

Our Ref : 382766/(DC/2018/08)/M45/110/(803475)

Your Ref :

14 November 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
(October 2022)

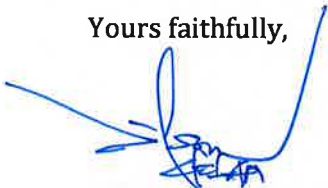
I write to inform you that the monthly EM&A Reports for October 2022 have been certified by the ET leader and verified by the IEC in accordance with Condition 4.3 of the EP. The report will be submitted to EPD separately.

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 quality 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/IS/cc
ce

Our ref: 14-11-2022

14-11-2022

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
40th Monthly EM&A Report (Rev. 0)

Reference is made to the submission of the 40th Monthly EM&A Report certified by the ET Leader and provided to Independent Environmental Checker (IEC) via an email for 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. IEC's verification to the monthly EM&A report does not release any of ET Leader and ET's obligations in the EM&A manual under the applicable Environmental Permit(s) for this project and does not endorse the implementation of EM&A programme from ET and ET Leader.

A verification process has been carried out to review the submission in connection with the Environmental Permit and EM&A Manual. Please be informed that IEC has comments on the captioned submission and ET's response (a copy of which is enclosed and marked Annex 1).

1) No documents provided by ET show that "IEC's comments for all October 2022 samples were received by

Fugro lab in chilled condition.” Section 5.3.6 of the EM&A Manual states that the water samples for SS measurement should be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen). 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 in the EM&A Manual. Moreover, Section 2.6.1 of EM&A Manual stipulates “The ET Leader shall plan, organise and manage the implementation of the EM&A programme, and ensure that the EM&A works are undertaken to the required standards.” On the other hand, the email provided by ET did not indicate the validated temperature as well. Therefore, the ET’s response was left irrelevant and questionable.

- 2) Appendix F the Impact Water Quality Monitoring Data of the monthly EM&A report certified by ET Leader shows the results of on-site measurement in October 2022. Not only there are discrepancies between note 1 of Appendix F Impact Water Quality Monitoring Data for water in location C2 & C1b mentioned insufficient water was available for sample collection and data results in Appendix F, but the response from ET failed to address the issue and remains irrelevant.
- 3) Section 5.2.2 of EM&A Manual mentions that other relevant data should also be recorded, including the monitoring location/position, time, weather conditions and any special phenomena or work underway at the construction site. According to the photos provided in WhatsApp group, an alternative access point was moved downstream for collecting water sampling C1b and C1b# of the same water body. No approximate sampling location was shown in Appendix C of Monitoring Locations. The accuracy and authenticity of the monthly EM&A report were unable to be confirmed and validated, even with certifications from ET Leader.
- 4) Section 5.3.6 of the EM&A Manual stipulates that water samples for SS measurement should be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen). 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. Moreover, Section 2.6.1 of EM&A Manual stipulates that “The ET Leader shall plan, organise and manage the implementation of the EM&A programme, and ensure that the EM&A works are undertaken to the required standards.” The email provided by ET does not indicate the validated temperature as well. The ET’s response is irrelevant and questionable, and no photos provided by ET prove that the temperature of the water samples before delivering for analysis
- 5) No photos provided by ET prove that the water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) varied within periods of time. Water samples were collected at an open ditch, which is distant from the boundary of the water body, by ET with the witnesses of IEC during the monthly random site inspection on

26 October 2022. The response from ET is doubtful.

- 6) There was no valid calibration certification provided by ET for the infrared thermometer. The accuracy of monitoring results e.g. SS packed in ice (cooled to 4°C without being frozen) is unable to be validated and confirmed.
- 7) The ET Leader has certified the monthly EM&A report in October 2022 but the ET is uncertain about correctness of the data shown in Appendix F Impact Water Quality Monitoring Data. A suspected incorrect and/misleading record was submitted for IEC verification. As a result, the accuracy of monitoring results remains unconfirmed.
- 8) Condition 2.2 of the Environmental Permit No. EP-345/2009/A stipulates 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. Some water samples at monitoring location C1b were not collected at approved sampling locations. In Section 2.11 of the monthly EM&A report certified by the ET Leader, a new practice was introduced regarding the water sampling equipment. The ET and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with Section 5.3.5 of the EM&A Manual
- 9) 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. The response certified by the ET Leader acknowledges that section 5.3.9 of the EM&A Manual does not strictly follow. Please consider the response made as mentioned, whether the ET and the ET Leader should be responsible for the implementation of the EM&A programme.
- 10) 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. In Section 3.5 of the monthly EM&A report, a new practice was introduced regarding to the SS testing method and SS detection limit. Two different SS reporting limits were introduced in the reporting month. The ET and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with Section 5.3.9 of the EM&A Manual, before approving the proposed changes of contents of EM&A programme
- 11) Section 5.3.5 of the EM&A Manual stipulates that a water sampler should be used. The water samples at monitoring location C1b were not collected with the water sampler shown in WhatsApp group.

IEC would like to clarify that IEC did not endorse the current procedure to determine the action and limit levels

of turbidity and suspended solids. Subjected to the accuracy and authenticity of all the information provided to us, IEC hereby verifies the monthly EM&A report in October 2022 was submitted.

Please be reminded both ET Leader and ET that IEC's comments / observations are based on your report and responses provided before submission to EPD. IEC's therefore comments / observations are full and final. With due respect, IEC does not see your additional RtC would add any additional value to IEC comments / observations after full/final IEC comments/observations.

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

Yours faithfully,

For and on behalf of
Ka Shing Management Consultant Limited



Independent Environmental Checker

Annex 1

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

Page 1 of 1

Document Title: IRTS 40th Monthly EM&A Report (October 2022)

Document Ref. No.:

Date of Issue of Comments: 11/11/2022




ITEM NO.	IEC'S COMMENT	ET'S RESPONSE	CLOSE DATE
1.	Please provide document(s) e.g. email on or before November 2, 2022 12:18 PM to show "IEC's comments for all October 2022 samples were received by Fugro lab in chilled condition."	The comment regarding sample condition was given in the IEC verification letter for the monthly EM&A for January 2022. Since February 2022, confirmation email regarding sample condition was sought from the appointed HOKLAS laboratory (Fugro) as the supporting document for report submission.	
2.	Note 1 of Appendix F Impact Water Quality Monitoring Data for water in location C2 and C1b states that insufficient water was available for sample collection. Please elaborate more your meaning "insufficient water was available for sample collection"	Insufficient water means that there is not enough water in the concerned water body at the monitoring locations to prepare a representative water sample for SS testing and on-site measurement. It was later proposed to be defined as "water depth less than 3cm" after the joint water sampling inspection with the ER, the IEC representative, the Contractor and the ET on 15 October 2021.	
3.	Please confirm whether all approximate sampling locations in October 2022 record in Appendix C Monitoring Locations	Please note that only the approximate sampling locations of monitoring location D2a are presented in Appendix C as the water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) changes in time.	
4.	Please provide photos showing temperature of the water samples before delivery for analysis	Please note that there was no photo taken for the temperature of water sample, the confirmation email issued by the appointed HOKLAS laboratory (Fugro) have proved that all the water samples were delivered to laboratory in chilled condition.	
5.	Please explain why approximate sampling location for water sampling D2a and D2a# shown Appendix C Monitoring Locations change from 10-31 October 2022	Please note that the approximate sampling locations of monitoring location D2a are presented in Appendix C as the water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) changes in time.	
6.	Please provide a valid calibration certificate of Infrared Thermometer	Please be informed that Section 5.3.7 of EM&A Manual stated that all in situ monitoring instruments should be calibrated by HOKLAS laboratory. The infrared thermometer is not a monitoring instrument for water quality monitoring as listed in the approved EM&A manual. There was no calibration certificate for the infrared thermometer.	
7.	Are you sure that data shown Appendix F Impact Water Quality Monitoring Data are true and correct?	The in-situ data presented in Appendix F was measured in-situ by multiparameter water quality meter and the data of SS level was from the laboratory report issued by HOKLAS accredited laboratory.	

40th Monthly EM&A Report (Rev. 0)

October 2022

for

Inter-Reservoirs 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	Joe HO	Tandy TSE	Kevin LI
Position	Environmental Team Member	Environmental Team Member	Environmental Team Leader
Signature			
Date	14 November 2022	14 November 2022	14 November 2022

Revision History

Rev.	Description	Date
0	1 st Submission for Comments	14 November 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 40th Monthly Environmental Monitoring and Audit (EM&A) Report presents EM&A works undertaken in the period from 1 to 31 October 2022. 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. Four (4) 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 all days during evening and five (5) sessions of construction noise impact monitoring at NM1 for daytime during general holidays and Sundays. Thirteen (13) 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 6, 11, 18 and 25 October 2022. 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	<ul style="list-style-type: none">• Outfall structure construction• Earth bund dismantling• Tree compensation
Portion C	<ul style="list-style-type: none">• Enhancement work at Kam Shan Country Park

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">• Outfall structure construction• Earth bund dismantling• Tree compensation
Portion C	<ul style="list-style-type: none">• Enhancement work at Kam Shan Country Park• Tree compensation

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 40th 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 October 2022.
- 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**.

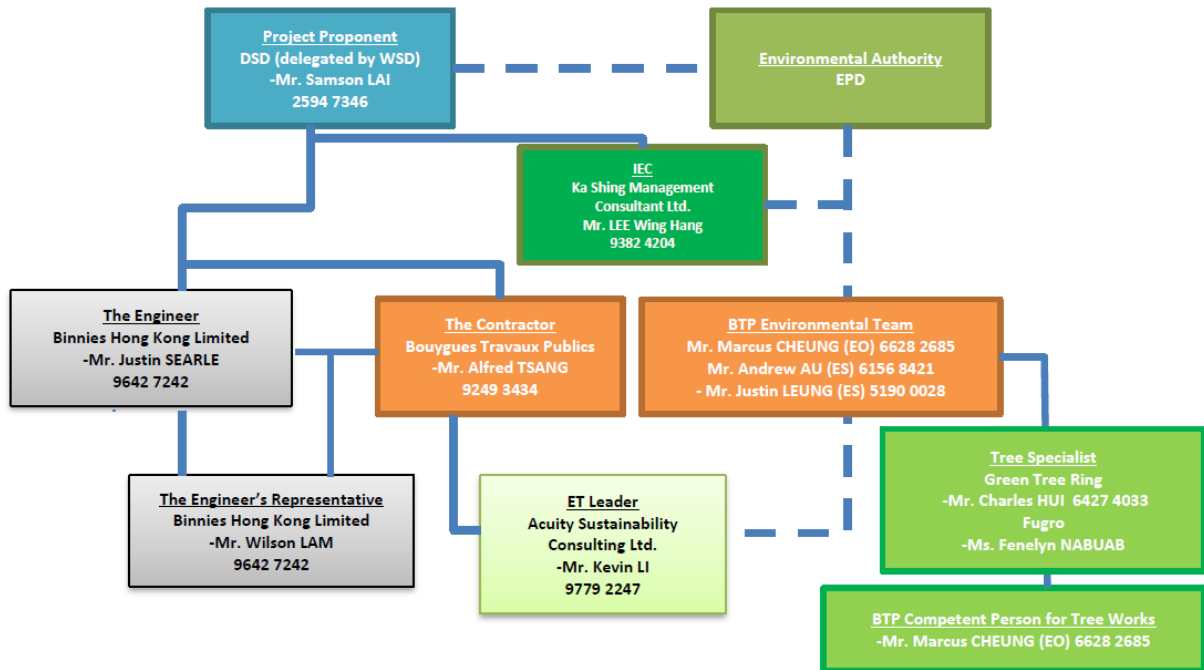


Figure 1.1 Project Organization Chart

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	Mr. Lee Wing Hang	9382 4204

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	<ul style="list-style-type: none"> • Outfall structure construction • Earth bund dismantling • Tree compensation
Portion C	<ul style="list-style-type: none"> • Enhancement work at Kam Shan Country Park

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	24-Aug-2022	GW-RN0819-22	Approved	21-Sep-2022 to 20-Jan-2023
Construction Noise Permit for works at Portion C	6-Jun-2022	GW-RN0466-22	Approved	14-Jun-2022 to 13-Dec-2022
Construction Noise Permit for works at Tai Po Road	13-Apr-2022	GW-RN0337-22	Approved	13-May-2021 to 12-Nov-2022

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 works are undertaken) • 3 nos. of consecutive $L_{eq(5min)}$ noise measurement between 1900-2300 hours (if evening works are undertaken) • 3 nos. of consecutive $L_{eq(5min)}$ noise measurement between 2300-0700 hours (if nighttime works are 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 caps 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 XL2
	Calibrator	Svan 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 (23ed), in accordance to American Public Health Association: Standard Methods for the Examination of Water and Wastewater APHA was adopted. 5000 mL of sample should be obtained as far as possible to achieve the lower detection limit $\leq 0.5\text{mg/L}$. When there is not enough water to be sampled (i.e., water depth is less than 11cm), 1000 mL would be obtained and the reporting limit would be 2.5 mg/L.

Data Management and QA/QC

- 3.6 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.
- 3.7 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

- 3.8 Construction noise monitoring was performed 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.
- 3.9 Evening time construction work has been conducted since 25 March 2020. Evening time monitoring was conducted on 5, 12, 19 and 26 October 2022 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)	52.1	59.0	49.2	60

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

- 3.10 Daytime during general holidays and Sundays construction work was conducted on 2, 9, 16, 23 and 30 October 2022. 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 3.3**.

Table 3.3 – 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	49.7	52.1	45.1	60

- 3.11 Four (4) 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 3.4**.

Table 3.4 – 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	55.7	60.3	51.3	75
NM2		54.7	59.1	51.0	

- 3.12 No construction noise related complaint was received in the reporting period. No Action / Limit Levels exceedance of construction noise recorded in the reporting period.
- 3.13 Weather conditions during the noise monitoring were mainly sunny. Summary of meteorological data is presented in **Appendix E**.

Water Quality Monitoring Result

- 3.14 Water quality monitoring was performed at approved monitoring locations, i.e. C1b, D1b, C2 and D2a, during the reporting period.
- 3.15 Thirteen (13) 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 3.5**.

Table 3.5 – Summary of Water Quality Monitoring Results

Parameters		C1b	D1b	C2	D2a
pH Value	Mean	7.7	7.7	7.6	7.3
	Max	8.1	8.0	8.0	7.9
	Min	7.0	7.0	7.1	6.9
Dissolved Oxygen (mg/L)	Mean	7.4	7.5	7.9	7.5
	Max	8.0	7.9	12.4	8.2
	Min	7.1	7.1	7.2	7.1
Dissolved Oxygen Saturation (%)	Mean	84.7	85.6	86.1	84.8
	Max	93.6	92.5	114.9	91.5
	Min	71.2	74.1	74.9	75.9
Turbidity (NTU)	Mean	3.7	5.4	6.8	2.2
	Max	7.7	8.6	12.1	7.6
	Min	0.9	3.2	4.0	0.7
Suspended Solids ¹ (mg/L)	Mean	1.7	2.9	3.9	1.9
	Max	7.0	7.0	7.0	6.0
	Min	0.5	0.5	1.0	0.5

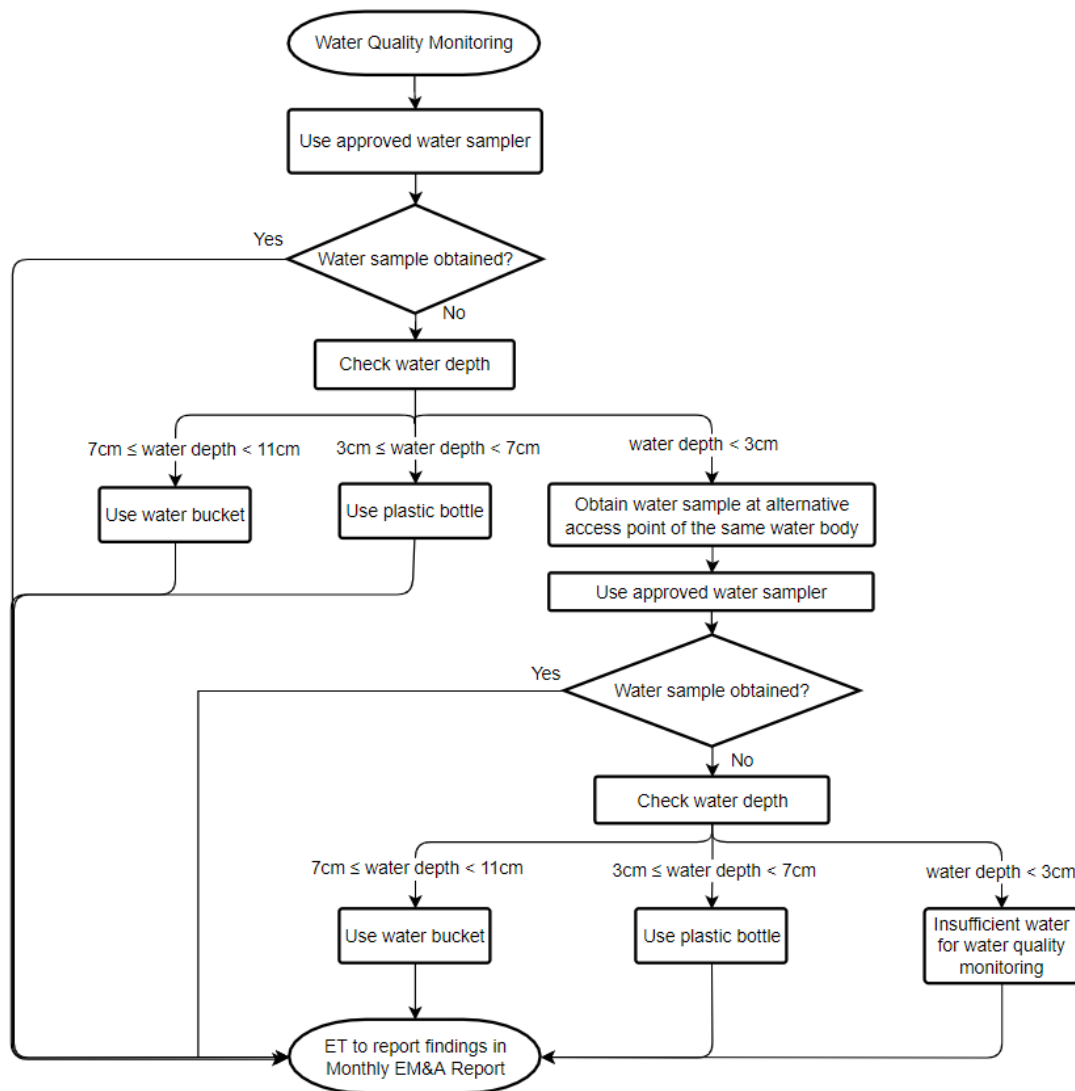
Remarks:



1. Lower detection limit of Suspended Solids is 0.5 mg/L. Data lower than such limit is regarded as 0.5 in result presentation.

- 3.16 Depending on the actual site situation and the amount of water to be sampled at each sampling location, 5L samples were taken as far as possible to achieve the lower detection limit for suspended solids to be ≤ 0.5 mg/L. However, when there is not enough water to be sampled at the sampling location (i.e., water depth is less than 11cm), 1L water samples were taken and the detection limit would be 2.5mg/L.
- 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 A temporary standby pump and associated drainage pipe were installed on 7 February 2022 behind the sampling location C2 as a precautionary measure against site flooding. The standby pump would only operate when there is heavy rainstorm. The pump was in operation in the reporting month of October 2022.

3.19 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 at original access to the water body. The fencing of the foot bridge across the catchwater at C1b monitoring location was restored on 15 October 2022, original access is the only access point for sampling event for C1b monitoring location since 15 October 2022.



C1b	C2
 <p>A close-up photograph showing a white measuring tape with black markings and a red logo, partially buried in dark, moist soil. The tape is oriented vertically, with the numbers 1 through 5 visible. The soil appears to be a mix of fine particles and small rocks.</p> <p>*Photos taken on 24 October 2022</p>	 <p>A wide-angle photograph of an outdoor site. The ground is a mix of dirt and sparse vegetation. A large blue tarp is visible on the right side of the frame. The background shows some trees and a clear sky.</p> <p>*Photos taken on 24 October 2022</p>

3.20 Weather conditions during monitoring were mainly sunny and fine with cloudy intervals. Detail of weather condition could be referring to **Appendix F**.

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)
October 2022	0.3221	0.000	0.04641	0.000	0.000	0.000

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 representative was also undertaken on 6 October 2022. 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
6 October 2022	LSMR	1. Drip trays should be provided for chemical containers.	1. Drip trays had been provided for chemical containers.
11 October 2022	LSMR	1. The chemicals should be placed on drip tray.	1. The chemicals had been placed on drip tray
18 October 2022	LSMR	1. The oil stains were observed.	1. The oil stains had been cleaned.
25 October 2022	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

Environmental Aspect	Mitigation Measures Implemented
	<ul style="list-style-type: none"> • 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., November 2022, include the followings:

Works Area	Major Site Activities
Portion A	<ul style="list-style-type: none">• Outfall structure construction• Earth bund dismantling• Tree compensation
Portion C	<ul style="list-style-type: none">• Enhancement work at Kam Shan Country Park• Tree compensation

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., November 2022, is presented in **Appendix J**. Monitoring will be performed at same locations presented in above sections.

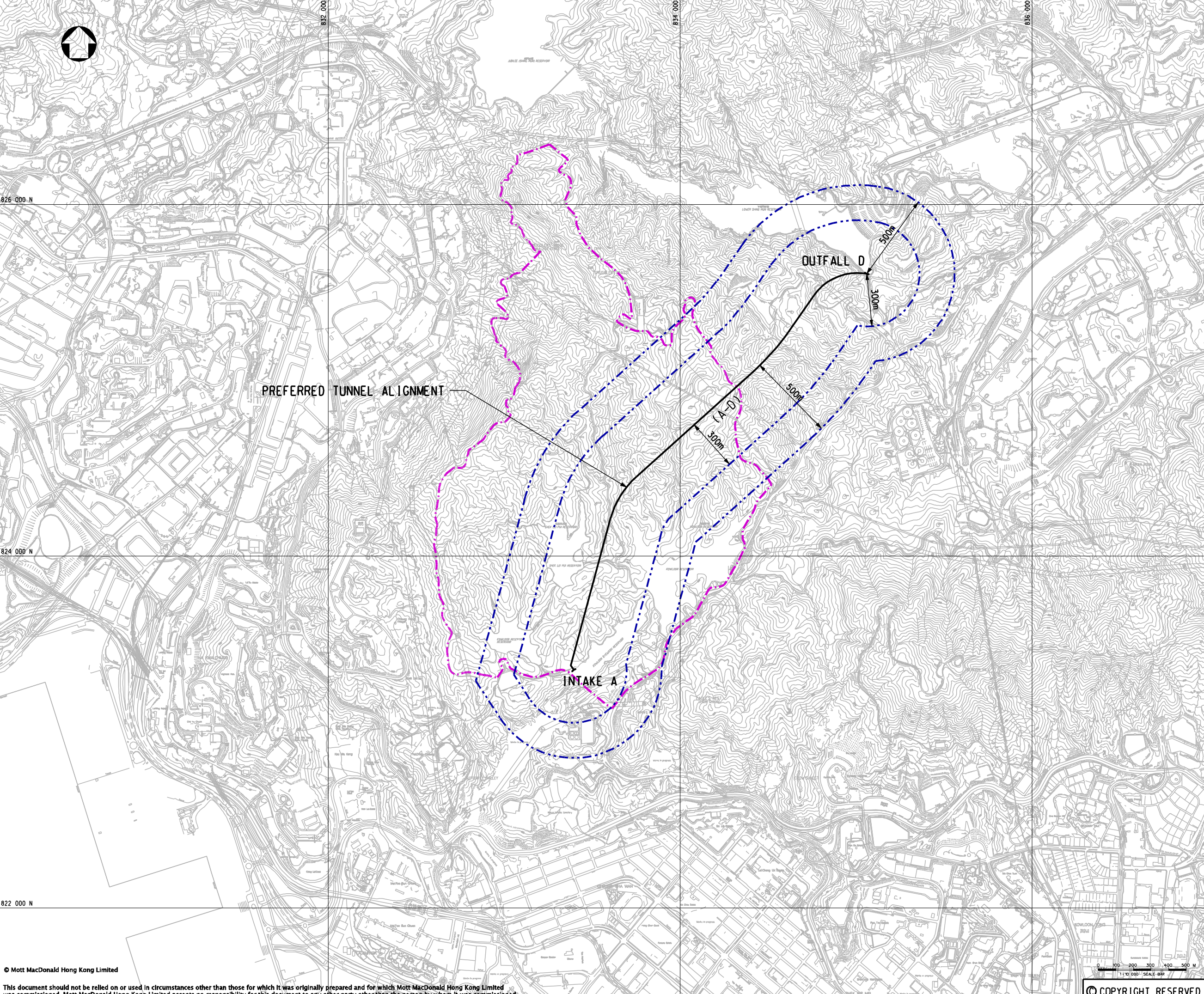
9. CONCLUSION AND RECOMMENDATIONS

- 9.1 This is the 40th Monthly Environmental Monitoring and Audit (EM&A) Report presents EM&A works undertaken in the period of 1 to 31 October 2022. 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




PREFERRED TUNNEL ALIGNMENT

OUTFALL D

INTAKE A

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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 Mott MacDonald Hong Kong Ltd
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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 (Oct 22 ~ Dec 22)

Layout : 4 -IRT-Rolling Y22M09D30a
 TASK filters: 3 Month Rolling, Level of Effort.
 Data Date : 30-Sep-22

Activity ID	Activity Name	Dur	Start	Finish	2022				2023
					Sep 43	Oct 44	Nov 45	Dec 46	Jan 47
IRTS - 3M Rolling Programme (Y22M09D30a)									
Contract Dates									
Project Completion									
Planned Completion									
Pcom_S1-1010	Forecast : Section 1 Completion of whole of the works excluding the works in Setion 2 and 3	0		26-Nov-22					◆ Forecast : Section 1 Completion of whole of the works excluding the works in Setion 2 and 3,
Pcom_S3-1010	Forecast : Section 3 Completion of all Landscape Works	0		26-Nov-22					◆ Forecast : Section 3 Completion of all Landscape Works,
Preliminaries and General Requirements									
BIM Submission									
PGR_1950	Full Coordinated As-built BIM Model *(P3)	54	31-Oct-22	02-Jan-23*					Full Coordinated As-built BIM Model *(P
PGR_1960	Preparation and Submission of COBie Data Deliverables *(P3)	31	03-Jan-23*	07-Feb-23					
PGR_1970	Preparation and Submission of Asset Management *(P3)	78	20-Sep-22A	21-Dec-22					Preparation and Submission of Asset Management *(P3)
Tai Po Road Site (TGLA No. TST453)									
TPR_GW-1040	General Site Storage	993	02-Jul-19A	14-Nov-22					General Site Storage
TPR_GW-1050	Reinstatement & Land Return	24	15-Nov-22	12-Dec-22					Reinstatement & Land Return
CSD Submission									
CSD 1 - Outfall Structure									
Alternative Works (Subject to approval of Structure Design)									
CSD1_OF_9105	Rock filling	72	22-Aug-22A	16-Nov-22					Rock filling
CSD1_OF_9200	Wall construction	116	13-Jun-22A	29-Oct-22					Wall construction
CSD1_OF_9700	Removal of soil bund	22	10-Oct-22	03-Nov-22					Removal of soil bund
CSD 2 - Alternative Alignment & Intake Structure									
Alternative Works (Subject to approval of alternative tunnel alignment)									
CSD_PF_2230	E&M Installation	138	03-May-22A	17-Oct-22					E&M Installation
CSD_PF_2250	Reinstatement	73	21-Jul-22A	17-Oct-22					Reinstatement
CSD 3 - Alteration of Power Supply Point & Cable Route for Connection to Kiosk at Intake Structure									
Alternative Works (Subject to Approval of Road Excavation with STLA Application for Cable Laying)									
CSD_PF_3260	Cable Laying	79	12-Aug-22A	29-Oct-22					Cable Laying
CSD 4 - Alternative Slope Upgrading Works for Feature No.7SW-D/F16 at Lower Shing Mun Reservoir (LSM)									
Alternative Works (Subject to Approval of Slope Upgrading Works Design)									
CSD_PF_4205	Reinstatement of Road	14	04-Nov-22	19-Nov-22					Reinstatement of Road
CSD_PF_4210	Removal of Soil Bund	22	10-Oct-22	03-Nov-22					Removal of Soil Bund
CSD_PF_4220	Rock Filling/ No Fine Concrete for Slop Works	33	10-Oct-22	16-Nov-22					Rock Filling/ No Fine Concrete for Slop Works
CSD_PF_4230	Removal of Pipe Pile & Raking Strut	32	20-Oct-22	25-Nov-22					Removal of Pipe Pile & Raking Strut
CSD_PF_4240	Landscaping	27	27-Oct-22	26-Nov-22					Landscaping
CSD_PF_4250	Road Resurfacing	3	24-Nov-22	26-Nov-22					Road Resurfacing
CSD_PF_4260	Dismantle of Tower Crane	4	29-Oct-22	02-Nov-22					Dismantle of Tower Crane
Compensation Event									
CE-063 Tower Crane at LSMR									
CE: Toewr Crane at LSMR Construction Works at LSMR									
CE063-2050	Dismantle of Tower Crane	3	27-Oct-22	29-Oct-22					Dismantle of Tower Crane
CE-084: Widening of the Maintenance Walkway Entrance at KBR									
CE084-1020	Excavation & Temporary Works Installation	12	07-Oct-22	20-Oct-22					Excavation & Temporary Works Installation
CE084-1030	Blinding Layer, Rebar Fixing, Formwork & Casting of Retaining Structure	18	21-Oct-22	10-Nov-22					Blinding Layer, Rebar Fixing, Formwork & Casting of Retaining Structure
CE084-1040	Backfilling Works to the Slope & Retaining Structure	14	11-Nov-22	26-Nov-22					Backfilling Works to the Slope & Retaining Structure

█ 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
30-Sep-22	Rolling Y22M09D30a	A.Tsang	

IRTS: 3 Month Rolling Programme (Oct 22 ~ Dec 22)

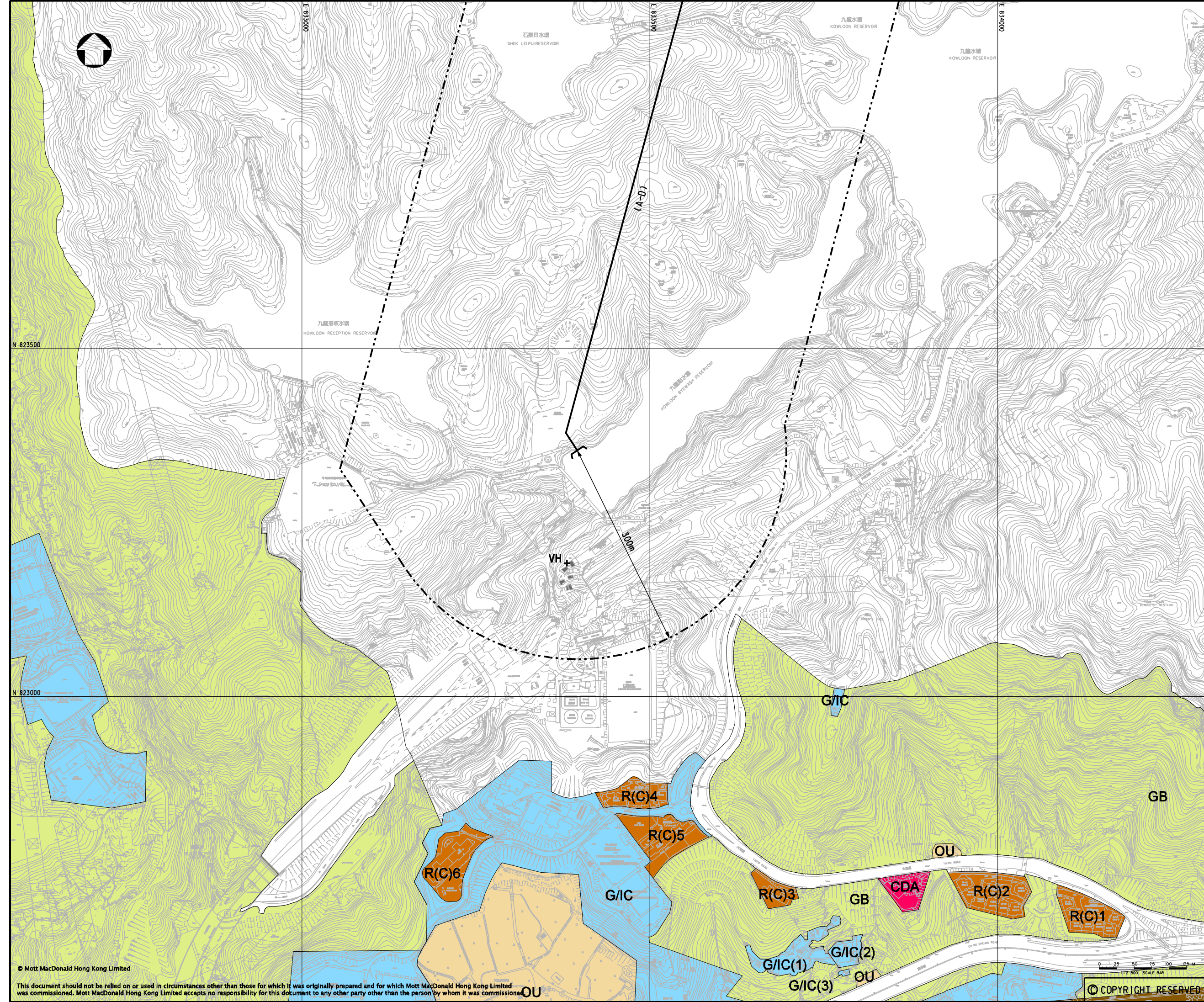
Layout : 4 -IRT-Rolling Y22M09D30a
 TASK filters: 3 Month Rolling, Level of Effort.
 Data Date : 30-Sep-22

Activity ID	Activity Name	Dur	Start	Finish	2022				2023	
					Sep	Oct	Nov	Dec	Jan	
					43	44	45	46	47	
CE-061: Provisional Enhancement Works & Ancillary Facilities in Kam Shan Country Park, KBR & LSMR										
Kam Shan Country Park										
KSCP_PoS_1050	Construction & Installation of Enhancement Works & Facilities	93	01-Aug-22A	19-Nov-22						Construction & Installation of Enhancement Works & Facilities
KBR										
KBR_PoS_1050	Construction & Installation of Enhancement Works & Facilities	93	01-Aug-22A	19-Nov-22						Construction & Installation of Enhancement Works & Facilities
LSMR										
LSMR_PoS_1050	Construction & Installation of Enhancement Works & Facilities	93	01-Aug-22A	19-Nov-22						Construction & Installation of Enhancement Works & Facilities
Tunneling Works										
Site Works										
LSMR (North Portal) & TBM										
LSMR : TBM Tunnel Excavation										
LSMR : TBM Power and Water Supply										
TBM_WtrS_2400	Dismantling and Removal of the Transformer and Other Electrical Equipment From the Substation	17	29-Dec-22	17-Jan-23						Dismantling and Removal of the Transformer and Other Electrical Equipment From the Substation
TBM Dismantling										
TB_Ds_1700	Tunnel Services Removal and Tunnel Cleaning	271	26-Nov-21A	31-Oct-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_3700	E&M Installation *(P1a)	176	14-Mar-22A	17-Oct-22						E&M Installation *(P1a)
KB_ISW_3800	Testing and Commissioning of E&M *(P1a)	64	01-Aug-22A	17-Oct-22						Testing and Commissioning of E&M *(P1a)
KBR Intake : E&M Installation of Electrical Actuated Penstocks										
KB_ISW_3880	Testing and Commissioning of Penstock (Stage 2)	155	08-Apr-22A	17-Oct-22						Testing and Commissioning of Penstock (Stage 2)
KBR : Site Setup and Access										
XKB_ISW_3600	Removal of Silt Curtain	6	12-Oct-22	18-Oct-22						Removal of Silt Curtain
Landscaping Works										
Enhancement Works of Kam Shan Country Park-Design										
KBR_LSc_1100	Enhance Works at Kam Sham Country Park	90	11-Aug-22A	26-Nov-22						Enhance Works at Kam Sham Country Park
KBR Landscaping										
KBR_LSc_1000	Landscaping	12	14-Nov-22	26-Nov-22						Landscaping
LSMR Landscaping										
LSM_LSc_1000	Landscaping	20	04-Nov-22	26-Nov-22						Landscaping

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

Client

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

 **Mott MacDonald**

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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)

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

Scale

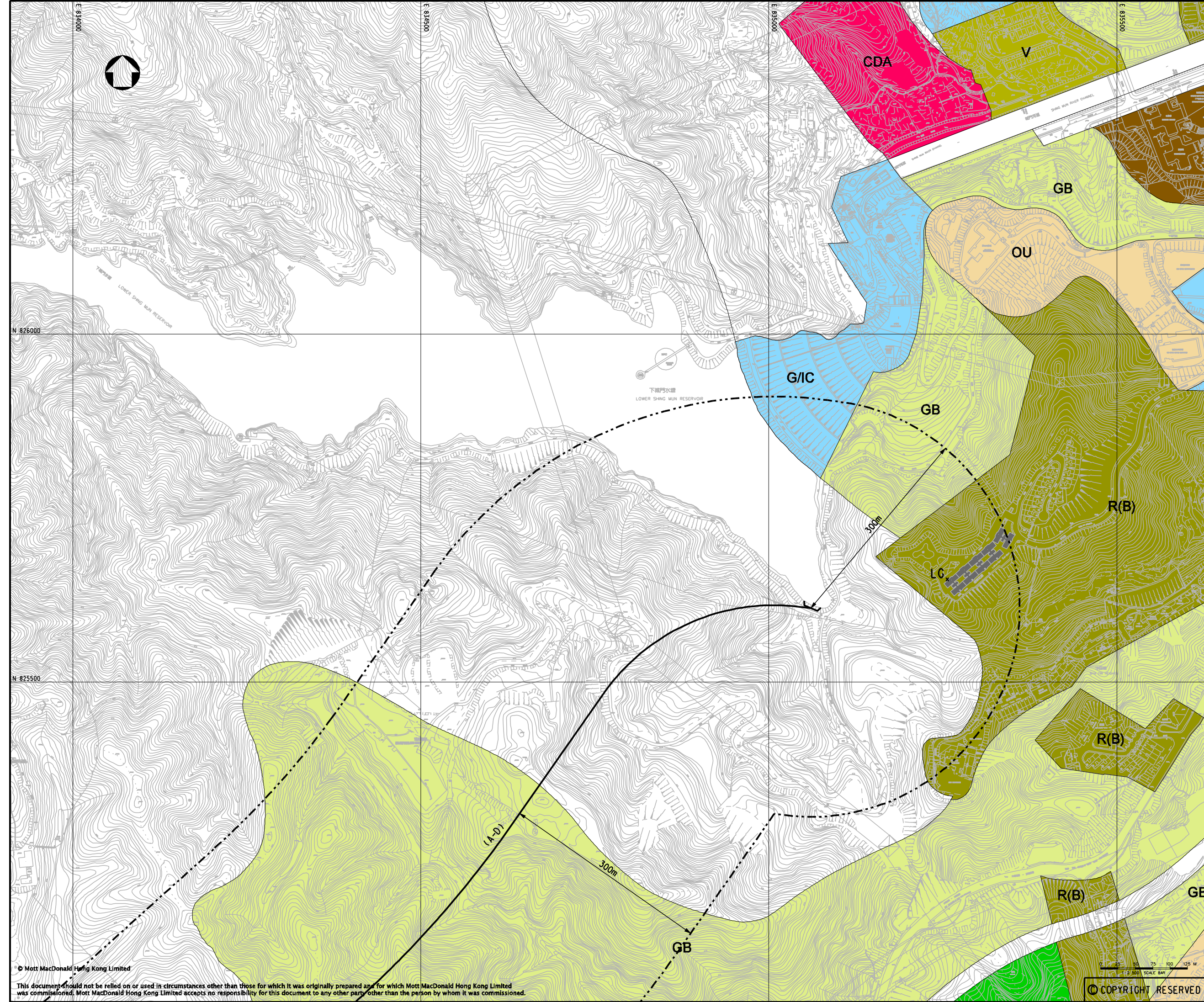
1:2500@A1

Project 240564

Status INF

Drawing No. 41240564-REPORT-ENV/EMBA-08/21/FIGURE-4-1.dgn

Rev



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

Client

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

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

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

1:2500@A1

Project 240564

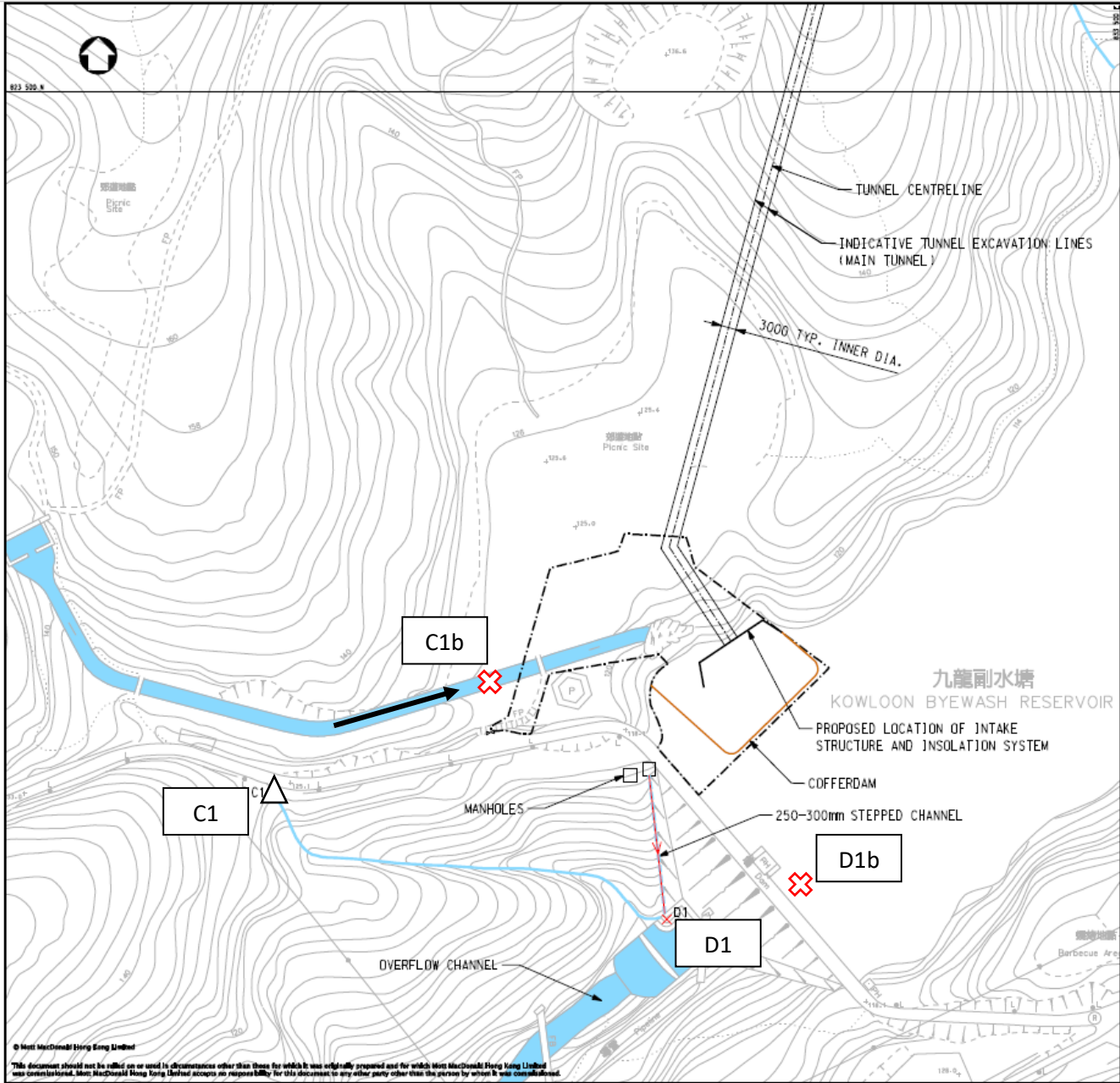
Status INF

Drawing No.

FIGURE 4-2

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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	Desc	Drawn	Checked	Date
01	REV 01	MDG	APR	2006/04/01
02	REV 02	MDG	APR	2006/04/01
03	REV 03	MDG	APR	2006/04/01

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

Mott MacDonald
22/F, One World Centre
215 Robinson Road
Hong Kong
Tel: 852 2211 8888
Fax: 852 2211 8889
www.mottmac.com

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

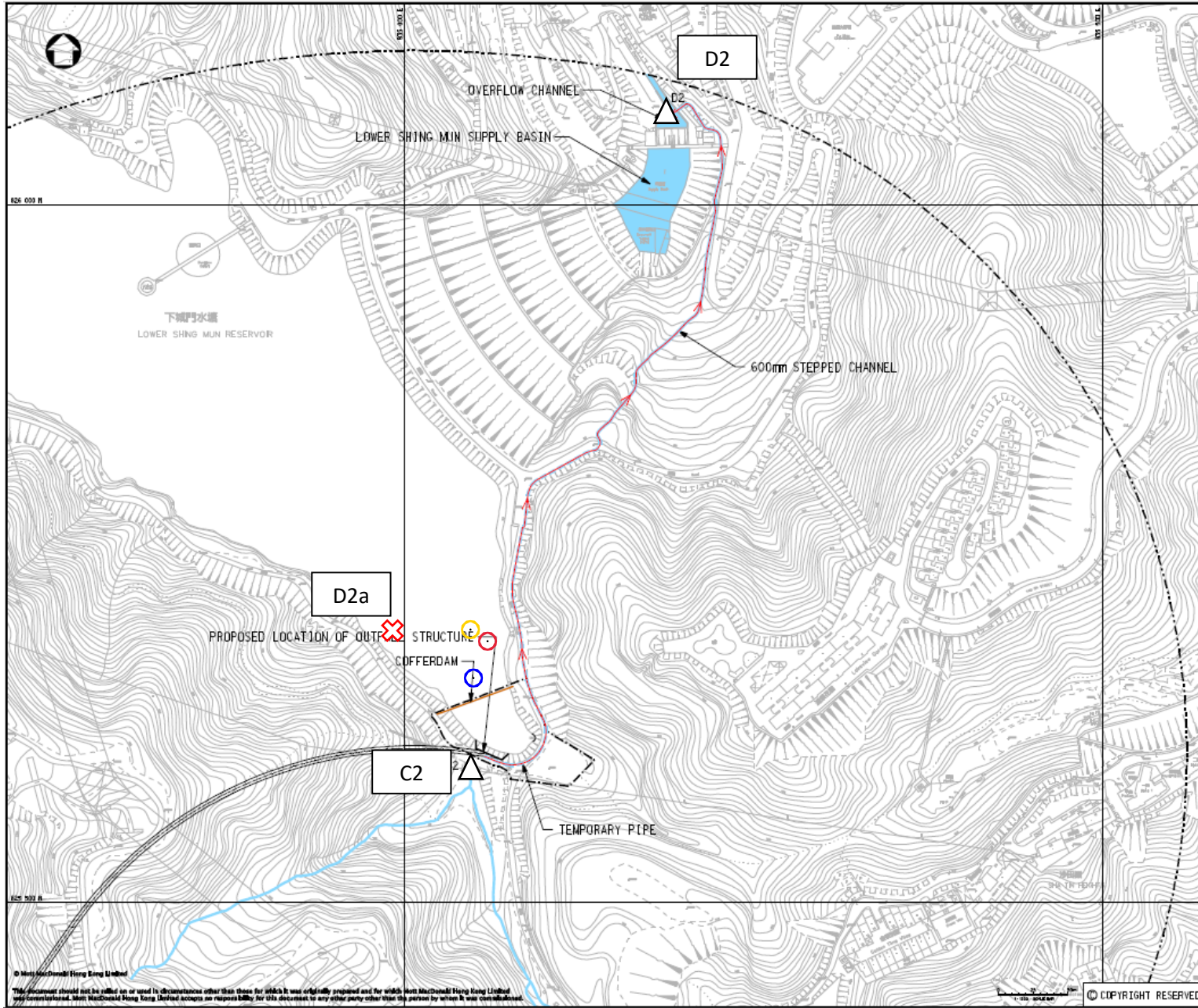
PROPOSED WATER QUALITY MONITORING STATION AT INTAKE END

Designed	MDG	Checked	APR
Drawn	MDG	Approved	APR
Scale	1:5000A1	Project No.	240564

Sheet No.	FIGURE 5-1	Total	P3
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NOTE:
DESIGN DETAILS OF THE COFFERDAM WILL BE DETERMINED BY THE CONTRACTOR.

- LEGEND:
- - - - - STUDY AREA BOUNDARY
 - - - - - WORKSITE AREA
 - WATERCOURSE
 - TEMPORARY PIPE
 - INDICATIVE LOCATION OF COFFERDAM
 - FLOW PATH OF TREATED EFFLUENT
 - × POINT OF EFFLUENT DISCHARGE / MONITORING STATION (2)
 - △ CONTROL STATION AT OUTFALL SITE
 - ⊗ Proposed Alternative Water Monitoring Station
 - Approximate sampling location on 3 October 2022
 - Approximate sampling location on 5,7 October 2022
 - Approximate sampling location on 10-31 October 2022

FR	REV	OR	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
FR	REV	OR	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
FR	REV	OR	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
FR	REV	OR	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV
FR	REV	OR	NOV	NOV	NOV	NOV	NOV	NOV	NOV	NOV

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

Mott MacDonald
Mott MacDonald Hong Kong Ltd
28/F, 280, Victoria Building
500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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

PROPOSED WATER QUALITY MONITORING STATION AT OUTFALL END

Design	FR	NOV	NOV	NOV	NOV
Check	NOV	NOV	NOV	NOV	NOV
Eng. OK	FR	NOV	NOV	NOV	NOV
Date	1:125041	Project	2405H	Issue	INF
Drawn	1:125041	Scale	1:125041	Checked	1:125041

Appendix D

Calibration Certificates of Equipment Used

Certificate of Calibration

for

Description: Sound Level Meter
Manufacturer: NTi Audio
Type No.: XL2 (Serial No.: A2A-13663-E0)
Microphone: ACO 7052 (Serial No.: 73780)
Preamplifier: NTi Audio MA220 (Serial No.:10390)

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 (31.5 Hz – 4k Hz)
- 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: 21 February 2022

Date of calibration: 24 February 2022

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Tang Cheuk Hang
Quality Manager

Date of issue: 24 February 2022

Certificate No.: APJ21-157-CC001



Page 1 of 4

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: 18.4 °C
 Air Pressure: 1018 hPa
 Relative Humidity: 47.2 %

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,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB	
30-130	dBA SPL	Fast	94	1000	94.0	±0.4	

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB	
30-130	dBA SPL	Fast	94	1000	94.0	Ref	
			104		104.0	±0.3	
			114		114.0	±0.3	

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB	
30-130	dBA SPL	Fast	94	1000	94.0	Ref	
		Slow			94.0	±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	Fast	94	31.5	94.1	±2.0
					63	94.1	±1.5
					125	94.1	±1.5
					250	94.0	±1.4
					500	94.0	±1.4
					1000	94.0	Ref
					2000	93.8	±1.6
					4000	93.3	±1.6

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	Fast	94	31.5	54.8	-39.4±2.0
					63	67.9	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.4	-8.6±1.4
					500	90.8	-3.2±1.4
					1000	94.0	Ref
					2000	95.0	+1.2±1.6
					4000	94.3	+1.0±1.6

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	Fast	94	31.5	91.1	-3.0±2.0
					63	93.3	-0.8±1.5
					125	93.9	-0.2±1.5
					250	94.0	-0.0±1.4
					500	94.1	-0.0±1.4
					1000	94.0	Ref
					2000	93.6	-0.2±1.6
					4000	92.5	-0.8±1.6

5. Calibration Results Applied

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

Uncertainties of Applied Value:

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

The uncertainties are evaluated for a 95% confidence level.

Note:

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



MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue

27-Apr-2022

Certificate Number

MLCN220926S

Customer Information

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

Equipment-under-Test (EUT)

Description

Sound Calibrator

Manufacturer

Svantek

Model Number

SV 33B

Serial Number

83042

Equipment Number

--

Calibration Particular

Date of Calibration

27-Apr-2022

Calibration Equipment

4231(MLTE008) / AV200063 / 23-Jun-23
1357(MLTE190) / MLEC21/05/02 / 26-May-22

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.

Approved By & Date

K.O. Lo

27-Apr-2022

Statements

- * 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. MLCN220926S

<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 -

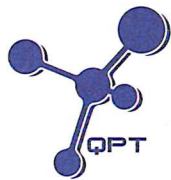
Calibrated By : Dan
Date : 27-Apr-22

Checked By : K.O. Lo
Date : 27-Apr-22

Page 2 of 2

萬儀校正中心有限公司
MaxLab Calibration Centre Limited

香港新界葵涌華星街16-18號保盈工業大廈9樓B室



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
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB080078
Date of Issue : 29 August 2022
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing Hong Street, Cheung Sha Wan
Kowloon (HK) Hong Kong

PART B - SAMPLE INFORMATION

Name of Equipment : HORIBA U-53
Manufacturer : HORIBA
Serial Number : THAUKESL
Date of Received : 26 August 2022
Date of Calibration : 26 August 2022
Date of Next Calibration : 25 November 2022
Request No. : D-BB080078

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500 H+
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Salinity	APHA 21e 2520B
Dissolved oxygen	APHA 21e 4500 O
Turbidity	APHA 21e 2130B

PART D - CALIBRATION RESULT

(1) pH value

Target (pH unit)	Display Reading (pH unit)	Tolerance	Result
4.00	4.12	0.12	Satisfactory
7.42	7.51	0.09	Satisfactory
10.01	10.17	0.16	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(2) Temperature

Reading of Ref. thermometer ($^{\circ}\text{C}$)	Display Reading ($^{\circ}\text{C}$)	Tolerance	Result
15.0	14.66	-0.34	Satisfactory
22.0	20.20	-1.80	Satisfactory
38.0	36.09	-1.91	Satisfactory

Tolerance of Temperature should be less than ± 2.0 ($^{\circ}\text{C}$)

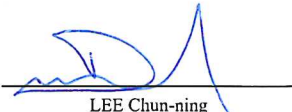
(3) Salinity

Expected Reading (g/L)	Display Reading (g/L)	Tolerance (%)	Result
10	10.11	1.10	Satisfactory
20	20.56	2.80	Satisfactory
30	30.19	0.63	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED
SIGNATORY:


LEE Chun-ning
Assistant Manager (Chemical Testing)



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

Test Report No. : R-BB080078
Date of Issue : 29 August 2022
Page No. : 2 of 2

(4) Dissolved oxygen

Expected Reading (mg/L)	Display Reading (mg/L)	Tolerance	Result
8.13	7.87	-0.26	Satisfactory
6.54	6.80	0.26	Satisfactory
1.28	1.23	-0.05	Satisfactory
0.15	0.11	-0.04	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(5) Turbidity

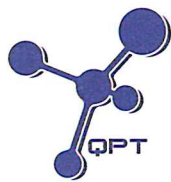
Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)	Result
0	0.51	--	Satisfactory
10	9.70	-3.00	Satisfactory
20	19.2	-4.00	Satisfactory
100	94.6	-5.40	Satisfactory
800	768	-4.00	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

Remark(s)

- The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
- The results relate only to the calibrated equipment as received
- The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- 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.

--- END OF REPORT ---



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

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Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB100041
Date of Issue : 17 October 2022
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing Hong Street, Cheung Sha Wan
Kowloon (HK) Hong Kong

PART B - SAMPLE INFORMATION

Name of Equipment : HORIBA U-53
Manufacturer : HORIBA
Serial Number : S2A98W8H
Date of Received : 12 October 2022
Date of Calibration : 14 October 2022
Date of Next Calibration : 13 January 2023
Request No. : D-BB100041

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500 H ⁺
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Salinity	APHA 21e 2520 B
Dissolved oxygen	APHA 21e 4500 O
Turbidity	APHA 21e 2130 B

PART D - CALIBRATION RESULT

(1) pH value

Target (pH unit)	Display Reading (pH unit)	Tolerance	Result
4.00	4.03	0.03	Satisfactory
7.42	7.31	-0.11	Satisfactory
10.01	9.91	-0.10	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Display Reading (°C)	Tolerance	Result
11	11.24	0.24	Satisfactory
23	22.45	-0.55	Satisfactory
40	38.75	-0.75	Satisfactory

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


(3) Salinity

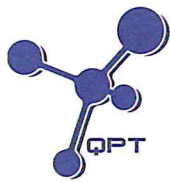
Expected Reading (g/L)	Display Reading (g/L)	Tolerance (%)	Result
10	9.68	-3.20	Satisfactory
20	19.78	-1.10	Satisfactory
30	30.20	0.67	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED
SIGNATORY:


LEE Chun-ning
Assistant Manager (Chemical Testing)



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB100041
Date of Issue : 17 October 2022
Page No. : 2 of 2

(4) Dissolved oxygen

Expected Reading (mg/L)	Display Reading (mg/L)	Tolerance	Result
7.70	7.90	0.20	Satisfactory
5.39	5.00	-0.39	Satisfactory
3.46	3.02	-0.44	Satisfactory
1.49	1.13	-0.36	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(5) Turbidity

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)	Result
0	0.89	--	Satisfactory
10	10.8	8.0	Satisfactory
20	20.6	3.0	Satisfactory
100	97.3	-2.7	Satisfactory
800	790.6	-1.2	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

Remark(s)

- The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
- The results relate only to the calibrated equipment as received
- The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- 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.

--- END OF REPORT ---

Calibration Certificate : RT2200530

CERTIFICATE OF CALIBRATION OF MEASURING TAPE

In-House Method GE-TM-089

Page 1 of 2

Information Supplied by the Customer

Customer	: Acuity Sustainability Consulting Limited		
Contact Information	: Unit E, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong		
Project	: Inter-reservoirs Transfer Scheme (IRTS) – Water Tunnel between KBR and LSMR		
Details of Measuring Tape		Nominal Range	: 5000 mm
Equipment ID No.	: Daiso 5m	Resolution/ Readability	: 1 mm
Manufacturer	: Daiso	Material	: Steel
Model	: 5m	Required Force	: - N
Serial No.	: N/A	Next Calibration Date	: N/A

Laboratory Information

Calibration Location	: Calibration Laboratory (22 San Hi Tsuen Street, Ping Shan, N.T.)		
Ambient Temperature	: Max. 20.6 °C / Min. 20.0 °C		
Relative Humidity	: Max. 61 % / Min. 57 %		
In-House Method Used	: GE-TM-089	Date of Receipt	: 15/08/2022
		Date of Calibration	: 16/08/2022

Calibrator Information

Reference Steel Rule	: RE-EQ-004-1	Certificate No.	: CJ201812491	Due Date	: Initial
Reference Weight	: -	Certificate No.	: -	Due Date	: -
Reference Weight	: -	Certificate No.	: -	Due Date	: -
Reference Weight	: -	Certificate No.	: -	Due Date	: -
Gauge Block	: -	Certificate No.	: -	Due Date	: -
Flat Table	: RE-EQ-044-1	Certificate No.	: LM210277	Due Date	: 06/01/2026
Max./Min. Thermometer	: RE-EQ-006-33	Certificate No.	: T220315(2)	Due Date	: 10/02/2023
Digital Hygrometer	: RE-EQ-006-33	Certificate No.	: ZS21080331D002	Due Date	: 03/08/2023

Calibration Result

1. Visual Check : Pass
2. Start Point : 0 mm
3. Error of Measurement

Graduation Mark (mm)	Cumulative Error (mm)	Coverage factor	Expanded Uncertainty (mm)
1000	0.3	1.98	0.8
2000	0.3	1.97	1.2
3000	0.3	1.97	1.6
4000	0.3	1.97	2.0
4700	0.5	1.97	2.4
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

GE-RP-022 Rev 3 (23/06/2021) (1/2)

1. HKAS has accredited The Lab (Asia) Limited (Reg. No. HOKLAS 204), under HOKLAS for specific calibration activities as listed in the HOKLAS directory of accredited laboratories.
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Calibration Certificate : RT2200530

CERTIFICATE OF CALIBRATION OF MEASURING TAPE

In-House Method GE-TM-089


Page 2 of 2

3. Error of Measurement

Graduation Mark (mm)	Cumulative Error (mm)	Coverage factor	Expanded Uncertainty (mm)

Remark

- 1) The reference equipment being used in this calibration is traceable to recognised national standards.
- 2) The reported results are traceable to the International System of Units (S.I.) or recognized measurement standards.
- 3) Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, drift of UUT, or the capability of any other laboratory to repeat the calibration.
- 4) UUT reading is a mean of 3 measurements.
- 5) The measurement interval is 1000 mm.
- 6) The reported expanded measurement uncertainty is stated as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%.
- 7) The results in this certificate relate only to the equipment as calibrated.

Checked by :  TSZE Man Kit Nelson
Calibration Engineer

Approved Signatory :  KOH Wa Yan
Calibration Engineer

Date : 24 AUG 2022

Date : 24 AUG 2022

- End of Certificate -

GE-RP-022 Rev 3 (23/06/2021) (2/2)

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Calibration Certificate : RT2200530(1)

CERTIFICATE OF CALIBRATION OF MEASURING TAPE

In-House Method GE-TM-089

Page 1 of 2

Information Supplied by the Customer

Customer : Acuity Sustainability Consulting Limited
Contact Information : Unit E, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project : Inter-reservoirs Transfer Scheme (IRTS) – Water Tunnel between KBR and LSMR
Details of Measuring Tape
Equipment ID No. : Knight 5.5m
Manufacturer : KNIGHT
Model : 5.5m
Serial No. : N/A
Nominal Range : 5500 mm
Resolution/ Readability : 1 mm
Material : Steel
Required Force : - N
Next Calibration Date : N/A

Laboratory Information

Calibration Location : Calibration Laboratory (22 San Hi Tsuen Street, Ping Shan, N.T.)
Ambient Temperature : Max. 20.9 °C / Min. 20.3 °C
Relative Humidity : Max. 59 % / Min. 55 %
In-House Method Used : **GE-TM-089**
Date of Receipt : 15/08/2022
Date of Calibration : 16/08/2022

Calibrator Information

Reference Steel Rule	Certificate No.	Due Date	Initial
: RE-EQ-004-1	: CJ201812491	: -	: Initial
Reference Weight	Certificate No. : -	Due Date : -	
Reference Weight	Certificate No. : -	Due Date : -	
Reference Weight	Certificate No. : -	Due Date : -	
Gauge Block	Certificate No. : -	Due Date : -	
Flat Table	Certificate No. : LM210277	Due Date : 06/01/2026	
Max./Min. Thermometer	Certificate No. : T220315(2)	Due Date : 10/02/2023	
Digital Hygrometer	Certificate No. : ZS21080331D002	Due Date : 03/08/2023	

Calibration Result

1. Visual Check : Pass
2. Start Point : 0 mm
3. Error of Measurement

Graduation Mark (mm)	Cumulative Error (mm)	Coverage factor	Expanded Uncertainty (mm)
1000	0.0	1.98	0.8
2000	0.0	1.97	1.2
3000	0.0	1.97	1.6
4000	0.0	1.97	2.0
5000	0.0	1.97	2.4
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

GE-RP-022 Rev 3 (23/06/2021) (1/2)

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Calibration Certificate : RT2200530(1)

CERTIFICATE OF CALIBRATION OF MEASURING TAPE

In-House Method GE-TM-089

Page 2 of 2

3. Error of Measurement

Graduation Mark (mm)	Cumulative Error (mm)	Coverage factor	Expanded Uncertainty (mm)

Remark

- 1) The reference equipment being used in this calibration is traceable to recognised national standards.
- 2) The reported results are traceable to the International System of Units (S.I.) or recognized measurement standards.
- 3) Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, drift of UUT, or the capability of any other laboratory to repeat the calibration.
- 4) UUT reading is a mean of 3 measurements.
- 5) The measurement interval is 1000 mm.
- 6) The reported expanded measurement uncertainty is stated as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%.
- 7) The results in this certificate relate only to the equipment as calibrated.

Checked by :  **TSZE Man Kit Nelson**
Calibration Engineer

Approved Signatory :  **KOH Wa Yan**
Calibration Engineer

Date : 24 AUG 2022

Date : 24 AUG 2022

- End of Certificate -

GE-RP-022 Rev 3 (23/06/2021) (2/2)

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Appendix E
Impact Noise Monitoring Data

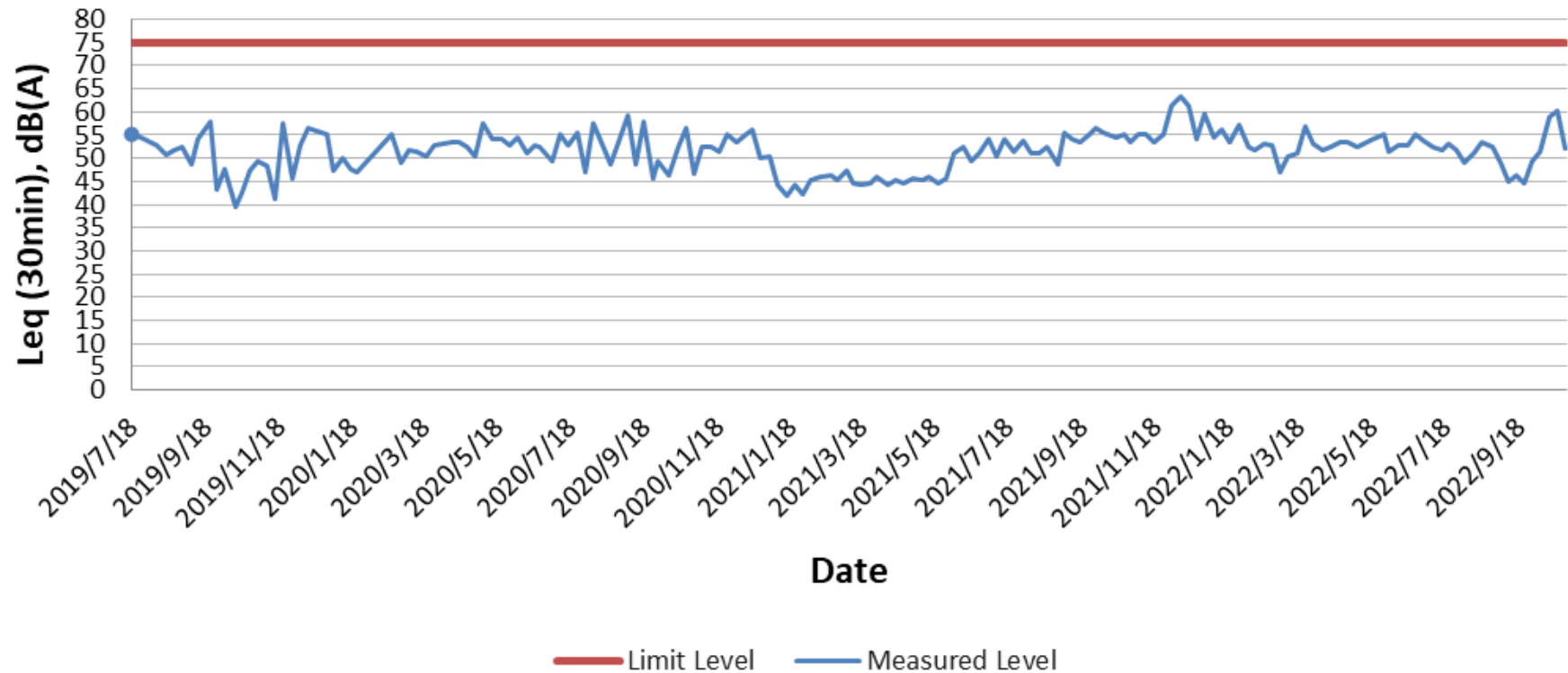
Impact Noise Monitoring Data

NM1 – Lakeview Garden

Daytime (0700 – 1900) except general holidays and Sunday

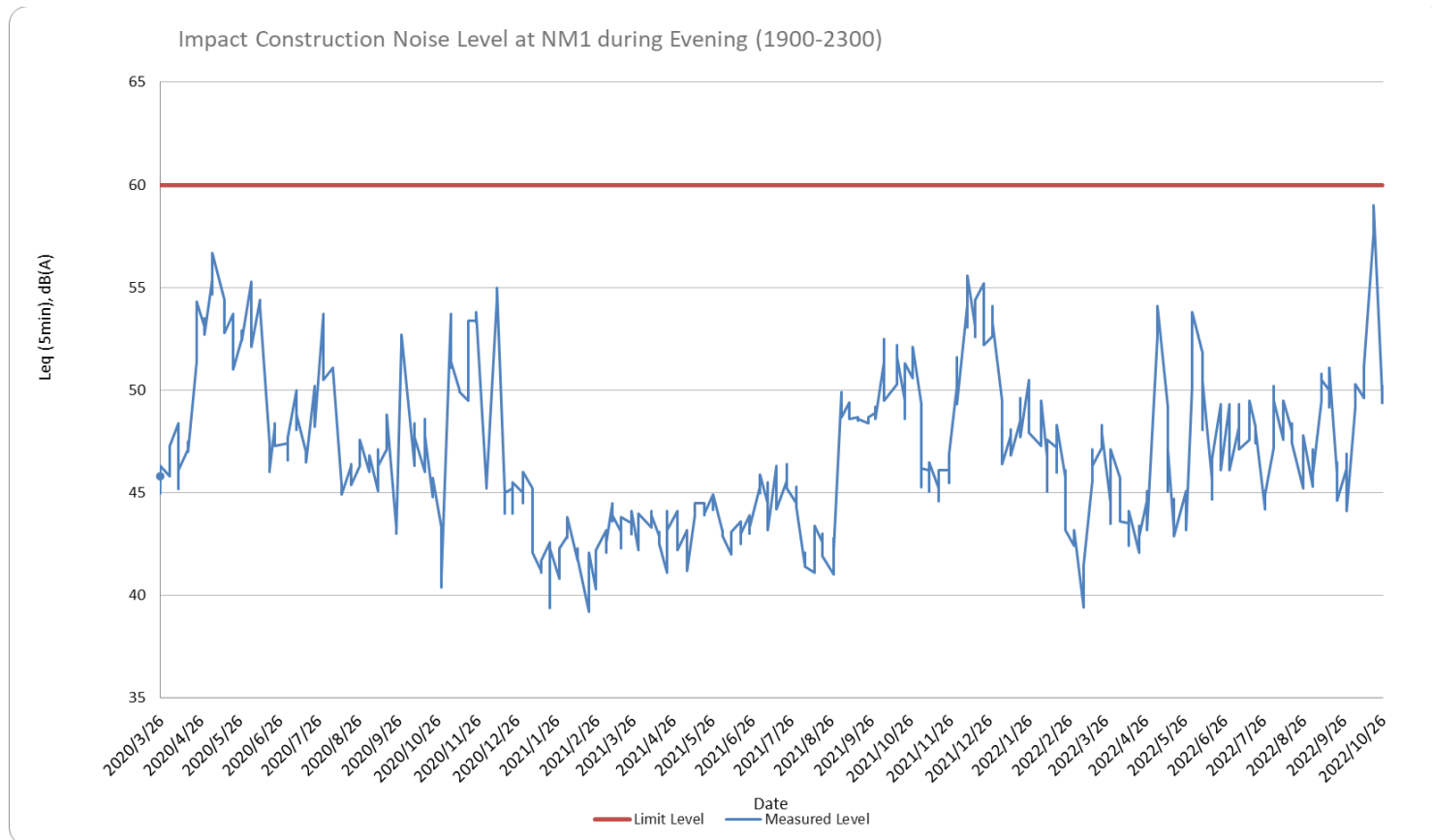
Date	Location	Time			Weather	L _{eq} (30min)	L ₁₀	L ₉₀	Wind Speed (m/s)	Temperature (°C)
05/10/2022	NM1	18:00	-	18:30	Sunny	51.3	53.2	45.1	0.9	27.3
12/10/2022	NM1	11:28	-	11:58	Sunny	58.9	64.5	50.5	1.7	27.1
19/10/2022	NM1	17:52	-	18:22	Sunny	60.3	62.1	59.4	0.6	25.3
26/10/2022	NM1	11:20	-	11:50	Sunny	52.1	53.6	50.2	2.0	26.2

Impact Construction Noise Level at NM1 during Daytime (0700 – 1900) except general holidays and Sunday



All days during Evening (1900-2300)

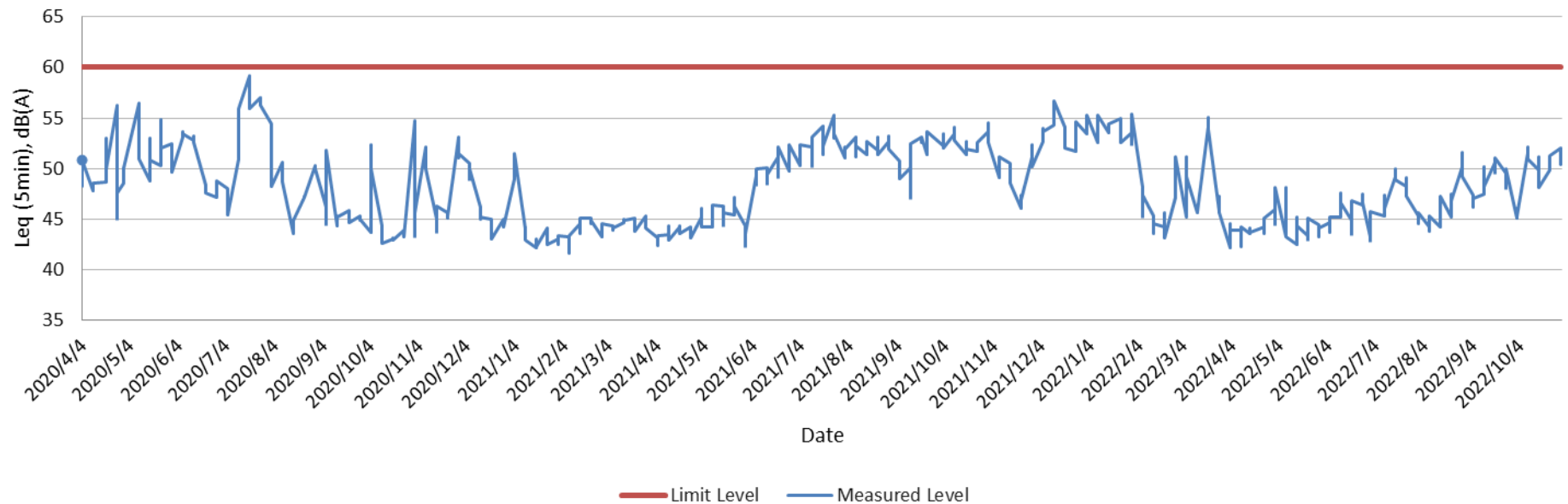
Date	Location	Time			Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Wind Speed (m/s)	Temperature (°C)
05/10/2022	NM1	19:04	-	19:09	Fine	49.2	51.3	46.4	1.2	26.4
05/10/2022	NM1	19:09	-	19:14	Fine	49.9	51.9	47.2	1.2	26.4
05/10/2022	NM1	19:14	-	19:19	Fine	50.3	53.1	43.2	1.2	26.4
12/10/2022	NM1	21:00	-	21:05	Fine	49.6	50.1	48.6	1.4	26.2
12/10/2022	NM1	21:05	-	21:10	Fine	50.2	51.6	49.3	1.4	26.2
12/10/2022	NM1	21:10	-	21:15	Fine	51.2	52.6	49.9	1.4	26.2
19/10/2022	NM1	19:10	-	19:15	Fine	57.6	61.4	49.6	0.7	24.1
19/10/2022	NM1	19:15	-	19:20	Fine	58.9	62.4	49.6	0.7	24.1
19/10/2022	NM1	19:20	-	19:25	Fine	59.0	61.2	50.2	0.7	24.1
26/10/2022	NM1	19:07	-	19:12	Fine	49.8	52.4	47.1	0.6	24.2
26/10/2022	NM1	19:12	-	19:17	Fine	49.4	51.9	46.6	0.6	24.2
26/10/2022	NM1	19:17	-	19:22	Fine	50.2	52.4	49.1	0.6	24.2



Daytime (0700-1900) during general holidays and Sundays

Date	Location	Time		Weather	L _{eq} (5min)	L ₁₀	L ₉₀	Wind Speed (m/s)	Temperature (°C)
02/10/2022	NM1	14:55	- 15:00	Sunny	45.1	46.5	41.5	0.9	27.5
02/10/2022	NM1	15:00	- 15:05	Sunny	46.1	47.5	42.6	0.9	27.5
02/10/2022	NM1	15:05	- 15:10	Sunny	45.3	46.9	42.1	0.9	27.5
09/10/2022	NM1	17:46	- 17:51	Sunny	51.6	54.6	48.1	2.1	27.1
09/10/2022	NM1	17:51	- 17:56	Sunny	52.1	54.2	50.6	2.1	27.1
09/10/2022	NM1	17:56	- 18:01	Sunny	50.9	52.6	49.7	2.1	27.1
16/10/2022	NM1	13:30	- 13:35	Sunny	49.8	50.5	48.7	0.4	27.1
16/10/2022	NM1	13:35	- 13:40	Sunny	51.2	52.4	50.2	0.4	27.1
16/10/2022	NM1	13:40	- 13:45	Sunny	48.1	49.9	47.2	0.4	27.1
23/10/2022	NM1	16:30	- 16:35	Sunny	49.8	50.3	49.0	0.4	26.2
23/10/2022	NM1	16:35	- 16:40	Sunny	50.2	51.4	49.1	0.4	26.2
23/10/2022	NM1	16:40	- 16:45	Sunny	51.3	52.1	49.9	0.4	26.2
30/10/2022	NM1	17:01	- 17:06	Sunny	52.0	54.4	50.6	0.9	24.0
30/10/2022	NM1	17:06	- 17:11	Sunny	51.3	53.1	49.4	0.9	24.0
30/10/2022	NM1	17:11	- 17:16	Sunny	50.4	52.6	50.0	0.9	24.0

Impact Construction Noise Level at NM1 during General Holidays and Sundays (0700-1900)

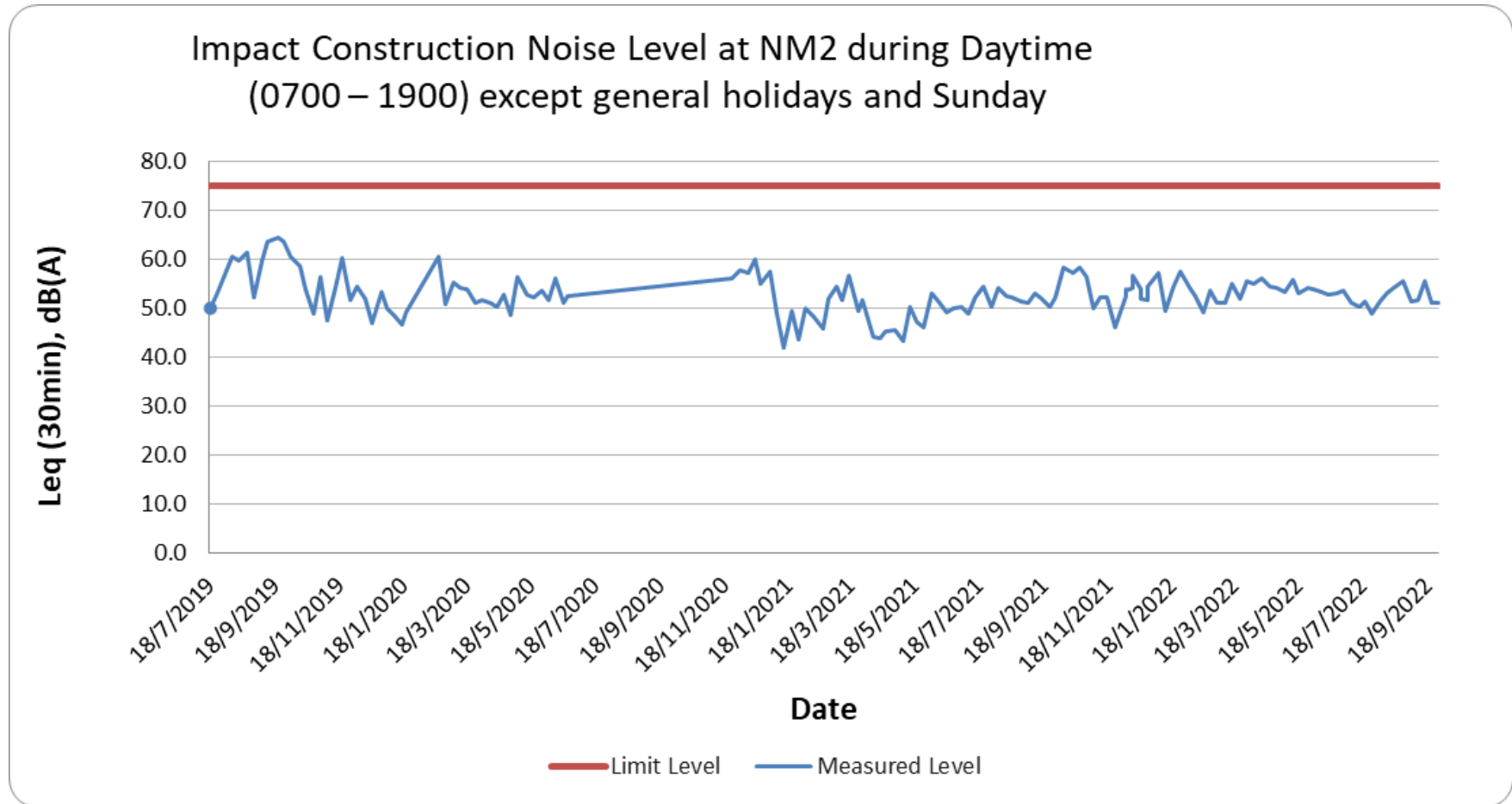


Impact Noise Monitoring Data

NM2 – 4 ½ Milestone, Tai Po Road

Daytime (0700 – 1900) except general holidays and Sunday




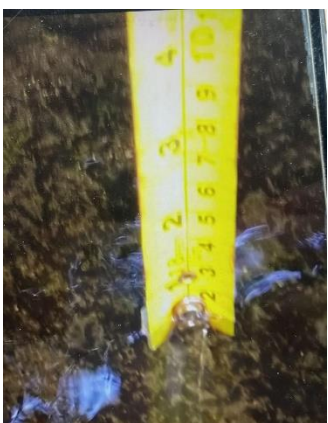

Date	Location	Time			Weather	L _{eq} (30min)	L ₁₀	L ₉₀	Wind Speed (m/s)	Temperature (°C)
05/10/2022	NM2	14:00	-	14:30	Sunny	53.6	56.1	50.4	1.4	28.1
12/10/2022	NM2	11:09	-	11:39	Sunny	51.0	52.2	49.5	0.4	27.2
19/10/2022	NM2	11:06	-	11:36	Sunny	59.1	61.2	56.1	0.3	26.4
26/10/2022	NM2	14:11	-	14:41	Sunny	55.1	56.2	52.4	0.4	25.0



Appendix F

Impact Water Quality Monitoring Data

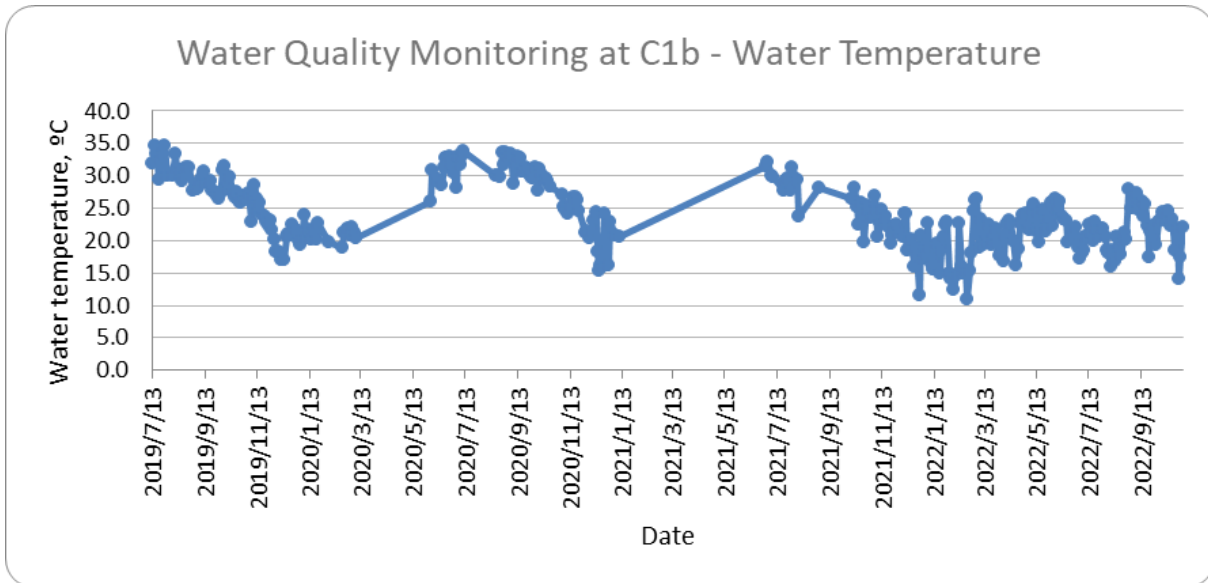
Date	Weather condition	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Equipment Used	Sampling Location	
3/10/2022	Sunny	C1b	10:47	22.98	8.0	7.1	82.6	2.8	<0.5	Water Sampler	Alternative Access	
3/10/2022	Sunny	C1b#	10:48	23.01	8.0	7.1	83.0	2.8	<0.5			
5/10/2022	Fine	C1b	11:00	23.22	8.1	7.2	84.1	6.5	1			
5/10/2022	Fine	C1b#	11:01	23.22	8.1	7.1	83.0	6.4	1			
7/10/2022	Fine	C1b	11:02	24.33	7.0	7.4	89.0	2.4	1			
7/10/2022	Fine	C1b#	11:03	24.35	7.0	7.4	88.5	2.4	1			
10/10/2022	Sunny	C1b	11:15	23.19	7.8	7.3	85.7	6.5	4			
10/10/2022	Sunny	C1b#	11:16	23.27	7.7	7.3	85.4	6.4	3			
12/10/2022	Sunny	C1b	10:31	24.22	7.9	7.5	89.2	7.7	3		Original Access	
12/10/2022	Sunny	C1b#	10:31	24.22	7.9	7.4	88.3	7.5	4		Alternative Access	
14/10/2022	Sunny	C1b	10:31	24.67	7.5	7.3	87.8	0.9	2		Small plastic bottle	Original Access
14/10/2022	Sunny	C1b#	10:36	24.58	7.5	7.5	89.7	0.9	2			
17/10/2022	Sunny	C1b	10:12	22.20	7.7	7.2	83.1	1.9	7			
17/10/2022	Sunny	C1b#	10:13	22.29	7.6	7.3	83.6	1.7	8			
19/10/2022	Fine	C1b	10:33	23.24	8.0	8.0	93.6	2.6	1			
19/10/2022	Fine	C1b#	10:34	23.18	8.0	8.0	93.4	2.6	1			
21/10/2022	Sunny	C1b	10:31	18.58	7.4	7.9	84.9	2.3	<0.5			
21/10/2022	Sunny	C1b#	10:32	18.59	7.4	8.0	85.4	2.1	<0.5			
24/10/2022	Fine	C1b	11:15	21.79	8.0	7.5	85.3	2.5	0.8			
24/10/2022	Fine	C1b#	11:16	21.80	8.0	7.4	83.7	2.4	0.9			
26/10/2022	Sunny	C1b	10:37	14.15	7.3	7.3	71.2	5.0	<0.5			
26/10/2022	Sunny	C1b#	10:39	14.04	7.3	7.1	69.1	4.5	<0.5			
28/10/2022	Sunny	C1b	11:23	17.41	7.6	7.4	77.2	2.6	<0.5			
28/10/2022	Sunny	C1b#	11:24	17.41	7.6	7.4	76.8	2.4	<0.5			
31/10/2022	Cloudy	C1b	11:24	22.10	7.7	7.6	87.3	4.4	0.9			
31/10/2022	Cloudy	C1b#	11:26	22.10	7.7	7.8	89.1	4.2	0.7			

C1b on Days with Insufficient Water Available for Water Sampler at Original Access		
3/10/2022	5/10/2022	7/10/2022
		
10/10/2022	14/10/2022	
		

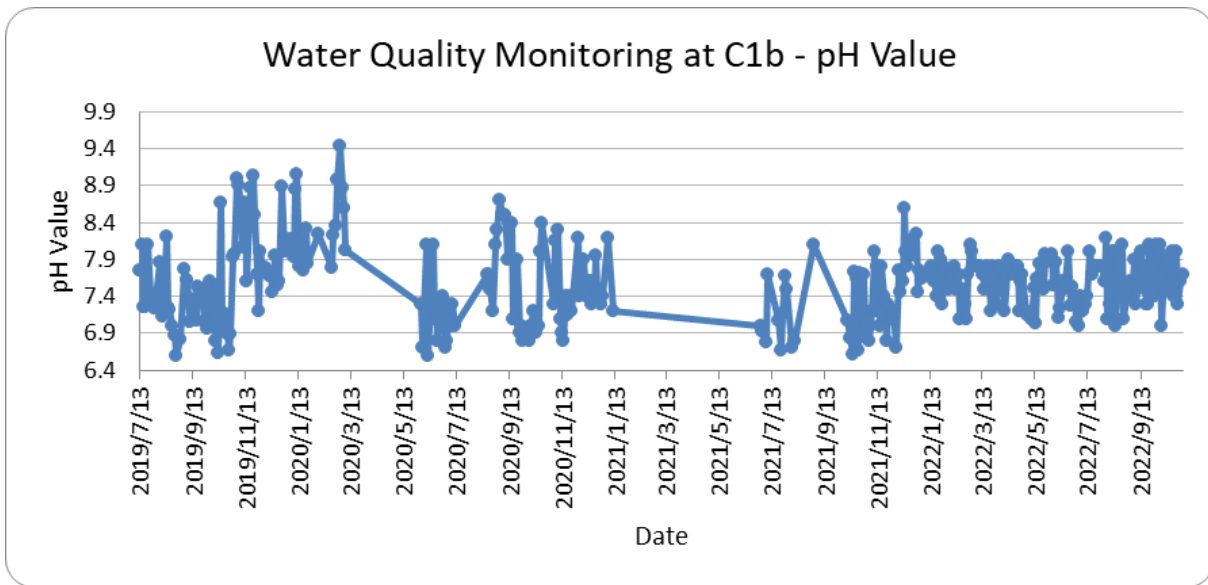
Remark: The water depth was less than 3cm for the above-mentioned dates at C1b.

Date	Weather Condition	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
3/10/2022	Sunny	D1b	11:00	22.96	7.8	7.5	87.5	8.6	2	Water Sampler
3/10/2022	Sunny	D1b#	11:01	22.99	7.8	7.3	85.6	8.6	2	
5/10/2022	Fine	D1b	11:21	23.21	8.0	7.5	87.7	6.3	1	
5/10/2022	Fine	D1b#	11:21	23.20	7.9	7.5	87.5	6.2	1	
7/10/2022	Fine	D1b	11:19	23.29	7.0	7.5	88.0	4.3	1	
7/10/2022	Fine	D1b#	11:19	23.29	7.0	7.4	87.0	4.2	1	
10/10/2022	Sunny	D1b	11:29	26.20	7.9	7.3	90.1	6.5	1	
10/10/2022	Sunny	D1b#	11:29	26.20	7.9	7.2	89.2	6.4	1	
12/10/2022	Sunny	D1b	10:54	22.67	7.9	7.7	88.6	7.0	3	
12/10/2022	Sunny	D1b#	10:55	22.67	7.9	7.5	87.0	7.0	3	
14/10/2022	Sunny	D1b	11:02	25.13	7.2	7.4	90.1	3.2	4	
14/10/2022	Sunny	D1b#	11:04	25.05	7.1	7.4	89.7	3.1	4	
17/10/2022	Sunny	D1b	10:21	23.11	7.6	7.1	82.5	7.4	<0.5	
17/10/2022	Sunny	D1b#	10:22	23.03	7.6	7.1	82.6	7.3	<0.5	
19/10/2022	Fine	D1b	10:53	24.54	7.4	7.3	87.8	4.2	4	
19/10/2022	Fine	D1b#	10:56	24.52	7.5	7.4	88.6	4.3	4	
21/10/2022	Sunny	D1b	10:42	18.59	7.9	7.2	76.7	5.1	<0.5	
21/10/2022	Sunny	D1b#	10:44	18.53	7.8	7.1	75.9	5.1	<0.5	
24/10/2022	Fine	D1b	11:33	21.96	8.0	7.4	84.8	3.6	5	
24/10/2022	Fine	D1b#	11:34	21.97	8.0	7.5	85.8	3.8	4	
26/10/2022	Sunny	D1b	10:47	15.24	7.6	7.4	74.1	4.8	4	
26/10/2022	Sunny	D1b#	10:50	15.23	7.5	8.1	80.6	4.3	3	
28/10/2022	Sunny	D1b	11:42	18.32	7.6	7.7	82.4	4.5	5	
28/10/2022	Sunny	D1b#	11:44	18.33	7.6	7.8	82.6	4.2	5	
31/10/2022	Cloudy	D1b	11:42	23.24	7.8	7.9	92.5	4.5	7	
31/10/2022	Cloudy	D1b#	11:44	23.25	7.8	8.0	93.3	4.3	6	

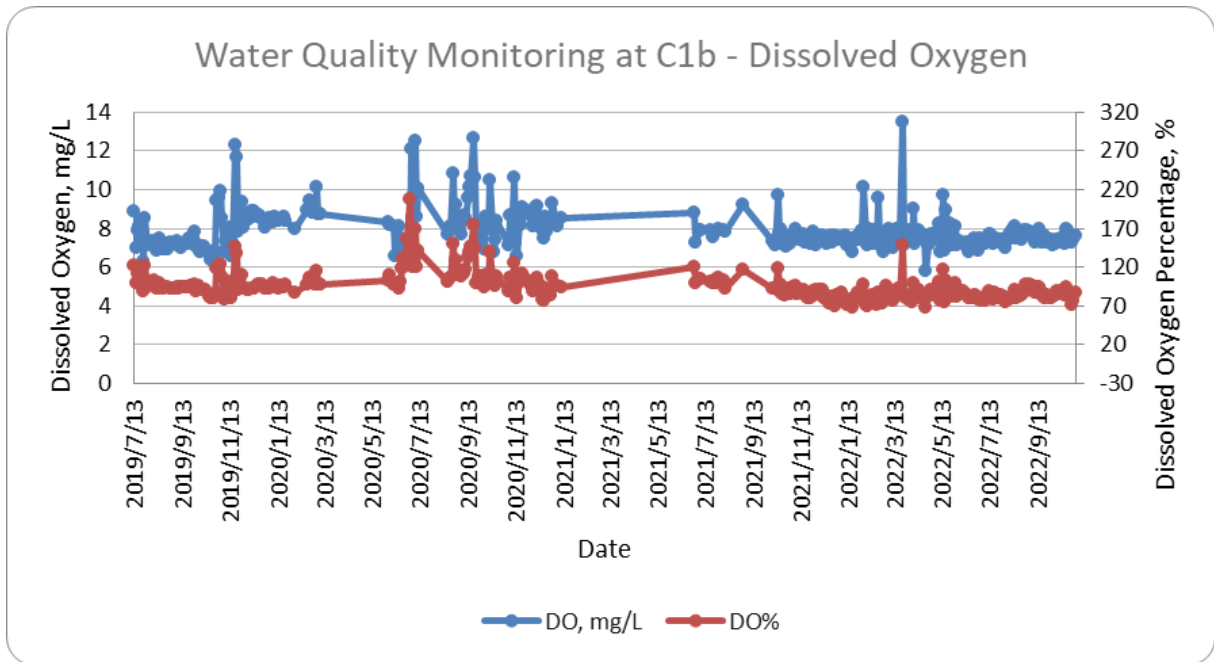
C1b



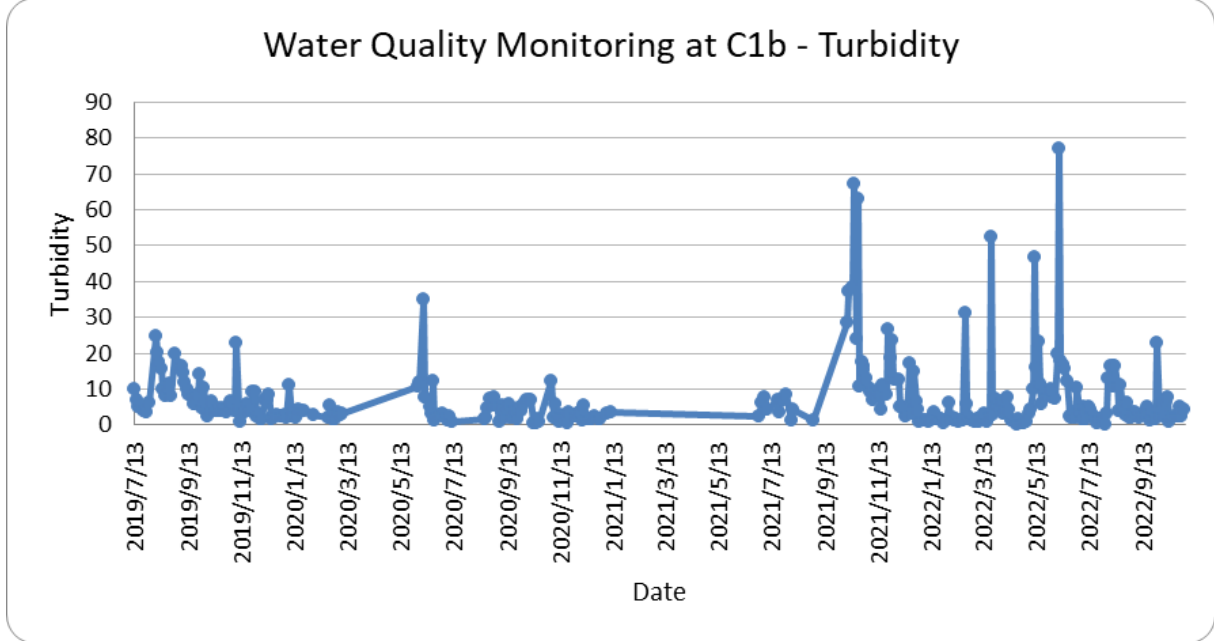
Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection



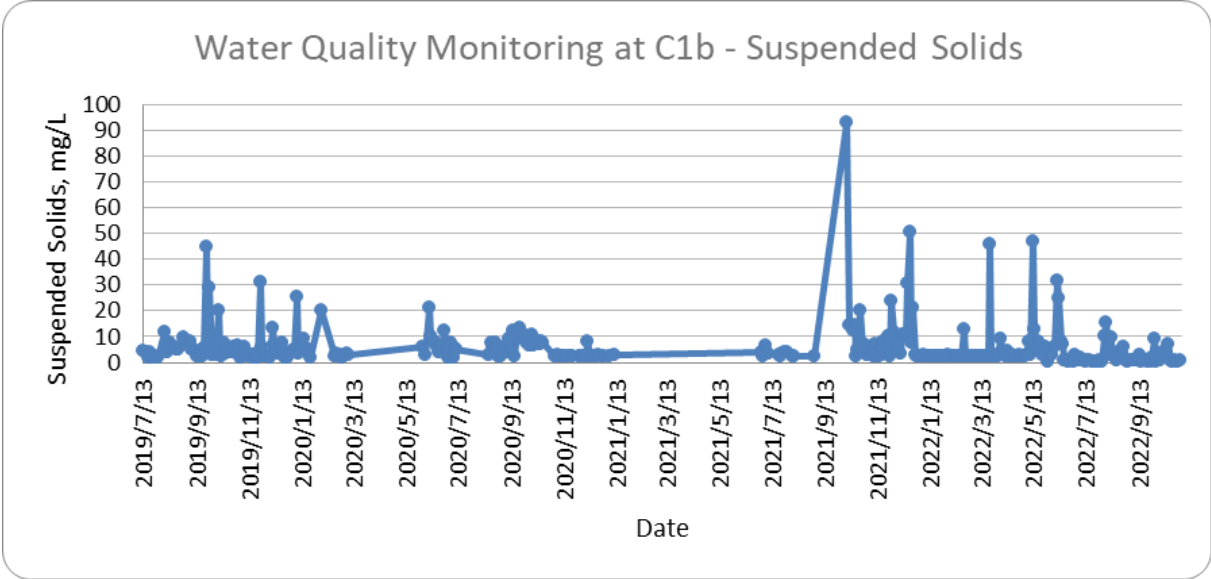
Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection



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

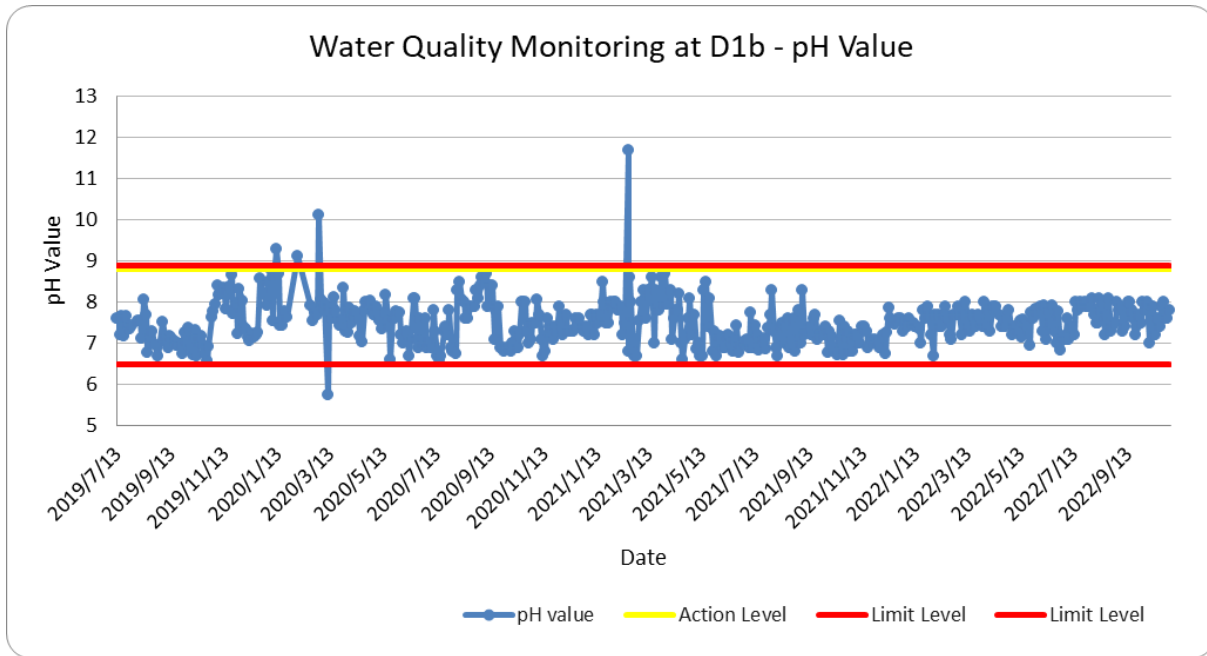
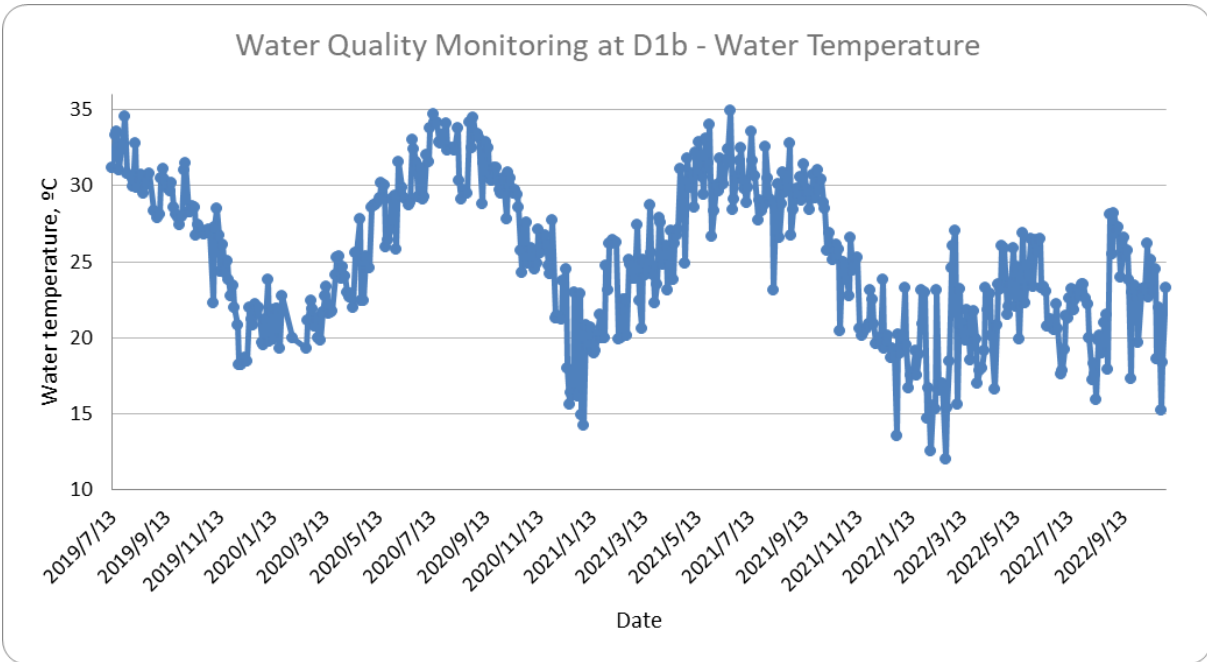


Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection

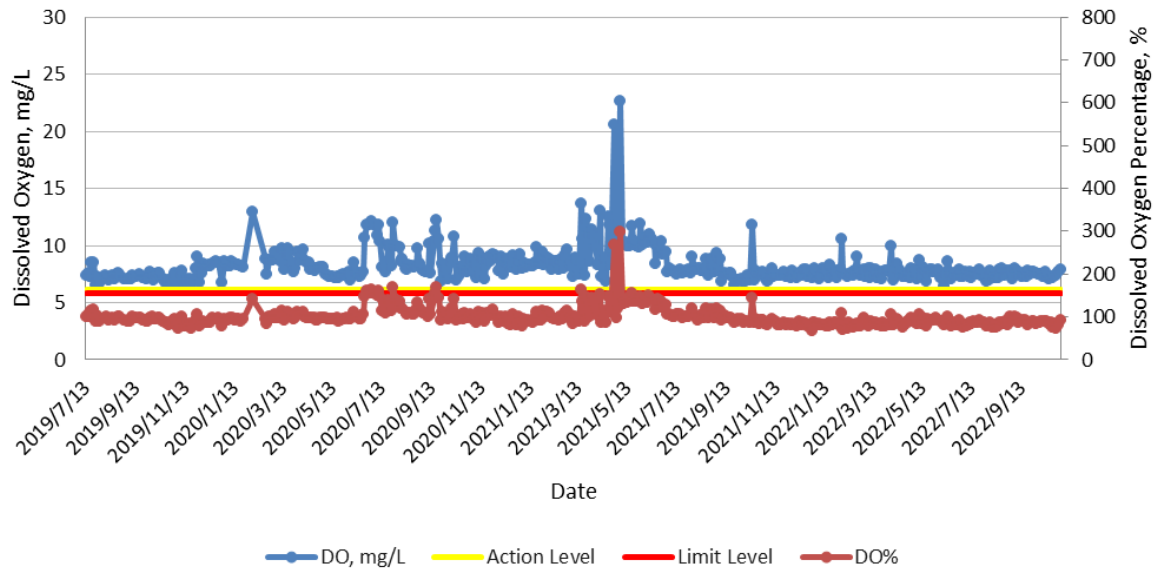


Note 1: Period without data implied that water in location C1b was dried up, insufficient water was available for sample collection

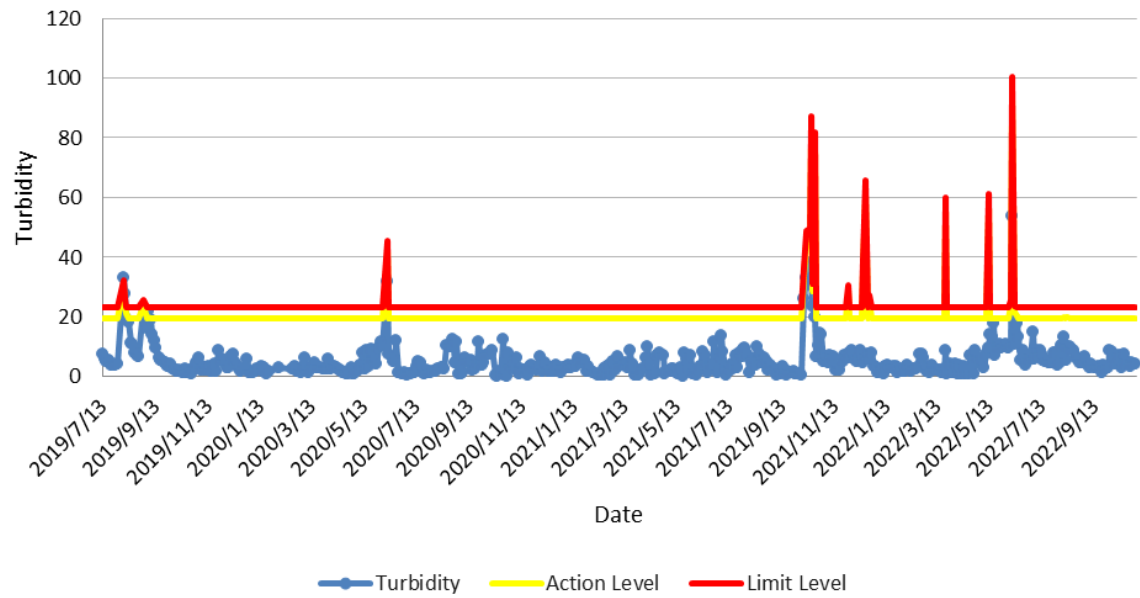
D1b



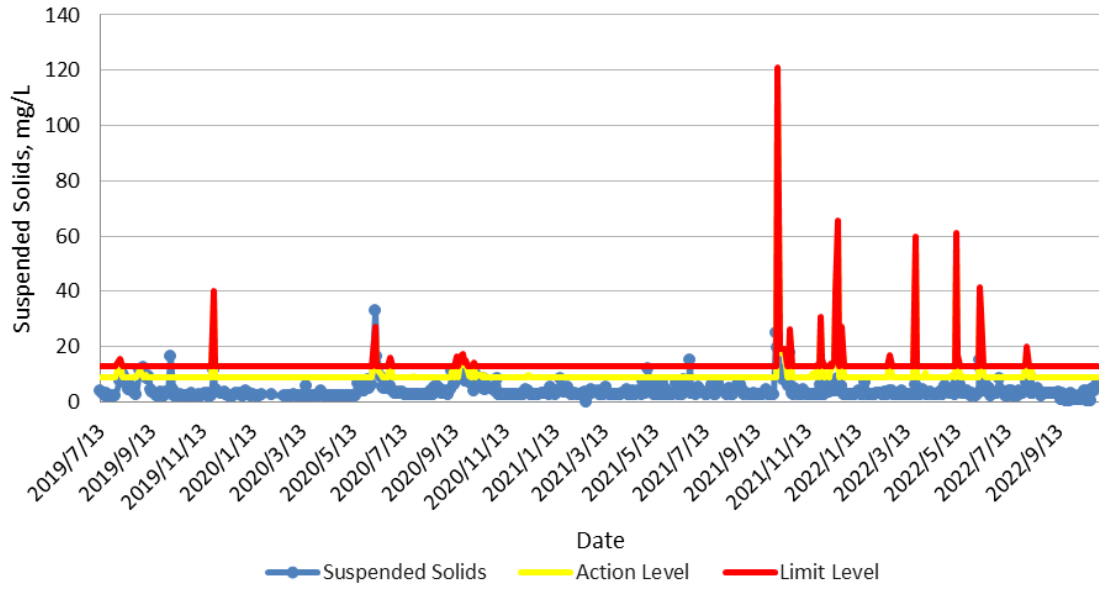
Water Quality Monitoring at D1b - Dissolved Oxygen



Water Quality Monitoring at D1b - Turbidity



Water Quality Monitoring at D1b - Suspended Solids

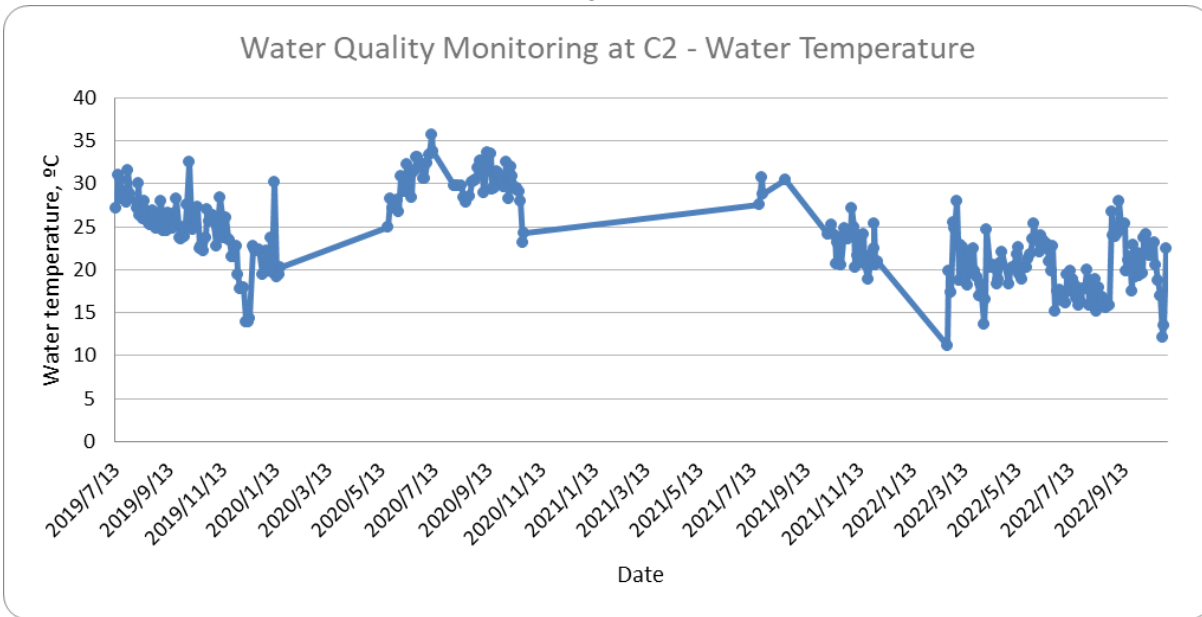


Date	Weather Condition	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
3/10/2022	Sunny	C2	10:02	19.57	8.0	7.5	81.6	6.1	4	Water Sampler
3/10/2022	Sunny	C2#	10:02	19.54	7.9	7.4	80.4	6.1	4	
5/10/2022	Fine	C2	10:18	23.70	8.0	7.7	90.4	4.0	2	
5/10/2022	Fine	C2#	10:19	23.71	8.0	7.8	92.0	3.9	2	
7/10/2022	Fine	C2	09:57	24.08	7.2	7.6	89.9	7.0	6	
7/10/2022	Fine	C2#	09:58	24.07	7.2	7.5	89.4	7.0	5	
10/10/2022	Sunny	C2	10:11	22.99	7.7	7.4	86.5	5.0	4	
10/10/2022	Sunny	C2#	10:12	22.96	7.7	7.5	87.1	5.2	5	
12/10/2022	Sunny	C2	09:29	21.57	7.6	7.2	82.0	5.7	4	
12/10/2022	Sunny	C2#	09:30	21.52	7.6	7.1	80.4	5.7	4	
14/10/2022	Sunny	C2	09:44	22.76	7.2	7.5	86.5	4.6	5	
14/10/2022	Sunny	C2#	09:45	22.69	7.2	7.4	85.4	4.7	4	
17/10/2022	Sunny	C2	09:00	23.13	7.9	7.5	87.4	8.1	1	
17/10/2022	Sunny	C2#	09:01	23.09	7.9	7.4	86.4	8.3	1	
19/10/2022	Fine	C2	09:45	20.50	7.1	7.2	79.8	5.2	3	
19/10/2022	Fine	C2#	09:48	20.42	7.2	7.1	79.1	5.1	3	
21/10/2022	Sunny	C2	09:40	18.67	8.0	7.4	79.6	5.4	1	
21/10/2022	Sunny	C2#	09:41	18.62	8.0	7.4	79.2	5.4	1	
24/10/2022	Fine	C2	10:27	16.89	7.5	7.3	74.9	7.7	5	
24/10/2022	Fine	C2#	10:28	16.87	7.5	7.2	74.1	7.7	5	
26/10/2022	Sunny	C2	09:08	12.13	7.4	12.4	114.9	9.6	4	
26/10/2022	Sunny	C2#	09:17	11.99	7.2	9.7	90.2	7.1	4	
28/10/2022	Sunny	C2	09:59	13.43	7.5	7.9	75.2	7.7	5	
28/10/2022	Sunny	C2#	10:02	13.24	7.6	7.8	74.9	7.7	5	
31/10/2022	Cloudy	C2	10:17	22.45	7.9	7.8	90.0	12.1	7	
31/10/2022	Cloudy	C2#	10:19	22.39	7.7	7.7	89.0	11.3	6	

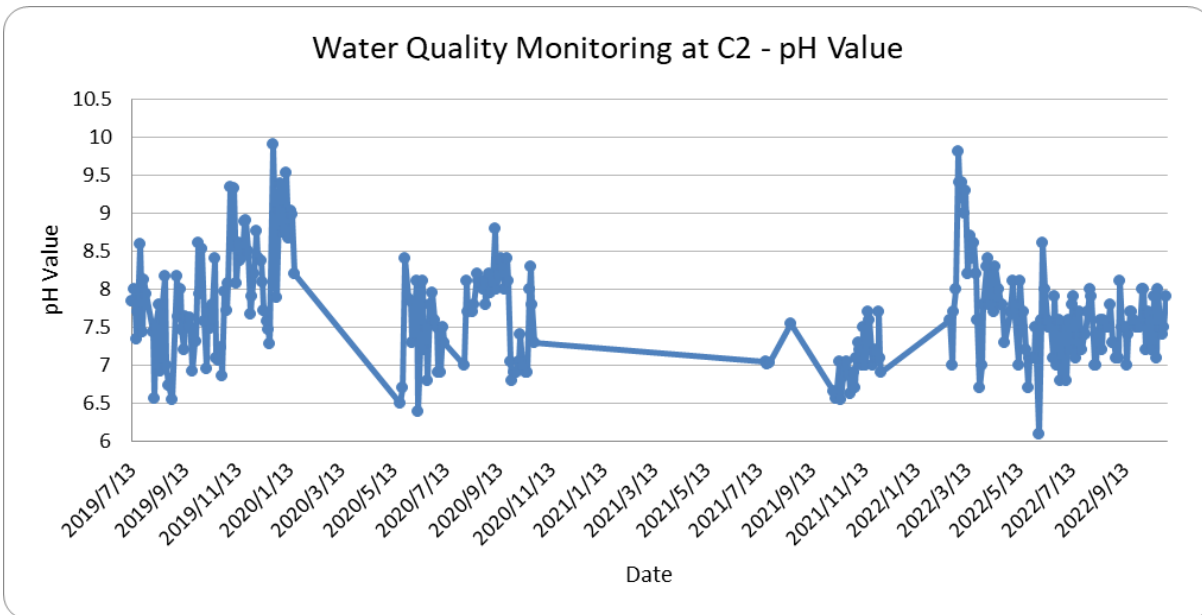
Date	Weather Condition	Sample ID	Time	Temp (°C)	pH	DO (mg/L)	DO%	Turbidity (NTU)	SS (mg/L)	Sampling Equipment
3/10/2022	Sunny	D2a	10:16	22.29	7.7	8.0	91.5	3.3	5	Water Sampler
3/10/2022	Sunny	D2a#	10:17	22.34	7.6	8.0	91.8	3.3	4	
5/10/2022	Fine	D2a	10:35	23.86	7.9	7.4	88.2	3.9	2	
5/10/2022	Fine	D2a#	10:36	23.85	7.9	7.4	87.8	3.8	2	
7/10/2022	Fine	D2a	10:17	24.42	7.1	7.1	84.6	3.2	3	
7/10/2022	Fine	D2a#	10:16	24.42	7.1	7.1	84.5	3.3	2	
10/10/2022	Sunny	D2a	10:28	24.84	7.2	7.1	85.6	1.6	1	
10/10/2022	Sunny	D2a#	10:29	24.87	7.2	7.0	84.7	1.5	1	
12/10/2022	Sunny	D2a	09:50	23.33	7.1	7.6	88.8	1.4	<0.5	
12/10/2022	Sunny	D2a#	09:50	23.36	7.1	7.5	87.6	1.4	<0.5	
14/10/2022	Sunny	D2a	10:21	24.34	7.2	7.1	85.3	1.2	<0.5	
14/10/2022	Sunny	D2a#	10:21	24.38	7.2	7.1	85.5	1.1	<0.5	
17/10/2022	Sunny	D2a	09:18	23.24	7.7	7.3	85.5	7.6	6	
17/10/2022	Sunny	D2a#	09:20	23.10	7.7	7.3	84.9	7.6	6	
19/10/2022	Fine	D2a	10:03	22.86	7.2	7.1	82.4	1.3	1	
19/10/2022	Fine	D2a#	10:05	22.87	7.2	7.1	82.2	1.4	1	
21/10/2022	Sunny	D2a	09:57	20.30	7.5	7.4	81.7	1.0	1	
21/10/2022	Sunny	D2a#	09:58	20.29	7.5	7.4	81.8	1.1	1	
24/10/2022	Fine	D2a	10:41	20.00	7.1	7.7	84.7	1.4	0.8	
24/10/2022	Fine	D2a#	10:44	20.01	7.1	7.6	83.6	1.4	<0.5	
26/10/2022	Sunny	D2a	09:42	14.12	6.9	8.2	79.8	0.7	<0.5	
26/10/2022	Sunny	D2a#	09:45	14.34	6.9	7.5	72.9	1.0	<0.5	
28/10/2022	Sunny	D2a	10:15	15.23	7.1	7.6	75.9	1.2	0.8	
28/10/2022	Sunny	D2a#	10:17	15.23	7.1	7.6	75.3	1.1	0.9	
31/10/2022	Cloudy	D2a	10:34	23.72	7.3	7.5	88.6	1.1	2	
31/10/2022	Cloudy	D2a#	10:35	23.73	7.3	7.4	87.8	1.1	2	

Date	Approximate Sampling Location Coordinates
03/10/2022	E 835056.881 N 825697.984
05/10/2022	E 835056.087
07/10/2022	N 825697.749
10/10/2022	
12/10/2022	
14/10/2022	
17/10/2022	
19/10/2022	E 835045.034
21/10/2022	N 825669.377
24/10/2022	
26/10/2022	
28/10/2022	
31/10/2022	

C2

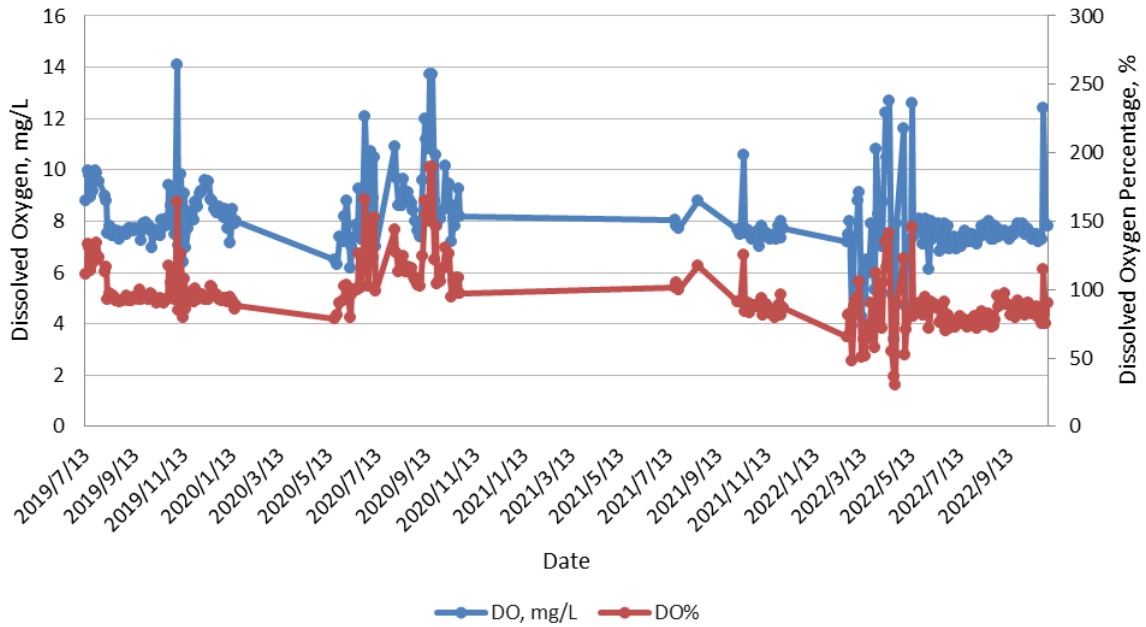


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection



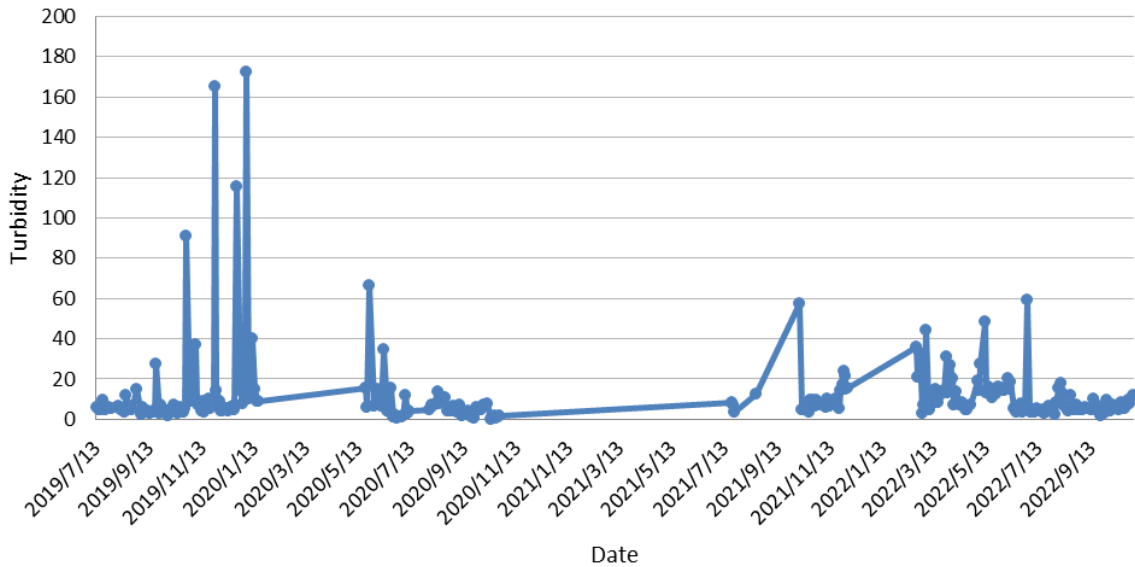
Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

Water Quality Monitoring at C2 - Dissolved Oxygen

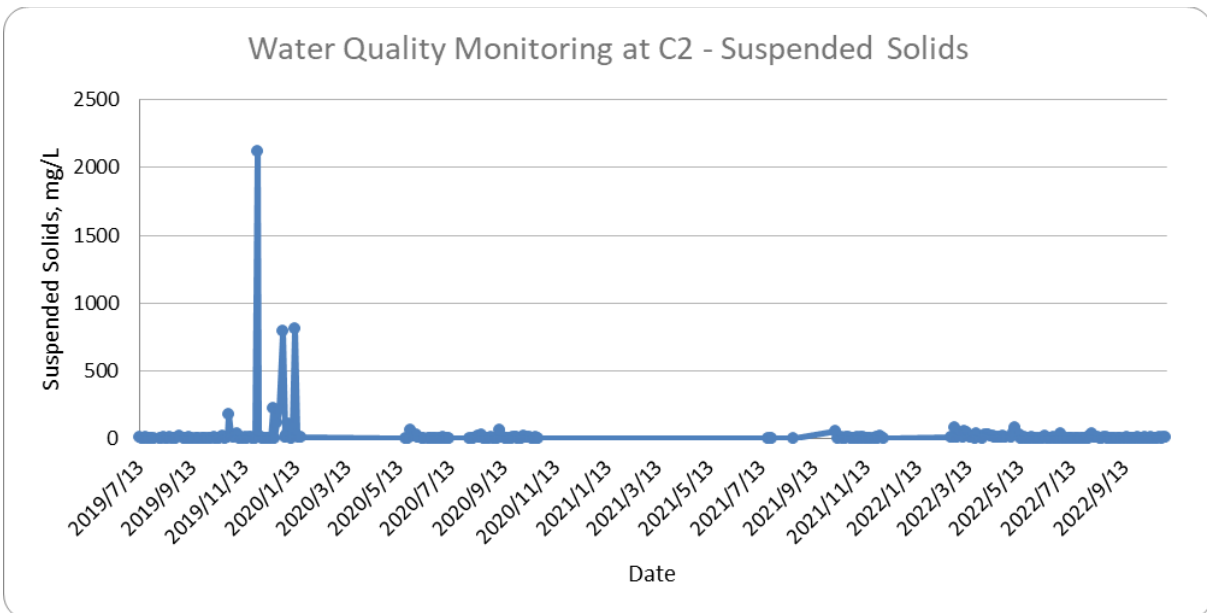


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

Water Quality Monitoring at C2 - Turbidity

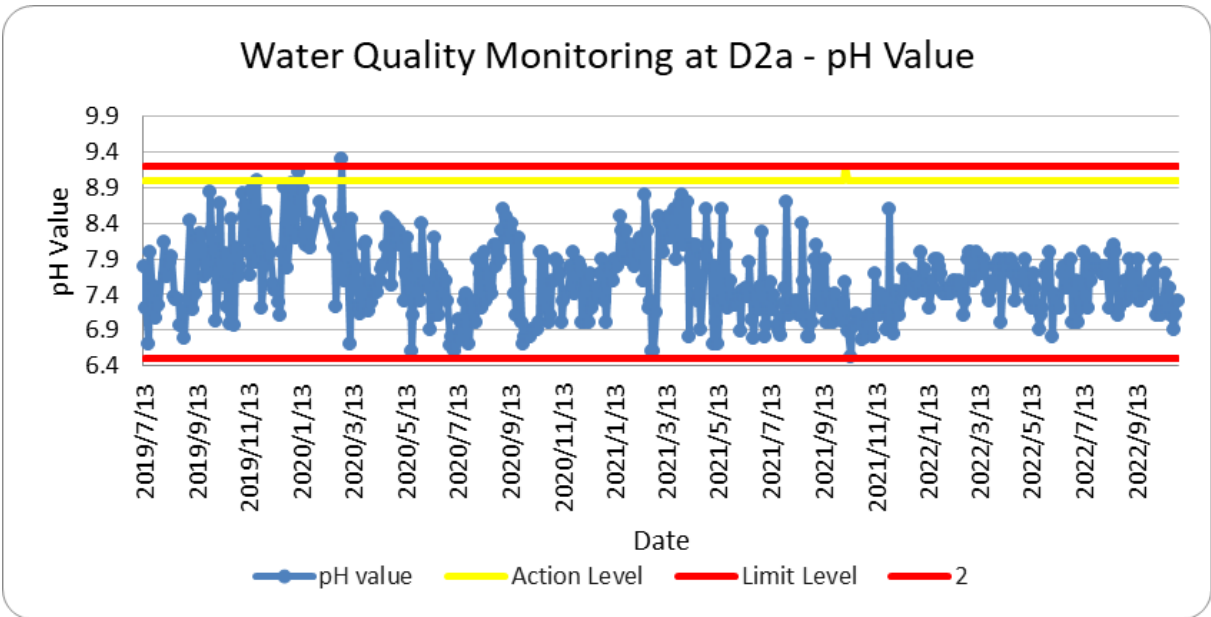
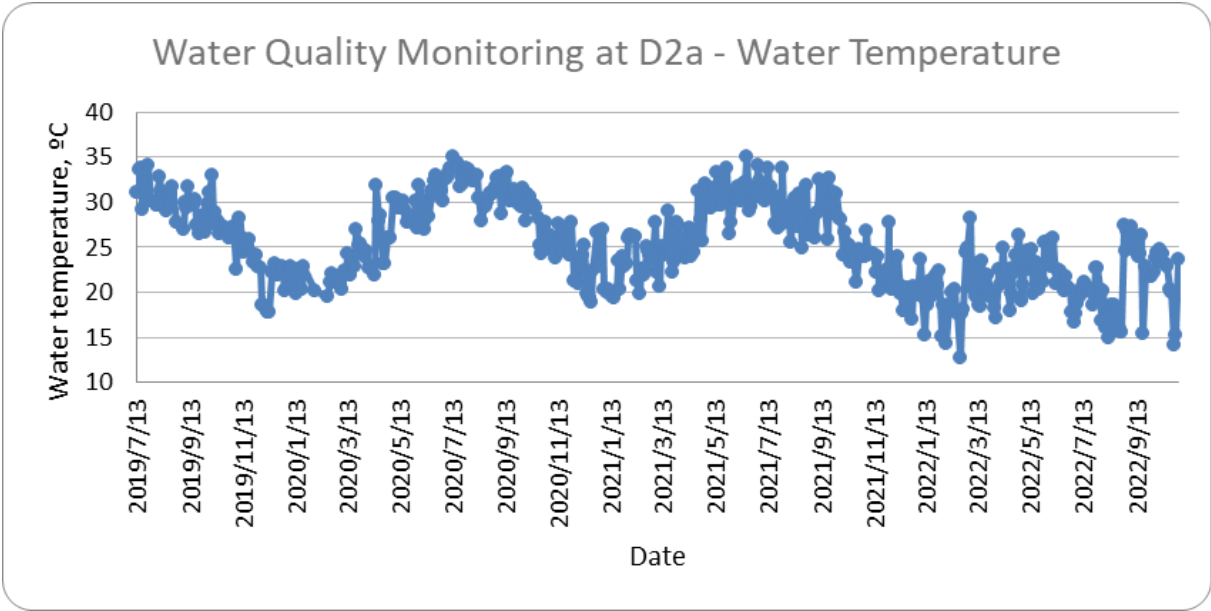


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

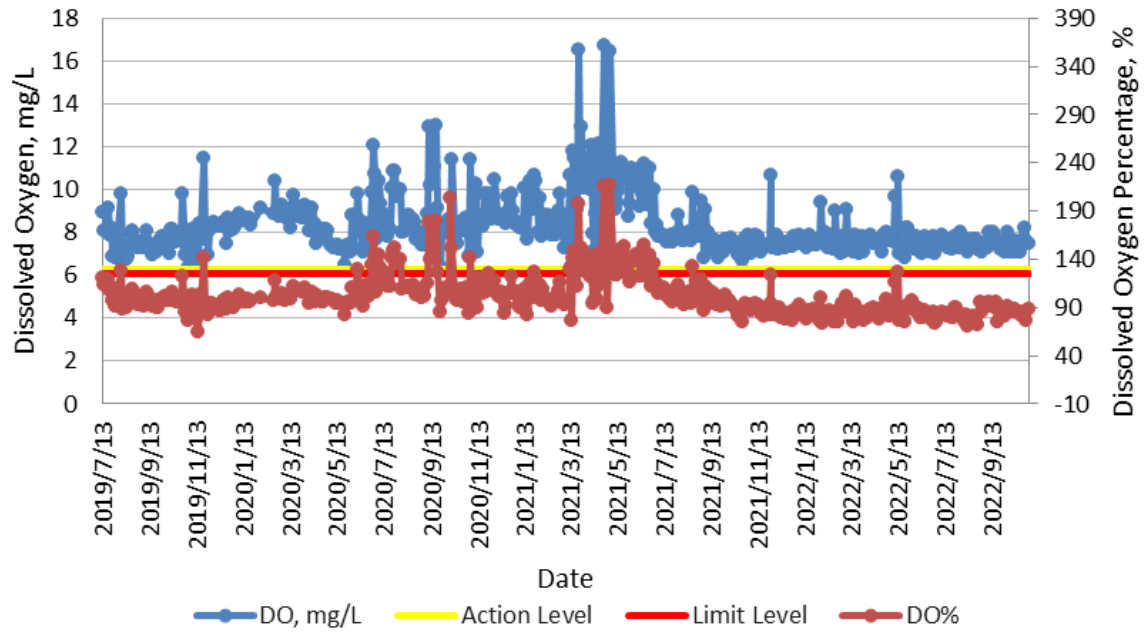


Note 1: Period without data implied that water in location C2 was dried up, insufficient water was available for sample collection

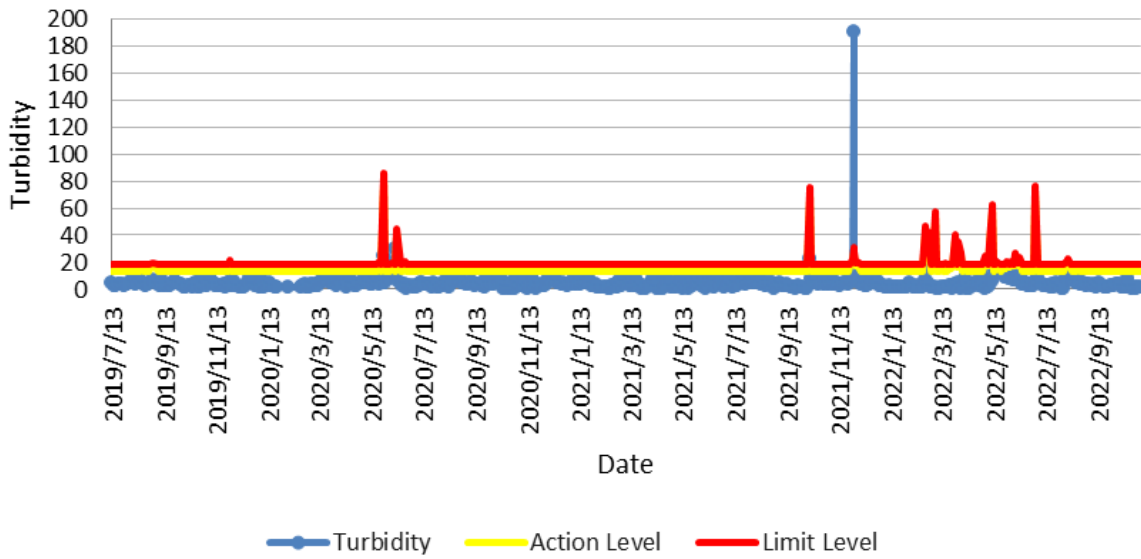
D2a



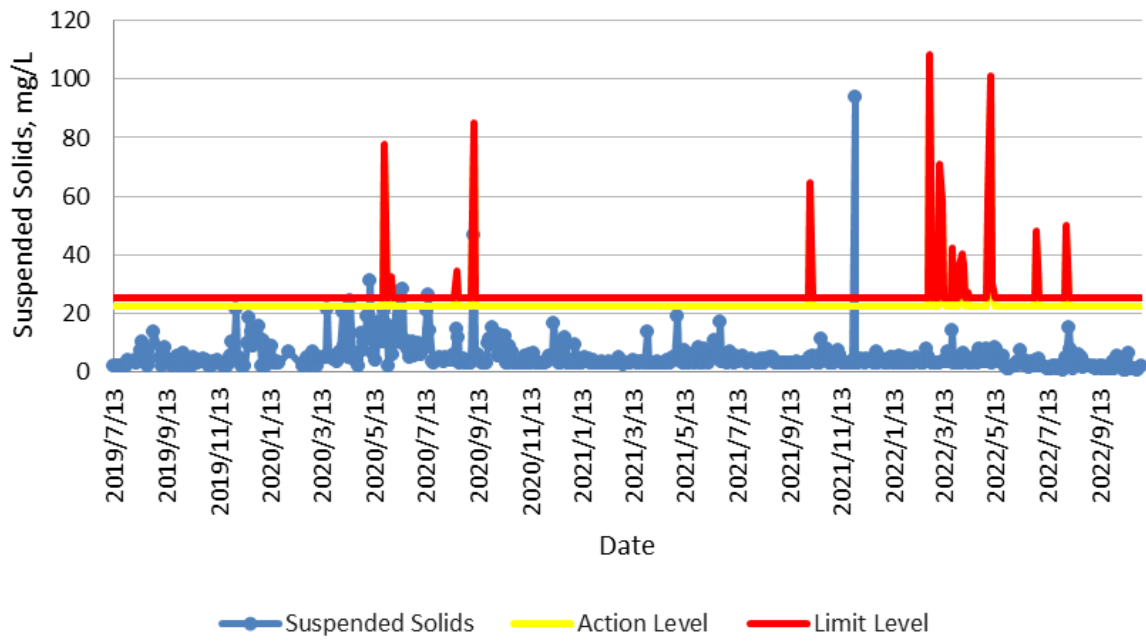
Water Quality Monitoring at D2a - Dissolved Oxygen



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 2022 (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	1.773	0	0	0.812	0.961	0	0	0	0	4	0.01807
Feb	1.760	0	0	1.712	0.047	0	0	0	0	0	0.00519
Mar	3.394	0	0	3.389	0.005	0	0	0	0	0	0.00834
Apr	3.230	0	0	3.230	0	0	0	0	0	0	0.02382
May	0.1347	0	0	0	0.1347	0	0	0	0	0	0.01369
June	0.0717	0	0	0	0.0717	0	0	0	0	0	0.04995
Sub-total	10.3634	0	0	9.143	1.2194	0	0	0	0	4	0.11906
July	0.03260	0	0	0.0260	0.0065	0	0	0	0	0	0.01554
Aug	0.1024	0	0	0	0.0652	0	0	0	0	0	0.03713
Sept	0.1277	0	0	0	0.1277	0	0	0	0	0	0.02861
Oct	1.7649	0	0	1.4428	0.3221	0	0	0	0	0.04641	1.7649
Nov											
Dec											
Total	12.391	0	0	10.6118	1.7409	0	0	0	0	4.04641	1.96524

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

November 2022

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

Note 1: Impact Water Quality Monitoring will be conducted from 08:00 to 12:00.

 = 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 October 2022 - 31 October 2022	0	1	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
1 October 2022 - 31 October 2022	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
1 October 2022 - 31 October 2022	0	0	N/A

Appendix L

HOKLAS Certificate of the
Laboratory



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

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*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



**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 40th Monthly EM&A Report (October 2022)

Document Ref. No.:

Date of Issue of Comments: 14/11/2022

ITEM NO.	IEC'S COMMENT	ET'S RESPONSE	CLOSE DATE
1.	No documents provided by ET show that "IEC's comments for all October 2022 samples were received by Fugro lab in chilled condition." Section 5.3.6 of the EM&A Manual states that the water samples for SS measurement should be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen).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 in the EM&A Manual. Moreover, Section 2.6.1 of EM&A Manual stipulates "The ET Leader shall plan, organise and manage the implementation of the EM&A programme, and ensure that the EM&A works are undertaken to the required standards." On the other hand, the email provided by ET did not indicate the validated temperatures well. Therefore, the ET's response was left irrelevant and questionable.	<p>The comment regarding SS sample condition was given in the IEC verification letter for the monthly EM&A for January 2022. Since February 2022, confirmation email regarding sample condition was sought from the appointed HOKLAS laboratory (Fugro) as the supporting document for report submission.</p> <p>During the IEC random site check carried out on 26 October 2022, ET has demonstrated to IEC that the temperature of storage box of the water samples for SS measurement complied with Section 5.3.6 of the EM&A Manual. Also, the confirmation email issued by the appointed HOKLAS laboratory (Fugro) have provided to IEC to prove that all the water samples were delivered to laboratory in chilled condition.</p>	
2.	Appendix F the Impact Water Quality Monitoring Data of the monthly EM&A report certified by ET Leader shows the results of on-site measurement in October 2022. Not only there are discrepancies between note 1 of Appendix F Impact Water Quality Monitoring Data for water in location C2 & C1b mentioned insufficient water was available for sample collection and data results in Appendix F, but the response from ET failed to address the issue and remains irrelevant.	<p>Please note that the graphs presented in Appendix F includes the monitoring data since July 2019, not just presenting the monitoring data of this reporting month (i.e. October 2022). Therefore, note 1 of Appendix F is the description for the monitoring data over the entire monitoring period.</p> <p>Please note that there is no discrepancy between note 1 of Appendix F Impact Water Quality Monitoring Data and the results of on-site measurement in October 2022.</p>	
3.	Section 5.2.2 of EM&A Manual mentions that other relevant data should also be recorded, including the monitoring location/position, time, weather conditions and any special phenomena or work underway at the construction site. According to the photos provided in WhatsApp group, an alternative access point was moved downstream for collecting water sampling C1b and C1b# of the same water body. No approximate sampling location was shown in Appendix C of Monitoring Locations. The accuracy and authenticity of the monthly EM&A report were unable to be confirmed and validated, even with certifications from ET Leader.	<p>Please note that the water sampling of C1b at alternative access point is recorded in Appendix F. The alternative access point (E 833344.508, N 823346.935) was submitted in the proposed EM&A change and demonstrated during the joint water sampling inspection with the ER, the IEC representative, the Contractor and the ET on 15 October 2021. The location plan of the original and alternative access point for C1b is enclosed for reference.</p> <p>Only the approximate sampling locations of monitoring location D2a are presented in Appendix C as the water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) changes in time.</p>	

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4.	Section 5.3.6 of the EM&A Manual stipulates that water samples for SS measurement should be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen). 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. Moreover, Section 2.6.1 of EM&A Manual stipulates that "The ET Leader shall plan, organise and manage the implementation of the EM&A programme, and ensure that the EM&A works are undertaken to the required standards." The email provided by ET does not indicate the validated temperature as well. The ET's response is irrelevant and questionable, and no photos provided by ET prove that the temperature of the water samples before delivering for analysis.	<p>The confirmation email issued by the appointed HOKLAS laboratory (Fugro) have proved that all the water samples were delivered to laboratory in chilled condition.</p> <p>During the IEC random site check carried out on 26 October 2022, ET has demonstrated to IEC that the temperature of storage box of the water samples for SS measurement complied with Section 5.3.6 of the EM&A Manual.</p>	
5.	No photos provided by ET prove that the water level at Lower Shing Mun Reservoir (i.e., monitoring location D2a) varied within periods of time. Water samples were collected at an open ditch, which is distant from the boundary of the water body, by ET with the witnesses of IEC during the monthly random site inspection on 26 October 2022. The response from ET is doubtful.	The water sampling of D2a on 26 October 2022 was carried out at a stream flowing from the worksite and into the Lower Shing Mun Reservoir. As stated in Section 3.17 of the monthly EM&A report, 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.	
6.	There was no valid calibration certification provided by ET for the infrared thermometer. The accuracy of monitoring results e.g. SS packed in ice (cooled to 4°C without being frozen) is unable to be validated and confirmed.	Please be informed that Section 5.3.7 of EM&A Manual stated that all in situ monitoring instruments should be calibrated by HOKLAS laboratory. The infrared thermometer is not a monitoring instrument for water quality monitoring as listed in the approved EM&A manual.	
7.	The ET Leader has certified the monthly EM&A report in October 2022 but the ET is uncertain about correctness of the data shown in Appendix F Impact Water Quality Monitoring Data. A suspected incorrect and/misleading record was submitted for IEC verification. As a result, the accuracy of monitoring result remains unconfirmed.	The in-situ data presented in Appendix F was measured in-situ by multiparameter water quality meter and the data of SS level was from the laboratory report issued by HOKLAS accredited laboratory.	

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8.	Condition 2.2 of the Environmental Permit No. EPs 345/2009/A stipulates 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. Some water samples at monitoring location C1b were not collected at approved sampling locations. In Section 2.11 of the monthly EM&A report certified by the ET Leader, a new practice was introduced regarding the water sampling equipment. The E T and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with Section 5.3.5 of the EM&A Manual	<p>At monitoring location C1b, shallow water level is often observed and the water sample could not be obtained by using the approved water sampler. Since the water monitoring methodology of the Project has no designated water sampling depths (i.e., surface/ middle/ bottom), depending on the water depth, a water bucket or a small plastic bottle are proposed to be used to collect water samples in shallow water at the designated locations to facilitate the water sampling of this location.</p> <p>If the measured water depth is between 7 cm and 11 cm (i.e. $7 \text{ cm} \leq \text{water depth} < 11 \text{ cm}$), a water bucket shall be used to obtain the water sample. If the measured water depth is between 3 cm and 7 cm (i.e. $3 \text{ cm} \leq \text{water depth} < 7 \text{ cm}$), a small plastic bottle shall be used to obtain the water sample.</p> <p>An alternative access point is also proposed to move downstream for water sampling of the same water body to facilitate the water sampling. The additional access location point are E 833344.508, N 823346.935 which is at approximately 25 m distance away from the approved monitoring location.</p>	
9.	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. The response certified by the ET Leader acknowledges that section 5.3.9 of the EM&A Manual does not strictly follow. Please consider the response made as mentioned, whether the ET and the ET Leader should be responsible for the implementation of the EM&A programme.	<p>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.</p> <p>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.</p>	

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10.	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. In Section 3.5 of the monthly EM&A report, a new practice was introduced regarding to the SS testing method and SS detection limit. Two different SS reporting limits were introduced in the reporting month. The ET and the ET Leader shall be responsible for the implementation of the EM&A programme in accordance with Section 5.3.9 of the EM&A Manual, before approving the proposed changes of contents of EM&A programme	<p>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.</p> <p>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.</p>	
11.	Section 5.3.5 of the EM&A Manual stipulates that a water sampler should be used. The water samples at monitoring location C1b were not collected with the water sampler shown in WhatsApp group.	<p>At monitoring location C1b, shallow water level is often observed and the water sample could not be obtained by using the approved water sampler. Since the water monitoring methodology of the Project has no designated water sampling depths (i.e., surface/ middle/ bottom), depending on the water depth, a water bucket or a small plastic bottle are proposed to be used to collect water samples in shallow water at the designated locations to facilitate the water sampling of this location.</p> <p>If the measured water depth is between 7 cm and 11 cm (i.e. $7 \text{ cm} \leq \text{water depth} < 11 \text{ cm}$), a water bucket shall be used to obtain the water sample. If the measured water depth is between 3 cm and 7 cm (i.e. $3 \text{ cm} \leq \text{water depth} < 7 \text{ cm}$), a small plastic bottle shall be used to obtain the water sample.</p>	

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Enclosure 1 – Location Plan of Original and Alternative Access Location for C1b

