MTR Corporation Limited

TUEN MUN SOUTH EXTENSION

(No. EP-615/2022)

Monthly EM&A Report No.11

(For October 2024)

Certified by	:	
		(Raymond Wong)
Position	:	Environmental Team Leader
Date	:	13/11/2024
Verified by	:	
		(Adi Lee)
Position	:	Independent Environmental Checker
Date	:	13/11/2024

MTR Corporation Limited

Tuen Mun South Extension
Monthly EM&A Report No. 11
[For October 2024]

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EXECUTIVE SUMMARY

The Tuen Mun South Extension (TME) is one of the seven recommended railway schemes in the Railway Development Strategy 2014 ("RDS-2014"). The project will extend the Tuen Ma Line (TML), from Tuen Mun (TUM) Station southwards by about 2.4 km, terminating at a new station near Tuen Mun Ferry Pier (i.e. Tuen Mun South (TMS) Station) with an intermediate station at Tuen Mun Area 16 (i.e. A16 Station).

The Environmental Impact Assessment (EIA) Report and its Environmental Monitoring and Audit (EM&A) Manual (Register No. AEIAR – 236/2022) for TME was approved on 12 July 2022, with an Environmental Permit (EP) granted on 18 August 2022 (EP No. EP-615/2022).

The construction was commenced in December 2023. This is the 11th EM&A report documents the findings of EM&A works conducted during the period from 1 to 31 October 2024.

EM&A Activities Summary

A summary of the EM&A activities in this reporting month is listed below:

EM&A Activities	Date	Details
Air Quality Monitoring	5, 10, 16, 22 and 28 October 2024	Refers to **Appendix A**
Noise Monitoring	10, 16, 22 and 28 October 2024	Refers to **Appendix A**
Water Quality Monitoring (1)	3, 5, 8, 10, 12, 15, 17, 19, 22, 24, 29 and 31 October 2024	Refers to **Appendix A**
Monthly Ardeid Monitoring	22 October 2024	Refers to **Appendix B**
Environmental Site Inspection	2, 9, 16, 23 and 30 October 2024	Refers to **Appendix A**

Note:
(1) Typhoon signal No.3 was hoisted on 26 October 2024, water quality monitoring was cancelled according to EM&A Manual.

Breaches of Action and Limit Levels for Air Quality
No exceedance of the Action / Limit Level of 1-hour TSP was recorded in the reporting month. Details are provided in **Appendix A**.

Breaches of Action and Limit Levels for Noise
No exceedance of the Action / Limit Level of construction noise was recorded in the reporting month. Details are provided in **Appendix A**.

Breaches of Action and Limit Levels for Water Quality
Some suspended solid (SS) results of 5, 8, 15, 24 and 29 October 2024 exceeded the relevant Action/Limit Levels, corresponding investigation findings concluded that the exceedances were not Project related. Details are provided in **Appendix A**.

Complaint, Notification of Summons and Successful Prosecution
One environmental complaint related to air quality was recorded on 28 October 2024 while no prosecution or notification of summon was received in the reporting month. Details are provided in **Appendix A**.

Reporting Changes
There was no reporting change in the reporting month.

Future Key Issues
Key issues to be considered in the next three months included the following. Details is provided in **Appendix A**.

Location	Site Activities
Tuen Mun River West Bank	Construction of temporary platform
Wu Shan Recreation Playground	Utilities & services diversion / protection, foundation and excavation works
A16 (i.e. Tuen Mun Swimming Pool)	Hoarding Erection, tree felling, tree transplantation, demolition of existing pet garden, pre-drilling works and bored piling
Wu King Road	Site formation and drainage works, utilities & services diversions and monitoring, and demolition of footbridge
Tuen Mun Ferry Pier	Demolition of existing covered walkway

Location	Site Activities
Viaduct on Tuen Mun River Channel	Construction of temporary platform and pre-drilling works

Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality, waste management and landscape and ecology.

1 INTRODUCTION

1.1 Background

1.1.1 The Tuen Mun South Extension (TME) (hereinafter referred to as "the Project") is one of the seven recommended railway schemes in the Railway Development Strategy 2014 ("RDS-2014"). The Project will extend the Tuen Ma Line (TML), from Tuen Mun (TUM) Station southwards by about 2.4 km, terminating at a new station near Tuen Mun Ferry Pier (i.e. Tuen Mun South (TMS) Station) with an intermediate station at Tuen Mun Area 16 (i.e. A16 Station).

1.1.2 The Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-236/2022) for the Project was approved on 12 July 2022 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 18 August 2022 (EP No: EP-615/2022) for the construction and operation of the Project.

1.2 Project Programme

1.2.1 The civil construction works contract (Contract 1500) of the Project was awarded in December 2023. The construction of the Project commenced in December 2023 and expected to complete in 2030. **Table 1.1** presents the information of the awarded Works Contract.

Table 1.1 Summary of Awarded Works Contract

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1500	TME Stations, Viaducts and River Crossing	December 2023	CRBC – Building King Joint Venture	WSP (Asia) Ltd.

1.3 Purpose of the Report

1.3.1 The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in December 2023. This is the 11th EM&A Report for the Project which summarises the EM&A works undertaken during the period from 1 to 31 October 2024.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1 EM&A Results

2.1.1 The EM&A Report for Works Contract 1500 prepared by the Contractor's ET is provided in **Appendix A**. The EM&A Report provides details of the project information, EM&A requirements, impact monitoring for air quality, noise and water quality, and audit results for the Contract. The details of the monthly ardeid monitoring are presented in **Appendix B**.

2.1.2 A summary of the major construction activities undertaken by the Contractor of Works Contract during the reporting period are presented in **Table 2.1**.

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Site	Construction Activities
Tuen Mun River West Bank	Construction of temporary working platform
Wu Shan Recreation Playground	Utilities &service diversion / protection, foundation and excavation works
A16 (i.e. Tuen Mun Swimming Pool)	Tree removal and transplantation, demolition of existing pet garden, bored piling and pre-drilling works
Wu King Road	Site formation and drainage works, utilities & services diversion, and demolition of footbridge
Viaduct on Tuen Mun River Channel	Construction of temporary platform

2.1.3 During the reporting month, impact monitoring for air quality, construction noise and water quality were conducted in accordance with the EM&A Manual.

2.1.4 No exceedance of the Action/Limit Level of 1-hour TSP and construction noise was recorded. Suspended solid (SS) results of 5, 8, 15, 24 and 29 October 2024 exceeded the relevant Action/Limit Levels, corresponding investigations have been conducted accordingly. The investigation findings concluded that the exceedances were not Project related. Details are presented in **Appendix A**.

2.1.5 Results of air quality, construction noise and water quality are summarised in **Tables 2.2 to 2.5** respectively. Details of the monitoring requirements, locations, equipment and methodology are presented in the EM&A Report in **Appendix A.**

Table 2.2 Summary of 1-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance due to the Project Construction (Yes/No)
AM1	Islamic Primary School	37 – 54	277.6	500	N/A
AM2a(1)	Oi Tak House, Yau Oi Estate	39 – 62	277.4	500	N/A
AM3	Yan Chai Hospital Law Chan Chor Si Primary School	21 – 77	279.9	500	N/A
AM4	Wu Tsui House, Wu King Estate	31 – 56	279.9	500	N/A
AM5	Tuen Mun Swimming Pool	34 – 61	277.1	500	N/A

Note: (1) Alternative monitoring location to AM2 Oi Lai House, Yau Oi Estate in the approved EM&A Manual.

Table 2.3 Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station ID	Location	Noise Level ($L_{eq, 30mins}$, dB(A))	Limit Level ($L_{eq, 30mins}$, dB(A))	Exceedance due to the Project Construction (Yes/No)
CN1	Tower 1, Century Gateway Phase 1	65 – 68	75	N/A
CN2	Islamic Primary School	58 – 65	70	N/A

Monitoring Station ID	Location	Noise Level ($L_{eq, 30mins}$, dB(A)	Limit Level ($L_{eq, 30mins}$, dB(A)	Exceedance due to the Project Construction (Yes/No)
		N/A(1)	65 during exams	N/A
CN3	Block 13, Lung Mun Oasis	60 – 61	75	N/A
CN4	Yan Chai Hospital Ho Sik Nam Primary School	62 – 64	70	N/A
		64	65 during exams	
CN5	Taoist Ching Chung Primary School	63 – 67	70	N/A
		N/A(1)	65 during exams	
CN6	Tower 1, Oceania Heights	68 – 70	75	N/A
CN7	Block 1, Pierhead Garden	60 – 66	75	N/A
CN8	Wu Fai House	57 – 65	75	N/A
CN9	Block 8, Glorious Garden	57 – 66	75	N/A
CN10	Oi Lai House, Yau Oi Estate	60 – 61	75	N/A
CN11	Wu Tsui House	58 – 64	75	N/A

Note: (1) No examination was held during the noise monitoring period in October 2024.

Table 2.4 Summary of Water Quality Monitoring Results (Mid-Ebb Tide) in the Reporting Period

Parameters		Monitoring Station ID						
		W1a(1)	W2	W3	W4	W5	W6	W7
Dissolved Oxygen (mg/L)	Surface / Middle (Averaged)	5.05 – 6.48	2.53 – 5.53	3.42 – 5.87	3.80 – 6.07	3.27 - 6.10	3.42 – 6.30	3.73 – 6.38
	Bottom (Averaged)	N/A	N/A	N/A	N/A	6.17	5.20 – 6.24	5.22 – 6.32
Turbidity (NTU)	Depth-averaged	1.81 – 5.55	2.60 – 6.17	2.59 – 4.75	2.58 – 5.18	3.00 – 4.46	2.40 – 4.63	1.76 – 5.25
Suspended Solid (mg/L)	Depth-averaged	2.25 – 7.80	2.00 – 8.65	1.55 – 7.25	4.05 – 8.40	4.30 – 7.90	2.95 – 7.88	1.85 – 8.45

Note: (1) W1a is control station in the mid-ebb tide.

Table 2.5 Summary of Water Quality Monitoring Results (Mid-Flood Tide) in the Reporting Period

Parameters		Monitoring Station ID						
		W1a	W2	W3	W8(1)	W9	W10	W11
Dissolved Oxygen (mg/L)	Surface / Middle (Averaged)	2.81 – 5.91	3.12 – 6.06	3.12 – 5.82	4.91 – 6.02	4.67 – 6.46	4.36 - 6.08	4.37 – 6.00
	Bottom (Averaged)	N/A	N/A	N/A	4.78 – 6.16	4.99 – 6.53	5.07 – 6.10	N/A
Turbidity (NTU)	Depth-averaged	2.81 – 5.48	2.11 – 6.82	2.17 – 6.15	3.71 – 9.07	2.92 – 5.90	3.69 – 5.91	2.47 – 5.04
Suspended Solid (mg/L)	Depth-averaged	2.75 – 8.40	3.20 – 10.85	2.70 – 9.20	4.00 – 13.70	4.03 – 8.50	3.28 – 7.60	2.35 – 7.20

Note: (1) W8 is control station in the mid-flood tide.

2.1.6 Monthly ardeid monitoring was conducted on 22 October 2024 and the detail of the monitoring is presented in **Appendix B**.

2.1.7 One environmental complaint related to air quality was recorded on 28 October 2024 while no prosecution or notification of summon was received in the reporting month. The details of the complaint are provided in **Appendix A**.

2.1.8 Regular site inspections were conducted by the ET, ER and the Contractor on a weekly basis and IEC audits on a monthly basis to check the implementation of environmental pollution control and mitigation measures for the Project. Details are provided in **Appendix A**.

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The Contractor has implemented all mitigation measures and requirements as stated in the EIA Report, EM&A Manual and EP (EP No: EP-615/2022). Details are provided in **Appendix A**.

3.1.2 The status of required submissions under the EP as of the reporting period is summarised in **Table 3.1**.

Table 3.1 Summary of EP Submissions Status

EP Condition (EP-615/2022)	Submission	Submission date	Status
Condition 1.12	Notification of Commencement Date of Construction	4 August 2023 3 October 2023 (update)	Deposited
Condition 1.14	Notification of Commencement Date of Operation	No later than 2 months prior to the commencement of operation	To be submitted in due course
Condition 2.11	EP Submission Schedule	19 October 2023	Deposited
Condition 2.12	Management Organization	7 November 2023 18 December 2023 (update) 27 February 2024 (update)	Deposited
Condition 2.14	Construction Noise Management Plan (CNMP)	7 September 2023 13 December 2023 (update) 2 February 2024 (update) 17 September 2024 (update)	Deposited
Condition 2.15	Rail Noise Mitigation Plan (RNMP)	23 August 2023	Approved (8 May 2024)
Condition 2.16	Pre-Construction Ardeid Survey Plan (PASP)	1 August 2023	Approved (18 August 2023)
Condition 2.17	Pre-Construction Ardeid Survey Report (PASR)	1 November 2023	Deposited
Condition 2.18	Monthly Ardeid Monitoring Plan (MAMP)	9 August 2023	Approved (14 November 2023)
		29 January 2024 (update)	Approved (15 February 2024)
Condition 2.19	Compensatory Tree Planting Implementation Plan (CTPIP)	To be submitted no later than 6 weeks of the commencement of the construction of the corresponding parts of the Project	To be submitted in due course
Condition 2.20	Landscape and Visual Mitigation Plan (LVMP)	To be submitted no later than 2 months before the commencement of the construction of the corresponding parts of landscape and visual mitigation measures of the Project	To be submitted in due course
Condition 2.21	Waste Management Plan (WMP)	6 November 2023 31 July 2024 (update) 20 September 2024 (update)	Deposited
Condition 2.25	Fixed Plant Noise Audit Report	To be submitted at least 1 month before commencement of operation of the Project	To be submitted in due course

EP Condition (EP-615/2022)	Submission	Submission date	Status
Condition 2.26	Noise Performance Test Report	To be submitted at least 1 month before commencement of operation of the Project	To be submitted in due course
Condition 3.3	Baseline Monitoring Report	11 November 2023 (Water Quality) 21 November 2023 (Dust)	Deposited
Condition 3.4	Monthly EM&A Report No.1 – 10	Submitted within 10 working days after the end of the reporting month	Deposited
	Monthly EM&A Report No.11	This submission	-
Condition 4.2	Dedicated Internet Website	9 January 2024	Deposited

Appendix A

Monthly EM&A Report for Contract 1500
TME Stations, Viaducts and River Crossing
(October 2024)

Tuen Mun South Extension (TME)

Contract 1500 – TME Stations, Viaducts and River Crossing

Monthly Environmental Monitoring and Audit (EM&A) Report (October 2024)

Doc. No. 1500-W-TME-CBJ-510-900707

CRBC – Build King Joint Venture

Revision: C

Date: 12/11/2024

Tuen Mun South Extension (TME)
Contract 1500 – TME Stations, Viaducts and River Crossing

Monthly Environmental Monitoring and Audit (EM&A) Report (October 2024)

Document No.:	1500-W-TME-CBJ-510-900707
Revision:	C
Date:	12/11/2024
Filename:	202410 TMSE EM&A Report_v2

Reviewed by CRBC – Build King JV:

Position	Name	Signature	Date
Project Manager	Mark Wong		12 November 2024
Environmental Manager	KM Lui		12 November 2024
Environmental Officer	Joe Wong		12 November 2024

Document Issue Record and Status:

Revision	Date	Description	Prepared by	Checked by	Approved by
A	05/11/2024	1st Submission	 Name: Arthur Lo Position: Principal Consultant	 Name: Fred Ng Position: Technical Director	 Name: Squall Lam Position: Contractor's ETL
B	11/11/2024	2nd Submission with MTR and IEC comments	 Name: Arthur Lo Position: Principal Consultant	 Name: Fred Ng Position: Technical Director	 Name: Squall Lam Position: Contractor's ETL
C	12/11/2024	3rd Submission with MTR and IEC comments	 Name: Arthur Lo Position: Principal Consultant	 Name: Fred Ng Position: Technical Director	 Name: Squall Lam Position: Contractor's ETL

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1. Introduction

China Road and Bridge Corporation-Build King Joint Venture (CRBC-BK JV) was commissioned by the MTR Corporation (MTRC) as the Civil Contractor for Works Contract 1500. WSP (Asia) Limited (WSP) was appointed by CRBC-BK JV as the Contractor's Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1. Purpose of the Report

1.1.1. The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in December 2023. This is the 11th EM&A Report for the Project which summarises the impact monitoring results and audit findings for the Project during the period from 1 to 31 October 2024.

1.2. Report Structure

1.2.1. This monthly EM&A Report is organized as follows:

(a) Section 1: Introduction

(b) Section 2: Project Information

(c) Section 3: Environmental Monitoring Requirement

(d) Section 4: Implementation Status of Environmental Mitigation Measures

(e) Section 5: Monitoring Results

(f) Section 6: Environmental Site Inspection and Audit

(g) Section 7: Environmental Non-conformance

(h) Section 8: Future Key Issues

(i) Section 9: Conclusions and Recommendations

2. Project Information

2.1. Background

2.1.1. The Tuen Mun South Extension (TME) (hereinafter referred to as "the Project") is one of the seven recommended railway schemes in the Railway Development Strategy 2014 ("RDS-2014"). The Project will extend the Tuen Ma Line (TML), from Tuen Mun (TUM) Station southwards by about 2.4 km, terminating at a new station near Tuen Mun Ferry Pier (i.e. Tuen Mun South (TMS) Station) with an intermediate station at Tuen Mun Area 16 (i.e. A16 Station).

2.1.2. An Environmental Impact Assessment (EIA) study for the Project was conducted in accordance with EIA Study Brief No. ESB-332/2020. The EIA Report and Environmental Monitoring and Audit (EM&A) Manual (Register No. AEIAR – 236/2022) were approved on 12 July 2022 under the Environmental Impact Assessment Ordinance (EIAO), with an Environmental Permit (EP) granted on 18 August 2022 (EP No. EP-615/2022).

2.1.3. According to the approved EM&A Manual of TME, the EM&A monitoring for the Project includes air quality, noise monitoring and water quality monitoring. Baseline dust and water quality monitoring for TME was carried out within August 2023 to October 2023.

2.2. General Description of the Project

2.2.1. The key elements of this Contract 1500 comprise below:

(a) New station at Tuen Mun Area 16 (A16 Station) extending from Tuen Mun Station (TUM);

(b) Tuen Mun River Bridge (TRB) over Tuen Mun River;

(c) Viaducts and connections from existing overrun viaduct at TUM to A16 Station and from A16 Station to Tuen Mun South Station (TMS) via TRB;

(d) Feeder Station;

(e) Intermediate emergency access point (EAP) to viaduct;

(f) Noise barriers (partial and full enclosure) on viaducts;

(g) Widening of Tuen Yee Street and associated public transport facilities at Area 16;

(h) Property Enabling Works (PEW);

(i) Modifications works to TUM;

(j) Demolition of existing Tuen Mun Swimming Pool (TMSP) after completion of the new swimming pool constructed by 1503 Contractor at the existing Tuen Mun Golf Centre;

(k) Re-provisioning of the existing Wu Shan Recreation Playground (including Tuen Mun Road Safety Town) and Hoi Wong Road Pet Garden;

(l) Temporary platforms with loading/unloading points, flood wall and construction access along and within Tuen Mun River to facilitate construction works;

(m) New station at Tuen Mun South with footbridge connecting to adjacent buildings and a staircase entrance to Tuen Mun Promenade;

(n) Re-alignment of existing Wu King Road and associated public transport facilities;

(o) Demolition of existing footbridges NF98 & NF99;

(p) Re-provisioning of Footbridge NF98 at Wu King Road;

(q) Re-provisioning of Tuen Mun Promenade and Tuen Mun Ferry Pier Public Toilet;

(r) Re-provisioning of existing Wu King Road Garden;

(s) Building Services, including Fire Detection and Protection System, Lighting Systems, Small Power Services, Low Voltage Power Supply Systems, Earthing and Lightning Protection System, Water Supply and Drainage System, Environmental Control System, Security and Access Management, Station-Based Control System, and Conditioned Based Monitoring System; and

(t) ABWF including common station components, such as signage, Info Corner, metal doors and ironmongery.

2.2.2. The layout plan of the Project is shown in **Figure 2.1**.

2.3. Construction Programme and Activities

2.3.1. The major construction activities undertaken in the reporting month are summarised below:

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Site	Construction Activities
Tuen Mun River West Bank	Construction of temporary working platform
Wu Shan Recreation Playground	Utilities &service diversion / protection, foundation and excavation works
A16 (i.e. Tuen Mun Swimming Pool)	Tree removal and transplantation, demolition of existing pet garden, bored piling and pre-drilling works
Wu King Road	Site formation and drainage works, utilities & services diversion, and demolition of footbridge
Viaduct on Tuen Mun River Channel	Construction of temporary platform

2.3.2. The tentative construction programme is presented in **Appendix A**.

2.4. Project Organization

2.4.1. The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarized in **Table 2.2**.

Table 2.2 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone
MTRC	Project Environmental Team	Project Environmental Team Leader	Mr. Raymond Wong	2621 7304
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Adi Lee	2859 5443
CRBC-BK JV	Contractor	Project's Environmental Officer	Mr. Joe Wong	6182 0351
WSP	Contractor's Environmental Team (ET)	ET Leader	Mr. Squall Lam	2579 8841

2.5. Status of Environmental Licences, Notification and Permits

2.5.1. Relevant environmental licenses, permits and/or notifications on environmental protection for the Project and valid in the reporting month are summarized in **Table 2.3**.

Table 2.3 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-615/2022	18 August 2022	-	Valid	EP-615/2022
Construction Noise Permit				
GW-RW0518-24	14 June 2024	6 December 2024	Valid	-
GW-RW0610-24	10 July 2024	09 October 2024	Valid	-
GW-RW0616-24	10 July 2024	09 October 2024	Valid	-
GW-RW0755-24	16 August 2024	31 October 2024	Valid	-
GW-RW0831-24	11 September 2024	30 November 2024	Valid	-
GW-RW0833-24	14 September 2024	13 December 2024	Valid	-
GW-RW0929-24	10 October 2024	09 January 2025	Valid	-
GW-RW0937-24	10 October 2024	09 January 2025	Valid	-
GW-RW0972-24	21 October 2024	20 January 2025	Valid	-
GW-RW1003-24	24 October 2024	23 January 2025	Valid	-
PP-RW0020-24	11 August 2024	10 October 2024	Valid	-
PP-RW0025-24	11 October 2024	10 December 2024	Valid	-
PP-RW0029-24	04 November 2024	04 December 2024	Valid	The CNP was issued on 8 October 2024
Wastewater Discharge License				
WT10002588-2023	20 June 2024	30 June 2029	Valid	Pui To Road (South) Rest Garden
WT10002589-2023	9 May 2024	31 May 2029	Valid	Works Area near A16
WT10002590-2023	24 April 2024	30 April 2029	Valid	Wu Shan Recreation Playground
WT10002591-2023	9 May 2024	31 May 2029	Valid	Works Area near the junction of Hoi Wong Road and Wu Shan Road
Chemical Waste Producer Registration				
5213-424-C4094-02	15 January 2024	-	Valid	-

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Billing Account for Construction Waste Disposal				
7049611	27 December 2023	-	Valid	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
500887	16 December 2023	-	Valid	-

3. Environmental Monitoring Requirement

3.1. Construction Dust Monitoring

Monitoring Requirements

3.1.1. In accordance with the approved EM&A Manual, 1-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required. Impact 1-hour TSP monitoring should be carried out for at least 3 times every 6 days. The Action and Limit Level of the air quality monitoring is provided in **Table 3.1**.

Table 3.1 Action and Limit Levels for 1-hour TSP

ID	Location	Action Level	Limit Level
AM1	Islamic Primary School	277.6 μg/m^3	500 μg/m^3
AM2a	Oi Tak House, Yau Oi Estate	277.4 μg/m^3	500 μg/m^3
AM3	Yan Chai Hospital Law Chan Chor Si Primary School	279.9 μg/m^3	500 μg/m^3
AM4	Wu Tsui House, Wu King Estate	279.9 μg/m^3	500 μg/m^3
AM5	Tuen Mun Swimming Pool (TMSP)	277.1 μg/m^3	500 μg/m^3

Monitoring Equipment

3.1.2. 1-hour TSP air quality monitoring was performed using portable direct reading dust meter located at the designated monitoring stations. Portable direct reading dust meters used for the monitoring were proven to IEC to be capable of achieving comparable result as that of the dust meter and thus were used for sampling. The portable direct reading dust meters meet all the requirements of the EM&A Manual. Brand and model of the equipment is given in **Table 3.2**.

Table 3.2 Air Quality Monitoring Equipment

Equipment	Brand and Model
Portable direct reading dust meter (1-hour TSP)	Sibata (Model No. LD-5R; S/N: 3Y7139)
	Sibata (Model No. LD-5R; S/N: 3Y7140)
	Sibata (Model No. LD-5R; S/N: 3Y7141)
	Sibata (Model No. LD-5R; S/N: 3Y7142)

Monitoring Locations

3.1.3. The monitoring station for construction dust monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TME of the Project. AM2a was used as the alternative baseline dust monitoring location of AM2 as there was renovation of building façade at Oi Lai House, Yau Oi Estate (AM2) during baseline monitoring. The location of the construction dust monitoring stations are summarised in **Table 3.3** and shown in **Figure 3.1**.

Table 3.3 Locations of Construction Dust Monitoring Station

Monitoring Location ID(1)	Dust Monitoring Location
AM1	Islamic Primary School
AM2a	Oi Tak House, Yau Oi Estate
AM3	Yan Chai Hospital Law Chan Chor Si Primary School
AM4	Wu Tsui House, Wu King Estate
AM5	Tuen Mun Swimming Pool (TMSP)(2)

Notes:

(1) 1-hour TSP impact monitoring should be conducted at the monitoring stations when there are Project-related major construction activities including site formation and piling works being undertaken within a radius of 500m from the monitoring stations.

(2) Impact dust monitoring at Tuen Mun Swimming Pool will be ceased when it is closed or it is demolished. Upon the commencement of demolition of TMSP, the impact dust monitoring will be conducted at Castle Peak Bay Ambulance Depot (ASR ID. A34).

Monitoring Methodology

3.1.4. The 1-hour TSP was sampled by drawing air into the portable dust monitor where particular concentrations were measured instantaneously with an in-built silicon detector sensing light scattered by the particulates in the sampled air. Continuous TSP levels were indicated and logged by a built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

Field Monitoring

3.1.5. The measuring procedures of the 1-hour dust meter was undertaken in accordance with the Manufacturer's Instruction Manual as follows:

Sibata LD-5R

(a) Set POWER to "ON" and make sure that the battery level was not flashed or in low level

(b) Pulled the air sampling inlet cover up

(c) Pushed the knob at MEASURE position

(d) Set time/mode setting to [BG] by pushing the time setting switch. Then, started the background measurement by pushing the start/stop switch once. It took 6 sec. to complete the background measurement

(e) Turned knob to SENSI. ADJ position and pressed in

(f) Pushed Start/Stop switch once

(g) Gently returned knob to the MEASURE position

(h) Pushed the time setting switch to change the time setting display to [LOG] at the bottom left of the liquid crystal display

(i) Removed the cap and started measurement

(j) Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

3.1.6. Adoption of the wind data from the existing automatic wind station, i.e. Tuen Mun Government Offices (TUN) which is operated by Hong Kong Observatory (HKO) rather than setting up wind data monitoring equipment is based on the following justifications:

- TUN is located in the vicinity of the designated monitoring locations. This Automatic wind station (22°23'26", 113°58'36") is located at the east of the Project and the anemometer is set up at 69m above mean sea level. It is clear of obstructions or turbulence caused by the buildings;
- This automatic wind station was considered as the closest wind station to the Project that could provide representative wind data in Tuen Mun area; and
- Wind data collected by HKO was considered as a reliable data source for the wind data, it is widely used in many EM&A Projects (e.g. Expansion of Hong Kong International Airport into a Three-runway System, Siu Ho Wan Station and Siu Ho Wan Depot Replanning Works – Advance Construction Works). The dataset is more accurate and reliable that could be downloaded periodically with real-timed data logger.
- According the HKO, the HKO's wind data monitoring equipment are calibrated regularly.

3.1.7. The data collected from TUN was used to check the wind speed and wind direction.

Maintenance and Calibration

3.1.8. The portable direct reading dust meter is calibrated every year against high volume sampler (HVS) to check the validity and accuracy of the results measured by direct reading method. The latest calibration certificates of the portable direct reading dust meter are provided in **Appendix D**. The corresponding calibration record of the HVS is also given in **Appendix D**.

Data Management and Data QA/QC Control

3.1.9. All monitoring data will be handled by the ET's in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will input into a computerized database maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.

3.1.10. For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

Monitoring Schedule for the Reporting Month

3.1.11. The schedule for dust monitoring conducted in October 2024 is provided in **Appendix E**.

3.2. Construction Noise Monitoring

Monitoring Requirements

3.2.1. In accordance with the approved EM&A Manual, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3.4** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit Level of the noise monitoring is provided in **Table 3.5**.

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. L_{eq}, L_{10} and L_{90} would be recorded.	At least once per week

Table 3.5 Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

ID	Location	Action Level	Limit Level
CN1	Tower 1, Century Gateway Phase 1	When one documented complaint is received	75 dB(A)
CN2	Islamic Primary School		70 dB(A) and 65 dB(A) during examination period
CN3	Block 13, Lung Mun Oasis		75 dB(A)
CN4	Yan Chai Hospital Ho Sik Nam Primary School		70 dB(A) and 65 dB(A) during examination period
CN5	Taoist Ching Chung Primary School		
CN6	Tower 1, Oceania Heights		75 dB(A)
CN7	Block 1, Pierhead Garden		75 dB(A)
CN8	Wu Fai House		75 dB(A)
CN9	Block 8, Glorious Garden		75 dB(A)
CN10	Oi Lai House, Yau Oi Estate		75 dB(A)
CN11	Wu Tsui House		75 dB(A)

Monitoring Equipment

3.2.2. Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.6**

Table 3.6 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	RION NL-52A (S/N: 00620665)
	RION NL-52A (S/N: 00620666)
	RION NL-52 (S/N: 00809405)
Acoustic Calibrator	RION NC-74 (S/N: 34246492)
	RION NC-74 (S/N: 34657230)
	RION NC-75 (S/N: 34680623)

Monitoring Locations

3.2.3. The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TME of the Project. The location of the construction noise monitoring station is summarised in **Table 3.7** and shown in **Figure 3.2**.

Table 3.7 Noise Monitoring Station during Construction Phase

Identification No.	Noise Monitoring Location [1]
CN1[2]	Tower 1, Century Gateway Phase 1
CN2	Islamic Primary School
CN3	Block 13, Lung Mun Oasis
CN4	Yan Chai Hospital Ho Sik Nam Primary School
CN5	Taoist Ching Chung Primary School
CN6	Tower 1, Oceania Heights
CN7[2]	Block 1, Pierhead Garden
CN8	Wu Fai House
CN9	Block 8, Glorious Garden

CN10	Oi Lai House, Yau Oi Estate
CN11	Wu Tsui House

Notes:
(1) Construction noise impact monitoring should be conducted at the monitoring stations when there are Project-related major construction activities being undertaken within a radius of 300m from the monitoring stations.
(2) Free field measurement is applied at CN1 and CN7 and +3dB (A) correction was applied to the measurement. Façade measurement is applied to the rest of the stations.

Monitoring Methodology

3.2.4. Monitoring Procedure

(a) Façade and free field measurements were made.

(b) The monitoring station was at a point 1m from the exterior of the noise sensitive facade and at a position 1.2m above ground.

(c) The battery condition was checked to ensure the correct functioning of the meter.

(d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(i) Frequency weighting: A

(ii) Time weighting: Fast

(iii) Time measurement: Leq(30-mins) during non-restricted hours i.e., 0700-1900 on normal weekdays.

(e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

(f) During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

(g) Noise measurement was paused during periods of high intrusive noise (e.g., dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.

(h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

Monitoring Calibration

3.2.5. Maintenance and Calibration procedures are as follows:

(a) The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.

(b) The meter and calibrator were sent to the supplier to check and calibrate at yearly intervals.

(c) Relevant calibration certificates are provided in **Appendix D**.

Data Management and Data QA/QC Control

3.2.6. All monitoring data will be handled by the ET's in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will input into a computerized database maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.

3.2.7. For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

Monitoring Schedule for the Reporting Month

3.2.8. The schedule for noise monitoring conducted in October 2024 is provided in **Appendix E**.

3.3. Water Quality Monitoring

Monitoring Requirements

3.3.1. In accordance with the approved EM&A Manual, water quality monitoring should be undertaken 3 days per week, at mid-flood and mid-ebb tides, with sampling/measurement at all designated monitoring stations including control station as specified in **Table 3.12.**

3.3.2. Measurement should be taken at 3 water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, except where the water depth less that 6m, the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station will be monitored. The Action and Limit Level of the water monitoring is provided in **Table 3.8** and **Table 3.9**.

Table 3.8 Action and Limit Levels for Water Quality (Wet Season)

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
Dissolved Oxygen (DO)				
W1a	Control Station	2.21 mg/L	Control Station	2.17 mg/L
W2	2.2 mg/L	2.06 mg/L	2.14 mg/L	1.93 mg/L
W3	1.8 mg/L	1.81 mg/L	1.51 mg/L	1.78 mg/L
W4	1.85 mg/L	-	1.65 mg/L	-
W5	1.81 mg/L (Surface)	-	1.5 mg/L (Surface)	-
	1.73 mg/L (Bottom)	-	1.55 mg/L (Bottom)	-
W6	1.76 mg/L (Surface)	-	1.58 mg/L (Surface)	-
	1.68 mg/L (Bottom)	-	1.57 mg/L (Bottom)	-
W7	2.38 mg/L (Surface)	-	2.27 mg/L (Surface)	-
	2.13 mg/L (Bottom)	-	1.76 mg/L (Bottom)	-
W8	-	Control Station	-	Control Station
	-		-	
W9	-	1.72 mg/L	-	1.68 mg/L
W10	-	1.81 mg/L (Surface)	-	1.73 mg/L (Surface)

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
	-	1.83 mg/L (Bottom)	-	1.71 mg/L (Bottom)
W11	-	1.82 mg/L	-	1.73 mg/L
Suspended Solid (SS)				
W1a	Control Station	5.88 mg/L	Control Station	6.23 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W2	6.68 mg/L	5.08 mg/L	7.75 mg/L	5.82 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W3	4.94 mg/L	4.91 mg/L	5.15 mg/L	5.31 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W4	5.06 mg/L	-	5.69 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W5	5.6 mg/L	-	5.8 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W6	4.57 mg/L	-	5.25 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W7	5.07 mg/L	-	5.25 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W8	-	Control Station	-	Control Station
W9	-	4.26 mg/L	-	4.3 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W10	-	4.75 mg/L	-	5.91 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W11	-	4.94 mg/L		5.54 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
Turbidity				
W1a	Control Station	9.86 NTU	Control Station	10.63 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W2	7.51 NTU	7.61 NTU	8.59 NTU	8.11 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W3	4.3 NTU	4.97 NTU	4.38 NTU	5.31 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W4	5.4 NTU	-	6.01 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W5	4.37 NTU	-	5.71 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
W6	5.2 NTU	-	5.51 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W7	6.5 NTU	-	7.75 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W8	-	Control Station	-	Control Station
W9	-	4.76 NTU	-	5.34 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W10	-	5.77 NTU	-	5.91 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W11	-	4.63 NTU	-	5.39 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	

Notes:
(1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
(2) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Table 3.9 Action and Limit Levels for Water Quality (Dry Season)

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
Dissolved Oxygen (DO)				
W1a	Control Station	1.96 mg/L	Control Station	1.93 mg/L
W2	1.95 mg/L	1.83 mg/L	1.89 mg/L	1.71 mg/L
W3	1.59 mg/L	1.6 mg/L	1.34 mg/L	1.58 mg/L
W4	1.64 mg/L	-	1.46 mg/L	-
W5	1.61 mg/L (Surface)	-	1.33 mg/L (Surface)	-
	1.53 mg/L (Bottom)	-	1.38 mg/L (Bottom)	-
W6	1.56 mg/L (Surface)	-	1.4 mg/L (Surface)	-
	1.49 mg/L (Bottom)	-	1.39 mg/L (Bottom)	-
W7	2.11 mg/L (Surface)	-	2.02 mg/L (Surface)	-
	1.89 mg/L (Bottom)	-	1.56 mg/L (Bottom)	-
W8	-	Control Station	-	Control Station
W9	-	1.52 mg/L	-	1.49 mg/L
W10	-	1.61 mg/L (Surface)	-	1.53 mg/L (Surface)
	-	1.62 mg/L (Bottom)	-	1.51 mg/L (Bottom)
W11	-	1.62 mg/L	-	1.54 mg/L
Suspended Solid (SS)				
W1a	Control Station	7.02 mg/L	Control Station	7.44 mg/L
	120% of upstream control station at		130% of upstream control station at the	

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
	the same tide of the same day		same tide of the same day	
W2	7.97 mg/L	6.07 mg/L	9.25 mg/L	6.94 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W3	5.9 mg/L	5.86 mg/L	6.15 mg/L	6.34 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W4	6.04 mg/L	-	6.79 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W5	6.68 mg/L	-	6.93 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W6	5.45 mg/L	-	6.27 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W7	6.05 mg/L	-	6.27 mg/L	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W8	-	Control Station	-	Control Station
W9	-	5.08 mg/L	-	5.13 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W10	-	5.67 mg/L	-	7.06 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W11	-	5.9 mg/L		6.61 mg/L
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
Turbidity				
W1a	Control Station	7.47 NTU	Control Station	8.06 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W2	5.69 NTU	5.76 NTU	6.51 NTU	6.15 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W3	3.26 NTU	3.77 NTU	3.32 NTU	4.02 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W4	4.09 NTU	-	4.55 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W5	3.11 NTU	-	4.33 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W6	3.94 NTU	-	4.18 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W7	4.92 NTU	-	5.88 NTU	-
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	

Stations	Action Level		Limit Level	
	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
W8	-	Control Station	-	Control Station
W9	-	3.6 NTU	-	4.05 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W10	-	4.37 NTU	-	4.48 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	
W11	-	3.51 NTU	-	4.09 NTU
	120% of upstream control station at the same tide of the same day		130% of upstream control station at the same tide of the same day	

Notes:
(1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
(2) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Monitoring Parameters

3.3.3. Dissolved Oxygen (DO), Dissolved Oxygen Saturation (DO%), temperature, pH, turbidity, salinity, suspended solid (SS) and water depth should be monitored at designated water quality monitoring stations. All parameters should be measured in-situ whereas SS should be determined by the laboratory. DO should be presented in mg/L and in % saturation.

3.3.4. Other relevant data should also be recorded, including monitoring location / position, time, tidal stages, weather conditions and any special phenomena or work underway at the construction site during the monitoring.

Monitoring Equipment

3.3.5. Based on the approved EM&A Manual, the monitoring equipment in **Table 3.10** were used for the in-situ measurement of water quality. A copy of the calibration certificates for the water quality monitoring equipment are provided in **Appendix D**.

Table 3.10 Water Quality Monitoring Equipment

Equipment	Model
DO and Temperature Meter, Salinity Meter, pH meter and Turbidimeter	YSI ProDSS (S/N: 15H103928)
Positioning Equipment	eTrex10
Water Depth Detector	LUCKY Fish Finder
Water Sampler	1120-1180 Vertical Alpha^{TM} Bottles

Monitoring Methodology

Monitoring Position Equipment

3.3.6. A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication or other equipment instrument of similar accuracy, provided and used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements. DGPS or the equivalent instrument, calibrated at appropriate checkpoint (e.g., Quarry Bay Survey Nail at Easting 840683.49, Northing 816709.55) provided and used to

ensure the monitoring station is at the correct position before taking measurement and water samples.

Sampler

3.3.7. A water sampler is required. It comprises a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

Water Depth Detector

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

Dissolved Oxygen and Temperature Measuring Instrument

3.3.9. The instrument is a portable and weatherproof DO measuring instrument complete with cable and sensor and use a DC power source. The equipment is capable of measuring:

- a DO-level in the range of 0 - 20 mg/L and 0 - 200% saturation; and
- a temperature of 0 - 45 degree Celsius with a capability of measuring to ±0.1 degree Celsius.

3.3.10. It has a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables should be available for replacement where necessary. (For example, YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

3.3.11. Salinity compensation was not built-in to the DO equipment, in-situ salinity measured to calibrate the DO equipment prior to each DO measurement.

Turbidity Measuring Instrument

3.3.12. Turbidity measured in-situ by the nephelometric method. The instrument is portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. It has a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument). The cable is not less than 25m in length. The meter calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement carried out on split water sample collected from the same depths of suspended solids samples.

Salinity Measuring Equipment

3.3.13. A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) provided for measuring salinity of the water at each monitoring location.

pH Measuring Equipment

3.3.14. The instrument consists of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It is readable to 0.1 pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 used for calibration of the instrument before and after use. Details of the method should comply with APHA, 19th Edition 4500-HTB.

Sample Containers and Storage

3.3.15. Water samples for SS determination stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples collected to achieve the detection limit.

Calibration of In-situ Instruments

3.3.16. All in-situ monitoring instruments checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes checked with certified standard solutions before each use. Wet bulb calibration for a DO meter carried out before measurement at each monitoring location.

3.3.17. For the on-site calibration of field equipment, the BS 127:1993, Guide to Field and On-Site Test Methods for the Analysis of Water is observed.

3.3.18. Sufficient stocks of spare parts maintained for replacements when necessary. Backup monitoring equipment also made available so that monitoring can proceed uninterrupted even when some equipment are under maintenance, calibration, etc.

Laboratory Measurement/Analysis

3.3.19. Analysis of suspended solids carried out in a HOKLAS or another international accredited laboratory. Sufficient water samples (i.e. not less than 2 litres) collected at the monitoring stations for carrying out the laboratory SS determinations, with detection limit shown in **Table 3.11**. All samples assigned a unique code and accompanied by Chain of Custody (COC) sheets.

3.3.20. The SS determination work start within 24 hours after collection of the water samples. The analyses follow the standard methods according to **Table 3.11** and as described in "American Public Health Association (APHA) Standard Methods for the Examination of Water and Wastewater", 21st edition, unless otherwise specified.

Table 3.11 Analytical Methods to be applied to Water Quality Samples

Determinant	Standard Method	Detection Limit
Suspended Solids (mg/L)	APHA 2540 D	0.5 mg/L

3.3.21. For the purpose of QA/QC, all QA/QC results including blank, spike recovery, number of duplicate samples per batch, etc. reported in accordance with the requirement of HOKLAS or international accredited scheme.

3.3.22. Additional duplicate samples may require by EPD for inter laboratory calibration. Remaining samples after analysis kept by the laboratory for 3 months in case repeat analysis is required. If in-house or non-standard methods are proposed, details of the method verification may also

require submitting to EPD. In any circumstance, the sample testing has comprehensive quality assurance and quality control programmes. The laboratory prepares to demonstrate the programmes to EPD or his representatives when requested.

Monitoring Locations

3.3.23. The monitoring station for water quality monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TME of the Project. W1a was used as the alternative baseline water quality monitoring location of W1 to tally with the figure in the EM&A Manual. The location of the water quality monitoring stations is shown in **Table 3.12** and shown in **Figure 3.3**.

Table 3.12 Locations of Water Quality Monitoring Stations

Monitoring Station No.	Description	Coordinates (2)	
		Easting	Northing
Ebb Tide			
W1a (1)	Control Station	815248	828328
W2	Impact Station	815152	827793
W3	Impact Station	814910	827397
W4	Impact Station	814842	827316
W5	Impact Station	814729	826983
W6	Impact Station	814732	826890
W7	Impact Station	814715	826771
Flood Tide			
W8	Control Station	814789	826682
W9	Impact Station	814693	826816
W10	Impact Station	814717	826927
W11	Impact Station	814759	827168
W3	Impact Station	814910	827397
W2	Impact Station	815152	827793
W1a(1)	Impact Station	815248	828328

Notes:
(1) Due to the inconsistency between the coordinates of W1 (E815248, N828328) in Table 4.1 and the location of W1 (E815248, N828262) shown in Figure No. C1502/C/TME/ACM/M60/401 of the approved EM&A Manual, and owing to the inaccessibility to W1 during construction phase, W1a (E815248, N828328) was proposed and approved as alternative monitoring location.
(2) The actual monitoring locations may be slightly deviated from the above due to actual site conditions.

Monitoring Schedule for the Reporting Month

3.3.24. The schedule for water quality monitoring conducted in October 2024 is provided in **Appendix E**.

4. Implementation Status of Environmental Mitigation Measures

4.1. Status of Environmental Mitigation Measures

4.1.1. The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C**.

4.2. Land Contamination Assessment

4.2.1. With reference to the Supplementary Contamination Assessment Plan (SCAP), site investigation was carried out at TME-S4 on 1 August 2024 and soil samples, duplicate soil samples and QA/QC samples were collected for laboratory testing.

4.2.2. Risk-Based Remediation Goals (RBRGs) for Lower of Industrial and Public Parks was adopted for the soil samples obtained at TME-S4 in accordance with the SCAP and the laboratory results show that no exceedances were found in the soil samples. Based on the laboratory results, no remediation actions are required for the soil at TME-S4 and the details of site investigation and laboratory results were summarized in Contamination Assessment Report (CAR). The CAR was submitted to EPD on 27 August 2024 and comments were provided by EPD on 11 September 2024. The revised CAR was submitted to EPD on 16 September 2024 and approved by EPD on 4 October 2024.

5. Monitoring Results

5.1. Construction Dust Monitoring

5.1.1. According to the approved EM&A manual, 1-hour TSP impact monitoring should be conducted at the monitoring stations when Project-related major construction activities being undertaken within a radius of 500m from the monitoring stations.

5.1.2. The dust monitoring results for 1-hour TSP are summarised in **Table 5.1** and the monitoring data with the graphical plots are presented in **Appendix F**. The wind speed and wind direction data obtained from the Tuen Mun Automatic Wind Station operated by Hong Kong Observatory are presented in **Appendix F**.

Table 5.1 Summary of 1-hour TSP Monitoring Result in the Reporting Period

ID	Average (μg/m^3)	Range (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
AM1	45.3	37 – 54	277.6	500
AM2a(1)	46.4	39 – 62	277.4	500
AM3	45.3	21 – 77	279.9	500
AM4	45.9	31 – 56	279.9	500
AM5	47.1	34 – 61	277.1	500

Note:
(1) Alternative monitoring location to AM2 Oi Lai House, Yau Oi Estate in the approved EM&A Manual.

5.1.3. No Action and Limit Level exceedance were recorded for 1-hour TSP monitoring in the reporting month.

5.1.4. The event and action plan is annexed in **Appendix I**.

5.1.5. Major dust sources during the monitoring included construction dust, nearby traffic emission and other nearby construction sites.

5.2. Regular Construction Noise Monitoring

5.2.1. According to the approved EM&A manual, construction noise impact monitoring should be conducted at the monitoring stations when Project-related major construction activities being undertaken within a radius of 300m from the monitoring stations.

5.2.2. The noise monitoring results are summarized in **Table 5.2** and the monitoring data with graphical plots are provided in **Appendix G**.

Table 5.2 Summary of Noise Monitoring Results in the Reporting Period

ID	Range, dB(A), $L_{eq\ (30mins)}$	Limit Level, dB(A), $L_{eq\ (30mins)}$
CN1(1)	65 – 68	75
CN2	58 – 65	70
	N/A(2)	65 during exams
CN3	60 – 61	75
CN4	62 – 64	70

ID	Range, dB(A), $L_{eq\ (30mins)}$	Limit Level, dB(A), $L_{eq\ (30mins)}$
	64	65 during exams
CN5	63 – 67	70
	N/A(2)	65 during exams
CN6	68 – 70	75
CN7(1)	60 – 66	75
CN8	57 – 65	75
CN9	57 – 66	75
CN10	60 – 61	75
CN11	58 – 64	75

Notes:
(1) Free field measurement was applied at CN1 and CN7 and +3dB (A) correction was applied to the measurement.
(2) No examination was held during the noise monitoring period in October 2024.

5.2.3. No Action and Limit Level exceedance of noise was recorded at the monitoring stations on the reporting month.

5.2.4. The event and action plan is annexed in **Appendix I**.

5.2.5. Major noise sources during the monitoring included construction noise, nearby traffic noise and other nearby construction sites.

5.3. Water Quality Monitoring

5.3.1. According to the approved EM&A manual, water quality monitoring should be conducted at the monitoring stations when piling works and pile cap construction works are conducted in Tuen Mun River Channel. Although the pilings works and pile cap construction works have not commenced, impact water quality monitoring has started in May 2024 in view that the construction works of temporary platform is being carrying out.

5.3.2. The water quality monitoring results are summarized in **Tables 5.3** and **5.4** and the monitoring data with graphical plots are provided in **Appendix H**.

Table 5.3 Summary of Water Quality Monitoring Results (Mid-Ebb Tide) in the Reporting Period

Parameters		Monitoring Station ID						
		W1a(1)	W2	W3	W4	W5	W6	W7
Dissolved Oxygen (mg/L)	Surface / Middle (Averaged)	5.05 – 6.48	2.53 – 5.53	3.42 – 5.87	3.80 – 6.07	3.27 - 6.10	3.42 – 6.30	3.73 – 6.38
	Bottom (Averaged)	N/A	N/A	N/A	N/A	6.17	5.20 – 6.24	5.22 – 6.32
Turbidity (NTU)	Depth-averaged	1.81 – 5.55	2.60 – 6.17	2.59 – 4.75	2.58 – 5.18	3.00 – 4.46	2.40 – 4.63	1.76 – 5.25
Suspended Solid (mg/L)	Depth-averaged	2.25 – 7.80	2.00 – 8.65	1.55 – 7.25	4.05 – 8.40	4.30 – 7.90	2.95 – 7.88	1.85 – 8.45

Note:

(1) W1a is control station in the mid-ebb tide.

Table 5.4 Summary of Water Quality Monitoring Results (Mid-Flood Tide) in the Reporting Period

Parameters		Monitoring Station ID						
		W1a	W2	W3	W8(1)	W9	W10	W11
Dissolved Oxygen (mg/L)	Surface / Middle (Averaged)	2.81 – 5.91	3.12 – 6.06	3.12 – 5.82	4.91 – 6.02	4.67 – 6.46	4.36 - 6.08	4.37 – 6.00
	Bottom (Averaged)	N/A	N/A	N/A	4.78 – 6.16	4.99 – 6.53	5.07 – 6.10	N/A
Turbidity (NTU)	Depth-averaged	2.81 – 5.48	2.11 – 6.82	2.17 – 6.15	3.71 – 9.07	2.92 – 5.90	3.69 – 5.91	2.47 – 5.04
Suspended Solid (mg/L)	Depth-averaged	2.75 – 8.40	3.20 – 10.85	2.70 – 9.20	4.00 – 13.70	4.03 – 8.50	3.28 – 7.60	2.35 – 7.20

Note:
(1) W8 is control station in the mid-flood tide.

5.3.3. Suspended solid (SS) results of 5, 8, 15, 24 and 29 October 2024 exceeded the relevant Action/Limit Levels, corresponding investigations have been conducted accordingly. The investigation findings concluded that the exceedances were not Project related. Please refer to Section 7 for more information.

5.3.4. The event and action plan is annexed in **Appendix I**.

5.4. Waste Management

5.4.1. C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.

5.4.2. As advised by the Contractor, 7,409,850 kg of inert C&D materials were generated in which 7,066,150 kg of the materials were disposed of at Tuen Mun Area 38 and 343,700 kg of the materials were reused in this project in the reporting month. 185,460 kg of general refuse were generated and disposed of at WENT Landfill in the reporting month. No plastic wastes, metals, paper / cardboard packages and yard waste were generated in the reporting period. The waste flow table and disposal location for different wastes in this reporting month is presented in **Table 5.5** and the cumulative waste flow table is annexed in **Appendix J**.

Table 5.5 Quantities of Waste Generated and Disposal Location in the Reporting Period

	Quantities of Waste							
	Inert C&D Materials (in '000 kg)		Chemical Waste (in '000 L)	Non-inert C&D Materials				
				Others, e.g. General Refuse (in '000 kg)	Recycled Materials			
					Paper (in '000 kg)	Plastics (in '000 kg)	Metals (in '000 kg)	Yard Waste (in '000 kg)
October 2024	7066.15	343.70	0	185.46	0	0	0	0
Disposal Locations	Tuen Mun Area 38	Reused in this Contract	N/A	WENT Landfill	N/A	N/A	N/A	N/A

5.4.3. The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes.

5.4.4. All dump trucks for C&D materials transportation and disposal had equipped with Global Positioning System (GPS) for real-time tracking and monitoring of their travel routings and parking locations. According to the record of travel routings and disposal locations of all dump trucks provided by the Contractor, no track deviation or abnormal disposal location was observed during the reporting period.

5.4.5. 120 m^3 of sediment was excavated from the Tuen Mun River Channel in the reporting month and the excavated sediment is proposed to be treated for reuse.

5.5. Ecology

5.5.1. Regular site inspections were conducted. Site preparation works and construction of temporary platform were carried out in Tuen Mun Park within the 100m buffer zone of the night roosting site in the reporting month. A summary of the site inspection is provided on **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

5.6. Landscape and Visual

5.6.1. Regular site inspections were conducted. Tree felling was taken place in A16 in accordance with the approved Tree Preservation and Removal Proposals (TPRPs) and tree transplantation was carried out in A16 in the reporting month. A summary of the site inspection is provided on **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

6. Environmental Site Inspection and Audit

6.1.1. Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.

6.1.2. In the reporting month, 5 site inspections were carried out on 2, 9, 16, 23 and 30 October 2024. Joint inspections with the IEC, ER, the Contractor and the ET were conducted on 2 October 2024. No noncompliance was recorded during the site inspection. Details of observations recorded during the site inspections are presented in **Table 6.1**.

Table 6.1 Observation and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	2 October 2024	The Contractor was reminded to enhance the water spraying at all site areas. (Reminder)	--
		The Contractor was reminded to cover the stockpile with tarpaulin sheet properly. (Reminder)	--
	9 October 2024	The Contractor was reminded to increase the frequency of water spraying on the haul road for dust suppression. (Reminder)	--
		Cement bags should be covered to avoid dust nuisance (Observation)	Cement bags have been covered properly.
	16 October 2024	The Contractor was reminded to provide watering to the works area for dust suppression control. (Reminder)	--
		The Contractor was reminded to erect hoarding surround the excavation area. (Reminder)	--
	23 October 2024	The Contractor was reminded to provide sufficient no. of hoarding no less than 2.4m along the works area beside the school (Reminder)	--
	30 October 2024	The mechanical cover of the dump truck shall be closed all time when it is outside of site area. (Observation)	The mechanical cover of the dump truck has been closed when it is outside of site area.
Noise	2 October 2024	The Contractor was reminded to provide sufficient noise barrier for the breaking works. (Reminder)	--
	9 October 2024	The Contractor was reminded to extend the noise barriers for the breaking works. (Reminder)	--
		Movable noise barrier should be provided for the air compressor. (Observation)	Movable noise barriers have been placed for the air compressor.

Parameters	Date	Observations and Recommendations	Follow-up
	23 October 2024	The Contractor was reminded to replace the broken movable noise barrier for the breaker head. (Reminder)	--
	30 October 2024	The Contractor was reminded to install noise blanket according to the CNP requirements before carrying out percussive piling work. (Reminder)	--
		The Contractor was reminded to replace the broken movable noise barrier for the breaker. (Reminder)	--
Water Quality	9 October 2024	The contractor was reminded to clear muddy water at the entrance to prevent overflow. (Reminder)	--
	16 October 2024	A gap was found at the silt curtain. The Contractor should tighten and well maintain the silt curtain to ensure no gap was found. (Observation)	Silt curtain has been tightened and well maintained.
Waste/ Chemical Management	2 October 2024	The Contractor was reminded to clean up the oil stain and the waste should be treated as chemical waste. (Reminder)	--
		Spillage of oil was found. The contractor should clean up the oil spill and contaminated soil, and treat them as chemical waste. (Observation)	Spillage oil has been cleaned up and the contaminated soil has been treated as chemical waste.
Ecology	N. A.	Nil	Nil
Landscape & Visual	N. A.	Nil	Nil
Permits/ Licenses	16 October 2024	Environmental Permit (EP) was missing at a temporary entrance. The Contractor should display EP on site. (Observation)	Environmental Permit have been placed at the temporary entrance.

6.1.3. All follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

7. Environmental Non-Conformance

7.1. Summary of Monitoring Exceedances

7.1.1. No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in reporting month.

7.1.2. No Action and Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.

7.1.3. Three (3) Action Level exceedances and Ten (10) Limit Level exceedances for water quality were recorded in the reporting month. Notifications of exceedance were issued and corresponding investigations have been conducted. All these exceedances were concluded invalid and are not Project related, please refer to **Appendix K** for the review of the exceedance in water quality monitoring.

7.1.4. Summary of Exceedance is provided in **Table 7.1**.

Table 7.1 Summary of Exceedance

Environmental Parameter		No. of Exceedance This Month		Exceedance due to Project Construction
		Action Level	Limit Level	
Air Quality (Construction Dust – 1-hour TSP)		0	0	0
Noise (Construction Noise – $L_{eq\ (30\ min)}$, dB(A))		0	0	0
Water Quality	Dissolved Oxygen	0	0	0
	Turbidity	0	0	0
	Suspended Solid	3	10	0
Total		3	10	0

7.2. Summary of Environmental Non-Compliance

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

7.3. Summary of Environmental Complaints, Summon and Successful Prosecution

7.3.1. No environmental related prosecution or notification of summon was received in the reporting month.

7.3.2. One complaint regarding dust nuisance from the works area at Wu King Road was received on 28 October 2024, the case was referred by 1823. Investigation was conducted. The major construction works activities in this works area were utilities diversion works and demolition of existing footbridge. Based on the observation from weekly site inspections and the records provided by the Contractor, mitigation measures, such as spraying water regularly to the works area and during concrete breaking works, covering construction materials with impervious sheet, keeping the works area tidy and clean, have been implemented. Also, the air quality monitoring results obtained from the monitoring station near Wu King Estate were well below the Action Level. In view of the above, it is concluded that no further action is required from the Contractor according to the EM&A manual. This complaint is project related.

7.3.3. Summary and cumulative statistics on environmental complaints, notification of summon and successful prosecution are provided in **Table 7.2** and **Appendix L** respectively.

Table 7.2 Summary of Environmental Complaints, Summon and Successful Prosecution

	Total No. Received in this Reporting Month	Cumulative No. Received since Project Commencement
Environmental Complaints	1	3
Notification of Summons	0	0
Successful Prosecutions	0	0

8. Further Key Issues

8.1. Construction Programme for the Next Three Month

8.1.1. The major construction works between November 2024 to January 2025 will be:

Table 8.1 Major Construction for the Next Three Month

Location	Site Activities
Tuen Mun River West Bank	Construction of temporary platform
Wu Shan Recreation Playground	Utilities & services diversion / protection, foundation and excavation works
A16 (i.e. Tuen Mun Swimming Pool)	Hoarding Erection, tree felling, tree transplantation, demolition of existing pet garden, pre-drilling works and bored piling
Wu King Road	Site formation and drainage works, utilities & services diversions and monitoring, and demolition of footbridge
Tuen Mun Ferry Pier	Demolition of existing covered walkway
Viaduct on Tuen Mun River Channel	Construction of temporary platform and pre-drilling works

8.2. Key Issues for the Coming Month

8.2.1. Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality, waste management, landscape and ecology.

8.3. Monitoring Schedule for the Next Two Month

8.3.1. The tentative schedules for dust and noise monitoring in November 2024 and water quality monitoring in November and December 2024 are provided in **Appendix E**.

9. Conclusions and Recommendation

9.1. Conclusions

9.1.1. No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in reporting month.

9.1.2. No Action and Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.

9.1.3. Three (3) Action Level exceedances and Ten (10) Limit Level exceedances for water quality were recorded in the reporting month. After investigation, the exceedances are not project related.

9.1.4. 5 nos. of environmental site inspections were carried out in October 2024. Recommendations for environmental site improvement were given to the Contractor for the deficiencies identified during the site audit.

9.1.5. One environmental complaint related to air quality was recorded on 28 October 2024 while no prosecution or notification of summon was received in the reporting month.

9.2. Recommendations

9.2.1. According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- Provide proper dust suppression measures, such as hoarding erection, water spraying and tarpaulin sheet covering, for exposed works area, cement bags and stockpile of dusty material.
- Ensure the mechanical covers of dump trucks are closed at all time when they are outside of site area.

Construction Noise Impact

- Provide sufficient no. of movable noise barrier and acoustics materials for the noisy equipment in the works area.
- Proper maintain the acoustics materials for the noisy equipment in the works area.

Water Quality Impact

- Ensure the silt curtain is tightened and properly maintained.
- Ensure the construction wastewater is collected properly and not to leak from the site.

Chemical and Waste Management

- Provide sufficient no. of drip trays for equipment and chemical containers to prevent chemical spillage, clean up the oil spilled and treated the contaminated material as chemical waste.

Ecology

- No specific observation was identified in the reporting month.

Landscape & Visual Impact

- No specific observation was identified in the reporting month.

Permits/licenses

- Ensure the Environmental Permit is displayed at the entrance of works areas.

Figures 2.1 Site Layout Plan

826000 N
827000 N
828000 N
814000 E
815000 E
816000 E

LEGEND:

- BOUNDARY OF THE SCHEME
- PROPOSED WORKS SITE
- PROPOSED WORKS SITE FOR MAINTENANCE WORKS
- PROPOSED WORKS AREA FOR UNLOADING POINT FOR THE PRE-CAST SEGMENT

Tuen Mun Ferry Pier
Wu King Road
Wu Shan Recreation Playground
A16
Tuen Mun River West Bank
Loading & Unloading Area 2
Loading & Unloading Area 1
Tuen Mun River Crossing
Pet Garden & Eastern Garden
Viaduct on Tuen Mun River Channel
Tuen Mun Station Overrun

TUEN MUN RIVER CHANNEL
CASTLE PEAK BAY (TSING SHAN WAN)
TUEN MUN TYPHOON SHELTER

0 50 100 150 200 250
METRES
1 : 10000

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

MTR

TUEN MUN SOUTH EXTENSION

ORIGINATOR

CRBC-Build King Joint Venture

CADD REF.

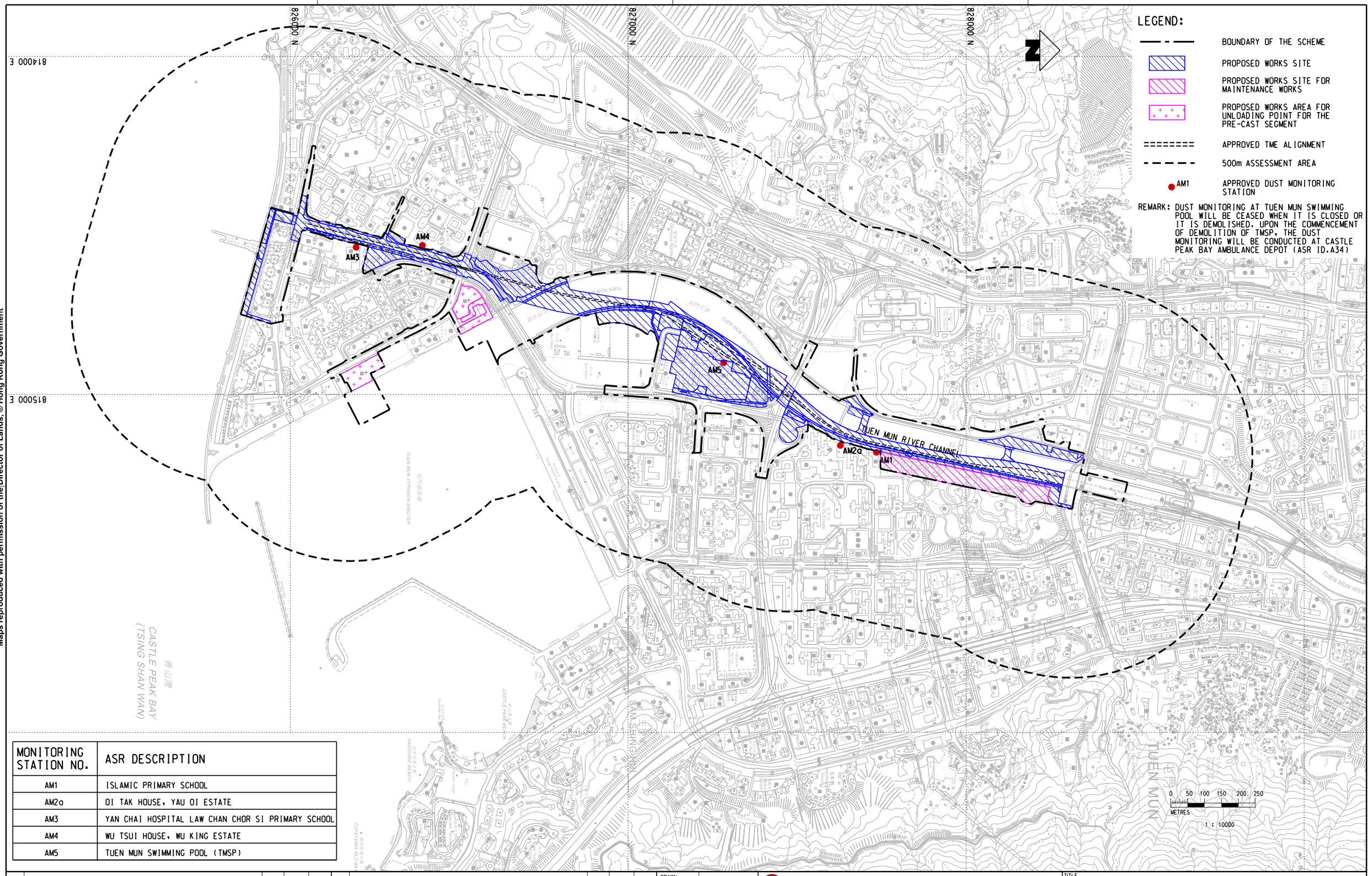
TITLE

CONTRACT 1500
SITE LAYOUT PLAN

SCALE	FIGURE NO.	REV.
1:10000 (A3)	FIGURE 2.1	

PLOT DRV:
MODEL NAME:
FILENAME:

Figures 3.1 Locations of Construction Dust Monitoring Stations



LEGEND:

- BOUNDARY OF THE SCHEME
- PROPOSED WORKS SITE
- PROPOSED WORKS SITE FOR MAINTENANCE WORKS
- PROPOSED WORKS AREA FOR UNLOADING POINT FOR THE PRE-CAST SEGMENT
- APPROVED TME ALIGNMENT
- 500m ASSESSMENT AREA
- AM1 APPROVED DUST MONITORING STATION

REMARK: DUST MONITORING AT TUEN MUN SWIMMING POOL WILL BE CEASED WHEN IT IS CLOSED OR IT IS DEMOLISHED. UPON THE COMMENCEMENT OF DEMOLITION OF TMSP, THE DUST MONITORING WILL BE CONDUCTED AT CASTLE PEAK BAY AMBULANCE DEPOT (ASR ID.A34)

MONITORING STATION NO.	ASR DESCRIPTION
AM1	ISLAMIC PRIMARY SCHOOL
AM2a	OI TAK HOUSE, YAU OI ESTATE
AM3	YAN CHAI HOSPITAL LAW CHAN CHOR SI PRIMARY SCHOOL
AM4	WU TSUI HOUSE, WU KING ESTATE
AM5	TUEN MUN SWIMMING POOL (TMSP)

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN
DESIGNED
CHECKED
APPROVED
DATE

MTR

TUEN MUN SOUTH EXTENSION

ORIGINATOR

CRBC-Build King Joint Venture

CADD REF.

TITLE

CONTRACT 1500
LOCATIONS OF DUST MONITORING STATIONS

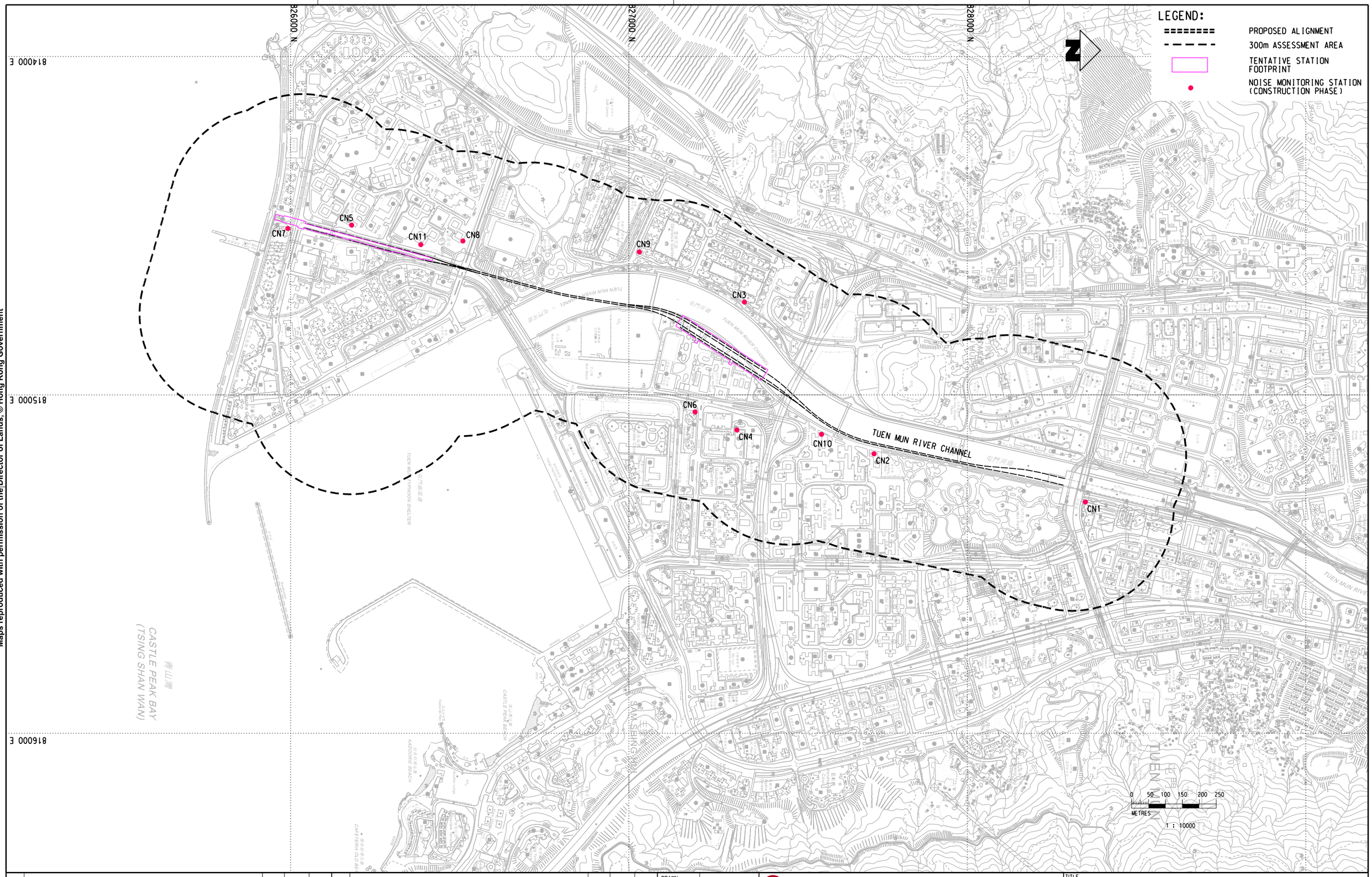
SCALE 1:10000 (A3)

FIGURE NO. FIGURE 3.1

REV. A

PLOT DRV:
MODEL NAME:
FILENAME:

Figures 3.2 Locations of Construction Noise Monitoring Stations



REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

MTR

TUEN MUN SOUTH EXTENSION

ORIGINATOR

中國路橋 CRBC Build King

CRBC-Build King Joint Venture

CADD REF. C1502_C_TME_ACM_M60_301.dgn

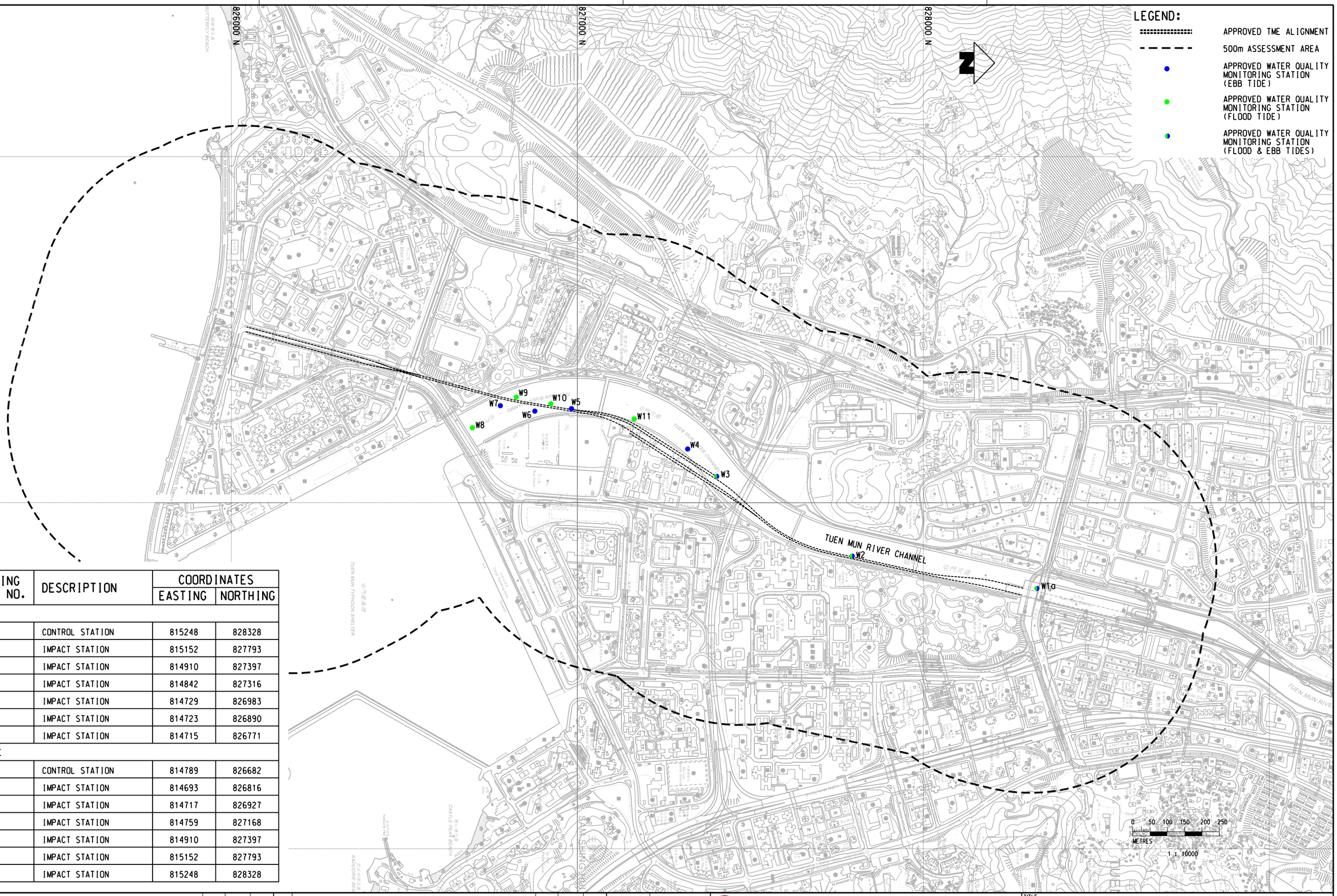
TITLE

CONTRACT 1500
LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

SCALE	FIGURE NO.	REV.
1:10000 (A3)	FIGURE 3.2	A

PLOT DRV:
MODEL NAME:
FILENAME:

Figures 3.3 Locations of Water Quality Monitoring Stations



MONITORING STATION NO.	DESCRIPTION	COORDINATES	
		EASTING	NORTHING
EBB TIDE			
W1a	CONTROL STATION	815248	828328
W2	IMPACT STATION	815152	827793
W3	IMPACT STATION	814910	827397
W4	IMPACT STATION	814842	827316
W5	IMPACT STATION	814729	826983
W6	IMPACT STATION	814723	826890
W7	IMPACT STATION	814715	826771
FLOOD TIDE			
W8	CONTROL STATION	814789	826682
W9	IMPACT STATION	814693	826816
W10	IMPACT STATION	814717	826927
W11	IMPACT STATION	814759	827168
W3	IMPACT STATION	814910	827397
W2	IMPACT STATION	815152	827793
W1a	IMPACT STATION	815248	828328

REV	DESCRIPTION	BY	DATE	APPROVED

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

MTR

TUEN MUN SOUTH EXTENSION

ORIGINATOR

CRBC-Build King Joint Venture

CADD REF.

TITLE

CONTRACT 1500
LOCATIONS OF WATER QUALITY MONITORING STATIONS

SCALE	FIGURE NO.	REV.
1:10000 (A3)	FIGURE 3.3	A

PLOT DRV:
MODEL NAME:
FILENAME:

Appendix A Tentative Construction Programme

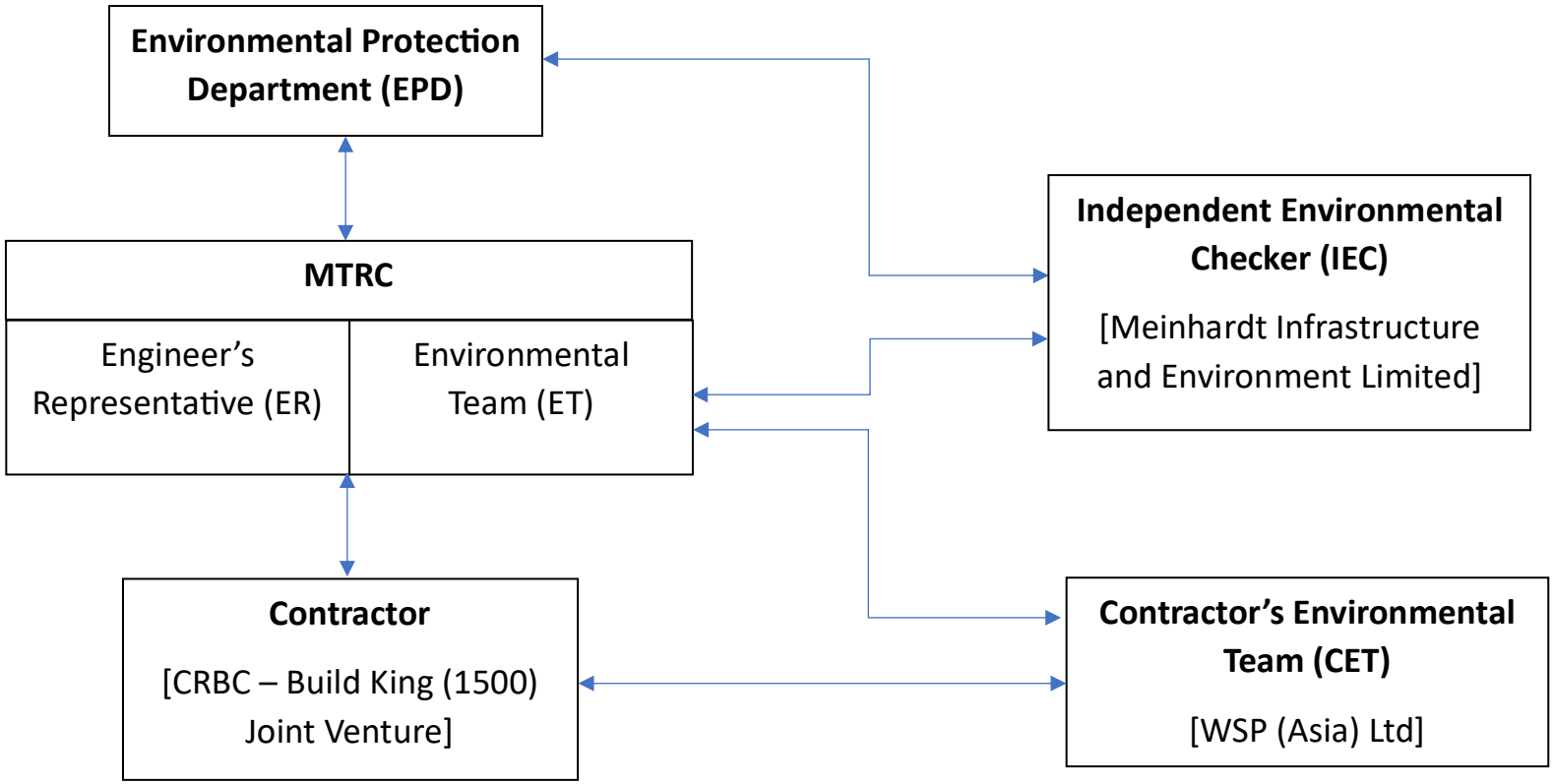
MTR CONTRACT 1500 - TME STATIONS, VIADUCTS AND RIVER CROSSING

Tentative Three Months Rolling Programme

Activity Name	October-24	November-24	December-24	January-25
CONTRACT 1500 - TME STATIONS, VIADUCTS AND RIVER CROSSING				
Works at Tuen Mun River				
Construction of Temporary Working Platform				
Viaduct on Tuen Mun River Channel				
Ground Investigation/ Pre-drilling Works				
A16				
Site Establishment of Erection of Hoarding and Gate in A16				
Tree Removal and Transplantation in A16				
Ground Investigation/ Pre-drilling for A16 Stations, Feeder Sub-station and Cooling Tower				
Foundation, Pile Caps and Tie Beams				
Demolition of Existing Pet Garden				
Wu Shan Recreation Playground				
Utilities & Service Diversion/ Protection for Viaduct Between TMS and TRB-North of TMS				
Foundation & Excavation for Viaduct Between TMS and TRB-North of TMS				
Wu King Road				
Utilities & Services Diversions and Monitoring				
Demolition of Footbridge				
Site Formation and Drainage works at Pick Up and Drop Off Area				
Tuen Mun Ferry Pier				
Demolition of Existing Covered Walkway				

Appendix B Project Organization Structure

Appendix B Project Organization Structure



Appendix C Project Implementation Schedule of Environmental Mitigation Measures

Appendix C – Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
Air Quality (Construction Phase)							
S3.9.1	Watering once every 2 hours on heavy construction work areas to reduce dust emission by 91.7%. Any potential dust impact and watering mitigation would be subject to the actual site condition.	To minimize dust impacts	Contractor	All works sites & areas identified with heavy construction works	Construction phase	Air Pollution Control Ordinance (APCO)	Implemented
S3.10.2	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices should be carried out to further minimize construction dust impact: • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines. • Open stockpiles should be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Covering of all dusty materials on vehicles transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins	To minimize dust impacts	Contractor	All works sites / areas	Construction phase	Air Pollution Control Ordinance (APCO)	Partially Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	a road, streets or other accessible to the public except for a site entrance or exit. • Imposition of speed controls for vehicles on unpaved site roads. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						
S3.10.3	Below measures should be implemented as a good practice: • Proper planning of site layout to locate the machinery and dusty activities (e.g. haul roads and stockpiling areas) away from nearby air sensitive uses such as soccer pitch and basketball court as far as practicable. • Provision of at least 2.4 m or higher hoarding from ground level along works site boundary close to the basketball court; and • Adopt more frequent watering (e.g. once every hour) to reduce dust emissions from the exposed site surfaces, if any.	To implement as a good practice	Contractor	Works sites located at the junction of Wu King Road and Wu Yuet Street	Construction phase	Air Pollution Control Ordinance (APCO)	Implemented
S3.10.4	Below measures should be applied as far as practicable: • Connect construction plant and equipment to main electricity	To minimize the exhaust emission from NRMMs	Contractor	All works sites/areas	Construction phase	Air Pollution Control Ordinance (APCO)	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	supply and avoid use of diesel generators and diesel-powered equipment; • Avoid usage of exempted NRMMs as far as practicable; and • Deploy electrified NRMMS as far as practicable						
Noise Impact (Construction Phase)							
S4.5.17 to S4.5.18	The site practices listed below should be followed during construction: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during construction. • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during construction. • Mobile plant, is any, should be sited as far from NSRs as possible. • Machine and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. • The engine of lorry should be switched off after arriving the unloading position; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilised, wherever practicable, in	To reduce impacts to surrounding NSRs	Contractor	All works sites/areas where applicable	Construction phase	TM-EIAO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	screening noise from on-site construction activities. In addition, the "Recommended Pollution Control Clauses for Construction Contracts" published by the EPD should be adopted in the Contract Specification for the Contractor to follow and implement relevant measures and good site practices in minimising noise impact.						
S4.5.19 to S4.5.22	*Quiet Construction Method / Powered Mechanical Equipment* According to deposited Construction Noise Management Plan (CNMP), quiet construction methods shall be implemented as far as practically possible. Rubber head poker vibrator, mini-robot mounted breaker, quieter model of breaker and quieter type wire saw / diamond wire saw shall be adopted. Quality Powered Mechanical Equipment (QPME) shall be adopted for at least the following equipment: • Crane, mobile / barge mounted (diesel) • Generator, super silenced, 70 dB(A) at 7m • Excavator / loader, wheeled/ tracked • Roller, vibratory • Air compressor, air flow > 10m3/min and <= 30m3/min • Road roller	To reduce impact to affected NSRs	Contractor	Works Areas refer to CNMP	Construction phase	TM-EIAO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	• Asphalt paver Quieter Powered Mechanical Equipment shall be adopted for at least the following equipment: • Mini robot mounted breaker • Quieter model of hydraulic breaker • Euro V/ VI concrete lorry mixer • Euro V/ VI crane lorry • Euro V/ VI dump truck						
S4.5.23 to S4.5.26	*Use of Noise Barrier, Noise Insulating Fabric and Noise Enclosure* According to deposited Construction Noise Management Plan (CNMP), the following equipment would be used to minimize the noise impact caused by the works activities: • Movable Noise Barrier (-10 dB(A)) [PME with fixed location] • Movable noise barrier shall be adopted as practically possible to achieve -10dB(A) at NSRs for at • least the following equipment: • Air compressor, air flow > 10m3/min and < =30m3/min • Concrete pump • Generator, super silenced, 70dB(A) at 7m • Grout pump • Saw, circular, wood • Movable Noise Barrier (-5 dB(A)) • Movable noise barrier shall be adopted as practically possible to achieve -5dB(A) at NSRs for at • least the following equipment: • Power Pack (diesel)	To reduce impact to affected NSRs	Contractor	Works Areas refer to CNMP	Construction phase	TM-EIAO	Partially Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	• Poker, vibratory, hand-held • Saw, wire • Power rammer (petrol) • Noise insulating Fabric (-10 dB(A)) • Piling, large diameter bored, oscillator • Piling, large diameter bored, reverse circulation drill • Drill rig, rotary type (diesel) • Piling, vibrating hammer						
S4.5.27 to S4.5.28	*Use of soundproof hammer bracket for hydraulic breaker* According to deposited Construction Noise Management Plan (CNMP), Soundproof Hammer Bracket for Hydraulic Breaker shall be adopted for all hydraulic breakers. Breaker Hammer Bracket with higher surface density should be adopted for construction works with adoption of Hydraulic Breaker along Wu King Road.	To reduce impact to affected NSRs	Contractor	Works Areas refer to CNMP	Construction phase	EIAO-TM	N/A
S4.5.29	*Mitigation Measures for Construction Works During Restricted Hours* The Contractor(s) should avoid conducting construction activities during restricted hours as far as practicable. If such construction activities are unavoidable, the Contractor(s) should adopt quieter construction methods such as use of QPME, quieter PME, quieter construction method (such as use of hydraulic crusher/wire saw/hand-held	To reduce impact to affected NSRs	Contractor	All works sites/areas where applicable	Construction phase	EIAO-TM, NCO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	concrete crusher instead of hydraulic breaker for demolition works), purpose-built noise barrier and noise enclosure for construction activities during restricted hours to ensure compliance with the NCO and relevant TM. The effectiveness and practicality of all these identified measures should be investigated and verified during the design, tendering and implementation stage of the construction works.						
S4.5.31	*Consideration of Further Noise Mitigation Measures* According to deposited Construction Noise Management Plan (CNMP), the contractor should avoid exam periods for critical work processes and consider use of PME with lower noise level by plant modification on PME and adopting new quieter equipment.	To reduce impact to affected NSRs	Contractor	All works sites/areas near concerned NSRs	Construction phase	EIAO-TM	N/A
S4.5.32	Construction Noise Management Plan(s) (CNMP) should be prepared before commencement of construction works, so that both the verification of the plant inventory, and the assessment of the effectiveness and practicality of all identified mitigation measures for mitigating the construction noise impact of the Project, should be performed during the design, tendering and construction stage of the Project. A clear method statement of all the recommended mitigation measures for controlling the construction noise impacts should be	To ensure that all the recommended mitigation measures will be implemented and executed properly.	Contractor	All works sites/areas where applicable	Construction phase	EIAO-TM	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	formulated in the CNMP(s) to be prepared by Contractor, such that all the recommended mitigation measures should be implemented and executed properly.						
Water Quality Impact (Construction Phase)							
S5.8.1 to S5.8.4	<u>Construction of Piers in Tuen Mun River</u> The pilling works should be conducted by phases. The method and sequence of the proposed pier works in Tuen Mun River should be carefully designed so that wastewater and sediment laden water generated from the pilling works would be confined and physically separated from the watercourse. All pilling, the associated excavation works and construction of pile caps in river should be fully enclosed by casing/concrete cofferdam/watertight precast pile cap shells. Concrete cofferdam and watertight precast pile cap shells should be constructed to isolate the construction activities from the river water. The detail design of the concrete cofferdams and watertight precast pile cap shells will be conducted by the Contractor during the construction phase to fulfil the requirements in DSD Technical Circular No. 1/2017 "*Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater*	To minimise impact during the piling and excavation work	Contractor	All works sites/areas on TMRC	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Partially Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	System" for DSD approval in order to formulate feasible options of these temporary structure. Water pumps should be used to collect any construction site runoff and ingress/seepage water within the concrete cofferdam and watertight precast pile cap shells. The collected construction site surface runoff and ingress/seepage water should be diverted to the on-site wastewater treatment facilities for treatment to satisfactory levels before discharged. Discharge licence issued by EPD for discharging effluent from the construction site under the WPCO is needed. The discharge quality and quantity must meet the requirements specified in the discharge licence and follow the TM-DSS. To further minimize any adverse water quality impact during the pilling and excavation works, silt curtains should be deployed to completely enclose the concrete cofferdam/watertight precast pile cap shells prior to setting up piling works and installation of concrete cofferdam/watertight precast pile cap shells. Silt curtains should only be removed after completion of pilling works and removal of concrete cofferdam/watertight precast pile cap shells. The Contractor should be responsible for the design, installation and maintenance of the silt curtain to minimize the impacts on water quality.						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	The design and specification of the silt curtains should be submitted.						
S5.8.5	<u>Construction Site Runoff and General Construction Activities</u> Control of potential pollution of nearby water bodies during the construction phase of the Project should be achieved by measures to: • Prevent or minimize the likelihood of pollutants (generated from construction activities) being in contact with rainfall or runoff; and • Abate pollutants in the stormwater surface runoff prior to the discharge of surface runoff to the nearby water bodies.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented
S5.8.6	It is important that Best Management Practices (BMPs) of mitigation measures in controlling water pollution and good site management, as specified in the ProPECC PN 1/94 "*Construction Site Drainage*" are followed, where applicable, to prevent runoff with high level of SS from entering the surrounding waters.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented
S5.8.7	All effluent discharged from the construction site should comply with the standards stipulated in the TM-DSS. The measures discussed below are recommended to protect water quality of the inland and coastal waters, and when properly implemented should be sufficient to adequately control site	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	discharges so as to avoid water quality impacts.						
S5.8.8	Surface runoff from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers should be provided on site during construction works to properly direct stormwater to such silt removal facilities. Perimeter channels should be provided on site boundaries where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented
S5.8.9	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to prevent local flooding. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented
S5.8.10	Construction works should be programmed to minimize soil excavation works in rainy seasons (April to September) as far as practicable. If soil excavation cannot be	To minimise impact from construction site run-off and general	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	avoided in these months or 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 in such that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.	construction activities					
S5.8.11	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented
S5.8.12	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
S5.8.13	If bentonite slurries are required for any construction works, they should be reconditioned and reused wherever practicable to minimise the disposal volume of used bentonite slurries. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after the related construction activities are completed. Requirements as stipulated in ProPECC Note PN 1/94 should be closely followed when handling and disposing bentonite slurries.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94	N/A
S5.8.14	Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms.	To minimise impact from construction site run-off	Contractor	All works area	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94, TMDSS	Implemented
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	To minimise impact from construction site run-off and general construction activities	Contractor	All works sites/areas	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94	Implemented
S5.8.16	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to	To minimise impact from construction site run-off and general	Contractor	All works sites/areas	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	clean the construction sites on a regular basis.	construction activities					
S5.8.16	The following mitigation measures related to the transportation of the sediment should be implemented to minimize the potential water quality impact: • Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. • The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. • Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the Director of Environmental Protection (DEP).	To minimise the potential water quality impact	Contractor	Barging point and barges	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94	Implemented
S5.8.17	Discharge licence issued by EPD for discharge of effluent from the construction site under the WPCO is needed. The discharge quality must meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works	To minimize impact from effluent discharge	Contractor	All works area	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94, TMDSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	areas should be treated so that it satisfies all the standards listed in the TMDSS. The beneficial uses of the treated effluent for other onsite activities such as dust suppression, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence.						
S5.8.18	<u>Construction Works in Close Proximity to Inland Water</u> The practices outlined in ETWB TC (Works) No. 5/2005 "*Protection of natural streams / rivers from adverse impacts arising from construction works*" should also be adopted where applicable to minimise the water quality impacts on any natural streams or surface water systems. Relevant mitigation measures from the ETWB TC (Works) No. 5/2005 are listed below: • The use of less or smaller construction plants may be specified in works area close to the inland water bodies. • Temporary storage of material (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from	To minimise impact from construction site run-off	Contractor	All works area	Construction phase	WPCO, EIAOTM, ProPECC PN 1/94, TMDSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	watercourse/ditch when carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any watercourse. • Construction debris and spoil should be covered up and / or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the watercourse, where practicable. • Construction effluent, site run-off and sewage should be properly collected and / or treated.						
S5.8.19 to S5.8.21	*Accidental Spillage of Chemicals* • Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied. • Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for	To minimise impact from accidental spillage	Contractor	All works area	Construction phase	WPCO, EIAOTM, Waste Disposal Ordinance (WDO), Waste Disposal (Chemical Waste) (General) Regulation	Partially Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. • Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: o Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. o Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. o Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.						
S5.8.22 to S5.8.23	*Sewerage Effluent from Construction Workforce* • No discharge of sewage to the storm water system and marine water will be allowed. Adequate and sufficient portable chemical toilets should be provided in the	To minimise impact from workforces sewage effluent	Contractor	All works area	Construction phase	WPCO, EIAO-TM, TM-DSS	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	works areas to handle sewage from construction workforce. • A licensed waste collector should be employed to clean and maintain the chemical toilets on a regular basis. • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment.						
S5.8.24 to S5.8.26	*Groundwater from Contaminated Areas, Contaminated Site Runoff and Wastewater from Land Decontamination* • Remediation of contaminated land should be properly conducted following the recommendations of Land Contamination Assessment to be conducted in future. Any excavated contaminated material and exposed contaminated surface should be properly housed and covered to avoid generation of contaminated runoff. Open stockpiling of contaminated materials should not be allowed. Any contaminated runoff or wastewater generated from the land decontamination processes should be properly collected and diverted to wastewater treatment facilities (WTF) as necessary. The WTF shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an	To minimise impact from groundwater from contaminated areas, contaminated site run-off/wastewater from land decontamination	Contractor	All works area confirmed with land contamination	Construction Phase	WPCO, EIAOTM, TM-DSS, Guidance Note for Contaminated Land Assessment	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment system shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal. • No direct discharge of groundwater from contaminated areas should be adopted. Prior to any excavation works within the potentially contaminated areas, the baseline groundwater quality in these areas should be reviewed based on the past relevant site investigation data and any additional groundwater quality measurements to be performed with reference to Guidance Note for Contaminated Land Assessment and Remediation and the review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TM-DSS. If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in the TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal. • If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in section 2.3 of TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	recharge points to monitor the effectiveness of the recharge wells and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. • The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.						
Waste Management Implication (Construction Phase)							
S6.4.3	Recommendations for good site practices during the construction phase include: • Nomination of approved personnel, such as a site manager, to be responsible for implementation of good site practices, arrangements for waste collection and effective disposal to an appropriate facility. • Training of site personnel in site cleanliness, concepts of waste reduction, reuse and recycling, proper waste management and chemical waste handling procedures. • Provision of sufficient waste reception/ disposal points, and regular collection of waste. • Adoption of appropriate measures to minimise windblown litter and dust during transportation of waste	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas	Construction phase	Waste Disposal Ordinance (WDO) and Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	by either covering trucks or by transporting wastes in enclosed containers. • Provision of regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • Adoption of a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites). • Preparation of Waste Management Plan (WMP), as part of the Environmental Management Plan (EMP).						
S6.4.4	Recommendations to achieve waste reduction are as follow: • Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. • Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors. • Recycle any unused chemicals or those with remaining functional capacity. • Maximise the use of reusable steel formwork to reduce the amount of C&D materials. • Adopt proper storage and site practices to minimise the potential	To minimize waste generation	Contractor	All works sites/areas	Construction phase	WDO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	for damage to, or contamination of construction materials. • Plan the delivery and stock of construction materials carefully to minimise the amount of waste generated. • Minimize over ordering and wastage through careful planning during purchasing of construction materials.						
S6.4.6	The C&D materials generated from demolition works, site clearance, excavation works, and construction of viaduct and stations should be sorted on-site into inert C&D materials (i.e. public fill) and C&D waste. To minimise the impact resulting from collection and transportation of C&D materials as far as practicable, C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed to landfill. A suitable area should be designated within the site for temporary stockpiling of C&D materials and to facilitate the sorting process. Within the stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance: • Proper handling and storage of waste such as soil by means of covers and/or water spraying system to minimise the potential environmental impact and to prevent materials from wind-blown or being washed away.	To minimise the impact resulting from collection and transportation of C&D materials	Contractor	All works sites/areas	Construction phase	WDO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	• Covering materials during heavy rainfall. • Locating stockpiles to minimise potential visual impacts. • Minimising land intake of stockpile areas as far as possible. • Adopting GPS or equivalent system for tracking and monitoring of all dump trucks engaged for the Project in recording their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials. • Keeping record and analysis of data collected by GPS or equivalent system related to travel routings and parking locations of dump trucks engaged on site.						
S6.4.7 to S6.4.9	General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light materials. The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers shall be separated from other waste. Provision and collection of recycling bins for different types of recyclable	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas	Construction phase	WDO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials. The Contractor shall carry out an education programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins shall also be provided in the sites as reminders.						
S6.4.10 to S6.4.12	If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Appropriate containers with proper labels should be used for storage of chemical wastes. Chemical wastes should be collected and delivered to designated outlet by a licensed collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. Any unused chemicals or those with remaining functional	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas	Construction phase	WDO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	capacity should be collected for reuse as far as practicable.						
S6.4.13 to S6.4.14	The sediment should be excavated, handled, transported and disposed of in a manner that would minimise adverse environmental impacts. For minimization of sediment disposal, beneficial reuse will be considered on site as far as practicable during the construction stage before the disposal of excavated sediment. Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of sediments.	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	APCO EDO	Implemented
S6.4.15	In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site.	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO	Implemented
S6.4.16	For off-site disposal, the basic requirements and procedures specified under PNAP No. 252 (ADV-21) shall be followed. Marine Fill Committee (MFC) of CEDD is managing the disposal facilities in Hong Kong for the excavated sediment, while EPD is the authority of issuing marine dumping	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO, DASO, ADV-21	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	permit under the Dumping at Sea Ordinance (DASO).						
S6.4.17	For the purpose of site allocation and application of marine dumping permit and if considered necessary by EPD (Marine Dumping Section), separate SSTP shall be submitted to EPD for agreement under DASO. Additional SI works, based on the SSTP, shall then be carried out in order to confirm the disposal arrangements of the excavated sediment. A Sediment Quality Report (SQR), reporting the chemical and biological screening results and the estimated quantities of sediment under different disposal options, shall then be submitted to EPD for agreement under DASO.	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO, DASO, ADV-21	N/A
S6.4.18	To ensure disposal space is allocated for the Project, the Project Proponent should be responsible for obtaining agreement from MFC on the allocation of the disposal site. The contractor(s), on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal.	To avoid and minimize impacts arising from waste management	Project Proponent and Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO, DASO, ADV-21	N/A
S6.4.19	The excavated sediments are expected to be loaded onto the barge at public barging point of which the exact location will be determined by the contractor(s) and agreed by EPD/CEDD and transported to the designated disposal sites allocated by MFC. The excavated sediment would	To avoid and minimize impacts arising from waste management	Project Proponent and Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO, DASO, ADV-21	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	be disposed of according to its determined disposal options and PNAP No. 252 (ADV-21).						
S6.4.20	Stockpiling of contaminated sediments shall be avoided as far as possible. If temporary stockpiling of contaminated sediments is unavoidable, the excavated sediment shall be covered by tarpaulin and the area shall be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiles shall be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas shall be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO).	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	WPCO	Implemented
S6.4.21	In order to minimise the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.	To avoid and minimize impacts arising from waste management	Contractor	All works sites/areas confirmed with sediment	Construction phase	WDO, APCO	Implemeneted
S6.4.22	The barge transporting the sediments to the designated disposal sites shall	To avoid and minimize	Contractor	All works sites/areas	Construction phase	WDO	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.	impacts arising from waste management		confirmed with sediment			
Land Contamination							
S7.8.1 to S7.8.3	*Recommended Further Works* As the concerned facilities within the Project Area are still in operation, it would not be feasible to carry out the proposed SI works under the EIA Study. Moreover, as the demolition of concerned facilities and construction works at the concerned areas will not commence until 2023, there could be changes in the operation or changes in land use within the Project Area which may cause further contamination issues. Therefore, site re-appraisal and submission of supplementary CAP(s) should be carried out for the whole Project Area at a later stage of the Project in order to address any new contamination issues caused by the (i) changes in operation of the identified potentially contaminated site and (ii) changes of land use within the Project Area. The associated SI works and any necessary remediation action are	To control land remediation work	Contractor	All works sites/areas identified with potential land contamination	Prior to the commencement of the construction works at the concerned areas	Guidance Note for Contaminated Land Assessment and Remediation, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Managment	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	recommended to be carried out after the operation of concerned area(s) has ceased but prior to the commencement of construction works at the concerned area(s). The site re-appraisal and submission of supplementary CAP(s) should be carried out prior to the commencement of the SI works. Supplementary CAP(s), presenting findings of the review, the latest site conditions and updated sampling strategy and testing protocol, should be submitted to EPD for approval. The SI works should be carried out according to EPD's approved supplementary CAP(s). Following completion of SI works and receipt of laboratory test results, CAR(s) should be prepared to present the findings of the SI works and to discuss the presence, nature and extent of contamination. If contamination is identified, RAP(s) which provides details of the remedial actions for the identified contaminated soil and / or groundwater should be approved by EPD. Remediation action, if necessary, will be carried out according to EPD approved RAP(s) and Remediation Report(s) (RR(s)) will be submitted after completion of the remediation action. The RR(s) should be endorsed by EPD prior to the commencement of construction works at the respective identified contaminated areas (if any).						

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
S7.8.4	*Possible Remediation Measures* According to the Practice Guide, the need to remediate the concerned areas would be determined based on the findings of the SI presented in the CAR and the actual nature, level and extent of contamination can only be evaluated through SI. The appropriate remediation methods should be selected in the RAP based on the SI findings. The possible remediation methods and the selection criteria are detailed in Section 5.2 of the CAP (**Appendix 7.1** refers).	To control land remediation work	Contractor	All works sites/areas identified with land contamination	Prior to the commencement of construction works at the contaminated areas	Guidance Note for Contaminated Land Assessment and Remediation, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management	N/A
Ecology (Construction Phase)							
S8.9.3	*Impacts on the Ardeid Night Roost* Tree felling at the Tuen Mun Park will be avoided, while maintenance works would only be limited to necessary pruning works, at overgrown trees branches that may pose safety issue to the public, or obstruction of construction within the works site and subsequent of railway operation. In addition, pruning of trees of the ardeids night roost should only be conducted when no ardeids are perching on the trees.	To avoid direct impact on ardeid night roost	Contractor	All works area	Works sites adjoining to TUM Station	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented
S8.9.4 to S8.9.5	*Establishment of Buffer Zone and Control of Working Hours*	To avoid early disturbance to the night roost that could	Contractor	Works sites adjoining to TUM Station	Construction phase	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	During the construction phase, the timing of the noisy construction activities should be arranged to avoid impact on the night roosting ardeids as far as possible. As such, no noisy construction activities using the power mechanical equipment (PME) should be conducted within 100 m from the night roosting site after 30 minutes before sunset, until the ardeids leave the roosting location of the following day (i.e. around 30 minutes after sunrise), in order to minimise the potential disturbance to night-roosting ardeids. The time for the control of noisy construction will commence 30 minutes before sunset, as presented in Table 8.16 with reference made to the Hong Kong Observatory. As a good practice, the contractor should plan the construction works properly for completion of the daily noisy construction works within the buffer zone 30 minutes before sunset, especially for concreting works of bored piles which should be carried out continuously to avoid the cold joint. The concreting works beyond the sunset time should therefore be considered as contingency arrangement due to the uncontrollable issues (i.e. traffic jam, delay of concrete supply, breakdown of plant / equipment, etc). In the event of occurrence of contingency arrangement, a notice with valid justification documents and contingency arrangement details should be prepared and recorded in the	discourage and displace ardeid night roosting use					

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	EM&A reports. This notice should also record any change in the ardeid night roost (e.g. displacement or abandonment) observed during contingency arrangement and any mitigation measures implemented and/or to be implemented. A reporting mechanism should be developed with details stated in Environmental Monitoring and Audit (EM&A) Manual. A monthly monitoring and observation on condition of night roost should be carried out during the construction phase to monitor the impact on the night roost. Some night-time activities are necessary to avoid potential safety issue and minimise interruption or disruption to existing road and rail traffic. In case where these activities occur in close proximity of the night roost, careful arrangement of work programme should be adopted as far as practicable to avoid disturbances from construction activities near the night-roost (such as noise, light and other human disturbance), especially during dry season (when ardeids are at relatively higher abundance). In addition, mitigation measures such as movable noise enclosures and movable barriers should be adopted to mitigate the noise and light from the night-time construction activities and to minimise disturbance to the night roosting ardeids, where necessary. Proper construction planning would also be						

<table>
<tr><th>EIA Ref.</th><th>Recommended Mitigation Measures</th><th>Objectives of the Recommended Measures and Main Concern to Address</th><th>Implementation Agent</th><th>Location of the Measures</th><th>Implementation Stage</th><th>Requirements</th><th>Implementation Status</th></tr>
<tr><td></td><td>implemented to arrange night-time activities in wet season as far as practicable. Where possible, these activities will also be scheduled on non-consecutive days to avoid continuous disturbance on the night roost.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Table 8.16</td><td>Seasonal Sunset Time During Survey

<table><tr><th>Months</th><th>Reference Time of Sunset (1)</th><th>Control of Noisy Construction Activities (2)</th></tr><tr><td>Sep – Feb</td><td>17:38 – 18:27</td><td>17:08 – 07:30 (on the following day)</td></tr><tr><td>Mar – May</td><td>18:27 – 19:03</td><td>17:57 – 07:30 (on the following day)</td></tr><tr><td>Jun – Aug</td><td>18:41 – 19:11</td><td>18:11 – 07:30 (on the following day)</td></tr></table>Notes:
(1) Reference was made to the sunset time in year 2021.
(2) Noisy construction activities should be ceased before the proposed time, except for contingent arrangement of concreting works due to uncontrollable issues. Such occurrence should be notified by the Contractor to Engineer/Engineer's Representative, Environmental Team Leader and Independent Environmental Checker on the same day of the occurrence.</td><td>To avoid early disturbance to the night roost that could discourage and displace ardeid night roosting use</td><td>Contractor</td><td>Works sites adjoining to TUM Station</td><td>Construction phase</td><td>EIAO-TM, EIAO Guidance Note. 3/2010</td><td>Implemented</td></tr>
<tr><td>Table 8.17</td><td>Construction Works/ Activities within 100m from Ardeid Night Roost

<u>TUM Overrun Modification</u></td><td>To avoid early disturbance to the night roost that could</td><td>Contractor</td><td>Works sites within 100m from Ardeid Night Roost</td><td>Construction phase</td><td>EIAO-TM, EIAO Guidance Note. 3/2010</td><td>Implemented</td></tr>
</table>

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	Modification works that does not require the use of PME: • Night-time activities should be avoided as far as practicable. • Daytime construction activities within buffer zone should follow control of working hours (Table 8.16 of the EIA Report). • Should night-time works be unavoidable, the following measures should be adopted: movable barrier; light control; and proper construction planning to arrange works in wet season as far as practicable. Noisy modification works that require the use of PME: • Night-time activities should be avoided. • Daytime construction activities within buffer zone should follow control of working hours (Table 8.16 of the EIA Report). <u>Provision of Temporary Steel Platform</u> • Construction activities should be conducted during daytime. • Any activities within buffer zone should follow control of working hours (Table 8.16 of the EIA Report). <u>Construction of Viaduct and Concreting works</u> • Any activities within buffer zone should follow control of working	discourage and displace ardeid night roosting use					

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	hours (Table 8.16 of the EIA Report). • Concreting works should be limited to daytime under normal circumstances. • In the event of a contingency event, a notice with justification and arrangement details should be prepared and recorded in the EM&A reports. Any observed change in the ardeid night roost and mitigation measures implemented and/or to be implemented should also be documented. <u>Maintenance Works at Tuen Mun Park</u> • When pruning of trees of the ardeids night roost is deemed necessary, it should only be conducted when no ardeids are perching on the trees.						
S8.9.6	*Pre-Construction Bat Survey* In the event that Chinese Fan-palm need to be felled, prior to the commencement of temporary works within Pui To Road (South) Rest Garden, pre-construction bat survey should be conducted to verify that no SNFB individuals are roosting within the Chinese Fan-palm trees. These roosting bats are relatively inactive during daytime, thus more susceptible to injury during tree-felling. Where roosting SNFB were observed, felling of the Chinese Fan-palm trees should	To verify that no SNFB individuals are roosting within the Chinese Fan-palm trees	Contractor	Pui To Road (South) Rest Garden	Construction phase	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	be suspended until the SNFB has emerged (e.g. after sunset). It is recommended to conduct tree-felling works during suitable weather conditions (e.g. fine, non-rainy evenings) during which the bats would be relatively active and more likely to emerge. If there are any injured bats found within the works area at Pui To Road (South) Rest Garden, AFCD should be informed and the bats should be taken care immediately. Pruning the fronds of the Chinese Fan-palm can also be considered during night-time (when SNFB has emerged from the roost) as an exclusion measure to discourage their return to the tree and avoid subsequent injury of bats. As SNFB are relatively active throughout the year, no seasonal pattern.						
S8.9.7 to S8.9.8	*Avoidance of Bird Collision* Considering the commuting activity of birds in the vicinity, the potential bird collision should be avoided by using non-transparent panels as the noise enclosure, as well as adopting non-glaring tinted materials, or superimposing dark patterns at the majority of facade glazing along barriers and station structures, as per Guidelines on Design of Noise Barriers (EPD & HyD, 2003) and Practice Notes No. BSTR/PN/003 (Revision D) Noise Barriers with Transparent Panels (HyD, 2018), to avoid and minimise bird mortality from collision.	To avoid and minimise bird mortality from collision	Contractor	Viaduct and Stations	Detailed Design stage, Construction and Operation Phase	EIAO-TM , EIAO Guidance Note. 3/2010 , *Guidelines on Design of Noise Barriers (EPD & HyD, 2003)* and *Practice Notes No. BSTR/PN/003 (Revision E) Noise Barriers with Transparent*	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	The bridge structure across the TMRC should also be well-illuminated to increase visibility for facilitating bird flight above or under the bridge and avoiding potential injury from collision.					*Panels* (HyD, 2020)	
S8.9.9	*Reinstatement of Areas of Temporary Loss* Temporary works sites and works areas would be reinstated and restored (e.g. at Pui To Road (South) Rest Garden and Wu Shan Recreation Playground) by reinstatement of landscape area and compensatory tree planting. Shade tolerant plants would also be planted at the shaded area under the viaduct. Reprovision of Chinese Fan-palm trees during the reinstatement could also provide roosting opportunities for SNFB.	To minimise the ecological impact	MTRCL and Contractor	All works sites/areas where applicable	Detailed Design and Construction phases	EIAO-TM, EIAO Guidance Note. 3/2010	N/A
S8.9.10	*Minimisation of Disturbance* Mitigation measures should be implemented to minimise the disturbance impacts (e.g. noise, glare and dust) to the surrounding habitats and their associated wildlife arising from the construction activities, including but not limited to the following: • Noise mitigation measures by effective placing of site hoarding, temporary nd material stockpiles where practicable as screening, shut down of machines and plants	To minimise the disturbance impacts to the surrounding habitats and their associated wildlife arising from the construction activities	Contractor	All works sites/areas	Construction phase	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	that are in intermittent use, and the use of quality PME to limit noise emissions at source; • Glare reduction measures such as restriction of construction hours, hoarding provision, night-time lighting control and avoidance of any directional lightings to the adjoining habitats and roosts to minimise the impact to nearby nocturnal fauna especially avifauna and bat; and • Dust suppression measures (such as regular spraying of haul roads, proper storage of construction materials, and environmental control measures as stipulated in the Air Pollution Ordinance (Construction Dust) Regulation) to avoid and minimise emission and dispersal dust, which would cover vegetation and potentially discourage usage of nearby wildlife.						
S8.9.11	*Control Glare / Lighting* The overall reduction of glare during both construction and operational phases should also be considered. A balance between lighting for safety, and avoiding excessive lighting can be achieved through the use of directional lighting to avoid light spill into sensitive areas (e.g. the ardeid night roost), and control timing of lighting periods, particularly for the works site(s) located in proximity to the ardeid night roost in	To minimise the disturbance impacts to the surrounding habitats and their associated wildlife arising from the construction activities	Contractor	All works sites/areas	Construction phase	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	Tuen Mun Park, and during peak roosting season of ardeid (e.g. dry season), hence minimising the potential indirect impact on the community of the night-roosting ardeids.						
S8.9.13	*Good Site Practice* Recommendations for good site practices during the construction phase include: • Nomination of approved personnel, such as a site manager, to be responsible for implementation of good site practices, arrangements for waste collection and effective disposal to an appropriate facility; • Training of site personnel in site cleanliness, concepts of waste reduction, reuse and recycling, proper waste management and chemical waste handling procedures; • Provision of sufficient waste reception/ disposal points, and regular collection of waste; • Adoption of appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Provision of regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Adoption of a recording system for the amount of wastes generated,	To avoid adverse impacts arising from the construction activities	Contractor	All works sites/areas	Construction phase	EIAO-TM, EIAO Guidance Note. 3/2010	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	recycled and disposed (including the disposal sites); and • Preparation of Waste Management Plan (WMP), as part of the Environmental Management Plan (EMP).						
Landscape and Visual Impact (Construction Phase)							
Table 9.9	CM1 - Trees unavoidably affected by the works should be transplanted as far as possible in accordance with DEVB TC(W) 4/2020 – Tree Preservation	To minimize the landscape and visual impact on surrounding setting	Contractor	All works sites/areas	Construction phase	DEVB TC(W) 4/2020 – Tree Preservation	Implemented
Table 9.9	CM2 - Control of night-time lighting glare to prevent light overspill to the nearby VSRs and into the sky. Relevant best practices as suggested in the "Charter on External Lighting" and “Guidelines on Industry Best Practices for External Lighting Installations” promulgated by ENB shall be adopted.	To minimize the landscape and visual impact on surrounding setting	Contractor	All works sites/areas	Construction phase	EIAO-TM	Implemented
Table 9.9	CM3 - Erection of decorative screen hoarding which should be compatible with the surrounding setting	To minimize the landscape and visual impact on surrounding setting	Contractor	All works sites/areas	Construction phase	EIAO-TM	Implemented
Table 9.9	CM4 - Management of facilities on work sites by controlling the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	To minimize the landscape and visual impact on surrounding setting	Contractor	All works sites/areas	Construction phase	-	N/A
Table 9.9	CM5 - All hard and soft landscape areas disturbed temporarily during construction should be reinstated on	To minimize the landscape impact on	Contractor	All works sites/areas	Construction phase	-	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	like-to-like basis, to the satisfaction of the relevant Government Departments.	surrounding setting					
Table 9.9	CM6 - Tree without impact from proposed works should be retained as far as possible in accordance with DEVB TC(W) 4/2020 – Tree Preservation. Any existing trees to be pruned by the Project should follow the Tree Management Practice Note No. 3: Tree Pruning issued by GLTMS of DEVB.	To minimize the landscape impact on surrounding setting	Contractor	All works sites/areas	Construction phase	DEVB TC(W) 4/2020	Implemented
Cultural Heritage (Construction Phase)							
S10.7.1	If there are any buildings / structures both at grade level and underground which were built on or before 1969 found within the works sites/ works areas during the excavation, the Project Proponent will alert AMO in an early stage or once identified.	To avoid/minimise impact on built heritage resources, if any	Contractor	All works sites/areas where applicable	Construction phase	EIAO-TM	N/A
S10.7.2	The Contractor should inform the AMO in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO.	To avoid/minimise impact on archaeological resources, if any	Contractor	All works sites/areas where applicable	Construction phase	EIAO-TM	N/A
Hazard to Life Assessment (Construction Phase)							
S11.9.16	The following “Good Practices” are proposed to limit the number of causalities and/ or fatalities: • Establishment of emergency response plans; • Safety/ emergency response training and drills for all personnel;	To limit the number of causalities and/ or fatalities.	Contractor	Works Areas ID#9a and #9b	Construction phase	EIAO-TM	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concern to Address	Implementation Agent	Location of the Measures	Implementation Stage	Requirements	Implementation Status
	• Provision of fire protection equipment; • Maintain the number of construction workers onsite to a minimum; • Implement adequate safety measures and procedures that completely eliminate the possibility of dropping anything into the LPG compound due to hoisting and transportation of precast segments or any other activities; • Hot work should be banned in the vicinity of the LPG Store, i.e. works areas ID#9a and #9b; • Construction activities at works areas ID#9a and #9b should be considered to be ceased when testing / examination / inspection of the underground storage tanks are conducted at the LPG Store; and • Keep close coordination with the LPG Store's owner and registered gas supply company on necessary precautionary measures to safeguard the LPG facilities during the construction phase of the Project. In particular, the delivery route and schedule of the LPG road tanker transportation should be fully understood, for preventing any interruption on the LPG delivery.						

Appendix D Calibration Certificates of Equipment and Certificate of HOKLAS Laboratory

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2410660**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 14-MAR-2024
		DATE OF ISSUE	: 21-MAR-2024
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.**
- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 **www.alsglobal.com**

WORK ORDER	: HK2410660
SUB-BATCH	: 1
CLIENT	: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT	: ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2410660-001	S/N: 3Y7139	AIR	14-Mar-2024	S/N: 3Y7139

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-5R
Serial No.	3Y7139
Equipment Ref:	EQ121

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	16 February 2024

Equipment Verification Results:

Verification Date: 7 & 8 March 2024

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
7-Mar-24	2hr01mins	09:26 ~ 11:27	18.7	1016.6	49.9	2956	24.4
7-Mar-24	2hr02mins	11:34 ~ 13:36	18.7	1016.6	41.2	2547	20.8
7-Mar-24	2hr02mins	13:45 ~ 15:47	18.7	1016.6	53.1	2867	23.4
8-Mar-24	2hr01mins	10:22 ~ 12:23	18.8	1018.8	34.3	2027	16.8
8-Mar-24	2hr14mins	12:44 ~ 14:58	18.8	1018.8	49.1	3005	22.4

Sensitivity Adjustment Scale Setting (Before Calibration) 584 (CPM)

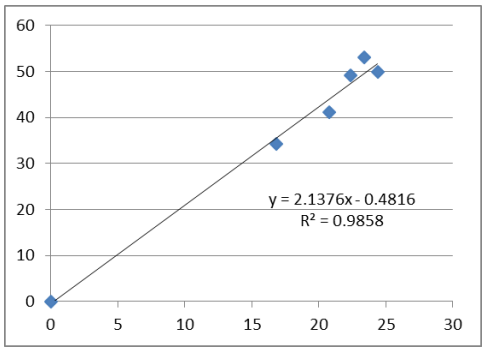
Sensitivity Adjustment Scale Setting (After Calibration) 588 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.1376 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9928

Date of Issue 13 March 2024



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.1376 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : Date : 13 March 2024

QC Reviewer : Ben Tam Signature : Date : 13 March 2024

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	16-Feb-24
Location ID :	Calibration Room - TISCH Higher Volume Sampler (Model TE-5170) S/N:1260 (HVS 018)	Next Calibration Date:	16-May-24

CONDITIONS

Sea Level Pressure (hPa)	1019	Corrected Pressure (mm Hg)	764.25
Temperature (°C)	20.4	Temperature (K)	293

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.13163
Model->	5025A	Qstd Intercept ->	-0.03523
Calibration Date->	15-Dec-23	Expiry Date->	15-Dec-24

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.631	54	54.57	Slope = 31.3860
13	4.7	4.7	9.4	1.470	47	47.50	Intercept = 2.3377
10	3.6	3.6	7.2	1.289	42	42.45	Corr. coeff. = 0.9976
8	2.4	2.4	4.8	1.055	35	35.37	
5	1.2	1.2	2.4	0.751	26	26.28	

Calculations :

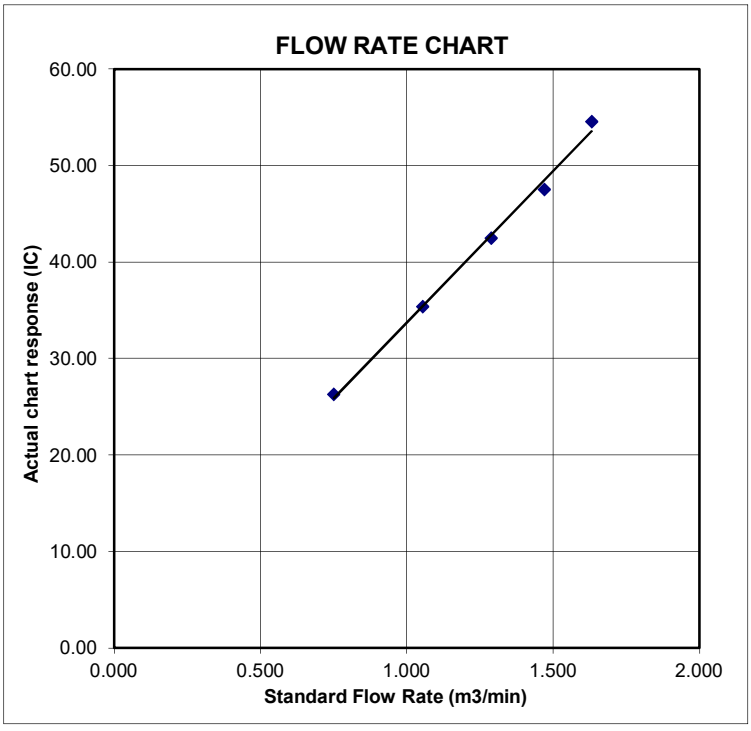
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2023	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.5	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4590	3.2	2.00
2	3	4	1	1.0360	6.4	4.00
3	5	6	1	0.9260	8.0	5.00
4	7	8	1	0.8840	8.9	5.50
5	9	10	1	0.7290	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9907	0.6790	1.4106	0.9957	0.6825	0.8878
0.9864	0.9522	1.9949	0.9914	0.9570	1.2556
0.9843	1.0630	2.2304	0.9893	1.0684	1.4037
0.9831	1.1121	2.3393	0.9881	1.1178	1.4723
0.9778	1.3413	2.8213	0.9828	1.3481	1.7756
QSTD	**m=**	**2.13163**	**QA**	**m=**	**1.33479**
	b=	**-0.03523**		**b=**	**-0.02217**
	r=	**0.99999**		**r=**	**0.99999**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2410661**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 14-MAR-2024
		DATE OF ISSUE	: 21-MAR-2024
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**
- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

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WORK ORDER : HK2410661
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2410661-001	S/N: 3Y7140	AIR	14-Mar-2024	S/N: 3Y7140

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-5R
Serial No.	3Y7140
Equipment Ref:	EQ122

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	16 February 2024

Equipment Verification Results:

Verification Date: 7 & 8 March 2024

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
7-Mar-24	2hr01mins	09:26 ~ 11:27	18.7	1016.6	49.9	2892	23.9
7-Mar-24	2hr02mins	11:34 ~ 13:36	18.7	1016.6	41.2	2613	21.3
7-Mar-24	2hr02mins	13:45 ~ 15:47	18.7	1016.6	53.1	3083	25.2
8-Mar-24	2hr01mins	10:22 ~ 12:23	18.8	1018.8	34.3	1983	16.4
8-Mar-24	2hr14mins	12:44 ~ 14:58	18.8	1018.8	49.1	2859	21.3

Sensitivity Adjustment Scale Setting (Before Calibration) 713 (CPM)

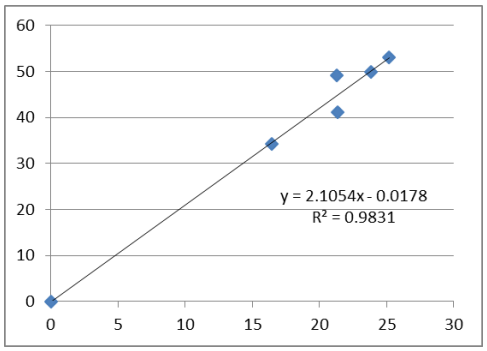
Sensitivity Adjustment Scale Setting (After Calibration) 714 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.1054 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9915

Date of Issue 13 March 2024



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.1054 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : Date : 13 March 2024

QC Reviewer : Ben Tam Signature : Date : 13 March 2024

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	16-Feb-24
Location ID :	Calibration Room - TISCH Higher Volume Sampler (Model TE-5170) S/N:1260 (HVS 018)	Next Calibration Date:	16-May-24

CONDITIONS

Sea Level Pressure (hPa)	1019	Corrected Pressure (mm Hg)	764.25
Temperature (°C)	20.4	Temperature (K)	293

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.13163
Model->	5025A	Qstd Intercept ->	-0.03523
Calibration Date->	15-Dec-23	Expiry Date->	15-Dec-24

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.631	54	54.57	Slope = 31.3860
13	4.7	4.7	9.4	1.470	47	47.50	Intercept = 2.3377
10	3.6	3.6	7.2	1.289	42	42.45	Corr. coeff. = 0.9976
8	2.4	2.4	4.8	1.055	35	35.37	
5	1.2	1.2	2.4	0.751	26	26.28	

Calculations :

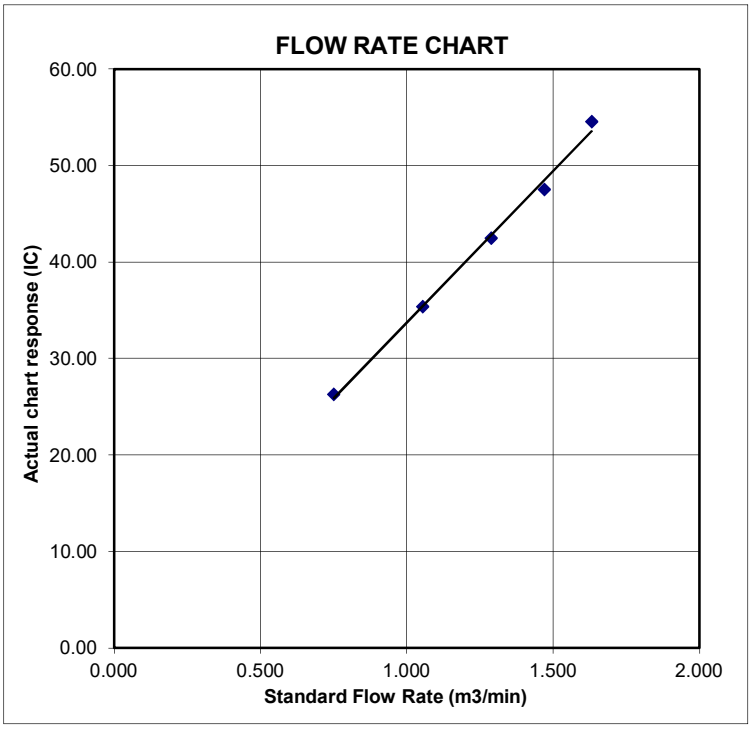
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2023	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.5	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4590	3.2	2.00
2	3	4	1	1.0360	6.4	4.00
3	5	6	1	0.9260	8.0	5.00
4	7	8	1	0.8840	8.9	5.50
5	9	10	1	0.7290	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9907	0.6790	1.4106	0.9957	0.6825	0.8878
0.9864	0.9522	1.9949	0.9914	0.9570	1.2556
0.9843	1.0630	2.2304	0.9893	1.0684	1.4037
0.9831	1.1121	2.3393	0.9881	1.1178	1.4723
0.9778	1.3413	2.8213	0.9828	1.3481	1.7756
QSTD	**m=**	**2.13163**	**QA**	**m=**	**1.33479**
	b=	**-0.03523**		**b=**	**-0.02217**
	r=	**0.99999**		**r=**	**0.99999**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

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ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2410662**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 14-MAR-2024
		DATE OF ISSUE	: 21-MAR-2024
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**
- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

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Tel. +852 2610 1044 Fax. +852 2610 2021 **www.alsglobal.com**

WORK ORDER	: HK2410662
SUB-BATCH	: 1
CLIENT	: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT	: ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2410662-001	S/N: 3Y7141	AIR	14-Mar-2024	S/N: 3Y7141

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-5R
Serial No.	3Y7141
Equipment Ref:	EQ123

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	16 February 2024

Equipment Verification Results:

Verification Date: 7 & 8 March 2024

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
7-Mar-24	2hr01mins	09:26 ~ 11:27	18.7	1016.6	49.9	2994	24.7
7-Mar-24	2hr02mins	11:34 ~ 13:36	18.7	1016.6	41.2	2605	21.3
7-Mar-24	2hr02mins	13:45 ~ 15:47	18.7	1016.6	53.1	3126	25.5
8-Mar-24	2hr01mins	10:22 ~ 12:23	18.8	1018.8	34.3	2072	17.2
8-Mar-24	2hr14mins	12:44 ~ 14:58	18.8	1018.8	49.1	2998	22.3

Sensitivity Adjustment Scale Setting (Before Calibration) 609 (CPM)

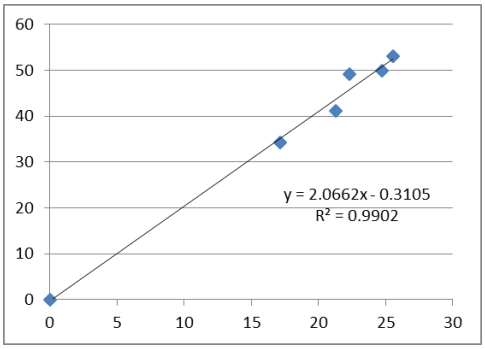
Sensitivity Adjustment Scale Setting (After Calibration) 605 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0662 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9951

Date of Issue 13 March 2024



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0662 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : Date : 13 March 2024

QC Reviewer : Ben Tam Signature : Date : 13 March 2024

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	16-Feb-24
Location ID :	Calibration Room - TISCH Higher Volume Sampler (Model TE-5170) S/N:1260 (HVS 018)	Next Calibration Date:	16-May-24

CONDITIONS

Sea Level Pressure (hPa)	1019	Corrected Pressure (mm Hg)	764.25
Temperature (°C)	20.4	Temperature (K)	293

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.13163
Model->	5025A	Qstd Intercept ->	-0.03523
Calibration Date->	15-Dec-23	Expiry Date->	15-Dec-24

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.631	54	54.57	Slope = 31.3860
13	4.7	4.7	9.4	1.470	47	47.50	Intercept = 2.3377
10	3.6	3.6	7.2	1.289	42	42.45	Corr. coeff. = 0.9976
8	2.4	2.4	4.8	1.055	35	35.37	
5	1.2	1.2	2.4	0.751	26	26.28	

Calculations :

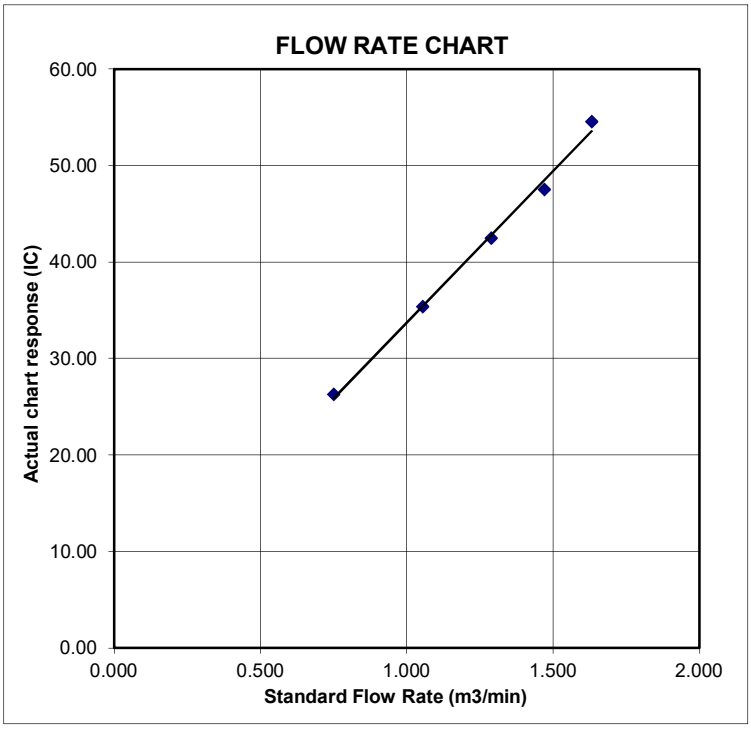
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2023	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.5	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4590	3.2	2.00
2	3	4	1	1.0360	6.4	4.00
3	5	6	1	0.9260	8.0	5.00
4	7	8	1	0.8840	8.9	5.50
5	9	10	1	0.7290	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9907	0.6790	1.4106	0.9957	0.6825	0.8878
0.9864	0.9522	1.9949	0.9914	0.9570	1.2556
0.9843	1.0630	2.2304	0.9893	1.0684	1.4037
0.9831	1.1121	2.3393	0.9881	1.1178	1.4723
0.9778	1.3413	2.8213	0.9828	1.3481	1.7756
QSTD	**m=**	**2.13163**	**QA**	**m=**	**1.33479**
	b=	**-0.03523**		**b=**	**-0.02217**
	r=	**0.99999**		**r=**	**0.99999**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2410664**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 14-MAR-2024
		DATE OF ISSUE	: 21-MAR-2024
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**
- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 **www.alsglobal.com**

WORK ORDER	:	HK2410664
SUB-BATCH	:	1
CLIENT	:	ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT	:	----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2410664-001	S/N: 3Y7142	AIR	14-Mar-2024	S/N: 3Y7142

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-5R
Serial No.	3Y7142
Equipment Ref:	EQ124

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	16 February 2024

Equipment Verification Results:

Verification Date: 7 & 8 March 2024

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
7-Mar-24	2hr01mins	09:26 ~ 11:27	18.7	1016.6	49.9	3029	25.0
7-Mar-24	2hr02mins	11:34 ~ 13:36	18.7	1016.6	41.2	2601	21.3
7-Mar-24	2hr02mins	13:45 ~ 15:47	18.7	1016.6	53.1	3097	25.3
8-Mar-24	2hr01mins	10:22 ~ 12:23	18.8	1018.8	34.3	2079	17.2
8-Mar-24	2hr14mins	12:44 ~ 14:58	18.8	1018.8	49.1	2966	22.1

Sensitivity Adjustment Scale Setting (Before Calibration) 503 (CPM)

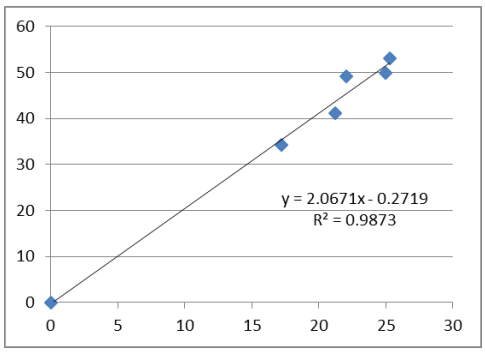
Sensitivity Adjustment Scale Setting (After Calibration) 501 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0671 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9936

Date of Issue 13 March 2024



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0671 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : Date : 13 March 2024

QC Reviewer : Ben Tam Signature : Date : 13 March 2024

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	16-Feb-24
Location ID :	Calibration Room - TISCH Higher Volume Sampler (Model TE-5170) S/N:1260 (HVS 018)	Next Calibration Date:	16-May-24

CONDITIONS

Sea Level Pressure (hPa)	1019	Corrected Pressure (mm Hg)	764.25
Temperature (°C)	20.4	Temperature (K)	293

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.13163
Model->	5025A	Qstd Intercept ->	-0.03523
Calibration Date->	15-Dec-23	Expiry Date->	15-Dec-24

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.631	54	54.57	Slope = 31.3860
13	4.7	4.7	9.4	1.470	47	47.50	Intercept = 2.3377
10	3.6	3.6	7.2	1.289	42	42.45	Corr. coeff. = 0.9976
8	2.4	2.4	4.8	1.055	35	35.37	
5	1.2	1.2	2.4	0.751	26	26.28	

Calculations :

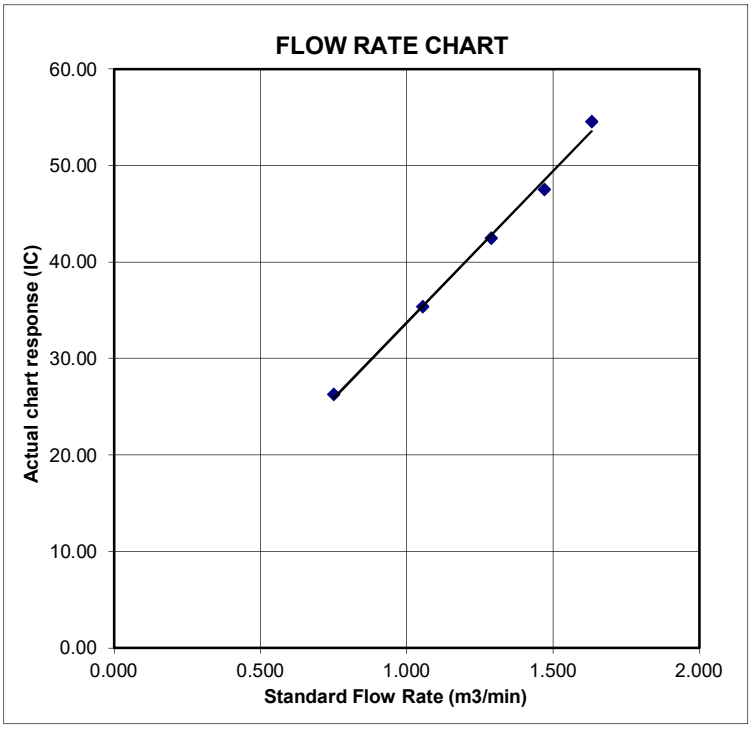
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2023	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.5	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4590	3.2	2.00
2	3	4	1	1.0360	6.4	4.00
3	5	6	1	0.9260	8.0	5.00
4	7	8	1	0.8840	8.9	5.50
5	9	10	1	0.7290	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9907	0.6790	1.4106	0.9957	0.6825	0.8878
0.9864	0.9522	1.9949	0.9914	0.9570	1.2556
0.9843	1.0630	2.2304	0.9893	1.0684	1.4037
0.9831	1.1121	2.3393	0.9881	1.1178	1.4723
0.9778	1.3413	2.8213	0.9828	1.3481	1.7756
QSTD	**m=**	**2.13163**	**QA**	**m=**	**1.33479**
	b=	**-0.03523**		**b=**	**-0.02217**
	r=	**0.99999**		**r=**	**0.99999**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C242242
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC24-0561) Date of Receipt / 收件日期 : 28 March 2024

Description / 儀器名稱 : Sound Level Meter (EQ018)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00809405
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 April 2024

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 22 April 2024

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C242242
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C240212
CL281	Multifunction Acoustic Calibrator	CDK2302738

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.1
				114.00		114.0

IEC 61672 Class 1 Limit : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

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Certificate of Calibration
校正證書

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6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					16 kHz	86.0	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					16 kHz	84.1	-8.5 (+3.5 ; -17.0)

Certificate of Calibration
校正證書

Certificate No. : C242242
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 16463

- Mfr's Limit : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C242241
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC24-0561) Date of Receipt / 收件日期 : 28 March 2024

Description / 儀器名稱	:	Sound Level Meter (EQ020)
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-52A
Serial No. / 編號	:	00620665
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 April 2024

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 22 April 2024

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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Certificate of Calibration
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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C240212
CL281	Multifunction Acoustic Calibrator	CDK2302738

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.9	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	93.9 (Ref.)
				104.00		103.9
				114.00		113.9

IEC 61672 Class 1 Limit : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.9	Ref.
			Slow			93.9	± 0.3

Certificate of Calibration
校正證書

Certificate No. : C242241
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.5
					250 Hz	85.2	-8.6 ± 1.4
					500 Hz	90.6	-3.2 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	95.1	+1.2 ± 1.6
					4 kHz	94.9	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					16 kHz	85.9	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.9	0.0 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	93.7	-0.2 ± 1.6
					4 kHz	93.1	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					16 kHz	84.0	-8.5 (+3.5 ; -17.0)

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Certificate of Calibration
校正證書

Certificate No. : C242241
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 21625

- Mfr's Limit : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
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c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C242240
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC24-0561) Date of Receipt / 收件日期 : 28 March 2024

Description / 儀器名稱 : Sound Level Meter (EQ021)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52A
Serial No. / 編號 : 00620666
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 20 April 2024

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits. (after adjustment)
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 22 April 2024

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
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Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (After Adjustment) was performed before the test from 6.1.1.2 to 6.3.2.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C240212
CL281	Multifunction Acoustic Calibrator	CDK2302738

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	* 92.0	± 1.1

* Out of IEC 61672 Class 1 Limit

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Limit : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

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Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					16 kHz	86.0	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					16 kHz	84.1	-8.5 (+3.5 ; -17.0)

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c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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Certificate No. : C242240
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Remarks : - UUT Microphone Model No. : UC-59 & S/N : 21627

- Mfr's Limit : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C236944
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC23-2369) Date of Receipt / 收件日期 : 23 November 2023

Description / 儀器名稱	:	Sound Calibrator (EQ083)
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NC-74
Serial No. / 編號	:	34246492
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 3 December 2023

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 4 December 2023

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C236944
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C233799
CL281	Multifunction Acoustic Calibrator	CDK2302738
TST150A	Measuring Amplifier	C221750

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Limit (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.05	± 0.3	± 0.20

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Limit	Uncertainty of Measured Value (Hz)
1	1.002	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C236946
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC23-2369) Date of Receipt / 收件日期 : 23 November 2023

Description / 儀器名稱 : Sound Calibrator (EQ086)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34657230
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 3 December 2023

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 4 December 2023

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C236946
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C233799
CL281	Multifunction Acoustic Calibrator	CDK2302738
TST150A	Measuring Amplifier	C221750

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Limit (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.10	± 0.3	± 0.20

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Limit	Uncertainty of Measured Value (Hz)
1	1.002	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C242239
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC24-0561) Date of Receipt / 收件日期 : 28 March 2024

Description / 儀器名稱 : Sound Calibrator (EQ089)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-75
Serial No. / 編號 : 34680623
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 April 2024

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 22 April 2024

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C242239
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C233799
CL281	Multifunction Acoustic Calibrator	CDK2302738
TST150A	Measuring Amplifier	C241879

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Limit (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.05	± 0.25	± 0.20

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Limit	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

ALS Technichem (HK) Pty Ltd
11/F., Chung Shun Knitting Centre,
1 - 3 Wing Yip Street,
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	BEN TAM	**WORK ORDER:**	HK2434824
CLIENT:	ACTION-UNITED ENVIRONMENTAL SERVICES &		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	**SUB-BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	29-Aug-2024
		DATE OF ISSUE:	10-Sep-2024

GENERAL COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.
This report superseded any previous report(s) with same work order number.

EQUIPMENT INFORMATION

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [Professional DSS]
Serial No./ Equipment No.:	[20J101862/ 15H103928]/ [EQW018]
Date of Calibration:	10-September-2024

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2434824

SUB-BATCH: 0
DATE OF ISSUE: 10-Sep-2024
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 10-September-2024 Date of Next Calibration: 10-December-2024

PARAMETERS:

Conductivity **Method Ref: APHA (23rd edition), 2510B**

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	160.9	+9.5
6667	6754	+1.3
12890	13244	+2.7
58670	61650	+5.1
	Tolerance Limit (%)	±10.0

Dissolved Oxygen **Method Ref: APHA (23rd edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
1.61	1.64	+0.03
5.49	5.42	-0.07
7.54	7.66	+0.12
	Tolerance Limit (mg/L)	±0.20

pH Value **Method Ref: APHA (23rd edition), 4500H: B**

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.81	-0.19
7.0	7.01	+0.01
10.0	9.95	-0.05
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2434824

SUB-BATCH: 0
DATE OF ISSUE: 10-Sep-2024
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 10-September-2024 Date of Next Calibration: 10-December-2024

PARAMETERS:

Turbidity **Method Ref: APHA (23rd edition), 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.25	--
4	4.27	+6.7
40	40.77	+1.9
80	82.46	+3.1
400	413.50	+3.4
800	806.49	+0.8
	Tolerance Limit (%)	±10.0

Salinity **Method Ref: APHA (23rd edition), 2520B**

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.01	--
10	10.43	+4.3
20	20.57	+2.9
30	31.67	+5.6
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2434824

SUB-BATCH: 0
DATE OF ISSUE: 10-Sep-2024
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 10-September-2024 Date of Next Calibration: 10-December-2024

PARAMETERS:

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
11.5	11.6	+0.1
19.0	18.3	-0.7
40.5	39.0	-1.5
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

-------- END OF REPORT --------

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

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

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所具備指定範疇內所須的技術能力並實施一套與實驗所運作相關的管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

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

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date : 28 February 2020
簽發日期：二零二零年二月二十八日

Registration Number : HOKLAS 066
註冊號碼：

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

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L001934

Appendix E EM&A Monitoring Schedules

MTRC Contract 1500 - TME Stations, Viaducts and River Crossing
Air Quality and Noise Impact Monitoring Schedule for October 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
						Air Monitoring
6	7	8	9	10	11	12
				Air & Noise Monitoring		
13	14	15	16	17	18	19
			Air & Noise Monitoring			
20	21	22	23	24	25	26
		Air & Noise Monitoring				
27	28	29	30	31		
	Air & Noise Monitoring					

MTRC Contract 1500 - TME Stations, Viaducts and River Crossing
Tentative Air Quality and Noise Impact Monitoring Schedule for November 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
						Air Monitoring
3	4	5	6	7	8	9
					Air & Noise Monitoring	
10	11	12	13	14	15	16
				Air & Noise Monitoring		
17	18	19	20	21	22	23
			Air & Noise Monitoring			
24	25	26	27	28	29	30
		Air & Noise Monitoring				

Remarks:

1) The Monitoring Schedule will be changed in the case of unforeseen circumstances (e.g. adverse weather etc)

2) Air Quality Monitoring will be conducted at AM1, AM2a, AM3, AM4 and AM5

3) Noise Monitoring will be conducted at CN1, CN2, CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10 and CN11

MTRC Contract 1500 - TME Stations, Viaducts and River Crossing
Water Quality Monitoring Schedule for October 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
				Mid-ebb: 13:22 Sampling: 11:52 - 14:52 Mid-flood: 07:10 Sampling: 07:00 - 08:40		Mid-ebb: 14:16 Sampling: 12:46 - 15:46 Mid-flood: 08:23 Sampling: 07:00 - 09:53
6	7	8	9	10	11	12
		Mid-ebb: 15:51 Sampling: 14:21 - 17:21 Mid-flood: 10:41 Sampling: 09:11 - 12:11		Mid-ebb: 05:13 Sampling: Cancel# Mid-flood: 17:40 Sampling: 16:10 - 19:00		Mid-ebb: 08:13 Sampling: 07:00 - 09:43 Mid-flood: 21:09 Sampling: Cancel#
13	14	15	16	17	18	19
		Mid-ebb: 11:04 Sampling: 09:34 - 12:34 Mid-flood: 17:49 Sampling: 16:19 - 19:00		Mid-ebb: 12:34 Sampling: 11:04 - 14:04 Mid-flood: 18:40 Sampling: 17:10 - 19:00		Mid-ebb: 13:59 Sampling: 12:29 - 15:29 Mid-flood: 08:14 Sampling: 07:00 - 09:44
20	21	22	23	24	25	26
		Mid-ebb: 16:08 Sampling: 14:38 - 17:38 Mid-flood: 11:22 Sampling: 09:52 - 12:52		Mid-ebb: 05:41 Sampling: Cancel# Mid-flood: 18:15 Sampling: 16:45 - 19:00		Mid-ebb: 08:30 Sampling: Cancel* Mid-flood: 16:35 Sampling: Cancel*
27	28	29	30	31		
		Mid-ebb: 11:09 Sampling: 09:39 - 12:39 Mid-flood: 17:29 Sampling: 15:59 - 18:59		Mid-ebb: 12:19 Sampling: 10:49 - 13:49 Mid-flood: 18:08 Sampling: 16:38 - 19:00		

Remarks:

 # Construction works at Tuen Mun River Channel was not planned, so water quality monitoring is not scheduled

**Water quality monitoring was cancelled due to the hoisting of Typhoon Signal No. 3.*

MTRC Contract 1500 - TME Stations, Viaducts and River Crossing
Tentative Water Quality Monitoring Schedule for November 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
						Mid-ebb: 13:21 Sampling: 11:51 - 14:51 Mid-flood: 07:43 Sampling: 07:00 - 09:13
3	4	5	6	7	8	9
		Mid-ebb: 15:00 Sampling: 13:30 - 16:30 Mid-flood: 09:55 Sampling: 08:25 - 11:25		Mid-ebb: 03:58 Sampling: Cancel[#] Mid-flood: 16:20 Sampling: 14:50 - 17:50		Mid-ebb: 05:52 Sampling: Cancel[#] Mid-flood: 18:33 Sampling: Cancel*
10	11	12	13	14	15	16
		Mid-ebb: 09:34 Sampling: 08:04 - 11:04 Mid-flood: 16:27 Sampling: 14:57- 17:57		Mid-ebb: 11:21 Sampling: 09:51 - 12:51 Mid-flood: 17:22 Sampling: 15:52 - 18:52		Mid-ebb: 12:58 Sampling: 11:28 - 14:28 Mid-flood: 07:25 Sampling: 07:00 - 09:05
17	18	19	20	21	22	23
		Mid-ebb: 15:07 Sampling: 13:37 - 16:37 Mid-flood: 10:16 Sampling: 08:46 - 11:46		Mid-ebb: 04:19 Sampling: Cancel[#] Mid-flood: 16:40 Sampling: 15:10 - 18:10		Mid-ebb: 06:00 Sampling: Cancel[#] Mid-flood: 18:44 Sampling: 17:14 - 19:00
24	25	26	27	28	29	30
		Mid-ebb: 09:33 Sampling: 08:03 - 11:03 Mid-flood: 16:06 Sampling: 14:36 - 17:36		Mid-ebb: 11:06 Sampling: 09:36 - 12:36 Mid-flood: 16:48 Sampling: 15:18 - 18:18		Mid-ebb: 12:23 Sampling: 10:53 - 13:53 Mid-flood: 07:07 Sampling: 07:00 - 08:37

Remarks:

1) The Monitoring Schedule will be changed in the case of unforeseen circumstances (e.g. adverse weather etc)

2) Water Quality Monitoring (Ebb tide) will be conducted at W1a, W2, W3, W4, W5, W6 and W7

3) Water Quality Monitoirng (Flood tide) will be conducted at W1a, W2, W3, W8, W9, W10 and W11

 # Construction works at Tuen Mun River Channel was not planned, so water quality monitoring is not scheduled

**Water quality monitoring was cancelled due to the hoisting of Typhoon Signal No. 3.*

MTRC Contract 1500 - TME Stations, Viaducts and River Crossing
Tentative Water Quality Monitoring Schedule for December 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
		Mid-ebb: 14:11 Sampling: 12:41 - 15:41 Mid-flood: 09:14 Sampling: 07:44 - 10:44		Mid-ebb: 15:25 Sampling: 13:55 - 16:55 Mid-flood: 10:47 Sampling: 09:17 - 12:17		Mid-ebb: 04:38 Sampling: Cancel[#] Mid-flood: 17:06 Sampling: 15:36 - 18:36
8	9	10	11	12	13	14
		Mid-ebb: 07:46 Sampling: 07:00 - 9:16 Mid-flood: 14:53 Sampling: 13:23 - 16:23		Mid-ebb: 10:00 Sampling: 08:30 - 11:30 Mid-flood: 16:00 Sampling: 14:30 - 17:30		Mid-ebb: 11:59 Sampling: 10:29 - 13:29 Mid-flood: 17:11 Sampling: 15:41 - 18:41
15	16	17	18	19	20	21
		Mid-ebb: 14:12 Sampling: 12:42 - 15:42 Mid-flood: 09:20 Sampling: 07:50 - 10:50		Mid-ebb: 10:46 Sampling: 9:16 - 12:16 Mid-flood: 15:32 Sampling: 14:02 - 17:02		Mid-ebb: 17:17 Sampling: 15:47 - 18:47 Mid-flood: 12:14 Sampling: 10:44 - 13:44
22	23	24	25	26	27	28
	Mid-ebb: 05:49 Sampling: Cancel[#] Mid-flood: 13:39 Sampling: 12:09 - 15:09					Mid-ebb: 11:20 Sampling: 09:50 - 12:50 Mid-flood: 16:13 Sampling: 14:43 - 17:43
29	30	31				
		Mid-ebb: 13:20 Sampling: 11:50 - 14:50 Mid-flood: 08:29 Sampling: 07:00 - 09:59				

Remarks:

1) The Monitoring Schedule will be changed in the case of unforeseen circumstances (e.g. adverse weather etc)

2) Water Quality Monitoring (Ebb tide) will be conducted at W1a, W2, W3, W4, W5, W6 and W7

3) Water Quality Monitoirng (Flood tide) will be conducted at W1a, W2, W3, W8, W9, W10 and W11

 # Construction works at Tuen Mun River Channel was not planned, so water quality monitoring is not scheduled

Appendix F Air Quality Monitoring Results and their Graphical Presentations

Appendix F – Extract of Wind Data from Tuen Mun Automatic Wind Station (October 2024)

5 October 2024

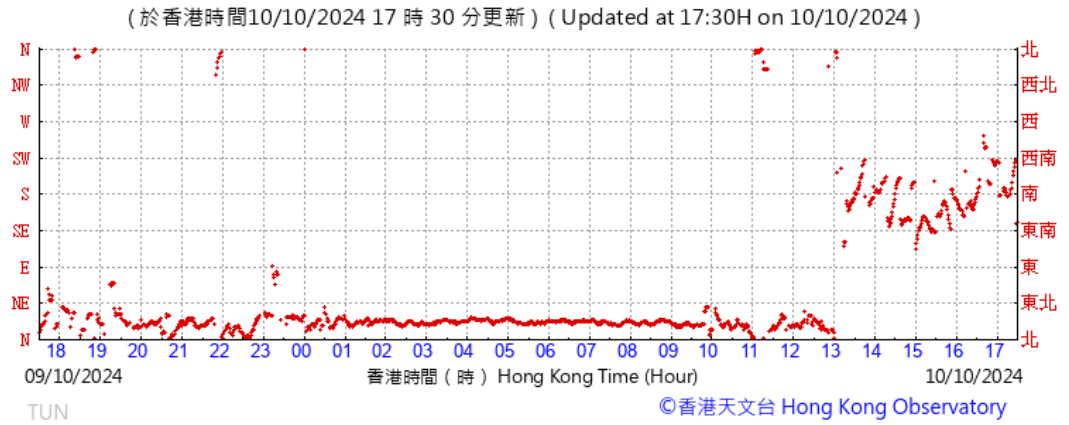
Wind Direction:

Wind Speed:

Appendix F – Extract of Wind Data from Tuen Mun Automatic Wind Station (October 2024)

10 October 2024

Wind Direction:

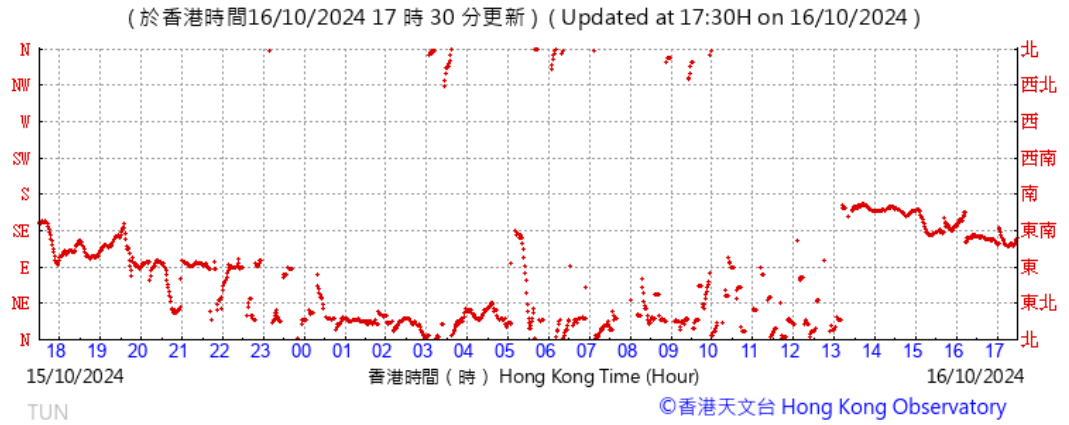


Wind Speed:

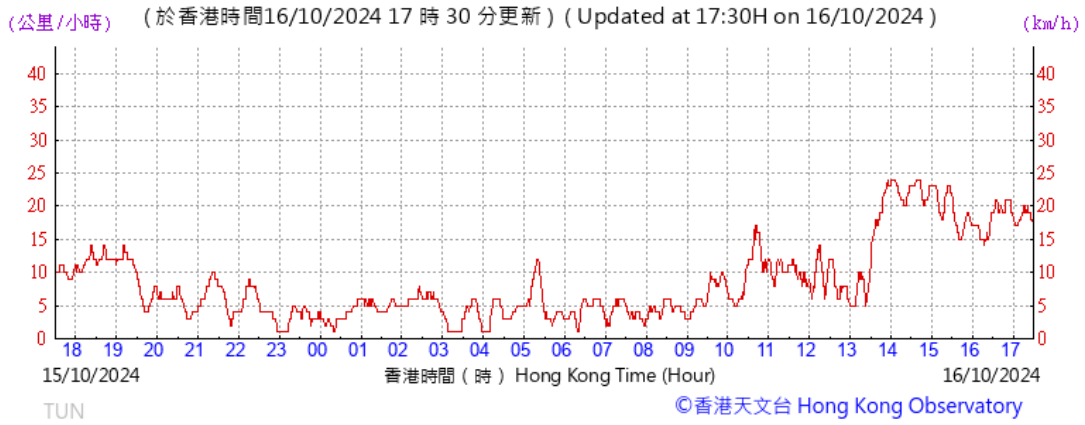
Appendix F – Extract of Wind Data from Tuen Mun Automatic Wind Station (October 2024)

16 October 2024

Wind Direction:



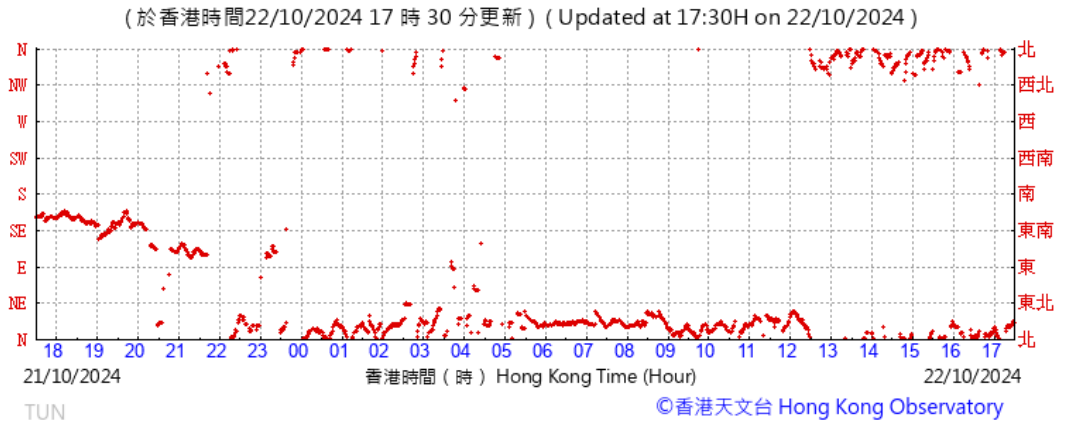
Wind Speed:



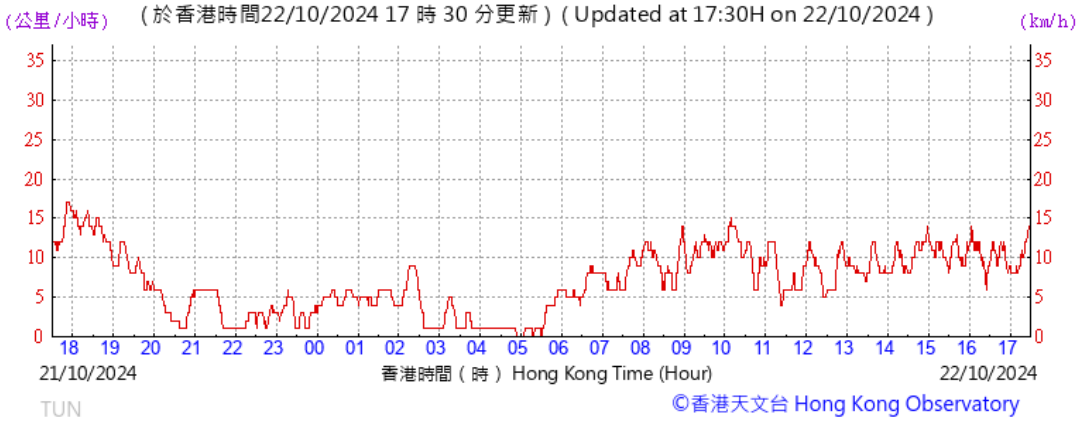
Appendix F – Extract of Wind Data from Tuen Mun Automatic Wind Station (October 2024)

22 October 2024

Wind Direction:



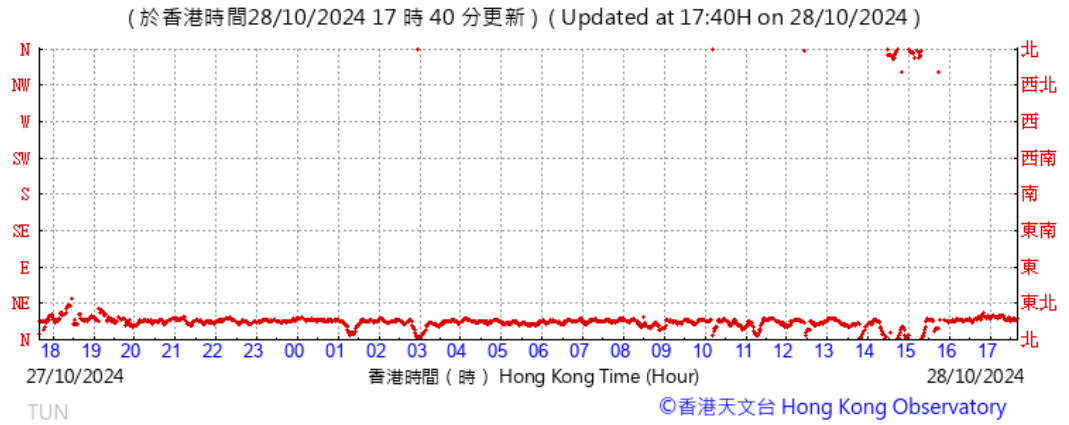
Wind Speed:



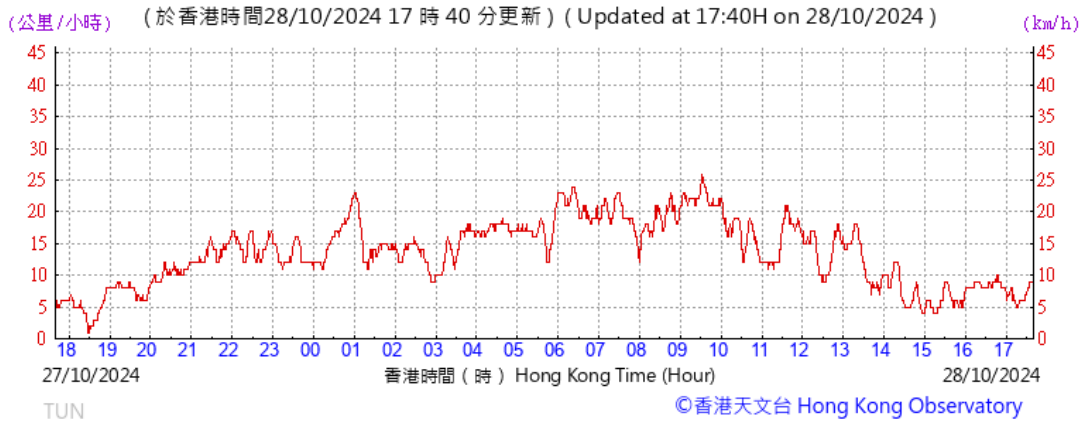
Appendix F – Extract of Wind Data from Tuen Mun Automatic Wind Station (October 2024)

28 October 2024

Wind Direction:



Wind Speed:



Appendix F - Air Quality Monitoring Results
1-hour TSP Monitoring Results for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

AM1 - Islamic Primary School

1-hour TSP (μg/m^3)								
Date	Weather	Start Time	1st Hour	2nd Hour	3rd Hour	Action Level	Limit Level	Exceedance (Y/N)
5-Oct-24	Sunny	9:15	44.0	41.0	54.0	277.6	500.0	N
10-Oct-24	Sunny	8:55	54.0	48.0	46.0			N
16-Oct-24	Sunny	9:10	53.0	40.0	51.0			N
22-Oct-24	Sunny	8:35	50.0	37.0	37.0			N
28-Oct-24	Sunny	13:00	39.0	43.0	43.0			N
		Average	45.3					
		Min	37.0					
		Max	54.0					

AM2a - Oi Tak House, Yau Oi Estate

1-hour TSP (μg/m^3)								
Date	Weather	Start Time	1st Hour	2nd Hour	3rd Hour	Action Level	Limit Level	Exceedance (Y/N)
5-Oct-24	Sunny	9:05	50.0	42.0	52.0	277.4	500.0	N
10-Oct-24	Sunny	9:05	50.0	62.0	52.0			N
16-Oct-24	Sunny	13:05	40.0	46.0	44.0			N
22-Oct-24	Sunny	8:45	48.0	39.0	46.0			N
28-Oct-24	Sunny	8:30	41.0	43.0	41.0			N
		Average	46.4					
		Min	39.0					
		Max	62.0					

AM3 - Yan Chai Hospital Law Chan Chor Si Primary School

1-hour TSP (μg/m^3)								
Date	Weather	Start Time	1st Hour	2nd Hour	3rd Hour	Action Level	Limit Level	Exceedance (Y/N)
5-Oct-24	Sunny	8:15	39.0	30.0	40.0	279.9	500.0	N
10-Oct-24	Sunny	13:00	73.0	71.0	77.0			N
16-Oct-24	Sunny	8:50	37.0	33.0	21.0			N
22-Oct-24	Sunny	8:25	55.0	45.0	50.0			N
28-Oct-24	Sunny	8:45	31.0	32.0	45.0			N
		Average	45.3					
		Min	21.0					
		Max	77.0					

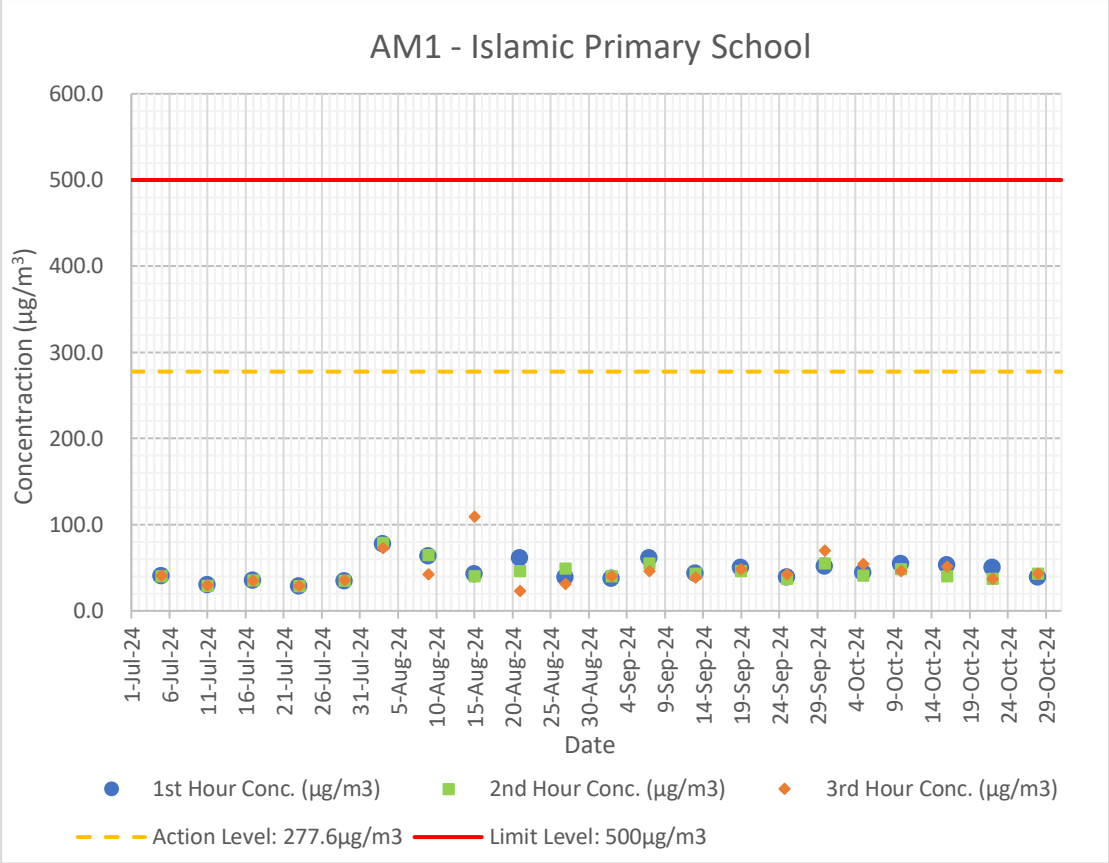
AM4 - Wu Tsui House, Wu King Estate

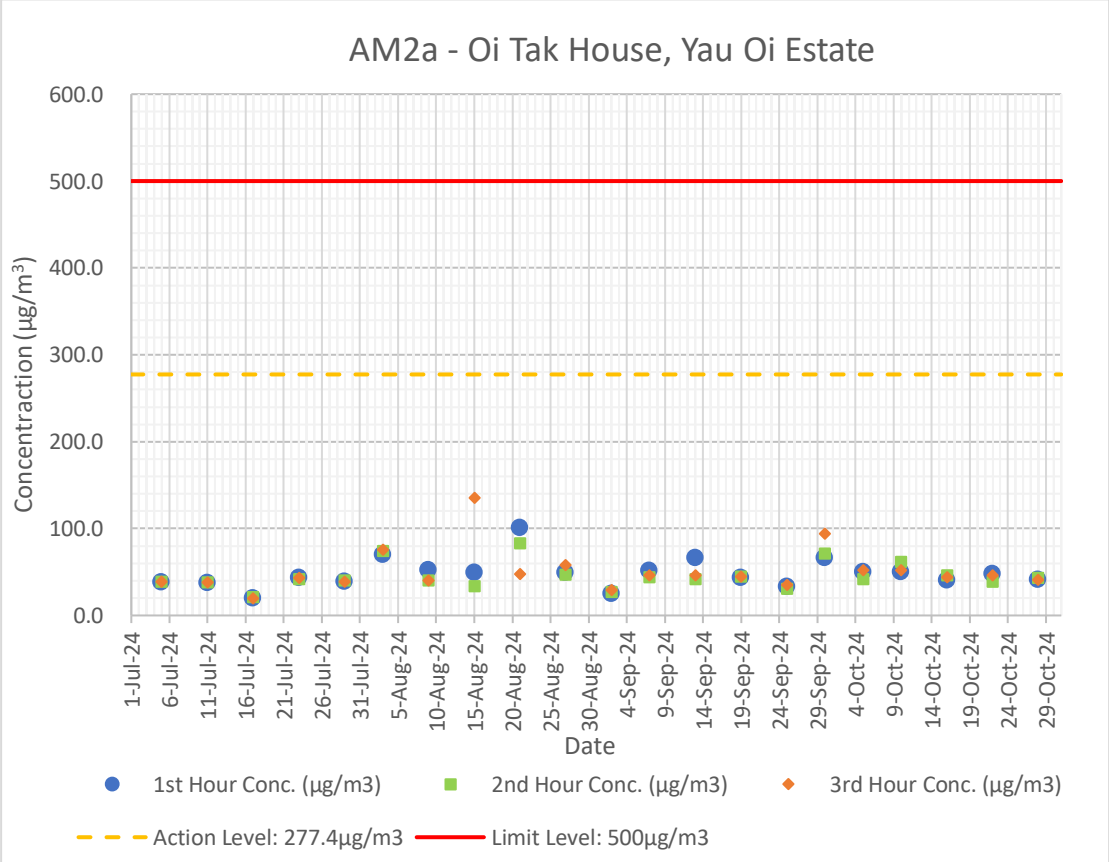
1-hour TSP (μg/m^3)								
Date	Weather	Start Time	1st Hour	2nd Hour	3rd Hour	Action Level	Limit Level	Exceedance (Y/N)
5-Oct-24	Sunny	8:25	56.0	42.0	34.0	279.9	500.0	N
10-Oct-24	Sunny	8:36	53.0	51.0	51.0			N
16-Oct-24	Sunny	9:00	49.0	45.0	39.0			N
22-Oct-24	Sunny	8:25	50.0	45.0	45.0			N
28-Oct-24	Sunny	8:55	47.0	31.0	51.0			N
		Average	45.9					
		Min	31.0					
		Max	56.0					

AM5 - Tuen Mun Swimming Pool (TMSP)

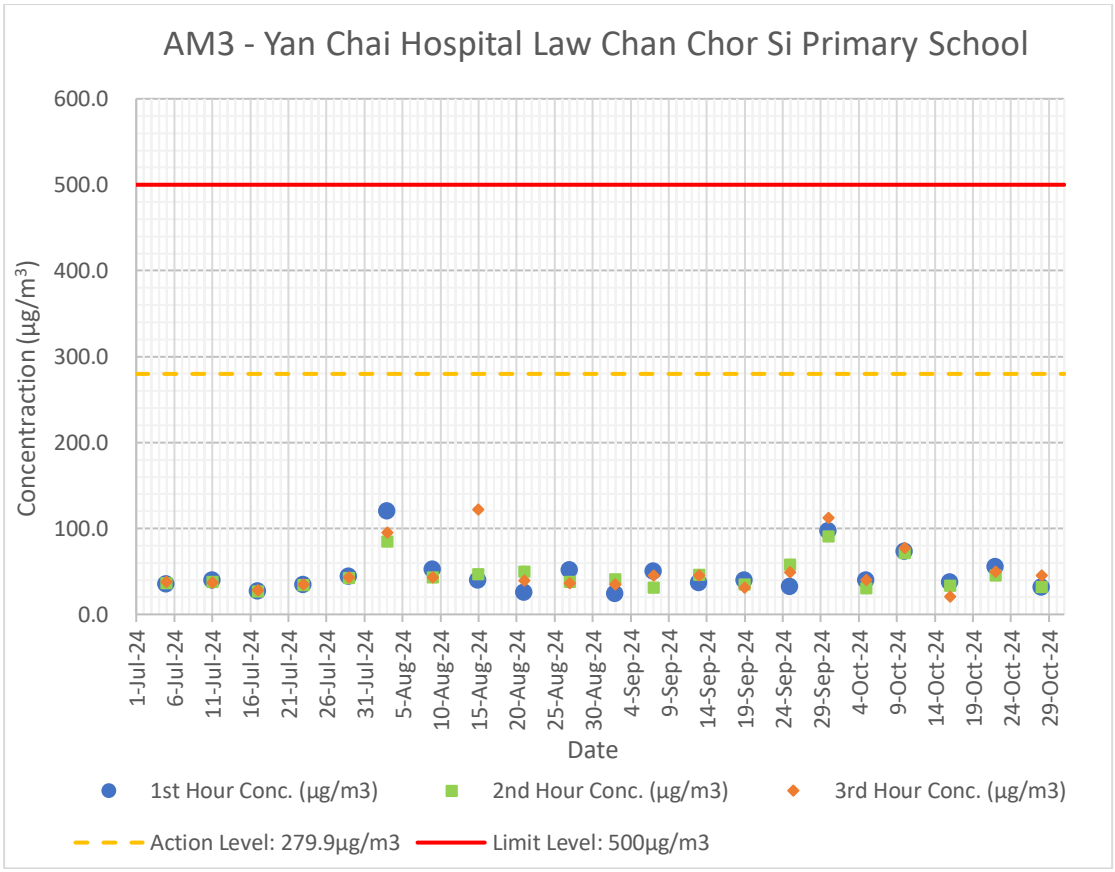
1-hour TSP (μg/m^3)								
Date	Weather	Start Time	1st Hour	2nd Hour	3rd Hour	Action Level	Limit Level	Exceedance (Y/N)
5-Oct-24	Sunny	13:10	61.0	52.0	54.0	277.1	500.0	N
10-Oct-24	Sunny	13:00	46.0	54.0	52.0			N
16-Oct-24	Sunny	8:41	34.0	41.0	45.0			N
22-Oct-24	Sunny	13:00	48.0	52.0	43.0			N
28-Oct-24	Sunny	8:45	41.0	39.0	45.0			N
		Average	47.1					
		Min	34.0					
		Max	61.0					

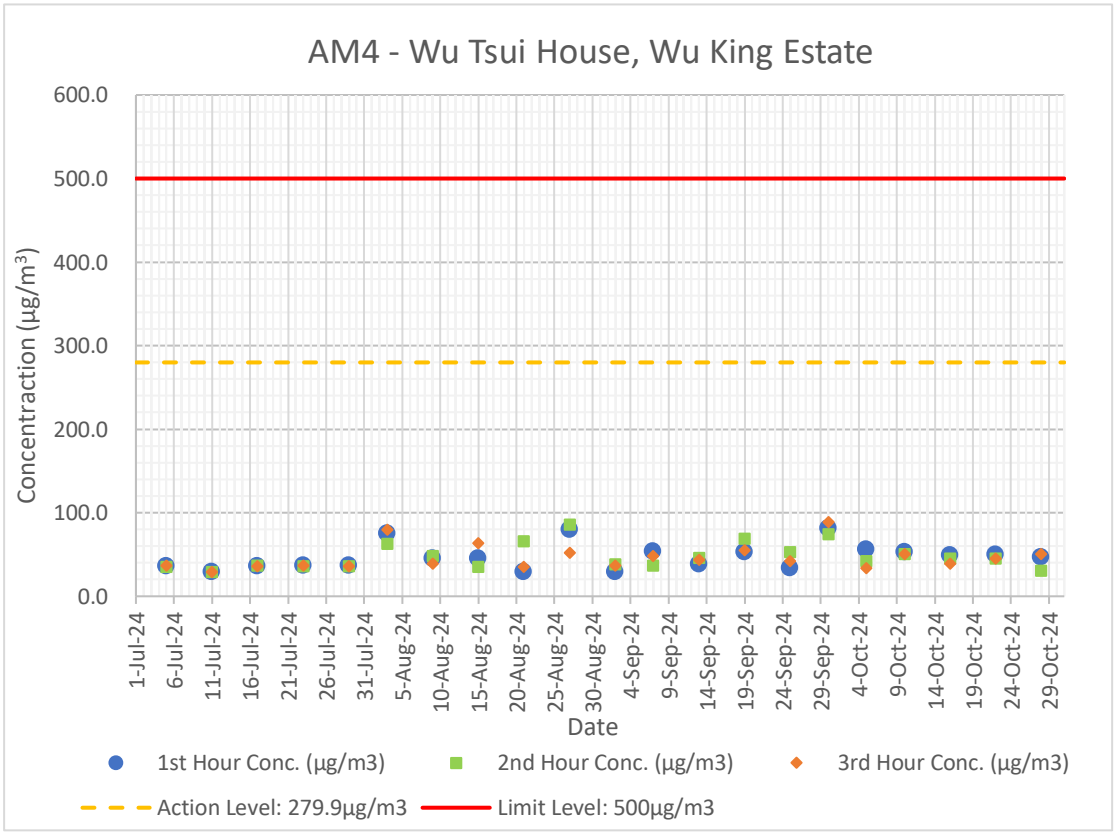
Appendix F – Graphical Presentations of Air Quality Monitoring Data (October 2024)



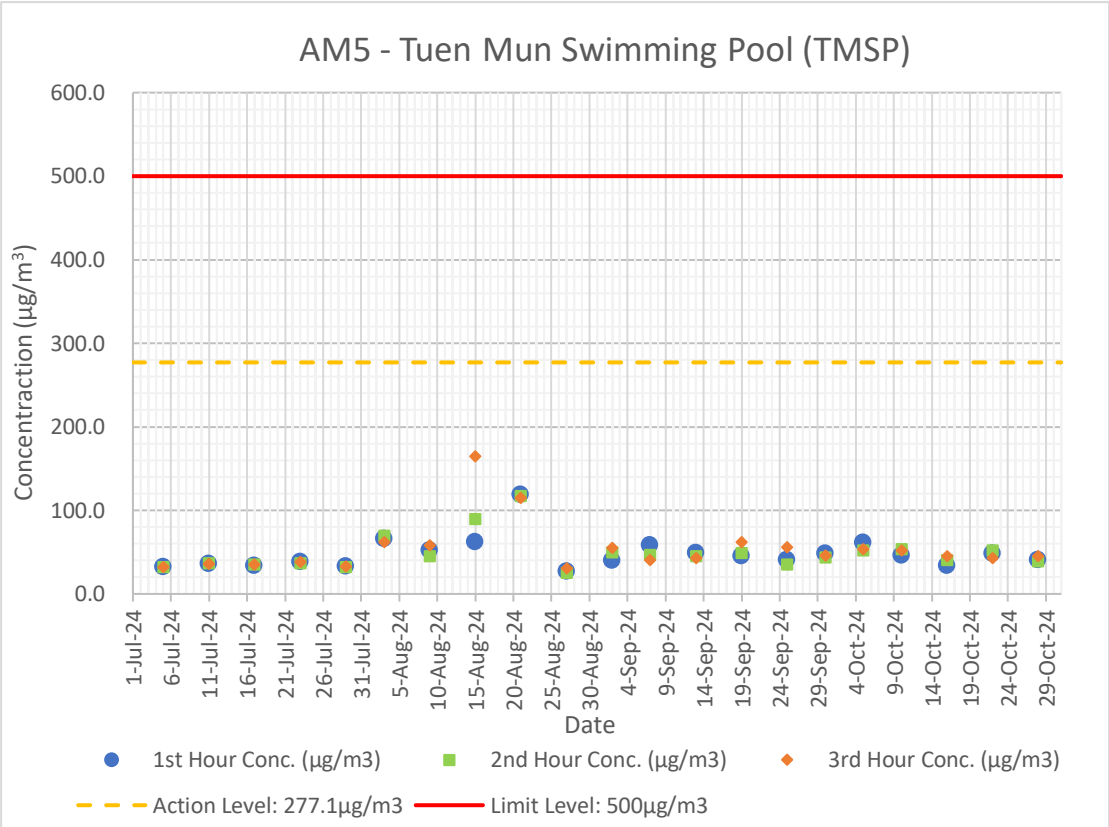


Appendix F – Graphical Presentations of Air Quality Monitoring Data (October 2024)





Appendix F – Graphical Presentations of Air Quality Monitoring Data (October 2024)



Appendix G Noise Monitoring Results and their Graphical Presentations

Appendix G - Regular Construction Noise Monitoring Results
Noise Monitoring Results for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

CN1 - Tower 1, Century Gateway Phase 1

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	10:40	68	75	N
16-Oct-24	Sunny	13:20	67		N
22-Oct-24	Sunny	10:30	68		N
28-Oct-24	Sunny	10:00	65		N

Remark: +3dB (A) correction was applied to free-field measurement at CN1.

CN2 - Islamic Primary School

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	9:35	63	70	N
16-Oct-24	Sunny	9:19	61		N
22-Oct-24	Sunny	9:25	65		N
28-Oct-24	Sunny	9:00	58		N

Remark: 65dB(A) during examination period

CN3 - Block 13, Lung Mun Oasis

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	14:50	61	75	N
16-Oct-24	Sunny	13:00	61		N
22-Oct-24	Sunny	13:46	60		N
28-Oct-24	Sunny	13:13	61		N

CN4 - Yan Chai Hospital Ho Sik Nam Primary School

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	14:05	62	70	N
16-Oct-24	Sunny	10:40	63		N
22-Oct-24	Sunny	13:50	64		N
28-Oct-24	Sunny	9:38	64	65	N

Remark: 65dB(A) during examination period

CN5 - Taoist Ching Chung Primary School

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	8:58	67	70	N
16-Oct-24	Sunny	10:25	65		N
22-Oct-24	Sunny	9:45	63		N
28-Oct-24	Sunny	10:15	64		N

Remark: 65dB(A) during examination period

CN6 - Tower 1, Oceania Heights

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	13:25	68	75	N
16-Oct-24	Sunny	11:23	70		N
22-Oct-24	Sunny	13:!0	70		N
28-Oct-24	Sunny	10:24	70		N

CN7 - Block 1, Pierhead Garden

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	14:38	63	75	N
16-Oct-24	Sunny	11:10	60		N
22-Oct-24	Sunny	9:00	63		N
28-Oct-24	Sunny	11:00	66		N

Remark: +3dB (A) correction was applied to free-field measurement at CN7.

Appendix G - Regular Construction Noise Monitoring Results

Noise Monitoring Results for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

CN8 - Wu Fai House

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	10:10	65	75	N
16-Oct-24	Sunny	9:10	62		N
22-Oct-24	Sunny	11:00	57		N
28-Oct-24	Sunny	9:00	63		N

CN9 - Block 8, Glorious Garden

Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	15:30	59	75	N
16-Oct-24	Sunny	13:45	66		N
22-Oct-24	Sunny	13:05	57		N
28-Oct-24	Sunny	11:19	61		N

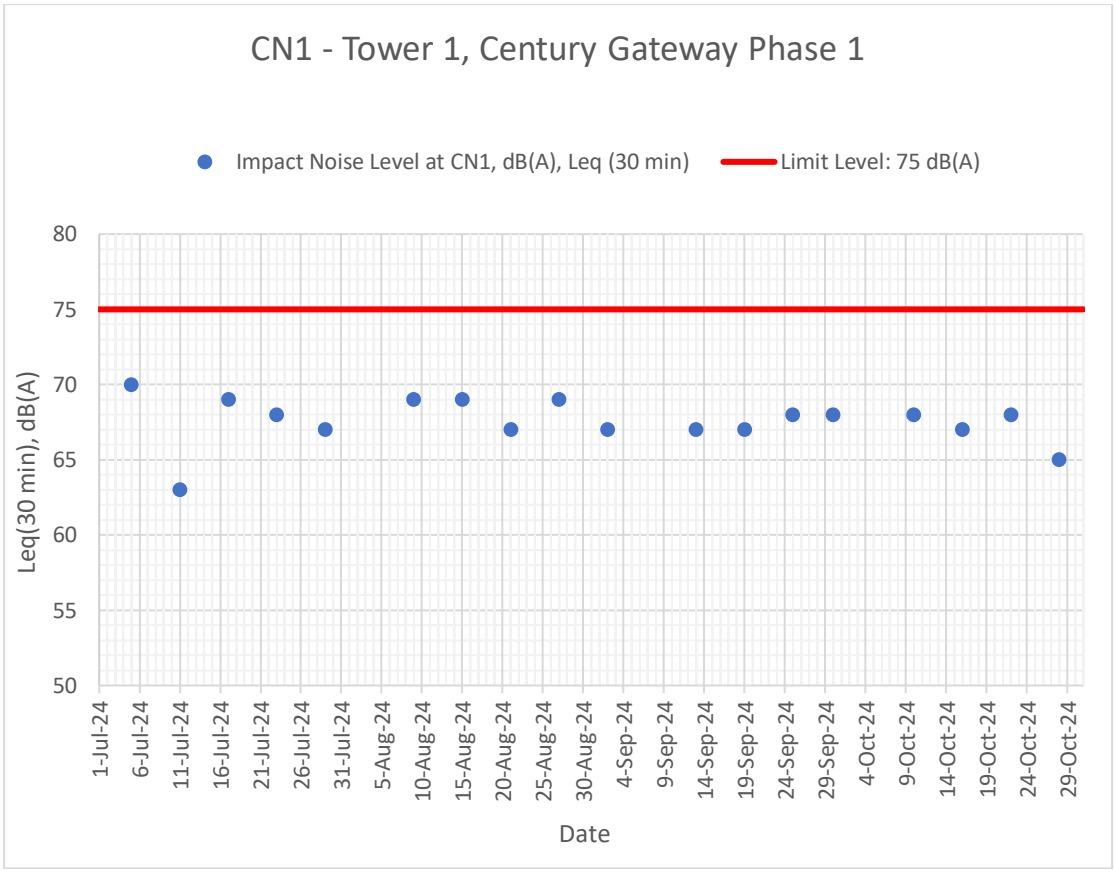
CN10 - Oi Lai House, Yau Oi Estate

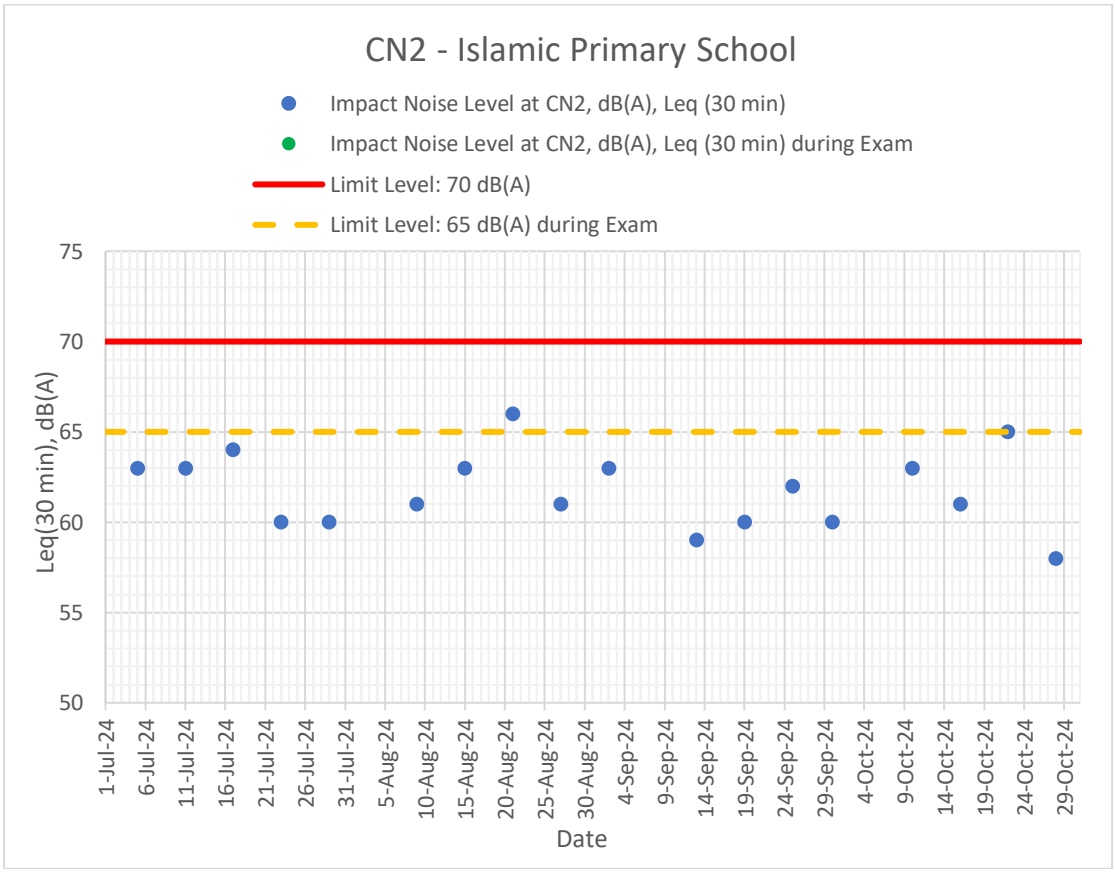
Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	9:00	60	75	N
16-Oct-24	Sunny	10:00	60		N
22-Oct-24	Sunny	8:50	61		N
28-Oct-24	Sunny	8:55	61		N

CN11 - Wu Tsui House

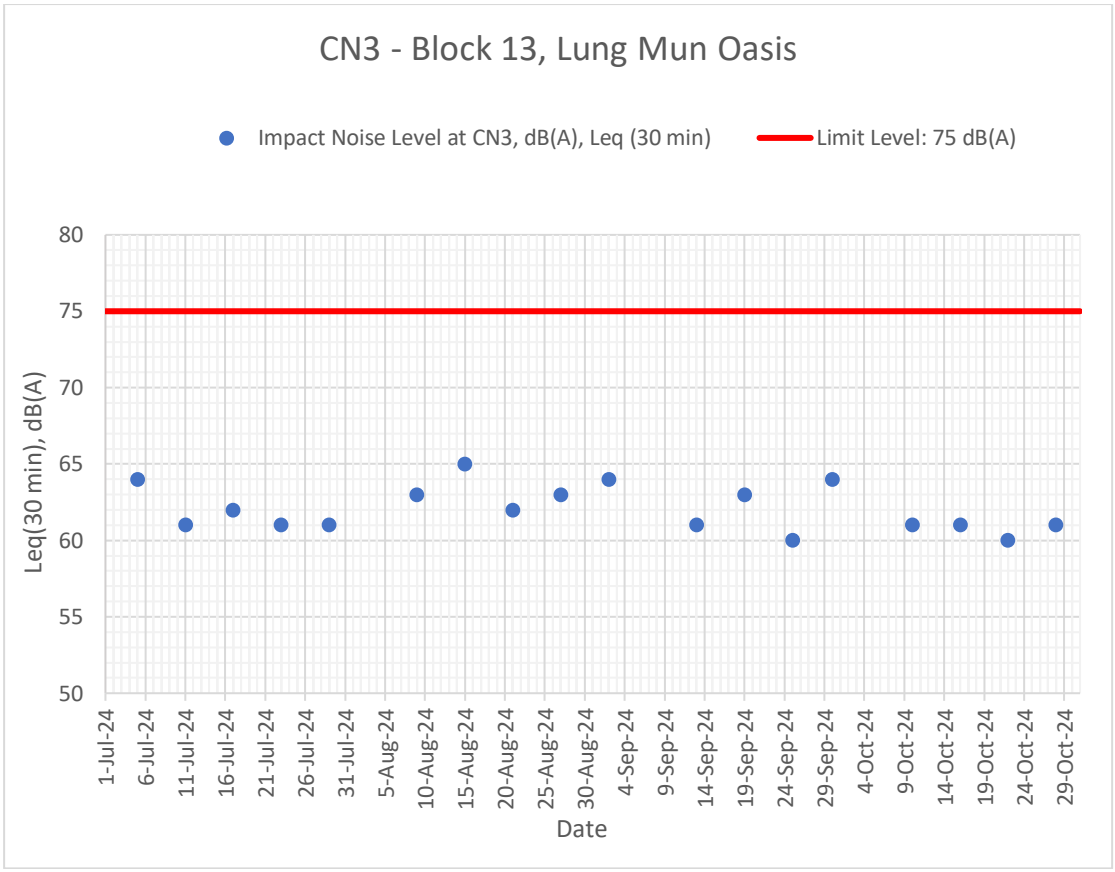
Date	Weather Condition	Time	Impact Noise Level, dB(A), Leq, 30mins	Limit Level, dB(A)	Exceedance (Y/N)
10-Oct-24	Sunny	9:38	63	75	N
16-Oct-24	Sunny	9:45	58		N
22-Oct-24	Sunny	10:25	64		N
28-Oct-24	Sunny	9:35	62		N

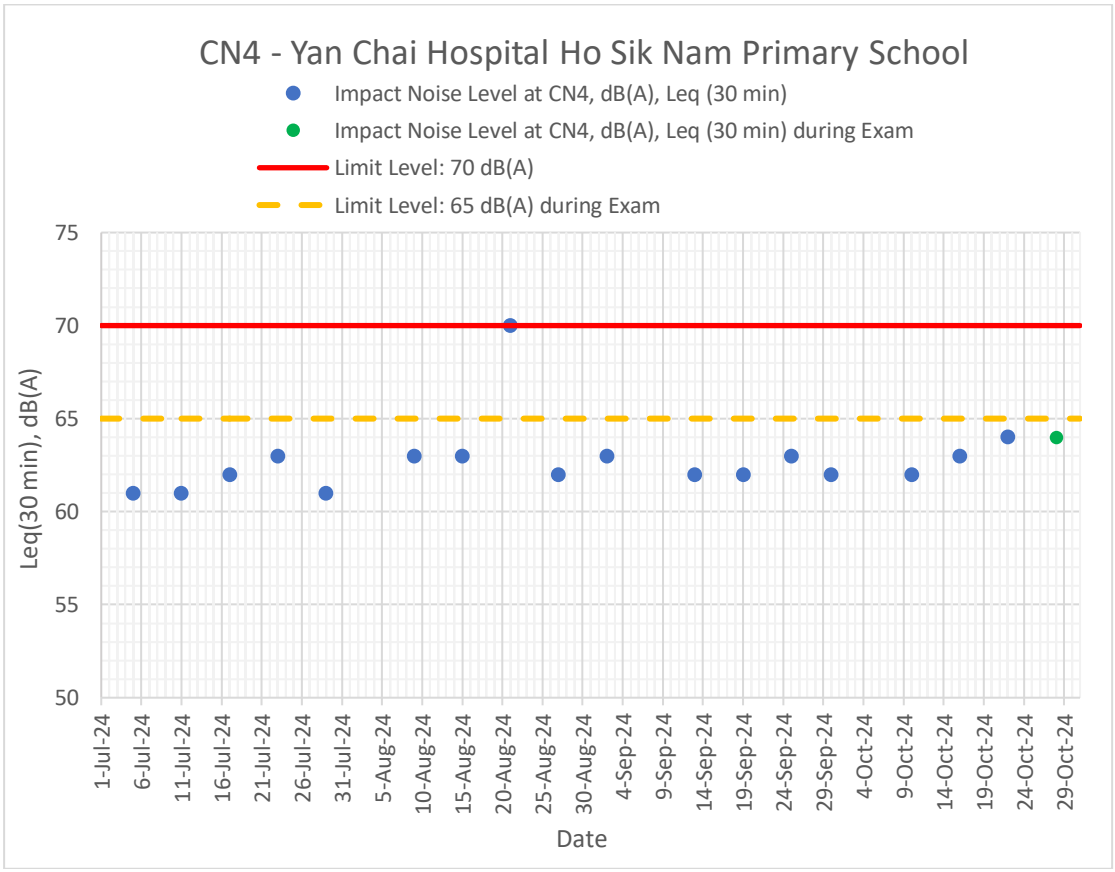
Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)



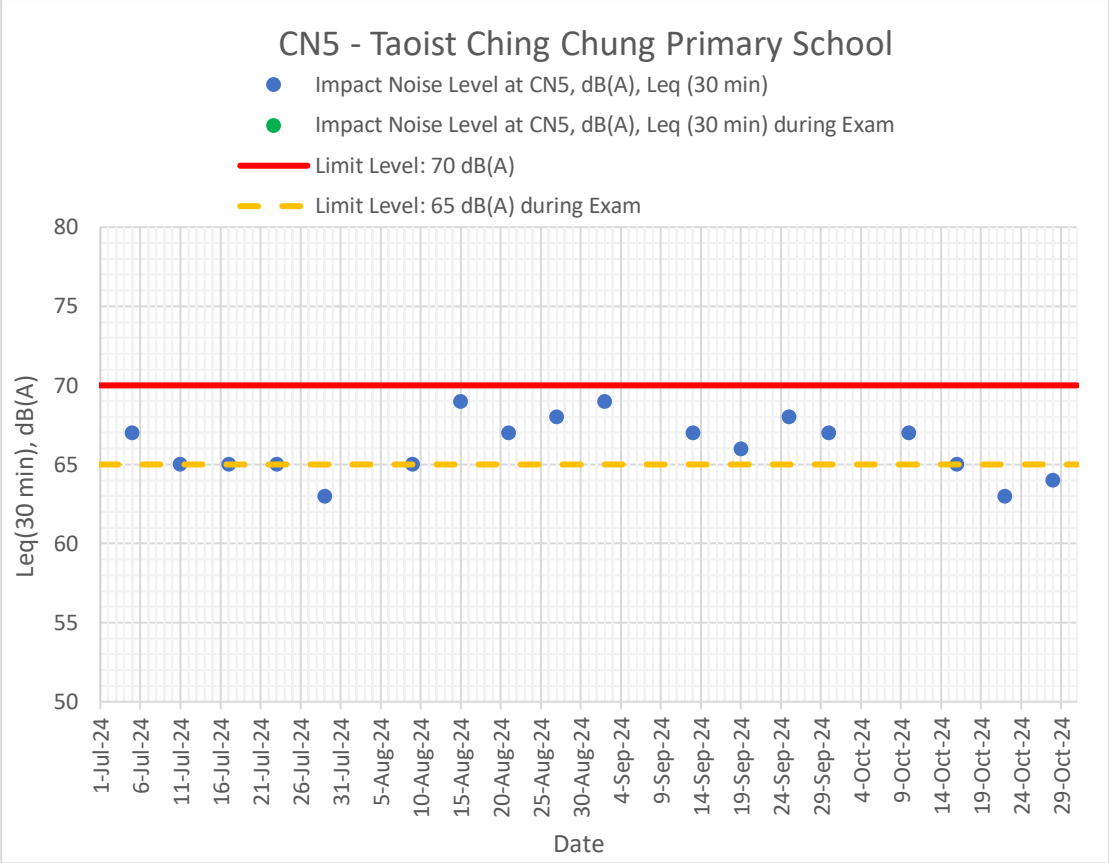


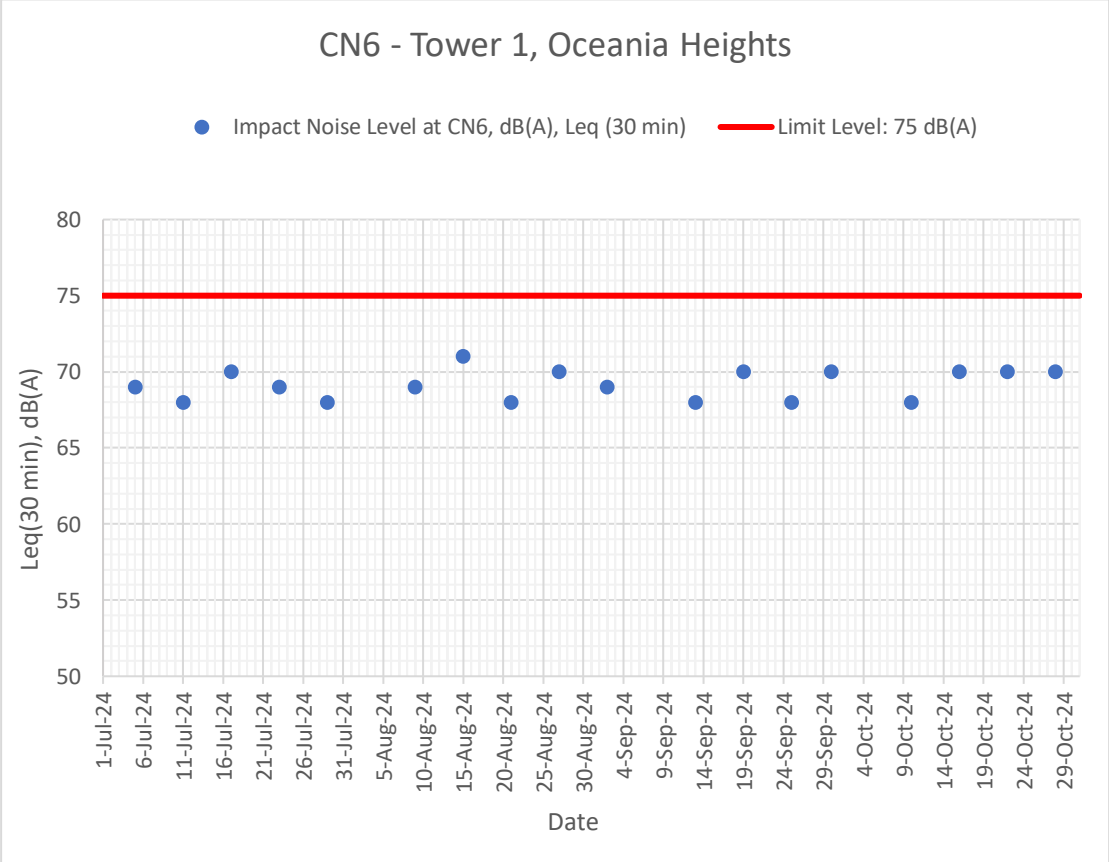
Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)



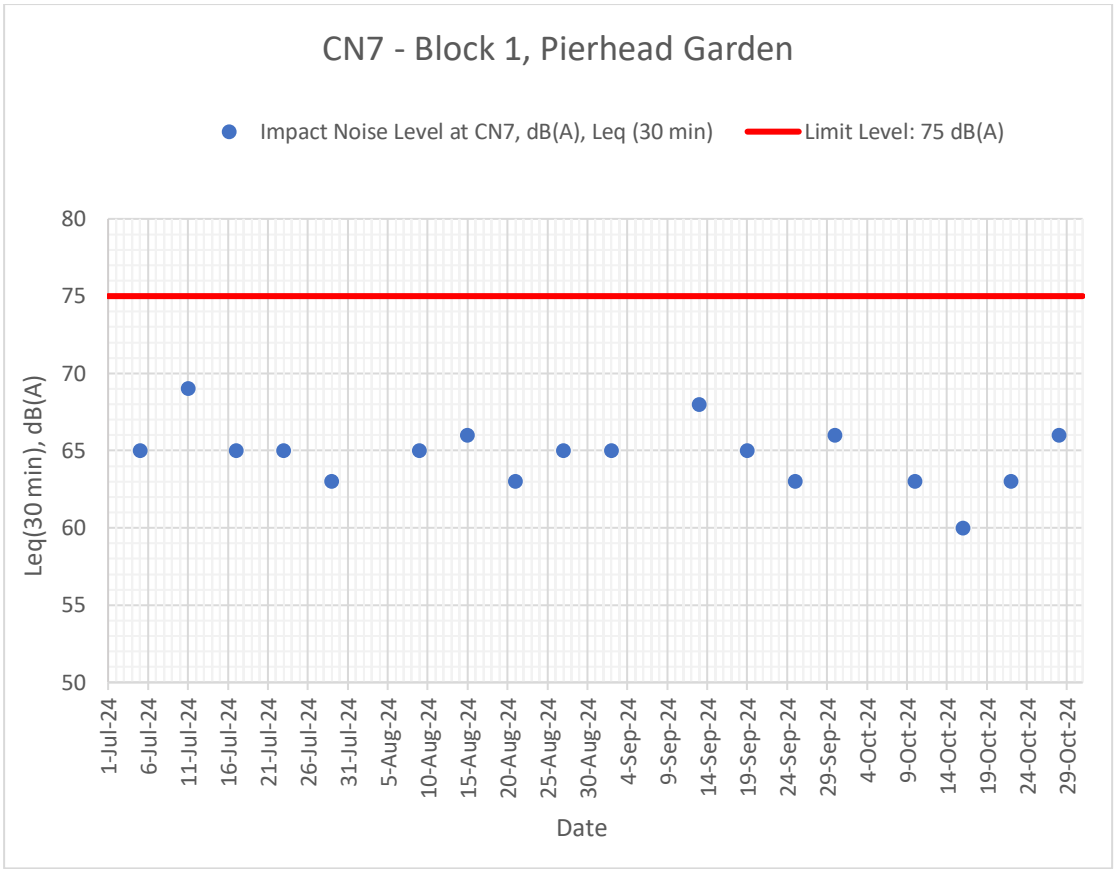


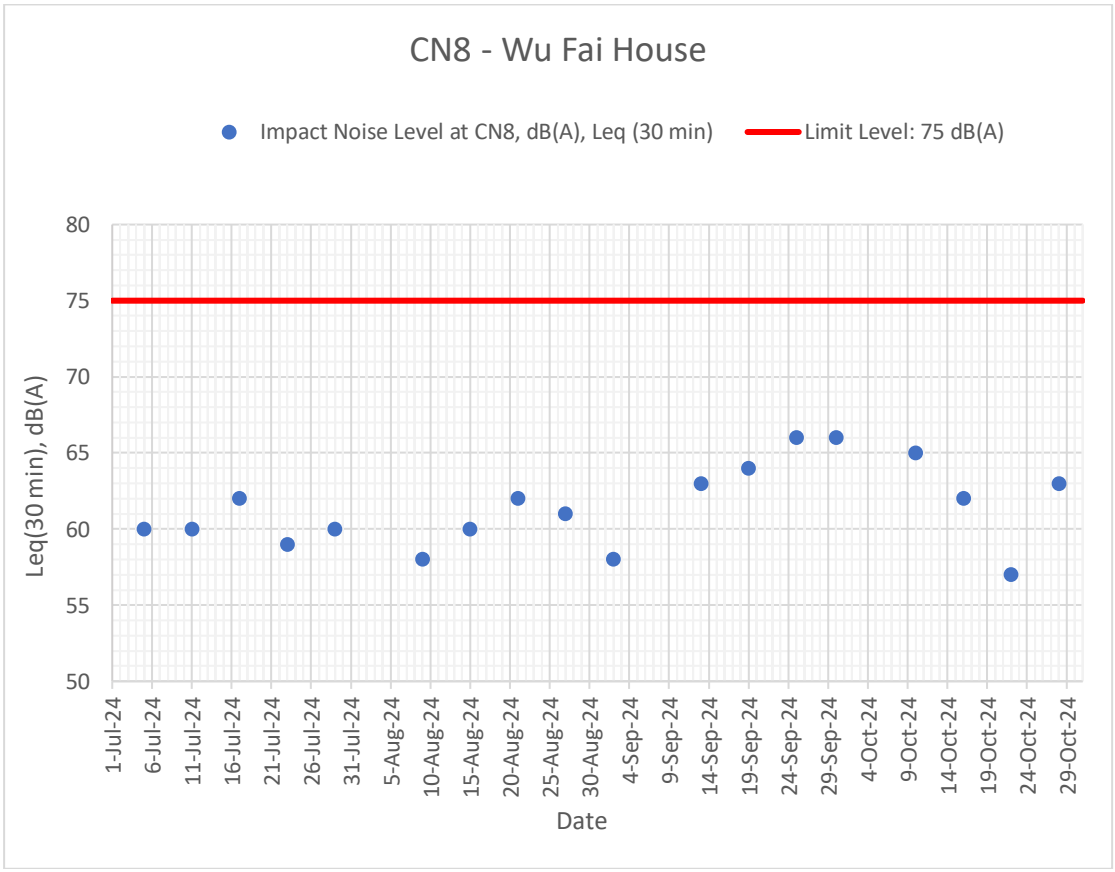
Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)



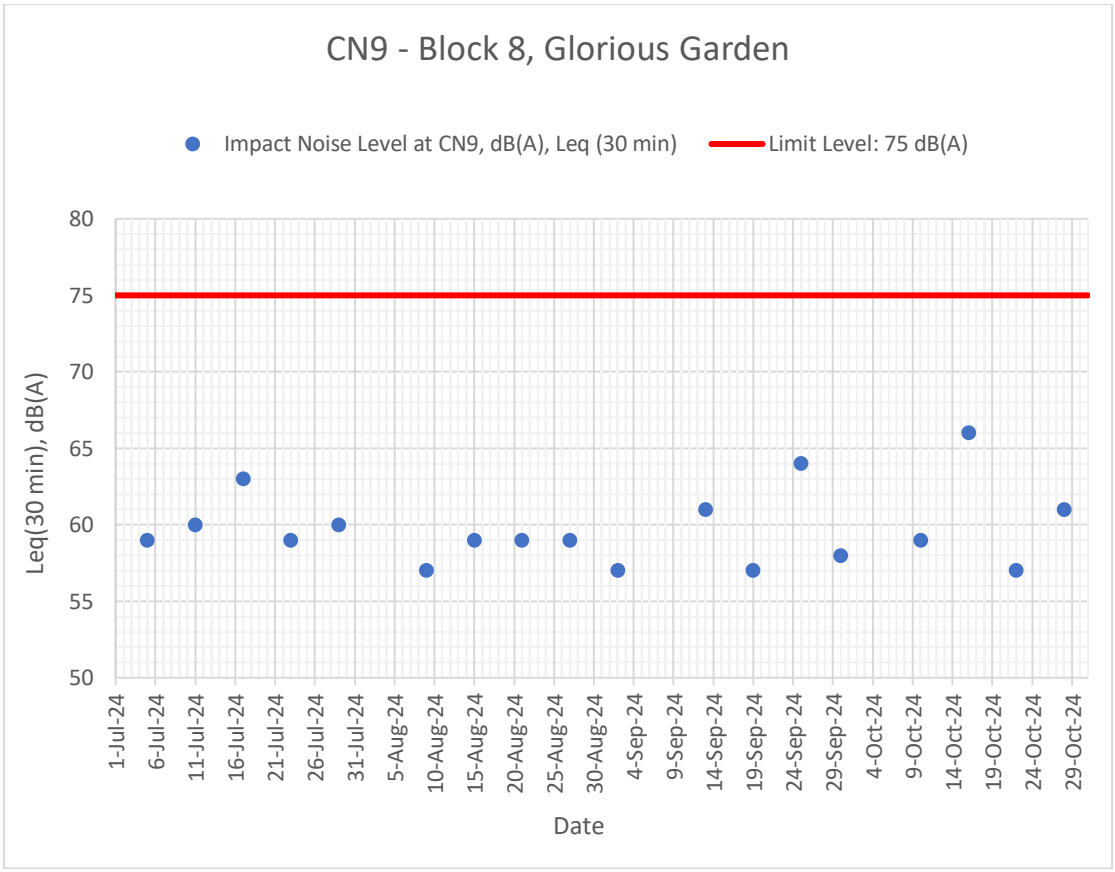


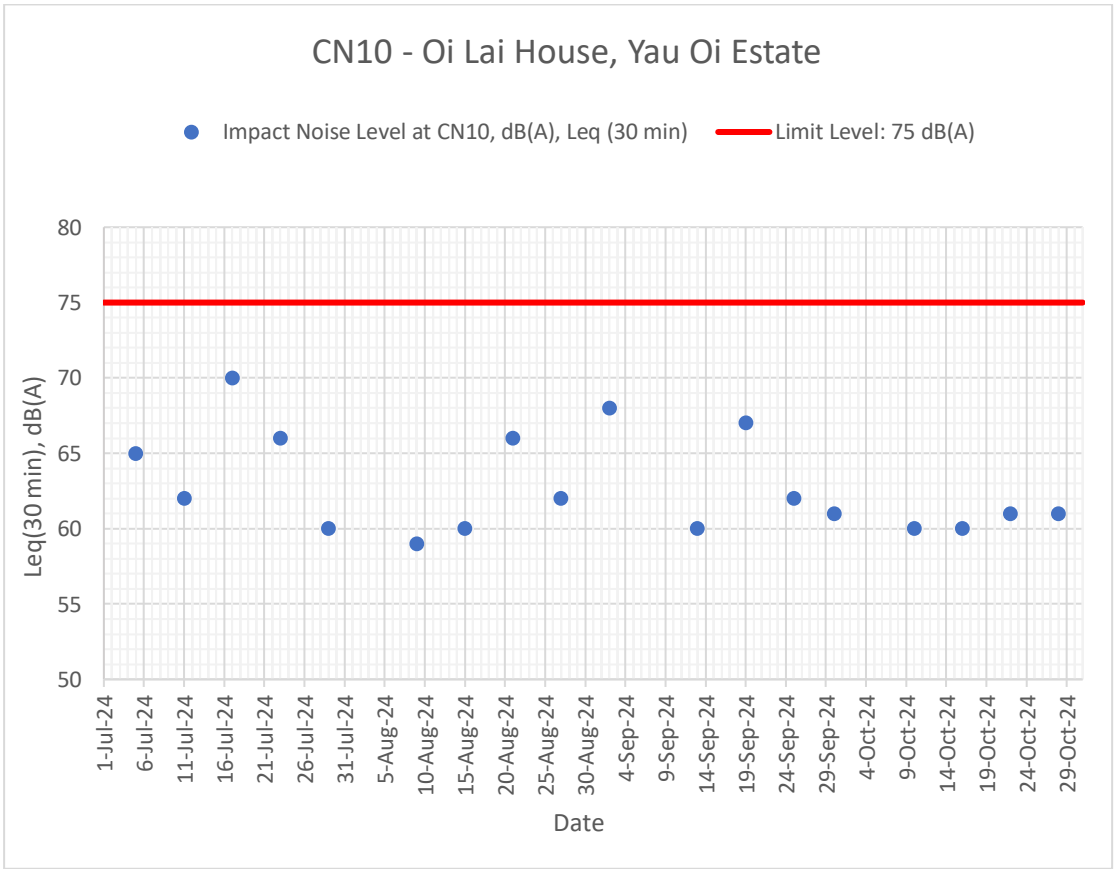
Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)



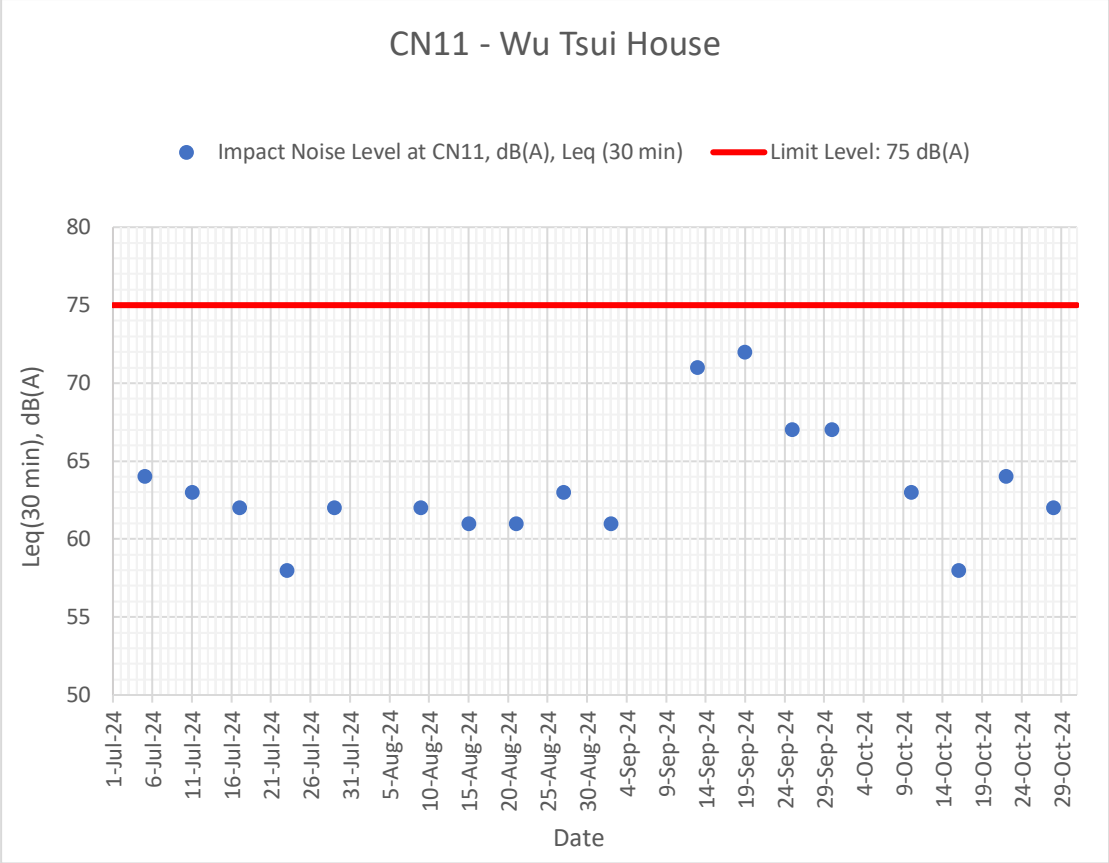


Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)





Appendix G – Graphical Presentations of Noise Monitoring Data (October 2024)



Appendix H Water Quality Monitoring Results and their Graphical Presentations

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **3-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	13:58	1.2	Middle	0.6	27.8	27.8	7.9	7.9	26.3	26.3	95.50	95.30	6.49	6.48	2.85	2.79	2.79	5.20	5.10	5.10
							27.8		7.9		26.3		95.10		6.46		2.72			5.00		
W2	Sunny	Moderate	14:06	1.9	Middle	1.0	28.0	28.0	7.9	7.9	28.1	28.1	82.10	82.00	5.50	5.49	3.30	3.28	3.28	5.20	5.00	5.00
							28.0		7.9		28.1		81.90		5.48		3.26			4.80		
W3	Sunny	Moderate	14:12	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.96	-	-	4.60
							-		-		-		-		-		-			-		
					Middle	1.3	27.9	27.9	7.9	7.9	28.1	28.1	87.70	87.35	5.89	5.87	3.00	2.96		4.30	4.60	
							27.9		7.9		28.1		87.00		5.84		2.92			4.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	14:17	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.77	-	-	4.05
							-		-		-		-		-		-			-		
					Middle	1.5	27.9	27.9	7.9	7.9	29.6	29.6	91.40	91.20	6.08	6.07	2.77	2.77		4.10	4.05	
							27.9		7.9		29.6		91.00		6.05		2.76			4.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	14:23	3.3	Surface	1.0	27.8	27.8	7.9	7.9	29.3	29.3	91.60	91.30	6.12	6.10	3.13	3.14	3.26	4.00	4.15	4.35
							27.7		7.9		29.3		91.00		6.08		3.14			4.30		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	27.9	27.9	8.0	8.0	30.0	30.0	93.10	93.00	6.18	6.17	3.36	3.39		4.70	4.55	
							27.9		8.0		30.0		92.90		6.16		3.42			4.40		
W6	Sunny	Moderate	14:29	3.5	Surface	1.0	28.1	28.1	8.0	8.0	30.7	30.7	95.60	95.60	6.30	6.30	3.77	3.77	3.17	3.90	3.90	4.15
							28.1		8.0		30.7		95.60		6.30		3.76			3.90		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.5	27.8	27.8	7.9	7.9	29.3	29.3	93.60	93.35	6.25	6.24	2.60	2.58		4.40	4.40	
							27.8		7.9		29.3		93.10		6.22		2.56			4.40		
W7	Sunny	Moderate	14:36	3.7	Surface	1.0	27.8	27.8	8.0	8.0	29.9	29.9	96.70	95.85	6.43	6.38	3.61	3.60	3.24	3.20	3.30	3.50
							27.8		8.0		29.9		95.00		6.32		3.58			3.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.7	27.9	27.9	8.0	8.0	30.2	30.2	95.60	95.30	6.34	6.32	2.93	2.88		3.60	3.70	
							27.9		8.0		30.2		95.00		6.29		2.83			3.80		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		3.34 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		3.62 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		6.12 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		6.63 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **3-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	8:08	1.5	Middle	1.3	27.2	27.2	7.9	7.9	30.1	30.1	82.20	81.40	5.52	5.47	2.80	2.81	2.81	4.80	4.60	4.60
							27.1		7.9		30.1		80.60		5.41		2.81			4.40		
W2	Sunny	Moderate	8:03	2.3	Middle	1.2	26.7	26.7	7.9	7.9	28.7	28.7	80.90	80.35	5.51	5.48	2.14	2.11	2.11	3.30	3.45	3.45
							26.7		7.9		28.7		79.80		5.44		2.08			3.60		
W3	Sunny	Moderate	7:57	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.17	-	-	2.70
							-		-		-		-		-		-			-		
					Middle	1.4	25.6	7.8	27.6	27.6	27.6	27.6	80.20	80.50	5.61	5.64	2.24	2.17		2.70	2.70	
							25.5		27.6		27.6		80.80		5.66		2.10			2.70		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	7:31	3.6	Surface	1.0	26.7	26.7	8.0	7.9	89.6	30.1	89.60	88.75	6.07	6.01	3.91	4.01	3.71	3.40	3.50	4.00
							26.7		7.9		87.9		87.90		5.95		4.10			3.60		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.6	26.4	26.4	7.9	7.9	88.2	29.7	88.20	87.45	6.02	5.97	3.46	3.42		4.60	4.50	
							26.4		7.9		86.7		86.70		5.91		3.38			4.40		
W9	Sunny	Moderate	7:37	3.3	Surface	1.0	27.1	27.1	8.0	8.0	86.4	30.5	86.40	86.05	5.80	5.78	3.31	3.27	2.92	3.10	3.25	4.03
							27.1		8.0		85.7		85.70		5.75		3.22			3.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	26.4	26.4	7.9	7.9	84.3	28.9	84.30	83.20	5.78	5.70	2.61	2.58		4.80	4.80	
							26.4		7.9		82.1		82.10		5.62		2.54			4.80		
W10	Sunny	Moderate	7:44	3.5	Surface	1.0	27.3	27.3	8.0	8.0	86.1	31.0	86.10	85.95	5.75	5.74	4.17	4.16	3.69	3.80	3.90	3.28
							27.3		8.0		85.8		85.80		5.72		4.15			4.00		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.5	27.0	27.0	7.9	7.9	87.5	30.4	87.50	86.95	5.88	5.85	3.23	3.21		2.50	2.65	
							27.0		7.9		86.4		86.40		5.81		3.19			2.80		
W11	Sunny	Moderate	7:52	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.47	-	-	2.35
							-		-		-		-		-		-			-		
					Middle	1.5	25.8	25.9	7.9	7.9	83.9	28.3	83.90	83.20	5.82	5.77	2.49	2.47		2.30	2.35	
							26.0		7.9		82.5		82.50		5.71		2.44			2.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9**	W10		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

** Since there was only one sampling depth during baseline monitoring, the derived action level and limit level for DO (i.e. middle depth) from baseline monitoring were adopted to compare the values obtained from the surface and bottom depths in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	4.46 (120% of Control Station)				4.46 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	4.83 (130% of Control Station)				4.83 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	4.80 (120% of Control Station)				4.80 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	5.20 (130% of Control Station)				5.20 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **5-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	12:48	1.6	Middle	0.8	27.9	27.9	7.9	7.9	32.9	32.9	81.00	80.95	5.32	5.32	4.54	4.50	4.50	4.80	4.60	4.60
							27.9		7.9		32.9		80.90		5.31		4.46			4.40		
W2	Sunny	Moderate	12:55	2.2	Middle	1.1	28.1	28.1	7.9	7.9	32.5	32.5	75.10	75.05	4.90	4.90	4.13	4.14	4.14	6.10	5.85	***5.85***
							28.1		7.9		32.5		75.00		4.89		4.14			5.60		
W3	Sunny	Moderate	13:02	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.97	-	-	4.45
							-		-		-		-		-		-			-		
					Middle	1.4	28.0	28.0	7.9	7.9	32.4	32.3	79.30	79.25	5.19	5.17	2.97	2.97		4.30	4.45	
							28.0		7.9		32.3		79.20		5.15		2.96			4.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	13:08	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.03	-	-	4.30
							-		-		-		-		-		-			-		
					Middle	1.5	27.9	27.9	7.9	7.9	32.0	32.0	80.90	80.85	5.31	5.31	3.03	3.03		4.20	4.30	
							27.9		7.9		32.0		80.80		5.30		3.02			4.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	13:13	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.12	-	-	***6.10***
							-		-		-		-		-		-			-		
					Middle	1.5	28.0	28.0	7.9	7.9	33.3	33.3	83.20	83.15	5.41	5.41	4.11	4.12		6.60	6.10	
							28.0		7.9		33.3		83.10		5.40		4.12			5.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Sunny	Moderate	13:19	3.5	Surface	1.0	28.0	28.0	7.9	7.9	31.4	31.4	82.00	82.00	5.39	5.39	3.06	3.05	3.77	5.00	4.70	5.30
							28.0		7.9		31.4		82.00		5.39		3.04			4.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.5	28.1	28.1	7.9	7.9	32.9	32.9	84.10	84.00	5.48	5.48	4.48	4.49		6.00	5.90	
							28.1		7.9		32.9		83.90		5.47		4.49			5.80		
W7	Sunny	Moderate	13:25	3.4	Surface	1.0	28.0	28.0	7.8	7.8	30.8	30.8	81.70	81.65	5.39	5.39	2.94	2.94	3.99	4.00	4.45	5.40
							28.0		7.8		30.8		81.60		5.38		2.93			4.90		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.4	27.9	27.9	7.9	7.9	32.9	32.9	84.00	83.95	5.48	5.48	5.04	5.05		6.50	6.35	
							27.9		7.9		32.9		83.90		5.48		5.06			6.20		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		5.40 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		5.85 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		5.52 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		5.98 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **5-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	8:46	1.3	Middle	0.7	26.8	26.8	7.7	7.7	28.6	28.6	65.50	65.40	4.46	4.46	3.38	3.38	3.38	4.20	3.95	3.95
							26.8		7.7		28.6		65.30		4.45		3.37			3.70		
W2	Sunny	Moderate	8:39	1.8	Middle	0.9	27.3	27.3	7.8	7.8	32.6	32.6	68.10	68.05	4.49	4.49	3.47	3.47	3.47	5.10	5.45	5.45
							27.3		7.8		32.6		68.00		4.49		3.47			5.80		
W3	Sunny	Moderate	8:33	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.66	-	-	5.90
							-		-		-		-		-		-			-		
					Middle	1.4	27.2	7.9	32.6	32.6	32.6	32.6	75.50	75.40	4.99	4.99	3.67	3.66		6.00	5.90	
							27.2		32.6		32.6		75.30		4.98		3.64			5.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	8:10	3.3	Surface	1.0	26.4	26.4	7.9	7.9	88.6	32.0	88.60	88.40	5.96	5.95	3.86	3.85	4.21	5.20	5.35	5.70
							26.4		7.9		88.2		88.20		5.93		3.83			5.50		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	26.4	26.4	7.9	7.9	89.6	33.0	89.60	89.25	5.99	5.98	4.57	4.58		5.80	6.05	
							26.4		7.9		88.9		88.90		5.96		4.59			6.30		
W9	Sunny	Moderate	8:16	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.56	-	-	4.40
							-		-		-		-		-		-			-		
					Middle	1.5	27.1	27.1	7.8	7.8	72.6	31.8	72.60	72.50	4.83	4.83	3.58	3.56		4.00	4.40	
							27.1		7.8		72.4		72.40		4.82		3.54			4.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Sunny	Moderate	8:22	3.2	Surface	1.0	27.2	27.2	7.9	7.9	77.4	33.0	77.40	77.35	5.11	5.11	4.00	3.99	4.63	7.00	6.70	***7.60***
							27.2		7.9		77.3		77.30		5.10		3.98			6.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.2	27.0	27.0	7.8	7.8	76.2	32.1	76.20	76.15	5.07	5.07	5.27	5.26		8.50	8.50	
							27.0		7.8		76.1		76.10		5.06		5.25			8.50		
W11	Sunny	Moderate	8:28	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.20	-	-	4.25
							-		-		-		-		-		-			-		
					Middle	1.4	27.2	27.2	7.8	7.8	77.9	32.1	77.90	77.80	5.17	5.16	3.20	3.20		4.50	4.25	
							27.2		7.8		77.7		77.70		5.15		3.19			4.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	5.06 (120% of Control Station)				5.06 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	5.48 (130% of Control Station)				5.48 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	6.84 (120% of Control Station)				6.84 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	7.41 (130% of Control Station)				7.41 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 8-Oct-2024 **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	14:32	0.9	Middle	0.5	28.4	28.4	7.6	7.6	26.3	26.2	75.60	75.05	5.08	5.05	4.23	4.22	4.22	6.60	6.20	6.20
							28.4		7.6		26.2		74.50		5.01		4.21			5.80		
W2	Sunny	Moderate	14:39	1.4	Middle	0.7	29.4	29.4	7.7	7.7	29.5	29.5	75.40	75.15	4.89	4.88	5.33	5.34	5.34	7.90	8.25	***8.25***
							29.4		7.7		29.5		74.90		4.86		5.34			8.60		
W3	Sunny	Moderate	14:44	1.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.28	-	-	6.65
							-		-		-		-		-		-			-		
					Middle	1.0	28.6	28.6	7.9	7.9	31.3	31.3	88.30	88.20	5.75	5.75	4.28	4.28		6.30	6.65	
							28.6		7.9		31.3		88.10		5.74		4.28			7.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	14:50	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.18	-	-	***8.40***
							-		-		-		-		-		-			-		
					Middle	1.3	29.1	29.1	7.9	7.9	31.0	31.0	87.50	87.45	5.67	5.66	5.20	5.18		8.80	8.40	
							29.1		7.9		31.0		87.40		5.65		5.15			8.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	14:56	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.46	-	-	***7.90***
							-		-		-		-		-		-			-		
					Middle	1.4	28.8	28.8	7.9	7.9	31.6	31.6	85.60	85.55	5.54	5.54	4.50	4.46		7.80	7.90	
							28.8		7.9		31.6		85.50		5.54		4.42			8.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Sunny	Moderate	15:02	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.91	-	-	4.30
							-		-		-		-		-		-			-		
					Middle	1.5	29.2	29.2	7.9	7.9	30.5	30.5	90.80	90.50	5.87	5.86	2.89	2.91		4.10	4.30	
							29.2		7.9		30.5		90.20		5.84		2.92			4.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W7	Sunny	Moderate	15:09	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.74	-	-	4.55
							-		-		-		-		-		-			-		
					Middle	1.5	28.9	28.9	7.8	7.8	30.4	30.4	86.50	86.25	5.63	5.62	2.73	2.74		4.90	4.55	
							28.9		7.8		30.4		86.00		5.60		2.74			4.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)		Mid-Ebb Tide								
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

(120% of Control Station)
(130% of Control Station)

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)		Mid-Ebb Tide					
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		5.06 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		5.49 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)		Mid-Ebb Tide					
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		7.44 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		8.06 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 8-Oct-2024 Control Station: W8 Mid-Flood Tide

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	11:49	0.9	Middle	0.5	26.9	26.9	7.5	7.5	22.1	22.1	53.00	52.20	3.74	3.68	3.65	3.61	3.61	5.00	4.95	4.95
							26.9		7.5		22.1		51.40		3.62		3.56			4.90		
W2	Sunny	Moderate	11:43	1.4	Middle	0.7	28.2	28.2	7.7	7.7	31.2	31.2	60.80	60.55	3.98	3.97	6.85	6.82	6.82	10.00	9.80	9.80
							28.2		7.7		31.2		60.30		3.96		6.78			9.60		
W3	Sunny	Moderate	11:35	2.2	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.38	-	-	6.60
							-		-		-		-		-		-			-		
					Middle	1.1	27.6	7.7	26.1	26.1	26.1	26.1	70.20	69.80	4.78	4.76	4.45	4.38		6.90	6.60	
							27.6		26.1		26.1		69.40		4.73		4.31			6.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	11:11	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	9.07	-	-	13.70
							-		-		-		-		-		-			-		
					Middle	1.5	28.2	28.2	7.8	7.8	89.6	31.2	89.60	89.05	5.88	5.85	9.06	9.07		14.10	13.70	
							28.2		7.8		88.5		88.50		5.81		9.08			13.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W9	Sunny	Moderate	11:18	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.11	-	-	8.00
							-		-		-		-		-		-			-		
					Middle	1.2	27.9	27.9	7.8	7.8	70.2	29.4	70.20	70.15	4.67	4.67	5.09	5.11		7.80	8.00	
							27.9		7.8		70.1		70.10		4.66		5.13			8.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Sunny	Moderate	11:24	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.18	-	-	7.50
							-		-		-		-		-		-			-		
					Middle	1.4	28.1	28.1	7.8	7.8	74.6	31.0	74.60	74.25	4.90	4.88	5.23	5.18		7.40	7.50	
							28.1		7.8		73.9		73.90		4.86		5.13			7.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Sunny	Moderate	11:29	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.33	-	-	6.70
							-		-		-		-		-		-			-		
					Middle	1.2	28.2	28.2	7.8	7.8	72.5	30.6	72.50	72.10	4.77	4.75	4.34	4.33		6.80	6.70	
							28.2		7.8		71.7		71.70		4.72		4.31			6.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	10.88 (120% of Control Station)				- (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	11.79 (130% of Control Station)				- (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	16.44 (120% of Control Station)				16.44 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	17.81 (130% of Control Station)				17.81 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **10-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Fine	Moderate	16:50	0.9	Middle	0.5	28.6	28.6	7.6	7.6	26.9	26.9	66.40	66.20	4.43	4.42	4.57	4.56	4.56	4.60	4.55	4.55
							28.6		7.6		26.9		66.00		4.41		4.55			4.50		
W2	Fine	Moderate	16:43	1.7	Middle	0.9	28.3	28.3	7.8	7.8	29.7	29.6	80.10	79.80	5.29	5.27	4.05	4.06	4.06	5.60	5.55	5.55
							28.3		7.8		29.5		79.50		5.25		4.07			5.50		
W3	Fine	Moderate	16:36	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.85	-	-	4.95
							-		-		-		-		-		-			-		
					Middle	1.4	28.3	7.8	30.5	30.5	30.5	30.5	83.30	83.05	5.48	5.47	3.86	3.85		5.00	4.95	
							28.3		30.5		30.5		82.80		5.45		3.84			4.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Fine	Moderate	16:10	3.4	Surface	1.0	27.8	27.8	7.8	7.8	90.3	31.8	90.30	90.20	5.95	5.94	4.34	4.34	4.68	5.10	5.10	5.93
							27.8		7.8		90.1		90.10		5.93		4.34			5.10		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.4	27.6	27.6	7.9	7.9	92.2	32.2	92.20	91.80	6.08	6.05	5.01	5.01		6.80	6.75	
							27.6		7.9		91.4		91.40		6.02		5.01			6.70		
W9	Fine	Moderate	16:19	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.48	-	-	4.90
							-		-		-		-		-		-			-		
					Middle	1.5	28.2	28.2	7.8	7.8	83.3	31.1	83.30	83.05	5.46	5.45	4.49	4.48		5.00	4.90	
							28.2		7.8		82.8		82.80		5.43		4.46			4.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Fine	Moderate	16:25	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.94	-	-	3.95
							-		-		-		-		-		-			-		
					Middle	1.5	28.3	28.3	7.8	7.8	85.5	30.6	85.50	85.30	5.61	5.60	3.96	3.94		4.00	3.95	
							28.3		7.8		85.1		85.10		5.59		3.91			3.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Fine	Moderate	16:31	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.25	-	-	4.90
							-		-		-		-		-		-			-		
					Middle	1.3	28.5	28.5	7.8	7.8	82.4	30.1	82.40	82.35	5.42	5.42	4.23	4.25		5.20	4.90	
							28.5		7.8		82.3		82.30		5.41		4.26			4.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	5.61 (120% of Control Station)				5.61 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	6.08 (130% of Control Station)				6.08 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	7.11 (120% of Control Station)				7.11 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	7.70 (130% of Control Station)				7.70 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **12-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	9:03	0.8	Middle	0.4	27.4	27.4	7.7	7.7	27.2	27.2	75.50	74.60	5.13	5.09	1.79	1.81	1.81	2.00	2.25	2.25
							27.4		7.7		27.2		73.70		5.04		1.82			2.50		
W2	Sunny	Moderate	9:10	1.3	Middle	0.7	27.4	27.4	7.4	7.4	26.7	26.7	37.70	37.30	2.57	2.53	3.84	3.85	3.85	2.00	2.00	2.00
							27.4		7.4		26.7		36.90		2.48		3.85			2.00		
W3	Sunny	Moderate	9:15	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.59	-	-	1.55
							-		-		-		-		-		-			-		
					Middle	1.3	27.1	27.1	7.6	7.6	24.5	24.5	50.20	49.25	3.48	3.42	2.62	2.59		1.50	1.55	
							27.1		7.6		24.5		48.30		3.35		2.55			1.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	9:21	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.08	-	-	4.30
							-		-		-		-		-		-			-		
					Middle	1.4	27.2	27.2	7.5	7.5	27.8	27.8	55.90	55.65	3.80	3.80	3.10	3.08		4.40	4.30	
							27.2		7.5		27.8		55.40		3.79		3.06			4.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	9:27	2.4	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.13	-	-	4.30
							-		-		-		-		-		-			-		
					Middle	1.2	27.2	27.2	7.5	7.5	27.6	27.6	48.30	48.00	3.29	3.27	3.13	3.13		4.10	4.30	
							27.2		7.5		27.6		47.70		3.25		3.12			4.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Sunny	Moderate	9:33	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.40	-	-	2.95
							-		-		-		-		-		-			-		
					Middle	1.4	27.1	27.1	7.5	7.5	26.8	26.8	50.90	49.85	3.49	3.42	2.41	2.40		2.80	2.95	
							27.1		7.5		26.8		48.80		3.34		2.38			3.10		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W7	Sunny	Moderate	9:40	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	1.76	-	-	1.85
							-		-		-		-		-		-			-		
					Middle	1.5	27.0	27.0	7.5	7.5	28.1	28.1	55.40	54.80	3.77	3.73	1.83	1.76		1.90	1.85	
							27.0		7.5		28.1		54.20		3.69		1.69			1.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		2.17 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		2.35 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		2.70 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		2.93 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **15-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Fine	Moderate	9:34	1.6	Middle	0.8	28.2	28.2	7.6	7.6	29.1	29.1	78.40	78.10	5.21	5.19	1.84	1.82	1.82	4.00	4.60	4.60
							28.2		7.6		29.1		77.80		5.17		1.80			5.20		
W2	Fine	Moderate	9:39	2.2	Middle	1.1	27.8	27.8	7.6	7.6	28.5	28.5	66.30	66.00	4.44	4.42	2.61	2.60	2.60	4.70	4.35	4.35
							27.8		7.6		28.5		65.70		4.40		2.59			4.00		
W3	Fine	Moderate	9:44	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.64	-	-	3.75
							-		-		-		-		-		-			-		
					Middle	1.4	27.7	27.7	7.6	7.6	29.0	29.0	61.10	61.00	4.09	4.09	2.64	2.64		3.60	3.75	
							27.7		7.6		29.0		60.90		4.08		2.63			3.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Fine	Moderate	9:49	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.89	-	-	***7.15***
							-		-		-		-		-		-			-		
					Middle	1.4	27.8	27.8	7.8	7.8	32.9	32.9	73.70	73.70	4.82	4.82	3.88	3.89		7.50	7.15	
							27.8		7.8		32.9		73.70		4.82		3.89			6.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Fine	Moderate	9:55	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.46	-	-	***6.75***
							-		-		-		-		-		-			-		
					Middle	1.5	27.9	27.9	7.8	7.8	32.6	32.6	77.00	76.85	5.03	5.02	3.47	3.46		7.30	6.75	
							27.9		7.8		32.6		76.70		5.01		3.45			6.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Fine	Moderate	10:00	3.3	Surface	1.0	27.8	27.8	7.7	7.7	30.5	30.5	72.20	72.10	4.78	4.78	2.82	2.79	3.16	4.50	5.00	***5.55***
							27.8		7.7		30.5		72.00		4.77		2.75			5.50		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	27.9	27.9	7.8	7.8	33.0	33.0	79.80	79.70	5.21	5.20	3.55	3.54		6.00	6.10	
							27.9		7.8		33.0		79.60		5.19		3.53			6.20		
W7	Fine	Moderate	10:06	3.5	Surface	1.0	27.9	27.9	7.7	7.7	31.2	31.2	75.20	74.65	4.96	4.93	2.74	2.77	3.17	3.90	3.90	4.05
							27.9		7.7		31.2		74.10		4.89		2.80			3.90		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.5	27.8	27.8	7.7	7.7	31.3	31.3	79.50	79.05	5.25	5.22	3.63	3.56		4.20	4.20	
							27.8		7.7		31.3		78.60		5.18		3.49			4.20		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		2.18 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		2.37 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		5.52 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		5.98 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **15-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Fine	Moderate	16:56	0.8	Middle	0.4	28.1	28.1	7.8	7.8	30.2	30.2	82.30	82.10	5.43	5.42	4.12	4.13	4.13	7.00	6.70	6.70
							28.1		7.8		30.2		81.90		5.41		4.13			6.40		
W2	Fine	Moderate	16:49	1.2	Middle	0.6	28.4	28.4	7.3	7.3	22.5	22.5	45.60	45.40	3.13	3.12	5.95	5.99	5.99	6.70	6.80	6.80
							28.4		7.3		22.5		45.20		3.10		6.02			6.90		
W3	Fine	Moderate	16:43	2.2	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.26	-	-	7.60
							-		-		-		-		-		-			-		
					Middle	1.1	28.3	7.4	23.6	23.6	23.6	23.6	46.00	45.70	3.14	3.12	4.31	4.26		7.20	7.60	
							28.3		23.6		23.6		45.40		3.10		4.21			8.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Fine	Moderate	16:20	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.25	-	-	6.75
							-		-		-		-		-		-			-		
					Middle	1.5	28.4	28.4	7.7	7.7	74.9	30.2	74.90	74.70	4.92	4.91	4.25	4.25		5.60	6.75	
							28.4		7.7		74.5		74.50		4.90		4.25			7.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W9	Fine	Moderate	16:26	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.34	-	-	6.35
							-		-		-		-		-		-			-		
					Middle	1.3	28.4	28.4	7.7	7.7	74.2	29.5	74.20	73.95	4.90	4.89	4.36	4.34		5.90	6.35	
							28.4		7.7		73.7		73.70		4.87		4.31			6.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Fine	Moderate	16:32	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.26	-	-	6.50
							-		-		-		-		-		-			-		
					Middle	1.3	28.2	28.2	7.7	7.7	73.2	30.1	73.20	72.85	4.83	4.81	4.28	4.26		6.40	6.50	
							28.2		7.7		72.5		72.50		4.78		4.23			6.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Fine	Moderate	16:37	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.41	-	-	7.15
							-		-		-		-		-		-			-		
					Middle	1.2	28.3	28.3	7.6	7.6	77.7	27.7	77.70	77.20	5.19	5.16	4.40	4.41		6.50	7.15	
							28.3		7.6		76.7		76.70		5.12		4.42			7.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	5.10 (120% of Control Station)				- (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	5.53 (130% of Control Station)				- (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	8.10 (120% of Control Station)				8.10 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	8.78 (130% of Control Station)				8.78 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 17-Oct-2024 **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Fine	Moderate	13:01	0.8	Middle	0.4	29.0	29.0	7.6	7.6	23.9	23.9	86.10	85.55	5.80	5.77	4.52	4.49	4.49	7.90	7.80	7.80
							29.0		7.6		23.9		85.00		5.73		4.45			7.70		
W2	Fine	Moderate	13:08	1.4	Middle	0.7	28.4	28.4	7.7	7.7	27.6	27.6	62.20	61.75	4.15	4.12	5.75	5.75	5.75	8.50	8.65	8.65
							28.4		7.7		27.6		61.30		4.09		5.75			8.80		
W3	Fine	Moderate	13:13	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.36	-	-	6.40
							-		-		-		-		-		-			-		
					Middle	1.2	28.1	28.1	7.7	7.7	28.4	28.4	63.30	63.10	4.22	4.21	4.34	4.36		6.40	6.40	
							28.1		7.7		28.4		62.90		4.20		4.37			6.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Fine	Moderate	13:19	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.83	-	-	6.85
							-		-		-		-		-		-			-		
					Middle	1.4	28.2	28.2	7.7	7.7	28.0	28.0	61.60	60.95	4.11	4.07	3.86	3.83		7.10	6.85	
							28.2		7.7		28.0		60.30		4.02		3.79			6.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Fine	Moderate	13:24	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.00	-	-	4.70
							-		-		-		-		-		-			-		
					Middle	1.4	28.3	28.3	7.7	7.7	28.4	28.4	64.90	64.85	4.32	4.32	3.01	3.00		4.70	4.70	
							28.3		7.7		28.4		64.80		4.31		2.99			4.70		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Fine	Moderate	13:29	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.20	-	-	5.60
							-		-		-		-		-		-			-		
					Middle	1.4	28.3	28.3	7.7	7.7	28.9	28.9	72.90	72.10	4.83	4.79	3.20	3.20		5.60	5.60	
							28.3		7.7		28.9		71.30		4.74		3.19			5.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W7	Fine	Moderate	13:35	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.89	-	-	8.45
							-		-		-		-		-		-			-		
					Middle	1.5	28.3	28.3	7.8	7.8	29.7	29.7	79.10	78.50	5.23	5.19	4.93	4.89		8.20	8.45	
							28.3		7.8		29.7		77.90		5.14		4.85			8.70		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6*		W7*	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		5.38 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		5.83 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		9.36 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		10.14 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 17-Oct-2024 **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Fine	Moderate	17:46	0.9	Middle	0.5	27.9	27.9	7.5	7.5	24.0	24.0	62.60	61.85	4.29	4.24	4.94	4.88	4.88	6.60	6.50	6.50
							27.9		7.5		24.0		61.10		4.19		4.82			6.40		
W2	Fine	Moderate	17:40	1.5	Middle	0.8	28.0	28.0	7.6	7.6	26.5	26.5	65.30	64.30	4.41	4.34	4.41	4.38	4.38	6.20	6.00	6.00
							28.0		7.6		26.5		63.30		4.27		4.35			5.80		
W3	Fine	Moderate	17:34	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.09	-	-	4.75
							-		-		-		-		-		-			-		
					Middle	1.5	27.9	7.6	25.7	25.7	25.7	25.7	63.60	63.20	4.32	4.30	3.09	3.09		5.00	4.75	
							27.9		25.7		25.7		62.80		4.27		3.08			4.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Fine	Moderate	17:11	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.90	-	-	8.80
							-		-		-		-		-		-			-		
					Middle	1.5	27.8	27.8	7.7	7.7	87.6	28.6	87.60	87.15	5.87	5.84	5.94	5.90		9.00	8.80	
							27.7		7.7		86.7		86.70		5.81		5.86			8.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W9	Fine	Moderate	17:17	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.05	-	-	6.10
							-		-		-		-		-		-			-		
					Middle	1.2	28.0	28.0	7.7	7.7	71.6	26.6	71.60	71.35	4.83	4.82	4.07	4.05		6.00	6.10	
							28.0		7.7		71.1		71.10		4.80		4.03			6.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Fine	Moderate	17:23	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.91	-	-	7.45
							-		-		-		-		-		-			-		
					Middle	1.4	28.1	28.1	7.6	7.6	65.6	27.6	65.60	65.00	4.39	4.36	4.90	4.91		7.10	7.45	
							28.1		7.6		64.4		64.40		4.32		4.92			7.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Fine	Moderate	17:28	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.17	-	-	5.70
							-		-		-		-		-		-			-		
					Middle	1.3	27.9	27.9	7.6	7.6	64.7	26.3	64.70	64.55	4.38	4.37	4.18	4.17		5.60	5.70	
							27.9		7.6		64.4		64.40		4.36		4.16			5.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	7.08 (120% of Control Station)				- (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	7.67 (130% of Control Station)				- (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	10.56 (120% of Control Station)				10.56 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	11.44 (130% of Control Station)				11.44 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **19-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Fine	Moderate	12:45	1.3	Middle	0.7	28.9	29.0	7.8	7.8	30.7	30.7	90.70	90.25	5.90	5.87	5.55	5.55	5.55	8.00	7.80	7.80
							29.0		7.8		30.7		89.80		5.83		5.55			7.60		
W2	Fine	Moderate	12:53	1.9	Middle	1.0	28.5	28.5	7.8	7.8	31.6	31.6	84.70	84.75	5.52	5.53	5.23	5.29	5.29	8.40	8.35	8.35
							28.5		7.8		31.6		84.80		5.53		5.34			8.30		
W3	Fine	Moderate	13:01	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.90	-	-	7.00
							-		-		-		-		-		-			-		
					Middle	1.4	28.7	28.7	7.8	7.8	31.0	31.0	85.80	85.60	5.59	5.58	3.89	3.90		7.70	7.00	
							28.7		7.8		31.0		85.40		5.57		3.90			6.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Fine	Moderate	13:12	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.38	-	-	6.25
							-		-		-		-		-		-			-		
					Middle	1.3	28.8	28.8	7.8	7.8	30.7	30.7	86.90	86.45	5.66	5.63	4.38	4.38		6.60	6.25	
							28.8		7.8		30.7		86.00		5.60		4.38			5.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Fine	Moderate	13:17	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.02	-	-	5.55
							-		-		-		-		-		-			-		
					Middle	1.4	28.9	28.9	7.8	7.8	30.7	30.7	83.10	82.90	5.40	5.39	3.98	4.02		5.60	5.55	
							28.9		7.8		30.7		82.70		5.37		4.06			5.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Fine	Moderate	13:23	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.63	-	-	6.80
							-		-		-		-		-		-			-		
					Middle	1.5	28.7	28.7	7.8	7.8	30.7	30.7	85.80	85.75	5.60	5.59	4.62	4.63		7.10	6.80	
							28.7		7.8		30.7		85.70		5.58		4.63			6.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W7	Fine	Moderate	13:30	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.79	-	-	4.80
							-		-		-		-		-		-			-		
					Middle	1.5	28.6	28.6	7.8	7.8	31.3	31.3	87.80	87.55	5.72	5.70	3.74	3.79		4.60	4.80	
							28.6		7.8		31.3		87.30		5.68		3.84			5.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6*		W7*	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		6.66 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		7.22 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		9.36 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		10.14 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **19-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Fine	Moderate	9:28	1.2	Middle	0.6	27.8	27.8	7.7	7.7	30.3	30.3	67.10	66.75	4.45	4.43	5.47	5.48	5.48	8.40	8.40	8.40
							27.8		7.7		30.3		66.40		4.41		5.48			8.40		
W2	Fine	Moderate	9:21	1.7	Middle	0.9	27.9	27.9	7.8	7.8	31.0	31.0	67.80	67.75	4.47	4.47	6.04	6.05	6.05	9.70	9.55	9.55
							27.9		7.8		31.0		67.70		4.47		6.06			9.40		
W3	Fine	Moderate	9:15	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.40	-	-	7.80
							-		-		-		-		-		-			-		
					Middle	1.3	27.8	7.8	30.3	30.3	30.3	30.3	76.00	75.65	5.04	5.02	4.41	4.40		7.00	7.80	
							27.8		30.3		30.3		75.30		5.00		4.39			8.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Fine	Moderate	8:52	3.1	Surface	1.0	28.3	28.3	7.8	7.8	92.1	31.8	92.10	91.95	6.01	6.00	5.22	5.20	6.09	6.30	6.65	8.33
							28.3		7.8		91.8		91.80		5.98		5.17			7.00		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.1	28.6	28.6	7.9	7.9	93.2	32.8	93.20	93.30	6.02	6.03	6.99	6.98		9.90	10.00	
							28.6		7.9		93.4		93.40		6.03		6.96			10.10		
W9	Fine	Moderate	8:58	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.43	-	-	5.35
							-		-		-		-		-		-			-		
					Middle	1.5	27.8	27.8	7.8	7.8	75.2	29.8	75.20	75.10	5.00	5.00	4.44	4.43		5.60	5.35	
							27.8		7.8		75.0		75.00		4.99		4.41			5.10		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Fine	Moderate	9:04	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.49	-	-	4.25
							-		-		-		-		-		-			-		
					Middle	1.5	27.7	27.7	7.8	7.8	80.4	30.8	80.40	80.25	5.33	5.32	4.56	4.49		4.50	4.25	
							27.7		7.8		80.1		80.10		5.30		4.42			4.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Fine	Moderate	9:09	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.86	-	-	4.60
							-		-		-		-		-		-			-		
					Middle	1.4	27.8	27.8	7.8	7.8	77.4	31.2	77.40	77.10	5.11	5.09	3.85	3.86		4.70	4.60	
							27.8		7.8		76.8		76.80		5.07		3.87			4.50		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	7.30 (120% of Control Station)				7.30 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	7.91 (130% of Control Station)				7.91 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	9.99 (120% of Control Station)				9.99 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	10.82 (130% of Control Station)				10.82 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **22-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	14:45	1.1	Middle	0.6	28.8	28.8	7.6	7.6	27.2	27.2	83.70	83.60	5.55	5.55	3.64	3.63	3.63	5.00	4.90	4.90
							28.8		7.6		27.2		83.50		5.54		3.62			4.80		
W2	Sunny	Moderate	14:52	1.7	Middle	0.9	28.6	28.6	7.8	7.8	29.8	29.8	81.90	81.80	5.37	5.36	4.55	4.57	4.57	6.60	6.60	6.60
							28.6		7.8		29.8		81.70		5.35		4.59			6.60		
W3	Sunny	Moderate	14:59	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.21	-	-	4.75
							-		-		-		-		-		-			-		
					Middle	1.3	28.7	28.7	7.8	7.8	29.0	29.0	86.60	86.50	5.70	5.70	3.21	3.21		4.80	4.75	
							28.7		7.8		29.0		86.40		5.69		3.20			4.70		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	15:05	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.84	-	-	4.05
							-		-		-		-		-		-			-		
					Middle	1.2	29.4	29.4	7.8	7.8	26.6	26.6	85.70	85.60	5.65	5.65	2.84	2.84		4.20	4.05	
							29.4		7.8		26.6		85.50		5.64		2.83			3.90		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	15:11	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.13	-	-	4.30
							-		-		-		-		-		-			-		
					Middle	1.3	28.9	28.9	7.8	7.8	28.3	28.2	91.20	91.00	6.01	6.00	3.13	3.13		4.60	4.30	
							28.9		7.8		28.2		90.80		5.99		3.13			4.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Sunny	Moderate	15:16	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.48	-	-	4.45
							-		-		-		-		-		-			-		
					Middle	1.5	28.9	28.9	7.8	7.8	29.8	29.8	87.90	87.70	5.75	5.74	4.47	4.48		4.60	4.45	
							28.9		7.8		29.8		87.50		5.73		4.48			4.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W7	Sunny	Moderate	15:23	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.27	-	-	4.65
							-		-		-		-		-		-			-		
					Middle	1.4	28.6	28.6	7.8	7.8	30.3	30.3	88.60	88.55	5.80	5.80	4.25	4.27		4.50	4.65	
							28.6		7.8		30.3		88.50		5.79		4.29			4.80		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6*		W7*	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		4.36 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		4.72 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		5.88 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		6.37 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **22-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	11:01	0.6	Middle	0.3	28.2	28.2	7.3	7.3	23.7	23.7	41.30	41.15	2.82	2.81	4.19	4.17	4.17	5.50	5.25	5.25
							28.2		7.3		23.7		41.00		2.80		4.15			5.00		
W2	Sunny	Moderate	10:54	1.3	Middle	0.7	28.0	28.0	7.6	7.6	29.1	29.1	65.20	64.90	4.34	4.32	4.91	4.90	4.90	6.20	6.65	6.65
							28.0		7.6		29.1		64.60		4.30		4.88			7.10		
W3	Sunny	Moderate	10:49	2.2	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.72	-	-	9.20
							-		-		-		-		-		-			-		
					Middle	1.1	28.1	7.6	29.4	29.4	29.4	29.4	75.90	74.75	5.04	4.96	5.73	5.72		9.40	9.20	
							28.1		29.4		29.4		73.60		4.88		5.70			9.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	10:26	3.2	Surface	1.0	27.9	27.9	7.5	7.5	78.2	30.3	78.20	78.00	5.19	5.18	5.74	5.76	6.37	8.30	8.55	8.95
							27.9		7.5		77.8		77.80		5.16		5.77			8.80		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.2	27.9	27.9	7.7	7.7	72.3	32.1	72.30	72.85	4.74	4.78	7.01	6.98		9.90	9.35	
							27.9		7.7		73.4		73.40		4.81		6.94			8.80		
W9	Sunny	Moderate	10:34	2.3	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.40	-	-	8.50
							-		-		-		-		-		-			-		
					Middle	1.2	27.9	27.9	7.7	7.7	82.8	31.8	82.80	82.60	5.44	5.43	5.41	5.40		8.80	8.50	
							27.9		7.7		82.4		82.40		5.41		5.38			8.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Sunny	Moderate	10:39	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.77	-	-	6.65
							-		-		-		-		-		-			-		
					Middle	1.3	28.0	28.0	7.7	7.7	80.9	30.8	80.90	80.80	5.34	5.33	4.79	4.77		6.70	6.65	
							28.0		7.7		80.7		80.70		5.32		4.74			6.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Sunny	Moderate	10:43	2.2	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.51	-	-	7.15
							-		-		-		-		-		-			-		
					Middle	1.1	28.1	28.1	7.7	7.7	73.6	30.1	73.60	73.25	4.86	4.84	4.50	4.51		7.00	7.15	
							28.1		7.7		72.9		72.90		4.81		4.52			7.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	7.64 (120% of Control Station)				7.64 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	8.27 (130% of Control Station)				8.27 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	10.74 (120% of Control Station)				10.74 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	11.64 (130% of Control Station)				11.64 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **24-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	17:29	1.3	Middle	0.7	26.7	26.7	7.8	7.8	31.1	31.1	88.20	87.90	5.93	5.91	5.21	5.18	5.18	7.40	7.80	7.80
							26.7		7.8		31.1		87.60		5.89		5.15			8.20		
W2	Sunny	Moderate	17:23	1.9	Middle	1.0	26.7	26.7	7.9	7.9	32.2	32.2	91.40	90.60	6.11	6.06	6.39	6.44	6.44	10.10	10.85	***10.85***
							26.7		7.9		32.3		89.80		6.00		6.49			11.60		
W3	Sunny	Moderate	17:16	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	6.15	-	-	8.25
							-		-		-		-		-		-			-		
					Middle	1.4	26.6	7.8	32.7	32.7	32.7	32.7	87.10	87.05	5.82	5.82	6.13	6.15		8.20	8.25	
							26.6		32.7		32.7		87.00		5.81		6.17			8.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	16:50	3.9	Surface	1.0	26.7	26.7	7.9	7.9	90.4	33.2	90.40	90.30	6.01	6.00	7.71	7.60	6.80	6.20	6.40	7.25
							26.7		7.9		90.2		90.20		5.99		7.49			6.60		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.9	26.1	26.1	7.8	7.8	87.5	33.1	87.50	87.10	5.88	5.86	6.15	6.01		8.40	8.10	
							26.1		7.8		86.7		86.70		5.83		5.86			7.80		
W9	Sunny	Moderate	16:56	3.3	Surface	1.0	24.6	24.6	7.9	7.9	93.7	33.0	93.70	93.50	6.47	6.46	6.19	6.12	5.90	8.80	8.90	8.48
							24.5		7.9		93.3		93.30		6.44		6.04			9.00		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	24.6	24.6	7.9	7.9	94.8	32.9	94.80	94.65	6.54	6.53	5.80	5.69		8.70	8.05	
							24.6		7.9		94.5		94.50		6.52		5.57			7.40		
W10	Sunny	Moderate	17:03	3.2	Surface	1.0	26.5	26.5	7.8	7.8	90.6	32.2	90.60	90.55	6.08	6.08	6.98	6.99	5.91	6.50	6.45	6.65
							26.5		7.8		90.5		90.50		6.07		7.00			6.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.2	26.7	26.7	7.8	7.8	91.9	33.0	91.90	91.65	6.11	6.10	4.81	4.83		7.10	6.85	
							26.7		7.8		91.4		91.40		6.08		4.84			6.60		
W11	Sunny	Moderate	17:10	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	5.04	-	-	7.20
							-		-		-		-		-		-			-		
					Middle	1.5	26.7	26.7	7.8	7.8	89.6	31.8	89.60	89.50	6.00	6.00	5.02	5.04		7.00	7.20	
							26.7		7.8		89.4		89.40		5.99		5.06			7.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9**	W10		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

** Since there was only one sampling depth during baseline monitoring, the derived action level and limit level for DO (i.e. middle depth) from baseline monitoring were adopted to compare the values obtained from the surface and bottom depths in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	8.16 (120% of Control Station)				8.16 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	8.84 (130% of Control Station)				8.84 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	8.70 (120% of Control Station)				8.70 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	9.43 (130% of Control Station)				9.43 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **29-Oct-2024** **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Fine	Moderate	10:17	1.5	Middle	0.8	25.5	25.5	7.7	7.7	31.2	31.2	79.00	78.95	5.42	5.42	3.13	3.12	3.12	3.40	3.70	3.70
							25.5		7.7		31.2		78.90		5.41		3.11			4.00		
W2	Fine	Moderate	10:23	1.9	Middle	1.0	25.3	25.3	7.7	7.7	30.3	30.3	76.50	75.85	5.30	5.26	6.11	6.17	6.17	6.30	6.35	6.35
							25.3		7.7		30.3		75.20		5.21		6.22			6.40		
W3	Fine	Moderate	10:29	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.74	-	-	4.15
							-		-		-		-		-		-			-		
					Middle	1.3	24.9	24.9	7.7	7.7	31.0	31.0	81.40	81.05	5.65	5.63	2.83	2.74		3.60	4.15	
							24.9		7.7		31.0		80.70		5.60		2.65			4.70		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Fine	Moderate	10:34	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	2.58	-	-	5.55
							-		-		-		-		-		-			-		
					Middle	1.4	25.2	25.2	7.7	7.7	31.7	31.6	76.60	76.50	5.27	5.26	2.60	2.58		5.50	5.55	
							25.2		7.7		31.6		76.40		5.25		2.55			5.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Fine	Moderate	10:39	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.65	-	-	***6.90***
							-		-		-		-		-		-			-		
					Middle	1.5	25.3	25.3	7.8	7.8	32.9	32.9	81.80	81.50	5.57	5.56	3.77	3.65		6.80	6.90	
							25.3		7.8		32.9		81.20		5.54		3.53			7.00		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Fine	Moderate	10:46	3.3	Surface	1.0	25.2	25.2	7.8	7.8	32.4	32.4	84.20	83.75	5.76	5.73	3.64	3.62	3.83	8.90	8.15	***7.88***
							25.2		7.8		32.4		83.30		5.70		3.60			7.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	25.5	25.5	7.8	7.8	33.1	33.1	77.40	76.85	5.26	5.22	4.01	4.04		7.30	7.60	
							25.5		7.8		33.1		76.30		5.18		4.06			7.90		
W7	Fine	Moderate	10:53	3.5	Surface	1.0	25.4	25.4	7.8	7.8	32.8	32.8	82.90	82.50	5.64	5.62	4.20	4.21	5.25	5.60	5.60	***6.45***
							25.4		7.8		32.8		82.10		5.60		4.21			5.60		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.5	25.6	25.6	7.8	7.8	33.6	33.6	80.50	80.55	5.44	5.44	6.27	6.29		7.40	7.30	
							25.6		7.8		33.6		80.60		5.44		6.30			7.20		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		3.74 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		4.06 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		4.44 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		4.81 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on **29-Oct-2024** **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Fine	Moderate	16:53	1.1	Middle	0.6	25.9	25.9	7.5	7.5	28.1	28.1	55.80	55.55	3.87	3.85	4.32	4.21	4.21	6.00	6.95	6.95
							25.9		7.5		28.1		55.30		3.83		4.10			7.90		
W2	Fine	Moderate	16:47	1.8	Middle	0.9	25.8	25.8	7.7	7.7	32.2	32.2	65.10	64.60	4.42	4.39	5.04	4.81	4.81	7.20	7.55	7.55
							25.8		7.7		32.2		64.10		4.36		4.57			7.90		
W3	Fine	Moderate	16:41	2.6	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.38	-	-	7.85
							-		-		-		-		-		-			-		
					Middle	1.3	25.5	7.7	29.6	29.6	29.6	29.6	58.90	58.75	4.08	4.07	4.38	4.38		9.30	7.85	
							25.5		29.6		29.6		58.60		4.06		4.37			6.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Fine	Moderate	16:13	3.8	Surface	1.0	25.0	25.1	7.8	7.8	87.6	31.3	87.60	87.05	6.06	6.02	3.23	3.19	3.71	6.00	5.75	6.68
							25.1		7.8		86.5		86.50		5.98		3.15			5.50		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.8	25.2	25.2	7.9	7.9	90.8	34.3	90.80	90.85	6.15	6.16	4.23	4.23		7.80	7.60	
							25.2		7.9		90.9		90.90		6.16		4.22			7.40		
W9	Fine	Moderate	16:22	3.3	Surface	1.0	25.7	25.7	7.7	7.7	68.6	31.5	68.60	68.55	4.68	4.68	3.41	3.39	4.06	5.10	5.25	5.73
							25.7		7.7		68.5		68.50		4.67		3.37			5.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	25.7	25.7	7.8	7.8	73.1	32.2	73.10	73.25	4.97	4.99	4.74	4.72		6.40	6.20	
							25.7		7.8		73.4		73.40		5.00		4.70			6.00		
W10	Fine	Moderate	16:29	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.05	-	-	6.25
							-		-		-		-		-		-			-		
					Middle	1.5	25.7	25.7	7.8	7.8	72.6	32.5	72.60	72.55	4.93	4.93	4.08	4.05		6.30	6.25	
							25.7		7.8		72.5		72.50		4.92		4.02			6.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Fine	Moderate	16:35	2.7	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.33	-	-	6.60
							-		-		-		-		-		-			-		
					Middle	1.4	25.6	25.6	7.8	7.8	75.3	31.9	75.30	75.05	5.14	5.13	4.35	4.33		7.00	6.60	
							25.6		7.8		74.8		74.80		5.11		4.30			6.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9**	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

** Since there was only one sampling depth during baseline monitoring, the derived action level and limit level for DO (i.e. middle depth) from baseline monitoring were adopted to compare the values obtained from the surface and bottom depths in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	4.45 (120% of Control Station)				4.45 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	4.82 (130% of Control Station)				4.82 (130% of Control Station)		

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	8.01 (120% of Control Station)				8.01 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	8.68 (130% of Control Station)				8.68 (130% of Control Station)		

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 31-Oct-2024 **Control Station: W1a** **Mid-Ebb Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A.*	Value	Average	D.A.*
W1a	Sunny	Moderate	11:17	1.0	Middle	0.5	25.9	25.9	7.9	7.9	34.7	34.7	90.40	90.25	6.04	6.03	5.00	4.97	4.97	6.40	6.25	6.25
							25.9		7.9		34.7		90.10		6.02		4.94			6.10		
W2	Sunny	Moderate	11:25	1.4	Middle	0.7	26.0	26.0	7.7	7.7	30.6	30.6	64.80	64.70	4.42	4.42	4.73	4.72	4.72	6.10	6.15	6.15
							26.0		7.7		30.6		64.60		4.41		4.70			6.20		
W3	Sunny	Moderate	11:31	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.75	-	-	7.25
							-		-		-		-		-		-			-		
					Middle	1.4	25.8	25.8	7.8	7.8	31.0	31.0	74.10	73.90	5.06	5.05	4.75	4.75		7.20	7.25	
							25.8		7.8		31.0		73.70		5.03		4.75			7.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W4	Sunny	Moderate	11:37	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.12	-	-	4.50
							-		-		-		-		-		-			-		
					Middle	1.4	25.9	26.0	7.8	7.8	31.9	31.9	78.20	77.30	5.30	5.24	4.12	4.12		4.70	4.50	
							26.0		7.8		31.9		76.40		5.18		4.12			4.30		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W5	Sunny	Moderate	11:44	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.04	-	-	6.15
							-		-		-		-		-		-			-		
					Middle	1.5	25.9	25.9	7.8	7.8	32.8	32.8	82.30	81.90	5.56	5.53	4.02	4.04		5.90	6.15	
							25.9		7.8		32.8		81.50		5.50		4.06			6.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W6	Sunny	Moderate	11:50	3.2	Surface	1.0	25.6	25.7	7.8	7.8	32.6	32.5	87.20	86.85	5.93	5.90	3.81	3.80	3.45	4.60	5.00	5.15
							25.8		7.8		32.4		86.50		5.87		3.78			5.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.2	25.9	25.9	7.8	7.8	32.4	32.4	82.50	82.45	5.59	5.59	3.09	3.10		4.70	5.30	
							25.9		7.8		32.4		82.40		5.58		3.10			5.90		
W7	Sunny	Moderate	11:56	3.3	Surface	1.0	25.9	25.9	7.9	7.9	32.7	32.7	87.90	87.70	5.93	5.92	3.90	3.90	3.62	5.50	5.35	4.85
							25.9		7.9		32.7		87.50		5.91		3.89			5.20		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.3	25.9	25.9	7.9	7.9	33.1	33.1	91.30	90.30	6.16	6.09	3.42	3.35		4.60	4.35	
							25.9		7.9		33.1		89.30		6.02		3.28			4.10		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Ebb Tide									
	W1a	W2	W3	W4	W5*		W6		W7	
	-	Middle	Middle	Middle	Surface	Bottom	Surface	Bottom	Surface	Bottom
Action Level	Control Station	2.20	1.80	1.85	1.81	1.73	1.76	1.68	2.38	2.13
Limit Level		2.14	1.51	1.65	1.50	1.55	1.58	1.57	2.27	1.76

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	7.51	4.30	5.40	4.37	5.20	6.50
		5.96 (120% of Control Station)					
Limit Level	Control Station	8.59	4.38	6.01	5.71	5.51	7.75
		6.46 (130% of Control Station)					

Suspended Soil (mg/L)

SS (mg/L) (See Note 2)	Mid-Ebb Tide						
	W1a	W2	W3	W4	W5	W6	W7
Action Level	Control Station	6.68	4.94	5.06	5.60	4.57	5.07
		7.50 (120% of Control Station)					
Limit Level	Control Station	7.75	5.15	5.69	5.80	5.25	5.25
		8.13 (130% of Control Station)					

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H - Water Quality Monitoring for MTRC Contract 1500 - TME Stations, Viaducts and River Crossing

Water Quality Monitoring Results on 31-Oct-2024 **Control Station: W8** **Mid-Flood Tide**

Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Level	Sampling Depth (m)	Water Temperature (°C)		pH		Salinity (ppt)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)			SS (mg/L)		
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	D.A*	Value	Average	D.A*
W1a	Sunny	Moderate	17:17	0.8	Middle	0.4	25.6	25.5	7.7	7.7	26.1	26.2	76.80	74.85	5.41	5.29	3.44	3.37	3.37	3.00	2.75	2.75
							25.3		7.7		26.3		72.90		5.16		3.29			2.50		
W2	Sunny	Moderate	17:11	1.4	Middle	0.7	25.9	25.9	7.7	7.7	26.5	26.5	64.80	64.75	4.54	4.54	3.32	3.31	3.31	3.00	3.20	3.20
							25.9		7.7		26.5		64.70		4.53		3.30			3.40		
W3	Sunny	Moderate	17:05	2.4	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.47	-	-	4.15
							-		-		-		-		-		-			-		
					Middle	1.2	26.0	7.8	31.2	31.2	31.2	31.2	77.50	77.00	5.27	5.24	3.46	3.47		4.10	4.15	
							26.0		31.2		31.2		76.50		5.21		3.47			4.20		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W8	Sunny	Moderate	16:40	3.1	Surface	1.0	26.0	26.0	7.8	7.8	81.5	30.6	81.50	81.35	5.57	5.56	4.13	4.09	3.96	6.70	6.55	6.23
							26.0		7.8		81.2		81.20		5.55		4.05			6.40		
					Middle	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
					Bottom	2.1	26.0	26.0	7.8	7.8	82.9	31.5	82.90	82.90	5.64	5.64	3.83	3.83		5.60	5.90	
							26.0		7.8		82.9		82.90		5.64		3.82			6.20		
W9	Sunny	Moderate	16:46	2.8	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.48	-	-	4.10
							-		-		-		-		-		-			-		
					Middle	1.4	25.8	25.8	7.9	7.9	88.6	32.3	88.60	88.25	6.01	5.99	3.45	3.48		3.80	4.10	
							25.8		7.9		87.9		87.90		5.96		3.50			4.40		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W10	Sunny	Moderate	16:52	2.9	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	4.14	-	-	5.50
							-		-		-		-		-		-			-		
					Middle	1.5	26.0	26.0	7.9	7.9	87.0	32.9	87.00	86.80	5.86	5.85	4.13	4.14		5.40	5.50	
							26.0		7.9		86.6		86.60		5.83		4.15			5.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		
W11	Sunny	Moderate	16:58	2.5	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	3.74	-	-	5.15
							-		-		-		-		-		-			-		
					Middle	1.3	25.8	25.8	7.8	7.8	77.9	31.1	77.90	77.65	5.32	5.31	3.76	3.74		4.70	5.15	
							25.8		7.8		77.4		77.40		5.29		3.72			5.60		
					Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
							-		-		-		-		-		-			-		

Remarks:

* D.A.: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

*** ***Bold Italic*** means Action Level exceedance

**** ***Bold Italic with underline*** means Limit Level exceedance

Dissolved Oxygen (mg/L)

DO (mg/L) (See Note 1)	Mid-Flood Tide							
	W1a	W2	W3	W8	W9	W10*		W11
	Middle	Middle	Middle	-	Middle	Surface	Bottom	Middle
Action Level	2.21	2.06	1.81	Control Station	1.72	1.81	1.83	1.82
Limit Level	2.17	1.93	1.78		1.68	1.73	1.71	1.73

Remark:

* Due to the water depth during this monitoring event, water samples can only be obtained in the middle depth. Therefore, the dervied action level and limit level for DO at surface from baseline monitoring were adopted to compare the value obtained from the middle depth in this monitoring event.

Turbidity (NTU)

Turbidity (NTU) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	9.86	7.61	4.97	Control Station	4.76	5.77	4.63
	4.75 (120% of Control Station)				4.75 (120% of Control Station)		
Limit Level	10.63	8.11	5.31	Control Station	5.34	5.91	5.39
	5.14 (130% of Control Station)				5.14 (130% of Control Station)		

Suspended Soil (mg/L)

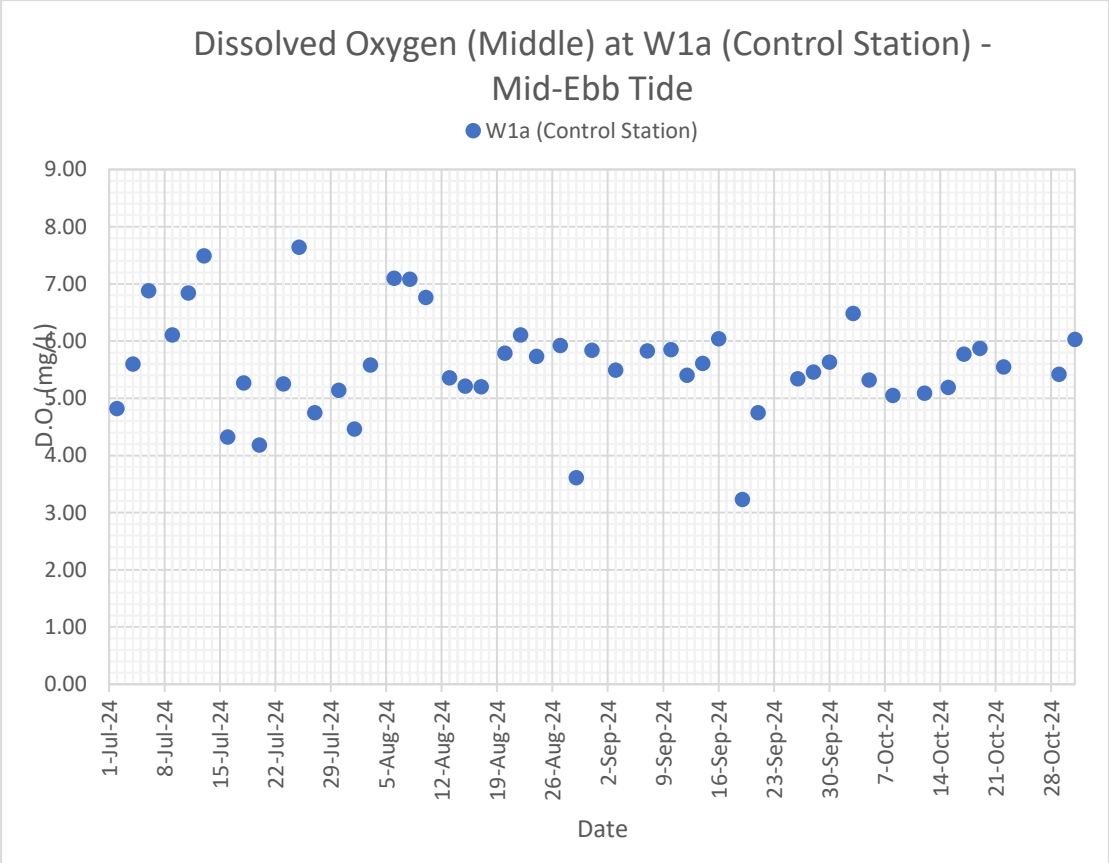
SS (mg/L) (See Note 2)	Mid-Flood Tide						
	W1a	W2	W3	W8	W9	W10	W11
Action Level	5.88	5.08	4.91	Control Station	4.26	4.75	4.94
	7.47 (120% of Control Station)				7.47 (120% of Control Station)		
Limit Level	6.23	5.82	5.31	Control Station	4.30	5.91	5.54
	8.09 (130% of Control Station)				8.09 (130% of Control Station)		

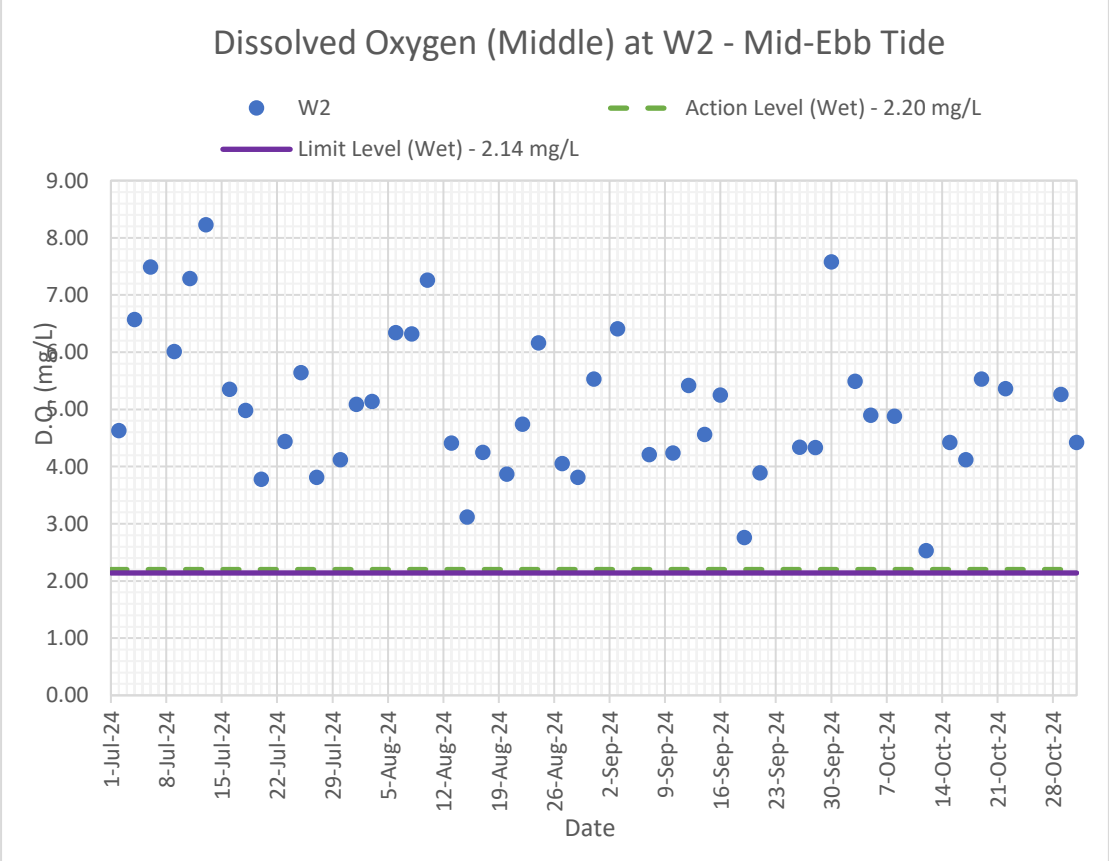
Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and S.S., non-compliance of the water quality occurs when monitoring results is higher than the limits.

Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

Dissolved Oxygen at Mid-Ebb Tide





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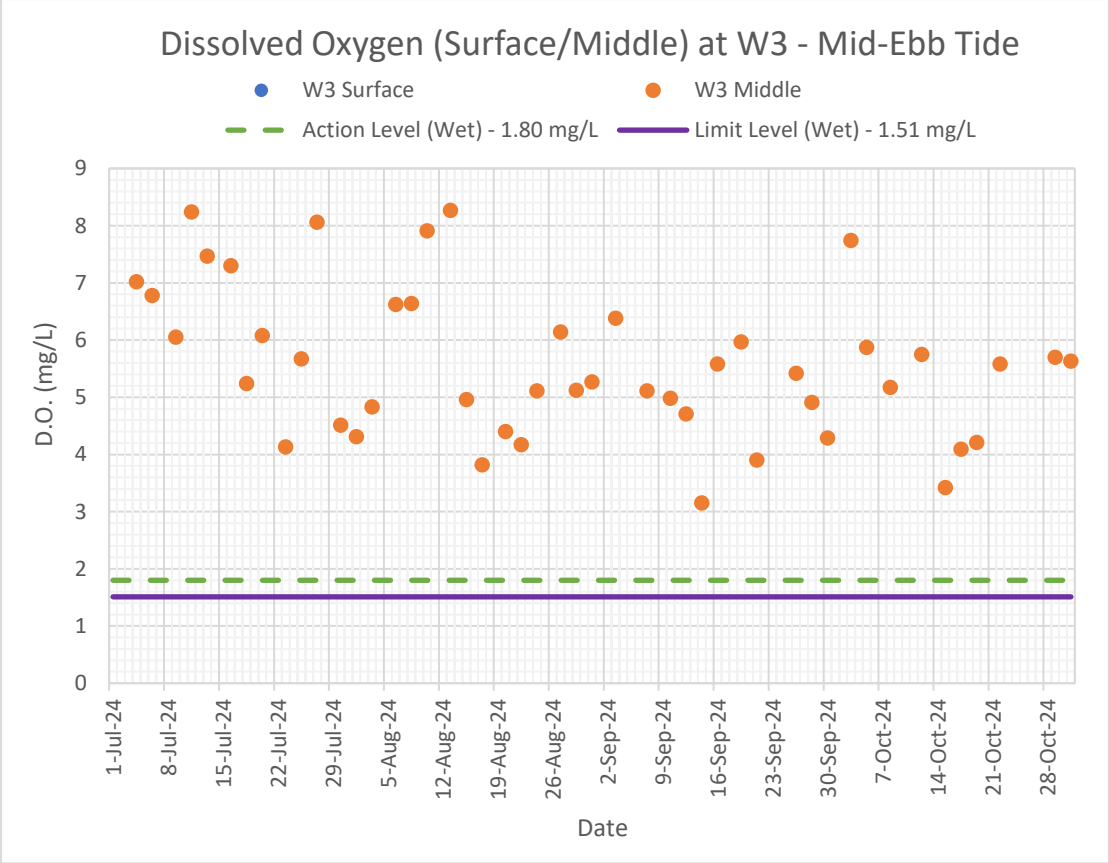

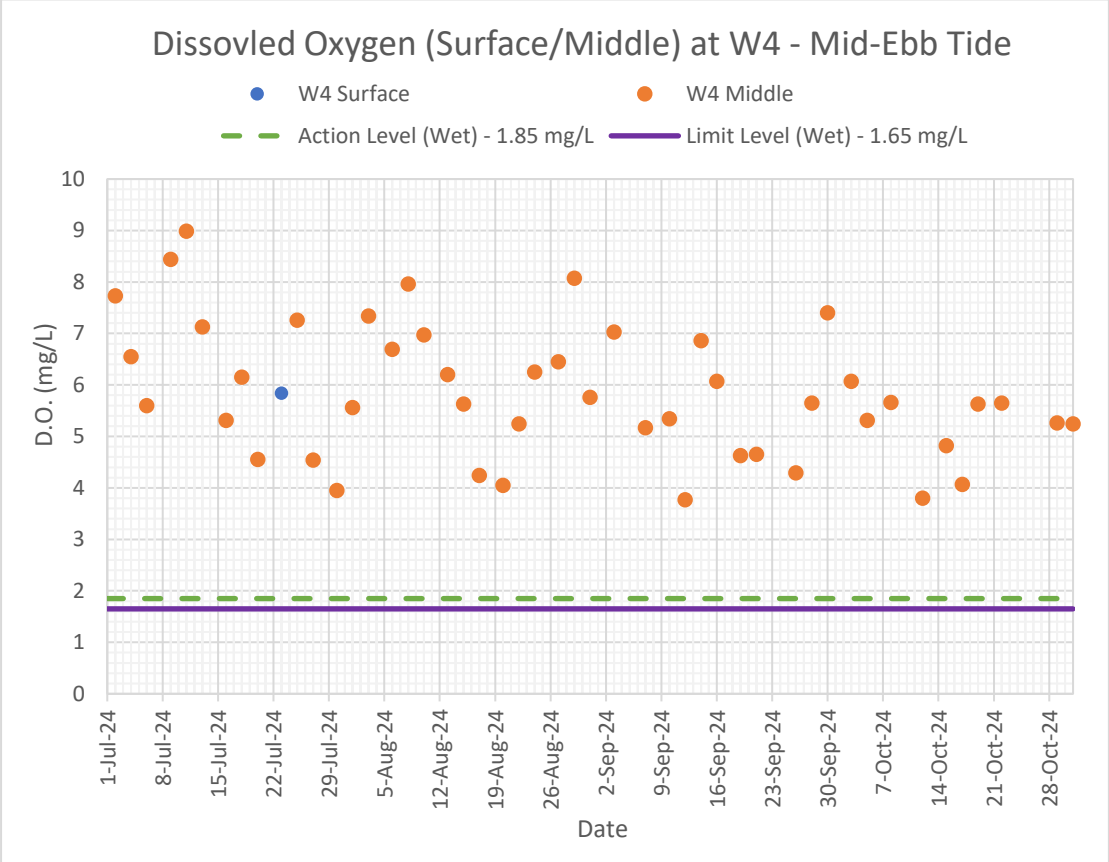

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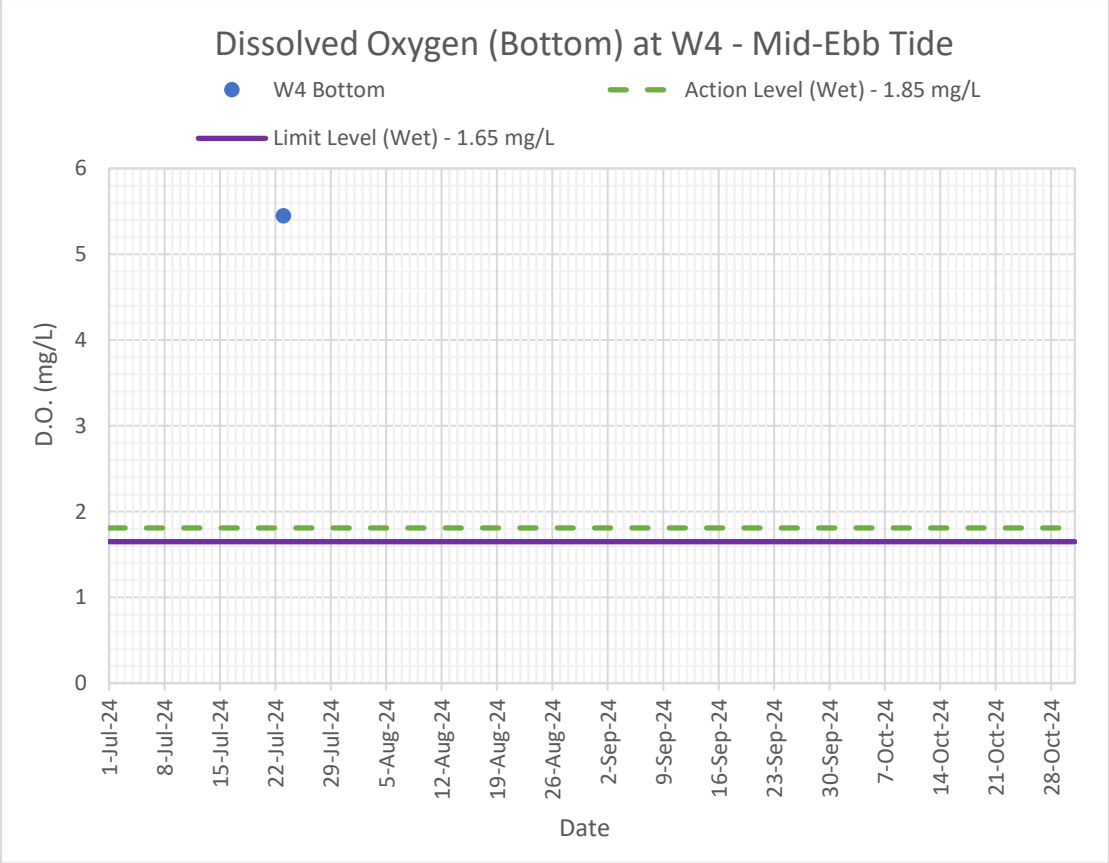

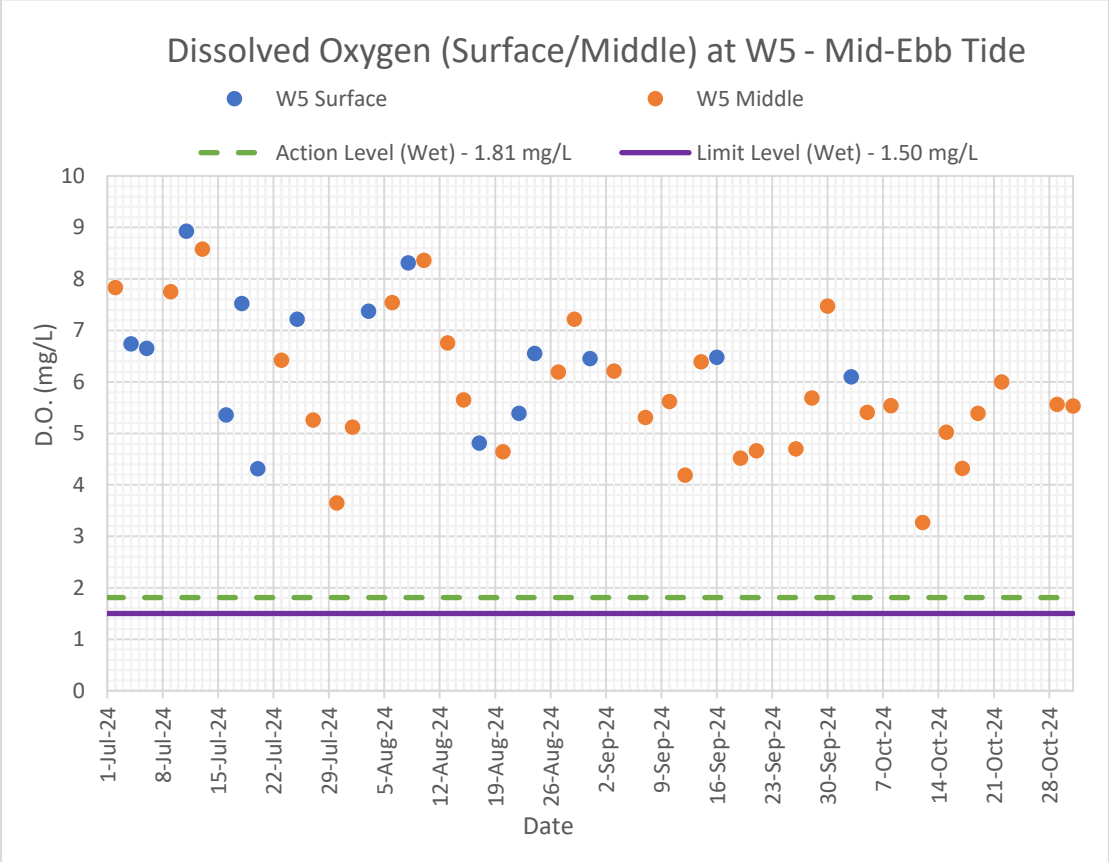

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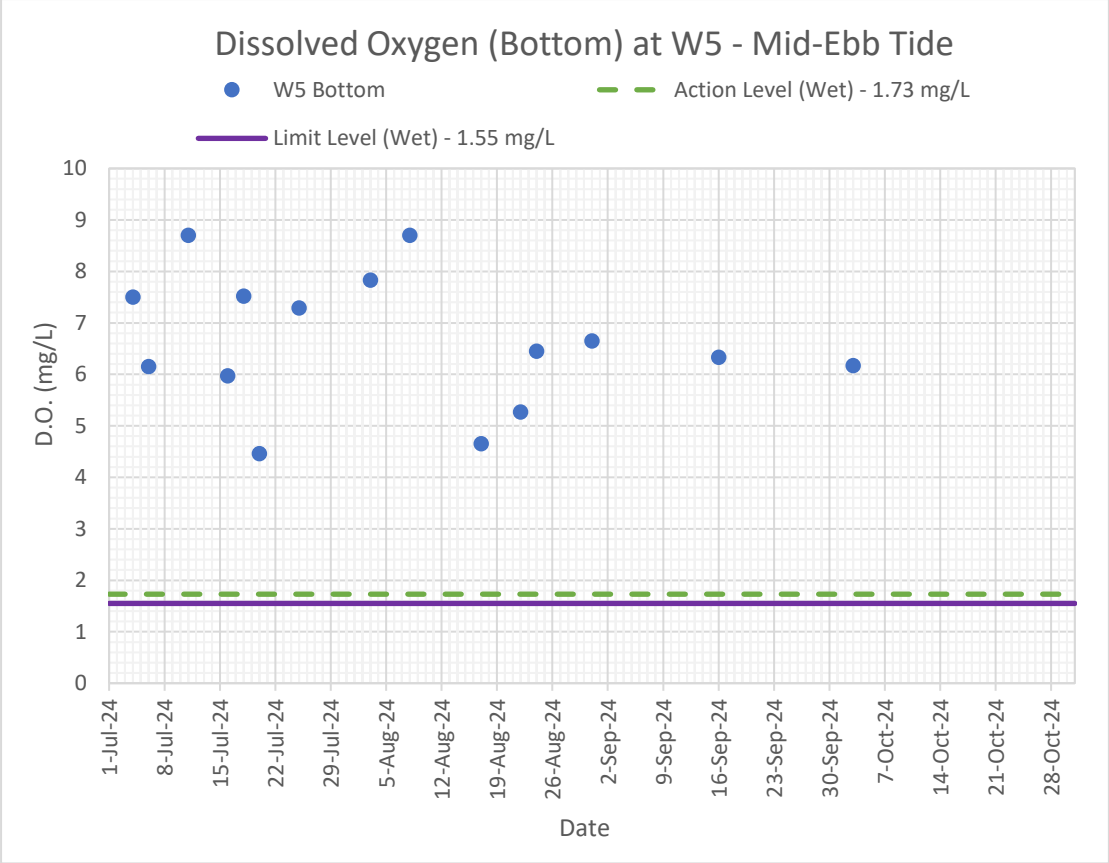

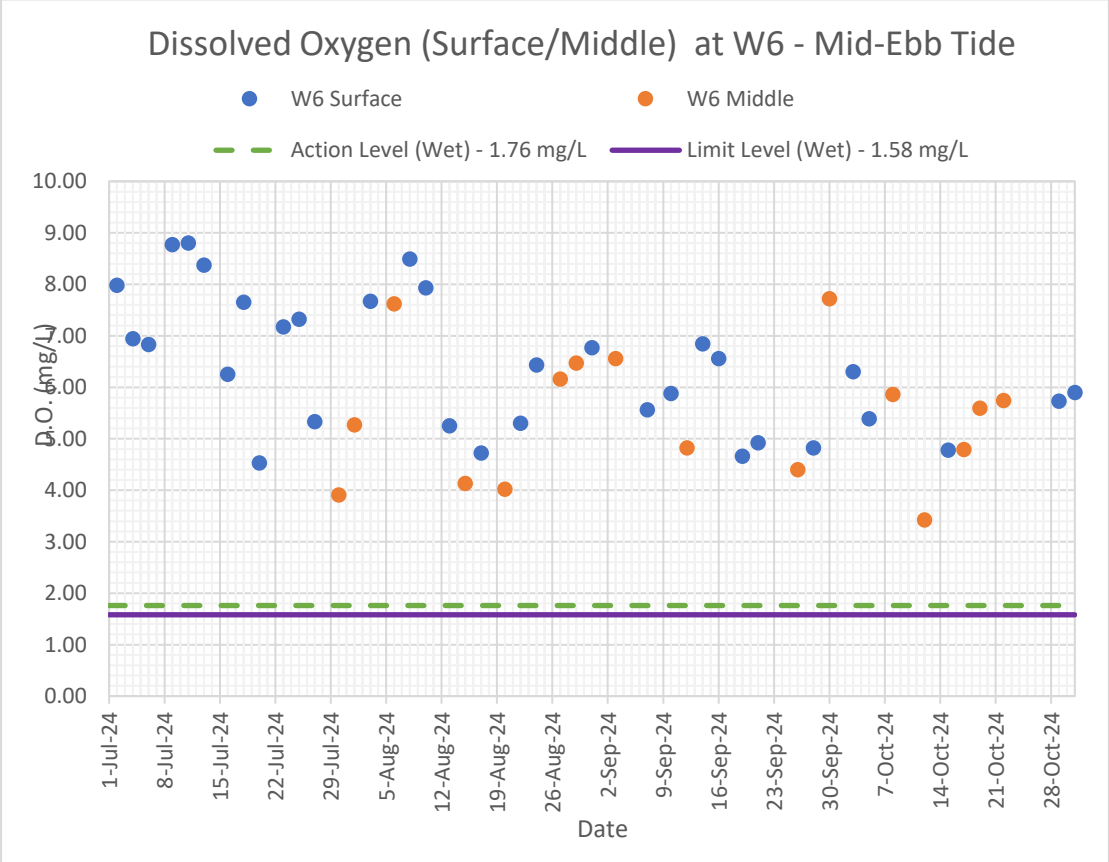

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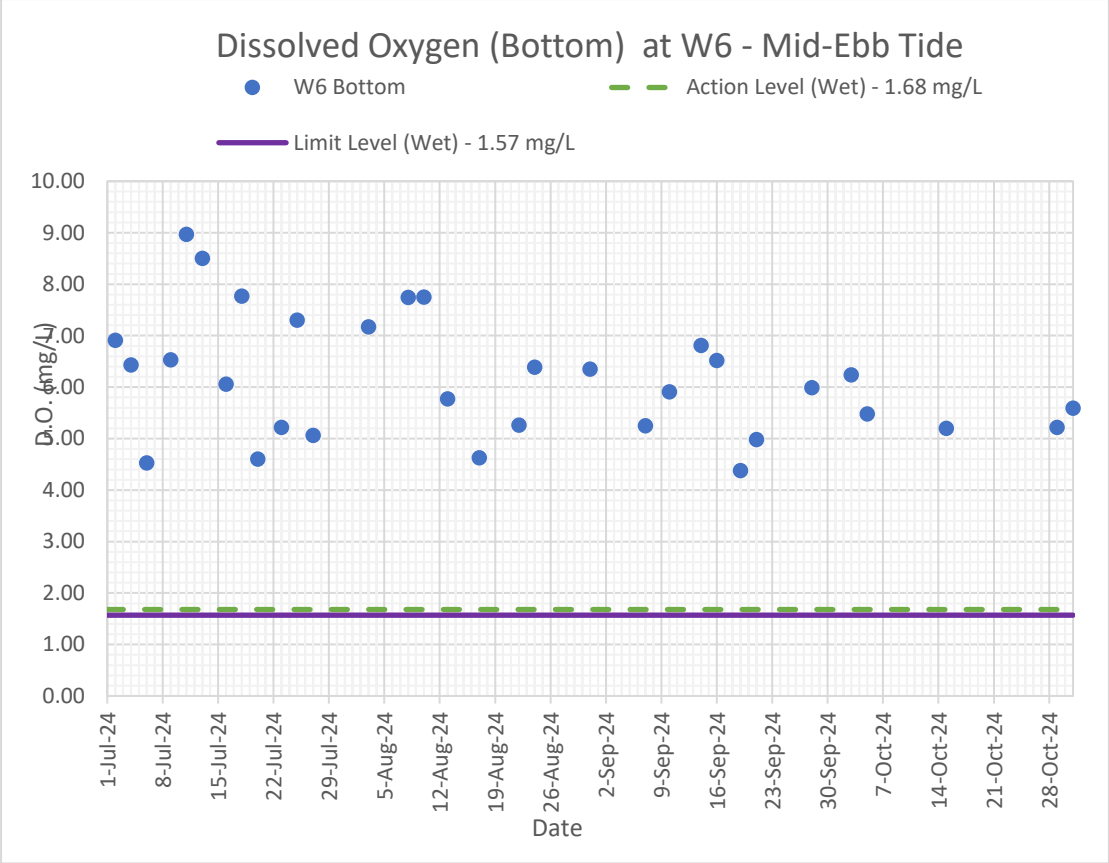

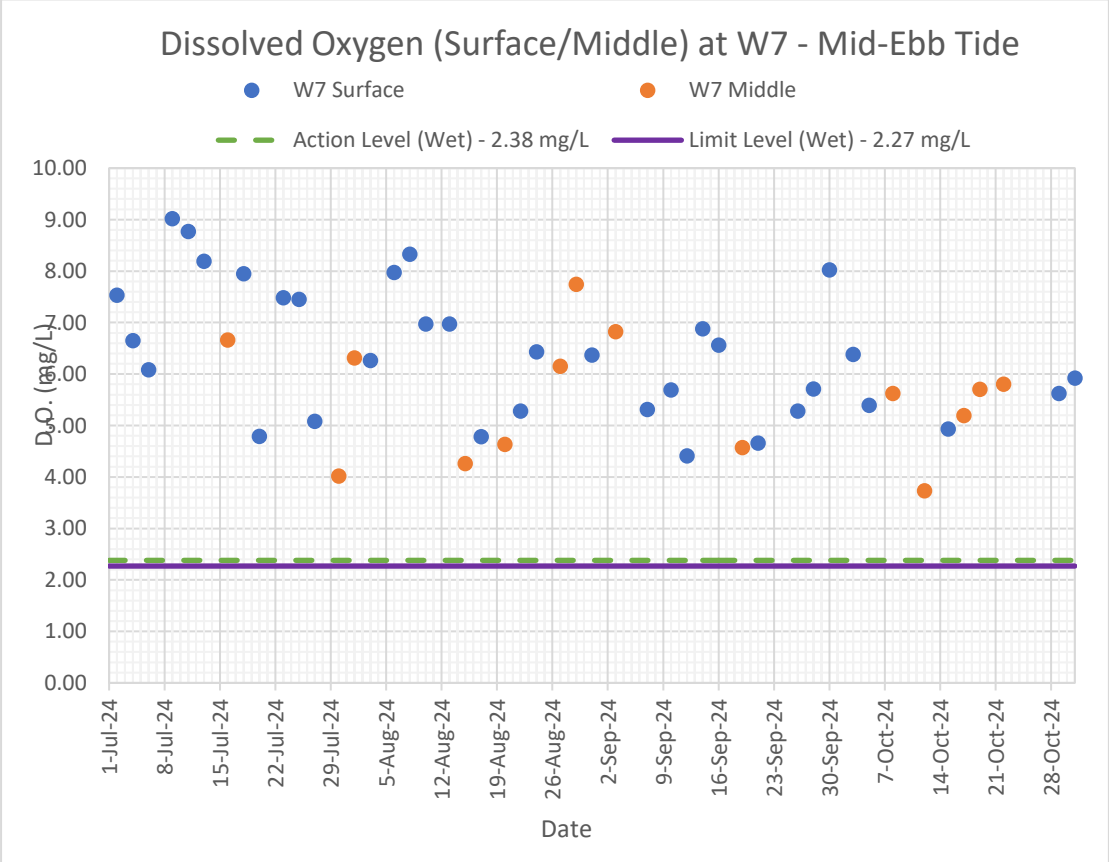

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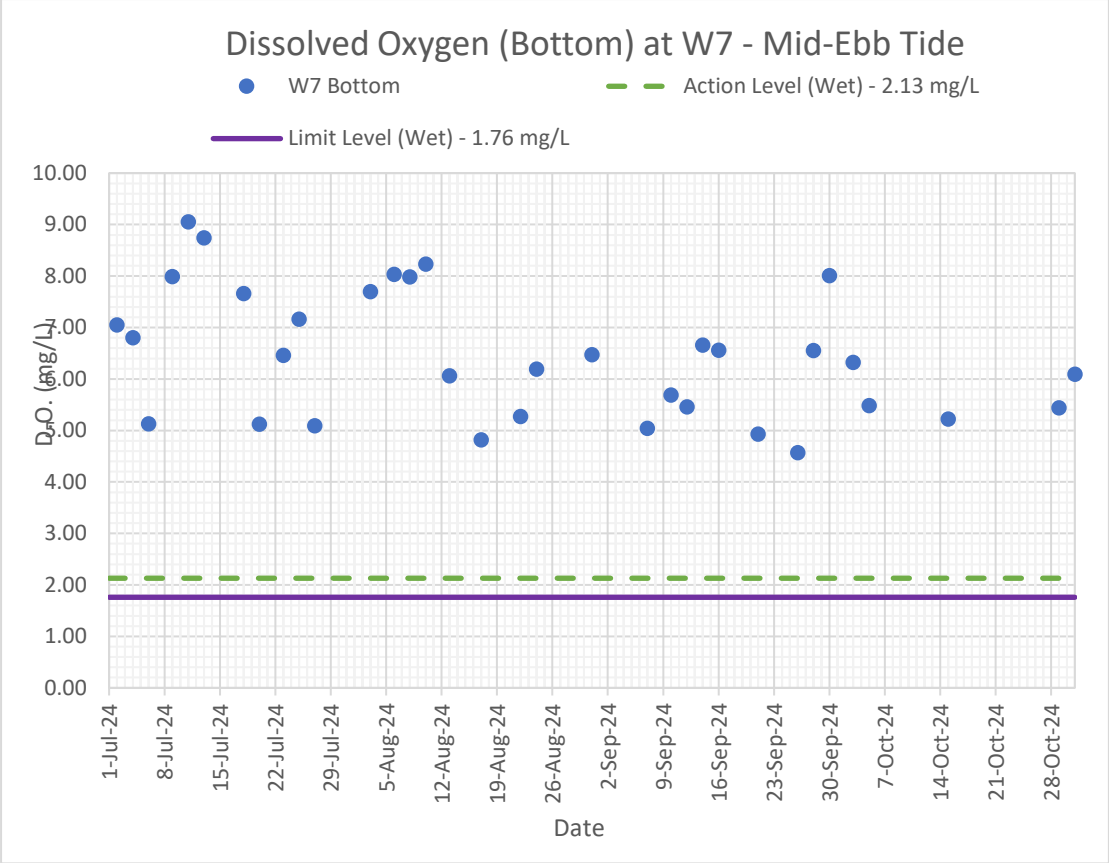
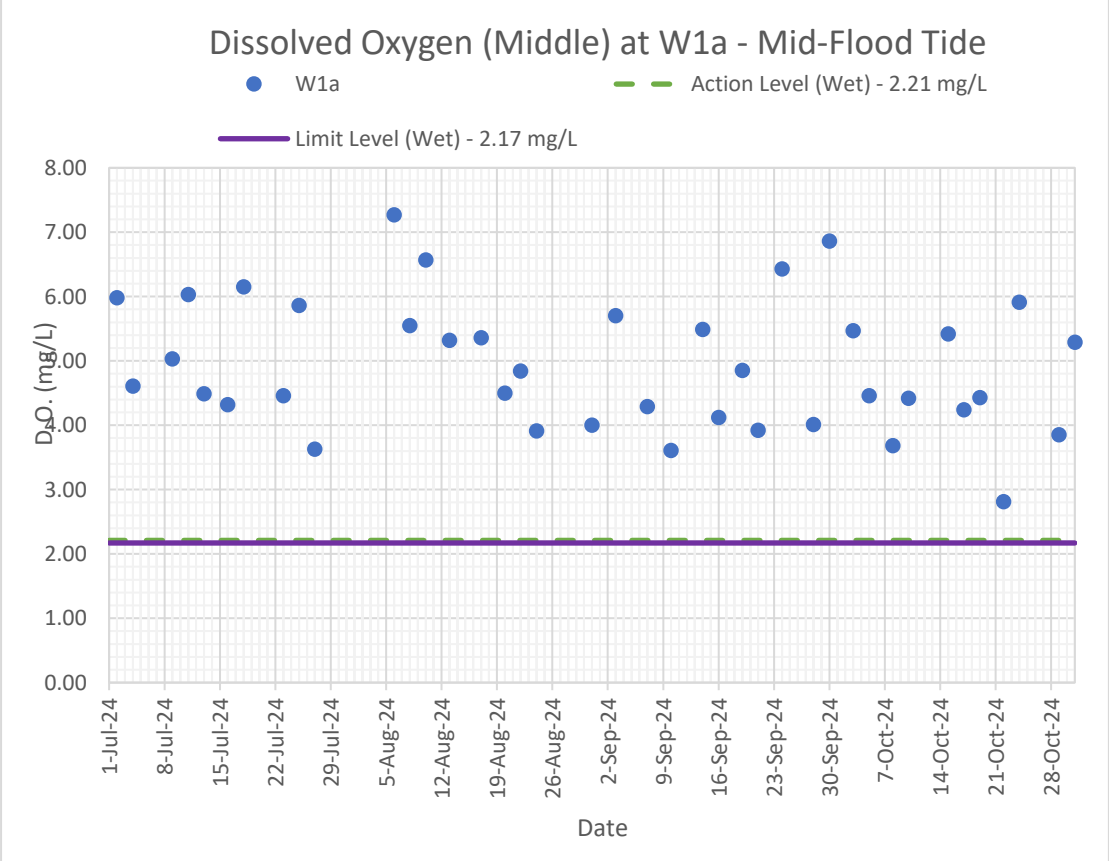


Dissolved Oxygen at Mid-Flood Tide



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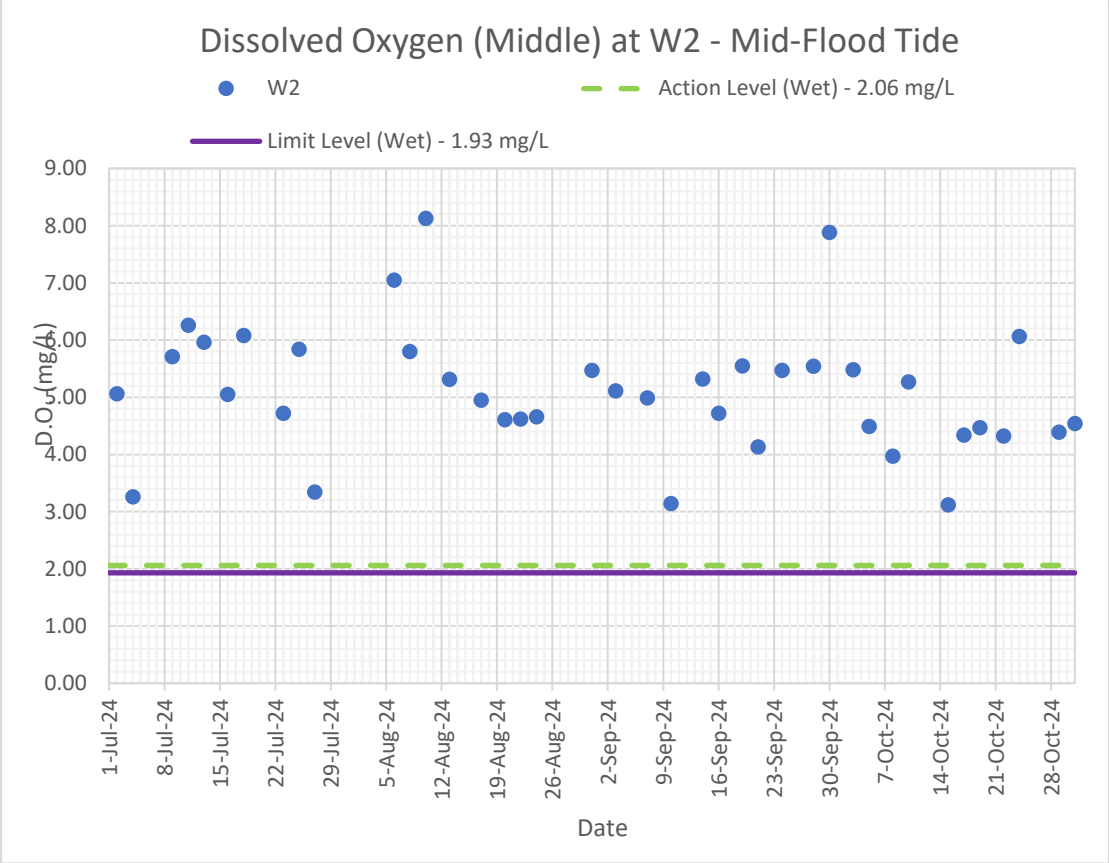

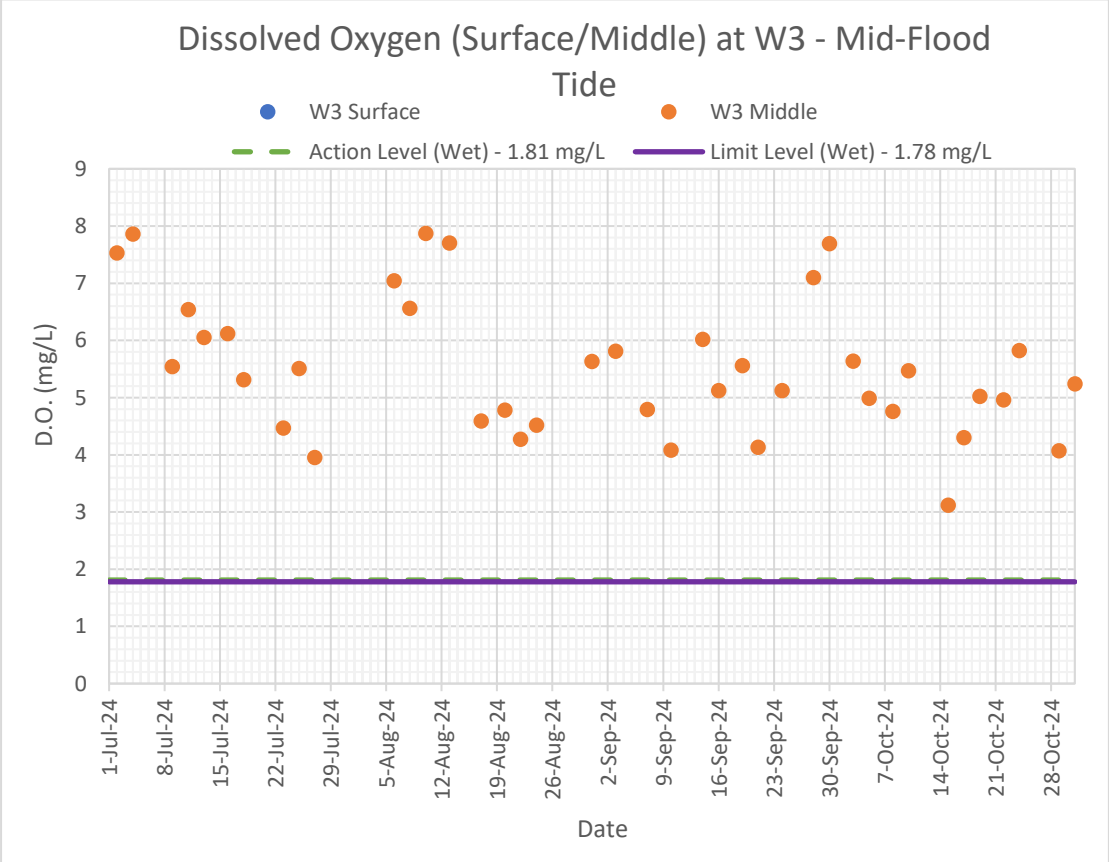

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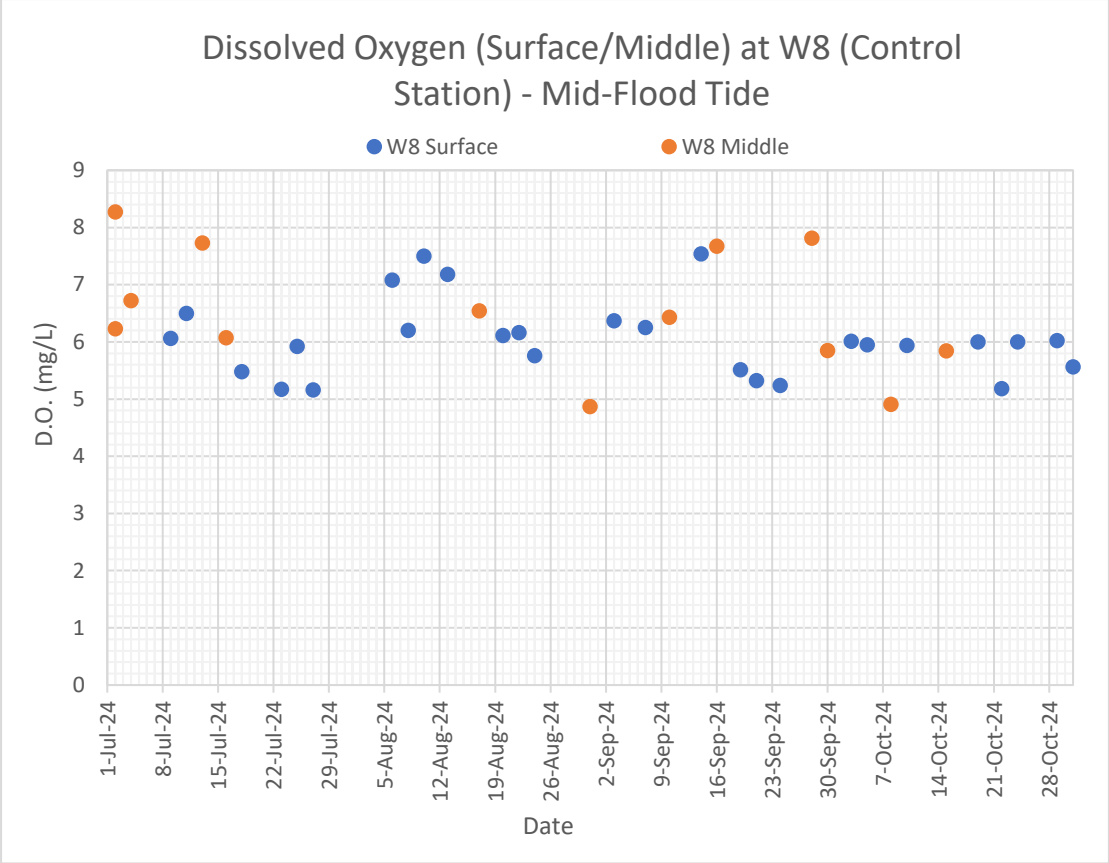

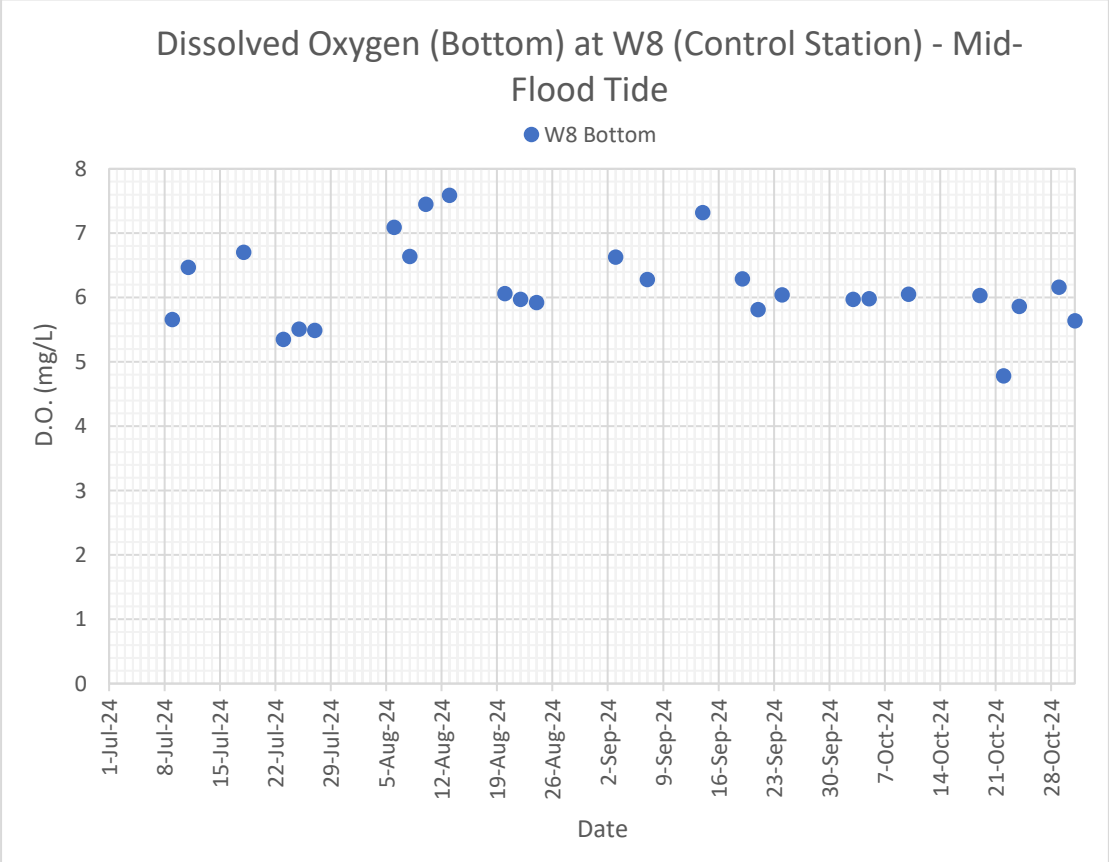

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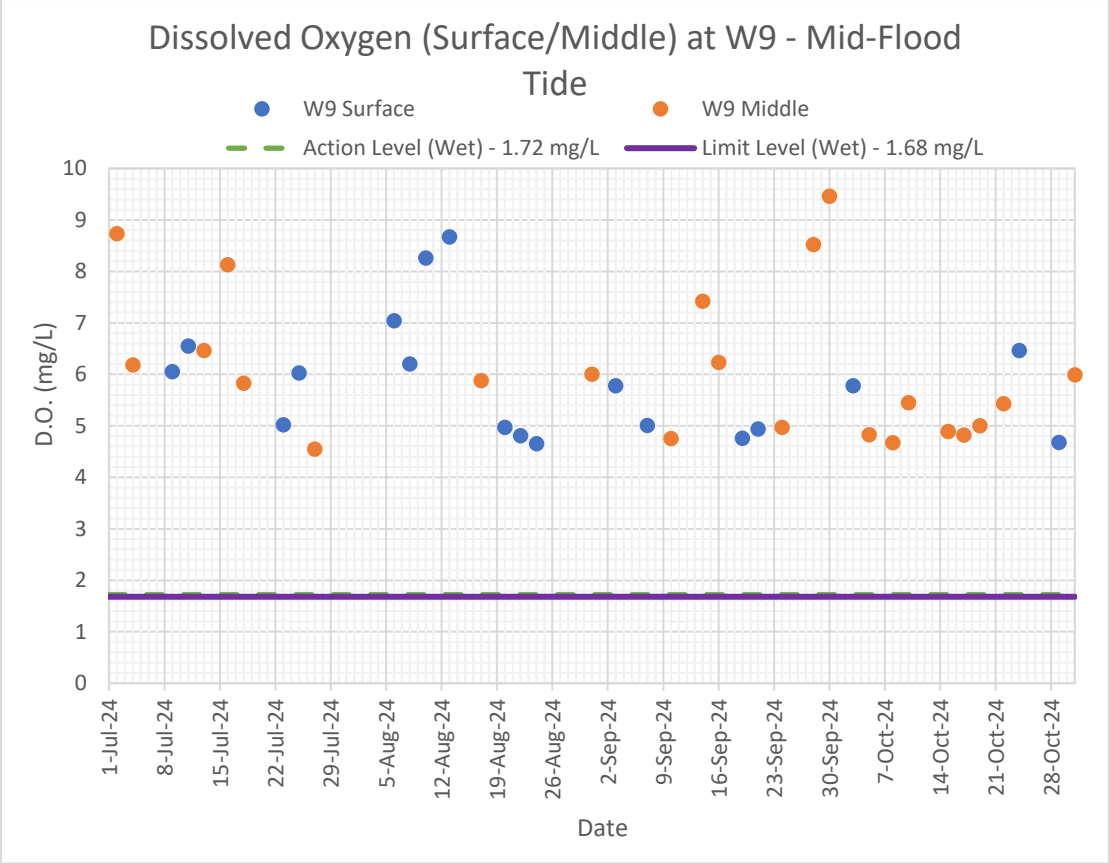

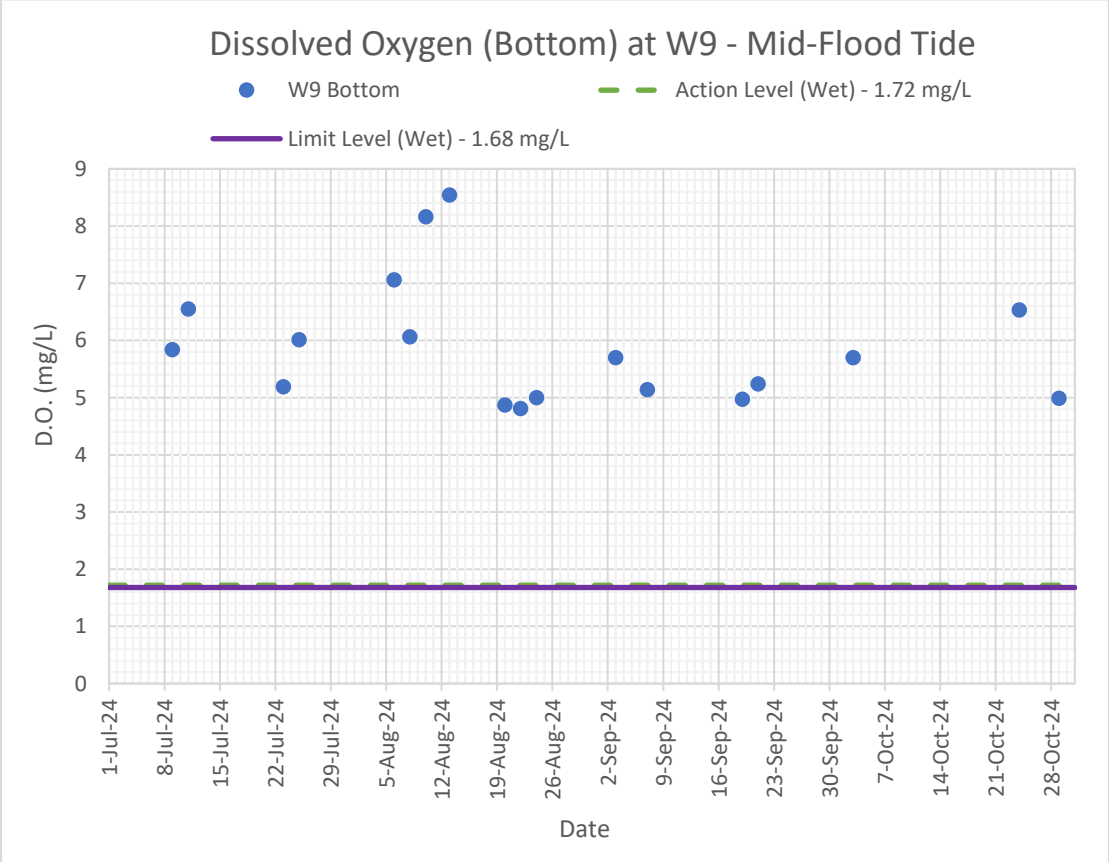

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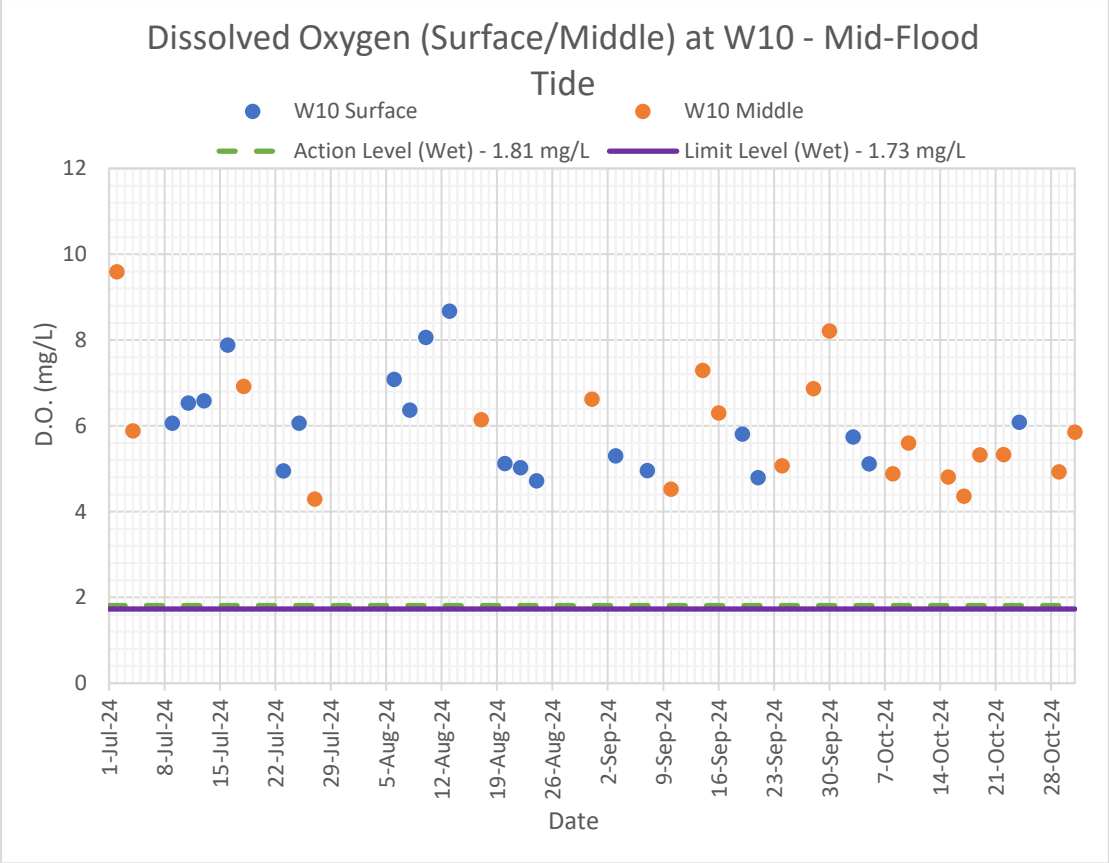

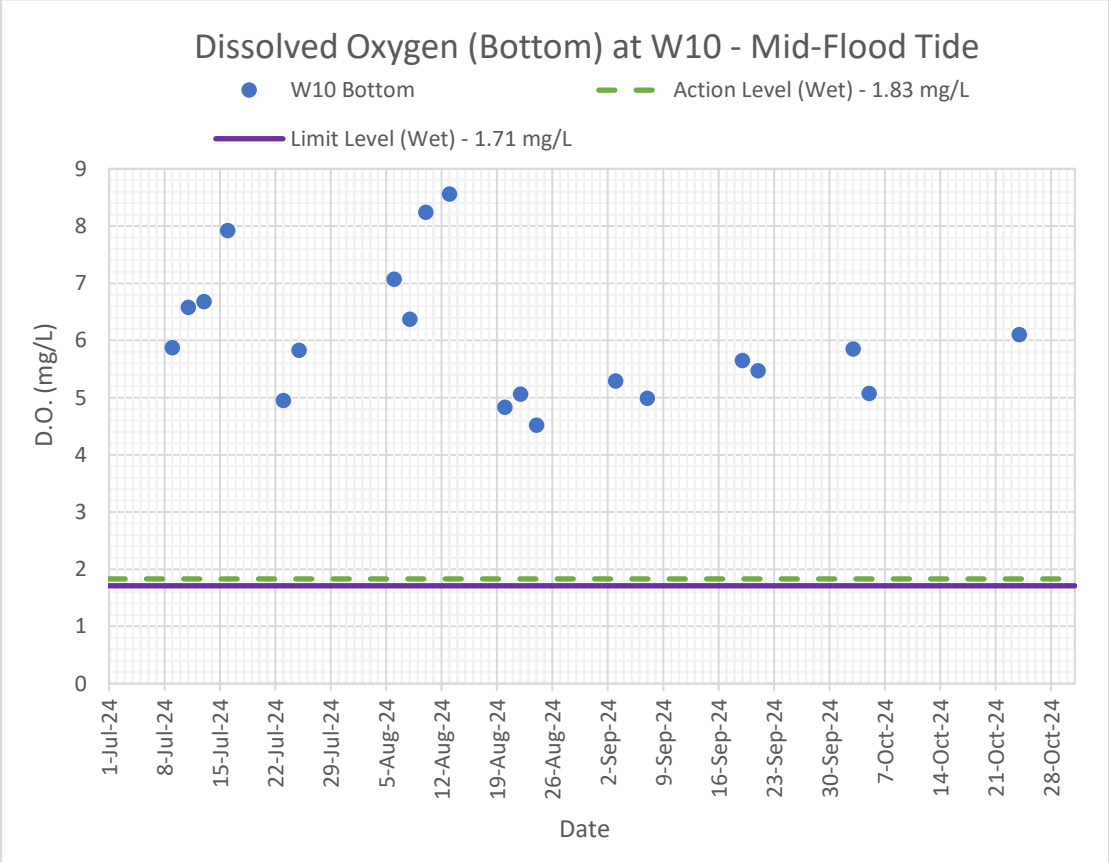

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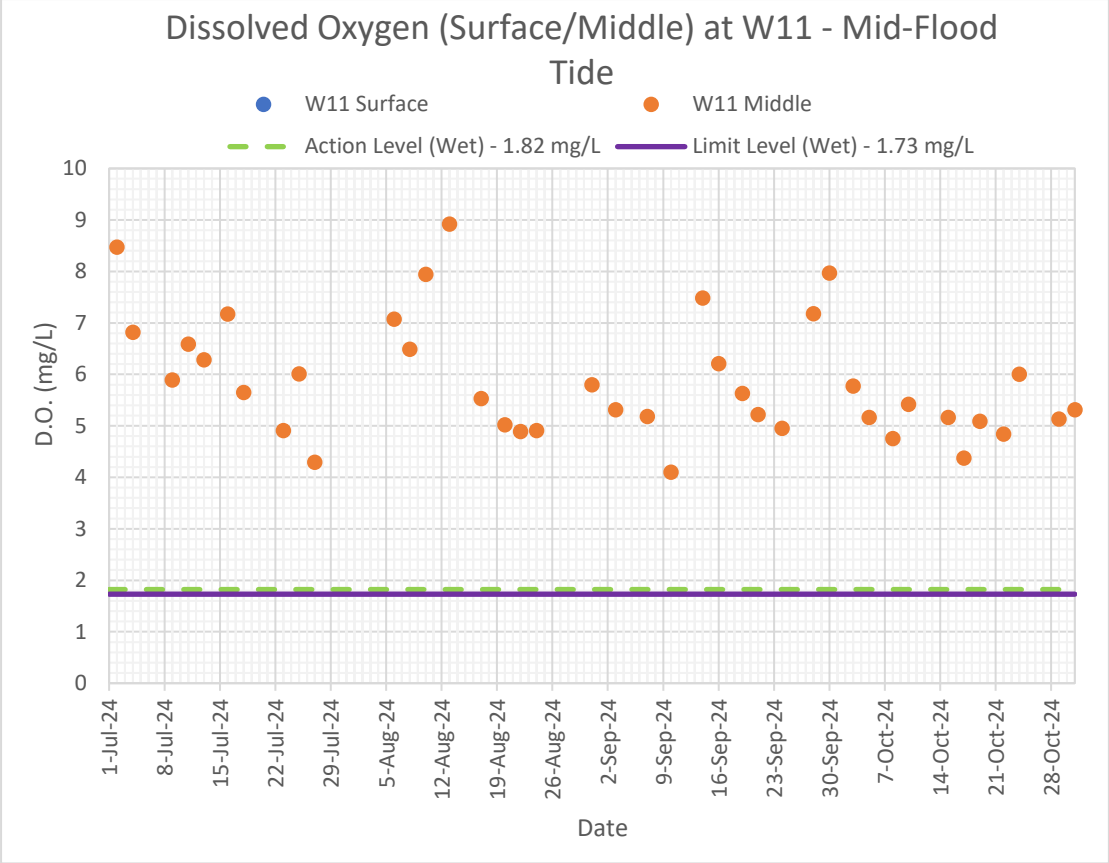
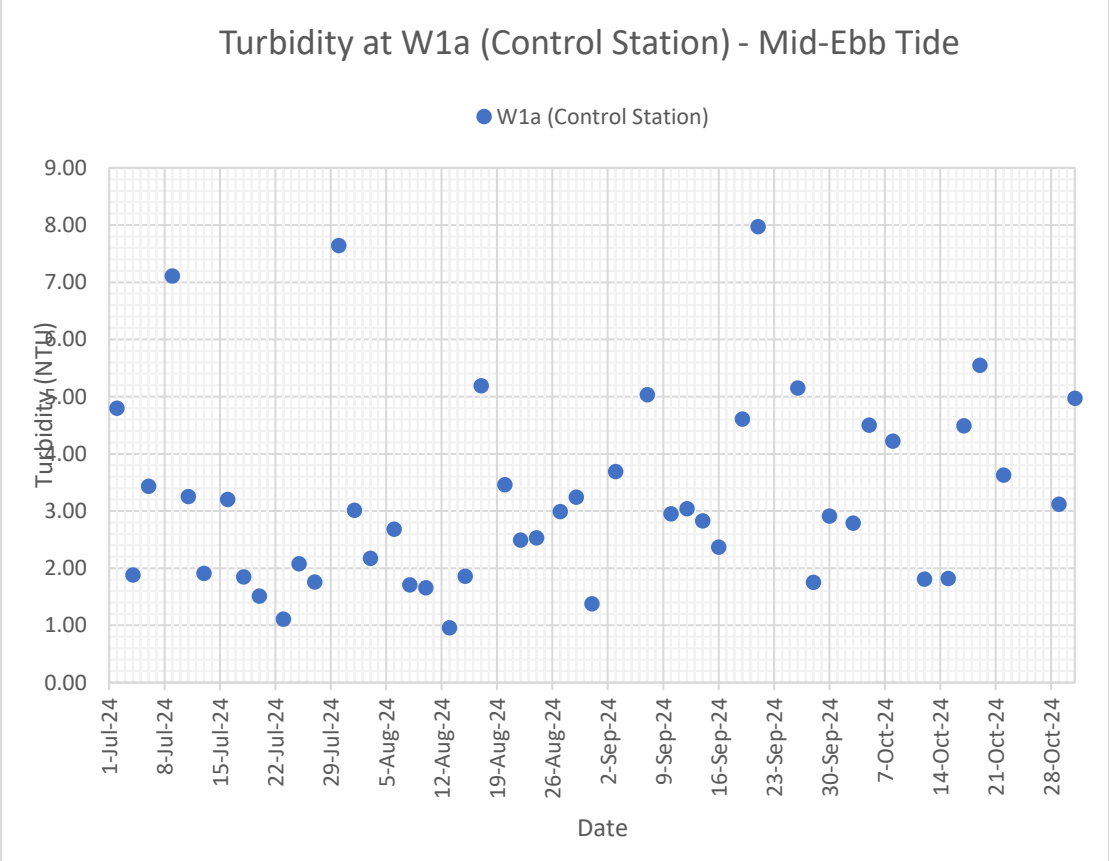


Turbidity at Mid-Ebb Tide



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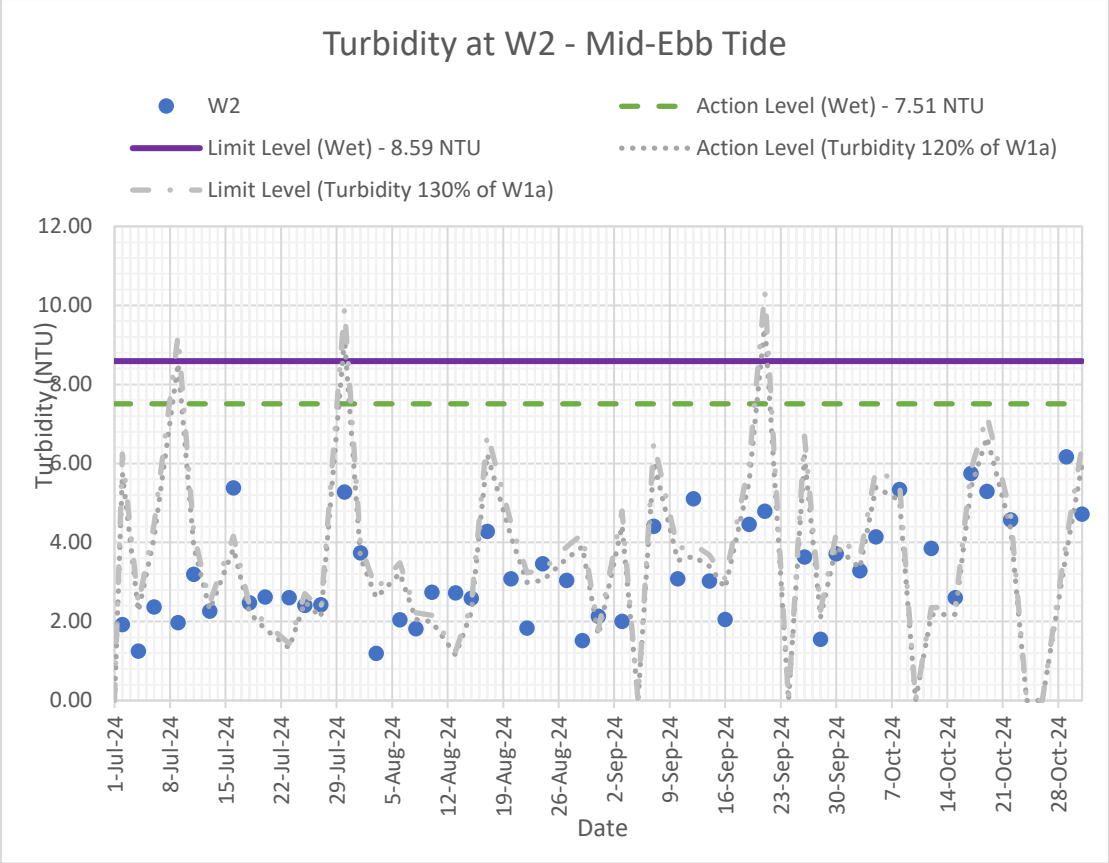

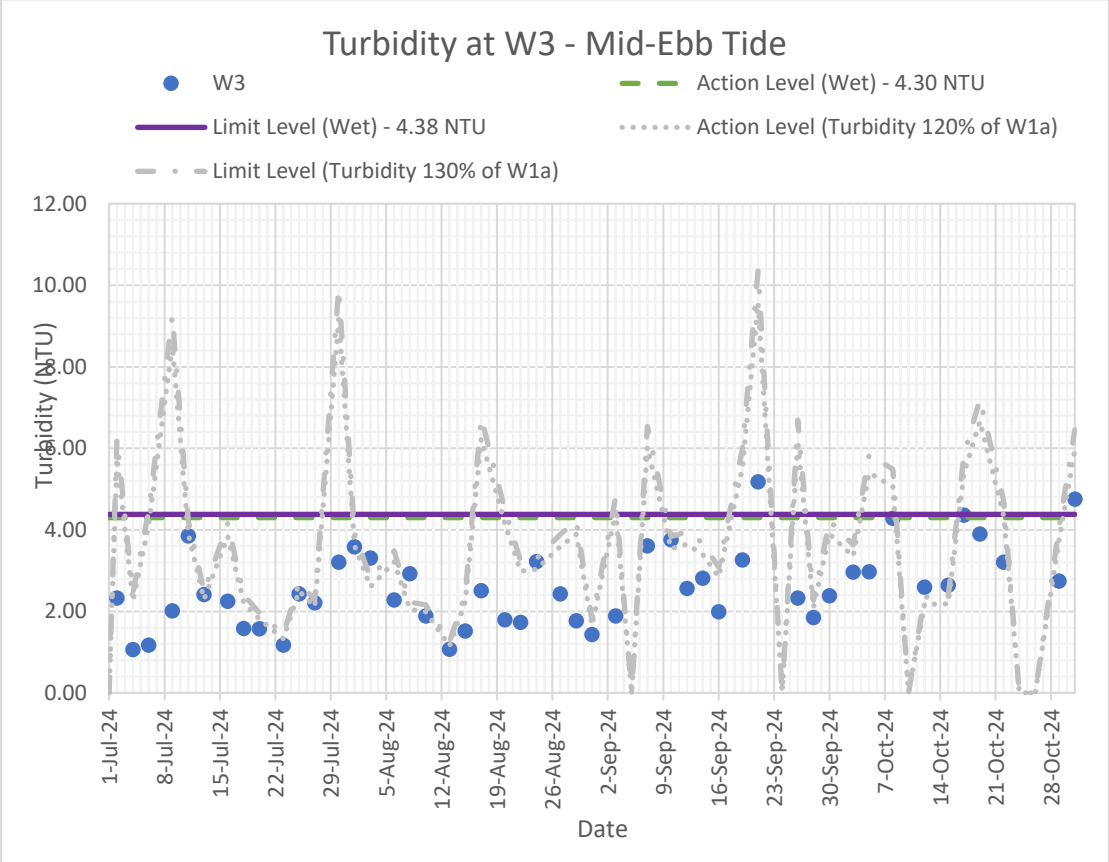

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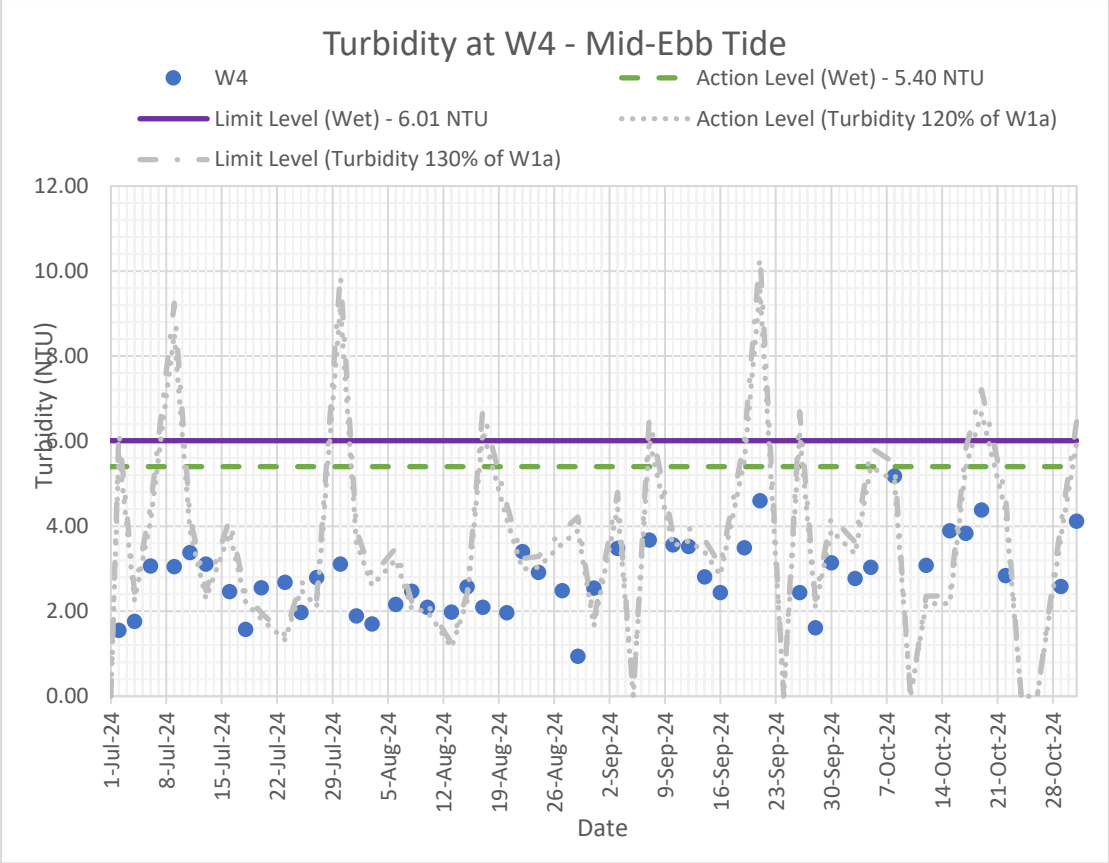

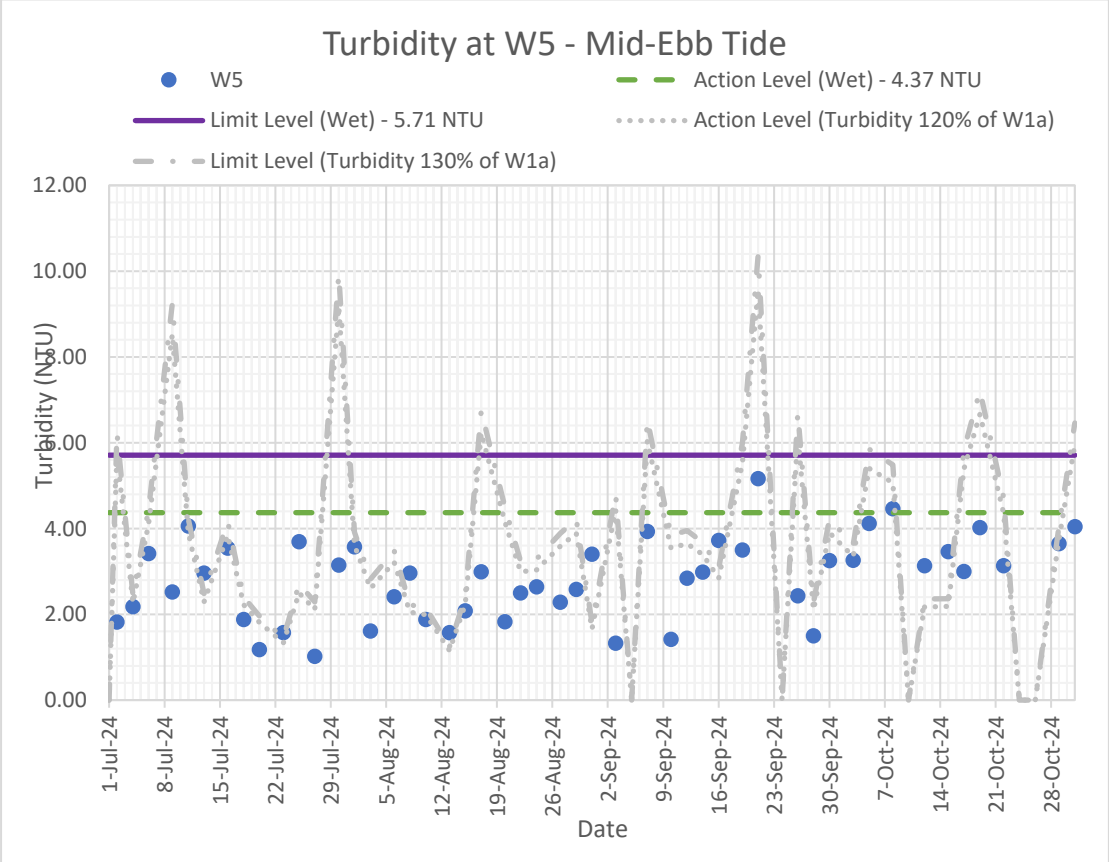

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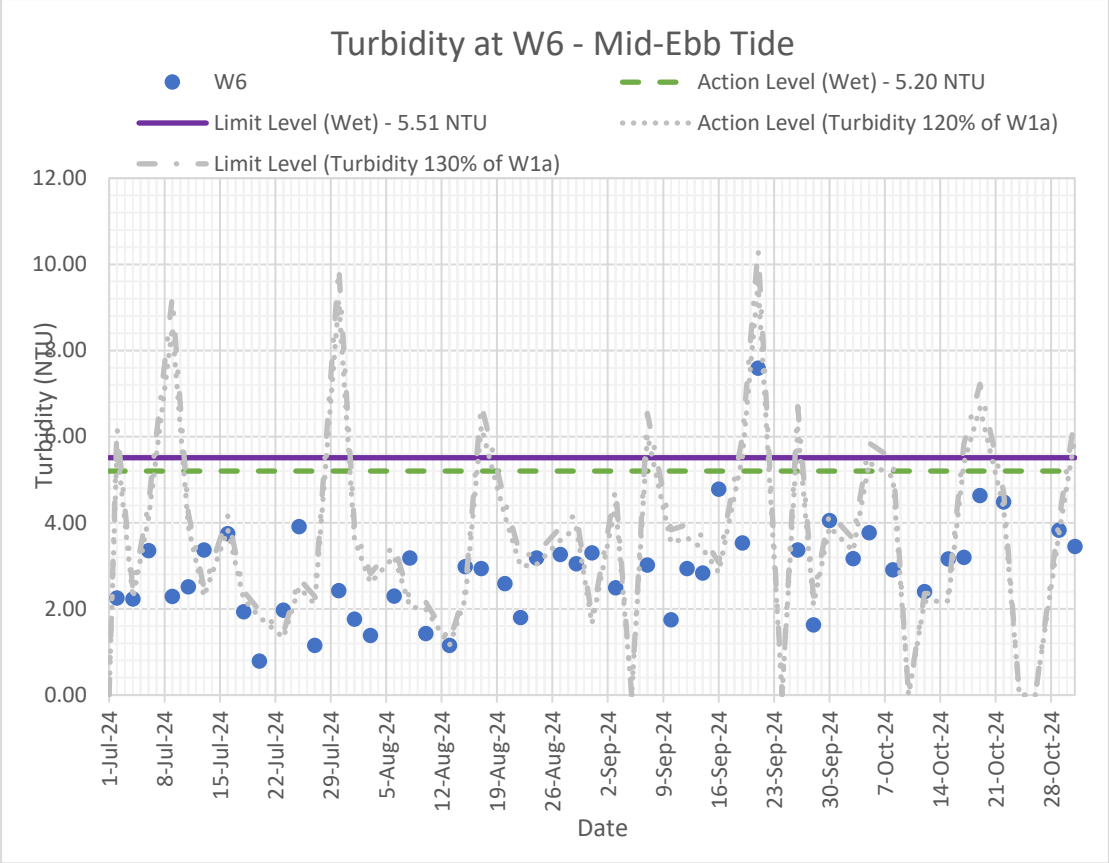
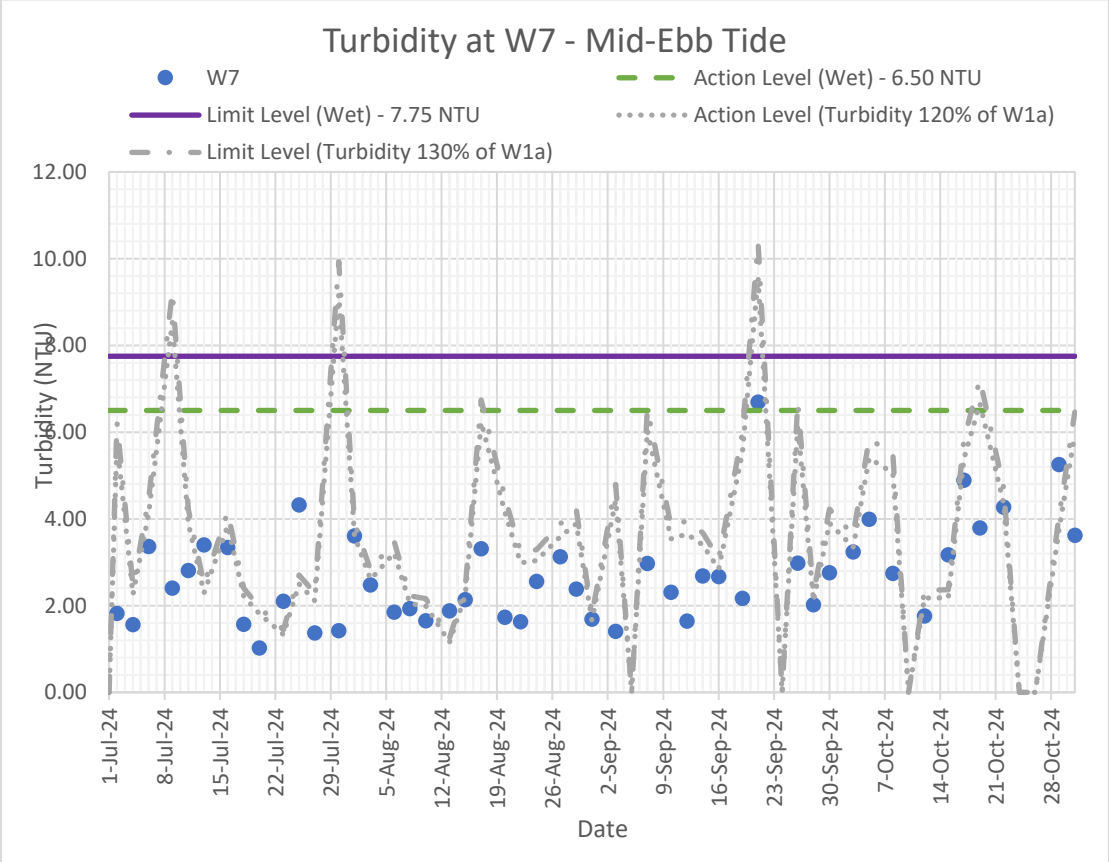
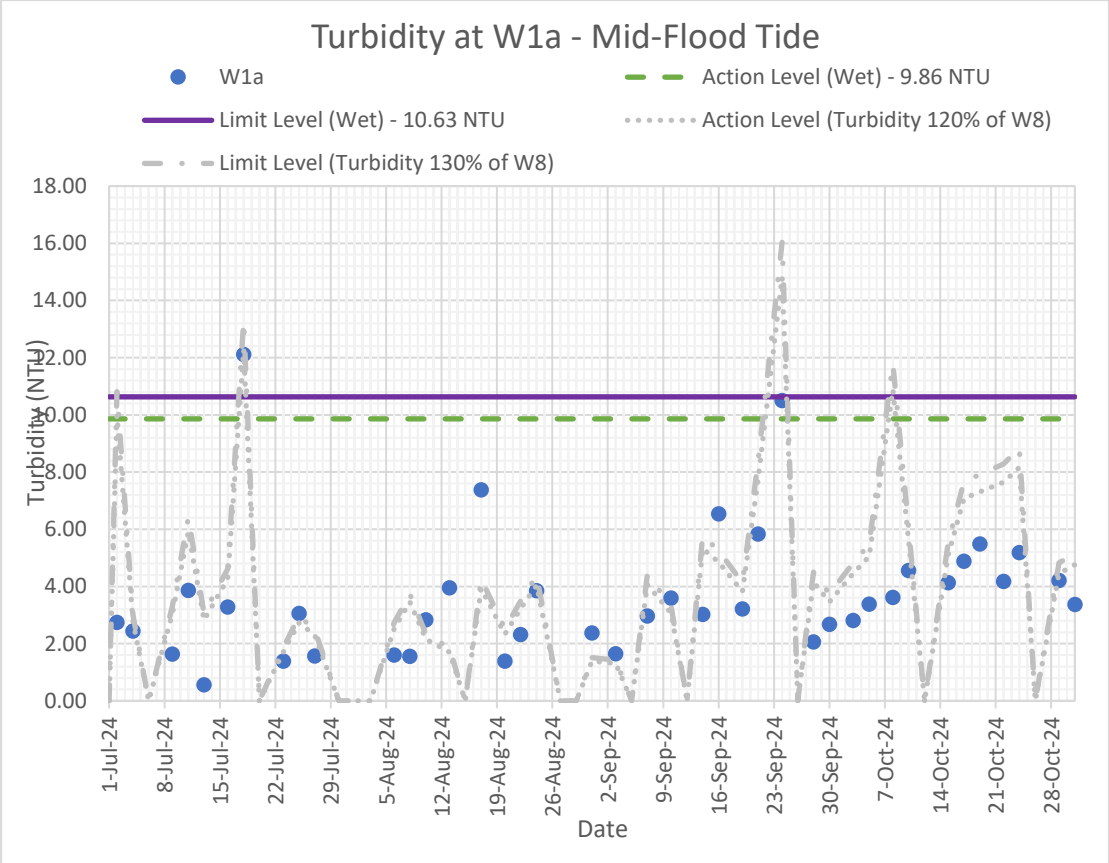
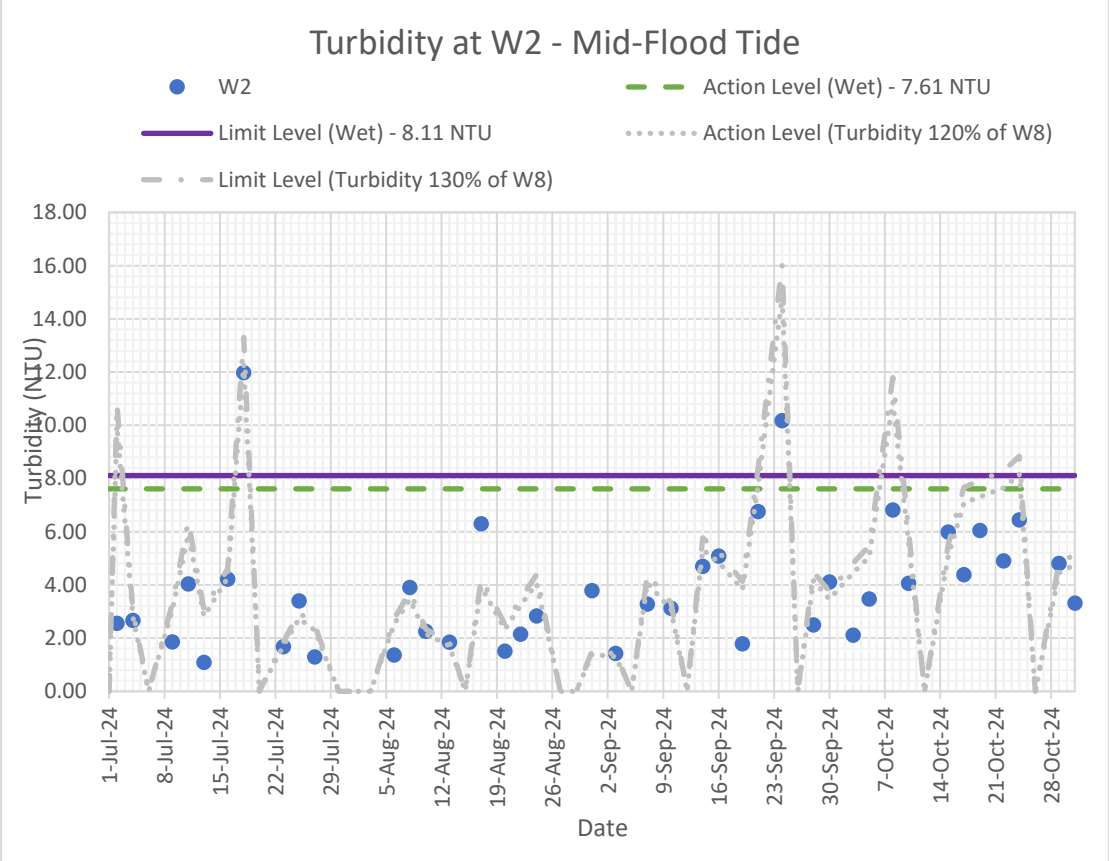




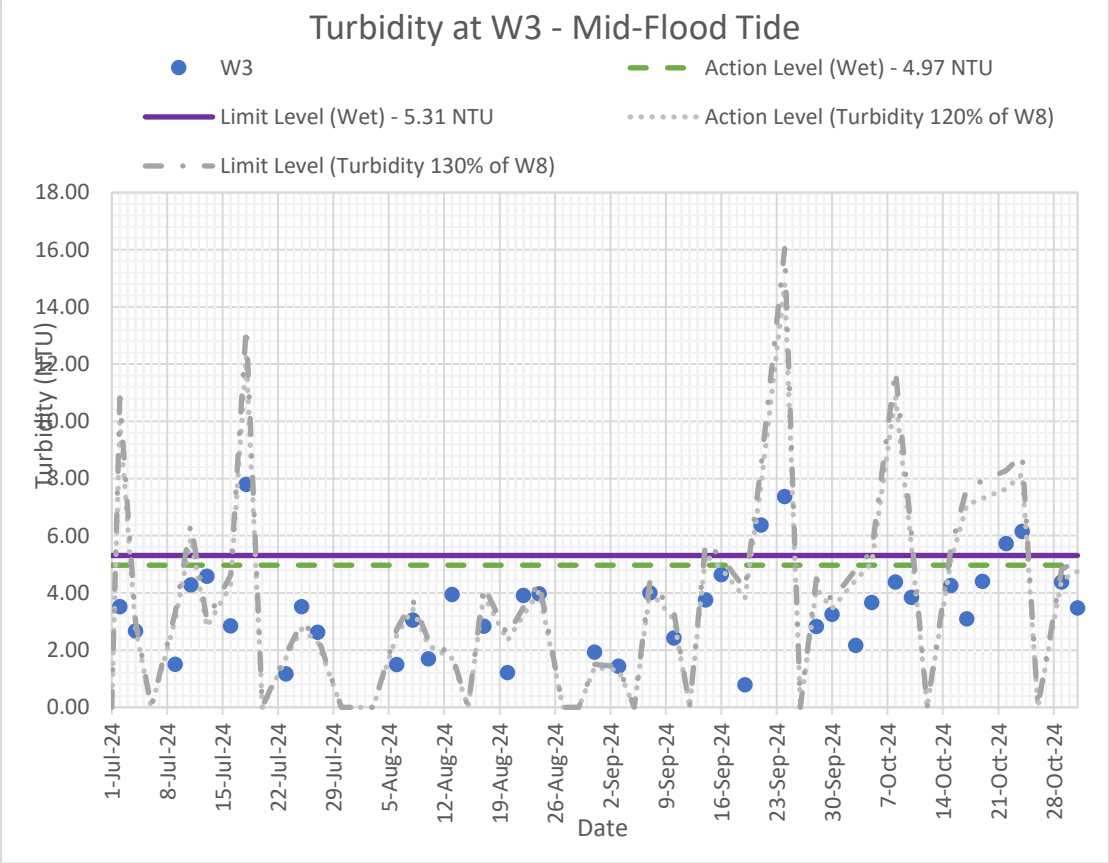
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

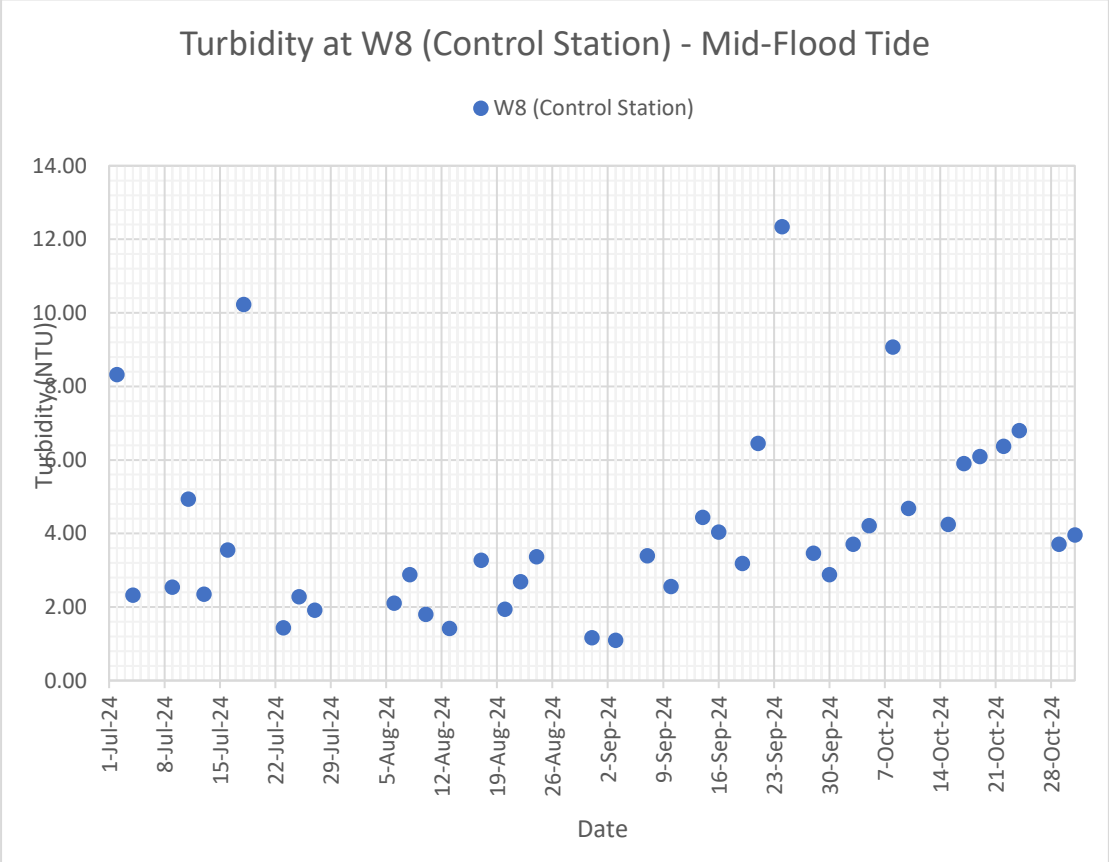
Turbidity at Mid-Flood Tide



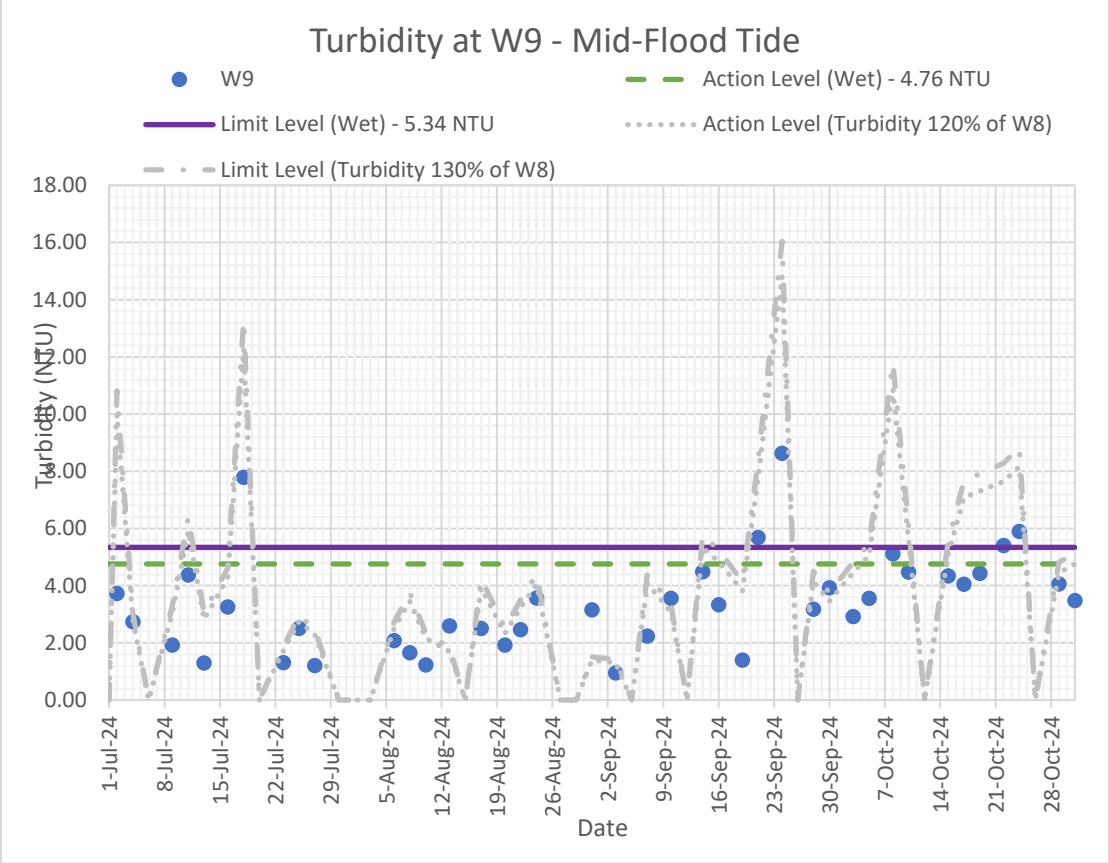


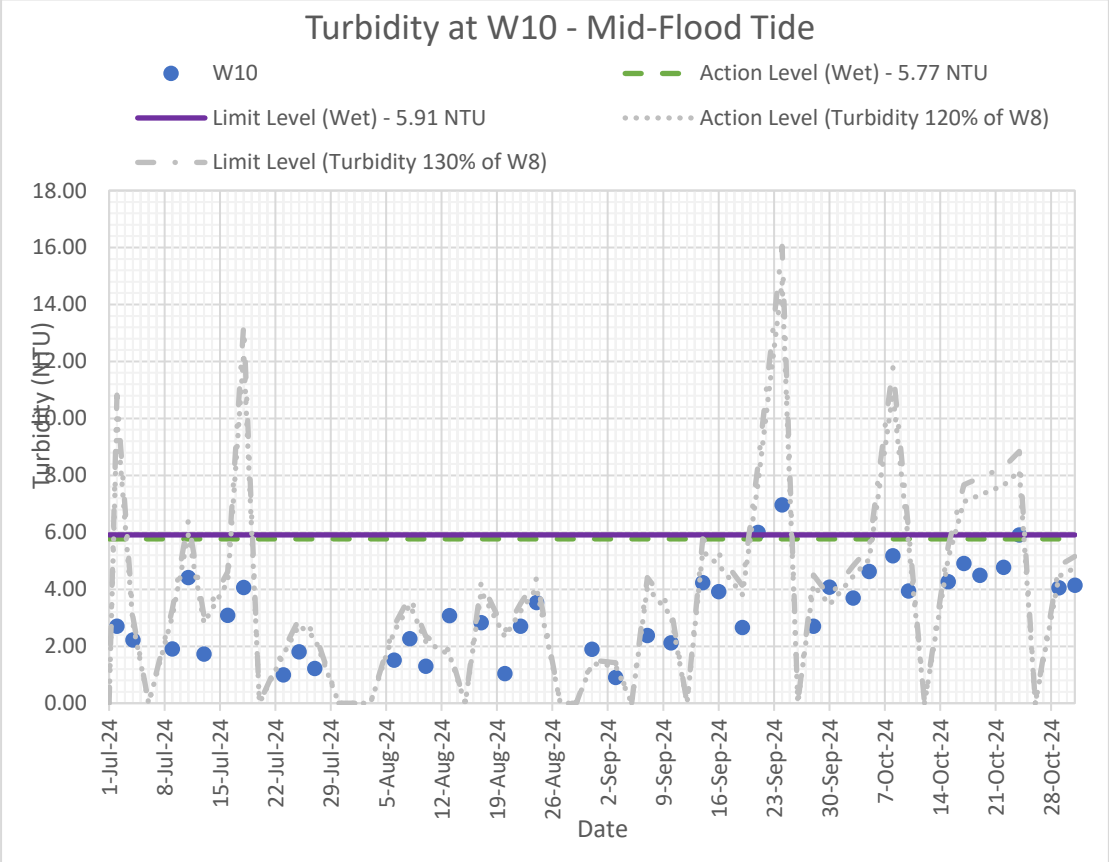
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)



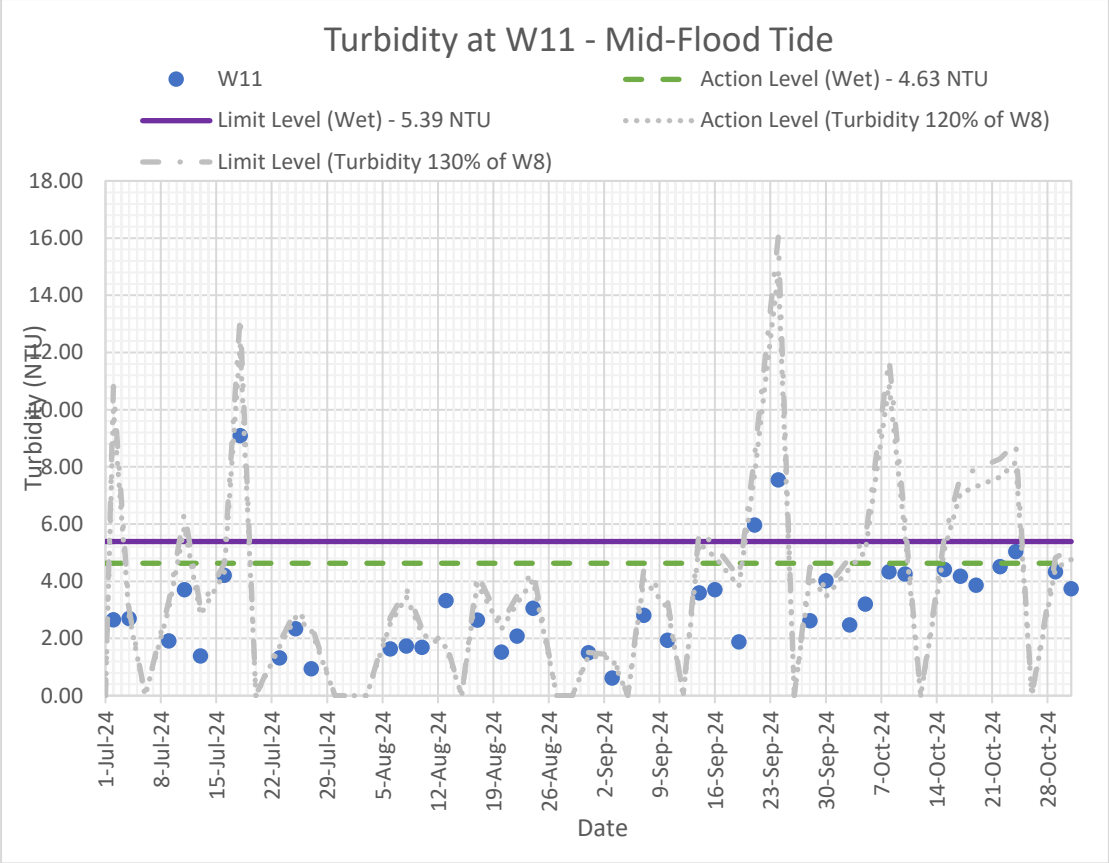


Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

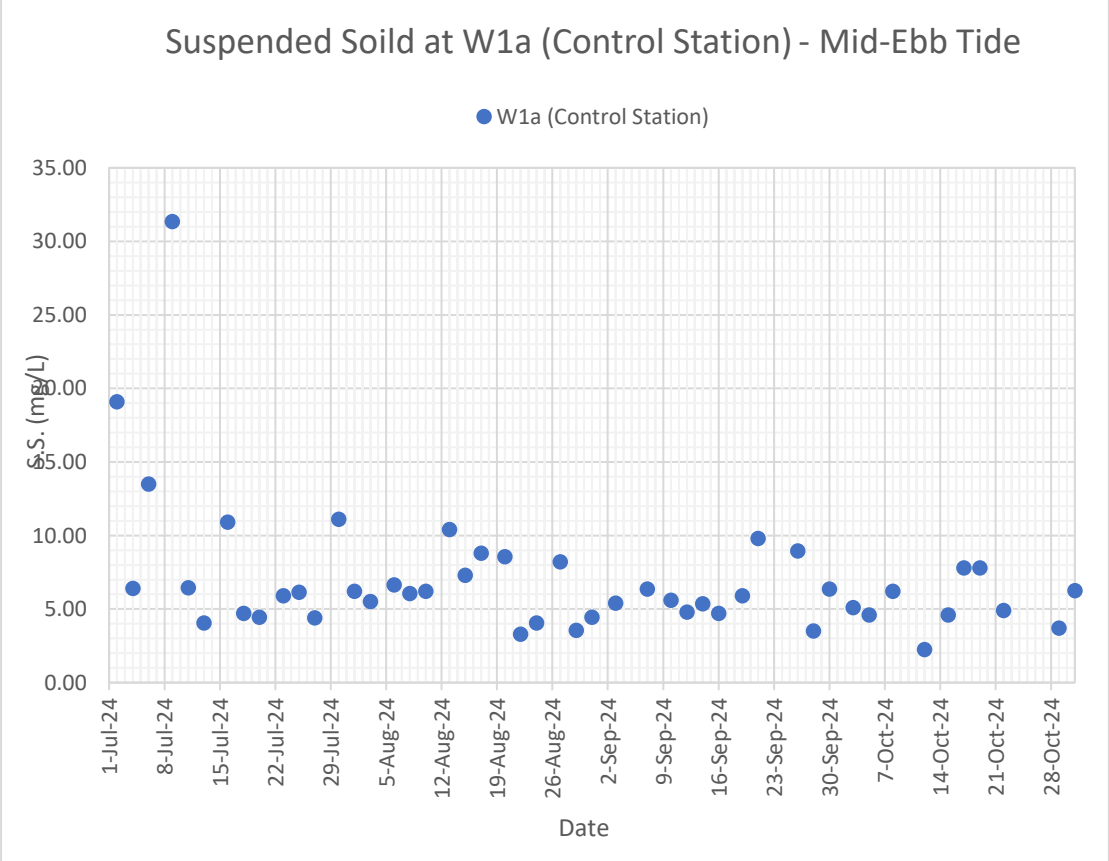




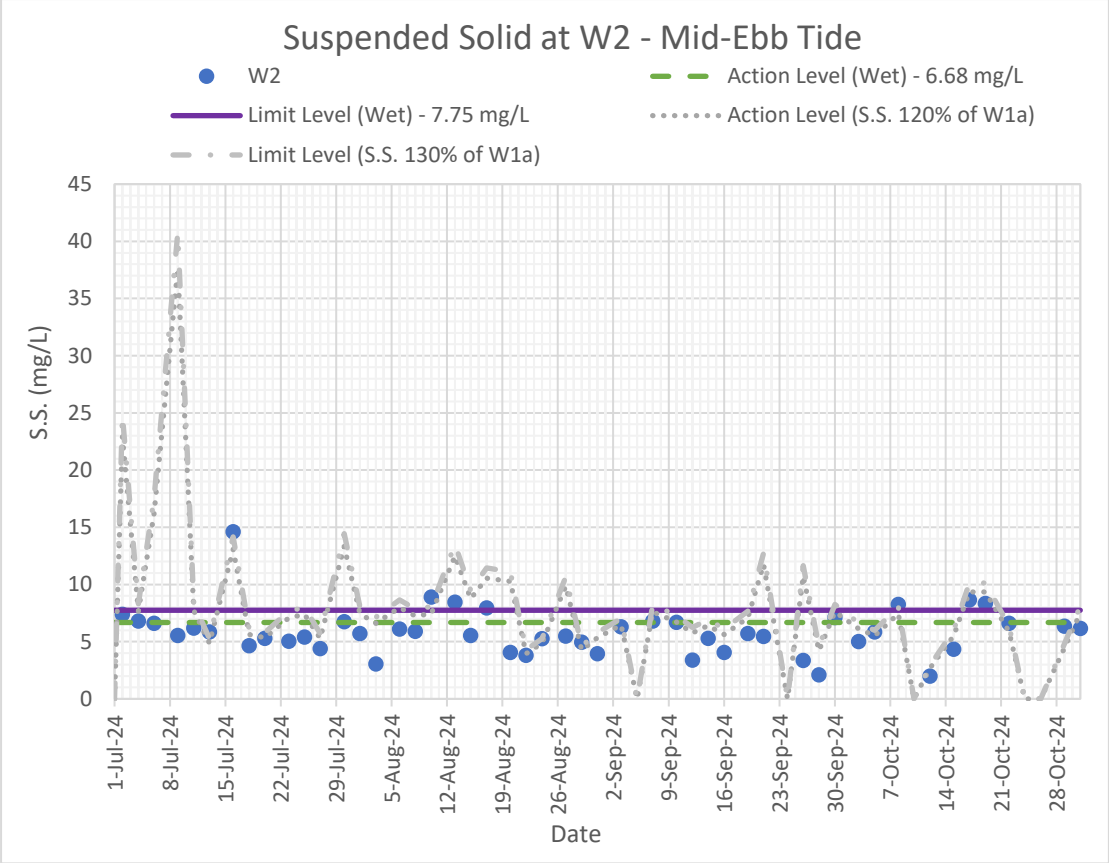
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

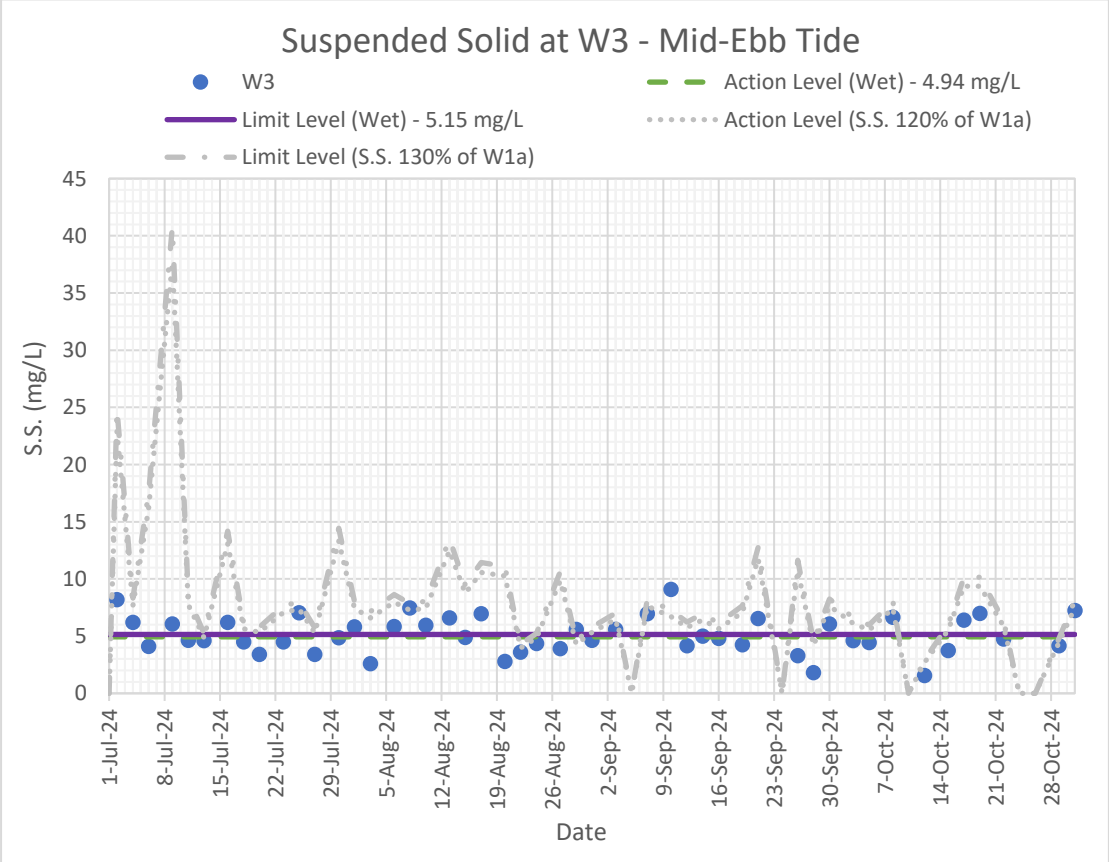


<u>Suspended Solid at Mid-Ebb Tide</u>

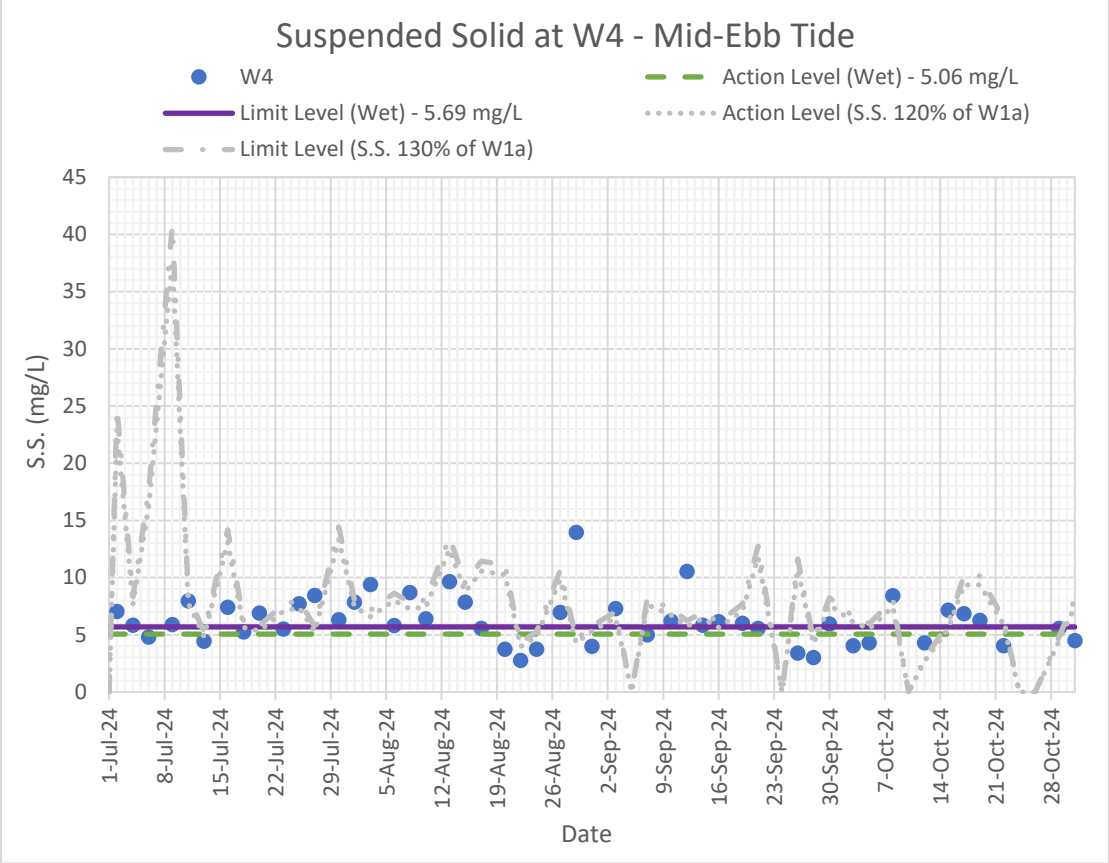


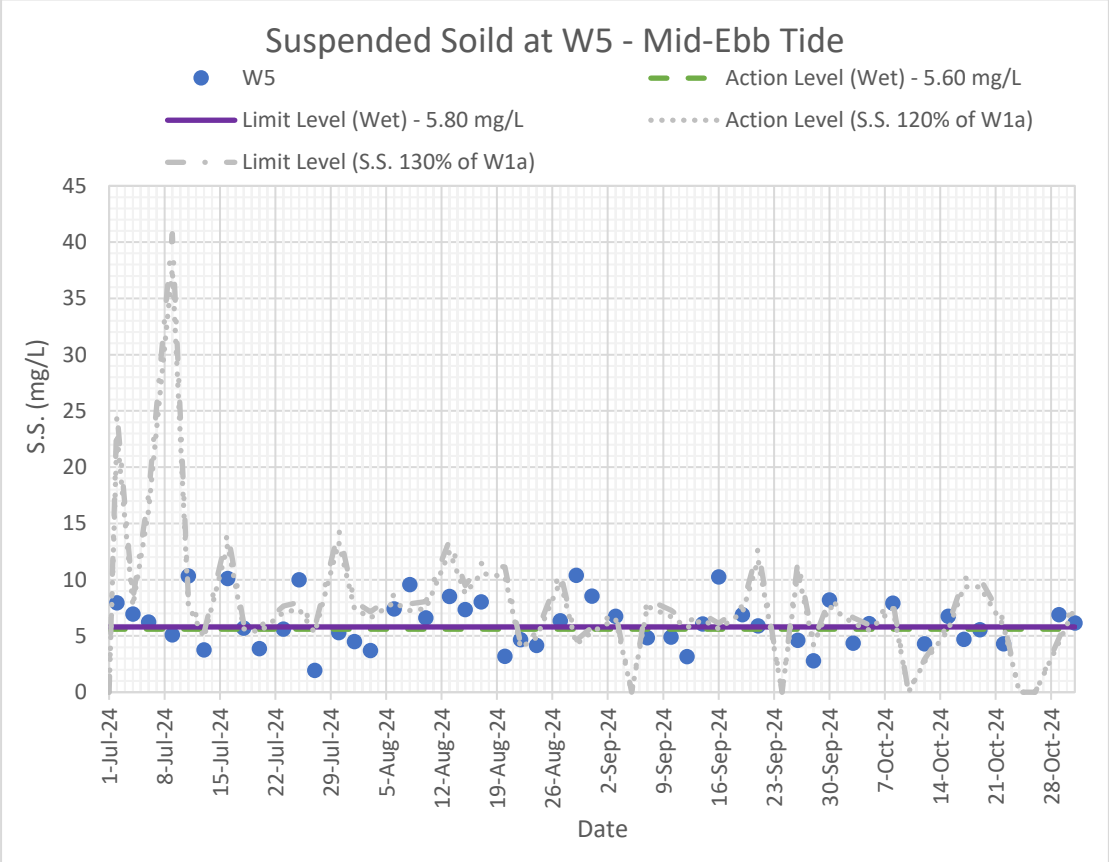
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)



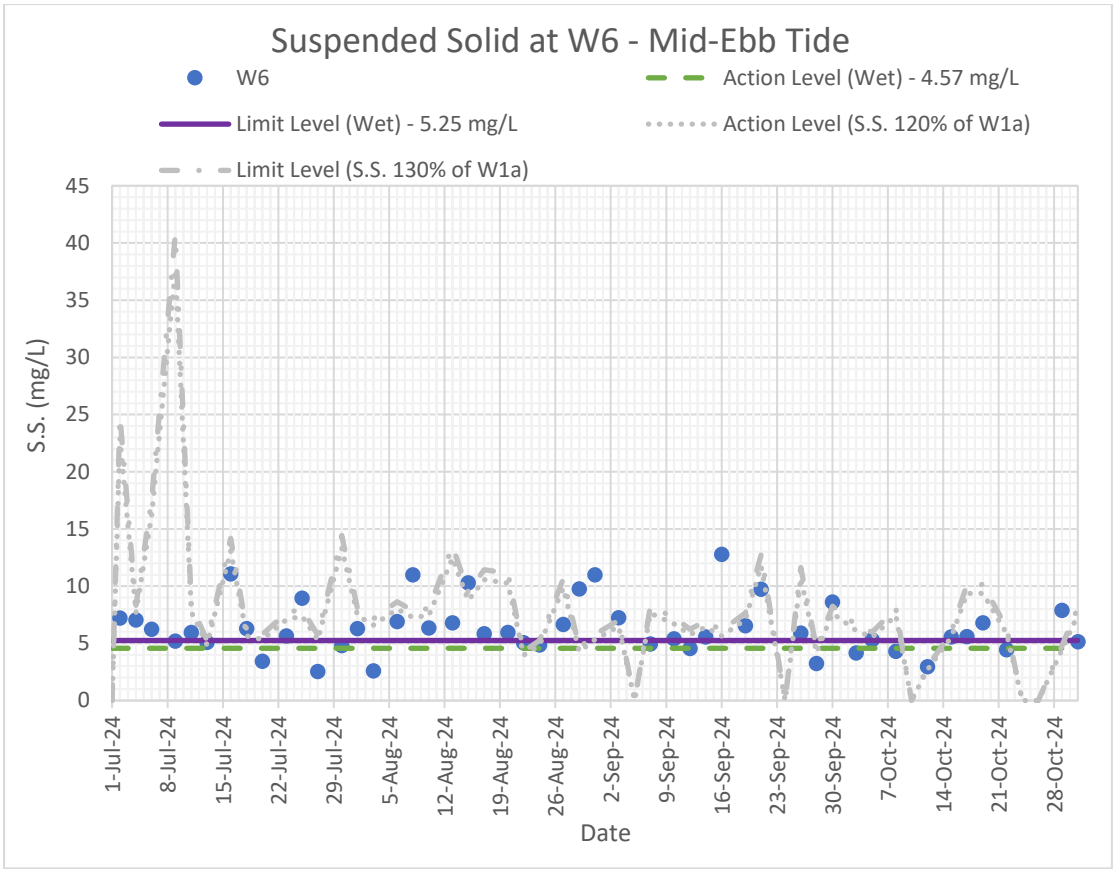


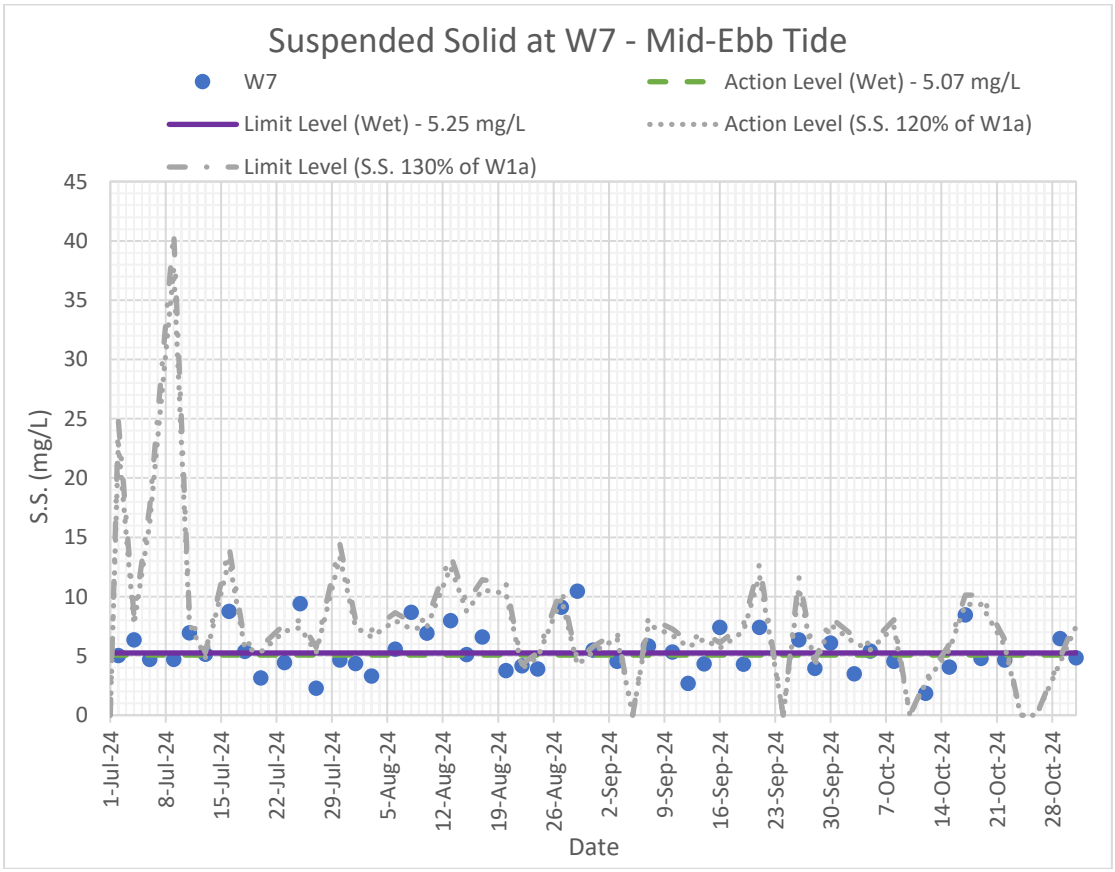
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)





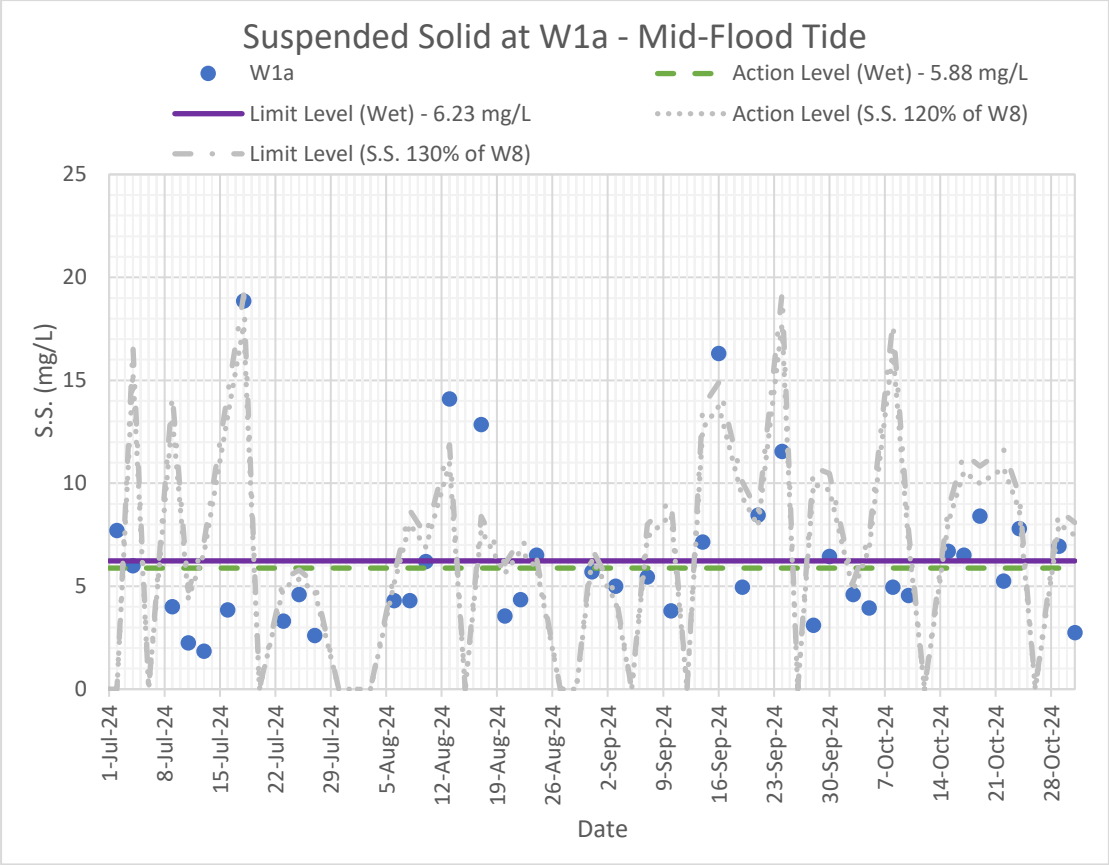
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

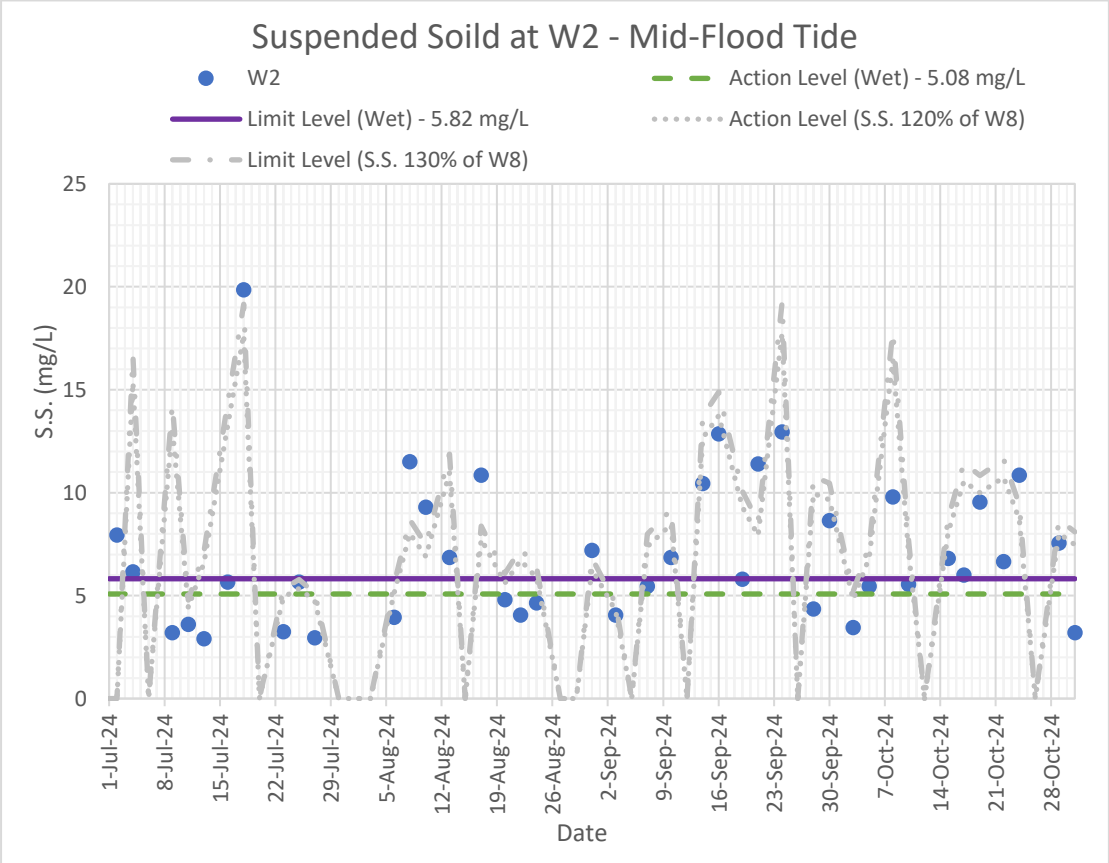




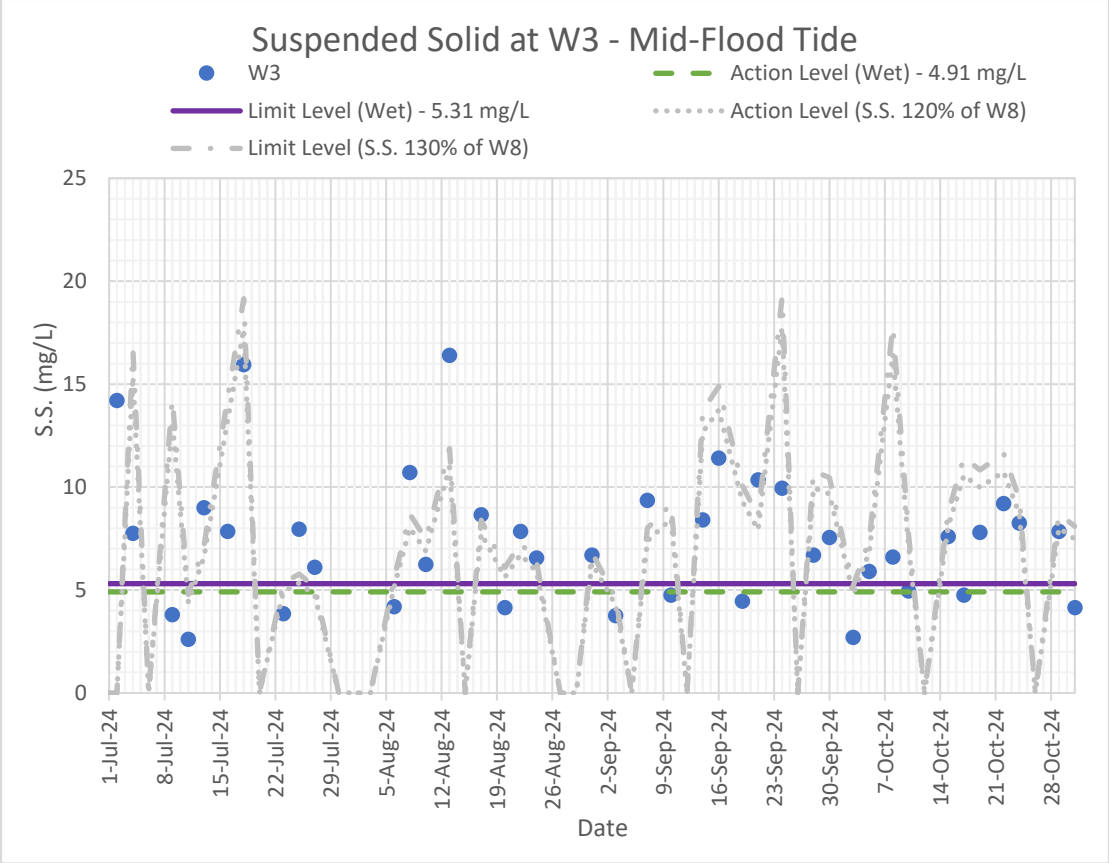
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)

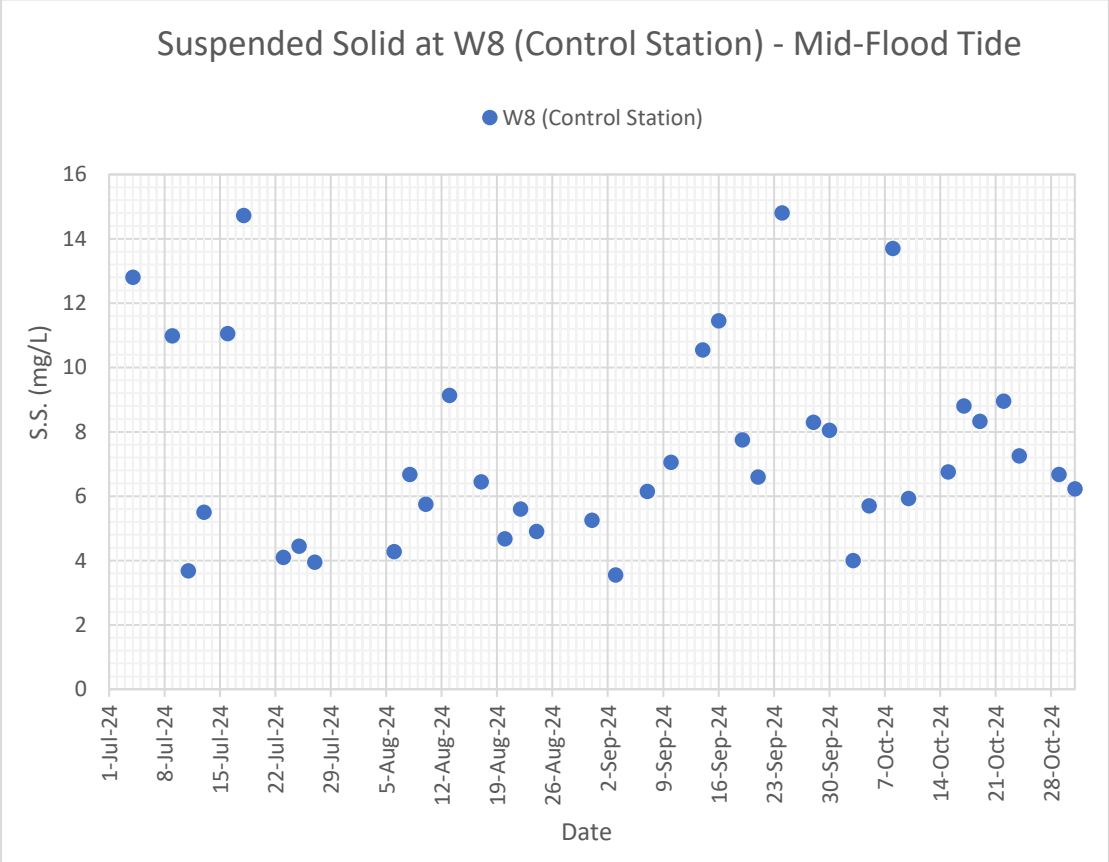
Suspended Solid at Mid-Flood Tide



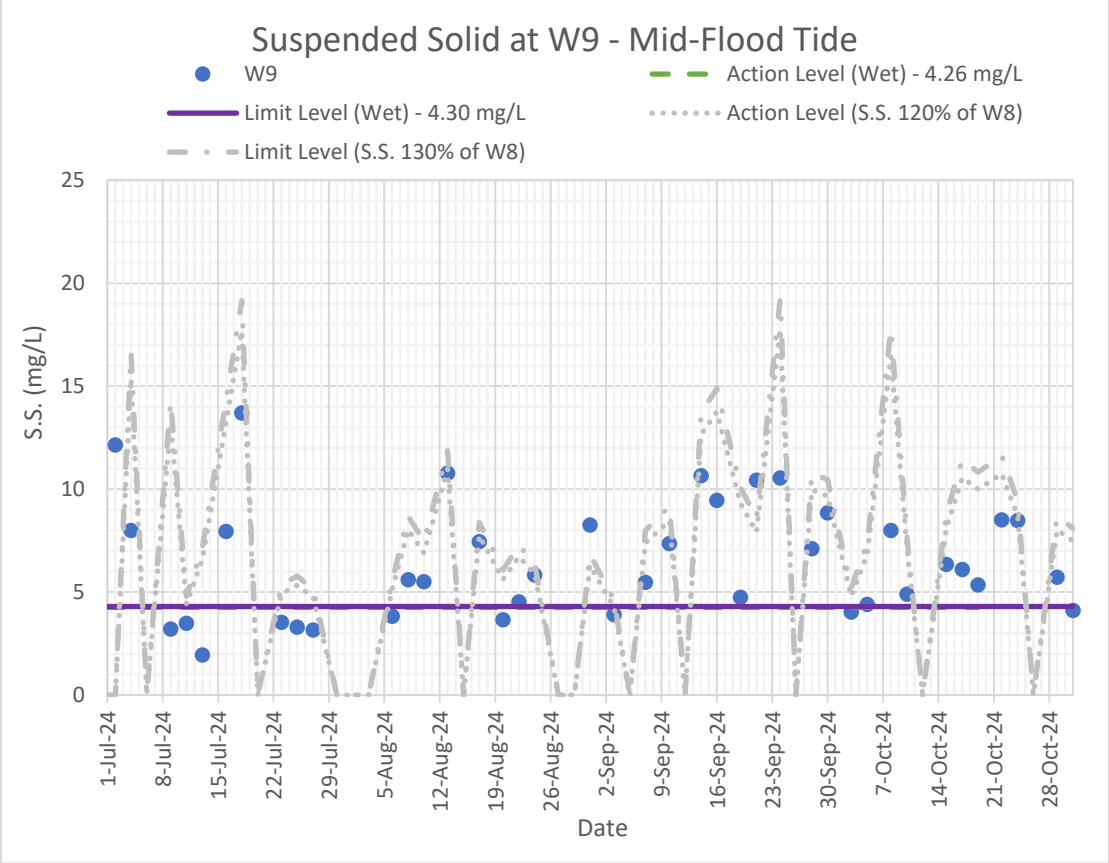


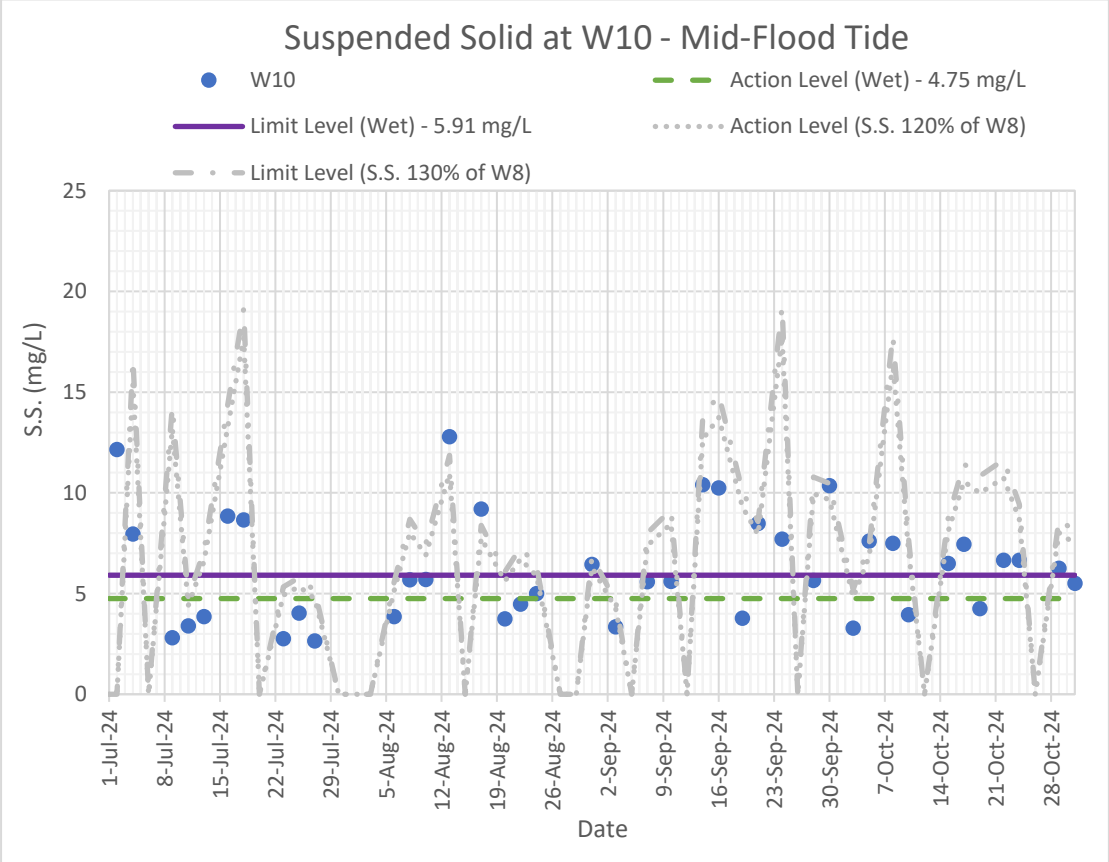
Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)



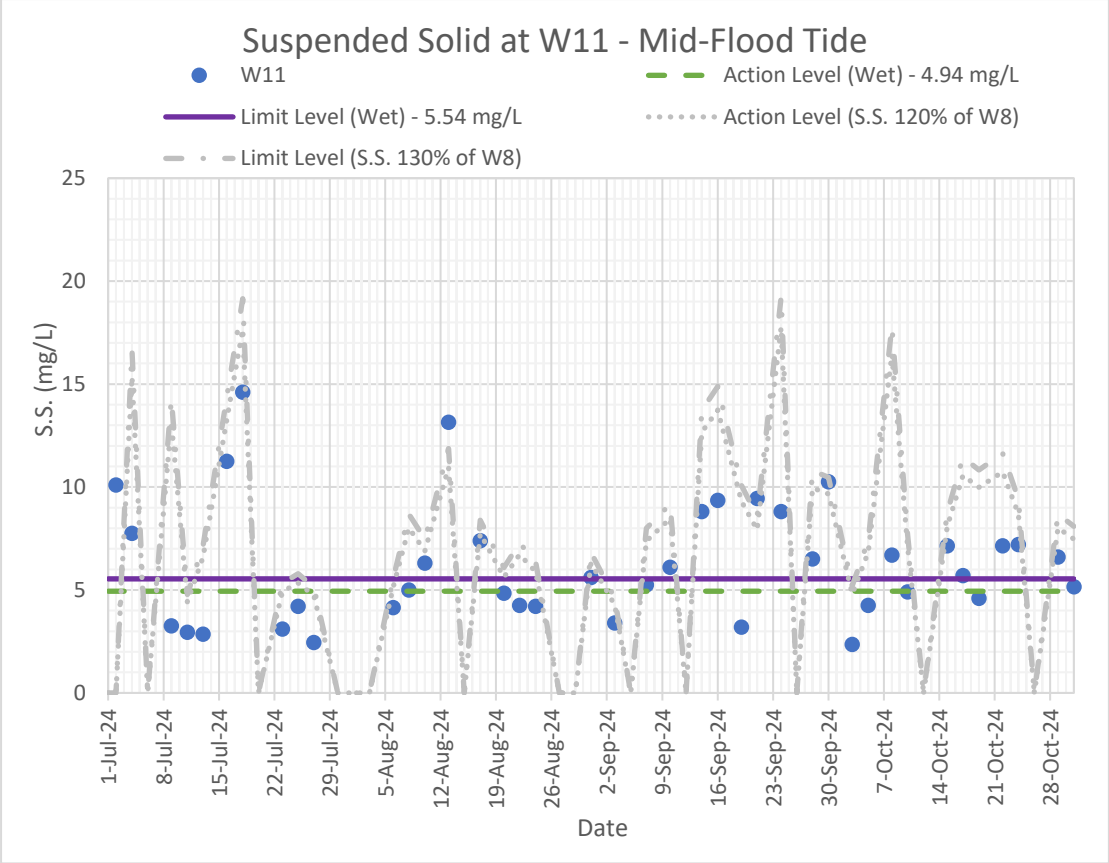


Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)





Appendix H – Graphical Presentations of Water Quality Monitoring Data (October 2024)



Appendix I Event Action Plan

Appendix I – Event Action Plan

Event / Action Plan for Construction Dust

Event	Action			
	ET	IEC	ER	Contractor
Action Level exceedance for one sample	1. Identify source, investigate the causes of exceedance, and propose remedial measures; 2. If exceedance is confirmed, inform ER. IEC and Contractor; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and contractor on possible remedial measures; 3. Review and advise the ET; and 4. ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance; and 2. Ensure remedial measures properly implemented.	1. Identify sources and investigate the cause of exceedance; 2. Implement the agreed proposals; and 3. Amend working methods agreed with the ER as appropriate.
Action Level exceedance for two or more consecutive samples	1. Identify source and investigate the cause of exceedance; 2. If exceedance is confirmed, inform ER, IEC, and Contractor; 3. Advise the ER, IEC on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency; 6. Discuss with ER, IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with ER, IEC, and contractor to discuss the remedial measures to be taken; and 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; and 4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance; 2. In consultation with the ET and IEC agree with the Contractor on the remedial measures to be implemented; and 3. Supervise implementation of remedial measures.	1. Identify sources and investigate the cause of exceedance; 2. Submit proposals for remedial to ET, ER and IEC within 3 working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal if appropriate.
Limit Level exceedance for one sample	1. Identify source, investigate the cause of exceedance and propose remedial measures; 2. If exceedance is confirmed, inform ER, IEC, contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency; and 5. Discuss with the ER, IEC and Contractor on the remedial measures and assess effectiveness.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; and 4. Advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Ensure remedial measures properly implemented.	1. Identify sources and investigate the cause of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ET, ER and IEC within 3 working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit Level exceedance for two or more consecutive samples	1. Identify source, investigate the cause of exceedance, and propose remedial measures; 2. If exceedance is confirmed, inform ER, IEC, contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency;	1. Check monitoring data submitted by ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; and 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of exceedance; 2. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 3. Ensure remedial measures properly implemented; and	1. Identify sources and investigate the cause of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ET, ER and IEC within 3 working days of notification; 4. Implement the agreed proposals;

Event	Action			
	ET	IEC	ER	Contractor
	5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with ER, IEC, and contractor to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.		4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ET, ER and IEC until the exceedance is abated.

Event / Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	1. Investigate the complaint and propose remedial measures; 2. Discuss with the ER and Contractor on the remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the Contractor; 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor; and 3. Supervise the implementation of the remedial measures.	1. Notify the Contractor, ET, IEC and Confirm receipt of notification of complaint in writing; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise implementation of remedial measures	1. Investigate the complaint and propose remedial measures; 2. Report the results of investigation to the IEC, ET, and ER; 3. Submit noise mitigation proposals to the ER, IEC, and ET within three working days of notification for agreement; and 4. Implement noise mitigation proposals.
Limit Level exceedance	1. Notify the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm exceedance; 3. Identify source and investigate the causes of exceedance; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Review the effectiveness of Contractor's remedial measures and	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET, and Contractor on the potential remedial measures; 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor; and 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and; 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER, IEC, and ET within three working days of notification for agreement; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

	keep IEC, EPD and ER informed of the results; and 7. If exceedance stops, cease additional monitoring.			

Event / Action Plan for Water Quality

Event	Action			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling day	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; and 4. Check monitoring data, all plant, equipment and Contractor's working methods.	1. Check monitoring data submitted by ET and Contractor(s)'s working methods.	1. Confirm receipt of notification of exceedance in writing.	1. Inform the ER and confirm notification of the non-compliance in writing; and 2. Check all plant and equipment and rectify unacceptable practice.
Action level being exceeded by two or more consecutive sampling days	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss additional mitigation measures with IEC and Contractor and ensure mitigation measures are implemented; and 6. Prepare to increase the monitoring frequency to daily.	1. Discuss with ET and Contractor on the mitigation measures and advise the ER accordingly; 2. Assess the effectiveness of the implemented mitigation measures; and 3. Check monitoring data submitted by ET and Contractor(s)'s working methods.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with IEC on the proposed mitigation measures and agree on the mitigation measures to be implemented; 3. Ensure additional mitigation measures are properly implemented; and 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Check all plant and equipment and rectify unacceptable practice; 3. Consider changes of working methods; 4. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and 5. Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and ER;	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures and agree on the mitigation measures to be implemented;	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Check all plant and equipment and rectify unacceptable practice; and 3. Consider changes of working methods;

Event	Action			
	ET	IEC	ER	Contractor
	4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss additional mitigation measures with IEC, ER and Contractor and ensure mitigation measures are implemented; and 6. Increase the monitoring frequency to daily until no exceedance of limit level.		3. Ensure additional mitigation measures are properly implemented; 4. Assess the effectiveness of the implemented mitigation measures; and 5. Request Contractor to critically review the working methods.	4. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and 5. Implement the agreed mitigation measures.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss additional mitigation measures with IEC, ER and Contractor and ensure mitigation measures are implemented; and 6. Increase the monitoring frequency to daily until no exceedance of limit level.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures and agree on the mitigation measures to be implemented; 3. Ensure additional mitigation measures are properly implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Request Contractor to critically review the working methods; and 6. 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.	1. Inform ER and confirm notification of non-compliance in writing; 2. Check all plant and equipment and rectify unacceptable practice; 3. Consider changes of working methods; 4. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 5. Implement the agreed mitigation measures; and 6. As directed by the ER, to slow down or to stop all or part of the construction activities.

Appendix J Monthly Summary Waste Flow Table

Contract No: MTR 1500 - TME Station, Viaducts and River Crossing
Date of Report: October, 2024

Monthly Summary Waste Flow Table for 2024

Monthly	Actual Quantities of C&D Materials Generated Monthly							Actual Quantities of Non-inert C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects (see Note 4)	Disposed as Public Fill	Imported Fill	Sorting Facilities	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)	Yard Waste
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	(in '000kg)
Jan,24	27.570	0.000	0.000	0.000	27.570	0.000	0.000	0.000	0.000	0.000	0.000	17.640	19.770
Feb,24	397.010	0.000	0.000	0.000	397.010	0.000	0.000	0.000	0.000	0.000	0.000	45.030	114.300
Mar,24	6070.960	0.000	0.000	0.000	6070.960	0.000	0.000	0.000	0.000	0.002	0.000	172.900	245.270
Apr,24	3432.130	0.000	0.000	0.000	3432.130	0.000	0.000	0.000	0.000	0.000	0.000	232.920	6.910
May,24	3019.890	0.000	0.000	0.000	3019.890	0.000	0.000	0.000	0.161	0.002	0.000	156.750	87.680
Jun,24	4779.920	0.000	0.000	0.000	4724.480	0.000	55.440	0.002	0.183	0.013	0.000	108.890	55.880
Jul,24	5631.670	0.000	0.000	0.000	5416.760	0.000	214.910	0.0001	0.232	0.003	0.000	112.780	108.380
Aug,24	4091.500	0.000	0.000	187.640	3894.820	0.000	9.040	0.0002	0.000	0.009	0.000	42.650	13.140
Sept,24	4619.970	0.000	0.000	0.000	4619.970	0.000	0.000	0.000	0.000	0.000	0.000	94.100	28.710
Oct,24	7409.850	0.000	343.700	0.000	7066.150	0.000	0.000	0.000	0.000	0.000	0.000	185.460	0.000
Nov,24	0.000												
Dec,24	0.000												
Total	39480.470	0.000	343.700	187.640	38669.740	0.000	279.390	0.002	0.576	0.028	0.000	1169.120	680.040

Notes:

1) The waste flow table shall also include C&D mateials that are specified in the contract to be imported for use at the site.
2) Plastic refer to plastic bottle/ containers, plastic sheets/ foam from packaging material.
3) The general refuse with non-recyclable materials were disposed to Landfill.
4) The broken concrete were transported to recycling company “Tailor Recycled Aggregates Ltd”.

Appendix K Review of Exceedance in Water Quality Monitoring

Appendix K – Review of Exceedance in Water Quality Monitoring

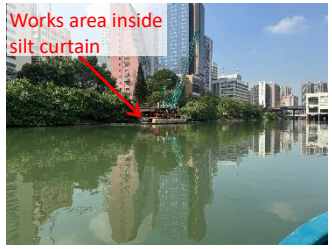
<table>
<tr><th rowspan="2">Sampling Date</th><th rowspan="2">Monitoring Station</th><th rowspan="2">Tidal Mode</th><th colspan="3">Parameters of Exceedance</th><th rowspan="2">Remarks</th><th rowspan="2">Exceedance due to Project</th></tr>
<tr><th>Dissolved Oxygen</th><th>Turbidity</th><th>Suspended Solid</th></tr>
<tr><td rowspan="3">5 October 2024</td><td>W5</td><td>Mid-Ebb</td><td>-</td><td>-</td><td>LL</td><td rowspan="2">No construction activity was observed in TMRC near W5 and W10 stations while construction activities carried out at TMRC included:
i. Construction of temporary platform inside the silt curtain at works area A16 near W3, W4 and W11 stations, and at works area along Tuen Mun Park located in between W1a station and Tin Hau Bridge;
ii. Construction of temporary platform inside silt curtain at work area near Pui To Road Rest Garden located in between W1a station and Tin Hau Bridge; and
iii. Pre-drill work inside the silt curtain at Tuen Mun River Channel near W3 station.

The silt curtains were observed in good condition, no muddy water was observed around the works areas and outside the silt curtains. The weather was fine, and water condition was observed moderate with no abnormality.

Since there is no construction activity carried out near W5 and W10 stations, and the exceedances recorded are marginal, the exceedances recorded on 5 October 2024 are considered not project related.</td><td rowspan="2">No</td></tr>
<tr><td>W10</td><td>Mid-Flood</td><td>-</td><td>-</td><td>LL</td></tr>
<tr><td colspan="8">Photo Record
 
Water condition near W5
 
Water condition near W10
 
Silt curtain near A16
 
Silt curtain between W1a and Tin Hau Bridge
 
Silt curtain near Pui To Road Rest Garden
 
Pre-drill work at Tuen Mun River Channel near W3</td></tr>
</table>

<table>
<tr><th rowspan="2">Sampling Date</th><th rowspan="2">Monitoring Station</th><th rowspan="2">Tidal Mode</th><th colspan="3">Parameters of Exceedance</th><th rowspan="2">Remarks</th><th rowspan="2">Exceedance due to Project</th></tr>
<tr><th>Dissolved Oxygen</th><th>Turbidity</th><th>Suspended Solid</th></tr>
<tr><td rowspan="2">8 October 2024</td><td>W2, W4 and W5</td><td>Mid-Ebb</td><td>-</td><td>-</td><td>AL (W5) and LL (W2 and W4)</td><td>No construction activity was observed in TMRC near W5 station while construction activities carried out at TMRC included:
i. Construction of temporary platform inside the silt curtain at works area A16 near W3, W4 stations, at works area along Tuen Mun Park located near W2 station, and in between W1a and Tin Hau Bridge;
ii. Construction of temporary platform inside silt curtain at work area near Pui To Road Rest Garden located in between W1a station and Tin Hau Bridge; and
iii. Pre-drill work inside the silt curtain at Tuen Mun River Channel near W11 station.

The silt curtains were observed in good condition, no muddy water was observed around the works areas and outside the silt curtains. The weather was fine, and water condition was observed moderate with no abnormality.

As mitigation measures were observed in place and the exceedances recorded are marginal, the exceedances recorded on 8 October 2024 are considered not project related.</td><td>No</td></tr>
<tr><td colspan="7">Photo Record
 
Water condition near W2
 
Water condition near W4
 
Water condition near W5
 
Silt curtain near A16
 
Silt curtain near Pui To Road Rest Garden
 
Silt curtain between W1a and Tin Hau Bridge
 
Pre-drill work at Tuen Mun River Channel near W11</td></tr>
</table>

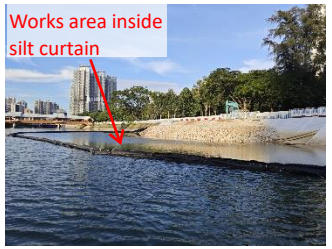
Sampling Date	Monitoring Station	Tidal Mode	Parameters of Exceedance			Remarks	Exceedance due to Project
			Dissolved Oxygen	Turbidity	Suspended Solid		
15 October 2024	W4, W5 and W6	Mid-Ebb	-	-	AL (W6) and LL (W4 and W5)	On the sampling day, no construction activity was observed in TMRC near W5 and W6 stations while Construction activities carried out at TMRC included: i. Construction of temporary platform inside the silt curtain at works area A16 near W3, W4 and W11 stations, at works area along Tuen Mun Park located near W2 station, and in between W1a and Tin Hau Bridge; ii. Construction of temporary platform inside silt curtain at work area near Pui To Road Rest Garden; and iii. Pre-drill work inside the silt curtain at Tuen Mun River Channel near W3 station. The silt curtains were observed in good condition, no muddy water was observed around the works areas and outside the silt curtains. The weather was fine, and water condition was observed moderate with no abnormality. As mitigation measures were observed in place, and no trace of muddy discharge from site was observed, the exceedances recorded on 15 October 2024 are considered not project related.	No

Photo Record

Water condition near W4


Water condition near W5


Water condition near W6

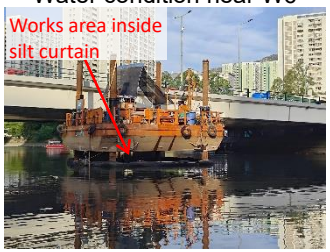


Silt curtain near W2

Silt curtain near A16

Silt curtain between W1a and Tin Hau Bridge

Silt curtain near Pui To Road Rest Garden



Pre-drill work at Tuen Mun River Channel near W3

<table>
<tr><th rowspan="2">Sampling Date</th><th rowspan="2">Monitoring Station</th><th rowspan="2">Tidal Mode</th><th colspan="3">Parameters of Exceedance</th><th rowspan="2">Remarks</th><th rowspan="2">Exceedance due to Project</th></tr>
<tr><th>Dissolved Oxygen</th><th>Turbidity</th><th>Suspended Solid</th></tr>
<tr><td rowspan="2">24 October 2024</td><td>W2</td><td>Mid-Flood</td><td>-</td><td>-</td><td>LL</td><td>Construction activities carried out at TMRC included:
i. Construction of temporary platform inside the silt curtain at works area A16 near W3, W4 and W11 stations, at works area along Tuen Mun Park located near W2 station, and in between W1a and Tin Hau Bridge;
ii. Construction of temporary platform inside silt curtain at work area near Pui To Road Rest Garden; and
iii. Pre-drill work inside the silt curtain at Tuen Mun River Channel near W3 station.

Silt curtains observed were in good condition, there was no muddy water found around both the works areas and outside the silt curtains. The weather was sunny, the water condition was moderate without abnormality.

Since mitigation measures were observed in place, and no trace of muddy discharge from the site was found, the exceedance recorded on 24 October 2024 are considered not project related.</td><td>No</td></tr>
<tr><td colspan="7">Photo Record
 

Water condition near W2
 

Silt curtain near Pui To Road Rest Garden
 

Silt curtain between W1a and Tin Hau Bridge
 

Pre-drill work at Tuen Mun River Channel near W3
 

Silt curtain near A16</td></tr>
<tr><td>29 October 2024</td><td>W4, W5, W6 and W7</td><td>Mid-Ebb</td><td>-</td><td>-</td><td>AL (W4) and LL (rest of stations)</td><td>No construction activity was observed in TMRC near W5, W6 and W7 while construction activities were carried out at TMRC included:
i. Construction of temporary platform inside the silt curtain at works area A16 near W3, W4 and W11 stations, at works area along Tuen Mun Park located near W2 station, and in between W1a and Tin Hau Bridge;
ii. Construction of temporary platform inside silt curtain at work area near Pui To Road Rest Garden; and
iii. Pre-drill work inside the silt curtain at Tuen Mun River Channel near W3 station.

Silt curtains observed were in good condition, there was no muddy water found around both the works areas and outside the silt curtains. The weather was sunny, the water condition was moderate without abnormality.

In view of the above, the exceedance recorded on 29 October 2024 are considered not project related.</td><td>No</td></tr>
</table>

Sampling Date	Monitoring Station	Tidal Mode	Parameters of Exceedance			Remarks	Exceedance due to Project
			Dissolved Oxygen	Turbidity	Suspended Solid		

Photo Record

Water condition near W4

Water condition near W5

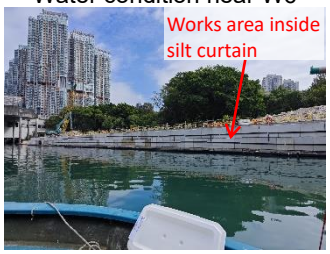
Water condition near W6

Water condition near W7

Silt curtain near A16

Silt curtain near W2

Silt curtain near Pui To Road Rest Garden



Silt curtain between W1a and Tin Hau Bridge

Pre-drill work at Tuen Mun River Channel near W3

Note: AL – Action Level; LL – Limit Level

Appendix L Cumulative Statistics on Complaints, Notification of Summons and Successful Prosecutions

Appendix L – Cumulative Statistics on Complaints, Notification of Summons and Successful Prosecutions

	Log Ref no.	Date Received	Description	Status	Total no. received in this month	Total no. received since project commencement
Environmental Complaints	EC-003	28 October 2024	A 1823 case regarding dust nuisance from the works area at Wu King Road. After investigation, the complaint is considered project related.	Closed	1	3
Notification of Summons	-	-	-	-	0	0
Successful Prosecutions	-	-	-	-	0	0

Appendix B

Monthly Ardeid Monitoring Result
(October 2024)

MTR Corporation Limited

Consultancy Agreement No. C1502
(Variation Order No. C1502/009)

Environmental Monitoring and Audit (EM&A) for Tuen Mun South Extension

Monthly Ardeid Monitoring Report (October 2024)

October 2024

	Name	Signature
Prepared & Checked:	Andrew Ip	
Reviewed & Approved:	Gigi Lam	

Version:	1	Date: 30 October 2024

Disclaimer

This Monthly Ardeid Survey Report is prepared for MTR Corporation Limited and is given for its sole benefit in relation to and pursuant to Consultancy Agreement No. C1502 and may not be disclosed to, quoted to or relied upon by any person other than MTR Corporation Limited without our prior written consent. No person (other than MTR Corporation Limited) into whose possession a copy of this Report comes may rely on this Report without our express written consent and MTR Corporation Limited may not rely on it for any purpose other than as described above.

AECOM Asia Co. Ltd.
12/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 3922 9000 Fax: (852) 3922 9797 www.aecom.com

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1 INTRODUCTION

1.1 Background

1.1.1 The Tuen Mun South Extension (TME) (hereinafter referred to as "the Project") is one of the seven recommended railway schemes in the Railway Development Strategy 2014 ("RDS-2014"). The Project will extend the Tuen Ma Line (TML), from Tuen Mun (TUM) Station southwards by about 2.4 km, terminating at a new station near Tuen Mun Ferry Pier (i.e. Tuen Mun South (TMS) Station) with an intermediate station at Tuen Mun Area 16 (i.e. A16 Station).

1.1.2 An Environmental Impact Assessment (EIA) study for the Project was conducted in accordance with EIA Study Brief No. ESB-332/2020. The EIA Report and Environmental Monitoring and Audit (EM&A) Manual (Register No.: AEIAR-236/2022) were approved under the Environmental Impact Assessment Ordinance (EIAO), with an Environmental Permit (EP) granted on 18 August 2022 (EP No: EP-615/2022).

1.1.3 The Project extends from the existing overrun at TUM Station to southward, and its viaduct structure would be located adjacent to an ardeids night roost in Tuen Mun Park (hereafter referred to as "TMP Night Roost"). This TMP Night Roost comprises a group of mature trees (Big-leaved Fig (*Ficus virens*) and Chinese Banyan (*Ficus microcarpa*), which supported night roosting ardeids, including Little Egret (*Egretta garzetta*), Great Egret (*Ardea alba*), and Chinese Pond Heron (*Ardeola bacchus*). According to the ecological surveys conducted in 2021 during the EIA study and the pre-construction ardeid survey conducted on 28 August 2023[1], the abundance of night roosting ardeids at this TMP Night Roost ranged from 39 to 126 individuals in wet season and up to 300 individuals in dry season. The construction of the viaduct structure may result in potential disturbance and indirect impact on the night roosting ardeids.

1.1.4 Mitigation measures include a buffer zone at 100 m from the night roost, where the working hours of construction activities were recommended in the approved EIA Report to minimise the potential disturbance to TMP Night Roost during the construction stage.

1.1.5 According to the recommendation of the approved EIA Report and EM&A Manual and the approved MAMP (January 2024), monthly ardeid monitoring shall be conducted when construction activities are present within the 100 m Buffer Zone of the Tuen Mun Park (TMP) Night Roost, to monitor the potential impact on the TMP night roost, and evaluate effectiveness of the proposed mitigation measures during construction, which include avoiding direct impact to the TMP Night Roost (e.g. careful planning of pruning works), and minimising indirect disturbances that could displace or discourage the use of the night roost.

1.1.6 A monthly ardeid monitoring was conducted on 22 October 2024 with details of monitoring methodology and findings are presented in **Section 2**.

[1] Detailed findings are provided in the Pre-Construction Ardeid Report (December 2023) submitted under EP Condition 2.17 (https://www.epd.gov.hk/eia/register/english/permit/ep6152022/documents/pasr/pdf/pasr.pdf).

2 MONTHLY ARDEID SURVEY

2.1 Survey Methodology

2.1.1 Monthly monitoring was conducted according to the methodology stated in the approved MAMP (January 2024). Direct observation (with the aid of binoculars) of the night roosting ardeids was made from two vantage points (VR1 and VR2a). The location of the TMP Night Roost, 100 m Buffer Zone and vantage points are shown in **Figure No. C1502/C/TME/ACM/M63/001**.

2.1.2 Ardeid species, abundance, flight line, location, and the tree species used for night roosting ardeids were recorded as close to the night roosts as possible. Observation of the flight lines (including flight direction, flight height, and returning time of the roosting ardeids) were undertaken at the agreed vantage points.

2.1.3 The monthly ardeid monitoring started from approximately an hour before sunset and last until nightfall, which is the peak period of ardeid activities at the night roost. The exact sunset time of the survey was made reference to the Hong Kong Observatory.

2.2 Monitoring Results and Findings

2.2.1 Ardeid monitoring at the TMP Night Roost was conducted on 22 October 2024, starting at 16:30 (at least an hour before sunset time) and lasted for at least 2 hours, with findings presented in the following sections. Site preparation works along both east and west of Tuen Mun River Channel (TMRC), as well as construction of temporary platform in TMRC were observed. Parts of these works were within the 100 m Buffer Zone. No construction works were being carried out on site during the monitoring.

Table 2.1 Summary of Ardeid Monitoring and Site Observation

Date of Monitoring	Time of Sunset	Weather Condition	Noticeable Activities in the vicinity of the TMP Night Roost during Monitoring
22nd October 2024	17:53	Fine	• Site preparation works along the east and west of TMRC • Construction of temporary platform in TMRC

2.2.2 One active night roost, the TMP Night Roost, was observed within the survey area (**Figure No. C1502/C/TME/ACM/M63/001** refers). A total of three ardeid species (i.e. Chinese Pond Heron, Great Egret and Little Egret) were observed utilising the TMP Night Roost on a group of mature Big-leaved Fig interspersed with some Chinese Banyan in Tuen Mun Park. Representative photographs of the TMP Night Roost and the construction activities being conducted during the reporting period is shown in **Annex A**.

2.2.3 A total of 260 ardeids returning to the TMP Night Roost was recorded (**Table 2.2** refers). The majority of the recorded ardeids were Little Egret, with low proportion of Chinese Pond Heron and Great Egret. A summary of the number of ardeids recorded, sunset time, and peak return time of the roosting ardeids are shown in **Table 2.2**.

2.2.4 The majority of the recorded ardeids were observed flying along the TMRC to the TMP Night Roost from the south, while some other flight lines were recorded from Tuen Mun Heung Sze Wui Road and banks of TMRC to the TMP Night Roost. Additionally, the majority of the recorded ardeids were observed returning to the TMP Night Roost at elevations between 10 m and 15 m.

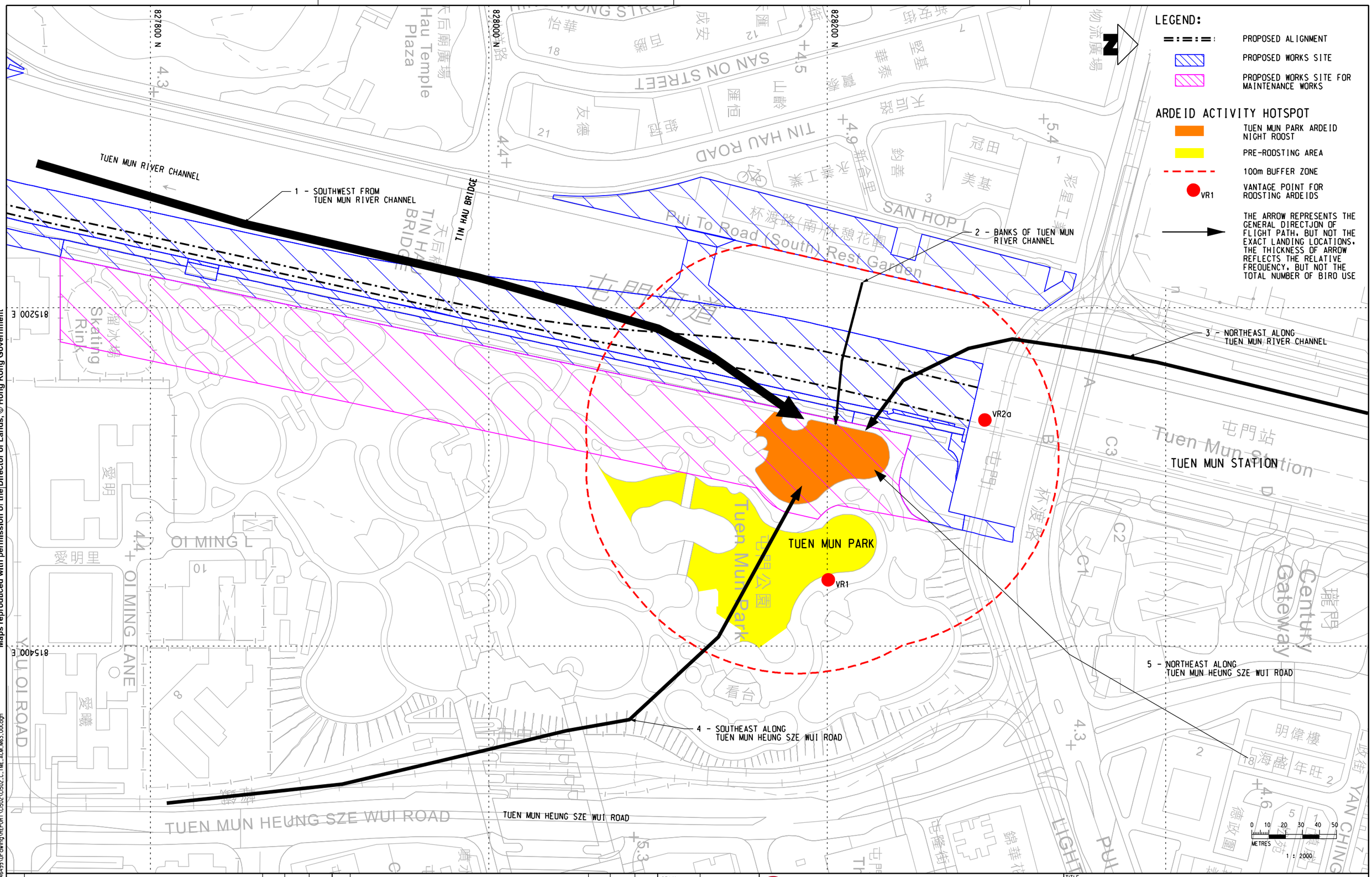
2.2.5 No pre-roosting behaviour from these night-roosting ardeids was observed. Some Black-crowned Night Heron and Grey Heron individuals were recorded within Tuen Mun Park, but none of them utilized the TMP Night Roost.

2.2.6 No other noticeable disturbance was observed at the TMP Night Roost and within the 100 m Buffer Zone during this monitoring period.

Table 2.2 Number and Species of Night Roosting Ardeids Recorded during Monthly Ardeid Survey (October 2024)

Survey Date	Species Recorded				Sunset Time	Peak Return Time
	Chinese Pond Heron	Great Egret	Little Egret	Total		
22nd October 2024	2	33	225	260	17:53	17:30-17:44

Figure



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DATE	

MTR

TUEN MUN SOUTH EXTENSION

ORIGINATOR

AECOM

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TITLE

C1502
TUEN MUN SOUTH EXTENSION
LOCATION OF TME ALIGNMENT, TMP NIGHT ROOST AND 100m BUFFER ZONE, AND REPRESENTATIVE FLIGHT LINES OF NIGHT ROOSTING ARDEIDS

SCALE	FIGURE NO.	REV.
1 : 2000 (A3)	C1502/C/TME/ACM/M63/001	–

Annex A

Representative Photographs taken on Site

Annex A – Representative Photographs Taken on Site

Latest aerial view of the TMP Night Roost

Site preparation works along Tuen Mun River Channel and construction of temporary platform