	/	/	/	/	/	/	/	
	27/12/2021	C2#	/	/	/	/	/	/	/	
	29/12/2021	C2	/	/	/	/	/	/	/	
	29/12/2021	C2#	/	/	/	/	/	/	/	
	31/12/2021	C2	/	/	/	/	/	/	/	
	31/12/2021	C2#	/	/	/	/	/	/	/	

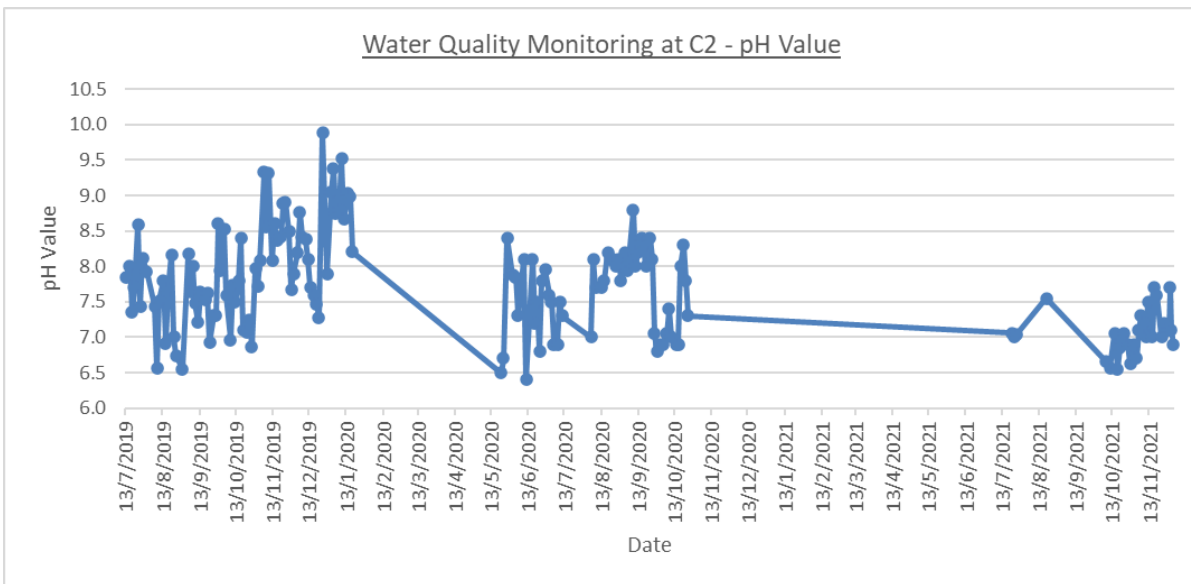
C2 on Days with Insufficient Water		
7/12/2021	9/12/2021	11/12/2021
		
13/12/2021	15/12/2021	17/12/2021
		
20/12/2021	22/12/2021	24/12/2021
		
27/12/2021	29/12/2021	31/12/2021
		

Location	Date	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
D2a	1/12/2021	D2a	11:31	21.4	7.2	7.3	82.5	5.5	2.7	Water Sampler
	1/12/2021	D2a#	11:33	21.4	7.2	7.2	80.8	5.7	3.2	
	3/12/2021	D2a	9:15	20.4	6.9	7.6	84.1	6.8	2.5	
	3/12/2021	D2a#	9:17	20.4	6.8	7.5	83.5	6.7	2.5	
	7/12/2021	D2a	11:37	21.1	7.4	7.8	87.4	4.1	4.6	
	7/12/2021	D2a#	11:35	21.1	7.5	7.9	88.6	4.2	3.6	
	9/12/2021	D2a	9:11	23.8	7.2	7.3	85.8	5.2	2.5	
	9/12/2021	D2a#	9:13	23.8	7.1	7.1	83.6	4.4	3.8	
	11/12/2021	D2a	16:25	24.0	7.1	7.6	90.8	6.4	2.9	
	11/12/2021	D2a#	16:28	24.0	7.1	7.5	88.6	7.1	2.7	
	13/12/2021	D2a	8:46	19.8	7.4	7.3	79.8	2.7	5.0	
	13/12/2021	D2a#	8:48	19.8	7.4	7.3	79.5	2.7	3.0	
	15/12/2021	D2a	8:34	20.7	7.7	7.6	85.2	2.9	3.0	
	15/12/2021	D2a#	8:36	20.7	7.8	7.5	83.4	2.8	3.0	
	17/12/2021	D2a	9:07	17.8	7.4	7.2	75.6	3.2	3.0	
	17/12/2021	D2a#	9:10	18.1	7.5	7.4	78.7	4.2	3.0	
	20/12/2021	D2a	8:34	18.9	7.7	7.5	80.4	7.6	4.0	
	20/12/2021	D2a#	8:36	18.8	7.7	7.3	78.2	7.5	4.0	
	22/12/2021	D2a	8:12	20.5	7.6	7.5	82.6	5.9	2.5	
	22/12/2021	D2a#	8:14	20.5	7.6	7.6	84.4	5.8	2.5	
	24/12/2021	D2a	8:01	19.8	7.5	7.5	82.1	5.4	6.0	
	24/12/2021	D2a#	8:03	19.8	7.5	7.2	78.9	5.5	7.0	
	27/12/2021	D2a	8:16	17.3	7.6	7.1	74.3	5.5	2.5	
	27/12/2021	D2a#	8:23	16.7	7.7	7.6	78.0	5.2	2.5	
	29/12/2021	D2a	9:52	20.6	7.4	7.8	87.0	3.2	3.0	
	29/12/2021	D2a#	9:54	20.6	7.4	7.8	86.8	3.0	3.0	
	31/12/2021	D2a	8:25	20.1	7.6	7.5	83.0	2.3	4.0	
	31/12/2021	D2a#	8:27	20.1	7.6	8.0	87.9	2.1	4.0	
D2a	Date	Approximate Sampling Location Coordinates								
	1/12/2021	E 835058.232 N 825650.006								
	3/12/2021									
	7/12/2021									
	9/12/2021									
	11/12/2021	E 835052.820 N 825660.447								
	13/12/2021									
	15/12/2021									
	17/12/2021									
	20/12/2021									
	22/12/2021									
	24/12/2021									
	27/12/2021									
	29/12/2021	E 835050.865								
	31/12/2021	N 825660.276								

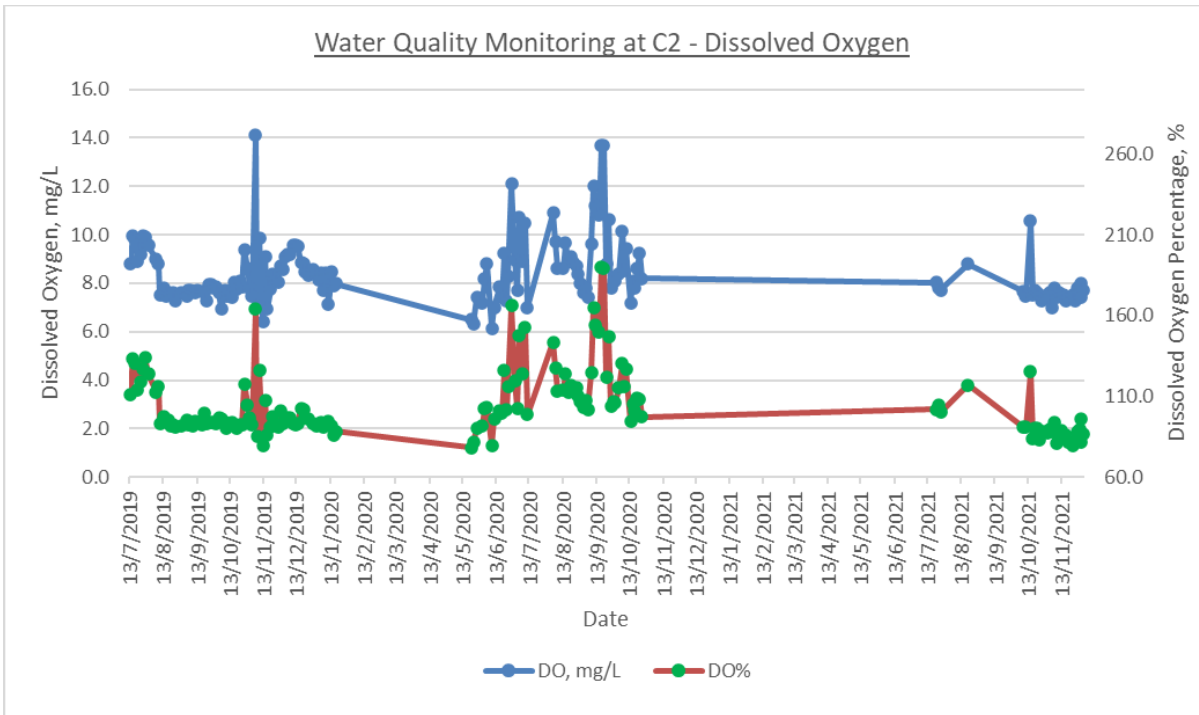
C2



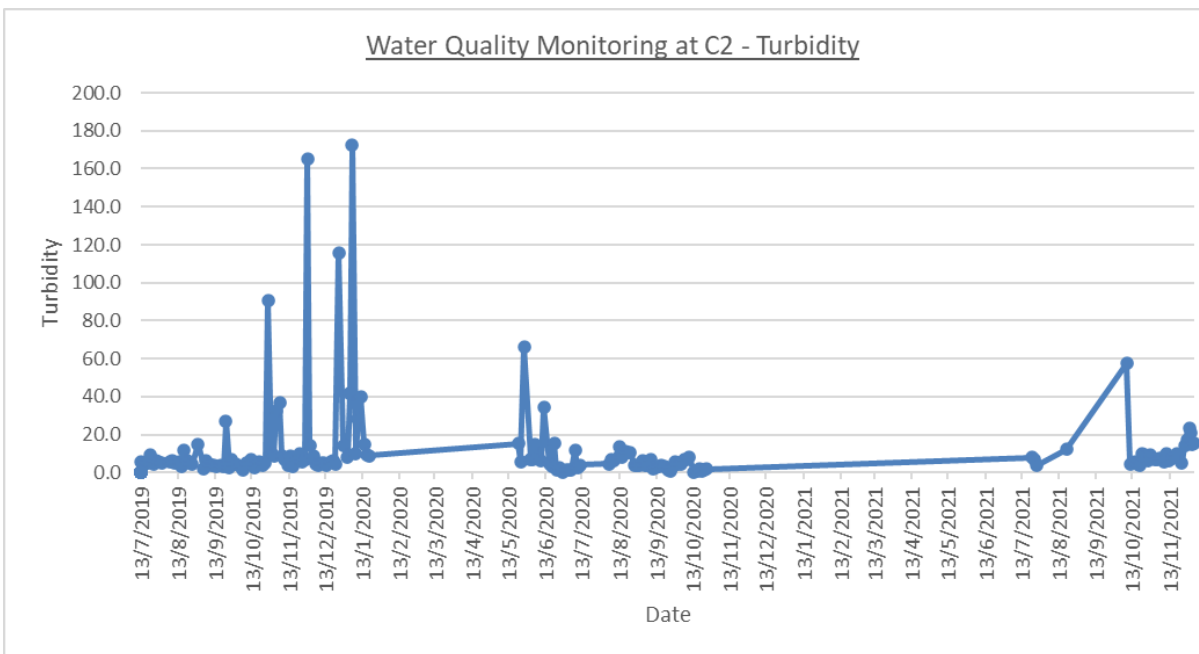
Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection



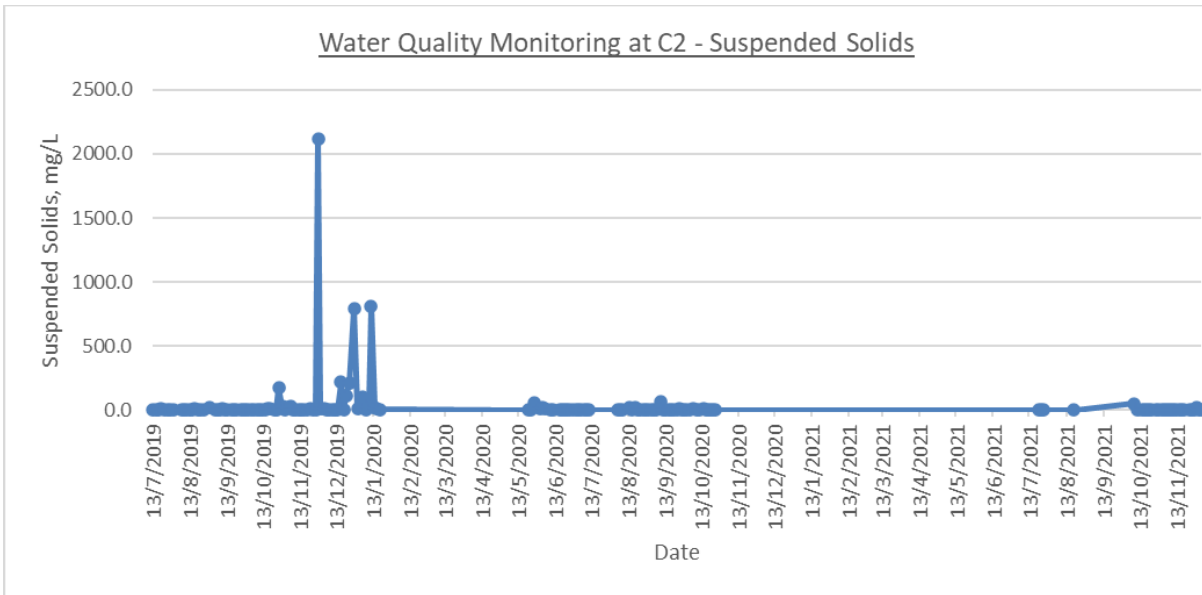
Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection



Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

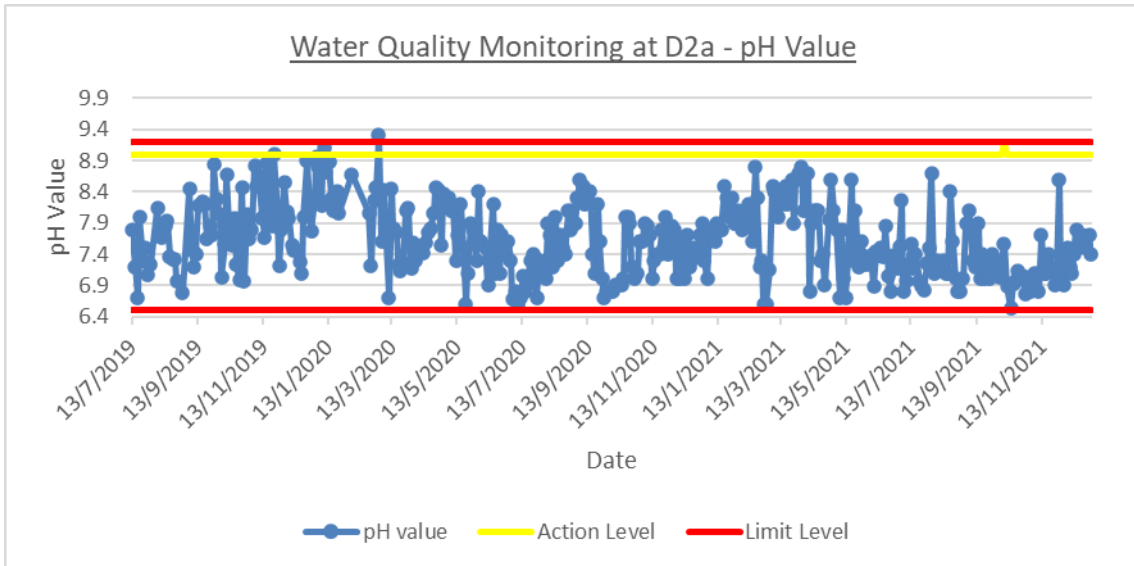
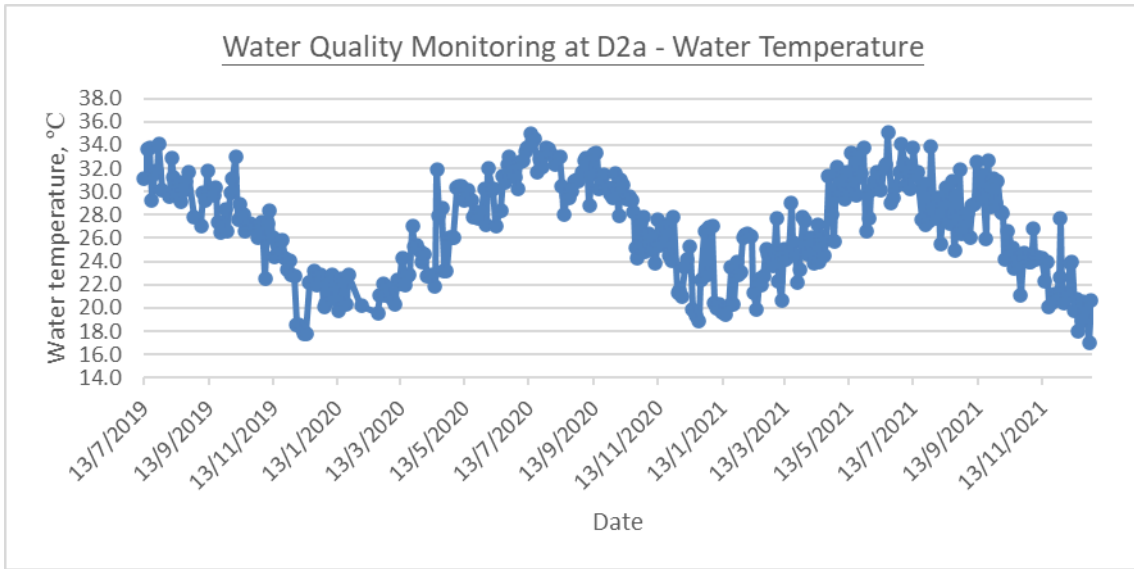


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

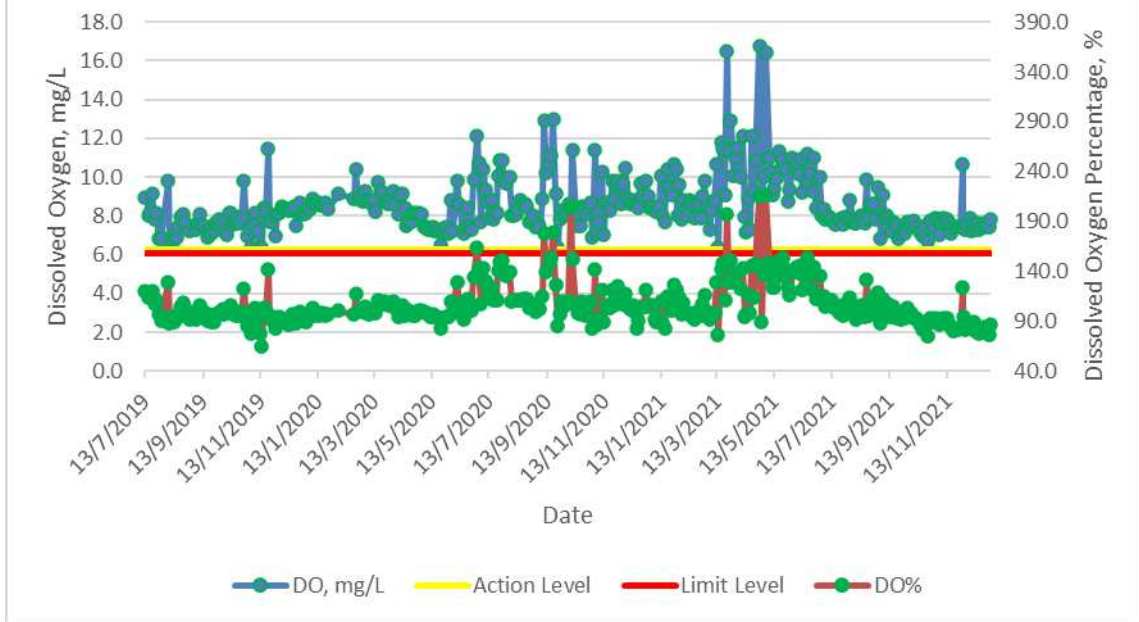


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

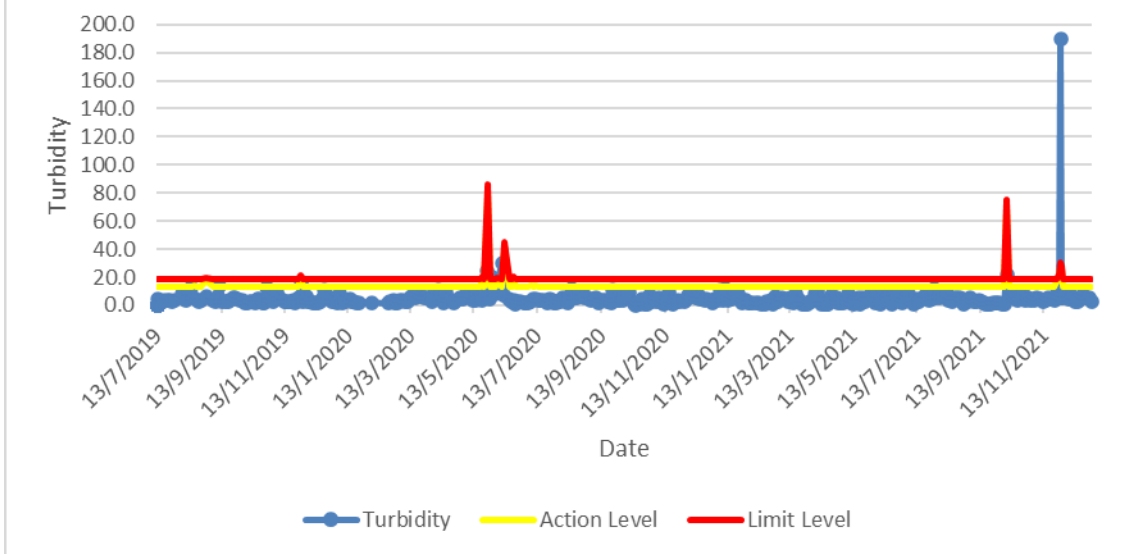
D2a



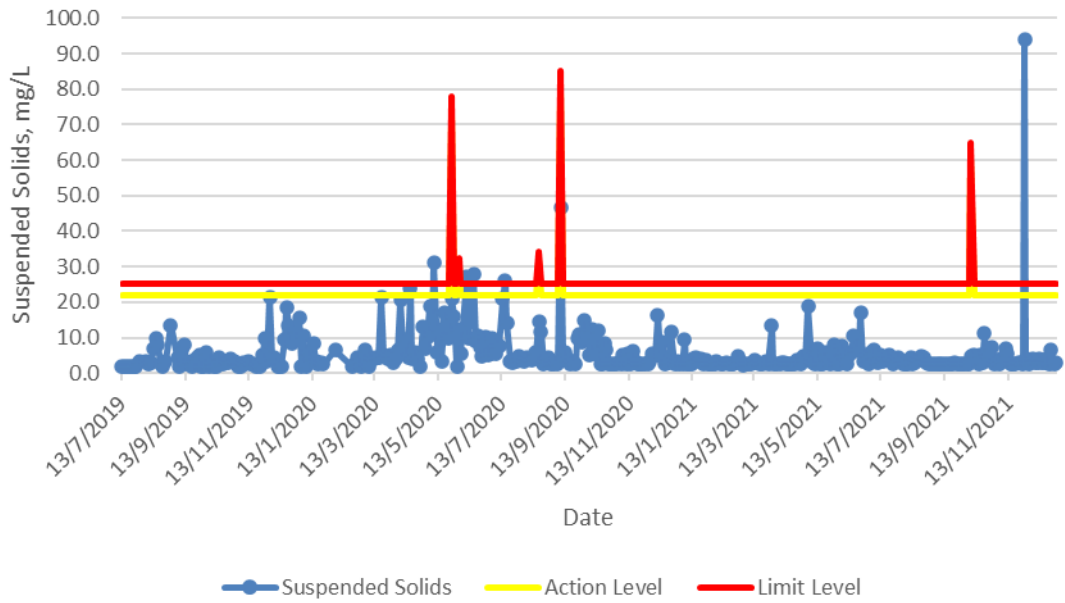
Water Quality Monitoring at D2a - Dissolved Oxygen



Water Quality Monitoring at D2a - Turbidity



Water Quality Monitoring at D2a - Suspended Solids



Appendix G

Event / Action Plans

Table B-1 Event/ Action Plan for Noise Impact

Event and Action Plan for Noise Impact				
Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level is reached	<ol style="list-style-type: none"> 1. Notify IEC and Contractor 2. Carry out investigation 3. Report the results of the investigation to the IEC and Contractor 4. Discuss with the Contractor and formulate remedial measures 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Ensure remedial measures are properly implemented 5. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposal to IEC 2. Implement noise mitigation proposals
Limit Level is reached	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify source 3. Repeat measurement to confirm findings 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 5. Inform IEC, ER and EPD the causes & actions taken for the exceedances 6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 7. If exceedance stops cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion or work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table B-2 Event/ Action Plan for Water Quality Impact

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings and repeat measurement on next day of exceedance being recorded; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working methods. 2. Discuss with ET and Contractor on possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation. 3. Request Contractor to view the working methods. 4. Ensure mitigation measures are properly implemented. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3 Check all plant and equipment and consider changes of working methods; 4. Discuss with ET, IEC and ER and propose mitigation measures to ER and IEC within 3 working days; 5. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings and repeat measurement on next day of exceedance being recorded; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working methods. 2. Discuss with ET and Contractor on possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Discuss with ET, IEC and ER and propose mitigation measures to ER and IEC; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

	to daily until no exceedance of Limit level for two consecutive days.			
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Appendix H

Monthly Waste Flow Table



Name of Department: ArchSD/CEDD/DSD/EMSD/HyD/WSD

Contract No.: DC/2018/08

Monthly Summary Waste Flow Table for 2021 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard 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 '000 kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000m ³)
Jan	6.334	0	0	3.028	3.306	0	0	0	0	0.4	0.00847
Feb	4.008	0	0	1.461	2.547	0	0	0	0	1.4	0.01195
Mar	6.096	0	0	0	6.096	0	0	0	0	0	0.00638
Apr	4.013	0	0	0	4.013	0	0	0	0	4.2	0.00612
May	4.096	0	0	1.130	2.966	0	0	0	0	0	0.00769
June	5.882	0	0	5.212	0.670	0	0	0	0	0	0.00533
Sub-total	30.429	0	0	10.831	19.598	0	0	0	0	6	0.04594
July	4.194	0	0	3.188	1.006	0	0	0	0	0.05	0.02628
Aug	6.064	0	0	2.820	3.243	0	0	0	0	1	0.01173
Sept	5.775	0	0	4.467	1.308	0	64.05	0	0	0	0.01292
Oct	0.164	0	0	0	0.164	0	82.35	0	0	0	0.02909
Nov	0.160	0	0	0	0.160	0	0	0	0	1.4	0.02673
Dec	0.0797	0	0	0	0.0797	0	0	0	0	0.8	0.01460
Total	46.8657	0	0	21.306	25.5587	0	146.40	0	0	9.25	0.16729

Remark: Use of conversion factors: density of inert C&D materials (2 ton/m³) and general refuse (1 ton/m³)



Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard 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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
37.523	37.2	0	0	5.92	0	0	0	0	4.8	0.323

- Notes:
- (1) The performance targets are given in PS Clause 1.104(14).
 - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

Appendix I

Implementation Schedule of Recommended Mitigation Measures

Table A-1 Air Quality Impact – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S.3.5.9	S.3.2.2	All the dust control measures as recommended in the Air Pollution Control (Construction Dust) Regulation, where applicable, should be implemented. Typical dust control measures include:	Air Quality (fugitive dust) Control during Construction Phase	Contractors	At all construction areas of the site during the entire construction period	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> The works area for site clearance shall be sprayed with water before, during and after the operation so as to maintain the entire surface wet 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> Restricting heights from which materials are to be dropped, as far as practicable to minimise the fugitive dust arising from unloading/ loading 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> Immediately before leaving a construction site, all vehicles shall be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> Erection of hoarding of not less than 2.4 m high from ground level along the site boundary, where appropriate 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> Any stockpile of dusty materials shall be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and 4 sides 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.5.9	S.3.2.2	<ul style="list-style-type: none"> All dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet 	Air Quality (fugitive dust) Control during Construction Phase	Contractors	Ditto	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
Operational Phase						
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table A-2 Noise Impact – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> The Contractor shall adopt the Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD 	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> The Contractor shall observe and comply with the statutory and non-statutory requirements and guidelines 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> Before commencing any work, the Contractor shall submit to the Engineer Representative for approval the method of working, equipment and noise mitigation measures intended to be used at the site 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> The Contractor shall devise and execute working methods to minimise the noise impact on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> Noisy equipment and noisy activities should be located as far away from the NSRs as is practical 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> Unused equipment should be turned off. PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> Regular maintenance of all plant and equipment 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
S.4.8.2	S.4.8.1	<ul style="list-style-type: none"> Material stockpiles and other structures should be effectively utilised as noise barriers, where practicable 	Noise control during construction	Contractors	Ditto	Annex 5 of EIAO-TM
Operational Phase						
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table A-3 Water Quality Impact – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S.5.10.1 -5.10.2	S.5.8.2 -5.8.3	Construction for the desilting facilities at intake and outfall portals should be carried out behind a temporary cofferdam which is watertight enclosure built in the reservoirs and pumped dry to expose the bottom.	Point Pollution Control	Contractors	Before construction of intake and outfall portals and remain on site until completion of intake and outfall portals and tunnel construction	Water Pollution Control Ordinance
S.5.10.3	S.5.8.4	The cofferdams should be regularly inspected and maintained to ensure no spillage of waste or wastewater into the reservoirs.	Point Pollution Control	Contractors	Before construction of intake and outfall portals and remain on site until completion of intake and outfall portals and tunnel construction	Water Pollution Control Ordinance
S. 5.10.4	S. 5.8.5	Construction of desilting facilities within works areas capable of controlling discharge of SS to comply with WPCO/TM-DSS	Point and Non-point Pollution Control	Contractors	At all construction areas of the site during the entire construction period	Water Pollution Control Ordinance
S.5.10.5	S.5.8.6	Construction runoff will be managed as per the Practice Note for Professional Persons ProPECC PN1/94 - Construction Site Drainage and the conditions of working within Water Gathering Grounds stipulated by WSD	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance Water Gathering Ground control by WSD
S.5.10.6	S. 5.8.7	A Drainage Management Plan should be prepared by the Contractor for approval by the Engineer for each of the works areas, detailing the facilities and measures to manage pollution arising from surface runoff from those works areas	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance Water Gathering Ground control by WSD
S. 5.10.7	S. 5.8.8	An Emergency Contingency Plan should also be prepared by the Contractor, detailing the response and procedures to contain and remove any accidental spillage along the temporary and permanent roads and at the site at short notice to prevent or minimize the quantities of contaminants from reaching the reservoirs and local streams leading to the reservoirs. The Emergency Contingency Plan should be submitted to the Engineer for approval	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance Water Gathering Ground control by WSD
S. 5.10.8	S. 5.8.9	▪ Surface run-off and effluent from the construction sites at	Stormwater and Non-point	Contractors	Ditto	Water Pollution Control

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
		the intake at Kowloon Byewash Reservoir and outfall at the Lower Shing Mun Reservoir will be directed towards adequately designed sand/silt removal facilities such as sand/silt traps and sediment basins to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO before discharging to discharge points downstream of the Kowloon Byewash Reservoir Dam and Lower Shing Mun Reservoir Dam respectively. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1m ³ /s a sedimentation basin of 30m ³ would be required and for a flow rate of 0.5m ³ /s the basin would be 150m ³ . The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction	Source Pollution Control			Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Channels, earth bunds or sand bag barriers will be provided on-site to properly direct stormwater to the above-mentioned facilities 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Existing on-site silt removal facilities, channels and manholes, if any, will be maintained and the deposited silt and grit will be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Other manholes, if any, including any newly constructed ones will be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Open stockpiles of materials on site will be avoided within water gathering grounds as far as practicable. All surplus spoil will be removed from water gathering grounds as soon as possible Measures will be taken to prevent the washing away of construction materials, soil, silt or debris 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Where possible, works entailing soil excavation will be minimized during the rainy season (i.e. April to September). If excavation in soil could not be avoided in these months or 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
		at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm				
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Where applicable, final earthworks surfaces/ slopes will be well compacted and hydro-seeded following completion to prevent erosion 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Where surface runoff or construction effluent is likely to be contaminated with oil, properly designed and maintained petrol interceptor will be provided to meet the WPCO/TM-DSS requirements. Oil leakage or spillage shall be contained and cleaned up immediately. Detailed design of the petrol interceptor shall be provided by the Contractor before commencement of construction 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Sewage arising from the construction workers on site should be collected by temporary sanitary facilities e.g. portable chemical toilets. Portable toilets should be used coupled with tankering away services provided by a licensed collector 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> All site discharges within Inland Waters Group A must comply with the terms and conditions of a valid discharge licence issued by EPD 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Vehicle wheel washing facilities should be provided, where applicable, at the site exit such that mud, debris, etc. deposited onto the vehicle wheels or body can be washed off before the vehicles are leaving the site area 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Section of the road between the wheel washing bay and the public road should be paved with backfill to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> ▪ Vehicle washing facilities should be drained into desilting facilities before discharge. The water should be recycled on site wherever possible. It is suggested that the wash water from the wheel wash basin is either reused for site watering or pumped to the on-site desilting facilities for treatment 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> • Desilting facilities should be checked and the deposited silt and grit should be removed regularly to ensure they are working properly at all times 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> • To minimize water quality impact, recycled water should be used at the cutter face for cooling purposes. Used water should be collected and discharged to settling tank for settlement 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> • Excess water from the settling tank would be transferred to the desilting facilities for treatment before discharge. The Contractor should ensure that the discharge water from the desilting facilities and treated spent effluent arising from tunnel boring from the desilting facilities comply with the WPCO/TM-DSS requirements before discharge 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> ▪ Existing on-site silt removal facilities, channels and manholes, if any, would be maintained such that the deposited silt and grit will be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times; 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> ▪ Desilting facilities should be checked and the deposited silt and grit should be removed regularly to ensure they are working properly at all times; 	Stormwater and Non-point Source Pollution Control	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> ▪ The project may occasionally involve the handling of fuel and generates chemical wastes. It must be ensured that all fuel tanks and chemical storage are sited on sealed and bunded areas, provided with locks and located outside water gathering grounds as far as practicable 	Protection Against Accidental Spillage	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> ▪ The storage areas will be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent accidentally spilled oil, fuel or chemicals from reaching the receiving waters 	Protection Against Accidental Spillage	Contractors	Ditto	Water Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Oil and grease removal facilities will be provided where appropriate, for example, in area near plant workshop/maintenance areas, if any 	Protection Against Accidental Spillage	Contractors	Ditto	Water Pollution Control Ordinance
S. 5.10.8	S. 5.8.9	<ul style="list-style-type: none"> Chemical waste arising from the site should be properly stored, handled, treated and disposed of in compliance with the requirements stipulated under the Waste Disposal (Chemical Waste) (General) Regulation 	Protection Against Accidental Spillage	Contractors	Ditto	Waste Disposal (Chemical Waste) (General) Regulation
Operational Phase						
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table A-4 Waste Management Implication – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S.6.7.1		Given the potential for secondary environmental impacts (dust, noise, water quality and visual impacts), mitigation measures are required to ensure proper handling, storage, transportation and disposal of materials at the outset and throughout the construction phase of the project	Waste management during construction	Contractors	At all construction areas of the site during the entire construction period	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> An on-site environmental co-ordinator employed by the Contractor should be identified at the outset of the works. The co-ordinator shall prepare a Waste Management Plan ("WMP") in accordance with the requirements set out in the ETWB TCW No. 19/2005, Waste Management on Construction Sites. The WMP shall include monthly and yearly Waste Flow Tables ("WFT") that indicate the amounts of waste generated, recycled and disposed of (including final disposal site), and which should be regularly updated 	Waste management during construction	Contractors	Ditto	ETWB TCW No. 19/2005, Waste Management on Construction Sites
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> The reuse/ recycling of all materials on site shall be investigated and exhausted prior to treatment/ disposal off-site 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> Good site practices shall be adopted from the commencement of works to avoid the generation of waste, reduce cross contamination of waste and to promote waste minimisation 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> All waste materials shall be sorted on-site into inert and non-inert C&D materials, and where the materials can be recycled or reused, they shall be further segregated. Inert material, or public fill will comprise stone, rock, concrete and soil which is suitable for land reclamation and site formation whilst non-inert materials include all other wastes generated from the construction process such as plastic packaging and vegetation (from site clearance) 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> The Contractor shall be responsible for identifying what materials can be recycled/ reused, whether on-site or off-site. In the event of the latter, the Contractor shall make 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
		arrangements for the collection of the recyclable materials. Any remaining non-inert waste shall be collected and disposed of to the public fill reception facilities whilst any inert C&D materials shall be re-used on site as far as possible. Alternatively, if no use of the inert material can be found on-site, the materials can be delivered to a public fill reception facilities after obtaining the appropriate licence				
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> In order to monitor the disposal of C&D material and solid wastes at public fill reception facilities and landfills, and control fly-tipping, a trip-ticket system shall be implemented by the Contractor, in accordance with the contract and the requirements of WBTC 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Material" 	Waste management during construction	Contractors	Ditto	WBTC 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Material"
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> Under the Waste Disposal (Chemical Waste) (General) Regulation, the Contractor shall register as a Chemical Waste Producer if chemical wastes such as spent lubricants and paints are generated on site. Only licensed chemical waste collectors shall be employed to collect any chemical waste generated at site. The handling, storage, transportation and disposal of chemical wastes shall be conducted in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes and A Guide to the Chemical Waste Control Scheme both published by EPD 	Waste management during construction	Contractors	Ditto	Waste Disposal (Chemical Waste) (General) Regulation
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> A sufficient number of covered bins shall be provided on site for the containment of general refuse to prevent visual impacts and nuisance to the sensitive surroundings. These bins shall be cleared daily and the collected waste disposed of to the refuse transfer station. Further to the issue of ETWB TCW No. 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness, the Contractor is required to maintain a clean and hygienic site throughout the project works 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> All chemical toilets, if any, shall be regularly cleaned and the night-soil collected and transported by a licensed contractor to a Government Sewage Treatment Works facility for disposal 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> Toolbox talks should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
S.6.7.2	S. 6.2.5	<ul style="list-style-type: none"> The Contractor shall comply with all relevant statutory requirements and guidelines and their updated versions that may be issued during the course of project construction 	Waste management during construction	Contractors	Ditto	Waste Disposal Ordinance
Operational Phase						
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table A-5 Ecological Impact – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S 8.8	N/A	Minimise the habitat loss of secondary woodland / plantation and grassland as far as possible	Reduce habitat and vegetation loss	Contractors	At all construction areas of the site during the entire construction period	Annex 16 of EIAO-TM
S 8.8	N/A	Disturbed secondary woodland / plantation and grassland should be reinstated after the completion of works	Reinstate disturbed habitats	Contractors	Worksite areas at the two portals / after completion of construction works	Annex 16 of EIAO-TM
S 8.8	N/A	Provide clear definition of site boundary	Prevent impact on offsite habitats	Contractors	At all construction areas of the site during the entire construction period	Annex 16 of EIAO-TM
S 8.8	N/A	Protect the protected plant <i>Pavetta hongkongensis</i> on its existing location; Transplant the <i>Pavetta hongkongensis</i> to other suitable location if onsite protection is not feasible.	Preserve the protected plant species	Contractors	On the vegetated slope along the existing vehicle access at worksite area at Lower Shing Mun Reservoir / Construction period	Annex 16 of EIAO-TM
S 8.8	N/A	Carry out compensatory planting if the individual of <i>Artocarpus hypargyreus</i> cannot be retained onsite	Mitigate the tree removal	Contractors	worksite area at Kwoloon Byewash Reservoir / Construction Period	ETWB TCW No. 3/2006
S 8.8	N/A	Workers should avoid eating and leave food in works area and avoid feeding the wildlife; Fishes observed remaining at the proposed works area during the draining down process should be translocated to the portion of the reservoir outside the cofferdam.	Avoidance of injury to wildlife	Contractors	At all construction areas of the site during the entire construction period	Annex 16 of EIAO-TM
S 8.8	N/A	Implement standard good site practices for dust suppression	Avoid dust deposition on vegetation	Contractors	At all construction areas of the site during the entire construction period	EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S 8.8	N/A	Implement standard good site practices for water quality control	Avoid site runoff to nearby habitats	Contractors	At all construction areas of the site during the entire construction period	Water Pollution Control Ordinance
S 8.8	N/A	Workers shall not disturb birds and other wildlife; Litter shall not be burned on-site but shall be removed off-site;	Avoid disturbance to wildlife	Contractors	At all construction areas of the site during the entire construction period	Annex 16 of EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
		Machinery not in use should be switched off to minimize the noise nuisance; No fishing is allowed in the reservoir without permission.				
Operational Phase						
S 8.8	N/A	Compensate the habitat loss (grassland and woodland) by restoration of same type of habitats to be lost. The compensatory ratio should not be less than 1:1 in terms of area.	Mitigate the temporary habitat loss	Contractors	Woodland at worksite area at Kowloon Byewash Reservoir and Grassland at worksite area at Lower Shing Mun Reservoir / Operational period	Annex 16 of EIAO-TM

Table A-6 Landscape and Visual Impact – Implementation Schedule of Recommended Mitigation Measures

Id No.	Landscape and Visual Mitigation Measures	Location	Funding	Implementation/ Maintenance Agent	Relevant Standard or Requirement	Implementation Stage			Timing of Implementation	Objectives of the Recommended Measure and Main Concern to address
LMM1	Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical	Site	WSD	Contractor	TM-EIA Annex 18		√		Throughout construction phase	To provide a viable growing medium suited to the existing conditions and reduce the need for the importation of top soil
LMM2	Existing Trees to be retained on site should be carefully protected during construction	Site	WSD	Contractor	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006		√		Throughout construction phase	To ensure the success of the tree preservation proposal
LMM3	Compensatory tree planting should be provided to compensate for felled trees	Site	WSD	Contractor	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006		√		Throughout design and construction phase	The planting proposal seeks to compensate for the predicted tree loss resulting from the construction, visually integrate the proposals within its existing landscape framework and provide an improved visual amenity
LMM4	Erection of decorative screen hoarding compatible with surrounding setting	Site	WSD	Contractor	TM-EIA Annex 18 and BD		√		Throughout construction phase	To integrate the construction site with the existing environment
LMM5	Locations of the site office, storage or workshops should be carefully adjusted to areas out of tree protection zones.	Site	WSD	Contractor	TM-EIA Annex 18 and BD	√			Throughout design phase	To avoid unnecessary felling of trees
LMM6	Selection of intake and outfall portals to areas enclosed by existing topography or vegetation	Site	WSD	Contractor	TM-EIA Annex 18 and BD	√			Throughout design phase	To preserve the existing topography and as many as trees as possible
LMM7	Appearance of the water intake and outfall structures	Site	WSD	Contractor	TM-EIA Annex 18 and BD	√			Throughout design phase	To reduce the apparent visual mass of water intake and outfall structures
LMM8	Reinstatement of disturbed vegetation at both portal	Site	WSD	Contractor	TM-EIA Annex 18			√	After the completion of construction	To mitigate disturbance to vegetation arising from the proposed construction

Id No.	Landscape and Visual Mitigation Measures	Location	Funding	Implementation/ Maintenance Agent	Relevant Standard or Requirement	Implementation Stage	Timing of Implementation	Objectives of the Recommended Measure and Main Concern to address
	areas						works	

Table A-7 Cultural Heritage – Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location/ Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase						
S 10.7	S8.1.2	Condition Survey for the identified historic items and monitoring of vibration levels if required.	Prevention of structural damage to the identified historic items	Contractors	Condition survey to be undertaken prior to the construction phase and vibration monitoring to be undertaken during the construction phase if required.	None
Operational Phase						
N/A	N/A	None	None	None	None	None


Appendix J

Tentative Monitoring Schedule of Next Reporting Period

IRTS – EM&A Monitoring & Inspection Schedule

January 2022

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2 Noise Monitoring at NM1 (09:00-19:00)	3 Impact Water Quality Monitoring	4 Weekly Site Inspection	5 Impact Water Quality Monitoring & Noise Monitoring at NM1 & NM2 (09:00-19:00); NM1 (19:00-23:00)	6	7 Impact Water Quality Monitoring	8
9 Noise Monitoring at NM1 (09:00-19:00)	10 Impact Water Quality Monitoring	11 Weekly Site Inspection	12 Impact Water Quality Monitoring & Noise Monitoring at NM1 & NM2 (09:00-19:00); NM1 (19:00-23:00)	13	14 Impact Water Quality Monitoring	15
16 Noise Monitoring at NM1 (09:00-19:00)	17 Impact Water Quality Monitoring	18 Weekly Site Inspection	19 Impact Water Quality Monitoring & Noise Monitoring at NM1 & NM2 (09:00-19:00); NM1 (19:00-23:00)	20	21 Impact Water Quality Monitoring	22
23 Noise Monitoring at NM1 (09:00-19:00)	24 Impact Water Quality Monitoring	25 Weekly Site Inspection	26 Impact Water Quality Monitoring & Noise Monitoring at NM1 & NM2 (09:00-19:00); NM1 (19:00-23:00)	27	28 Impact Water Quality Monitoring	29
30 Noise Monitoring at NM1 (09:00-19:00)	31 Impact Water Quality Monitoring					

 = General Holiday

Appendix K

Cumulative Statistics on Complaints,
Notifications of Summons And
Successful Prosecutions

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 Dec 2021 - 31 Dec 2021	0	1	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
1 Dec 2021 - 31 Dec 2021	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
1 Dec 2021 - 31 Dec 2021	0	0	N/A

**CONTRACT NO. DC/2018/08 - INTER-RESERVOIRS TRANSFER SCHEME
- WATER TUNNEL BETWEEN KOWLOON BYEWASH RESERVOIR AND LOWER SHING MUN RESERVOIR
IEC's COMMENTS**

Document Title: IRTS 30th Monthly EM&A Report (December 2021) IEC Verification Letter

Document Ref. No.: IEC's verification letter ref. 14-01-2022

Date of Issue of Comments: 14/01/2022

ITEM NO.	IEC'S COMMENT	ET'S RESPONSE	CLOSE DATE
1.	Pursuant to Sections 5.3.6, concern has been raised on the sample condition when delivered to the laboratory for SS testing. Such information was yet to be provided in the SS test reports. A sufficient description on the sample condition when delivered to the laboratory are better to be available in the SS test reports for the sake of clarify.	As confirmed by Acumen and Fugro (the laboratories used for this Project), as it only serves as a common practice in the industry, when there is no abnormal condition when receiving the samples, no notification or formal records shall be sent.	
2.	Analysis of SS was not carried out with reference to the testing method and detection limit stated in Section 5.3.9 of EM&A Manual.	As per Section 5.3.9 of the EM&A Manual, the procedures for testing suspended solids should follow APHA 2540D (21st edition at the time of the EM&A Manual being written) and the detection limit to be less than or equal to 0.1 mg/L. After enquired 6 laboratories in the market, the closest match was 0.5 mg/L for 5 L samples with the APHA 17th, 22nd or 23rd (the latest) edition of APHA. Depending on the actual site situation and the amount of water to be sampled at each sampling location, 5 L samples will be taken as far as possible. When there is not enough water to be sampled at the sampling location (i.e. water depth is less than 11 cm), 1 L samples, which the detection limit being 2.5 mg/L, shall then be taken as far as possible. Given that the action and limit levels of this Project are considerably greater than 2.5 mg/L, it is a reasonable and practical value to be used.	
3.	Pursuant to Sections 5.3.9, 5.3.10 and 5.3.13 of EM&A manual, SS results were released in HOKLAS endorsed reports in the reporting month. None of the SS results were obtained from HOKLAS endorsed reports since the project commencement.	All laboratories used for the Project are HOKLAS accredited. The certificates can be found online and can be found below.	

klau@acuityhk.com

From: Acumen-Huntington Hui <htthui@acumen-env.com>
Sent: Thursday, 13 January 2022 10:11 am
To: klau@acuityhk.com
Cc: 'Kevin W M Li'; 'Tandy KC Tse'; ttse.acuityhk@gmail.com; 'Carmen Cheuk'; 'CHEUNG, Marcus (BTP)'; 'ASCL Howard Chan'; jleung@acuityhk.com
Subject: RE: DC/2018/08 - Inter-reservoirs Transfer Scheme - Dec 2021 Sample Condition During Receiving

Dear Kelvin,

We confirmed that the sample(s) for Inter-reservoirs Transfer Scheme received in Dec 2021 under chilled condition, thanks

Should you have any enquiries, please feel free to contact me.

Best regards,

Huntington Hui

Acumen Laboratory and Testing Limited

From: klau@acuityhk.com [mailto:klau@acuityhk.com]
Sent: Thursday, January 13, 2022 10:03 AM
To: 'Acumen-Huntington Hui' <htthui@acumen-env.com>
Cc: 'Kevin W M Li' <kli@acuityhk.com>; 'Tandy KC Tse' <ttse@acuityhk.com>; ttse.acuityhk@gmail.com; 'Carmen Cheuk' <are.carmencheuk@hkirts.com>; 'CHEUNG, Marcus (BTP)' <marcus.cheung@dragageshk.com>; 'ASCL Howard Chan' <hchan@acuityhk.com>; jleung@acuityhk.com
Subject: DC/2018/08 - Inter-reservoirs Transfer Scheme - Dec 2021 Sample Condition During Receiving

Dear Hunt,

As per IEC's comments, we would like to confirm that all Dec 2021 samples were received by Acumen in chilled condition. Thank you and please let me know if you have any questions.

Best regards,

Kelvin Lau

Acuity Sustainability Consulting Limited
O: 2698-6833 F: 2698-9383

From: Leung, Tiga <pi.leung@fugro.com>
Sent: Thursday, 13 January 2022 10:03 am
To: klau@acuityhk.com
Cc: 'Kevin W M Li'; 'Tandy KC Tse'; ttse.acuityhk@gmail.com; 'Carmen Cheuk'; CHEUNG, Marcus (HKIRTS); 'ASCL Howard Chan'
Subject: Re: DC/2018/08 - Inter-reservoirs Transfer Scheme - Dec 2021 Sample Condition During Receiving

Dear Kelvin,

We checked all the sample received in December by Fugro lab in chilled condition. Thanks.

Kind Regards,

Tiga Leung

Supervisor – Water Quality Laboratory

Fugro

T + 852 2452 7926 | **F** + 852 2450 6138 | **E** pi.leung@fugro.com | **W** fugro.com

A Fugro Development Centre, 5 Lok Yi Street, Tai Lam, Tuen Mun, NT, Hong Kong

Together we create a safe and liveable world.

From: klau@acuityhk.com <klau@acuityhk.com>
Sent: Thursday, January 13, 2022 9:59 AM
To: Leung, Tiga <pi.leung@fugro.com>
Cc: 'Kevin W M Li' <kli@acuityhk.com>; 'Tandy KC Tse' <ttse@acuityhk.com>; ttse.acuityhk@gmail.com <ttse.acuityhk@gmail.com>; 'Carmen Cheuk' <are.carmencheuk@hkirts.com>; CHEUNG, Marcus (HKIRTS) <marcus.cheung@dragageshk.com>; 'ASCL Howard Chan' <hchan@acuityhk.com>
Subject: DC/2018/08 - Inter-reservoirs Transfer Scheme - Dec 2021 Sample Condition During Receiving

Dear Tiga,

As per IEC's comments, we would like to confirm that all Dec 2021 samples were received by Fugro lab in chilled condition. Thank you and please let me know if you have any questions.

Best regards,

Kelvin Lau

Acuity Sustainability Consulting Limited

O: 2698-6833 F: 2698-9383



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ACUMEN LABORATORY AND TESTING LIMITED
浩科檢測中心有限公司

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon,
Hong Kong
香港九龍長沙灣永康街37-39號福源廣場12樓D室

*is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of*
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗室活動

Environmental Testing
環境測試

*This accreditation to ISO/IEC 17025:2017 demonstrates technical competence for a defined scope and
the implementation of a management system relevant to laboratory operation
(see joint IAF-ILAC-ISO Communiqué).*

此項 ISO/IEC 17025:2017 的認可資格證明此實驗室具備指定範疇內所須的技術能力並
實施一套與實驗室運作相關的管理體系
(見國際認可論壇、國際實驗室認可合作組織及國際標準化組織的聯合公報)。

The common seal of HKAS is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date : 15 November 2021
簽發日期：二零二一年十一月十五日

Registration Number : HOKLAS 241
註冊號碼：

Date of First Registration : 16 July 2014
首次註冊日期：二零一四年七月十六日





Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗室活動

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環境測試

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the implementation of a management system relevant to laboratory operation
(see joint IAF-ILAC-ISO Communiqué).*

此項 ISO/IEC 17025:2017 的認可資格證明此實驗所具備指定範圍內所須的技術能力並
實施一套與實驗所運作相關的管理體系
(見國際認可論壇、國際實驗室認可合作組織及國際標準化組織的聯合公報)。

*The common seal of HKAS is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章*

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良

Issue Date : 28 February 2020
簽發日期：二零二零年二月二十八日

Registration Number : HOKLAS 066
註冊號碼：



Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

FUGRO TECHNICAL SERVICES LIMITED
輝固技術服務有限公司

Fugro Development Centre, 5 Lok Yi Street, Tai Lam, Tuen Mun, New Territories, Hong Kong
香港新界屯門大欖樂怡街五號輝固發展中心

*is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of*
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗室活動

Environmental Testing
環境測試

*This accreditation to ISO/IEC 17025:2017 demonstrates technical competence for a defined scope and
the implementation of a management system relevant to laboratory operation
(see joint IAF-ILAC-ISO Communiqué).*

此項 ISO/IEC 17025:2017 的認可資格證明此實驗室具備指定範圍內所須的技術能力並
實施一套與實驗室運作相關的管理體系
(見國際認可論壇、國際實驗室認可合作組織及國際標準化組織的聯合公報)。

The common seal of HKAS is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date : 25 May 2021
簽發日期：二零二一年五月二十五日

Registration Number : HOKLAS 015
註冊號碼：

Date of First Registration : 23 March 1989
首次註冊日期：一九八九年三月二十三日

