Civil Engineering and Development Department

Agreement No. CE 59/2015 (EP)
Environmental Team for
Tseung Kwan O – Lam Tin Tunnel
Design and Construction

Monthly Environmental Monitoring and Audit Report for May 2022

(Version 1.0)

Approved By

(Dr. HF Chan,
Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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ANEWR

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Your reference:

Our reference: HKCEDD08/50/108077

Date: 22 June 2022

Attention: Mr Raymond Chan

BY FAX & POST
(Fax no.: 2739 0076)

Dear Sirs

Agreement No.: NTE 06/2016
Independent Environmental Checker for Tseung Kwan O – Lam Tin Tunnel
Monthly Environmental Monitoring and Audit Report for May 2022 (version 1.0)

We refer to the emails of 13, 14, and 21 June 2022 from Cinotech Consultants Limited attaching the Monthly Environmental Monitoring and Audit Report for May 2022 (version 1.0).

We have no comment and hereby verify the captioned report in accordance with Clause 4.4 of the Environmental Permit no. EP-458/2013/C.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Edric Lau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/LTKE/lsmt

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EXECUTIVE SUMMARY

Introduction

1. This is the 67th Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the "Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction" (hereinafter called "the Project"). This report documents the findings of EM&A Works conducted in May 2022.

2. During the reporting month, the following works contracts were undertaken:
   - Contract No. NE/2015/01 – Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works;
   - Contract No. NE/2015/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works;
   - Contract No. NE/2015/03 – Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge;
   - Contract No. NE/2017/01 – Tseung Kwan O – Lam Tin Tunnel –Tseung Kwan O Interchange and Associated Works
   - Contract No. NE/2017/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works.
   - Contract No. NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System (TCSS) and Associated Works
   - Contract No. NE/2017/07 – Cross Bay Link, Tseung Kwan O – Main Bridge and Associated Works.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the non-compliance (exceedance) in the reporting month for the Project is tabulated in **Table I**.

Table I Non-compliance (exceedance) Record for the Project in the Reporting Month

Environmental Monitoring	No. of Non-compliance (Exceedance)		No. of Non-compliance (Exceedance) due to Construction Activities of this Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
Air Quality	0	0	0	0	Refer to Appendix K
Noise	9	1	8	0	Refer to Appendix K & O
Marine Water Quality	18	55	0	0	Refer to Appendix K
Groundwater Level Monitoring (Piezometer Monitoring)	0	N/A[1]	0	N/A[1]	N/A
Ecological	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A

Note:(1) No Limit Level for Groundwater Level Monitoring (Piezometer Monitoring).

Air Quality Monitoring

5. No Action/Limit Level exceedance for 1-hour TSP monitoring was recorded.

6. No Action Level exceedance for 24-hour TSP monitoring was recorded.

7. No Limit Level exceedances for 24-hour TSP monitoring was recorded.

Construction Noise Monitoring

8. Eight (8) Action Level exceedance was recorded due to documented complaints in the reporting month. The Summary of Documented Complaints in Reporting Month is tabulated in **Table III.**

9. One(1) Level exceedance was recorded due to monitoring results in this reporting month.

Water Quality Monitoring

10. Groundwater quality monitoring had been suspended since October 2019 upon the agreement by EPD. Further details should be founded at **Section 5.1**.

11. All marine water quality monitoring was conducted as scheduled in the reporting month. There were eighteen (18) Action Level and fifty-five (55) Limit Level exceedances recorded in Monitoring Stations (M) during marine water quality monitoring. During this reporting month, no sand plume was observed during the water quality monitoring and site audits, therefore there is no direct evidence that the recent exceedances were due to the construction works of the Project. Details of this investigation are presented in **Section 5**. Daily silt curtain inspection and weekly diving inspection have been carried out by contractor, the record, as reviewed by the site auditors, indicated that silt curtains were found in good conditions.

12. Since all marine works are completed in November 2021, the post-reclamation marine water quality monitoring was initiated in December 2021. The monitoring location is presented in **Figure 9** while the monitoring results shall be referred to in **Appendix W**.

13. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis on 3 October 2018 as the construction activity was 120m away from the piezometer gate. No monitoring was conducted in the reporting month.

Ecological Monitoring

14. Post-translation coral monitoring survey shall be conducted once every 3 months for a period of 12 months after completion of coral translocation. The post-translocation coral monitoring surveys were completed in November 2017.

Monitoring on Cultural Heritage

15. Monitoring of impacts on Cultural Heritage at Cha Kwo Ling Tin Hau Temple commenced in May 2017. No Alert, Alarm, and Action (AAA) Level exceedance was recorded in the reporting month.

Landscape and Visual Monitoring and Audit

16. The implementation of landscape and visual mitigation measures was checked during the environmental site inspections. Recommended follow-up actions have been discharged by the Contractor. Details of the audit findings and implementation status are presented in Section 10.

Landfill Gas Monitoring

17. Monitoring of landfill gases commenced in December 2016 and was carried out by the Contractor at excavation location, Portion III. No Limit Level exceedance was recorded.

Environmental Site Inspection

18. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer, and Environmental Team. The representative of the IEC joined the site inspection for NE2015/01 and NE/2017/07 on 18 May 2022 & NE/2015/02, NE/2017/01, NE/2017/02, and NE/2017/06 on 26 May 2022 respectively. Details of the audit findings and implementation status are presented in **Section 10**.

Waste Management

19. Wastes generated from this Project include inert construction and demolition (C&D) materials, non-inert C&D materials, and marine sediment. Details of waste management data are presented in **Section 11** and **Appendix P**.

Key Information in the Reporting Month

20. Summary of key information in the reporting month is tabulated in **Table II**

Table II Key Information in the Reporting Month

Monthly Complaints	Event Details		Action Taken	Status
	Number	Nature		
May 2022	9	Noise	Details refer to App O	Draft CIR submitted / Closed
April 2022	8	Air / Noise	Details refer to App O	Closed
March 2022	4	Noise / Water	Details refer to App O	Closed
February 2022	3	Noise	Details refer to App O	Closed
January 2022	4	Noise	Details refer to App O	Closed
December 2021	8	Noise	Details refer to App O	Closed
November 2021	7	Noise	Details refer to App O	Closed
October 2021	3	Noise / Odour / Water	Details refer to App O	Closed
September 2021	6[*1]	Air / Noise	Details refer to App O	Closed
August 2021	3	Noise	Details refer to App O	Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

*1: 1 complaint in September 2021 was received in early October 2021.

21. Summary of complaints received in the reporting month is tabulated in **Table III.**

Table III Summary of Complaints Details in Reporting Month

Complaint No.	Complaint	Investigation Findings	Follow-up Action / Mitigation Measure
Lam Tin Side			
597, 599, 603, 604, 605, 607	Construction Noise Nuisance on Weekdays during daytime (Lam Tin side)	The complaint is considered as project-related. Various construction activities were conducted during the time of complaint. The details shall be referred to CIR-N169.	Despite the Contractor had applied noise mitigation measures, some deficiencies were identified. The Contractor is reminded to replace the damaged acoustic sheet and erect noise barrier properly.
609	Deterioration of Indoor Air Quality and Noise Nuisance	Investigation undergoing	
614	Construction noise during Restricted Hours near Yau Lai Estate		
Tseung Kwan O Side			
606	Construction Noise Nuisance in May 2022 (C3)	The complaint is considered project-related. The noise source was coming from a breaker located at Area A if NE2017/02. The breaking works have completed during the time of submitting the CIR. The details shall be referred to CIR-N170.	The contractor is reminded to follow approved CNMP strictly and erect a noise barrier properly.
608	Construction Noise during Holiday (CBL-C1)	The complaint is considered as project-related. The Contractor held a valid CNP and no non-compliance was recorded for this particular event. The complaint is considered project-related as construction is undergoing during the time of the complaint. The details shall be referred to CIR-N171.	The Contractor is reminded to strictly follow the approved CNP.
610	Construction Noise Nuisance in Night- time (Apr 2022)	The complaint is considered non-project-related as no construction is undergoing during the time of the complaint. The details shall be referred to CIR-N171.	
611	Construction Noise during Holiday	The contracts located near Tseung Kwan O Bay Area were investigated. Construction works had been conducted for NE2015/02. However, the Contractor of NE2015/02 held a valid CNP and no non-compliance was recorded. No conclusion has been made as not all information had been collected. The details shall be referred to CIR-N172.	N/A

Key Construction Work in the reporting month & the next reporting month

22. Summary of key construction work in the reporting month is tabulated in **Table IV**.

Table IV Summary Table for Key Construction Work in the Reporting Month

Contract No.	Project Title	Site Activities (May 2022)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough & Noise Enclosure 2) EHC7 U-Trough 3) Site Formation Area 1G1 & 1G2 & 5 4) Site Formation Area 2 5) Site Formation Slope Stabilization 6) Site Formation Retaining Wall 7) Administration Building 8) West Ventilation Building 9) Bridge Construction 10) Emergency Stormwater Storage Tank + Stormwater Pumping Station 11) Sewage Pumping Station 12) S01_2, EHC1&4 Construction 13) CKLR Underground Utilities 14) Underpass S01 15) Landscape Deck & Noise Cover 16) LTI Drainage 17) Road EHC4 Site Formation Works
		Main Tunnel	18) Main Tunnel Lining Works 19) Branch Tunnel Lining Works 20) Profile Barrier / VE Panel 21) S02_2 Excavation & Lining 22) Tunnel E&M Works
		TKO Interchange	23) Bridge Construction 24) East Ventilation Building 25) Underground Utilities / Drainage Works 26) Slope stabilization works
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Sloping seawall construction 2) Construction of U-trough at CH821 – CH105 3) Construction of Underpass at CH105 – CH318 4) Construction of seawall coping 5) Construction of road P2 and SR2 6) Backfilling at U-Trough A S200/300/400 7) Asphalt laying	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	The construction works under the contract had been completed in December 2019. The EM&A works were terminated in late April 2020.	
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Movement Joints 2) Defects Rectification 3) Waterproofing and Asphalt Pavement Site Trial 4) Installation of Railing	
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Inspection pit excavation and utility diversion works 2) Construction of drainage and watermain 3) Asphalt Paving 4) Pier, Staircase and Lift Shalt Construction 5) Road Works	
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Goods arrival & storage on site 2) Installation works inside WVB & EVB 3) Installation works at Bridge 4) Relocation to new site office	

Contract No.	Project Title	Site Activities (May 2022)
NE/2017/07	Cross Bay Link, Tseung Kwan O – Main Bridge and Associated Works	1) Precast shell fabrication with 17 out of 17nos. had completed for Portion I 2) Precast Segment Fabrication with 236 out of 236 nos. 3) Precast pier fabrication with 17 out of 17 nos in Portion I. 4) Predrilling Work at Portion I had completed with 35 out of 35 nos. 5) Piling work at Portion I had completed with 35 out of 35 nos. 6) Precast Shell Installation with 17 out of 17 nos. had completed at portion II 7) Erection for bridge segment for main bridge at Portion I completed. 33.3% of Bridge S200 completed; 50% of Bridge S400 & Bridge CT completed. 8) E&M Work and External Work at Portion V Plant Room Building in progress 9) Touch up paining and painting of east and west side spans ring weld in progress 10) Welding of L3 parapet base plate on steel bridge 11) Waterproofing works for division area, footpath area and cycle track area. 12) Construction of steel-concrete transition zone in Portion II 13) Top, transverse, bottom and external tension at Portion II 14) Construction of long stitching and planter wall at Portion II 15) Installation of ducting at Portion II.

Future Key Issues

23. The future key environmental issues in the coming month include:

Table V Summary Table for Site Activities in the next Reporting Period

Contract No. and Project Title	Site Activities (June 2022)		Key Environmental Issues *
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough & Noise Enclosure 2) EHC7 U-Trough & Noise Enclosure 3) Site Formation Area 1G1 & 1G2 & 5 4) Site Formation Area 2 5) Site Formation Slope Stabilization 6) Site Formation Retaining Wall 7) Administration Building 8) West Ventilation Building 9) Bridge Construction 10) Emergency Stormwater Storage Tank + Stormwater Pumping Station 11) Sewage Pumping Station 12) S01_2, EHC 1&4 Construction 13) CKLR Underground Utilities 14) Underpass S01 15) Landscape Deck & Noise Cover 16) LTI Drainage 17) Road EHC4 Site Formation Works	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	18) Main Tunnel Lining Works 19) Branch Tunnel Lining Works 20) Profile Barrier / VE Panel 21) S02_2 Excavation & Lining 22) Tunnel E&M Works	(B)
	TKO Interchange	23) East Ventilation Building 24) Underground Utilities / Drainage Works 25) Slope Stabilization Works	(A) / (C) / (D) / (E) / (F) / (I)

Contract No. and Project Title	Site Activities (June 2022)	Key Environmental Issues *
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Sloping seawall construction 2) Construction of U-trough at CH821 – CH105 3) Construction of Underpass at CH105 – CH318 4) Construction of seawall coping 5) Construction of road P2 and SR2 6) Backfilling at U-Trough A S200/300/400 7) Asphalt laying	(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	The construction works under the contract had been completed in December 2019. Materials are being removed from works area.	N/A
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Utility trough concrete cover installation 2) Defects rectification 3) Installation of Movement Joints 4) Waterproofing and Asphalt Pavement	(A) / (B) / (E) / (F) / (G)
NE/2017/02 –Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Inspection pit excavation and utility diversion works 2) Construction of drainage and watermain 3) Asphalt Paving 4) Pier, Staircase and Lift Shalt Construction 5) Road Works	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Goods arrival & storage on site 2) Installation works inside Admin Building 3) Installation works inside EVB and WVB 4) Relocation to new sit office	(E)
NE/2017/07 - Cross Bay Link, Tseung Kwan O – Main Bridge and Associated Works	1) Top, transverse, bottom and external tension 2) Construction of long stitching 3) Construction of concrete structure above deck 4) Construction of steel-concrete transition zone 5) Waterproofing works 6) Installation of parapet 7) Construction of steel-concrete transition zone 8) Installation of sign gantries 9) Road Pavement	(A) / (B) / (D) / (E) / (F) / (G) / (H) / (I)

Note:
(A) Watering for dust generation from haul road, stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
(B) Noisy construction activity such as rock-breaking activities and piling works;
(C) Runoff from exposed slope or site area;
(D) Wastewater and runoff discharge from site;
(E) Accumulation of silt, mud and sand along U-channels and sedimentation tanks;
(F) Set up and implementation of temporary drainage system for the surface runoff;
(G) Storage of chemicals/fuel and chemical waste/waste oil on site;
(H) Accumulation and storage of general and construction waste on site; and
(I) Marine water quality impact and indirect impact to coral communities due to marine construction for TKO-LTT reclamation

1. INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was commissioned by Civil Engineering and Development Department (CEDD) as the Environmental Team (ET) to undertake environmental monitoring and auditing services for the Works Contracts involved in the implementation of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) project to ensure that the environmental performance of the Works Contracts comply with the requirements specified in the Environmental Permit (EP), Environmental Monitoring & Audit (EM&A) Manual, Environmental Impact Assessment (EIA) Report of the TKO-LTT project and other relevant statutory requirements. This is the 67th Monthly EM&A report summarizing the EM&A works for the Project in May 2022.

Purpose of the Report

1.2 This is the 67th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in May 2022.

Structure of the Report

1.3 The structure of the report is as follows:

Section 1: **Introduction** – purpose and structure of the report.

Section 2: **Contract Information** – summarises background and scope of the Contract, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting month.

Section 3: **Air Quality Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 4: **Noise Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 5: **Water Quality Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 6: **Ecological Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations and Action and Limit Levels, monitoring results and Event / Action Plans.

Section 7: **Cultural Heritage** –summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations and monitoring results.

Section 8: **Landscape and Visual Monitoring Requirements** – summarises the requirements of landscape and visual monitoring

Section 9: **Landfill Gas Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, monitoring results and Limit Levels and Action Plan

Section 10: **Environmental Site Inspection** – summarises the audit findings of the weekly site inspections undertaken within the reporting month.

Section 11: **Waste Management** – summarises the waste management data in the reporting month.

Section 12: **Environmental Non-conformance** – summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting month.

Section 13: **Future Key Issues** – summarises the impact forecast and monitoring schedule for the next three months.

Section 14: **Conclusions and Recommendation**

2. PROJECT INFORMATION

Background

2.1 In 2002, Civil Engineering and Development Department (CEDD) commissioned an integrated planning and engineering study under Agreement No. CE 87/2001 (CE) "Further Development of Tseung Kwan O – Feasibility Study" (the "TKO Study") to formulate a comprehensive plan for further development of TKO New Town. It recommended to further develop TKO to house a total population of 450,000 besides the district's continuous commercial and industrial developments.

2.2 At present, the Tseung Kwan O Tunnel is the main connection between Tseung Kwan O (TKO) and other areas in the territory. To cope with the anticipated transport need, the TKO Study recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) (hereinafter referred to as "the Project") and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas. The site layout plan for the Project is shown in **Figure 1**. CBL was also entrusted with part of the marine viaducts near Tseung Kwan O Interchange since the commencement of the CBL project the December 2018.

2.3 The Environmental Impact Assessment (EIA) Report for the TKO-LTT project was approved under the Environmental Impact Assessment Ordinance (EIAO) in July 2013. The corresponding Environmental Permit (EP) was issued in August 2013 (EP no.: EP-458/2013). Variations to the EP was applied and the latest EP (EP no.: EP-458/2013/C) was issued by the Director of Environmental Protection (DEP) in January 2017.

2.4 The commencement dates of construction of this Project are:

- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
- Contract No. NE/2015/03: 29 May 2017.
- Contract No. NE/2017/02: 15 March 2018.
- Contract No. NE/2017/01: 23 May 2018.
- Contract No. NE/2017/06: 09 November 2018.
- Contract No. NE/2017/07: 22 February 2021

Project Organizations

2.5 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Civil Engineering and Development Department (CEDD)
- The Engineer and the Engineer's Representative (ER) – AECOM
- Environmental Team (ET) – Cinotech Consultants Limited (Cinotech)
- Independent Environmental Checker (IEC) – AnewR Consulting Limited (AnewR)

2.6 The key contacts of the Project are shown in **Table 2.1**.

Table 2.1 Key Project Contacts

Party	Role	Contact Person	Phone No.	Fax No.
CEDD	Project Proponent	Mr. LO Sai Pak, Sunny	2301 1384	2739 0076
AECOM	Engineer's Representative	Mr. Jackie CW, Ng	3910 1601	3910 1600
Cinotech	Environmental Team	Dr. HF Chan	2151 2088	3107 1388
		Mr. KS Lee	2151 2091	
AnewR	Independent Environmental Checker	Mr. James Choi	2618 2836	3007 8648

Construction Activities undertaken during the Reporting Month

2.7 The major site activities undertaken in the reporting month included:

Table 2.2 Summary Table for Major Site Activities in the Reporting Month

Contract No.	Project Title	Site Activities (May 2022)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough & Noise Enclosure 2) EHC7 U-Trough 3) Site Formation Area 1G1 & 1G2 &5 4) Site Formation Area 2 5) Site Formation Slope Stabilization 6) Site Formation Retaining Wall 7) Administration Building 8) West Ventilation Building 9) Bridge Construction 10) Emergency Stormwater Storage Tank + Stormwater Pumping Station 11) Sewage Pumping Station 12) S01_2, EHC1&4 Construction 13) CKLR Underground Utilities 14) Underpass S01 15) Landscape Deck & Noise Cover 16) LTI Drainage 17) Road EHC4 Site Formation Works
		Main Tunnel	18) Main Tunnel Lining Works 19) Branch Tunnel Lining Works 20) Profile Barrier / VE Panel 21) S02_2 Excavation & Lining 22) Tunnel E&M Works
		TKO Interchange	23) Bridge Construction 24) East Ventilation Building 25) Underground Utilities / Drainage Works 26) Slope stabilization works
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Sloping Seawall Construction 2) Construction of U-trough 3) Construction of Seawall Coping 4) Construction of Road P2 and SR2	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	The construction works under the contract had been completed in December 2019. The EM&A works were terminated in late April 2020.	
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Movement Joints 2) Defects Rectification 3) Waterproofing and Asphalt Pavement Site Trial 4) Installation of Railing	

Contract No.	Project Title	Site Activities (May 2022)
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Inspection pit excavation and utility diversion works 2) Construction of drainage and watermain 3) Asphalt Paving 4) Pier, Staircase and Lift Shalt Construction 5) Road Works
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System (TCSS) and Associated Works	1) Goods arrival & storage on site 2) Installation works inside WVB & EVB 3) Installation works at Bridge 4) Relocation to new site office
NE/2017/07	Cross Bay Link, Tseung Kwan O – Main Bridge and Associated Works	1) Precast shell fabrication with 17 out of 17nos. had completed for Portion I 2) Precast Segment Fabrication with 236 out of 236 nos. 3) Precast pier fabrication with 17 out of 17 nos in Portion I. 4) Predrilling Work at Portion I had completed with 35 out of 35 nos. 5) Piling work at Portion I had completed with 35 out of 35 nos. 6) Precast Shell Installation with 17 out of 17 nos. had completed at portion II 7) Erection for bridge segment for main bridge at Portion I completed. 33.3% of Bridge S200 completed; 50% of Bridge S400 & Bridge CT completed. 8) E&M Work and External Work at Portion V Plant Room Building in progress 9) Touch up paining and painting of east and west side spans ring weld in progress 10) Welding of L3 parapet base plate on steel bridge 11) Waterproofing works for division area, footpath area and cycle track area. 12) Construction of steel-concrete transition zone in Portion II 13) Top, transverse, bottom and external tension at Portion II 14) Construction of long stitching and planter wall at Portion II 15) Installation of ducting at Portion II.

2.8 The construction programme showing the inter-relationship with environmental protection/mitigation measures are presented in **Table 2.3**.

Table 2.3 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Major Environmental Impact	Control Measures
As mentioned in **Table 2.2**	Noise, dust impact, water quality and waste generation	• Sufficient watering of the works site with active dust emitting activities • Properly cover the stockpiles • On-site waste sorting and implementation of trip ticket system • Appropriate desilting/sedimentation devices provided on site for treatment before discharge • Use of quiet plant and well-maintained construction plant • Provide movable noise barrier

Status of Environmental Licences, Notification and Permits

2.9 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 2.4**.

Table 2.4 Summary of the Status of Environmental Licences, Notification and Permits

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
Environmental Permit (EP)				
N/A	EP-458/2013/C	20/1/2017	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
NE/2015/01	EPD Ref no.: 405305	21/07/2016	N/A	Valid
	EPD Ref no.: 405582	28/07/2016	N/A	Valid
NE/2015/02	EPD Ref no.: 406100	12/08/2016	N/A	Valid
NE/2015/03	EPD Ref no.: 416072	26/04/2017	N/A	Valid
NE/2017/02	EPD Ref no.: 429867	19/01/2018	N/A	Valid
NE/2017/01	EPD Ref no.: 430070	25/01/2018	N/A	Valid
NE/2017/06	EPD Ref no.: 461507	03/11/2020	N/A	Valid
Billing Account for Construction Waste Disposal				
NE/2015/01	Account No. 7025431	11/07/2016	N/A	Valid
NE/2015/02	Account No. 7025654	16/08/2016	N/A	Valid
NE/2015/03	Account No. 7026805	30/12/2016	N/A	Valid
NE/2017/02	Account No. 7029651	22/12/2017	N/A	Valid
NE/2017/01	Account No. 7029994	01/02/2018	N/A	Valid
NE/2017/06	Account No. 7032520	22/11/2018	N/A	Valid
NE/2017/07	Account No. 7031412	24/07/2018	N/A	Valid
Registration of Chemical Waste Producer				
NE/2015/01	Waste Producer No. 5218-290-L2881-02	22/08/2016	N/A	Valid
	Waste Producer No. 5213-833-L2532-03	22/08/2016	N/A	Valid
NE/2015/02	Waste Producer No. 5213-838-C4094-01	23/08/2016	N/A	Valid
NE/2015/03	Waste Producer No. 5213-265-W3435-04	19/07/2017	N/A	Valid
NE/2017/02	Waste Producer No. 5213-833-Z4004-04	01/02/2018	N/A	Valid
NE/2017/01	Waste Producer No. 5213-833-C4262-01	12/02/2018	N/A	Valid
NE/2017/07	Waste Producer No. 5213-839-C1232-19	28/08/2018	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance				
NE/2015/01	WT00028495-2017	11/08/2017	31/08/2022	Valid
	WT00039948-2021	28/02/2022	30/11/2026	Valid
NE/2015/02	WT00030654-2018	16/04/2018	30/04/2023	Valid

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
NE/2015/02	WT00040338-2022	28/01/2022	28/02/2027	Valid
NE/2017/01	WT00030711-2018	11/04/2018	30/04/2023	Valid
	WT00030716-2018	23/05/2018	31/05/2023	Valid
NE/2017/02	WT00030654-2018	16/04/2018	30/04/2023	Valid
NE/2017/07	WT00032842-2018	01/03/2019	31/03/2024	Valid
	WT00034178-2019	15/07/2019	31/07/2024	Valid
Construction Noise Permit (CNP)				
NE/2015/01	GW-RE1114-21	01/12/2021	31/05//2022	Valid until 31 May 22
	GW-RE0177-22	22/03/2022	21/09/2022	Valid
	GW-RE0188-22	14/03/2022	13/06/2022	Valid
	GW-RE0540-22	07/06/2022	05/08/2022	Valid from 7 June 22
	GW-RE0582-22	14/06/2022	09/09/2022	Valid from 14 June 22
	GW-RE0600-22	13/06/2022	12/08/2022	Valid from 13 June 22
NE/2015/02	GW-RE0228-22	22/03/2022	21/09/2022	Valid
	GW-RE0237-22	17/03/2022	16/09/2022	Valid
	GW-RE0279-22	29/03/2022	23/05/2022	Valid until 23 May 22
NE/2017/01	GW-RE1100-21	10/11/2021	02/05/2022	Valid until 2 May 22
	GW-RE0439-22	11/05/2022	10/07/2022	Valid from 11 May 22
	GW-RE0450-22	13/05/2022	02/11/2022	Valid from 13 May 22
NE/2017/07	GW-RE0304-22	31/03/2022	30/07/2022	Valid
Marine Dumping Permit				
NE/2017/01	EP/MD/21-011	N/A	N/A	N/A

Summary of EM&A Requirements

2.10 The EM&A programme requires construction noise monitoring, air quality monitoring, water quality monitoring, environmental site audit, etc. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the Project EIA Report.

2.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 10** of this report.

2.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the monitoring parameters of the required environmental monitoring works and audit works for the Project in the reporting month.

3. AIR QUALITY

Monitoring Requirements

3.1 According to EM&A Manual of the Project, 1-hour and 24-hour TSP monitoring are required to monitor the air quality. For regular impact monitoring, a sampling frequency of at least once in every six days shall be undertaken at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Six designated monitoring stations were selected for air quality monitoring programme. **Table 3.1** describes the air quality monitoring locations, which are also depicted in **Figure 2**.

Table 3.1 Locations for Air Quality Monitoring

Monitoring Stations	Location	Location of Measurement
AM1	Tin Hau Temple	Ground Level
AM2	Sai Tso Wan Recreation Ground	Ground Level
AM3	Yau Lai Estate Bik Lai House	Rooftop (41/F)
AM4(1)	Sitting-out Area at Cha Kwo Ling Village	Ground Level
AM4(A)(2) (*)	Cha Kwo Ling Public Cargo Working Area Administrative Office	Rooftop (3/F)
AM5(A)(*)	Tseung Kwan O DSD Desilting Compound	Ground Level
AM6(A) (*)	Park Central, L1/F Open Space Area	1/F

Remarks: (1) For 1-hour TSP monitoring; (2) For 24-hour TSP monitoring
(*) Air quality monitoring at designated station AM4(24-hr TSP), AM5 and AM6 was rejected by the premise owners. Therefore, baseline and impact air quality monitoring works were carried out at alternative air quality monitoring stations AM4(A) (24-hr TSP only), AM5(A) and AM6(A) respectively.

Monitoring Equipment

3.3 High Volume Samplers (HVS) were used to carry out 24-hour TSP monitoring. Direct reading dust meter were also used to measure 1-hour average TSP levels. The 1-hour sampling was determined periodically by HVS to check the validity and accuracy of the results measured by direct reading method.

3.4 Wind data monitoring equipment was set at rooftop (about 41/F) of Yau Lai Estate Bik Lai House for logging wind speed and wind direction such that the wind sensors are clear of obstructions or turbulence caused by building. The wind data monitoring equipment is re-calibrated at least once every six months and the wind directions are divided into 16 sectors of 22.5 degrees each. The location is shown in **Figure 2**.

3.5 **Table 3.2** summarizes the equipment to be used in the air quality monitoring. Copies of calibration certificates are attached in **Appendix B**.

Table 3.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TISCH Model: TE-5025A	1
1-hour TSP Dust Meter	Sibata Model No.: LD-3B / LD-5R	5
	Met One Instruments Model No.: AEROCET-831	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	0
HVS Sampler	TISCH Model: TE-5170	1
	GMW Model: GS2310	5
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1
	Davis Weather Stations, Vantage Pro 2, Model No. 6152CUK	0

Monitoring Parameters and Frequency

3.6 **Table 3.3** summarizes the monitoring parameters, monitoring period and frequencies of air quality monitoring.

Table 3.3 Frequency and Parameters of Air Quality Monitoring

Monitoring Stations	Parameter	Frequency
AM1, AM2, AM3, AM4, AM5(A) and AM6(A)	1-hour TSP	3 times per 6 days
AM1, AM2, AM3, AM4(A), AM5(A) and AM6(A)	24-hour TSP	Once per 6 days

Monitoring Methodology

1-hour TSP Monitoring

Measuring Procedures

3.7 The measuring procedures of the 1-hour dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

(Model LD3 / LD3B / LD5R)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

(AEROCET-531)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Remove the red rubber cap from the AEROCET-531 inlet nozzle.
- Turn on the power switch that is located on the right side of the AEROCET-531.
- On power up the product intro screen is displayed for 3 seconds. The intro screen displays the product name and firmware version.
- Then the main counter screen will be displayed.
- Press the START button. Internal vacuum pump start running. After 1 minute the pump will stop and the 0.5µm and 5µm channels will show the cumulative counts of particles larger than 0.5µm and 5µm per cubic foot.
- The AEROCET-531 is now checked out and ready for use.
- To switch off the AEROCET-531 power to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, and display value and site condition were recorded during the monitoring period.

(Equipment: Hal Technology; Model no. Hal-HPC300 / Hal-HPC301)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

3.8 The following maintenance/calibration is required for the direct dust meters:

- Check and calibrate the meter by HVS to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

3.9 High volume samplers (HVS) (TISCH Model: TE-5170 and GMW Model: GS2310) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

3.10 The positioning of the HVS samplers are as follows:

- a horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
- no two samplers shall be placed less than 2 meters apart

- the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
- a minimum of 2 metres of separation from walls, parapets and penthouses is required for rooftop samplers;
- a minimum of 2 metres of separation from any supporting structure, measured horizontally is required;
- no furnace or incinerator flue is nearby;
- airflow around the sampler is unrestricted;
- the sampler is more than 20 metres from the dripline;
- any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
- permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- a secured supply of electricity is needed to operate the samplers.

Operating/analytical procedures for the operation of HVS

3.11 Prior to the commencement of the dust sampling, the flow rate of the high-volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

3.12 For TSP sampling, fiberglass filters with a collection efficiency of > 99% for particles of 0.3μm diameter were used.

3.13 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

3.14 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centred with the stamped number upwards, on a supporting screen.

3.15 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

3.16 The shelter lid was closed and secured with the aluminium strip.

3.17 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

3.18 After sampling, the filter was removed and sent to the HOKLAS laboratory (ALS Hong Kong) for weighing. The elapsed time will be also recorded.

3.19 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

3.20 The following maintenance/calibration is required for the HVS:

- The high-volume motors and their accessories will be properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking will be made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers will be calibrated at bi-monthly intervals using TE-5025A Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

3.21 No Action/Limit Level exceedance was recorded for 1-hour TSP monitoring.

3.22 No Action and no Limit Level exceedance was recorded for 24-hour TSP monitoring.

3.23 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer at rooftop of Yau Lai Estate Bik Lai House (41/F). The location is shown in **Figure 2**. This weather information for the reporting month is summarized in **Appendix C**.

3.24 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix E** and **Appendix F** respectively.

3.25 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Table 3.4 Major Dust Source during Air Quality Monitoring

Station	Major Dust Source
AM1 – Tin Hau Temple	Road Traffic at Cha Kwo Ling Road
AM2 – Sai Tso Wan Recreation Ground	N/A
AM3 – Yau Lai Estate Bik Lai House	Road Traffic near Eastern Cross Harbour Tunnel Toll Plaza
AM4 - Sitting-out Area at Cha Kwo Ling Village	Road Traffic at Cha Kwo Ling Road
AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office	Road Traffic at Cha Kwo Ling Road
AM5(A) - Tseung Kwan O DSD Desilting Compound	Vehicle Movement within the Desilting Compound
AM6(A) - Park Central, L1/F Open Space Area	Road Traffic at Po Yap Road

4. NOISE

Monitoring Requirements

4.1 According to EM&A Manual of the Project, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities. The regular monitoring frequency for each monitoring station shall be on a weekly basis and conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

4.2 Noise monitoring was conducted at 8 designated monitoring stations (CM1, CM2, CM3, CM4, CM5, CM6(A), CM7(A), CM8(A) in the reporting period. **Table 4.1** and **Figure 3** show the locations of these stations.

Table 4.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	Rooftop (41/F)
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	Rooftop (41/F)
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	Rooftop (40/F)
CM4	Tin Hau Temple, Cha Kwo Ling	Ground Level
CM5	CCC Kei Faat Primary School, Yau Tong	Rooftop (6/F)
CM6(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores	Ground Level
CM7(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores	Ground Level
CM8(A)*	Park Central, L1/F Open Space Area	1/F

Remarks:
* Noise monitoring at designated station CM6, CM7 & CM8 was rejected by the premise owners. Therefore, baseline and impact noise monitoring works were carried out at alternative noise monitoring stations CM6(A), CM7(A) and CM8(A) respectively.

Monitoring Equipment

4.3 Integrating Sound Level Meter was used for impact noise monitoring. The meters are Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x) that also complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. **Table 4.2** summarizes the noise monitoring equipment being used. Copies of calibration certificates are attached in **Appendix B**.

Table 4.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 957/ 959 / 979	5
	BSWA308 SLM	2
Calibrator	SV30A	0
	Brüel & Kjær 4231	0
	ST-120	1

4.4 **Table 4.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**. Additional weekly impact monitoring are carried out for evening time (1900 – 2300 hours) for monitoring stations CM1, CM2, CM3 & CM6(A) and night-time (2300 – 0700 hours) for monitoring stations CM1, CM2 & CM3.

Table 4.3 Frequency and Parameters of Noise Monitoring

Monitoring Stations	Parameter	Period	Frequency	Measurement
CM1	L_{10}(30 min) dB(A) L_{90}(30 min) dB(A) L_{eq}(30 min) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade
CM2				Façade
CM3				Façade
CM4				Façade
CM5				Façade
CM6(A)				Free Field
CM7(A)				Free Field
CM8(A)				Façade
CM1	L_{10}(5 min) dB(A) L_{90}(5 min) dB(A) L_{eq}(5 min) dB(A)	1900 – 0700 hrs on normal weekdays		Façade
CM2				Façade
CM3				Façade
CM6(A)		1900 – 2300 hrs on normal weekdays		Free Field

Monitoring Methodology and QA/QC Procedure

4.5 The monitoring procedures are as follows:

- The monitoring station was normally be at a point 1m from the exterior of the sensitive receivers building façade and be at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels was adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time was set as follows:
  - frequency weighting: A
  - time weighting : Fast
  - measurement time : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement will be more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} was recorded. In addition, noise sources was recorded on a standard record sheet.
- Noise monitoring will be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. Supplementary monitoring was provided to ensure sufficient data would be obtained.

Maintenance and Calibration

4.6 The microphone head of the sound level meter and calibrator was cleaned with a soft cloth at quarterly intervals.

4.7 The sound level meter and calibrator was checked and calibrated at yearly intervals.

4.8 Immediately prior to and following each noise measurement the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

4.9 No Limit Level exceedance during daytime was recorded due to monitoring results in this reporting month. No project-related Action/ Limit level exceedances for evening/night-time construction noise monitoring was recorded.

4.10 Noise monitoring results and graphical presentations are shown in **Appendix G**.

4.11 The major noise source identified at the noise monitoring stations are shown in **Table 4.4**.

Table 4.4 Major Noise Source during Noise Monitoring

Monitoring Stations	Locations	Major Noise Source
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	Road Traffic near Eastern Cross Harbour Tunnel Toll Plaza
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	Road Traffic near Eastern Cross Harbour Tunnel Toll Plaza
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	Road Traffic near Eastern Cross Harbour Tunnel Toll Plaza
CM4	Tin Hau Temple, Cha Kwo Ling	Road Traffic at Cha Kwo Ling Road
CM5	CCC Kei Faat Primary School, Yau Tong	Road Traffic at Yau Tong Road
CM6(A)	Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores	Road Traffic at O King Road near Ocean Shores
CM7(A)	Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores	Road Traffic at Tong Yin Street
CM8(A)	Park Central, L1/F Open Space Area	Road Traffic at Po Yap Road

4.12 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured L_{eq} – Baseline L_{eq} = CNL), in order to facilitate the interpretation of the noise exceedance. The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 4.5, 4.6 and 4.7**.

Table 4.5 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Station	Baseline Noise Level, dB (A) (at 0700 – 1900 hrs on normal weekdays)	Noise Limit Level, dB (A) (at 0700 – 1900 hrs on normal weekdays)
CM1	65.5	75
CM2	63.6	
CM3	65.6	
CM4	62.0	
CM5	68.2	70*
CM6(A)	61.9	75
CM7(A)	58.3	
CM8(A)	69.1	
(*) Noise Limit Level is 65 dB(A) during school examination periods.		

Table 4.6 Baseline Noise Level and Noise Limit Level for Monitoring Stations (Evening-time & Daytime (Holiday))

Station	Baseline Noise Level, dB (A) (Evening time on all days (1900-2300 hrs) and Holidays (including Sundays) during daytime (0700-1900 hrs))	Noise Limit Level, dB (A) (Evening time on all days (1900-2300 hrs) and Holidays (including Sundays) during daytime (0700-1900 hrs))
CM1	64.4	70
CM2	62.2	
CM3	64.7	
CM6(A)	60.2	65[1]
1. ASR B was adopted according to the EIA as traffic in the surrounding area has not been changed.		

Table 4.7 Baseline Noise Level and Noise Limit Level for Monitoring Stations (Night-time)

Station	Baseline Noise Level, dB (A) (Night-time (2300 – 0700 hrs)	Noise Limit Level, dB (A) (Night-time (2300 – 0700 hrs)
CM1	14-day baseline monitoring results for the time period of impact measurement at each station would be adopted	55
CM2		
CM3		

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

5.1 The existing groundwater quality monitoring programme has been suspended as the monitoring results had been deemed non-representative of the impact from the project justified by two major factors: (1) influence on the monitoring results from non-project related factors, such as anthropogenic activities and natural phenomenon; and (2) large separation between the monitoring stations and works area. In addition, as no alternative locations for the groundwater quality monitoring were available, the groundwater quality monitoring has been suspended since October 2019 upon the agreement by EPD.

Marine Water Quality

5.2 Marine water quality monitoring was conducted three times per week at the designated monitoring stations. Monitoring took place two times per monitoring day during mid ebb and mid flood tides at three depths (1 meter from surface, mid depth and 1 meter from the bottom). For Tseung Kwan O Salt Water Intake (i.e. Station M6), water sampling and in-situ measurements was taken at the vertical level where the water abstraction point of the intake is located (i.e. approximately mid-depth level). If the water depth is less than 6m, the mid-depth measurement may be omitted. If the depth is less than 3m, only the mid-depth measurements need to be taken.

5.3 Duplicate in-situ measurements (Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity) and water samples (suspended solids (SS)) at each depth were monitored in accordance with the requirements in the EM&A Manual. For selection of tides for in-situ measurement and water sampling, tidal range of individual flood and ebb tides were not less than 0.5m.

5.4 According to the Environmental Review Report (ERR) for Variations of Environmental Permit (Ref: C45-03), water quality monitoring and audit programme was implemented for monitoring of oxygen depletion (e.g. Dissolved Oxygen (DO) level) in this embayed waters during the period when the fully enclosed barrier is installed. A "Proposal for Water Quality Monitoring in Temporary Marine Embayment" has been submitted to EPD in July 2017 to propose the monitoring frequency, parameter, location, etc. EPD has no further comment on the Proposal. Since January 2020, the cofferdam has been partially removed and the seawater is no longer enclosed. Therefore, no embayment water quality monitoring is required.

Groundwater Level Monitoring (Piezometer Monitoring)

5.5 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan. The monitoring commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. No monitoring was conducted in the reporting month.

Monitoring Locations

Marine Water Quality

5.6 A total of twelve monitoring stations are designated for the water quality monitoring program according to EM&A Manual. One additional monitoring station (W1) is designated for monitoring of oxygen depletion in the embayed waters during the period when the fully enclosed barrier is installed. In addition, an extra monitoring station (W2) was set up in December 2021 for post-reclamation marine water monitoring. The locations are also summarized in **Table 5.2**. Their locations shown on **Figure 5** with the exception of W2, which was presented in **Figure 9**.

Table 5.2 Marine Quality Monitoring Stations

Monitoring Stations	Descriptions	Coordinates	
		Easting	Northing
M1	Junk Bay Coral Site – Junk Bay near Chiu Keng Wan	844255	817565
M2	Junk Bay Coral Site – Junk Bay	844076	817087
M3	Junk Bay Coral Site – Junk Island	844491	817890
M4	Junk Bay Coral Site –Chiu Keng Wan	843209	816416
M5	Junk Bay Coral Site – Fat Tong Chau	845463	815769
M6	Tseung Kwan O Salt Water Intake	845512	817442
C1	Control Station – Southeast	844696	814773
C2	Control Station – Northwest	842873	816014
G1	Gradient Station	844418	817560
G2	Gradient Station	844290	817384
G3	Gradient Station	844488	817735
G4	Gradient Station	844967	817551
W2	Embayed Area formed by TKO-LT Tunnel Reclamation	844313	817801

Monitoring Equipment

5.7 For in-situ monitoring, a multi-parameter meter was used to measure Dissolved oxygen (DO) concentration, DO saturation (DO %), pH, temperature and turbidity. A sampler was used to collect water samples for laboratory analysis of SS, BOD_5, TOC, Total Nitrogen, Ammonia-N and Total Phosphate.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

5.8 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
- a temperature of 0-45 degree Celsius.

5.9 It has a membrane electrode with automatic temperature compensation complete with a cable.

5.10 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

5.11 Salinity compensation was built-in in the DO equipment.

Turbidity

5.12 Turbidity was measured in-situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not be less than 25m in length.

pH

5.13 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

Water Depth Detector

5.14 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

Water Sampler

5.15 Water samples collected for laboratory analysis were stored in high density polythene bottles sample containers, with appropriate preservatives added. All sampling bottles were labelled (waterproof) with the sampling date and time, sample lot number and sampling location reference number to avoid mishandling.

Sample Container and Storage

5.16 Following collection, water samples for laboratory analysis were stored in high density polythene bottles, with preservative appropriately added where necessary. They will be packed in ice (cooled to 4°C without being frozen), delivered to the laboratory and analysed as soon as possible.

Calibration of In-Situ Instruments

5.17 All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring.

5.18 For the on-site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" was observed.

5.19 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe. The probe was then be calibrated with a solution of known NTU.

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

5.21 **Table 5.3** summarizes the equipment used in the water quality monitoring program. Copies of the calibration certificates of the equipment are shown in **Appendix B**.

Table 5.3 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI 6820-C-M	0
	Aquaread AP-2000-D	0
	YSI EXO1 Multiparameter Sondes	1
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1

Monitoring Parameters and Frequency

5.22 **Table 5.4** summarizes the monitoring parameters, monitoring period and frequencies of the water quality monitoring in the reporting period.

Table 5.4 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1 C2 G1 G2 G3 G4	*In-situ*: Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity Laboratory Testing: Suspended Solids (SS)	M1-M5, C1-C2, G1-G4 • 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If the water depth is less than 6m, omit mid-depth sampling. M6 • at the vertical level where the water abstraction point of the intake is located(i.e. approximately mid-depth level)	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)
W2	*In-situ*: Dissolved oxygen (DO), pH, temperature and salinity	• 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If the water depth is less than 6m, omit mid-depth sampling.	Once per month

Monitoring Methodology

Marine Water Quality

5.23 The monitoring stations were accessed using survey boat by the guide of a hand-held Global Positioning System (GPS). The depth of the monitoring location was measured using depth meter in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment was lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements was carried out accordingly. The in-situ measurements at predetermined depths was carried out in duplicate. In case the difference in the duplicate in-situ measurement results was larger than 25%, the third set of in-situ measurement would be carried out for result confirmation purpose.

5.24 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples for SS at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible.

Laboratory Analytical Methods

5.25 The testing of all parameters were conducted by ALS Hong Kong (HOKLAS Registration No.083) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method and limit of reporting are provided in **Table 5.5**.

Table 5.5 Methods for Laboratory Analysis for Water Samples

Parameters (Unit)	Proposed Method	Reporting Limit	Detection Limit
SS (mg/L)	APHA 2540 D	0.5 mg/L (1)	0.5 mg/L
BOD_5 (mg O_2/L)	APHA 19ed 5210B	2 mg O_2/L	--
TOC (mg-TOC/L)	In-house method SOP020 (Wet Oxidation)	1 mg-TOC/L	--
Total Nitrogen (mg/L)	In-house method SOP063 (FIA)	0.6 mg/L	--
Ammonia-N (mg NH_3-N/L)	In-house method SOP057 (FIA)	0.05 mg NH_3-N/L	--
Total Phosphorus (mg-P/L)(2)	In-house method SOP055 (FIA)	0.05 mg-P/L	--

Note:
1) Limit of Reporting is reported as Detection Limit for non-HOKLAS report.
2) Parameter Total Phosphorus represents the laboratory testing for total phosphate content in water which is the sum of all three forms of phosphates in water.

QA/QC Requirements

Decontamination Procedures

5.26 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

Sampling Management and Supervision

5.27 Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

5.28 QA/QC procedures as attached in **Appendix J** are available for the parameters analysed in the HOKLAS-accredited laboratory, ALS Hong Kong.

Results and Observations

Groundwater Quality Monitoring

5.29 Monitoring of groundwater quality had been suspended since October 2019. (Details refer to Section 5.1)

Marine Water Quality Monitoring

5.30 Marine water monitoring results and graphical presentations are shown in **Appendix I**. Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.

5.31 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. There were eighteen (18) Action Level and fifty-five (55) Limit Level exceedances recorded in Monitoring Stations (M) during marine water quality monitoring.

5.32 The monitoring result for post-reclamation marine water quality monitoring is present in **Appendix W**. No action or limit level of dissolved oxygen is recorded in the reporting month.

5.33 Exceedances of turbidity and suspended solid were recorded on from various monitoring stations non-specifically among all stations including the control stations. Investigations over May 2022 showed that the range of SS levels recorded in May 2022 remained consistent with the records in recent months. All Contractor is reminded to strictly follow the approved drainage plan and clear drainage regularly. In particular, all drainage shall be checked and cleared after heavy rainstorm as sediments may accumulate along pipes and culverts. Further details can be found in **Appendix K**.

5.34 Silt curtain inspections are carried out before the commencement of the construction works every day and diving surveys are also conducted once a week to inspect the silt curtain below the water level. The inspection report are verified by both the RE and the diving specialist and the records are reviewed weekly during the site audits.

Groundwater Level Monitoring (Piezometer Monitoring)

5.35 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan.

5.36 Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. As the construction activity was 120m away from the piezometer gate, no monitoring was conducted in this reporting month.

Mitigation Measures Adopted by Contractors for Surface runoff Prevention

5.37 During dry season, the Contractors have maintained the mitigation measures adopted on Site, in order to prevent surface run-off and muddy water from discharging to the public areas. The mitigation measures adopted by each Contract are summarised below:

NE2015/01

5.38 At Lam Tin Side, the Site drainage systems are divided into two parts, namely the site formation and tunnel site drainage which includes:

1. Site formation drainage system collects surface run-off from open excavation areas including slope works and flows naturally to the lowest point in the Site, where they are pumped to the wetseps and sedimentation tank for treatment near LTI site entrance before they are discharged to the designated discharge point.
2. Tunnel drainage system collects surface run-off from the tunnel which are then pumped to the sedimentation tanks near tunnel adit, where three sets of wetseps and sedimentation tanks were set up. The treated water will be discharged to designated discharge point near the Eastern Harbour Crossing (EHC) area.

5.39 At Eastern Harbour Crossing (EHC), two sets of wetseps and sedimentation tanks are set up on site. The wastewater will flow to the lowest catchpit by gravity, which are then pumped to wetseps for wastewater treatment. The sandbags/bunds are also set up at the vehicle entrance to surface run-off from the Site.

5.40 At Tseung Kwan O (TKO), the surface run-off from the slope are directed to the lowest point at cavern via the permanent drainage, which are then pumped to the sedimentation tanks for wastewater treatment via temporary pipes. The treated water will be discharged at designated discharge points. The wetseps and sedimentation tanks are provided under the BMCPC bridge and at the two sides of marine working platform. Water from natural stream will also be diverted to existing drainage to avoid overloading the capacity of the wastewater treatment system. The reservoir on the right side of marine working platform will be enlarged to cater for higher water storage demands. During heavy rainfall, the water stored at the exit of the tunnel shall be pumped into the sedimentation tanks on the right.

NE2015/02

5.41 The exposed sloped area at Portion 9 has been covered with geotextile or tarpaulin to avoid surface run-off. Since March 2021, the stormwater at Portion IX, VIII, VII, VI, II and I will be collected towards to the sedimentation tanks at the edge of site boundary.

5.42 Certain amount of stormwater received in Portion 9 will be directed and pumped via the flex tube and sump towards the water treatment system and the approved discharge points (as shown in **Appendix V**). Water generated from Portion VI and V and some water in Portion IX are treated via storage tanks and sedimentation tanks and discharged into approved discharge points (manholes of DN2100 Drain and Area Z).

5.43 The peripheral open U-channel are also provided along the site boundary, which shall be directed to the storage tank and WetSep for treatment in Area A.

5.44 Regular cleaning depending on site conditions are provided for the WetSep at Area A and Z; and the storage tanks and sedimentation tanks at Area A. The water treated by the sedimentation tank and the wetsep shall be discharged towards the designated discharge point. Quality of the effluent are also monitored regularly.

NE2017/02

5.45 Existing manholes are covered with sandbags and geotextiles to avoid surface run-off from entering the channels.

5.46 Stockpiles are covered with tarpaulin to avoid surface run-off.

5.47 Concrete blocks and sandbags are placed along the periphery of the site boundary to avoid surface run-off.

5.48 Stormwater within the site enters the excavated area and flow naturally into the sump due height difference. The stormwater collected in the sump shall be pumped into the sedimentation tank where the run-off is treated before discharging into the designated discharge point.

NE2015/03

5.49 The existing manhole cover are covered with geotextile to prevent muddy water from entering the existing U-channels along the side of Po Shun Road. Manhole inspection are carried out by taking silt measurement regularly in case if silt enters the channel, and silt shall be removed from the manhole if silt were found.

5.50 Sandbags were placed at the periphery of the site along the hoarding to prevent surface runoff from escaping the site.

5.51 Exposed slopes are covered with tarpaulin to prevent surface run-off.

5.52 The surface run-off shall be pumped into the sedimentation tank where they are treated before entering the designated discharge points.

NE2017/01

5.53 Temporary peripheral open U-channels and sumps are provided for collecting the stormwater, which are pumped and directed towards the sedimentation tank for treatment. The treated water shall be directed to the designated discharge point.

6. ECOLOGY

Post-Translocation Coral Monitoring

6.1 Post-translocation monitoring survey is recommended in the EM&A Manual to audit the success of coral translocation. Information gathered during each post-translocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.

6.2 Under Contract No. NE/2015/01 and NE/2015/02, a total of 14 and 29 coral colonies were tagged and translocated respectively from the Donor Site to the Recipient Site in November 2016. Ten (10) corals at the Recipient Site were also tagged by each Contract as reference for post-translocation monitoring.

6.3 The post-translocation coral monitoring shall be conducted once every 3 months after completion for a period of 12 months. Location of post-translocation coral monitoring is shown in **Figure 7**. The fourth post-translocation coral monitoring was carried out on 07 November 2017. No further monitoring is required.

7. CULTURAL HERITAGE

Monitoring Requirement

7.1 According to the EP Conditions and EM&A Manual, monitoring of vibration impacts was conducted when the construction works are less than 100m from the Built Heritage in close proximity of the worksite, namely the Cha Kwo Ling Tin Hau temple. Tilting and settlement monitoring should be applied on the Cha Kwo Ling Tin Hau Temple. Construction works less than 100m from the Cha Kwo Ling Tin Hau temple commenced on 8 May 2017.

7.2 As stated in the "*Built Heritage Mitigation Plan*" for this Project, during the period of the construction works conducted within 100m from the Cha Kwo Ling Tin Hau Temple, monitoring on settlement and tilting will be conducted once a day for the Cha Kwo Ling. Monitoring of vibration will be conducted during blasting at Cha Kwo Ling area once a day. When there is no blasting to be conducted at the area, vibration monitoring at the Cha Kwo Ling Tin Hau Temple will be conducted once per day when there are piling works or rock breaking works within the 100m from the Cha Kwo Ling Tin Hau Temple.

Monitoring Locations

7.3 One vibration monitoring point and three building settlement monitoring points were proposed for monitoring of the cultural heritage. The building settlement markers were placed on the wall on three sides of the Temple, except the front, of the Cha Kwo Ling Tin Hau Temple and the vibration monitoring point is located within the Cha Kwo Ling Tin Hau Temple. Monitoring Location is shown in **Figure 8**.

Monitoring Equipment

7.4 Building settlement is measured via a settlement marker attached to the wall of Cha Kwo Ling Tin Hau Temple by adhesive tape.

7.5 Vibration monitoring was conducted by using vibrographs: Minimate Plus manufactured by Instantel. These vibrographs will be calibrated annually and its performance follows the requirements given in the "*Guidance Note on Vibration Monitoring*" (GN-VM) issued by the Civil Engineering and Development Department, which is based on the Performance Specification for Blasting Seismographs by International Society of Explosive Engineers (ISEE (2000)).

7.6 **Table 7.1** summarizes the equipment employed by the Contractor for cultural heritage monitoring. Copies of calibration certificates are attached in **Appendix B**.

Table 7.1 Cultural Heritage Monitoring Equipment

Equipment	Manufacturer and Model	Quantity
Digital Level for tilting	Leica LS15 Serial No.: 701141	1
Digital Caliper for tilting	Mitutoyo CD-6" ASX Serial No.: A17047921	1
iCivil-1011 Inclinometer for building settlement	iCivil-1011 Inclinometer Serial No.: HK110118 / HK110120	2
Vibrographs for vibration monitoring	MiniMate Plus / MicroMate manufactured by Instantel Model No.: 716A0403 / 721A2501	33

Monitoring Methodology

7.7 Vibrograph (velocity seismograph) was deployed at each monitoring station to measure and record the PPV and amplitude of ground motion in three mutually perpendicular directions. Vibration monitoring equipment fulfils the requirements stated in the Government guidelines and is calibrated to HOKLAS standards. Each monitoring would not be more than 10 minutes. Settlement monitoring should be conducted by surveyors manually.

Alert, Alarm and Action Levels

7.8 The Alert, Alarm and Action (AAA) Levels are given in **Table 7.2**.

Table 7.2 AAA Levels for Monitoring for Cultural Heritage

Parameter	Alert Level	Alarm Level	Action Level
Vibration	ppv: 4.5 mm/s	ppv: 4.8 mm/s	ppv: 5mm/s Maximum Allowable Vibration Amplitude: 0.1mm
Building Settlement Markers	6mm	8mm	10mm
Building Tilting(1)	1:2000	1:1500	1:1000

Remarks:
(1) Building tilting measurement was replaced by building settlement point measurement. The tilting can be calculated by the ratio of the maximum settlement difference between 2 points and the distance between the 2 points.

Results

7.9 In the reporting month, cultural heritage monitoring was carried out by the Contractor at the aforesaid location on 26 occasions. No AAA Level exceedance was recorded in the reporting month. The monitoring results are presented in **Appendix T**.

Mitigation Measures for Cultural Heritage

7.10 According to Condition 3.6 of the EP (EP No.: EP-458/2013/C), to prevent damage to Cha Kwo Ling Tin Hau Temple and its Fung Shui rocks (Child-given rocks) during the construction phase, a temporarily fenced-off buffer zone (Rocks buffer zone is 5 m from the edge of Rocks and 15m from the edge of Rocks alter) with allowance for public access (minimum 1 m) around the temple and the Fung Shui rocks shall be provided. The open yard in front of the temple should be kept as usual for annual Tin Hau festival.

7.11 As there is a large buffer distance from the current works to Cha Kwo Ling Tin Hau Temple and the Fung Shui rocks (Child-given rocks), the temporarily fenced-off rocks buffer zone and from the edge of Rocks alter is not required. The fenced-off rocks buffer zone would be implemented when there is construction activities in vicinity of the cultural heritage.

8. LANDSCAPE AND VISUAL IMPACT REQUIREMENTS

8.1 Landscape and visual mitigation measures during the construction phase shall be checked to ensure that they are fully realized and implemented on site.

8.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures listed in "Implementation Schedule and Recommended Mitigation Measures" (shown in **Appendix N)**. The summaries of observations and recommendations related to landscape and visual impacts, if any, are shown in **Appendix L**.

8.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

9. LANDFILL GAS MONITORING

Monitoring Requirement

9.1 In accordance with the EM&A Manual, monitoring of landfill gas is required for construction works within the Sai Tso Wan Landfill Consultation Zone during the construction phase. This section presents the results of landfill gas measurements performed by the Contractor. **Appendix A** shows the Limit Levels for the monitoring works.

9.2 The "Landfill Gas Monitoring Proposal", including the monitoring programme and detailed actions, is submitted to the EPD for approval. Details of monitoring in this Proposal is in line with the monitoring requirements stipulated in the EM&A Manual.

Monitoring Parameters and Frequency

9.3 Monitoring parameters for Landfill gas monitoring include Methane, Carbon dioxide and Oxygen.

9.4 According to the implementation schedule and recommended mitigation measures of the EM&A Manual, measurements of the following frequencies should be carried out:

Excavations deeper than 1m
- at the ground surface before excavation commences;
- immediately before any worker enters the excavation;
- at the beginning of each working day for the entire period the excavation remains open; and
- periodically throughout the working day whilst workers are in the excavation.

Excavations between 300mm and 1m deep
- directly after the excavation has been completed; and
- periodically whilst the excavation remains open.

For excavations less than 300mm deep
- monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person

Monitoring Locations

9.5 Monitoring of oxygen, methane and carbon dioxide was performed for excavations at 1m depth or more within the Consultation Zone. In this reporting month, the area required to be monitored for landfill gas are shown below and **Figure 6** shows the landfill gas monitoring locations.
- Excavation Locations : Portion III
- Manholes and Chambers : N/A
- Relocation of monitoring wells : N/A
- Any other Confined Spaces : N/A

Monitoring Equipment noise mitigation

9.6 **Table 9.1** summarizes the equipment employed by the Contractor for the landfill gas monitoring.

Table 9.1 Landfill Gas Monitoring Equipment

Equipment	Model and Make	Quantity
Portable gas detector	ALTAIR 5X Multigas Detector (Serial No. 137333)	1

Results and Observations

9.7 In the reporting month, landfill gas monitoring was carried out by the Contractor at the aforesaid locations on 130 occasions. No Limit Level exceedance for landfill gas monitoring was recorded in the reporting month. The monitoring results are provided in **Appendix R**. Copies of calibration certificates are attached in **Appendix B.**

10. ENVIRONMENTAL AUDIT

Site Audits

10.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix L**.

10.2 Joint weekly site audits by the representatives of the Engineer, Contractor and the ET were conducted in the reporting month as shown in below:

- Contract No. NE/2015/01: 4, 11, 18, 25
- Contract No. NE/2015/02: 5, 12, 19, 26
- Contract No. NE/2017/01: 5, 12, 19, 26
- Contract No. NE/2017/02: 5, 12, 19, 26
- Contract No. NE/2017/06: 5, 13, 19, 26
- Contract No. NE/2017/07: 4, 11, 18, 25

10.3 Monthly joint site inspection with the representative of IEC was conducted for NE/2015/01 and NE/2017/07 on 18 May 2022, while NE/2015/02, NE/2017/01, NE/2017/02 and NE/2017/06 were conducted on 26 May 2022.

10.4 The EM&A programme of Contract No. NE/2015/03 had been terminated on 21 April 2020 under the approval of EPD.

Implementation Status of Environmental Mitigation Measures

10.5 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Implementation Schedule and Recommended Mitigation Measures is provided in **Appendix N**.

10.6 During site inspections in the reporting month, no non-compliance was recorded on reporting month. The observations and recommendations made during the audit sessions are summarized in **Appendix L**.

11. WASTE MANAGEMENT

11.1 Waste generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and marine sediments. Inert C&D waste includes soil, broken rock, broken concrete and building debris, while non-inert C&D materials are made up of C&D waste which cannot be reused or recycled and has to be disposed of at the designated landfill sites. Marine sediment shall be expected from excavation and dredging works of this Project.

11.2 With reference to relevant handling records of this Project, the quantities of different types of waste generated in the reporting month are summarised and presented in **Appendix P**.

11.3 The Contractors are advised to minimize the wastes generated through the recycling or reusing. All mitigation measures stipulated in the approved EM&A Manual and waste management plans shall be fully implemented. The status of implementation of waste management and reduction measures are summited in **Appendix N**.

12. ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

12.1 No Limit Level exceedance of noise was recorded due to the monitoring results in the reporting month. Seven (7) Action Level exceedances of construction noise were recorded in the reporting month.

12.2 No Limit Level exceedance of air quality was recorded in the reporting month. No Action Level exceedance of air quality monitoring was recorded in the reporting month.

12.3 Eighteen (18) Action Level and Fifty-five (55) Limit Level exceedances were recorded in Monitoring Stations (M) during marine water quality monitoring.

12.4 No Action and Limit Level exceedances were recorded for W2 during the post-reclamation marine water quality monitoring.

12.5 Actions carried out in accordance with the Event and Action Plans in **Appendix M** are presented in **Appendix K** – Summary of Exceedance.

Summary of Environmental Complaint

12.6 Nine (9) environmental complaints were received in the reporting month. The Cumulative Complaint Log is presented in **Appendix O**. The investigation status and result is also reported in **Appendix O**.

Summary of Environmental Summon and Successful Prosecution

12.7 No notification of summon or successful environmental prosecution was received in this reporting period. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix O**.

13. FUTURE KEY ISSUES

13.1 Tentative construction programmes for the next three months are provided in **Appendix Q**.

13.2 Major site activities to be undertaken for the next reporting period are summarized in **Table 13.1**.

Table 13.1 Summary Table for Site Activities in the next Reporting Period

Contract No. and Project Title	Site Activities (May 2022)		Key Environmental Issues *
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough & Noise Enclosure 2) EHC7 U-Trough 3) Site Formation Area 1G1 & 1G2 & 5 4) Site Formation Area 2 5) Site Formation Slope Stabilization 6) Site Formation Retaining Wall 7) Administration Building 8) West Ventilation Building 9) Bridge Construction 10) CKLR Underground Utilities 11) Underpass S01 12) Landscape Deck & Noise Cover 13) LTI Drainage 14) Road EHC4 Site Formation Works	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	15) Main Tunnel Lining Works 16) Branch Tunnel Lining Works 17) S02_2 Excavation & Lining 18) Tunnel E&M Works	(B)
	TKO Interchange	19) Bridge Construction 20) East Ventilation Building 21) Underground Utilities / Drainage Works 22) Slope Stabilization Works	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Sloping seawall construction 2) Construction of U-trough at CH821 – CH105 3) Construction of Underpass at CH105 – CH318 4) Construction of seawall coping 5) Construction of road P2 and SR2 6) Backfilling at U-Trough A S200/300/400 7) Asphalt laying		
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	The construction works under the contract had been completed in December 2019. Materials are being removed from works area.		
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Installation of Railing 2) Construction of Concrete Profile barrier 3) Grouting Works 4) Installation of Road Drainage and Drain Pipe 5) Road pavemnet and road marking		
NE/2017/02 –Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Inspection pit excavation and utility diversion works 2) Construction of drainage and watermain 3) Asphalt Paving 4) Pier, Staircase and Lift Shalt Construction 5) Road Works		

Contract No. and Project Title	Site Activities (May 2022)	Key Environmental Issues *
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Goods arrival & storage on site 2) Installation in Admin Building 3) Installation works inside Tunnel 4) Installation works inside EVB and WVB 5) Relocation to new sit office	
NE/2017/07 - Cross Bay Link, Tseung Kwan O – Main Bridge and Associated Works	1) Top, transverse, bottom and external tension 2) Construction of long stitching 3) Construction of concrete structure above deck 4) Construction of steel-concrete transition zone 5) Waterproofing works 6) Installation of parapet 7) Construction of steel-concrete transition zone 8) Installation of sign gantries 9) Road Pavement	

Note:
(A) Watering for dust generation from haul road, stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
(B) Noisy construction activity such as rock-breaking activities and piling works;
(C) Runoff from exposed slope or site area;
(D) Wastewater and runoff discharge from site;
(E) Accumulation of silt, mud and sand along U-channels and sedimentation tanks;
(F) Set up and implementation of temporary drainage system for the surface runoff;
(G) Storage of chemicals/fuel and chemical waste/waste oil on site;
(H) Accumulation and storage of general and construction waste on site; and
(I) Marine water quality impact and indirect impact to coral communities due to marine construction for TKO-LTT reclamation.

Key Issues for the Coming Month

13.3 Key environmental issues in the coming month include:

- Watering for dust generation from haul road, stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Noisy construction activity such as rock-breaking activities and piling works;
- Runoff from exposed slope or site area;
- Wastewater and runoff discharge from site;
- Accumulation of silt, mud and sand along U-channels and sedimentation tanks;
- Set up and implementation of temporary drainage system for the surface runoff;
- Precaution measures in case of heavy rainfall brought along by typhoon;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation and storage of general and construction waste on site; and
- Marine water quality impact and indirect impact to coral communities due to marine construction for TKO-LTT reclamation.

14. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

14.1 This is the 67th Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in May 2022 in accordance with EM&A Manual and the requirement under EP.

Air Quality Monitoring

14.2 No Action/Limit Level exceedance for 1-hour TSP monitoring was recorded.

14.3 No Limit Level exceedance for 24-hour TSP monitoring was recorded.

14.4 No Action Level exceedance for 24-hour TSP monitoring was recorded.

Construction Noise Monitoring

14.5 One (1) Level exceedance was recorded due to the monitoring results recorded in this reporting month.

14.6 Seven (7) Action Level exceedance was recorded for documented complaints. The details of complaint shall be referred to **Appendix O**.

Water Quality Monitoring

14.7 Groundwater quality monitoring had been suspended since October 2019. Details shall be referred to **Section 5.1**.

14.8 Eighteen (18) Action Level and fifty-five (55) Limit Level exceedances were recorded in Monitoring Stations (M) during marine water quality monitoring.

14.9 No Action and Limit Level exceedances were recorded for W2 during the post-reclamation marine water quality monitoring in the reporting month.

14.10 Tunnel construction activities are within +/- 50m of the piezometer gate in plan. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. No monitoring was conducted in the reporting month.

Ecological Monitoring

14.11 The post-translocation coral monitoring surveys were completed in November 2017.

Monitoring on Cultural Heritage

14.12 No Alert Alarm and Action (AAA) Level exceedance of cultural heritage monitoring on cultural heritage was recorded in the reporting month.

Landscape and Visual Monitoring and Audit

14.13 No non-compliance of the landscape and visual impact was recorded in the reporting month.

Landfill Gas Monitoring

14.14 Monitoring of landfill gases in the reporting month was carried out by the Contractor at excavation location, Portion III. No Limit Level exceedance was recorded.

Environmental Site Inspection

14.15 Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Environmental Team. During site inspections in the reporting month, no non-compliance was identified. The environmental deficiency observed during the reporting month are shown in **Appendix L.**

Complaint, Prosecution and Notification of Summons

14.16 Nine (9) environmental complaints, no successful prosecution and notification of summon were received during the reporting period.

Recommendations

14.17 The following recommendations were made to the Contractor for the reporting month:
Air Quality Impact

- To regularly apply watering on dry surface should be applied to minimize erosion.
- To aim the water spray at the rock breaking point for effective dust suppression.
- To water materials before loading/unloading.
- To turn off idle equipment.

Construction Noise

- To provide sufficient noise barriers for noisy PMEs as practically at LTI according to CNMP.
- To repair the gaps between the noise barriers.
- To place compatible noise barrier close to the breaking point for effective noise screening.
- To erect sound proof canvases on derrick lighter barge

Water Quality Impact

- To clear the oil slick and check for any damage of the silt curtain.
- To repair damaged or missing silt curtain
- To check whether the curtain has been set to the seabed.
- To ensure that the pumping rate of bored pile is sufficient to avoid discharging waste water into the sea.
- To clear floating refuse between the cofferdam and silt curtain.
- To clear oil slick within and outside cofferdam.
- To control the amount of loading materials in the barge to avoiding spillage.
- To cover stockpile near seafront.
- To remove wastewater and oil in drip tray.
- To remove pond/still water.

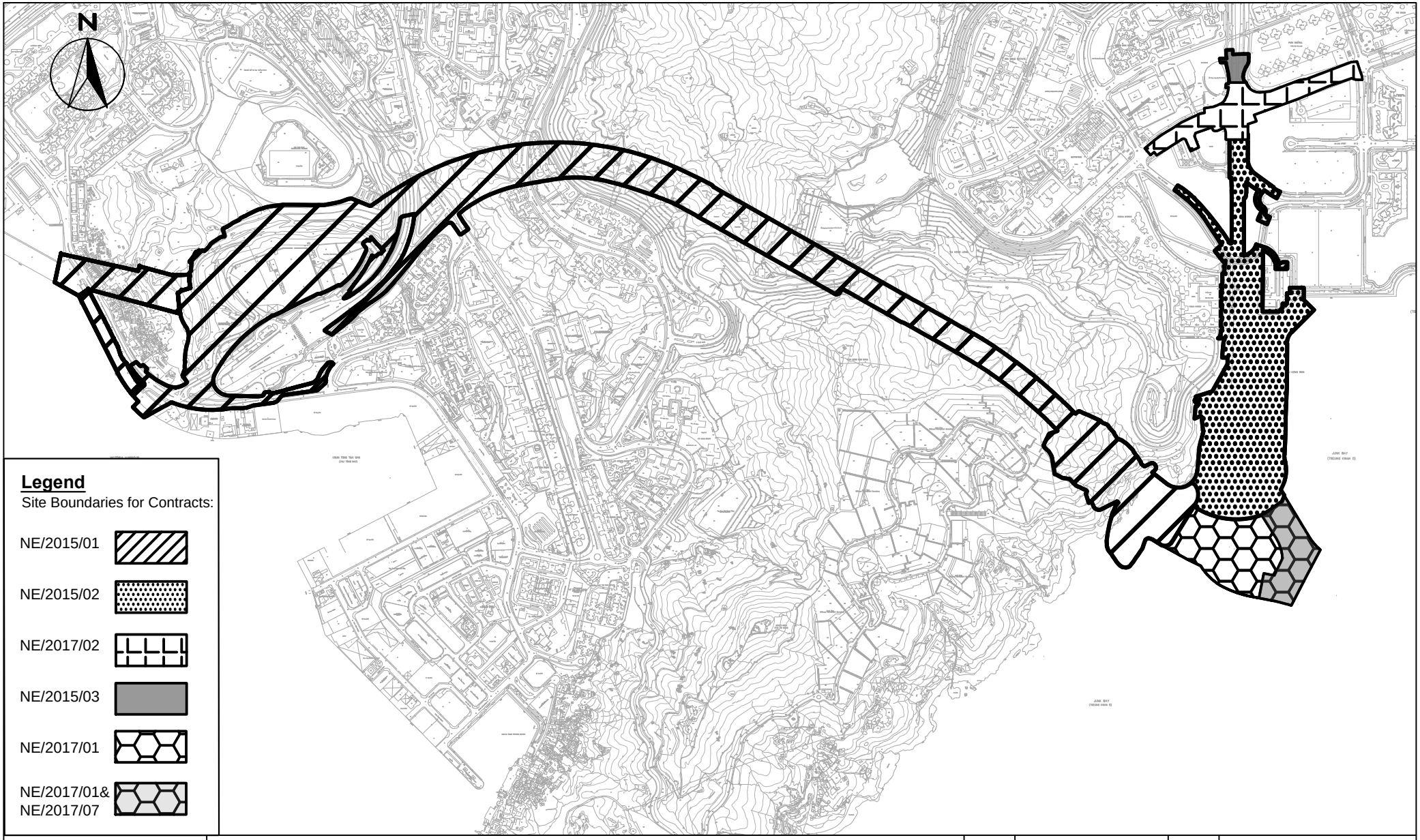
Waste/Chemical Management

- To bund or lock the chemical storage area.
- To clear dripping oil from bored piling machine.
- To clear oil slick on seawater.
- To clear oil on the floor.

Landscape and Visual

- To avoid placing any construction materials in the tree protection zone.

FIGURES



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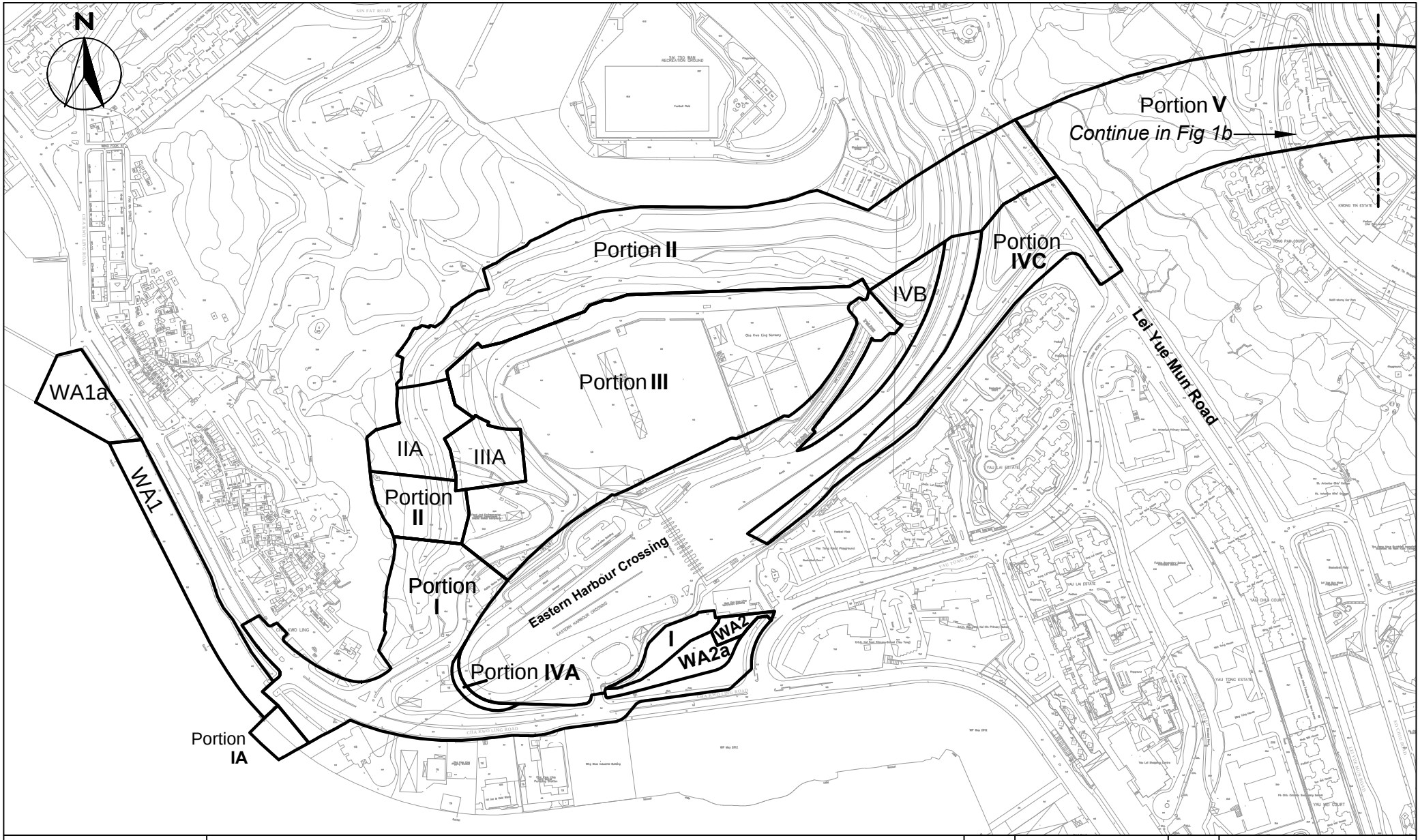
Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Layout Plan

SCALE	1:13000@A4	DATE	15 April 2021
CHECK	CC	DRAWN	KC
JOB No.	MA16034	FIGURE NO. 1	REV -



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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions under Works Contract No. NE/2015/01 (LT)

SCALE	1:5000@A4	DATE	15 April 2021
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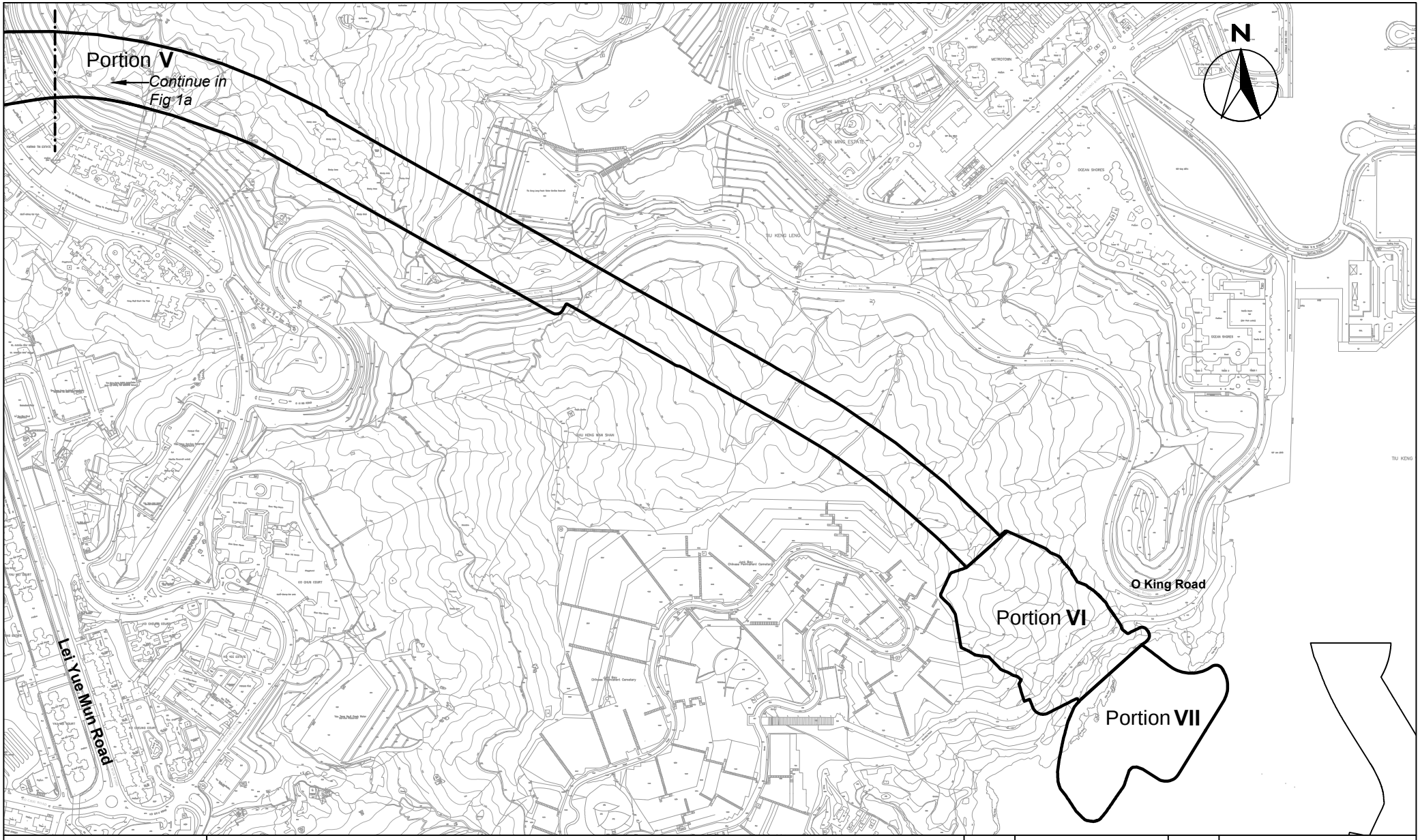

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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions under Works Contract No. NE/2015/01 (TKO)

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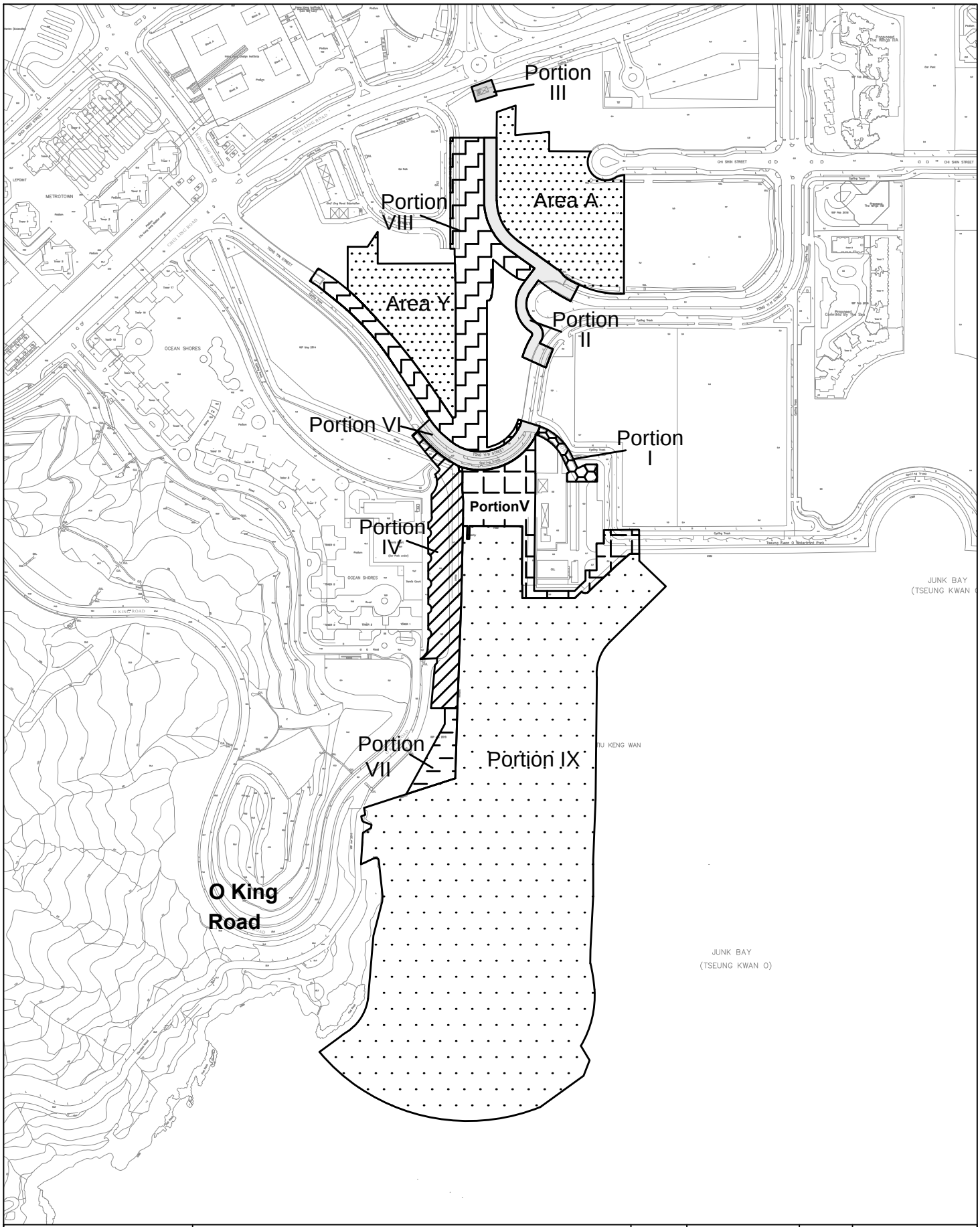
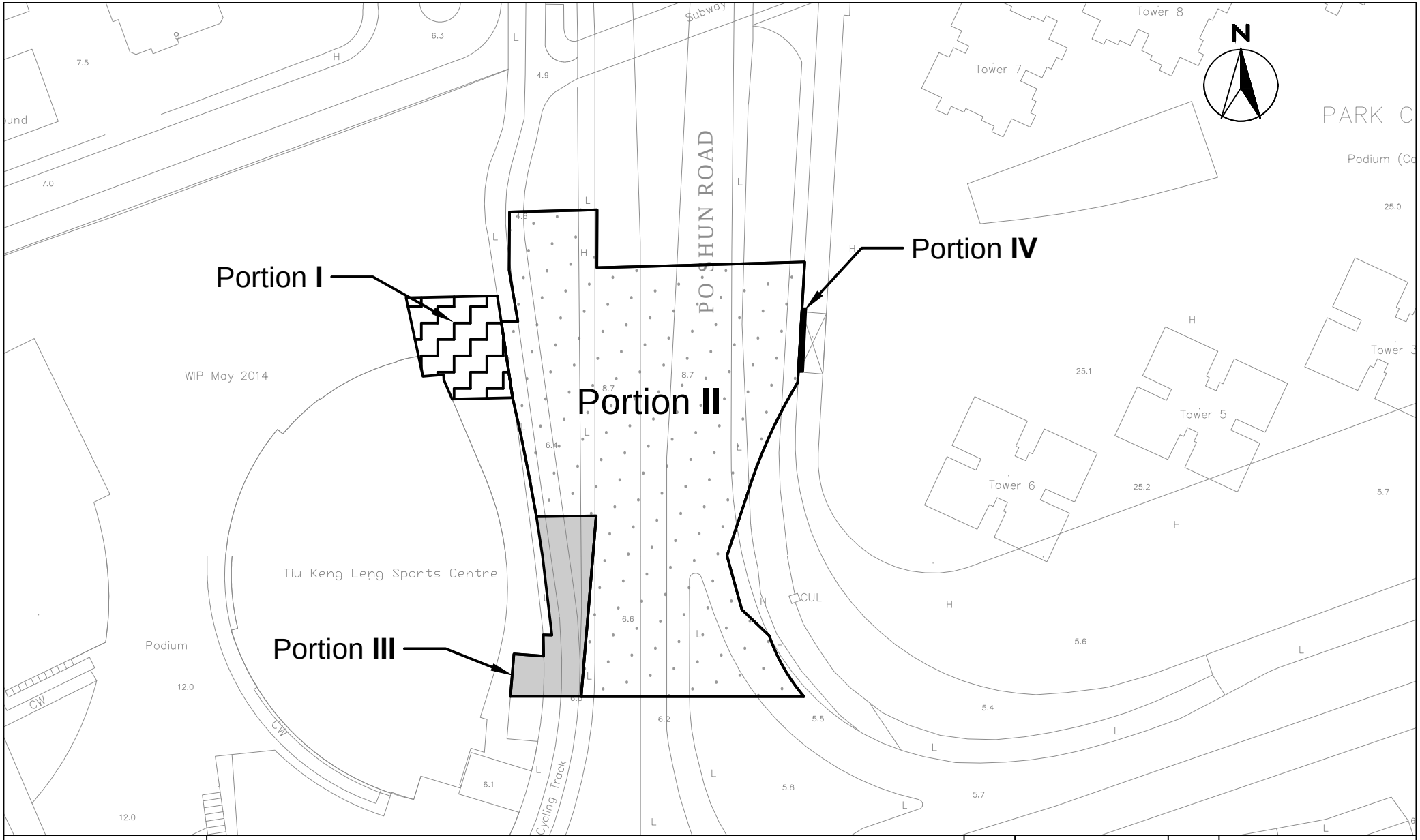


CINOTECH Cinotech Consultants Limited	Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction **Site Portions under Works Contract No. NE/2015/02**	SCALE	1:5000@A4	DATE	25 July 2021
		CHECK	CC	DRAWN	KC
		JOB No.	MA16034	FIGURE NO. 1c	REV -



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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions in Tseung Kwan O under Works Contract No. NE/2015/03

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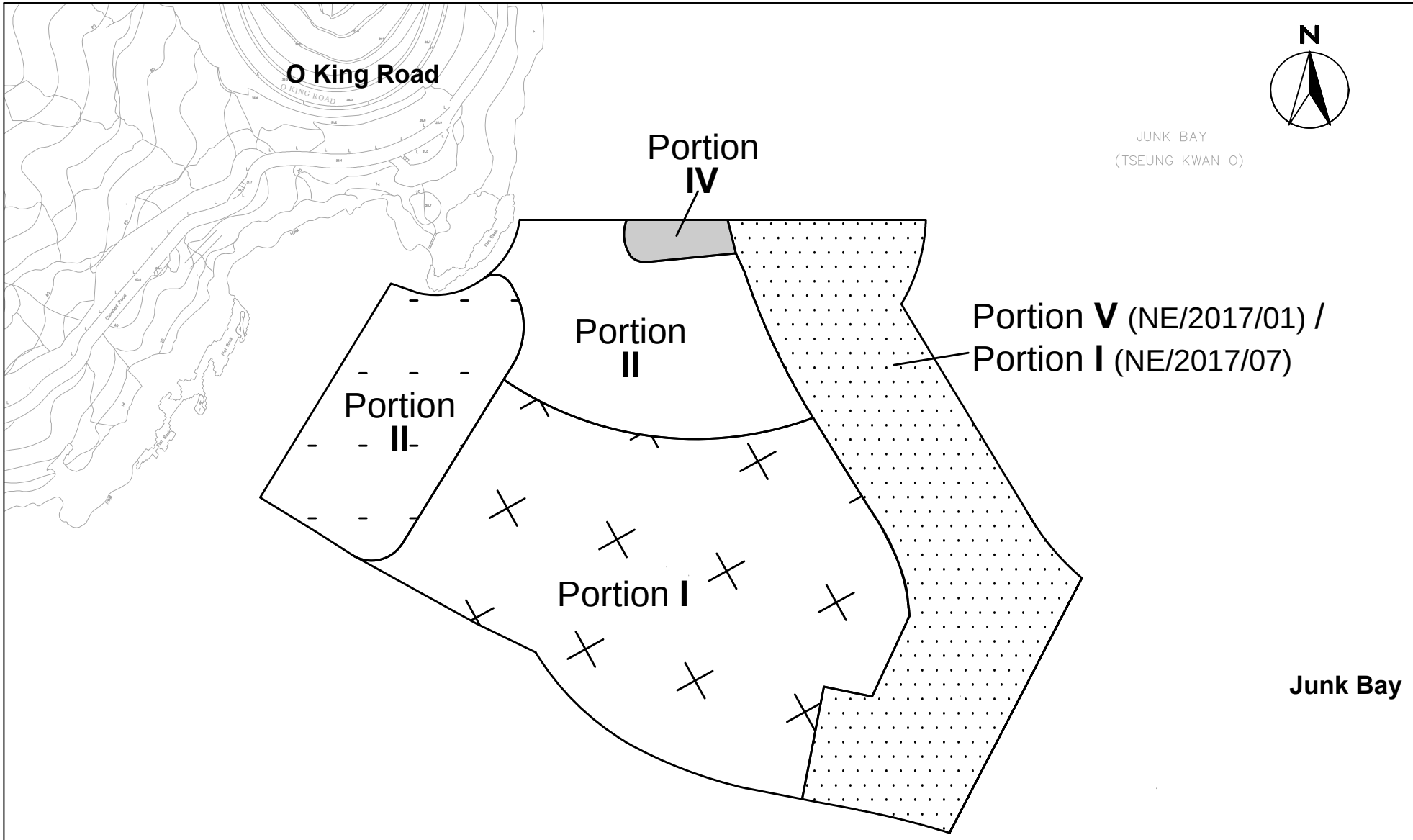

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions in Tseung Kwan O under Works Contract No. NE/2017/01

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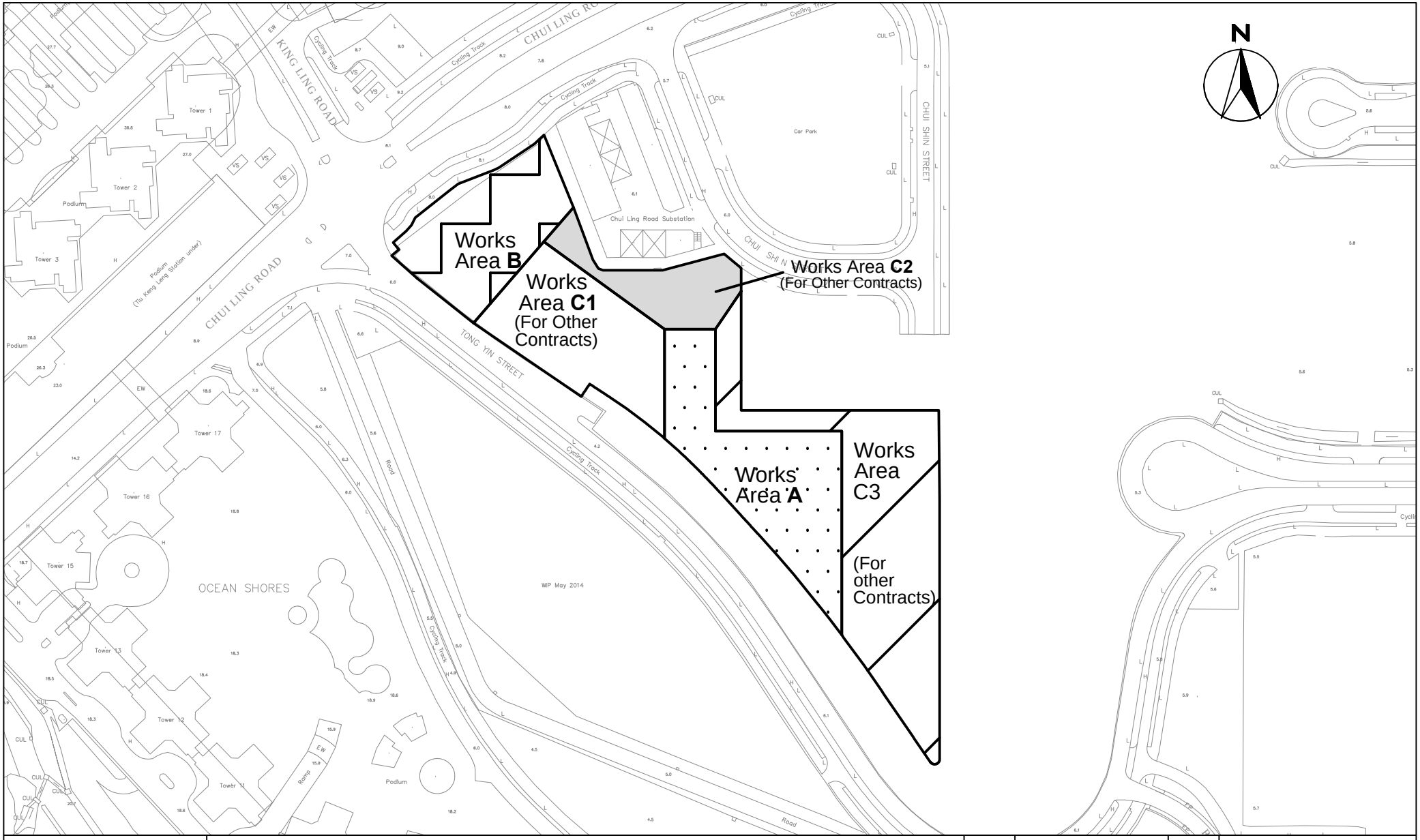

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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions in Tseung Kwan O (Site Office) under Works Contract No. NE/2017/02

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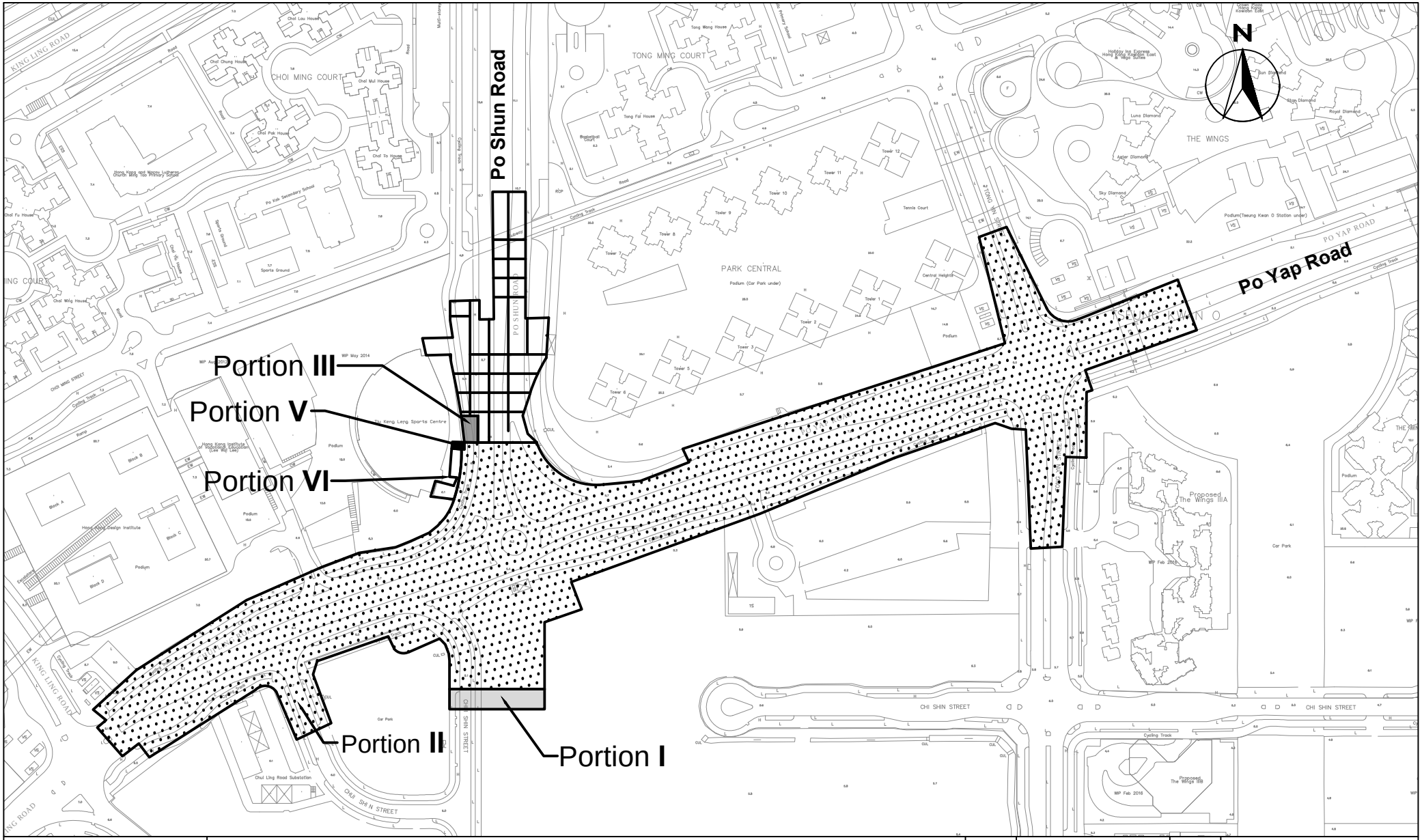
JOB No.	MA16034	FIGURE NO. 1f	REV -



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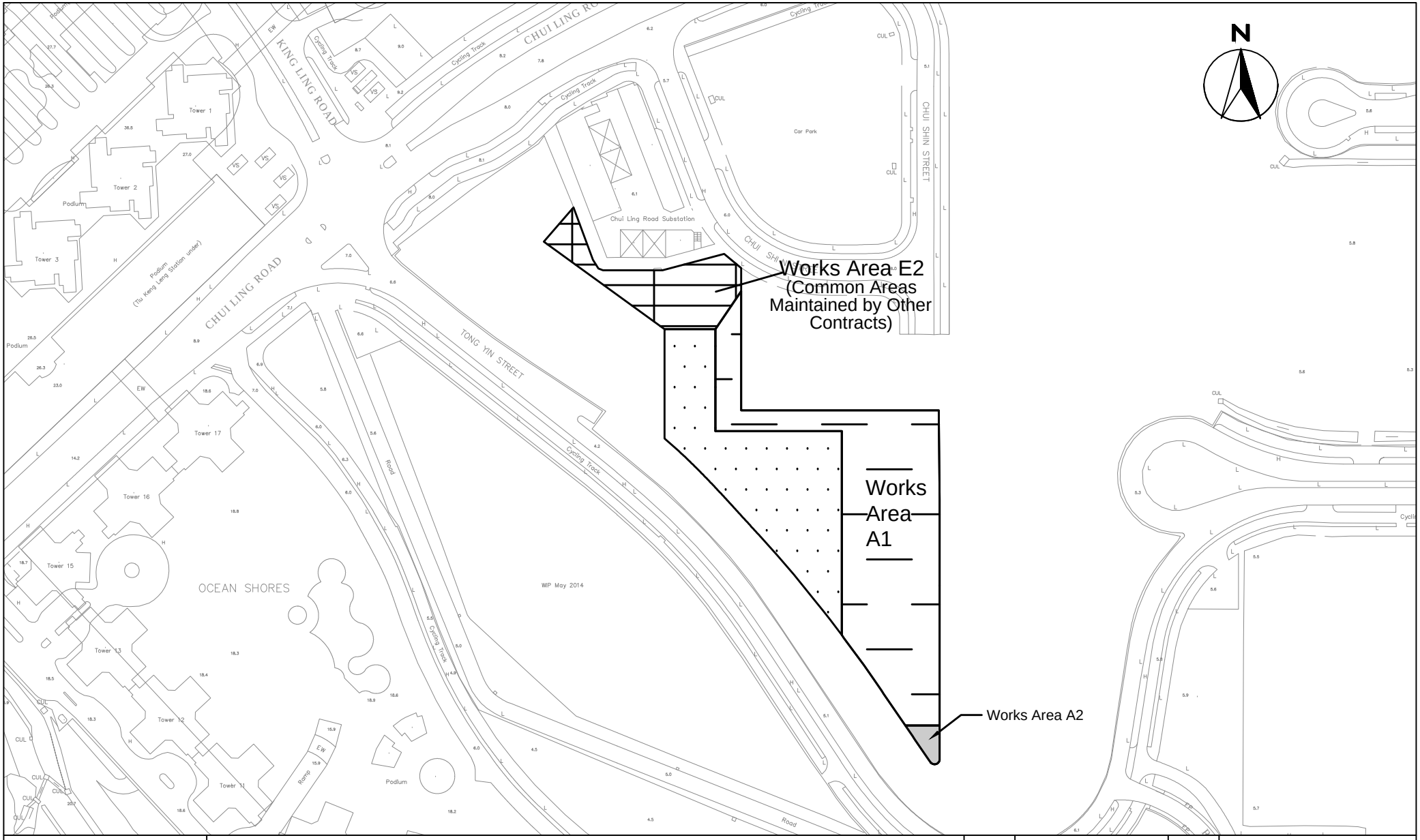
Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions in Tseung Kwan O under Works Contract No. NE/2017/02

SCALE	1:3000@A4	DATE	15 April 2021
CHECK	CC	DRAWN	KC
JOB No.	MA16034	FIGURE NO. 1g	REV -



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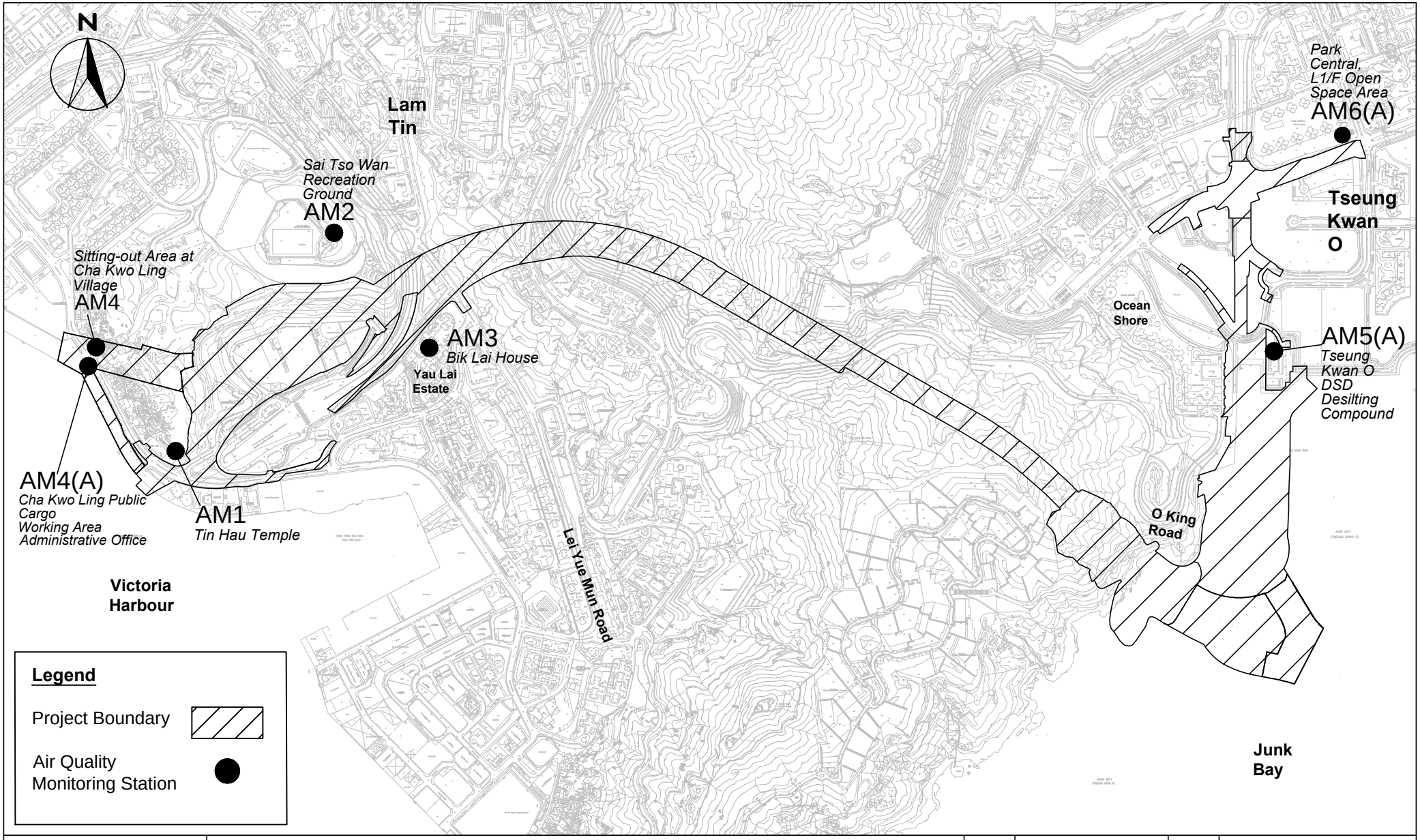
Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Site Portions in Tseung Kwan O (Site Office) under Works Contract No. NE/2017/01

SCALE	1:2000@A4	DATE	15 April 2021
CHECK	CC	DRAWN	KC
JOB No.	MA16034	FIGURE NO.	1h
		REV	-



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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Air Quality Monitoring Station

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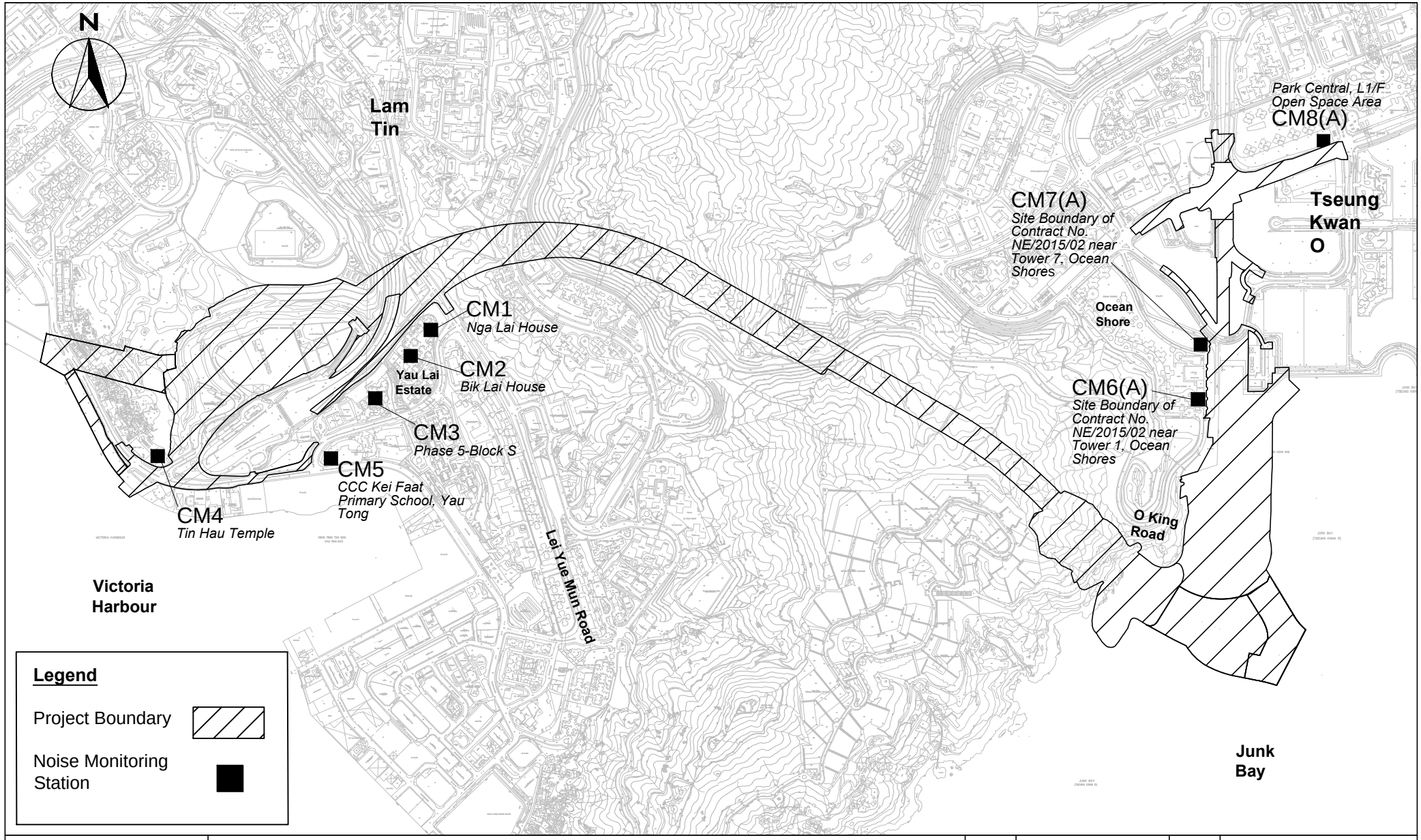
CHECK	CC	DRAWN	KC
JOB No.	MA16034	FIGURE NO.	2
		REV	-



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Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel– Design and Construction

Noise Monitoring Stations

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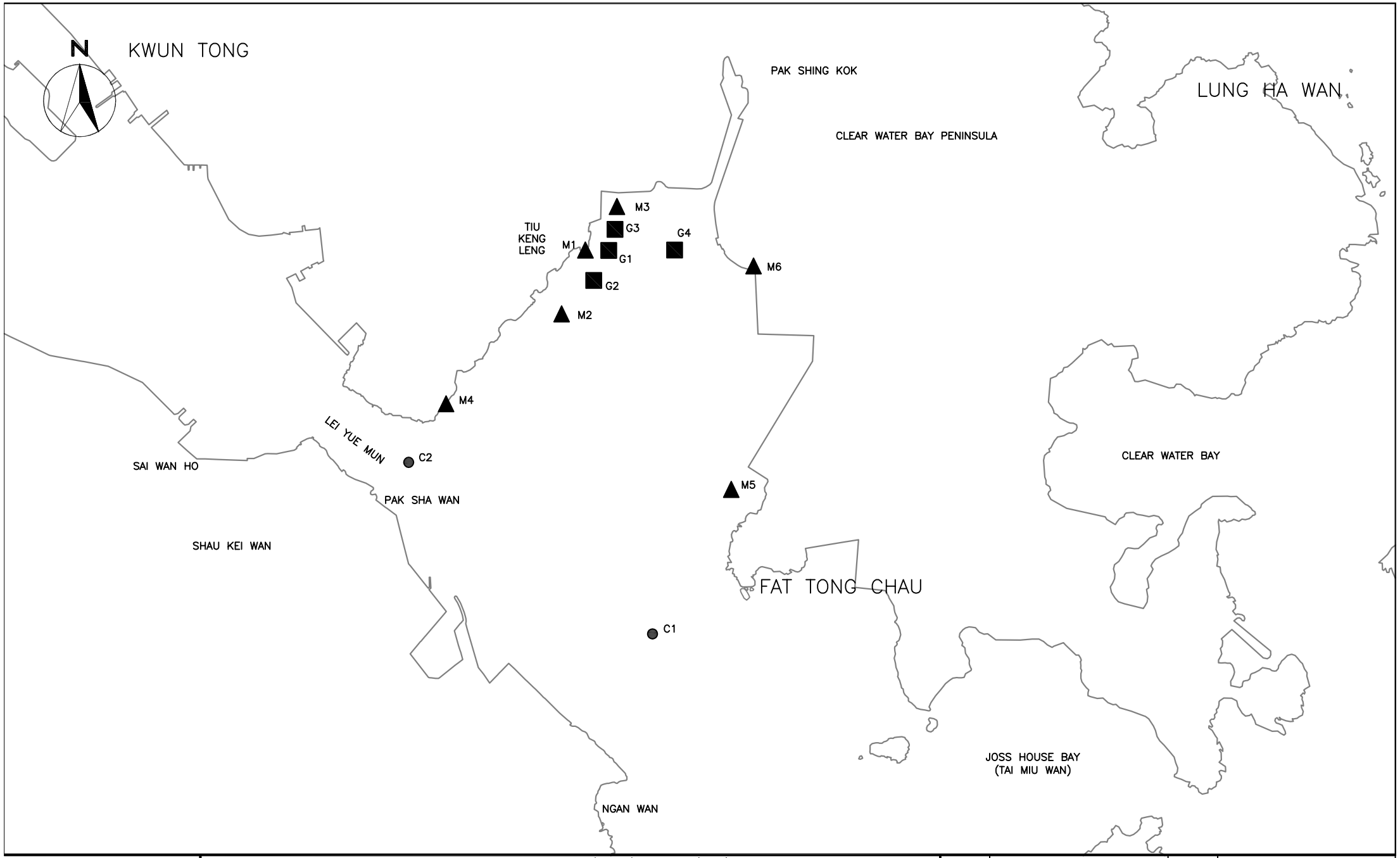
JOB No.	MA16034	FIGURE NO. 3	REV -



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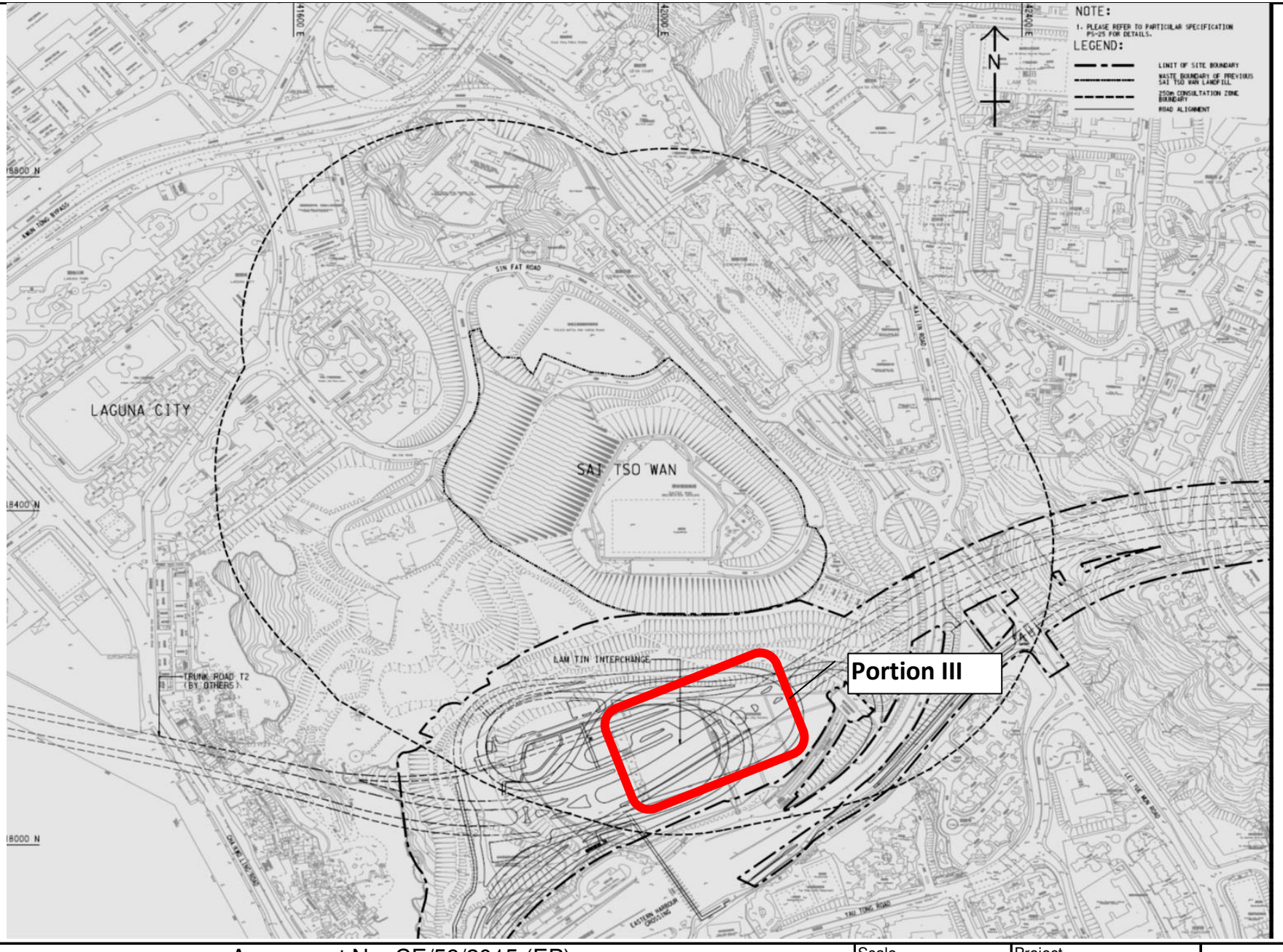
Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction

Locations of Water Quality Monitoring Stations

SCALE	N.T.S	DATE	AUG 2016
CHECK	JF	DRAWN	JW
PROJECT NO.	MA16034	FIGURE NO.	5
		REV	–



Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Locations of Landfill Gas Monitoring	Scale: N.T.S Date: Dec-16	Project No.: MA16034 Figure: 6

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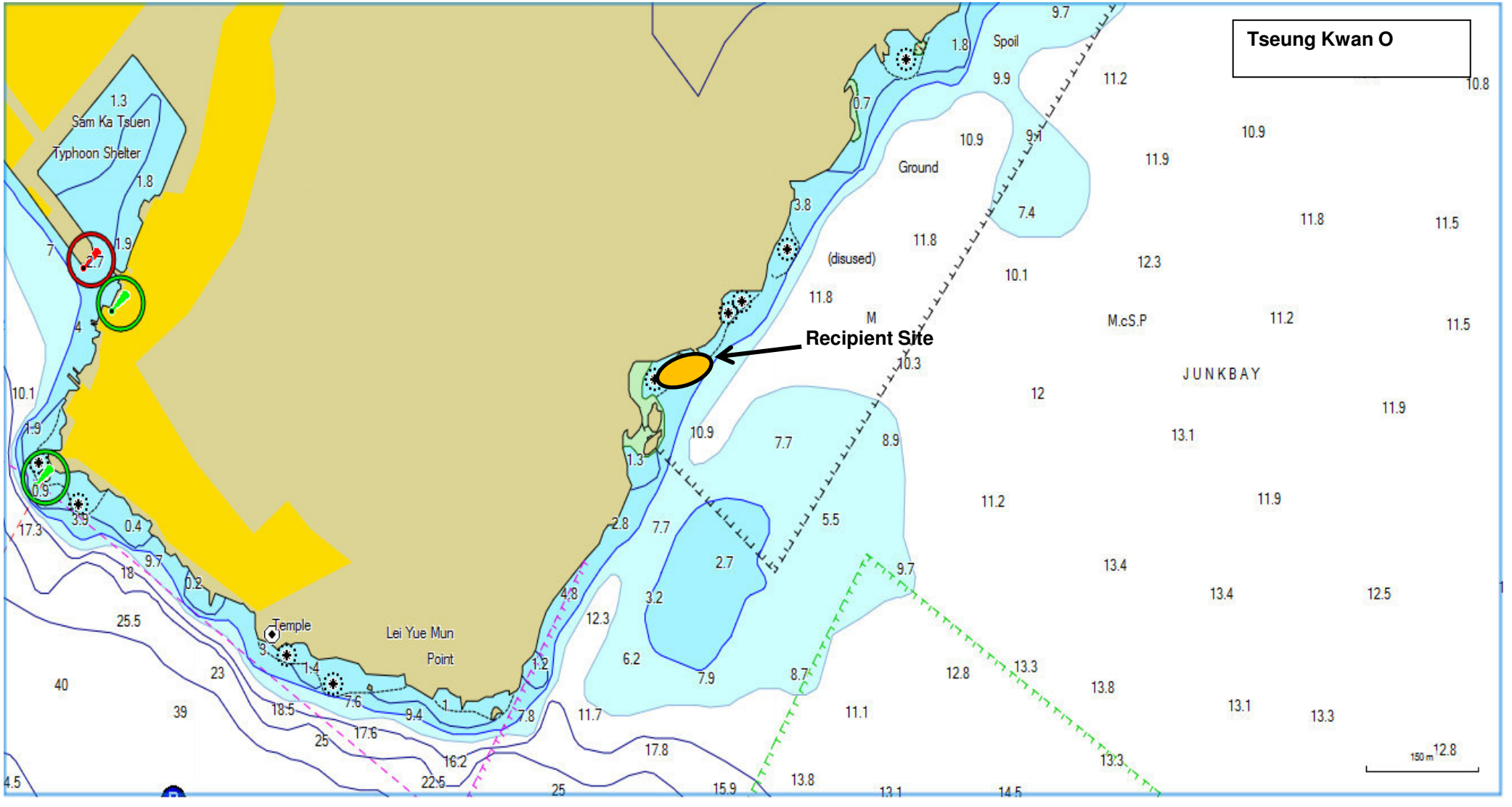
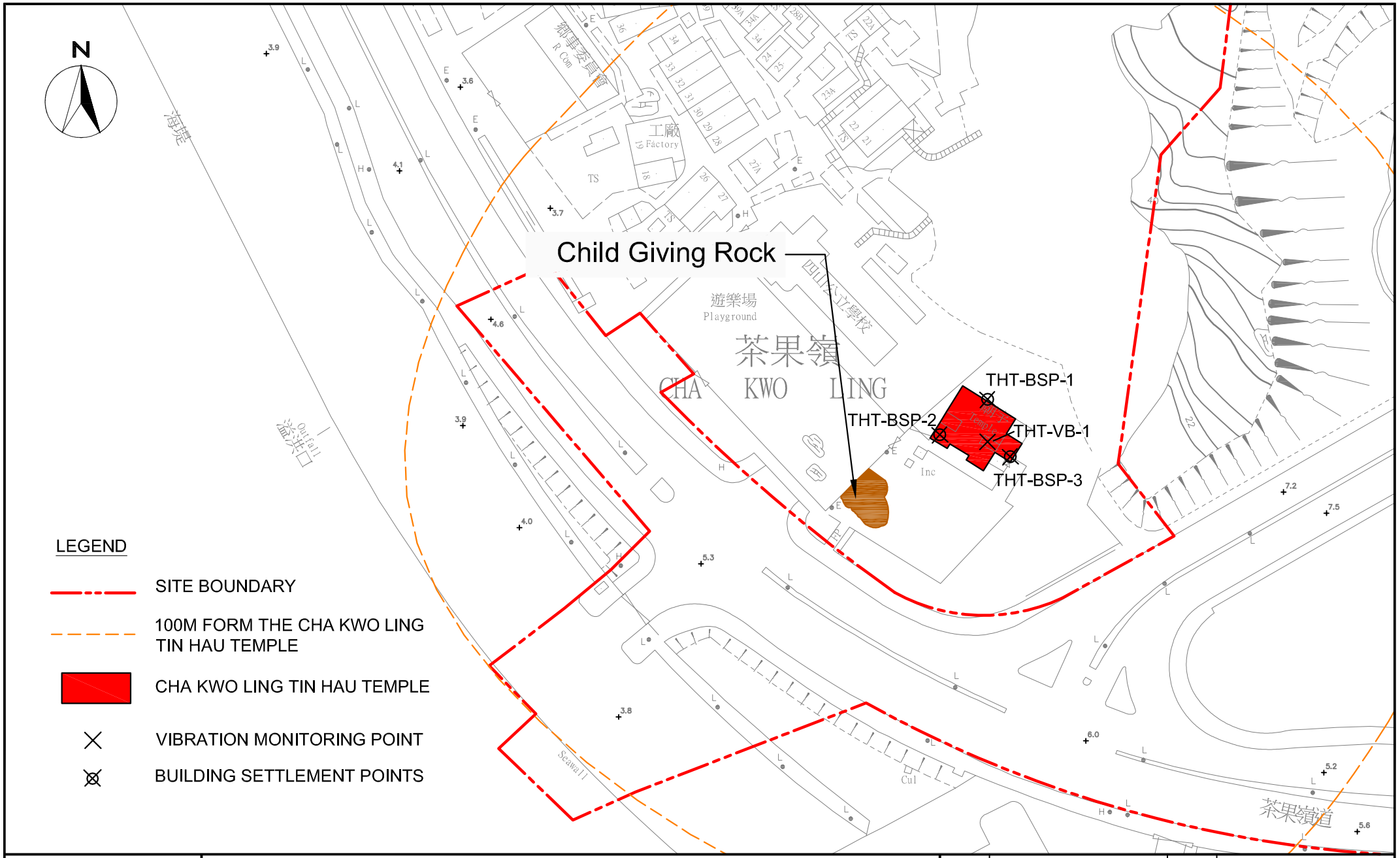


Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Location of Post-translocation Coral Monitoring	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Mar-17	Figure: 7	



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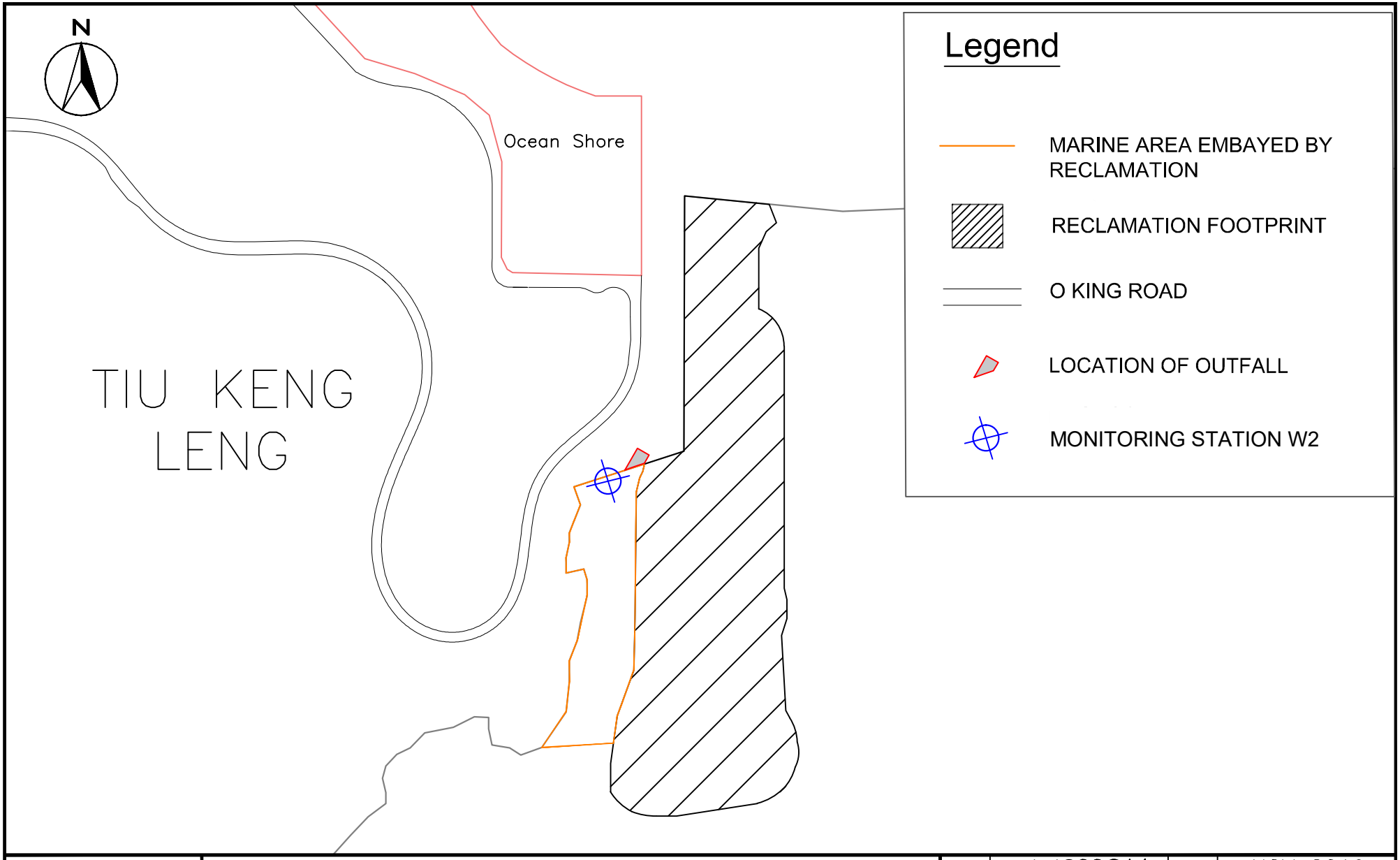
Agreement No. CE/59/2015 (EP)
Environmental Team for Tsueng Kwan O - Lam Tin Tunnel - Design and Construction

Locations of Monitirong for Cultural Heritage

SCALE	N.T.S.	DATE	FEB 2018
CHECK	JF	DRAWN	AC
JOB No.	MA16034	FIGURE NO. 8	REV -



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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction

Location of Embayment formed by Reclamation and Monitoring Station W2

SCALE	1:4000@A4	DATE	NOV 2019
CHECK	BC	DRAWN	KC
PROJECT NO.	MA16034	FIGURE NO.	9
		REV	—

APPENDIX A
ACTION AND LIMIT LEVELS

APPENDIX A – Action and Limit Levels

Air Quality

1-hr TSP

Monitoring Stations	Location	Action Level, µg/m³	Limit Level, µg/m³
AM1	Tin Hau Temple	275	500
AM2	Sai Tso Wan Recreation Ground	273	
AM3	Yau Lai Estate Bik Lai House	271	
AM4	Sitting-out Area at Cha Kwo Ling Village	278	
AM5(A)	Tseung Kwan O DSD Desilting Compound	273	
AM6(A)	Park Central, L1/F Open Space Area	285	

24-hr TSP

Monitoring Stations	Location	Action Level, µg/m³	Limit Level, µg/m³
AM1	Tin Hau Temple	173	260
AM2	Sai Tso Wan Recreation Ground	192	
AM3	Yau Lai Estate Bik Lai House	167	
AM4(A)	Cha Kwo Ling Public Cargo Working Area Administrative Office	210	
AM5(A)	Tseung Kwan O DSD Desilting Compound	175	
AM6(A)	Park Central, L1/F Open Space Area	165	

Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) [(1)]
1900-2300 on all days and 0700-2300 on general holidays (including Sundays)		60/65/70 dB(A)[(2)(3)]
2300-0700 on all days		45/50/55 dB(A)[(2)(3)]

[1] 70 dB(A) for schools and 65 dB(A) for schools during examination period.
[2] Acceptable Noise Levels for Area Sensitivity Rating of A/B/C
3 If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

Water Quality

Groundwater

Parameters	Action	Limit
DO in mg L^{-1}	7.6	7.6
pH	6.0 – 8.9	6.0 – 9.0
BOD_5 in mg L^{-1}	2.0	2.0
TOC in mg L^{-1}	Stream 1 and Stream 2: 9	Stream 1 and Stream 2: 9
	Stream 3: 6	Stream 3: 6
Total Nitrogen in mg L^{-1}	2.0	2.1
Ammonia-N in mg L^{-1}	0.15	0.20
Total Phosphate in mg L^{-1}	0.05	0.05
SS in mg L^{-1}	7.6	12.1
Turbidity in NTU	2.1	2.3

Notes:
1. For pH, non-compliance of the water quality limits occurs when monitoring result is out of the range of the limits.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, 5-day biochemical oxygen demand (BOD_5), Total organic carbon (TOC), Total Nitrogen, Ammonia-N and Total Phosphate, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

Groundwater Level Monitoring

Drill Hole No.	38568-LDH1	TKO-LBH907
Action Level (mPD)	+74.65	+17.59

Marine Water Quality

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2, 4 and 5)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2, 4 ad 5)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day	***6.9mg/L*** or 130% of upstream control station's SS at the same tide of the same day
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.
5. Refer to Appendix I – Marine Water Quality Monitoring Results and Graphical Presentations for results of upstream control stations at each tide on each day.

Water Quality Monitoring in Temporary Marine Embayment

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 2)	Depth Average	***4.8 mg/L*** (4)	***4 mg/L*** (3)
	Bottom	***2.4 mg/L*** (4)	***2 mg/L*** (3)

Notes:
1. "depth-averaged" is calculated by taking the arithmetic means of reading of all sampling depths.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. Current Water Quality Objectives (WQOs) for marine waters of Hong Kong
4. As an alert for adverse water quality impact, the Action Level is set as 120% of the Current WQOs for marine waters of Hong Kong.

Ecology

Post-translocation Coral Monitoring

Parameter	Action Level Definition	Limit Level Definition
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level is exceeded.	If during the Impact Monitoring a 25% increase in the percentage of partial mortality occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Limit Level is exceeded.

Landfill Gas Monitoring

Parameter	Limit Level
Oxygen	<19%
	<18%
Methane	>10% LEL (i.e. > 0.5% by volume)
	>20% LEL (i.e. > 1% by volume)
Carbon Dioxide	>0.5%
	>1.5%

Alert, Alarm, Action Levels for Built Heritage Monitoring

Parameter	Alert Level	Alarm Level	Action Level
Vibration	ppv:4.5mm/s	ppv: 4.8mm/s	ppv: 5mm/s Maximum Allowable Vibration Amplitude: 0.1mm
Building Settlement Point	6mm	8mm	10mm
Building Tilting	1:2000	1:1500	1:1000

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/05/0035

Project No. AM1 - Tin Hau Temple

Date: 9-Apr-22 Next Due Date: 9-Jun-22 Operator: SK

Equipment No.: A-01-05 Model No.: GS2310 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.2	3.64	61.96	9.6	3.11
2	10.2	3.20	54.51	7.2	2.69
3	7.7	2.78	47.42	5.4	2.33
4	5.4	2.33	39.77	3.3	1.82
5	3.0	1.74	29.75	2.0	1.42

By Linear Regression of Y on X

Slope , mw = **0.0535** **Intercept, bw =** **-0.2213**

Correlation coefficient* = **0.9973**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.29**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 9-Apr-22

Checked by: Henry Leung Signature: Date: 9-Apr-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/08/0035

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 9-Apr-22 Next Due Date: 9-Jun-22 Operator: SK

Equipment No.: A-01-08 Model No.: GS2310 Serial No. 1287

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

.

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.2	3.64	61.96	9.4	3.08
2	10.4	3.24	55.04	6.8	2.62
3	7.8	2.80	47.72	5.2	2.29
4	5.4	2.33	39.77	3.4	1.85
5	3.0	1.74	29.75	2.0	1.42

By Linear Regression of Y on X

Slope , mw = **0.0510** **Intercept, bw =** **-0.1387**

Correlation coefficient* = **0.9973**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.19**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 9-Apr-22

Checked by: Henry Leung Signature: Date: 9-Apr-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0035

Project No. AM3 - Yau Lai Estate, Bik Lai House

Date: 9-Apr-22 Next Due Date: 9-Jun-22 Operator: SK

Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.2	3.64	61.96	9.4	3.08
2	10.4	3.24	55.04	7.0	2.65
3	8.4	2.91	49.51	5.6	2.37
4	5.4	2.33	39.77	3.4	1.85
5	3.0	1.74	29.75	2.0	1.41

By Linear Regression of Y on X

Slope , mw = **0.0516** **Intercept, bw =** **-0.1629**

Correlation coefficient* = **0.9983**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.20**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 9-Apr-22

Checked by: Henry Leung Signature: Date: 9-Apr-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/54/0035

Project No. AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office

Date: 9-Apr-22 Next Due Date: 9-Jun-22 Operator: SK

Equipment No.: A-01-54 Model No.: TE-5170 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.0	3.62	61.49	9.4	3.08
2	10.6	3.27	55.56	7.4	2.73
3	7.6	2.77	47.11	5.2	2.29
4	5.6	2.37	40.50	3.4	1.85
5	3.0	1.74	29.75	2.0	1.42

By Linear Regression of Y on X

Slope , mw = **0.0530** **Intercept, bw =** **-0.2129**

Correlation coefficient* = **0.9969**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.24**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 9-Apr-22

Checked by: Henry Leung Signature: Date: 9-Apr-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/37/0035

Project No. AM5(A) - Tseung Kwan O DSD Desilting Compound

Date: 9-Apr-22 Next Due Date: 9-Jun-22 Operator: SK

Equipment No.: A-01-37 Model No.: GS2310 Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.2	3.64	61.96	9.6	3.11
2	10.8	3.30	56.08	7.4	2.73
3	8.4	2.91	49.51	5.8	2.42
4	5.4	2.33	39.77	3.4	1.85
5	3.0	1.74	29.75	2.0	1.42

By Linear Regression of Y on X

Slope , mw = **0.0525** **Intercept, bw =** **-0.1849**

Correlation coefficient* = **0.9980**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.27**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 9-Apr-22

Checked by: Henry Leung Signature: Date: 9-Apr-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/07/0034

Project No. AM6 - Park Central

Date: 4-Mar-22 Next Due Date: 4-May-22 Operator: SK

Equipment No.: A-01-07 Model No.: GS2310 Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	294.3	Pressure, Pa (mmHg)	760.8

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.6	3.57	60.76	8.6	2.95
2	9.3	3.07	52.25	6.4	2.55
3	7.6	2.78	47.28	4.8	2.21
4	4.9	2.23	38.04	3.2	1.80
5	3.0	1.74	29.86	2.1	1.46

By Linear Regression of Y on X

Slope , mw = **0.0488** **Intercept, bw =** **-0.0352**

Correlation coefficient* = **0.9972**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.20**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 4-Mar-22

Checked by: Henry Leung Signature: Date: 4-Mar-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/07/0035

Project No. AM6 - Park Central

Date: 4-May-22 Next Due Date: 4-Jul-22 Operator: SK

Equipment No.: A-01-07 Model No.: GS2310 Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	297.6	Pressure, Pa (mmHg)	760.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.1	3.62	61.59	8.9	2.99
2	9.6	3.10	52.78	6.6	2.57
3	7.9	2.81	47.92	5.0	2.24
4	5.2	2.28	38.96	3.4	1.85
5	3.4	1.85	31.58	2.3	1.52

By Linear Regression of Y on X

Slope , mw = **0.0494** **Intercept, bw =** **-0.0668**

Correlation coefficient* = **0.9979**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.22**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 4-May-22

Checked by: Henry Leung Signature: Date: 4-May-22

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Laser Dust Monitor

Date of Calibration 29-Mar-22

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 29-May-22

Model No.: LD-3B

Serial No.: 2Y6194

Equipment No.: SA-01-02

Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03

Before Sensitivity Adjustment 578

Tisch Calibration Orifice No.: 3864

After Sensitivity Adjustment 578

Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute **X-axis**	Mass concentration (μg/m^3) **Y-axis**
1	4500	75.0	152.0
2	3980	66.3	133.0
3	3220	53.7	109.0
Average		**65.0**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.0068**

Intercept, bw = **0.8941**

Correlation coefficient* = **0.9992**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μg/m3)] **2.0**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Laser Dust Monitor

Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 29-Jul-22

Model No.: LD-3B

Serial No.: 2Y6194

Equipment No.: SA-01-02

Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03

Before Sensitivity Adjustment 578

Tisch Calibration Orifice No.: 3864

After Sensitivity Adjustment 578

Calibration of 1 hr TSP

Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute **X-axis**	Mass concentration ($\mu g/m^3$) **Y-axis**
1	4200	70.0	175.0
2	3700	61.7	155.0
3	3000	50.0	130.0
Average		**60.6**	**153.3**

By Linear Regression of Y on X

Slope , mw = **2.2431**

Intercept, bw = **17.5000**

Correlation coefficient* = **0.9995**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μ g/m3)] **2.5**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Limited)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 8Y2374
Equipment No.: SA-01-04
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 652
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 652

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	72.0	152.0
2	65.5	133.0
3	54.0	109.0
Average	**63.8**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.3541** **Intercept, bw =** **-18.9343**

Correlation coefficient* = **0.9958**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	63.8
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 8Y2374

Equipment No.: SA-01-04 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 652

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 652

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	73.0	155.0
2	66.0	137.0
3	55.0	118.0
Average	**64.7**	**136.7**

By Linear Regression of Y on X

Slope , mw = **2.0263** **Intercept, bw =** **5.6316**

Correlation coefficient* = **0.9937**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	136.7
Particaulate Concentration by Dust Meter (µg/m^3)	64.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 8Y2373
Equipment No.: SA-01-05
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 657
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 657

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	65.0	152.0
2	58.0	133.0
3	50.5	109.0
Average	**57.8**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.9683** **Intercept, bw =** **-40.3336**

Correlation coefficient* = **0.9989**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	57.8
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)]	**2.3**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 8Y2373

Equipment No.: SA-01-05 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 657

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 657

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	70.0	156.0
2	63.0	139.0
3	52.0	117.0
Average	**61.7**	**137.3**

By Linear Regression of Y on X

Slope , mw = **2.1518** **Intercept, bw =** **4.6377**

Correlation coefficient* = **0.9986**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	137.3
Particaulate Concentration by Dust Meter (µg/m^3)	61.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.2**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 972777
Equipment No.: SA-01-06
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 645
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 645

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	69.0	152.0
2	62.0	133.0
3	54.5	109.0
Average	**61.8**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.9683** **Intercept, bw =** **-52.2068**

Correlation coefficient* = **0.9989**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	61.8
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 972777

Equipment No.: SA-01-06 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 645

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 645

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	75.0	160.0
2	68.0	145.0
3	55.0	115.0
Average	**66.0**	**140.0**

By Linear Regression of Y on X

Slope , mw = **2.2573** **Intercept, bw =** **-8.9806**

Correlation coefficient* = **0.9998**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	140.0
Particaulate Concentration by Dust Meter (µg/m^3)	66.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 972778
Equipment No.: SA-01-07
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 735 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	72.0	152.0
2	63.0	133.0
3	54.0	109.0
Average	**63.0**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.3889** **Intercept, bw =** **-19.1667**

Correlation coefficient* = **0.9978**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	63.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 972778

Equipment No.: SA-01-07 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 735 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	75.0	157.0
2	66.0	136.0
3	53.0	113.0
Average	**64.7**	**135.3**

By Linear Regression of Y on X

Slope , mw = **1.9837** **Intercept, bw =** **7.0572**

Correlation coefficient* = **0.9969**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	135.3
Particaulate Concentration by Dust Meter (µg/m^3)	64.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 972779
Equipment No.: SA-01-08
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 744 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 744 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	69.0	152.0
2	60.5	133.0
3	52.0	109.0
Average	**60.5**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.5294** **Intercept, bw =** **-21.6961**

Correlation coefficient* = **0.9978**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	60.5
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)]	**2.2**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 972779

Equipment No.: SA-01-08 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 744 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 744 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	76.0	158.0
2	65.0	137.0
3	54.0	114.0
Average	**65.0**	**136.3**

By Linear Regression of Y on X

Slope , mw = **2.0000** **Intercept, bw =** **6.3333**

Correlation coefficient* = **0.9997**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	136.3
Particaulate Concentration by Dust Meter (µg/m^3)	65.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 972780
Equipment No.: SA-01-09
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 739 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 739 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	69.0	152.0
2	61.0	133.0
3	53.0	109.0
Average	**61.0**	**131.3**

By Linear Regression of Y on X

Slope , mw = **2.6875** **Intercept, bw =** **-32.6042**

Correlation coefficient* = **0.9978**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	61.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.2**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 972780

Equipment No.: SA-01-09 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 739 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 739 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	73.0	163.0
2	65.5	147.0
3	52.0	117.0
Average	**63.5**	**142.3**

By Linear Regression of Y on X

Slope , mw = **2.1943** **Intercept, bw =** **2.9978**

Correlation coefficient* = **0.9999**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	142.3
Particaulate Concentration by Dust Meter (µg/m^3)	63.5
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.2**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Mar-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-May-22
Model No.: LD-5R
Serial No.: 972781
Equipment No.: SA-01-10
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 734 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	74.0	152.0
2	63.5	133.0
3	48.0	109.0
Average	**61.8**	**131.3**

By Linear Regression of Y on X

Slope , mw = **1.6459** **Intercept, bw =** **29.5628**

Correlation coefficient* = **0.9991**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	131.3
Particaulate Concentration by Dust Meter (µg/m^3)	61.8
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-May-22

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 29-Jul-22

Model No.: LD-5R

Serial No.: 972781

Equipment No.: SA-01-10 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 734 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	78.0	157.0
2	66.0	136.0
3	53.0	110.0
Average	**65.7**	**134.3**

By Linear Regression of Y on X

Slope , mw = **1.8817** **Intercept, bw =** **10.7708**

Correlation coefficient* = **0.9993**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	134.3
Particaulate Concentration by Dust Meter (µg/m^3)	65.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.0**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

Certificate of Calibration - Wind Monitoring Station

Description:	Yau Lai Estate, Bik Lai House
Manufacturer:	Davis Instruments
Model No.:	Davis7440
Serial No.:	MC01010A44
Equipment No.:	SA-03-04
Date of Calibration	19-Feb-2022
Next Due Date	19-Aug-2022

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	D = V1 – V2
0.0	0.0	0.0
1.5	1.5	0.0
2.5	2.5	0.0
4.2	4.3	-0.1

2. Performance check of Wind Direction

Wind Direction (°)		Difference D (°)
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer

2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by: _____ Wong Shing Kwai

Approved by: _____ Henry Leung

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00164 Issue Date : 25 Jan 2022
Application No. : HP00042

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-08-12

Manufacturer: : SVANTEK

Other information :

Model No.	SVAN 957
Serial No.	23851
Microphone No.	17204

Date Received : 19 Jan 2022

Test Period : 21 Jan 2022 to 21 Jan 2022

Test Requested : Performance checking for Sound Level Meter

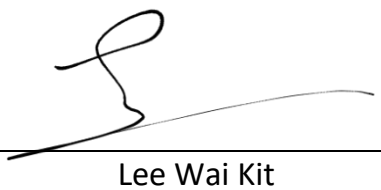
Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED



Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00164 Issue Date : 25 Jan 2022
Application No. : HP00042

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+0.1	± 1.5
114.0	114.2	+0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00145 Issue Date : 04 Nov 2021
Application No. : HP00029

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-03

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	570188
Microphone No.	570608

Date Received : 26 Oct 2021

Test Period : 26 Oct 2021 to 02 Nov 2021

Test Requested : Performance checking for Sound Level Meter

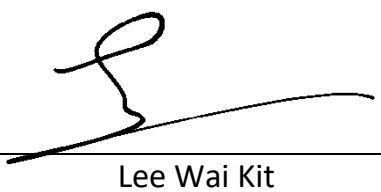
Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED



Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00145 Issue Date : 04 Nov 2021
Application No. : HP00029

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	93.9	-0.1	± 1.5
114.0	114.0	0.0	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00149 Issue Date : 16 Nov 2021
Application No. : HP00031

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-04

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580238
Microphone No.	590073

Date Received : 05 Nov 2021

Test Period : 08 Nov 2021 to 12 Nov 2021

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00149 Issue Date : 16 Nov 2021
Application No. : HP00031

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	93.7	-0.3	± 1.5
114.0	114.0	0.0	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00171 Issue Date : 01 Apr 2022
Application No. : HP00046

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-05

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580287
Microphone No.	570610

Date Received : 25 Mar 2022

Test Period : 30 Mar 2022 to 30 Mar 2022

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00171 Issue Date : 01 Apr 2022
Application No. : HP00046

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.0	0.0	± 1.5
114.0	114.2	+0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00150 Issue Date : 16 Nov 2021
Application No. : HP00032

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-13-01

Manufacturer: : SOUNDTEK

Other information :

Model No.	ST-120
Serial No.	181001608

Date Received : 05 Nov 2021

Test Period : 08 Nov 2021 to 12 Nov 2021

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00150 Issue Date : 16 Nov 2021
Application No. : HP00032

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	570188
Microphone No.	570608
Equipment No.	N-12-03

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+0.1	± 0.3
114.0	114.0	0.0	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00187 Issue Date : 28 Apr 2022
Application No. : HP00069

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be YSI EXO1 Multi-parameter Sonde.

Equipment No.: : SW-08-166

Manufacturer: : YSI Incorporated, a Xylem brand

Other information :

Description:	Serial No.
- EXO Optical DO Sensor, Ti	17K101625
- EXO conductivity/Temperature Sensor, Ti	17H103448
- EXO Turbidity Sensor, Ti	17K100333
- EXO pH Sensor Assembly, Guarded, Ti	17B100260

Date Received : 22 Apr 2022

Test Period : 25 Apr 2022 to 28 Apr 2022

Test Requested : Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Test Method : According to manufacturer instruction manual, APHA 23rd Ed 4500-O G

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The results relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00187 Issue Date : 28 Apr 2022
Application No. : HP00069

Certificate of Calibration

Test Result :

Conductivity performance checking

Expected Reading (mS/cm)	Instrument Readings (mS/cm)	Acceptance Criteria	Comment
146.9	144.9	140-154	Pass
1412	1438	1341-1483	Pass
6667	6693	6334-7000	Pass
12890	12887	12246-13535	Pass
58670	59252	55737-61604	Pass

Temperature performance checking

Expected Reading (℃)	Instrument Readings (℃)	Acceptance Criteria	Comment
10.0	10.725	±2.0	Pass
25.0	25.450	±2.0	Pass
35.0	34.224	±2.0	Pass

pH performance checking

Expected Reading (pH unit)	Instrument Readings (pH unit)	Acceptance Criteria	Comment
4.01	4.05	4.0 ± 0.2	Pass
7.00	7.02	7.0 ± 0.2	Pass
10.01	10.01	10.0 ± 0.2	Pass

D.O. performance checking

Expected Reading	Instrument Readings (mg/L)	Acceptance Criteria	Comment
0.00	0.22	--	--
9.00	8.99	±0.20	Pass

Turbidity performance checking

Expected Reading(NTU)	Instrument Readings (NTU)	Acceptance Criteria	Comment
0	0.29	--	--
5	5.03	4.5-5.5	Pass
50	50.25	45-55	Pass
100	99.35	95-105	Pass

Note : "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

- End of report -

APPENDIX C
WEATHER INFORMATION

Table I: Weather over the Reporting Month

May 2022				
Table I				
Day	Mean Pressure (hPa)	Air Temperature Mean (°C)	Mean Relative Humidity (%)	Total Rainfall (mm)
1	1012.6	20.7	89.0	32.4
2	1014.6	18.5	84.0	23.4
3	1015.8	22.3	62.0	0.0
4	1014.3	24.6	63.0	0.0
5	1012.6	25.2	73.0	0.0
6	1012.4	25.5	76.0	0.0
7	1013.0	25.4	77.0	0.8
8	1013.2	25.0	70.0	Trace
9	1012.3	25.6	75.0	Trace
10	1009.7	25.7	88.0	1.4
11	1007.8	25.0	95.0	61.4
12	1006.0	25.8	91.0	123.5
13	1005.2	25.5	92.0	107.1
14	1008.2	24.6	93.0	5.0
15	1009.8	22.6	91.0	26.2
16	1012.4	20.0	85.0	4.7
17	1013.6	22.4	72.0	0.0
18	1013.8	23.9	52.0	0.0
19	1011.9	25.8	64.0	0.0
20	1009.2	26.9	76.0	0.0
21	1007.8	26.9	78.0	0.0
22	1007.3	25.0	83.0	0.6
23	1007.6	24.0	90.0	11.2
24	1009.2	24.4	93.0	10.3
25	1007.7	25.3	91.0	1.3
26	1004.7	26.7	88.0	2.4
27	1004.3	27.4	89.0	24.7
28	1005.5	28.7	81.0	Trace
29	1005.8	29.1	79.0	Trace
30	1005.9	29.2	78.0	Trace
31	1006.8	28.2	82.0	0.1

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
1 May 2022	12:00 AM	SW	0.0
1 May 2022	1:00 AM	SW	1.3
1 May 2022	2:00 AM	SW	0.9
1 May 2022	3:00 AM	SW	0.9
1 May 2022	4:00 AM	ENE	0.9
1 May 2022	5:00 AM	ENE	0.4
1 May 2022	6:00 AM	ENE	0.9
1 May 2022	7:00 AM	ENE	0.4
1 May 2022	8:00 AM	WSW	0.9
1 May 2022	9:00 AM	NNE	0.9
1 May 2022	10:00 AM	ENE	0.9
1 May 2022	11:00 AM	ENE	0.9
1 May 2022	12:00 PM	ENE	2.2
1 May 2022	1:00 PM	SE	0.9
1 May 2022	2:00 PM	ENE	0.4
1 May 2022	3:00 PM	NNE	1.8
1 May 2022	4:00 PM	NNE	2.2
1 May 2022	5:00 PM	ENE	0.9
1 May 2022	6:00 PM	ENE	1.3
1 May 2022	7:00 PM	ENE	0.4
1 May 2022	8:00 PM	ENE	0.4
1 May 2022	9:00 PM	ENE	0.9
1 May 2022	10:00 PM	NNE	0.4
1 May 2022	11:00 PM	NNE	0.4
2 May 2022	12:00 AM	NNE	0.9
2 May 2022	1:00 AM	SSW	0.4
2 May 2022	2:00 AM	SSW	0.9
2 May 2022	3:00 AM	SW	0.9
2 May 2022	4:00 AM	NE	0.4
2 May 2022	5:00 AM	S	0.4
2 May 2022	6:00 AM	SSW	0.9
2 May 2022	7:00 AM	NE	0.9
2 May 2022	8:00 AM	SW	0.9
2 May 2022	9:00 AM	NNE	0.4
2 May 2022	10:00 AM	NE	1.3
2 May 2022	11:00 AM	NE	1.8
2 May 2022	12:00 PM	NNE	2.2
2 May 2022	1:00 PM	ENE	1.8
2 May 2022	2:00 PM	ENE	1.3
2 May 2022	3:00 PM	NNE	1.3
2 May 2022	4:00 PM	NE	1.3
2 May 2022	5:00 PM	NNE	1.3
2 May 2022	6:00 PM	NE	1.3
2 May 2022	7:00 PM	SSW	0.9
2 May 2022	8:00 PM	SSE	0.9
2 May 2022	9:00 PM	SW	0.4

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
2 May 2022	10:00 PM	SSW	0.4
2 May 2022	11:00 PM	E	0.9
3 May 2022	12:00 AM	ENE	0.9
3 May 2022	1:00 AM	NE	0.9
3 May 2022	2:00 AM	NE	1.3
3 May 2022	3:00 AM	NNE	0.9
3 May 2022	4:00 AM	SSE	0.4
3 May 2022	5:00 AM	SE	0.4
3 May 2022	6:00 AM	NNE	0.4
3 May 2022	7:00 AM	NNE	0.9
3 May 2022	8:00 AM	NNE	0.9
3 May 2022	9:00 AM	SSW	0.4
3 May 2022	10:00 AM	NNE	0.4
3 May 2022	11:00 AM	SSW	0.9
3 May 2022	12:00 PM	NE	0.9
3 May 2022	1:00 PM	ENE	1.3
3 May 2022	2:00 PM	NNE	2.2
3 May 2022	3:00 PM	NNE	0.9
3 May 2022	4:00 PM	NNE	0.9
3 May 2022	5:00 PM	NNE	1.3
3 May 2022	6:00 PM	ENE	1.3
3 May 2022	7:00 PM	ENE	1.8
3 May 2022	8:00 PM	ENE	0.9
3 May 2022	9:00 PM	NNE	0.9
3 May 2022	10:00 PM	NE	1.3
3 May 2022	11:00 PM	NNE	1.3
4 May 2022	12:00 AM	NNE	0.9
4 May 2022	1:00 AM	NE	1.3
4 May 2022	2:00 AM	NNE	1.3
4 May 2022	3:00 AM	NE	1.8
4 May 2022	4:00 AM	NE	1.8
4 May 2022	5:00 AM	NNE	1.8
4 May 2022	6:00 AM	NE	2.7
4 May 2022	7:00 AM	NE	2.2
4 May 2022	8:00 AM	NE	2.2
4 May 2022	9:00 AM	NE	1.8
4 May 2022	10:00 AM	NNE	1.8
4 May 2022	11:00 AM	NE	1.8
4 May 2022	12:00 PM	NNE	1.3
4 May 2022	1:00 PM	NNE	1.3
4 May 2022	2:00 PM	ENE	1.3
4 May 2022	3:00 PM	ENE	1.3
4 May 2022	4:00 PM	ENE	1.8
4 May 2022	5:00 PM	ENE	0.9
4 May 2022	6:00 PM	WSW	0.9
4 May 2022	7:00 PM	NNE	1.3

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
4 May 2022	8:00 PM	ENE	0.9
4 May 2022	9:00 PM	ENE	1.3
4 May 2022	10:00 PM	ENE	1.3
4 May 2022	11:00 PM	SE	0.9
5 May 2022	12:00 AM	ENE	1.8
5 May 2022	1:00 AM	NNE	1.8
5 May 2022	2:00 AM	NNE	0.9
5 May 2022	3:00 AM	ENE	1.8
5 May 2022	4:00 AM	ENE	0.9
5 May 2022	5:00 AM	ENE	0.9
5 May 2022	6:00 AM	ENE	0.4
5 May 2022	7:00 AM	ENE	1.3
5 May 2022	8:00 AM	NNE	0.4
5 May 2022	9:00 AM	ENE	1.8
5 May 2022	10:00 AM	ENE	1.8
5 May 2022	11:00 AM	ENE	1.8
5 May 2022	12:00 PM	NNE	1.8
5 May 2022	1:00 PM	NE	2.2
5 May 2022	2:00 PM	ENE	1.8
5 May 2022	3:00 PM	ENE	1.8
5 May 2022	4:00 PM	NE	1.3
5 May 2022	5:00 PM	NNE	1.8
5 May 2022	6:00 PM	NE	1.3
5 May 2022	7:00 PM	NNE	1.3
5 May 2022	8:00 PM	NE	1.3
5 May 2022	9:00 PM	NNE	1.3
5 May 2022	10:00 PM	ENE	0.4
5 May 2022	11:00 PM	S	0.4
6 May 2022	12:00 AM	SW	0.9
6 May 2022	1:00 AM	SW	0.4
6 May 2022	2:00 AM	ENE	0.9
6 May 2022	3:00 AM	ENE	0.9
6 May 2022	4:00 AM	ENE	0.9
6 May 2022	5:00 AM	ENE	1.8
6 May 2022	6:00 AM	ENE	1.8
6 May 2022	7:00 AM	NNE	1.8
6 May 2022	8:00 AM	ENE	0.9
6 May 2022	9:00 AM	ENE	1.3
6 May 2022	10:00 AM	NNE	1.3
6 May 2022	11:00 AM	NNE	0.9
6 May 2022	12:00 PM	ESE	0.9
6 May 2022	1:00 PM	NNE	1.3
6 May 2022	2:00 PM	ENE	1.3
6 May 2022	3:00 PM	ENE	1.3
6 May 2022	4:00 PM	ENE	1.8
6 May 2022	5:00 PM	NE	0.9

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
6 May 2022	6:00 PM	ENE	1.3
6 May 2022	7:00 PM	E	1.3
6 May 2022	8:00 PM	ENE	1.8
6 May 2022	9:00 PM	ENE	0.9
6 May 2022	10:00 PM	NE	2.2
6 May 2022	11:00 PM	ENE	1.8
7 May 2022	12:00 AM	ENE	1.3
7 May 2022	1:00 AM	NNE	1.8
7 May 2022	2:00 AM	NNE	1.3
7 May 2022	3:00 AM	NNE	1.3
7 May 2022	4:00 AM	NNE	0.9
7 May 2022	5:00 AM	ESE	0.9
7 May 2022	6:00 AM	ENE	0.9
7 May 2022	7:00 AM	ENE	1.3
7 May 2022	8:00 AM	NNE	0.9
7 May 2022	9:00 AM	ENE	0.4
7 May 2022	10:00 AM	NE	0.4
7 May 2022	11:00 AM	NNE	0.4
7 May 2022	12:00 PM	ENE	0.9
7 May 2022	1:00 PM	NE	0.9
7 May 2022	2:00 PM	NE	0.4
7 May 2022	3:00 PM	NE	0.4
7 May 2022	4:00 PM	ENE	0.9
7 May 2022	5:00 PM	ENE	0.9
7 May 2022	6:00 PM	ENE	1.3
7 May 2022	7:00 PM	ENE	2.2
7 May 2022	8:00 PM	WSW	0.9
7 May 2022	9:00 PM	NNE	0.9
7 May 2022	10:00 PM	ENE	1.3
7 May 2022	11:00 PM	ENE	1.3
8 May 2022	12:00 AM	ENE	1.8
8 May 2022	1:00 AM	SE	0.9
8 May 2022	2:00 AM	ENE	1.8
8 May 2022	3:00 AM	NNE	1.3
8 May 2022	4:00 AM	NNE	0.9
8 May 2022	5:00 AM	ENE	0.9
8 May 2022	6:00 AM	ENE	0.9
8 May 2022	7:00 AM	ENE	0.4
8 May 2022	8:00 AM	ENE	0.9
8 May 2022	9:00 AM	ENE	1.3
8 May 2022	10:00 AM	NNE	2.2
8 May 2022	11:00 AM	NE	1.3
8 May 2022	12:00 PM	NE	1.8
8 May 2022	1:00 PM	NNE	1.3
8 May 2022	2:00 PM	SSW	0.4
8 May 2022	3:00 PM	SW	0.9

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
8 May 2022	4:00 PM	E	0.4
8 May 2022	5:00 PM	ENE	0.9
8 May 2022	6:00 PM	ENE	1.8
8 May 2022	7:00 PM	ENE	1.3
8 May 2022	8:00 PM	NNE	0.9
8 May 2022	9:00 PM	ENE	0.4
8 May 2022	10:00 PM	NNE	0.4
8 May 2022	11:00 PM	NNE	0.9
9 May 2022	12:00 AM	S	0.4
9 May 2022	1:00 AM	SSW	0.9
9 May 2022	2:00 AM	SE	0.4
9 May 2022	3:00 AM	SSE	0.4
9 May 2022	4:00 AM	SSE	0.0
9 May 2022	5:00 AM	NNE	0.4
9 May 2022	6:00 AM	S	0.4
9 May 2022	7:00 AM	ENE	0.4
9 May 2022	8:00 AM	NE	0.4
9 May 2022	9:00 AM	SSW	0.9
9 May 2022	10:00 AM	SSW	1.3
9 May 2022	11:00 AM	SSW	0.9
9 May 2022	12:00 PM	SSW	0.9
9 May 2022	1:00 PM	SSW	0.9
9 May 2022	2:00 PM	E	0.4
9 May 2022	3:00 PM	SW	1.3
9 May 2022	4:00 PM	SW	0.4
9 May 2022	5:00 PM	NE	0.4
9 May 2022	6:00 PM	ENE	0.9
9 May 2022	7:00 PM	ENE	0.9
9 May 2022	8:00 PM	NE	1.3
9 May 2022	9:00 PM	ENE	1.8
9 May 2022	10:00 PM	ENE	0.9
9 May 2022	11:00 PM	NE	0.4
10 May 2022	12:00 AM	NNE	0.4
10 May 2022	1:00 AM	NNE	0.4
10 May 2022	2:00 AM	NNE	0.4
10 May 2022	3:00 AM	ENE	0.9
10 May 2022	4:00 AM	NE	0.4
10 May 2022	5:00 AM	ENE	1.3
10 May 2022	6:00 AM	ENE	0.9
10 May 2022	7:00 AM	NE	0.9
10 May 2022	8:00 AM	ENE	1.8
10 May 2022	9:00 AM	ENE	1.3
10 May 2022	10:00 AM	ENE	2.2
10 May 2022	11:00 AM	ENE	4.5
10 May 2022	12:00 PM	ENE	3.6
10 May 2022	1:00 PM	ENE	2.7

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
10 May 2022	2:00 PM	ENE	2.7
10 May 2022	3:00 PM	ENE	4.5
10 May 2022	4:00 PM	ENE	3.6
10 May 2022	5:00 PM	ENE	3.6
10 May 2022	6:00 PM	ENE	2.7
10 May 2022	7:00 PM	ENE	1.8
10 May 2022	8:00 PM	ENE	0.9
10 May 2022	9:00 PM	ENE	0.9
10 May 2022	10:00 PM	E	0.4
10 May 2022	11:00 PM	ENE	0.9
11 May 2022	12:00 AM	E	0.4
11 May 2022	1:00 AM	ESE	0.0
11 May 2022	2:00 AM	ESE	0.0
11 May 2022	3:00 AM	ESE	0.0
11 May 2022	4:00 AM	NE	0.4
11 May 2022	5:00 AM	ENE	0.9
11 May 2022	6:00 AM	SSE	0.4
11 May 2022	7:00 AM	E	0.9
11 May 2022	8:00 AM	ENE	0.9
11 May 2022	9:00 AM	ENE	0.9
11 May 2022	10:00 AM	ENE	1.3
11 May 2022	11:00 AM	ENE	0.9
11 May 2022	12:00 PM	ENE	0.4
11 May 2022	1:00 PM	ENE	0.4
11 May 2022	2:00 PM	ENE	0.4
11 May 2022	3:00 PM	ENE	0.9
11 May 2022	4:00 PM	ENE	0.9
11 May 2022	5:00 PM	ENE	0.4
11 May 2022	6:00 PM	ENE	0.4
11 May 2022	7:00 PM	ENE	0.9
11 May 2022	8:00 PM	ENE	0.9
11 May 2022	9:00 PM	ENE	1.3
11 May 2022	10:00 PM	ENE	2.2
11 May 2022	11:00 PM	ENE	0.9
12 May 2022	12:00 AM	ENE	0.9
12 May 2022	1:00 AM	ENE	1.3
12 May 2022	2:00 AM	NE	1.3
12 May 2022	3:00 AM	ENE	1.8
12 May 2022	4:00 AM	NNE	0.9
12 May 2022	5:00 AM	NNE	0.4
12 May 2022	6:00 AM	NNE	0.4
12 May 2022	7:00 AM	ENE	0.4
12 May 2022	8:00 AM	NE	0.9
12 May 2022	9:00 AM	NNE	0.9
12 May 2022	10:00 AM	NE	0.4
12 May 2022	11:00 AM	NE	0.4

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
12 May 2022	12:00 PM	NNE	0.9
12 May 2022	1:00 PM	NNE	0.9
12 May 2022	2:00 PM	ENE	1.3
12 May 2022	3:00 PM	NNE	2.2
12 May 2022	4:00 PM	NNE	0.9
12 May 2022	5:00 PM	ENE	0.9
12 May 2022	6:00 PM	ENE	1.3
12 May 2022	7:00 PM	ENE	1.3
12 May 2022	8:00 PM	ENE	1.8
12 May 2022	9:00 PM	ENE	0.9
12 May 2022	10:00 PM	ENE	1.3
12 May 2022	11:00 PM	ENE	1.8
13 May 2022	12:00 AM	ENE	1.3
13 May 2022	1:00 AM	ENE	1.8
13 May 2022	2:00 AM	ENE	1.3
13 May 2022	3:00 AM	NNE	0.9
13 May 2022	4:00 AM	ENE	0.9
13 May 2022	5:00 AM	ENE	1.3
13 May 2022	6:00 AM	ENE	1.8
13 May 2022	7:00 AM	ENE	1.8
13 May 2022	8:00 AM	ENE	1.8
13 May 2022	9:00 AM	ENE	1.8
13 May 2022	10:00 AM	ENE	1.3
13 May 2022	11:00 AM	ENE	2.2
13 May 2022	12:00 PM	ENE	1.8
13 May 2022	1:00 PM	ENE	1.3
13 May 2022	2:00 PM	ENE	1.3
13 May 2022	3:00 PM	NE	1.3
13 May 2022	4:00 PM	ENE	1.3
13 May 2022	5:00 PM	NE	0.9
13 May 2022	6:00 PM	NE	0.9
13 May 2022	7:00 PM	ENE	1.3
13 May 2022	8:00 PM	ENE	1.3
13 May 2022	9:00 PM	ENE	0.9
13 May 2022	10:00 PM	ENE	1.3
13 May 2022	11:00 PM	ENE	0.4
14 May 2022	12:00 AM	ENE	0.9
14 May 2022	1:00 AM	ENE	0.4
14 May 2022	2:00 AM	ENE	1.3
14 May 2022	3:00 AM	ENE	0.4
14 May 2022	4:00 AM	ENE	0.4
14 May 2022	5:00 AM	ENE	1.3
14 May 2022	6:00 AM	ENE	0.4
14 May 2022	7:00 AM	E	0.9
14 May 2022	8:00 AM	ENE	1.3
14 May 2022	9:00 AM	ENE	0.9

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
14 May 2022	10:00 AM	ENE	2.7
14 May 2022	11:00 AM	ENE	1.8
14 May 2022	12:00 PM	ENE	2.2
14 May 2022	1:00 PM	ENE	1.8
14 May 2022	2:00 PM	ENE	2.7
14 May 2022	3:00 PM	ENE	2.2
14 May 2022	4:00 PM	ENE	2.2
14 May 2022	5:00 PM	ENE	2.2
14 May 2022	6:00 PM	ENE	1.8
14 May 2022	7:00 PM	ENE	2.2
14 May 2022	8:00 PM	ENE	2.2
14 May 2022	9:00 PM	ENE	1.8
14 May 2022	10:00 PM	ENE	1.3
14 May 2022	11:00 PM	ENE	1.3
15 May 2022	12:00 AM	ENE	1.3
15 May 2022	1:00 AM	ENE	0.9
15 May 2022	2:00 AM	E	1.3
15 May 2022	3:00 AM	E	0.4
15 May 2022	4:00 AM	ENE	0.4
15 May 2022	5:00 AM	---	0.0
15 May 2022	6:00 AM	ENE	0.9
15 May 2022	7:00 AM	ESE	0.4
15 May 2022	8:00 AM	ENE	1.3
15 May 2022	9:00 AM	ENE	2.2
15 May 2022	10:00 AM	ENE	3.1
15 May 2022	11:00 AM	ENE	3.1
15 May 2022	12:00 PM	ENE	0.9
15 May 2022	1:00 PM	ENE	0.9
15 May 2022	2:00 PM	ENE	0.9
15 May 2022	3:00 PM	ENE	1.3
15 May 2022	4:00 PM	ENE	0.9
15 May 2022	5:00 PM	ENE	0.4
15 May 2022	6:00 PM	ENE	0.4
15 May 2022	7:00 PM	ENE	0.4
15 May 2022	8:00 PM	ENE	0.9
15 May 2022	9:00 PM	ENE	0.9
15 May 2022	10:00 PM	ENE	0.4
15 May 2022	11:00 PM	NE	0.4
16 May 2022	12:00 AM	SW	0.9
16 May 2022	1:00 AM	ENE	0.9
16 May 2022	2:00 AM	SW	1.3
16 May 2022	3:00 AM	ESE	2.2
16 May 2022	4:00 AM	SSE	0.9
16 May 2022	5:00 AM	WSW	0.9
16 May 2022	6:00 AM	WSW	1.3
16 May 2022	7:00 AM	WSW	1.3

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
16 May 2022	8:00 AM	E	1.8
16 May 2022	9:00 AM	WSW	0.9
16 May 2022	10:00 AM	SSW	0.9
16 May 2022	11:00 AM	SE	0.9
16 May 2022	12:00 PM	ENE	1.3
16 May 2022	1:00 PM	ENE	1.3
16 May 2022	2:00 PM	ENE	1.8
16 May 2022	3:00 PM	ENE	1.3
16 May 2022	4:00 PM	WSW	1.3
16 May 2022	5:00 PM	NNE	1.3
16 May 2022	6:00 PM	ENE	1.3
16 May 2022	7:00 PM	ENE	1.3
16 May 2022	8:00 PM	ENE	1.3
16 May 2022	9:00 PM	SE	0.9
16 May 2022	10:00 PM	ENE	0.9
16 May 2022	11:00 PM	NNE	0.9
17 May 2022	12:00 AM	NNE	0.9
17 May 2022	1:00 AM	ENE	0.9
17 May 2022	2:00 AM	ENE	0.4
17 May 2022	3:00 AM	ENE	0.9
17 May 2022	4:00 AM	ENE	0.4
17 May 2022	5:00 AM	ENE	0.9
17 May 2022	6:00 AM	NNE	0.9
17 May 2022	7:00 AM	ESE	0.4
17 May 2022	8:00 AM	E	0.9
17 May 2022	9:00 AM	S	0.9
17 May 2022	10:00 AM	SW	1.3
17 May 2022	11:00 AM	ESE	1.3
17 May 2022	12:00 PM	E	1.8
17 May 2022	1:00 PM	SE	1.3
17 May 2022	2:00 PM	E	1.8
17 May 2022	3:00 PM	ENE	1.8
17 May 2022	4:00 PM	E	1.8
17 May 2022	5:00 PM	ESE	1.3
17 May 2022	6:00 PM	ENE	1.3
17 May 2022	7:00 PM	S	0.9
17 May 2022	8:00 PM	E	0.9
17 May 2022	9:00 PM	ENE	1.8
17 May 2022	10:00 PM	ENE	2.7
17 May 2022	11:00 PM	ENE	2.2
18 May 2022	12:00 AM	ENE	1.8
18 May 2022	1:00 AM	ENE	1.8
18 May 2022	2:00 AM	E	0.9
18 May 2022	3:00 AM	SE	0.9
18 May 2022	4:00 AM	E	0.9
18 May 2022	5:00 AM	E	0.4

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
18 May 2022	6:00 AM	SW	0.9
18 May 2022	7:00 AM	WSW	0.9
18 May 2022	8:00 AM	SE	0.4
18 May 2022	9:00 AM	SE	0.9
18 May 2022	10:00 AM	ESE	1.3
18 May 2022	11:00 AM	E	2.2
18 May 2022	12:00 PM	E	1.8
18 May 2022	1:00 PM	ESE	0.9
18 May 2022	2:00 PM	SE	1.8
18 May 2022	3:00 PM	E	1.3
18 May 2022	4:00 PM	ENE	1.3
18 May 2022	5:00 PM	ENE	1.3
18 May 2022	6:00 PM	E	0.9
18 May 2022	7:00 PM	ENE	0.9
18 May 2022	8:00 PM	ENE	1.8
18 May 2022	9:00 PM	ENE	2.7
18 May 2022	10:00 PM	ENE	1.8
18 May 2022	11:00 PM	ENE	2.2
19 May 2022	12:00 AM	WSW	2.2
19 May 2022	1:00 AM	NNE	2.2
19 May 2022	2:00 AM	ENE	1.3
19 May 2022	3:00 AM	ENE	1.8
19 May 2022	4:00 AM	ENE	1.3
19 May 2022	5:00 AM	SE	2.7
19 May 2022	6:00 AM	ENE	1.8
19 May 2022	7:00 AM	NNE	0.4
19 May 2022	8:00 AM	NNE	0.9
19 May 2022	9:00 AM	ENE	0.9
19 May 2022	10:00 AM	ENE	1.3
19 May 2022	11:00 AM	ENE	1.3
19 May 2022	12:00 PM	ENE	1.3
19 May 2022	1:00 PM	ENE	1.8
19 May 2022	2:00 PM	NNE	1.3
19 May 2022	3:00 PM	SE	0.9
19 May 2022	4:00 PM	SE	1.3
19 May 2022	5:00 PM	ESE	1.3
19 May 2022	6:00 PM	E	2.7
19 May 2022	7:00 PM	ENE	1.3
19 May 2022	8:00 PM	SW	1.3
19 May 2022	9:00 PM	ENE	1.3
19 May 2022	10:00 PM	ENE	0.9
19 May 2022	11:00 PM	ENE	1.8
20 May 2022	12:00 AM	E	1.3
20 May 2022	1:00 AM	ENE	1.8
20 May 2022	2:00 AM	NE	0.4
20 May 2022	3:00 AM	ENE	1.3

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
20 May 2022	4:00 AM	ENE	1.3
20 May 2022	5:00 AM	ENE	0.9
20 May 2022	6:00 AM	SW	1.8
20 May 2022	7:00 AM	SW	1.3
20 May 2022	8:00 AM	SE	1.3
20 May 2022	9:00 AM	ESE	1.3
20 May 2022	10:00 AM	WSW	1.8
20 May 2022	11:00 AM	WSW	1.3
20 May 2022	12:00 PM	WSW	2.7
20 May 2022	1:00 PM	E	1.3
20 May 2022	2:00 PM	SW	2.2
20 May 2022	3:00 PM	SW	0.9
20 May 2022	4:00 PM	ENE	1.8
20 May 2022	5:00 PM	ENE	1.8
20 May 2022	6:00 PM	ENE	1.3
20 May 2022	7:00 PM	ENE	0.9
20 May 2022	8:00 PM	ENE	0.9
20 May 2022	9:00 PM	ENE	0.4
20 May 2022	10:00 PM	ENE	0.4
20 May 2022	11:00 PM	S	1.3
21 May 2022	12:00 AM	SW	0.9
21 May 2022	1:00 AM	NNE	1.3
21 May 2022	2:00 AM	NE	1.8
21 May 2022	3:00 AM	NE	1.3
21 May 2022	4:00 AM	NNE	0.9
21 May 2022	5:00 AM	ENE	0.9
21 May 2022	6:00 AM	ENE	0.9
21 May 2022	7:00 AM	NE	0.9
21 May 2022	8:00 AM	E	0.9
21 May 2022	9:00 AM	ENE	0.9
21 May 2022	10:00 AM	NE	1.8
21 May 2022	11:00 AM	ENE	1.8
21 May 2022	12:00 PM	NE	1.3
21 May 2022	1:00 PM	NE	1.3
21 May 2022	2:00 PM	NE	1.3
21 May 2022	3:00 PM	ENE	1.3
21 May 2022	4:00 PM	ENE	1.3
21 May 2022	5:00 PM	ENE	1.3
21 May 2022	6:00 PM	NE	1.3
21 May 2022	7:00 PM	NE	1.3
21 May 2022	8:00 PM	ENE	0.9
21 May 2022	9:00 PM	ENE	1.3
21 May 2022	10:00 PM	ENE	0.9
21 May 2022	11:00 PM	ENE	1.3
22 May 2022	12:00 AM	ENE	1.8
22 May 2022	1:00 AM	ENE	1.3

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
22 May 2022	2:00 AM	ENE	1.8
22 May 2022	3:00 AM	ENE	0.9
22 May 2022	4:00 AM	E	0.4
22 May 2022	5:00 AM	SSW	0.9
22 May 2022	6:00 AM	ENE	1.3
22 May 2022	7:00 AM	ENE	1.8
22 May 2022	8:00 AM	ENE	1.8
22 May 2022	9:00 AM	ENE	2.2
22 May 2022	10:00 AM	ENE	1.8
22 May 2022	11:00 AM	NE	1.3
22 May 2022	12:00 PM	ENE	1.8
22 May 2022	1:00 PM	ENE	3.6
22 May 2022	2:00 PM	ENE	4.9
22 May 2022	3:00 PM	ENE	5.4
22 May 2022	4:00 PM	ENE	4.5
22 May 2022	5:00 PM	ENE	3.6
22 May 2022	6:00 PM	ENE	3.1
22 May 2022	7:00 PM	ENE	3.1
22 May 2022	8:00 PM	NE	1.8
22 May 2022	9:00 PM	ENE	0.4
22 May 2022	10:00 PM	NNE	0.4
22 May 2022	11:00 PM	NE	0.4
23 May 2022	12:00 AM	NE	0.4
23 May 2022	1:00 AM	ENE	0.4
23 May 2022	2:00 AM	NE	0.4
23 May 2022	3:00 AM	NNE	0.0
23 May 2022	4:00 AM	NNE	0.4
23 May 2022	5:00 AM	NNE	0.9
23 May 2022	6:00 AM	NE	0.4
23 May 2022	7:00 AM	ENE	0.9
23 May 2022	8:00 AM	ENE	0.9
23 May 2022	9:00 AM	ENE	0.9
23 May 2022	10:00 AM	ENE	0.9
23 May 2022	11:00 AM	WSW	0.9
23 May 2022	12:00 PM	NNE	0.9
23 May 2022	1:00 PM	ENE	0.9
23 May 2022	2:00 PM	ENE	1.8
23 May 2022	3:00 PM	ENE	0.9
23 May 2022	4:00 PM	SE	1.3
23 May 2022	5:00 PM	ENE	1.3
23 May 2022	6:00 PM	NNE	0.9
23 May 2022	7:00 PM	NNE	0.9
23 May 2022	8:00 PM	ENE	1.3
23 May 2022	9:00 PM	ENE	0.9
23 May 2022	10:00 PM	ENE	1.3
23 May 2022	11:00 PM	ENE	1.8

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
24 May 2022	12:00 AM	ENE	1.3
24 May 2022	1:00 AM	NNE	1.3
24 May 2022	2:00 AM	NNE	0.9
24 May 2022	3:00 AM	NE	0.9
24 May 2022	4:00 AM	NNE	1.3
24 May 2022	5:00 AM	NNE	0.9
24 May 2022	6:00 AM	NNE	0.9
24 May 2022	7:00 AM	SE	0.4
24 May 2022	8:00 AM	NNE	1.3
24 May 2022	9:00 AM	NNE	0.9
24 May 2022	10:00 AM	NE	1.3
24 May 2022	11:00 AM	ENE	1.3
24 May 2022	12:00 PM	ENE	0.9
24 May 2022	1:00 PM	ENE	1.3
24 May 2022	2:00 PM	ENE	1.3
24 May 2022	3:00 PM	NNE	1.3
24 May 2022	4:00 PM	NNE	1.3
24 May 2022	5:00 PM	ENE	1.3
24 May 2022	6:00 PM	NNE	0.9
24 May 2022	7:00 PM	NNE	0.9
24 May 2022	8:00 PM	NNE	1.8
24 May 2022	9:00 PM	NNE	1.3
24 May 2022	10:00 PM	NE	1.3
24 May 2022	11:00 PM	NE	1.3
25 May 2022	12:00 AM	ENE	0.9
25 May 2022	1:00 AM	NE	0.9
25 May 2022	2:00 AM	NE	0.9
25 May 2022	3:00 AM	NNE	0.9
25 May 2022	4:00 AM	NE	0.4
25 May 2022	5:00 AM	NNE	0.9
25 May 2022	6:00 AM	NE	0.9
25 May 2022	7:00 AM	NE	0.9
25 May 2022	8:00 AM	NE	1.3
25 May 2022	9:00 AM	NE	0.9
25 May 2022	10:00 AM	NE	0.9
25 May 2022	11:00 AM	NNE	0.9
25 May 2022	12:00 PM	NE	0.9
25 May 2022	1:00 PM	NNE	0.9
25 May 2022	2:00 PM	ENE	4.5
25 May 2022	3:00 PM	NNE	1.3
25 May 2022	4:00 PM	NNE	1.3
25 May 2022	5:00 PM	ENE	0.9
25 May 2022	6:00 PM	ENE	0.9
25 May 2022	7:00 PM	ENE	0.9
25 May 2022	8:00 PM	ENE	1.3
25 May 2022	9:00 PM	ENE	0.9

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
25 May 2022	10:00 PM	N	0.4
25 May 2022	11:00 PM	ENE	0.4
26 May 2022	12:00 AM	NNE	0.4
26 May 2022	1:00 AM	ENE	0.9
26 May 2022	2:00 AM	NNE	0.9
26 May 2022	3:00 AM	ENE	0.4
26 May 2022	4:00 AM	NE	0.4
26 May 2022	5:00 AM	NE	0.9
26 May 2022	6:00 AM	NE	0.9
26 May 2022	7:00 AM	ENE	1.3
26 May 2022	8:00 AM	NNE	2.2
26 May 2022	9:00 AM	ENE	0.9
26 May 2022	10:00 AM	ENE	0.9
26 May 2022	11:00 AM	ENE	1.3
26 May 2022	12:00 PM	ENE	1.3
26 May 2022	1:00 PM	WSW	1.8
26 May 2022	2:00 PM	NNE	0.9
26 May 2022	3:00 PM	ENE	0.9
26 May 2022	4:00 PM	ENE	0.9
26 May 2022	5:00 PM	ENE	1.3
26 May 2022	6:00 PM	SE	0.9
26 May 2022	7:00 PM	ENE	2.2
26 May 2022	8:00 PM	NNE	0.4
26 May 2022	9:00 PM	NNE	0.9
26 May 2022	10:00 PM	ENE	0.9
26 May 2022	11:00 PM	ENE	0.4
27 May 2022	12:00 AM	ENE	0.9
27 May 2022	1:00 AM	ENE	1.3
27 May 2022	2:00 AM	ENE	0.4
27 May 2022	3:00 AM	NNE	0.4
27 May 2022	4:00 AM	ENE	0.9
27 May 2022	5:00 AM	NNE	0.4
27 May 2022	6:00 AM	E	0.9
27 May 2022	7:00 AM	E	0.4
27 May 2022	8:00 AM	SW	0.0
27 May 2022	9:00 AM	ENE	1.3
27 May 2022	10:00 AM	WSW	1.3
27 May 2022	11:00 AM	SW	0.4
27 May 2022	12:00 PM	SW	0.9
27 May 2022	1:00 PM	SW	0.4
27 May 2022	2:00 PM	SW	0.4
27 May 2022	3:00 PM	S	0.4
27 May 2022	4:00 PM	SSW	0.9
27 May 2022	5:00 PM	SSW	0.4
27 May 2022	6:00 PM	SSW	0.4
27 May 2022	7:00 PM	SSE	0.4

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
27 May 2022	8:00 PM	SSE	0.4
27 May 2022	9:00 PM	ENE	0.4
27 May 2022	10:00 PM	ENE	0.9
27 May 2022	11:00 PM	ENE	0.9
28 May 2022	12:00 AM	ENE	0.9
28 May 2022	1:00 AM	E	0.0
28 May 2022	2:00 AM	E	0.4
28 May 2022	3:00 AM	E	0.4
28 May 2022	4:00 AM	SE	0.4
28 May 2022	5:00 AM	SE	0.4
28 May 2022	6:00 AM	SE	0.0
28 May 2022	7:00 AM	ESE	0.4
28 May 2022	8:00 AM	ENE	1.3
28 May 2022	9:00 AM	ENE	1.8
28 May 2022	10:00 AM	SW	0.4
28 May 2022	11:00 AM	SW	1.8
28 May 2022	12:00 PM	SW	0.9
28 May 2022	1:00 PM	SW	0.9
28 May 2022	2:00 PM	SW	0.9
28 May 2022	3:00 PM	SE	0.4
28 May 2022	4:00 PM	E	0.4
28 May 2022	5:00 PM	ENE	1.3
28 May 2022	6:00 PM	ENE	2.2
28 May 2022	7:00 PM	ESE	0.9
28 May 2022	8:00 PM	ENE	1.8
28 May 2022	9:00 PM	ENE	0.4
28 May 2022	10:00 PM	ENE	0.4
28 May 2022	11:00 PM	SE	0.9
29 May 2022	12:00 AM	ENE	1.3
29 May 2022	1:00 AM	ENE	1.8
29 May 2022	2:00 AM	NNE	0.9
29 May 2022	3:00 AM	NNE	0.9
29 May 2022	4:00 AM	NNE	0.9
29 May 2022	5:00 AM	NNE	0.9
29 May 2022	6:00 AM	NNE	1.3
29 May 2022	7:00 AM	NE	1.8
29 May 2022	8:00 AM	NNE	1.8
29 May 2022	9:00 AM	ENE	1.8
29 May 2022	10:00 AM	NNE	1.8
29 May 2022	11:00 AM	NE	1.8
29 May 2022	12:00 PM	NNE	1.3
29 May 2022	1:00 PM	NNE	1.8
29 May 2022	2:00 PM	NNE	1.3
29 May 2022	3:00 PM	ENE	1.3
29 May 2022	4:00 PM	ENE	1.8
29 May 2022	5:00 PM	NNE	0.9

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	Time	Direction	Wind Speed m-s
29 May 2022	6:00 PM	NE	1.3
29 May 2022	7:00 PM	NE	1.8
29 May 2022	8:00 PM	NE	1.3
29 May 2022	9:00 PM	NE	1.3
29 May 2022	10:00 PM	E	0.9
29 May 2022	11:00 PM	NE	1.8
30 May 2022	12:00 AM	NNE	1.3
30 May 2022	1:00 AM	NNE	2.2
30 May 2022	2:00 AM	NE	1.8
30 May 2022	3:00 AM	NNE	1.8
30 May 2022	4:00 AM	ENE	0.9
30 May 2022	5:00 AM	E	0.9
30 May 2022	6:00 AM	ENE	0.9
30 May 2022	7:00 AM	NNE	1.3
30 May 2022	8:00 AM	NE	1.3
30 May 2022	9:00 AM	ENE	0.9
30 May 2022	10:00 AM	ENE	1.3
30 May 2022	11:00 AM	NNE	1.3
30 May 2022	12:00 PM	NE	1.3
30 May 2022	1:00 PM	NE	1.3
30 May 2022	2:00 PM	ENE	1.3
30 May 2022	3:00 PM	E	0.9
30 May 2022	4:00 PM	E	1.3
30 May 2022	5:00 PM	NE	1.3
30 May 2022	6:00 PM	ENE	1.3
30 May 2022	7:00 PM	ENE	0.9
30 May 2022	8:00 PM	NE	0.9
30 May 2022	9:00 PM	NE	0.9
30 May 2022	10:00 PM	NE	0.9
30 May 2022	11:00 PM	NNE	0.9
31 May 2022	12:00 AM	NNE	0.9
31 May 2022	1:00 AM	NNE	0.9
31 May 2022	2:00 AM	NNE	0.4
31 May 2022	3:00 AM	NNE	0.9
31 May 2022	4:00 AM	NE	0.4
31 May 2022	5:00 AM	NNE	0.9
31 May 2022	6:00 AM	NE	0.4
31 May 2022	7:00 AM	NNE	0.9
31 May 2022	8:00 AM	NNE	0.9
31 May 2022	9:00 AM	ENE	0.9
31 May 2022	10:00 AM	ENE	1.8
31 May 2022	11:00 AM	ENE	0.9
31 May 2022	12:00 PM	NE	1.3
31 May 2022	1:00 PM	ENE	1.8
31 May 2022	2:00 PM	ENE	1.3
31 May 2022	3:00 PM	ENE	1.3

Appendix C - Weather Conditions during Monitoring Period

May 2022			
Table II: Wind Speed and Directions			
Noveber 2021	**Time**	**Direction**	**Wind Speed m-s**
31 May 2022	4:00 PM	SW	1.3
31 May 2022	5:00 PM	SW	1.8
31 May 2022	6:00 PM	SSW	0.9
31 May 2022	7:00 PM	SW	0.9
31 May 2022	8:00 PM	ENE	0.9
31 May 2022	9:00 PM	ENE	0.4
31 May 2022	10:00 PM	NE	0.0
31 May 2022	11:00 PM	NE	0.0

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Impact Air Quality and Noise Monitoring Schedule (May 2022)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-May	2-May	3-May	4-May	5-May	6-May	7-May
			1 hr TSP X3 [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Daytime (07:00-19:00)]** [CM1, CM2, CM3, CM4, CM5] [CM6(A), CM7(A), CM8(A))] **Noise [Evening time (19:00-23:00)]** [CM6(A)]		**Noise [Evening time (19:00-23:00)]** [CM1, CM2, CM3] **Noise [Night-time (23:00-07:00)]** [CM1, CM2, CM3] **24 hr TSP**	
8-May	9-May	10-May	11-May	12-May	13-May	14-May
		1 hr TSP X3 [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Daytime (07:00-19:00)]** [CM1, CM2, CM3, CM4, CM5] [CM6(A), CM7(A), CM8(A))] **Noise [Evening time (19:00-23:00)]** [CM6(A)]		**24 hr TSP**	**1 hr TSP X3** [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Evening time (19:00-23:00)]** [CM1, CM2, CM3] **Noise [Night-time (23:00-07:00)]** [CM1, CM2, CM3]	
15-May	16-May	17-May	18-May	19-May	20-May	21-May
			24 hr TSP	**1 hr TSP X3** [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Daytime (07:00-19:00)]** [CM1, CM2, CM3, CM4, CM5] [CM6(A), CM7(A), CM8(A))] **Noise [Evening time (19:00-23:00)]** [CM6(A)]	**Noise [Evening time (19:00-23:00)]** [CM1, CM2, CM3] **Noise [Night-time (23:00-07:00)]** [CM1, CM2, CM3]	
22-May	23-May	24-May	25-May	26-May	27-May	28-May
		24 hr TSP	**1 hr TSP X3** [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Daytime (07:00-19:00)]** [CM1, CM2, CM3, CM4, CM5] [CM6(A), CM7(A), CM8(A))] **Noise [Evening time (19:00-23:00)]** [CM6(A)]		**Noise [Evening time (19:00-23:00)]** [CM1, CM2, CM3] **Noise [Night-time (23:00-07:00)]** [CM1, CM2, CM3]	
29-May	**30-May**	**31-May**				
	24 hr TSP	**1 hr TSP X3** [AM1, AM2, AM3] [AM4,AM5(A), AM6(A)] **Noise [Daytime (07:00-19:00)]** [CM1, CM2, CM3, CM4, CM5] [CM6(A), CM7(A), CM8(A))] **Noise [Evening time (19:00-23:00)]** [CM6(A)]				

Air Quality Monitoring Station

AM1 - Tin Hau Temple
AM2 - Sai Tso Wan Recreation Ground
AM3 - Yau Lai Estate Bik Lai House
AM4(1) - Sitting-out Area at Cha Kwo Ling Village
AM4(A)(2) - Cha Kwo Ling Public Cargo Working Area Administrative Office
AM5(A) - Tseung Kwan O DSD Desilting Compound
AM6(A) - Park Central, L1/F Open Space Area

Noise Monitoring Station

CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong
CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong
CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong
CM4 - Tin Hau Temple, Cha Kwo Ling
CM5 - CCC Kei Faat Primary School, Yau Tong
CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores
CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores
CM8(A) - Park Central, L1/F Open Space Area

Note (1) For 1-hour TSP monitoring; (2) For 24-hour TSP monitoring

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Tentative Impact Water Quality Monitoring Schedule (May 2022)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-May	2-May	3-May	4-May	5-May	6-May	7-May
			Mid-Ebb 17:56 Mid-Flood 10:50		Mid-Ebb -- Mid-Flood 10:32	
8-May	9-May	10-May	11-May	12-May	13-May	14-May
			Mid-Ebb 11:11 Mid-Flood 7:33		Mid-Ebb 13:15 Mid-Flood 7:39	
15-May	16-May	17-May	18-May	19-May	20-May	21-May
	Mid-Ebb 15:38 Mid-Flood 9:01		Mid-Ebb 17:19 Mid-Flood 10:20		Mid-Ebb -- Mid-Flood 11:54	
22-May	23-May	24-May	25-May	26-May	27-May	28-May
	Mid-Ebb -- Mid-Flood 15:20		Mid-Ebb 11:36 Mid-Flood 17:54		Mid-Ebb 7:49 Mid-Flood 13:34	
29-May	30-May	31-May				
	Mid-Ebb 15:48 Mid-Flood 9:00					

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Monitoring Station:
C1, C2, G1, G2, G3, G4, M1, M2, M3, M4, M5, M6

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

APPENDIX E - 1-HOUR TSP MONITORING RESULTS

Location AM1 - Tin Hau Temple			
Date	Time	Weather	Particulate Concentration (µg/m^3)
4-May-22	9:30	Sunny	62.1
4-May-22	10:30	Sunny	78.2
4-May-22	11:30	Sunny	71.3
10-May-22	12:00	Rainly	69.3
10-May-22	13:00	Rainly	100.8
10-May-22	14:00	Rainly	65.1
13-May-22	12:15	Cloudy	85.1
13-May-22	13:15	Cloudy	73.6
13-May-22	14:15	Cloudy	80.5
19-May-22	13:00	Sunny	105.0
19-May-22	14:00	Sunny	63.0
19-May-22	15:00	Sunny	67.2
25-May-22	13:00	Fine	55.2
25-May-22	14:00	Fine	62.1
25-May-22	15:00	Fine	62.1
31-May-22	13:00	Cloudy	58.8
31-May-22	14:00	Cloudy	58.8
31-May-22	15:00	Cloudy	75.6
		Average	71.9
		Maximum	105.0
		Minimum	55.2

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
4-May-22	9:00	Sunny	35.7
4-May-22	10:00	Sunny	46.2
4-May-22	11:00	Sunny	37.8
10-May-22	9:00	Cloudy	25.2
10-May-22	10:00	Cloudy	21.0
10-May-22	11:00	Cloudy	29.4
13-May-22	11:00	Rainly	12.6
13-May-22	12:00	Rainly	14.7
13-May-22	13:00	Rainly	10.5
19-May-22	9:00	Sunny	39.6
19-May-22	10:00	Sunny	41.8
19-May-22	11:00	Sunny	48.4
25-May-22	16:00	Sunny	25.2
25-May-22	17:00	Sunny	25.2
25-May-22	18:00	Sunny	29.4
31-May-22	9:00	Sunny	46.2
31-May-22	10:00	Sunny	37.4
31-May-22	11:00	Sunny	48.4
		Average	31.9
		Maximum	48.4
		Minimum	10.5

APPENDIX E - 1-HOUR TSP MONITORING RESULTS

Location AM3 - Yau Lai Estate Bik Lai House			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
4-May-22	15:10	Sunny	64.4
4-May-22	16:10	Sunny	59.8
4-May-22	17:10	Sunny	71.3
10-May-22	15:00	Rainly	79.8
10-May-22	16:00	Rainly	81.9
10-May-22	17:00	Rainly	96.6
13-May-22	15:20	Cloudy	82.8
13-May-22	16:20	Cloudy	66.7
13-May-22	17:20	Cloudy	69.0
19-May-22	9:00	Sunny	75.6
19-May-22	10:00	Sunny	54.6
19-May-22	11:00	Sunny	54.6
25-May-22	9:00	Fine	73.6
25-May-22	10:00	Fine	59.8
25-May-22	11:00	Fine	57.5
31-May-22	9:00	Cloudy	107.1
31-May-22	10:00	Cloudy	50.4
31-May-22	11:00	Cloudy	46.2
		Average	69.5
		Maximum	107.1
		Minimum	46.2

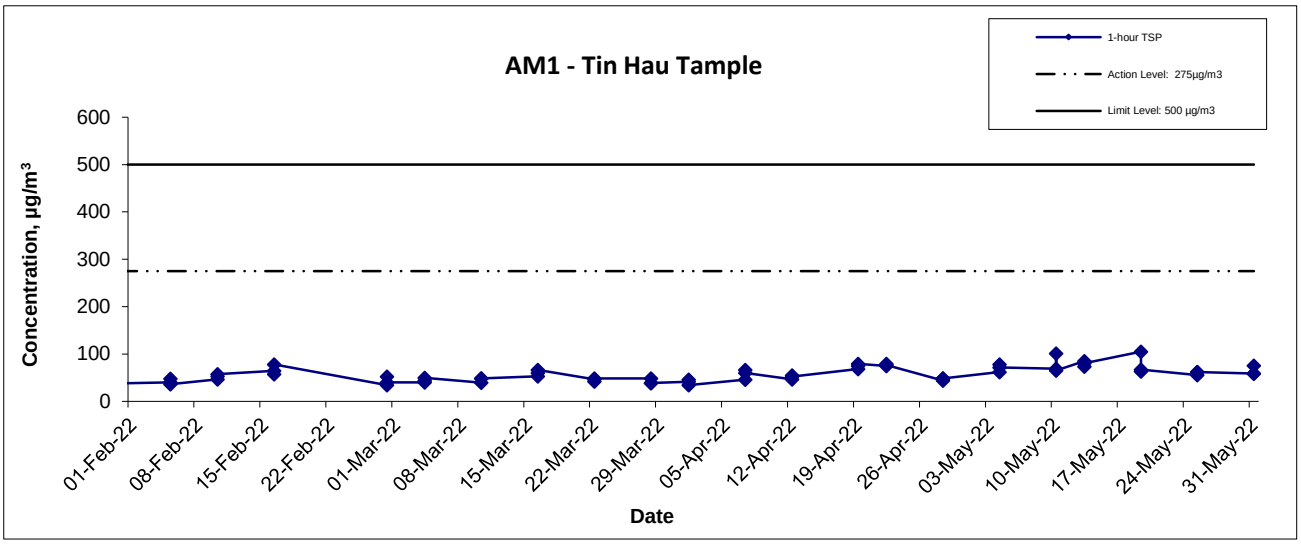
Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
4-May-22	12:50	Sunny	69.0
4-May-22	13:50	Sunny	87.4
4-May-22	14:50	Sunny	59.8
10-May-22	9:00	Rainly	117.6
10-May-22	10:00	Rainly	98.7
10-May-22	11:00	Rainly	84.0
13-May-22	9:30	Cloudy	64.4
13-May-22	10:30	Cloudy	71.3
13-May-22	11:30	Cloudy	78.2
19-May-22	16:00	Sunny	84.0
19-May-22	17:00	Sunny	84.0
19-May-22	18:00	Sunny	105.0
25-May-22	16:00	Fine	41.4
25-May-22	17:00	Fine	57.5
25-May-22	18:00	Fine	50.6
31-May-22	16:00	Cloudy	50.4
31-May-22	17:00	Cloudy	67.2
31-May-22	18:00	Cloudy	63.0
		Average	74.1
		Maximum	117.6
		Minimum	41.4

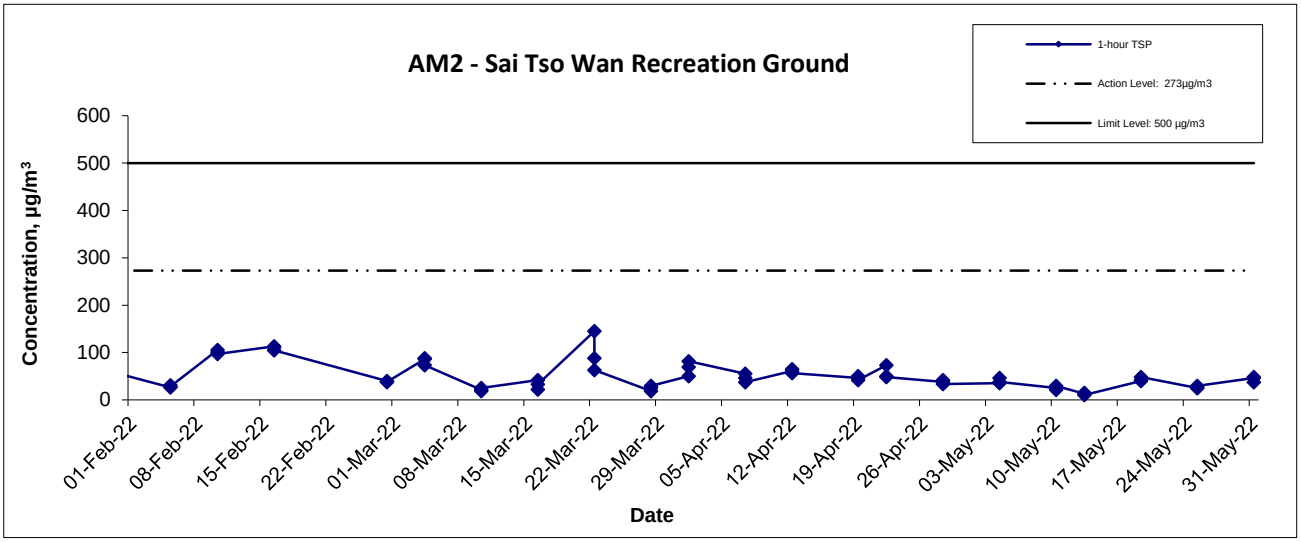
APPENDIX E - 1-HOUR TSP MONITORING RESULTS

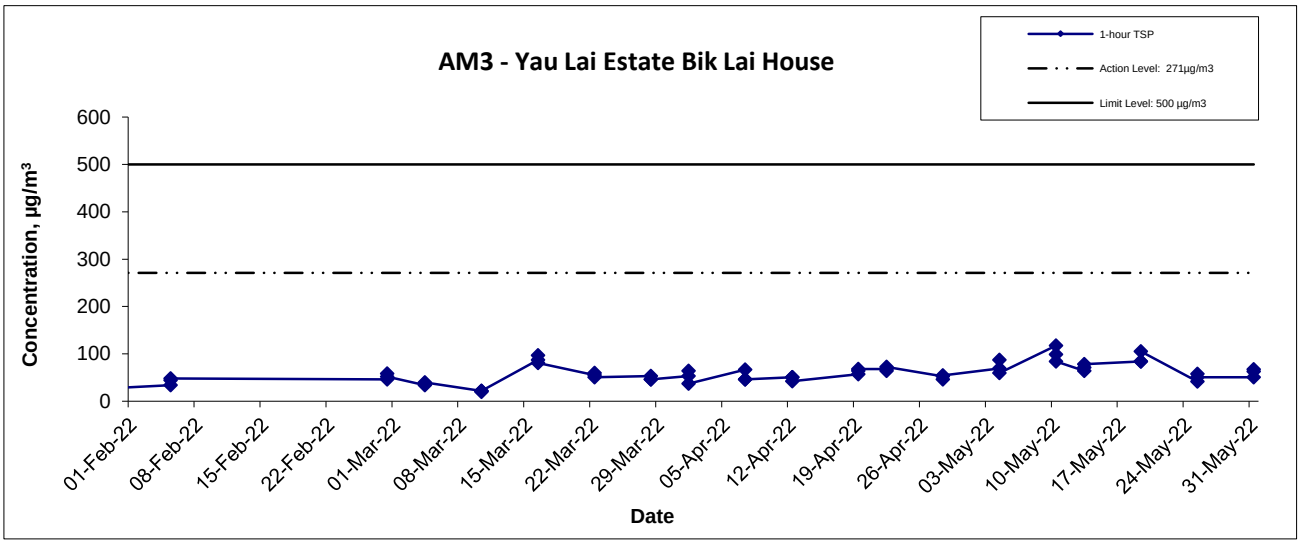
Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
4-May-22	16:00	Sunny	33.6
4-May-22	17:00	Sunny	39.9
4-May-22	18:00	Sunny	21.0
10-May-22	13:00	Cloudy	31.5
10-May-22	14:00	Cloudy	31.5
10-May-22	15:00	Cloudy	35.7
13-May-22	14:00	Rainly	21.0
13-May-22	15:00	Rainly	27.3
13-May-22	16:00	Rainly	16.8
19-May-22	16:00	Sunny	55.0
19-May-22	17:00	Sunny	63.8
19-May-22	18:00	Sunny	46.2
25-May-22	9:00	Sunny	33.6
25-May-22	10:00	Sunny	46.2
25-May-22	11:00	Sunny	46.2
31-May-22	16:00	Sunny	52.8
31-May-22	17:00	Sunny	46.2
31-May-22	18:00	Sunny	44.0
		Average	38.5
		Maximum	63.8
		Minimum	16.8

Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration (µg/m^3)
4-May-22	13:00	Sunny	46.2
4-May-22	14:00	Sunny	54.6
4-May-22	15:00	Sunny	52.5
10-May-22	16:00	Cloudy	21.0
10-May-22	17:00	Cloudy	18.9
10-May-22	18:00	Cloudy	31.5
13-May-22	15:15	Rainly	14.7
13-May-22	16:15	Rainly	21.0
13-May-22	17:15	Rainly	14.7
19-May-22	13:00	Sunny	61.6
19-May-22	14:00	Sunny	57.2
19-May-22	15:00	Sunny	63.8
25-May-22	13:00	Sunny	21.0
25-May-22	14:00	Sunny	37.8
25-May-22	15:00	Sunny	50.4
31-May-22	13:00	Sunny	52.8
31-May-22	14:00	Sunny	48.4
31-May-22	15:00	Sunny	57.2
		Average	40.3
		Maximum	63.8
		Minimum	14.7

1-hr TSP Concentration Levels







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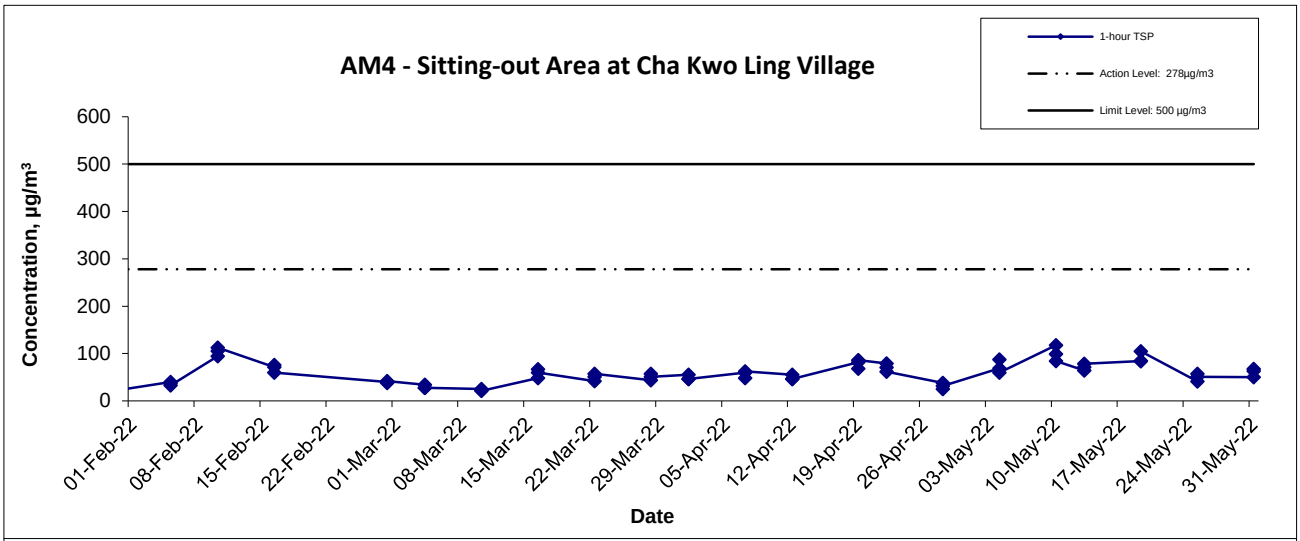
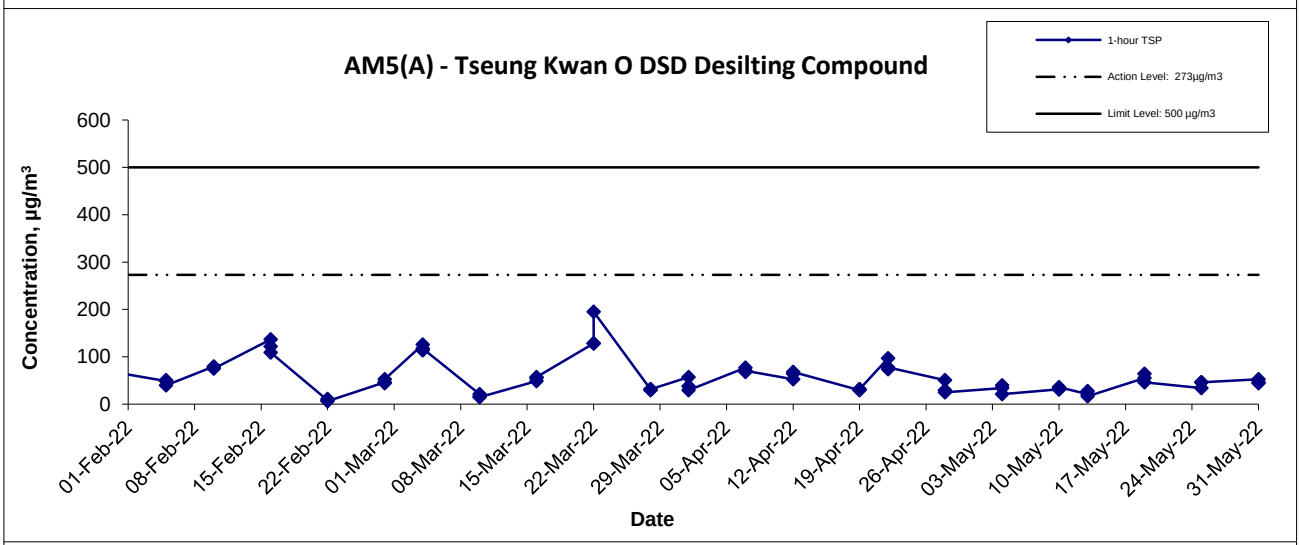
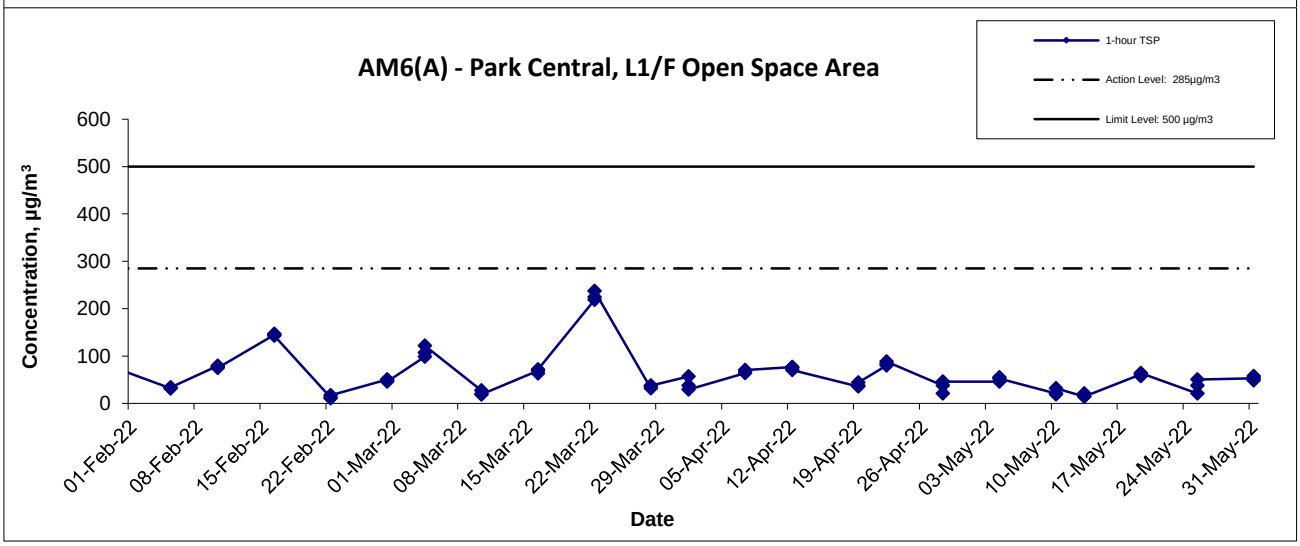
1-hr TSP Concentration Levels







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APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - 24-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Rainy	3.3417	3.4937	0.1520	9978.5	10002.5	24.0	1.21	1.21	1.21	1744.9	87.1
12-May-22	Cloudy	3.3100	3.4106	0.1006	10002.5	10026.5	24.0	1.21	1.21	1.21	1739.6	57.8
18-May-22	Sunny	3.3661	3.5057	0.1396	10025.5	10049.5	24.0	1.22	1.21	1.21	1747.3	79.9
24-May-22	Fine	3.3053	3.3978	0.0925	10049.5	10073.5	24.0	1.21	1.21	1.21	1743.9	53.0
30-May-22	Cloudy	3.3825	3.4861	0.1036	10073.5	10097.5	24.0	1.20	1.20	1.20	1732.2	59.8
											Min	53.0
											Max	87.1
											Average	67.5

Location AM2 - Sai Tso Wan Recreation Ground

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Sunny	2.6967	2.7734	0.0767	31027.2	31051.2	24.0	1.21	1.21	1.21	1745.8	43.9
12-May-22	Rainy	2.6792	2.7290	0.0498	31051.2	31075.2	24.0	1.21	1.21	1.21	1739.5	28.6
18-May-22	Cloudy	3.3475	3.4275	0.0800	31099.3	31123.3	24.0	1.22	1.21	1.21	1747.6	45.8
24-May-22	Fine	3.3763	3.4620	0.0857	31123.3	31147.3	24.0	1.21	1.21	1.21	1744.0	49.1
30-May-22	Sunny	3.3955	3.4607	0.0652	31147.3	31171.3	24.0	1.20	1.20	1.20	1731.9	37.6
											Min	28.6
											Max	49.1
											Average	41.0

Location AM3 - Yau Lai Estate, Bik Lai House

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Rainy	3.3597	3.4663	0.1066	5465.5	5489.5	24.0	1.21	1.21	1.21	1746.5	61.0
12-May-22	Cloudy	3.3022	3.3653	0.0631	5489.5	5513.5	24.0	1.21	1.21	1.21	1739.6	36.3
18-May-22	Sunny	3.3458	3.4888	0.1430	5513.5	5537.5	24.0	1.22	1.21	1.21	1748.3	81.8
24-May-22	Fine	3.3000	3.3888	0.0888	5537.5	5561.5	24.0	1.21	1.21	1.21	1745.5	50.9
30-May-22	Cloudy	3.4195	3.5137	0.0942	5561.5	5585.5	24.0	1.20	1.20	1.20	1732.7	54.4
											Min	36.3
											Max	81.8
											Average	55.7

Location AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Rainy	3.3863	3.5229	0.1366	15463.7	15487.7	24.0	1.21	1.21	1.21	1746.3	78.2
12-May-22	Cloudy	3.3143	3.3868	0.0725	15487.7	15511.7	24.0	1.21	1.21	1.21	1740.2	41.7
18-May-22	Sunny	3.3983	3.5803	0.1820	15511.7	15535.7	24.0	1.22	1.21	1.21	1748.8	104.1
24-May-22	Fine	3.3135	3.3564	0.0429	15535.7	15559.7	24.0	1.21	1.21	1.21	1744.6	24.6
30-May-22	Cloudy	3.4176	3.5692	0.1516	15559.7	15583.7	24.0	1.20	1.20	1.20	1732.8	87.5
											Min	24.6
											Max	104.1
											Average	67.2

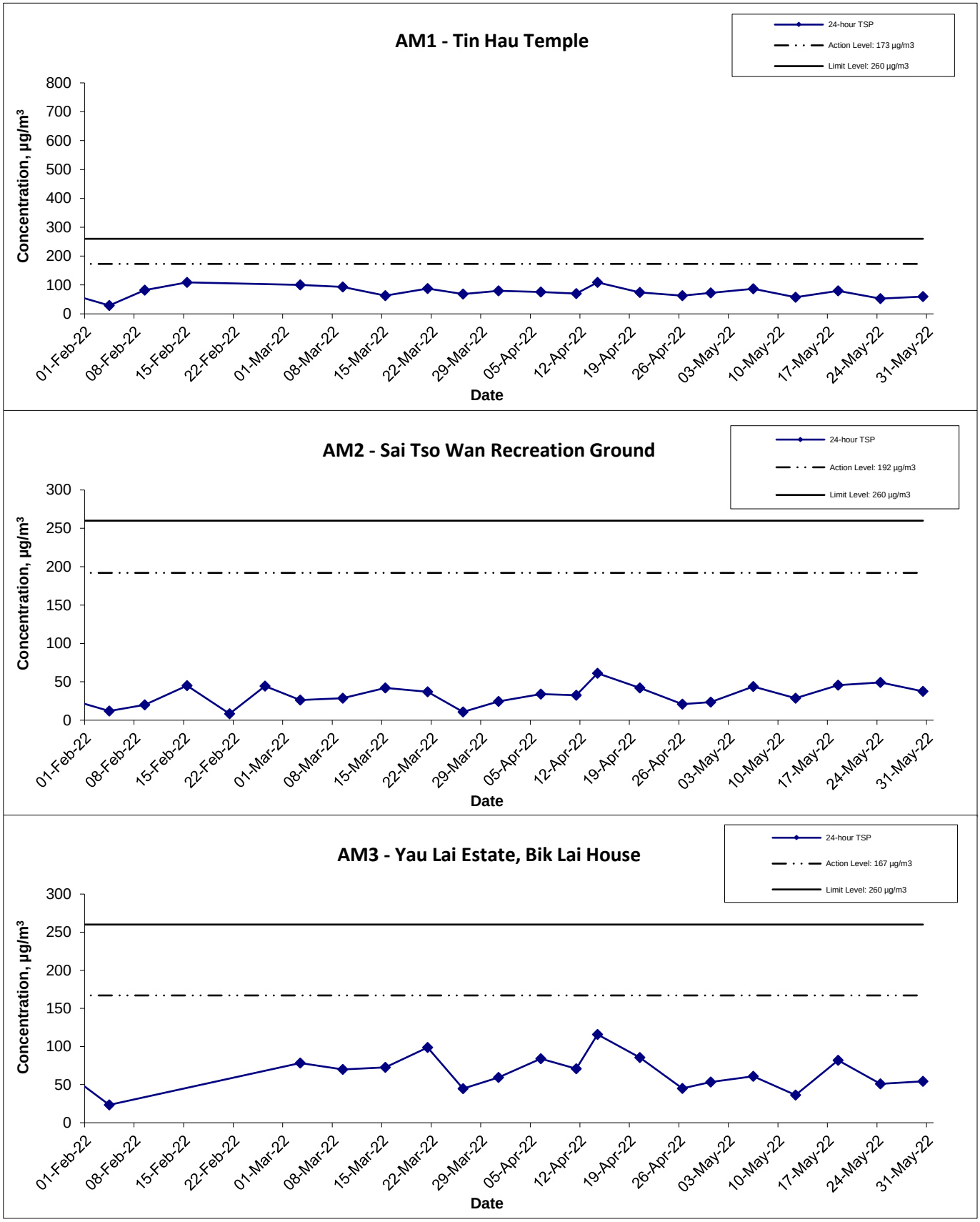
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Rainy	2.6981	2.7201	0.0220	32754.7	32778.8	24.1	1.21	1.21	1.21	1752.0	12.6
12-May-22	Rainy	3.3628	3.3794	0.0166	32778.8	32802.8	24.0	1.21	1.21	1.21	1741.4	9.5
18-May-22	Sunny	3.3347	3.3816	0.0469	32802.8	32826.8	24.0	1.22	1.21	1.21	1748.6	26.8
24-May-22	Sunny	3.3752	3.4431	0.0679	32826.8	32850.8	24.0	1.21	1.21	1.21	1745.1	38.9
30-May-22	Sunny	3.3652	3.4200	0.0548	32850.8	32874.8	24.0	1.20	1.20	1.20	1733.2	31.6
											Min	9.5
											Max	38.9
											Average	23.9

Location AM6(A) - Park Central, L1/F Open Space Area

Start Date	Weather	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
6-May-22	Sunny	2.6778	2.7126	0.0348	4644.9	4668.9	24.0	1.21	1.21	1.21	1749.1	19.9
12-May-22	Rainy	2.6793	2.7340	0.0547	4468.9	4492.9	24.0	1.21	1.21	1.21	1742.5	31.4
18-May-22	Sunny	3.3529	3.4065	0.0536	4492.9	4516.9	24.0	1.22	1.21	1.22	1750.9	30.6
24-May-22	Sunny	3.3514	3.3867	0.0353	4516.9	4540.9	24.0	1.21	1.21	1.21	1747.2	20.2
30-May-22	Sunny	3.7024	3.7406	0.0382	4540.9	4564.9	24.0	1.20	1.21	1.20	1734.6	22.0
											Min	19.9
											Max	31.4
											Average	24.8

24-hr TSP Concentration Levels



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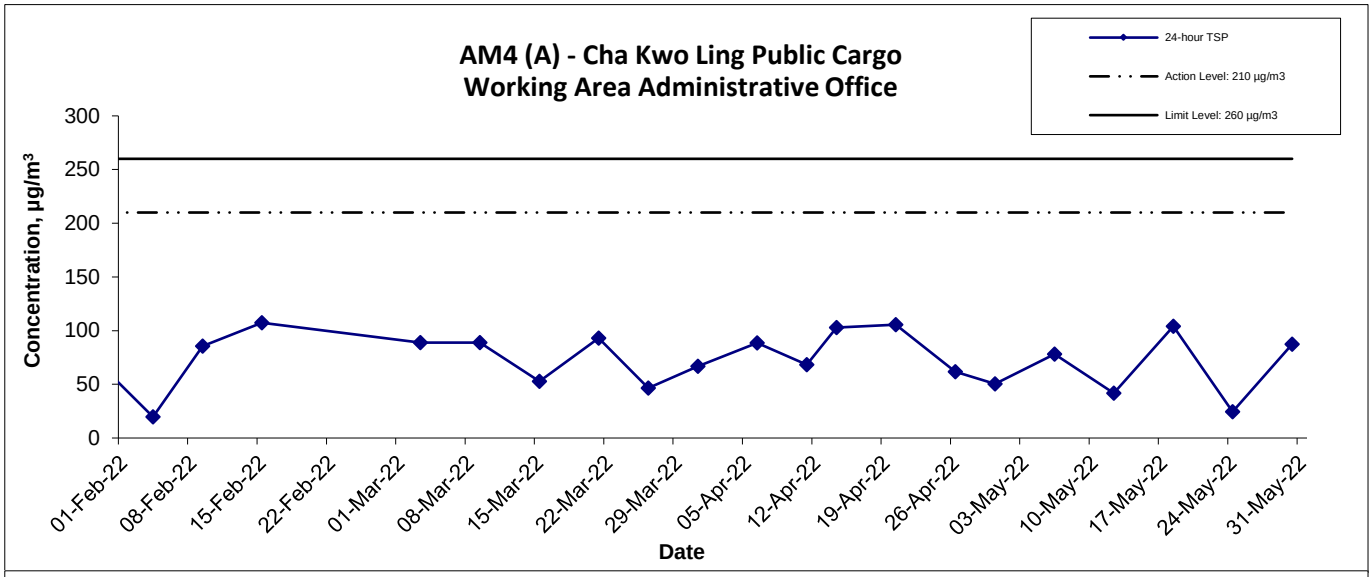
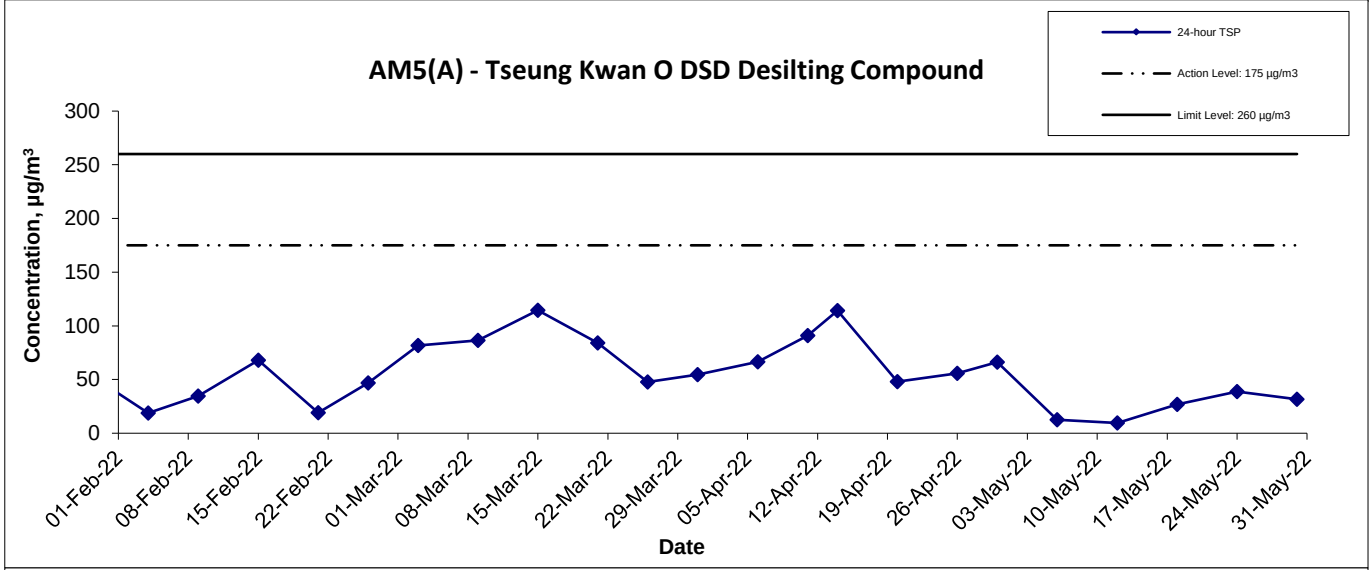
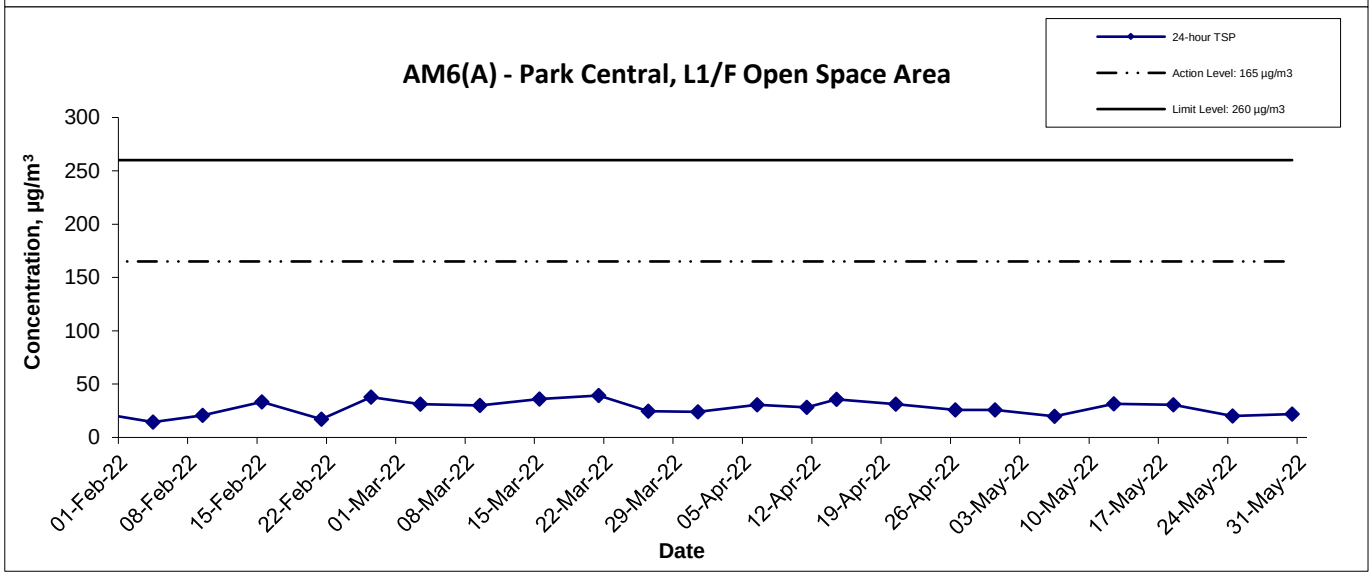
24-hr TSP Concentration Levels







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APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix G - Noise Monitoring Results

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	13:39	Sunny	72.5	75.3	69.6	65.5	72
10-May-22	14:58	Drizzle	77.9	79.6	76.8	65.5	***78***
19-May-22	9:00	Sunny	72.0	74.4	68.4	65.5	71
25-May-22	16:17	Fine	74.2	76.1	71.8	65.5	74
31-May-22	9:30	Cloudy	72.3	75.4	60.8	65.5	71

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	12:57	Sunny	72.8	74.9	68.4	63.6	72
10-May-22	16:30	Drizzle	75.4	75.5	72.9	63.6	75
19-May-22	10:00	Sunny	75.2	77.1	72.4	63.6	75
25-May-22	13:00	Fine	74.7	77.3	70.5	63.6	74
31-May-22	11:30	Cloudy	74.7	76.6	72.4	63.6	74

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	14:25	Sunny	73.4	74.5	70.0	65.6	73
10-May-22	13:30	Drizzle	70.1	70.4	69.9	65.6	68
19-May-22	11:00	Sunny	72.8	74.7	70.2	65.6	72
25-May-22	15:31	Fine	74.1	77.4	67.2	65.6	74
31-May-22	10:30	Cloudy	72.5	74.8	69.2	65.6	72

Location CM4 - Tin Hau Temple, Cha Kwo Ling

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	11:20	Sunny	62.3	65.8	59.1	62.0	51
10-May-22	11:00	Drizzle	55.7	57.2	48.3	62.0	56 Measured ≦ Baseline
19-May-22	13:30	Sunny	65.0	69.4	52.4	62.0	62
25-May-22	14:00	Fine	60.5	61.7	55.8	62.0	61 Measured ≦ Baseline
31-May-22	14:00	Cloudy	57.0	59.5	53.2	62.0	57 Measured ≦ Baseline

Location CM5 - CCC Kei Faat Primary School, Yau Tong

Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	15:17	Sunny	68.1	70.8	64.2	68.2	68 Measured ≦ Baseline
10-May-22	12:30	Drizzle	69.5	73.2	60.3	68.2	64
19-May-22	12:00	Sunny	69.1	72.5	59.0	68.2	62
25-May-22	14:49	Fine	69.4	72.2	62.5	68.2	63
31-May-22	13:00	Cloudy	70.2	72.1	66.3	68.2	66

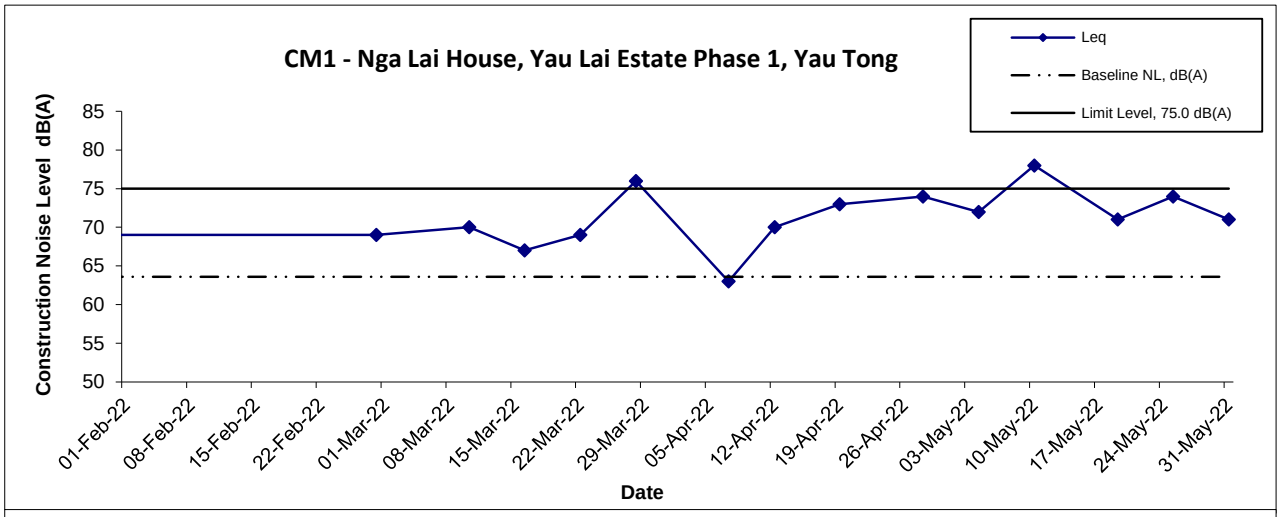
Appendix G - Noise Monitoring Results

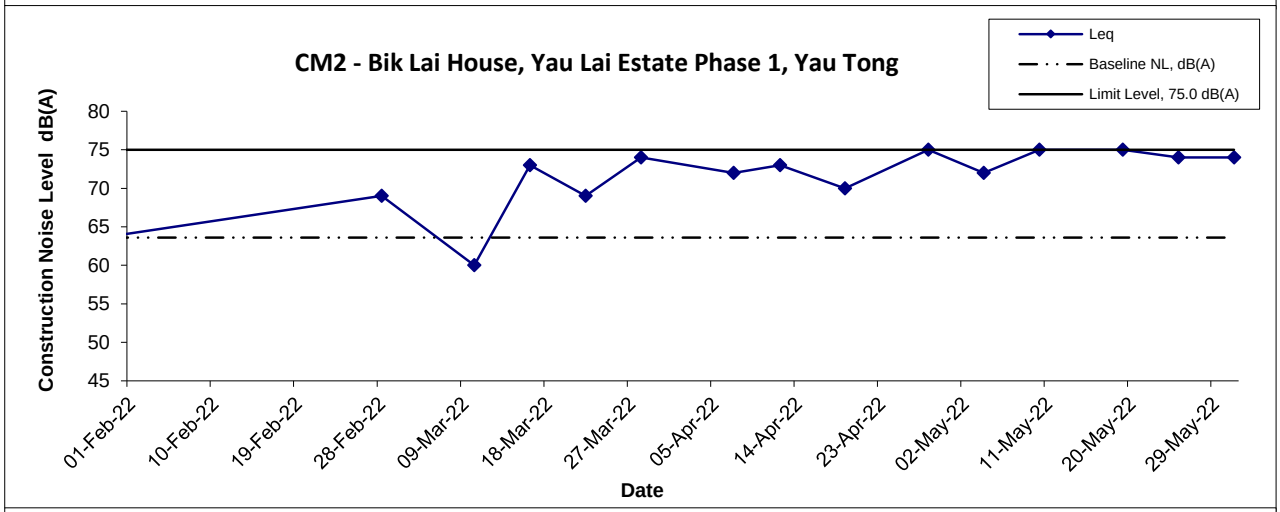
Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	10:44	Sunny	61.7	63.7	57.7	61.9	62 Measured ≦ Baseline
10-May-22	13:00	Drizzle	63.1	65.4	60.3	61.9	57
19-May-22	14:00	Sunny	66.9	69.4	63.1	61.9	65
25-May-22	10:27	Sunny	65.8	68.7	58.5	61.9	64
31-May-22	15:00	Sunny	67.3	68.6	59.4	61.9	66

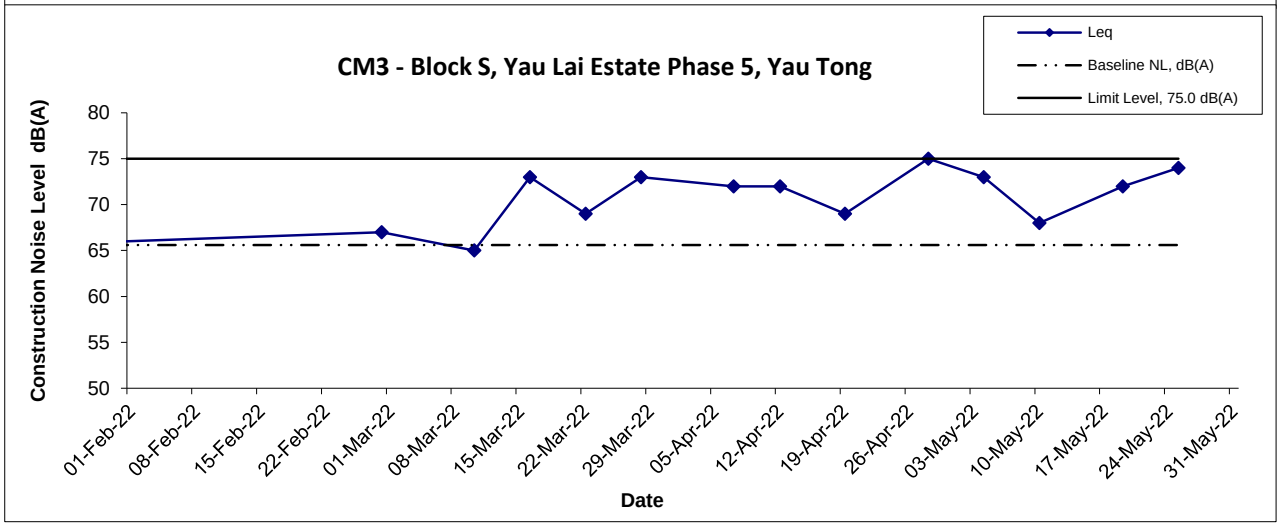
Location CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	10:45	Sunny	61.7	63.7	59.7	58.3	59
10-May-22	11:30	Drizzle	60.2	62.3	58.4	58.3	56
19-May-22	15:00	Sunny	65.7	67.6	63.3	58.3	65
25-May-22	9:51	Sunny	61.9	62.8	59.3	58.3	59
31-May-22	14:00	Sunny	66.1	70.1	59.6	58.3	65

Location CM8(A) - Park Central, L1/F Open Space Area							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
04-May-22	13:00	Sunny	66.3	68.2	64.1	69.1	66 Measured ≦ Baseline
10-May-22	10:40	Drizzle	67.0	69.7	62.8	69.1	67 Measured ≦ Baseline
19-May-22	13:00	Sunny	68.7	70.4	65.3	69.1	69 Measured ≦ Baseline
25-May-22	11:23	Sunny	63.1	66.2	60.4	69.1	63 Measured ≦ Baseline
31-May-22	13:00	Sunny	69.2	69.7	67.7	69.1	53

Noise Levels







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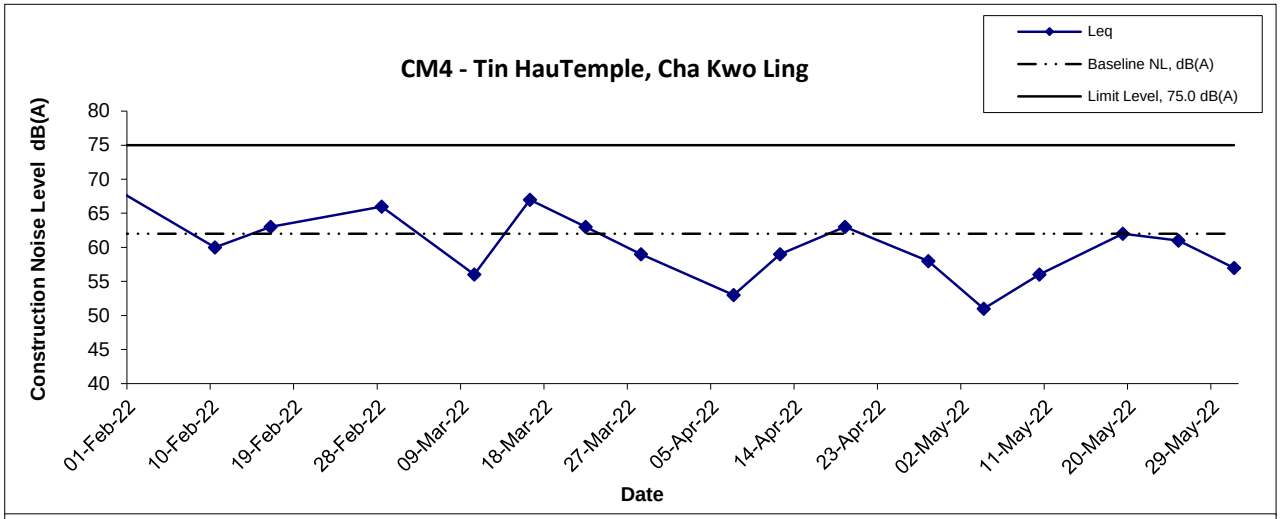
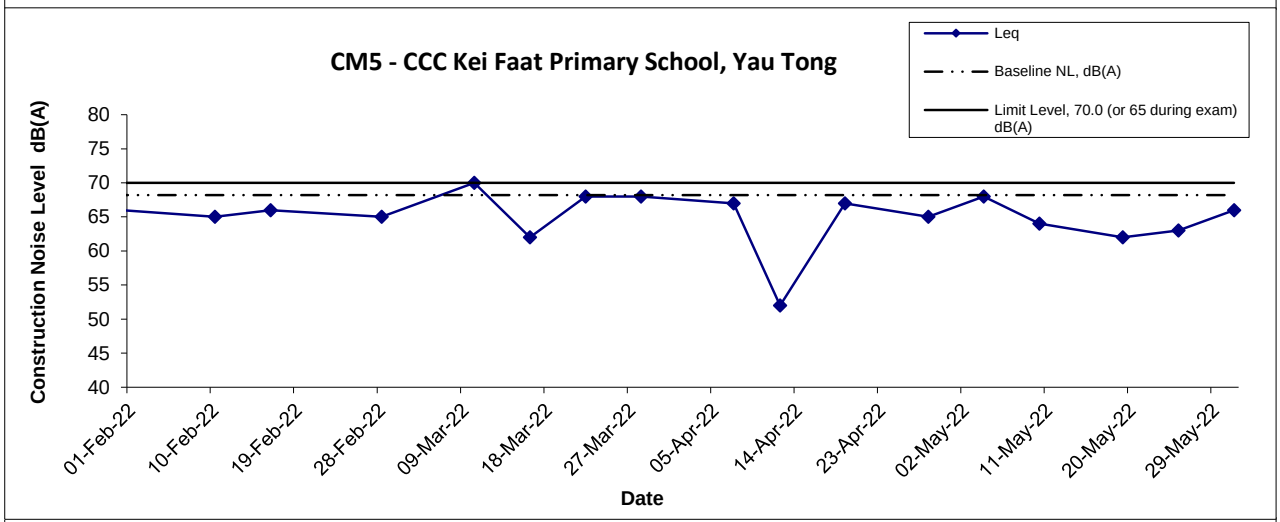
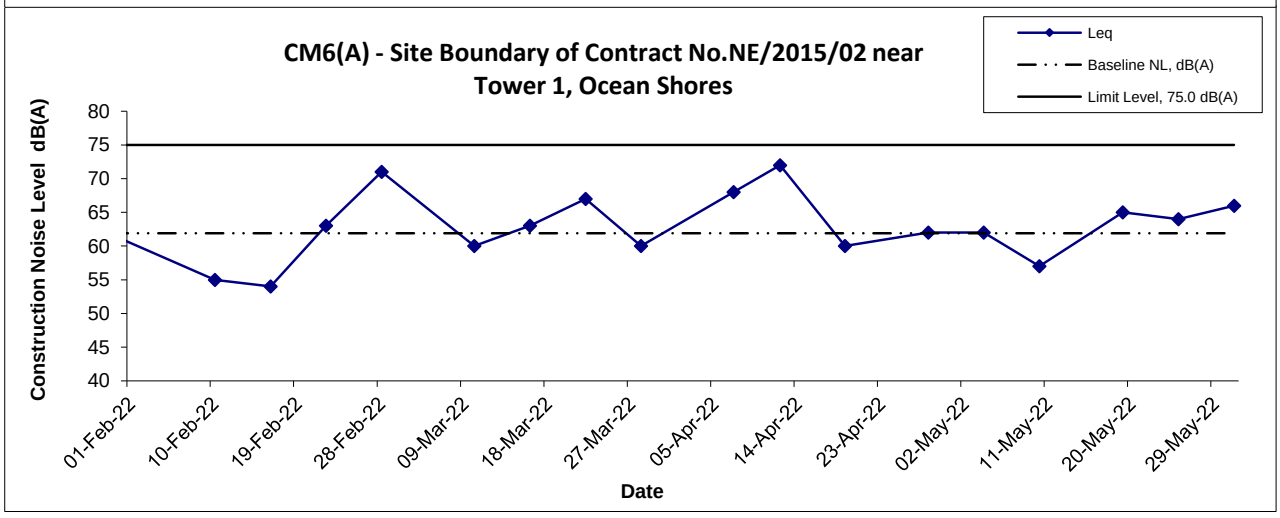
Noise Levels







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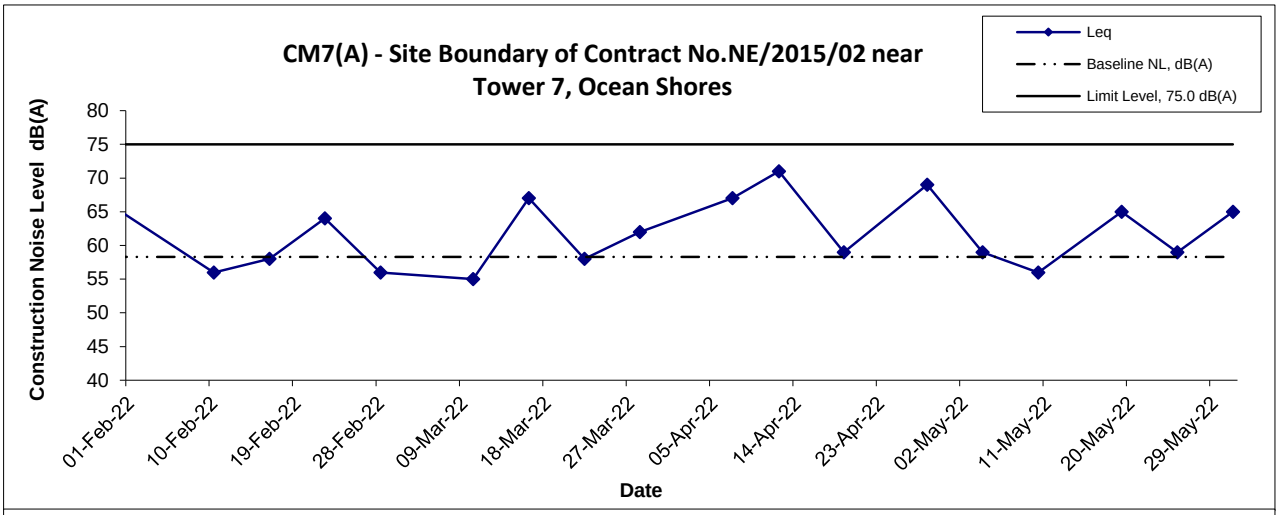
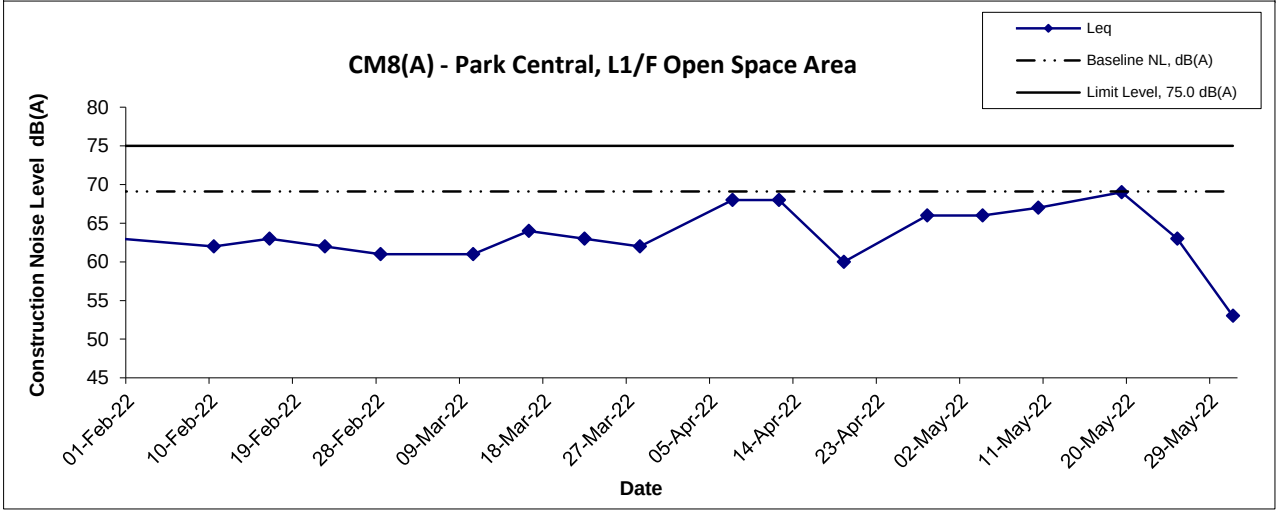
Noise Levels





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Appendix G - Noise Monitoring Results

(Restricted Hours - 19:00 to 23:00 on all other days & 07:00 to 23:00 holidays)

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	22:00	Drizzle	68.4	69.5	66.7	68.9	64.4	67
	22:05		68.8	69.8	67.3			
	22:10		69.4	70.7	67.6			
13-May-22	22:00	Drizzle	67.2	68.1	65.0	67.4		64
	22:05		66.5	67.3	62.8			
	22:10		68.2	69.5	66.4			
20-May-22	22:00	Fine	67.2	68.1	65.0	67.4		64
	22:05		66.5	67.3	62.8			
	22:10		68.2	69.5	66.4			
27-May-22	22:00	Fine	68.4	69.5	66.7	68.9		67
	22:05		68.8	69.8	67.3			
	22:10		69.4	70.7	67.6			

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	22:20	Drizzle	66.9	67.9	63.6	67.4	62.2	66
	22:25		68.2	69.7	66.6			
	22:30		67.0	68.6	65.2			
13-May-22	22:20	Drizzle	68.0	69.3	64.7	67.3		66
	22:25		66.8	68.3	65.1			
	22:30		66.9	68.4	65.1			
20-May-22	22:20	Fine	68.0	69.3	64.7	67.3		66
	22:25		66.8	68.3	65.1			
	22:30		66.9	68.4	65.1			
27-May-22	22:20	Fine	66.9	67.9	63.6	67.4		66
	22:25		68.2	69.7	66.6			
	22:30		67.0	68.6	65.2			

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	22:40	Drizzle	67.1	69.4	65.1	67.6	64.7	64
	22:45		67.5	68.8	65.3			
	22:50		68.1	69.6	65.4			
13-May-22	22:40	Drizzle	69.2	70.3	68.5	68.4		66
	22:45		68.4	69.5	66.7			
	22:50		67.5	68.8	65.3			
20-May-22	22:40	Fine	69.2	70.3	68.5	68.8		67
	22:45		68.4	69.5	66.7			
	22:50		68.8	69.6	67.5			
27-May-22	22:00	Fine	62.4	64.8	59.6	66.4		62
	22:20		67.0	68.6	65.2			
	22:40		68.1	69.6	65.4			

Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
4-May-22	19:00	Fine	55.6	57.3	54.0	55.4	60.2	60Measured ≦ Baseline
	19:05		55.5	57.2	54.0			
	19:10		55.2	57.2	53.9			
10-May-22	19:00	Fine	56.1	58.4	54.2	56.4		56Measured ≦ Baseline
	19:05		56.5	59.4	54.0			
	19:10		56.5	59.3	54.1			
19-May-22	19:00	Fine	62.7	65.1	59.8	62.5		59
	19:05		62.5	64.9	59.7			
	19:10		62.4	64.8	59.6			
25-May-22	19:00	Fine	55.3	57.1	53.3	55.3		55Measured ≦ Baseline
	19:05		55.4	57.1	53.2			
	19:10		55.2	57.7	53.5			
31-May-22	19:00	Cloudy	62.9	64.6	58.3	62.8		59
	19:05		62.8	64.5	58.3			
	19:10		62.7	64.4	58.2			

Appendix G - Noise Monitoring Results

(Restricted Hours - 2300-0700 on all days)

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	23:00	Drizzle	56.7	57.2	55.2	56.6	63.7	57Measured ≦ Baseline
	23:05		56.6	57.3	55.2			
	23:10		56.5	57.5	55.2			
13-May-22	23:10	Drizzle	58.5	59.6	57.8	57.8	63.7	58Measured ≦ Baseline
	23:15		58.0	58.3	57.3			
	23:20		56.8	57.4	56.2			
20-May-22	23:00	Fine	56.5	56.8	55.2	56.5	63.7	57Measured ≦ Baseline
	23:05		56.3	57.5	55.3			
	23:10		56.7	57.5	55.2			
27-May-22	23:00	Fine	56.7	57.2	55.2	56.6	63.7	57Measured ≦ Baseline
	23:05		56.6	57.3	55.2			
	23:10		56.5	57.5	55.2			

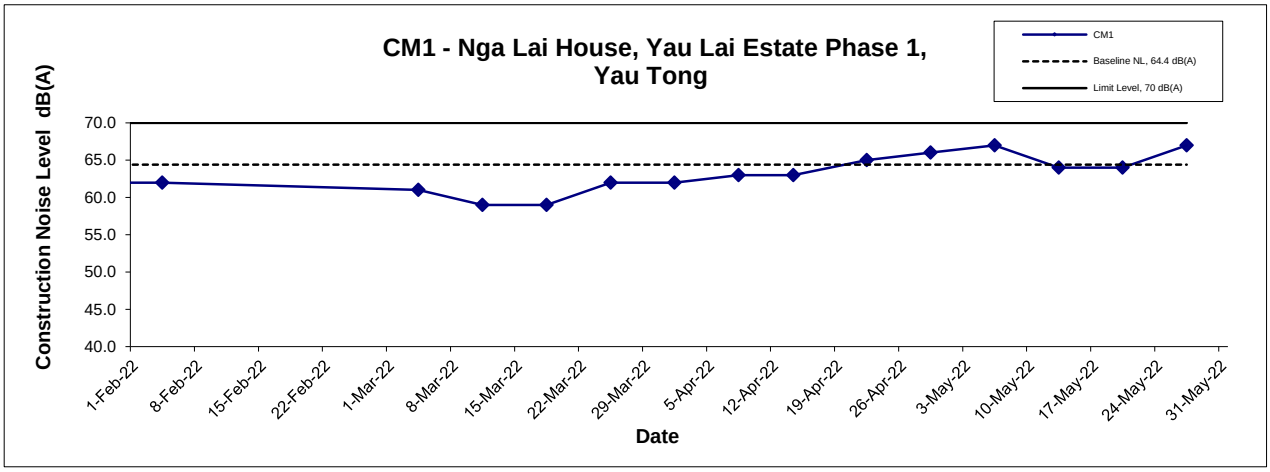
Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	23:40	Drizzle	58.3	58.9	57.1	58.8	60.8	59Measured ≦ Baseline
	23:45		59.4	60.8	57.5			
	23:50		58.5	59.6	57.3			
13-May-22	23:40	Fine	57.4	59.1	55.8	57.0	60.8	57Measured ≦ Baseline
	23:45		56.7	58.8	52.6			
	23:50		56.8	57.5	54.3			
20-May-22	23:30	Fine	58.1	58.7	57.1	58.7	60.8	59Measured ≦ Baseline
	23:35		59.4	60.5	57.6			
	23:40		58.6	59.8	57.2			
27-May-22	23:30	Fine	58.3	58.9	57.1	58.8	60.8	59Measured ≦ Baseline
	23:35		59.4	60.8	54.6			
	23:40		58.5	59.6	57.3			

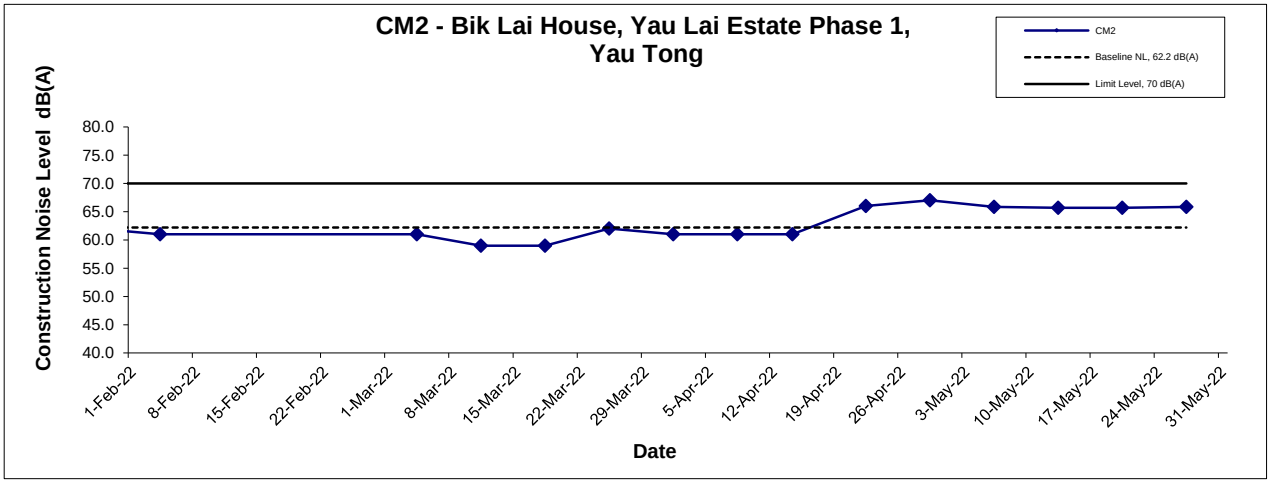
Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-May-22	0:10	Drizzle	56.7	58.8	52.6	55.4	61.8	55Measured ≦ Baseline
	0:15		54.6	56.2	52.4			
	0:20		54.6	56.1	52.5			
13-May-22	0:10	Fine	56.6	57.5	54.9	56.7	61.8	57Measured ≦ Baseline
	0:15		56.7	57.2	55.4			
	0:20		56.8	57.7	56.3			
20-May-22	0:00	Fine	56.7	59.0	52.4	55.4	61.8	55Measured ≦ Baseline
	0:05		54.6	56.2	52.7			
	0:10		54.6	56.3	53.0			
27-May-22	0:00	Fine	56.7	58.8	52.6	55.4	61.8	55Measured ≦ Baseline
	0:05		54.6	56.2	52.4			
	0:10		54.6	56.1	52.5			

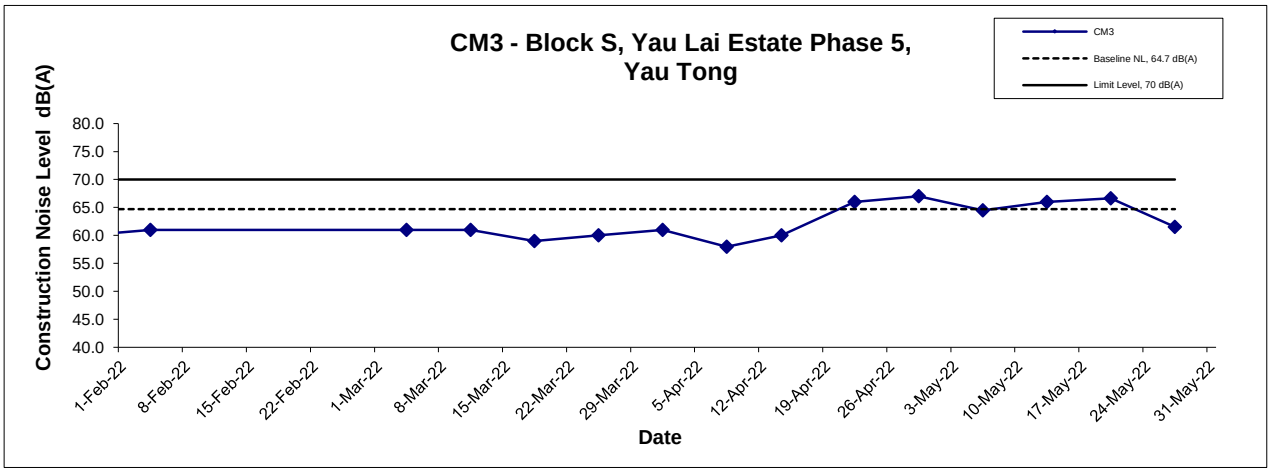
Remark:

"Measured ≦ Baseline" means that the averaged measured Leq is smaller than the baseline Leq, and therefore the measured levels are not valid exceedances.

Noise Levels
(Restricted Hours - 19:00 - 23:00 on normal weekdays)







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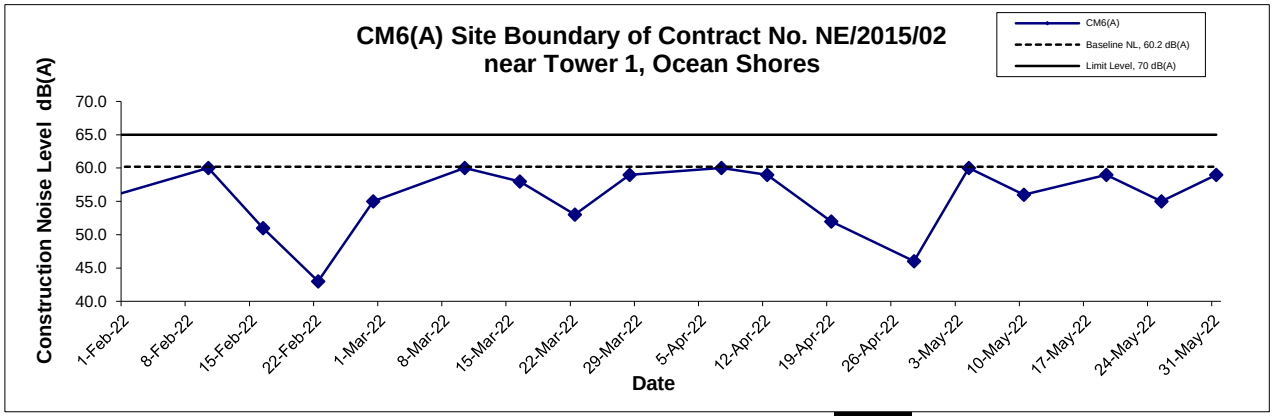
Noise Levels
(Restricted Hours - 19:00 - 23:00 on normal weekdays)



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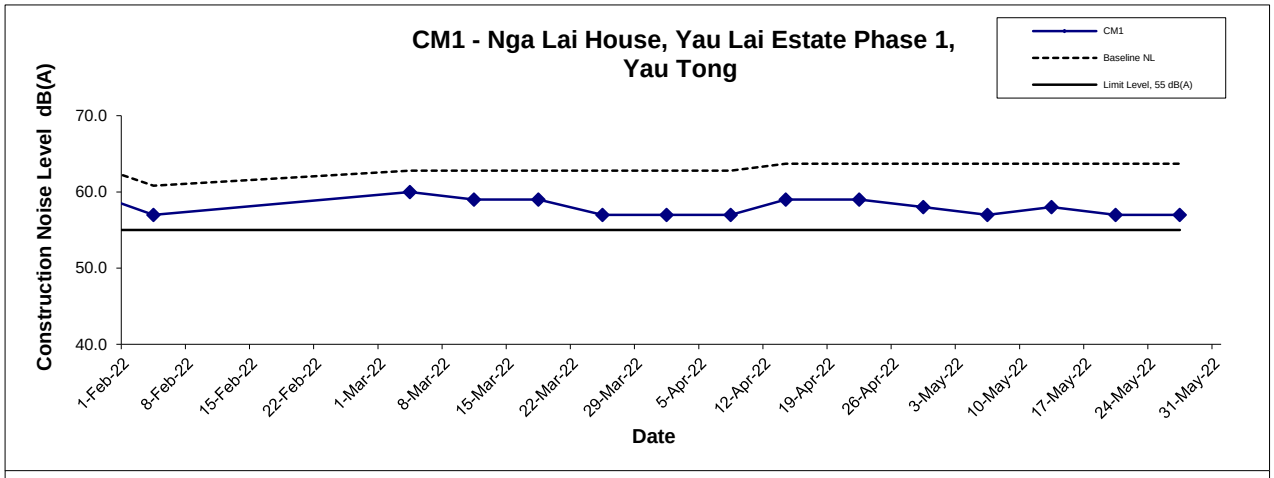
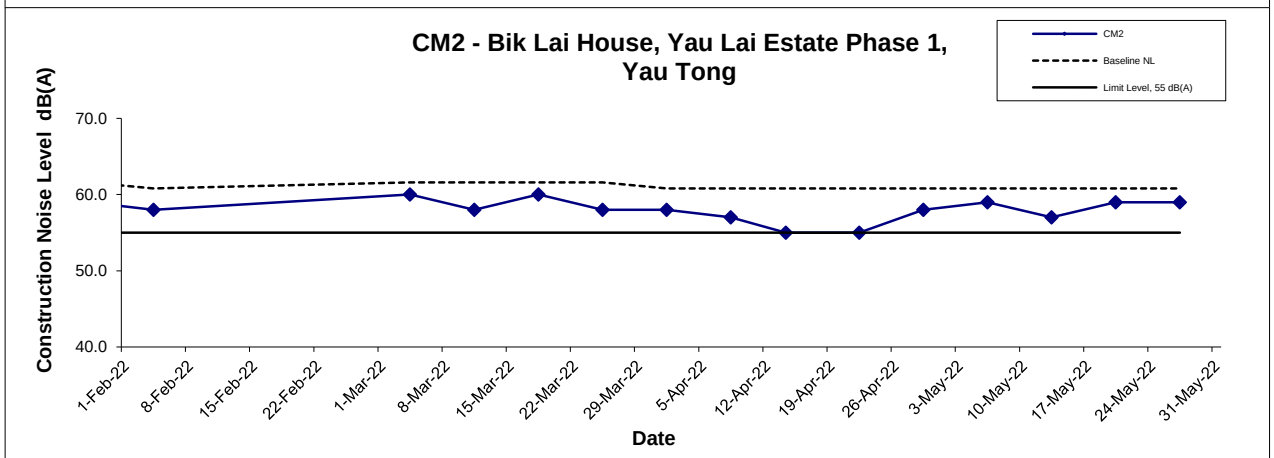
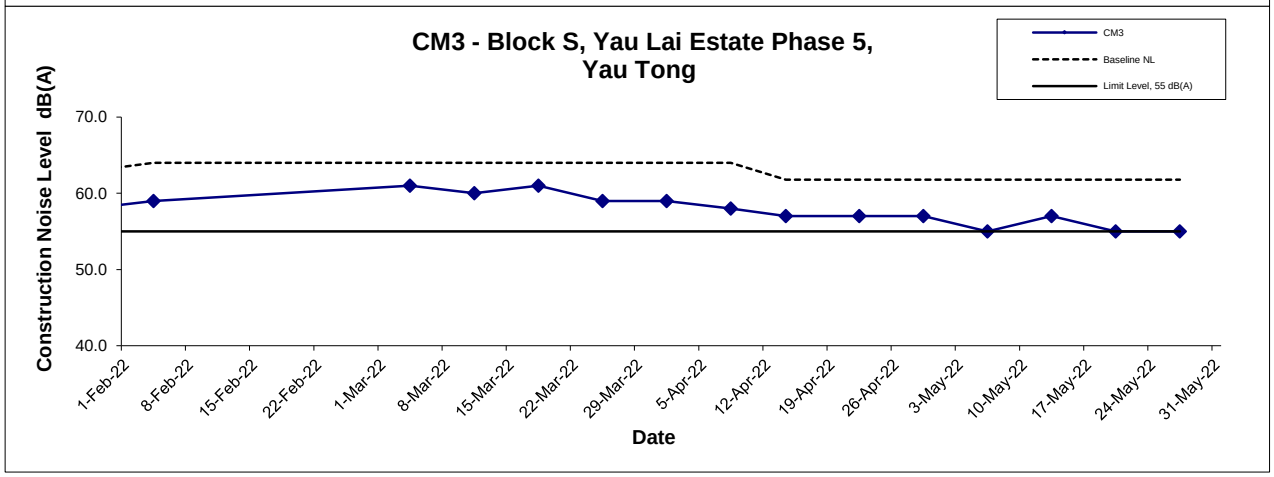
Noise Levels
(Restricted Hours - 2300-0700 on normal weekdays)







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APPENDIX H
SILT CURTAIN DEPLOYMENT PLAN
REV08

Silt Curtain Deployment Plan

Revision History and Plan Approval

Rev.	Date	Prepared by	Approved by	Endorsed by	Remarks
01	21 Nov 2016	Simon Cheng	Chow Chin Chi	Timothy Lo	First Issue
02	15 Dec 2016	Simon Cheng	Chow Chin Chi	Timothy Lo	Second Issue
03	10 May 2017	Jenny Cheung	Lighting Chan	Timothy Lo	Second issue
04	26 March 2020	Lighting Chan	Crispin Ao Samuel Sim	CS Yeung	Fourth Issue
05	24 Aug 2020	Lighting Chan	Crispin Ao Chow Chin Chi	CS Yeung	Fifth Issue
06	9 Feb 2021	Lam Siu Ho	Samuel Sim	CS Yeung	Sixth Issue
07	7 Dec 2021	Nic Lam	Valentine Ho	CS Yeung	Seventh Issue
08	5 May 2022	Nic Lam	Valentine Ho	CS Yeung	Eighth Issue
Signature:					

Contents

Page

1. Introduction

1.1. Purpose

As stipulated in section 2.8 of the Environmental Permit no: EP-458/2013/C, it stated:

The Permit Holder shall, no later than one month before commencement of the reclamation or marine works, deposit with the Director three hard copies and two electronic copies of a Slit Curtain Deployment Plan.

There is no reclamation works under our contract but the marine works as stipulated in PS Section 21.

The Silt Curtain Deployment Plan was prepared according to section 2.8 of the Environmental Permit no: EP-458/2013/C. It was submitted and approved by ET, IEC and EPD in May 2017.

This plan is revised for the main purpose of updating the marine works programme and status at our project as shown in Appendix D2 – Works Programme. And additional specification of Silt Curtain is added in Appendix D4 – Silt Curtain Material.

1.2. Drawing and Respective Contractual Requirement

This deployment plan shall be read in conjunction with the following reference Drawing and Contractual Specifications:

- Appendix D1 –

  Drawing No. H2645/C/TKO/LCS/T10/003 Rev – ;

  Drawing No. H2645/C/TKO/LCS/T10/007 Rev – ;

  Drawing No. H2645/C/TKO/LCS/T10/008 Rev –
- Environmental Permit (EP) (Permit No. AEP-458/2013/C) Permit Conditions 2.8 and respective Figure 5 and Figure 7.
- General Specification Sections 21/25 and Particular Specification Sections 21/25

2. Scope of Application of this SCDP

2.1. Construction Works under Contract No. NE/2015/01

Construction works under Contract No. NE/2015/01 includes:

- Construction of the main tunnel of the TKOLT Tunnel;
- Construction of tunnel portal facilities and ventilation building at TKO;
- Construction of slip roads, branch tunnels, viaducts, Lam Tin Interchange, tunnel portal facilities, ventilation building and administration building at Kwun

Tong; and

- Implementation of the associated building, civil, structural, marine, electrical and mechanical, landscaping and environmental protection and mitigation works.

2.2. Scope of Application of Silt Curtain and Construction Programme

The floating single curtain will be deployed during the early stage of site formation work and silt curtains will be deployed for the construction and removal works of barging point and steel platform. The programme showing the updated commencement and completion dates of the major marine works are illustrated in **Appendix D2**.

3. Silt Curtain Design

General type silt curtain consists of a layer of geotextile tied on 300mm diameter buoys and extended to the seabed level secured by steel chain ballast. The buoys will be further positioned by nylon ropes tired on nearby existing structures. Sufficient length of geotextile shall be allowed such that the silt curtain can be extended from the water surface to the seabed during high tide condition. The typical section of the proposed silt curtain is attached in **Appendix D3**.

4. Silt Curtain Material

The proposed Woven Polypropylene geotextile Silt Curtain's materials will be Bontec SG110/110 which is manufactured by Bonar, G and E Silt Curtain which is manufactured by G and E Company Limited and ACETex which is manufactured by ACE Geosynthetics. These products are widely used in Projects of Hong Kong and being approved by WSD, DSD, various RSS and CEDD. The specification of the proposed geotextile, respective project reference and approval letter is attached as in **Appendix D4**.

5. Silt Curtain Pilot Test

5.1. In-Situ Monitoring

The pilot test will take place at the early stage of the construction works with the highest current speed conditions, covering both flood and ebb tide for one week including 1 sampling day for retrieving baseline conditions and a total of 3 subsequent sampling days for its efficiency testing.

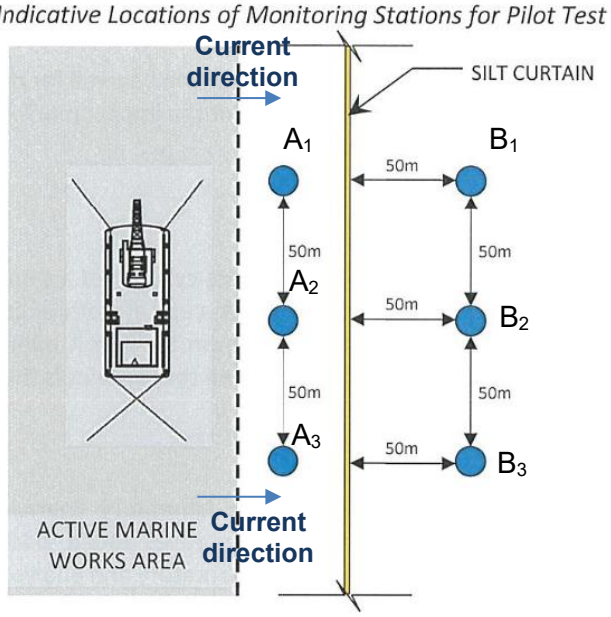
5.2. Monitoring Locations

The pilot test for water monitoring will be conducted at six monitoring stations, i.e. three within the marine works area and three outside the silt curtain. A typical locations sampling stations are described in Table 1 and Figure 1 below.

Monitoring Station	Location	Description
A_1	Within Marine Works Area	Three monitoring stations spaced at approximately50m from each other and located between the marine works and the silt curtain boundary
A_2		
A_3		
B_1	Outside the Silt Curtain	Three monitoring stations spaced at approximately50m from each other and located within approximately 50m from the silt curtain boundary
B_2		
B_3		

Table 1 : Typical locations sampling stations

Figure 1 Indicative Locations of Monitoring Stations for Pilot Test



5.3. Water Sampling Equipment

For in-situ monitoring, a multi-parameter meter (Model YSI 6820-C-M) / Aquaread AP-2000-D or equivalent) will be used to measure turbidity. A sampler will be used to collect water samples for laboratory analysis of suspended solids.

5.4. Turbidity

Turbidity will be measured in-situ by the nephelometric method. The instrument will be portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment will be capable of measuring turbidity between 0-1000 NTU. The probe cable will not be less than 25m in length.

5.5. Water Depth Detector

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

5.6. Position System

A hand-held GPS will be adopted to ensure the exact location is located prior to sample collection.

5.7. Current Velocity and Direction

A Valeport 106 or equivalent current meter will be used for measuring current velocity and direction to verify the exact location of the impact monitoring stations and control stations.

5.8. Suspended Solids

A water sampler with capacity of not less than 2 litres, make up by PVC or glass cylinder will be effectively sealed with cups at both ends will be adopted. The water sampler will keep it open and prevent premature closure until released by a messenger when the sampler is the assigned water depth.

5.9. Sample Container and Storage

The water samples will be sent for laboratory analysis and stored in high density polythene bottles with no preservatives added and packed in ice (cooled to 4 Degree Celsius without being frozen), delivered to the laboratory and analysed as soon as possible.

5.10. Calibration of In-Situ Instruments

All in situ monitoring instruments will be checked, calibrated and certified by a laboratory accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) or other internal 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 will be checked with certified standard solution before each use. A zero-check distilled water will be performed with the turbidity probe at least once per monitoring day. The probe will then be calibrated with a solution of known NTU. In addition, the turbidity probe will be calibrated at least twice per month to establish the relationship between turbidity readings (in NTU) and levels of suspended solids (in mg/L).

The British Standard BS 1427:2009, “Guide to on-site test methods for the analysis of waters” will be closely observed for the in-situ calibration of field equipment.

Sufficient spare parts will be maintained for replacements when necessary. Back up monitoring equipment will also be made available so that the monitoring can proceed without interrupted even when some equipment is under maintenance, calibration and etc.

The table 2 below summarizes the equipment to be in used in water quality monitoring program within the pilot test.

Equipment	Model	Monitoring Parameters/ Use	Qty.
Water Sample	Kahlsico Water – Bottle Model 135DW150 or Equivalent	Collection of water sample	2
Multi-parameter Water Quality System	YSI6820-C-M/YSI 6920/ Aquaread Ltd AP-2000 or equivalent	Measure turbidity	2
Monitoring Position Equipment	"Magellan" Handheld GPS Model Triton 400/ Garmin Model eTrex 10 or equivalent	Locate water quality monitoring stations	1
Sonar Water Depth Detector	Garmin Fishfinder 140 or equivalent	Determination of water depth	1
Current Meter	Valeport 106	Measure current velocity	1

Table 2 : Equipment used in water quality monitoring

5.11. Monitoring methodology

A hand-held digital GPS will be used to access the monitoring stations during the water quality monitoring of the pilot test. The depth of the monitoring location will be measured using depth meter in order to determine the sampling depths. The probes of the in-situ measurement will then be lowered to the predetermined depths (1m below water surface, mid-depth and 1m above seabed) and the measurements will be carried out accordingly.

During each measurement, two consecutive measurements of in-situ parameters will be taken. The probes will be retrieved out of the water after the first measurement and then re-deployed for the second measurement. If the difference in the value between the first and second readings of each paired set was more then 25% of the value of the first reading, this reading will be discarded and another readings will be taken. Water samples for SS (mg/L) measurements will be collected at the same depths.

Water sampler will be lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler will then be released to travel down the wire. The water sample will be sealed within the sampler before retrieving. At each station, water samples for about 1 Litre will be taken at three depths (1m below water surface, mid-depth and 1m above seabed) will be collected accordingly. The samples will be stored in cool box less than 4 Degree Celsius but without frozen. In addition, the field information will also be recorded.

5.12. Laboratory Analytical Methods

The testing of all parameters will be conducted under HOKLAS accredited laboratory and comprehensive quality assurance and control procedures in place will be carried out in order to ensure quality and consistency in results.
The SS determination works will be started within 24 hours after collection of the water samples.

5.13. Quality Assurance / Quality Control Requirements

Water samples will be dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples will be stored in a cool box and kept at less than 4 degree Celsius but not freeze. All water samples will be handled under a chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory. The results of the pilot test and recommendations will be submitted to the Supervisor, Environmental Team and Independent Environmental Checker for review.

6. The Effective of Silt Curtain

The effectiveness of silt curtain will be evaluated by comparing the pilot test results outside and the inside the silt curtain, i.e. (SS_{inside} – $SS_{outside}$) / (SS_{inside}) x100%

If there is no significant difference (≥95%), the silt curtain can be evaluated to be effective.
The SS shall be tested by using APHA2540B standard and the reporting limit of such testing is 1mg/L.

7. Silt Curtain Installation

- Link up 300mm buoys together by a net.
- Tie the top end of the geotextile to the buoys net and the bottom end with steel chain ballast before transportation.
- Transport the silt curtain to the location for fixing via marine pontoon.
- Workers tie the buoys to the water and then slowly put the geotextile with the steel chain ballast into sea.
- Put the buoys to the water and then slowly put out the geotextile with the steel chain ballast into sea.
- In order to maintain the position of the silt curtain especially at location with strong current, place concrete sinkers to the seabed if required and tie the silt curtain to the sinkers with nylon strings by divers.
- The implementation schedule is attached in **Appendix D6**.

8. Silt Curtain Maintenance

On-board supervisors will be assigned to check the condition of the silt curtain before commencement of works every week. An inspection checklist as shown in **Appendix D5** will be prepared and filled in by the site supervisors. All checklists will be kept on site for record purpose.
Under adverse weather condition, the silt curtain will not be temporary removed. But related works will be suspended immediately if the silt curtain is found damaged. Lifting the silt curtain from the water by grab dredger / derrick barge. Sew a new piece of geotextile to the existing geotextile to cover the damaged area with sufficient overlapping length (at least 300mm). The marine works will resume after the repaired work of the silt curtains have been finished.
Refuse around the silt curtains will be collected at regular intervals on a daily basis so that water behind the silt curtains will be kept free from floating debris.
Sufficient stock of geotextile will be kept on site for replacement. The spare geotextile will be kept in a place to avoid direct contact with water and sunlight.

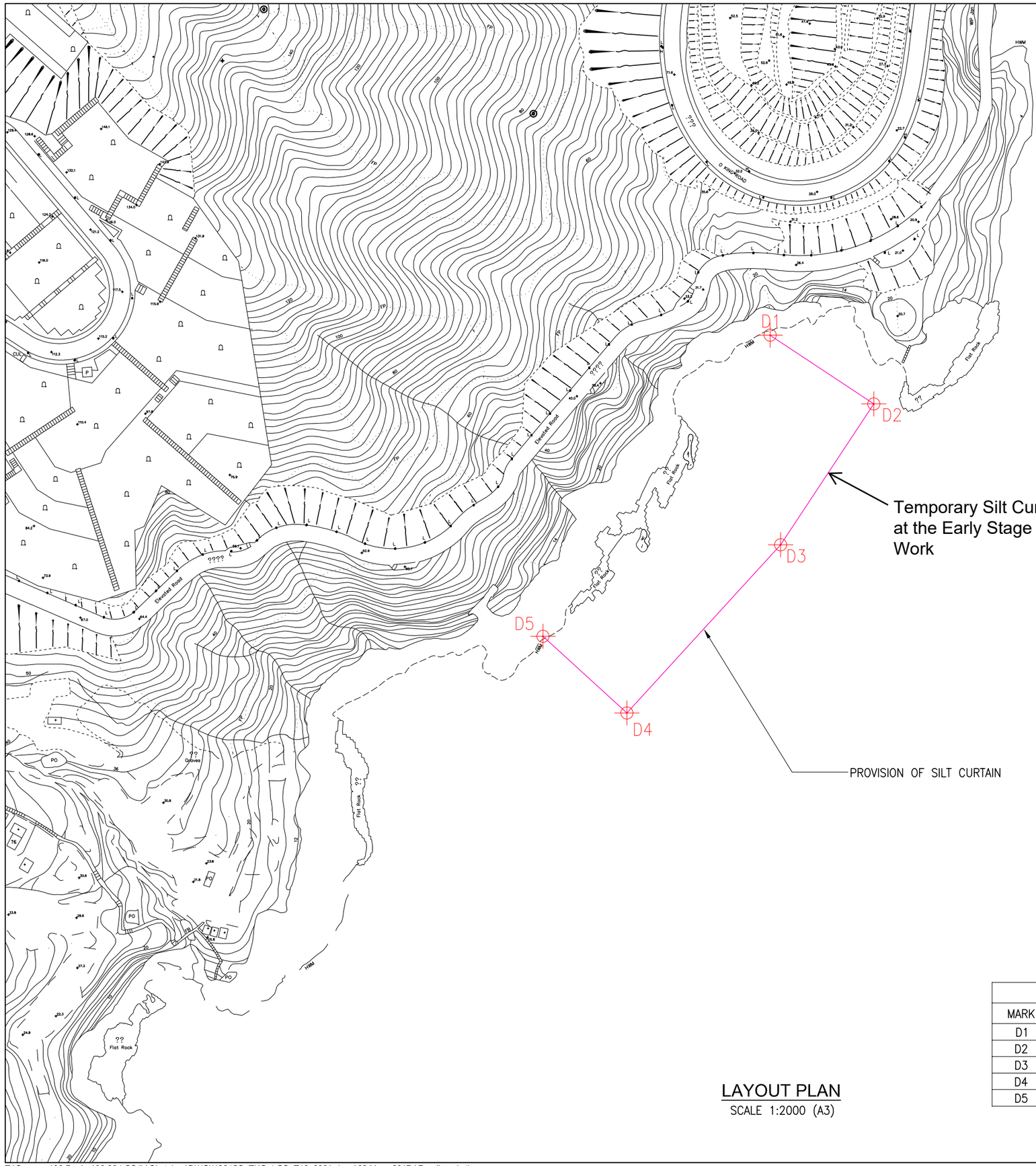
9. Silt Curtain Removal / Repositioning

The silt curtain will be removed once respective construction work has been completed. The work shall be carried out by derrick lighter barges in order to reduce the negative impact on water quality.

Tentatively, there will not be any plan for repositioning of the silt curtain. If necessary, the re-deployment actions will be submitted in separate application.

Appendix D1 -

Drawings



LAYOUT PLAN
SCALE 1:2000 (A3)

	HK 1980 GRID COORDINATES		WGS 84 GEODETIC COORDINATES	
MARK	EASTING	NORTHING	LATITUDE	LONGITUDE
D1	844174.1704	817602.0852	22.17 839798	114.15 215959
D2	844224.4839	817568.7734	22.17 821734	114.15 245245
D3	844179.2867	817500.5083	22.17 784758	114.15 218909
D4	844104.7137	817418.9133	22.17 740568	114.15 175464
D5	844063.9738	817456.1471	22.17 760753	114.15 151753

REV.	DESCRIPTION	DATE	BY	APP
A	MINOR REVISION	161216	-	-
-	FIRST ISSUE	161025	-	-

土木工程拓展署
Civil Engineering and Development Department

AECOM

TSEUNG KWAN O -LAM TIN TUNNEL -
MAIN TUNNEL AND ASSOCIATED WORKS

OPERATION AREA FOR
SILT CURTAIN AT TKO SITE

LEIGHTON 禮頓-中建聯營
Leighton - China State Joint Venture

SUBCONTRACTOR / SUBCONSULTANT

DRG. NO. H2645/C/TKO/LCS/T10/006	REV. A
CONTRACT NO. NE/2015/01	DATE OF ISSUE 2016-10-25
CHECKED BY SC	DRAWN BY AF
SCALE 1:2000 (A3)	STATUS FOR INFORMATION
DIMENSIONS ARE IN METERS	PAPER SIZE A3

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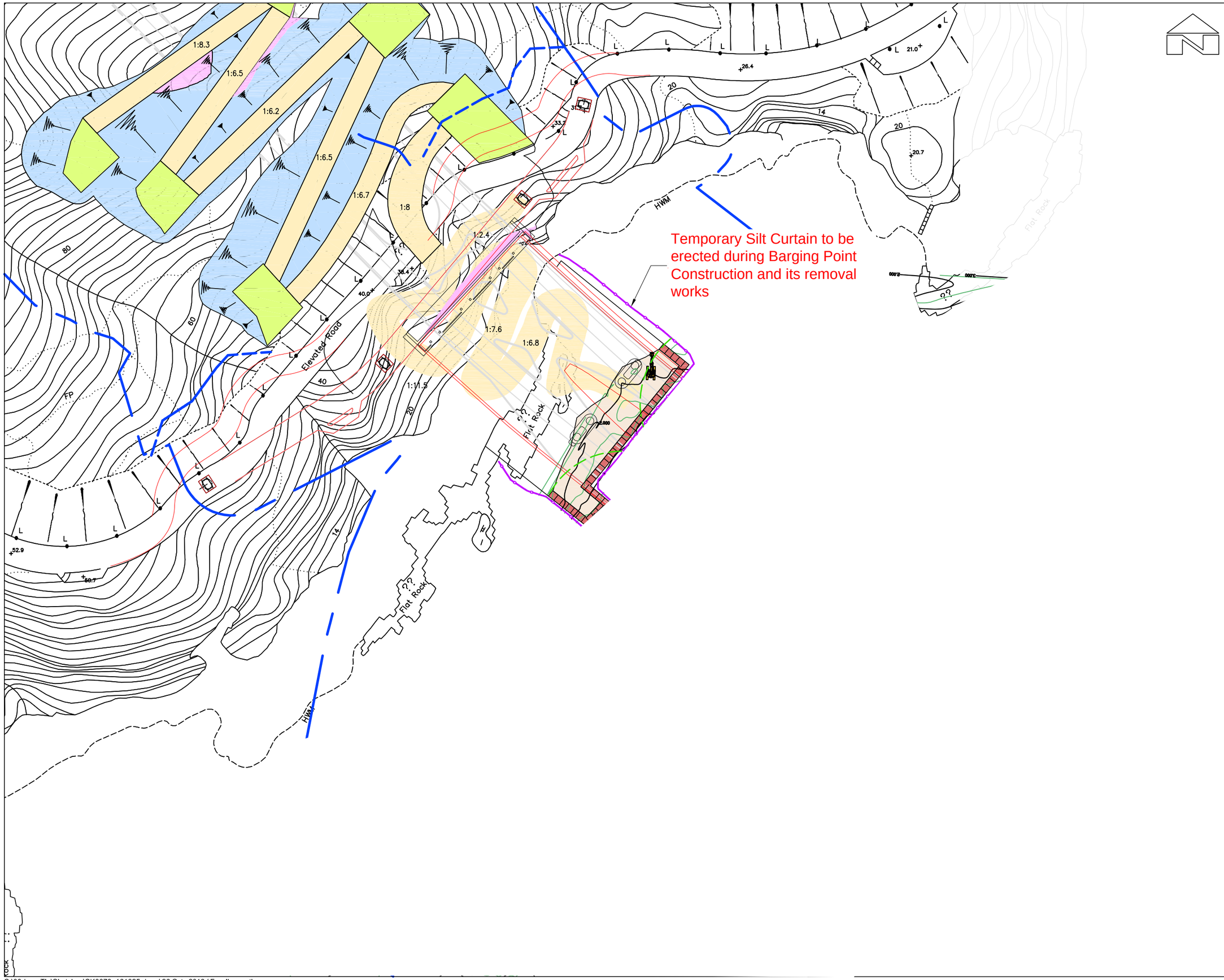

LEGEND:

- SITE BOUNDARY
- SEAWALL BLOCKS

REV.	DESCRIPTION	DATE	BY	APP
-	FIRST ISSUE	161025	-	-

CEDD 土木工程拓展署 Civil Engineering and Development Department

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TSEUNG KWAN O -LAM TIN TUNNEL -
MAIN TUNNEL AND ASSOCIATED WORKS

BARGING POINT SILT CURTAIN AT STAGE 2

LEIGHTON 禮頓·中建聯營 Leighton - China State Joint Venture

SUBCONTRACTOR / SUBCONSULTANT

H2645/C/TKO/LCS/SK/007	REV. -
CONTRACT NO. NE/2015/01	DATE OF ISSUE 2016-10-25
CHECKED BY JH	DRAWN BY AF
SCALE 1:500 (A3)	STATUS FOR INFORMATION
DIMENSIONS ARE IN METERS	PAPER SIZE A3

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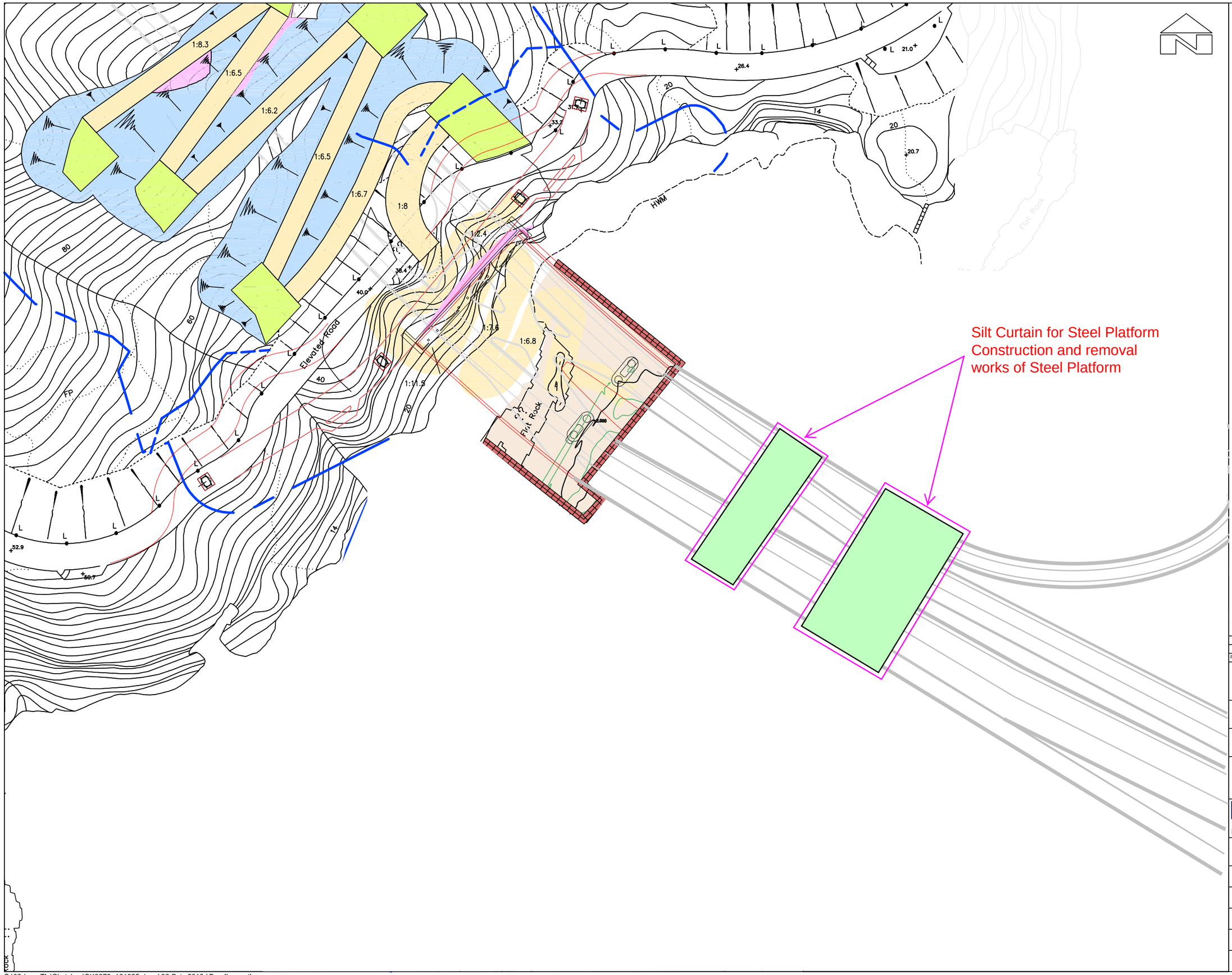

LEGEND:

SITE BOUNDARY

SEAWALL BLOCKS

REV.	DESCRIPTION	DATE	BY	APP
-	FIRST ISSUE	161025	-	-

土木工程拓展署
Civil Engineering and Development Department

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TSEUNG KWAN O -LAM TIN TUNNEL -
MAIN TUNNEL AND ASSOCIATED WORKS

CONSTRUCTION OF TEMP SILT CURTAIN FOR STEEL PLATFORM AT STAGE 3

LEIGHTON 禮頓·中建聯營
Leighton - China State Joint Venture

SUBCONTRACTOR / SUBCONSULTANT

H2645/C/TKO/LCS/SK/008	REV. -
CONTRACT NO. NE/2015/01	DATE OF ISSUE 2016-10-25
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Appendix D2 -
Works Programme

Contract No.: NE/2015/01
Contract Title.:
Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works

Leighton - China State Joint Venture

Tentative Programme for Major Marine Works at TKO

DESCRIPTION	2017												2018												2019											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Formation																																				
- Site Formation Work																																				
- Early Stage of Site Formation Work (Marine Works)																																				
Temporary Barging Facility																																				
- Provision of the Silt Curtain for Barging Facility Construction																																				
- Construction of Barging Facility (Marine Works)																																				
- Barging Facility in Operation																																				
Viaduct Construction Activities																																				
- Provision of Silt Curtain around the temp Platform or pile of steel platform																																				
- Construction work for Foundation and steel Platform (Marine Works)																																				
- Removal of steel platform 1C and 1D (Marine Works)																																				
- Removal of temporary platform 1B and associated temporary barging facility (Marine Works)																																				

DESCRIPTION	2020												2021												2022											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Formation																																				
- Site Formation Work																																				
- Early Stage of Site Formation Work (Marine Works)																																				
Temporary Barging Facility																																				
- Provision of the Silt Curtain for Barging Facility Construction																																				
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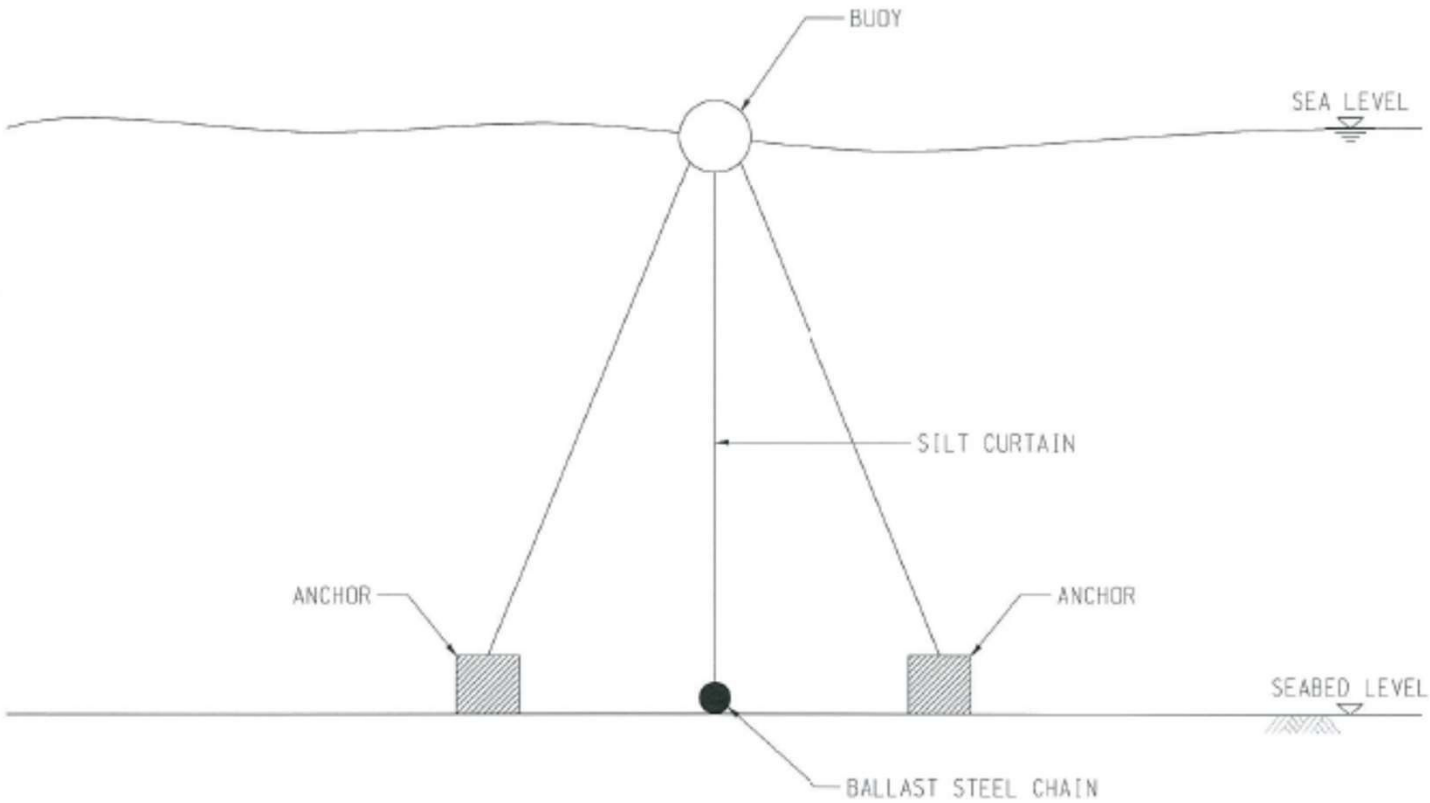
- Removal of steel platform 1C and 1D (Marine Works)																																				
- Removal of temporary platform 1B and associated temporary barging facility (Marine Works)																																				

Appendix D3 -
Typical Section of Silt Curtain

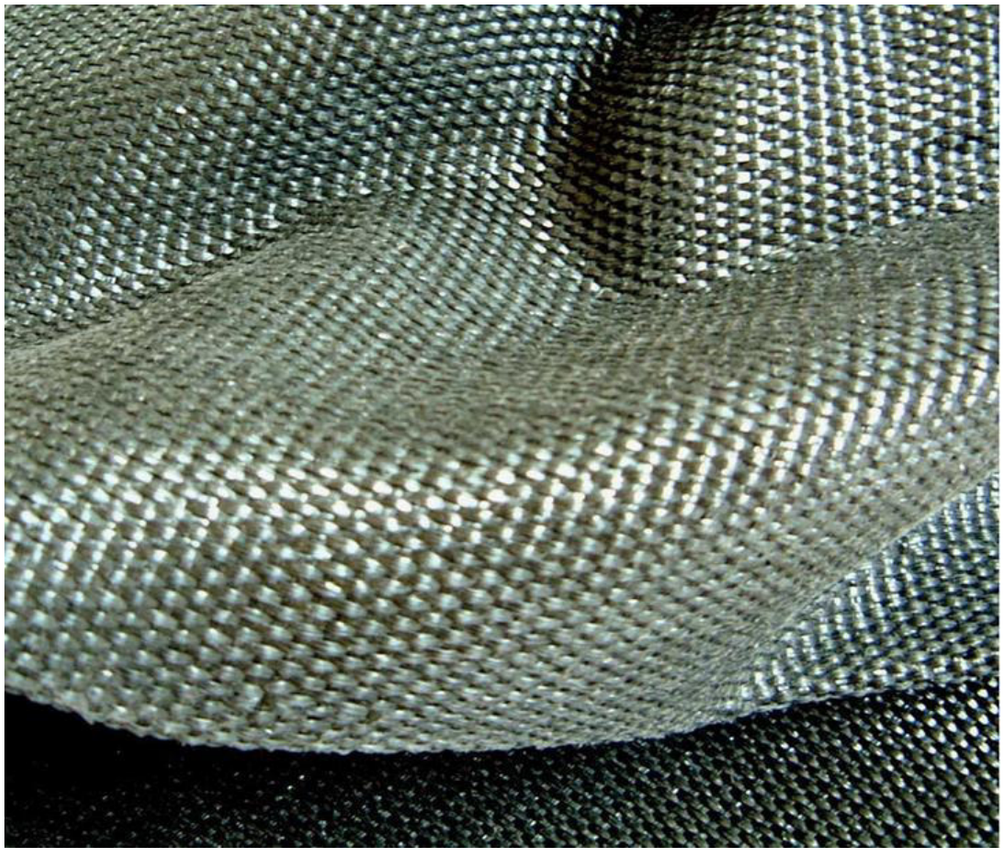


TYPICAL DETAILS OF PROPOSED SILT CURTAIN

Appendix D4 -
Silt Curtain Material

Material Submission

BONTEC SG110/110
Woven Polypropylene Geotextile



G AND E COMPANY LIMITED

14/F., Kiu Yin Commerical Building,

361 - 363 Lockhart Road,

Wanchai, Hong Kong

Tel: 2570 0130 Fax: 2570 0089

website: www.g-and-e.com

December 2016

Table of Contents

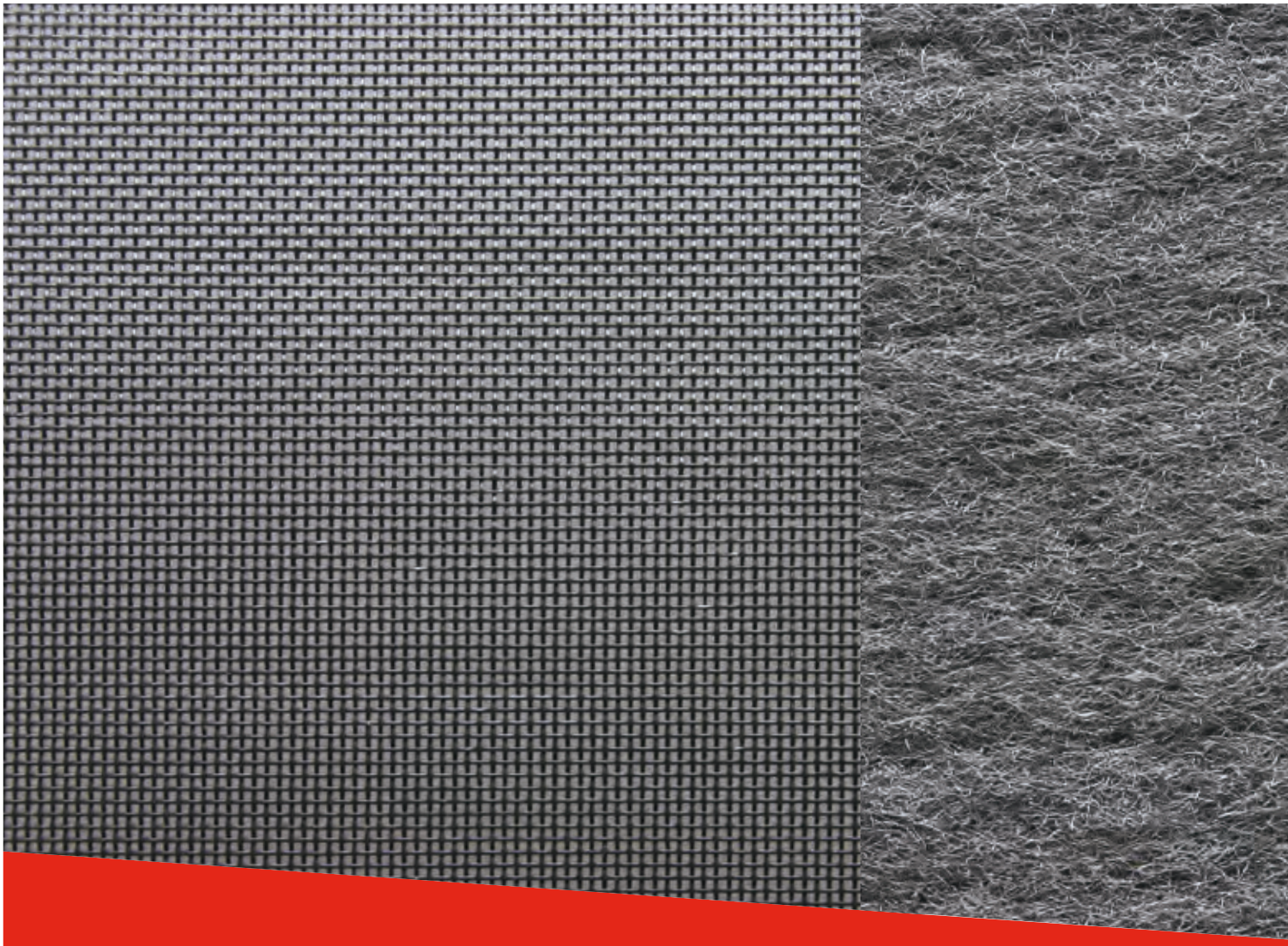
G & E
ENGINEERING
Since 1984

Bontec SG110/110
Woven Geotextile

Manufacturing Company Profile

bontec

woven and nonwoven geotextiles



GEOTEXTILE

WE UNDERCOVER
THE WORLD

Bonar

partners in performance

Bontec Geotextile

Bontec is an internationally renowned brand of geotextiles. We have earned this reputation over the past thirty years thanks to our quality, service and flexible production processes. This flexibility is a result of the vertical integration of our production. We control the entire process – from raw materials to finished product – for both our woven and nonwoven varieties.

We are therefore not dependent upon the quality or delivery time of others, and we can guarantee your success. Our Bontec brand offers state of the art woven and nonwoven geotextiles that provide answers to meet all of your challenges. Thanks to continuous research and investment in the latest technology, we provide the best solutions for all possible functions of geotextiles.

Nonwoven process

Starting with polypropylene granules,

we extrude endless synthetic filaments. After stretching and shrinking, these filaments are cut into fibres.

These fibres are then deposited in layers by a crosslapper.

By means of our own unique process we needle punch the layers into each other, after which they are thermo fixated. The result is an extremely high performance geotextile.

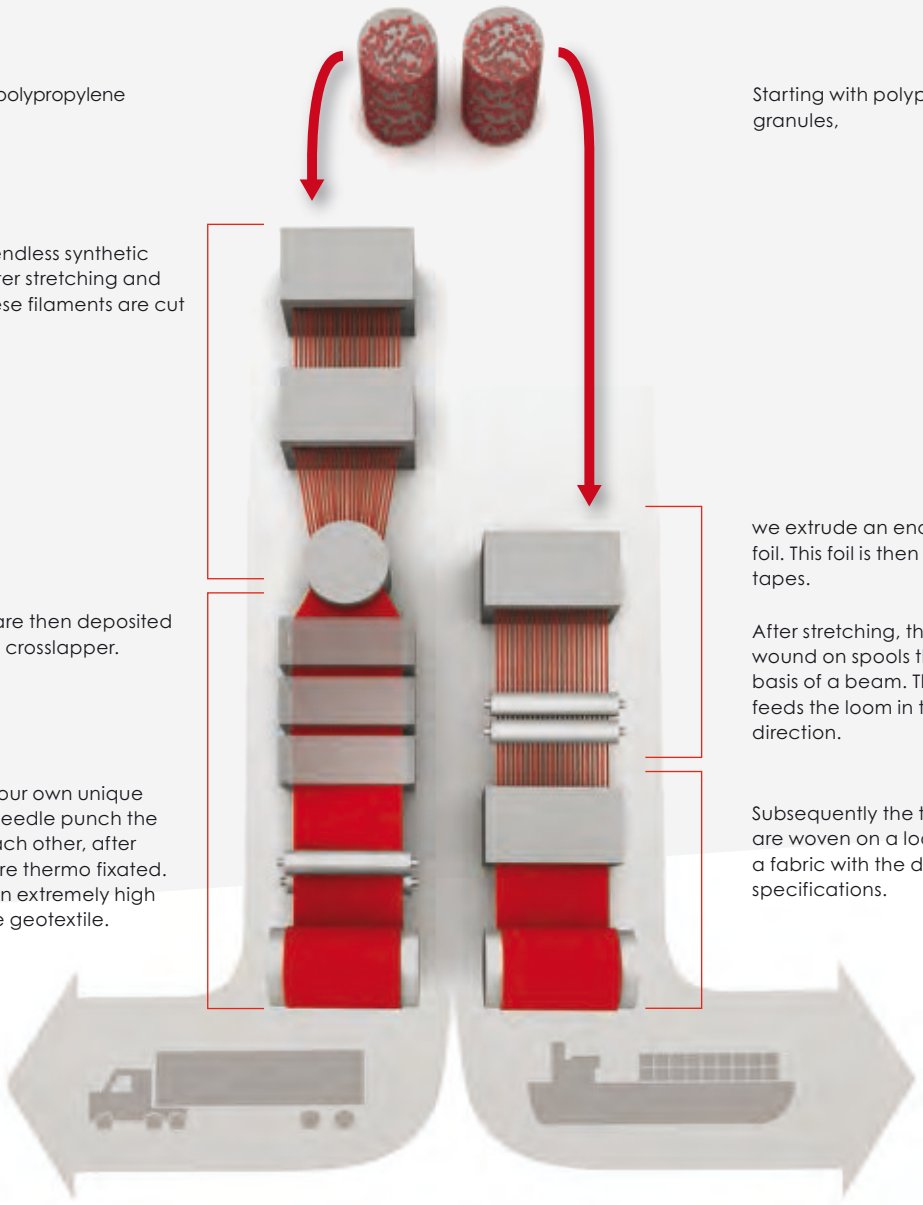
Woven process

Starting with polypropylene granules,

we extrude an endless synthetic foil. This foil is then cut into fine tapes.

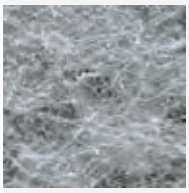
After stretching, the tapes are wound on spools that form the basis of a beam. That beam feeds the loom in the machine direction.

Subsequently the tapes are woven on a loom to a fabric with the desired specifications.



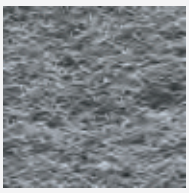
Nonwoven Geotextile

NW
Thermally Bonded Nonwoven Geotextiles



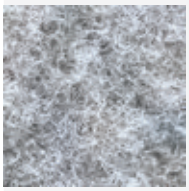
Produced by applying mechanical and thermal bonding processes. NW has the highest tensile strength of the range and is used primarily for lightweight separation and filtration. Its excellent hydraulic properties are ideal for use in filtration applications. Typical uses include the encapsulation of a trench drain.

VNW
Nonwoven Needle Punched (Colored) Geotextile



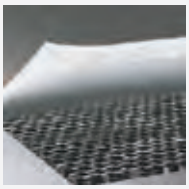
Produced by needle punching colored polypropylene fibres. The range varies from 200 to 2,000 g/m². VNW is used for protection of membranes, as a component for drainage composites, or as a component for erosion control composites.

SNW
Superior Needle Punched Nonwoven Geotextiles



Produced in a manner similar to NW, SNW offers extraordinary properties for its very low weight. SNW is used primarily in circumstances that require both high tensile strength and elongation. Typical areas of application include membrane protection in reservoirs and landfills.

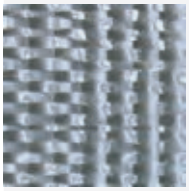
LG
Geocomposites



For the production of LG, woven and nonwoven geotextile are needle punched together. This process combines the properties of the two types in a single layer. These products are used in situations that require a high tensile strength as well as extreme protection.

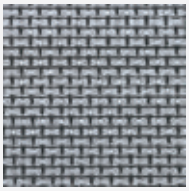
Woven Geotextile

SG
Lightweight 'Standard Grade' Woven Geotextile



These lightweight, woven geotextiles from 65 to 250 g/m² are used primarily for separation. For example, SG prevents good quality sand or granules from mixing with underlying soil. It is used for the construction of roads, parking lots and airport runways.

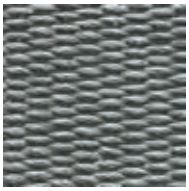
HF
'High Flow' Woven Geotextile



Thanks to their specific structure, HF geotextiles have high permeability. This quality is very important for erosion control and infiltration applications. Typical applications include:

- As an under layer for concrete revetment blocks or between dissimilar layers of quick draining granular fill consisting of fine sand and rounded gravel.
- The envelopment of infiltration crates or tubes for rainwater management.

SG
Heavyweight 'Standard Grade' Woven Geotextile



These heavyweight, woven geotextiles vary from 250 to 600g/m² and they possess tensile strengths up to 200 kN/m and above. Heavyweight SG is used in heavy load circumstances, such as temporary basal reinforcement, coastal reinforcement and soil stabilization.

HS
'High Strength' Woven Geotextile

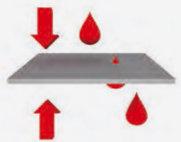
The polyester wovens have a very high tensile strength of up to 600 kN /m. This strength and their very low stretch make them ideal for situations where:

- Reinforcement of the ground is essential.
- The construction of very steep, or even vertical, slopes with different types of soil is required.

Use of Geotextiles

1 Erosion control

In erosion control, the geotextile protects soil surfaces from the tractive forces of moving water or wind and rainfall erosion.



2 Filtration

The use of geotextiles in filter applications is probably the oldest, most widely known, and most used function of geotextiles. The geotextile is used to prevent fine soil particles from moving with the water flow normal to the plane.

3 Protection

A geotextile can be used as a protective layer against mechanical damage during installation and after the completion of a particular construction project. It will help prevent the puncturing of geomembranes used in constructions such as tunnels, landfills or reservoirs.

4 Drainage

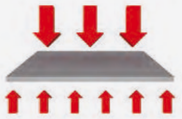
When functioning as a drain, a geotextile acts as a conduit for the movement of liquids or gasses in the plane of the geotextile. Relatively thick nonwoven geotextiles are the products most commonly used. Selection should be based on transmis-sivity, which is the capacity for in-plane flow.

5 Stress relief

The geotextile provides a stress-relieving interlayer between the existing pavement and the overlay that reduces and retards reflective cracks under certain conditions. It also acts as a moisture barrier to prevent surface water from entering the pavement structure.

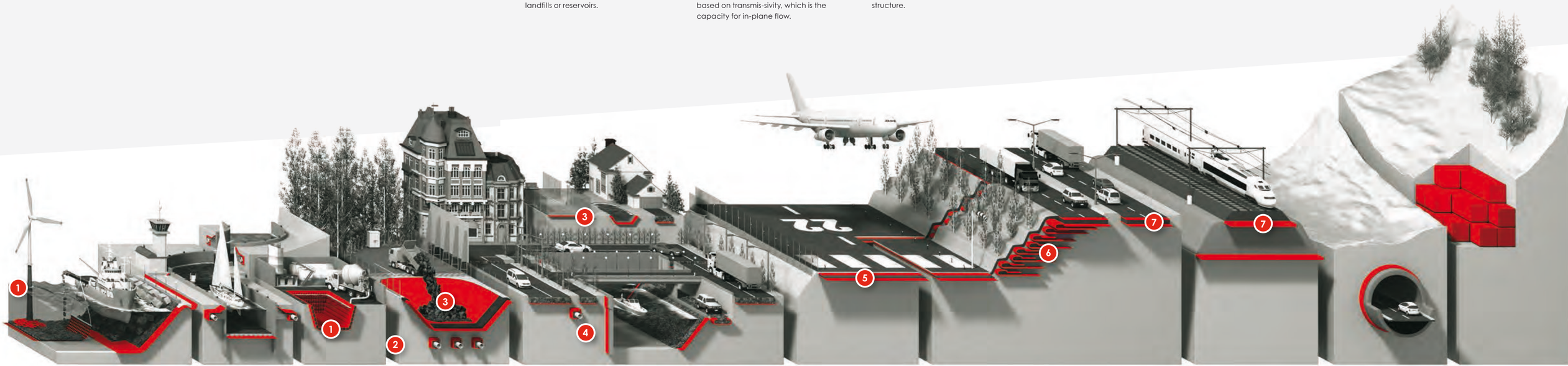
6 Reinforcement

The geotextile interacts with soil through friction or adhesion forces to resist tensile or shear forces. To provide reinforcement, a geotextile must have sufficient strength, low elongation and low creep to avoid movement of the structure.



7 Separation

Separation is the process of preventing two dissimilar materials from mixing. In this function, a geotextile is most often required to prevent the undesirable mixing of fill and natural soils or of two different types of fill.



Value chain

World player with local market presence

- Most complete product range
- Vertically integrated production - from raw material to finished stock
- Strong logistic service and stock supported key products to meet market needs
- Health and Safety from production right through delivery on site as an absolute priority
- Over 30 years of experience in a constantly evolving hi-tech market:
  > Innovation driven
  > Project specific engineered solutions

Advantages of Bontec Geotextiles

- Intelligent installation techniques
- Cost and energy saving
- Increased life-span of projects

PRODUCTION SITES

- Belgium - Zele & Lokeren
- China - Yizheng
- Germany - Groß Ippener & Obernburg
- Hungary - Tiszaújváros
- Saudi-Arabia - Yanbu
- The Netherlands - Arnhem & Emmen
- USA - Asheville, NC

Development Centers in the Netherlands, Belgium and USA
Sales offices in UK, France and China

PRODUCT PORTFOLIO

Geotextiles
Geocomposites
Geogrids
Geocells
Vertical Drains
Erosion Control Systems
Construction Fibres

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Bonar
partners in performance

www.bontec.be

G & E
ENGINEERING
Since 1984

Bontec SG110/110
Woven Geotextile

Product Specification

SG WOVEN GEOTEXTILES

we under^{cover} the world

A TOTAL RANGE OF GEOTEXTILES

Headquarters:
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DD3 7EU
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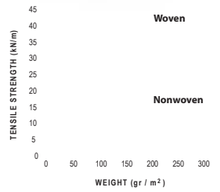
F.: +44 (0)1382 229238
E-MAIL: geotextiles@bonaryarns.com

website: www.bonartf.com

bontec
woven and nonwoven geotextiles



SEPARATION

REINFORCEMENT

Other geotextiles available within the Bontec range include Highflow, High strength Wovens and Thermally Bonded & Needlepunched Nonwovens

Visit us at our website:
www.bonartf.com

SG Woven Geotextiles

PRODUCT PROFILE

"An exciting range of Standard Grade geotextiles that offer the perfect solution to your Separation requirements. With tensile strengths ranging from 10 to 300 kN/m you can be certain that an SG fabric will be available with the performance that you are looking for."

DAILY SEPARATION, SOIL STRENGTHENING
OR GROUND REINFORCEMENT?

Bontec SG woven geotextiles are manufactured from polypropylene tapes & yarns, and exhibit an excellent chemical resistance to commonly encountered acids and alkalis at ambient temperatures. Available in a lightweight range with products from 80 to 200g/m2, and a heavyweight range from 200 to 800g/m2.

Bontec SG facts include:

Tensile strengths up to 300 kN per metre (kN/m) width
CBR Puncture Strengths ranging from 1.800 N to 12.500 N
SG Mechanical Properties that offer maximum strength at minimal cost and ensure the products survivability both against installation damage and in the longer term.

Lightweight woven geotextiles typically offer greater mechanical strengths per unit weight than comparable nonwoven grades. This makes lightweight woven geotextiles the ideal choice for separation

Waterflows normal to the plane that are generally several times more than that required by design

A range of consistent opening sizes suited for use in soils ranging from clay to coarse granular fill.

SG hydraulic properties that are suited to the demands of everyday separators.

Available ex-stock in 4.5m and 5.25m wide rolls or other widths to order

Typical applications for SG woven geotextiles include:

As a general purpose separator for use under site access roads and areas of hardstanding.
As a separation and strengthening layer under new roadways, car parks, industrial units etc.
As an erosion control layer under heavy rock armour in coastal defence projects.
For any separation application where there exists a need to prevent the intermixing of soft foundation soils with good clean granular fill.

SG Woven Geotextiles have been manufactured as a cost effective solution to your soil separation and stabilisation applications. They are manufactured from highly durable polypropylene polymer and have a long life expectancy when used in permanent structures.

For further product information, be it a technical data sheet or to discuss your project with one of our in-house geotextile experts please do not hesitate to contact one of our offices listed below.

For UK and Ireland: BONAR YARNS & FABRICS Ltd
St. Salvador Street | Dundee | Scotland | DD3 7EU
T.: +44 (0)1382 346102 | F.: +44 (0)1382 229238
E-MAIL: geotextiles@bonaryarns.com

Headquarters: BONAR TECHNICAL FABRICS NV/SA
Industriestraat 39 | B-9240 Zele | BELGIUM
T.: +32 (0) 52 457 487 | F.: + 32 (0) 52 457 495
E-MAIL: geotextiles@bonartf.com

bontec
woven and nonwoven geotextiles

Bontec® SG 110/110

Heavy weight Polypropylene Woven Geotextiles

Technical data sheet

Product description

Polymer	Density	Melting Point	Construction
100% Polypropylene	0,91 kg/dm³	165 °C	Tapes

Properties

Mechanical Properties	Standard	Performance	Tolerance
Tensile strength - MD	EN ISO 10319	110 kN/m	-9,9 kN/m
Tensile strength - CMD	EN ISO 10319	110 kN/m	-9,9 kN/m
Elongation at maximum load - MD	EN ISO 10319	10 %	+/-2,3 %
Elongation at maximum load - CMD	EN ISO 10319	8 %	+/-1,8 %
Static puncture resistance (CBR)	EN ISO 12236	12,5 kN	-2,5 kN
Dynamic perforation resistance (cone drop)	EN ISO 13433	10 mm	+2,0 mm
Tensile strength at 2% elongation - MD	EN ISO 10319	15 kN/m	
Tensile strength at 2% elongation - CMD	EN ISO 10319	25 kN/m	
Tensile strength at 5% elongation - MD	EN ISO 10319	45 kN/m	
Tensile strength at 5% elongation - CMD	EN ISO 10319	60 kN/m	

Hydraulic Properties	Standard	Performance	Tolerance
Water permeability normal to the plane (VIh50)	EN ISO 11058	25 l/m²s	-8 l/m²s
Characteristic Opening Size (O90)	EN ISO 12956	230 µm	+/-69,0 µm

Physical Properties	Standard	Performance	Tolerance
Weight	EN ISO 9864	464 g/m²	+/-46,4 g/m²
Length (+/- 1%) x width (+/- 1%)		100 x 5,25 m	
Truck Load Volume (+/- 10%)		30450 m²	
Roll diameter (+/- 10%)		45 cm	

Durability	Standard	Performance	
Predicted minimal durability in years in natural soils with 4 < pH < 9 and soil temperatures < 25°C	EN ISO 13438 - A2	25	
Maximum allowed time between installation and covering of the geosynthetic	EN 12224	2 weeks	

Version date : 1/11/2014

Version n° 3

The Quality Management System of Bonar has been approved to the ISO 9001 Quality Management System Standard. Certificates are available on request.

CE

Progress through performance
A Low&Bonar solution

Bonar NV.
Industriestraat 39, 9240 Zele, Belgium
T: +32 (0) 52 457 487 / F: +32 (0) 52 457 495
info@lowandbonar.com / www.lowandbonar.com

G & E ENGINEERING Since 1984

Bontec SG110/110
Woven Geotextile

Certification

QUALITY MANAGEMENT SYSTEM CERTIFICATE

ISO 9001 : 2008

The BQA sa hereby declares that the management system of:

Bonar NV – Site in Zele en Lokeren

Bonar
partners in performance

located at Industriestraat 39 - 9240 Zele - Belgium, has been examined on 24-03-2014
and found in conformity with the ISO 9001, edition 2008, standard for the following application field:

Development, manufacture and sales of a standard range of fibres and textiles such as agrotextiles, building textiles and geosynthetics, as well as similar products especially designed to customer specifications

This certificate has been issued by the BQA sa according to its quality manual concerning the certification of systems, and after concluding the contract of certification N° CER_AJ_QMS_24-03-2014_301_N, under which the company accepts a regular control of its management system.

Certificate N° BQA_QMS019_C_2004301
Valid until 23-03-2017

BELAC
BQA N° 019-QMS

D. SIMOENS
Directeur

BQA

DS/AJ/C/24-03-2014

CERTIFICATE OF ENVIRONNEMENTAL MANAGEMENT SYSTEM

ISO 14001 : 2004

The BQA, nv hereby declares that the environmental management system of the company

Bonar NV – Site in Zele en Lokeren

Bonar
partners in performance

located at Industriestraat 39 – 9240 Zele – Belgium, has been examined on 24-03-2014
and found in conformity with the ISO 14001, edition 2004, standard for the following application field:

Development, manufacture and sales of a standard range of fibres and textiles such as agrotextiles, building textiles and geosynthetics, as well as similar products especially designed to customer specifications.

This certificate has been issued by BQA, nv according to its quality manual EMS concerning the certification of environmental management systems, and after the contract of certification N° CER_AJ_EMS019_24-03-2014_N, under which the company accepts a regular control of its environmental management system.

Certificate N° BQA_EMS019_C_200402
Valid until 23-03-2017

BELAC

BQA N° 019-EMS

D. SIMOENS
Directeur

BQA

BQA, nv - rue Montoyer 24 (b9) - 1000 Brussels

DS/AJ/C/24-03-2014

ZERTIFIKAT

Certification Body CE 1213
SKZ – TeConA GmbH
Friedrich-Bergius-Ring 22
97076 Würzburg / Germany

Certificate of Conformity of the Factory Production Control 1213–CPR–5945

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product(s)

NW **5, 6, 6 UV, 7, 8, 8 D, 8/8 ABG, 8.5, 9, 10, 10 UV, 10 UV IT, 11, 12, 12 UV, 13, 130 N, 15, 15 I, 15 UV, 150 I, 16, 16 ABG, 160 N, 18, 18 UV, 19 UV, 20, 20 XUV, 200 I, 21, 21 UV, 23 P, 250 I,**
GTX-N, needle punched, thermally treated; PP; used for the functions: S + F + D
25, 25 R, 26, 29, 30, 32, 32 R, 40, 40 R, 45,
GTX-N, needle punched, thermally treated; PP; used for the functions: S + F + D + P
Forte, Light, Medium, Supra, UNI, X Forte, X Light
GTX-N, needle punched, thermally treated; PP; used for the functions: S + F

SNW **100, 120, 140, 25, 25 XUV, 31, 40 UV, 46, 50, 50 SP, 55, 55 M, 55 XUV, 62, 70, 75, 75 XUV, 80, 85, 90,**
GTX-N, needle punched; PP; used for the functions: S + F + D + P
14, 17, 17 T,
GTX-N, needle punched; PP; used for the functions: S + F + D

VNW **200-PP-K, 200-PP-Z, 300-PP-K, 350-PPZ30, 400-PP-K, 450-PP-K, 500-PP-K, 600-PP-K, 600-PPZ30, 700-PP-K, 800-PP-K, 1000 PP-K, 1200-PP-K, 1500-PP-K, 1800-PP-K, 2000-PP-K,**
GTX-N, needle punched; PP; used for the functions: S + F + D + P

produced by or for

Bonar NV
Industriestraat 39
9240 Zele / Belgium

and produced in the manufacturing plant(s)

615

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13249:2000/A1:2005; EN 13250:2000/A1:2005; EN 13251:2000/A1:2005; EN 13252:2000/A1:2005; EN 13253:2000/A1:2005; EN 13254:2000/A1:2005; EN 13255:2000/A1:2005; EN 13257:2000/A1:2005; EN 13265:2000/A1:2005

under system 2+ for the performances set out in this certificate are applied and that the factory production control

fulfils all the prescribed requirements for these performances.

This certificate was first issued on 2014-11-04 and will remain valid as long as the test methods and/or factory production control requirements included in the harmonised standard(s), used to assess the performance of the declared essential characteristics, do not change, and the construction product, and the manufacturing conditions in the plant are not modified significantly, unless suspended or withdrawn by the factory production control certification body.

i. V.

Würzburg, 04 November 2014

Dipl.-Ing. Helmut Zanzinger
Certification Body

ZERTIFIKAT

Certification Body CE 1213
SKZ – TeConA GmbH
Friedrich-Bergius-Ring 22
97076 Würzburg / Germany

Certificate of Conformity of the Factory Production Control 1213–CPR–5945

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product(s)

PROTEC **250, 250 FR, 300, 33, 400, 500, 500 SP, 600, 700, 750, 750 XUV, 800 FR, 800, 800 XUV, 1000 FR,**
GTX-N, needle punched; PP; used for the functions: S + F + D + P
X 1000, X 1200
GTX-N, needle punched; PP; used for the functions: F + D + P

TS **1, 2,**
GTX-N, thermally bonded; PP; used for the functions: S + F
3, 4, 5,
GTX-N, thermally bonded; PP; used for the functions: S + F + D

produced by or for

Bonar NV
Industriestraat 39
9240 Zele / Belgium

and produced in the manufacturing plant(s)

615

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13249:2000/A1:2005; EN 13250:2000/A1:2005; EN 13251:2000/A1:2005; EN 13252:2000/A1:2005; EN 13253:2000/A1:2005; EN 13254:2000/A1:2005; EN 13255:2000/A1:2005; EN 13257:2000/A1:2005; EN 13265:2000/A1:2005

under system 2+ for the performances set out in this certificate are applied and that the factory production control

fulfils all the prescribed requirements for these performances.

This certificate was first issued on 2014-11-04 and will remain valid as long as the test methods and/or factory production control requirements included in the harmonised standard(s), used to assess the performance of the declared essential characteristics, do not change, and the construction product, and the manufacturing conditions in the plant are not modified significantly, unless suspended or withdrawn by the factory production control certification body.

i. V.

Würzburg, 04 November 2014

Dipl.-Ing. Helmut Zanzinger
Certification Body

Low&
Bonar

Progress through performance

Zele, 07/11/2016

CERTIFICATION OF COMFORMANCE

The undersigned supplier BONAR NV, hereby states under his responsibility that the following product complies with the indicated technical properties :

order 229827 your order 161018 a

Type	SG 20/20 F	28875,0 m²
	SG 110/110	21000,0 m²

Delivery docs : Packing list N. T1609193

Manufacturer : Low and Bonar NV, Industriestraat 39, 9240 Zele, Belgium
Goods are of Belgian (EU) origin

LOW AND BONAR NV

Low & Bonar NV
Industriestraat 39
B-9240 Zele
BTW BE 0421 053 442

Bontec SG110/110
Woven Geotextile

Installation Guideline

BONTEC: Woven and Non Woven Geotextiles manufactured by Bonar Technical Fabrics – Belgium.

RECOMMENDATION FOR THE INSTALLATION OF GEOTEXTILES

- The **BONTEC** geotextiles shall be kept in its original packaging in order to protect it from damaging UV-rays and high temperatures.

- The **BONTEC** geotextiles shall be stored protected from wind, rain, excess moisture or sunlight.

- The **BONTEC** geotextiles shall only be unpacked just before use. The material shall be covered within 1 week

- The **BONTEC** geotextiles shall be labelled and show the following data :

    - roll number
    - quality
    - name of the manufacturer
    - roll length & width
    - roll weight

- The **BONTEC** geotextiles shall be laid with the longitudenal ascis down slopes

- A minimum overlap of 500 mm between the different sheets shall be respected. Sewing of the different fabrics shall be done with a double prayer stitching technique with non deteriorating thread.

- Wherever visibility or installation of the BONTEC geotextile is poor an extra safety overlap of +/- 1 m shall be respected

- The surfaces to be covered with **BONTEC** geotextiles shall be smooth and free of sticks, roots, sharp objects, and all debris that may damage the fabric. The surface to be covered shall be firm and unyielding, with no sudden changes or brakes in grade.
- The compacted sub-base shall be maintained in a smooth, uniform and compacted condition during installation of the fabric.
- In area' s where wind is prevalent, fabric installation shall be started at the upwind side of the project and proceed downwind. The leading edgeof the fabric shall be secured at all times with sandbags or other means sufficient to hold it down during high winds. Sandbags or rubber tires may be used as required to hold the fabric in position during installation. Tires shall not have exposedsteel cords or other sharp edges which may snag or cut the fabric. Materials, equipment or other items shall not be dragged across the fabric or be allowed to slide down slopes on the fabric.

- Should the fabric be damaged during any step of the installation, the damaged section shall be repaired by covering it with a piece of fabric which extends at least 0,6 meter in all directions beyond the damaged area. The fabric shall be secured as directed by the engineer.

- Smoking shall not be permitted by personnel working on the fabric.

G & E
ENGINEERING
Since 1984

Bontec SG110/110
Woven Geotextile

List of Project Reference

Bontec SG Range Woven Geotextile

Date	Project	Client	Consultant	Product	Qty
Feb-05	CV/2003/06 Stanley Waterfront Improvement Project - Construction Pier and Boardwalk	Sun Fook Kong (Civil) Ltd	Civil Engineering and Development Department	NW10 SG100/100	3,150 2,080
Feb-05	99/9028 Lamma Power Station	Wai Kee (Zens) Construction & Transportation Co Ltd	Maunsell Geotechnical Services Ltd	SG100/100	1,040
Feb-05	CV/2004/02 Reconst. of Wong Shek & Ko Lau Wan Public Piers	Kin Shing Construction Co Ltd	Civil Engineering and Development Department	SG100/100	4,680
Apr-05	CV/2002/04 Penny's Bay Reclamation Stage 2	Gammon Skanska Ltd Shun Tat Construction Engineering Ltd	Scott Wilson Ltd	SG100/100 SG100/100	4,160 3,150
Apr-05	HK/12/02 CED, Central Reclamation Phase III, Engineering Works	Best Leader Engineering Ltd Leighton - China State - Van Oord Joint Venture	Atkins China Ltd	SG100/100 SG100/100	1,040 2,615
May-05	03/8013 Lamma Island to Cyberport	Leader- Marine Contractors Ltd Honwin Engineering Ltd	Maunsell Geotechnical Services Ltd	SG100/100 SG100/100	1,040 1,050
Jul-05	Shenzhen to Tai Po Twin Submarine Gas Pipeline Project	Honwin Engineering Ltd		SG100/100	3,675
Sep-05	TP37/03 Remaining Engineering Infrastructure Works for Pak Shek Kok Development Package 2A	Leader - Wai Kee (C&T) Joint Venture	Hyder Consulting Ltd	SG100/100	1,040
Nov-05	HY/2002/26 Stonecutter's Bridge	Hong Kong River Engineering Co Ltd	Ove Arup & Partners HK Ltd	SG100/100	1,050
Feb-06	CV/2005/12 Fill Reception Facilities at Tseung Kwan O Area 137 Quarry Bay and Mui Wo	Penta-Ocean Construction Co Ltd	Civil Engineering and Development Department	SG100/100	525
Mar-06	Maintenance Dredging at Castle Peak Power Station (CPPS) Jetty	New Concepts Engineering Development Ltd	Civil Engineering and Development Department	SG100/100	525
Mar-06	CV/2004/04 Maintenance and Repairs to Government / Public Piers and Immersed Tubes of Hung Hom Cross-Harbor Tunnel	China Harbour Engineering Co. Ltd	Civil Engineering and Development Department	SG100/100	1,050
Mar-06	HY/2005/06 Castle Peak Road Improvement West of Tsing Lung Tau	Shun Tat Construction Engineering Limited Chun Wo Construction & Engineering Co Ltd	Mouchel Halcrow JV	SG100/100 SG100/100	1,050 525
May-06	212 Main Works for the Proposed Third Golf Course Development at Kau Sai Chau, Sai Kung	China Harbour Engineering Co. Ltd	Ove Arup & Partners HK Ltd	SG100/100	3,150

Jun-06	Hong Kong Convention and Exhibition Centre Project - Silt Screen for Intake Pipe	Wai Kee (Zens) Construction & Transportation Co Ltd	NA	SG100/100	2,100
		Kaden - Wai Kee (C&T) JV		SG100/100	2,100
Aug-06	EP/SP/52/06 Development of EcoPark in Tuen Mun Area 38	Kaden Construction Limited	Scott Wilson Ltd	SG100/100	1,050
Sep-06	CV/2004/06 Management and Capping of Contaminated Mud Pit IV at East of Sha Chau - Phase III	Kaden - Wai Kee (C&T) Joint Venture	Civil Engineering and Development Department	SG100/100	1,050
Oct-06	Lamma Island Cable Landing	United Marine Co Ltd	Hong Kong Electric Co Ltd	SG100/100	2,100
Nov-06	CV/2004/01 Maintenance and Repairs to Seawalls, Piers and Other Port Works	Kin Shing Construction Co Ltd	Civil Engineering and Development Department	SG100/100	2,625
Dec-06	Private project	Friendly Benefit Engineering Ltd	NA	SG100/100	525
Feb-07	Prebored Socketted H-Piles at Hong Kong Convention & Exhibition Centre	Yee Hop Engineering Co Ltd	NA	SG100/100	3,623
May-07	HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau	Chun Wo Construction & Engineering Co Ltd	Mouchel-Halcrow JV	SG100/100	525
May-07	CV/2004/05 Maintenance Dredging	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG100/100	2,100
Aug-07	Dredging Project in Lai Chi Kok Shipyard	Maritime Mechanic Ltd	NA	SG100/100	525
Aug-07	6/WSD/06 Construction of Salt Water Supply System for Penny's Bay	Univic Engineering Ltd	Water Supplies Department	SG100/100	1,050
Nov-07	Permanent Aviation Fuel Facility Hong Kong International Airport (Contract No. H2104)	UDL Dredging Ltd	Babtie Asia Ltd	SG100/100	1,050
Dec-07	Seawall Modify, Tuen Mun Area 38	Cheer Engineering Ltd	Scott Wilson Ltd	SG100/100	525
May-08	DC/2007/10 Design and Construction of HK West Drainage Tunnel	Tapbo Civil Engineering Co Ltd	Ove Arup & Partners HK Ltd	SG100/100	5,486
Sep-08	CV/2006/05 Maintenance of Seawalls and Navigation Channels	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG100/100	6,825
Sep-08	Marine Works at Maldives	Kwan Sing Engineering & Construction Co Ltd		SG100/100	525
Nov-08	DC/2007/06 River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River	Kwan Lee Construction Co Ltd	Maunsell Consultants Asia Ltd	SG100/100	10,500
Mar-09	DC/2007/01 Drainage Improvement Works in Ki Lun Tsuen, Kwu Tung, Ma Tso Lung and Sha Ling	Shanghai Urban Construction Group Corp	Mott Connell Ltd	SG100/100 SG40/40	7,875 71,925

Jun-09	CHEC247 Lamma Power Station - Navigation Channel Improvement	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG100/100	7,350
Jan-10	Tsing Yi	Sam Woo Bore Pile Foundation Ltd		SG110/110	525
Feb-10	HY/2009/11 Central - Wanchai Bypass - North Point Reclamation	China Harbour Engineering Co UDL Ship Management Ltd	AECOM Asia Co Ltd	SG110/110 SG110/110	21,541 1,050
Mar-10	KL/2009/01 Site formation for Kai Tak Cruise Terminal Development	Penta-Ocean Construction Co. Ltd Kwan Sing Construction Ltd Crown Asia Engineering Ltd	Scott Wilson Ltd	SG110/110 SG110/110 SG110/110	28,875 5,775 1,050
Apr-10	TK/2009/01 Infrastructure Works at Town Centre South and Tiu Keng Leng, Tseung Kwan O	Shun Tat Construction Engineering Ltd	Meinhardt (C&S) Ltd	SG110/110 SG40/40	9,450 1,050
Apr-10	Lau Fau Shan	Wang Hip Iron Works Wirks Co Ltd		SG110/110	525
May-10	HK/2009/01 Wan Chai Development Phase II Central Wanchai Bypass	Leader Civil Engineering Corp Ltd Chun Wo-Leader Joint Venture	AECOM Asia Co Ltd	SG110/110 SG110/110	5,250 28,875
Jun-10	9/WSD/08 Laying of Western Cross Harbour Main and Associated Land Main Form West Kowloon to Sai Ying Pun	Shun Tat Construction Engineering Ltd	Mott Connell Limited	SG110/110	10,470
Oct-10	DC/2007/12 Design and Construction of Tsuen Wan Drainage Tunnel	Shun Tat Construction Engineering Co Ltd	Hyder Consulting Ltd	SG110/110	2,100
Oct-10	TP/2010/02 Cycle Tracks from Sheung Shui to Ma On Shan	Richwell Machinery Engineering Ltd	Civil Engineering and Development Department	SG110/110	525
Dec-10	CV/2010/03 Maintenance Contract for Seawalls and Navigation Channels	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG110/110	12,075
Dec-10	HK/2009/02 Wan Chai Development Phase II	Tung Wo Engineering Co Ltd Chun Wo-CRGL Joint Venture	AECOM Asia Co Ltd	SG110/110 SG110/110	4,200 2,625
Jan-11	HY/2009/15 Central-Wanchai Bypass-Tunnel Causeway Bay Typhoon Shelter	Shun Tat Construction Eng Ltd China State Engineering Co Ltd Tung Wo Engineering Ltd Hong Kong River Engineering Co Ltd	AECOM Asia Co Ltd	SG110/110 SG110/110 SG110/110 SG110/110	50,400 2,625 1,050 10,831
Jan-10	DC/2008/09 Submarine outfall Aberdeen	Paul Y Construction Co Ltd	AECOM Asia Co Ltd	SG110/110	525
Jan-10	KL/2008/07 Kai Tak Development - Advance	Crown Asia Engineering Ltd	AECOM Asia Co Ltd	SG110/110	1,050
Jan-10	DC/2011/04 Reconstruction, improvement and rehabilitation of Kai Tak River	Leader - Sunnic JV	Scott Wilson Ltd	SG110/110	525
Jan-11	CV/2009/02 Handling of surplus public fill	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG110/110	525
Mar-11	HK/2010/06 Wanchai Development Phase II-Central-Wanchai Bypass over MTR Tsuen Wan Line	Leader Civil Engineering Corp Ltd Gammon Construction Ltd	AECOM Asia Co Ltd	SG110/110 SG110/110	8,400 1,575

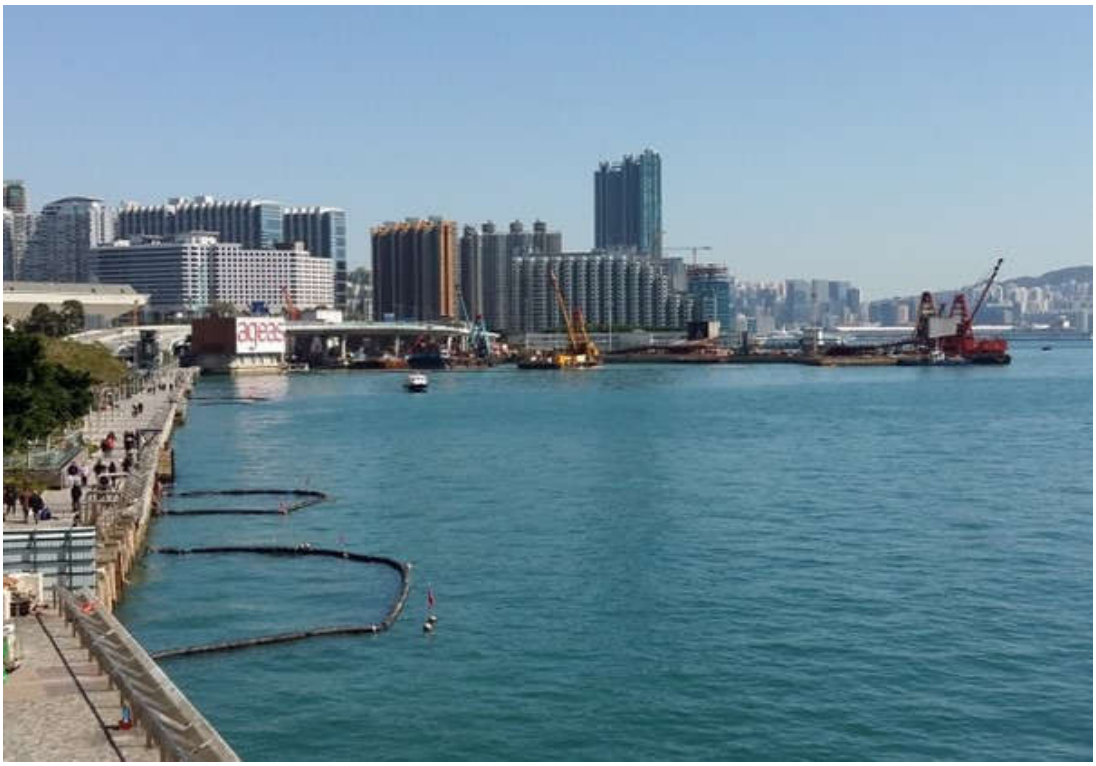
Apr-11	HY/2009/19 Central-Wanchai Bypass-Tunnel (North Point Section)	S W Marine Works Ltd Chun Wo Foundations Ltd Cheer Engineering Ltd	AECOM Asia Co. Ltd	SG110/110 SG110/110 SG110/110	3,150 19,950 525
May-11	DC/2009/13 Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	Leader Civil Engineering Corp Ltd	Scott Wilson CDM Joint Venture	SG110/110	1,575
May-11	DC/2009/22 Drainage Improvement Works in Shuen Wan, Tai Po- Contract 1	Kwan Lee-Kuly Joint Venture	AECOM Asia Co. Ltd	SG110/110	2,625
Jul-11	SIL (E) 903 Stage 2 Ocean Park Station Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge	Leighton Contractors (Asia) Ltd Cheer Engineering Ltd	Vector International Ltd	SG110/110 SG110/110	4,725 1,575
Aug-11	KL/2010/02 Kai Tak Approach Channel Improvement Works Stage 1	Kwan Sing Contractors Ltd	AECOM Asia Co. Ltd	SG110/110	7,350
Sep-11	DC/2010/02 Drainage Improvement Works in Shuen Wan And Shek Wu Wai	Kwan Lee-Kuly Joint Venture	Drainage Services Department	SG110/110	10,500
Oct-11	DC/2007/16 Design and Construction of Lai Chi Kok Transfer Scheme	Fortress Development Ltd	Maunsell Consultants Asia Ltd	SG110/110	2,100
Dec-11	HY/2010/02 HK-Zhuhai-Macau Bridge - HK Boundary Crossing Facilities Reclamation Works	China Harbour Engineering Co Ltd Sharon Asia Waste Sorting Eng Ltd Chung Kong Marine Engineering Ltd	Ove Arup & Partners HK Ltd	SG110/110 SG110/110 SG110/110	68,775 525 10,500
Jul-12	GSPD/SP/TKW-NP/089/2011 Installation of Submarine Gas Pipeliners and Associated Facilities from to Kwa Wan to North Point	Macdow - Kaden Joint Venture	Mott Connell Limited	SG110/110	3,150
Aug-11	HY/2011/03 HK-Zhuhai Macau Bridge - Hong Kong Link Road - Scenic Hill and Hong Kong Boundary Crossing Facilities	China State Construction Eng (HK) Ltd Will Pak Engineering Ltd Shun Tat Construction Eng Ltd Chun Ngai Construction Engineering Ltd	Ove Arup & Partners HK Ltd	SG110/110 SG20/20F SG110/110 SG110/110 SG20/20F	23,100 9,450 1,575 2,625 5,250
Mar-13	1017EM10 Kai Tak Former Runway	Crown Asia Engineering Ltd	Civil Engineering and Development Department	SG110/110	1,050
Mar-13	2/WSD/09 Salt Water Supply for Northwest New Territories - Construction of Lok On Pai Salt Water Pumping Station and Associated Works	Sunrise Enterprises Ltd	Water Supplies Department	SG40/40	525
Apr-13	Yuen Long	Kwong Wah Electrical Co Ltd	-	SG40/40	525
May-13	HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West	Hong Kong River Engineering Co Ltd China State - Leader JV	AECOM Asia Co. Ltd	SG110/110 SG110/110	41,475 525
Jun-13	SCL1111 Hung Hom North Approach Tunnels	Gammon - Kaden Joint Venture	AECOM Asia Co. Ltd	SG40/40 SG110/110	19,425 525

Aug-13	Near Hoi Sum Park, King Wan, Tokuawan	Hong Kong Marine Contractors Ltd		SG110/110	525
Sep-13	HY/2012/07 Tuen Mun - Chek Lap Kok Link-Sothern Connection Viaduct Section	Gammon Construction Ltd Right Lead Construction Co Ltd	AECOM Asia Co. Ltd	SG110/110 SG110/110	9,450 1,050
Oct-13	Mongkok	S W Marine Works Ltd		SG110/110	525
Jan-14	2/WSD/09 Construction of Lok On Pai salt water pumping station and associated works	CPC Construction Hong Kong Ltd	Water Supplies Department	SG40/40	1,050
Jan-14	CV/2013/02 Maintenance contract for seawalls and navigation channels	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG110/110	25,725
Feb-14	16/WSD/11 Replacement and rehabilitation of water mains at Peng Chau, Sunshine Island and Hei Ling Chau	MIRDTEC HK Ltd.	AECOM Asia Co. Ltd	SG110/110	2,625
Mar-14	Remodeling of New World Centre at Salisbury Road	Kaden Construction Ltd		SG110/110	1,050
Apr-14	KL/2011/01 Kai Tak Development - Reconstruction and Upgrading of Kai Tak Nullah	Chit Cheung Construction Co Ltd	AECOM Asia Co. Ltd	SG110/110	2,100
Jul-14	CV/2013/05 Construction of Cycle Parking Area near Yung Shue Ferry Pier, Lamma Island	Tak Cheong Construction Co Ltd	Civil Engineering and Development Department	SG110/110	525
Oct-14	MTRC SIL (E) 902 Nam Fung Tunnel and Ventilation Buildings	Nishimatsu Construction Co. Ltd	Scott Wilson Ltd	SG110/110	7,875
Nov-14	HY/2010/08 Central-Wanchai Bypass-Tunnel (Slip Road 8 Section)	Shun Tat Construction Eng Ltd	AECOM Asia Co Ltd	SG110/110	4,200
Jan-15	SCL1121 Shatin to Central Link - NSL Cross Habour Tunnel	Penta Ocean - China State JV	AECOM Asia Co. Ltd	SG110/110	19,950
Apr-15	KL/2013/01 Site Formation for Kai Tak Cruise Terminal Development - Remaining Works	Zhen Hua Engineering Company Limited	URS Hong Kong Ltd	SG110/110	15,750
May-15	Yau Tong Bay Redevelopment - Land Decontamination Works	Hong Kong River Engineering Co Ltd	AECOM Asia Co Ltd	SG110/110	2,100
Sep-15	MTRC810A West Kowloon Terminus Station North	Leighton - Gammon JV	AECOM-Aedas JV	SG110/110	11,025
Oct-15	Private job in Crooked Island	Maritime Mechanic Ltd		SG110/110	1,050
Nov-15	Private job in Tung Chung	Fortress Development Ltd		SG110/110	525
Jan-16	MTRC810B West Kowloon Terminus Station South	Laing O'Rourke - Hsin Chong - Paul Y. Joint Venture Tapbo Civil Engineering Co Ltd	AECOM - Aedas JV	SG110/110	1,050

Jan-16	Proposed revitalization of Avenue of Star and east TST Promenade Waterfront	Kaden Construction Ltd		SG110/110	1,050
Feb-16	HY/2013/01 HKZMB - Construction of Passenger Clearance Building	Leighton-Chun Wo Joint Venture	AECOM Asia Company Limited	SG110/110	2,100
Mar-16	KL/2014/01 Kai Tak Development - Stage 2 Infrastructure Works for Developments at Southern Part of the Former Runway	CEC-CCC Joint Venture	AECOM Asia Company Limited	SG110/110	525
Mar-16	1/WSD/15 Term Contract for Waterworks District E - New Territories East	Yick Sing Civil Engineering Ltd	Water Services Department	SG110/110	2,625
Mar-16	Fill Bank at Tuen Mun Area 38	Fortress Development Ltd	CH2M Hill (China) Limited	SG110/110	525
May-16	SCL 1128 Causeway Bay Typhoon Shelter to Admiralty Tunnels	Dragages-Bouygues J.V. Tapbo Civil Engineering Co Ltd VSL		SG110/110	1,575
Jun-16	Silt Curtain Repair	Hong Kong Marine Contractors Ltd		SG110/110	5,250
Jul-16	EP/SP/10/91 SENT Landfill, Tseung Kwan O	Green Valley Landfill, Limited	Rust Asia Pacific Ltd	SG40/40F	2,625
Sep-16	NE/2015/02 Tseung Kwan O - Lam Tin Tunnel Road P2 and Associated Works	CRBC-Build King Joint Venture Hong Kong River Engineering	Civil Engineering and Development Department	SG110/110	10,500
Oct-16	HY/2013/03 HKZMB HK BCF Vehicle Clearance Plazas and Ancillary Buildings and facilities	China Harbor Engineering Co Ltd Hing Fu Engineering Co Ltd Luen Hing Construction & Eng Ltd	AECOM Asia Co Ltd	SG20/20F SG20/20F	12,075 5,250
Nov-16	Job at Wan Chai	Will Pak Engineering Ltd		SG110/110	525
Nov-16	Job at Wan Chai	S W marine Works Ltd		SG110/110	1,050
Nov-16	NE/2015/07 Signature Project Scheme in Sha Tin – Decking of Tai Wai Nullah in Sha Tin	Concentric Construction Ltd	Black & Veatch Hong Kong Limited	SG20/2F	2,625
Nov-16	HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section	Dragages - Bouygues Joint Venture Crown Asia Engineering Ltd	AECOM Asia Co. Ltd	SG20/2F	25,725

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com



Date	Jan 2016
Project	Proposed revitalization of Avenue of Star and east TST Promenade Waterfront
Client	New World Development
Main Contractor	Kaden Construction Ltd
Works	Silt Protector
Material	Woven Geotextile Bontec SG110/110
Quantity	1,050 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	Jan 2015
Project	Contract No. SCL1121 Shatin to Central Link - NSL Cross Habour Tunnel
Client	MTRC
Consultant	AECOM Asia Co. Ltd
Main Contractor	Penta Ocean - China State JV
Works	Silt Curtain
Material	Woven Geotextile Bontec SG110/110
Quantity	8,400 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2014
Project	HY/2012/07 Tuen Mun - Chek Lap Kok Link- Sothern Connection Viaduct Section
Client	Highway Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Gammon Construction Ltd
Material	Woven geotextile Bontec SG110/110
Works	Silt Protector
Quantity	8,925 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	Nov 2014
Project	Contract No. HY/2010/08 Central-Wanchai Bypass - Tunnel (Slip Road 8 Section)
Client	Highway Department
Consultant	AECOM Asia Co Ltd
Main Contractor	China State Construction Engineering (HK) Ltd
Works	Silt Curtain
Material	Woven Geotextile Bontec SG110/110
Quantity	1,575 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2013
Project	Contract No. HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West
Client	CEDD
Consultant	AECOM Asia Co. Ltd
Main Contractor	China State Construction Engineering Co. Ltd
Works	Silt Curtain
Material	Woven Geotextile SG110/110
Quantity	42,000 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	June 2013
Project	Contract No: HY/2011/03 HK-Zhuhai Macau Bridge Hong Kong Link Road - Scenic Hill and Hong Kong Boundary Crossing Facilities
Client	Highway Department
Consultant	Ove Arup & Partners HK Ltd
Main Contractor	China State Construction Engineering
Works	Tailor-made Silt Protector
Material	Woven Geotextile Bontec SG110/110

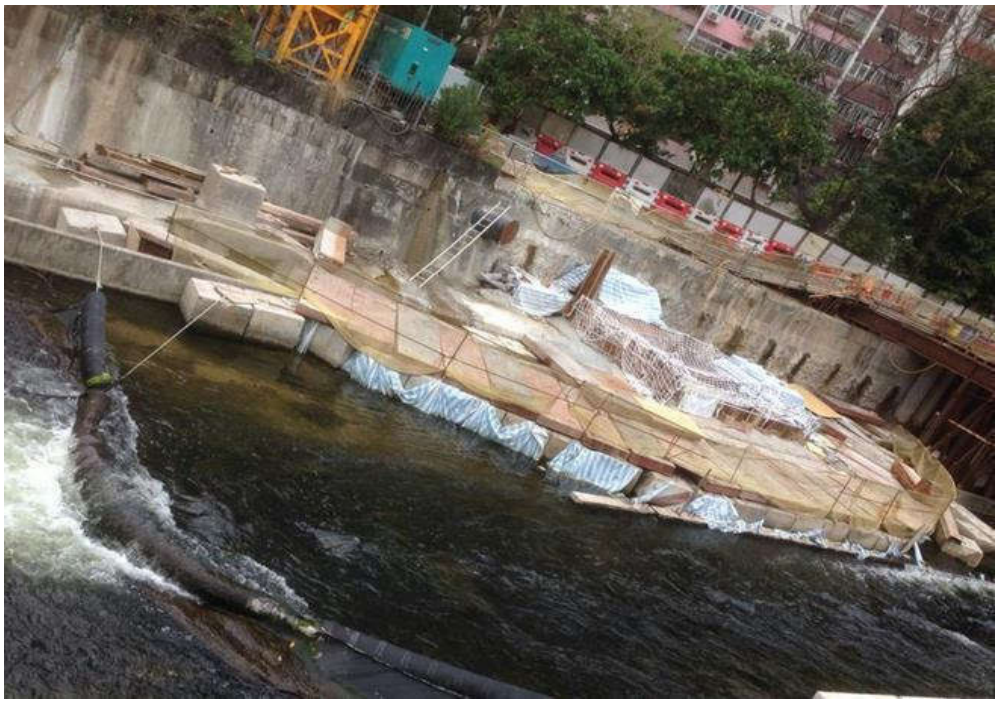
G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	Jan 2014
Project	Contract No. CV/2013/02 Maintenance contract for seawalls and navigation channels
Client	CEDD
Consultant	CEDD
Main Contractor	China Harbour Engineering Co Ltd
Works	Silt Protector
Material	Woven Geotextile Bontec SG110/110

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com



Date	Feb 2014
Project	Contract No. DC/2011/04 Reconstruction, improvement and rehabilitation of Kai Tak River from Wong Tai Sin Police Station to Tung Tau II Estate
Client	Drainage Service Department
Consultant	Scott Wilson Limited
Main Contractor	Leader - Sunnic JV
Works	Silt Curtain to Kai Tak Nullah
Material	Woven Geotextile Bontec SG110/110
Quantity	525 sqm

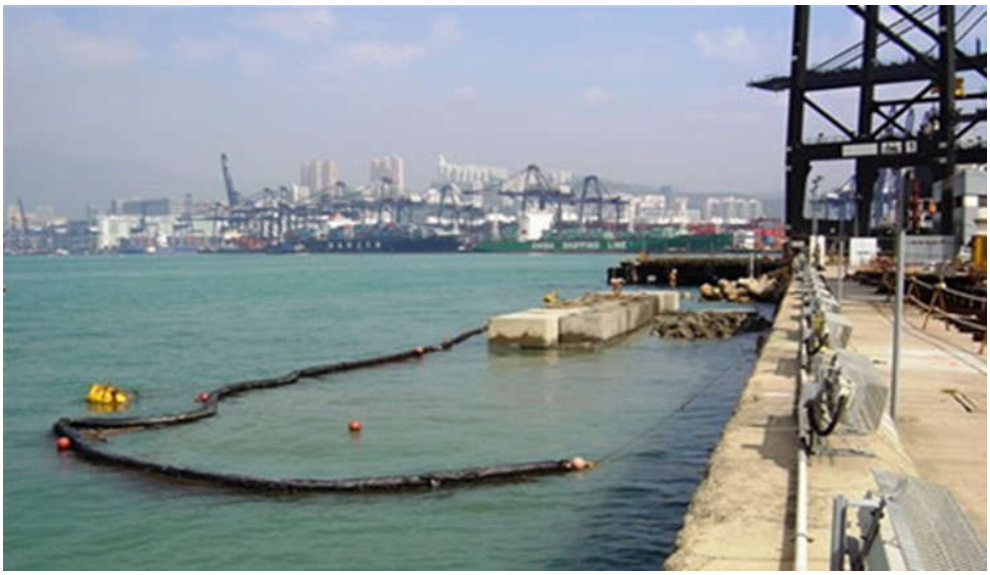
G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	Dec 2011
Project	Contract No. HY/2010/02 HK-Zhuhai-Macau Bridge - HK Boundary Crossing Facilities Reclamation Works
Client	Highway Department
Consultant	Ove Arup & Partners HK Ltd
Main Contractor	China Harbour Engineering Co Ltd
Works	Tailor-made Silt Protector
Material	Woven Geotextile Bontec SG110/110

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com



Date	November 2005
Project	Contract No. HY/2002/26 Stonecutters Bridge
Client	Highway Department
Consultant	Ove Arup and Partners HK Ltd
Main Contractor	Hong Kong River Engineering Co Ltd Maeda - Hitachi - Yokogawa - Hsing Chong Joint Venture
Material	Woven geotextile Bontec SG110/110
Works	Tailor-made Silt Curtain
Size	1,050 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2011
Project	Contract No. DC/2009/22 Drainage Improvement Works in Shuen Wan, Tai Po
Client	Drainage Service Department
Consultant	AECOM (Asia) Ltd
Main Contractor	Kwan Lee - Kuly Joint Venture
Works	Separation
Material	Woven geotextile SG110/110
Quantity	2,625 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	June 2013
Project	Contract No. HY/2009/15 Central-Wanchai Bypass-Tunnel (Causeway Bay Typhoon Shelter Section)
Client	Highway Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	China State Construction Engineering (HK) Limited
Works	Tailor-made Silt Curtain
Material	Woven Geotextile Bontec SG110/110

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2014
Project	Contract No. HK/2009/02 Wan Chai Development Phase II Central - Wan Chai Bypass Wan Chai East
Client	Civil Engineering and Development Department
Consultant	AECOM (Asia) Ltd
Main Contractor	Chun Wo Construction & Engineering Co.Ltd
Application	Silt Protector
Material	Woven Geotextile SG110/110
Quantity	6,825 sqm

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2010
Project	Contract No. HK/2009/01 Wan Chai Development Phase II -Central - Wanchai Bypass at Hong Kong Convention and Exhibition Centre
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Chun Wo - Leader Joint Venture
Works	Intake Silt Curtain
Materials	Woven Geotextile SG110/110
Size	34,125 sqm

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2010
Project	KL/2009/01 Site formation for Kai Tak Cruise Terminal Development
Client	CEDD
Consultant	Scott Wilson Ltd
Main Contractor	Penta-Ocean Construction Co. Ltd
Materials	SG110/110
Size	1,050 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2014
Project	HY/2012/07 Tuen Mun - Chek Lap Kok Link- Sothern Connection Viaduct Section
Client	Highway Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Gammon Construction Ltd
Works	Silt Curtain
Material	Woven geotextile Bontec SG110/110

G AND E COMPANY LIMITED

14/F., Kiu Yin Commerical Building,
361-363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2010
Project	Contract No. DC/2007/01 Drainage Improvement Works in Ki Lun Tsuen, Kwu Tung, Ma Tso Lung and Sha Ling
Client	Drainage Services Department
Consultant	Mott MacDonald
Main Contractor	Shanghai Urban Construction (Group) Corporation
Material	Woven Geotextile Bontec SG110/110 Woven Geotextile Bontec SG40/40
Quantity	SG110/110 - 7,875 sqm SG40/40 - 71,925 sqm

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	April 2011
Project	Contract No. HY/2009/11 Central - Wanchai Bypass - North Point Reclamation
Client	Highways Department
Consultant	AECOM Asia Ltd
Main Contractor	China Habour Engineering Company
Works	Tailor-made Silt Curtain
Materials	Woven Geotextile SG110/110
Quantity	22,066 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2004
Project	Contract No. CV/2001/12 Reconstruction of Cheung Chau and Wu Kai Sha Public Piers
Client	Civil Engineering and Development Department
Engineer	Civil Engineering and Development Department
Main Contractor	Hong Kong and Macau Scent On Engineering & Construction Ltd
Works	Tailor-made Silt Curtain
Material	Woven Geotextile Bontec SG110/110

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	October 2006
Project	Lamma Island Cable Landing
Client	Hong Kong Electric Co Ltd
Consultant	Hong Kong Electric Co Ltd
Main Contractor	United Marine Co Ltd
Works	Tailor-made Silt Curtain
Material	Woven Geotextile SG110/110
Quantity	2,100 sqm

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2006
Project	Contract No. HY/2005/06 Castle Peak Road Improvement West of Tsing Lung Tau
Client	Highway Department
Consultant	Mouchel Halcrow JV
Main Contractor	Chun Wo Construction & Engineering Co., Ltd.
Material	Woven Geotextile Bontec SG110/110
Works	Tailor-made Silt Curtain
Quantity	1,050 sqm

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	February 2005
Project	Contract No. CV/2003/06 Stanley Waterfront Improvement Project - Construction Pier &
Client	Civil Engineering and Development Department
Consultant	Civil Engineering and Development Department
Main Contractor	Sun Fook Kong (Civil) Ltd
Works	Silt Curtain - SG110/110
Quantity	2,080 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	May 2011
Project	Contract No. DC/2009/13 Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan
Client	Drainage Service Department
Consultant	Scott Wilson CDM Joint Venture
Main Contractor	Leader Civil Engineering Corp Ltd
Material	Bontec SG110/110 woven geotextile
Works	Silt Curtain
Quantity	1,575 sqm

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	Jan 2005
Project	Contract No. HK/12/02 Central Reclamation Phase III Engineering Works
Client	Civil Engineering and Development Department
Consultant	Atkins China Ltd
Main Contractor	Leighton - China State - Van Oord JV
Material	Woven Geotextile Bontec SG110/110
Works	Silt Curtain
Quantity	3,655 sqm

G AND E COMPANY LIMITED

14/F, Kiu Yin Commercial Building,
361 - 363 Lockhart Road
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	January 2010
Project	KL/2008/07 Kai Tak Development-Infrastructure works at Southern part of former runway, Stage 1
Client	CEDD
Consultant	AECOM
Main Contractor	Friendly Benefit Engineering Ltd
Works	Fabrication of Silt Curtain
Materials	SG110/110

G & E
ENGINEERING
Since 1984

Bontec SG110/110
Woven Geotextile

Approval Letters

ENGINEER'S OFFICE
BLACK & VEATCH
HONG KONG LTD.
25th Floor, Millennium City 6
392 Kwun Tong Road, Kowloon, Hong Kong.
Tel : 2601 1000
Fax : 2601 3988

ENGINEER'S REPRESENTATIVE'S OFFICE
Butterfly Valley Fresh Water Primary Service Reservoir
Kowloon, Hong Kong
(Not a postal address)

Your ref. : C9103/BVSR/WF/0076/10/13
Our ref. : 4991/(4/WSD/11)/M25/120/L100071

Date: 22 October 2013

By Hand

Contract: 4/WSD/11 Project Office
c/o China Geo – Engineering Corporation
Rooms 2421-2425, 24/F, Sun Hung Kai Centre
30 Harbour Road
Wan Chai
Hong Kong

Attn: Mr. Wong Fai (Site Agent)

Dear Sirs,

Agreement No. CE 55/2008 (WS)
Contract No. 4/WSD/11
Construction of Butterfly Valley Fresh Water Primary Service Reservoir Extension and Associated Mainlaying
Material Submission – Geotextile Filter

We refer to your letter of 10 October 2013 supplementing the additional information for your proposal to use the following material:

Item	*Material*	*Manufacturer*	*Supplier*
1.	Geotextile Filter	Bonar Technical Fabrics	G & E Co. Ltd.

Please be advised that we have no objection in principle to your proposal, provided that the application of such materials shall be in full compliance with the manufacturer's recommendations and the Contract Specification.

You are reminded, pursuant to PS Clause 7.196S(3)(d), to provide the sieve size of the base soil upon collection of soil sample on Site for our information.

Yours faithfully,

Peter K H Ng
Engineer's Representative

PNg/AC/JT/dt

Drainage Services Department
Drainage Projects Division
44/F, Revenue Tower, 5 Gloucester Road,
Wan Chai, Hong Kong

渠務署
排水工程部
香港灣仔告士打道5號
稅務大樓44樓

來函檔號 Your Ref: KLKJV/DC201002/T40/0173
本署檔號 Our Ref: ( ) in DP/8/4109CD/DC1002/30
電 話 Tel: (852) 2435 7031
傳 真 Fax: (852) 2827 8700

By fax and post
(Fax No. 2674 6688)

29 August 2011

Kwan Lee – Kuly Joint Venture
Unit 6, 16/F Yuen Long Trading Centre,
33 Wang Yip Street West,
Yuen Long, N.T.

(Attention: Mr. CHAN Wing-kai – Project Manager)

Dear Sirs,

Contract No. DC/2010/02
Drainage Improvement Works in Shuen Wan and Shek Wu Wai

Material Submission – Type B Geotextile

I refer to your above quoted letter dated 19 August 2011 and the attached email dated 29 August 2011 enclosing further information in response to the comments given in my letter dated 25 August 2011 regarding the captioned subject.

Please be advised that I have no objection to your proposal of using "Bontec SG110/110 Woven Polypropylene Type B Geotextile" manufactured by "Bonar Technical Fabrics" and supplied by "G and E Company Limited" as the geotextile filter Type B / Geotextile Type 2 for this Contract subject to its satisfactory performance on site.

Yours faithfully,

(W. L. YIP)
Engineer's Representative
Drainage Projects Division
Drainage Services Department

Encl.
cc. DC/2010/02 Site Office

Internal (to note in file): E/D19

WLY/

AECOM
8/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong
www.aecom.com

+852 2605 6262 tel
+852 2691 2649 fax

D1045

RECEIVED
08 JUN 2011
BY:

Your Ref.: KLKJV/DC200922/M60/1498
Our Ref. : (DC/2009/22)/R20/106(0019)

8 June 2011

Kwan Lee – Kuly Joint Venture
Unit 6, 16/F, Yuen Long Trading Centre
33 Wang Yip Street West, Yuen Long
New Territories, Hong Kong

Attn : Mr. WONG Ching Lung (Site Agent)

Shuen Wan RE's Office
Fo Chun Road , Pak Shek Kok , Tai Po, H.K.
T +852 2603 6933
F +852 2603 7998

Dear Sirs

Contract No. DC/2009/22
Drainage Improvement Works in Shuen Wan, Tai Po – Contract 1

Material Submission – Type B Geotextile

I refer to your above referenced letter dated 31 May 2011 enclosing further information in response to the comments given in my letter ref. (0017) in the same series dated 27 May 2011 on the captioned material submission for my approval.

Please be advised that I have no objection to your proposal of using "Bontec SG 110/110" manufactured by "Bonar Technical Fabrics Company" and supplied by "G & E Company Limited" "as the geotextile filter Type B / Geotextile Type 2 for this Contract subject to its satisfactory performance on site.

You are reminded to strictly follow the manufacturer's guidelines on storage, handling and installation procedures for application of the material.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.

Eddie LUK
Resident Engineer
Water & Urban Development

cc AECOM - Attn : Mr. Joseph HO
M/F

EL/VH/pc

Reg No 1396

土木工程拓展署
CEDD Civil Engineering and Development Department

RECEIVED

土木工程處
Civil Engineering Office

Web site 網址 : http://www.cedd.gov.hk
E-mail 電子郵件 :
Telephone 電話 : (852) 2760 5737
Facsimile 傳真 : (852) 2714 2054
Our reference 本署檔號 : ( ) in PW WC/CV0402/R20/340 Pt.1
Your reference 來函檔號 : KS330/2005

香港九龍公主道101號
土木工程拓展署大樓四樓
4/F, Civil Engineering and Development Building,
101 Princess Margaret Road,
Kowloon, Hong Kong

24 January 2005

BY MAIL & FAX No. 2780 2085

Kin Shing Construction Company Limited
1/F,
27 Yin Chong Street,
Mong Kok
Kowloon
(Attn.: Mr. Patrick P K Chau – Site Agent)

Dear Sirs,

Contract No. CV/2004/02
Reconstruction of Wong Shek and Ko Lau Wan Public Piers

Material Submission – Geotextile for Silt Curtain

I refer to your letter of 14.1.2005 enclosing the particulars of the geotextile for fabrication of silt curtain.

In accordance with PS Clause 26.08(2), the proposed "SG 100/100" woven geotextile manufactured by Bonar Technical Fabrics is approved to be used under the captioned Contract.

Pursuant to PS Clause 26.08(1), you are required to submit details of the silt curtains 3 weeks before their deployment.

Contract No. CV/2004/02			
Post	Initial	Copy	Action
CM			
PM			
SA			✓
Sub-A			
Eng.(1)			
Eng.(2)			
C.F			
Foreman			
Q.S		✓	
Safety			
Material			
Survey			

Yours faithfully,

(W H LEE)
Engineer's Representative
Port Works Division
Civil Engineering and Development Department

c.c.
SIOW/P2B – Site Copy

cls

土木工程拓展署
CEDD Civil Engineering and Development Department

Web site 網址 : http://www.cedd.gov.hk
E-mail 電子郵件 :
Telephone 電話 : (852) 2762 5035
Facsimile 傳真 : (852) 2714 2054
Our reference 本署檔號 : (15) in PW WC/CV0306/R20/340 Pt.01
Your reference 來函檔號 : CIV:002091/1.2/HW/SY/CC/me(S0087),
CIV:002091/1.2/HW/SY/CC/me(S0118)

土木工程處
Civil Engineering Office

香港九龍公主道101號
土木工程拓展署大樓4樓
4/F, Civil Engineering and Development Building,
101 Princess Margaret Road,
Kowloon, Hong Kong

112

18 February 2005

Sun Fook Kong (Civil) Limited
Rms. 3207-10,
Great Eagle Centre,
23 Harbour Road,
Wan Chai,
Hong Kong
(Attn: Mr. Howard KONG - Fax No.2827 6275)

Dear Sirs,

Contract No. CV/2003/06

Stanley Waterfront Improvement Project –
Construction of Pier and Boardwalk

Fabric for Silt Curtain

I refer to your above letters dated 21.1.2005 and 15.2.2005 proposing the SG100/100 fabric supplied by "Bonar Technical Fabrics" for silt curtain.

I have no objection to your proposed material for silt curtain.

Yours faithfully,

(Paul Y K MA)
Engineer's Representative
Port Works Division
Civil Engineering and Development Department

c.c.
Site Office (Attn: SIOW/P1A)
CEG/P1A

File PW WC/CV0306/M10/300

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Post-it® Fax Note 7671 | Date 24/2/05 | # of pages ▶ 1
To MR. STANLEY WAN | From CHAN SZE-HO
Co./Dept. G&E | Co. SFK
Phone # 25060028 | Phone # 68471709
Fax # 25700089 | Fax #

TOTAL P.01

MAUNSELL | AECOM

Maunsell Consultants Asia Ltd
8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, N.T., Hong Kong
茂盛(亞洲)工程顧問有限公司
香港新界沙田鄉事會路 138 號新城市中央廣場第 2 座 8 樓
T +852 2605 6262 F +852 2691 2649 www.maunsell.aecom.com
SRE's Office T +852 2669 0708 F +852 2631 2889 E sre@jtriw.com.hk

Your Ref. : DC0706/M1.2/1512 & 1529
Our Ref. : (DC/2007/06)/R20/106(0023)

Chiu Hing Construction & Transportation Co. Ltd.
Room 201, 2/F Fuk Shing Commercial Building
28 On Lok Mun Street
On Lok Tsuen, Fanling
New Territories, Hong Kong

Attn : Mr. Roger Lau (Site Agent)

13 November 2008

Dear Sir,

Contract No. DC/2007/06
River Improvement Works in Upper Lam Tsuen River,
She Shan River and Upper Tai Po River

Proposed Geotextile at Gabion Wall in She Shan River and Upper Tai Po River

I refer to your letter dated 7 November 2008 and 12 November 2008 respectively.

Please be advised that since the water flow rate of the proposed geotextile model Bontec SG100/100 meets the requirements in accordance with P.S. Clause 7.150, I have no further objections to your proposed use of woven geotextile model Bontec SG100/100, supplied by "G and E Company Ltd." at gabion wall in She Shan River and Tai Po River, subject to its satisfactory performance on site.

Yours faithfully,

Adrian Ng
Resident Engineer

cc MCAL - Attn : Mr. Conder Yan
Chiu Hing H.O.

AN/BC/ek

Bontec SG110/110
Woven Geotextile

G and E Company Introduction

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 – 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 2570 0103 Fax: 2570 0089 website: www.g-and-e.com

G and E – a Perspective

G and E, founded in 1984, is a geosynthetics specialist who distributes a wide variety of geosynthetics from a list of renowned global manufacturers. The Company also manages a competent installation contracting service. To better serve our clients, design and engineering service have also been established in our portfolio. We aspire to provide our client comprehensive engineering solutions, from technical application and design, the supply of materials and their installation, to the conformance testing and project commissioning.

G and E takes a strong vision on geosynthetics application and development by working closely with international consultants, academics, professional organizations, research institutions, testing laboratories and renowned manufacturers, a mission to broaden the versatility of geosynthetics and its innovation.

Our vast product range covers:
Geotextile, geomembrane, geodrain, geocomposite, geogrid, geocell, band drain, erosion control systems, geosynthetic clay liner, rockfall barrier, gabion, geofoam, silt curtain, concrete mattress and geotextile container, extending a very wide scope of application in most civil, geotechnical and marine engineering.

We offer our clients:

- Extensive product knowledge and installation method statement
- Comprehensive services, application, design, contracting and commissioning
- Highly attentive and superior professional work
- Superb quality products at competitive price

G and E is ISO9001:2008 quality management certified, and a VSRS registered subcontractor. G and E has a remarkably successful working relationship with a long list of clients, the Government, project owners, contractors, designers, consultant engineers, overseas distributors and trading partners. The clientele extends to Macau, Southeast Asia and Southern China.

Talk to us today and see how we can work together for cost-effective and time saving solutions. We are stepping into our 32nd year in the field and have valuable experience to share with you.

ISO9001:2008 | Product Endorsement | A Registered Subcontractor

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G and E is a distribution network and sourcing agent of geosynthetics, as well as a provider of professional design and installation services.

Central – Wan Chai Bypass - seawall separation using heavy non-woven geotextile Bontec SNW120

The company handles a comprehensive range of geosynthetic materials:

GEOTEXTILE:	PP, PET woven, non-woven, thermal bonded, needle punched, spun bond, special weave & composite
GEOMEMBRANE:	HDPE, LLDPE, PVC, keyed preformed, tunnel lining, concrete protection liner, gas barrier, basement waterproofing, leakage collection & effluent containment
GEODRAIN:	Geonet, geocomposite, band drain, sheet drain & roof drain
GEOGRID:	HDPE, PET, PP for reinforced slope and wall, MSEW, stabilization geogrid, special composite
EROSION CONTROL:	Erosion mat, concrete mat, coir mat, geocell, gabion, rockfall mesh, flexible rockfall fence
MARINE ENGINEERING:	Silt curtain, turbidity control, block mat, geotextile tube, trash boom, geotextile container
GCL:	Geosynthetic clay liner, bentonite liner and composite
HDPE PIPE:	Sewer pipe, dual wall pipe, submarine outfall
TUNNELING:	GFRP rebar for soft eye, tunnel support & invert drainage
SPECIAL SERVICE:	Geomembrane leak location survey, HDPE pipe welding, HDPE lining repair

Dec 2015

Registration Certificate

This is to certify that the Management Systems of

G & E Company Limited

have been assessed by AJA Registrars and registered
against the requirements of

ISO 9001:2008

Certificate No. : **AJA14/17026** Date of Original Registration : **22/01/2014**

Expiry Date : **14/12/2016** Date of Re-Registration : **N/A**

UKAS MANAGEMENT SYSTEMS
0059

Chief Executive - AJA Registrars Ltd

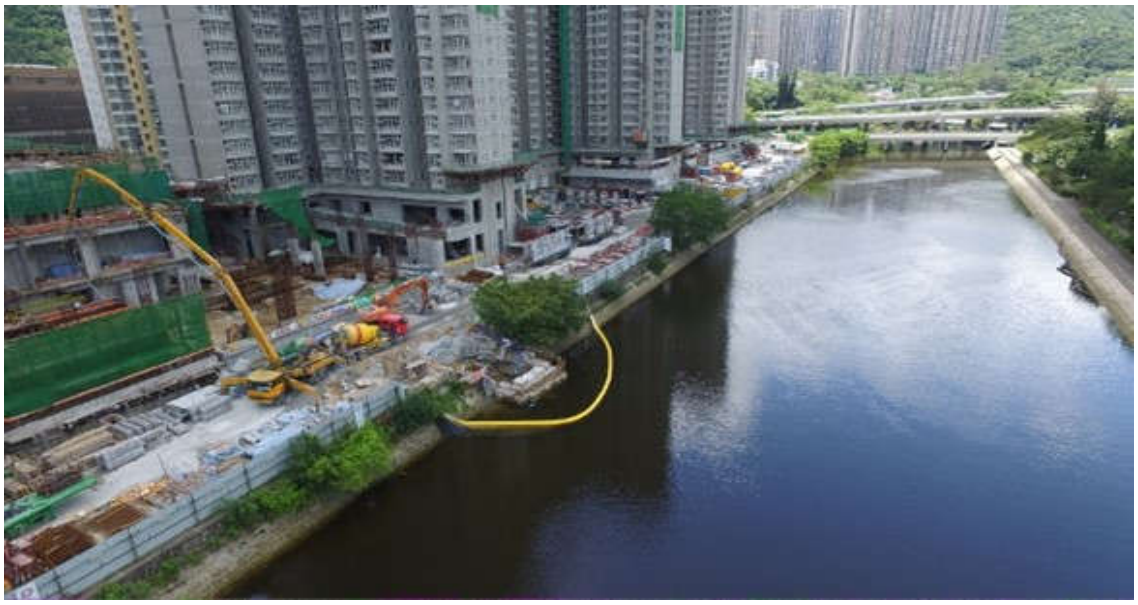
MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

AJA REGISTRARS
ANGLO JAPANESE AMERICAN

This certificate is issued in respect of the locations & scope of registration detailed in the Associated Registration Schedule.
This certificate is the property of AJA Registrars Ltd Unit 6 Gordano Court Gordano Gate Business Park Serbert Close Portishead Bristol UK BS20 7FS
and must be returned on request. A member of the AJA Group of Companies

Material Submission

G and E Silt Curtain



G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building

361-363 Lockhart Road, Wanchai, HK

Tel: 2570 0103 Fax: 2570 0089 website: www.g-and-e.com

August 2019

G & E ENGINEERING
Since 1984

Table of Contents

An Introduction of G and E Company Limited

G AND E COMPANY LIMITED

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Our vast product range covers:
Geotextile, geomembrane, geodrain, geocomposite, geogrid, geocell, band drain, erosion control systems, geosynthetic clay liner, cementitious liner, rockfall barrier, gabion, geofoam, silt curtain, concrete mattress and geotextile container, extending a wide scope of application in most civil, geotechnical and marine engineering construction.

We offer our clients:

- Extensive product knowledge and installation method statement
- Comprehensive application, design, contracting and commissioning services
- High integrity and superior professional attention
- Superb quality products at competitive price

G and E is ISO 9001:2015 quality management certified and a VSRS registered contractor, with a remarkably successful working relationship with a long list of clients, the Government, project owners, contractors, designers, consultant engineers, overseas distributors and trading partners. The clientele extends to Macau, Southeast Asia and Southern China.

Talk to us today and see how we can work together for cost-effective and time saving solutions. We are into our 35th year in the industry, we have a library of experience to share and to support your project.

ISO9001:2015 | IGAI | International Geosynthetics Society | Product Endorsement | Registered Subcontractor

G AND E COMPANY LIMITED

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Wanchai, Hong Kong
Tel: 2570 0103 Fax: 2570 0089 website: www.g-and-e.com

G and E runs a distribution network and sourcing agent of geosynthetics, as well as a provider of professional design and installation services.

TKO - Lam Tin Tunnel - Main tunnel and associated works using DSP silt curtain

The company handles a comprehensive range of geosynthetic materials:

GEOTEXTILE:	Woven, non-woven, thermal bonded, needle punched, spun bond, special weave & composite
GEOMEMBRANE:	HDPE, LLDPE and PVC membrane, keyed preformed, tunnel, conductive and concrete protection liner, gas barrier, basement waterproofing, leakage collection & effluent containment
GEODRAIN:	Geonet, geocomposite, band drain, sheet drain and miradrain
GEOGRID:	Uni, mono direction and composite geogrid
EROSION CONTROL:	Erosion mat, concrete mat, coir mat, geocell, gabion, rockfall mesh, flexible rockfall fence, cementitious liner
MARINE:	Silt curtain, turbidity control, block mat, geotextile tube, oil & trash boom, geotextile bag & container
GEOSYNTHETIC CLAY LINER:	Bentonite liner and composite
TUNNEL:	Tunnel support & invert drainage void former
LANDSCAPING :	Geotextile filter, root barrier and drainage mat and roof drain
SPECIAL SERVICE:	Geomembrane leak location survey, HDPE pipe welding, HDPE lining repair and Dust Control

Feb 2019

G & E
ENGINEERING
Since 1984

Silt Curtain Leaflet

G and E - Silt Curtain

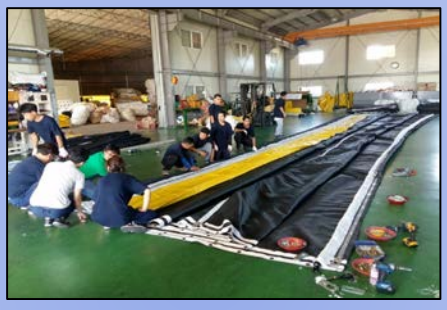
G and E has established silt curtain fabrication facility in Korea, making full use of professional factory set up, trained and skill workers, availability of quality geotextile and components, efficient operation and fast delivery from Busan to Hong Kong. G and E Silt Curtain (GESC series) has standard unit and customized model.

Typical proto-type

We can supply silt curtain systems with:

- Customize design & drawing based on requirements
- Engineer to site condition constraint
- Fabricate to specific depth and length
- Supplement with accessories and installation components

Handling of the silt curtain



Fabrication of silt curtain

Factory in Ansung, Korea

The silt curtain will be delivered in pre-assembled package, including the float, geotextile curtain, ballast chain, other accessories, readied for immediate deployment , anchor system is optional.

Silt Curtain Types

G and E Silt Curtain system comes in various types to suit all environments. There are:

- **Hanging type** - typical floating system to enclosed work area
- **Standing type** - suspended in mid water to allow marine traffic
- **Barge type** – for attachment to vessel or marine structure
- **Cover head type** - for coastal calm area
- **Frame type** - for enclosure of grab bucket
- **Double chain type** – a waving skirt to accommodate tidal change

Hanging type

Hanging type - Woven PP geotextile

Standing type

Double chain type

Barge type

Cover head type

Small span type

There are various sizes of float (buoyancy necessity), different grades of geotextile (strength requirement), a variety of steel plates (connection integrity), reinforcement belt (stiffening the curtain body) and several bottom chain (adequate ballast weight) to configurate the most appropriate system.

Silt Curtain Accessory

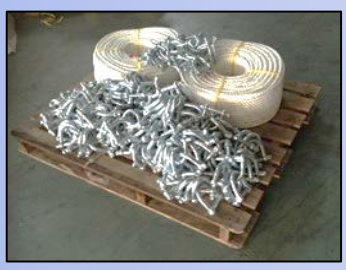
Optional accessories include sub-float to counter balance wave action, market buoy to identify anchor position, market light to signal alignment, fluke & ton bag anchor to replace anchor block as well as PP rope, shackle and anchor wire.

Anchor wire & cable

Marker light

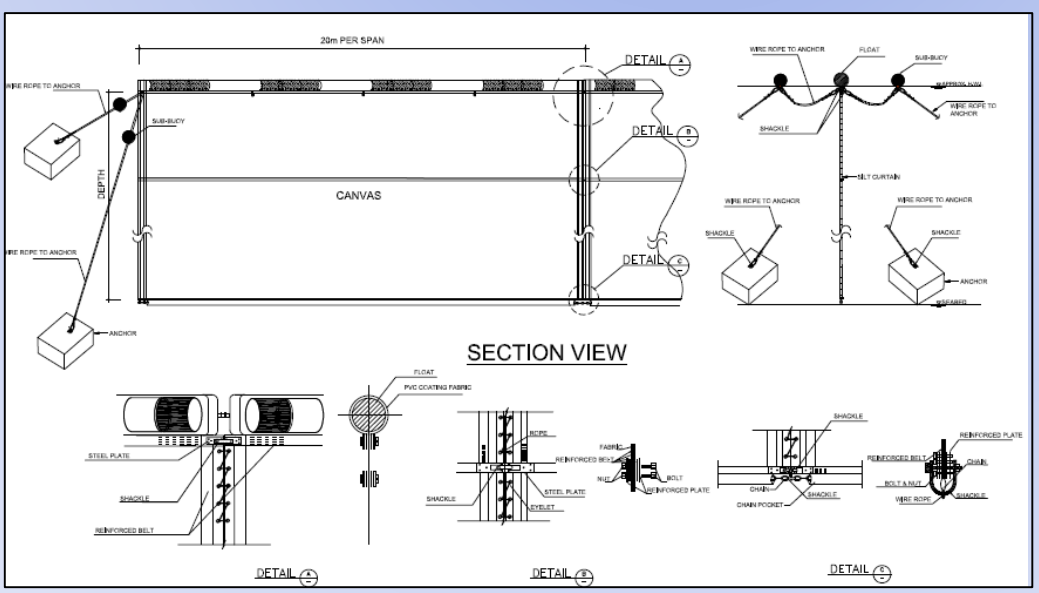
Marker buoy

Sand bag anchor



Rope & shackle

Typical Design Drawing of Silt Curtain



Fluke anchor

Sub float

G and E Company Limited

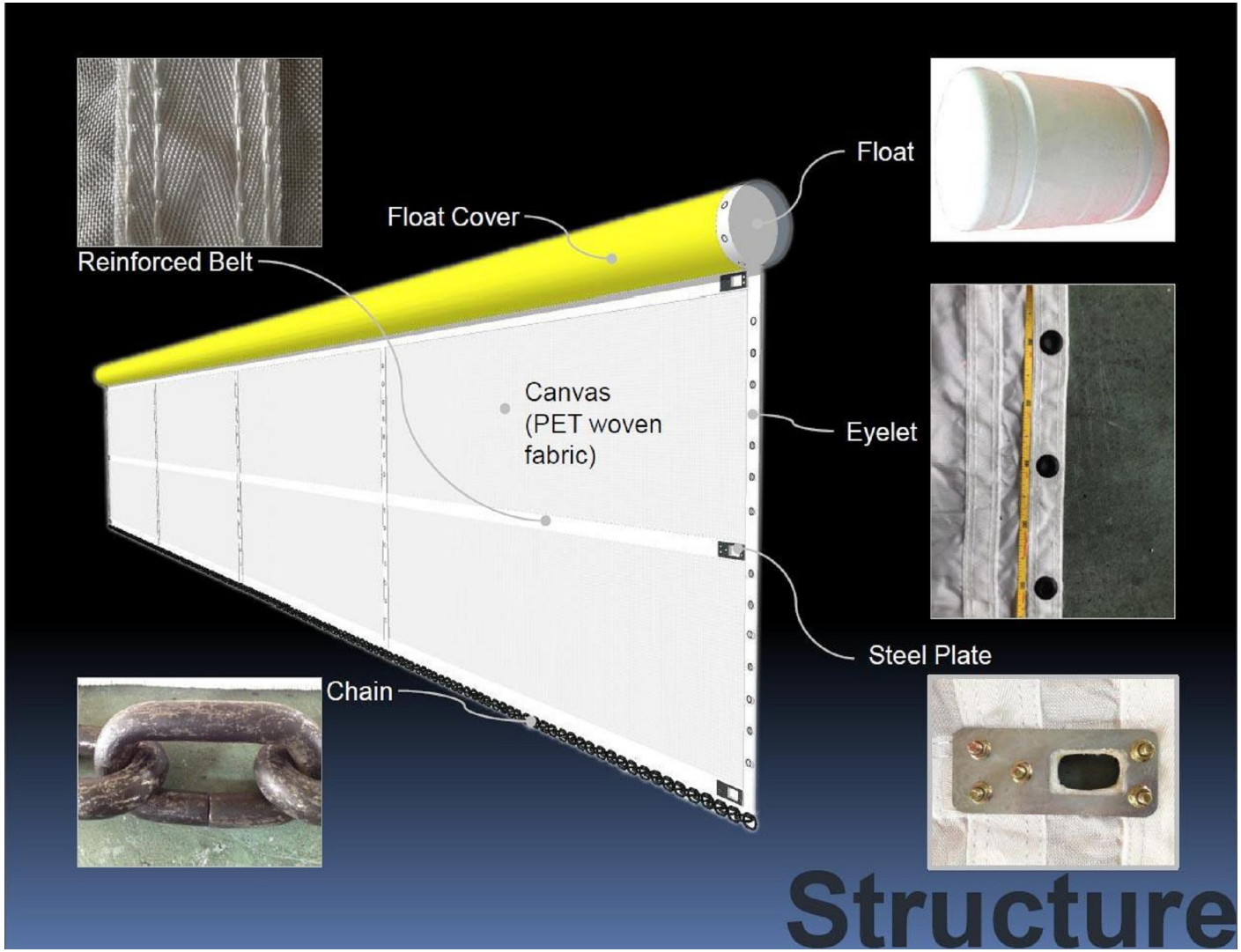
14th Floor, Kiu Yin Commercial Building, 361-363 Lockhart Road, Wanchai, Hong Kong

Tel: 2570 0103 Fax: 2570 0089 e-mail: wing@g-and-e.com

website: www.g-and-e.com

ver. 1 Sep 2018

Silt Curtain Components



G & E ENGINEERING
Since 1984

Silt Curtain Specification

G & E ENGINEERING
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GESC Silt Curtain Specification

Silt curtain system	Material	GESC-SG110
Curtain Geotextile	Woven Polypropylene PP	SG110/110
Float element	High density Polystyrene	300 - 600 mm diameter
Steel Plate	50-80 µm Galvanized mild steel	Plate or Ring
Ballast Chain	0.2% carbon mild steel coal tar coating	2 - 5 kg/m
Eyelet	0.2% carbon mild steel oil based painting	25 mm
Shackle	50-80 µm Galvanized mild steel	14, 19 & 25 mm
PP rope	Polypylene	16 & 18 mm

Woven Polypropylene PP (Bontec SG110/110)

Low & Bonar Geotextile	Unit	Test Method	SG110/110
Geotextile Tensile Strength	kN/m	EN ISO 10319	110
Geotextile Elongation	%	EN ISO 10319	10
Geotextile Flow Rate	l/m²sec	EN ISO 11058	25
Apparent Opening Size	mm	EN ISO 12956	0.23

G & E ENGINEERING
Since 1984

Geotextile Specification

GESC Silt Curtain Specification

Silt curtain system	Material	GESC-DM15	GESC-DM20	GESC-DM30
Curtain Geotextile	Woven Polyester PET	DM15	DM20	DM25
Float element	High density Polystyrene	300 - 600 mm diameter		
Steel Plate	50-80 µm Galvanized mild steel	Plate or Ring		
Ballast Chain	0.2% carbon mild steel coal tar coating	2 - 5 kg/m		
Eyelet	0.2% carbon mild steel oil based painting	25 mm		
Shackle	50-80 µm Galvanized mild steel	14, 19 & 25 mm		
PP rope	Polypylene	16 & 18 mm		

Geonia Geotextile	Unit	Test Method	DM15	DM20	DM30
Tensile Strength	kN/m	ASTM D4595	150/150	200/200	300/300
Elongation	%	ASTM D4595	15	15	15
Flow Rate	l/m²/sec	ASTM D4491	1	1	1
Permittivity	/sec	ASTM D4491	0.02	0.02	0.02
Apparent Opening Size	mm	ASTM D4751	0.075	0.075	0.075

Ref no.: DM-15 180906
CL code: G&E HK

GEONIA® Woven Geotextiles

GEONIA® PET Woven Geotextile Technical Data Sheet

www.egeonia.com

High Strength Polyester Woven Geotextiles for Soil Reinforcement Applications

DM-15

Mechanical Properties		Test Method	Unit		Value
Physical Properties					
Tensile Strength at break	MD	ISO 10319	kN/m	≥	150
Tensile Strength at break	CD	ISO 10319	kN/m	≥	150
Tensile Elongation at break	MD	ISO 10319	%	≤	15
Tensile Elongation at break	CD	ISO 10319	%	≤	15
Hydraulic Properties					
Flux (h:50mm)		ISO 11058	l/m^2sec (mm/sec)	≥	1
Permittivity (h:50mm)		ISO 11058	sec^{-1}	≥	0.02
Apparent Opening Size (O_{95})		ASTM D4751	㎛	≤	75

Packing (Standard export packing)	Unit	Value
Roll Width	m	5.40
Roll Length	m	300
Roll Weight	kg	778
Roll Area	m^2	1,620
20ft Container	m^2	21,060
40ft Container	m^2	42,120

Above data sheet is our standard properties for the reference usage. DAEYOUN GEOTECH will not be responsible caused by any discrepancy with above data sheet. Please contact us if you need specified data sheet.

MADE IN KOREA

DAEYOUN GEOTECH
123, Apogongdan-gil, Apo-eup, Gimcheon-si, Gyeongsangbuk-do, 39670, Korea
Tel: +82-2-539-9700 Fax: +82-2-539-9710
www.dygeotech.com E-mail: overseas@egeonia.com

GEONIA®
Woven Geotextiles

GEONIA® PET Woven Geotextile Technical Data Sheet

www.egeonia.com

High Strength Polyester Woven Geotextiles for Soil Reinforcement Applications

DM-20

Mechanical Properties		Test Method	Unit		Value
Physical Properties					
Tensile Strength at break	MD	ISO 10319	kN/m	≥	200
Tensile Strength at break	CD	ISO 10319	kN/m	≥	200
Tensile Elongation at break	MD	ISO 10319	%	≤	15
Tensile Elongation at break	CD	ISO 10319	%	≤	15
Hydraulic Properties					
Flux (h:50mm)		ISO 11058	l/m^2sec (mm/sec)	≥	1
Permittivity (h:50mm)		ISO 11058	sec^{-1}	≥	0.02
Apparent Opening Size (O_{95})		ASTM D4751	㎛	≤	75

Packing (Standard export packing)	Unit	Value
Roll Width	m	5.40
Roll Length	m	300
Roll Weight	kg	1,049
Roll Area	m^2	1,620
20ft Container	m^2	16,200
40ft Container	m^2	32,400

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www.dygeotech.com E-mail: overseas@egeonia.com

Ref no.: DM-30 180906
CL code: G&E HK

GEONIA® Woven Geotextiles

GEONIA® PET Woven Geotextile Technical Data Sheet

www.egeonia.com

High Strength Polyester Woven Geotextiles for Soil Reinforcement Applications

DM-30

Mechanical Properties		Test Method	Unit		Value
Physical Properties					
Tensile Strength at break	MD	ISO 10319	kN/m	≥	300
Tensile Strength at break	CD	ISO 10319	kN/m	≥	300
Tensile Elongation at break	MD	ISO 10319	%	≤	15
Tensile Elongation at break	CD	ISO 10319	%	≤	15
Hydraulic Properties					
Flux (h:50mm)		ISO 11058	l/m^2sec (mm/sec)	≥	1
Permittivity (h:50mm)		ISO 11058	sec^{-1}	≥	0.02
Apparent Opening Size (O_{95})		ASTM D4751	㎛	≤	75

Packing (Standard export packing)	Unit	Value
Roll Width	m	5.40
Roll Length	m	300
Roll Weight	kg	1,486
Roll Area	m^2	1,620
20ft Container	m^2	11,340
40ft Container	m^2	22,680

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www.dygeotech.com E-mail: overseas@egeonia.com

bontec
woven and nonwoven geotextiles

Bontec® SG 110/110

Heavy weight Polypropylene Woven Geotextiles

Technical data sheet

Product description

Polymer	Density	Melting Point	Construction
100% Polypropylene	0,91 kg/dm³	165 °C	Tapes

Properties

Mechanical Properties	Standard	Performance	Tolerance
Tensile strength - MD	EN ISO 10319	110 kN/m	-9,9 kN/m
Tensile strength - CMD	EN ISO 10319	110 kN/m	-9,9 kN/m
Elongation at maximum load - MD	EN ISO 10319	10 %	+/-2,3 %
Elongation at maximum load - CMD	EN ISO 10319	8 %	+/-1,8 %
Static puncture resistance (CBR)	EN ISO 12236	12,5 kN	-2,5 kN
Dynamic perforation resistance (cone drop)	EN ISO 13433	10 mm	+2,0 mm
Tensile strength at 2% elongation - MD	EN ISO 10319	15 kN/m	
Tensile strength at 2% elongation - CMD	EN ISO 10319	25 kN/m	
Tensile strength at 5% elongation - MD	EN ISO 10319	45 kN/m	
Tensile strength at 5% elongation - CMD	EN ISO 10319	60 kN/m	

Hydraulic Properties	Standard	Performance	Tolerance
Water permeability normal to the plane (VIh50)	EN ISO 11058	25 l/m²s	-8 l/m²s
Characteristic Opening Size (O90)	EN ISO 12956	230 µm	+/-69,0 µm

Physical Properties	Standard	Performance	Tolerance
Weight	EN ISO 9864	464 g/m²	+/-46,4 g/m²
Length (+/- 1%) x width (+/- 1%)		100 x 5,25 m	
Truck Load Volume (+/- 10%)		30450 m²	
Roll diameter (+/- 10%)		45 cm	

Durability	Standard	Performance	
Predicted minimal durability in years in natural soils with 4 < pH < 9 and soil temperatures < 25°C	Applicable application standard: Annex B	100	
Maximum allowed time between installation and covering of the geosynthetic	EN 12224	2 weeks	

Version date : 1/09/2017

Version n° 5

The Quality Management System of Bonar has been approved to the ISO 9001 Quality Management System Standard. Certificates are available on request.

CE

Progress through performance
A Low&Bonar solution

Low & Bonar NV
Industriestraat 39, 9240 Zele, Belgium
T: +32 (0) 52 457 487 / F: +32 (0) 52 457 495
info@lowandbonar.com / www.bontecgeosynthetics.com

G & E ENGINEERING
Since 1984

Silt Curtain
Component Material and Coating

G & E ENGINEERING
Since 1984

Silt Curtain
Component Material and Coating

Item	Material	Coating
Eyelet	0.2% Low Carbon Mild Steel	Painting (oil-based paint)
Steel Plate		Galvanized (50 - 80µm)
Reinforced Steel Plate		Hot Dip Galvanize (over 80µm)
Bolt & Nut		Galvanized (50 - 80µm)
Ballast Chain		Coal Tar Painting
Shackle		Galvanized (50 – 80µm)

G & E ENGINEERING
Since 1984

ISO 9001:2015 Certificate

Registration Certificate

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Certificate No. : **AJA14/17026**

Date of Original Registration : **22nd January 2014**

Expiry Date : **27th March 2021**

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UKAS MANAGEMENT SYSTEMS

0059

Chief Executive - AJA Registrars Ltd

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

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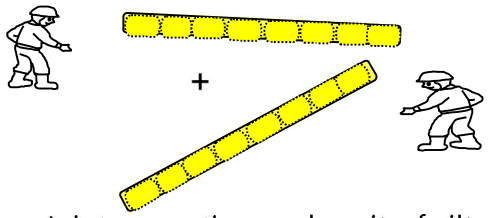
G & E ENGINEERING
Since 1984

Silt Curtain Installation & Caution & Maintenance

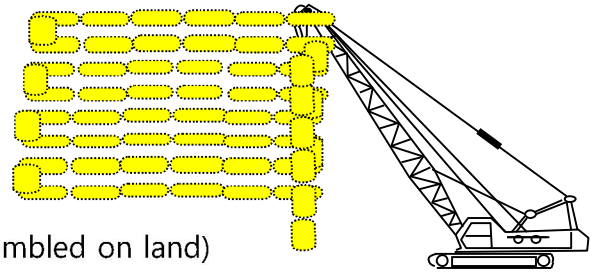
Basic Installation Guide

Silt Protector

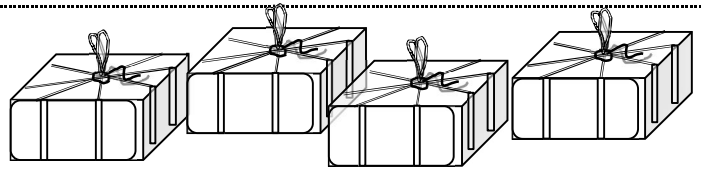
Flot & Curtain part



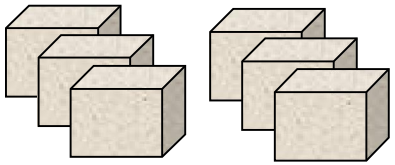
- Joint connetion each unit of silt protector (assembled on land)



Silt Protector Tonbag Anchor

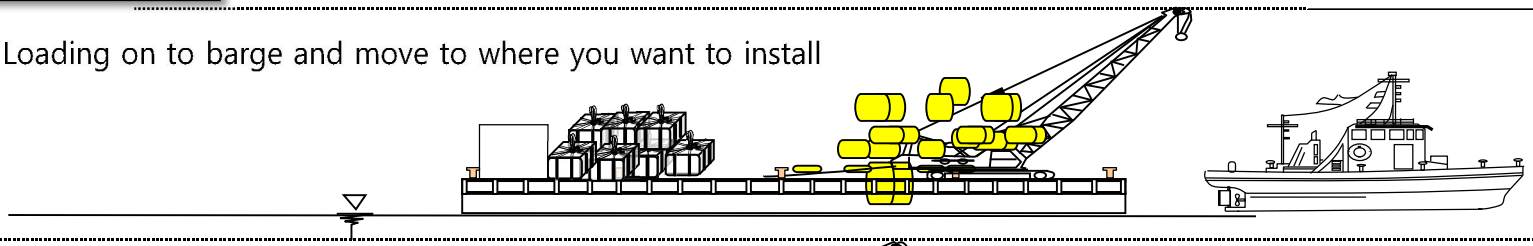


- Make Tonbag Anchor or Concrete Block

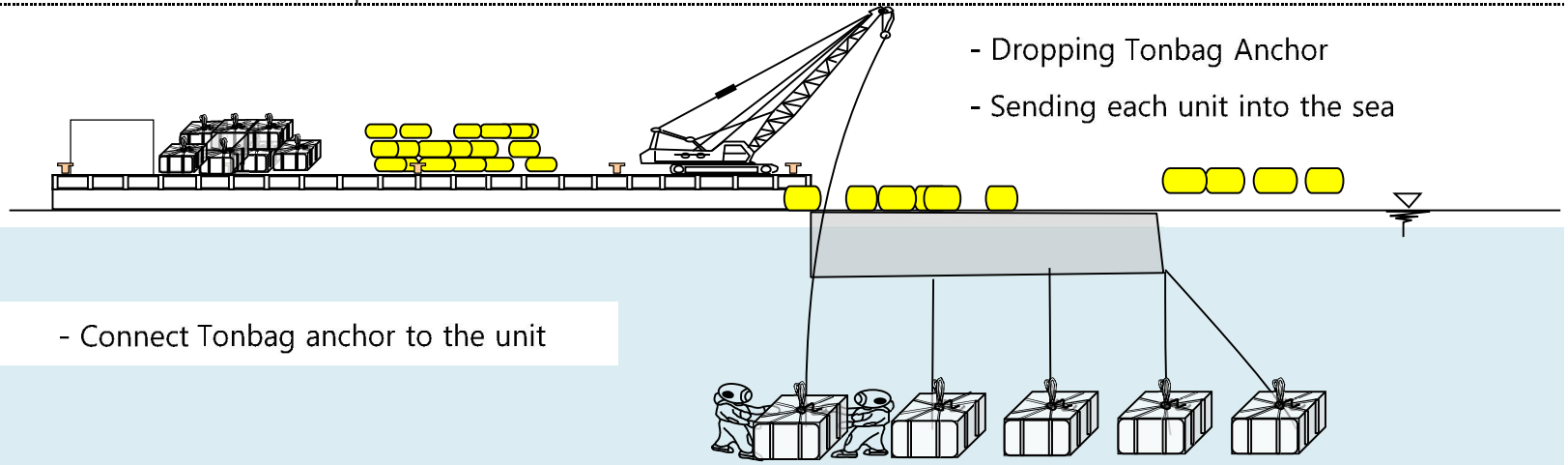


Loading & move

- Loading on to barge and move to where you want to install



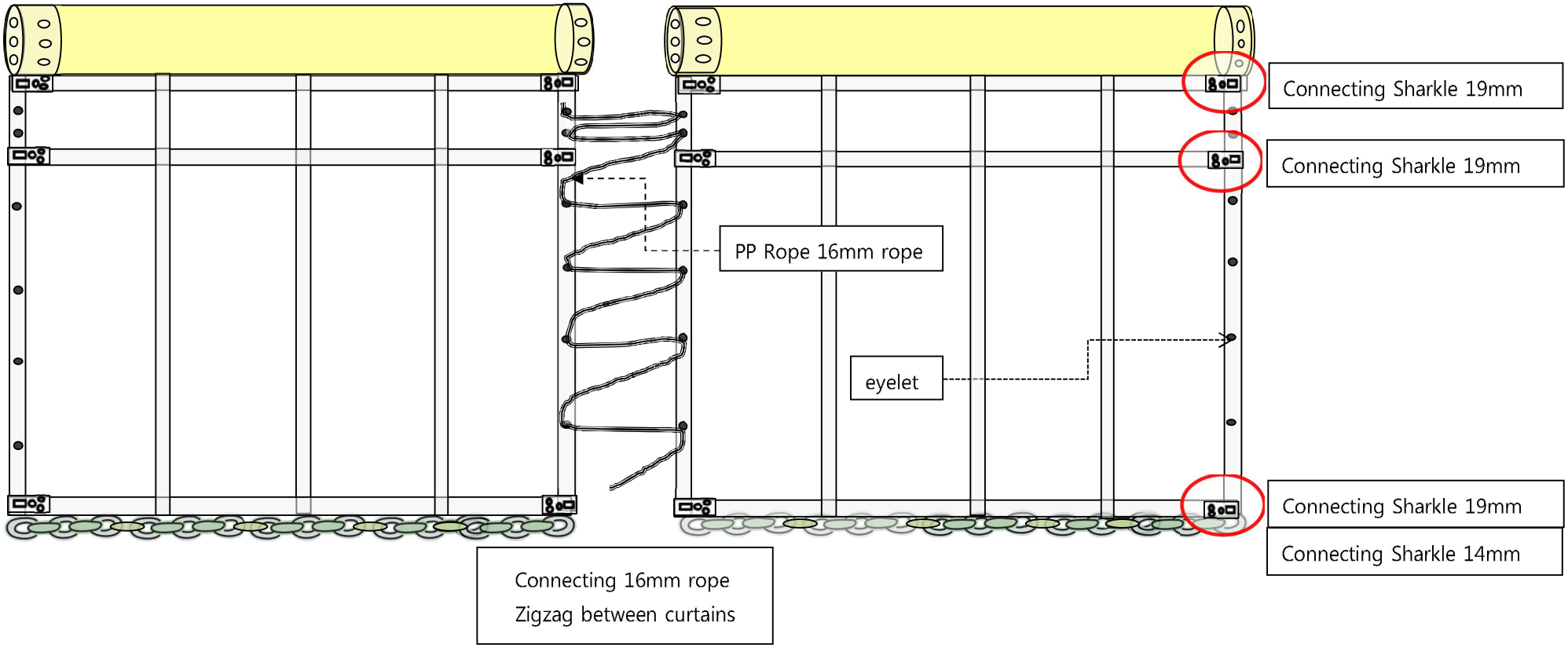
Installation



- Dropping Tonbag Anchor
- Sending each unit into the sea

- Connect Tonbag anchor to the unit

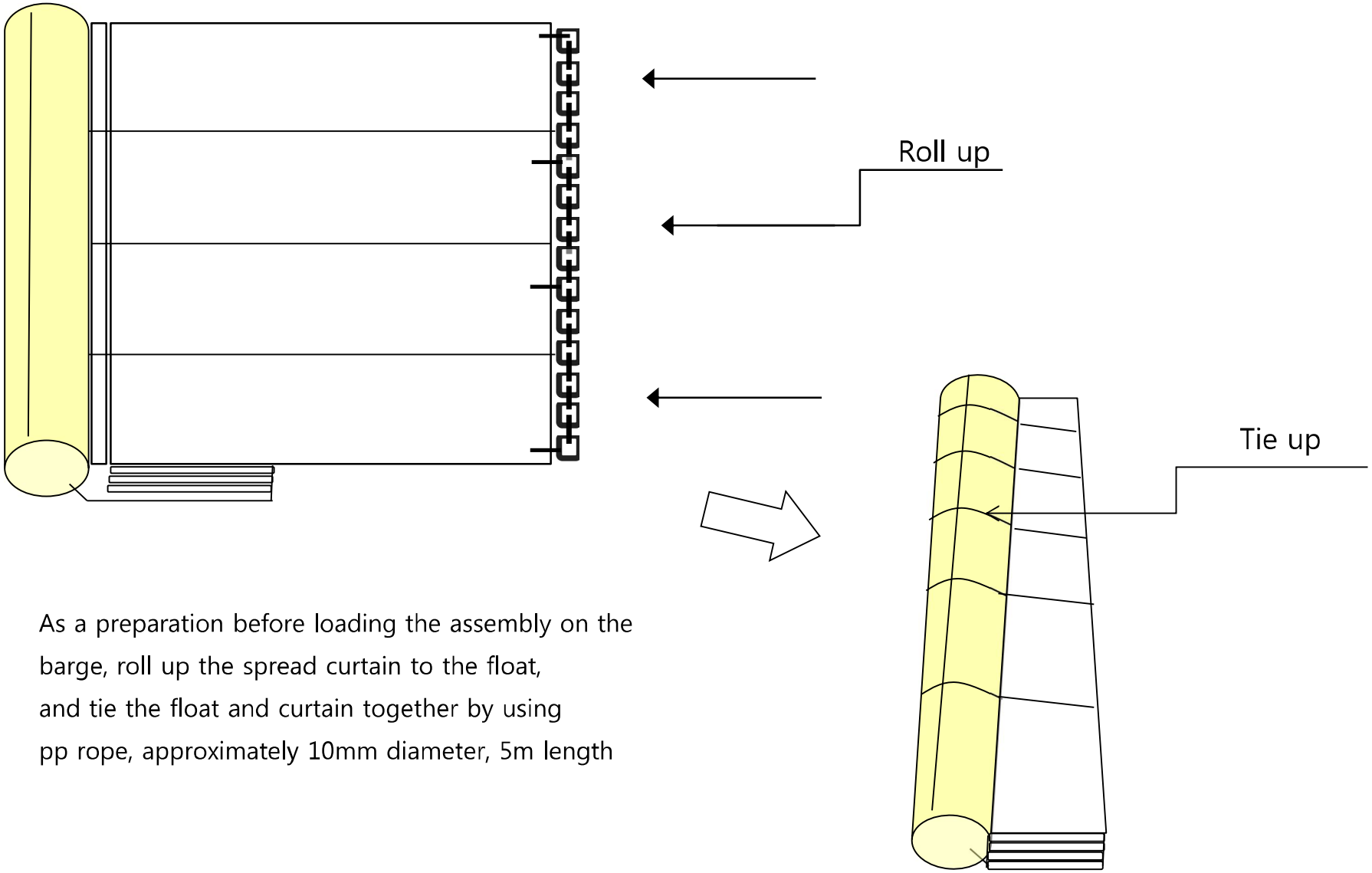
Installation Guide (Connecting curtain and curtain)



* Number of connections(between curtain and curtain)

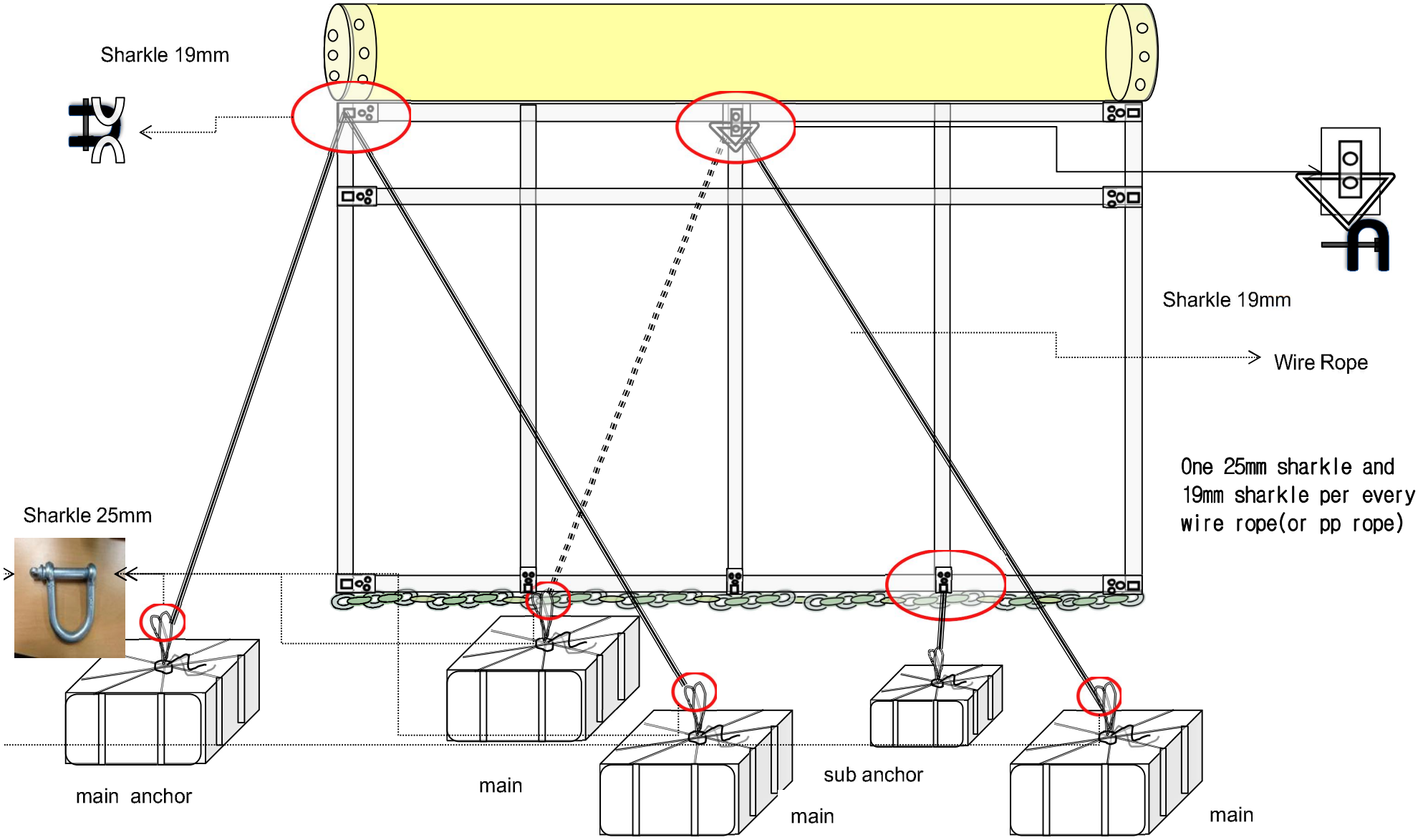
	19mm sharkle	No. of eyelet
2m height of curtain	3	6
3m height of curtain	4	9
4m height of curtain	4	12
5m height of curtain	5	15
6m height of curtain	5	18

Installation Guide (Tempory tying curtains)



As a preparation before loading the assembly on the barge, roll up the spread curtain to the float, and tie the float and curtain together by using pp rope, approximately 10mm diameter, 5m length

Installation Guide (Connecting Curtain and Anchor)



Caution

Caution

Designate a person who is in charge of management of the Silt Protector.
If an environment that exceeds the design conditions is estimated, remove the Silt Protector immediately, or the unit may be da
If the Silt Protector requires a repair, take necessary actions soon. If it is left without being repaired, the function of the unit may be affected adversely or the damage may expand so that it cannot be repaired.

In casethe Silt Protector has been dislocated from the proper position or the layout has been deformed, restore it to original position or formation immediately. Otherwise, serious accident may be caused.

Be careful not to damage the float and curtain when removing sea shells and plants from these components.
The float is made of Styrofoam which is inflammable . Keep fire away from this component.

Preconditions for maintenance

This Silt Protector has been designed based on the precondition that it must be removed in environmental conditions that exceed the design condition, Therefore, in case it was not removed in such condition, it must be inspected after such environmental condition has ended, and must be repaired as soon as possible if necessary.

Check the unit periodically, and any component that have been deteriorated due to aging must be repaired or replaced with ne

Table 1 presents the conditions on which this Silt Protector is designed.

Table 1 Design conditions

Item	Condition	Item	Condition
Speed of wind	m/second	Diameter float	m
Speed of current	m/second	Length of curtain	m
Wave Height	m/second	Serviceable life	months
Period of wave	Seconds	Range of tide	H.W.L + m
Wave length	m		L.W.L . .m
Depth of water	m	Sediment	

Maintenance 1

Maintenance

Daily inspection

The Silt Protector should be visually monitored by patrol during the period it is placed in the water. The patrol is performed on the boat for the purpose of preventing ships from running against the unit and of finding abnormality in earlier phase. (once per day)

Caution: In case the Silt Protector has a serous trouble , Failure to do the daily check may cause serious trouble in addition to the loss of its normal pollution protection performance.

Peridodic inspection

In addition to visual inspection on the boat, periodicallty dive to check the unit thoroughly. (Once per every three month)

Caution: In case the Silt Protector has been damaged, failure to do the periodical check may cause the loss of its normal pollution peotection performance and a damage that cannot be repaired to occur.

Extra inspection

After typhoon or other abnormal weather, check the unit for the purpose of finding possible damages or troubles earlier. This check is performed basically on the boat, but dive to check the unit if necessary.

Caution: In case the Silt Protector has been seriously damaged, failure to do the extra check may cause the loss of its nomal pollution protection performance and a damage that cannot be repaired to occure.

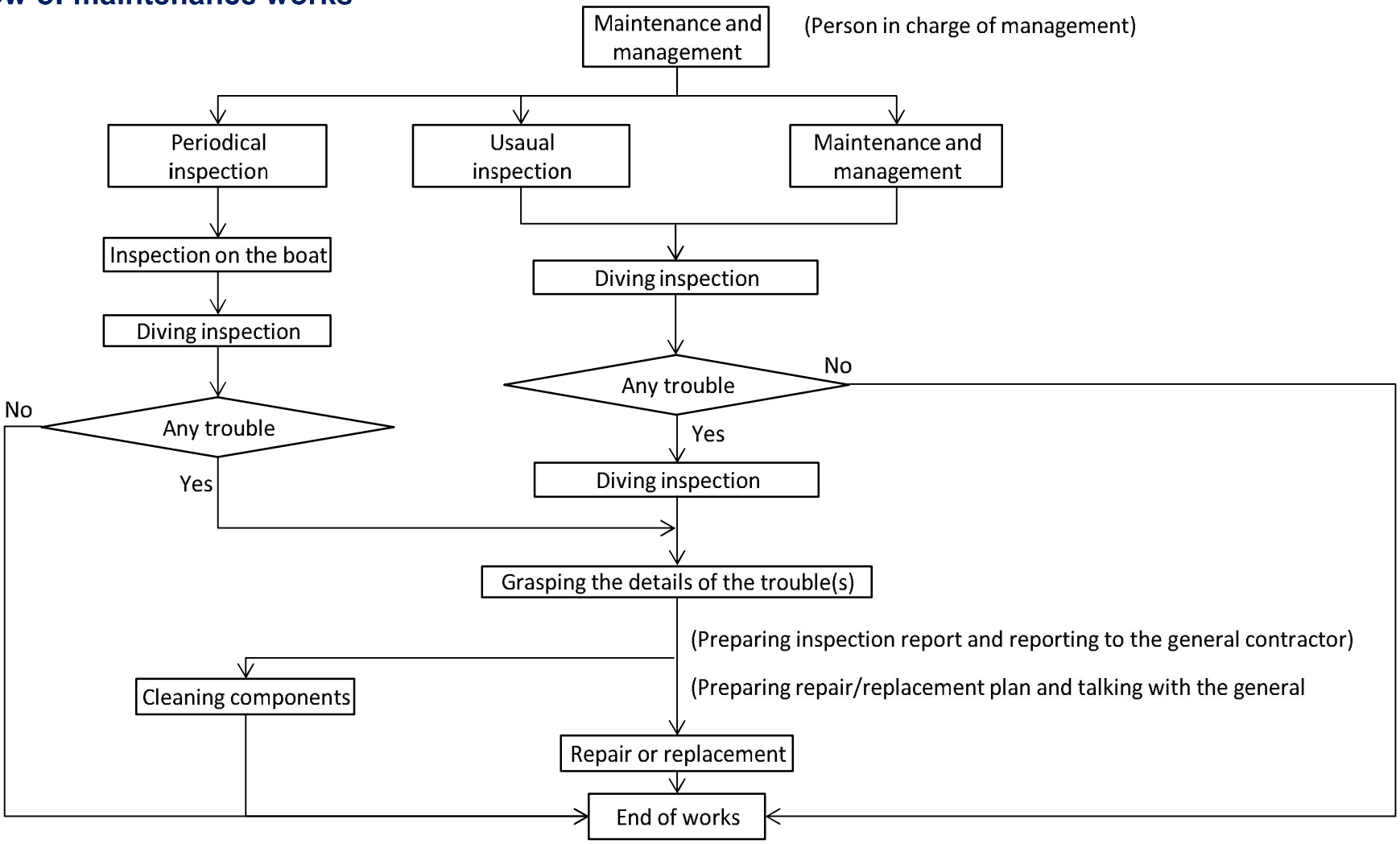
Sea shell removal

If it is found that the freeboard of the float is less than 1/2 of its diameter due to increase of the total weight with the growth of sea shells and plants on the float and curtain, dive to clean these components. It is recommended to monitor the change of the freeboard of the float. check it at the periodical inspection, and record the growth of the sea organisms. (perform these works as necessary.)

Caution: Failure to do the cleaning may increase the weight of the Silt Protector resulting in sinking it to cause loss of the function. Be careful not to damage the Silt Protector when cleaning the unit.

Maintenance 2

Flow of maintenance works



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Job Reference List

Silt Curtain

Date	Project	Client	Consultant	Model	Size (W x Lm)	No. of Span
Jul-03	CV/2002/04 Penny's Bay Reclamation Stage 2	Gammon Construction Ltd	Scott Wilson Ltd		5 x 20m 5 x 10m	86 256
May-13	DC/2011/01 Drainage Maintenance and Construction in Mainland South Districts (2011-2015)	World Diamond Engineering Ltd	Drainage Services Department	GSP 15	5x20m 3x5m 3x2m 3x13m	1 10 1 4
Apr-14	HY/2012/07 Dual 2-lane carriageway between HZMB BCF and North Lantau Highway	Gammon Construction Ltd	AECOM Asia Co Ltd	DSP15	6 x 20 7 x 20 9 x 20	24 10 10
Mar-15	16/WSD/11 Replacement and rehabilitation of water mains at Peng Chau, Sunshine Island and Hei Ling Chau	Pipe Tech Ltd MIRDTEC HK Ltd	AECOM Asia Co Ltd	DSP 15 DSP 15 DSP 15	0.6 x 20 1.2 x 20 1.5 x 20	1 22 6
Mar-15	P552 Deep Cement Mixing Trial Works	Penta Ocean Construction Co Ltd	Atkins China Ltd & Mott MacDonald	DSP30 DSP30	8 x 20 8 x 25	2 6
Aug-15	Tsuen Wan West Station, TW-6 Property Development	Hip Hing Construction Co Ltd	Mannars Chan & Associates	DSP15	4 x 20	1
Dec-15	HK/2012/08 Wan Chai Development Phase II - Central Wan Chai Bypass at Wan Chai West	China State - Leader JV	AECOM Asia Co. Ltd	DSP30 DSP30 DSP15 DSP15 DSP15	10 x 20 5 x 10 10 x 20 9 x 20 8 x 20	6 6 5 5 5
Mar-16	Asia Pacific Gateway (APG) - Tseung Kwan O (Cape Collinson)	Maritime Mechanic Ltd	Environmental Resources Management	DSP15	14 x 12	20
Nov-16	Dredging works at Marina Cove	Fung Kau Kee Contractors Ltd		DSP15	5 x 20	2
Nov-16	HY/2012/08 Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section	Dragages - Bouygues JV Crown Asia Engineering Ltd	AECOM Asia Co. Ltd	DSP15 Marker Buoy	8 x 20 9 x 20 10 x 20 Dia: 520mm	5 75 5 12 nos.
Dec-16	C3203 3rd Runway System Project DCM Ground Improvement Works (Package 3)	Sambo E & C Co Ltd	Atkins China Ltd & Mott MacDonald	DSP 30 Barge Type	4 x 10 2 x 10 4 x 9 1.6 x 9 2.8 x 9 1.8 x 9 2 x 9	46 2 246 4 2 2 2
Dec-16	C3204 3rd Runway System Project DCM Ground Improvement Works (Package 4)	CRBC-Sambo JV	Atkins China Ltd & Mott MacDonald	DSP30	6 x 5.3 6 x 11.3 6 x 12.3 6 x 12.8 6 x 13.8 6 x 6 3 x 20	2 2 20 4 4 100 10
Jan-17	C3201 3rd Runway System Project DCM Ground Improvement Works (Package 1)	Penta Ocean-China State- Dong Ah JV	Atkins China Ltd & Mott MacDonald	DSP 30	6 x 8	154

Feb-17	P560 Aviation Fuel Pipeline Diversion Works	Kat Yue Construction Engineering Ltd	Mott MacDonald HK Ltd	DSP15	1.5 x 20	8
Jul-17	Refuse Boom at Tai O by World Wide Fund	G and E Co. Ltd	World Wide Fund	DSP15	0.5 x 20	3
Aug-17	Lyric Theater Complex and Extended Basement Project for the WKCD Authority	Gammon Construction Ltd	AECOM Asia Co. Ltd / Mott Macdonald HK Ltd	DSP15	8 x 20	6
Mar-18	HK/2009/02 Wan Chai Development Phase II Central - Wanchai Bypass at Wanchai East	Chun Wo - CRGL JV	AECOM Asia Co Ltd	DSP15	7 x 20	13
Apr-18	NL/2017/03 Tung Chung New Town Extension - Reclamation and Advance Works	Build King - SCT JV	AECOM Asia Co Ltd	DSP15	4.7 x 20 6.4 x 20 6.9 x 20 7.4 x 20	354 90 37 33
Apr-18	NE/2017/01 TKO - Lam Tin Tunnel Road - TKO Interchange and Associated Works	CW - STEC - CMGC JV Sam Woo Bore Pile Foundation Ltd	AECOM Asia Co Ltd	DSP15 Barge Type	4 x 14 5 x 14 6 x 14 5 x 12 6 x 12 10 x 14 14 x 14 12 x 14	28 44 46 36 18 10 10 22
May-18	NE/2015/01 TKO - Lam Tin Tunnel - Main tunnel and associated works	Leighton - China State JV	AECOM Asia Co Ltd	Silt Curtain	20 x 0.8 20 x 10	20 40
Jun-18	Lago Nam Van, Macau	Sunley Engineering & Construction Co Ltd	WSP	DSP15	1.1 x 20 1.9 x 20	17 3
Jun-18	Sai Sha Road Widening between Kam Ying Road and Future Trunk Road T7	Gammon Construction Ltd	Highways Dept	DSP15	1.5 x 14	2
Oct-18	HY/2014/07 Central Kowloon Route - Kai Tak West	Gammon Construction Ltd	Arup - Mott MacDonald JV	GESC-15	20 x 2 10 x 3 20 x 3 20 x 4 20 x 5 20 x 6 20 x 7	2 1 1 7 3 11 12
Nov-18	Proposed Residential Development at Site N TKOTL 70RP, Lohas Park Package 6	Hip Hing Construction Co Ltd		GESC 15	20 x 1.5 10 x 1.5	1 2
Nov-18	YL/2017/03 Development of Lok Ma Chau Loop; Land Decontamination and Advance Engineering Works	Sang Hing - Kuly Joint Venture	Black & Veatch Hong Kong Ltd	GESC15	20 x 2	14
Jan-19	C340B 輕軌媽閣站主體建造工程 - 臨時道路工程	Hai Fai Construction		DSP 15	20 x 3	12
Apr-19	NE/2016/01 Site formation and infrastructure work for development of Anderson Road quarry site	Chun Wo - STE Vasteam JV	AECOM Asia Co Ltd	GESC 15	10 x 4	4
Jun-19	HY/2014/16 Hiram's Highway Improvement Stage 1 - Between Clearwater Bay Road and Marina Cove	China State Construction Engineering (Hong Kong) Limited	Meinhart Infrastructure and Environmental Ltd	GESC 15	20 x 4	5

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Photo References

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361 - 363 Lockhart Road,
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Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	November 2018
Project	Contract No. HY/2014/16 Hiram's Highway Improvement Stage 1 - Between Clearwater Bay Road and Marina Cove
Client	Highway Department
Consultant	Meinhart Infrastructure and Environmental Ltd
Main Contractor	China State Construction Engineering (HK) Ltd
Works	Environmental protection
Material	Silt Curtain GESC 15
Quantity	5 spans of 100m Length

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website: www.g-and-e.com

Date	May 2019
Project	Contract No. NE/2016/01 Site Formation and Infrastructure Works for Development of Anderson Road Quarry
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Co Ltd
Main Contractor	Chun Wo Development Holdings Ltd Tinkle Construction Engineering Co Ltd
Works	Site drainage outfall silt control
Material	GESC 15
Quantity	4 spans of 40 Lm

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Date	April 2018
Project	Contract No. NE/2017/01 TKO - Lam Tin Tunnel Road - TKO Interchange and Associated Works
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Co Ltd
Main Contractor	Chun Wo - STEC - CMGC JV Sam Woo Bore Pile Foundation Ltd
Works	Piling Rig Silt Curtain
Material	DSP15 Skirt Type Silt Curtain
Quantity	214 spans

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Date	October 2018
Project	Contract No. HY/2014/07 Central Kowloon Route - Kai Tak West
Client	Highways Department
Consultant	Arup - Mott MacDonald JV
Main Contractor	Gammon Construction Ltd
Works	Marine works turbidity control
Material	Silt Curtain GESC-15
Quantity	30 spans for a total length of 590Lm

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Date	April 2018
Project	Contract No. NL/2017/03 Tung Chung New Town Extension - Reclamation and Advance Works
Client	Civil Engineering Development Department
Consultant	AECOM Asia Co Ltd
Main Contractor	Build King - Samsung C & T JV
Works	Marine Water Turbidity Control
Material	DSP15 Tube Type Silt Curtain
Quantity	514 spans, 10.28 km long

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Date	April 2018
Project	Contract No. NE/2017/01 TKO - Lam Tin Tunnel Road - TKO Interchange and Associated Works
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Co Ltd
Main Contractor	Chun Wo - STEC - CMGC JV Sam Woo Bore Pile Foundation Ltd
Works	Piling Rig Silt Curtain
Material	DSP15 Barge Type Silt Curtain
Quantity	182 spans - 500 m length

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Date	February 2018
Project	Contract No. NE/2015/01 TKO - Lam Tin Tunnel - Main Tunnel and Associated Works
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Company Limited
Main Contractor	Leighton - China State JV
Works	Coastal Area Protection Silt Curtain
Material	DSP15 with SG110 geotextile fabric
Quantity	400 m

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Date	July 2017
Project	"ALL Hands on Deck", Reduce Ocean Gabbage Campaign
Client	Worldwide Fund for Nature Hong Kong
Consultant	G and E Company Limited
Main Contractor	G and E Company Limited
Works	Refuse Boom
Material	DSP15 Silt Curtain
Quantity	60m long with 0.5m depth

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Date	March 2014
Project	Contract No. HK/2009/02 Wan Chai Development Phase II Central - Wan Chai Bypass Wan Chai East
Client	Civil Engineering and Development Department
Consultant	AECOM (Asia) Ltd
Main Contractor	Chun Wo - CRGL Joint Venture
Works	Silt Protector
Material	DSP15 Silt Curtain
Quantity	13 spans of 7m D x 20m W

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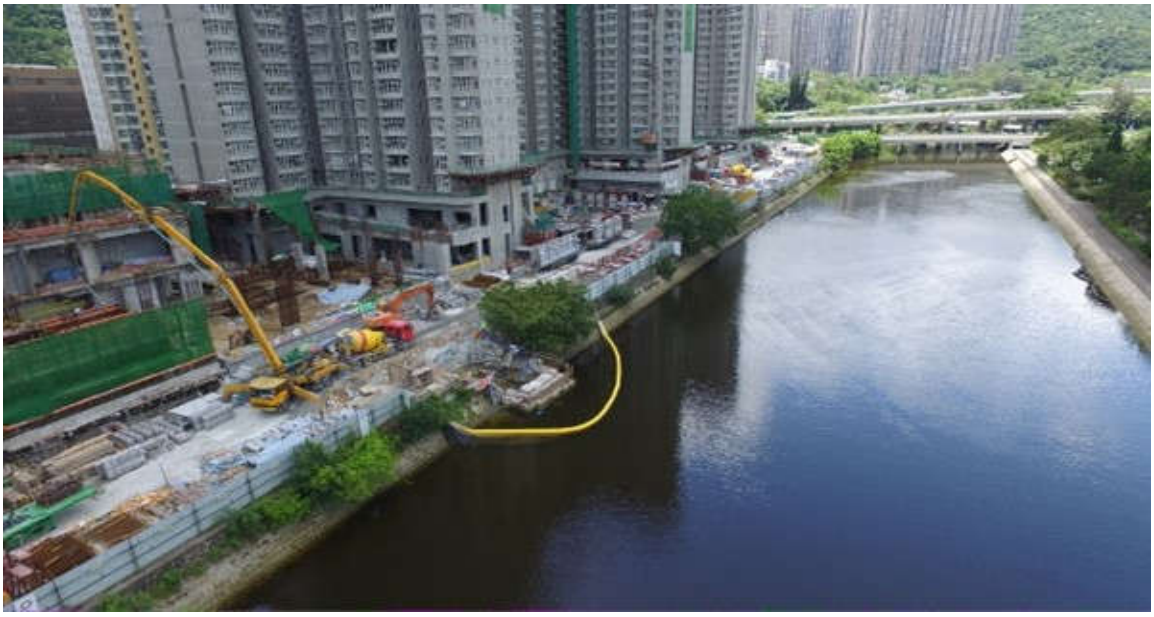

Date	April 2017
Project	Contract No. HKHA20120023 Public Rental Housing, Shek Mun Estate
Client	Housing Authority
Consultant	Housing Authority
Main Contractor	Hin Sum Engineering Co. Ltd
Works	Silt Curtain to Enclose Marine Work
Material	DSP System with Woven Geotextile Bontec SG110/110
Quantity	2 spans of 3m Depth x 20m Length

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Date	October 2016
Project	Contract C3201 Three Runway System Project Deep Cement Mixing Works (Package 1)
Client	Hong Kong Airport Authority
Consultant	Atkins in association with Mott MacDonald
Main Contractor	Penta Ocean-China State- Dong Ah JV
Works	Barge Type Silt Curtain
Material	DSP 30 6m Depth x 8m Width
Quantity	134 spans

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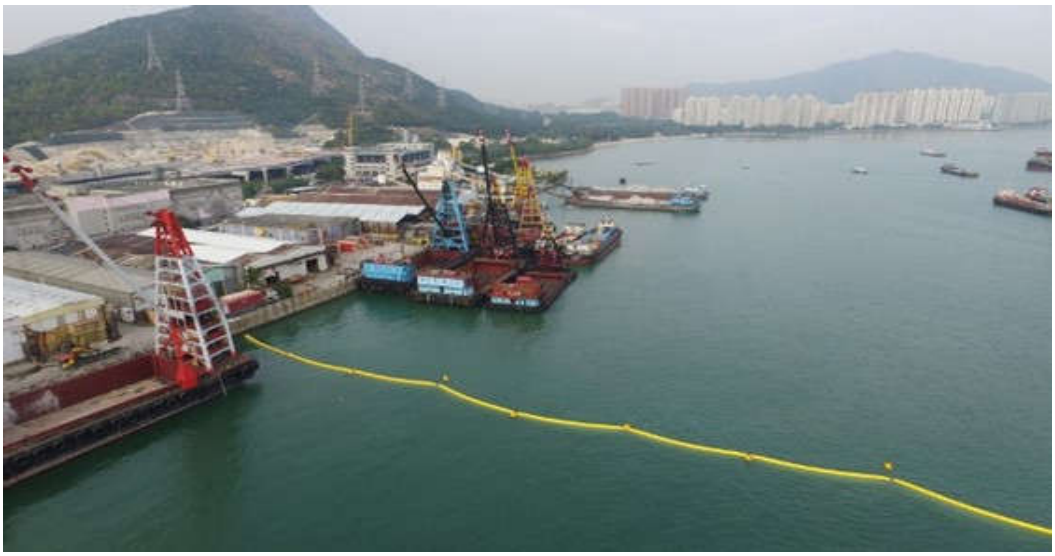

Date	June 2014
Project	Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section
Client	Highways Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Dargages Hong Kong
Works	Turbidity Control in Reclamation Works
Material	Geonia Silt Curtain
Quantity	85 spans, total 1,700m long

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Date	March 2016
Project	Asia Pacific Gateway (APG) - Tseung Kwan O
Client	China Mobile International Limited
Consultant	Environmental Resources Management
Main Contractor	Maritime Mechanic Ltd
Works	Fiber Optic Laying Turbidity Control
Material	DSP15 Silt Curtain

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Date	May 2014
Project	HY/2012/07 Tuen Mun - Chek Lap Kok Link-Sothern Connection Viaduct Section
Client	Highway Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Gammon Construction Ltd
Works	Silt Protector
Material	DSP 15 Silt Curtain
Quantity	6m x 20m 24 spans 7m x 20m 10 spans 9m x 20m 10 spans

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Date	April 2015
Project	Contract No. 16/WSD/11 Replacement and rehabilitation of water mains, stage 4 phase 2
Client	Water Supplies Department
Consultant	AECOM Asia Company Limited
Main Contractor	Pipe Tech Ltd
Works	Silt Curtain to Enclose Marine Works
Material	DSP 15 Silt Curtain
Quantity	1.2 x 20m 2 spans 1.5 x 20m 4 spans

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Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	March 2015
Project	Contract No. P552 Deep Cement Mixing Trial Works
Client	Hong Kong Airport Authority
Consultant	Atkins - Mott MacDonald
Main Contractor	Penta Ocean Construction Co Ltd
Works	Primary Barge Silt Curtain
Material	DSP30 Silt Curtain
Quantity	8m x 20m 2 Spans 8m x 25m 6 Spans

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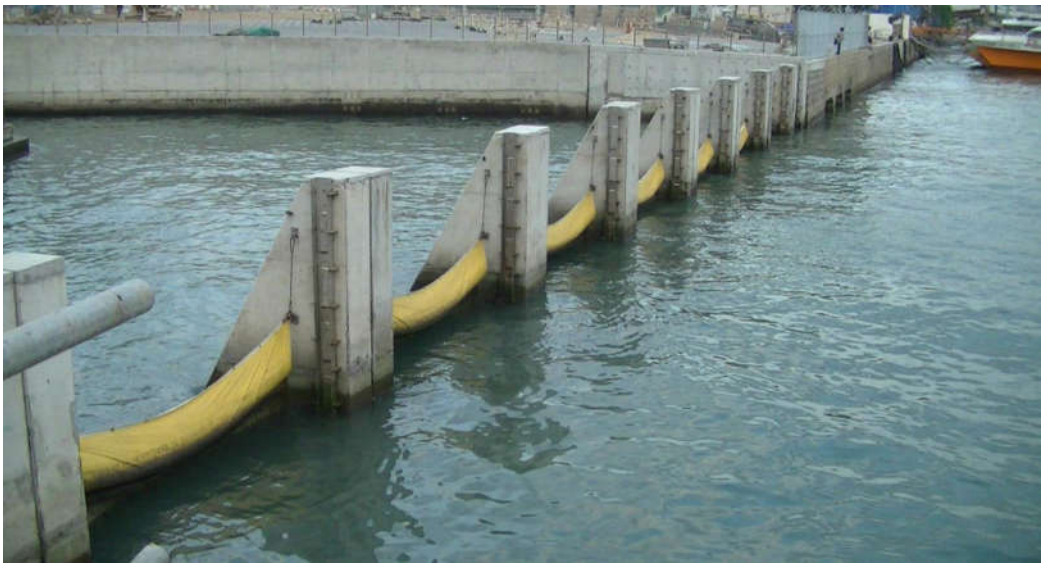
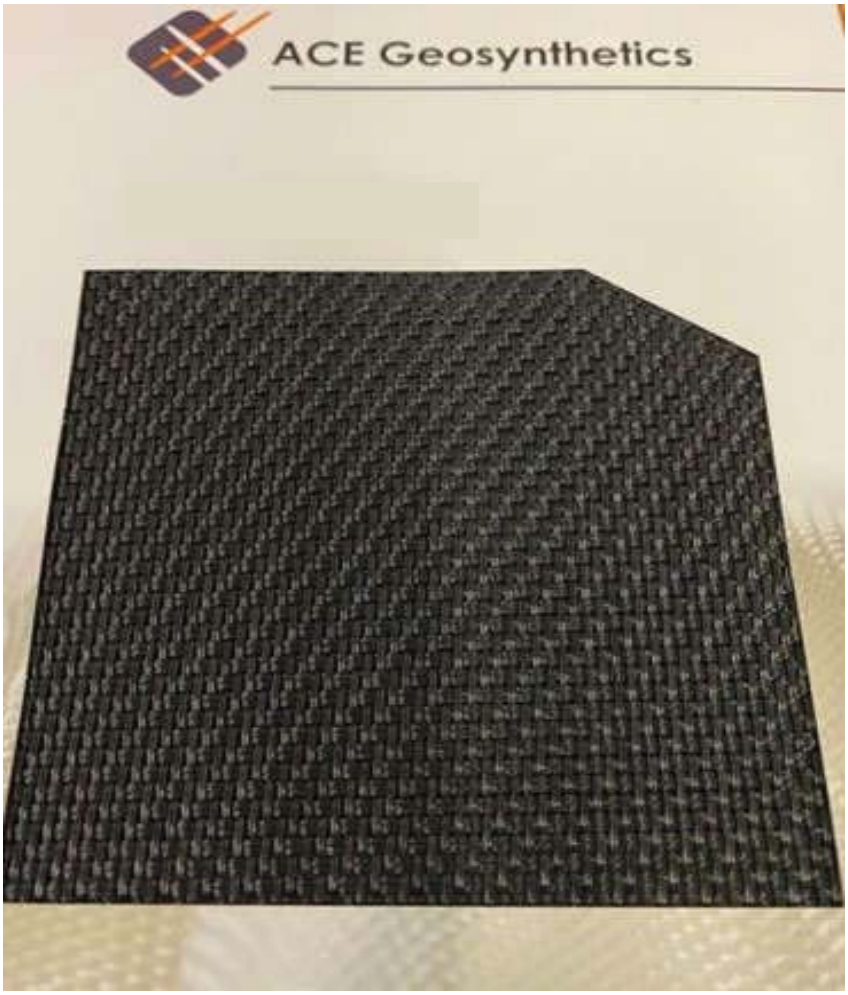


Date	Sep 2013
Project	DC/2011/01 Drainage Maintenance and Construction in Mainland South Districts (2011-2015)
Client	Drainage Service Department
Consultant	Drainage Service Department
Main Contractor	Paul Y. Construction Co. Ltd
Works	Inflow Interceptor Silt Curtain
Material	GEOS GSP 15 Silt Curtain
Quantity	16 spans

Material Submission

ACETex



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December 2021

Table of Contents

G & E ENGINEERING
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ACETex

Company Profile

Background

ACE Geosynthetics is a Taiwanese geosynthetic manufacturer established in 1996 with the first automatic production line of geogrid and geotextile in Taiwan. With relative experience, professional staff, quality products, and considerate services, ACE Geosynthetics has become the leading geosynthetic exporter in Asia. We have specialists from civil, geotechnical, marine, and hydraulic engineering to form a technical service team offering immediate and professional recommendation to both product and application.

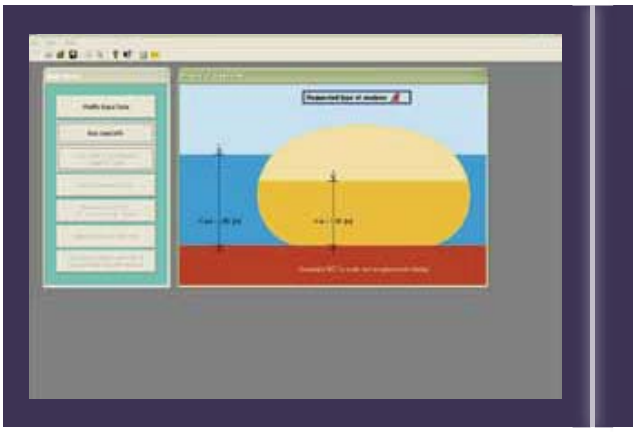
Mission Statement

ACE Geosynthetics is to manufacture and provide integrated, geosynthetic-related products and services for worldwide engineering tasks. We are striving to meet the expectations of our customers with Accurate, Collaborative, and Efficient approach, through which customer's needs and our professionalism are all considered to produce the most suitable product and service.

Technical Services We Offer

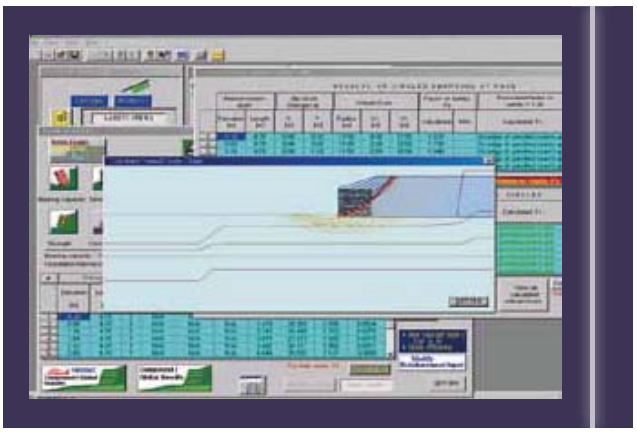
1.Structure Design and Analysis

We suggest efficient and effective solution(s) for client's consideration. Depending on the requested products and needs, engineers will generate design drawing(s) and material requirements for communication and mutual understanding. Analysis can be performed for some cases as supporting information. Professional software such as MSEW, ReSSA, Reslope, Stedwin, and GeoCoPS are used in design and analysis for effectiveness.



2.Product Customization

In this industry all projects are considered unique. Although some products can be applied to different projects, there are still cases require special design to satisfy given conditions. At ACE Geosynthetics, customization for ACEGrid®, ACETex®, ACETube®, ACEFormer™, or ACEBag™ is available to ensure customers get what is needed accurately and efficiently.



3.Technical Consultation

ACE provides technical advice throughout the entire business process from right product selection at the quotation stage to product application at the construction stage. We are always here for customer assistance.

How Quality is Achieved?

1.Expertise

ACE Geosynthetics has more than 40 engineering experts with different professional knowledge covering geotechnical engineering, hydraulic engineering, marine engineering, environmental engineering, landscape engineering, construction management, mechanical engineering, chemical engineering, material engineering, textile engineering, and so forth. These professionals are primary keepers of all production and operation at ACE, to ensure all in coming tasks are well interpreted, evaluated, processed, and produced.

2.Quality Management

The fundamental quality management system of ACE Geosynthetics is recognized and certified by ISO 9001 and 9002. With the basic guideline of ISO 9001, ACE Geosynthetics further obtained CE Marking, BBA Approvals, and NTPEP Qualification Report for its final product(s).

3.In-house Certified Laboratory

There is an in-house civil engineering laboratory to carry out a series of professional tests for research and development and product quality control purposes. The laboratory is certified by TAF (Taiwan Accreditation Foundation), and is further recognized with the ILAC Laboratory Combined MRA Mark as shown below:

ilac-MRA

TAF
Civil Engineering Laboratory
2285

FACTS

With premium grade yarns and cautious production process, the physical and mechanical properties of ACE products are as good as expected. Besides regular tests in the lab, various long-term and short-term experiments for the inherent physical property, mechanical property and long-term design property of product are also carried out. Tests like UV test, chemical resistance test, seawater immersion test, cement soil burial test, PVA geogrid anchoring test, adhesion test with asphalt pavement, oxidation test, filtration test, abrasion test, and many other tests have been done (or in the process of doing).

Adhesion Test

Filtration Test

Outdoor Exposure Test

Anchoring Test

Cement Soil Burial Test

Oxidation Test

Seawater Immersion Test

Chemical Resistance Test

ACE Geosynthetics EcoPark

The application of geosynthetics is an efficient and environmentally friendly approach to deal with engineering problems. ACE Geosynthetics designs and constructs a full scale park to demonstrate some practical designs and applications of geosynthetic system; and further, to advocate the low environmental impact construction methods. The park comprises more than twenty (20) application methods with geosynthetics in six (6) different engineering categories...

Visit the ACE Geosynthetics EcoPark online now at www.acegeosyntheticsecopark.com.

ACE Geosynthetics

www.geoace.com sales@geoace.com

Tel 886-4-26595926 Fax 886-4-26595935

Note : The information provided herein is accurate to the best knowledge of the company and is given out in good faith. All the information contained is intended as a general guide only to use of such products and we do not accept liability for any loss or damage however arising, which results directly or indirectly from use of such information. ACE Geosynthetics has a policy of continuous development thus information and product specification may change without notice.

2014/09

G & E ENGINEERING
Since 1984

ACETex

Product Profile

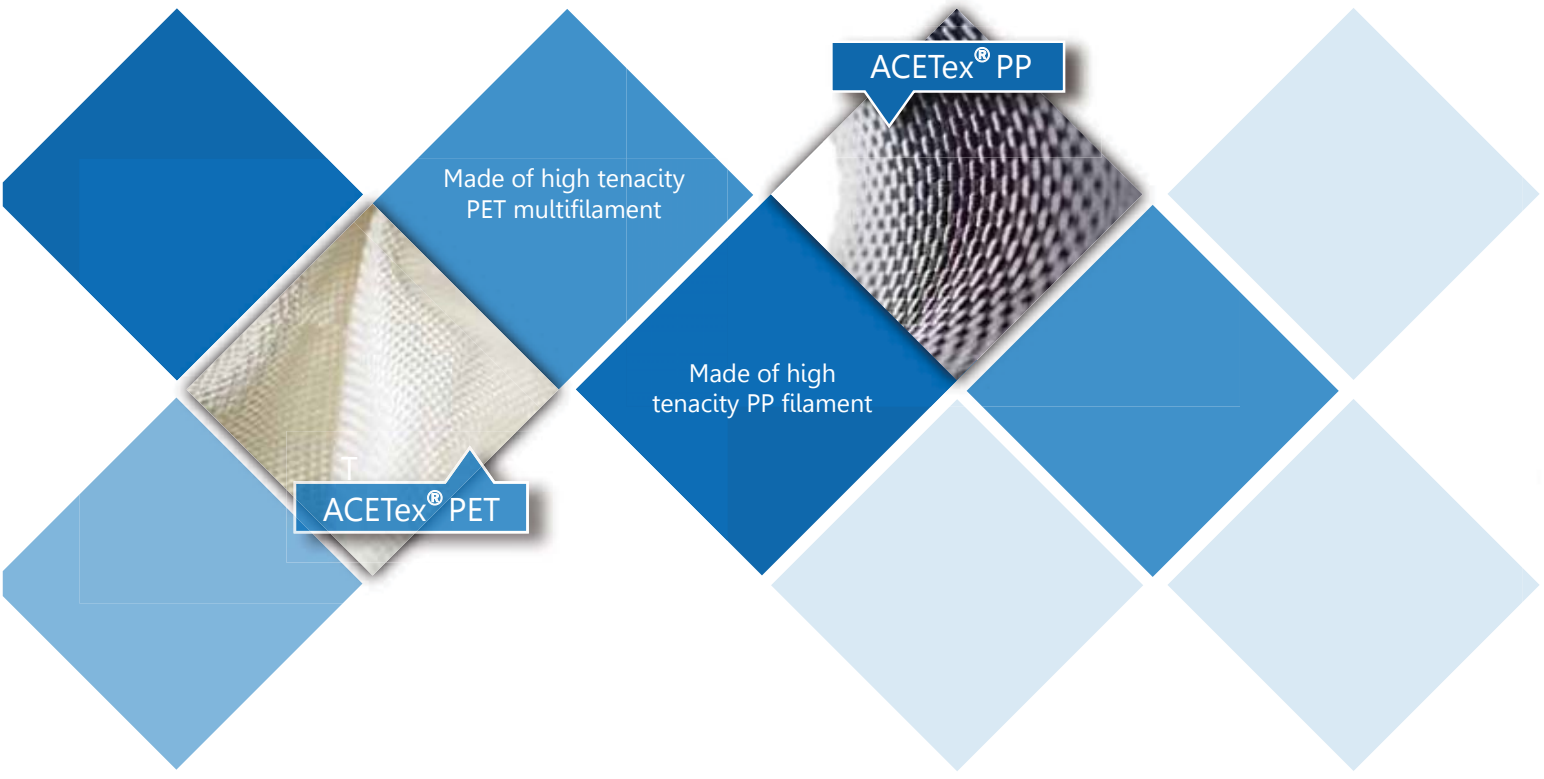
ACETex

Introduction to ACETex

ACETex®

ACETex® is the registered trademark of ACE Geosynthetics for all its geotextile products. ACETex® is basically woven geotextile made of high tenacity and high molecular weight polyester or polypropylene yarns, to provide a wide range of geotextile with different strength at low elongation. With experience and know-how, ACE Geosynthetic is able to produce extraordinarily high strength woven geotextile for special engineering applications.

The two main types of ACETex® are ACETex® PET and ACETex® PP .



ACETex® PET APPLICATION

ACETex® PET can be applied in the following constructions and purposes:

Ground stabilization
Airport Runway Reinforcement.
Railway Track Reinforcement.
Pile Foundation.

Reinforced Embankment
Reinforced Embankment.
Reinforced Abutment.

Reinforced Wall and Slope
Reinforced Wall.
Reinforced Slope.

Pavement Reinforcement
Subgrade Stabilization.

Separation
Sidewalk Paver.

Containment
Geotextile Bag.
Geotextile Tube.



Real Case

High tensile strength ACETex® is applied in soft soil improvement for a high-level roadway upgrade and expansion project. The proposed construction site is a flood plain area, since it is close to a river. ACETex® is laid to separate different granular materials for differential settlement prevention, to evenly distribute and transfer load downward for ground stabilization, and to provide some degrees of horizontal drainage to the ground. The time needed for granular material to settle and consolidate is shortened substantially.

WHY ACETex® PET

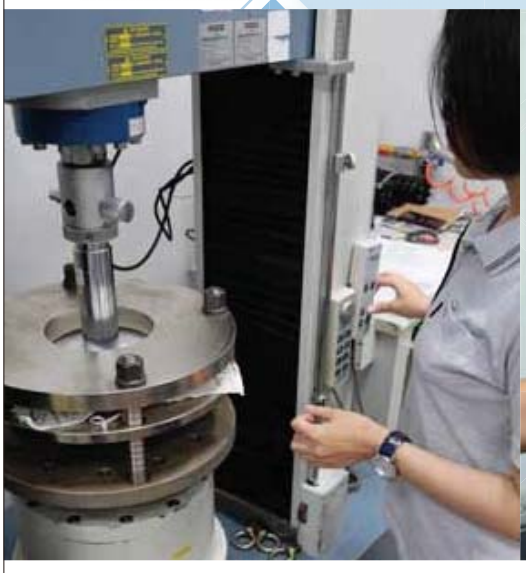
ACETex® PET has excellent performance in different constructions and environmental conditions.

Key Features:

- Stable woven structure.
- Low elongation and high tensile modulus.
- Remarkable performance against creep.

Key Benefits:

- Cost and time saving.
- Easy and quick installation.
- Durable in natural environment.
- Improve bearing capacity.



ACETex® PP APPLICATION

ACETex® PP can be applied in the following constructions and purposes:

Containment
Geotextile Bag.
Geotextile Tube.

Filtration
Geotextile behind Retaining Wall.
Geotextile around Underdrain.
Silt Fence.

Separation
Sidewalk Paver.

Pavement Reinforcement
Subgrade Stabilization.

Ground stabilization
Railway Track Reinforcement.



Real Case

Durable ACETex® is processed to enormous containers (ACEContainer®) for high polluted sludge dredging and disposal. The settlement of the sludge mixture of oil, silt, drifted sand, and suspended solids at the bottom of the harbor basin pollutes the environment and affects the routine operation of the port and navigation of ships. The dredged sludge is put into ACEContainer® fixed on a barge, and is then transported to an appropriate location and dropped into the sea after proper sealing. ACEContainer® effectively helps the dredging and disposal work, and controls the spread of the polluted sludge.

WHY ACETex® PP

ACETex® PP has excellent performance in different constructions and environmental conditions.

Key Features:

- Various woven structure.
- High permeability and CBR value.
- Remarkable resistance against abrasion, UV light and chemical environment.
- Relatively light weight with high tensile strength (compare to products with the same strength level).

Key Benefits:

- Cost and time saving.
- Durable in natural environment.
- Easy handling and installation.

G & E ENGINEERING
Since 1984

ACETex

ACEBag Product Brochure

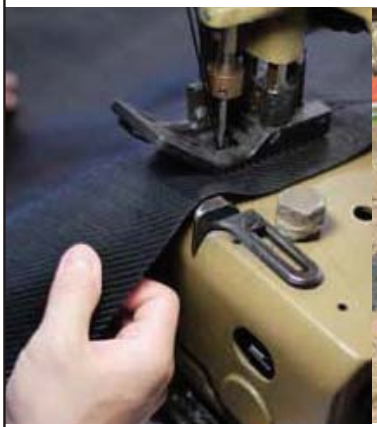
ACE Geosynthetics

ACEBag™

PRODUCT

ACEBag™ is the registered trademark of ACE Geosynthetics for all its geotextile bags. In general, ACEBag™ is a woven container with high tensile strength, strong seam, high loading capacity and appropriate textile texture for engineering application. Its size and design can be customized to satisfy the desired purpose.

A bag is composed of durable geotextile (ACETex®), strong handler loop, and appropriate sewing thread; and it can be produced in different design for different requirements. The materials used for ACEBag™ fabrication are mainly polypropylene or polyester woven geotextile. Seams on the ACEBag™ are sewed by skilled technicians with thread of durable yarns. This ensures the overall product quality and performance.



APPLICATION

ACEBag™ can be applied in the following purposes:

- **Material Storage**
  – to keep materials in place for protection, storage, delivery and relative management. It is also a packing medium.
- **Shoreline Protection**
  – to construct barrier(s) to protect the coast (or river) from erosion.
- **Pipeline Protection**
  - to provide a supporting seat to the existing pipeline around coastal area as a mean of protection.
- **Sludge Treatment**
  – to filter out the water from unwanted waste/sludge/deposit.
- **Coastal Reclamation**
  – to be utilized as a medium to nourish the beach and reclaim land from the sea.
- **Reinforced Structure Construction**
  – to use with gabion and form facing system of a reinforced structure; applicable in areas where cobble and stone are absent, and soil is convenient.
- **Tailing Dewatering**
  – to retain the tailing and minerals and filter out the water.
- **Temporary Structure Construction**
  – to do rush repairs and barrier for flooding.

Real Case

ACEBag™, incorporates with ACEGabion™, is used to construct a temporary bank for the dredging operation at the Wushe Reservoir. Dredged silt is filled into ACEBag™ in the ACEGabion™ to form structural units. These units are then piled along the riverside to prevent more soil being washed to the reservoir by rain. The cost and time of constructing a temporary bank protection is greatly reduced. Moreover, the disposal of the silt filling at the end of the operation is convenient, since it has been dewatered by ACEBag™ and is packed.

WHY ACEBag™

Key Features:

- Customized Production.
- Durable material and seam.
- Outstanding resistance to puncture.
- Excellent resistance to UV, chemical, immersion corrosion in seawater.
- Can be used to contain sludge, aggregate, plastic pellet, chemical fertilizer and etc.
- Easy to pile and transport; loading capacity can be fully utilized.
- Built-in cap or loop for sealing the bag; no additional packing is needed.

Key Benefits:

- Short working time.
- Easy to handle and stack.
- Cost-effective.
- Environmentally-friendly.
- Enable efficient material management.

www.geoace.com
sales@geoace.com

G&E ENGINEERING
Since 1984

ACETex

ACE Solution in Hydraulic Engineering

ACE Geosynthetics

www.geoace.com
sales@geoace.com

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2020/06

ACE Geosynthetics

ACE Solutions in Hydraulic Engineering

2020
www.geoace.com

About ACE Geosynthetics

Founded in March 1996, ACE Geosynthetics is now a leader in Taiwan's geosynthetics industry and offers professional and innovative solutions for the global engineering market, including collapse site remediation, slope and retaining wall engineering, weak foundation improvements, slope erosion control, road engineering, environmental protection, maritime engineering, riverbank protection, etc. In the past ten years, our outstanding design and application performance of geosynthetic materials have been repeatedly recognized by International Achievement Awards from Industrial Fabrics Association International, and the number of obtained awards is among the best among global competitors. Currently, the countries to which the Company exports its products and services span more than 70 countries across five continents. Thus, ACE Geosynthetics has taken a place in the international geosynthetics industry stably.

Based on independent research and development capabilities and rich manufacturing experiences, we offer a wide range of high-performance products, including geogrids, geotextiles, geotextile tubes, vegetative nets, drainage materials, and landscaping and hydraulic materials. In addition to the ISO9001 quality management system certification, the TAF (Taiwan Accreditation Foundation) certified laboratory has been further established to strictly control product quality. At the same time, it has actively obtained product certification from various countries and is currently one of the manufacturers with the most complete set of global product certification systems. Meanwhile, in 2003, a professional engineering design team has been established to provide engineering planning and design integration and application services. We continue to strengthen our vertical integration capabilities from product development, manufacturing, and processing to engineering planning and design, and provide geosynthetic materials and services that meet the requirements of the environment and engineering to create the largest overall benefits for customers. At the same time, we hope to deepen customer relationships, and create a team of professionals to provide the best solutions in the global market.

Index

Engineering Planning and Design

We assist on-site surveys, provide systematic engineering planning, feasibility proposals and plan proposals according to customer needs. We can provide basic design, detailed design, materials and construction specifications, safety analysis in line with international design specifications, unit price analysis and data such as calculation of carbon emissions in the design stage of the case.

Construction Guidance and Support

We provide suggestions on specifications and quantity of construction equipment according to customer requirements, and we provide the construction plans or construction drawings, construction supervision focuses and other information as well. Or, we send experienced engineers to the job sites to guide the construction methods and techniques of using relevant products and systems.

Professional Technical Consultation

For product specifications, applications, design, durability, construction operations and subsequent maintenance, we provide economical and safe solutions for customers, and work with customers to develop new application systems that manage to solve difficult engineering problems.

Geosynthetic Product Testing

Our own TAF certified laboratory provides professional testing services for geosynthetic products. Various long-term tests can also be carried out to evaluate the long-term physical property changes of products in various environments as a reference for design consulting services.

Professional Services Provided by the Professional Technical Team

Civil Engineering | Geotechnical Engineering | Hydraulic Engineering | Marine Engineering | Environmental Engineering | Landscape Engineering

Technical service team composed of more than
40 engineering professionals in different fields



ACE Solutions

Landslide Remediation and Slope Construction

- Landslide Remediation and Road Rehabilitation
- Reinforced Slope and Retaining Wall
- Slope Erosion Control
- Debris Flow Control Embankment

Coastline Protection

- Seawall and Bulkhead
- Groyne and Jetty
- Beach Nourishment
- Sediment Dredging

Riverbank and Channel Protection

- Revetment
- Pier Scour Protection
- Channel
- Flood Detention

Roadway Construction and Base Reinforcement

- Subgrade Stabilization
- Base Reinforcement
- Pavement Improvement
- Road Embankment and Bridge Pier



Why Choose ACE Geosynthetics?

2017 IFAI AWARD OF EXCELLENCE
2016 IFAI AWARD OF EXCELLENCE
2015 IFAI AWARD OF EXCELLENCE
2013 IFAI OUTSTANDING ACHIEVEMENT
2011 IFAI OUTSTANDING ACHIEVEMENT
Award of Excellence
Outstanding Achievement
BEST IN CATEGORY — GEOSYNTHETICS — IAA 2017 - NEW ORLEANS, LA

Since 2006

Since 2003

Participation in relevant associations

International awards

Countries where our products are sold

6 Continents

70 Countries

Patent Portfolio

Issued Patents 60+

Countries 25

Published Papers 56

Annual Participation 10+

Journal publications, exhibitions, seminars

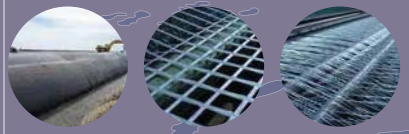
A diverse team with 20 years of experience

Professional Ability

Integration Ability

Quality Assurance

From product development/ manufacturing to processing



From engineering planning and design analysis to construction

International Certification


BBA


GOSTR


TAF


ISO9001


CE


NTPEP


ISO14001


ISO50001


ISO14064


Geogrid Carbon Footprint Assessment


Geotextile Tube Carbon Footprint Assessment


Reinforced Embankment Carbon Footprint Assessment

ACE Solutions in Hydraulic Engineering

The Hydraulic engineering field mainly concerns various hydraulic structures, including dams, river and sea dikes, groynes, breakwaters, revetments, land reclamation, port construction, estuary improvement, dredging and coastal protection. For construction purposes, diversified oceanic and coastal structures such as seawalls, revetments and breakwaters can reduce the effects of waves, tides or storm surges. Areas that are subject to long-term effects of waves need improvements to prevent erosion. In areas with shore drifting sand, shore flow and waves, it is necessary to carry out silt balance treatment.

After the construction of hydraulic and maritime structures, the direction of drifting sand will be affected. If the structure is too long, the downstream will not be able to obtain the sand source, which will cause the downstream to be eroded and the upstream to accumulate sands. If the structure is too short, the shore current will flow through the structure to the downstream, which will bring the drifting sand downwards. So, the size of the hydraulic structure requires an appropriate design. As the public's awareness of environmental protection increases, the requirements of Hydraulic engineering projects not only end with the construction of structures, but also involve the management of the oceanic and coastal environment.

ACE Geosynthetics offers a range of solutions that are generally easier, more durable, more economical and more resilient than traditional reinforced concrete structures. For example, a geotextile tube is used as a temporary or permanent structure, on which local sand can be laid to form artificial sand dunes, or stones and concrete blocks can be laid to form the jetty, offshore dyke and other protective structures.

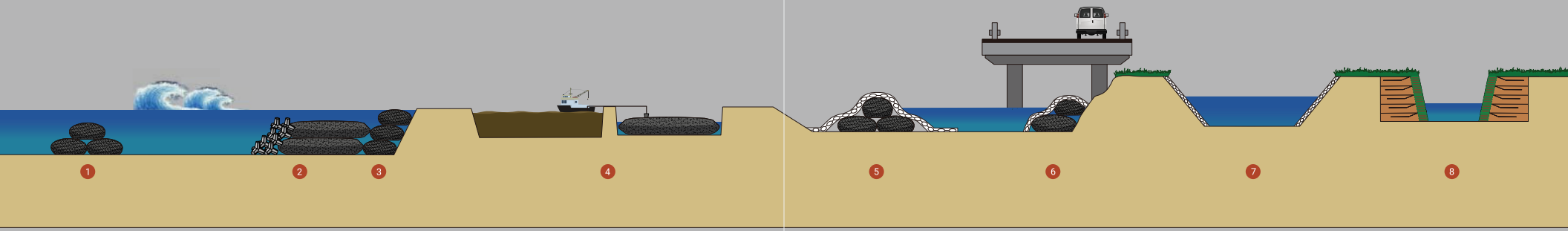
When using the geotextile tube to construct the hydraulic structure, no matter the rigid to flexible construction method is applied, there are advantages such as simplified simple construction, shortened short construction period, low construction cost, suitability for different local terrain conditions, and the structure is usually formed by filling the existing soil sand in the bag tubular body, which can greatly save material and handling costs, and the carbon emissions generated during the construction process are much smaller than those generated by the traditional method. Therefore, it speaks for itself that ACE provides an excellent solution that can meet the needs of engineering and environment in the field of water conservancy engineering.

1. Beach Nourishment

3. Seawalls and Bulkheads

5. Levees and Dikes

7. Revetments



2. Groynes and Jetties

4. Sediment Dredging

6. Pier Scour Protection

8. Flood Detention

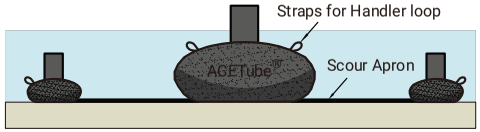
1. Beach Nourishment

Due to the currents, the coastline can be eroded, causing the shoreline to recede and the original beach area to disappear. Relying on the natural drifting sand to restore the original beach landscape takes a long time, and if there are major climate events such as a typhoon strike, it will aggravate the shore erosion and make the beach shoreline retreat again; therefore, an appropriate beach nourishment project is needed to restore the beach.

ACETube®
Geotextile Tubes
for Coastal Protection

Before | After

In beach nourishment projects, the wave dissipating concrete block/ concrete wave block is often used, but it can be lost easily due to sea current erosion. It will generate a large amount of carbon emissions during production and transportation, and it can seriously hinder the natural landscape. For coastal protection and reclamation, it is better to use coastal facilities such as offshore dykes, submerged levees hidden under water, or long levees in artificial bays to make sand accumulate along the coast.



Using the geotextile tube to construct the offshore embankments, submerged dikes, long banks and other hydraulic structures parallel to the coastline play the role of deflecting the drifting sand and preventing the scouring, so that the drifting sand can be accumulated to achieve the effect of beach nourishment.

As the geotextile tube is a flexible method, the special structure can be designed according to the project requirements, so that the impact of the broken wave on beach erosion can be reduced. It lowers the amount of drifting sand and maintains the static and stable effect of beach nourishment. Meanwhile, the artificial sand pumping for backfilling can also be used to speed up beach nourishment.

The geotextile tube is usually filled with the existing materials at the installation location to form the structure, and its underwater installation is easy. Therefore, compared with the concrete blocks or stones used in traditional construction methods, a large amount of expensive materials, transportation and construction costs can be saved as it is more environmentally friendly. In addition, the structure constructed using the geotextile tube can be well coordinated with the local terrain, so it can provide very good resistance to water flow scouring.

ADVANTAGES :

- The construction method of the geotextile tube is easier than that of other materials used in general marine engineering.
- The RC structure is highly costly, and the use of the geotextile tube method is fairly economical.
- The geotextile tube has a very good fit to the natural ecological environment, and the algae can adhere to its surface and grow at a fast rate, thus effectively reaching the target of ecological recreation.

REFERENCE 1

Hotel Beach Nourishment

Fujarah, UAE

2009

ACETube®

In 2007, a strong tropical cyclone Gonuhit the Fujarah coast, making a great havoc on the Emirates and causing serious erosion for several kilometers. Le Meridien Hotel urgently needed an effective solution to restore the beach.

An ACETube® geotextile tube structure in a U-shape, forming a seaward breakwater stretching out for 200 meters long on the southern and the northern side. This structure create a 228 m x 225 m safe zone to reduce the wave energy and nourish the beach.

After the project construction was completed, ACETube® geotextile tubes effectively controlled erosion and prevented Fujarah coast from further attack by cyclones. ACETube® represents the best way to reduce impact and reach sustainable development for our environment.

REFERENCE 2

Dredging of Port Channel and Land Reclamation

Kaohsiung, Taiwan

2018

ACETube®

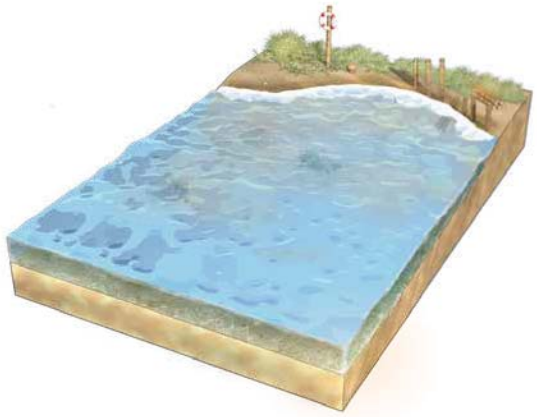
In order to expand the Kaohsiung Port terminal, it is necessary to clear and transport the channel silt to the planned filling area.

For embankment filling, the ACETube® geotextile tube forms the core structure of the embankment to increase the dredging capacity. Stones laid outside of the embankment protect and improve the service life of the structure. The height of a single geotextile tube can be up to 4.0 m or more. After double stacking the ACETube®, and adding the riprap cover, the levee height reached almost 9.0 m.

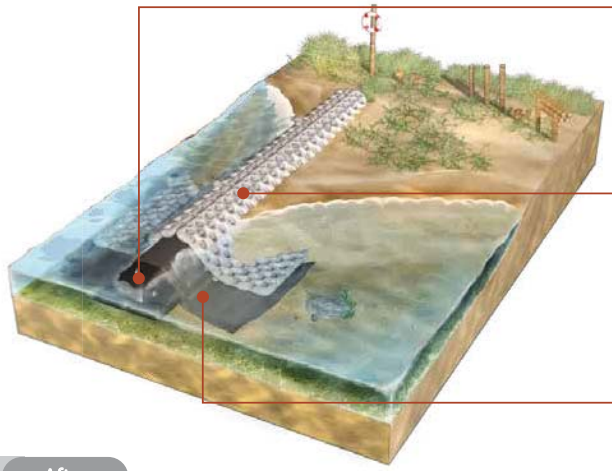
The ACETube® geotextile tube skillfully uses the dredged sand source as the sand embankment material to simultaneously reduce the cost of dredging and construction materials and lower the carbon emissions of the total project to achieve effects of safety, environmental friendliness and cost-effectiveness. The giant sand containment system manufactured with high-strength geotextiles can significantly increase the allowable fill volume in a single session, which greatly reduces the material and construction cost.

2. Groynes and Jetties

Factors such as coastal erosion, reduced sand transport in the river, and tidal changes caused by global climate variations will change the coastal line. As far as rivers and streams are concerned, if certain climate factors exist , the flow rates or flow differences can be larger. Especially during the rainy season or typhoon transits, the flow will increase rapidly, and cause damage to the riverbank and flooding outside the dyke, causing damage to crops or people's livelihood.

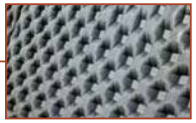


Before



After

ACETube®
Geotextile Tubes
for Coastal Protection



ACEFormer™
Geotextile Mattresses
Grouted with Cement Mortar
for Surface Protection

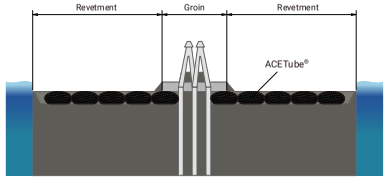
ACETex®
Geotextile for Separation
and Erosion Control

The use of the groyne can interrupt the wave or water flow energy to restore and protect the shoreline This interruption reduces the internal wave energy and flow rate so the suspended sediment is precipitated. Large wave energy increases the kinetic energy of drifting sand. The groyne often uses concrete or stone armor which is difficult to construct and costly. Because of the long-term erosion of the bed by ocean currents, it is easy to cause the rigid structure to be damaged due to differential subsidence, or the loss of rockfill, which may even cause damage to the overall structure of the groyne.

Maintaining or nourishing depleted beach levels is efficiently achieved by installing ACETube® perpendicular to shorelines to create beach remediating groynes or jetties. The ACETube® structures disrupt longshore currents and accumulate sediment, that sustains the existing coastline.

Also, the ACEFormer™ geotextile mattress can be added for surface protection or stabilization. Compared with the rockfill, the ACETube® geotextile tube can be filled with local sea sand, which can cut down costs by reducing the need for purchased materials and transportation. And the underwater installation of the ACETube® geotextile tube is simple, cost-effective and with little impact on the environment. Furthermore, the ecofriendly geotextile materials adapt to the marine environment, attracting fresh aquatic plant and animal life.

In addition to the construction of the groyne, the geotextile tube can also be used for the protection of the jetty structure. The geotextile tube is placed on the riverbed around the jetty to stabilize the jetty foundation and increase its resistance , thus improving the overall stability and water flow control capability.



ADVANTAGES :

- The ACETube® groyne system can resist river scouring to avoid structural subsidence, reduce the flow rate and increase the deposition rate to stabilize the river channel.
- Cost advantages over traditional methods.
- The geotextile tube can be used in green projects to effectively reduce carbon emissions and achieve energy-saving and carbon-saving effects.

REFERENCE 1

Riverbank Erosion Control, Zhuoshui River

Changhua, Taiwan

2017

ACETube® ACEFormer™

2017 IFAI International Achievement Award (IAA) Best in Category & Award of Excellence

Zhuoshui River often encounters the problems of flood plain shrinkage. A spur dam was installed to serve as the river bank protection; however, due to long-term erosion along the foundation at the spur head, soil loss and local settlement of the structure occurred resulting in the destruction of the gabion shield and exposure of the pier head.

The ACETube® geotextile tubes were used to shelter the foundation of the PC spur dam. First, a layer of polypropylene ACETube® paved both sides of the dam's foundation to retard base subsidence. The ACETube® were then filled to different heights or stacked together to stabilize the foundation, and to reduce the effects of scour and improve the effectiveness of siltation at the pier heads. Also, at the most severe erosion sites, gabions overspread the ACETube® and gaps were filled with local sand to amplify the overall erosion resistance of the structure.

This project has canvassed more than 1,100 m of the Zhuoshui River bank for the protection of flood plain slopes and several spur dams along the river. Instead of solely using gabions, the combination of gabions with ACETube® geotextile tubes can save around 30-40% of the overall costs, and furthermore reduce approximately 88% of carbon emissions. The shoreline has extended and direct erosion of the flood plain has reduced, successfully improving the safety of the embankment and well exerting its functions.

REFERENCE 2

The Project of an L-Shaped, Sand-Containing Breakwater

UAE

2013

ACETube®

2013 IFAI International Achievement Award (IAA) Award of Excellence

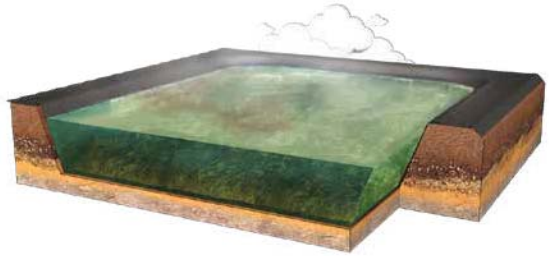
This project was at a coast in Ras Al Khaimah, where there was a groyne for the protection of the navigation channel. The local authority planned to build a fishing port right there where the groin was and decided to make use of it as a part of the port.

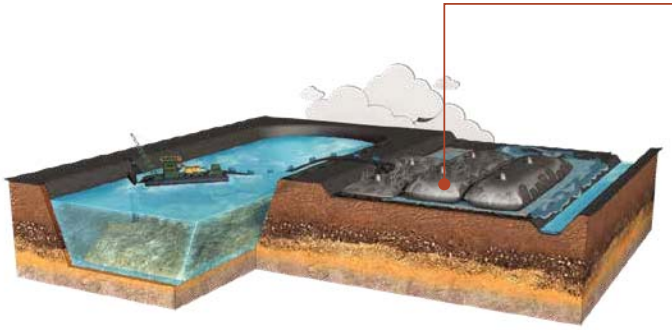
This project design applied various types of ACETube® as the perimeter barrier structure which contained and trapped in-situ sand to forming the core of the breakwater. The construction was carried out from bottom to top with the usage of 286 ACETube® geotextile tubes. Externally, ACETube® was covered with an under-layer of aggregates and further protected by a layer of armor rocks. The final look was similar to a rubble-mound type breakwater.

The innovative application of ACETube® for breakwater construction significantly reduced the cost and minimized environmental disturbance. The project even won 2013 International Achievement Award from IFAI for its outstanding performance.

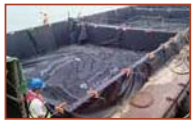
3. Sediment Dredging

Freshwater and seawater currents carry sediments into harbors and other naval passageways constricting navigation and the flow of water. Dredging the sediment accumulated along the beds of watercourses clears and deepens paths for ships. The dredged material is effortlessly stored in ACETube® or ACEContainer™ then transported to various sites for disposal or more beneficially utilzed to form hydraulic structures.





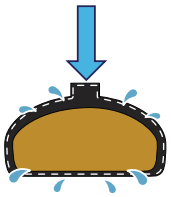
ACETube®
Geotextile Tubes
for Dewatering



ACEContainer™
Geotextile Containers Fitting in Split Barge for Marine Structure Construction, Land Reclamation, and Dredging

Before After

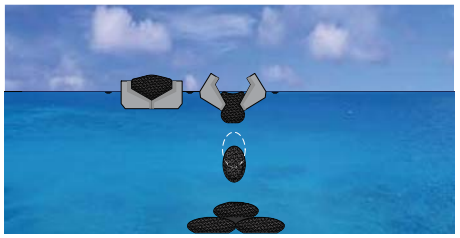
ACETube® dewatering tubes are tubular-shaped containers fabricated by multiple pieces of engineered woven fabrics with excellent filtration characteristics. In general, sludge is pumped into ACETube® dewatering tubes with or without flocculants depending on the sludge particle sizes. During and after the filling process, the water dissipates through the fabric while the solid particles are retained within the geotextile tubes with low moisture contents. Afterwards, the volume of sludge reduces significantly, and a great deal of removal and disposal works are saved. Moreover, the installation and usage of ACETube® are very cost and time effective.



Water drained out

In most traditional dredging practices where tools are used for excavation and sludge is placed in the treatment tank for natural drying subject to land restrictions, it can lead to a lengthy processing time and a limited processing amount, thus affecting the efficiency of dredging operations. By comparison, the geotextile tube can be quickly dehydrated in the early stage and is not subject to land restrictions, which effectively solves the shortcomings of its traditional methods and improves the effectiveness of dredging.

ACEContainer™ are monolithic geotextile containers designed to fit in split barge and pour in sediment sand or other ground materials to dredging. When the geotextile containers are filled to a desired depth of the split barge hopper, and then they are sealed and ready to be dumped to the targeted position through the barge tugging.



The volume of ACEContainer™ matches up to the hopper of barge which can exceed 200 m³. With the use of ACEContainer™, a great amount of loosely or lightly cohesive materials can be effectively and efficiently contained, moved, and dumped into (deep) water area without polluting the surrounding water body (ocean or river) at the dumping location. In some cases, ACEContainer™ geotextile containers are filled with dredged materials and deposited to build coastal protection facilities; two jobs are accomplished by one thing without considerable costly materials, transportation and installation works.

ADVANTAGES :

ACETube® Dewatering System

- Highly time and cost effective.
- High sludge treatment capacity.
- There are fewer site restrictions and stacking can increase throughput.

ACEContainer™

- The bag body can be customized to match the changes to the tank of the open-bottom vessel (hopper barge), so it can effectively deal with a large amount of silt.
- Based on the mathematical calculation and hydraulic simulation testing results, it is possible to design a geotechnical sand container that meets the requirements of throwing operations at sea under different conditions.
- It can facilitate rapid dredging, maintain the depth of the channel without affecting shipping and prevent marine pollutions.

REFERENCE 1

The Sand Drift Treatment and Land Reclamation Project, Taichung Port

Taichung, Taiwan

2009

ACETube®

In order to alleviate the silt problem in the navigation channel and restore the sediment storage capacity in the northern silt area, the Taichung Harbor North Silt Area needs to construct a cofferdam in the shoal location of the existing silt area with geotextile tubes that can be quickly constructed with lower environmental impact.

In this case, the existing sea sand is filled into the giant ACETube® geotextile tube. The geotextile tube forms a gravity structure to meet the needs for stability of the cofferdam, and has the functions of energy dissipation and wave breaking, and thus it can dredge the silt and fill the land.

Using the existing sea sand to backfill the giant ACETube® geotextile tube can reduce the amount of concrete and reduce the damage of the project to the coastal ecological environment. Compared with the wave block of equal weight, it can reduce at least 2500T-CO^2 emissions. Compared with riprap of equal weight, it can reduce engineering costs by 50% and truly achieve the green goals of safety, economy, ecological protection and carbon reduction.

REFERENCE 2

Dredged Materials Disposal, Wan Chai Development Phase II Project, Victoria Harbor

Hong Kong

2011

ACEContainer™

On average, Hong Kong's Victoria Harbor has about 220,000 ships to visit the port each year. In order to ensure the normal operation of the shipping, the competent authority has attached great importance to the siltation problem of the port.

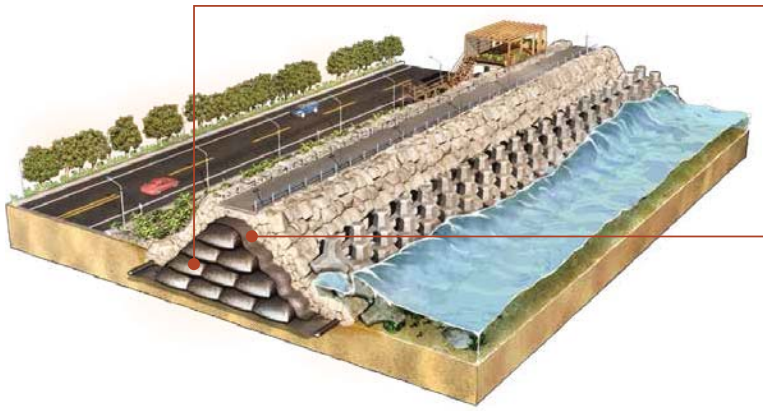
For sludge dredging and treatment, the designer manages to deploy the ACEContainer™ sandbags in the second phase of the Victoria Harbor Development Project. The ACEContainer™ is sized and installed according to the opening space of the open-bottom vessel (hopper barge). After being filled with silt and sealed, it can be directly transported to the intended location by the open-bottom vessel (hopper barge) for throwing operations.

The use of ACEContainer™ is a faster and more effective solution than conventional dredging techniques. As ACEContainer™ has excellent tensile and stitching strength, water permeability and filtration properties, it can properly encapsulate sludge during the casting process to avoid environmental pollution.

4. Seawalls and Bulkheads

Due to the tidal current difference between the port and the coast, the foundation of the dike is gradually lost. The dike will be damaged over a long time, and the original wave-eliminating block will disappear, which will affect the safety and stability of the embankment foundation structure.

Seawalls, as wave-proof structures built along the shoreline, are important hydraulic structures to withstand waves, tides or surges for protection of inhabited land and people. Seawall structures incorporating with high-strength and flexible ACETube® geotextile tubes and ACETex® geotextiles as filtration and erosion control geosynthetic fabric adapt to almost any shoreline curve, dip and juncture.



ACETube®
Geotextile Tubes
for Coastal Protection

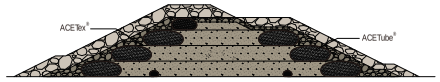
ACETex®
Geotextile for Separation
and Erosion Control

Before After

Replacing the traditional RC structure with the geotextile tube not only can eliminate the wave impact energy more effectively, but also has the advantages of rapid deployment, cost-effectiveness and environmental protection. ACETube® geotextile tubes are monolithic-tubular containers fabricated by multiple pieces of highly engineered synthetic woven fabrics. In order to form flexible mass-gravity hydraulic structures for coastal protection, it can be filled with in-situ solids. In general, geotextile tubes are hydraulically filled with in-situ sand/water slurry by pump, dredger or funnel. During and after the filling process, the water dissipates through the fabric, while the sand can be retained within the geotextile tubes and become the main composition of the structures.

The construction method using the geotextile tube is simple, as only one sand pump or small sand pump dredger is required for construction, and the sand can be extracted from the local sand source to fill the bag. Compared with other construction methods, the purchase and transportation cost of the materials can be greatly reduced, and the impact on the environment ecology and landscape is smaller.

Using the geotextile tube as the embankment can strengthen the stability and safety of the overall structure of the seawall, and successfully block the wave attack to achieve the basic protection effect on the sea side. At the same time, it can avoid the damage of the embankment, thus eliminating flooding and disasters outside the embankment. The dike core can be completely composed of the geotextile tube, or the geotextile tube can form the outside of the embankment, as shown in the following figure.



The geotextile tube is a flexible method, which can be used to design a special structure type to break the waves according to the demand, effectively reduce the beach erosion, and stabilize balance of the drifting sand in the upstream and downstream. Overall, the advantages of using the geotextile tube to construct breakwaters are significant.

ADVANTAGES :

- The flexible structure has better resistance to water flow impact.
- Construction is simple and fast.
- The silt can be extracted and used as the material to fill the bag, which can reduce the cost of material purchase, handling, and silt removal.
- The traditional reinforced concrete is replaced with local materials and environmentally friendly bags to reduce environmental damage.
- The geotextile tube is used as the embankment material, and the structural stability is better.

REFERENCE 1

Dredge and Land Reclamation, Anping Harbor

Tainan, Taiwan

2015

ACETube®

Anping harbor has been used for 36 years; the original design became inadequate, so it was required to build new facilities. In addition, dredging the harbor was also an urgent issue.

The required dike for land reclamation was 168 m long and 10 m wide at the bottom and 2.5 m at the top. Considering in situ varying topographic contours, different sizes of ACETube® geotextile tubes were designed. The silt could fill the ACETube®, and backfilling the area behind ACETube® dike would provide the reclamation material.

The dike constructed by ACETube® geotextile tubes used more than 5,200 cubic meters of silt dredged from the deposit area of the Harbor, effectively reducing the cost of silt removal. Comparing ACETube® and caisson, the ACETube® solution provides a relatively easy and faster installation at a lower cost than using caissons.

REFERENCE 2

Reinforced Earth Quay Wall

UAE

2010

ACEGrid®

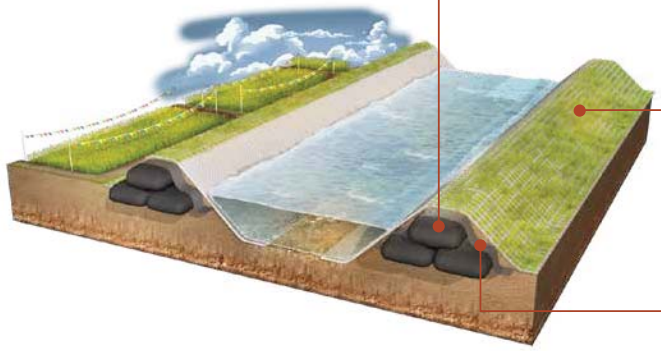
Excess shipping traffic caused access and management of the port in difficult. The port authority decided to build both a quay wall and a marina to expand the mooring area and facilitate the port activities.

The designer proposed building a 3 m high reinforced earth quay wall. The wall face was built with stacked precast concrete blocks, each 70 cm high. These blocks then were with ACEGrid® geogrid. To avoid the reduction of soil strength caused by the sea, as well as the possible structure settlement, the foundation of the retaining wall below water level was backfilled with graded aggregate. The upper part above water level was backfilled with sand.

The quay wall and marina have been attacked by tropical cyclones from the Gulf of Oman, these structures remain steady. The capacity and convenience of the fish port has been significantly enhanced by the construction of the quay wall.

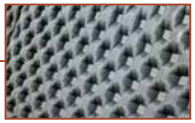
5. Levees and Dikes

River bank erosion is a natural phenomenon, but it may be accelerated by human behavior. Water conservancy engineers need to master the river landscape to make the river function and maintain ecological balance. ACE Geosynthetics uses geosynthetics to provide cost-effective, highly efficient and environmentally friendly hydraulic engineering solutions, such as rugged river revetments or flow control structures that can reduce river bank scouring or promote sedimentation.



Before | After

ACETube®
Geotextile Tubes for Coastal Protection

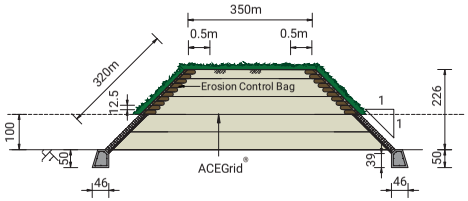


ACEFormer™
Geotextile Mattresses Grouted with Cement Mortar for Surface Protection

ACETex®
Geotextile Mattresses for Separation and Erosion Control

When the heavy rain strikes, if the flood passage section of the river is insufficient, overflowing or dike burst may occur to cause flooding. By constructing dikes or dams, it can be used to protect against floods and protect the safety of people around the river. In the meantime, during heavy rains and floods, in order to reduce the erosion of river banks by rivers with high flow rates and flow volumes, artificial revetments need to be built to protect river banks.

The reinforced soil structure constructed by the ACEGrid® geogrid can be used as a very economical and effective levee heightening system. It is generally built above the normal water level. Different panel systems can be chosen according to the local hydrology and geographical environment, and it can quickly strengthen the flood control and anti-scour ability of the new embankment.



In addition, ACE's revetment system can also be combined with ACETex® geotextile or the ACETube® geotextile tube to stabilize and strengthen the embankment, or the ACEFormer™ geotextile mattress can be used to further strengthen the surface.

The reinforced soil structure is a gravity retaining structure composed of a panel system, stiffening materials, and rammed backfill soil. The reinforcement material is buried between the soils, and the tensile strength and shear strength of the original soil are increased by the strength of the material. Its application not only can greatly reduce construction costs, shorten the construction period, achieve earthwork balance, and allow large deformation of structures caused by earthquakes or other external forces, but also increases its aesthetics upon completion.

When the reinforced soil structure is used as the embankment, the geogrid has good hydrolysis resistance and will not be damaged by the water soaking, and the soil sand surrounded by the stiffening grid will not be lost, so the overall stability can be maintained.

ADVANTAGES :

- It is faster and more cost-effective to design the Wrapped Around Reinforced Revetment with ACESandbag™ and ACEGrid® than the traditional reinforced concrete revetment.
- The ACESandbag™ uses the existing soil as the filling material for easy vegetation, which is conducive to the maintenance of the local ecological environment.

REFERENCE 1

Canal Improvement Project

Pingtung, Taiwan

2009

ACEGrid® ACESandbag™

According to the "flood control plan for flood-prone areas," the Niaosong Canal should be rectified according to the principles of safety, economy, ecological protection and carbon reduction to expand its flood passage section.

The foundation of the project uses the pre-cast concrete blocks. The existing dredged soil is used to construct the ACEGrid® Reinforced Revetment above the flood level.

The flooding of upstream villages and farmland can be improved to reduce the flooded area by about 300 hectares. The reinforced wall surface can be planted and greened. Upon completion, the planting and greening effect is remarkable, and it has the advantages of porosity, rough surface and self-purification ability to restore water quality. In-situ backfilling with local dredged earth and stone can reduce transportation costs and carbon emissions.

REFERENCE 2

Zhuoshui River Revetment Improvement Project

Changhua, Taiwan

2015

ACETube® ACEFormer™

2017 IAA Award of Excellence

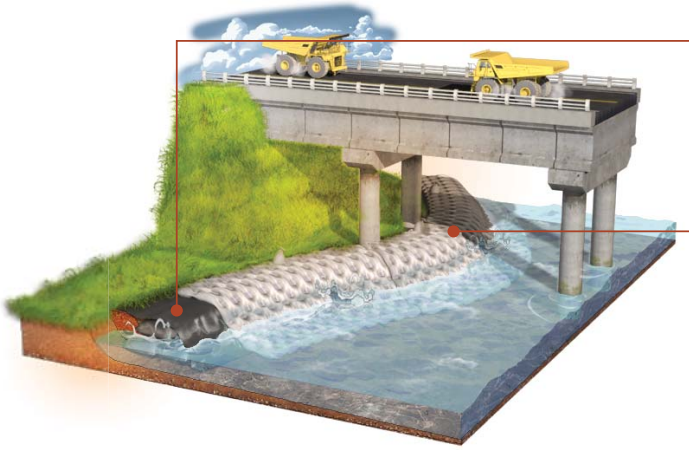
The river bank in this area has been scoured by water for a long time, resulting in the loss of earth and rock in the high riverbank. The bank line is continuously advancing to the dike to seriously jeopardize the stability of the dike structure and the safety of life and property of local residents.

The ACETube® geotextile tube is filled with the existing river silt near the site, and the surface layer is laid with the ACEFormer™ geotextile mattress filled with cement mortar to strengthen the slope strength and protect the high riverbank from loss.

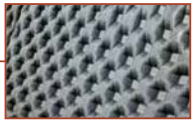
After the remediation, the bank line extends outward, prevents the river from directly scouring the high riverbank, and improves the safety of the riverbank and the dike. Compared with the gabion, it saves the cost by about 30%~40% and reduces the carbon dioxide emissions by 88%. And it is also conducive to the river environment due to in-situ backfilling with the use of existing silt.

6. Pier Scour Protection

As the pier is affected by the fluvial process, natural scouring and accumulation can occur. Especially when the bridge crosses the rushing river, and it often encounters floods, the riverbed of its pier, abutment or foundation can be subjected to intense erosion for a long time. This results in continuous loss of the soil coverage and the exposure of the bridge foundation, which can affect the stability of the bridge as a whole and even cause the bridge to fall. In recent years, under the influence of climate change, heavy rainfall and flood events are more frequent, and bridge erosion protection requires more effective solutions.



ACETube®
Geotextile Tubes for Coastal Protection

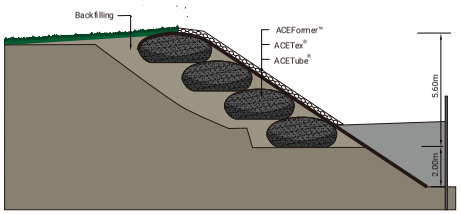


ACEFormer™
Geotextile Mattresses Grouted with Cement Mortar for Surface Protection

Before | After

Flexible ACETube® geotextile tubes or ACESandbag™ geotextile bags hug bridge piers and other monopile or gravity foundations, barring the underwater shearing of soil around the piers. The protection methods employed are further fortified with protective ACEFormer™ geotextile mattresses cover.

After the geotextile tube is filled with the riverbed soil and stones, it can be stacked around the foundation of the pier, which can form a flexible structure that is resistant to water flow scouring and can stabilize the foundation of the pier.



The geotextile tube can be constructed in a curved section according to local conditions, and the construction is easy and fast. Meanwhile, the fabric form can be laid on the outer layer of the stacked geotextile tube.

The fabric form is filled with cement mortar to enhance the impact resistance and avoid damage by foreign objects, and it can slow down the coastal water flow due to its large surface roughness, so as to increase the rate of river bed siltation, and indirectly achieve the effect of river rectification. Overall, the effect of bridge foundation protection can be brought into full play.

ADVANTAGES :

- The flexible bag structure can be flexibly applied to different terrains according to the local conditions, thus helping create a sustainable green environment for energy saving and carbon reduction.
- The materials can be used directly at the time of construction, and there is no need to purchase additional sand and gravel, or excessive equipment and manpower, which can save costs.

REFERENCE 1

Protection of Pier Foundation of Zhongsha Bridge at Zhuoshui River

Changhua, Taiwan

2015

ACETube® ACEFormer™

2015 IFAI Award of Excellence

After decades of use, due to continuous and severe erosion over a long term, some pier foundations and surrounding areas of Zhongsha Bridge have been extremely unstable and need to be dealt with immediately.

Adopt the scouring protection system composed of the ACETube® geotextile tube and ACEFormer™ geotextile mattress.

A significant amount of cost of using expensive concrete materials can be saved. The flexible nature of the material allows it to adapt to different topography and local conditions, which not only makes engineering easier, but also helps the structure to adapt to the environment.

REFERENCE 2

River Bank and Pier Protection Project

Peru

2013

ACETube®

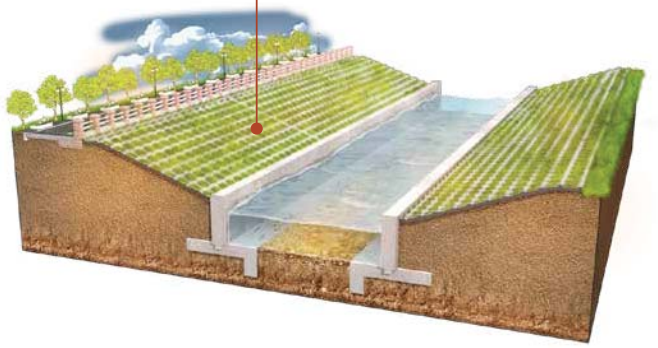
The long-term lateral erosion of the riverbank causes the slope to collapse continuously and the side slope on the bank to be nearly vertical, and as the vegetation cannot grow, it poses a threat to the stability of the riverside roads and the bridge along the river bank.

The ACETube® geotextile tubes in different sizes are stacked on the bank slope and around the pier to form a revetment, and the ACETube® geotextile tubes are stacked on the upper part of the river bank to form several layers that increase the revetment height. A total of 2,050 geotextile tubes in three sizes are mainly used.

In addition to adjusting the river environment, extensive use of existing silt to fill the ACETube® can also save a lot of cost and time for material purchase, transportation and installation. The ACETube® is a flexible material. It can be installed and adapt to different terrains and local conditions; the flexible structure formed after filling has good resistance to water flow scouring.

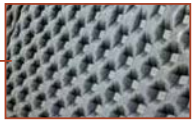
7. Revetment

Owing to the current action, the river banks are prone to erosion. Especially when the flood passage section of the river is insufficient, when it is raining, the floods can easily scour and destroy the river bank slope. Revetment structures are built to protect slopes, banks or cliffs against erosion.



Before

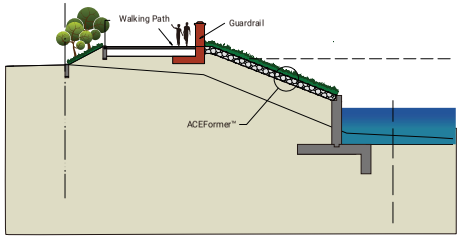
After



ACEFormer™
Geotextile Mattresses Grouted with Cement Mortar for Surface Protection

ACELiner™
Geosynthetic Clay Liners Consisting of Two or Three Layers of Geosynthetics Enclosing a Layer of Sodium Bentonite

Geosynthetics have multifunctional purposes in coastal revetment construction including toe scour protection, filtration, drainage, and separation. Several cost-effective ACE geosynthetic options exist that frame riverbanks, curtailing erosion and protecting riversides and adjacent structures from destructive flow velocities apparent in rivers during storms and floods. ACE revetment systems incorporate ACETex® geotextiles or ACETube® geotextile tube structures to stabilize and reinforce embankments and are further fortified with ACEFormer™ geotextile mattresses or ACEMat™ erosion control mats armor.



In order to prevent the erosion of the slope and the loss of soil, using the ACEFormer™ as the revetment is a very effective solution. ACEFormer™ are two-layer and high-strength geotextile mattresses grouted with cement mortar or concrete. The geotextiles are able to accommodate different landforms, and provide a formwork to construct a surface protection structure. With the filling material, the ACEFormer™ system provides an effective shield and medium against erosion, and to reduce the wave energy and flow velocity on the applied surface.

ACEFormer™ is very different from the traditional steel formwork. It contains the interconnected bag space for filling cement mortar. When the mortar is solidified, a rigid panel is formed for protection. As it is not like the general formwork that needs to be removed after grouting, it can save working hours.

The ACEFormer™ is available in a variety of thicknesses, permeable areas and surface finishes. If you want to enhance the anti-leakage ability of the lining building, you can use the ACELiner™ Geosynthetic Clay Liner. If it is combined with the vegetation, a vegetative fabric form can be used, which is equipped with openings to spray grass seeds and increase the surface area for plant growth.

ADVANTAGES :

- Strong, durable and resistant to water erosion.
- Simple and quick installation to reduce construction time and costs.
- Reduce the usage of costly materials to save money.
- Many types and filled thickness to suit diverse project needs.

REFERENCE 1

Riverbank Protection, Niaosong Canal

Kaohsiung, Taiwan

2010

ACEFormer™

The "Niaosong Canal Widening and Improvement Project" was set to:

- Resume the discharge capacity of flood control.
- Reduce the risk of flooding.
- Ensure the safety of local residents and their properties.
- Promote favorable land appreciation.

In addition, the construction also entitled the canal to become an eco-friendly environment and a water-accessible area.

Pursuing the objectives of the project, the designer came up with a good idea of using ACE Revetment Composite System to meet all the requirements in one solution. To overcome the scouring, reinforced concrete (RC) revetment was used for the area below the water level. The revetment was then backfilled with engineered fill, sloped upward and backward to the pavement grade. To prevent the erosion of surface run-off and to minimize the possible harsh destruction due to overflow or flooding, ACEFormer™ Vegetation Type (V Type) geotextile mattress was placed on the backfilled surface. Different from traditional concrete structure, ACEFormer™ not only provides a durable surface for scouring resistance, but also offers spaces for vegetation to grow.

The initial palish gray surface of the ACEFormer™ has been changing to rich fresh green and a variety of local species have been observed on site. Although the site has experienced several challenges of strong typhoons and torrential rainfalls, the canal stays stable and the flooding damages have ceased completely.

REFERENCE 2

Lakeside Revetment

Prahova District, Romania

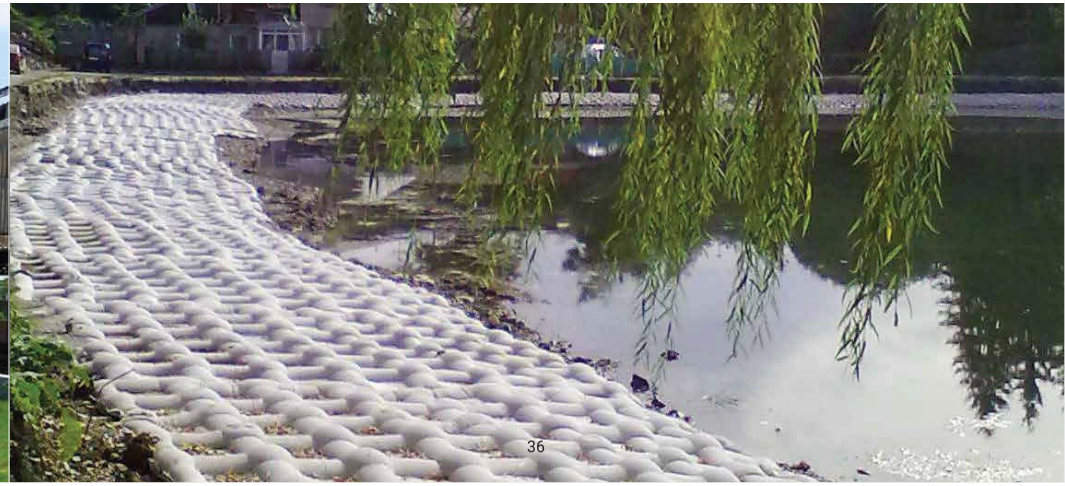
2011

ACEFormer™

In a leisure zone planning area located in Prahova District, Romania, there was a severe landslide caused by heavy erosion which imperiled the houses and buildings and building around the lake. On the other hand, disordered growing vegetation was another issue associated with the planning area. A solution which would protect the community and residents from further dangers of erosion as well as beautify the planning area was immediately required.

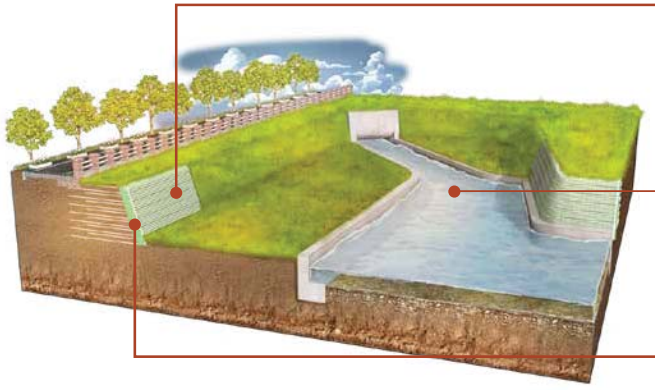
The best solution was to construct the revetment with ACEFormer™ Vegetation Type geotextile mattresses. This easy and quick method could shorten the construction time after the water in lake was drained out.

The ACEFormer™ act as a strong cover layer on the eroded area, and counteracts attacks from water to prevent landslides. The special design of ACEFormer™ Vegetation Type would also crop landscaping plants to avoid the wanton growth of weeds.



8. Flood Detention

The urbanization or the development of watersheds will result in the failure of existing drainage facilities or the reduction of protection standards. The extreme weather will not allow immediate venting of heavy rains, resulting in excessive surface runoff and flooding. The probability of flooding will become high and harm people's living space, thereby leaving people's livelihood in trouble. Therefore, various flood control measures should be properly planned to effectively control storm runoff, and setting up a flood detention pond is one of the important practices.



Before | After

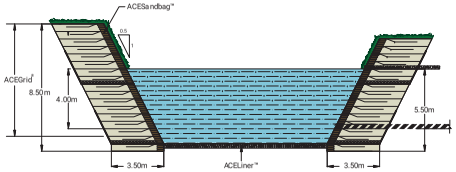
ACEGrid®
Flexible Woven PET Geogrids for Soil Reinforcement

ACELiner™
Geosynthetic Clay Liners

ACESandbag™
Durable Sandbags for Erosion Control

Flood detention pond often installed in the storm runoff area to temporarily store surface runoff, which has the effect of reducing and delaying flood peak flow, and can reduce the impact of flood on downstream low-lying areas. Today, there are extreme climate threats everywhere in the world, and the importance of the flood retention pond is increasing.

In addition to the general flood retention function, the flood detention pond can also be used as a recreation space. The construction of the flood detention pond with the Wrapped Around Reinforced Retaining Wall can directly use the excavated soil in the field, and the construction is convenient, so the construction cost can be reduced, the construction period can be shortened, and the earthwork balance can be achieved. As the surface can be planted, it is more beneficial to the creation of a recreational space. If we want to strengthen leakage resistance at the bottom of the pond, we can use the ACELiner™ Geosynthetic Clay Liners.



The mechanical effect provided by the geogrid is a stable "apparent cohesion," which is also the main stabilization mechanism of the soil reinforced structure. The geogrid will not be damaged by water soaking, and the soil that is surrounded by the geogrid will not be lost, so the reinforced structure can maintain stability.

The geogrid has the function of strengthening the soil, which can make up for the insufficient shear strength or tensile strength in the soil. The layered configuration can increase the friction between the material and the soil layer to strengthen the soil. Therefore, the reinforced retaining wall can have a larger slope degree than the natural slope, and increase the flooding capacity of the flood retention pond.

ADVANTAGES :

- It introduces the flood peak flow into the pond to delay the discharge time, effectively alleviating the burden on the overall drainage system in the original area.
- It can directly use the excavated soil in the field to save material purchase and handling costs.
- It is convenient for construction, which can greatly reduce construction costs and shorten the construction period.
- It helps create an ecologically green environment that allows the original flora and fauna to have a good habitat.

REFERENCE 1

Geosynthetic Detention Basin at Shalu Interchange

Taichung, Taiwan

2015

ACEGrid® ACESandbag™

2016 IAA Award of Excellence

In order to control the floods in the region for a long time, it is proposed to set up a disaster-proof flood detention pond that can accommodate and effectively delay stormwater runoff.

The green space in the northern upper circle of the National freeway's Shalu Interchange is used to dig and construct a detention pond in the stable gravel layer. The pond wall is reinforced with the ACEGrid® geogrid and the ACESandbag™ erosion control bag to hold the local earth and stones.

It is a wrapped-around reinforced structure constructed by using a large amount of excavated earth and stones. In addition to being equipped with the flood detention function, it can also effectively reduce the costs. We set up disaster prevention facilities in idle spaces to effectively address the threat of regional flooding. The stiffend slope has a good vegetative effect, so that the space can still retain the original green landscape.

REFERENCE 2

Detention Pond Under the Shalu Overpass of Freeway No. 3

Taichung, Taiwan

2014

ACEGrid® GG ACEDrain™ S

The flooding problem of Shalu District mainly resulted from the drainage construction was unable to catch up the speed of regional development and the construction projects on the area increase rapidly, making impervious areas and the surface runoff increased as well.

The treatment plan included using the spare space between bridge piers under the Shalu overpass of the Freeway No. 3 located to construct a detention pond with 1,026m³ volume.

The construction utilized local materials, natural granular backfill to form mechanically stabilized earth (MSE) wall as the wall structure around the detention pond. The bottom of detention pond uses RC raft foundation. Every 4 m vertical height of the MSE wall lays out light gravel drainage layer with horizontal and vertical ACEDrain™ geocomposite drainage panels of 2 m spacing, so that the seepage water in the soil layer behind the slope is diverted into the pond to release the water pressure and to maintain the long-term stability of the reinforced slope. Moreover, the reinforced slope uses durable erosion control bags which are filled with in-situ selected soils and staked on the slope with ACEGrid® GG geogrids wrapping around, allowing the slope to have stable foundation for vegetation and to reach the effects of greening and ecological friendliness.

The detention pond allows surface runoff to be stored temporarily within it and thus achieves the effect of flood storage; moreover, it is able to reduce flood peak flow produced by rainstorm or delay the arriving time of peak flow, and then decrease flooding condition of low-lying district downstream during rainy seasons. Using mechanically stabilized earth (MSE) on this construction not only fulfills the basic demand of security and economy in civil engineering but also conforms to the current trends of carbon reduction and ecological sustainability pursued by the engineering industry.

REFERENCE 3

Ecological Landscape Park with Function of Flood Detention, Pinglin Forest Park

Taichung, Taiwan

2015

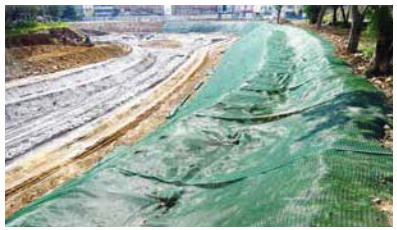
ACETex® ACEMat™ ACESandbag™

2016 FIABCI-Taiwan Real Estate Excellence Award

The old military camp site is revitalized and built into a multi-purpose ecological park with landscaping, rest and flood detention functions. It is planned to be a 3.7 hectare original forest park and a 32,000 m3 ecological flood detention pond.

ACETex® geotextiles and geosynthetic clay liners are laid under the flood detention pond, pile up pebbles at the bottom and the lower half of the slope, and stack the upper half of the slope with the ACESandbag™ Erosion Control Bags. Also, we use the ACEMat™ Turf Reinforcement Mats to carry out erosion protection and planting on the slope of the park.

The occurrence of flooding is greatly reduced, and the recreational and sightseeing space is created to enhance the quality of nearby living environment. The park can adjust the microclimate of the adjacent area, reduce the heat island effect, improve air pollution, and improve the overall quality of life of the local people.



REFERENCE 4

Maple Garden, a Recreational Park with Function of Flood Detention in the City Center

Taichung, Taiwan

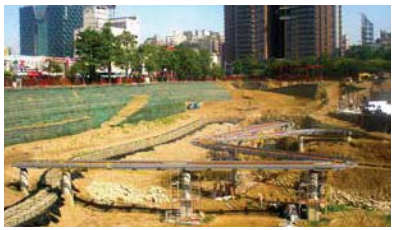
2012

ACEGrid® ACETex® ACEMat™

2014 FIABCI World Prix d'Excellence Award

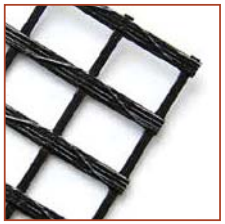
2013 FIABCI Taiwan Real Estate Excellence Award

The base covers an area of about 30,000 square meters. Because the originally planned project was terminated in the early stage, a large depression was left in the base. It has been re-planned and transformed into a multi-functional ecological park that combines functions of landscaping, ecological protection, exhibitions, flood detention, drainage and air quality adjustment, and has become another well-known new attraction.



The slope around the park is a Wrapped Around Reinforced Soil Structure constructed with ACEGrid®. The pebbles are laid at the bottom of the flood detention pond and the overlying ACETex® Geotextile is used as a filter layer, and the upper part is protected by gabions and erosion control mats.

The park is designed to accommodate floods in the volume of 200,000 m³. Upon completion of the project, it has effectively exerted the function of flood detention and flood control when it was hit by strong typhoons several times. Nearly 400 arbor trees and shrubs that cover an area of 16,000 m² were planted in the park to add 28,000m² of green space to Taichung City, effectively reduce the heat island effect and make it the multi-functional urban lung. The park not only provides better protection for the safety and quality of life of the people, but also further enhances the tourism industry in Taichung and promotes regional economic prosperity.



ACEGrid® Geogrids

ACEGrid® is woven from high-strength polyester fiber bundles (PET) for soil reinforcement. The mesh size and structure are adjusted according to the product specifications. In addition to the anti-UV protective film, the outer layer may also be added with flame retardant components to improve fire resistance and durability.

ACETube® Geotextile Tubes

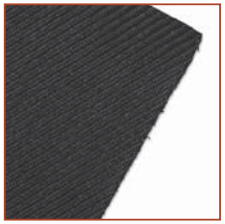
ACETube®, a large-sized tubular bag made of the polypropylene (PP) geotextiles, can be filled with sand and stones to form a gravity structure, which is usually used to construct various types of structures for shoreline protection. The bag material has good durability, good water permeability, sediment retention efficiency, and good workability, and as it can be filled with in-situ materials, it can also greatly reduce the construction cost.

ACETex® PET Geotextiles

ACETex® PET is woven from high-strength polyester fiber bundles (PET) to exhibit high tensile strength at low strain. It has the functions of reinforcement and separation, and can be widely used for soft soil improvement, base stabilization, and weak foundation reinforcement, etc.

ACESandbag™ Geotextile Bags

ACESandbag™ is highly robust geotextile bag for forming temporary or permanent structures in hydraulic and geotechnical engineering, erosion control and facility protection. The sizes and shapes of ACESandbag™ can be customized to satisfy the desired purpose. The bag material is resistant to ultraviolet rays, water permeable, and easy for construction, and the filler can be taken locally.



ACETex® ES Geotextiles

ACETex® ES is woven into a special structure with self-developed polypropylene (PP) yarns. It has high stiffness and high water permeability. It can also have excellent separation, filtration and reinforcement functions. It is especially suitable for road subgrade stabilization and base reinforcement. It can improve road safety and extend its service life.

ACEFormer™ Geotextile Mattresses

ACEFormer™ consists of two layers of high-strength geotextiles for slope, river bank and pipeline protection. It is filled with cement mortar, and a rigid protective layer can be formed after consolidation. Different types can be designed according to environmental requirements, and all will have the advantages of easy construction and good adhesion to the protected object.

ACETex® NW Geotextiles

ACETex® NW is nonwoven geotextile made from either polyester continuous filament yarns by needle-punched manufacturing process; or polypropylene staple fiber by needle-punched manufacturing process with thermally bonded surface.

ACEMat™ R High Performance Turf Reinforcement Mats

ACEMat™ R is a three-dimensional fabric woven from high-strength polypropylene (PP) yarn has a quadrangular pyramid structure that interlocks with the soil, protects the soil surface from erosion, and retains plant seeds and roots to promote planting. It provides an efficient solution for erosion control in exposed steep slopes and heavy rain areas.

How Quality is Achieved?

1.Expertise

ACE Geosynthetics has more than 40 engineering experts with different professional knowledge covering geotechnical engineering, hydraulic engineering, marine engineering, environmental engineering, landscape engineering, construction management, mechanical engineering, chemical engineering, material engineering, textile engineering, and so forth. These professionals are primary keepers of all production and operation at ACE, to ensure all in coming tasks are well interpreted, evaluated, processed, and produced.

2.Quality Management

The fundamental quality management system of ACE Geosynthetics is recognized and certified by ISO 9001 and 9002. With the basic guideline of ISO 9001, ACE Geosynthetics further obtained CE Marking, BBA Approvals, and NTPEP Qualification Report for its final product(s).

3.In-house Certified Laboratory

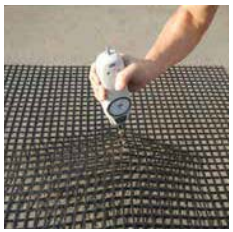
There is an in-house civil engineering laboratory to carry out a series of professional tests for research and development and product quality control purposes. The laboratory is certified by TAF (Taiwan Accreditation Foundation), and is further recognized with the ILAC Laboratory Combined MRA Mark as shown below:

ilac-MRA

TAF
Civil Engineering Laboratory
2285

FACTS

With premium grade yarns and cautious production process, the physical and mechanical properties of ACE products are as good as expected. Besides regular tests in the lab, various long-term and short-term experiments for the inherent physical property, mechanical property and long-term design property of product are also carried out. Tests like UV test, chemical resistance test, seawater immersion test, cement soil burial test, PVA geogrid anchoring test, adhesion test with asphalt pavement, oxidation test, filtration test, abrasion test, and many other tests have been done (or in the process of doing).



Adhesion Test

Filtration Test

Outdoor Exposure Test

Anchoring Test

Cement Soil Burial Test

Oxidation Test

Seawater Immersion Test

Chemical Resistance Test

Would Like to Know More about Geosynthetics?

Come to Explore and Learn Geosynthetic Applications in ACE Geosynthetics Ecopark!

ACE Geosynthetics Ecopark is organized and constructed by ACE Geosynthetics with total area 10,000 m² to demonstrate various geosynthetic applications in civil engineering. The concept of considering the sustainability of both engineering and environment is influencing the contemporary engineering methods. As issues of traditional engineering methods and environmental impacts keep arising, geosynthetics is gradually becoming the preferred solution for the broad civil engineering application. It is proven that constructions can be easy and environmentally friendly with geosynthetics.
When visiting our educational Ecopark, you are capable to find out over 20 applications built in actual dimensions (1:1) with vivid demonstration. This Ecopark is not only to demonstrate the geosynthetic applications but also to achieve the educational purpose to make more people realize the benefits of applying geosynthetics to our environment.

Welcome to visit ACE Geosynthetics Ecopark to explore more about geosynthetics!
http://www.acegeosyntheticsecopark.com/

Reinforcement

1. Segmental Precast Concrete Panel Facing
2. Cast-in-place Concrete Facing
3. Modular Block Facing
4. Gabion Facing
5. Wrap-Around
6. Wire Mesh Facing

Shore Protection

16. Ecological Tank
17. Geotextile Tube
18. Geotextile Mattress
19. Sand Bag
20. Modular Block
21. Masonry Block
22. Riparian Tank
23. Gabion with Geotextile Bag
24. Reinforced Levee

Erosion Control

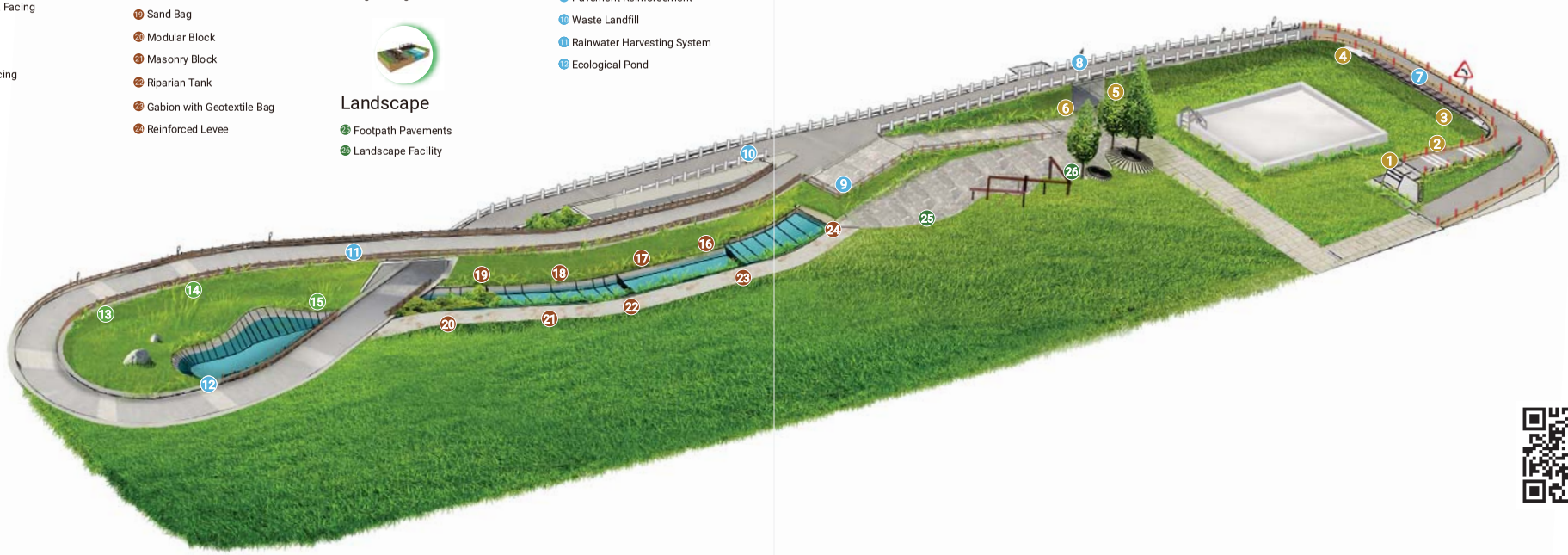
13. Geomat
14. Rectangular Pyramidal Geomat
15. High Strength Geomat

Landscape

25. Footpath Pavements
26. Landscape Facility

Other Applications

7. Basal Reinforcement of Railway
8. Monitoring System
9. Pavement Reinforcement
10. Waste Landfill
11. Rainwater Harvesting System
12. Ecological Pond



G & E ENGINEERING
Since 1984

ACETex

Product Specification

ACE Geosynthetics

ACETex®

GT100-II PP

ACETex® PP is made of durable and high tenacity polypropylene (PP) fibers comprising of monofilament and/or multifilament. It has moderate opening size and high permeability with innovative weaving structure. It can be widely used for reinforcement, separator, containment and filtration in long term.

Mechanical Index Properties	**SI Unit**	**Value**	
Nominal Tensile Strength -MD	kN/m	100	ISO 10319
Nominal Tensile Strength -CD	kN/m	100	ISO 10319
Nominal Elongation -MD	%	10	ISO 10319
Nominal Elongation -CD	%	10	ISO 10319
Tensile strength at 2% strain -MD	kN/m	9	ISO 10319
Tensile strength at 2% strain -CD	kN/m	18	ISO 10319
Tensile strength at 5% strain -MD	kN/m	45	ISO 10319
Tensile strength at 5% strain -CD	kN/m	45	ISO 10319
Static Puncture Resistance (CBR)	N	14000	ISO 12236
Dynamic Perforation (Cone Drop)	mm	10	ISO 13433
Durability			
Maximum allowed time between installation and covering of the geosynthetic		2 weeks	EN 12224
Predicted minimal durability in years in natural soils with 4 <pH <9 and soil temperature <25°C		25 years	ISO 13438
Hydraulic Properties			
Flow Rate (50mm head)	$l/sec/m^2$	30	ISO 11058
Characteristic opening size (O_{90})	mm	0.3	ISO 12956
Packing Properties			
Width	m	4.5	
Length	m	50	

Note.

The maximun width of ACETex® can reach 5.2m and width shown on the data sheet is the most effective.
The values given are indicative and correspond to an MARV results obtained in our QC laboratory. The right is reserved to make changes without notice.

INTERNATIONAL OFFICE Email: sales@geoace.com Tel: +886 4 2659 5926 Fax: +886 4 2659 5935

ACE2019
B0702130130002
S107048T104002 2020/12/21

G&E ENGINEERING
Since 1984

ACETex

Certification

Certificat

Certificate

N° 2008/32212.5

AFNOR Certification certifies that the management system implemented by:
AFNOR Certification certifie que le système de management mis en place par :

GOLD JOINT INDUSTRY CO., LTD.

for the following activities:
pour les activités suivantes :

DESIGN AND MANUFACTURING OF GEOGRIDS AND GEOTEXTILES.

has been assessed and found to meet the requirements of:
a été évalué et jugé conforme aux exigences requises par :

ISO 9001 : 2015

and is developed on the following locations:
et est déployé sur les sites suivants :

NO. 33, JING 3RD., C.E.P.Z. WUCI DISTRICT, TAICHUNG CITY, TAIWAN, R.O.C.

This certificate is valid from (year/month/day)
Ce certificat est valable à compter du (année/mois/jour) **2020-02-25** until *jusqu'au* **2023-02-24**

Ce document est signé électroniquement. Il constitue un original électronique à valeur probatoire
This document is electronically signed. It stands for an electronic original with probationary value

Franck LEBEUGLE
Managing Director of AFNOR Certification
Directeur Général d'AFNOR Certification

The electronic certificate only, available at www.afnor.org, attests in real-time that the company is certified. *Seul le certificat électronique, consultable sur www.afnor.org, fait foi en temps réel de la certification de l'organisme.* COFRAC accreditation n° 4-0001, Management Systems Certification, Scope available on www.cofrac.fr *Accréditation COFRAC n° 4-0001, Certification de Systèmes de management, Portée disponible sur www.cofrac.fr* AFAQ is a registered trademark. *AFAQ est une marque déposée.* CERTI F 0958.8 – EN 11/2019

Scan this QR code to check the validity of the certificate

11 rue Francis de Pressensé - 93571 La Plaine Saint-Denis Cedex - France - T. +33 (0)1 41 62 80 00 - F. +33 (0)1 49 17 90 00
SAS au capital de 18 187 000 € - 479 076 002 RCS Bobigny - www.afnor.org

Certificat

Certificate

N° 2011/39339.4

AFNOR Certification certifies that the management system implemented by:
AFNOR Certification certifie que le système de management mis en place par :

GOLD JOINT INDUSTRY CO., LTD.

for the following activities:
pour les activités suivantes :

DESIGN AND MANUFACTURING OF GEOGRIDS AND GEOTEXTILES.

has been assessed and found to meet the requirements of:
a été évalué et jugé conforme aux exigences requises par :

ISO 14001:2015

and is developed on the following locations:
et est déployé sur les sites suivants :

NO. 33, JING 3RD., C.E.P.Z. WUCI DISTRICT, TAICHUNG CITY, TAIWAN, R.O.C.

This certificate is valid from (year/month/day)
Ce certificat est valable à compter du (année/mois/jour) **2020-02-25** until *jusqu'au* **2022-12-12**

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Appendix B. The Certification of CE Marking

BTTG
TESTING • CERTIFICATION • AUDITING

Construction Products Regulation (EU) No. 305/2011

Certificate

Conformity of Factory Production Control

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product(s):

Product description

ACETex GT (PET);
50-II; 100-I; 100-II; 150-I; 150-II; 200-I; 200-II; 250-I; 250-II; 300-I; 300-II; 350-I; 400-I; 450-I; 500-I; 550-I; 600-I; 650-I; 800-I; 950-I; 1000/50; 1000-I; 1200-I

Intended uses

for roads and other trafficked areas (F,S,R); railways (F,S,R); earthworks, foundations and retaining structures (F,S,R); drainage systems (F,S); erosion control works (F,S,R); reservoirs and dams (F,S,R); canals (F,S,R); solid waste disposal (F,S,R); liquid waste containment (F,R)

placed on the market under the name or trade mark of

ACE Geosynthetics, No.33, Jing 3rd Road, C.E.P.Z. Wuchi, Taichung City, Taiwan, R.O.C.

and produced in the manufacturing plant(s)

Factory Code: ACE 435

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 13249:2016, EN 13250:2016, EN 13251:2016, EN 13252:2016, EN 13253:2016, EN 13254:2016, EN 13255:2016, EN 13257:2016, EN 13265:2016

under system 2+ are applied and that the factory production control is assessed to be in conformity with the applicable requirements.

This certificate was first issued on 02 February 2011 and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods, nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Certificate Number: **0338-CPR-0627**

Date of Issue: 03 July 2020

Authorised by

C A Butcher
Certification Manager

Issued by: BTTG™ (Notified Body No. 0338).
BTTG™, Unit 6 Wheel Forge Way, Trafford Park, Manchester, M17 1EH, United Kingdom
Tel: +44 (0)161 876 4211 email: ppe@bttg.co.uk website: www.bttg.co.uk

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ACETex

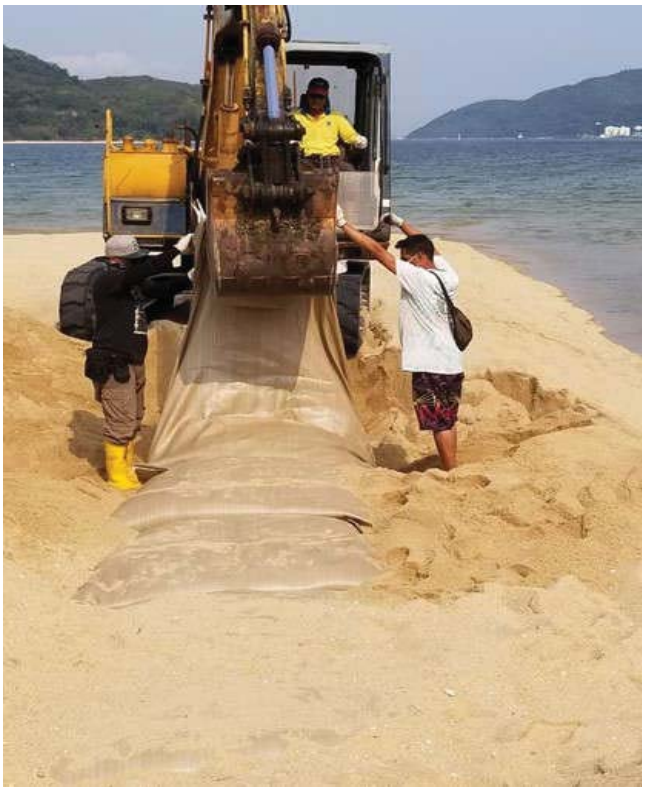
Project Reference

ACE Geotextile Bag

Date	Project	Client	Consultant	Model	Dimension (sqm)	Qty (unit)
Jan-11	HK/2009/01 Wan Chai Development Phase II - Central - Wanchai Bypass	Chun Wo-Leader Joint Venture	AECOM Asia Co Ltd	Geotextile Container	300m^3 1.8 x 1.8 x 2.3m (23x29m folded) (11x12m closing lid)	2 4 56
Jun-11	MTRC 811B West Kowloon Terminus Approach Tunnel (South)	Gammon - Leighton Joint Venture	AECOM Asia Co Ltd	Geotextile Container	4 cir x 3m length	1
Sep-11	HY/2009/15 Central - Wan Chai Bypass - Tunnel (Causeway Bay Typhoon Shelter section)	China State Construction Engineering (HK) Ltd	AECOM Asia Co Ltd	Geotextile Container	(23x29m folded) (11x12m closing lid)	21
Dec-11	MTRC810B West Kowloon Terminus Station North	Laing O'Rourke-Hsin Chong-Paul Y JV	AECOM-Aedas JV	Geotextile Container	(23x29m folded) (11x11m closing lid)	17
Jul-12	GSPD/SP/TKW-NP/089/2011 Installation of Submarine Gas Pipeliners and Associated Facilities from to Kwa Wan to North Point	Macdow - Kaden Joint Venture	Mott MacDonald Limited	Geotextile Container	(23x29m folded) (11x12m closing lid)	18
Sep-16	SCL1121 Shatin to Central Link - NSL Cross Habour Tunnel	Penta-Ocean - China State JV	AECOM Asia Co Ltd	Geotextile Container	300 m^3	75
Dec-17	DC/2015/02 Drainage maintenance and construction at Waterloo Road	Works of Diving Hong Kong Co Ltd	Drainage Services Department	ACE Geotextile Tube	14m L x 8.6m C	3
Nov-19	KT/2019/01 Kai Tak Sports Park	Hip Hing Engineering Co Ltd	Ove Arup & Partners Hong Kong Ltd	ACE Geotextile Tube	2m L x 2 m C	2
Feb-20	SS H502 Design and Construction of Joint-use Government Office Building in Area 67, TKO	Hip Hing Engineering Co Ltd	Architectural Services Department	ACE Geotextile Tube	1.5m L x 1m W	10
Jan-20	SS F505 Inland revenue Tower	Hip Hing Engineering Co Ltd	Ove Arup & Partners Hong Kong Ltd	ACE Geotextile Tube	4m L x 2m C	2
Mar-20	Improvement Works at Silvermine Bay Beach, Mui Wo	Man Shun Construction & Engineering Co Ltd	Island District Council	ACEbag	2.5m L x 3.14m C	44

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 - 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com



Date	March 2020
Project	Improvement Works at Silvermine Bay Beach, Mui Wo, Lantau Island
Client	Islands District
Consultant	Island District
Main Contractor	Man Shun Constrution & Engineering Co Ltd
Works	Sand Bag Groyne
Material	ACEBag
Quantity	44 pieces

G AND E COMPANY LIMITED

14th Floor, Kiu Yin Commercial Building
361-363 Lockhart Road,
Wanchai, Hong Kong
Tel: 852-2570 0103 Fax: 852-2570 0089
website: www.g-and-e.com

Date	October 2011
Project	Contract No. HK/2009/01 Wan Chai Development Phase II - Central - Wanchai Bypass at Hong Kong Convention and Exhibition Centre
Client	Civil Engineering and Development Department
Consultant	AECOM Asia Co. Ltd
Main Contractor	Chun Wo - Leader Joint Venture
Works	Disposal of Type 3 Contaminants
Material	ACE Geotextile Container
Quantity	62 units

G & E
ENGINEERING
Since 1984

ACETex

G and E Company Introduction

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 – 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 2570 0103 Fax: 2570 0089 website: www.g-and-e.com

G and E – A Perspective

G and E, a geosynthetics specialist, distributes a full range of geosynthetics from renowned global manufacturers. The Company also manages a competent installation contracting service. To better serve our clients, design and engineering service have also been established in our portfolio. We aspire to provide our client comprehensive engineering solutions, from application and design, supply of materials and their installation, to conformance testing and project commissioning.

G and E takes a strong vision in geosynthetics application and development by working closely with contractors, consultants, academics, professional organizations, research institutions, testing laboratories and manufacturers, a mission to broaden the versatility of geosynthetics and its innovation.

We offer our clients extensive product knowledge and their installation expertise, with comprehensive service to application, design, contracting and commissioning. We aim for superior professional attentiveness with superb quality products and services at competitive price.

G and E is ISO 9001:2015 quality management certified and a VSRS registered contractor, with a remarkably successful working relationship with a long list of clients, the Government, project owners, contractors, designers, consultant engineers, overseas distributors and trading partners. The clientele extends to Macau, Southeast Asia and Southern China.

Talk to us today and see how our proposal can be appropriate, cost-effective and time saving solutions. We are into our 37th year in the industry, we have a library of experience to share and to support your project.

ISO9001:2015 | IGAI | International Geosynthetics Society | Product Endorsement | Registered Subcontractor

April 2021

G AND E COMPANY LIMITED

14/F Kiu Yin Commercial Building
361 – 363 Lockhart Road,
Wanchai, Hong Kong
Tel: 2570 0103 Fax: 2570 0089 website: www.g-and-e.com

G and E runs a distribution network and sourcing agent of geosynthetics, as well as a provider of professional design and installation services.

Kai Tak Development - Reconstruction and Upgrading of Kai Tak Nullah

The company handles a comprehensive range of geosynthetic materials:

GEOTEXTILE:	Woven, non-woven, thermal bonded, needle punched, spun bond, special weave & composite
GEOMEMBRANE:	HDPE, LLDPE and PVC membrane, keyed preformed, conductive & concrete protection liner, gas barrier, waterproofing liner, leakage collection & effluent containment
GEODRAIN:	Geonet, geocomposite, band drain, sheet drain, relief drain
GEOGRID:	Uni-axial, bi-axial & tri-axial geogrid and composite geogrid
EROSION CONTROL:	Erosion mat, concrete mat, coir mat, geocell, gabion, wire & cable mesh, flexible rockfall barrier
MARINE:	Silt curtain, turbidity control, block mat, geotextile tube, oil & trash boom, geobag, geotextile container, concrete mattress
CLAY LINERS:	Geosynthetic bentonite liner GCL and composite
TUNNEL:	Waterproofing membrane, invert drainage void former, GFRP, strip drain, geodrain
LANDSCAPE:	Geotextile filter, root barrier, drainage mat, roof drain, tree anchor, rigid drainage cell
SPECIAL SERVICE:	Geomembrane leak location survey, HDPE pipe, geosynthetics fabrication, repair & testing, crib wall, reinforced fill slope and wall, ground stabilization, land decontamination

April 2021

REGISTRATION CERTIFICATE

this is to certify that the management system of

G and E Company Limited.

have been assessed by AJA EUROPE and registered against the requirements of

ISO 9001:2015

scope of registration

General Construction installation work Service and sales of Construction material such as Geosynthetics

14/F Kiu Yin Commerical Building361-363 Lockhart Road, Wan Chai, Hong Kong

Sites Registered		AJAEU/21/16729
EAC		Certificate Number
22nd January 2014	8th May 2021	27th March 2024
Date Original Registration	Date Of Re-registration	Expiry Date
27th January 2024	N/A	N/A
Next Re-Audit Due Date	Revision Date	Previous Expiry Date

Alfonso Pagliuca, President & Founder, AJA Europe Ltd

UKAS MANAGEMENT SYSTEMS
0273

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

AJA EUROPE TM

Appendix D5 -
Inspection Checklist

Contract No. : NE/2015/01
Project Title : Tsueng Kwan O - Lam Tin Tunnel
Main Tunnel and Associated Works

Client : Civil Engineering and Development Department
Consultant : AECOM
Main Contractor : Leighton - China State Joint Venture

Silt Curtain Weekly Inspection Checklist

Location : _____

Inspection Date and Time : _____

Item	Description	Condition		Immediate Action Required? *		Target Rectification Date	Remarks
		Yes	No	Yes	No		
1	Any floating debris/ refuse within silt screen / curtain?						
2	Supporting frame / buoys in good condition?						
3	Tying rope in good condition?						
4	Geotextile intact and in good condition						
5	Sinkers in good condition?						
6	Any obstruction to water flow between geotextile?						

Checked by: _____
On behalf of
Leighton - China State JV

Endorsed by: _____
On behalf of
AECOM

*Note: For silt curtain with defects which need to be rectified immediately, related marine works have to be stopped until rectification works are completed to the satisfaction of the *Supervisor*

Appendix D6 -
Implementation Schedule of Silt Curtains

Implementation Schedule of Silt Curtains

Reference Section	Implementation Schedule of Silt Curtains				
	Conditions	The Location of the measures	Time for implementing the measures	Implemented by	Monitored by
Section 7	<u>Installation of silt curtain</u> • The arrangement of the installation of silt curtain at each location shall follow the methodology presented in the Silt Curtain Deployment Plan	TKO Marine Works area	During construction and removal stage for barging point and steel platform	Contractor	ET IEC RSS
Section 8	<u>Maintenance of silt curtain</u> • The silt curtains shall be inspected weekly and carry out necessary maintenance taking into account the site conditions, with details to be agreed with ET • Weekly inspection checklist shall be recorded	TKO Marine Works area	During construction and removal stage for barging point and steel platform	Contractor	RSS

APPENDIX I
MARINE WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	18:14	Surface	1.0	23.3	23.4	8.3	8.3	35.1	35.1	93.1	93.2	6.6	6.6	6.6	1.3	1.2	1.5	2.3	2.5	3.3
						23.4		8.3		35.1		93.2		6.6			1.2			2.6		
				Middle	9.1	23.3	23.3	8.3	8.3	35.1	35.1	92.8	92.8	6.6	6.6		1.3	1.3		3.3	3.2	
						23.3		8.3		35.1		92.8		6.6			1.3			3.0		
				Bottom	17.1	23.3	23.3	8.3	8.3	35.1	35.1	92.9	92.9	6.6	6.6	6.6	2.1	2.1		3.9	4.2	
						23.3		8.3		35.1		92.8		6.6			2.1			4.4		
C2	Sunny	Moderate	16:56	Surface	1.1	23.5	23.5	8.8	8.5	35.0	35.0	91.4	91.7	6.5	6.5	6.5	0.9	0.9	1.1	1.6	1.8	2.4
						23.5		8.2		35.0		92.0		6.5			0.9			1.9		
				Middle	16.0	23.4	23.3	8.3	8.3	35.0	35.1	91.2	91.2	6.5	6.5		1.0	1.0		2.2	2.4	
						23.3		8.2		35.1		91.2		6.5			1.0			2.6		
				Bottom	31.0	23.3	23.3	8.3	8.3	35.1	35.1	91.3	91.4	6.5	6.5	6.5	1.4	1.4		3.2	3.1	
						23.3		8.2		35.1		91.5		6.5			1.4			2.9		
G1	Sunny	Moderate	17:29	Surface	1.0	23.8	23.7	8.3	8.3	35.1	35.1	95.2	95.2	6.7	6.7	6.7	1.1	1.0	1.1	2.6	2.7	2.2
						23.7		8.3		35.1		95.2		6.7			1.0			2.8		
				Middle	4.0	23.6	23.5	8.3	8.3	35.2	35.2	94.8	94.8	6.7	6.7		1.2	1.1		2.1	2.2	
						23.5		8.3		35.2		94.8		6.7			1.1			2.3		
				Bottom	7.0	23.3	23.3	8.3	8.3	35.2	35.2	92.8	93.0	6.6	6.6	6.6	1.2	1.2		1.9	1.8	
						23.3		8.3		35.2		93.2		6.6			1.3			1.7		
G2	Sunny	Moderate	17:17	Surface	1.0	23.7	23.6	8.3	8.3	35.1	35.1	95.3	95.3	6.7	6.7	6.7	0.9	0.9	0.9	3.1	2.9	2.6
						23.6		8.3		35.1		95.2		6.7			0.9			2.6		
				Middle	5.0	23.3	23.3	8.3	8.3	35.2	35.2	94.2	94.4	6.7	6.7		0.9	0.9		2.8	2.7	
						23.3		8.3		35.2		94.5		6.7			0.9			2.5		
				Bottom	9.0	23.2	23.2	8.3	8.3	35.2	35.2	94.6	94.7	6.7	6.7	6.7	0.9	0.9		2.3	2.3	
						23.2		8.3		35.2		94.7		6.7			0.9			2.2		
G3	Sunny	Moderate	17:39	Surface	1.0	24.1	24.1	8.3	8.3	35.0	34.9	96.6	96.5	6.8	6.8	6.8	1.5	1.4	1.7	2.9	2.7	3.3
						24.1		8.3		34.9		96.4		6.8			1.4			2.5		
				Middle	4.0	23.6	23.6	8.3	8.3	35.1	35.1	96.1	96.1	6.8	6.8		1.7	1.7		3.2	3.3	
						23.6		8.3		35.1		96.1		6.8			1.7			3.3		
				Bottom	7.0	23.5	23.5	8.3	8.3	35.2	35.2	95.3	95.0	6.7	6.7	6.7	1.9	1.8		3.6	3.8	
						23.5		8.3		35.2		94.7		6.7			1.8			4.0		
G4	Sunny	Moderate	17:54	Surface	1.0	24.2	24.2	8.3	8.3	35.0	35.0	97.4	97.3	6.8	6.8	6.8	1.5	1.5	1.6	2.8	2.7	2.3
						24.2		8.3		35.0		97.2		6.8			1.5			2.6		
				Middle	4.1	23.8	23.8	8.3	8.3	35.1	35.1	95.9	96.1	6.7	6.8		1.6	1.6		2.3	2.3	
						23.9		8.3		35.0		96.3		6.8			1.7			2.2		
				Bottom	7.0	23.7	23.6	8.3	8.3	35.1	35.1	95.6	95.5	6.7	6.7	6.7	1.6	1.7		1.7	1.8	
						23.6		8.3		35.1		95.4		6.7			1.8			1.9		
M1	Sunny	Moderate	17:24	Surface	1.1	23.7	23.8	8.3	8.3	35.1	35.1	94.0	94.0	6.6	6.6	6.6	1.5	1.5	1.6	1.3	1.4	1.7
						23.9		8.3		35.1		93.9		6.6			1.5			1.4		
				Middle	3.1	23.8	23.8	8.3	8.3	35.1	35.1	93.8	93.7	6.6	6.6		1.7	1.7		1.7	1.7	
						23.8		8.3		35.1		93.6		6.6			1.6			1.6		
				Bottom	5.0	23.5	23.5	8.3	8.3	35.2	35.2	92.8	92.7	6.6	6.5	6.5	1.6	1.7		2.3	2.2	
						23.4		8.3		35.2		92.5		6.5			1.8			2.1		
M2	Sunny	Moderate	17:12	Surface	1.1	23.5	23.6	8.3	8.3	35.2	35.2	94.9	95.1	6.7	6.7	6.7	1.1	1.1	1.1	2.6	2.7	3.2
						23.6		8.3		35.2		95.2		6.7			1.1			2.8		
				Middle	6.0	23.3	23.3	8.3	8.3	35.2	35.2	94.4	94.5	6.7	6.7		1.1	1.1		3.3	3.2	
						23.3		8.3		35.2		94.5		6.7			1.1			3.0		
				Bottom	11.0	23.1	23.1	8.3	8.3	35.2	35.2	94.5	94.6	6.7	6.7	6.7	1.1	1.1		3.5	3.7	
						23.1		8.3		35.2		94.7		6.7			1.1			3.8		
M3	Sunny	Moderate	17:46	Surface	1.0	24.1	24.0	8.3	8.3	34.9	35.0	95.9	96.3	6.7	6.7	6.8	1.3	1.3	1.5	3.0	3.2	3.8
						23.9		8.3		35.0		96.7		6.8			1.3			3.3		
				Middle	4.0	23.6	23.7	8.3	8.3	35.1	35.1	95.9	96.2	6.8	6.8		1.5	1.6		3.7	3.9	
						23.7		8.3		35.1		96.4		6.8			1.6			4.0		
				Bottom	7.0	23.6	23.6	8.3	8.3	35.2	35.1	95.6	95.8	6.7	6.8	6.8	1.6	1.6		4.7	4.5	
						23.6		8.3		35.1		95.9		6.8			1.6			4.3		
M4	Sunny	Moderate	17:04	Surface	1.0	23.3	23.3	8.3	8.3	35.2	35.2	93.1	93.2	6.6	6.6	6.6	1.2	1.2	1.4	2.4	2.3	2.7
						23.3		8.3		35.2		93.2		6.6			1.3			2.2		
				Middle	5.0	23.1	23.2	8.3	8.3	35.2	35.2	93.6	93.4	6.7	6.6		1.4	1.4		2.7	2.6	
						23.2		8.3		35.2		93.1		6.6			1.4			2.5		
				Bottom	9.0	23.1	23.1	8.3	8.3	35.2	35.2	93.7	93.7	6.7	6.7	6.7	1.5	1.5		2.9	3.1	
						23.1		8.3		35.3		93.7		6.7			1.6			3.2		
M5	Sunny	Moderate	18:05	Surface	1.0	23.7	23.7	8.3	8.3	35.1	35.1	94.6	94.2	6.7	6.6	6.6	1.1	1.1	1.4	4.0	4.2	3.4
						23.7		8.3		35.1		93.8		6.6			1.1			4.3		
				Middle	6.0	23.2	23.2	8.3	8.3	35.2	35.2	93.3	93.4	6.6	6.6		1.3	1.3		3.7	3.5	
						23.2		8.3		35.2		93.4		6.6			1.3			3.2		
				Bottom	11.1	23.0	23.1	8.4	8.4	35.3	35.3	94.9	94.9	6.8	6.7	6.7	1.7	1.7		2.5	2.7	
						23.1		8.4		35.3		94.8		6.7			1.7			2.9		
M6	Sunny	Moderate	17:59	Surface	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	1.7	-	-	2.6
						-		-		-		-		-			-			-		
				Middle	2.1	23.6	23.7	8.3	8.3	35.1	35.0	94.7	95.0	6.7	6.7		1.7	1.7		2.7	2.6	
						23.8		8.3		35.0		95.3		6.7			1.6			2.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 4 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 1.7 NTU	***C2: 1.8 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.1 mg/L	***C2: 2.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.1 mg/L	***C2: 2.3 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.7 mg/L	***C2: 4.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	11:29	Surface	1.0	23.4	23.4	8.3	8.3	35.0	35.0	93.3	92.8	6.6	6.6	6.6	0.8	0.9	1.6	3.2	3.4	2.9
						23.4		8.3		35.0		92.3		6.5			1.0			3.6		
				Middle	9.0	23.1	23.1	8.3	8.3	35.2	35.2	94.0	94.0	6.7	6.7		1.2	1.2		3.1	3.0	
						23.1		8.3		35.2		94.0		6.7			1.2			2.8		
				Bottom	17.0	22.8	22.8	8.4	8.4	35.3	35.3	95.5	95.6	6.8	6.8	6.8	2.8	2.6		2.5	2.3	
						22.8		8.4		35.3		95.7		6.8			2.5			2.1		
C2	Sunny	Moderate	10:18	Surface	1.0	23.3	23.3	8.3	8.3	35.0	35.1	92.4	91.9	6.5	6.5	6.5	1.8	1.7	1.9	4.2	4.3	5.2
						23.3		8.3		35.1		91.3		6.5			1.7			4.4		
				Middle	16.0	23.3	23.3	8.3	8.3	35.1	35.1	90.7	90.8	6.4	6.4		1.9	1.8		5.3	5.2	
						23.3		8.3		35.1		90.9		6.4			1.8			5.0		
				Bottom	31.1	23.2	23.2	8.3	8.3	35.1	35.1	91.0	91.0	6.5	6.5	6.5	2.3	2.2		6.4	6.3	
						23.3		8.3		35.1		90.9		6.5			2.2			6.1		
G1	Sunny	Moderate	10:50	Surface	1.0	23.6	23.6	8.3	8.3	35.0	34.9	93.8	93.6	6.6	6.6	6.6	0.7	0.6	0.8	3.9	4.1	3.2
						23.6		8.3		34.8		93.3		6.6			0.6			4.2		
				Middle	4.0	23.4	23.4	8.3	8.3	35.2	35.2	93.6	93.4	6.6	6.6		0.8	0.8		2.8	3.0	
						23.5		8.3		35.2		93.2		6.6			0.8			3.2		
				Bottom	7.0	23.4	23.4	8.3	8.3	35.2	35.2	93.7	93.6	6.6	6.6	6.6	0.9	0.9		2.3	2.5	
						23.3		8.3		35.2		93.4		6.6			1.0			2.7		
G2	Sunny	Moderate	10:37	Surface	1.0	23.4	23.4	8.3	8.3	35.0	35.0	93.6	92.6	6.6	6.6	6.5	0.8	0.9	1.0	4.1	4.3	3.5
						23.3		8.3		35.1		91.6		6.5			0.9			4.5		
				Middle	5.0	23.3	23.3	8.3	8.3	35.1	35.1	91.5	91.4	6.5	6.5		1.1	1.1		3.6	3.4	
						23.3		8.3		35.1		91.3		6.5			1.1			3.2		
				Bottom	9.0	23.3	23.3	8.3	8.3	35.1	35.1	91.3	91.3	6.5	6.5	6.5	0.9	0.9		2.6	2.8	
						23.3		8.3		35.1		91.2		6.5			1.0			2.9		
G3	Sunny	Moderate	10:57	Surface	1.0	23.5	23.5	8.3	8.3	35.1	35.1	94.7	94.3	6.7	6.7	6.7	0.8	0.8	0.8	2.3	2.4	2.1
						23.5		8.3		35.1		93.9		6.6			0.8			2.5		
				Middle	4.0	23.4	23.4	8.3	8.3	35.2	35.2	94.1	93.9	6.7	6.6		0.8	0.8		2.2	2.2	
						23.4		8.3		35.2		93.7		6.6			0.8			2.1		
				Bottom	7.0	23.3	23.3	8.3	8.3	35.2	35.2	94.3	94.1	6.7	6.7	6.7	0.8	0.9		1.6	1.7	
						23.3		8.3		35.2		93.8		6.6			0.9			1.8		
G4	Sunny	Moderate	11:09	Surface	1.0	23.6	23.7	8.3	8.3	35.1	35.0	91.3	90.6	6.4	6.4	6.5	0.3	0.3	0.9	4.2	4.0	3.2
						23.8		8.3		34.9		89.9		6.3			0.2			3.8		
				Middle	4.0	23.4	23.4	8.3	8.3	35.2	35.2	92.5	92.5	6.5	6.5		0.5	0.5		3.0	3.2	
						23.4		8.3		35.2		92.4		6.5			0.5			3.3		
				Bottom	7.0	23.3	23.3	8.3	8.3	35.2	35.2	87.9	87.4	6.2	6.2	6.2	1.9	2.1		2.4	2.6	
						23.3		8.3		35.2		86.9		6.2			2.2			2.7		
M1	Sunny	Moderate	10:44	Surface	1.0	23.7	23.6	8.3	8.3	35.0	35.0	92.9	92.0	6.6	6.5	6.5	0.6	0.7	0.7	2.4	2.6	2.2
						23.6		8.3		35.0		91.1		6.4			0.7			2.7		
				Middle	3.0	23.6	23.6	8.3	8.3	35.1	35.1	91.8	91.5	6.5	6.4		0.7	0.7		2.1	2.2	
						23.6		8.3		35.0		91.1		6.4			0.7			2.3		
				Bottom	5.1	23.5	23.5	8.3	8.3	35.1	35.1	91.5	91.4	6.5	6.5	6.5	0.7	0.7		1.7	1.8	
						23.5		8.3		35.1		91.2		6.4			0.8			1.9		
M2	Sunny	Moderate	10:31	Surface	1.0	23.4	23.4	8.3	8.3	35.0	35.0	93.1	92.6	6.6	6.6	6.5	0.5	0.5	0.8	3.0	2.8	3.5
						23.4		8.3		35.0		92.0		6.5			0.5			2.6		
				Middle	6.0	23.2	23.2	8.3	8.3	35.2	35.2	91.3	91.4	6.5	6.5		0.7	0.6		3.6	3.4	
						23.2		8.3		35.2		91.4		6.5			0.6			3.1		
				Bottom	11.0	23.1	23.1	8.3	8.3	35.2	35.2	92.1	92.3	6.5	6.6	6.6	1.3	1.3		4.3	4.4	
						23.1		8.3		35.2		92.5		6.6			1.3			4.4		
M3	Sunny	Moderate	11:03	Surface	1.0	23.5	23.5	8.3	8.3	35.1	35.1	94.9	94.8	6.7	6.7	6.7	0.8	0.7	0.8	3.0	2.9	3.7
						23.5		8.3		35.0		94.6		6.7			0.7			2.8		
				Middle	4.0	23.5	23.5	8.3	8.3	35.2	35.2	94.3	94.3	6.7	6.7		0.7	0.7		3.8	3.6	
						23.5		8.3		35.2		94.3		6.7			0.7			3.3		
				Bottom	7.0	23.3	23.3	8.3	8.3	35.2	35.2	95.8	95.5	6.8	6.8	6.8	0.8	0.8		4.6	4.5	
						23.4		8.3		35.2		95.2		6.7			0.8			4.4		
M4	Sunny	Moderate	10:25	Surface	1.0	23.3	23.3	8.3	8.3	35.2	35.1	92.4	92.3	6.6	6.5	6.6	0.9	0.9	1.6	2.2	2.3	2.7
						23.3		8.3		35.1		92.1		6.5			1.0			2.4		
				Middle	5.0	23.1	23.1	8.3	8.3	35.2	35.2	93.3	93.0	6.6	6.6		1.2	1.2		2.6	2.8	
						23.1		8.3		35.2		92.7		6.6			1.2			2.9		
				Bottom	9.1	23.0	23.1	8.3	8.3	35.3	35.3	93.7	93.5	6.7	6.6	6.6	2.5	2.5		2.8	3.0	
						23.1		8.3		35.3		93.3		6.6			2.5			3.1		
M5	Sunny	Moderate	11:23	Surface	1.0	23.4	23.4	8.3	8.3	35.0	35.0	91.4	91.1	6.5	6.4	6.5	1.0	1.0	1.9	3.0	3.1	2.7
						23.4		8.3		35.0		90.7		6.4			1.0			3.2		
				Middle	6.1	23.1	23.1	8.3	8.3	35.2	35.2	93.1	92.6	6.6	6.6		2.1	2.2		2.8	2.7	
						23.1		8.3		35.2		92.0		6.5			2.2			2.6		
				Bottom	11.0	23.0	23.0	8.3	8.3	35.3	35.3	94.0	94.2	6.7	6.7	6.7	2.6	2.5		2.1	2.3	
						23.0		8.4		35.3		94.4		6.7			2.5			2.4		
M6	Sunny	Moderate	11:15	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	0.9	-	-	2.3
						-		-		-		-		-			-			-		
				Middle	2.0	23.5	23.5	8.3	8.3	35.1	35.1	93.2	92.8	6.6	6.6		8.0	8.0		2.5	2.3	
						23.5		8.3		35.1		92.3		6.5			8.0			2.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 4 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 3.2 NTU	***C1: 3.4 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 4.1 mg/L	***C1: 4.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 4.1 mg/L	***C1: 4.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 06 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	11:00	Surface	1.0	22.3	22.3	8.1	8.1	34.8	34.8	91.6	91.3	6.5	6.5	6.5	1.5	1.6	1.5	2.5	2.3	1.8
						22.3		8.1		34.8		91.0		6.5			1.6			2.1		
				Middle	9.0	22.3	22.3	8.1	8.1	34.9	34.9	90.0	90.0	6.4	6.4		1.6	1.5		1.5	1.7	
						22.3		8.1		34.9		90.0		6.4			1.5			1.8		
				Bottom	16.0	22.3	22.3	8.1	8.1	34.9	34.9	90.3	90.4	6.4	6.4	6.4	1.4	1.4		1.2	1.3	
						22.3		8.1		34.9		90.4		6.4			1.3			1.4		
C2	Cloudy	Moderate	10:06	Surface	1.1	22.2	22.2	7.7	7.8	34.8	34.8	90.5	90.1	6.5	6.4	6.3	1.7	1.7	2.1	1.5	1.4	1.8
						22.3		8.0		34.8		89.6		6.4			1.6			1.3		
				Middle	16.1	22.2	22.2	7.8	7.9	34.9	34.9	87.7	87.8	6.3	6.3		2.1	2.1		1.7	1.8	
						22.2		8.0		34.9		87.8		6.3			2.1			1.8		
				Bottom	31.0	22.2	22.2	8.0	8.0	35.0	35.0	88.0	88.1	6.3	6.3	6.3	2.5	2.5		2.2	2.3	
						22.2		8.0		35.0		88.1		6.3			2.5			2.4		
G1	Cloudy	Moderate	10:33	Surface	1.0	22.3	22.3	8.1	8.1	34.7	34.7	88.9	88.9	6.3	6.3	6.3	0.9	0.9	1.5	1.2	1.3	1.8
						22.3		8.1		34.7		88.9		6.3			1.0			1.4		
				Middle	4.5	22.3	22.2	8.1	8.1	34.8	34.8	88.5	88.6	6.3	6.3		1.8	1.8		1.8	1.9	
						22.2		8.1		34.8		88.6		6.3			1.8			1.9		
				Bottom	7.1	22.2	22.2	8.1	8.1	34.8	34.8	89.4	89.6	6.4	6.4	6.4	2.0	1.9		2.2	2.3	
						22.2		8.1		34.8		89.8		6.4			1.9			2.4		
G2	Cloudy	Moderate	10:25	Surface	1.1	22.3	22.3	8.1	8.1	34.7	34.7	94.0	93.8	6.7	6.7	6.6	0.6	0.6	1.0	1.2	1.2	1.8
						22.3		8.1		34.8		93.5		6.7			0.6			1.2		
				Middle	5.0	22.3	22.3	8.1	8.1	34.8	34.8	92.0	92.1	6.6	6.6		0.9	0.9		1.6	1.7	
						22.3		8.1		34.8		92.1		6.6			0.9			1.8		
				Bottom	9.1	22.2	22.2	8.1	8.1	34.9	34.9	92.8	92.9	6.6	6.6	6.6	1.6	1.6		2.7	2.5	
						22.2		8.1		34.9		92.9		6.6			1.5			2.3		
G3	Cloudy	Moderate	10:38	Surface	1.1	22.3	22.3	8.1	8.1	34.7	34.7	92.8	92.4	6.6	6.6	6.5	0.5	0.5	0.6	1.7	1.6	2.1
						22.2		8.1		34.8		92.0		6.6			0.5			1.4		
				Middle	4.0	22.2	22.2	8.1	8.1	34.8	34.8	89.8	89.9	6.4	6.4		0.6	0.6		2.4	2.3	
						22.2		8.1		34.8		89.9		6.4			0.6			2.1		
				Bottom	7.0	22.2	22.2	8.1	8.1	34.8	34.8	89.3	89.3	6.4	6.3	6.3	0.6	0.6		2.5	2.6	
						22.2		8.1		34.8		89.2		6.3			0.6			2.7		
G4	Cloudy	Moderate	10:46	Surface	1.0	22.3	22.3	8.1	8.1	34.8	34.8	90.0	89.9	6.4	6.4	6.4	0.9	0.9	1.1	1.2	1.2	1.7
						22.3		8.1		34.8		89.7		6.4			0.9			1.1		
				Middle	4.0	22.3	22.3	8.1	8.1	34.8	34.8	89.2	89.2	6.3	6.3		1.1	1.0		1.6	1.7	
						22.3		8.1		34.8		89.2		6.3			1.0			1.8		
				Bottom	7.0	22.2	22.2	8.1	8.1	34.8	34.8	90.2	90.5	6.4	6.4	6.4	1.2	1.3		2.2	2.1	
						22.2		8.1		34.8		90.8		6.5			1.3			2.0		
M1	Cloudy	Moderate	10:30	Surface	1.0	22.2	22.3	8.1	8.1	34.7	34.7	89.4	89.1	6.4	6.3	6.3	1.2	1.2	1.3	<0.1	<0.1	1.4
						22.3		8.1		34.7		88.7		6.3			1.2			<0.1		
				Middle	3.0	22.3	22.3	8.1	8.1	34.7	34.7	88.7	88.7	6.3	6.3		1.5	1.5		1.6	1.7	
						22.3		8.1		34.7		88.6		6.3			1.4			1.8		
				Bottom	5.0	22.2	22.3	8.1	8.1	34.7	34.7	88.7	88.7	6.3	6.3	6.3	1.3	1.3		2.5	2.4	
						22.3		8.1		34.7		88.7		6.3			1.3			2.3		
M2	Cloudy	Moderate	10:20	Surface	1.1	22.3	22.3	8.1	8.1	34.7	34.8	91.2	91.3	6.5	6.5	6.5	0.6	0.5	1.2	2.4	2.3	2.9
						22.3		8.1		34.8		91.3		6.5			0.5			2.2		
				Middle	5.0	22.3	22.3	8.1	8.1	34.9	34.9	91.9	91.9	6.5	6.5		1.2	1.2		2.5	2.7	
						22.3		8.1		34.9		91.9		6.5			1.1			2.8		
				Bottom	11.0	22.2	22.2	8.1	8.1	34.9	34.9	92.3	92.4	6.6	6.6	6.6	1.8	1.8		3.5	3.6	
						22.3		8.1		34.9		92.5		6.6			1.8			3.7		
M3	Cloudy	Moderate	10:42	Surface	1.1	22.3	22.3	8.1	8.1	34.7	34.7	91.0	90.6	6.5	6.5	6.4	0.4	0.4	0.7	2.2	2.3	3.1
						22.3		8.1		34.7		90.1		6.4			0.4			2.4		
				Middle	4.1	22.2	22.2	8.1	8.1	34.8	34.7	89.4	89.4	6.4	6.4		0.6	0.6		2.8	3.0	
						22.3		8.1		34.7		89.4		6.4			0.6			3.2		
				Bottom	7.0	22.2	22.2	8.1	8.1	34.8	34.8	87.8	87.5	6.2	6.2	6.2	1.2	1.2		3.8	4.0	
						22.2		8.1		34.8		87.1		6.2			1.2			4.2		
M4	Cloudy	Moderate	10:15	Surface	1.1	22.3	22.3	8.0	8.1	34.8	34.8	90.6	90.6	6.5	6.5	6.4	2.1	2.1	1.9	2.4	2.5	2.1
						22.3		8.1		34.8		90.6		6.5			2.1			2.6		
				Middle	5.0	22.2	22.2	8.1	8.1	34.9	34.9	90.4	90.4	6.4	6.4		2.0	2.0		2.1	2.2	
						22.2		8.1		34.9		90.4		6.4			2.0			2.2		
				Bottom	9.0	22.2	22.2	8.1	8.1	34.9	34.9	90.5	90.6	6.4	6.4	6.4	1.5	1.5		1.8	1.8	
						22.2		8.1		34.9		90.6		6.4			1.5			1.7		
M5	Cloudy	Moderate	10:55	Surface	1.1	22.3	22.3	8.1	8.1	34.8	34.8	95.0	94.4	6.8	6.7	6.6	1.8	1.8	1.8	2.1	2.2	1.3
						22.3		8.1		34.8		93.7		6.7			1.8			2.3		
				Middle	6.2	22.2	22.3	8.1	8.1	34.8	34.8	91.4	91.4	6.5	6.5		1.9	1.9		1.6	1.6	
						22.3		8.1		34.8		91.4		6.5			1.9			1.5		
				Bottom	11.0	22.2	22.2	8.1	8.1	34.9	34.9	91.1	91.2	6.5	6.5	6.5	1.6	1.6		<0.1	<0.1	
						22.2		8.1		34.9		91.2		6.5			1.7			<0.1		
M6	Cloudy	Moderate	10:51	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	1.2	-	-	1.7
						-		-		-		-		-			-			-		
				Middle	2.2	22.3	22.3	8.1	8.1	34.7	34.7	88.6	88.4	6.3	6.3		8.0	8.0		1.6	1.7	
						22.3		8.1		34.7		88.1		6.3			8.0			1.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 6 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 1.6 NTU	***C1: 1.8 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 1.6 mg/L	***C1: 1.7 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 11 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	12:28	Surface	1.1	22.1	22.1	8.2	8.2	33.5	33.5	92.8	92.8	6.4	6.4	6.4	1.0	1.0	1.2	<0.1	<0.1	0.4
						22.0		8.2		33.5		92.7		6.4			1.0			<0.1		
				Middle	9.1	21.9	22.0	8.2	8.2	34.0	34.0	91.9	91.8	6.4	6.4		1.2	1.2		<0.1	<0.1	
						22.1		8.2		34.0		91.7		6.4			1.2			<0.1		
				Bottom	17.0	21.9	21.9	8.2	8.2	34.5	34.6	91.0	90.7	6.3	6.3	6.3	1.3	1.4		1.1	1.1	
						21.9		8.2		34.8		90.4		6.3			1.4			1.1		
C2	Rainy	Moderate	10:44	Surface	1.1	22.9	22.4	8.2	8.2	33.2	33.2	91.2	91.3	6.3	6.3	6.4	2.2	2.2	1.5	1.2	1.3	1.6
						21.9		8.2		33.2		91.3		6.3			2.2			1.4		
				Middle	16.6	21.9	21.9	8.2	8.2	34.3	34.3	94.5	94.3	6.5	6.5		1.2	1.2		1.6	1.6	
						21.9		8.2		34.2		94.0		6.5			1.3			1.5		
				Bottom	32.1	21.9	21.9	8.2	8.2	34.5	34.5	96.1	96.1	6.6	6.6	6.6	1.1	1.1		1.9	1.9	
						21.9		8.2		34.5		96.1		6.6			1.0			1.8		
G1	Rainy	Moderate	11:24	Surface	1.0	22.0	22.0	8.2	8.2	34.3	34.3	97.8	97.8	6.7	6.7	6.7	0.6	0.6	0.9	<0.1	<0.1	1.1
						21.9		8.2		34.4		97.8		6.7			0.6			<0.1		
				Middle	4.0	21.9	21.9	8.2	8.2	34.4	34.4	96.8	96.9	6.7	6.7		0.8	0.8		1.3	1.5	
						21.8		8.2		34.4		96.9		6.7			0.7			1.6		
				Bottom	7.0	21.8	21.8	8.2	8.2	34.5	34.5	95.6	95.3	6.6	6.6	6.6	1.2	1.3		1.6	1.7	
						21.7		8.2		34.5		95.0		6.6			1.3			1.8		
G2	Rainy	Moderate	11:05	Surface	1.0	22.5	22.2	8.2	8.2	34.3	34.3	97.4	97.5	6.7	6.7	6.6	0.5	0.5	0.9	<0.1	<0.1	1.0
						21.9		8.2		34.3		97.5		6.7			0.5			<0.1		
				Middle	5.0	21.9	21.9	8.2	8.2	34.4	34.4	95.0	95.3	6.6	6.6		1.0	0.9		1.3	1.4	
						21.9		8.2		34.4		95.5		6.6			0.9			1.4		
				Bottom	9.1	21.8	21.8	8.2	8.2	34.5	34.5	94.2	94.1	6.5	6.5	6.5	1.2	1.2		1.6	1.7	
						21.9		8.2		34.6		94.0		6.5			1.2			1.8		
G3	Rainy	Moderate	11:31	Surface	1.1	22.2	22.1	8.2	8.2	34.1	34.1	99.4	99.5	6.8	6.8	6.8	0.3	0.3	0.5	2.1	2.2	1.2
						21.9		8.2		34.2		99.5		6.8			0.3			2.3		
				Middle	4.0	21.8	21.9	8.2	8.2	34.5	34.4	97.7	98.0	6.7	6.7		0.5	0.4		1.6	1.5	
						21.9		8.2		34.4		98.2		6.8			0.4			1.4		
				Bottom	7.0	21.7	21.8	8.2	8.2	34.5	34.5	96.5	96.4	6.7	6.7	6.7	0.7	0.7		<0.1	<0.1	
						21.8		8.2		34.6		96.2		6.7			0.7			<0.1		
G4	Rainy	Moderate	11:46	Surface	1.0	22.8	22.4	8.2	8.2	34.2	34.2	100.1	100.2	6.8	6.8	6.8	0.5	0.5	1.1	1.2	1.3	1.7
						22.0		8.2		34.2		100.3		6.8			0.5			1.4		
				Middle	4.0	21.0	22.0	8.2	8.2	34.3	34.3	98.2	98.7	6.7	6.8		0.7	0.7		1.6	1.7	
						22.0		8.2		34.3		99.1		6.8			0.7			1.8		
				Bottom	7.1	21.8	21.9	8.2	8.2	34.6	34.7	93.7	93.5	6.5	6.5	6.5	1.9	2.0		2.1	2.2	
						21.9		8.2		34.7		93.2		6.5			2.1			2.3		
M1	Rainy	Moderate	11:12	Surface	1.0	22.7	22.4	8.2	8.2	34.3	34.3	97.0	97.0	6.6	6.6	6.6	0.6	0.6	0.9	1.6	1.8	1.0
						22.1		8.2		34.3		97.0		6.6			0.6			1.9		
				Middle	3.0	21.8	21.9	8.2	8.2	34.4	34.4	96.2	96.4	6.6	6.6		0.9	0.9		1.4	1.3	
						22.0		8.2		34.3		96.6		6.6			0.8			1.1		
				Bottom	5.1	21.8	21.8	8.2	8.2	34.5	34.5	94.2	94.1	6.5	6.5	6.5	1.3	1.3		<0.1	<0.1	
						21.8		8.2		34.5		94.0		6.5			1.3			<0.1		
M2	Rainy	Moderate	10:57	Surface	1.0	22.5	22.2	8.2	8.2	34.4	34.4	100.4	100.4	6.9	6.9	6.8	0.6	0.6	0.9	1.2	1.4	1.8
						21.9		8.2		34.4		100.3		6.9			0.6			1.5		
				Middle	5.5	21.8	21.8	8.2	8.2	34.4	34.4	98.6	99.0	6.8	6.8		0.7	0.7		1.7	1.8	
						21.8		8.2		34.4		99.4		6.8			0.6			1.9		
				Bottom	10.0	21.8	21.8	8.2	8.2	34.7	34.7	93.7	93.5	6.5	6.5	6.5	1.4	1.4		2.3	2.2	
						21.8		8.2		34.7		93.3		6.5			1.4			2.1		
M3	Rainy	Moderate	11:38	Surface	1.0	22.1	22.0	8.2	8.2	34.3	34.3	99.1	99.4	6.8	6.8	6.8	0.6	0.5	0.7	<0.1	<0.1	1.0
						22.0		8.2		34.3		99.6		6.8			0.5			<0.1		
				Middle	4.0	21.9	21.9	8.2	8.2	34.4	34.4	97.3	97.5	6.7	6.7		0.7	0.7		1.3	1.2	
						21.9		8.2		34.4		97.6		6.7			0.7			1.1		
				Bottom	7.0	21.7	21.7	8.2	8.2	34.6	34.6	95.9	95.8	6.6	6.6	6.6	0.8	0.8		1.8	1.8	
						21.8		8.2		34.6		95.6		6.6			0.8			1.7		
M4	Rainy	Moderate	10:52	Surface	1.0	23.0	22.5	8.2	8.2	33.9	33.9	97.8	97.9	6.7	6.7	6.7	0.9	0.9	0.9	1.6	1.7	1.0
						22.0		8.2		33.9		98.0		6.7			0.9			1.8		
				Middle	5.1	21.9	21.9	8.2	8.2	34.5	34.5	97.2	97.4	6.7	6.7		0.5	0.5		1.2	1.3	
						21.9		8.2		34.5		97.5		6.7			0.6			1.4		
				Bottom	9.1	21.8	21.8	8.2	8.2	34.6	34.6	95.7	95.7	6.6	6.6	6.6	1.2	1.1		<0.1	<0.1	
						21.8		8.2		34.6		95.6		6.6			1.1			<0.1		
M5	Rainy	Moderate	12:17	Surface	1.1	22.0	22.0	8.2	8.2	33.6	33.6	93.3	93.3	6.4	6.4	6.4	1.6	1.6	2.0	<0.1	<0.1	0.4
						21.9		8.2		33.6		93.3		6.4			1.6			<0.1		
				Middle	6.0	21.9	22.0	8.2	8.2	33.7	33.7	92.6	92.7	6.4	6.4		2.2	2.1		<0.1	<0.1	
						22.1		8.2		33.7		92.8		6.4			2.0			<0.1		
				Bottom	11.0	21.9	21.9	8.2	8.2	34.0	34.0	91.7	91.7	6.3	6.3	6.3	2.4	2.4		1.1	1.2	
						21.9		8.2		34.0		91.6		6.3			2.5			1.2		
M6	Rainy	Moderate	12:00	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	1.0	-	-	1.4
						-		-		-		-		-			-			-		
				Middle	2.2	22.8	22.4	8.2	8.2	34.3	34.3	95.0	95.1	6.5	6.5		1.0	1.0		1.4	1.4	
						21.9		8.2		34.3		95.2		6.6			1.0			1.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 11 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 1.3 NTU	***C2: 1.4 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 1.6 mg/L	***C2: 1.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 1.6 mg/L	***C2: 1.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.2 mg/L	***C2: 2.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 11 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	8:29	Surface	1.0	22.3	22.3	8.2	8.2	33.5	33.5	92.6	92.6	6.4	6.4	6.4	1.1	1.1	1.2	<0.1	<0.1	1.3
						22.3		8.2		33.5		92.5		6.4			1.1			<0.1		
				Middle	8.5	22.1	22.1	8.2	8.2	33.8	33.8	91.8	91.9	6.3	6.3		1.2	1.2		1.4	1.5	
						22.1		8.2		33.7		91.9		6.4			1.2			1.6		
				Bottom	16.0	21.3	21.3	8.2	8.2	34.9	34.9	90.0	89.9	6.3	6.3	6.3	1.5	1.5		2.2	2.4	
						21.2		8.2		35.0		89.7		6.3			1.5			2.5		
C2	Rainy	Moderate	7:02	Surface	1.0	22.3	22.3	8.2	8.2	33.1	33.1	91.2	91.2	6.3	6.3	6.4	1.2	1.2	1.1	2.5	2.3	1.3
						22.3		8.2		33.2		91.2		6.3			1.2			2.1		
				Middle	16.0	21.9	21.9	8.2	8.2	34.4	34.4	95.4	95.2	6.6	6.6		1.0	1.1		1.7	1.5	
						21.9		8.2		34.4		94.9		6.6			1.1			1.3		
				Bottom	31.0	21.9	21.9	8.2	8.2	34.5	34.5	96.0	96.1	6.6	6.6	6.6	1.1	1.1		<0.1	<0.1	
						21.9		8.2		34.5		96.1		6.6			1.2			<0.1		
G1	Rainy	Moderate	7:39	Surface	1.0	22.2	22.1	8.2	8.2	34.4	34.4	97.8	97.8	6.7	6.7	6.7	0.7	0.7	0.9	<0.1	<0.1	1.0
						22.1		8.2		34.4		97.7		6.7			0.6			<0.1		
				Middle	3.7	22.1	22.1	8.2	8.2	34.4	34.4	97.2	97.3	6.7	6.7		0.7	0.7		1.1	1.2	
						22.1		8.2		34.4		97.4		6.7			0.7			1.3		
				Bottom	6.5	21.8	21.8	8.2	8.2	34.5	34.5	94.3	94.2	6.5	6.5	6.5	1.5	1.5		1.7	1.8	
						21.8		8.2		34.6		94.0		6.5			1.4			1.8		
G2	Rainy	Moderate	7:21	Surface	1.1	22.4	22.3	8.2	8.2	34.3	34.3	97.6	97.6	6.7	6.7	6.7	0.6	0.6	0.9	<0.1	<0.1	1.3
						22.3		8.2		34.3		97.6		6.7			0.6			<0.1		
				Middle	5.1	22.0	22.1	8.2	8.2	34.4	34.4	96.1	96.4	6.6	6.6		0.9	0.8		1.6	1.6	
						22.1		8.2		34.4		96.7		6.7			0.8			1.6		
				Bottom	9.0	21.8	21.8	8.2	8.2	34.6	34.6	93.8	93.8	6.5	6.5	6.5	1.3	1.3		2.5	2.3	
						21.8		8.2		34.6		93.7		6.5			1.3			2.1		
G3	Rainy	Moderate	7:46	Surface	1.0	22.7	22.7	8.2	8.2	34.1	34.1	98.9	99.1	6.8	6.8	6.7	0.3	0.3	0.5	2.9	3.1	2.4
						22.6		8.2		34.1		99.2		6.8			0.3			3.3		
				Middle	3.7	21.9	22.0	8.2	8.2	34.5	34.5	97.3	97.4	6.7	6.7		0.5	0.5		2.5	2.4	
						22.0		8.2		34.5		97.4		6.7			0.5			2.2		
				Bottom	6.5	21.9	21.9	8.2	8.2	34.5	34.5	97.0	96.9	6.7	6.7	6.7	0.6	0.7		1.7	1.6	
						21.9		8.2		34.5		96.8		6.7			0.7			1.5		
G4	Rainy	Moderate	8:01	Surface	1.0	22.8	22.8	8.2	8.2	34.1	34.1	99.8	99.9	6.8	6.8	6.7	0.5	0.5	1.0	1.4	1.5	1.0
						22.7		8.2		34.2		100.0		6.8			0.5			1.6		
				Middle	3.7	22.1	22.2	8.2	8.2	34.4	34.4	96.6	97.0	6.7	6.7		0.9	0.9		1.3	1.4	
						22.2		8.2		34.4		97.4		6.7			0.8			1.4		
				Bottom	6.5	21.9	21.9	8.2	8.2	34.5	34.5	94.9	94.6	6.6	6.5	6.5	1.5	1.6		<0.1	<0.1	
						21.8		8.2		34.6		94.2		6.5			1.7			<0.1		
M1	Rainy	Moderate	7:28	Surface	1.0	22.5	22.5	8.2	8.2	34.3	34.3	96.7	96.8	6.6	6.6	6.6	0.6	0.6	0.9	1.6	1.4	0.9
						22.5		8.2		34.3		96.9		6.6			0.6			1.2		
				Middle	3.0	22.3	22.3	8.2	8.2	34.4	34.4	95.7	95.8	6.6	6.6		1.0	1.0		1.1	1.2	
						22.3		8.2		34.4		95.9		6.6			1.0			1.2		
				Bottom	5.1	22.2	22.2	8.2	8.2	34.4	34.5	95.0	94.8	6.5	6.5	6.5	1.1	1.2		<0.1	<0.1	
						22.2		8.2		34.5		94.6		6.5			1.2			<0.1		
M2	Rainy	Moderate	7:16	Surface	1.0	22.6	22.5	8.2	8.2	34.4	34.4	100.5	100.5	6.9	6.9	6.8	0.7	0.7	0.9	1.8	1.7	1.0
						22.5		8.2		34.4		100.5		6.9			0.7			1.6		
				Middle	5.2	21.9	22.0	8.2	8.2	34.5	34.5	96.7	97.0	6.7	6.7		0.8	0.8		1.2	1.3	
						22.0		8.2		34.5		97.3		6.7			0.8			1.4		
				Bottom	9.5	21.7	21.7	8.2	8.2	34.6	34.6	95.1	94.8	6.6	6.6	6.6	1.2	1.2		<0.1	<0.1	
						21.7		8.2		34.7		94.4		6.5			1.3			<0.1		
M3	Rainy	Moderate	7:54	Surface	1.0	22.4	22.4	8.2	8.2	34.2	34.2	99.9	100.0	6.8	6.8	6.8	0.6	0.5	0.7	<0.1	<0.1	1.0
						22.4		8.2		34.2		100.0		6.9			0.5			<0.1		
				Middle	3.8	22.2	22.2	8.2	8.2	34.4	34.4	98.1	98.5	6.8	6.8		0.7	0.6		1.2	1.3	
						22.2		8.2		34.4		98.9		6.8			0.6			1.4		
				Bottom	6.5	21.8	21.8	8.2	8.2	34.6	34.6	95.4	95.4	6.6	6.6	6.6	0.8	0.9		1.5	1.7	
						21.8		8.2		34.6		95.3		6.6			0.9			1.8		
M4	Rainy	Moderate	7:09	Surface	1.0	22.6	22.6	8.2	8.2	34.0	34.0	98.2	98.3	6.7	6.7	6.7	0.9	0.8	0.8	2.2	2.3	2.8
						22.5		8.2		34.1		98.4		6.7			0.8			2.4		
				Middle	5.1	22.0	22.0	8.2	8.2	34.5	34.5	98.0	98.2	6.8	6.8		0.6	0.6		2.6	2.7	
						22.1		8.2		34.4		98.4		6.8			0.6			2.7		
				Bottom	9.1	21.8	21.8	8.2	8.2	34.6	34.6	95.6	95.6	6.6	6.6	6.6	1.1	1.1		3.7	3.6	
						21.8		8.2		34.6		95.6		6.6			1.1			3.4		
M5	Rainy	Moderate	8:19	Surface	1.0	22.3	22.3	8.2	8.2	33.6	33.6	93.4	93.4	6.4	6.4	6.4	1.5	1.5	2.1	1.4	1.5	2.2
						22.3		8.2		33.6		93.3		6.4			1.5			1.6		
				Middle	5.5	22.2	22.2	8.2	8.2	33.7	33.7	92.5	92.5	6.4	6.4		2.4	2.3		2.5	2.4	
						22.2		8.2		33.7		92.5		6.4			2.3			2.2		
				Bottom	10.0	22.1	22.1	8.2	8.2	33.8	33.9	92.1	92.0	6.4	6.4	6.4	2.4	2.4		2.6	2.8	
						22.0		8.2		33.9		91.9		6.4			2.4			2.9		
M6	Rainy	Moderate	8:09	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	1.0	-	-	1.2
						-		-		-		-		-			-			-		
				Middle	2.1	22.2	22.2	8.2	8.2	34.3	34.3	95.3	95.4	6.6	6.6		8.0	8.0		1.2	1.2	
						22.2		8.2		34.3		95.4		6.6			8.0			1.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 11 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 1.8 NTU	***C1: 2.0 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: n.a. mg/L	***C1: n.a. mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: n.a. mg/L	***C1: n.a. mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.1 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 13 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	11:31	Surface	1.0	24.8	24.8	8.5	8.5	26.9	27.0	89.0	89.0	6.4	6.3	6.3	2.3	2.1	2.7	2.9	2.8	2.7
						24.8		8.5		27.1		89.0		6.3			2.0			2.6		
				Middle	9.0	24.5	24.5	8.6	8.6	32.9	32.9	89.4	89.5	6.2	6.2		2.2	2.0		2.5	2.7	
						24.5		8.6		32.9		89.6		6.2			1.9			2.8		
				Bottom	11.0	24.5	24.5	8.6	8.6	33.1	33.1	91.2	91.2	6.3	6.3	6.3	4.2	4.1		2.6	2.6	
						24.5		8.6		33.1		91.2		6.3			4.0			2.5		
C2	Cloudy	Calm	10:05	Surface	1.0	24.8	24.8	8.4	8.4	28.6	28.7	83.6	83.3	5.8	5.8	5.9	1.1	1.1	2.0	2.1	2.3	3.1
						24.7		8.5		28.8		83.0		5.9			1.2			2.5		
				Middle	16.0	24.4	24.4	8.6	8.6	32.5	32.5	86.3	86.3	6.0	5.9		2.4	2.4		3.0	3.2	
						24.4		8.6		32.5		86.2		5.9			2.4			3.3		
				Bottom	31.0	24.4	24.4	8.6	8.6	32.4	32.4	86.2	86.2	5.9	5.9	5.9	2.4	2.4		4.0	3.9	
						24.4		8.6		32.4		86.2		5.8			2.4			3.7		
G1	Cloudy	Calm	10:46	Surface	1.1	24.6	24.6	8.5	8.5	28.4	28.4	86.6	86.5	6.2	6.1	6.0	2.0	1.9	1.6	2.4	2.6	3.0
						24.6		8.5		28.5		86.3		6.0			1.9			2.8		
				Middle	4.0	24.5	24.5	8.5	8.5	30.6	30.6	85.1	85.1	6.0	6.0		1.1	1.1		2.7	2.9	
						24.5		8.5		30.5		85.1		6.0			1.1			3.0		
				Bottom	7.0	24.4	24.4	8.5	8.5	31.8	31.9	83.2	82.9	5.9	5.8	5.8	1.6	1.8		3.6	3.4	
						24.4		8.5		32.0		82.5		5.8			2.0			3.2		
G2	Cloudy	Calm	10:31	Surface	1.1	24.6	24.7	8.6	8.6	28.1	28.1	87.2	87.1	6.2	6.2	6.0	2.2	2.2	1.4	3.0	3.2	2.7
						24.7		8.6		28.1		86.9		6.1			2.2			3.4		
				Middle	5.1	24.5	24.5	8.6	8.6	31.5	31.5	85.4	85.3	5.9	5.9		0.7	0.7		2.8	2.7	
						24.5		8.6		31.5		85.1		5.9			0.7			2.6		
				Bottom	9.1	24.3	24.4	8.6	8.6	32.4	32.4	82.8	83.2	5.8	5.8	5.8	1.2	1.2		2.4	2.3	
						24.4		8.6		32.4		83.5		5.8			1.2			2.1		
G3	Cloudy	Calm	11:53	Surface	1.1	24.6	24.6	8.5	8.5	28.0	28.0	86.5	86.5	6.2	6.1	6.0	2.7	2.7	2.0	2.5	2.4	1.9
						24.6		8.5		28.0		86.4		6.1			2.7			2.3		
				Middle	4.0	24.4	24.5	8.5	8.5	30.7	30.7	84.2	84.2	5.8	5.8		1.4	1.3		1.9	1.8	
						24.5		8.5		30.7		84.1		5.8			1.3			1.7		
				Bottom	7.1	24.4	24.4	8.5	8.5	32.0	32.0	79.0	79.0	5.5	5.5	5.5	2.0	1.9		1.6	1.5	
						24.4		8.5		32.1		79.0		5.5			1.9			1.3		
G4	Cloudy	Calm	11:11	Surface	1.0	24.6	24.6	8.5	8.5	27.8	27.8	86.6	86.7	6.0	6.0	6.0	2.9	3.1	1.6	3.7	3.8	3.2
						24.6		8.5		27.7		86.8		6.0			3.2			3.9		
				Middle	4.0	24.5	24.5	8.5	8.5	31.0	31.0	86.1	86.0	6.0	5.9		0.9	0.9		3.4	3.2	
						24.5		8.5		31.0		85.9		5.9			0.9			3.0		
				Bottom	7.0	24.5	24.4	8.5	8.5	31.5	31.6	85.6	85.3	5.8	5.9	5.9	0.9	0.8		2.4	2.6	
						24.4		8.5		31.7		85.0		6.0			0.8			2.7		
M1	Cloudy	Calm	10:38	Surface	1.1	24.6	24.6	8.5	8.5	28.5	28.4	87.2	86.9	6.0	6.1	6.0	1.8	1.7	1.5	3.3	3.6	3.1
						24.6		8.5		28.4		86.6		6.1			1.6			3.8		
				Middle	3.0	24.5	24.5	8.5	8.5	30.1	30.1	82.8	83.1	5.8	5.9		1.5	1.5		3.1	3.0	
						24.5		8.5		30.1		83.3		5.9			1.5			2.9		
				Bottom	5.0	24.4	24.4	8.5	8.5	30.9	31.0	82.4	81.7	5.8	5.7	5.7	1.3	1.3		2.6	2.8	
						24.4		8.5		31.2		81.0		5.6			1.3			2.9		
M2	Cloudy	Calm	10:22	Surface	1.1	24.7	24.7	8.6	8.6	28.8	28.7	87.4	87.2	6.1	6.1	6.0	1.7	1.8	1.4	3.1	2.9	3.6
						24.7		8.6		28.6		86.9		6.1			1.9			2.7		
				Middle	6.0	24.5	24.5	8.6	8.6	31.9	31.9	86.4	86.6	5.9	5.9		0.5	0.5		3.5	3.6	
						24.5		8.6		32.0		86.8		6.0			0.5			3.7		
				Bottom	11.0	24.4	24.4	8.6	8.6	32.8	32.8	87.4	87.1	5.9	5.9	5.9	1.8	1.8		4.6	4.4	
						24.4		8.6		32.7		86.8		5.9			1.8			4.2		
M3	Cloudy	Calm	11:02	Surface	1.1	24.6	24.6	8.5	8.5	28.2	28.3	85.0	85.0	5.9	5.9	5.8	3.4	3.4	2.3	4.3	4.2	3.8
						24.6		8.5		28.3		84.9		5.9			3.4			4.0		
				Middle	4.1	24.4	24.4	8.5	8.5	30.7	30.7	81.8	81.8	5.7	5.8		1.9	2.0		3.8	3.8	
						24.4		8.5		30.7		81.8		5.8			2.0			3.7		
				Bottom	7.0	24.3	24.3	8.5	8.5	31.9	31.9	76.4	75.8	5.4	5.3	5.3	1.5	1.5		3.4	3.4	
						24.3		8.5		31.8		75.2		5.2			1.5			3.4		
M4	Cloudy	Calm	10:14	Surface	1.1	24.7	24.7	8.6	8.6	28.2	28.2	87.7	87.6	6.3	6.2	6.1	1.5	1.4	0.9	2.1	2.3	2.7
						24.7		8.6		28.2		87.4		6.1			1.4			2.4		
				Middle	5.1	24.5	24.5	8.6	8.6	31.6	31.6	86.5	86.6	6.0	6.0		0.5	0.5		2.7	2.7	
						24.5		8.6		31.6		86.6		5.9			0.5			2.6		
				Bottom	9.0	24.4	24.4	8.6	8.6	32.1	32.1	85.4	85.7	5.8	5.9	5.9	0.7	0.6		3.0	3.1	
						24.4		8.6		32.0		86.0		6.0			0.6			3.2		
M5	Cloudy	Calm	11:23	Surface	1.0	24.7	24.7	8.5	8.5	28.1	28.1	87.5	87.5	6.3	6.2	6.1	1.8	1.8	2.6	4.1	4.2	3.6
						24.7		8.5		28.1		87.5		6.1			1.8			4.3		
				Middle	6.0	24.4	24.4	8.5	8.5	32.5	32.6	87.4	87.7	6.1	6.0		1.7	1.7		3.5	3.7	
						24.4		8.5		32.6		87.9		6.0			1.8			3.9		
				Bottom	11.1	24.4	24.5	8.6	8.6	33.1	33.1	89.6	89.9	6.2	6.2	6.2	4.1	4.2		2.6	2.8	
						24.5		8.6		33.1		90.1		6.2			4.4			2.9		
M6	Cloudy	Calm	11:18	Surface	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	1.2	-	-	2.6
						-		-		-		-		-			-			-		
				Middle	2.1	24.5	24.5	8.5	8.5	30.0	30.0	85.7	85.6	6.0	6.0		1.3	1.2		2.8	2.6	
						24.5		8.5		30.0		85.5		6.0			1.2			2.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 13 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 2.9 NTU	***C2: 3.1 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.8 mg/L	***C2: 3.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.8 mg/L	***C2: 3.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 4.6 mg/L	***C2: 5.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 13 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	14:33	Surface	1.1	24.9	24.9	8.5	8.5	27.2	27.1	88.8	88.9	6.3	6.3	6.3	2.0	2.1	2.7	3.4	3.2	2.7
						24.9		8.5		27.0		89.0		6.3			2.1			3.0		
				Middle	9.0	24.5	24.5	8.6	8.6	32.9	32.9	89.6	89.7	6.2	6.2		1.8	1.8		2.8	2.7	
						24.5		8.6		32.9		89.8		6.2			1.8			2.6		
				Bottom	11.1	24.6	24.6	8.6	8.6	33.1	33.1	91.0	91.0	6.3	6.3	6.3	4.2	4.3		2.0	2.2	
						24.6		8.6		33.1		91.0		6.3			4.4			2.3		
C2	Cloudy	Calm	13:21	Surface	1.0	24.8	24.8	8.5	8.5	28.8	28.8	83.0	83.0	5.8	5.8	5.9	1.3	1.3	2.0	2.8	2.7	3.5
						24.8		8.5		28.8		82.9		5.8			1.3			2.5		
				Middle	16.0	24.5	24.5	8.6	8.6	32.4	32.4	86.2	86.2	6.0	6.0		2.3	2.3		3.2	3.4	
						24.5		8.6		32.4		86.2		6.0			2.3			3.5		
				Bottom	31.1	24.5	24.5	8.6	8.6	32.4	32.4	86.1	86.2	6.0	6.0	6.0	2.3	2.3		4.6	4.4	
						24.5		8.6		32.4		86.2		6.0			2.2			4.2		
G1	Cloudy	Calm	13:57	Surface	1.1	24.7	24.7	8.5	8.5	28.7	28.6	86.3	86.3	6.1	6.1	6.0	1.7	1.9	1.6	3.6	3.7	4.2
						24.7		8.5		28.5		86.3		6.1			2.0			3.8		
				Middle	4.0	24.6	24.6	8.5	8.5	30.6	30.7	85.0	84.9	5.9	5.9		1.1	1.1		4.0	4.2	
						24.6		8.5		30.8		84.8		5.9			1.0			4.3		
				Bottom	7.1	24.5	24.5	8.5	8.5	32.0	32.0	82.2	82.4	5.7	5.7	5.7	2.0	1.9		5.0	4.8	
						24.5		8.5		32.0		82.6		5.7			1.8			4.6		
G2	Cloudy	Calm	13:43	Surface	1.1	24.7	24.7	8.6	8.6	28.0	28.0	87.0	87.0	6.2	6.2	6.0	2.2	2.2	1.4	3.8	4.0	3.5
						24.7		8.6		28.0		86.9		6.2			2.2			4.2		
				Middle	5.1	24.5	24.5	8.6	8.6	31.5	31.5	85.2	85.2	5.9	5.9		0.8	0.8		3.4	3.5	
						24.5		8.6		31.5		85.2		5.9			0.8			3.6		
				Bottom	9.0	24.4	24.4	8.6	8.6	32.4	32.4	83.5	83.6	5.8	5.8	5.8	1.1	1.1		3.0	3.1	
						24.4		8.6		32.4		83.6		5.8			1.1			3.1		
G3	Cloudy	Calm	14:05	Surface	1.1	24.7	24.7	8.5	8.5	27.9	27.9	86.3	86.3	6.1	6.1	6.0	2.7	2.7	1.9	4.2	4.2	3.7
						24.7		8.5		27.9		86.3		6.1			2.7			4.2		
				Middle	4.1	24.6	24.6	8.5	8.5	30.8	30.8	84.2	84.3	5.9	5.9		1.2	1.2		3.7	3.7	
						24.6		8.5		30.9		84.3		5.9			1.2			3.7		
				Bottom	7.1	24.4	24.4	8.5	8.5	32.1	32.1	78.5	78.5	5.5	5.5	5.5	1.9	1.9		3.1	3.3	
						24.4		8.5		32.1		78.4		5.5			1.9			3.4		
G4	Cloudy	Calm	14:17	Surface	1.0	24.7	24.7	8.5	8.5	27.6	27.6	86.4	86.4	6.1	6.1	6.1	3.4	3.5	1.8	4.5	4.5	3.7
						24.7		8.5		27.6		86.3		6.1			3.5			4.4		
				Middle	4.0	24.6	24.6	8.5	8.5	30.9	30.9	86.0	86.0	6.0	6.0		1.0	1.0		3.5	3.7	
						24.6		8.5		30.9		85.9		6.0			1.0			3.8		
				Bottom	7.0	24.5	24.5	8.5	8.5	31.7	31.7	84.9	84.5	5.9	5.9	5.9	0.7	0.9		3.0	2.9	
						24.5		8.5		31.8		84.1		5.9			1.1			2.8		
M1	Cloudy	Calm	13:51	Surface	1.1	24.7	24.7	8.5	8.5	28.3	28.3	87.0	87.1	6.2	6.2	6.0	1.6	1.6	1.5	3.7	3.6	3.1
						24.7		8.6		28.3		87.1		6.2			1.7			3.4		
				Middle	3.1	24.6	24.6	8.5	8.5	30.1	30.1	83.5	83.5	5.9	5.9		1.5	1.5		2.9	3.1	
						24.6		8.5		30.2		83.5		5.9			1.5			3.2		
				Bottom	5.1	24.5	24.5	8.5	8.5	31.2	31.2	81.0	81.0	5.7	5.6	5.6	1.3	1.3		2.6	2.7	
						24.5		8.5		31.2		80.9		5.6			1.3			2.8		
M2	Cloudy	Calm	13:36	Surface	1.1	24.8	24.8	8.6	8.6	27.8	28.0	87.4	87.4	6.2	6.2	6.1	2.3	2.2	1.5	3.5	3.4	3.9
						24.8		8.6		28.2		87.3		6.2			2.0			3.3		
				Middle	6.0	24.5	24.5	8.6	8.6	32.0	32.0	86.5	86.5	6.0	6.0		0.5	0.5		4.0	3.9	
						24.5		8.6		32.0		86.5		6.0			0.5			3.7		
				Bottom	11.1	24.5	24.5	8.6	8.6	32.8	32.8	87.0	87.0	6.0	6.0	6.0	1.9	1.9		4.7	4.6	
						24.5		8.6		32.8		87.0		6.0			1.9			4.4		
M3	Cloudy	Calm	14:11	Surface	1.1	24.6	24.6	8.5	8.5	28.5	28.6	84.0	83.9	6.0	5.9	5.8	3.2	3.2	2.3	3.3	3.2	3.8
						24.6		8.5		28.6		83.8		5.9			3.2			3.0		
				Middle	4.1	24.5	24.5	8.5	8.5	30.7	30.7	81.6	81.6	5.7	5.7		2.0	2.0		3.6	3.8	
						24.5		8.5		30.7		81.5		5.7			2.0			3.9		
				Bottom	7.0	24.4	24.4	8.5	8.5	31.9	31.9	74.9	75.5	5.2	5.3	5.3	1.6	1.6		4.2	4.4	
						24.4		8.5		32.0		76.0		5.3			1.6			4.6		
M4	Cloudy	Calm	13:29	Surface	1.1	24.8	24.8	8.6	8.6	27.9	27.9	87.8	87.9	6.2	6.2	6.1	1.5	1.5	0.9	4.3	4.4	3.6
						24.8		8.6		27.8		87.9		6.2			1.5			4.5		
				Middle	5.0	24.6	24.6	8.6	8.6	31.6	31.6	86.5	86.5	6.0	6.0		0.5	0.5		3.7	3.6	
						24.6		8.6		31.6		86.5		6.0			0.5			3.4		
				Bottom	9.0	24.5	24.5	8.6	8.6	32.0	32.1	86.1	86.1	6.0	6.0	6.0	0.6	0.6		2.6	2.8	
						24.5		8.6		32.1		86.0		6.0			0.6			3.0		
M5	Cloudy	Calm	14:26	Surface	1.0	24.8	24.8	8.5	8.5	28.3	28.3	87.4	87.4	6.2	6.2	6.1	1.7	1.7	2.6	3.2	3.2	2.9
						24.8		8.5		28.3		87.3		6.2			1.8			3.1		
				Middle	6.0	24.5	24.5	8.5	8.5	32.6	32.6	87.8	87.8	6.1	6.1		1.7	1.7		2.8	3.0	
						24.5		8.5		32.6		87.8		6.1			1.6			3.1		
				Bottom	11.0	24.5	24.5	8.6	8.6	33.1	33.1	89.9	90.0	6.2	6.2	6.2	4.4	4.5		2.3	2.5	
						24.5		8.6		33.1		90.0		6.2			4.5			2.6		
M6	Cloudy	Calm	14:23	Surface	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	1.3	-	-	2.9
						-		-		-		-		-			-			-		
				Middle	2.0	24.6	24.6	8.5	8.5	29.7	29.7	85.9	86.0	6.0	6.0		8.0	8.0		2.7	2.9	
						24.6		8.5		29.6		86.1		6.1			8.0			3.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 13 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 5.1 NTU	***C1: 5.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.8 mg/L	***C1: 4.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.8 mg/L	***C1: 4.2 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.6 mg/L	***C1: 2.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 16 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	16:05	Surface	1.0	24.6	24.6	8.5	8.5	34.6	34.0	95.1	94.9	6.6	6.5	6.4	1.4	1.4	5.3	1.3	1.4	1.9
						24.6		8.5		33.4		94.6		6.5			1.4			1.5		
				Middle	9.1	24.6	24.6	8.5	8.5	29.5	27.8	92.6	92.5	6.4	6.3		6.0	6.1		1.7	1.8	
						24.6		8.5		26.1		92.3		6.3			6.2			1.9		
				Bottom	17.0	24.6	24.6	8.5	8.5	32.8	33.3	91.5	91.5	6.2	6.2	6.2	9.1	8.5		2.4	2.4	
						24.6		8.5		33.9		91.4		6.3			7.9			2.4		
C2	Rainy	Moderate	15:15	Surface	1.1	24.6	24.6	8.4	8.4	23.1	25.5	90.4	90.3	6.6	6.5	6.4	1.9	1.9	1.8	3.0	2.9	2.5
						24.6		8.4		28.0		90.2		6.4			1.9			2.7		
				Middle	16.0	24.6	24.6	8.5	8.5	31.2	37.1	89.3	89.3	6.2	6.4		1.8	1.8		2.4	2.5	
						24.6		8.5		43.1		89.3		6.6			1.8			2.6		
				Bottom	30.8	24.6	24.6	8.5	8.5	32.9	33.5	88.8	88.9	6.2	6.1	6.1	1.9	1.8		2.4	2.3	
						24.6		8.5		34.1		88.9		6.1			1.6			2.1		
G1	Rainy	Moderate	15:39	Surface	1.1	24.8	24.7	8.6	8.5	22.7	23.2	94.3	93.6	6.9	6.8	6.7	0.9	0.9	1.4	1.7	1.6	2.2
						24.7		8.5		23.6		92.9		6.7			1.0			1.5		
				Middle	4.1	24.7	24.7	8.5	8.5	41.6	32.6	91.9	91.7	6.6	6.6		2.0	1.8		2.4	2.3	
						24.7		8.5		23.7		91.4		6.6			1.7			2.1		
				Bottom	7.0	24.6	24.6	8.5	8.5	36.9	31.0	92.7	92.9	6.3	6.5	6.5	1.5	1.4		2.9	2.8	
						24.6		8.5		25.0		93.1		6.7			1.4			2.6		
G2	Rainy	Moderate	15:28	Surface	1.1	24.5	24.6	8.5	8.5	24.6	24.8	93.2	93.2	6.8	6.8	6.8	1.0	1.0	0.7	2.8	2.7	2.3
						24.7		8.5		25.0		93.2		6.8			0.9			2.5		
				Middle	5.1	24.6	24.6	8.6	8.6	32.4	26.8	94.6	94.8	6.6	6.8		0.5	0.5		2.2	2.3	
						24.6		8.6		21.1		94.9		7.0			0.5			2.4		
				Bottom	9.0	24.6	24.6	8.6	8.6	25.0	21.5	94.4	94.5	7.2	7.1	7.1	0.5	0.6		1.7	1.8	
						24.6		8.6		17.9		94.6		7.0			0.6			1.9		
G3	Rainy	Moderate	15:45	Surface	1.1	24.8	24.7	8.5	8.5	35.2	34.1	94.6	92.5	6.5	6.3	6.4	1.0	1.0	1.5	3.9	3.8	3.2
						24.6		8.5		32.9		90.4		6.2			1.1			3.7		
				Middle	4.1	24.7	24.7	8.5	8.5	25.4	25.7	92.1	92.2	6.6	6.5		1.7	1.6		3.0	3.1	
						24.7		8.5		26.0		92.3		6.5			1.6			3.2		
				Bottom	6.9	24.6	24.7	8.5	8.5	35.2	30.2	92.0	91.6	6.0	6.3	6.3	2.0	1.9		2.8	2.6	
						24.7		8.5		25.2		91.1		6.5			1.9			2.4		
G4	Rainy	Moderate	15:55	Surface	1.2	24.7	24.7	8.5	8.5	33.2	33.0	94.3	93.8	6.5	6.5	6.4	1.1	1.1	1.1	3.4	3.6	3.0
						24.7		8.5		32.9		93.3		6.4			1.1			3.7		
				Middle	4.0	24.7	24.7	8.5	8.5	33.8	33.8	93.5	93.7	6.4	6.4		1.1	1.1		2.8	2.9	
						24.7		8.5		33.8		93.8		6.4			1.1			3.0		
				Bottom	7.0	24.6	24.6	8.5	8.5	32.8	37.9	94.1	94.1	6.4	6.5	6.5	1.1	1.1		2.4	2.6	
						24.6		8.5		43.0		94.1		6.6			1.1			2.7		
M1	Rainy	Moderate	15:34	Surface	1.1	24.6	24.6	8.5	8.5	22.0	21.6	92.0	91.7	6.7	6.7	6.6	0.9	1.0	1.2	1.4	1.5	2.1
						24.5		8.5		21.1		91.3		6.8			1.0			1.5		
				Middle	3.0	24.7	24.7	8.5	8.5	23.6	24.0	90.3	90.2	6.5	6.5		0.7	0.8		2.0	2.2	
						24.7		8.5		24.4		90.0		6.5			0.8			2.4		
				Bottom	5.1	24.7	24.7	8.5	8.5	23.0	30.7	89.5	89.5	6.5	6.5	6.5	1.8	1.8		2.5	2.7	
						24.7		8.5		38.4		89.5		6.5			1.8			2.9		
M2	Rainy	Moderate	15:25	Surface	1.2	24.7	24.7	8.6	8.6	26.9	26.9	95.9	95.7	6.8	6.8	6.7	1.0	1.0	0.9	3.0	2.8	2.2
						24.7		8.6		27.0		95.4		6.8			0.9			2.6		
				Middle	6.1	24.6	24.6	8.6	8.6	28.9	30.4	94.8	94.9	6.7	6.6		0.7	0.7		2.0	2.2	
						24.6		8.6		32.0		94.9		6.6			0.7			2.4		
				Bottom	11.1	24.6	24.6	8.6	8.6	35.1	36.0	94.5	94.6	5.5	6.0	6.0	1.1	1.0		1.8	1.7	
						24.6		8.6		36.9		94.6		6.5			1.0			1.5		
M3	Rainy	Moderate	15:50	Surface	1.0	24.7	24.7	8.5	8.5	24.8	27.0	92.4	91.7	6.5	6.4	6.4	1.0	1.0	2.1	1.9	1.8	2.3
						24.7		8.5		29.1		90.9		6.4			1.0			1.7		
				Middle	4.1	24.7	24.7	8.5	8.5	32.1	29.1	90.5	90.7	6.2	6.4		2.6	2.4		2.4	2.3	
						24.8		8.5		26.2		90.9		6.6			2.1			2.1		
				Bottom	7.0	24.6	24.6	8.5	8.5	27.8	34.3	91.8	92.0	6.1	6.1	6.1	2.9	2.9		2.7	2.9	
						24.6		8.5		40.8		92.1		6.1			2.8			3.1		
M4	Rainy	Moderate	15:20	Surface	1.0	24.6	24.6	8.6	8.6	32.7	32.8	96.6	96.0	6.7	6.6	6.7	1.5	16.0	6.1	2.4	2.3	1.8
						24.6		8.6		32.9		95.3		6.6			30.5			2.2		
				Middle	4.0	24.6	24.6	8.6	8.6	37.8	32.2	95.5	95.5	6.7	6.8		1.3	1.3		1.8	1.9	
						24.6		8.6		26.5		95.4		6.8			1.2			1.9		
				Bottom	9.0	24.6	24.6	8.6	8.6	35.6	38.8	94.8	94.8	6.5	6.3	6.3	1.1	1.1		1.4	1.4	
						24.6		8.6		42.0		94.7		6.2			1.0			1.3		
M5	Rainy	Moderate	16:00	Surface	1.1	24.6	24.6	8.5	8.5	31.5	31.1	95.5	94.9	6.6	6.6	6.5	2.2	2.2	2.5	2.1	2.3	2.8
						24.6		8.5		30.6		94.3		6.6			2.2			2.5		
				Middle	6.2	24.6	24.6	8.5	8.5	32.1	32.7	92.2	92.1	6.5	6.4		2.5	2.4		2.9	2.8	
						24.6		8.5		33.3		91.9		6.3			2.3			2.6		
				Bottom	10.9	24.6	24.6	8.5	8.5	33.7	33.2	91.0	91.0	6.2	6.2	6.2	2.3	2.8		3.2	3.3	
						24.6		8.5		32.7		90.9		6.3			3.4			3.4		
M6	Rainy	Moderate	15:58	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	1.5	-	-	3.0
						-		-		-		-		-			-			-		
				Middle	2.0	24.7	24.7	8.6	8.5	31.9	31.5	95.5	94.9	6.6	6.6		1.5	1.5		2.8	3.0	
						24.7		8.5		31.0		94.2		6.5			1.5			3.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 16 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 2.1 NTU	***C2: 2.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.4 mg/L	***C2: 3.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.4 mg/L	***C2: 3.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.7 mg/L	***C2: 2.9 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 16 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	10:06	Surface	1.0	24.6	24.6	8.5	8.5	27.3	30.3	95.5	95.2	6.7	6.6	6.5	1.4	1.4	1.4	2.5	2.4	3.0
						24.6		8.5		33.3		94.8		6.5			1.4			2.2		
				Middle	9.1	24.6	24.6	8.5	8.5	32.9	33.1	92.9	92.7	6.3	6.3		0.7	1.0		3.0	3.1	
						24.6		8.5		33.2		92.4		6.4			1.3			3.1		
				Bottom	17.0	24.6	24.6	8.5	8.5	28.0	31.4	91.5	91.5	6.4	6.3	6.3	1.9	1.7		3.6	3.5	
						24.6		8.5		34.8		91.4		6.3			1.6			3.3		
C2	Rainy	Moderate	9:23	Surface	1.1	24.6	24.6	8.4	8.4	28.1	25.6	90.5	90.5	6.4	6.5	6.4	1.8	1.9	1.9	3.7	3.8	3.4
						24.6		8.4		23.1		90.4		6.6			1.9			3.8		
				Middle	16.1	24.6	24.6	8.5	8.5	29.2	30.1	89.3	89.3	6.3	6.3		1.8	1.8		3.3	3.5	
						24.6		8.5		31.0		89.3		6.2			1.8			3.6		
				Bottom	30.4	24.6	24.6	8.5	8.5	34.8	32.7	88.9	88.9	6.1	6.1	6.1	2.0	1.9		3.1	2.9	
						24.6		8.5		30.6		88.8		6.2			1.8			2.7		
G1	Rainy	Moderate	9:44	Surface	1.1	24.7	24.7	8.6	8.5	22.5	24.1	94.8	94.3	6.9	6.9	6.6	0.9	0.9	1.4	3.4	3.6	3.1
						24.8		8.5		25.7		93.7		6.9			0.9			3.8		
				Middle	4.1	24.7	24.7	8.5	8.5	24.8	25.4	92.3	92.0	6.6	6.4		1.8	1.9		3.2	3.1	
						24.7		8.5		25.9		91.6		6.2			1.9			2.9		
				Bottom	7.0	24.6	24.6	8.5	8.5	41.0	32.3	92.1	92.5	6.7	6.7	6.7	1.7	1.5		2.5	2.6	
						24.6		8.5		23.7		92.9		6.7			1.4			2.7		
G2	Rainy	Moderate	9:36	Surface	1.1	24.7	24.6	8.5	8.5	24.4	25.4	94.3	93.6	6.8	6.8	6.7	0.9	1.0	0.7	4.3	4.2	3.6
						24.5		8.5		26.5		92.9		6.7			1.0			4.0		
				Middle	5.1	24.6	24.6	8.5	8.5	20.9	22.7	94.3	94.6	7.0	6.7		0.6	0.6		3.8	3.7	
						24.6		8.6		24.5		94.8		6.5			0.5			3.5		
				Bottom	9.0	24.6	24.6	8.6	8.6	20.5	20.3	94.5	94.5	7.0	7.1	7.1	0.5	0.5		3.2	3.1	
						24.6		8.6		20.1		94.4		7.1			0.5			2.9		
G3	Rainy	Moderate	9:47	Surface	1.1	24.8	24.7	8.5	8.5	22.2	24.5	95.2	93.1	6.9	6.7	6.5	1.0	1.1	1.5	3.0	3.2	2.4
						24.6		8.5		26.7		91.0		6.5			1.1			3.4		
				Middle	4.1	24.7	24.7	8.5	8.5	26.3	27.4	92.0	92.1	6.6	6.4		1.7	1.6		2.4	2.3	
						24.7		8.5		28.5		92.2		6.3			1.6			2.1		
				Bottom	7.0	24.6	24.7	8.5	8.5	27.1	25.1	91.7	91.9	6.6	6.6	6.6	2.0	2.0		1.6	1.8	
						24.7		8.5		23.0		92.0		6.7			1.9			1.9		
G4	Rainy	Moderate	9:54	Surface	1.1	24.7	24.7	8.5	8.5	32.2	32.6	94.8	94.4	6.4	6.4	6.4	1.1	1.1	1.1	3.8	3.7	3.1
						24.7		8.5		33.0		93.9		6.5			1.1			3.6		
				Middle	4.1	24.7	24.7	8.5	8.5	33.7	33.8	93.3	93.6	6.4	6.4		1.2	1.1		3.2	3.1	
						24.6		8.5		33.8		93.8		6.4			1.0			2.9		
				Bottom	7.0	24.6	24.6	8.5	8.5	28.4	35.9	94.0	94.1	6.6	6.6	6.6	1.1	1.1		2.5	2.6	
						24.6		8.5		43.5		94.1		6.5			1.1			2.7		
M1	Rainy	Moderate	9:40	Surface	1.1	24.7	24.6	8.5	8.5	40.0	30.9	92.3	91.9	6.4	6.5	6.4	0.9	1.0	1.2	2.8	2.9	3.3
						24.5		8.5		21.7		91.5		6.7			1.0			3.0		
				Middle	3.0	24.7	24.7	8.5	8.5	39.9	35.7	90.6	90.4	6.2	6.2		0.8	0.8		3.2	3.3	
						24.7		8.5		31.5		90.1		6.3			0.7			3.3		
				Bottom	5.1	24.7	24.7	8.5	8.5	42.7	39.0	89.5	89.5	6.3	6.2	6.2	1.7	1.8		3.5	3.7	
						24.7		8.5		35.4		89.5		6.0			1.8			3.8		
M2	Rainy	Moderate	9:32	Surface	1.1	24.7	24.7	8.6	8.6	27.1	26.0	96.4	96.0	6.9	6.9	6.7	1.1	1.0	0.9	2.9	2.7	3.2
						24.7		8.6		24.9		95.6		6.9			1.0			2.5		
				Middle	6.1	24.6	24.6	8.6	8.6	29.5	35.3	94.8	94.8	6.5	6.5		0.7	0.7		3.0	3.3	
						24.6		8.6		41.1		94.8		6.5			0.6			3.5		
				Bottom	11.1	24.6	24.6	8.6	8.6	33.3	32.6	94.5	94.5	6.5	6.5	6.5	1.1	1.1		3.4	3.6	
						24.6		8.6		32.0		94.5		6.5			1.1			3.7		
M3	Rainy	Moderate	9:51	Surface	1.0	24.8	24.7	8.5	8.5	21.9	25.3	93.3	92.5	6.8	6.7	6.4	0.9	1.0	1.0	3.7	3.9	3.6
						24.7		8.5		28.6		91.6		6.6			1.0			4.0		
				Middle	4.1	24.7	24.7	8.5	8.5	29.2	29.3	90.6	90.6	6.2	6.2		0.5	1.0		3.6	3.8	
						24.7		8.5		29.4		90.5		6.2			1.5			3.9		
				Bottom	7.0	24.6	24.6	8.5	8.5	41.0	31.9	91.5	91.8	6.3	6.5	6.5	1.0	1.1		3.0	3.1	
						24.6		8.5		22.8		92.0		6.7			1.2			3.2		
M4	Rainy	Moderate	9:28	Surface	1.0	24.6	24.6	8.6	8.6	32.6	32.6	97.4	96.7	6.7	6.7	6.7	0.8	1.1	1.2	2.4	2.6	3.1
						24.6		8.6		32.7		96.0		6.6			1.3			2.8		
				Middle	5.0	24.6	24.6	8.6	8.6	33.9	31.1	95.5	95.5	6.6	6.6		1.4	1.3		3.0	3.1	
						24.6		8.6		28.2		95.4		6.7			1.3			3.1		
				Bottom	9.0	24.6	24.6	8.6	8.6	27.3	31.2	94.9	94.8	6.7	6.6	6.6	1.1	1.1		3.5	3.7	
						24.6		8.6		35.1		94.7		6.4			1.1			3.9		
M5	Rainy	Moderate	10:01	Surface	1.1	24.6	24.6	8.5	8.5	32.4	31.7	96.9	95.9	6.7	6.7	6.5	2.2	2.2	2.0	3.6	3.8	3.2
						24.6		8.5		30.9		94.8		6.6			2.1			4.0		
				Middle	6.2	24.6	24.6	8.5	8.5	35.2	34.1	92.4	92.2	6.3	6.3		2.4	1.9		3.5	3.3	
						24.6		8.5		32.9		92.0		6.4			1.5			3.0		
				Bottom	10.9	24.6	24.6	8.5	8.5	36.7	35.1	91.3	91.1	6.4	6.3	6.3	2.6	1.9		2.8	2.7	
						24.6		8.5		33.5		90.9		6.3			1.1			2.5		
M6	Rainy	Moderate	9:58	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	1.5	-	-	-
						-		-		-		-		-			-			-		
				Middle	2.1	24.7	24.7	8.6	8.5	28.1	27.3	96.7	95.7	6.9	6.9		8.0	8.0		3.7	3.9	3.9
						24.7		8.5		26.5		94.7		6.9			8.0			4.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 16 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 2.1 NTU	***C1: 2.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.1 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 4.1 mg/L	***C1: 4.5 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 18 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Moderate	Cloudy	14:05	Surface	1.0	24.5	24.5	8.6	8.6	33.5	33.6	95.9	95.9	6.6	6.6	6.6	0.8	0.8	1.0	3.3	3.2	3.9
						24.5		8.6		33.6		95.8		6.6			0.8			3.1		
				Middle	9.0	24.4	24.4	8.6	8.6	33.8	33.8	96.5	96.6	6.7	6.7		0.6	0.6		3.6	3.6	
						24.4		8.6		33.8		96.6		6.7			0.6			3.6		
				Bottom	17.0	24.3	24.3	8.6	8.6	33.9	33.9	96.1	96.1	6.6	6.6		1.8	1.7		4.8	4.9	
						24.3		8.6		33.9		96.1		6.6			1.7			5.0		
C2	Moderate	Cloudy	12:41	Surface	1.0	24.5	24.5	8.5	8.5	33.1	33.0	93.7	93.7	6.5	6.5	6.4	1.6	1.6	1.8	2.9	2.8	3.2
						24.5		8.5		33.0		93.7		6.5			1.6			2.6		
				Middle	16.1	24.4	24.4	8.6	8.6	33.7	33.7	93.2	93.2	6.4	6.4		1.6	1.6		3.1	3.2	
						24.4		8.6		33.7		93.2		6.4			1.6			3.3		
				Bottom	31.0	24.4	24.4	8.6	8.6	33.8	33.8	92.9	92.9	6.4	6.4	6.4	2.1	2.1		3.5	3.7	
						24.4		8.6		33.8		92.9		6.4			2.0			3.9		
G1	Moderate	Cloudy	13:20	Surface	1.1	24.5	24.5	8.6	8.6	32.9	32.9	94.5	94.5	6.5	6.5	6.5	1.3	1.3	2.0	5.4	5.2	4.4
						24.5		8.6		32.9		94.4		6.5			1.3			5.0		
				Middle	4.0	24.5	24.5	8.6	8.6	33.0	33.0	93.3	93.2	6.4	6.4		1.5	1.5		4.3	4.5	
						24.5		8.6		32.9		93.1		6.4			1.5			4.7		
				Bottom	7.0	24.5	24.5	8.6	8.6	33.2	33.2	91.8	91.8	6.3	6.3	6.3	3.2	3.1		3.6	3.6	
						24.5		8.6		33.2		91.7		6.3			3.1			3.6		
G2	Moderate	Cloudy	13:05	Surface	1.0	24.5	24.5	8.6	8.6	32.9	33.2	95.1	95.1	6.6	6.6	6.5	1.1	1.1	1.6	3.8	3.7	4.4
						24.5		8.6		33.4		95.0		6.6			1.1			3.6		
				Middle	5.0	24.4	24.4	8.6	8.6	33.6	33.7	94.5	94.5	6.5	6.5		1.4	1.4		4.6	4.4	
						24.4		8.6		33.7		94.5		6.5			1.4			4.1		
				Bottom	9.0	24.4	24.4	8.6	8.6	33.8	33.8	95.1	95.1	6.6	6.6	6.6	2.2	2.2		5.4	5.3	
						24.4		8.6		33.8		95.0		6.6			2.2			5.1		
G3	Moderate	Cloudy	13:27	Surface	1.0	24.7	24.7	8.6	8.6	33.0	33.0	94.4	94.4	6.5	6.5	6.5	0.9	0.9	1.0	3.2	3.1	3.3
						24.7		8.6		33.0		94.3		6.5			0.9			2.9		
				Middle	4.0	24.6	24.6	8.6	8.6	32.9	32.9	93.9	93.9	6.5	6.5		0.9	0.9		3.4	3.3	
						24.6		8.6		32.9		93.9		6.5			0.9			3.2		
				Bottom	7.0	24.6	24.6	8.6	8.6	33.1	33.6	91.6	91.5	6.3	6.3	6.3	1.1	1.1		3.5	3.7	
						24.6		8.6		34.2		91.4		6.3			1.1			3.8		
G4	Moderate	Cloudy	13:43	Surface	1.0	24.5	24.5	8.5	8.5	33.5	33.5	94.3	94.3	6.5	6.5	6.5	0.9	0.9	1.4	4.0	3.8	4.2
						24.5		8.5		33.5		94.2		6.5			0.9			3.6		
				Middle	4.1	24.5	24.5	8.5	8.5	33.6	33.6	93.6	93.6	6.4	6.4		0.9	0.9		3.9	4.1	
						24.5		8.5		33.6		93.6		6.4			0.8			4.2		
				Bottom	7.1	24.5	24.5	8.6	8.6	33.8	33.8	92.3	92.3	6.4	6.3	6.3	2.2	2.3		4.4	4.7	
						24.5		8.6		33.8		92.2		6.3			2.3			4.9		
M1	Moderate	Cloudy	13:12	Surface	1.0	24.6	24.6	8.6	8.6	33.0	32.9	93.5	93.4	6.5	6.4	6.4	1.1	1.0	1.7	4.4	4.3	3.6
						24.6		8.6		32.9		93.2		6.4			1.0			4.1		
				Middle	3.0	24.5	24.5	8.6	8.6	33.0	33.0	92.9	92.9	6.4	6.4		1.4	1.4		3.8	3.7	
						24.5		8.6		33.0		92.9		6.4			1.3			3.6		
				Bottom	5.0	24.5	24.5	8.6	8.6	33.1	33.1	92.1	92.1	6.4	6.4	6.4	2.5	2.6		2.6	2.8	
						24.5		8.6		33.1		92.1		6.4			2.7			3.0		
M2	Moderate	Cloudy	12:57	Surface	1.1	24.4	24.4	8.6	8.6	33.0	33.0	96.4	96.3	6.7	6.7	6.6	1.3	1.3	1.8	2.2	2.2	2.1
						24.4		8.6		33.0		96.1		6.6			1.3			2.2		
				Middle	6.0	24.4	24.4	8.5	8.5	33.1	33.1	95.0	95.0	6.6	6.6		1.3	1.3		2.1	2.2	
						24.4		8.5		33.1		95.0		6.6			1.3			2.3		
				Bottom	11.0	24.4	24.4	8.6	8.6	33.3	33.2	94.0	94.0	6.5	6.5	6.5	2.8	2.8		1.8	1.8	
						24.4		8.6		33.2		93.9		6.5			2.7			1.8		
M3	Moderate	Cloudy	13:34	Surface	1.1	24.6	24.6	8.6	8.6	33.5	33.2	93.8	93.8	6.5	6.5	6.5	1.0	1.0	1.1	2.3	2.5	3.3
						24.6		8.6		32.8		93.7		6.5			1.0			2.6		
				Middle	4.1	24.6	24.6	8.6	8.6	33.0	33.0	93.5	93.5	6.5	6.5		1.0	1.1		3.3	3.5	
						24.6		8.6		33.1		93.5		6.5			1.1			3.6		
				Bottom	7.0	24.6	24.6	8.6	8.6	33.5	33.4	91.4	91.3	6.3	6.3	6.3	1.3	1.2		3.8	3.9	
						24.6		8.6		33.4		91.2		6.3			1.2			4.0		
M4	Moderate	Cloudy	12:50	Surface	1.1	24.5	24.5	8.6	8.6	33.3	33.3	93.9	93.9	6.5	6.5	6.5	1.9	1.8	2.0	2.9	3.0	3.8
						24.5		8.6		33.3		93.9		6.5			1.8			3.1		
				Middle	5.1	24.5	24.5	8.6	8.6	33.3	33.3	93.4	93.4	6.4	6.4		2.0	2.0		3.2	3.3	
						24.5		8.6		33.3		93.4		6.5			2.0			3.4		
				Bottom	9.1	24.5	24.5	8.6	8.6	33.5	33.4	93.0	93.0	6.4	6.4	6.4	2.2	2.3		4.8	5.0	
						24.5		8.6		33.4		93.0		6.4			2.3			5.2		
M5	Moderate	Cloudy	13:56	Surface	1.0	24.5	24.5	8.5	8.5	33.5	33.5	94.2	94.2	6.5	6.5	6.4	1.0	1.0	1.2	2.2	2.4	3.6
						24.5		8.5		33.5		94.1		6.5			1.0			2.5		
				Middle	6.0	24.5	24.5	8.5	8.5	33.6	33.6	92.3	92.3	6.4	6.4		1.3	1.4		3.4	3.3	
						24.5		8.5		33.7		92.3		6.4			1.4			3.1		
				Bottom	11.0	24.4	24.4	8.6	8.6	33.8	33.8	93.9	94.0	6.5	6.5	6.5	1.1	1.1		5.3	5.2	
						24.4		8.6		33.8		94.0		6.5			1.1			5.1		
M6	Moderate	Cloudy	13:51	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	1.8	-	-	3.0
						-		-		-		-		-			-			-		
				Middle	2.1	24.7	24.7	8.5	8.5	33.6	33.6	92.4	92.3	6.3	6.3		1.9	1.8		2.8	3.0	
						24.7		8.5		33.6		92.2		6.3			1.8			3.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 18 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 2.5 NTU	***C2: 2.7 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.3 mg/L	***C2: 3.6 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.3 mg/L	***C2: 3.6 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 4.4 mg/L	***C2: 4.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 18 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Moderate	Cloudy	10:04	Surface	1.0	24.4	24.4	8.6	8.6	33.6	33.6	96.2	96.2	6.6	6.5	6.6	0.8	0.8	1.0	5.0	5.2	4.3
						24.4		8.6		33.6		96.1		6.5			0.8			5.3		
				Middle	9.1	24.2	24.2	8.6	8.6	33.8	33.8	96.1	96.2	6.7	6.6		0.7	0.7		4.4	4.3	
						24.3		8.6		33.8		96.2		6.5			0.6			4.2		
				Bottom	17.0	24.2	24.2	8.6	8.6	33.9	33.9	96.4	96.3	6.6	6.7	6.7	1.5	1.6		3.4	3.6	
						24.2		8.6		33.9		96.2		6.7			1.6			3.7		
C2	Moderate	Cloudy	8:41	Surface	1.0	24.3	24.3	8.5	8.5	33.1	33.1	94.0	93.9	6.4	6.4	6.4	1.7	1.6	1.8	5.9	5.8	5.0
						24.4		8.5		33.1		93.8		6.5			1.6			5.6		
				Middle	16.1	24.3	24.3	8.6	8.6	33.7	33.7	93.2	93.3	6.3	6.3		1.6	1.5		5.0	5.2	
						24.3		8.6		33.7		93.4		6.3			1.5			5.4		
				Bottom	31.1	24.3	24.3	8.6	8.6	33.8	33.8	92.7	92.8	6.3	6.3	6.3	2.3	2.3		4.3	4.1	
						24.3		8.6		33.8		92.8		6.3			2.3			3.9		
G1	Moderate	Cloudy	9:23	Surface	1.1	24.4	24.4	8.6	8.6	32.9	32.9	95.9	95.3	6.6	6.5	6.5	1.4	1.4	2.0	2.8	3.0	3.5
						24.4		8.6		32.9		94.6		6.5			1.3			3.2		
				Middle	4.1	24.4	24.4	8.6	8.6	33.0	33.0	94.0	93.7	6.5	6.4		1.5	1.5		3.3	3.4	
						24.5		8.6		33.0		93.4		6.3			1.5			3.4		
				Bottom	7.0	24.4	24.4	8.6	8.6	33.2	33.2	92.0	92.0	6.3	6.2	6.2	3.2	3.2		4.0	4.2	
						24.4		8.6		33.2		92.0		6.2			3.2			4.4		
G2	Moderate	Cloudy	9:06	Surface	1.0	24.3	24.4	8.6	8.6	32.9	33.1	95.6	95.4	6.5	6.6	6.5	1.3	1.2	1.6	4.4	4.2	3.7
						24.4		8.6		33.3		95.1		6.6			1.1			4.0		
				Middle	5.0	24.3	24.3	8.6	8.6	33.6	33.6	94.5	94.5	6.4	6.4		1.4	1.4		3.5	3.7	
						24.4		8.6		33.6		94.5		6.5			1.4			3.8		
				Bottom	9.0	24.3	24.3	8.6	8.6	33.8	33.8	94.9	95.1	6.6	6.6	6.6	2.2	2.1		3.5	3.3	
						24.3		8.6		33.8		95.2		6.6			2.1			3.0		
G3	Moderate	Cloudy	9:31	Surface	1.1	24.5	24.5	8.6	8.6	33.0	33.0	94.5	94.5	6.5	6.4	6.5	0.9	0.9	1.0	3.2	3.4	3.8
						24.6		8.6		33.0		94.5		6.4			0.9			3.5		
				Middle	4.1	24.5	24.5	8.6	8.6	32.9	32.9	94.1	94.1	6.5	6.5		0.9	0.9		3.8	3.7	
						24.5		8.6		32.9		94.0		6.5			0.9			3.5		
				Bottom	7.1	24.5	24.5	8.6	8.6	33.4	33.2	92.3	92.1	6.4	6.4	6.4	1.1	1.1		4.4	4.3	
						24.5		8.6		33.1		91.8		6.4			1.1			4.1		
G4	Moderate	Cloudy	9:46	Surface	1.0	24.4	24.4	8.6	8.6	33.5	33.5	94.4	94.4	6.4	6.4	6.5	0.9	0.9	1.4	4.3	4.4	3.5
						24.4		8.6		33.5		94.3		6.4			0.9			4.4		
				Middle	4.0	24.4	24.4	8.5	8.5	33.6	33.6	93.4	93.5	6.4	6.5		1.0	0.9		3.8	3.7	
						24.4		8.5		33.6		93.6		6.5			0.9			3.5		
				Bottom	7.0	24.4	24.4	8.6	8.6	33.8	33.8	92.5	92.6	6.2	6.2	6.2	2.2	2.2		2.6	2.5	
						24.4		8.6		33.8		92.6		6.2			2.3			2.4		
M1	Moderate	Cloudy	9:14	Surface	1.0	24.4	24.5	8.6	8.6	33.0	33.0	94.2	94.2	6.4	6.5	6.4	1.1	1.1	1.5	3.5	3.7	3.1
						24.5		8.6		33.1		94.2		6.6			1.2			3.8		
				Middle	3.0	24.3	24.4	8.5	8.5	33.1	33.1	92.7	92.7	6.4	6.4		1.4	1.5		3.3	3.2	
						24.4		8.5		33.1		92.7		6.4			1.6			3.0		
				Bottom	5.0	24.4	24.4	8.6	8.6	33.0	33.1	92.8	92.6	6.3	6.3	6.3	1.7	2.0		2.5	2.6	
						24.4		8.6		33.1		92.4		6.4			2.2			2.7		
M2	Moderate	Cloudy	8:58	Surface	1.1	24.3	24.3	8.6	8.6	33.1	33.1	97.7	97.5	6.6	6.7	6.6	1.3	1.3	1.7	5.2	5.1	3.8
						24.3		8.6		33.1		97.2		6.8			1.3			5.0		
				Middle	6.0	24.3	24.3	8.5	8.5	33.2	33.2	95.0	95.0	6.6	6.5		1.3	1.3		4.0	3.9	
						24.3		8.5		33.1		95.0		6.4			1.3			3.7		
				Bottom	11.0	24.3	24.3	8.6	8.6	33.3	33.3	94.0	94.2	6.6	6.5	6.5	2.5	2.6		2.5	2.6	
						24.3		8.6		33.2		94.3		6.4			2.7			2.6		
M3	Moderate	Cloudy	9:39	Surface	1.0	24.5	24.4	8.6	8.6	32.9	17.8	94.9	94.6	6.5	7.1	6.8	0.8	0.9	1.1	3.6	3.7	3.2
						24.4		8.6		2.7		94.2		7.8			1.0			3.8		
				Middle	4.0	24.5	24.5	8.6	8.6	33.1	33.1	93.7	93.8	6.5	6.4		1.1	1.1		3.1	3.3	
						24.5		8.6		33.0		93.8		6.4			1.1			3.4		
				Bottom	7.0	24.5	24.5	8.6	8.6	33.4	33.5	91.6	91.6	6.4	6.4	6.4	1.3	1.3		2.6	2.5	
						24.5		8.6		33.5		91.5		6.4			1.2			2.4		
M4	Moderate	Cloudy	8:49	Surface	1.1	24.3	24.4	8.6	8.6	33.3	33.3	94.0	94.0	6.6	6.5	6.5	1.9	1.9	2.0	3.8	3.6	2.5
						24.4		8.6		33.3		94.0		6.5			1.9			3.4		
				Middle	5.0	24.4	24.4	8.6	8.6	33.5	33.4	93.5	93.4	6.5	6.4		1.9	2.0		2.6	2.4	
						24.4		8.6		33.3		93.3		6.3			2.0			2.2		
				Bottom	9.1	24.4	24.4	8.6	8.6	33.5	33.5	93.1	93.2	6.4	6.4	6.4	2.1	2.1		1.7	1.6	
						24.4		8.6		33.5		93.3		6.4			2.1			1.5		
M5	Moderate	Cloudy	9:56	Surface	1.0	24.4	24.4	8.5	8.5	33.5	33.5	94.5	94.5	6.6	6.5	6.5	1.0	1.0	1.2	3.2	3.1	2.4
						24.4		8.5		33.5		94.4		6.5			1.0			2.9		
				Middle	6.0	24.3	24.3	8.5	8.5	33.6	33.6	92.2	92.4	6.3	6.4		1.3	1.3		2.2	2.3	
						24.4		8.5		33.6		92.5		6.4			1.3			2.4		
				Bottom	11.0	24.3	24.3	8.6	8.6	33.7	33.7	93.7	93.9	6.4	6.4	6.4	1.2	1.2		1.9	1.8	
						24.3		8.6		33.8		94.0		6.5			1.2			1.7		
M6	Moderate	Cloudy	9:53	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	1.8	-	-	1.6
						-		-		-		-		-			-			-		
				Middle	2.0	24.6	24.6	8.6	8.5	33.6	33.6	93.1	92.9	6.4	6.3		8.0	8.0		1.4	1.6	
						24.6		8.5		33.6		92.7		6.2			8.0			1.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 18 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 1.9 NTU	***C1: 2.0 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 6.2 mg/L	***C1: 6.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 6.2 mg/L	***C1: 6.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 4.3 mg/L	***C1: 4.6 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 20 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Moderate	Calm	11:45	Surface	1.1	24.9	25.2	8.6	8.6	33.3	33.3	96.8	97.5	6.6	6.7	6.7	1.0	0.9	1.0	2.3	2.4	2.0
						25.4		8.6		33.3		98.2		6.7			0.8			2.4		
				Middle	9.0	24.5	24.6	8.6	8.6	33.8	33.6	97.4	97.3	6.7	6.7		0.9	0.9		2.2	2.2	
						24.6		8.6		33.5		97.2		6.7			0.9			2.1		
				Bottom	17.1	24.4	24.4	8.6	8.6	33.7	33.7	96.4	96.2	6.7	6.6	6.6	0.8	1.4		1.4	1.4	
						24.3		8.6		33.6		95.9		6.6			1.9			1.3		
C2	Moderate	Calm	10:55	Surface	1.1	24.7	24.7	8.6	8.6	33.3	33.3	95.1	95.1	6.5	6.5	6.5	1.2	1.2	1.5	<0.1	<0.1	1.0
						24.7		8.6		33.3		95.1		6.5			1.2			<0.1		
				Middle	16.1	24.5	24.5	8.6	8.6	33.3	33.3	94.2	94.2	6.5	6.5		1.1	1.1		1.2	1.3	
						24.5		8.6		33.3		94.1		6.5			1.1			1.4		
				Bottom	31.0	24.4	24.7	8.6	8.7	33.4	33.3	94.2	92.3	6.5	7.0	7.0	1.9	2.4		1.7	1.8	
						25.0		8.8		33.2		90.4		7.5			2.9			1.9		
G1	Moderate	Calm	11:17	Surface	1.0	24.9	25.0	8.6	8.6	33.1	33.2	95.9	95.4	6.6	6.5	6.5	0.8	0.8	0.9	2.6	2.6	2.1
						25.0		8.6		33.2		94.9		6.5			0.8			2.5		
				Middle	4.1	24.7	24.6	8.6	8.6	33.3	33.3	94.4	94.2	6.5	6.5		1.0	1.0		2.1	2.2	
						24.6		8.6		33.4		94.0		6.5			0.9			2.2		
				Bottom	7.0	24.6	24.6	8.6	8.6	33.3	33.4	94.0	93.9	6.5	6.5	6.5	1.0	1.0		1.6	1.6	
						24.6		8.6		33.4		93.8		6.5			1.0			1.6		
G2	Moderate	Calm	11:10	Surface	1.1	25.1	25.1	8.6	8.6	33.2	33.3	94.2	95.1	6.4	6.5	6.5	0.8	0.8	1.0	1.2	1.3	2.2
						25.1		8.6		33.3		96.0		6.6			0.8			1.4		
				Middle	5.0	24.6	24.6	8.6	8.6	33.3	33.4	94.0	94.1	6.5	6.5		1.0	1.0		2.2	2.3	
						24.6		8.6		33.4		94.2		6.5			1.0			2.4		
				Bottom	9.0	24.5	24.5	8.6	8.6	33.5	33.5	94.2	94.3	6.5	6.5	6.5	1.4	1.2		2.8	3.0	
						24.5		8.6		33.6		94.4		6.5			1.1			3.1		
G3	Moderate	Calm	11:22	Surface	1.0	25.9	26.0	8.5	8.6	33.0	33.0	92.8	93.4	6.3	6.3	6.3	2.2	1.3	1.3	2.8	3.1	4.1
						26.0		8.6		32.9		94.0		6.3			0.4			3.3		
				Middle	4.0	24.7	24.7	8.6	8.6	33.4	33.4	91.1	91.2	6.3	6.3		0.9	1.0		4.0	3.9	
						24.7		8.6		33.4		91.2		6.3			1.1			3.8		
				Bottom	7.0	24.6	24.6	8.6	8.6	33.5	33.4	90.8	90.8	6.3	6.2	6.2	1.6	1.6		5.5	5.4	
						24.6		8.6		33.4		90.7		6.2			1.6			5.3		
G4	Moderate	Calm	11:31	Surface	1.1	25.0	25.0	8.6	8.6	33.3	33.3	95.7	95.8	6.5	6.6	6.5	0.9	1.0	1.0	2.3	2.5	3.5
						25.0		8.6		33.3		95.9		6.6			1.1			2.7		
				Middle	4.0	24.7	24.7	8.6	8.6	33.4	33.4	95.4	95.3	6.6	6.5		1.1	1.1		3.7	3.6	
						24.7		8.6		33.4		95.1		6.5			1.0			3.4		
				Bottom	7.1	24.6	24.6	8.6	8.6	33.4	33.4	94.7	94.7	6.5	6.5	6.5	1.0	0.9		4.6	4.4	
						24.6		8.6		33.4		94.6		6.5			0.9			4.1		
M1	Moderate	Calm	11:14	Surface	1.1	25.5	25.6	8.6	8.6	32.9	32.8	94.1	94.6	6.4	6.4	6.4	0.6	0.5	0.8	1.8	1.7	2.6
						25.6		8.6		32.8		95.0		6.4			0.4			1.6		
				Middle	3.0	24.7	24.8	8.6	8.6	33.4	33.5	93.3	93.4	6.4	6.4		0.9	0.9		2.5	2.4	
						24.8		8.6		33.5		93.4		6.4			0.9			2.2		
				Bottom	5.0	24.7	24.7	8.6	8.6	33.4	33.6	93.6	93.6	6.4	6.4	6.4	0.9	0.9		3.6	3.7	
						24.7		8.6		33.8		93.6		6.5			1.0			3.8		
M2	Moderate	Calm	11:06	Surface	1.1	25.0	25.3	8.6	8.6	33.2	33.1	94.5	95.2	6.5	6.5	6.5	1.0	0.8	1.4	2.7	2.9	2.5
						25.6		8.6		33.1		95.9		6.5			0.6			3.0		
				Middle	6.1	24.5	24.5	8.6	8.6	33.3	33.3	93.5	93.6	6.5	6.5		1.3	1.2		2.5	2.5	
						24.5		8.6		33.4		93.6		6.5			1.2			2.4		
				Bottom	11.1	24.4	24.4	8.6	8.6	33.4	33.4	93.6	93.5	6.5	6.5	6.5	3.0	2.3		2.1	2.2	
						24.4		8.6		33.4		93.3		6.4			1.7			2.3		
M3	Moderate	Calm	11:26	Surface	1.1	25.8	25.8	8.6	8.6	33.2	33.2	93.5	94.2	6.3	6.4	6.4	0.6	0.5	1.1	2.8	3.0	2.2
						25.8		8.6		33.2		94.8		6.4			0.4			3.2		
				Middle	4.0	24.8	24.8	8.6	8.6	33.4	33.4	93.5	93.6	6.4	6.4		1.3	1.2		2.5	2.3	
						24.8		8.6		33.4		93.6		6.4			1.2			2.1		
				Bottom	7.0	24.6	24.6	8.6	8.6	33.5	33.4	92.0	92.2	6.3	6.3	6.3	1.5	1.5		1.3	1.3	
						24.6		8.6		33.4		92.3		6.4			1.5			1.3		
M4	Moderate	Calm	11:00	Surface	1.1	24.9	25.0	8.6	8.6	33.2	33.2	93.5	94.5	6.4	6.5	6.5	1.9	1.4	1.8	2.1	2.3	1.7
						25.2		8.6		33.2		95.5		6.5			1.0			2.4		
				Middle	5.0	24.5	24.5	8.6	8.6	33.3	33.3	93.5	93.8	6.4	6.5		1.6	1.6		1.5	1.6	
						24.5		8.6		33.3		94.1		6.5			1.7			1.7		
				Bottom	9.0	24.4	24.4	8.6	8.6	33.4	33.4	93.7	93.8	6.5	6.5	6.5	3.7	2.4		1.2	1.3	
						24.4		8.6		33.4		93.9		6.5			1.1			1.3		
M5	Moderate	Calm	11:39	Surface	1.1	25.0	24.9	8.6	8.6	33.3	33.3	94.2	94.8	6.5	6.5	6.5	1.1	1.1	1.6	1.4	1.3	1.8
						24.9		8.6		33.3		95.3		6.5			1.0			1.2		
				Middle	6.1	24.5	24.5	8.6	8.6	33.4	33.4	94.8	94.5	6.5	6.5		1.5	1.5		1.9	1.8	
						24.5		8.6		33.4		94.2		6.5			1.5			1.6		
				Bottom	11.1	24.4	24.4	8.6	8.6	33.5	33.5	94.9	94.9	6.6	6.5	6.5	2.2	2.1		2.4	2.4	
						24.4		8.6		33.5		94.8		6.5			2.0			2.4		
M6	Moderate	Calm	11:34	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	1.0	-	-	1.6
						-		-		-		-		-			-			-		
				Middle	2.0	24.8	24.8	8.6	8.6	33.4	33.4	95.9	95.9	6.6	6.6		8.0	8.0		1.7	1.6	
						24.8		8.6		33.4		95.8		6.6			8.0			1.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 20 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 1.6 NTU	***C1: 1.8 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.8 mg/L	***C1: 3.1 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 1.6 mg/L	***C1: 1.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 23 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	14:37	Surface	1.0	24.9	24.9	8.6	8.6	31.9	31.9	96.7	97.0	6.7	6.7	6.7	1.1	1.0	1.1	1.4	1.5	1.6
						24.9		8.6		31.9		97.3		6.7			1.0			1.5		
				Middle	9.1	24.9	24.9	8.6	8.6	31.9	31.9	97.4	97.5	6.7	6.7		0.8	0.8		1.7	1.6	
						24.9		8.6		31.9		97.6		6.7			0.8			1.5		
				Bottom	17.0	24.8	24.8	8.6	8.6	32.1	32.1	96.3	95.1	6.7	6.6	6.6	1.4	1.5		1.7	1.8	
						24.7		8.6		32.1		93.9		6.5			1.6			1.9		
C2	Cloudy	Moderate	13:13	Surface	1.0	24.8	24.8	8.4	8.5	31.5	31.5	96.3	96.1	6.7	6.7	6.6	0.7	0.7	1.7	1.5	1.7	2.2
						24.8		8.6		31.5		95.9		6.7			0.7			1.8		
				Middle	16.0	24.8	24.8	8.5	8.5	31.9	31.9	93.1	93.3	6.4	6.5		2.1	1.9		2.2	2.2	
						24.8		8.6		31.8		93.4		6.5			1.6			2.1		
				Bottom	31.0	24.8	24.8	8.5	8.5	31.9	31.9	92.9	93.0	6.4	6.4	6.4	2.4	2.5		2.9	2.8	
						24.8		8.6		31.9		93.0		6.4			2.6			2.6		
G1	Cloudy	Moderate	13:55	Surface	1.0	24.8	24.8	8.5	8.5	31.6	31.6	93.7	93.8	6.5	6.5	6.5	0.9	0.9	0.9	1.9	1.8	2.4
						24.8		8.6		31.6		93.9		6.5			0.9			1.6		
				Middle	4.0	24.8	24.8	8.5	8.5	31.6	31.6	93.7	93.8	6.5	6.5		0.9	0.9		2.1	2.2	
						24.8		8.6		31.6		93.8		6.5			0.9			2.3		
				Bottom	7.0	24.8	24.8	8.6	8.6	31.7	31.7	94.0	93.9	6.5	6.5	6.5	1.0	1.0		2.9	3.1	
						24.8		8.6		31.7		93.7		6.5			1.0			3.3		
G2	Cloudy	Moderate	13:37	Surface	1.1	24.8	24.8	8.6	8.6	31.4	31.5	95.5	95.7	6.6	6.6	6.6	0.6	0.6	1.2	2.3	2.5	1.9
						24.8		8.6		31.5		95.8		6.6			0.5			2.7		
				Middle	5.0	24.8	24.8	8.6	8.6	31.7	31.7	95.4	95.5	6.6	6.6		0.9	0.9		1.8	1.7	
						24.8		8.6		31.7		95.5		6.6			0.8			1.6		
				Bottom	9.0	24.9	24.9	8.6	8.6	31.9	31.9	93.7	93.5	6.5	6.5	6.5	2.3	2.3		1.5	1.4	
						24.9		8.6		31.9		93.3		6.5			2.3			1.3		
G3	Cloudy	Moderate	14:03	Surface	1.1	24.9	24.9	8.6	8.5	31.6	31.6	93.8	93.6	6.5	6.5	6.5	0.9	0.8	1.1	2.7	2.6	1.9
						24.9		8.5		31.6		93.4		6.5			0.8			2.4		
				Middle	4.0	24.9	24.9	8.6	8.6	31.6	31.6	93.7	93.7	6.5	6.5		1.0	1.0		1.8	1.7	
						24.9		8.6		31.6		93.6		6.5			1.0			1.6		
				Bottom	7.0	24.8	24.8	8.5	8.5	31.8	31.8	91.8	91.2	6.4	6.3	6.3	1.4	1.5		1.3	1.4	
						24.8		8.5		31.8		90.5		6.3			1.7			1.5		
G4	Cloudy	Moderate	14:18	Surface	1.0	24.9	24.9	8.5	8.5	31.5	31.6	92.2	92.4	6.4	6.4	6.4	1.9	1.9	2.3	1.9	1.9	1.6
						24.9		8.5		31.6		92.5		6.4			1.9			1.9		
				Middle	4.0	24.9	24.9	8.5	8.5	31.7	31.6	93.0	92.9	6.4	6.4		1.4	1.5		1.4	1.5	
						24.9		8.5		31.6		92.7		6.4			1.6			1.5		
				Bottom	7.0	24.9	24.9	8.5	8.5	31.9	31.9	92.8	93.3	6.4	6.4	6.4	4.2	3.5		1.3	1.4	
						24.9		8.5		31.9		93.7		6.5			2.9			1.5		
M1	Cloudy	Moderate	13:46	Surface	1.1	24.8	24.8	8.6	8.6	31.3	31.3	93.9	94.1	6.5	6.5	6.5	0.6	0.6	0.6	1.8	1.7	2.4
						24.8		8.6		31.3		94.3		6.5			0.6			1.5		
				Middle	3.0	24.8	24.8	8.6	8.6	31.6	31.6	95.0	94.8	6.6	6.6		0.6	0.6		2.2	2.4	
						24.8		8.5		31.5		94.5		6.6			0.6			2.6		
				Bottom	5.0	24.8	24.8	8.6	8.6	31.7	31.7	95.8	96.0	6.6	6.6	6.6	0.6	0.6		2.9	3.1	
						24.8		8.6		31.7		96.1		6.7			0.7			3.3		
M2	Cloudy	Moderate	13:30	Surface	1.0	24.8	24.8	8.6	8.6	31.2	31.2	96.0	95.9	6.7	6.7	6.6	0.7	0.6	2.1	1.9	1.8	2.6
						24.8		8.6		31.2		95.8		6.7			0.6			1.7		
				Middle	6.0	24.8	24.8	8.6	8.6	31.7	31.7	91.8	93.0	6.4	6.4		1.8	1.6		2.4	2.6	
						24.8		8.6		31.7		94.2		6.5			1.5			2.8		
				Bottom	11.0	24.9	24.9	8.6	8.6	32.0	32.0	93.6	93.6	6.5	6.5	6.5	4.1	3.9		3.2	3.4	
						24.9		8.6		32.0		93.5		6.5			3.7			3.5		
M3	Cloudy	Moderate	14:10	Surface	1.0	24.9	24.9	8.5	8.5	31.4	31.2	93.4	92.1	6.5	6.4	6.4	0.7	0.7	1.2	2.4	2.6	2.2
						24.9		8.5		31.0		90.7		6.3			0.6			2.8		
				Middle	4.0	24.8	24.8	8.5	8.5	31.7	31.7	92.7	92.6	6.4	6.4		1.0	1.0		2.1	2.2	
						24.8		8.5		31.6		92.5		6.4			1.0			2.2		
				Bottom	7.1	24.8	24.8	8.5	8.5	31.8	31.8	88.6	88.4	6.1	6.1	6.1	1.9	1.9		1.7	1.8	
						24.8		8.5		31.8		88.1		6.1			2.0			1.9		
M4	Cloudy	Moderate	13:22	Surface	1.0	24.8	24.8	8.6	8.6	31.6	31.6	98.3	97.9	6.8	6.8	6.7	0.7	0.7	1.2	2.6	2.7	1.9
						24.8		8.6		31.6		97.5		6.8			0.6			2.8		
				Middle	5.0	24.8	24.8	8.6	8.6	31.9	31.9	94.4	94.4	6.5	6.5		1.1	1.1		1.5	1.6	
						24.8		8.6		31.9		94.4		6.5			1.1			1.7		
				Bottom	9.0	24.8	24.8	8.6	8.6	32.0	32.0	93.4	93.4	6.5	6.5	6.5	1.9	2.0		1.3	1.4	
						24.8		8.6		32.0		93.3		6.5			2.0			1.4		
M5	Cloudy	Moderate	14:29	Surface	1.1	24.9	24.9	8.5	8.5	31.9	31.9	94.3	94.5	6.5	6.5	6.6	1.7	1.7	1.9	1.5	1.7	2.3
						24.9		8.5		31.9		94.7		6.5			1.8			1.9		
				Middle	6.0	24.8	24.8	8.5	8.5	32.0	32.0	95.4	95.2	6.6	6.6		1.6	1.6		2.2	2.3	
						24.8		8.5		32.0		95.0		6.6			1.7			2.4		
				Bottom	11.0	24.8	24.8	8.5	8.5	32.0	32.0	94.9	94.8	6.6	6.6	6.6	2.3	2.2		2.7	2.8	
						24.8		8.5		32.0		94.7		6.6			2.2			2.9		
M6	Cloudy	Moderate	14:25	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	1.1	-	-	2.6
						-		-		-		-		-			-			-		
				Middle	2.1	24.9	24.9	8.5	8.5	31.7	31.7	94.0	93.9	6.5	6.5		8.0	8.0		2.4	2.6	
						24.9		8.5		31.7		93.8		6.5			8.0			2.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 23 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 1.8 NTU	***C1: 2.0 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 1.7 mg/L	***C1: 1.9 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 1.7 mg/L	***C1: 1.9 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.2 mg/L	***C1: 2.3 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 25 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	10:40	Surface	1.0	24.8	24.9	8.6	8.6	33.4	33.4	93.7	93.7	6.3	6.3	6.3	1.0	1.0	1.7	3.0	2.9	2.3
						24.9		8.6		33.4		93.6		6.3			1.0			2.8		
				Middle	9.0	24.7	24.7	8.6	8.6	33.5	33.5	92.5	92.6	6.3	6.3		1.0	1.1		2.3	2.2	
						24.7		8.6		33.5		92.7		6.3			1.1			2.1		
				Bottom	17.1	24.7	24.7	8.6	8.6	33.8	33.8	92.4	92.5	6.4	6.4	6.4	2.9	3.0		1.8	1.7	
						24.7		8.6		33.8		92.6		6.4			3.1			1.5		
C2	Cloudy	Calm	9:15	Surface	1.0	24.7	24.8	8.6	8.6	33.3	33.3	93.5	93.3	6.3	6.3	6.3	1.4	1.4	1.7	2.2	2.2	2.7
						24.8		8.6		33.4		93.0		6.3			1.4			2.1		
				Middle	16.1	24.6	24.7	8.6	8.6	33.5	33.5	91.7	91.6	6.3	6.2		2.2	2.2		2.7	2.6	
						24.7		8.6		33.5		91.5		6.1			2.2			2.4		
				Bottom	30.0	24.7	24.7	8.6	8.6	33.6	33.6	91.1	91.1	6.2	6.3	6.3	1.6	1.6		3.2	3.4	
						24.7		8.6		33.6		91.1		6.3			1.6			3.6		
G1	Cloudy	Calm	9:58	Surface	1.0	24.8	24.8	8.6	8.6	32.8	32.7	94.2	94.2	6.5	6.5	6.4	0.8	0.8	0.9	2.9	3.1	2.6
						24.9		8.6		32.6		94.1		6.5			0.8			3.2		
				Middle	4.0	24.7	24.7	8.6	8.6	33.5	33.5	94.1	93.9	6.4	6.4		0.8	0.8		2.8	2.7	
						24.7		8.6		33.6		93.7		6.4			0.8			2.5		
				Bottom	7.0	24.7	24.7	8.6	8.6	33.6	33.6	93.4	93.2	6.3	6.3	6.3	1.0	1.0		2.1	2.2	
						24.7		8.6		33.6		93.0		6.4			1.0			2.3		
G2	Cloudy	Calm	9:42	Surface	1.0	24.8	24.8	8.6	8.6	33.4	33.4	95.5	95.5	6.5	6.4	6.5	0.5	0.5	0.5	3.4	3.6	3.2
						24.8		8.6		33.4		95.4		6.4			0.5			3.8		
				Middle	5.0	24.7	24.7	8.6	8.6	33.3	33.4	94.4	94.7	6.5	6.5		0.7	0.6		3.4	3.2	
						24.7		8.6		33.6		94.9		6.5			0.6			3.0		
				Bottom	9.1	24.7	24.7	8.6	8.6	33.6	33.6	94.6	94.7	6.4	6.4	6.4	0.4	0.4		2.8	2.7	
						24.7		8.6		33.6		94.8		6.4			0.4			2.5		
G3	Cloudy	Calm	10:07	Surface	1.0	24.9	24.9	8.6	8.6	32.5	32.4	93.1	92.7	6.3	6.3	6.3	0.7	0.7	1.0	2.8	2.7	3.2
						25.0		8.6		32.2		92.2		6.3			0.7			2.6		
				Middle	4.0	24.8	24.8	8.6	8.6	33.5	33.5	92.5	92.6	6.2	6.2		1.0	0.9		2.8	3.0	
						24.8		8.6		33.5		92.7		6.3			0.9			3.2		
				Bottom	7.0	24.8	24.7	8.6	8.6	34.0	33.9	91.7	91.0	6.3	6.2	6.2	1.4	1.5		3.6	3.8	
						24.7		8.6		33.7		90.3		6.2			1.7			3.9		
G4	Cloudy	Calm	10:23	Surface	1.1	24.9	25.0	8.6	8.6	33.4	33.4	95.6	95.5	6.4	6.5	6.5	0.7	0.7	0.6	3.0	2.9	2.3
						25.0		8.6		33.4		95.4		6.5			0.8			2.7		
				Middle	4.0	24.7	24.7	8.6	8.6	33.5	33.5	94.6	94.9	6.4	6.5		0.7	0.7		2.5	2.4	
						24.8		8.6		33.5		95.2		6.5			0.7			2.2		
				Bottom	7.0	24.7	24.7	8.6	8.6	33.6	33.6	95.0	95.0	6.4	6.4	6.4	0.5	0.4		1.9	1.8	
						24.7		8.6		33.6		95.0		6.4			0.4			1.7		
M1	Cloudy	Calm	9:51	Surface	1.1	24.8	24.9	8.6	8.6	33.3	33.1	92.9	92.9	6.4	6.4	6.3	0.8	0.7	0.8	1.7	1.8	2.3
						24.9		8.6		32.8		92.8		6.4			0.7			1.9		
				Middle	3.1	24.7	24.8	8.6	8.6	33.5	33.5	92.1	92.3	6.2	6.2		0.8	0.8		2.4	2.3	
						24.8		8.6		33.5		92.4		6.2			0.8			2.2		
				Bottom	5.1	24.8	24.8	8.6	8.6	33.5	33.5	92.0	92.2	6.2	6.2	6.2	0.9	0.9		2.8	2.7	
						24.7		8.6		33.5		92.3		6.3			0.9			2.6		
M2	Cloudy	Calm	9:33	Surface	1.1	24.9	25.0	8.6	8.6	33.3	33.3	96.0	96.1	6.4	6.5	6.5	0.6	0.6	0.7	1.8	1.8	2.3
						25.0		8.6		33.3		96.1		6.6			0.6			1.8		
				Middle	6.0	24.7	24.7	8.6	8.6	33.5	33.4	94.7	94.5	6.6	6.5		0.9	0.9		2.1	2.2	
						24.7		8.6		33.2		94.2		6.5			1.0			2.3		
				Bottom	11.1	24.7	24.7	8.6	8.6	33.7	33.6	93.9	94.2	6.3	6.3	6.3	0.8	0.7		3.2	3.0	
						24.7		8.6		33.6		94.4		6.3			0.7			2.8		
M3	Cloudy	Calm	10:15	Surface	1.0	24.8	25.0	8.6	8.6	33.4	33.0	92.2	92.5	6.2	6.2	6.2	1.5	1.2	1.3	2.4	2.5	2.1
						25.1		8.6		32.6		92.7		6.2			1.0			2.6		
				Middle	4.0	24.7	24.8	8.6	8.6	33.6	33.6	92.8	92.9	6.3	6.3		1.0	1.0		2.1	2.2	
						24.8		8.6		33.6		93.0		6.3			1.0			2.3		
				Bottom	7.1	24.7	24.7	8.6	8.6	33.7	33.7	90.9	90.3	6.2	6.1	6.1	1.8	1.8		1.8	1.7	
						24.7		8.6		33.7		89.7		6.1			1.9			1.6		
M4	Cloudy	Calm	9:25	Surface	1.1	24.8	24.8	8.6	8.6	33.3	33.4	95.0	94.9	6.6	6.6	6.5	1.1	1.1	1.2	1.4	1.6	2.3
						24.8		8.6		33.4		94.7		6.5			1.1			1.8		
				Middle	5.0	24.7	24.7	8.6	8.6	33.5	33.5	93.9	94.0	6.4	6.4		1.1	1.2		2.4	2.4	
						24.8		8.6		33.5		94.1		6.4			1.2			2.3		
				Bottom	9.1	24.7	24.7	8.6	8.6	33.6	33.6	93.6	93.5	6.4	6.4	6.4	1.4	1.4		2.7	2.9	
						24.7		8.6		33.6		93.4		6.3			1.5			3.1		
M5	Cloudy	Calm	10:33	Surface	1.1	24.9	24.9	8.6	8.6	33.4	33.4	94.8	94.7	6.4	6.3	6.4	0.9	0.9	1.6	2.8	2.7	2.2
						24.9		8.6		33.4		94.6		6.3			0.9			2.5		
				Middle	6.1	24.7	24.7	8.6	8.6	33.5	33.5	93.5	93.5	6.4	6.4		1.0	1.0		2.4	2.3	
						24.7		8.6		33.5		93.5		6.4			1.0			2.1		
				Bottom	11.1	24.7	24.7	8.6	8.6	33.6	33.6	93.3	93.3	6.4	6.4	6.4	3.1	3.0		1.9	1.7	
						24.7		8.6		33.6		93.2		6.3			2.9			1.4		
M6	Cloudy	Calm	10:30	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	0.7	-	-	2.5
						-		-		-		-		-			-			-		
				Middle	2.0	24.9	24.9	8.6	8.6	33.5	33.5	94.4	94.3	6.5	6.4		0.8	0.7		2.6	2.5	
						24.8		8.6		33.5		94.1		6.3			0.7			2.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 25 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 1.9 NTU	***C2: 2.0 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.6 mg/L	***C2: 2.8 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.6 mg/L	***C2: 2.8 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 4.1 mg/L	***C2: 4.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 25 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	14:55	Surface	1.0	24.9	25.0	8.6	8.6	33.4	33.4	93.3	93.4	6.4	6.4	6.4	1.0	1.0	1.8	3.1	3.2	3.7
						25.0		8.6		33.4		93.4		6.4			1.0			3.3		
				Middle	9.0	24.8	24.8	8.6	8.6	33.5	33.5	92.8	92.9	6.4	6.4		0.9	0.9		3.8	3.7	
						24.8		8.6		33.5		92.9		6.4			0.9			3.5		
				Bottom	16.9	24.8	24.8	8.6	8.6	33.8	33.8	92.5	92.6	6.3	6.3	6.3	3.6	3.6		4.3	4.4	
						24.8		8.6		33.8		92.6		6.3			3.5			4.4		
C2	Cloudy	Calm	13:25	Surface	1.0	24.9	24.9	8.6	8.6	33.4	33.4	93.0	93.0	6.4	6.4	6.3	1.4	1.4	1.7	2.3	2.5	2.9
						24.9		8.6		33.4		92.9		6.4			1.4			2.6		
				Middle	16.1	24.8	24.8	8.6	8.6	33.5	33.5	91.5	91.5	6.3	6.3		2.2	2.2		2.7	2.9	
						24.8		8.6		33.5		91.4		6.3			2.2			3.0		
				Bottom	31.0	24.8	24.8	8.6	8.6	33.6	33.6	91.2	91.3	6.3	6.3	6.3	1.5	1.4		3.2	3.4	
						24.8		8.6		33.6		91.3		6.3			1.4			3.5		
G1	Cloudy	Calm	14:08	Surface	1.0	25.0	25.0	8.6	8.6	32.8	32.9	94.0	94.0	6.5	6.4	6.4	0.8	0.8	0.8	3.4	3.3	2.8
						24.9		8.6		33.0		94.0		6.4			0.8			3.1		
				Middle	4.1	24.8	24.8	8.6	8.6	33.6	33.6	93.7	93.8	6.4	6.4		0.8	0.8		2.8	2.7	
						24.8		8.6		33.6		93.8		6.4			0.8			2.6		
				Bottom	7.0	24.8	24.8	8.6	8.6	33.6	33.6	93.1	93.1	6.4	6.4	6.4	1.0	1.0		2.5	2.4	
						24.8		8.6		33.6		93.1		6.4			0.9			2.2		
G2	Cloudy	Calm	13:49	Surface	1.0	25.1	25.1	8.6	8.6	32.4	32.4	95.3	95.2	6.5	6.5	6.5	0.8	0.8	0.6	2.8	3.0	3.4
						25.1		8.6		32.4		95.0		6.5			0.8			3.1		
				Middle	5.0	24.8	24.8	8.6	8.6	33.5	33.5	94.9	94.9	6.5	6.5		0.6	0.6		3.1	3.3	
						24.8		8.6		33.5		94.9		6.5			0.6			3.4		
				Bottom	9.0	24.8	24.8	8.6	8.6	33.6	33.6	94.8	94.9	6.5	6.5	6.5	0.5	0.5		3.9	4.1	
						24.8		8.6		33.6		94.9		6.5			0.5			4.3		
G3	Cloudy	Calm	14:17	Surface	1.1	25.1	25.1	8.6	8.6	33.2	33.3	92.9	93.1	6.4	6.4	6.3	0.9	0.9	1.2	2.3	2.2	2.7
						25.1		8.6		33.3		93.3		6.4			0.8			2.1		
				Middle	4.0	24.9	24.9	8.6	8.6	33.1	33.3	92.9	92.9	6.3	6.3		0.9	0.9		2.7	2.8	
						24.9		8.6		33.5		92.9		6.4			0.9			2.9		
				Bottom	7.0	24.9	24.9	8.6	8.6	33.7	33.7	89.9	89.8	6.2	6.1	6.1	1.7	1.7		3.4	3.2	
						24.9		8.6		33.7		89.7		6.1			1.7			3.0		
G4	Cloudy	Calm	14:35	Surface	1.0	25.2	25.2	8.6	8.6	33.4	33.4	95.4	95.4	6.5	6.5	6.5	0.8	0.8	0.6	3.0	2.9	2.5
						25.2		8.6		33.4		95.4		6.5			0.8			2.8		
				Middle	4.0	24.9	24.9	8.6	8.6	33.5	33.5	95.0	95.0	6.5	6.5		0.7	0.7		2.4	2.5	
						24.9		8.6		33.5		95.0		6.5			0.7			2.6		
				Bottom	7.0	24.8	24.8	8.6	8.6	33.6	33.6	94.8	94.8	6.5	6.5	6.5	0.5	0.5		2.1	2.2	
						24.8		8.6		33.6		94.8		6.5			0.5			2.3		
M1	Cloudy	Calm	13:57	Surface	1.0	25.0	25.0	8.6	8.6	32.7	32.7	92.5	92.4	6.3	6.3	6.3	0.7	0.7	0.8	2.8	2.8	2.3
						25.0		8.6		32.7		92.3		6.3			0.7			2.8		
				Middle	3.0	24.9	24.9	8.6	8.6	33.5	33.5	92.2	92.2	6.3	6.3		0.8	0.8		2.4	2.5	
						24.9		8.6		33.5		92.2		6.3			0.8			2.6		
				Bottom	5.0	24.9	24.9	8.6	8.6	33.5	33.5	92.3	92.4	6.3	6.3	6.3	0.8	0.8		1.6	1.5	
						24.9		8.6		33.5		92.4		6.3			0.8			1.4		
M2	Cloudy	Calm	13:41	Surface	1.1	25.1	25.1	8.6	8.6	33.3	33.3	96.0	96.0	6.6	6.6	6.5	0.6	0.6	0.8	2.3	2.4	1.9
						25.1		8.6		33.3		95.9		6.6			0.6			2.4		
				Middle	6.1	24.8	24.8	8.6	8.6	33.5	33.4	94.3	94.3	6.5	6.5		1.0	1.1		1.9	1.8	
						24.8		8.6		33.2		94.2		6.5			1.1			1.7		
				Bottom	11.1	24.8	24.8	8.6	8.6	33.6	33.6	94.3	94.3	6.5	6.5	6.5	0.7	0.7		1.7	1.6	
						24.8		8.6		33.6		94.3		6.5			0.7			1.4		
M3	Cloudy	Calm	14:26	Surface	1.1	25.0	25.0	8.6	8.6	33.2	33.2	92.6	92.7	6.3	6.3	6.4	1.4	1.4	1.5	3.1	2.9	2.2
						25.0		8.6		33.1		92.7		6.3			1.4			2.6		
				Middle	4.0	24.9	24.9	8.6	8.6	33.6	33.6	93.2	93.3	6.4	6.4		1.0	1.0		2.4	2.3	
						24.9		8.6		33.6		93.3		6.4			1.1			2.1		
				Bottom	7.0	24.8	24.8	8.6	8.6	33.7	34.4	89.3	89.1	6.1	6.0	6.0	1.9	1.9		1.4	1.6	
						24.8		8.6		35.1		88.9		5.9			2.0			1.7		
M4	Cloudy	Calm	13:34	Surface	1.0	24.9	25.0	8.6	8.6	33.4	33.4	94.4	94.5	6.5	6.5	6.5	1.1	1.0	1.2	2.3	2.2	1.8
						25.0		8.6		33.4		94.6		6.5			1.0			2.1		
				Middle	5.0	24.9	24.9	8.6	8.6	33.5	33.5	94.0	94.0	6.4	6.4		1.2	1.1		1.8	1.7	
						24.9		8.6		33.5		93.9		6.4			1.1			1.6		
				Bottom	9.0	24.8	24.8	8.6	8.6	33.6	33.6	93.3	93.3	6.4	6.4	6.4	1.5	1.5		1.6	1.6	
						24.8		8.6		33.6		93.2		6.4			1.6			1.6		
M5	Cloudy	Calm	14:46	Surface	1.1	25.0	25.0	8.6	8.6	33.4	33.4	94.5	94.5	6.5	6.5	6.4	0.9	1.0	2.0	1.6	1.8	2.2
						25.0		8.6		33.4		94.4		6.5			1.0			1.9		
				Middle	6.0	24.9	24.9	8.6	8.6	33.5	33.5	93.6	93.6	6.4	6.4		1.0	1.0		2.1	2.2	
						24.9		8.6		33.5		93.6		6.4			1.0			2.3		
				Bottom	11.0	24.8	24.8	8.6	8.6	33.6	33.6	93.1	93.1	6.4	6.4	6.4	4.2	4.1		2.5	2.6	
						24.8		8.6		33.6		93.1		6.4			4.1			2.7		
M6	Cloudy	Calm	14:43	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	0.7	-	-	3.1
						-		-		-		-		-			-			-		
				Middle	2.1	25.0	25.0	8.6	8.6	33.5	33.5	94.4	94.5	6.5	6.5		8.0	8.0		3.2	3.1	
						25.0		8.6		33.5		94.5		6.5			8.0			3.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 25 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 4.3 NTU	***C1: 4.7 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.8 mg/L	***C1: 4.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.8 mg/L	***C1: 4.2 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 5.2 mg/L	***C1: 5.7 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 27 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	10:34	Surface	1.1	25.2	25.2	8.4	8.4	31.4	31.4	85.4	85.5	5.9	5.9	5.9	2.0	2.1	2.3	2.9	3.1	4.1
						25.2		8.4		31.4		85.6		5.9			2.1			3.3		
				Middle	9.0	25.1	25.1	8.4	8.4	31.5	31.5	85.3	85.4	5.9	5.9		2.2	2.2		3.9	4.1	
						25.1		8.4		31.5		85.4		5.9			2.1			4.2		
				Bottom	17.0	25.1	25.1	8.4	8.4	31.6	31.6	86.3	86.3	6.0	6.0	6.0	2.8	2.8		5.1	5.3	
						25.1		8.4		31.6		86.2		6.0			2.8			5.4		
C2	Sunny	Moderate	9:42	Surface	1.1	25.3	25.3	8.3	8.3	31.2	31.2	81.6	81.9	5.6	5.6	5.7	2.8	2.7	2.5	3.0	2.8	3.2
						25.3		8.3		31.2		82.2		5.7			2.6			2.5		
				Middle	16.0	25.2	25.2	8.3	8.3	31.5	31.4	83.9	83.5	5.8	5.8		2.3	2.5		3.2	3.1	
						25.2		8.3		31.4		83.1		5.7			2.6			2.9		
				Bottom	31.0	25.2	25.2	8.3	8.3	31.5	31.5	85.8	85.7	5.9	5.9	5.9	2.2	2.2		3.9	3.7	
						25.2		8.3		31.5		85.5		5.9			2.2			3.5		
G1	Sunny	Moderate	10:05	Surface	1.0	25.3	25.3	8.4	8.4	31.2	31.3	91.6	91.3	6.3	6.3	6.3	1.1	1.1	1.1	2.6	2.8	3.3
						25.3		8.4		31.3		91.0		6.3			1.2			2.9		
				Middle	4.1	25.3	25.3	8.4	8.4	31.4	31.4	91.8	91.9	6.3	6.3		1.1	1.1		3.1	3.3	
						25.3		8.4		31.4		91.9		6.3			1.1			3.4		
				Bottom	6.9	25.2	25.2	8.4	8.4	31.6	31.6	90.6	90.9	6.2	6.3	6.3	1.2	1.2		3.9	4.0	
						25.2		8.4		31.6		91.2		6.3			1.2			4.1		
G2	Sunny	Moderate	9:57	Surface	1.1	25.4	25.4	8.4	8.4	31.3	31.3	92.3	92.7	6.3	6.4	6.4	0.9	0.9	1.4	2.7	2.7	3.2
						25.4		8.4		31.2		93.0		6.4			0.9			2.6		
				Middle	5.0	25.3	25.3	8.4	8.4	31.4	31.4	92.5	92.4	6.4	6.4		1.0	1.0		3.2	3.1	
						25.3		8.4		31.5		92.3		6.3			1.1			2.9		
				Bottom	9.0	25.1	25.1	8.4	8.4	31.7	31.7	89.4	89.5	6.2	6.2	6.2	2.3	2.2		3.9	3.8	
						25.1		8.4		31.7		89.5		6.2			2.0			3.6		
G3	Sunny	Moderate	10:09	Surface	1.0	25.4	25.3	8.4	8.4	31.1	31.2	92.7	91.7	6.4	6.3	6.3	1.1	1.1	1.2	3.4	3.3	3.7
						25.3		8.4		31.3		90.6		6.2			1.2			3.2		
				Middle	4.0	25.3	25.3	8.4	8.4	31.3	31.3	91.9	92.0	6.3	6.3		1.1	1.0		3.3	3.6	
						25.3		8.4		31.2		92.0		6.3			1.0			3.8		
				Bottom	6.9	25.2	25.2	8.4	8.4	31.6	31.6	90.1	90.4	6.2	6.2	6.2	1.4	1.3		4.0	4.2	
						25.2		8.4		31.6		90.7		6.2			1.2			4.4		
G4	Sunny	Moderate	10:19	Surface	1.0	25.4	25.4	8.4	8.4	31.2	31.3	91.8	92.5	6.3	6.4	6.4	1.1	1.2	1.3	4.4	4.3	3.6
						25.3		8.4		31.4		93.1		6.4			1.3			4.1		
				Middle	4.1	25.4	25.3	8.4	8.4	31.3	31.3	92.7	92.5	6.4	6.4		1.1	1.1		3.4	3.6	
						25.3		8.4		31.4		92.3		6.4			1.1			3.7		
				Bottom	6.9	25.2	25.2	8.4	8.4	31.6	31.6	89.8	90.5	6.2	6.2	6.2	1.6	1.7		2.8	3.0	
						25.3		8.4		31.6		91.2		6.3			1.7			3.2		
M1	Sunny	Moderate	10:01	Surface	0.9	25.3	25.3	8.4	8.4	31.0	30.9	90.1	90.2	6.2	6.2	6.2	1.1	1.0	1.1	2.8	3.0	3.6
						25.4		8.4		30.8		90.3		6.2			1.0			3.2		
				Middle	3.0	25.3	25.4	8.4	8.4	30.9	30.9	89.0	89.3	6.1	6.2		1.0	1.0		3.6	3.5	
						25.4		8.4		30.9		89.6		6.2			1.0			3.3		
				Bottom	5.0	25.2	25.2	8.4	8.4	31.5	31.5	87.9	88.1	6.1	6.1	6.1	1.2	1.2		4.1	4.2	
						25.2		8.4		31.5		88.3		6.1			1.2			4.3		
M2	Sunny	Moderate	9:52	Surface	1.0	25.2	25.2	8.4	8.4	31.6	31.6	91.0	91.7	6.3	6.3	6.3	1.1	1.1	1.6	2.3	2.2	3.0
						25.2		8.4		31.6		92.3		6.4			1.1			2.1		
				Middle	6.1	25.2	25.2	8.4	8.4	31.7	31.7	91.2	91.2	6.3	6.3		1.1	1.1		2.8	3.0	
						25.2		8.4		31.7		91.1		6.3			1.1			3.1		
				Bottom	11.1	25.0	25.0	8.4	8.4	31.7	31.7	89.0	88.7	6.1	6.1	6.1	2.6	2.5		3.9	3.8	
						25.0		8.4		31.8		88.4		6.1			2.4			3.6		
M3	Sunny	Moderate	10:13	Surface	1.1	25.3	25.3	8.4	8.4	31.2	31.2	90.6	90.7	6.2	6.2	6.3	1.2	1.1	1.1	2.9	2.9	3.2
						25.3		8.4		31.2		90.7		6.2			1.1			2.8		
				Middle	4.1	25.4	25.3	8.4	8.4	31.2	31.3	91.7	91.6	6.3	6.3		1.1	1.0		3.4	3.3	
						25.3		8.4		31.3		91.4		6.3			1.0			3.2		
				Bottom	7.0	25.2	25.2	8.4	8.4	31.5	31.5	90.3	90.3	6.2	6.2	6.2	1.2	1.2		3.6	3.5	
						25.2		8.4		31.5		90.2		6.2			1.2			3.4		
M4	Sunny	Moderate	9:47	Surface	1.1	25.2	25.2	8.4	8.4	31.5	31.5	87.8	87.9	6.1	6.1	6.1	1.8	1.8	1.6	3.1	3.3	2.8
						25.2		8.4		31.5		88.0		6.1			1.8			3.5		
				Middle	5.1	25.2	25.2	8.3	8.3	31.5	31.6	87.5	87.9	6.0	6.0		1.6	1.5		2.5	2.7	
						25.2		8.4		31.6		88.3		6.1			1.5			2.8		
				Bottom	8.9	25.1	25.1	8.4	8.4	31.7	31.7	89.0	88.9	6.1	6.1	6.1	1.4	1.5		2.2	2.3	
						25.0		8.4		31.7		88.8		6.1			1.7			2.4		
M5	Sunny	Moderate	10:28	Surface	1.1	25.2	25.2	8.4	8.4	31.4	31.4	85.4	85.4	5.9	5.9	5.9	2.1	2.1	2.2	2.2	2.4	3.1
						25.2		8.4		31.4		85.4		5.9			2.1			2.5		
				Middle	6.0	25.2	25.2	8.4	8.4	31.4	31.4	85.3	85.4	5.9	5.9		2.1	2.2		2.8	2.9	
						25.2		8.4		31.4		85.4		5.9			2.2			3.0		
				Bottom	11.0	25.2	25.2	8.4	8.4	31.4	31.4	85.3	85.3	5.9	5.9	5.9	2.2	2.3		3.9	4.1	
						25.2		8.4		31.4		85.3		5.9			2.3			4.2		
M6	Sunny	Moderate	10:22	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	1.6	-	-	3.6
						-		-		-		-		-			-			-		
				Middle	2.0	25.3	25.3	8.4	8.4	31.6	31.6	90.4	90.5	6.2	6.2		1.6	1.6		3.7	3.6	
						25.3		8.4		31.6		90.5		6.2			1.6			3.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 27 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 2.6 NTU	***C2: 2.9 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.3 mg/L	***C2: 3.6 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 3.3 mg/L	***C2: 3.6 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 4.4 mg/L	***C2: 4.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 27 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	14:32	Surface	1.0	25.3	25.2	8.4	8.4	31.4	31.4	85.6	85.7	5.9	5.9	5.9	1.6	1.9	2.2	3.0	3.1	3.8
						25.2		8.4		31.4		85.7		5.9			2.1			3.2		
				Middle	9.1	25.1	25.1	8.4	8.4	31.5	31.5	85.7	85.7	5.9	5.9		2.2	2.2		3.9	3.7	
						25.1		8.4		31.5		85.6		5.9			2.3			3.5		
				Bottom	17.0	25.0	25.0	8.4	8.4	31.7	31.6	86.8	86.6	6.0	6.0	6.0	2.5	2.7		4.4	4.6	
						25.1		8.4		31.6		86.4		6.0			2.8			4.7		
C2	Sunny	Moderate	13:33	Surface	1.0	25.4	25.3	8.1	8.2	31.0	31.1	81.5	81.6	5.6	5.6	5.8	2.7	2.7	2.5	3.3	3.4	2.9
						25.3		8.3		31.2		81.7		5.6			2.8			3.5		
				Middle	16.0	25.1	25.2	8.3	8.3	31.5	31.5	86.5	86.0	6.0	5.9		2.1	2.1		3.0	2.9	
						25.2		8.3		31.5		85.4		5.9			2.1			2.7		
				Bottom	31.0	25.1	25.1	8.3	8.3	31.7	31.6	86.9	86.7	6.0	6.0	6.0	2.9	2.7		2.7	2.6	
						25.1		8.3		31.6		86.5		6.0			2.4			2.4		
G1	Sunny	Moderate	14:04	Surface	1.0	25.4	25.3	8.4	8.4	31.1	31.2	91.7	91.2	6.3	6.3	6.3	1.1	1.1	1.1	3.4	3.7	3.1
						25.3		8.4		31.4		90.6		6.2			1.2			3.9		
				Middle	4.0	25.3	25.3	8.4	8.4	31.5	31.4	91.9	92.0	6.3	6.3		1.1	1.1		3.0	3.2	
						25.3		8.4		31.3		92.0		6.3			1.1			3.4		
				Bottom	7.0	25.2	25.2	8.4	8.4	31.6	31.6	91.0	91.2	6.3	6.3	6.3	1.2	1.2		2.7	2.5	
						25.2		8.4		31.6		91.4		6.3			1.2			2.3		
G2	Sunny	Moderate	13:55	Surface	1.0	25.5	25.4	8.4	8.4	31.2	31.3	94.5	93.9	6.5	6.5	6.4	0.8	1.0	1.3	2.5	2.7	3.6
						25.3		8.4		31.4		93.2		6.4			1.1			2.9		
				Middle	5.1	25.3	25.3	8.4	8.4	31.6	31.6	92.4	92.2	6.4	6.3		1.1	1.1		3.2	3.4	
						25.3		8.4		31.5		91.9		6.3			1.0			3.6		
				Bottom	9.5	25.1	25.1	8.4	8.4	31.7	31.7	89.6	89.6	6.2	6.2	6.2	2.0	1.9		4.5	4.8	
						25.1		8.4		31.7		89.5		6.2			1.7			5.0		
G3	Sunny	Moderate	14:08	Surface	1.0	25.4	25.4	8.4	8.4	31.0	31.0	93.2	92.4	6.4	6.4	6.4	1.0	1.1	1.1	3.4	3.4	3.0
						25.4		8.4		31.0		91.6		6.3			1.1			3.3		
				Middle	4.0	25.4	25.4	8.4	8.4	31.2	31.2	92.7	92.6	6.4	6.4		1.1	1.1		3.2	3.1	
						25.4		8.4		31.2		92.5		6.4			1.0			3.0		
				Bottom	7.1	25.2	25.2	8.4	8.4	31.6	31.6	90.6	90.6	6.2	6.2	6.2	1.3	1.3		2.8	2.7	
						25.2		8.4		31.6		90.5		6.2			1.3			2.5		
G4	Sunny	Moderate	14:16	Surface	1.0	25.4	25.4	8.4	8.4	31.1	31.2	94.0	93.1	6.5	6.4	6.4	1.0	1.0	1.4	2.5	2.4	2.9
						25.4		8.4		31.3		92.1		6.3			1.0			2.3		
				Middle	4.0	25.3	25.3	8.4	8.4	31.5	31.5	92.7	92.5	6.4	6.4		1.1	1.1		2.6	2.8	
						25.3		8.4		31.4		92.3		6.4			1.1			2.9		
				Bottom	7.0	25.2	25.2	8.4	8.4	31.6	31.6	89.9	89.2	6.2	6.1	6.1	2.4	2.2		3.3	3.5	
						25.2		8.4		31.6		88.4		6.1			2.0			3.6		
M1	Sunny	Moderate	14:00	Surface	1.0	25.4	25.4	8.4	8.4	30.7	30.9	90.6	89.6	6.2	6.2	6.2	1.0	1.0	1.1	2.8	2.7	3.8
						25.3		8.4		31.1		88.5		6.1			1.0			2.5		
				Middle	2.0	25.3	25.3	8.4	8.4	31.2	31.2	89.6	89.3	6.2	6.1		1.1	1.1		4.0	3.8	
						25.3		8.4		31.2		88.9		6.1			1.0			3.6		
				Bottom	5.0	25.2	25.2	8.4	8.4	31.6	31.6	87.8	87.5	6.0	6.0	6.0	1.2	1.2		5.0	4.8	
						25.2		8.4		31.6		87.1		6.0			1.3			4.6		
M2	Sunny	Moderate	13:51	Surface	1.0	25.3	25.3	8.4	8.4	31.6	31.6	92.8	92.2	6.4	6.3	6.3	1.0	1.1	1.5	3.0	3.2	2.9
						25.3		8.4		31.6		91.5		6.3			1.1			3.3		
				Middle	6.3	25.2	25.2	8.4	8.4	31.7	31.7	91.3	91.3	6.3	6.3		1.1	1.1		2.9	3.1	
						25.2		8.4		31.7		91.3		6.3			1.2			3.2		
				Bottom	11.0	25.1	25.0	8.4	8.4	31.7	31.7	89.4	89.2	6.2	6.1	6.1	2.0	2.3		2.5	2.4	
						25.0		8.4		31.7		88.9		6.1			2.5			2.2		
M3	Sunny	Moderate	14:12	Surface	1.0	25.5	25.4	8.4	8.4	30.8	30.8	93.0	92.1	6.4	6.3	6.3	1.0	1.1	1.2	2.2	2.3	2.8
						25.4		8.4		30.8		91.1		6.3			1.3			2.4		
				Middle	4.0	25.4	25.3	8.4	8.4	31.3	31.3	92.5	92.0	6.4	6.3		1.1	1.1		2.9	2.8	
						25.3		8.4		31.4		91.5		6.3			1.1			2.6		
				Bottom	7.1	25.2	25.2	8.4	8.4	31.5	31.5	90.4	90.4	6.2	6.2	6.2	1.3	1.3		3.0	3.2	
						25.2		8.4		31.5		90.3		6.2			1.2			3.4		
M4	Sunny	Moderate	13:45	Surface	1.0	25.3	25.3	8.3	8.3	31.3	31.3	83.5	85.4	5.8	5.9	6.0	2.4	2.1	1.7	2.9	3.0	3.2
						25.2		8.3		31.4		87.2		6.0			1.9			3.0		
				Middle	5.0	25.2	25.2	8.4	8.3	31.6	31.6	89.1	88.6	6.1	6.1		1.3	1.4		3.1	3.3	
						25.2		8.3		31.6		88.0		6.1			1.5			3.4		
				Bottom	9.0	25.0	25.0	8.4	8.4	31.7	31.7	88.4	88.7	6.1	6.1	6.1	1.9	1.6		3.6	3.5	
						25.1		8.4		31.7		89.0		6.1			1.4			3.4		
M5	Sunny	Moderate	14:27	Surface	1.1	25.2	25.2	8.4	8.4	31.4	31.4	86.0	85.7	5.9	5.9	5.9	2.1	2.1	2.2	3.7	3.6	3.0
						25.2		8.4		31.4		85.4		5.9			2.2			3.4		
				Middle	6.0	25.2	25.2	8.4	8.4	31.4	31.4	85.5	85.5	5.9	5.9		2.1	2.2		3.0	3.0	
						25.2		8.4		31.4		85.4		5.9			2.2			2.9		
				Bottom	11.0	25.2	25.2	8.4	8.4	31.4	31.4	85.4	85.4	5.9	5.9	5.9	2.4	2.4		2.7	2.6	
						25.2		8.4		31.4		85.3		5.9			2.4			2.5		
M6	Sunny	Moderate	14:21	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	1.8	-	-	2.9
						-		-		-		-		-			-			-		
				Middle	2.0	25.3	25.3	8.4	8.4	31.6	31.6	91.0	90.8	6.3	6.2		8.0	8.0		2.8	2.9	
						25.3		8.4		31.6		90.5		6.2			8.0			3.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 27 May 2022 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 3.2 NTU	***C1: 3.4 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.7 mg/L	***C1: 4.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.7 mg/L	***C1: 4.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 5.5 mg/L	***C1: 5.9 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 30 May 2022

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	14:31	Surface	1.0	25.9	25.9	8.4	8.4	30.5	30.5	81.4	81.4	5.6	5.6	5.7	2.4	2.4	2.5	1.2	1.3	1.7
						25.9		8.4		30.5		81.3		5.6			2.4			1.3		
				Middle	9.0	25.6	25.6	8.5	8.5	31.4	31.4	86.3	86.3	5.9	5.9		2.2	2.1		1.5	1.6	
						25.6		8.5		31.4		86.3		5.9			2.1			1.6		
				Bottom	17.0	25.3	25.3	8.5	8.5	31.9	31.9	88.1	88.1	6.0	6.0	6.0	3.0	2.9		2.1	2.2	
						25.3		8.5		31.8		88.1		6.0			2.8			2.3		
C2	Sunny	Calm	13:05	Surface	1.1	25.9	25.9	8.3	8.3	30.6	30.6	80.9	81.0	5.5	5.5	5.6	2.6	2.6	3.0	1.3	1.3	1.8
						25.9		8.3		30.6		81.0		5.6			2.7			1.3		
				Middle	16.0	25.5	25.5	8.4	8.3	31.3	31.4	83.9	84.0	5.8	5.8		3.1	3.2		1.6	1.7	
						25.5		8.3		31.4		84.0		5.8			3.2			1.8		
				Bottom	31.0	25.4	25.4	8.4	8.4	31.5	31.5	84.9	84.9	5.8	5.8	5.8	3.4	3.3		2.4	2.3	
						25.4		8.4		31.5		84.8		5.8			3.2			2.2		
G1	Sunny	Calm	13:46	Surface	1.1	26.5	26.5	8.4	8.4	31.0	31.0	86.8	86.8	5.9	5.9	5.9	0.8	0.8	1.5	2.4	2.6	1.5
						26.5		8.4		31.0		86.7		5.9			0.8			2.7		
				Middle	4.0	26.1	26.1	8.4	8.4	31.3	31.3	87.6	87.7	5.9	5.9		1.2	1.2		1.7	1.8	
						26.1		8.4		31.3		87.7		6.0			1.2			1.9		
				Bottom	7.1	25.5	25.5	8.5	8.5	31.7	31.7	85.8	85.7	5.9	5.9	5.9	2.4	2.4		<0.1	<0.1	
						25.5		8.5		31.7		85.6		5.9			2.5			<0.1		
G2	Sunny	Calm	13:29	Surface	1.1	26.7	26.7	8.4	8.4	31.1	31.1	91.5	91.5	6.2	6.2	6.1	0.9	0.9	1.5	<0.1	<0.1	1.0
						26.7		8.4		31.1		91.5		6.2			0.9			<0.1		
				Middle	5.1	25.8	25.8	8.4	8.4	31.5	31.5	88.7	88.7	6.1	6.1		1.1	1.1		1.1	1.2	
						25.8		8.4		31.5		88.7		6.1			1.1			1.2		
				Bottom	9.0	25.3	25.3	8.5	8.5	31.9	31.9	87.4	87.4	6.0	6.0	6.0	2.6	2.5		1.9	1.8	
						25.3		8.5		31.9		87.4		6.0			2.5			1.6		
G3	Sunny	Calm	13:53	Surface	1.0	26.6	26.6	8.4	8.4	30.8	30.8	87.9	87.8	5.9	5.9	5.9	0.8	0.8	1.4	2.4	2.3	1.8
						26.6		8.4		30.8		87.6		5.9			0.8			2.2		
				Middle	4.0	26.1	26.1	8.4	8.4	31.3	31.3	87.9	87.9	6.0	6.0		1.9	2.0		1.6	1.7	
						26.0		8.4		31.3		87.9		6.0			2.0			1.8		
				Bottom	7.1	25.3	25.4	8.5	8.5	31.8	31.8	88.4	88.6	6.1	6.1	6.1	1.5	1.5		1.5	1.4	
						25.4		8.5		31.8		88.7		6.1			1.5			1.3		
G4	Sunny	Calm	14:11	Surface	1.0	26.6	26.6	8.4	8.4	31.0	31.0	90.9	90.9	6.1	6.1	6.1	1.3	1.3	2.4	2.8	3.1	2.3
						26.7		8.4		31.0		90.9		6.1			1.4			3.3		
				Middle	4.0	26.2	26.3	8.4	8.4	31.2	31.2	90.4	90.5	6.1	6.1		1.4	1.4		2.3	2.2	
						26.3		8.4		31.2		90.5		6.1			1.4			2.1		
				Bottom	7.0	25.6	25.5	8.5	8.5	31.7	31.7	88.5	88.5	6.1	6.0	6.0	4.6	4.5		1.5	1.6	
						25.5		8.5		31.7		88.4		6.0			4.4			1.7		
M1	Sunny	Calm	13:37	Surface	1.1	27.0	27.0	8.4	8.4	30.7	30.6	91.3	91.4	6.1	6.1	6.0	0.5	0.5	0.9	2.4	2.3	1.3
						27.0		8.4		30.6		91.4		6.1			0.5			2.2		
				Middle	3.0	25.9	25.9	8.4	8.4	31.3	31.3	87.2	87.2	5.9	5.9		1.1	1.1		1.8	1.7	
						25.9		8.4		31.3		87.1		5.9			1.0			1.6		
				Bottom	5.1	25.7	25.7	8.4	8.4	31.6	31.5	85.6	85.6	5.8	5.8	5.8	1.4	1.3		<0.1	<0.1	
						25.7		8.4		31.5		85.6		5.9			1.2			<0.1		
M2	Sunny	Calm	13:22	Surface	1.0	26.5	26.5	8.4	8.4	31.0	31.0	90.2	90.3	6.1	6.1	6.1	1.1	1.1	1.6	3.3	3.5	2.6
						26.5		8.4		31.0		90.3		6.1			1.1			3.6		
				Middle	6.1	25.6	25.6	8.4	8.4	31.6	31.6	89.7	89.7	6.1	6.1		1.2	1.2		3.1	3.0	
						25.6		8.4		31.6		89.7		6.1			1.2			2.8		
				Bottom	11.0	25.2	25.2	8.4	8.4	32.1	32.1	88.2	88.3	6.1	6.1	6.1	2.5	2.7		1.5	1.4	
						25.1		8.4		32.1		88.3		6.1			2.8			1.3		
M3	Sunny	Calm	14:02	Surface	1.1	26.7	26.7	8.4	8.4	30.9	30.8	89.5	89.5	6.0	6.0	5.9	1.1	1.1	1.8	4.0	3.9	3.3
						26.7		8.4		30.8		89.5		6.0			1.1			3.8		
				Middle	4.0	26.1	26.1	8.4	8.4	31.2	31.2	86.1	86.2	5.9	5.9		2.1	2.1		3.3	3.5	
						26.1		8.4		31.2		86.2		5.9			2.0			3.6		
				Bottom	7.0	25.4	25.3	8.5	8.5	31.8	31.8	87.9	88.0	6.0	6.0	6.0	2.2	2.2		2.5	2.6	
						25.3		8.5		31.8		88.0		6.0			2.2			2.6		
M4	Sunny	Calm	13:14	Surface	1.0	25.9	25.9	8.3	8.3	30.9	30.9	83.8	83.8	5.7	5.7	5.8	2.6	2.6	2.3	3.4	3.5	3.1
						25.9		8.3		30.9		83.7		5.7			2.6			3.6		
				Middle	5.0	25.7	25.7	8.3	8.3	31.2	31.2	84.8	84.8	5.8	5.8		2.9	2.9		3.2	3.3	
						25.7		8.3		31.2		84.8		5.8			2.8			3.3		
				Bottom	9.0	25.7	25.7	8.4	8.4	31.5	31.5	88.4	88.5	6.0	6.0	6.0	1.3	1.3		2.5	2.7	
						25.7		8.4		31.5		88.5		6.1			1.3			2.8		
M5	Sunny	Calm	14:22	Surface	1.1	26.1	26.1	8.5	8.5	30.9	30.9	86.2	86.2	5.9	5.9	5.9	1.6	1.5	1.8	2.8	3.0	3.5
						26.1		8.5		30.9		86.2		5.9			1.5			3.1		
				Middle	6.1	26.0	26.0	8.5	8.5	30.9	30.9	85.9	85.9	5.9	5.9		1.7	1.7		3.3	3.5	
						26.0		8.5		30.9		85.8		5.9			1.7			3.6		
				Bottom	11.0	26.0	26.0	8.4	8.4	30.9	31.0	85.5	85.5	5.8	5.8	5.8	2.0	2.1		3.8	4.0	
						25.9		8.4		31.0		85.4		5.8			2.3			4.2		
M6	Sunny	Calm	14:18	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	1.2	-	-	3.9
						-		-		-		-		-			-			-		
				Middle	2.0	26.3	26.3	8.5	8.5	31.2	31.2	90.2	90.1	6.1	6.1		1.2	1.2		4.0	3.9	
						26.3		8.5		31.2		90.0		6.1			1.2			3.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Action and Limit Levels for Marine Water Quality on 30 May 2022 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C2: 4.0 NTU	***C2: 4.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 1.6 mg/L	***C2: 1.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 1.6 mg/L	***C2: 1.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C2: 2.8 mg/L	***C2: 3.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 30 May 2022

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)			pH			Salinity ppt			DO Saturation (%)			Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average		Value	Average		Value	Average		Value	Average		Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	8:53	Surface	1.1	25.5	25.5		8.4	8.4		30.6	30.6		81.2	81.5		5.5	5.5	5.6	2.3	2.3	2.6	3.0	2.9	2.3
						25.5			8.4			30.5			81.7			5.5			2.4			2.7		
				Middle	9.0	25.3	25.3		8.5	8.5		31.4	31.4		86.3	86.4		5.8	5.8		2.1	2.1		2.3	2.2	
						25.3			8.5			31.4			86.4			5.8			2.2			2.1		
				Bottom	17.0	24.9	24.8		8.5	8.5		31.9	31.9		87.6	87.8		5.9	6.0	6.0	3.4	3.4		1.8	1.7	
						24.8			8.5			31.9			87.9			6.1			3.4			1.6		
C2	Sunny	Calm	7:32	Surface	1.0	25.5	25.6		8.3	8.3		30.5	30.5		80.7	80.7		5.6	5.5	5.6	2.5	2.5	3.1	2.7	2.9	3.5
						25.6			8.3			30.5			80.7			5.5			2.5			3.0		
				Middle	16.0	25.1	25.1		8.4	8.4		31.4	31.4		84.3	84.1		5.7	5.7		3.2	3.2		3.3	3.5	
						25.1			8.4			31.3			83.8			5.6			3.2			3.7		
				Bottom	31.0	25.0	25.0		8.4	8.4		31.6	31.6		84.9	85.0		5.9	5.9	5.9	3.9	3.7		4.0	4.2	
						25.0			8.4			31.6			85.1			5.9			3.6			4.3		
G1	Sunny	Calm	8:13	Surface	1.1	26.1	26.1		8.4	8.4		31.0	31.0		86.6	86.7		5.8	5.9	5.8	0.8	0.8	1.4	2.2	2.2	2.7
						26.1			8.4			31.0			86.8			5.9			0.8			2.2		
				Middle	4.0	25.9	25.8		8.4	8.4		31.2	31.2		87.2	87.2		5.8	5.8		1.1	1.2		2.8	2.7	
						25.8			8.4			31.3			87.2			5.9			1.2			2.6		
				Bottom	7.1	25.1	25.1		8.4	8.4		31.7	31.7		85.5	85.5		5.9	5.9	5.9	2.3	2.3		3.3	3.1	
						25.0			8.4			31.7			85.4			5.9			2.3			2.9		
G2	Sunny	Calm	7:57	Surface	1.0	25.7	25.7		8.4	8.4		31.1	31.1		92.0	91.8		6.2	6.2	6.1	0.9	0.9	1.5	2.3	2.5	1.4
						25.7			8.4			31.1			91.6			6.2			0.9			2.6		
				Middle	5.0	25.5	25.4		8.4	8.4		31.5	31.5		88.7	88.8		5.9	6.0		1.1	1.1		1.6	1.7	
						25.4			8.4			31.5			88.8			6.1			1.1			1.8		
				Bottom	9.0	24.9	24.9		8.4	8.4		31.9	31.9		87.6	87.6		5.9	5.9	5.9	2.6	2.6		<0.1	<0.1	
						24.9			8.5			31.9			87.5			5.9			2.6			<0.1		
G3	Sunny	Calm	8:20	Surface	1.1	26.2	26.2		8.4	8.4		30.6	30.7		88.0	88.1		5.8	5.8	5.8	0.7	0.7	1.4	1.8	1.7	2.2
						26.2			8.4			30.7			88.2			5.8			0.7			1.5		
				Middle	4.0	25.8	25.7		8.4	8.4		31.2	31.2		88.0	87.9		5.9	5.9		1.7	1.8		2.3	2.2	
						25.7			8.4			31.3			87.7			5.8			2.0			2.1		
				Bottom	7.1	25.1	25.1		8.5	8.5		31.7	31.8		87.0	87.4		5.9	6.0	6.0	1.8	1.7		2.7	2.6	
						25.0			8.5			31.8			87.8			6.1			1.6			2.5		
G4	Sunny	Calm	8:35	Surface	1.0	26.2	26.1		8.4	8.4		31.0	31.0		90.9	91.0		6.2	6.1	6.1	1.3	1.3	1.6	2.5	2.7	2.2
						26.1			8.4			31.0			91.0			6.1			1.3			2.9		
				Middle	4.1	25.8	25.9		8.4	8.4		31.2	31.2		90.4	90.3		6.2	6.1		1.4	1.4		2.3	2.3	
						25.9			8.4			31.2			90.2			6.0			1.4			2.2		
				Bottom	7.0	25.0	25.0		8.5	8.5		31.8	31.8		87.9	88.0		5.9	6.0	6.0	2.1	2.2		1.6	1.7	
						25.1			8.5			31.8			88.0			6.0			2.4			1.8		
M1	Sunny	Calm	8:06	Surface	1.1	25.8	25.8		8.4	8.4		30.6	30.6		92.0	91.8		6.0	6.1	6.0	0.5	0.5	1.0	1.6	1.7	2.4
						25.8			8.4			30.6			91.6			6.1			0.5			1.8		
				Middle	3.1	25.5	25.6		8.4	8.4		31.4	31.4		87.3	87.3		5.9	5.9		1.1	1.1		2.1	2.3	
						25.6			8.4			31.3			87.2			6.0			1.1			2.4		
				Bottom	5.0	25.3	25.3		8.4	8.4		31.5	31.5		86.1	85.9		5.8	5.9	5.9	1.3	1.3		3.0	3.2	
						25.3			8.4			31.6			85.6			5.9			1.4			3.3		
M2	Sunny	Calm	7:49	Surface	1.0	25.3	25.3		8.4	8.4		31.0	31.0		89.9	90.0		6.2	6.1	6.1	1.1	1.1	1.7	2.8	2.7	2.2
						25.3			8.4			31.0			90.1			6.0			1.1			2.6		
				Middle	6.0	25.2	25.2		8.4	8.4		31.6	31.6		89.8	89.7		6.1	6.1		1.2	1.1		2.4	2.3	
						25.2			8.4			31.6			89.6			6.1			1.1			2.1		
				Bottom	11.0	24.7	24.7		8.4	8.4		32.1	32.1		88.2	88.2		6.1	6.1	6.1	3.0	2.9		1.8	1.7	
						24.8			8.4			32.1			88.2			6.0			2.8			1.6		
M3	Sunny	Calm	8:27	Surface	1.0	26.1	26.0		8.4	8.4		30.8	30.8		89.2	89.3		5.9	6.0	5.9	1.0	1.1	1.8	<0.1	<0.1	1.2
						26.0			8.4			30.8			89.3			6.0			1.1			<0.1		
				Middle	4.1	25.8	25.7		8.4	8.4		31.2	31.2		86.4	86.2		5.9	5.9		2.2	2.1		1.4	1.4	
						25.7			8.4			31.2			86.0			5.9			2.1			1.3		
				Bottom	7.0	25.0	25.0		8.5	8.5		31.8	31.8		86.1	86.8		6.0	6.0	6.0	2.4	2.3		2.4	2.3	
						25.0			8.5			31.8			87.5			6.0			2.2			2.2		
M4	Sunny	Calm	7:42	Surface	1.0	25.4	25.4		8.3	8.3		31.0	31.0		83.7	83.9		5.7	5.6	5.7	2.8	2.7	2.3	2.3	2.5	1.8
						25.5			8.3			31.0			84.0			5.6			2.7			2.7		
				Middle	5.1	25.3	25.4		8.3	8.3		31.2	31.2		85.1	84.9		5.8	5.7		2.5	2.5		1.8	1.7	
						25.4			8.3			31.2			84.7			5.7			2.6			1.6		
				Bottom	9.0	25.3	25.3		8.4	8.4		31.5	31.5		88.0	88.1		6.1	6.0	6.0	1.6	1.5		1.2	1.3	
						25.2			8.4			31.5			88.1			5.9			1.5			1.4		
M5	Sunny	Calm	8:45	Surface	1.0	25.7	25.7		8.5	8.5		30.9	30.9		86.7	86.5		6.0	5.9	5.8	1.6	1.6	1.7	1.6	1.8	2.3
						25.6			8.5			30.9			86.2			5.8			1.6			1.9		
				Middle	6.0	25.7	25.6		8.5	8.5		30.9	30.9		85.9	86.0		5.8	5.8		1.7	1.8		2.4	2.3	
						25.6			8.5			30.9			86.0			5.9			1.8			2.1		
				Bottom	11.0	25.7	25.6		8.4	8.4		30.9	30.9		85.7	85.7		5.8	5.8	5.8	1.8	1.8		2.8	3.0	
						25.6			8.4			30.9			85.7			5.8			1.8			3.1		
M6	Sunny	Calm	8:42	Surface	-	-	-		-	-		-	-		-	-		-	-	6.1	-	-	1.2	-	-	1.7
						-			-			-			-			-			-			-		
				Middle	2.0	25.8	25.8		8.4	8.4		31.2	31.2		90.1	90.1		6.0	6.1		8.0	8.0		1.8	1.7	
						25.9			8.5			31.2			90.1			6.1			8.0			1.5		
				Bottom	-	-	-		-	-		-	-		-	-		-	-	-	-	-		-	-	
						-			-			-			-			-			-			-		

Remarks: *DA: Depth-Averaged

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

Action and Limit Levels for Marine Water Quality on 30 May 2022 (Mid-Flood Tide)

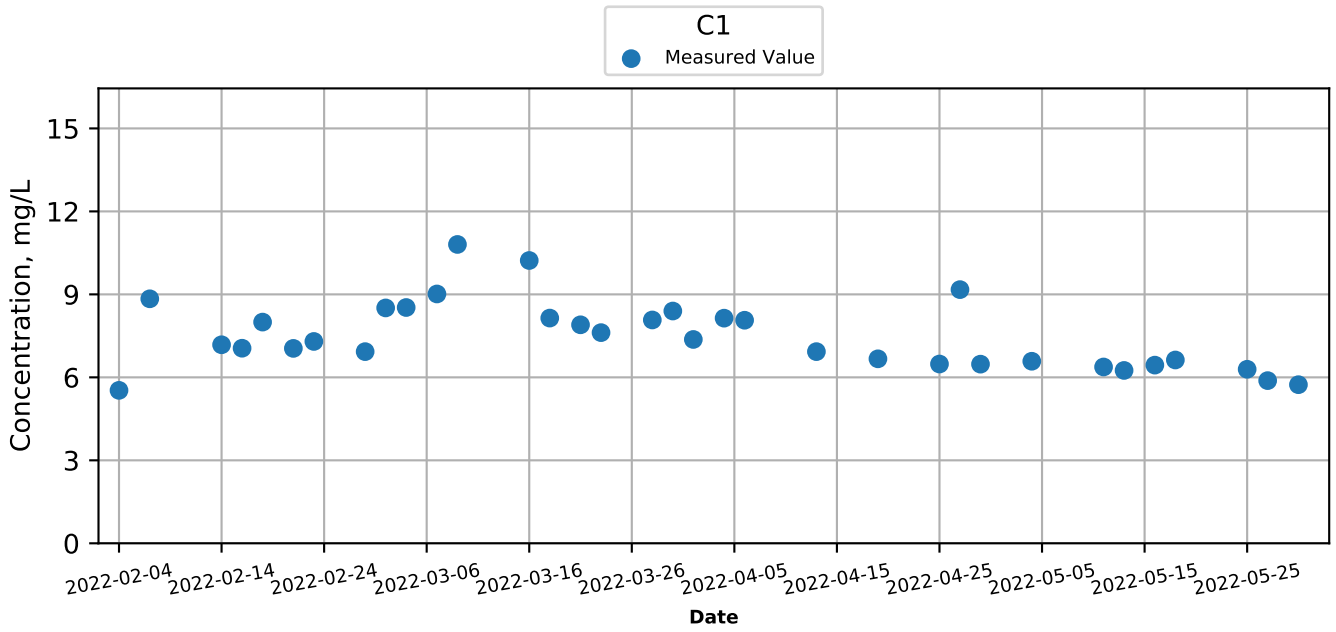
Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU***	***22.2 NTU***
		or 120% of upstream control station's Turbidity at the same tide of the same day	or 130% of upstream control station's Turbidity at the same tide of the same day
		C1: 4.1 NTU	***C1: 4.4 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L***	***6.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.4 mg/L	***C1: 3.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L***	***7.4 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 3.4 mg/L	***C1: 3.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L***	***7.9 mg/L***
		or 120% of upstream control station's SS at the same tide of the same day	or 130% of upstream control station's SS at the same tide of the same day
		C1: 2.0 mg/L	***C1: 2.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

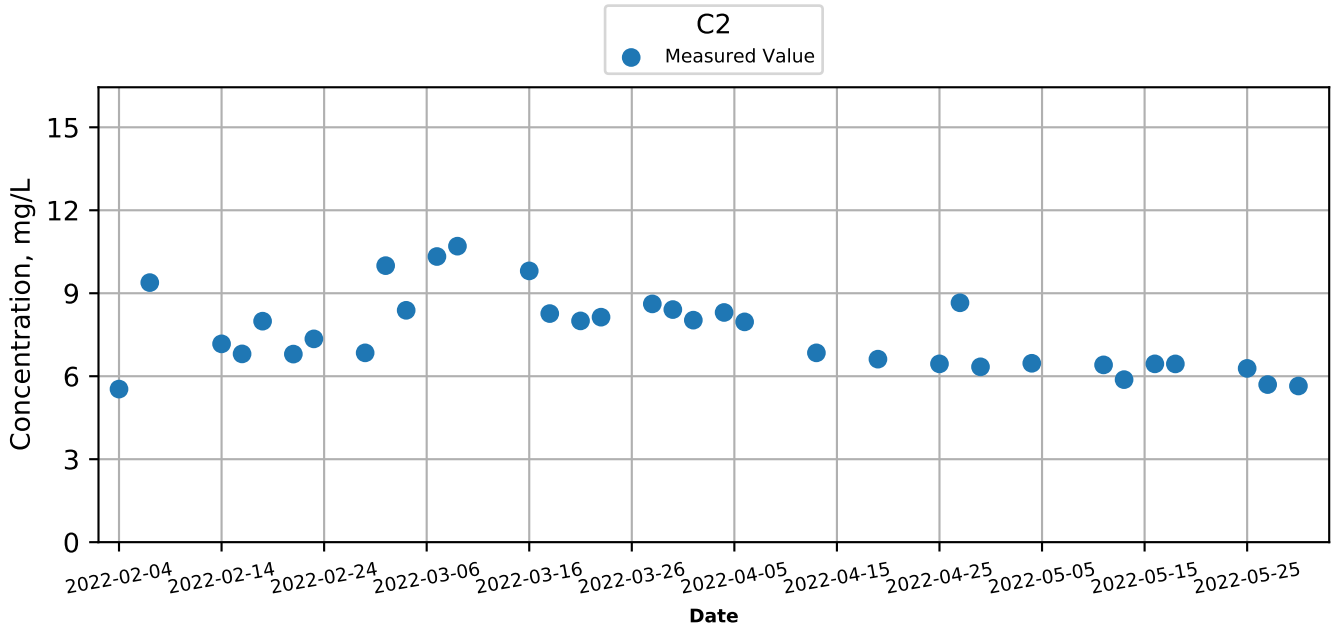
Notes:

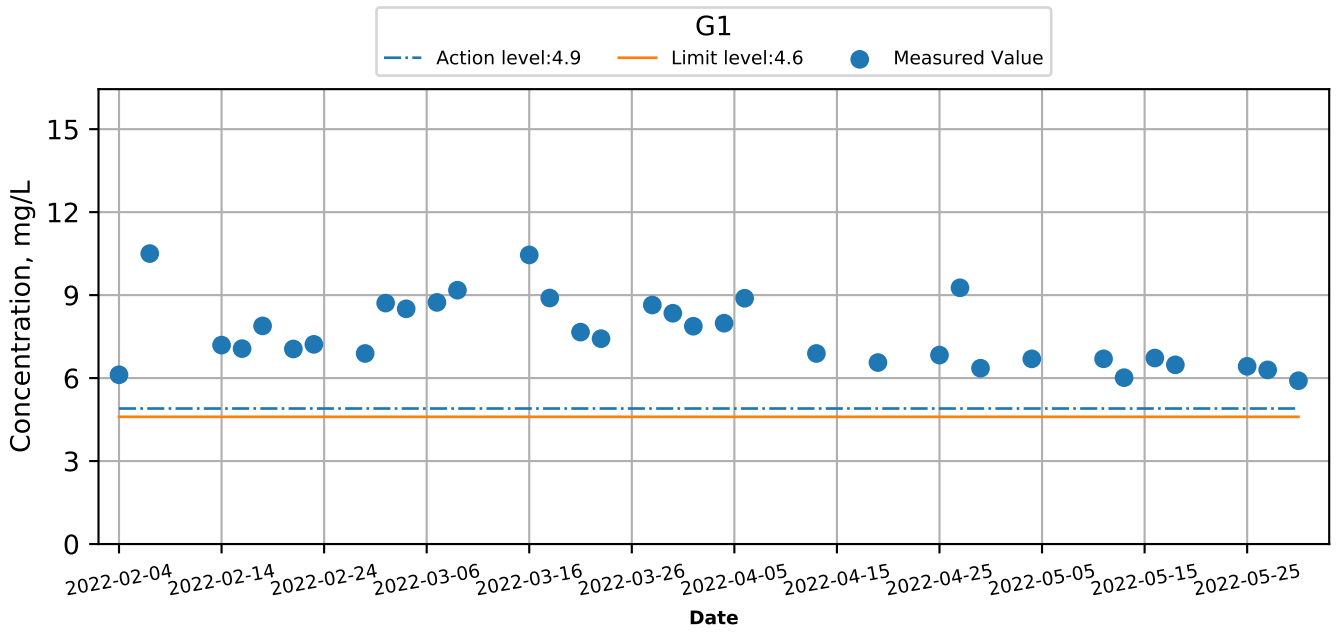
1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Ebb

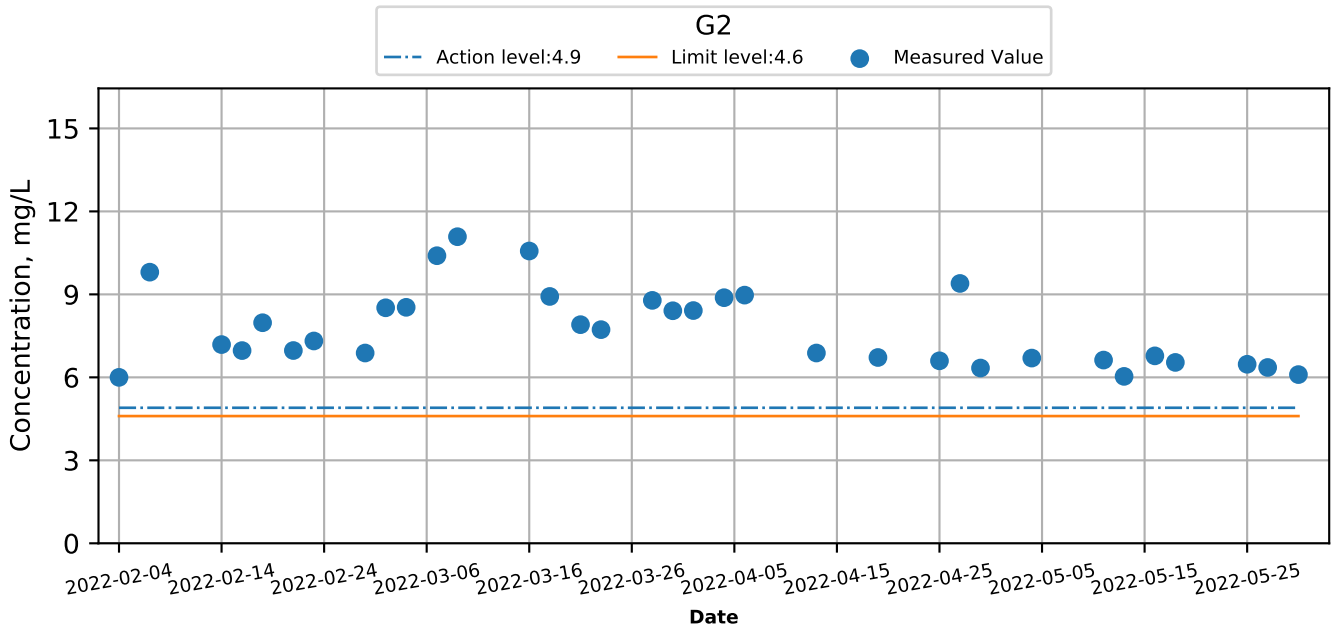


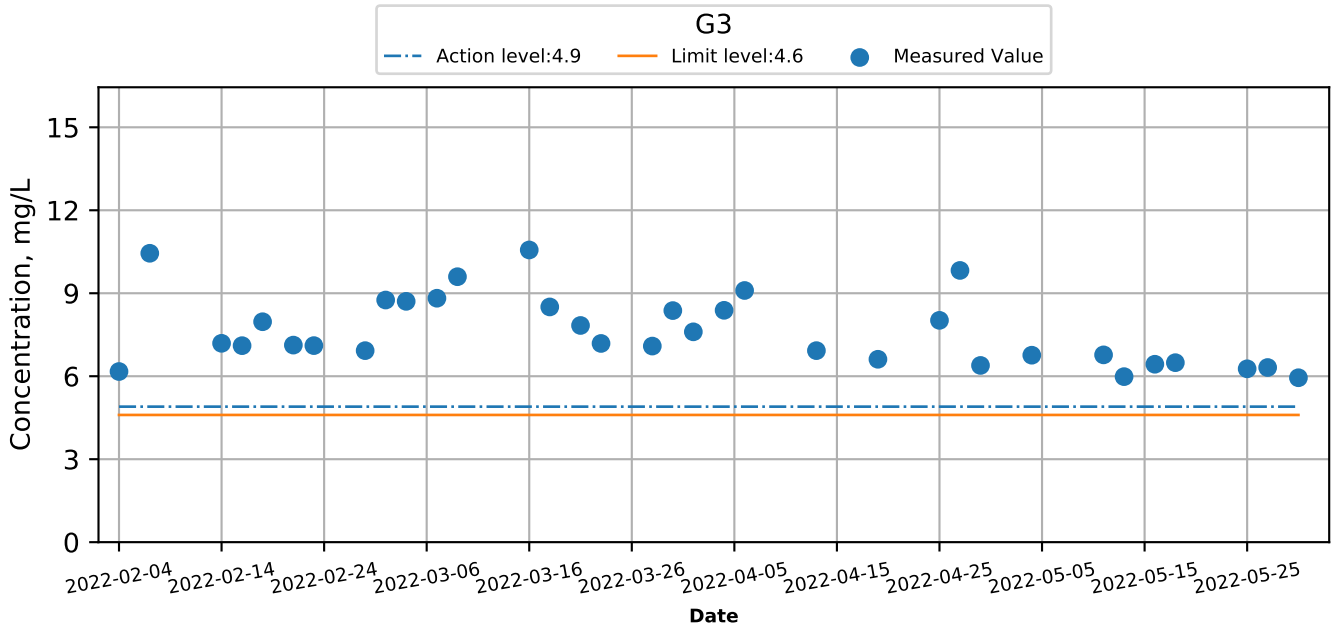


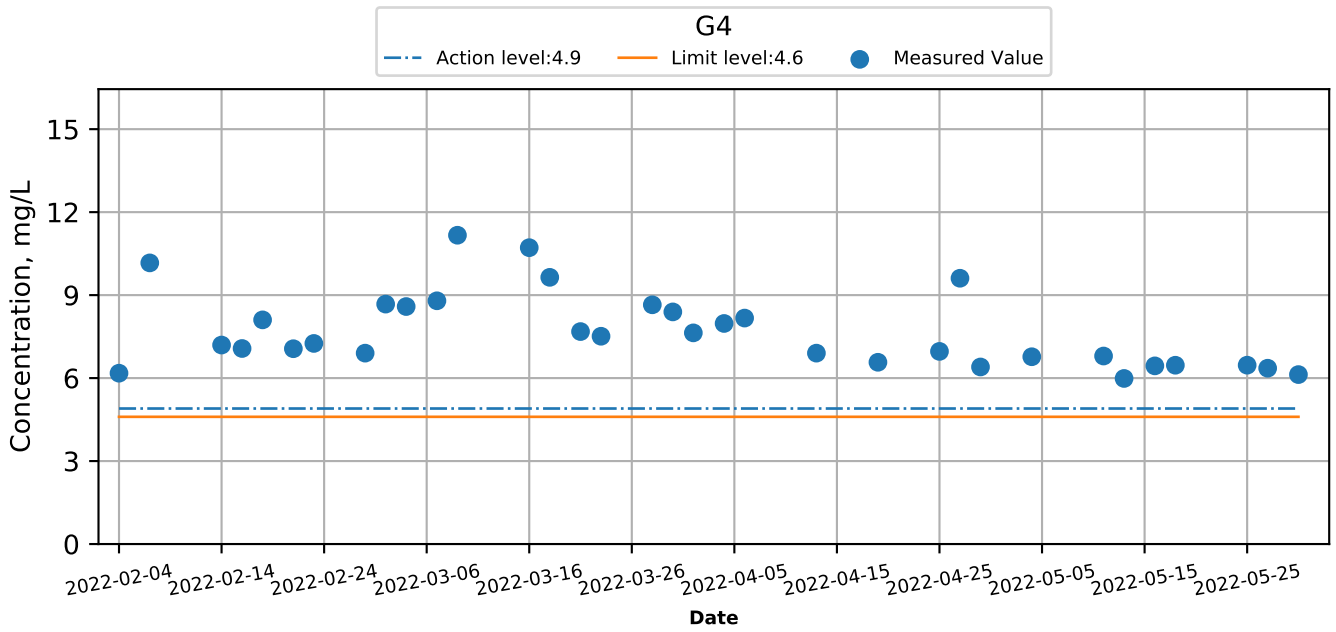


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Ebb

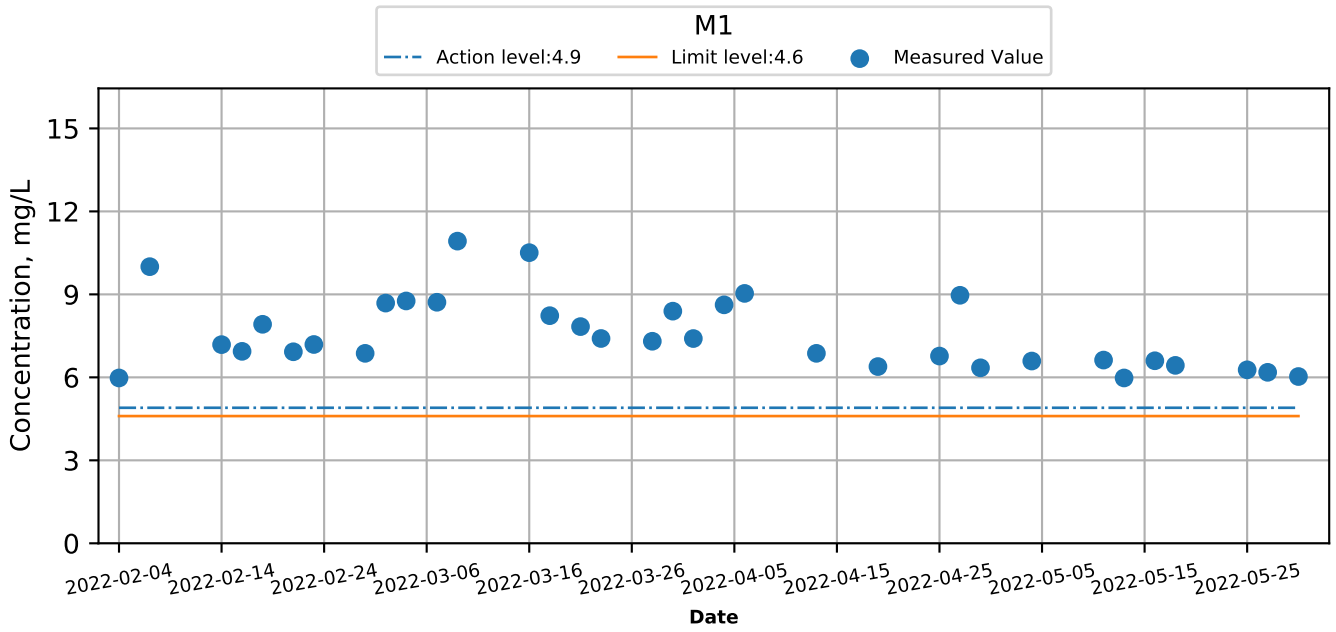


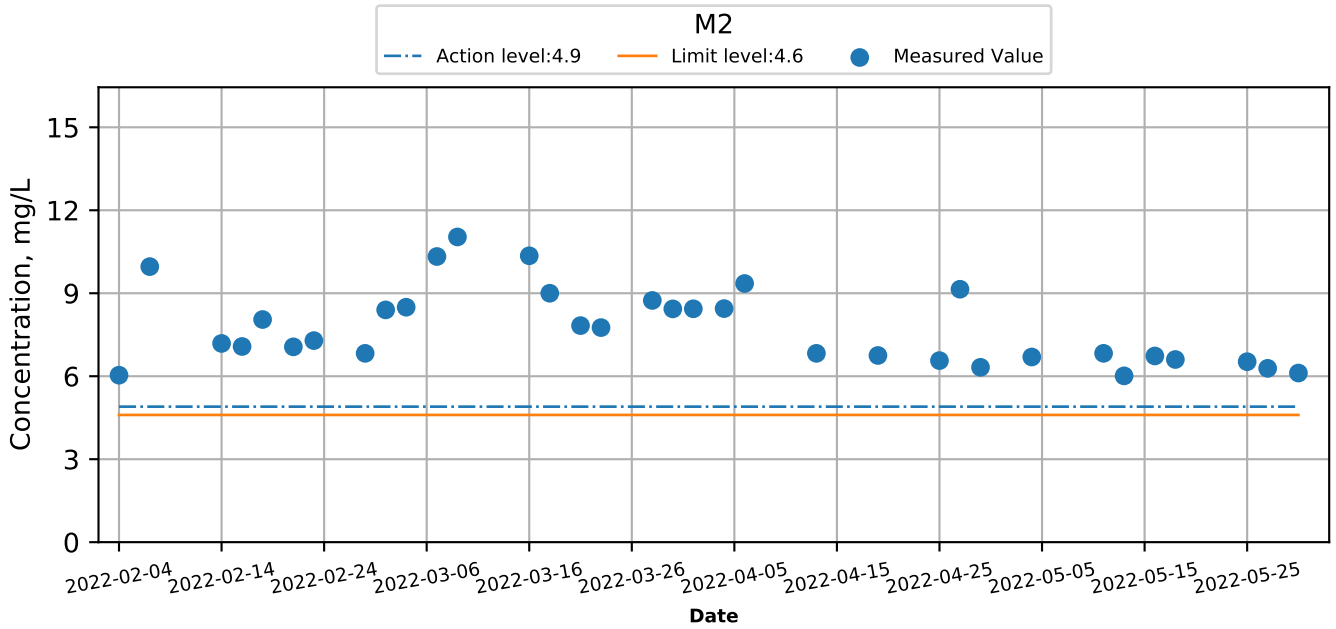


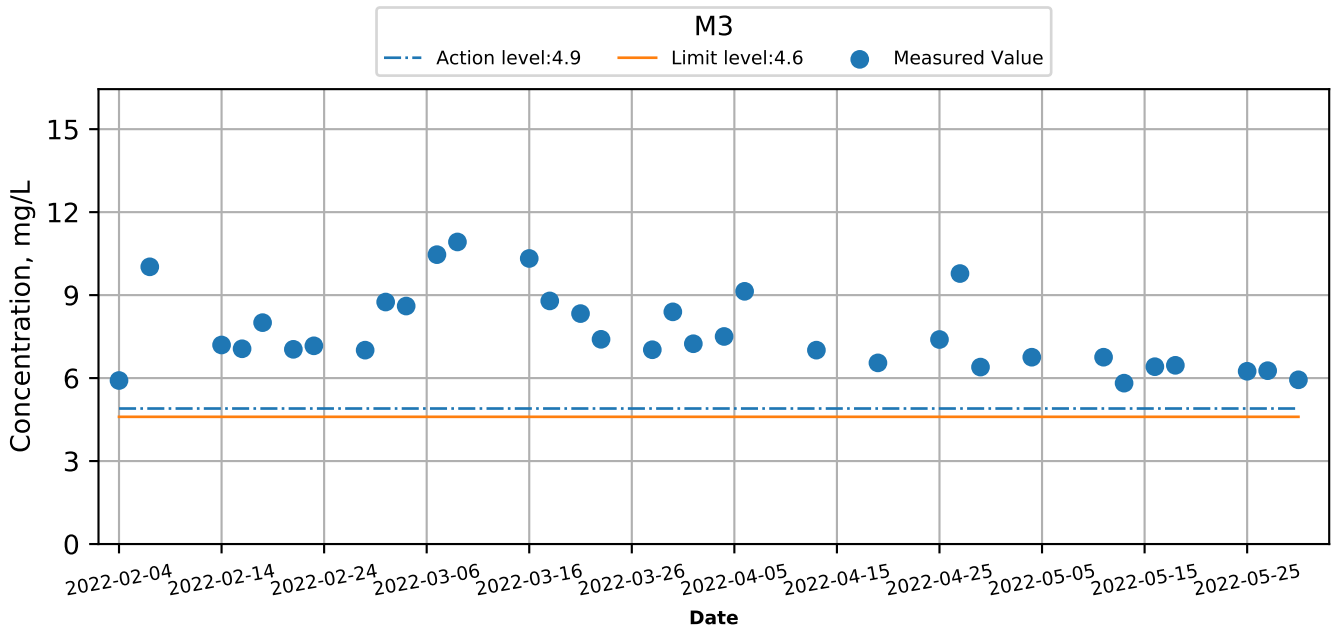


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Ebb

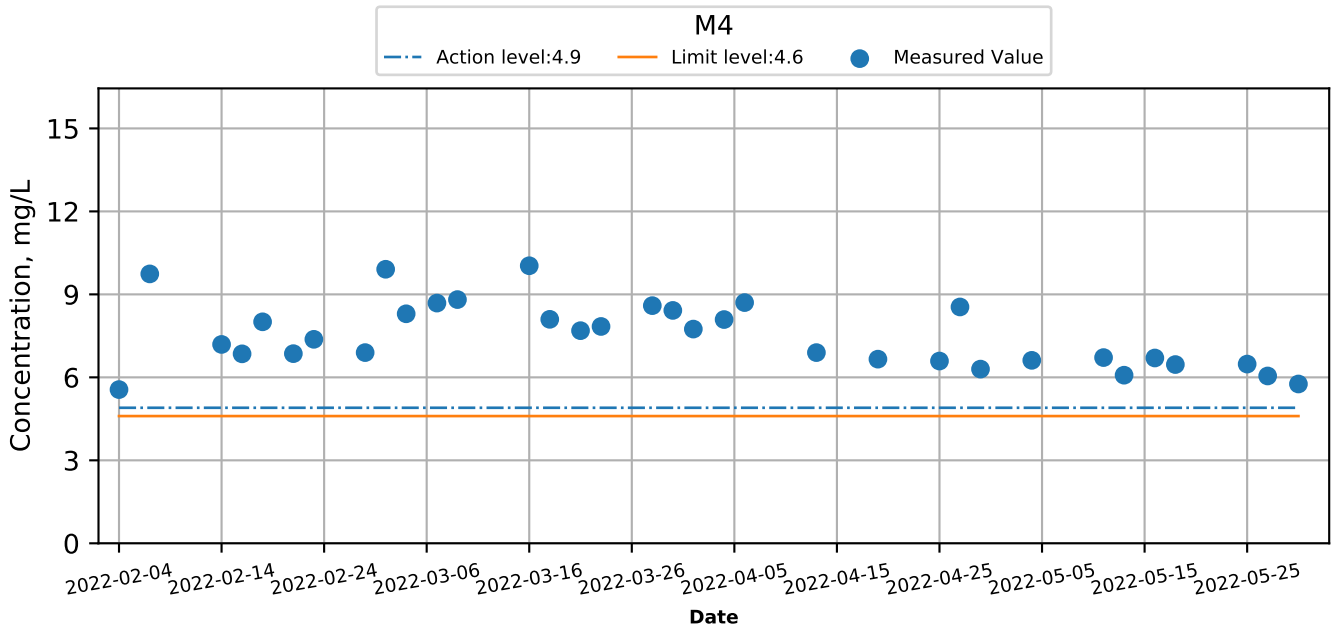


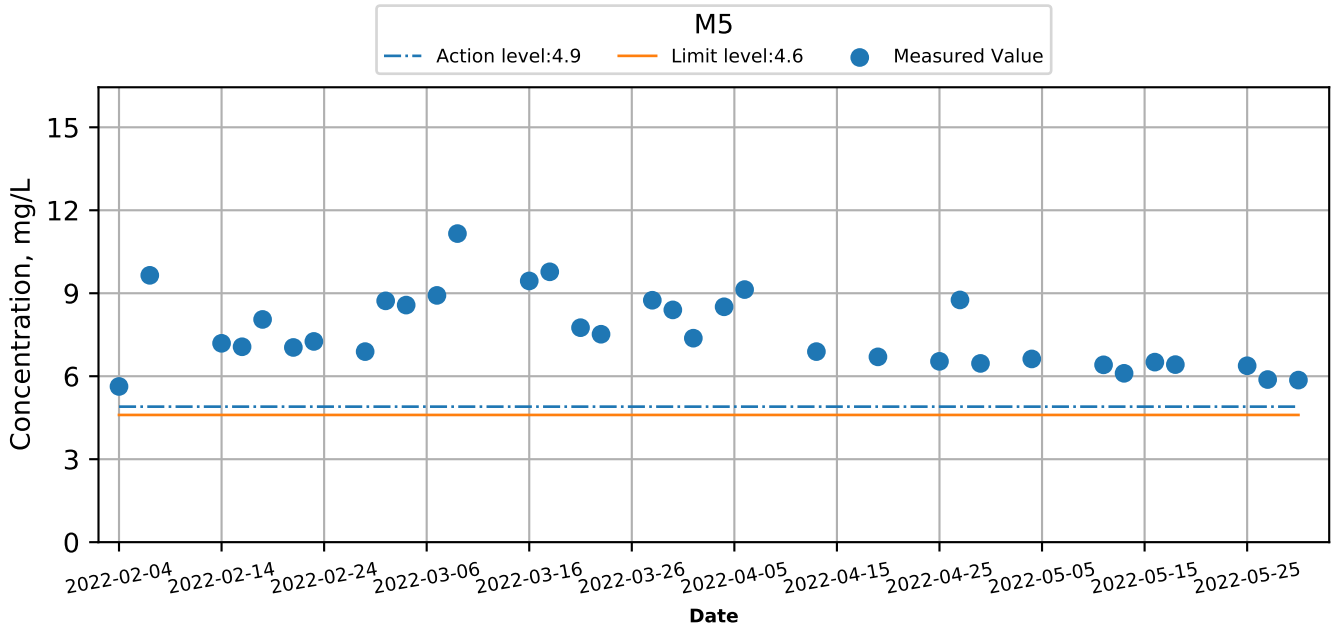




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

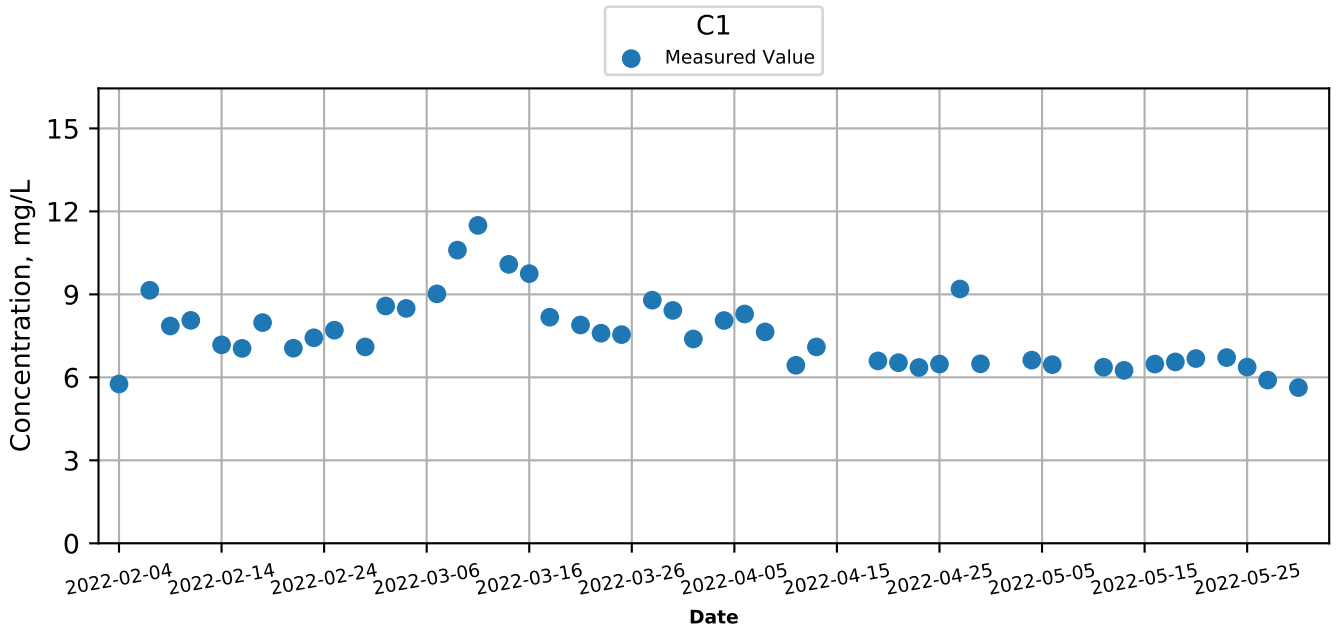
Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Ebb

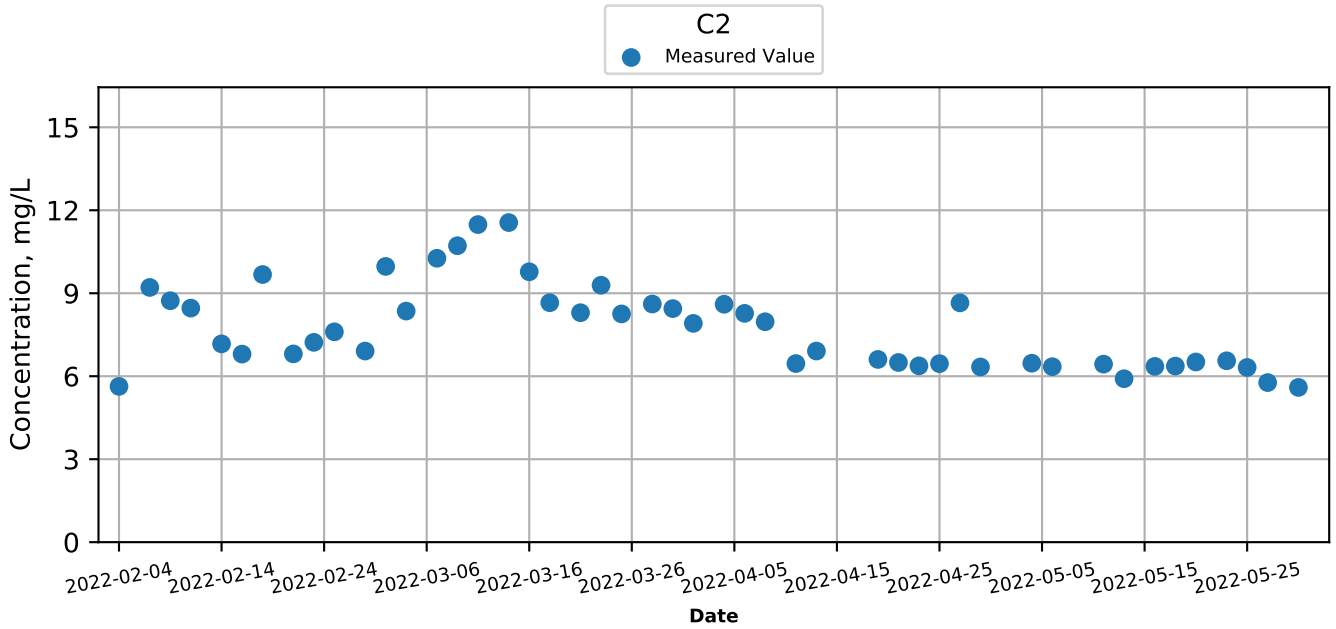


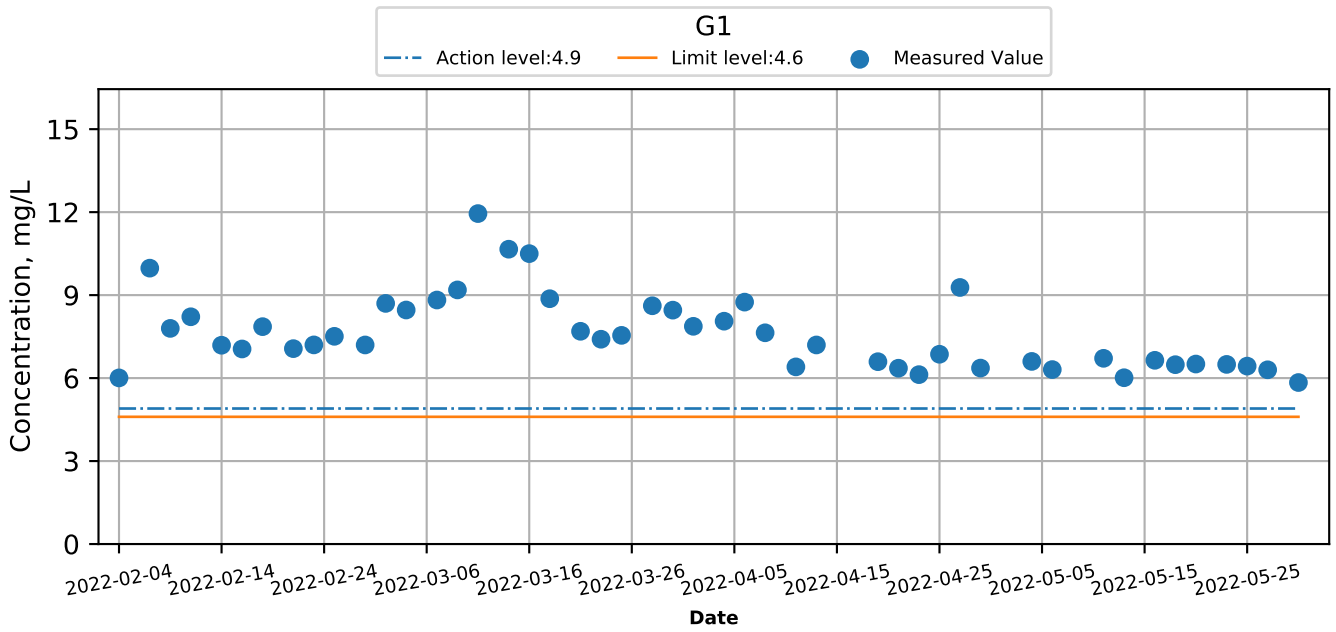


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Flood

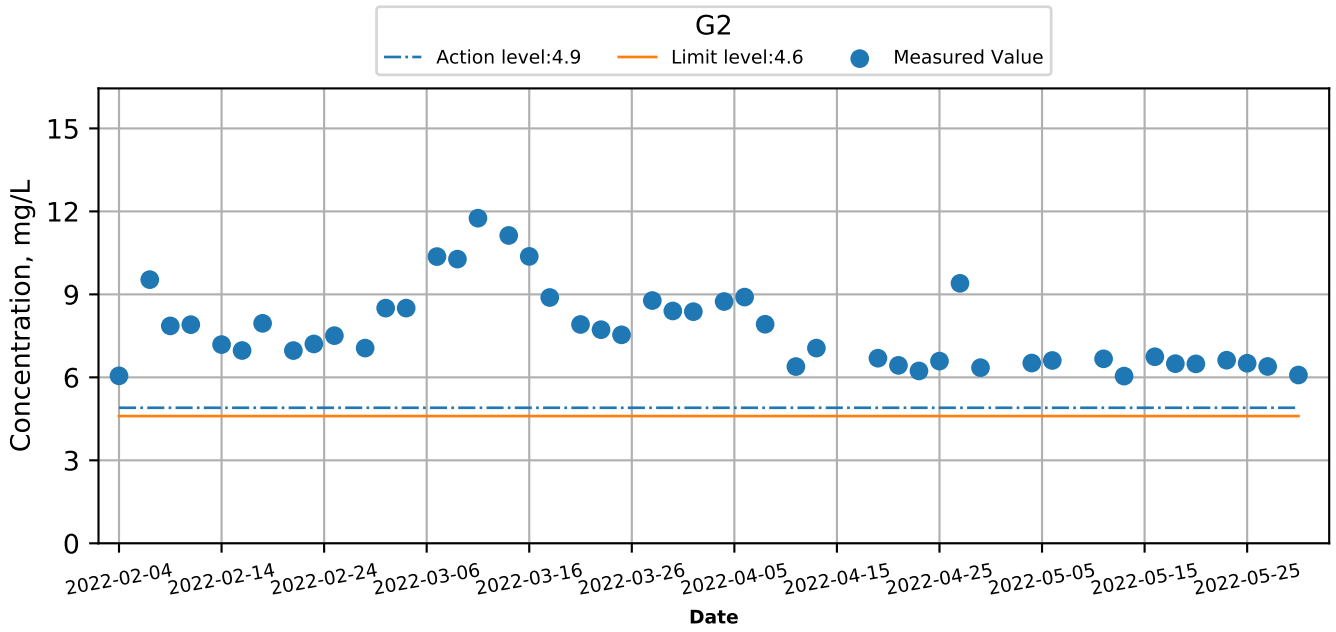


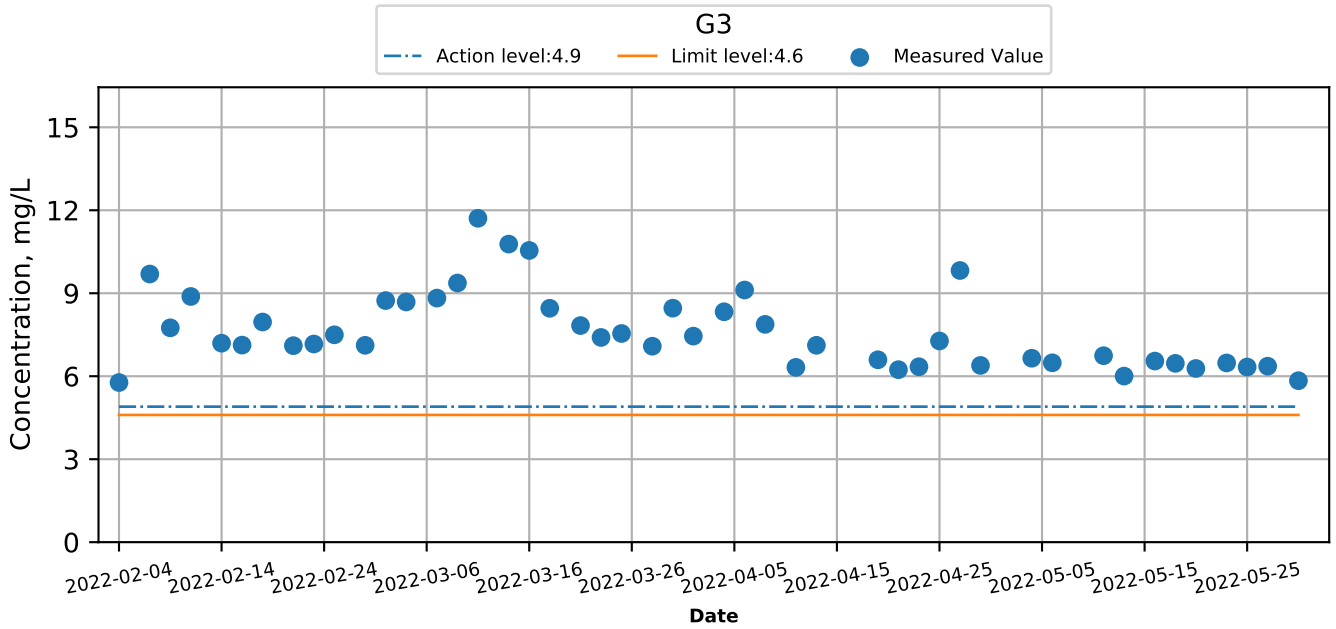


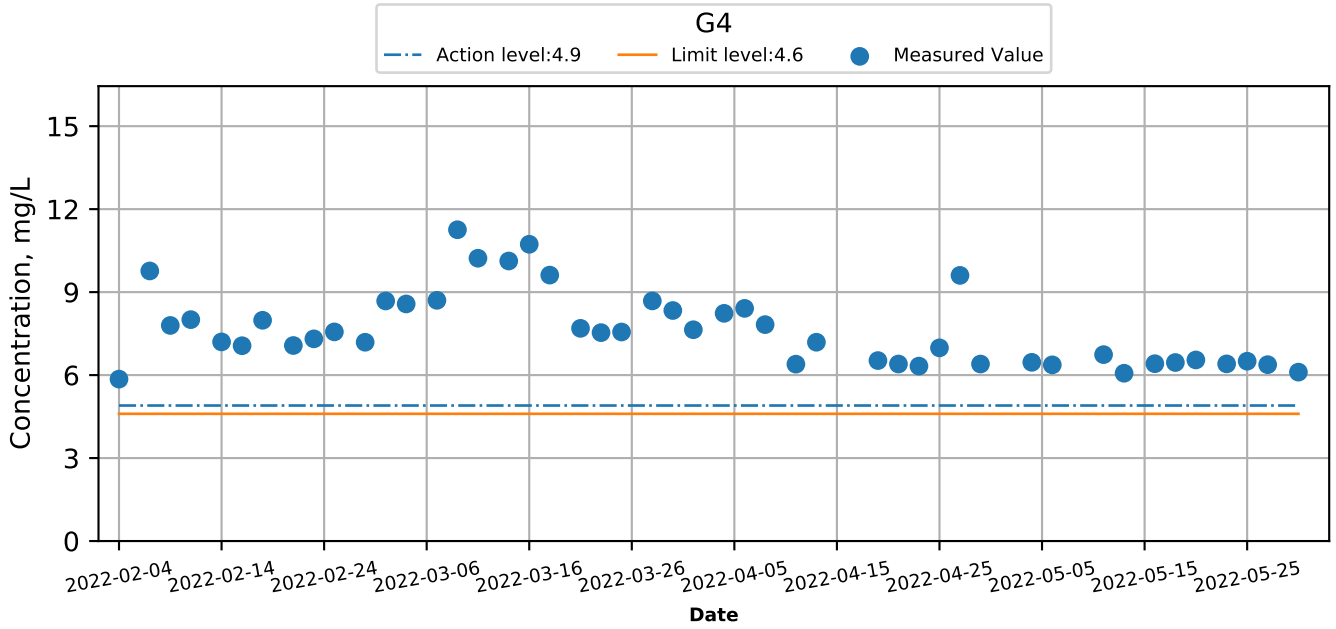


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Flood

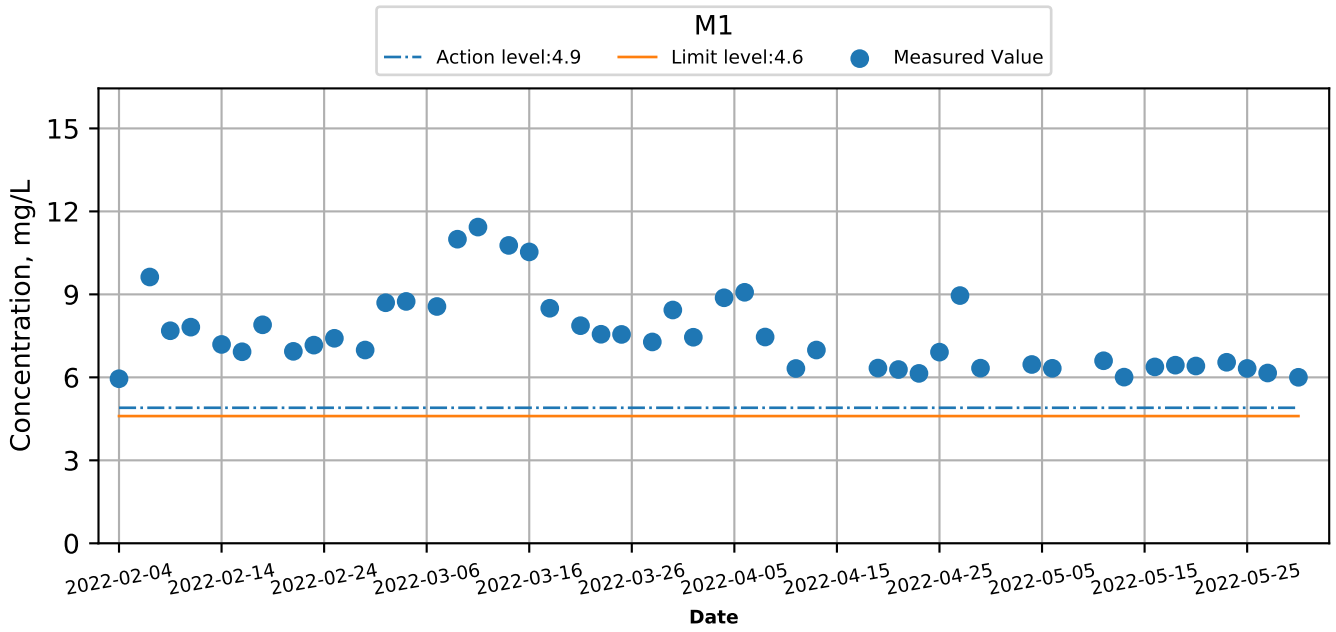


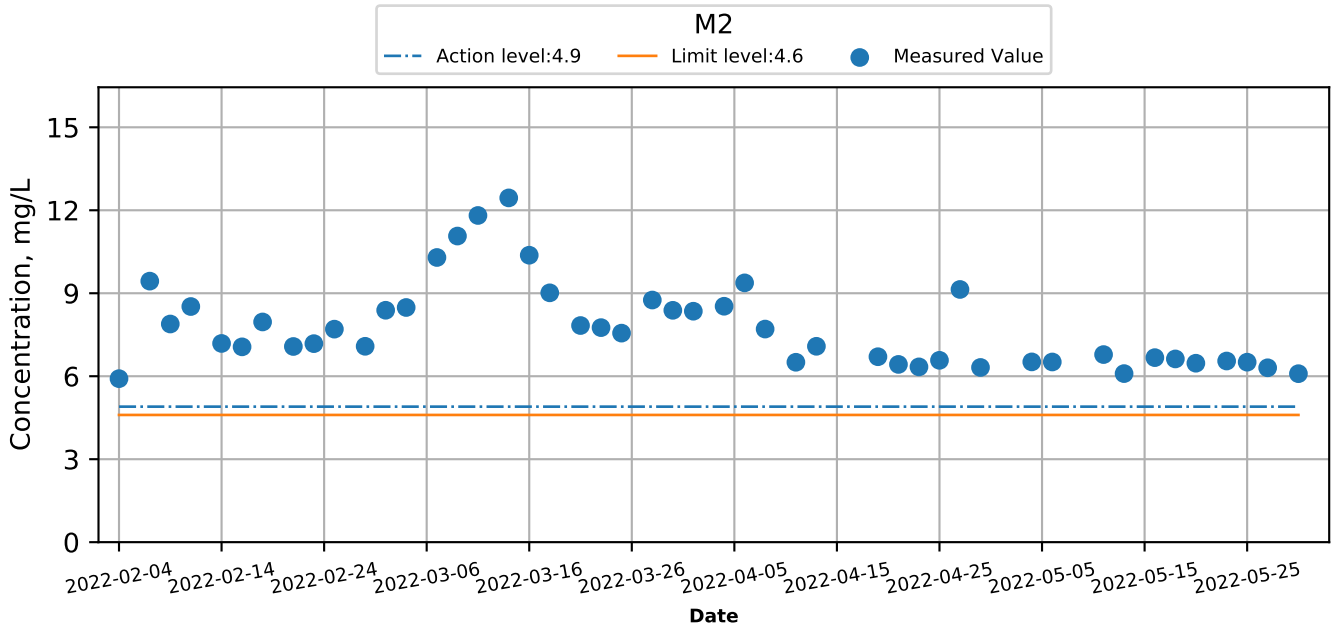


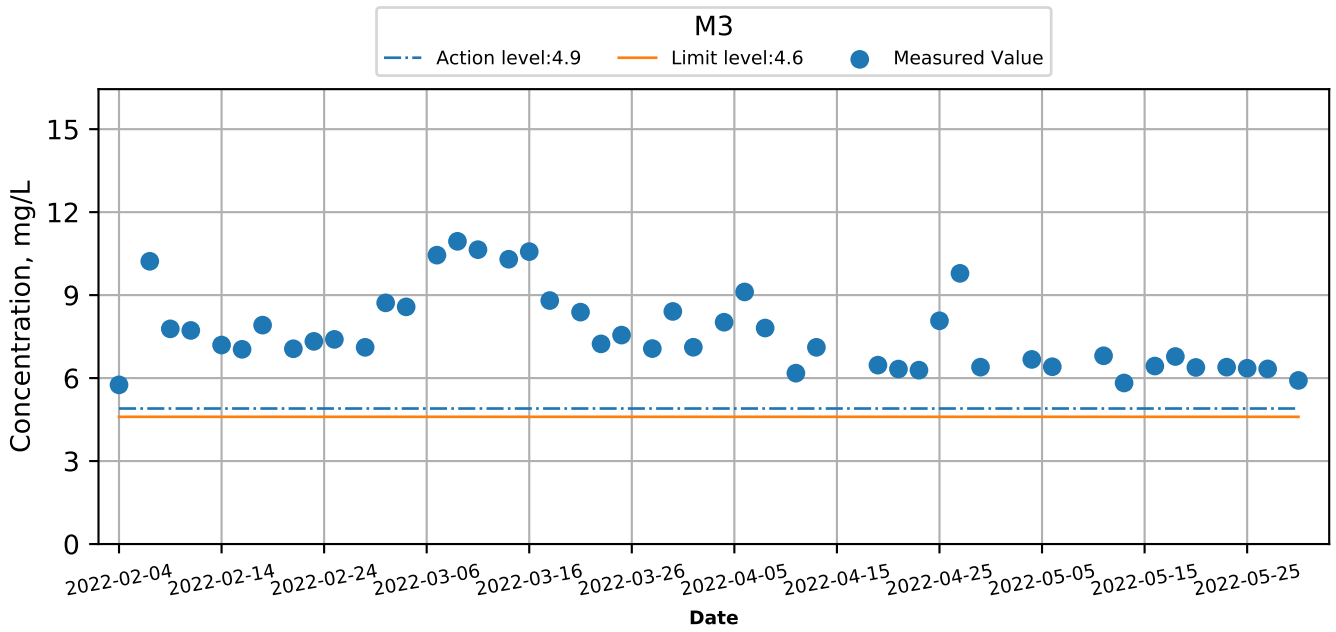


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Flood

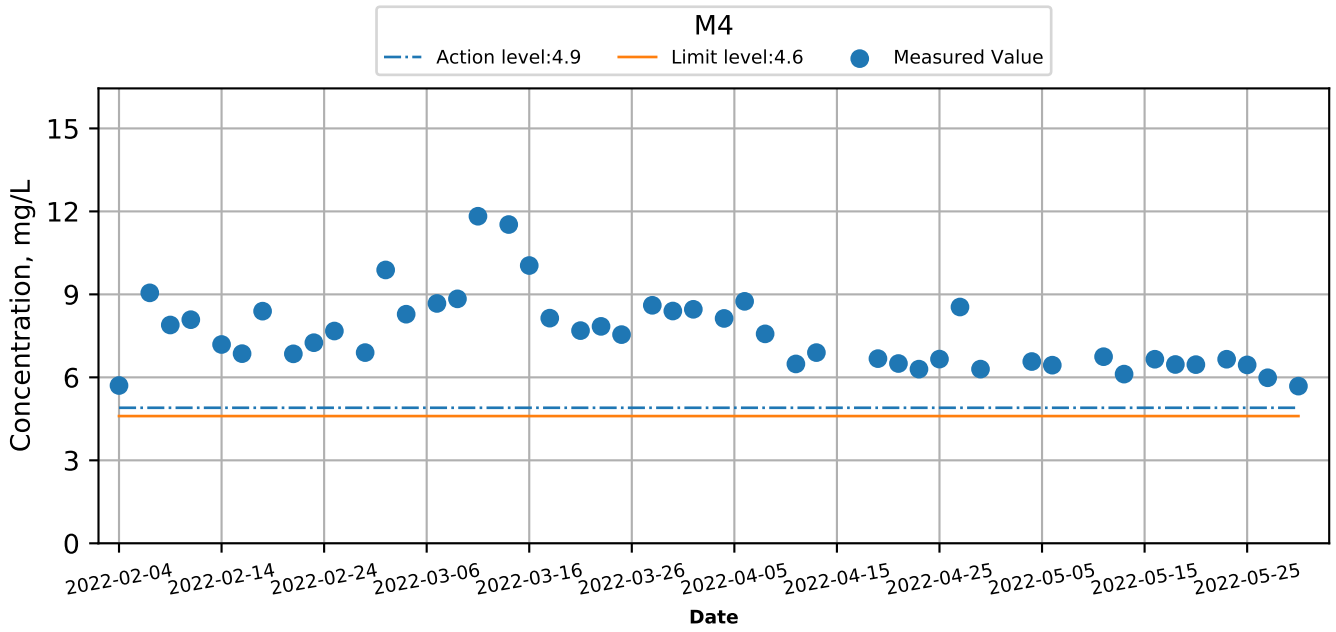


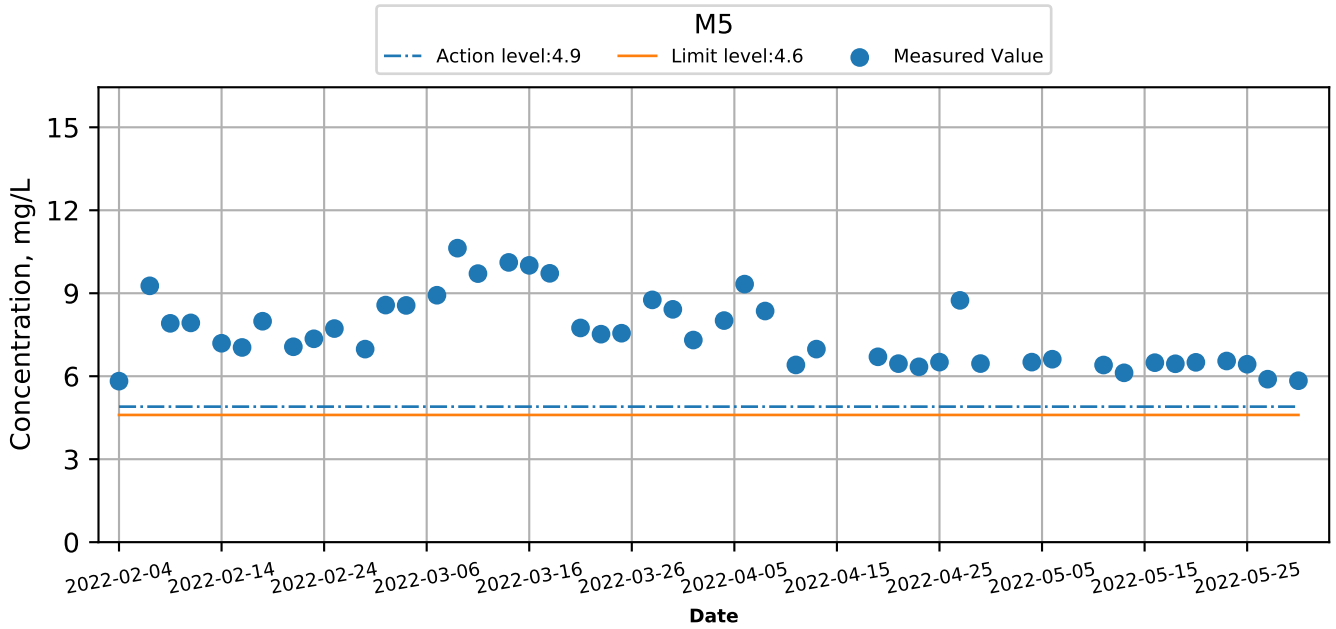




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

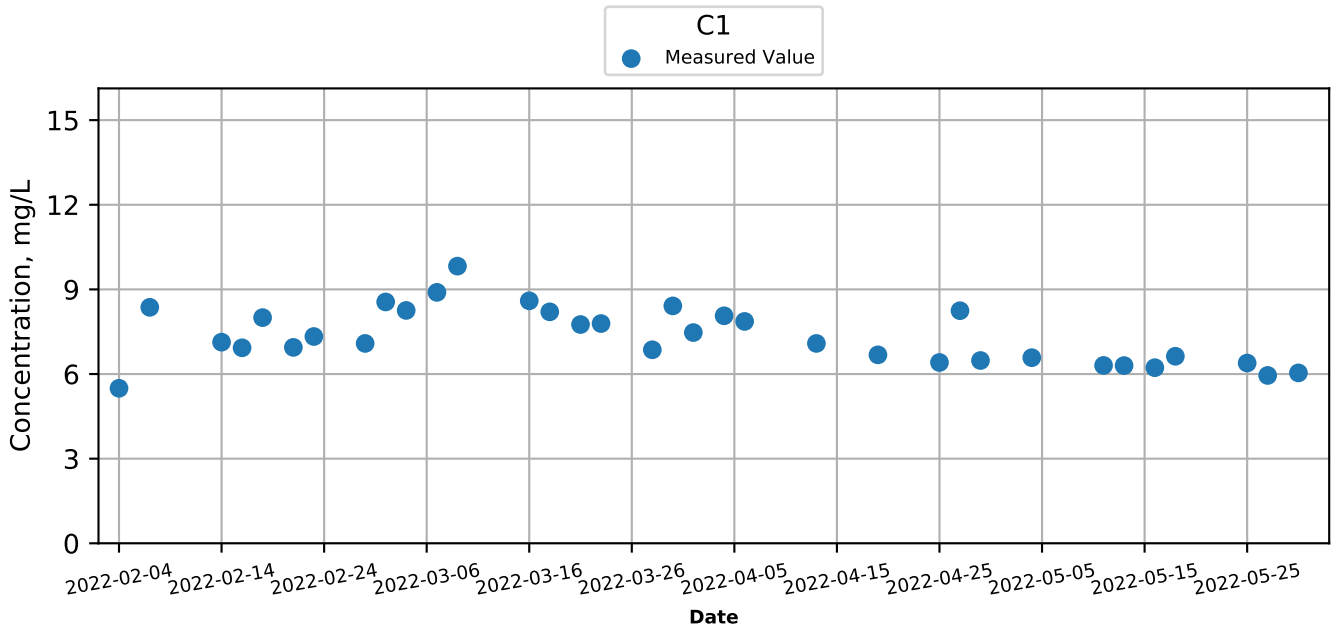
Dissolved Oxygen (Depth-Averaged) at Monitoring Stations during Mid-Flood

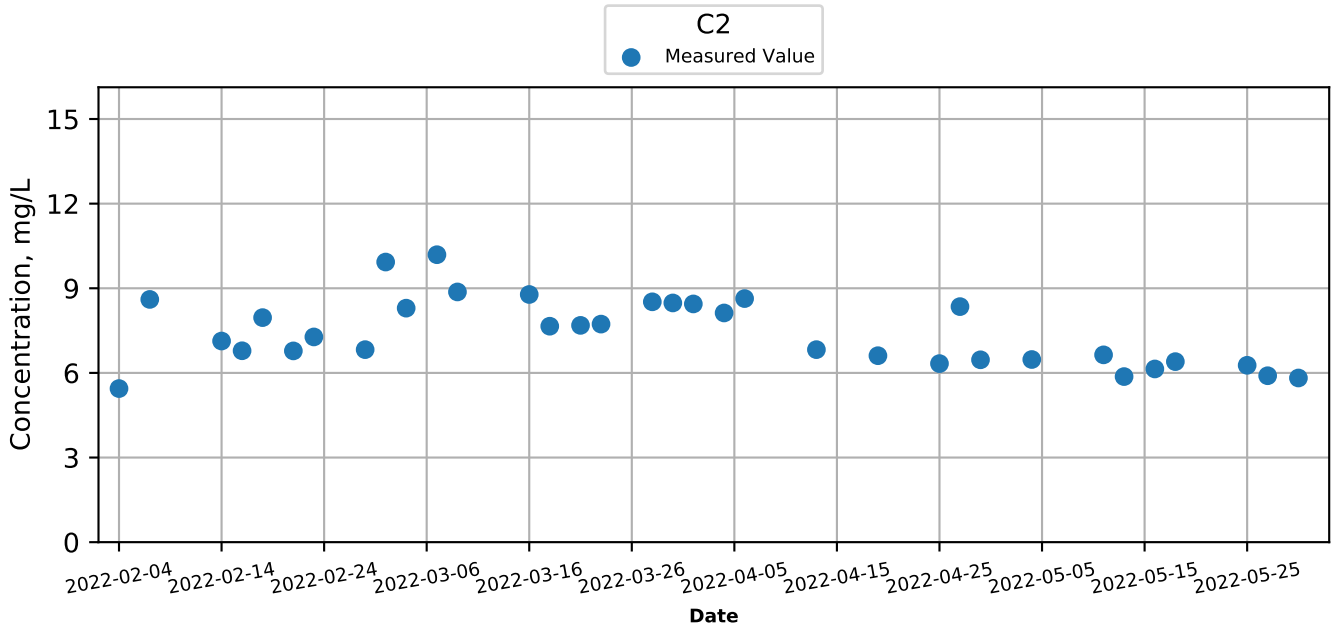


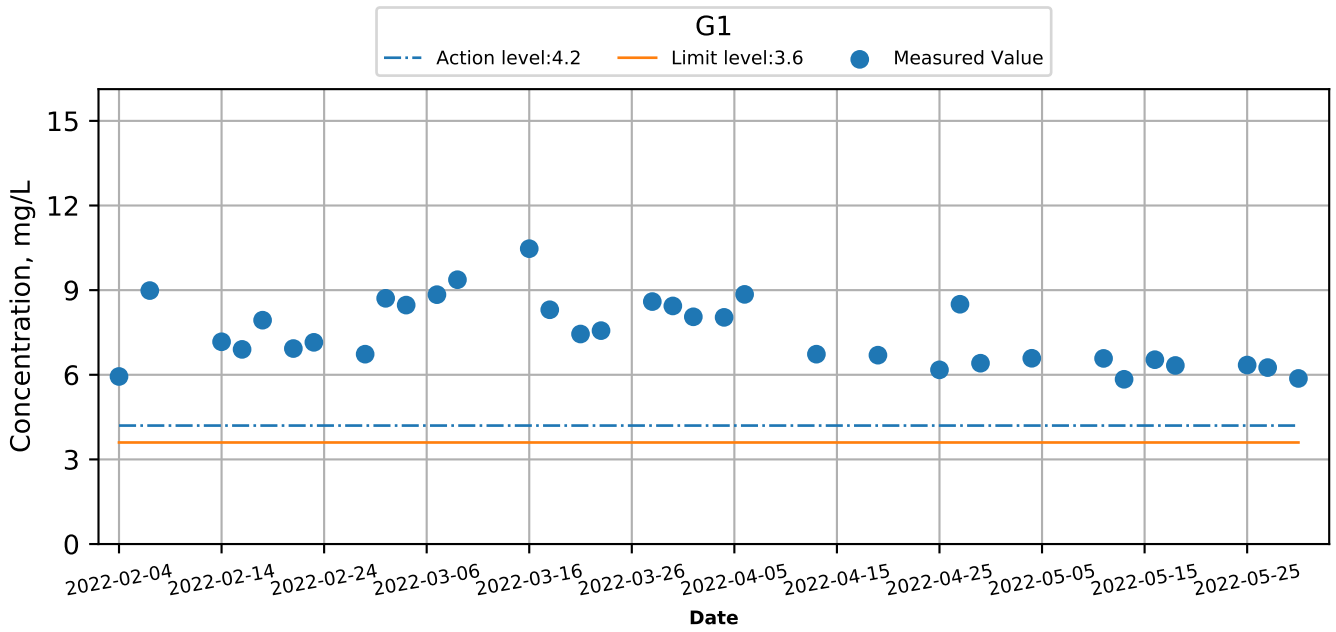


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Ebb

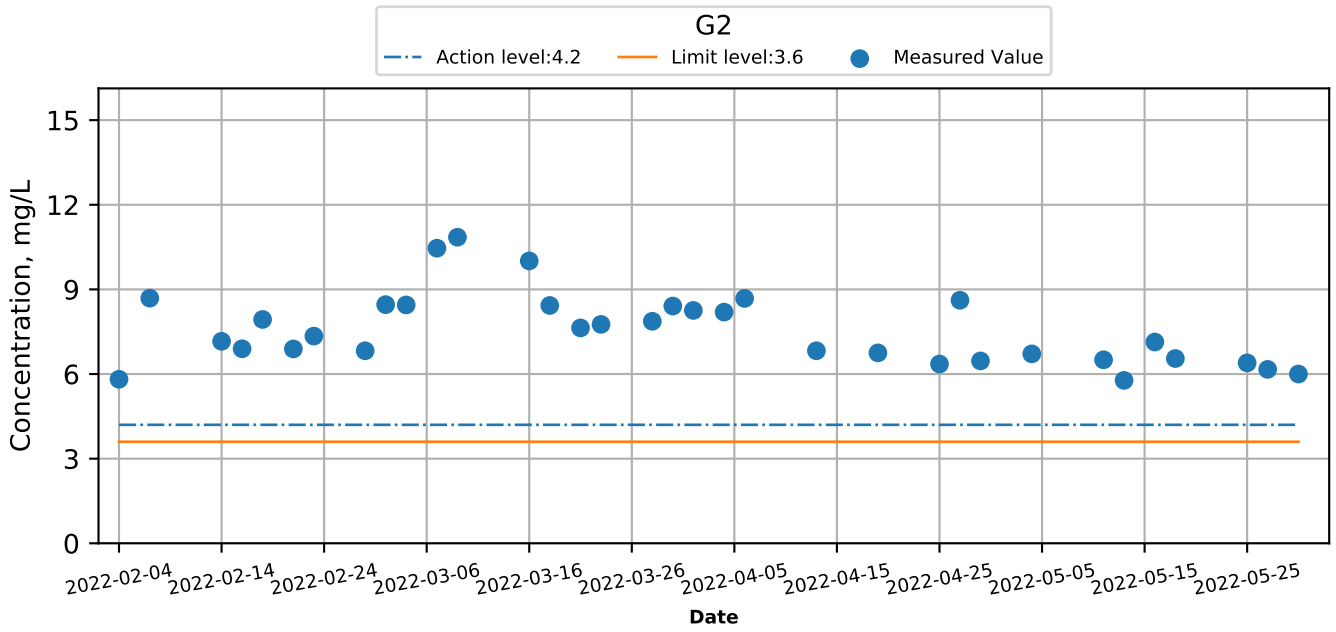


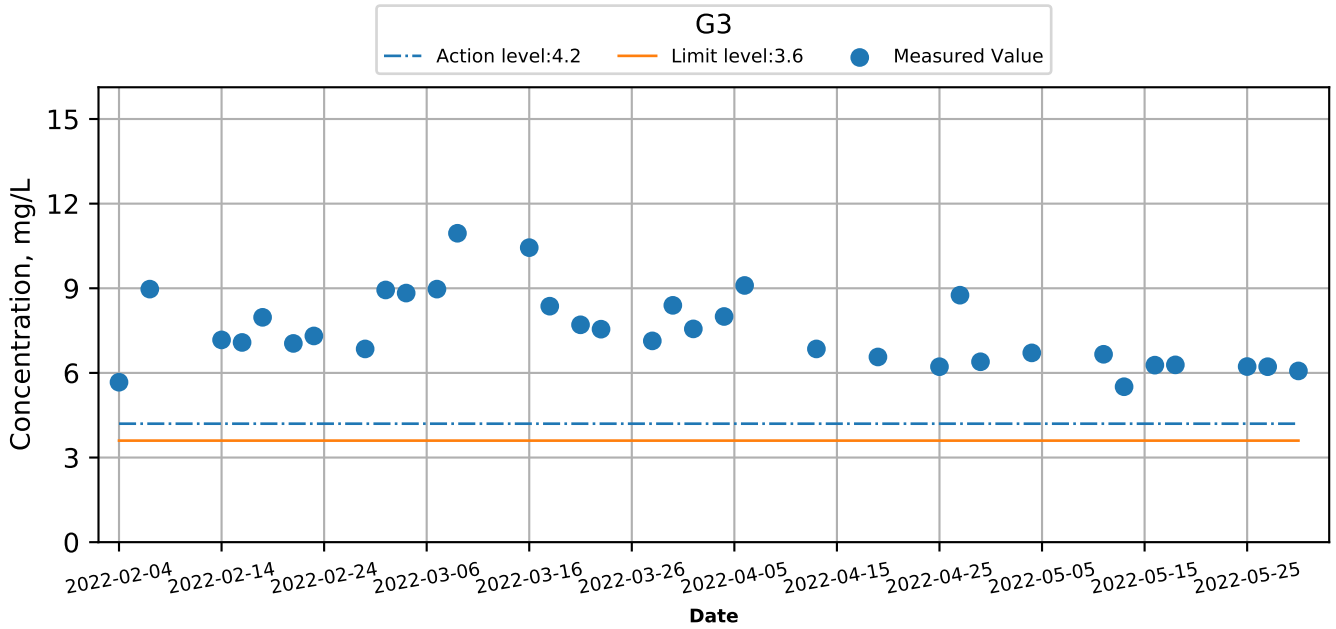


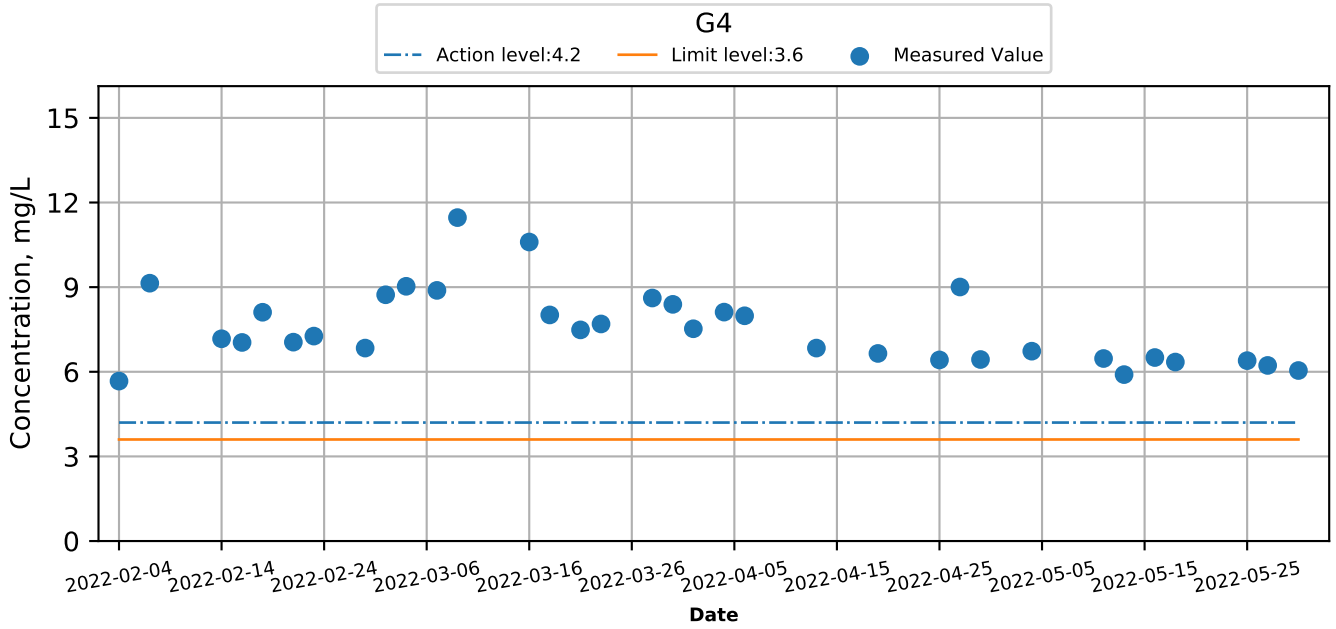


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Ebb

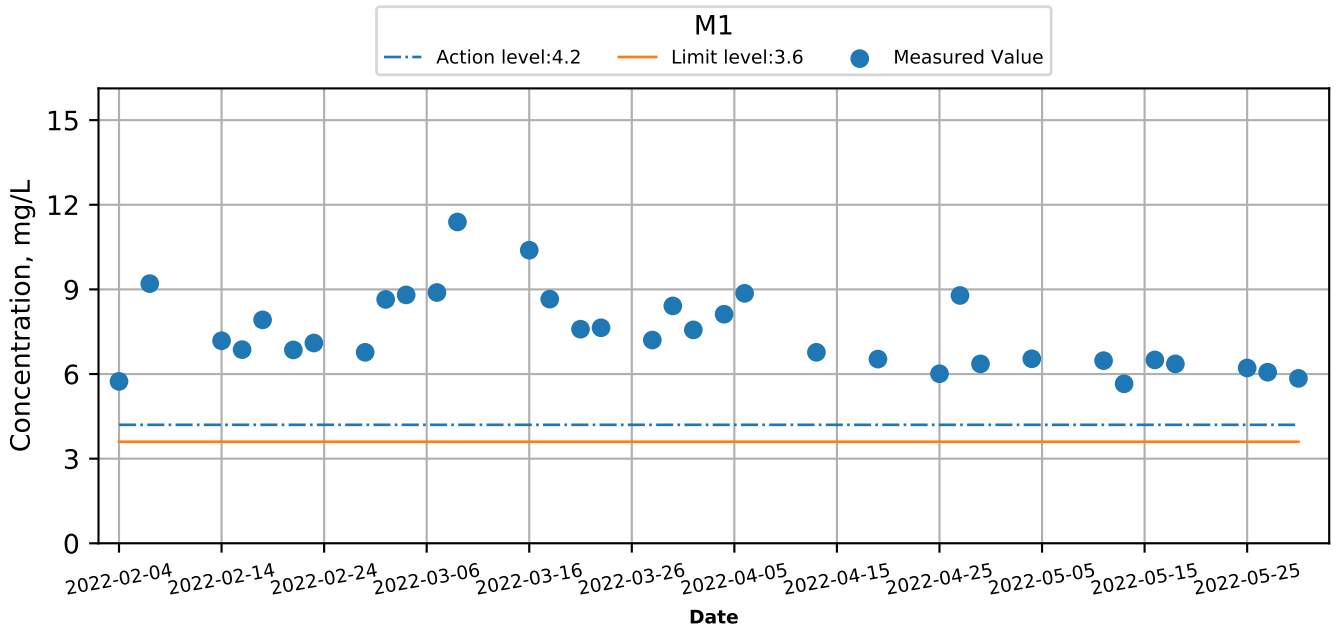


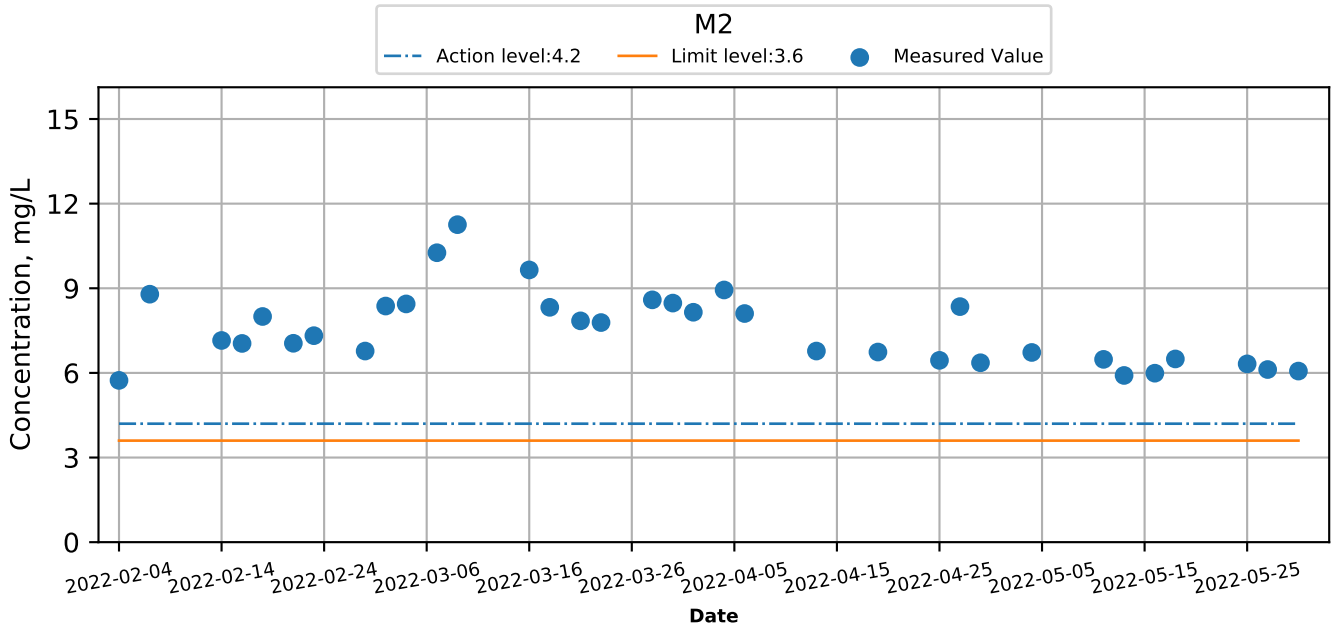


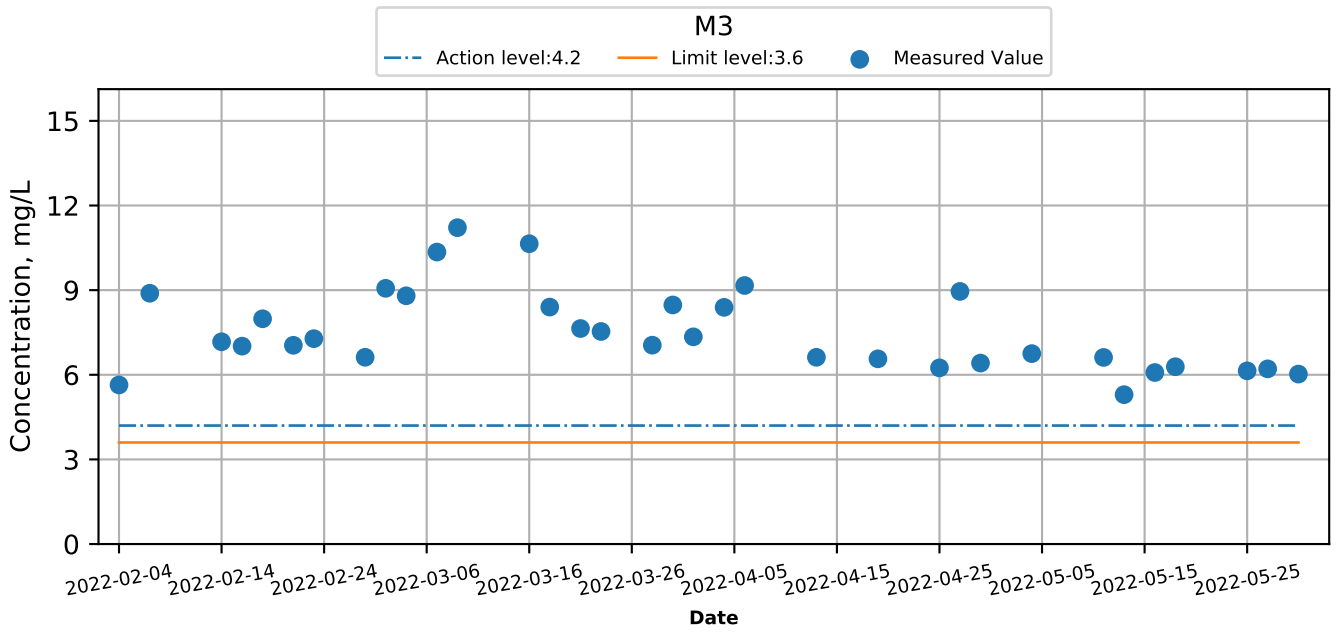


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Ebb

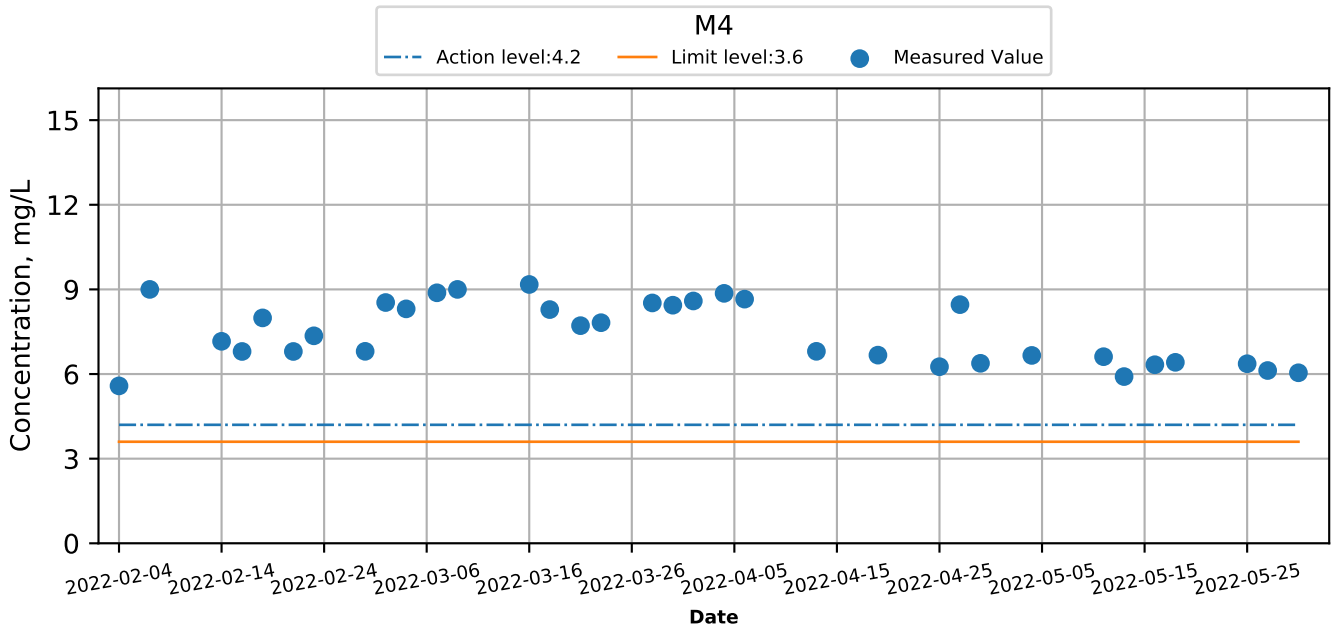


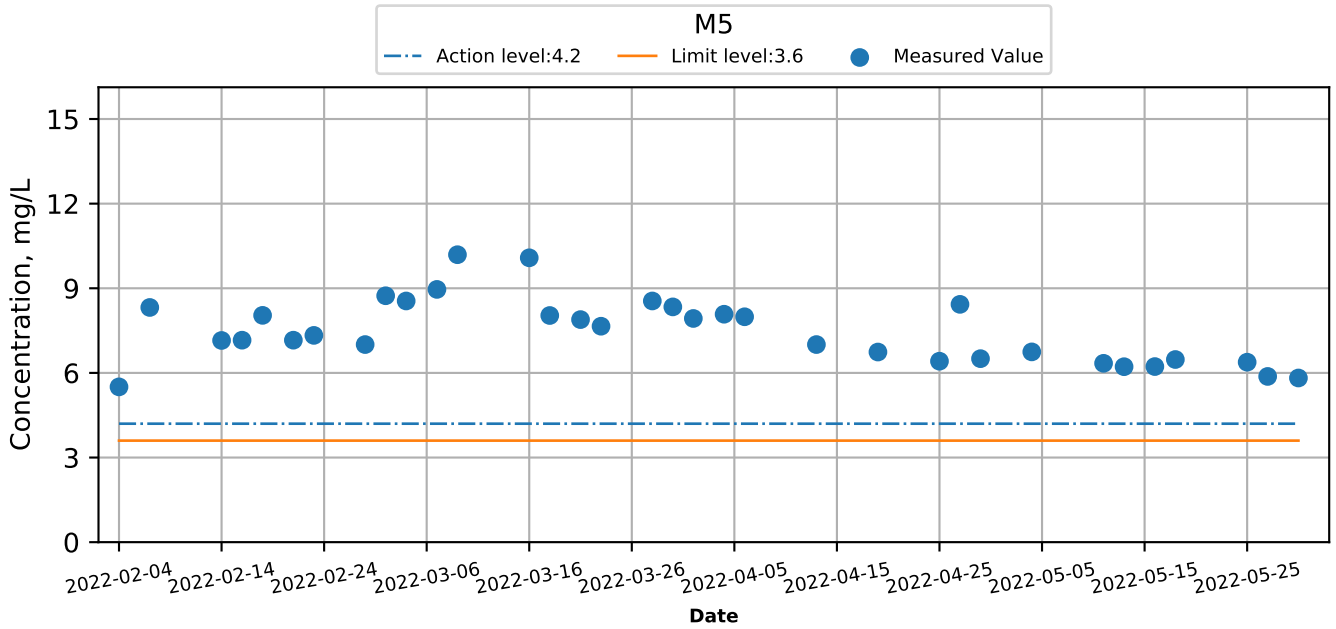




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

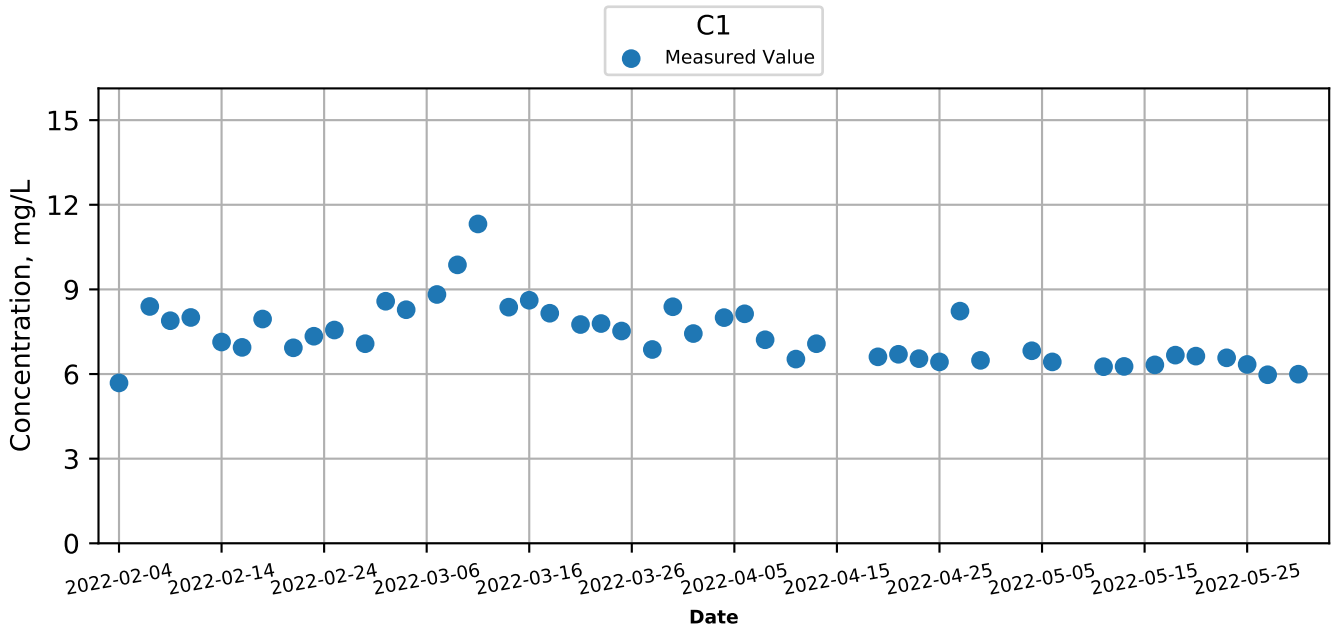
Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Ebb

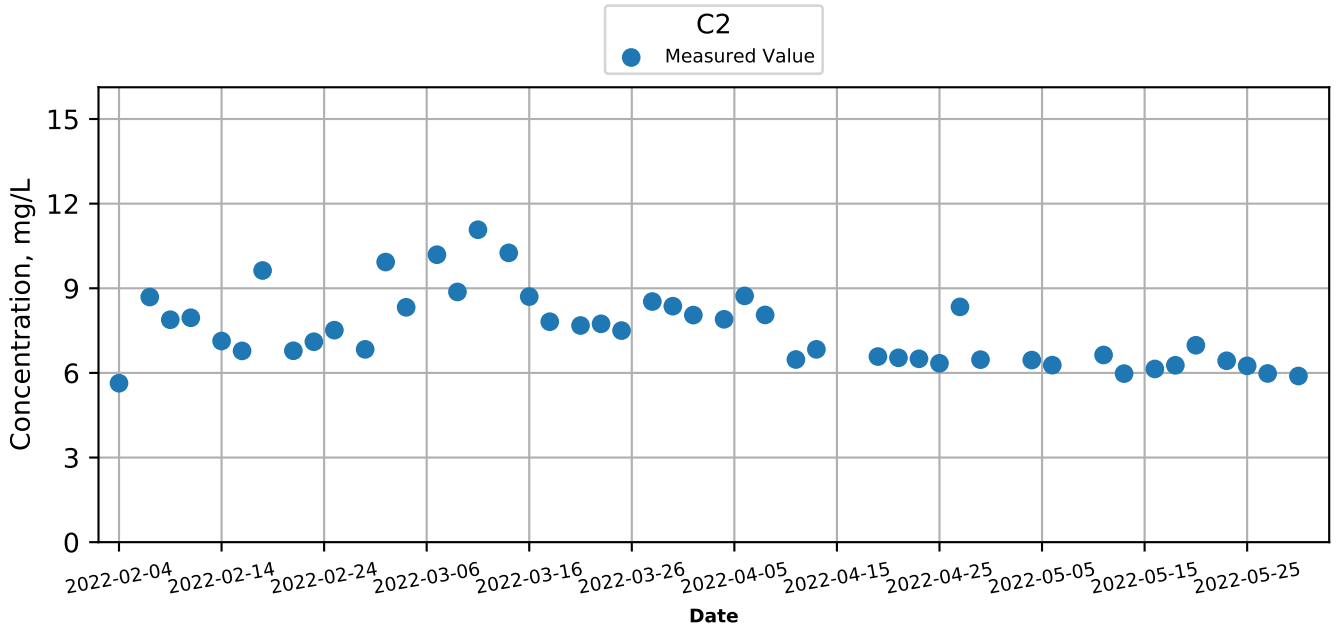


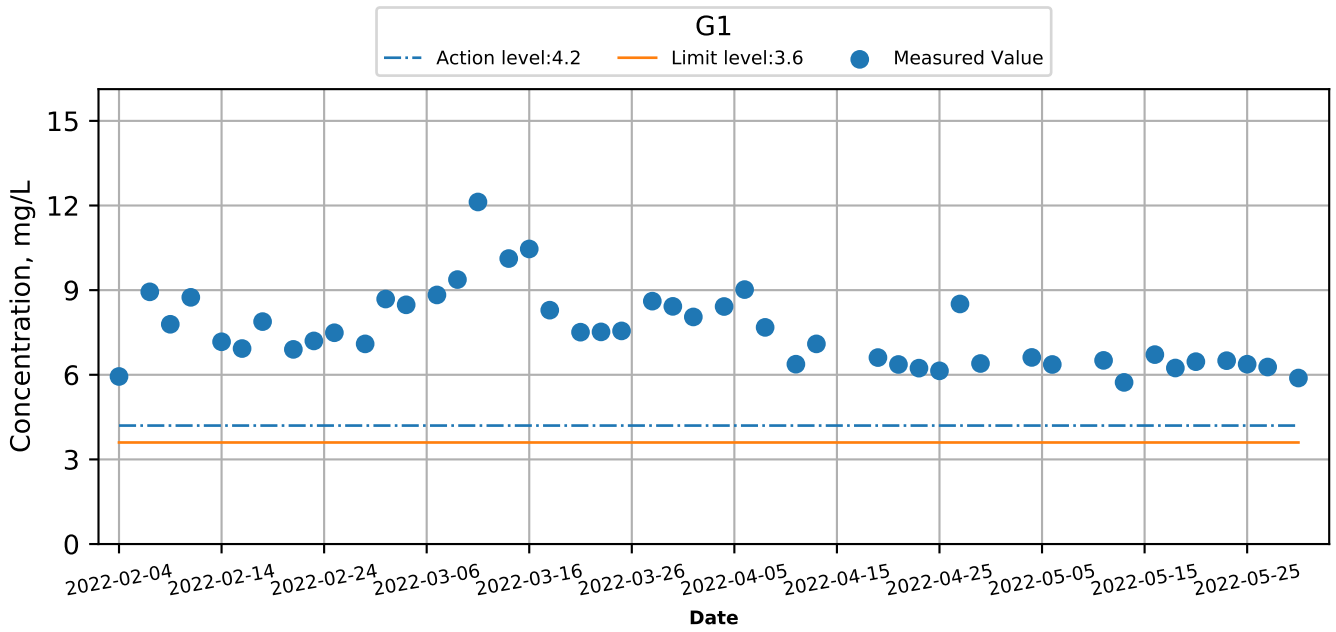


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Flood

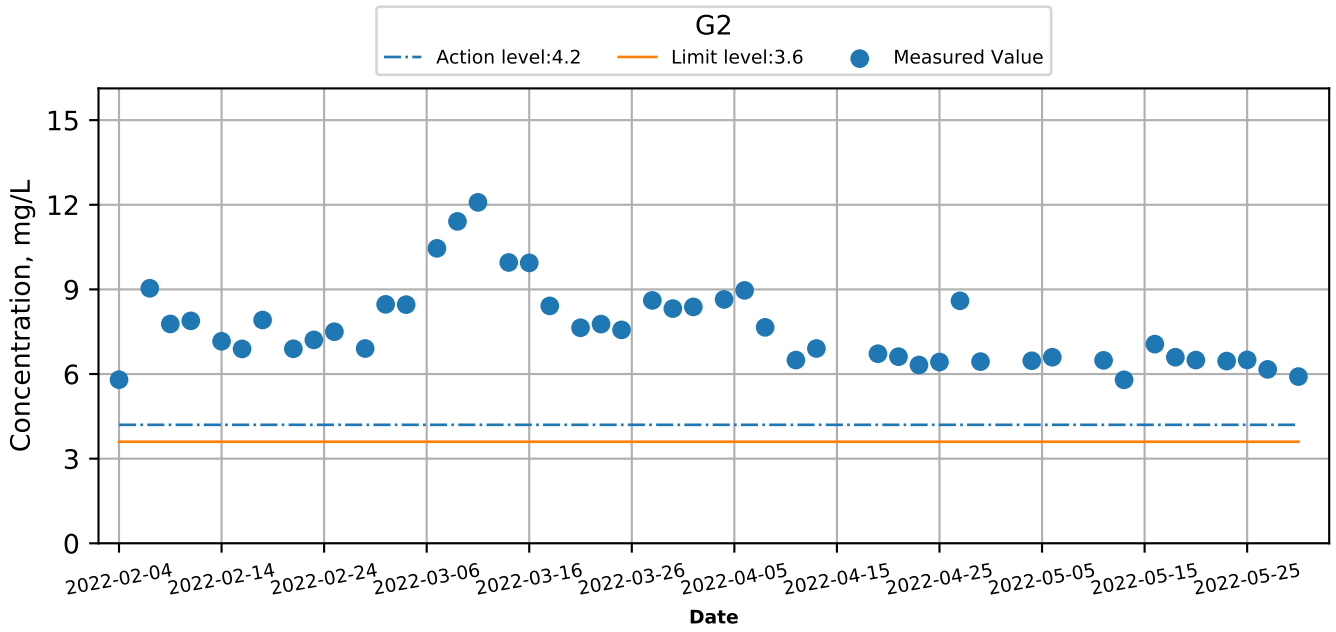


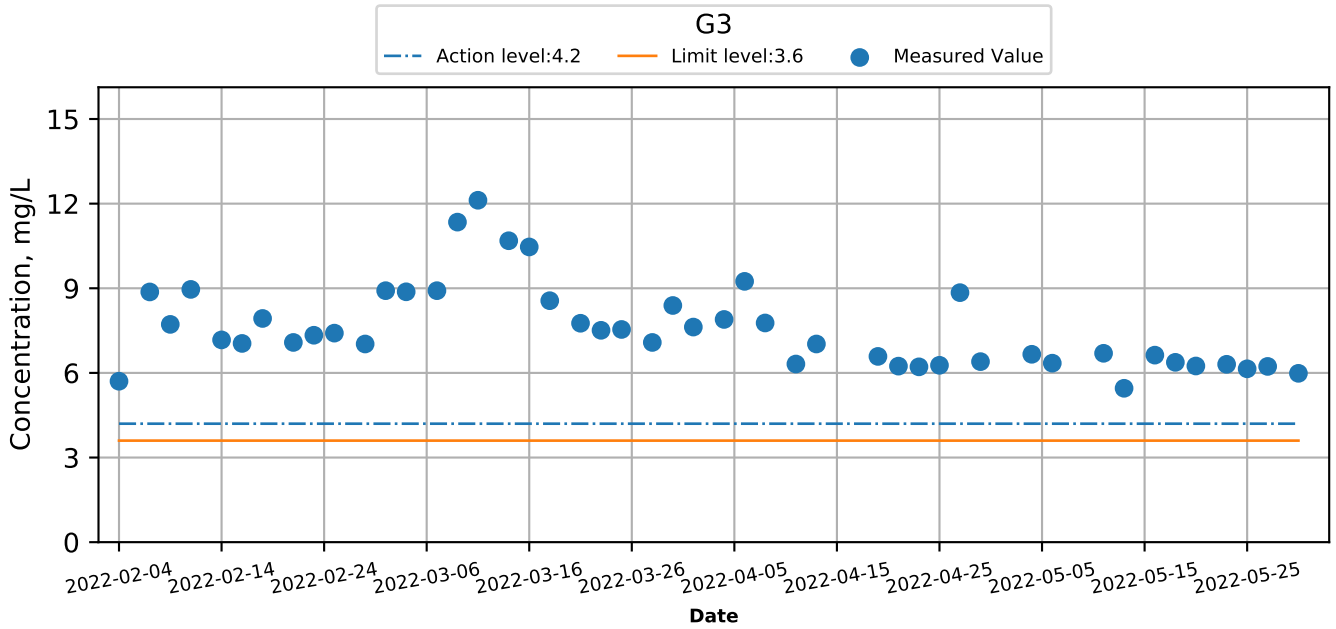


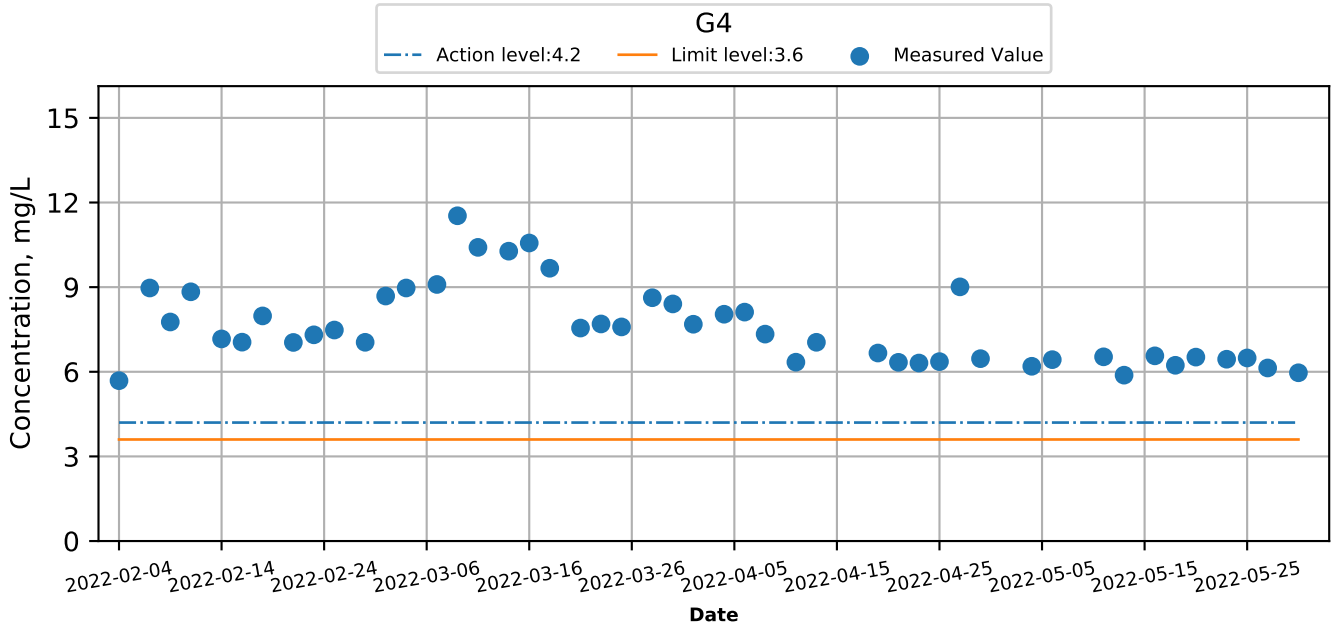


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Flood

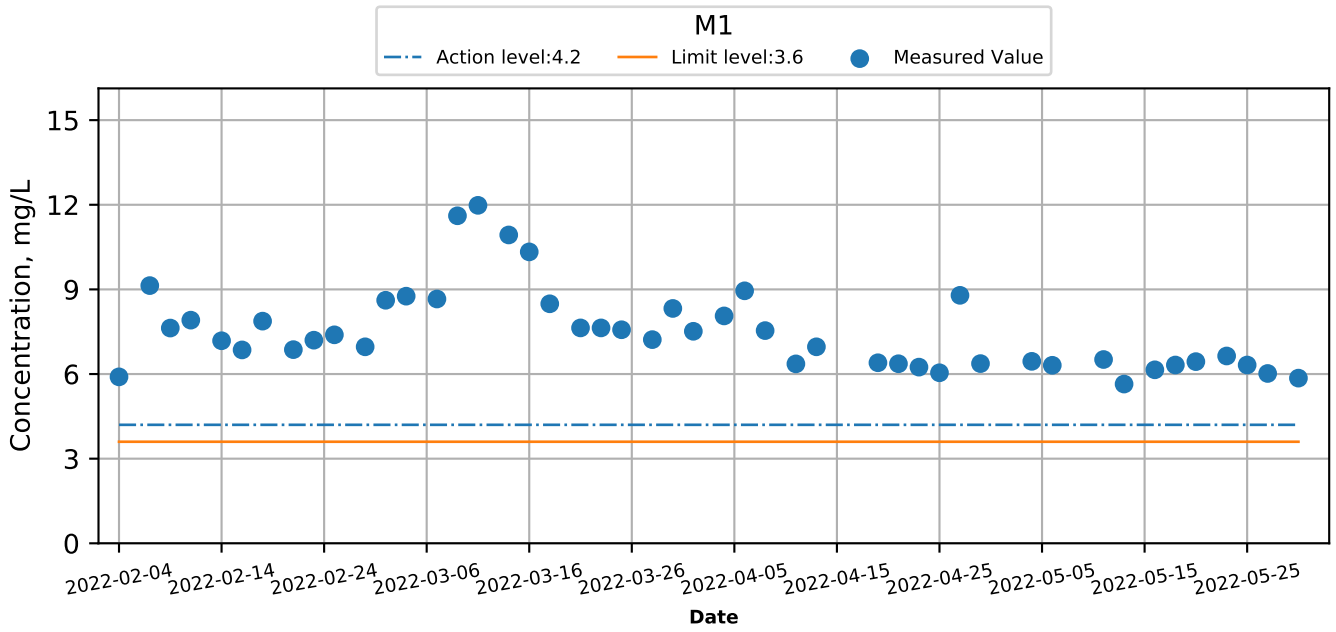


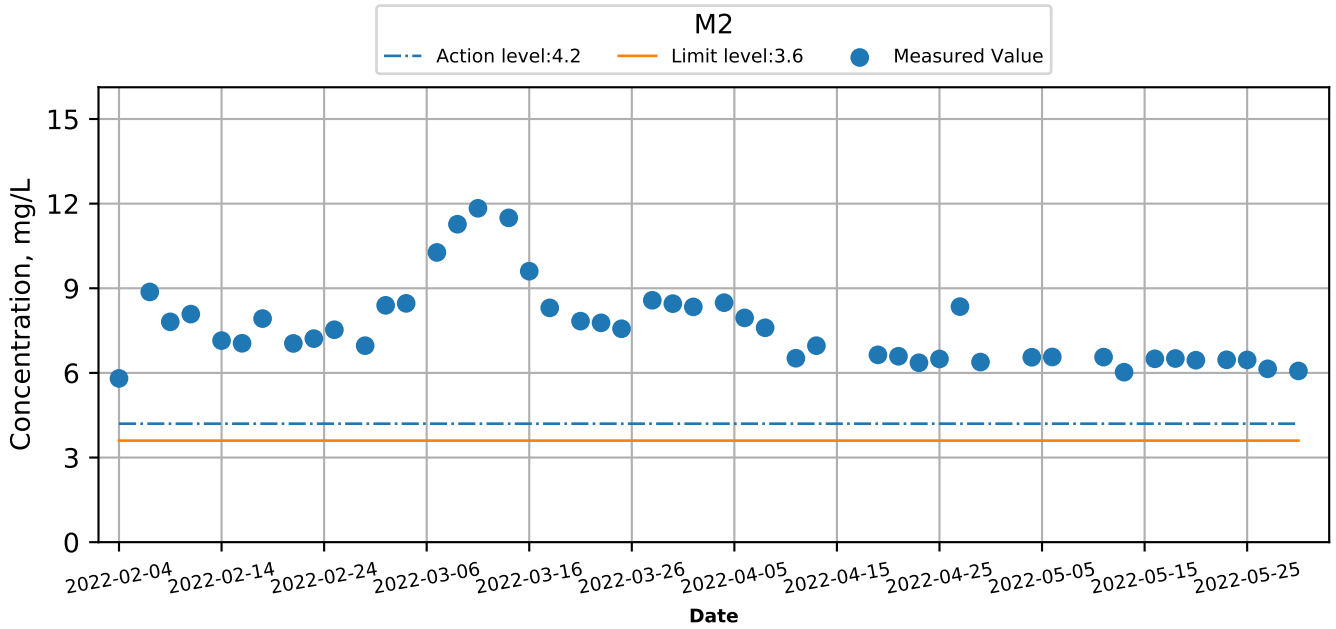


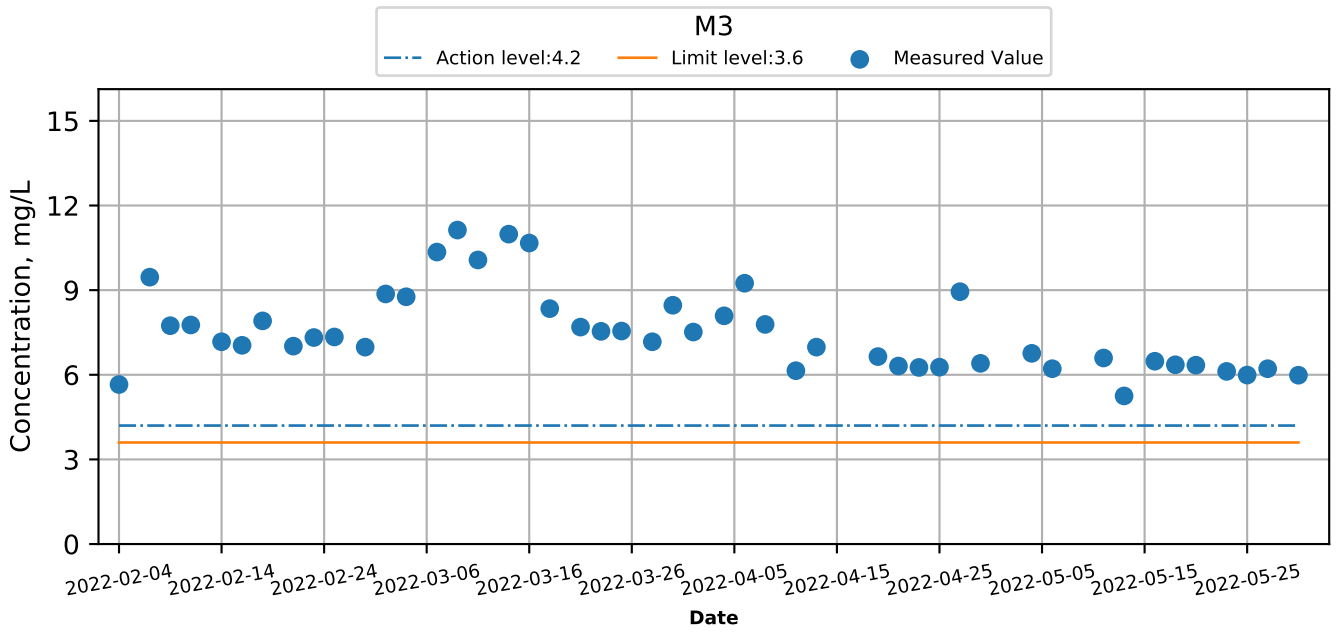


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Flood

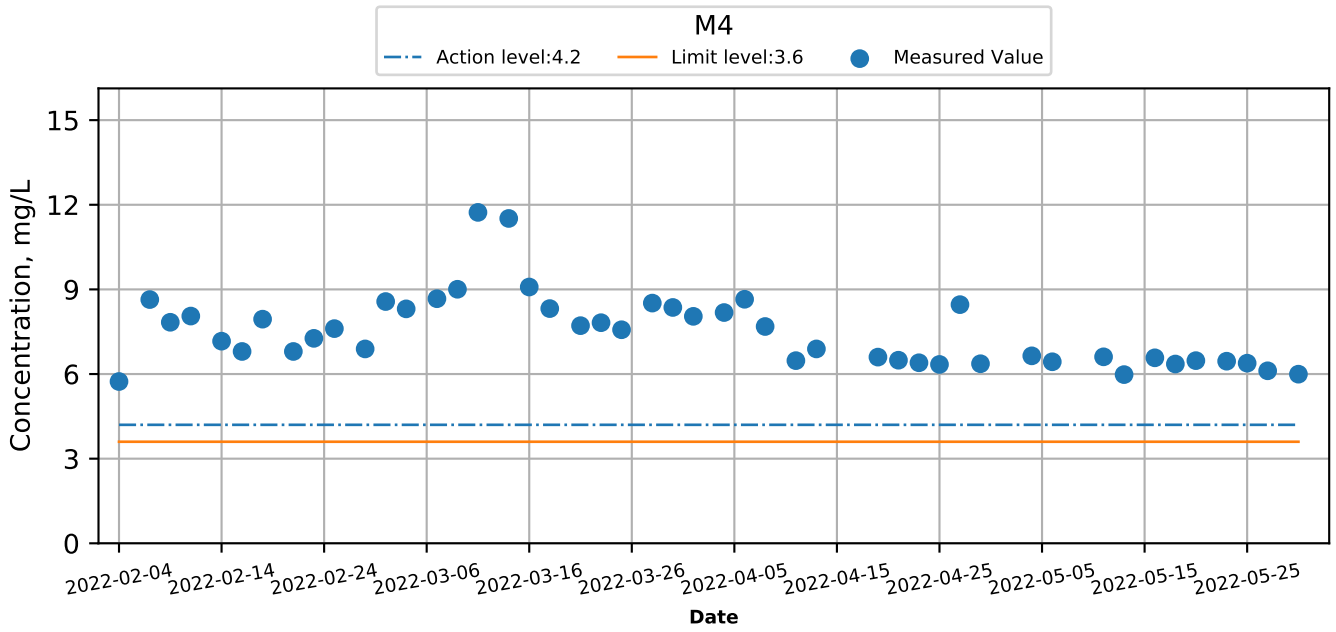


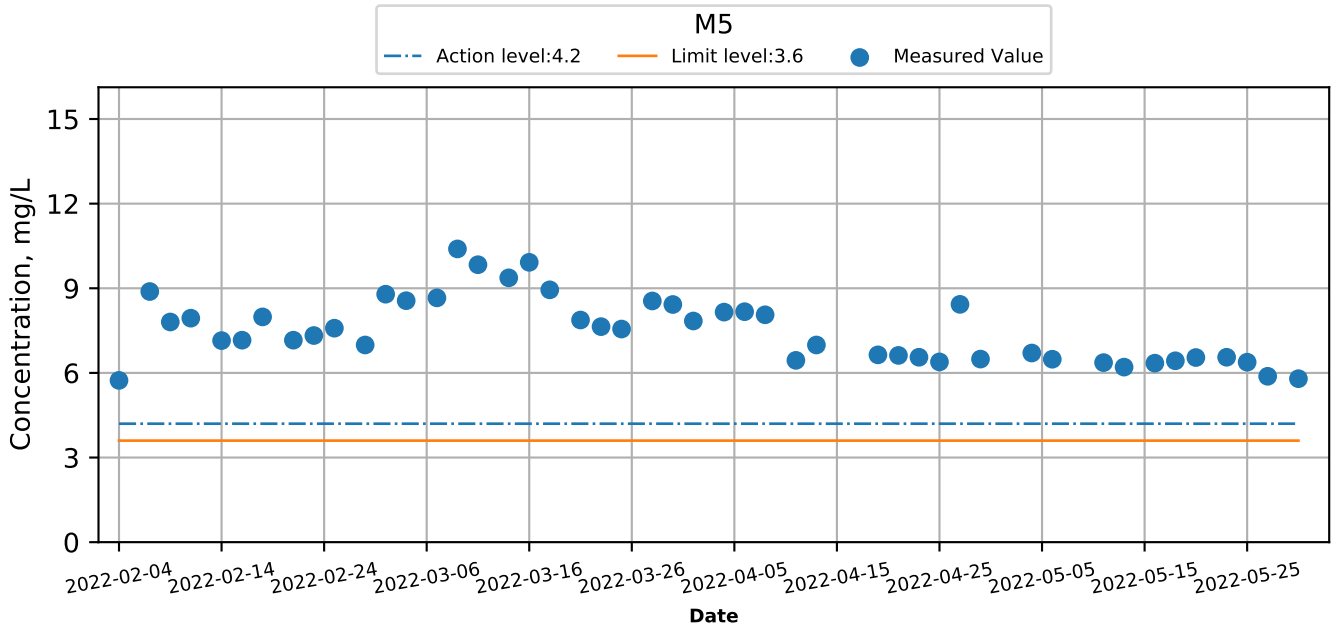




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

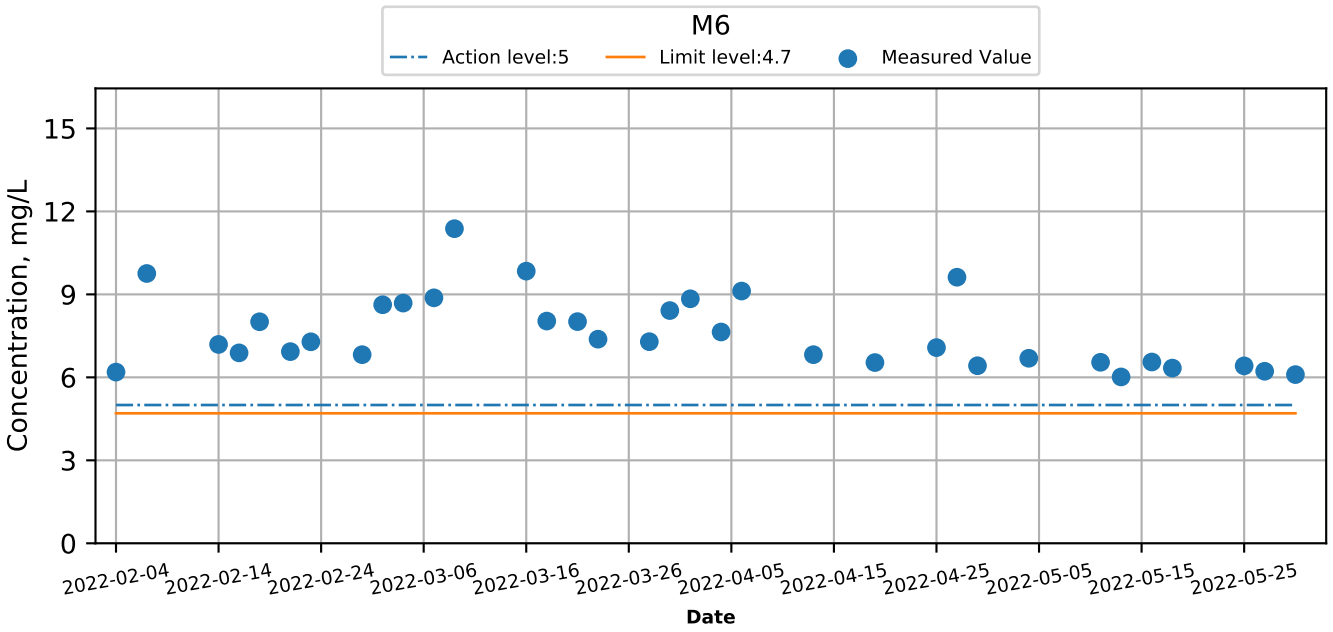
Dissolved Oxygen (Bottom) at Monitoring Stations during Mid-Flood





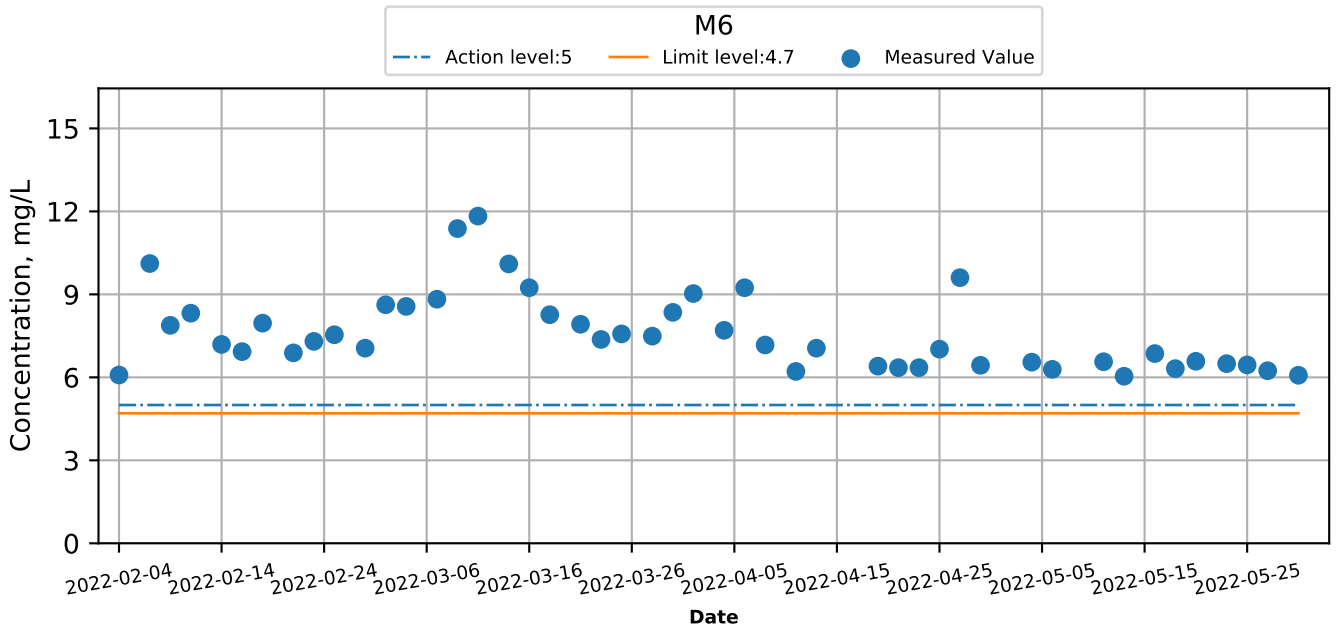
Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Dissolved Oxygen (Intake level) at Monitoring Stations during Mid-Ebb



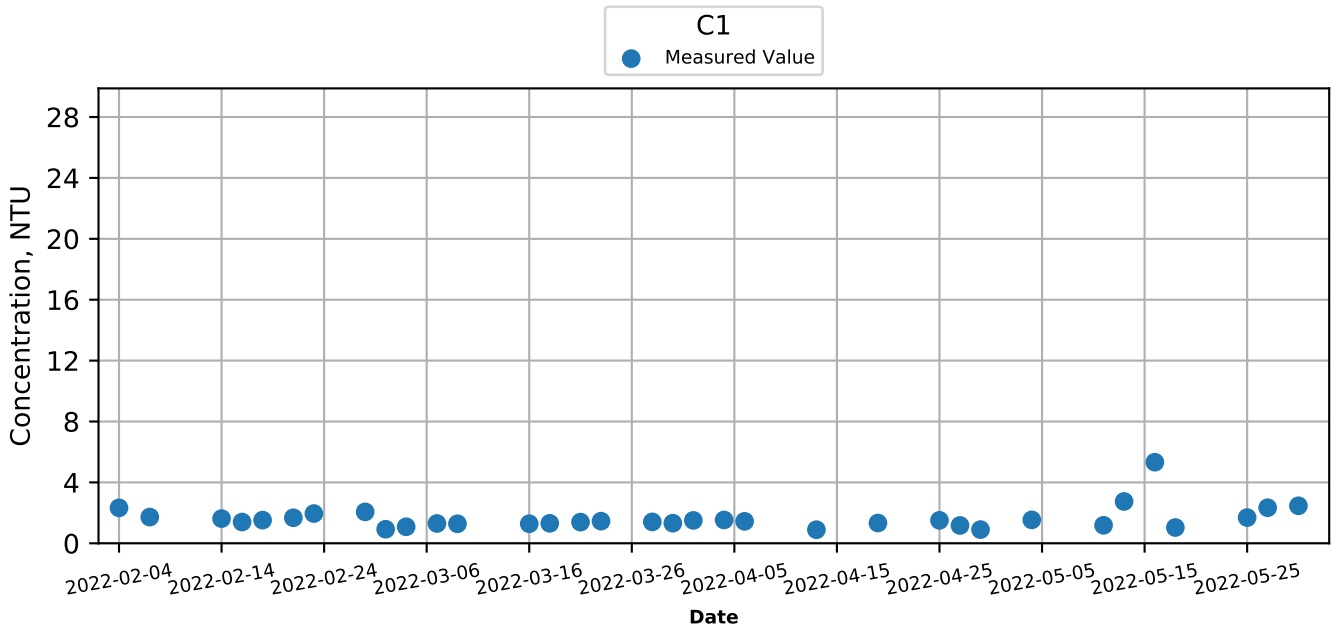
Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

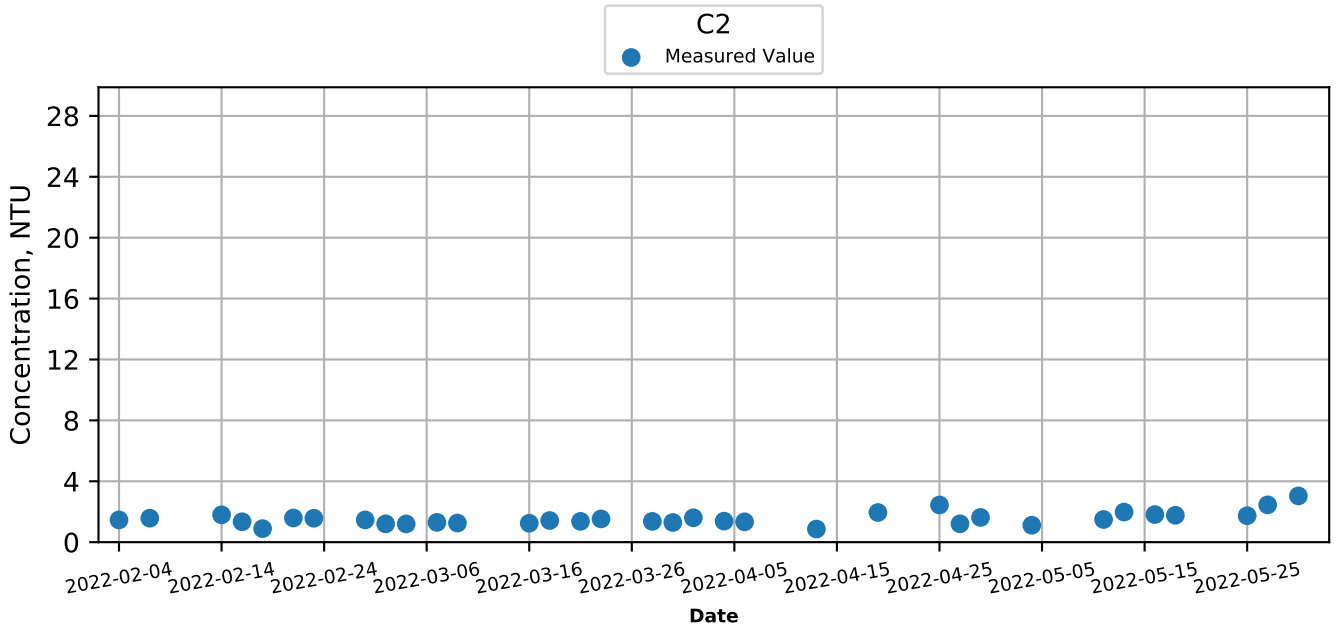
Dissolved Oxygen (Intake level) at Monitoring Stations during Mid-Flood

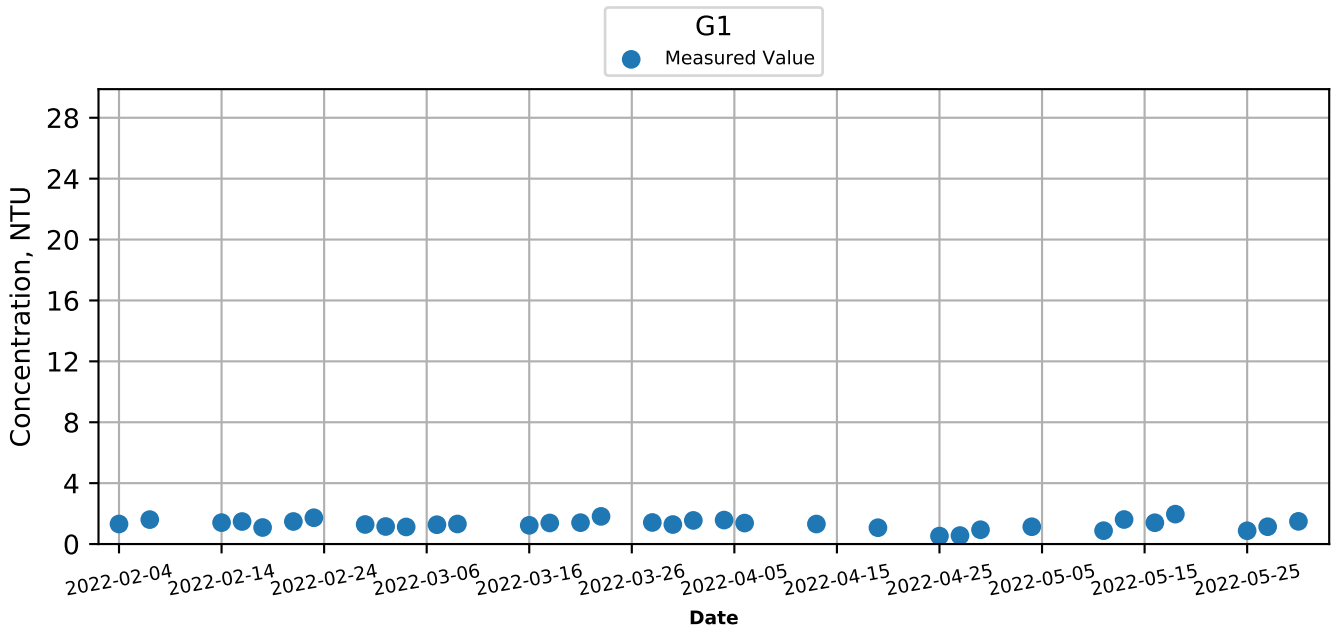


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Ebb

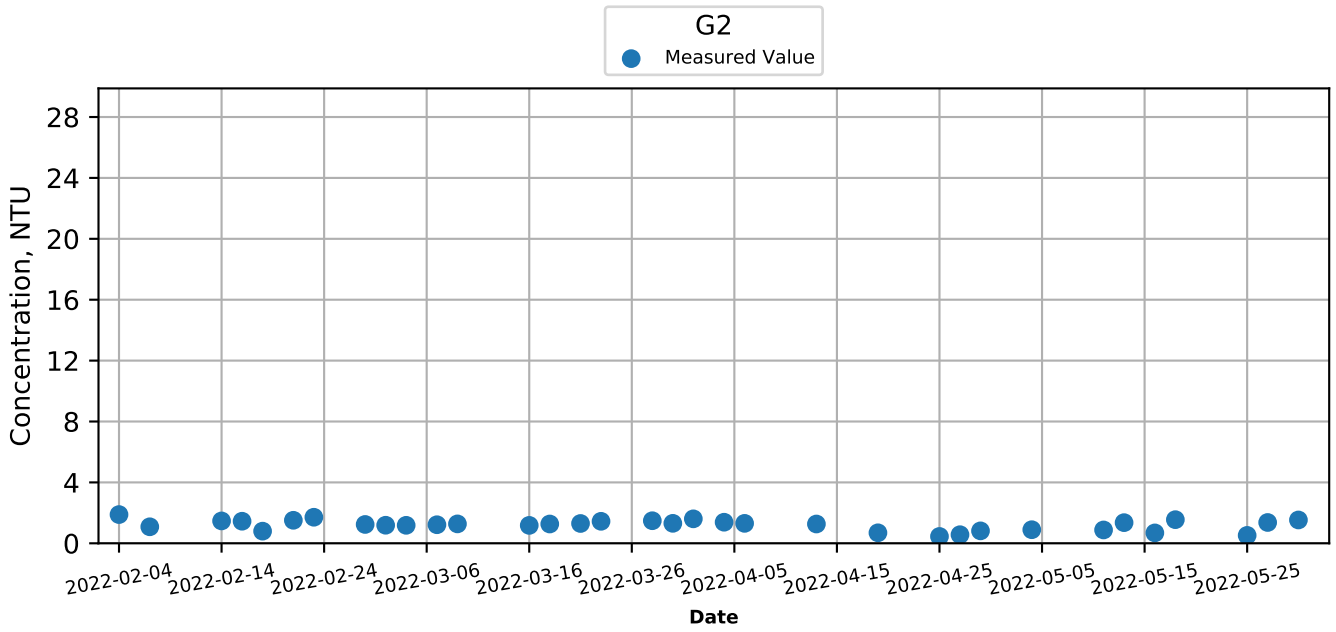


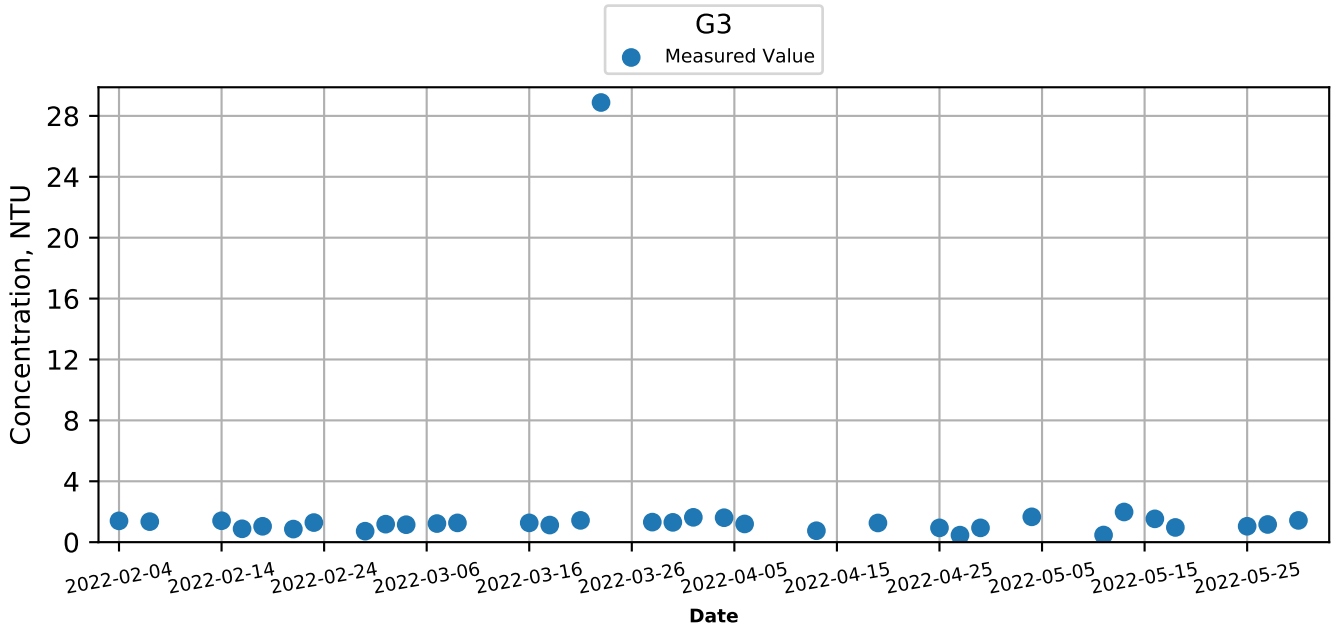


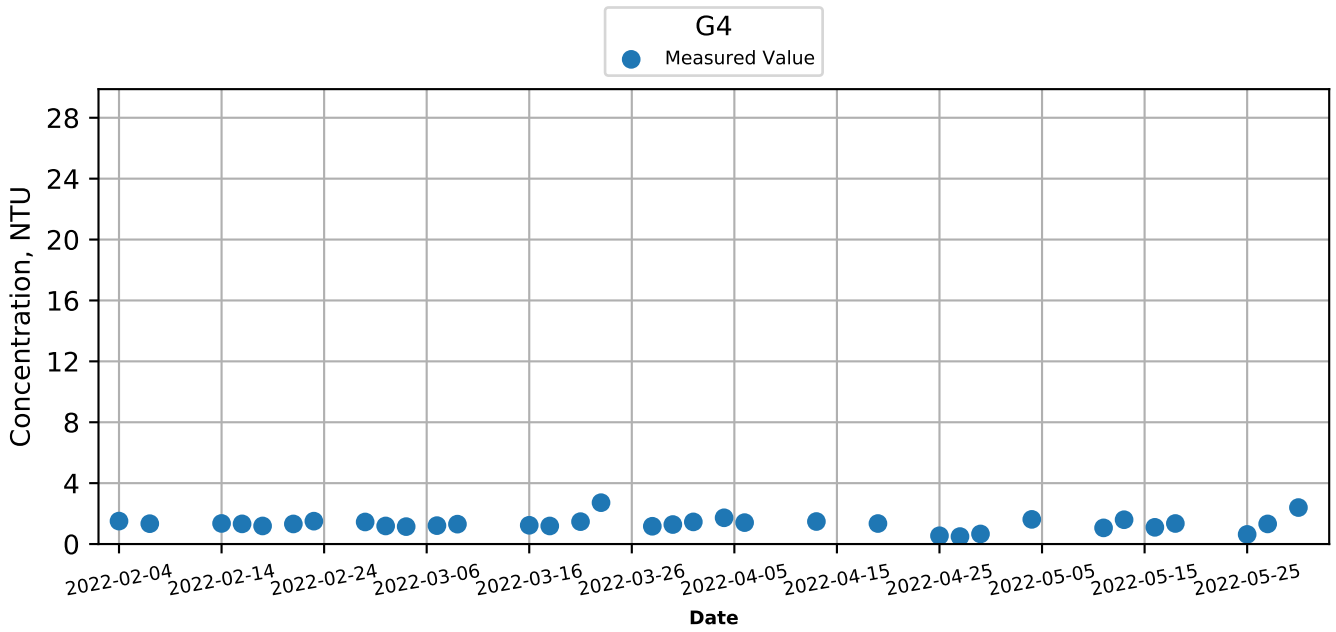


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Ebb

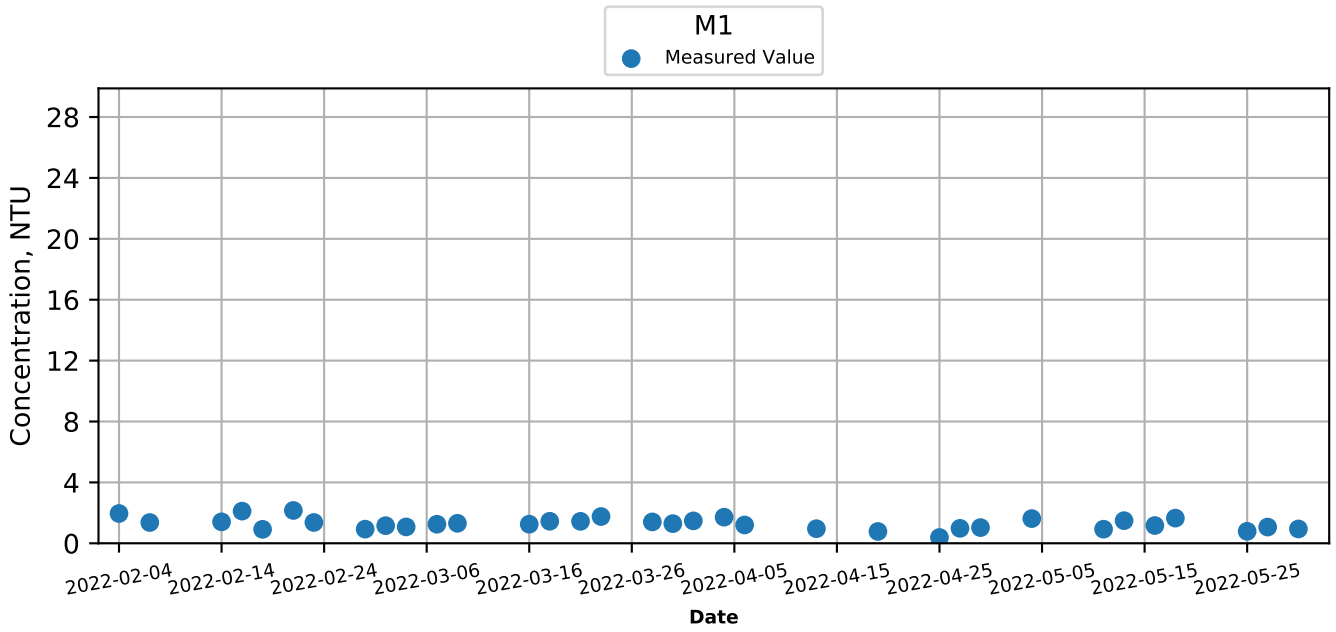


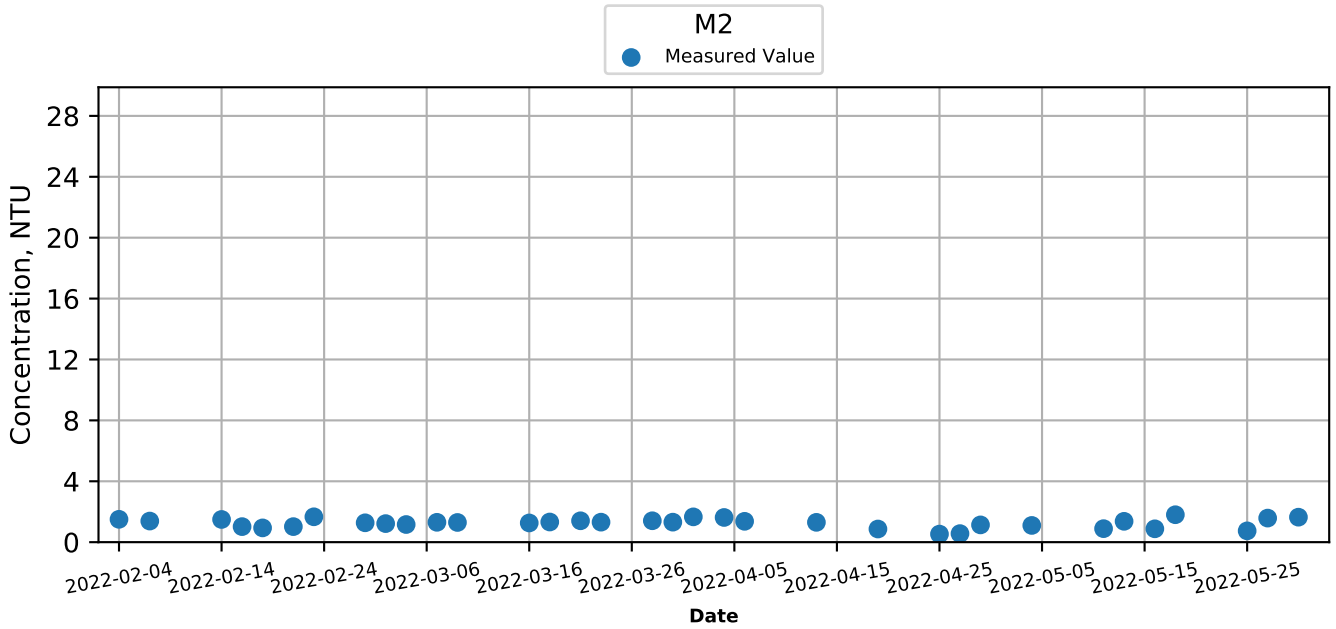


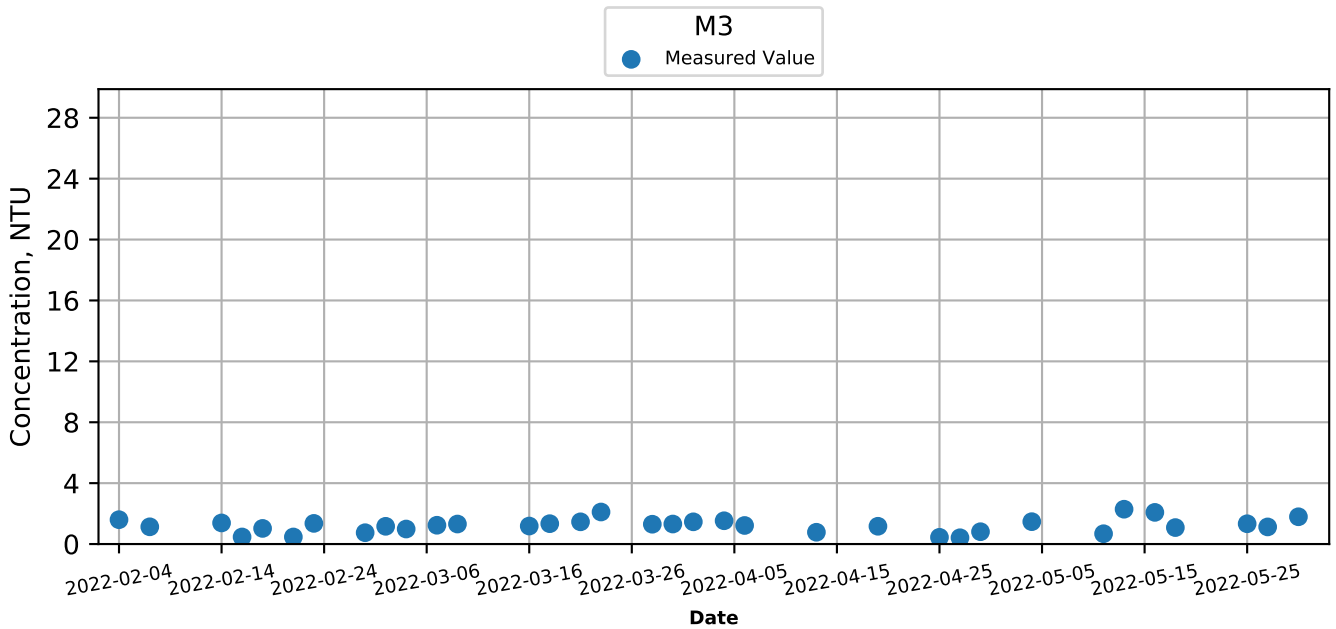


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Ebb

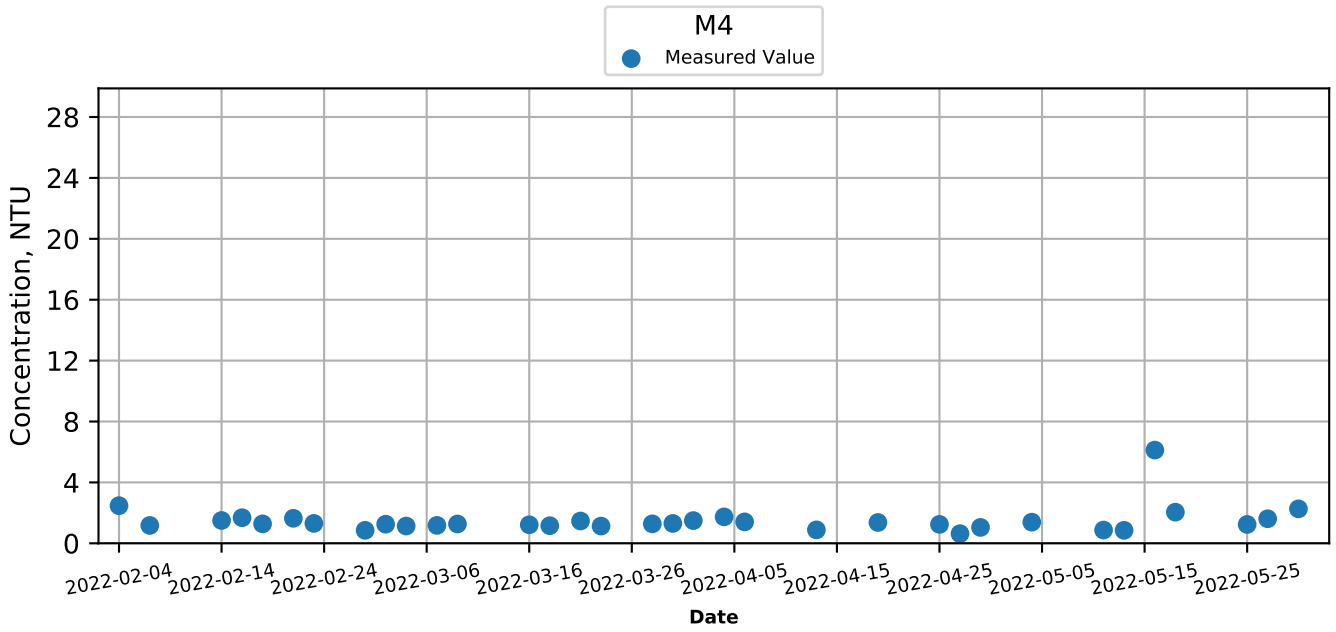


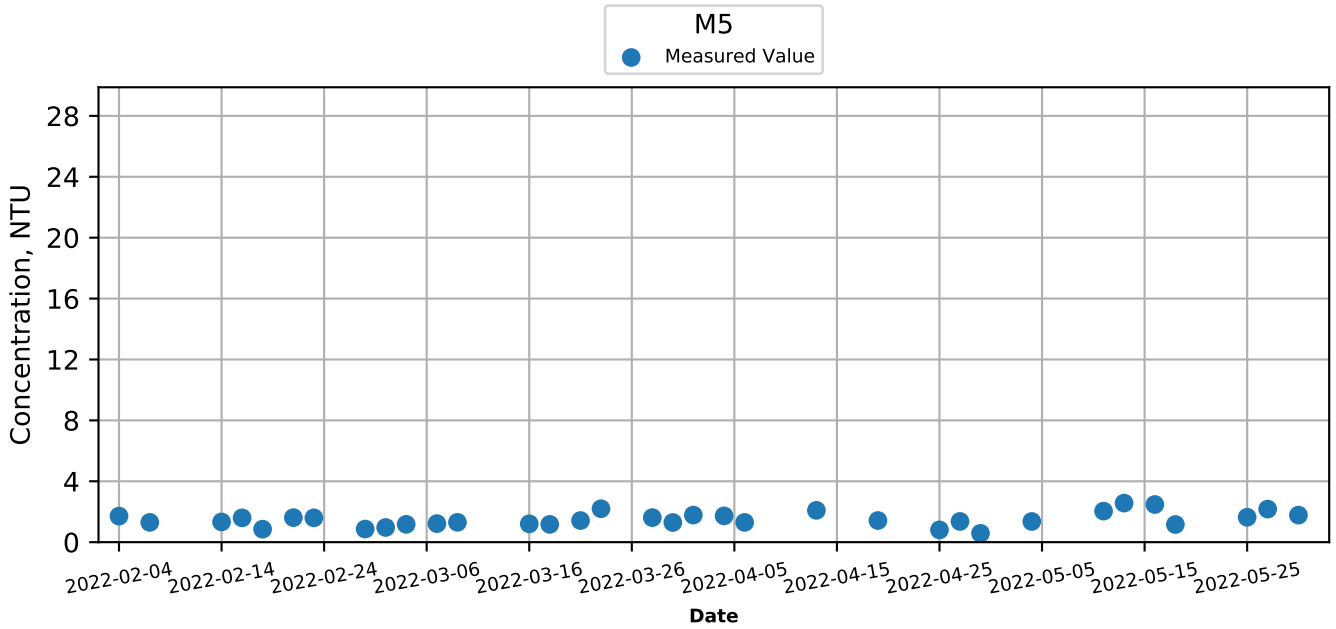




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

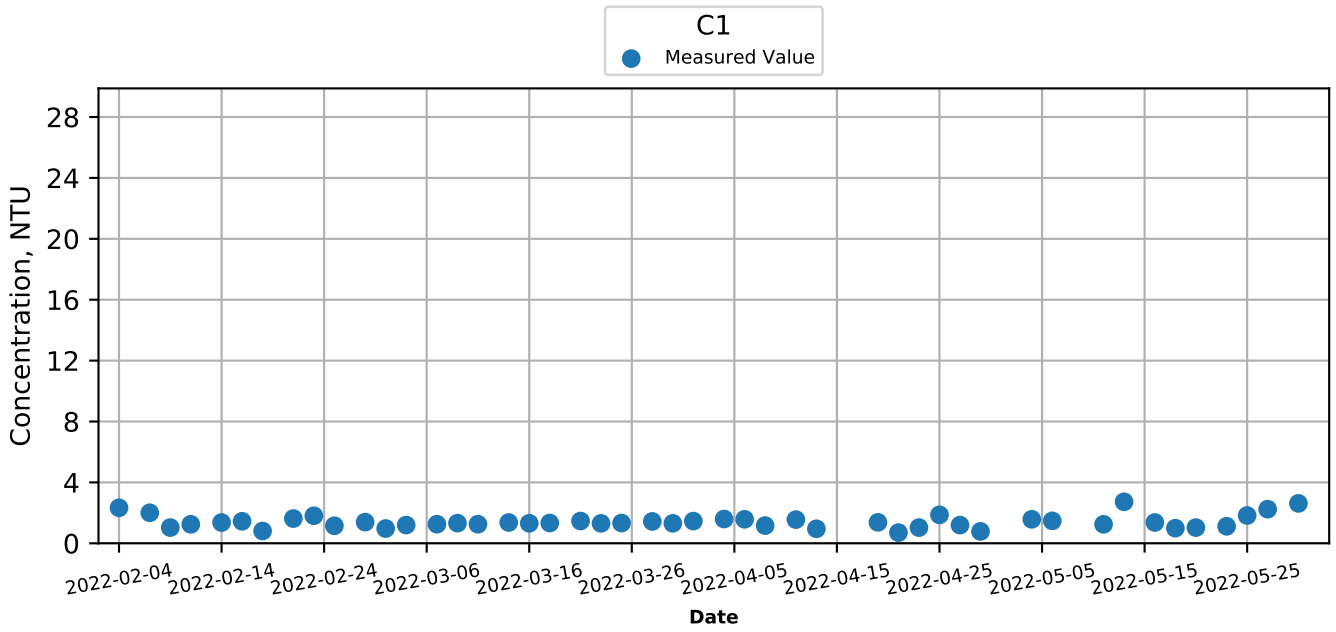
Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Ebb

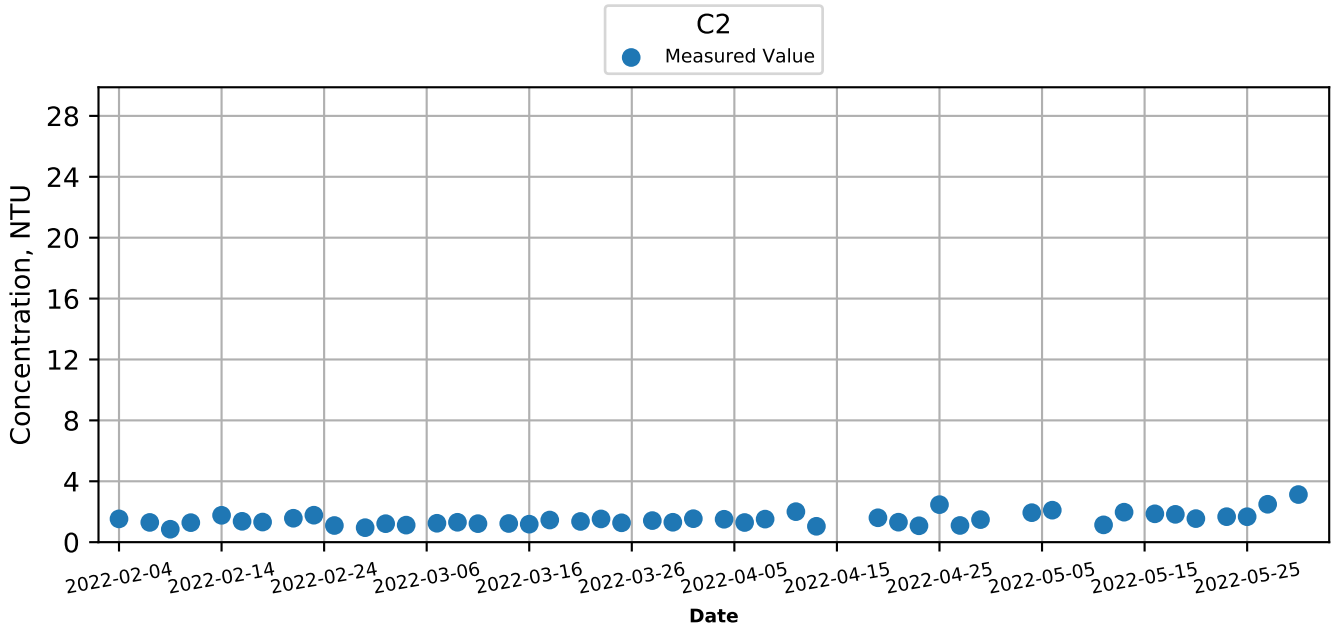


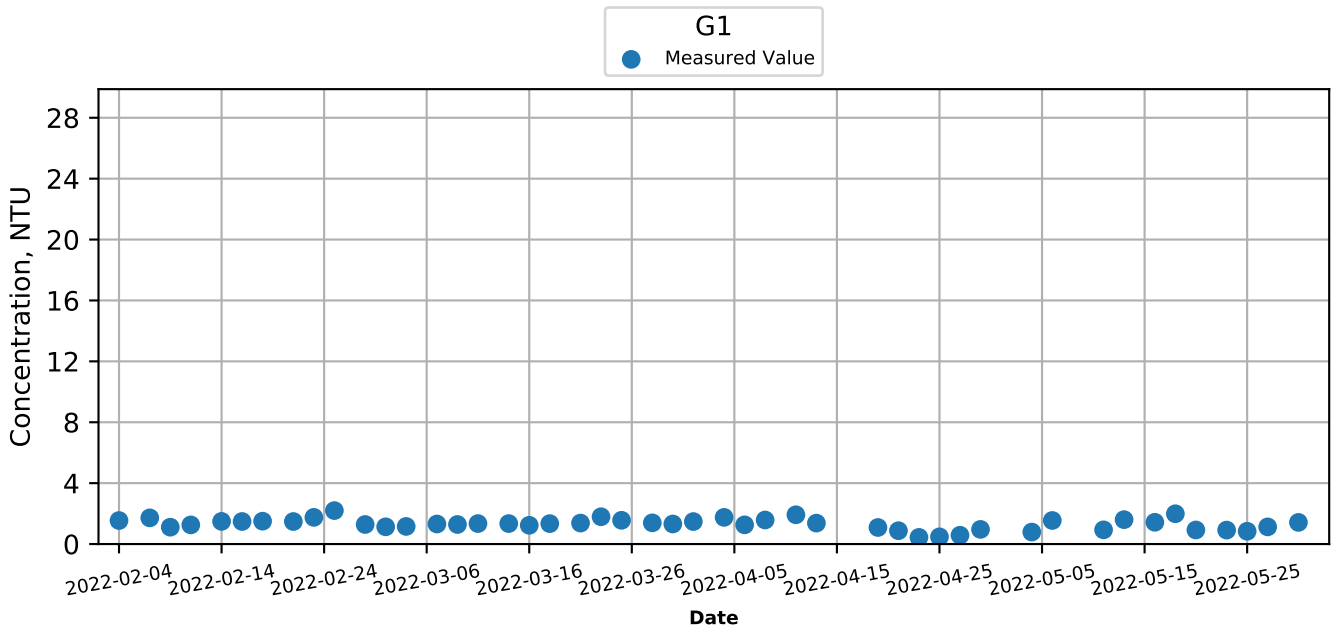


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Flood

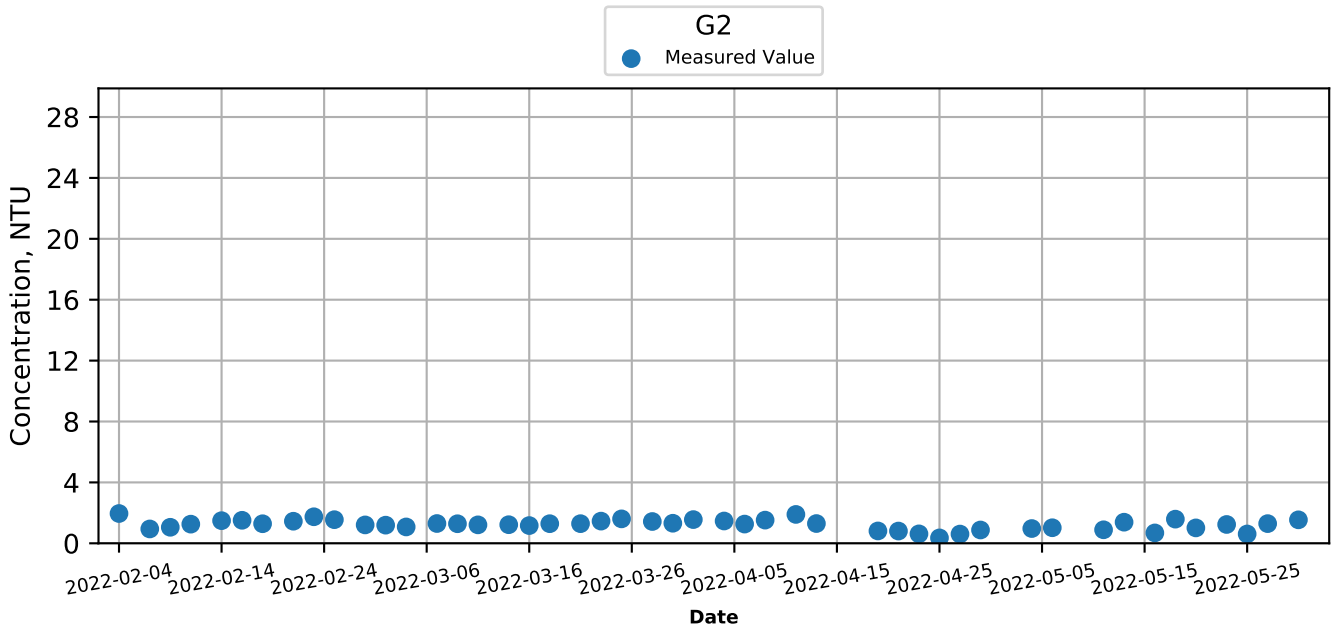


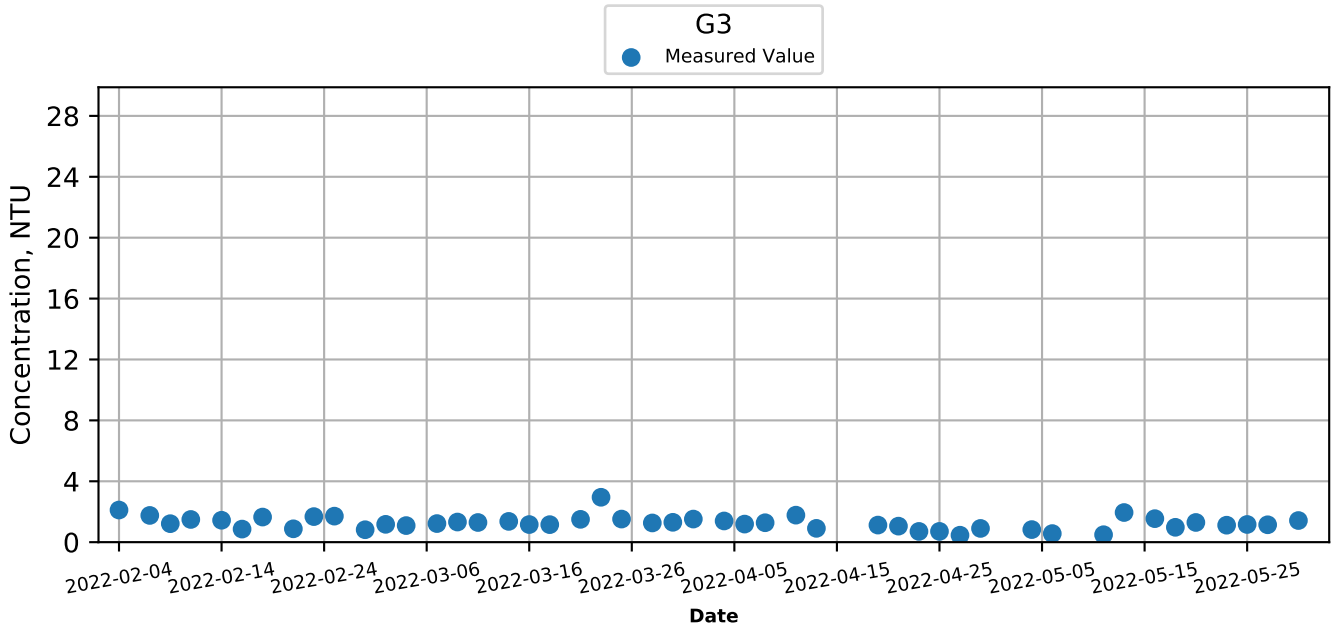


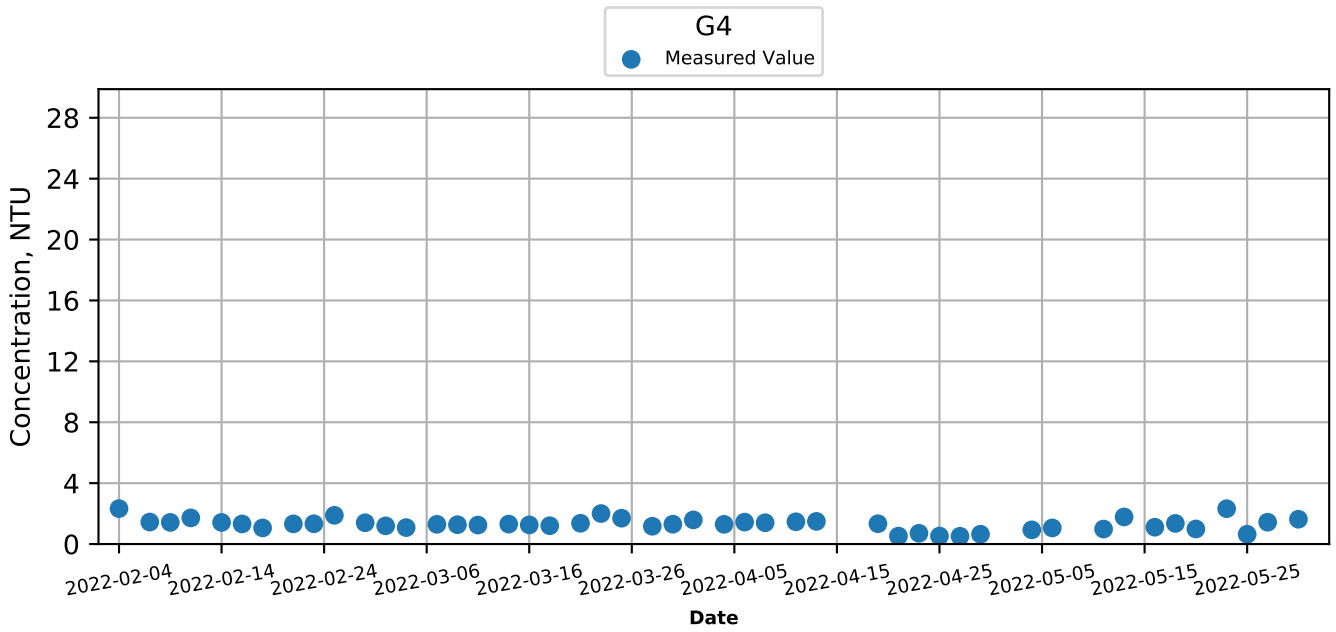


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Flood

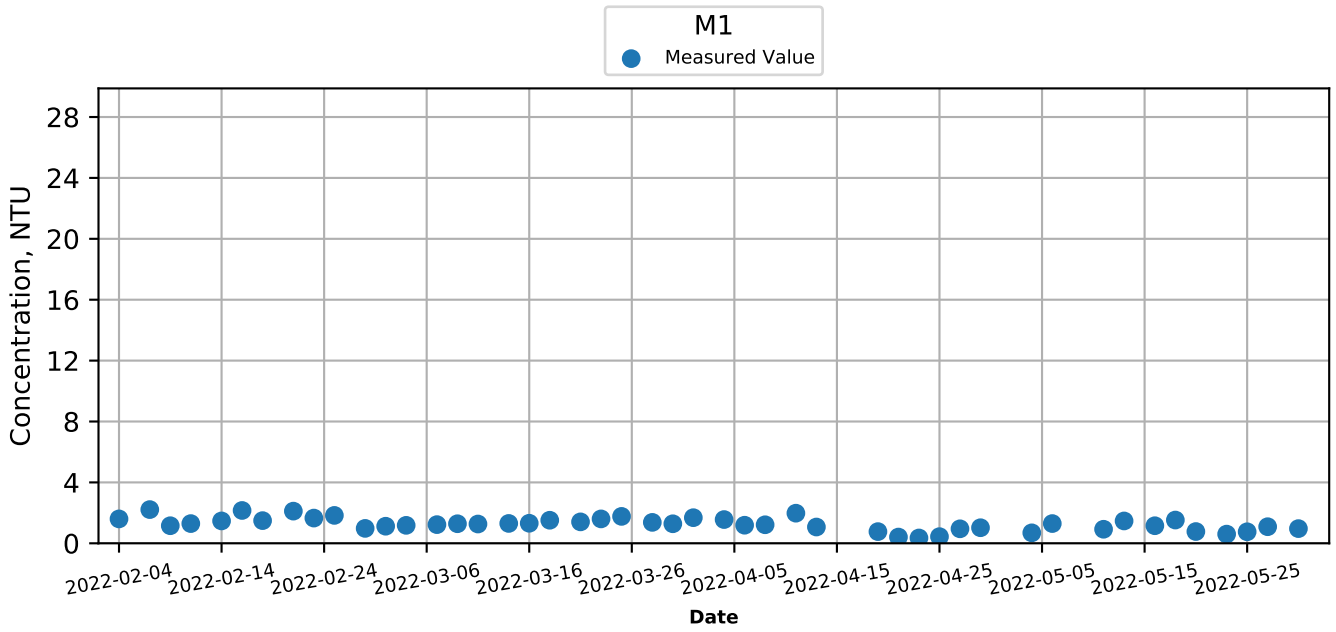


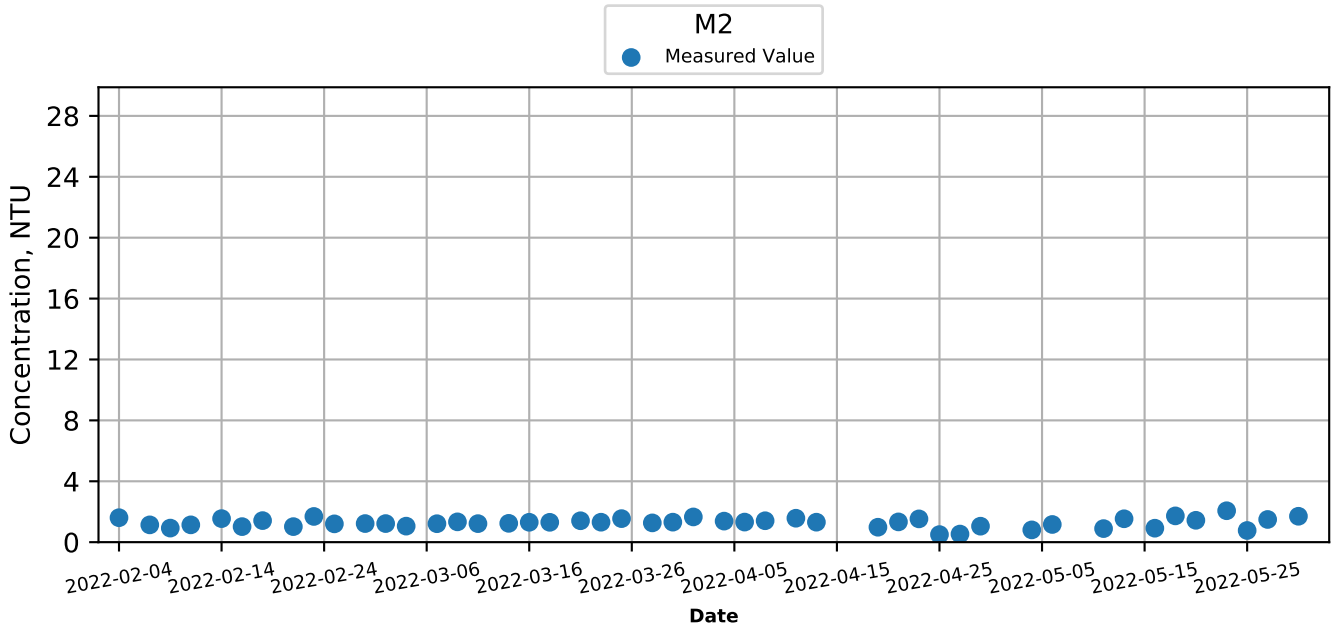


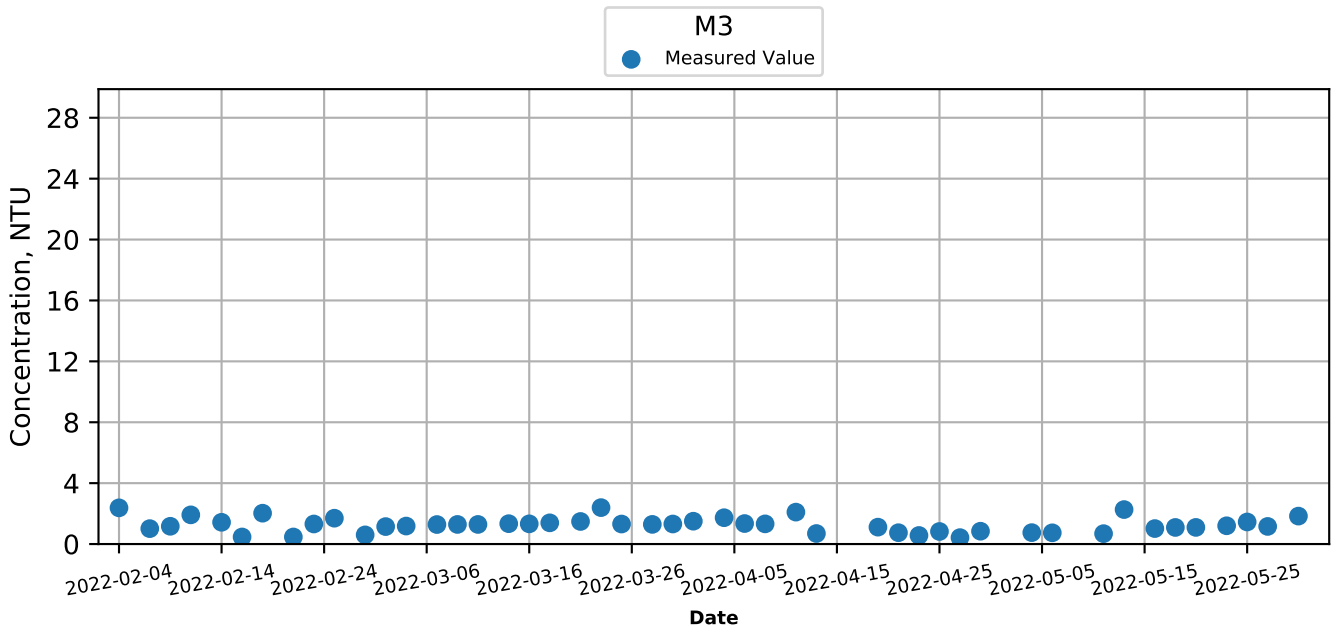


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Flood

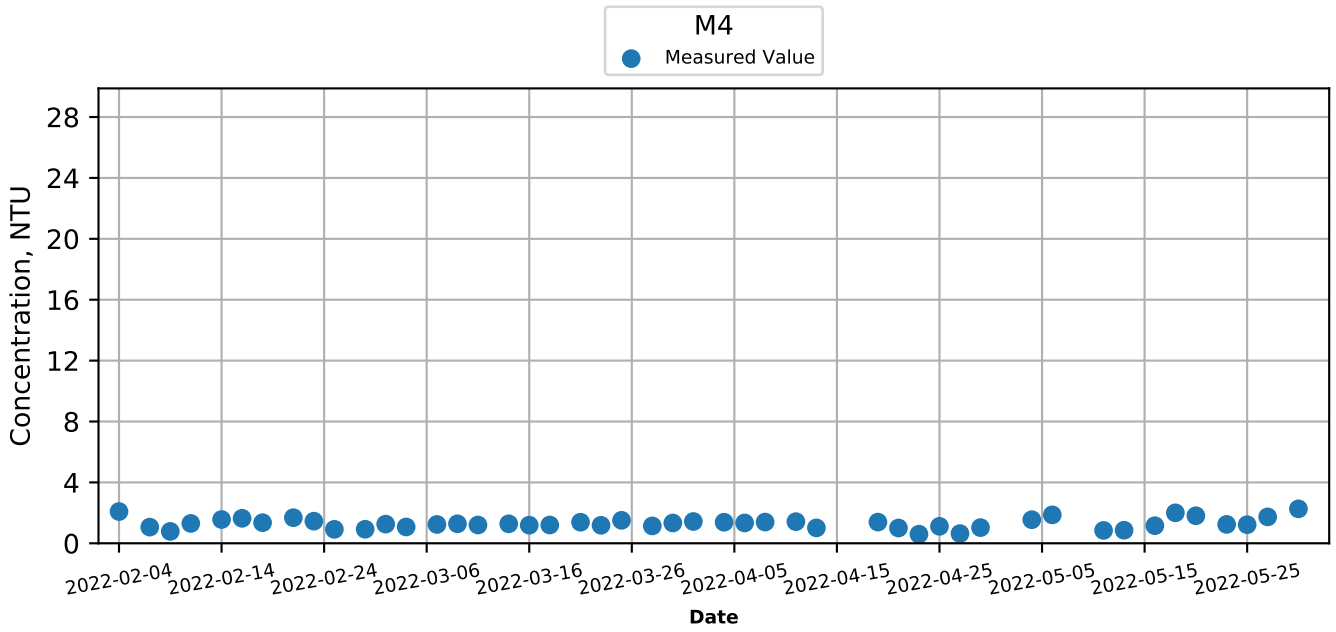


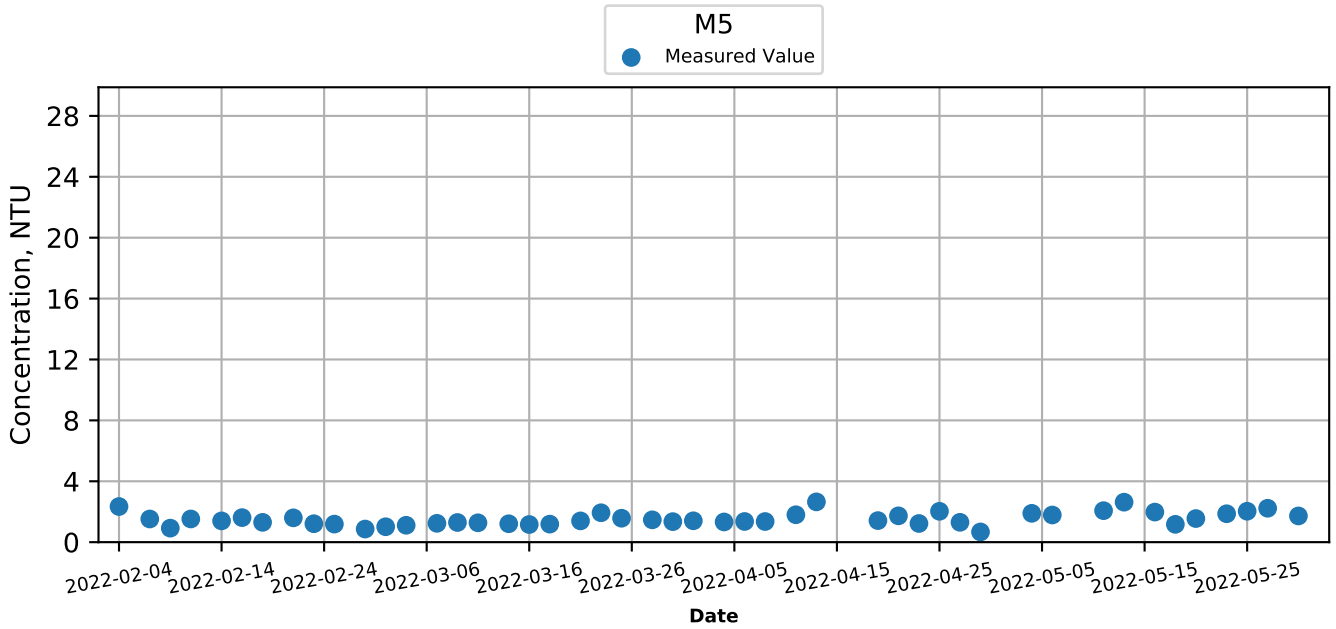




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

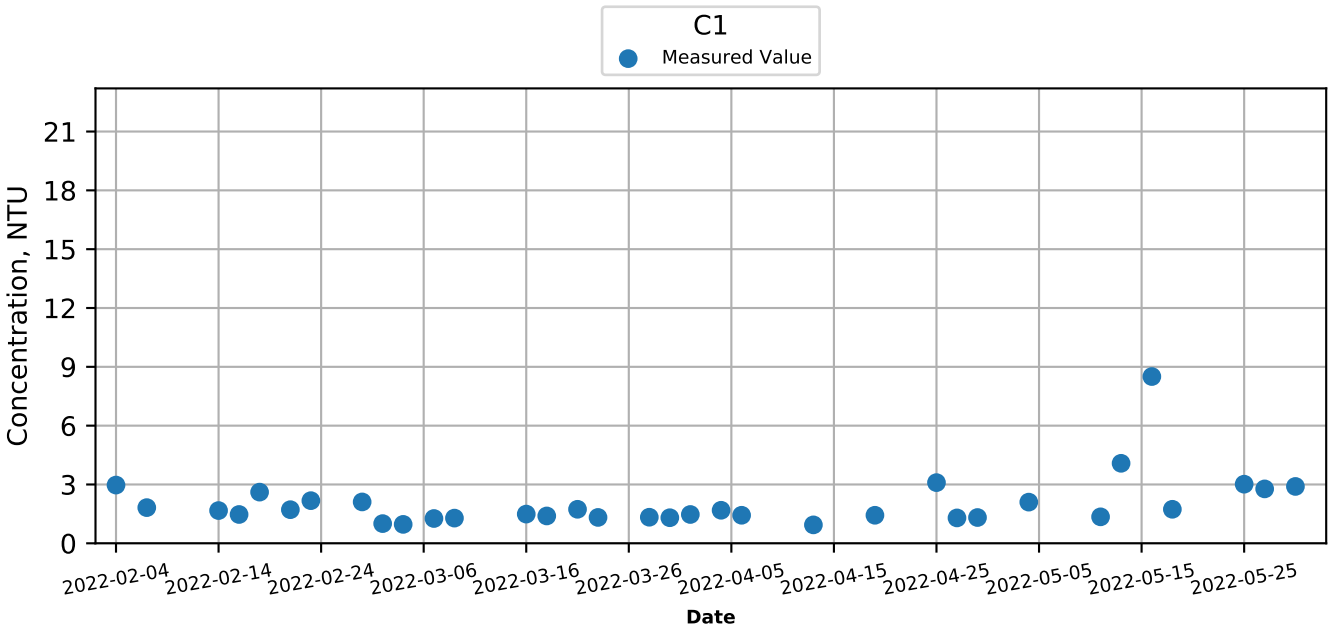
Turbidity (Depth-Averaged) at Monitoring Stations during Mid-Flood

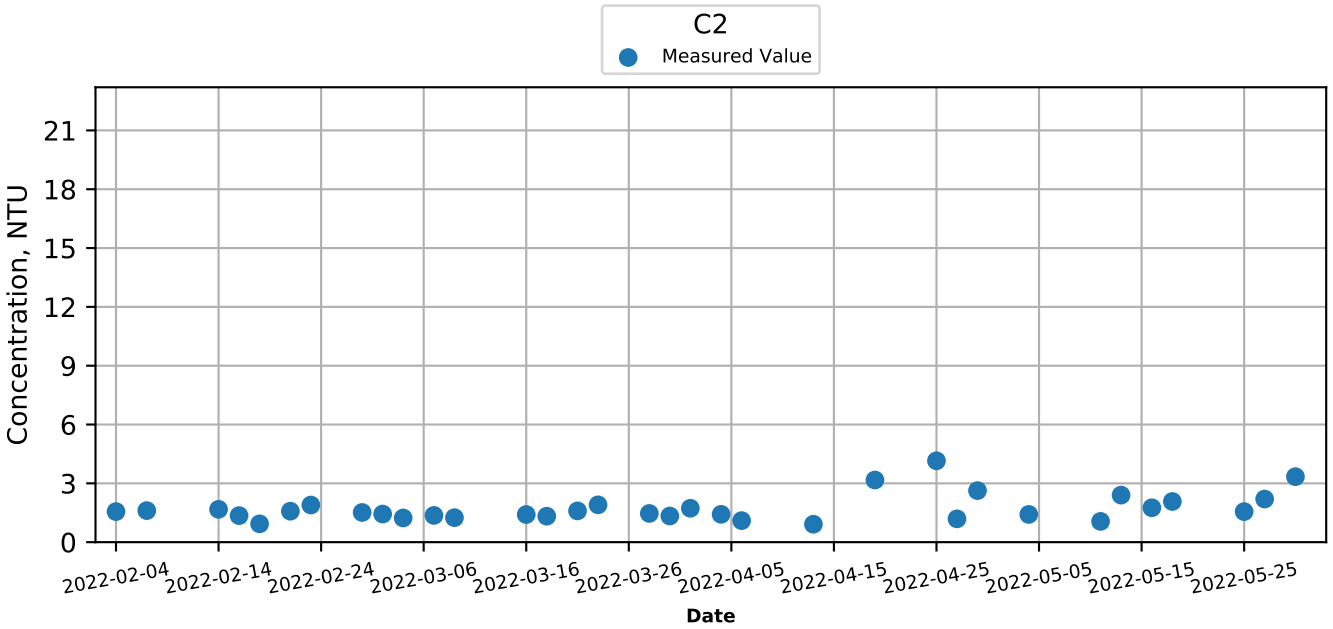


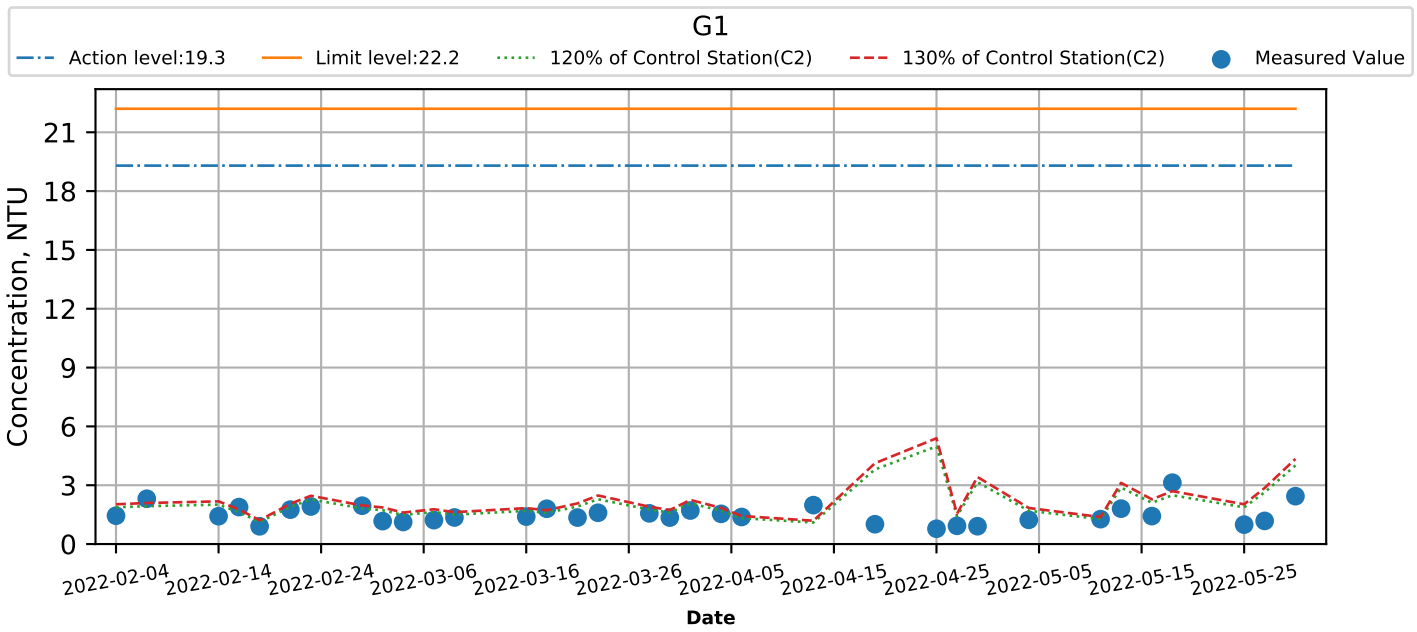


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Ebb

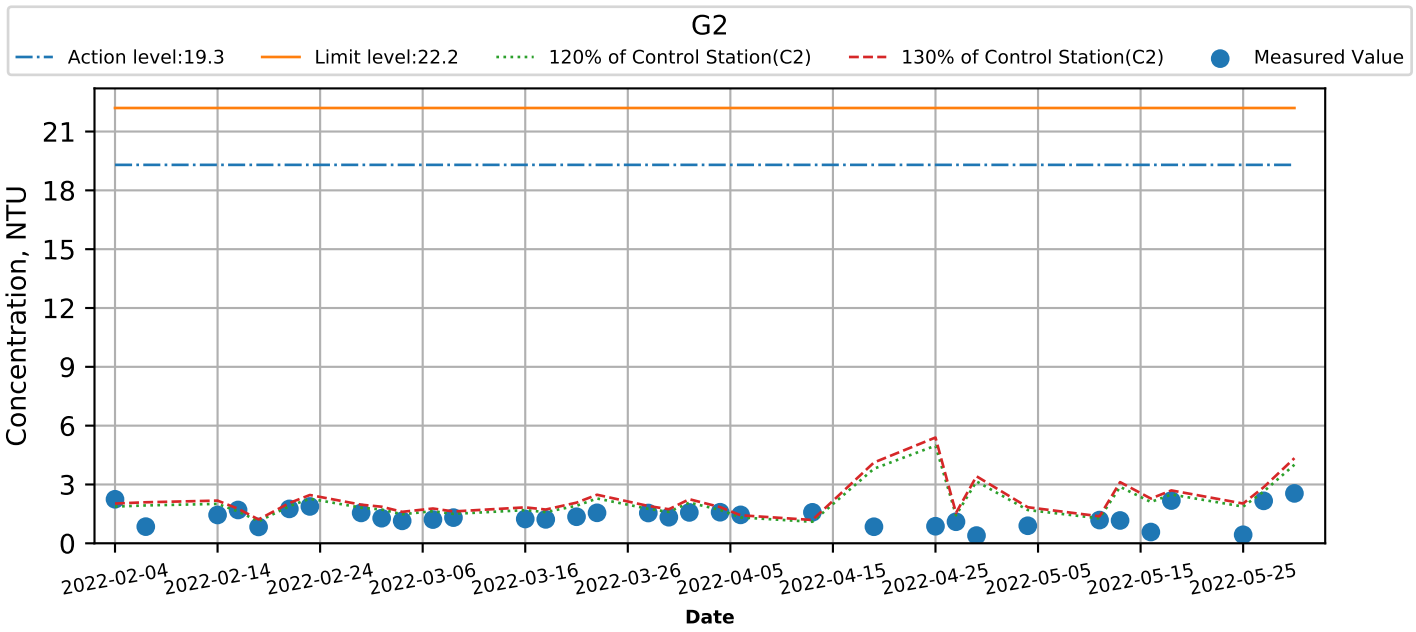


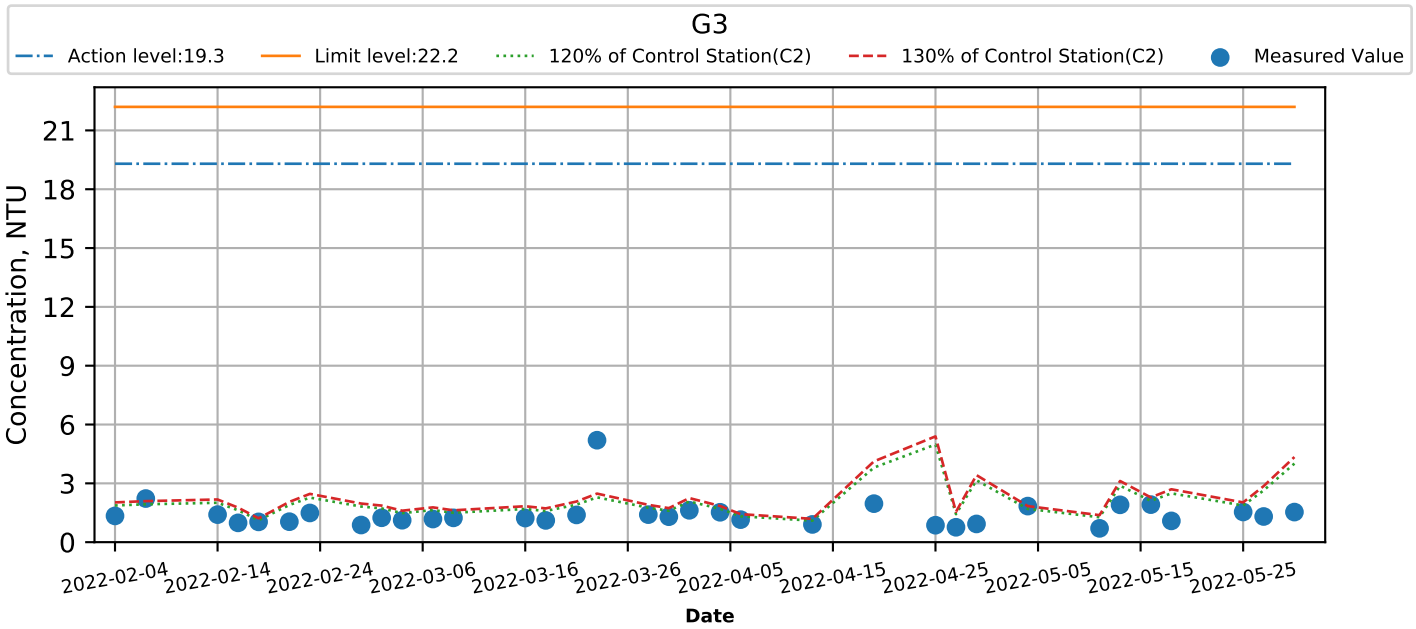


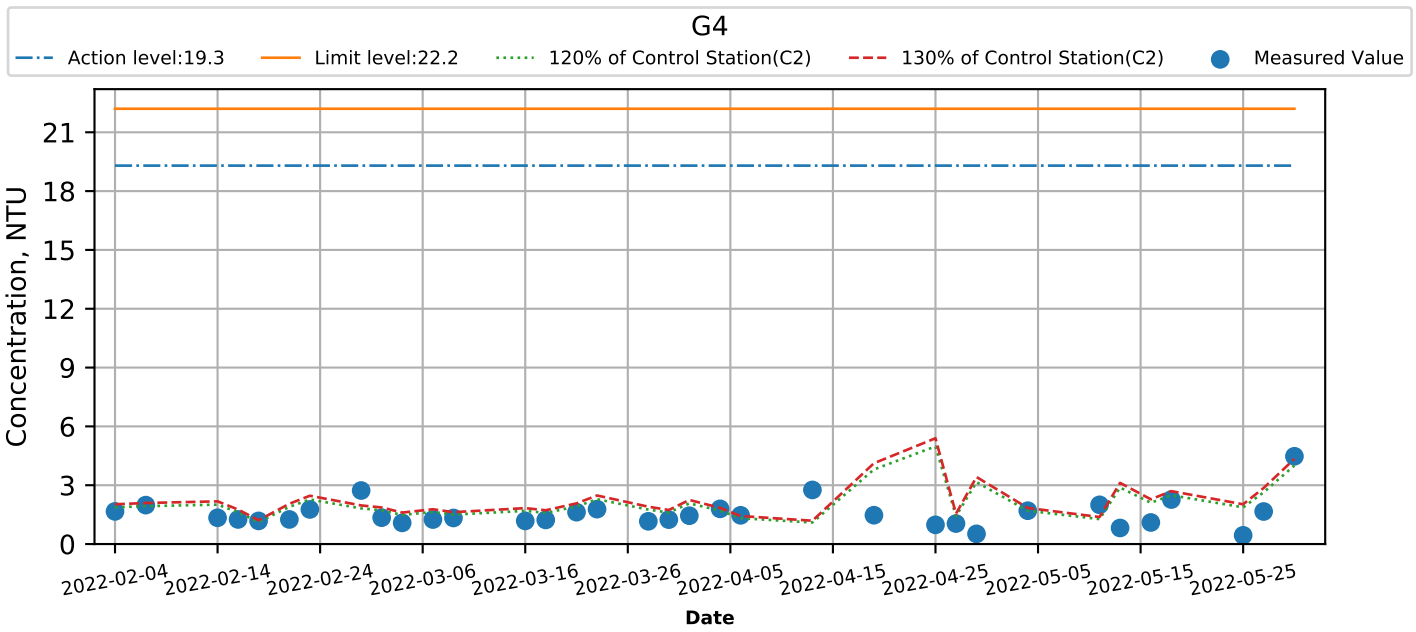


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Ebb

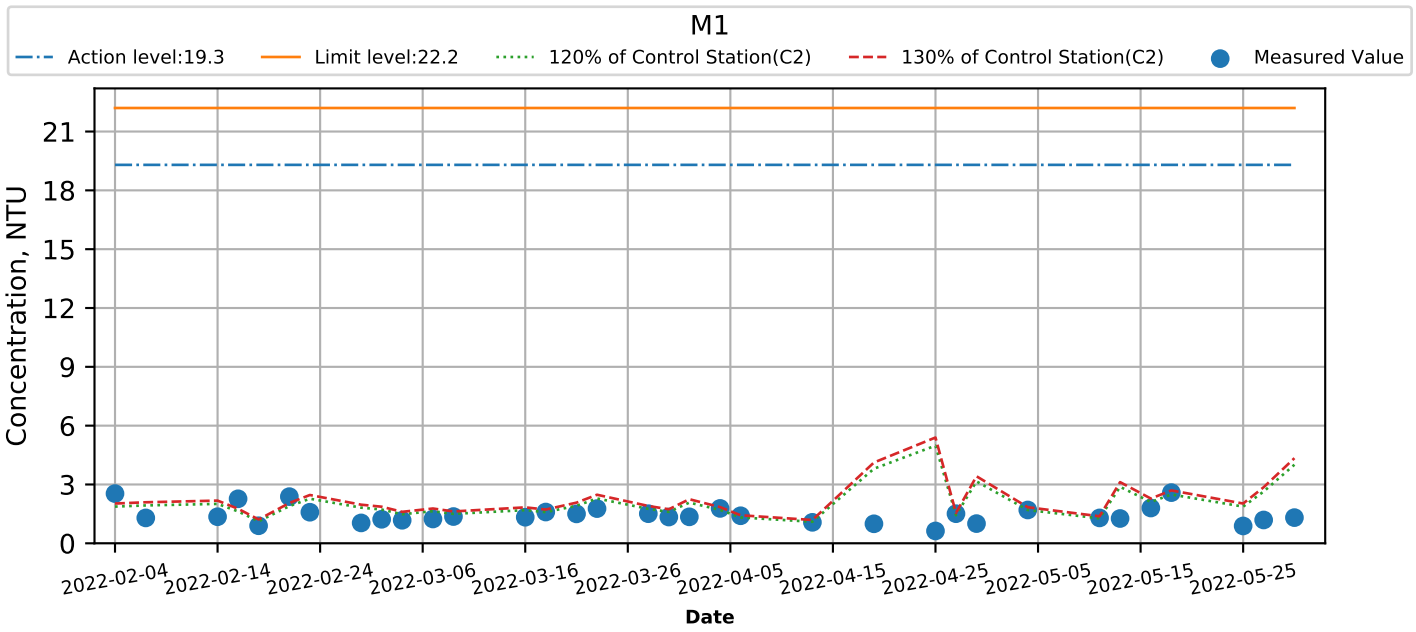


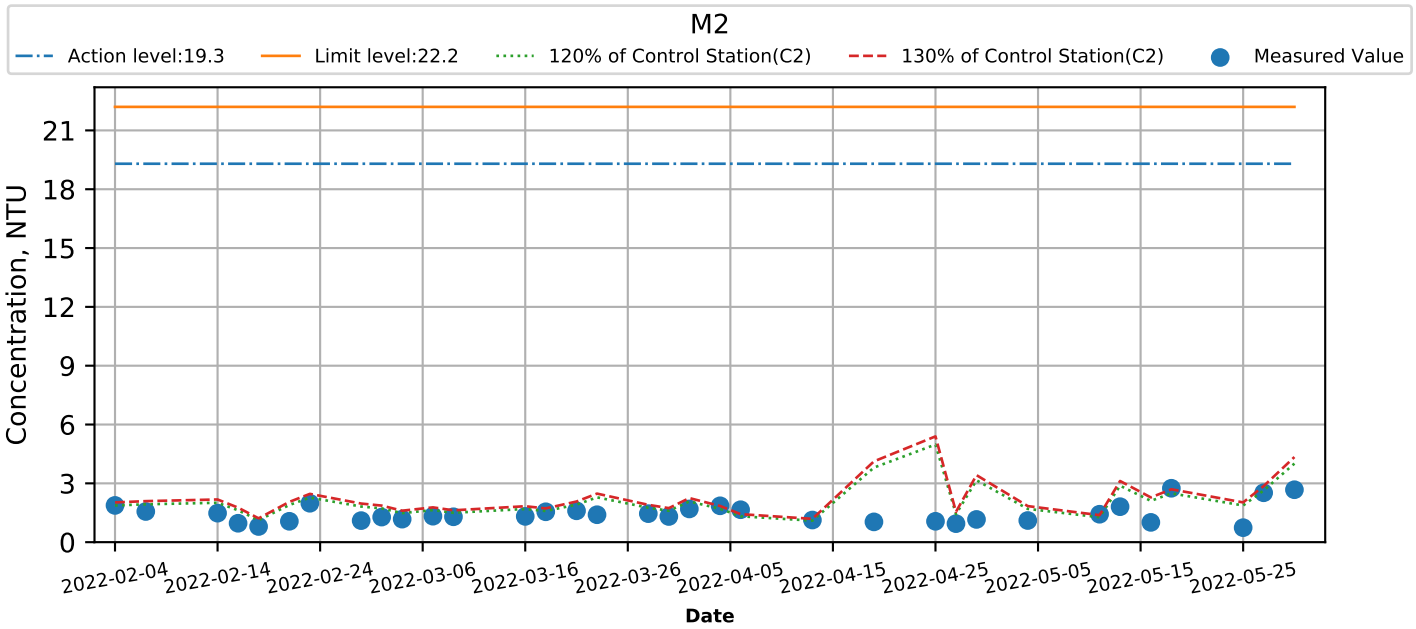


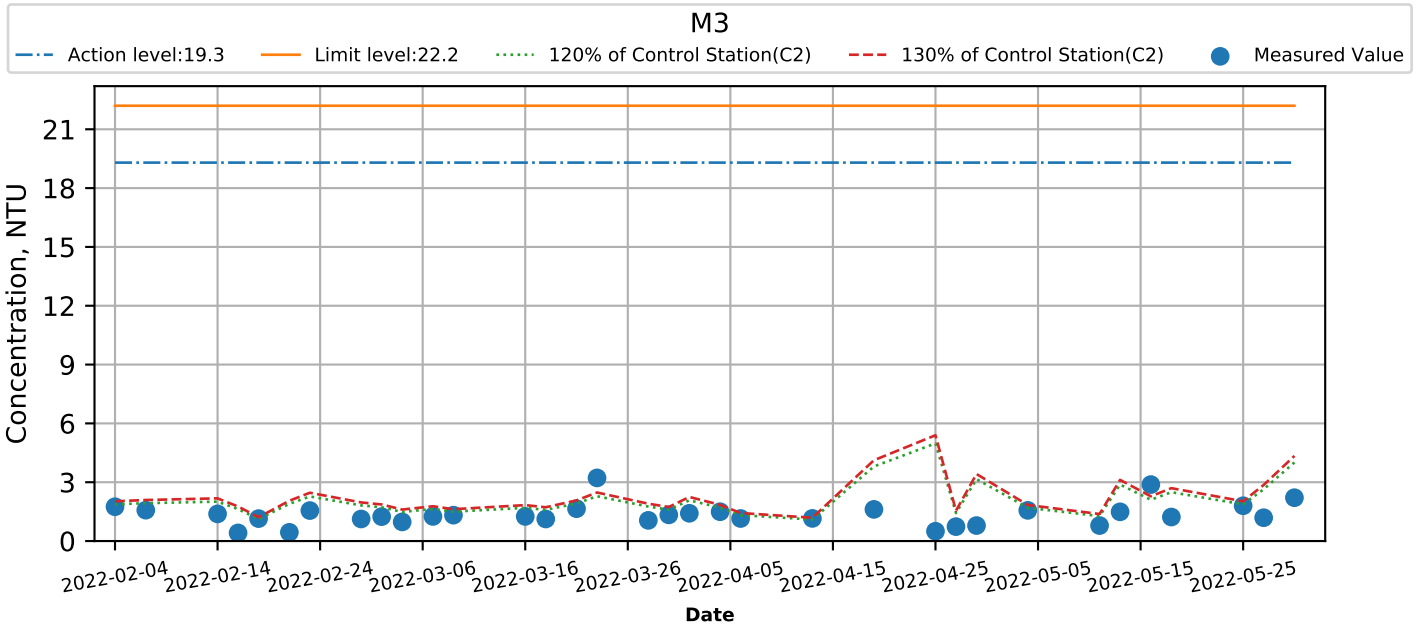


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Ebb

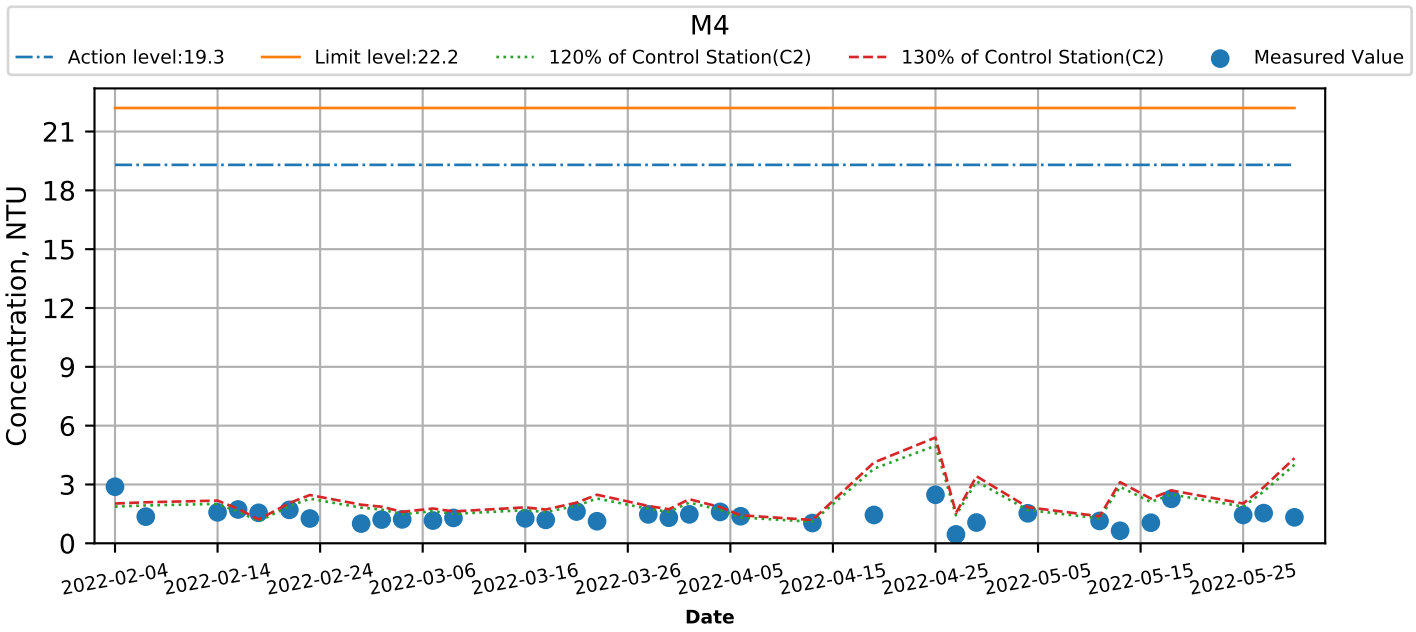


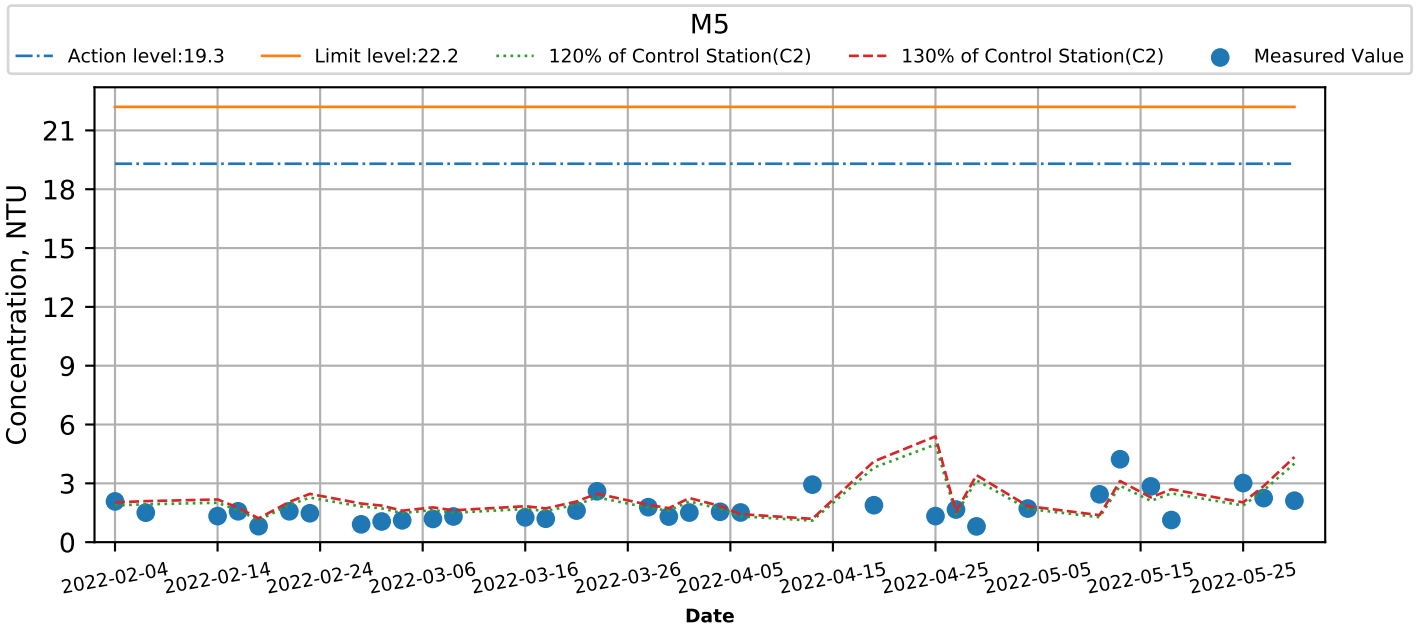




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

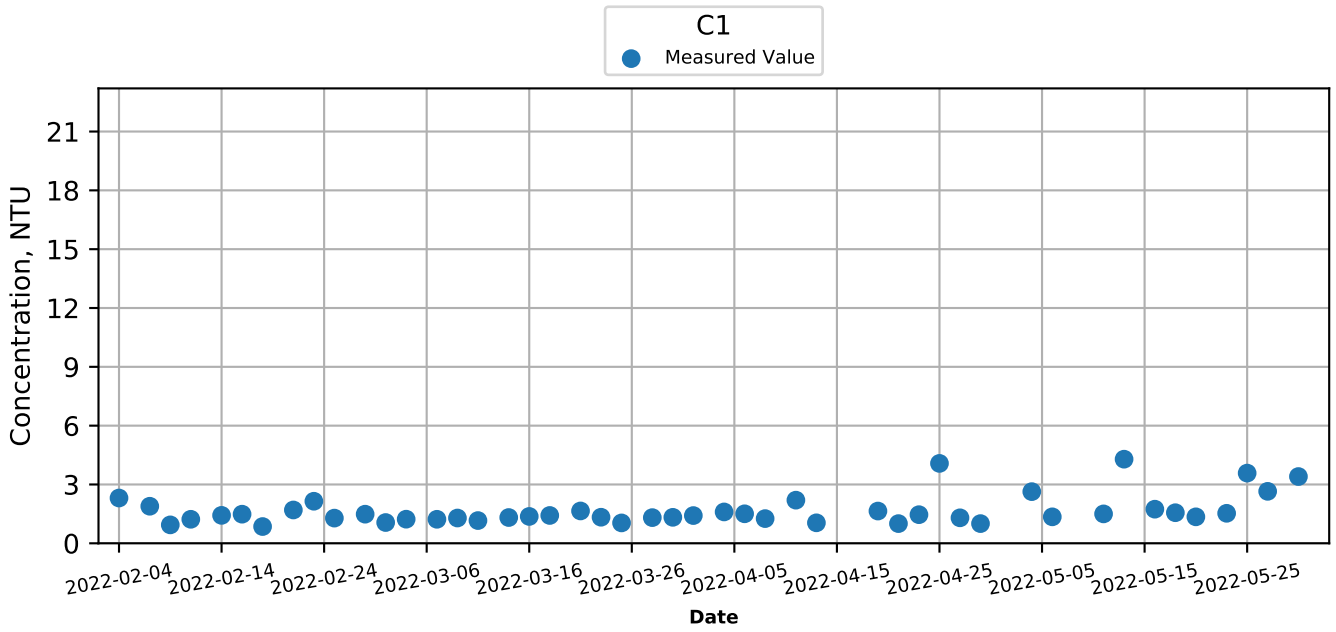
Turbidity (Bottom) at Monitoring Stations during Mid-Ebb

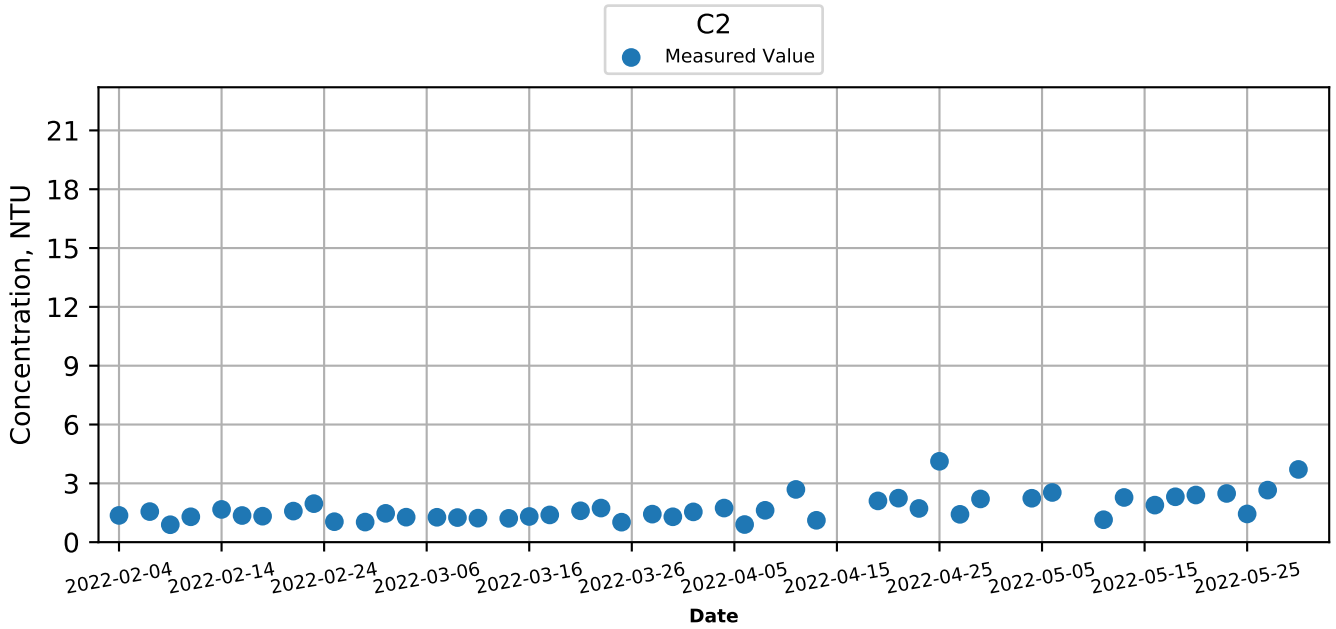


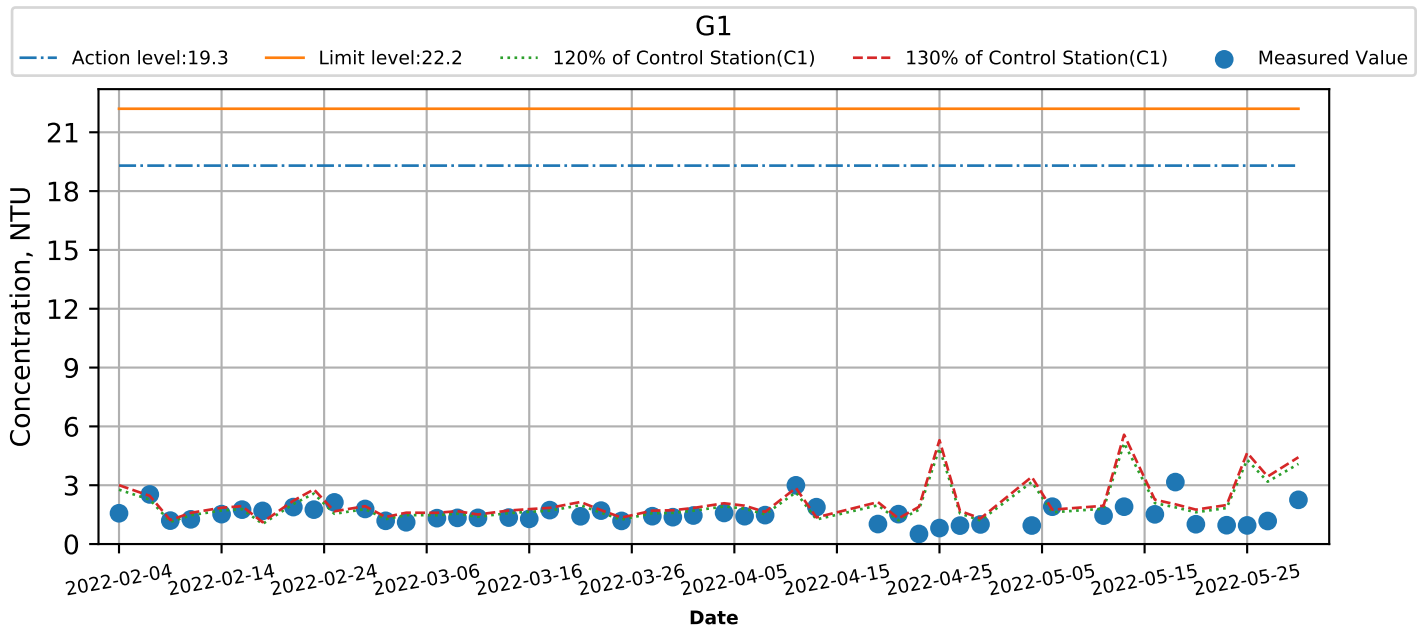


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Flood

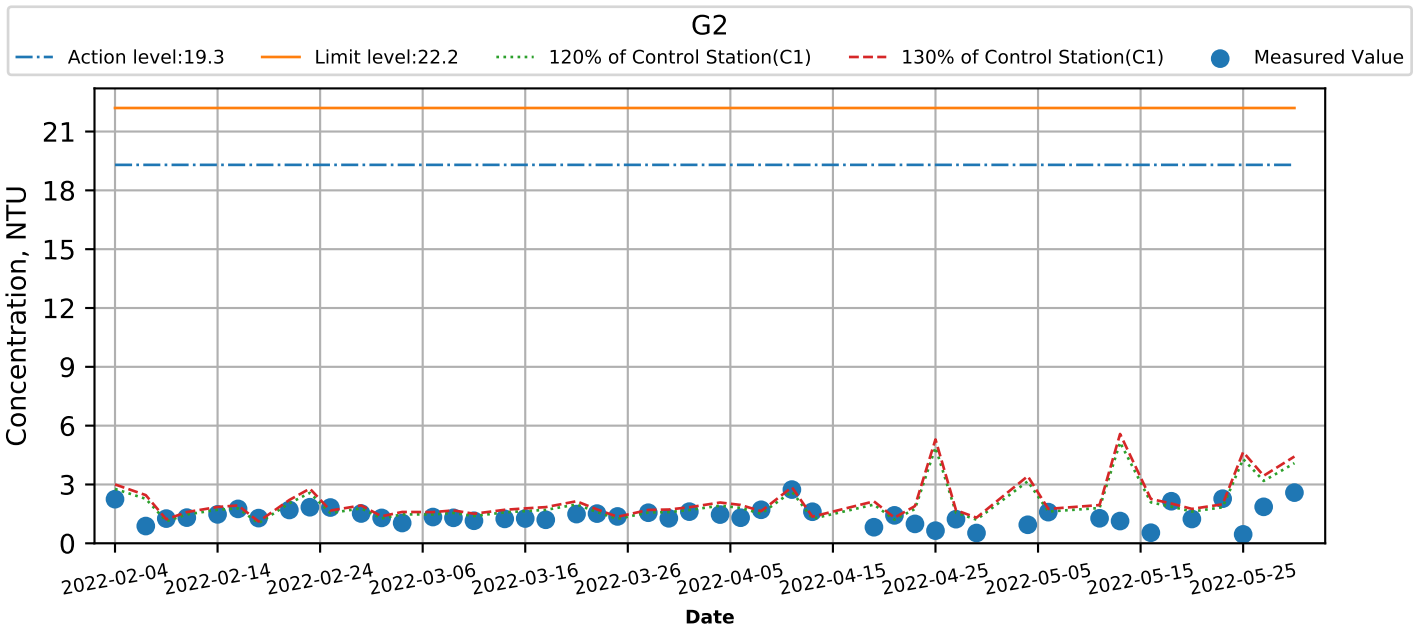


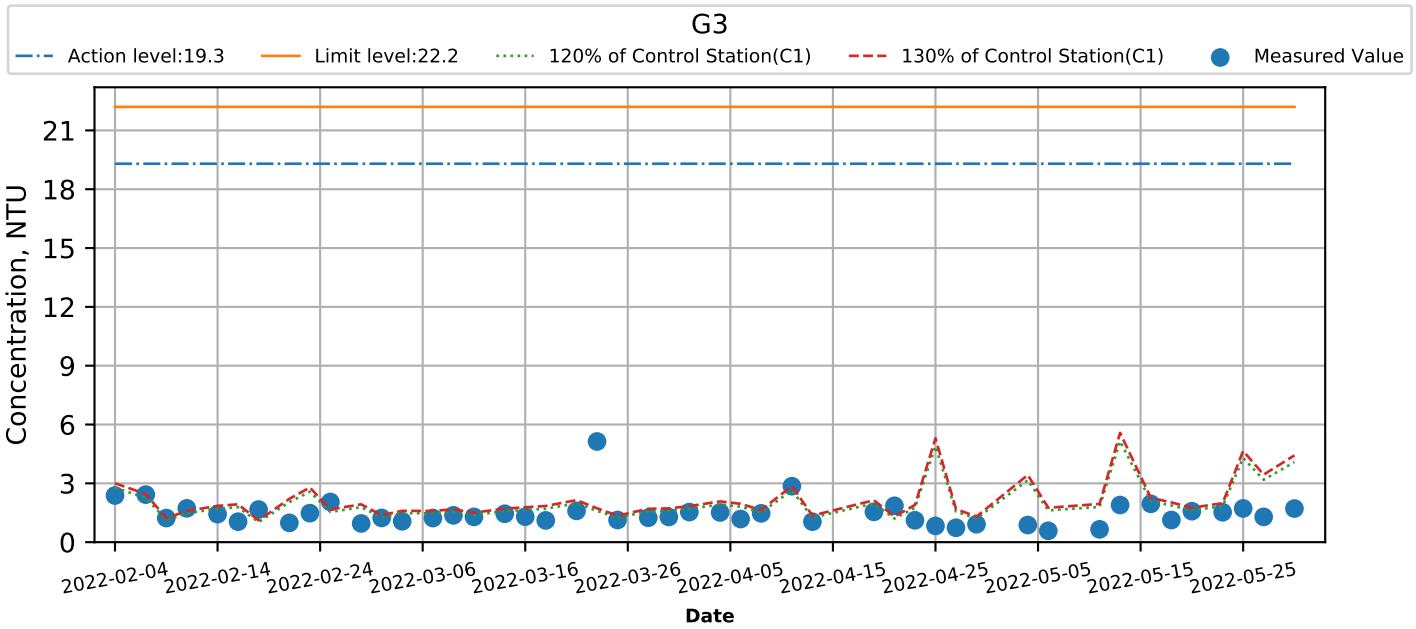


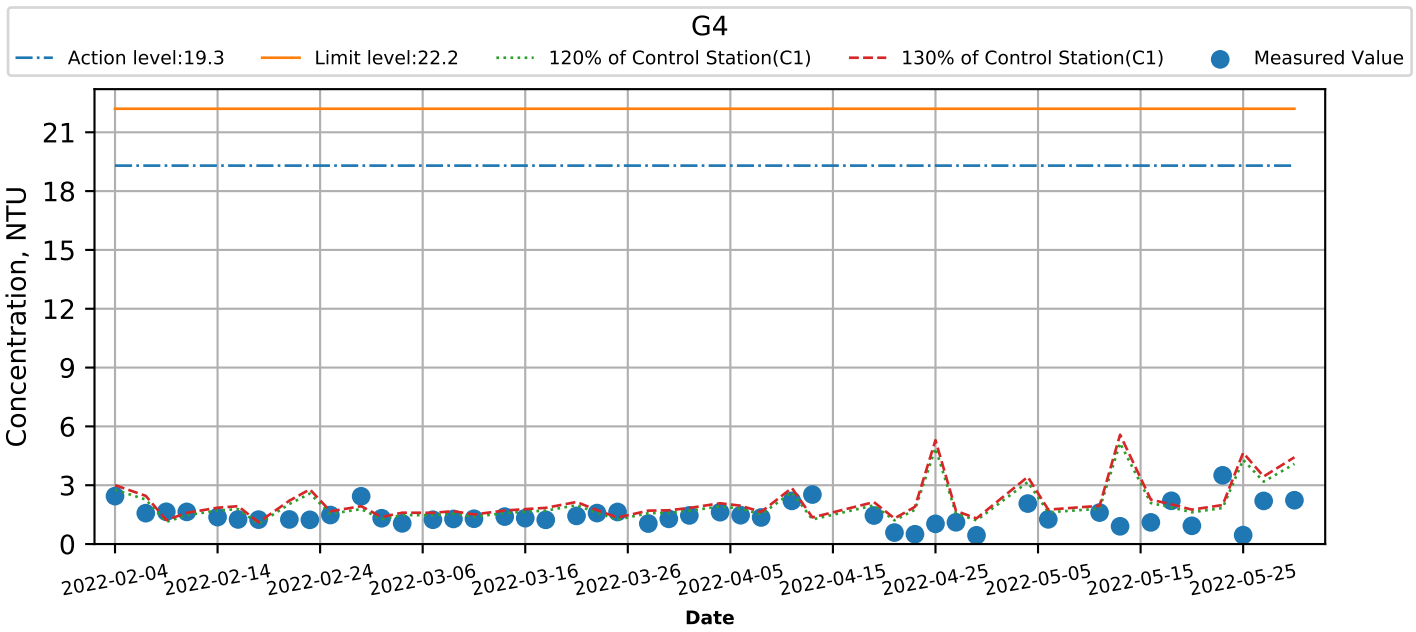


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Flood

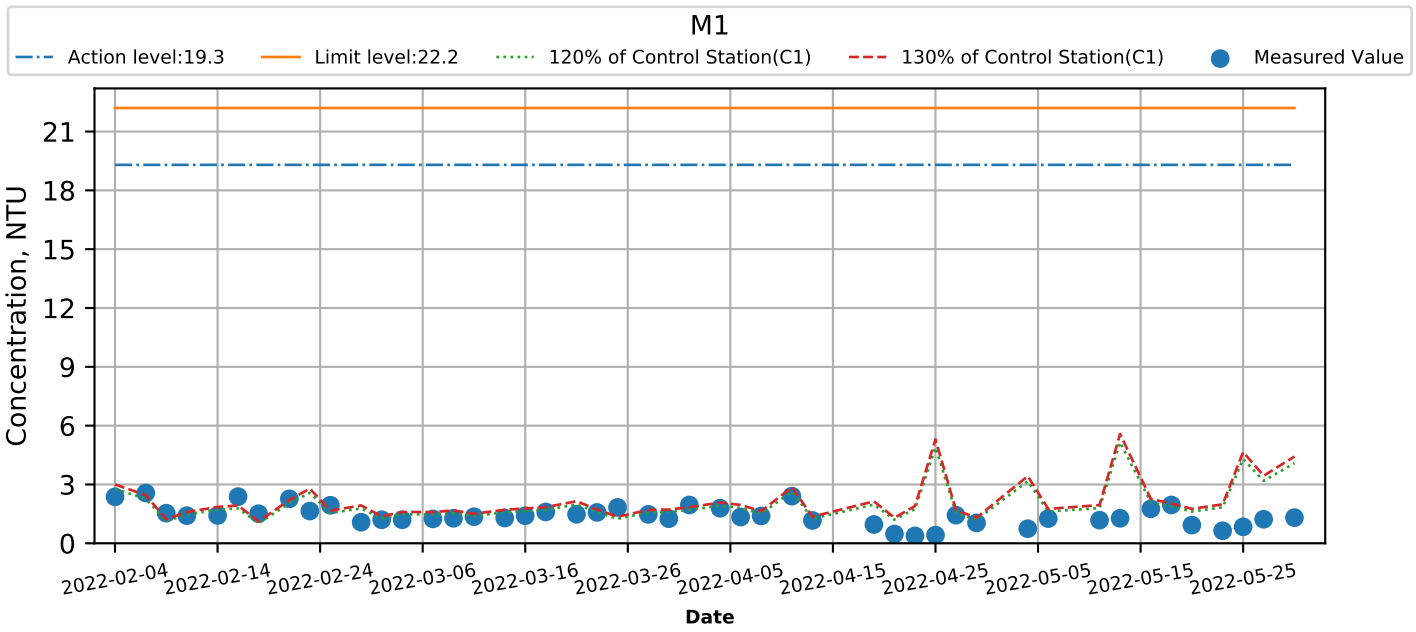


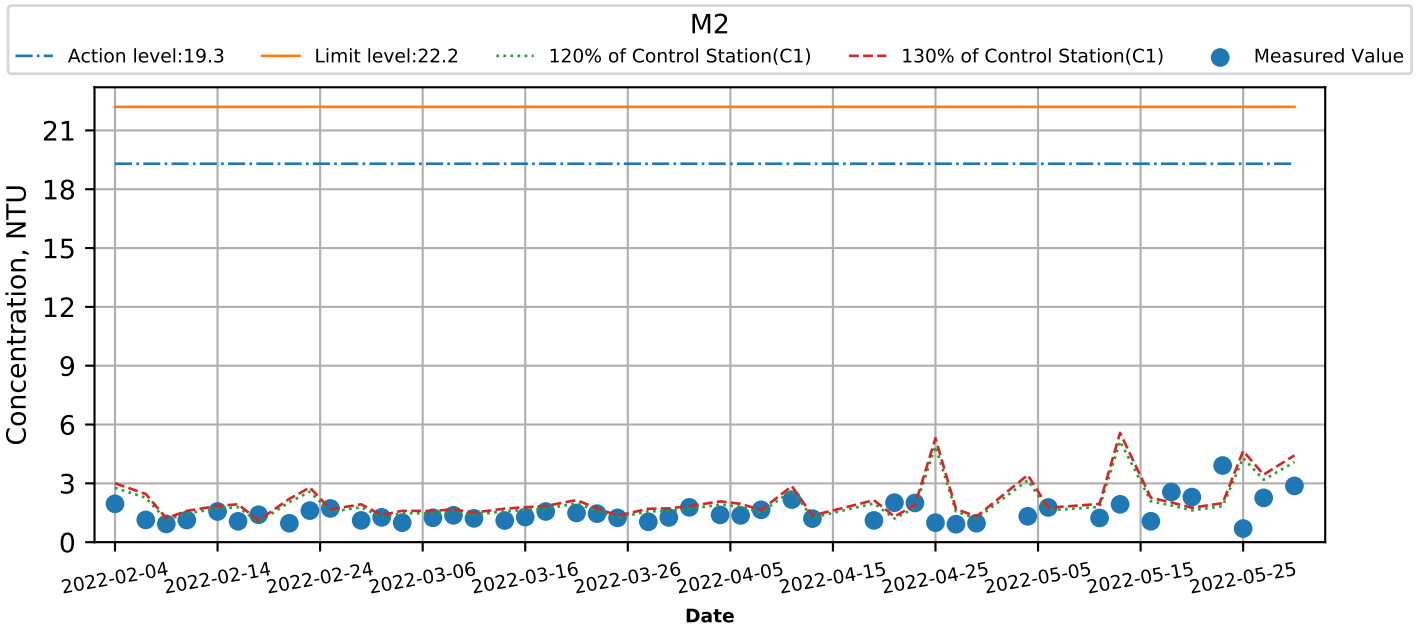


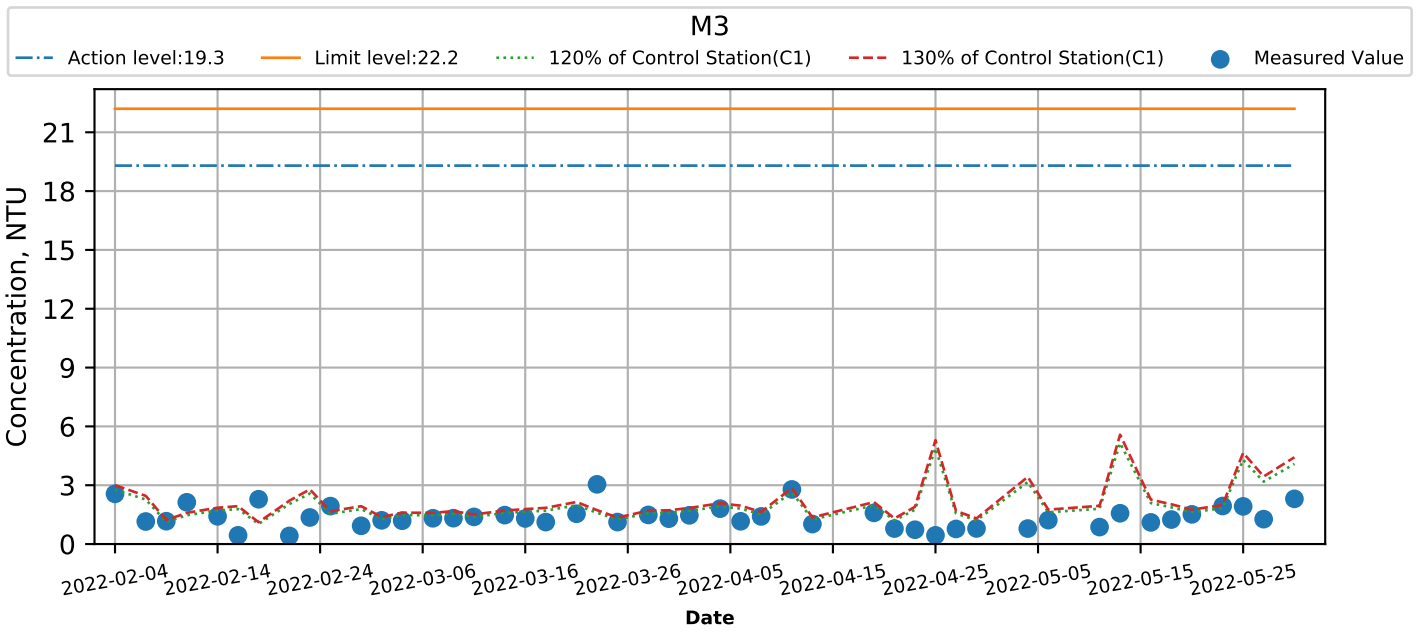


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Bottom) at Monitoring Stations during Mid-Flood

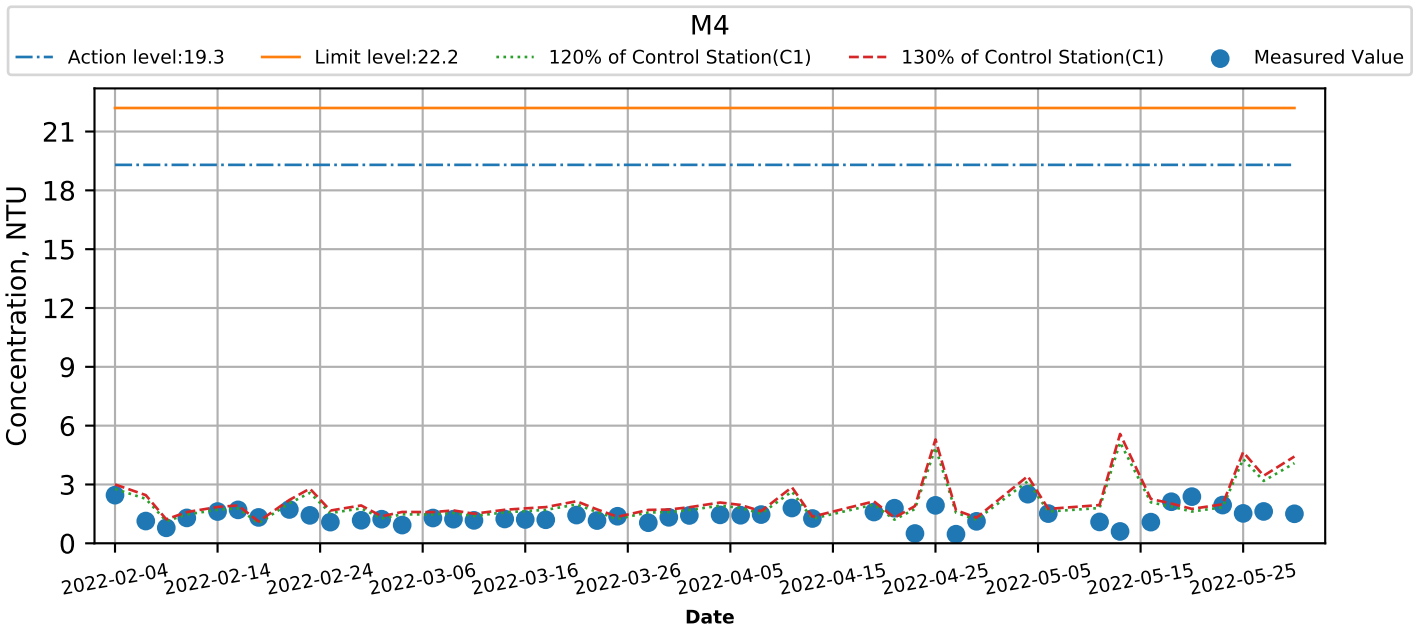


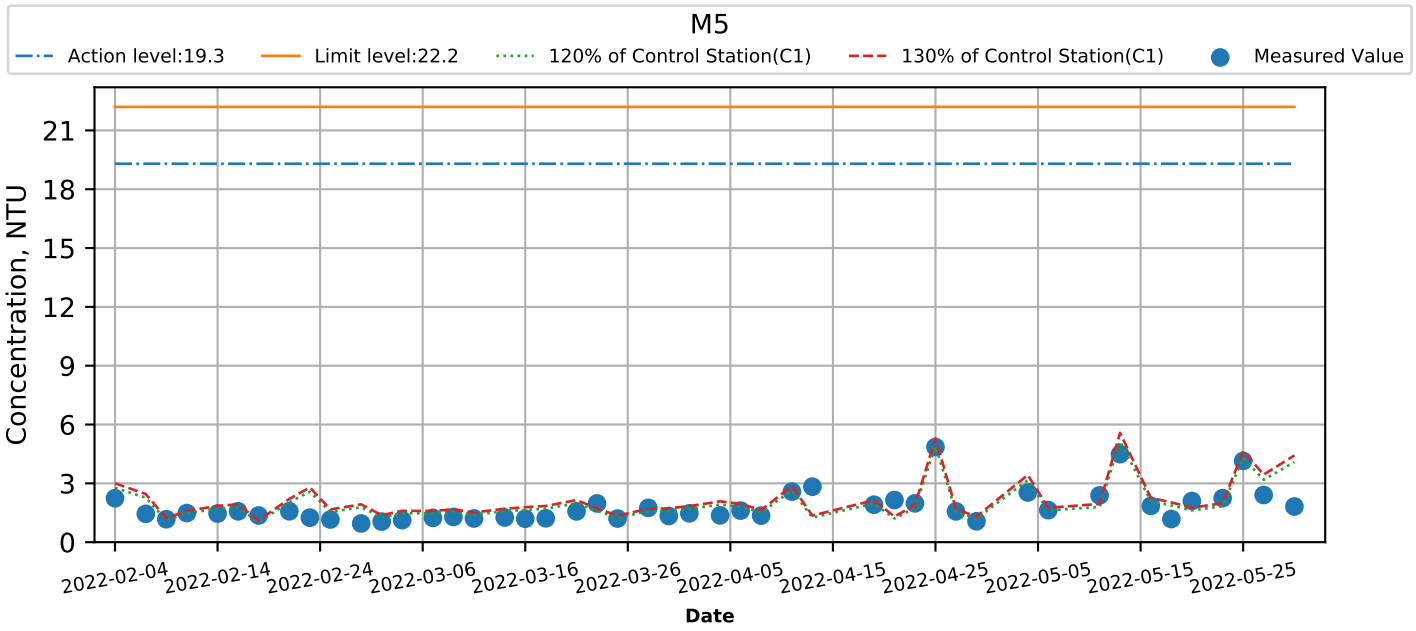




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

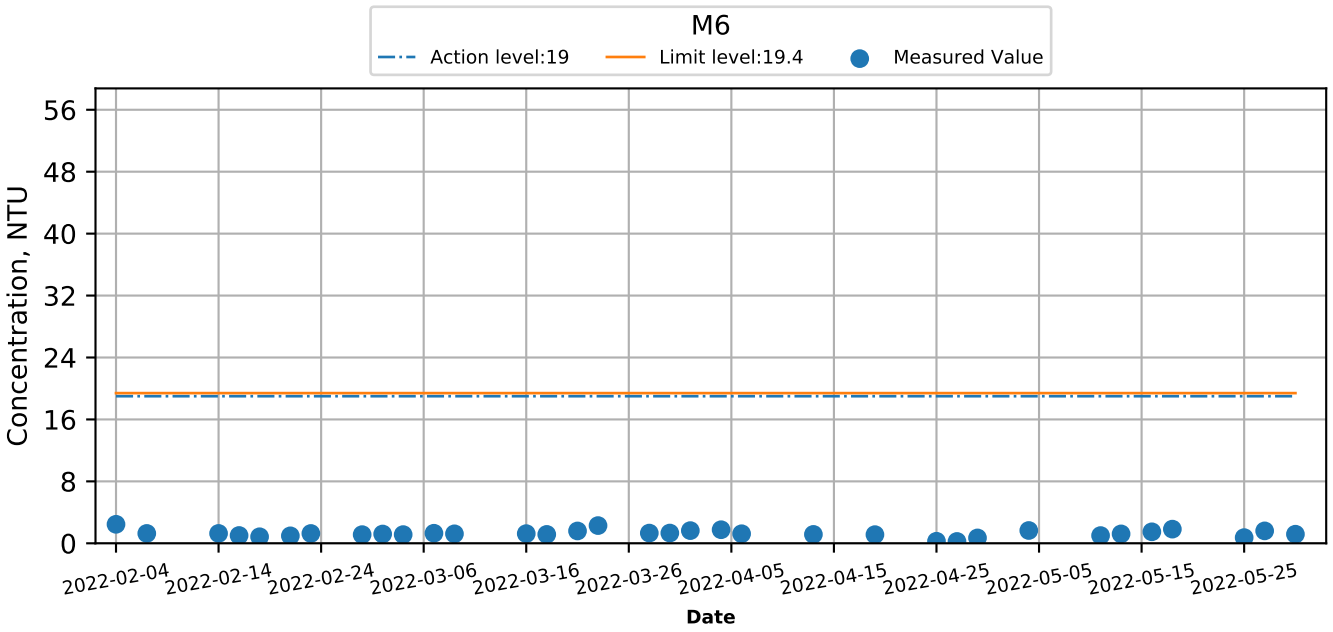
Turbidity (Bottom) at Monitoring Stations during Mid-Flood





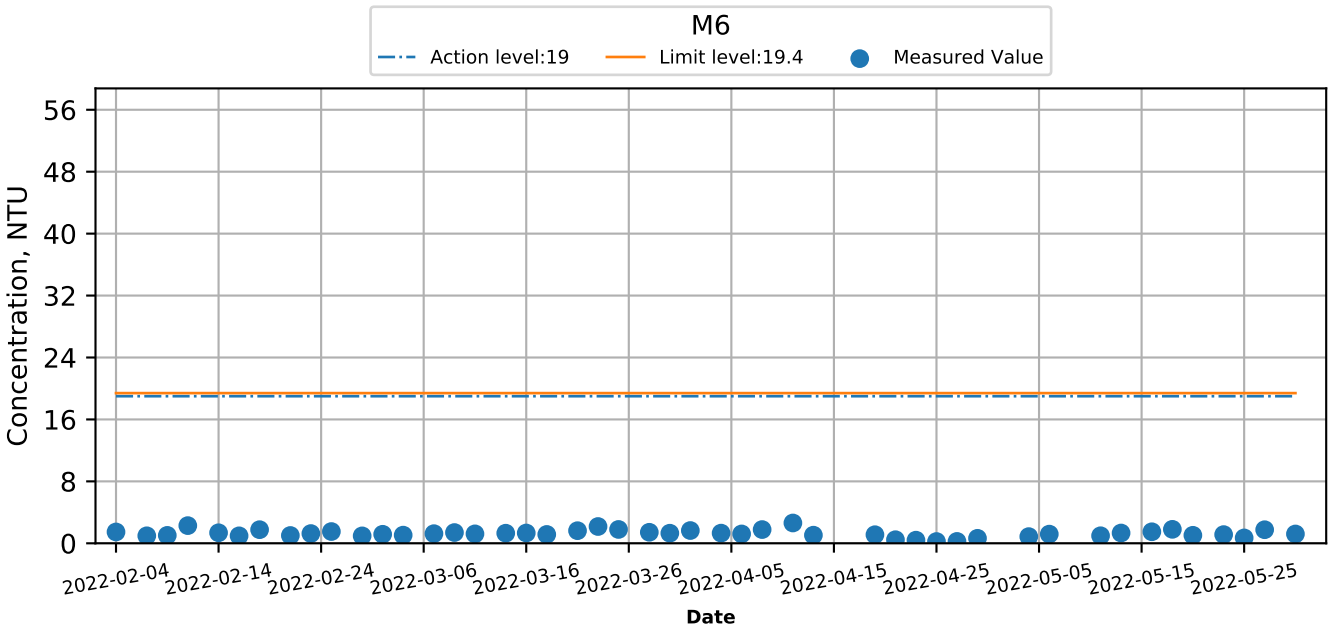
Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Turbidity (Intake level) at Monitoring Stations during Mid-Ebb



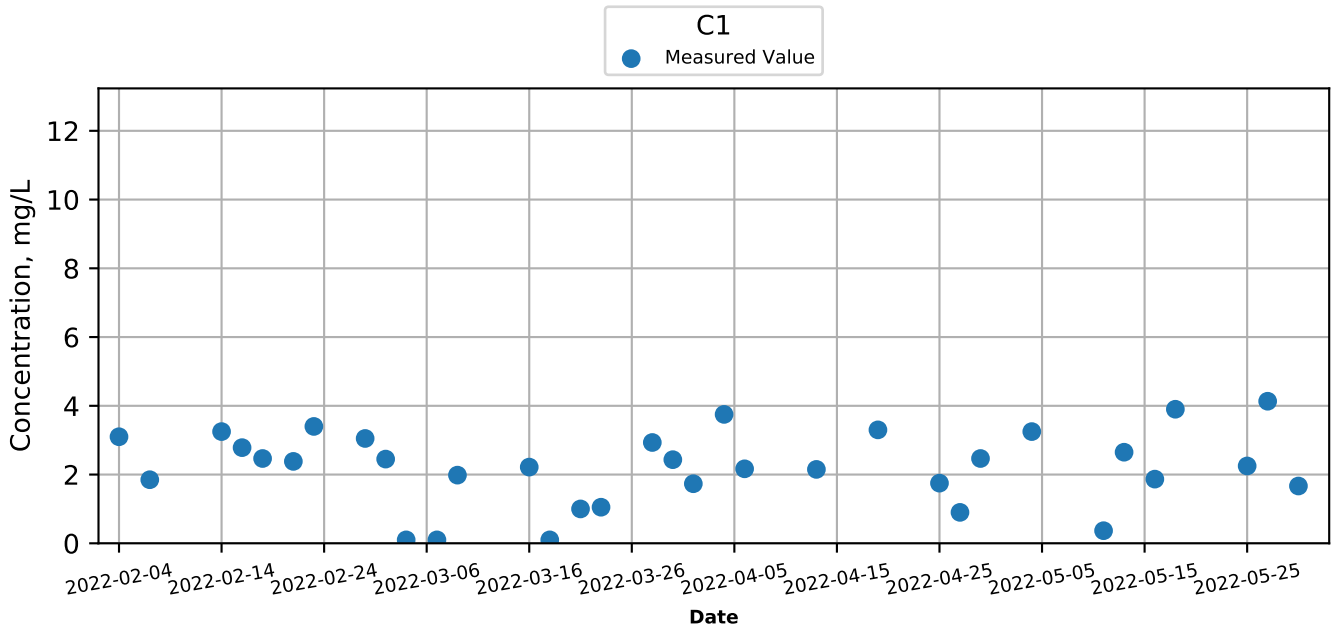
Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

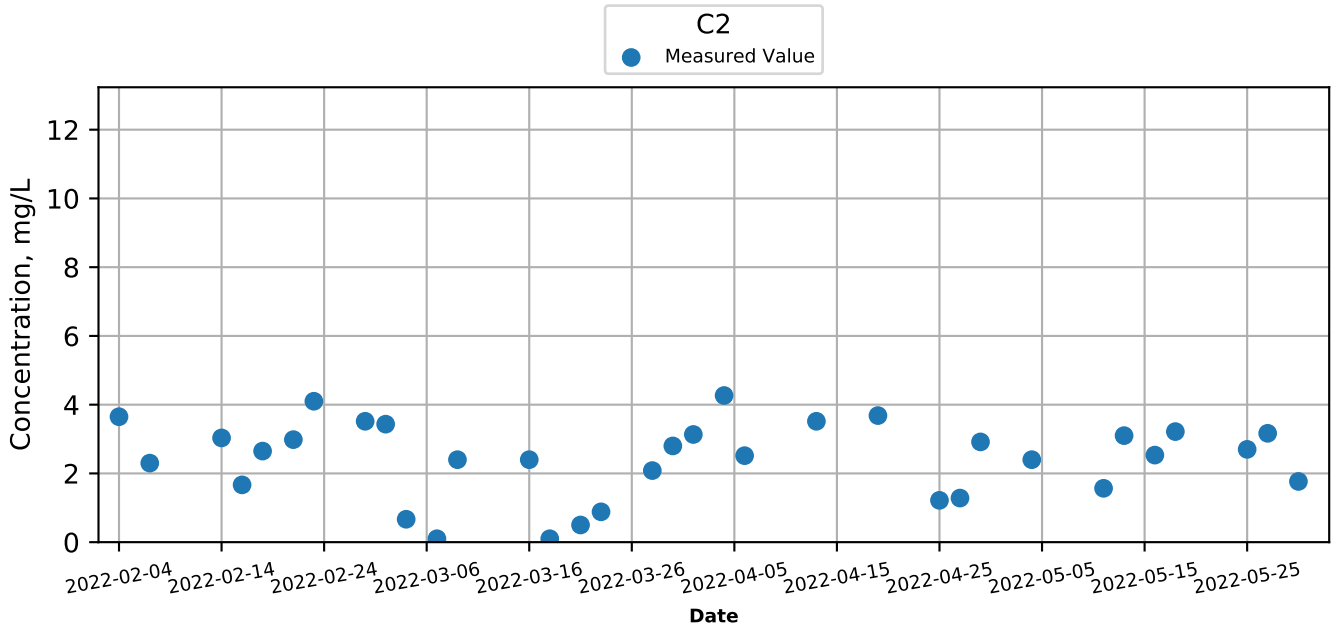
Turbidity (Intake level) at Monitoring Stations during Mid-Flood

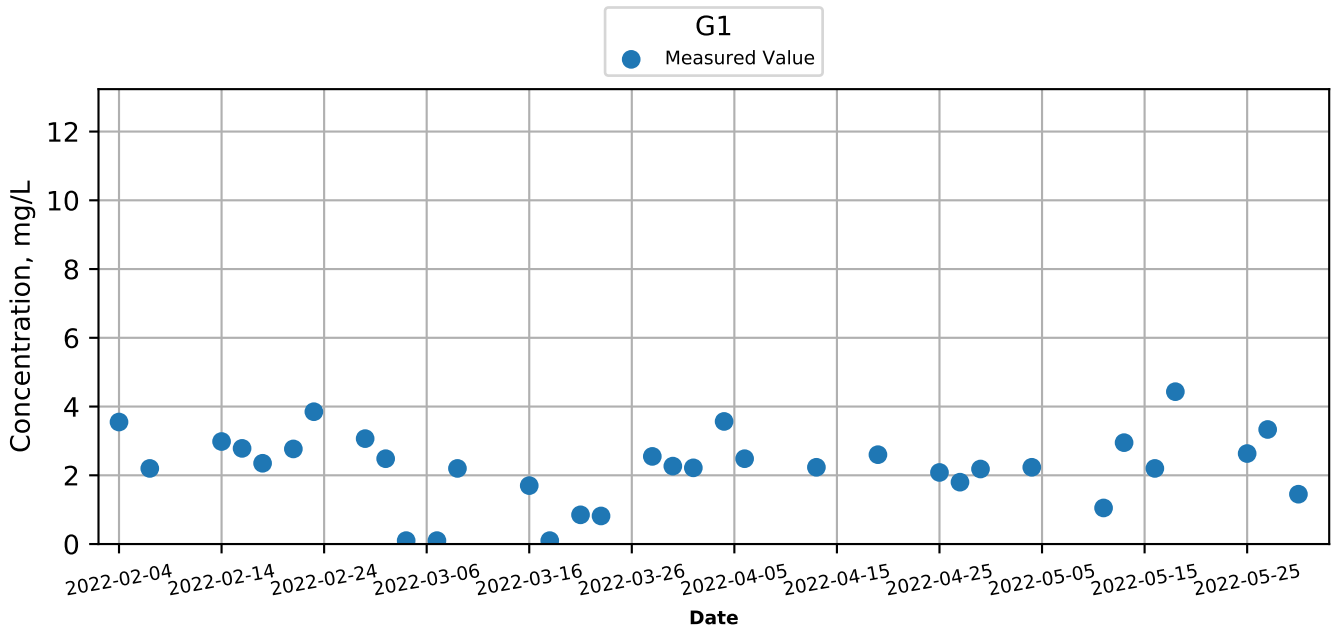


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Ebb

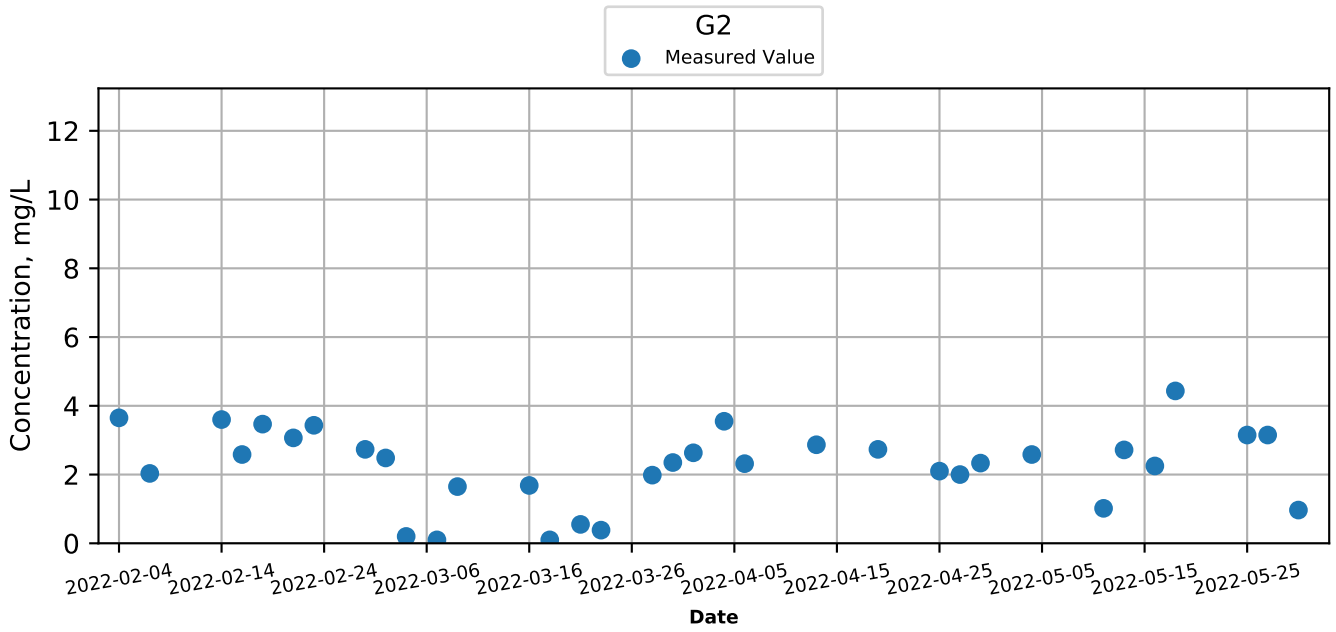


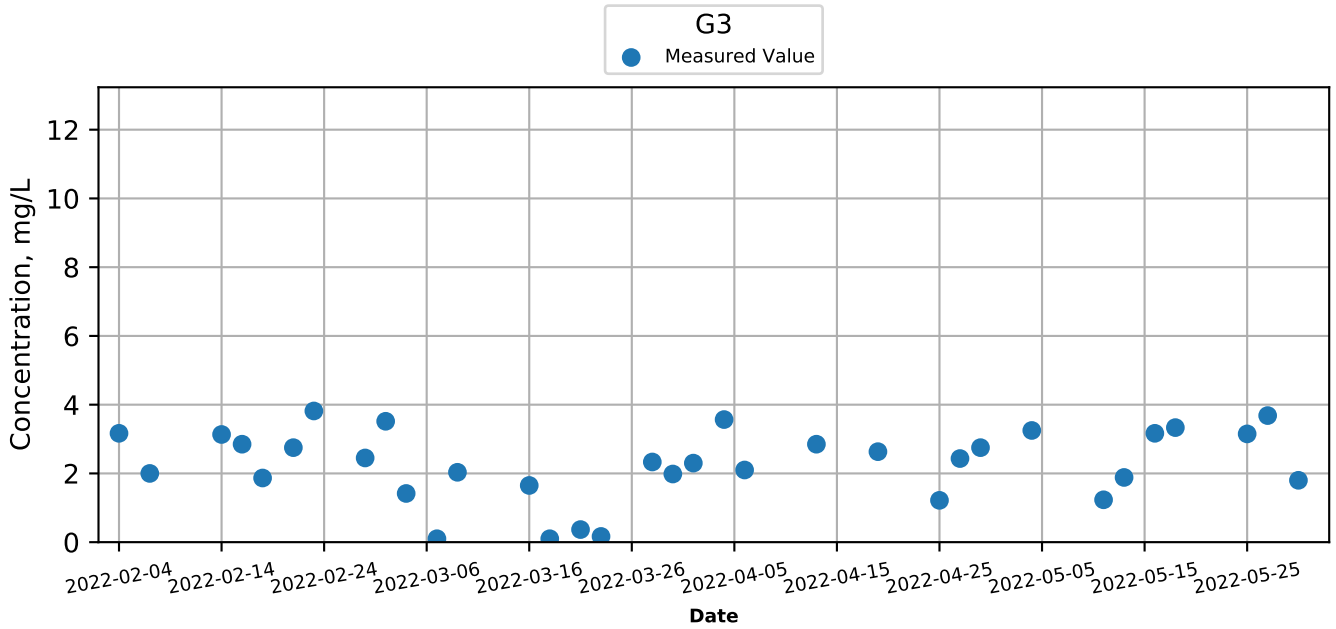


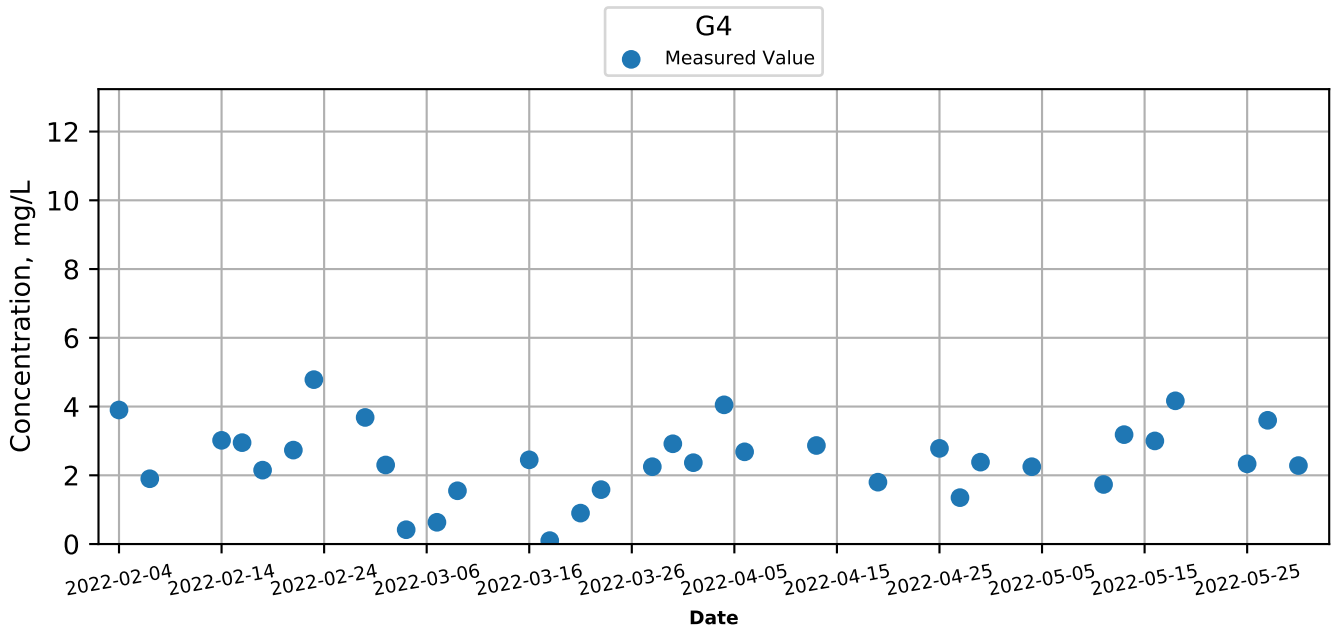


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Ebb

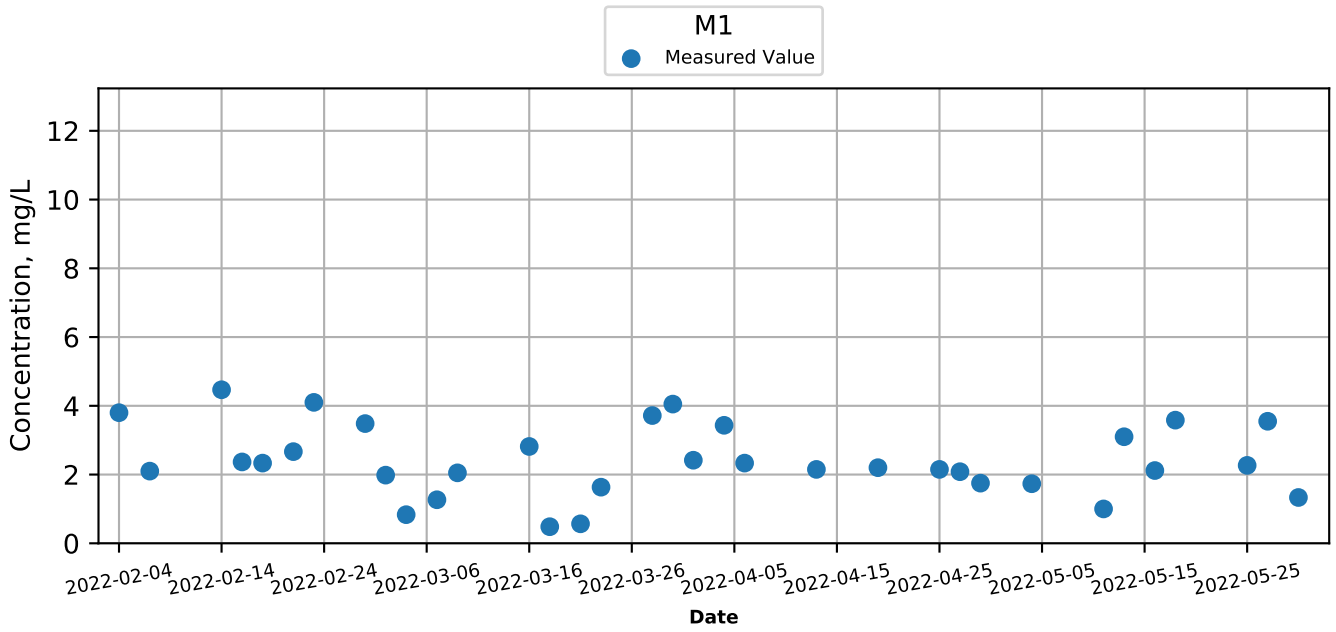


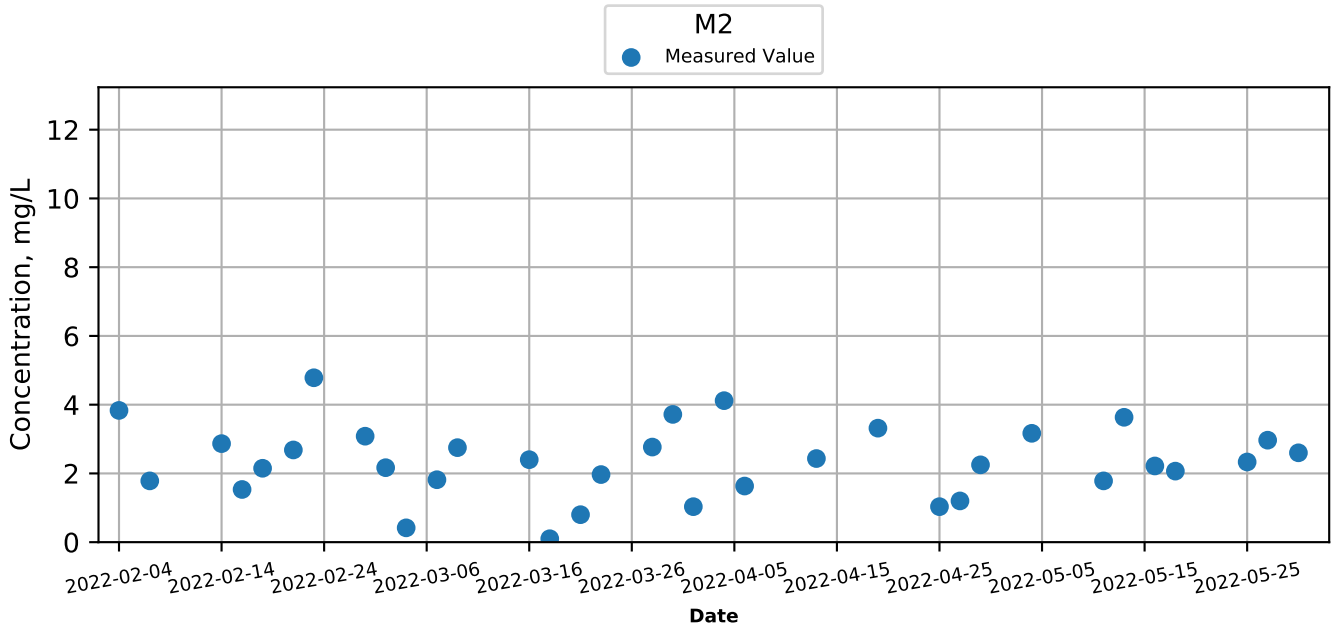


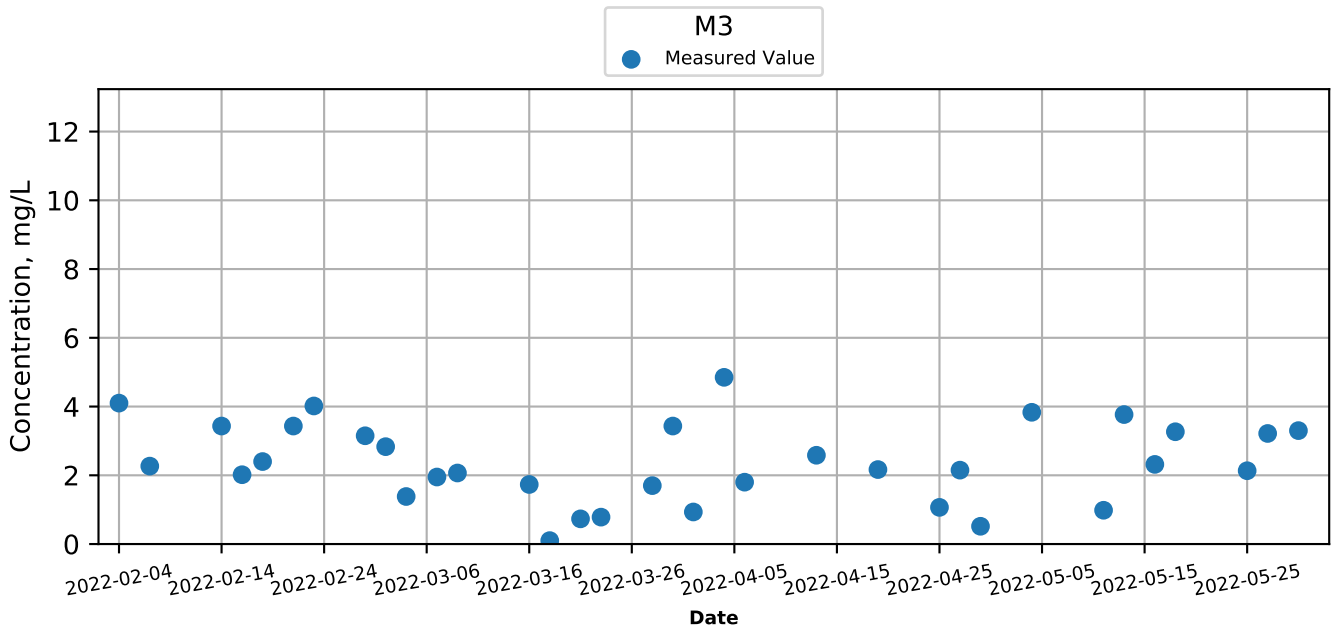


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Ebb

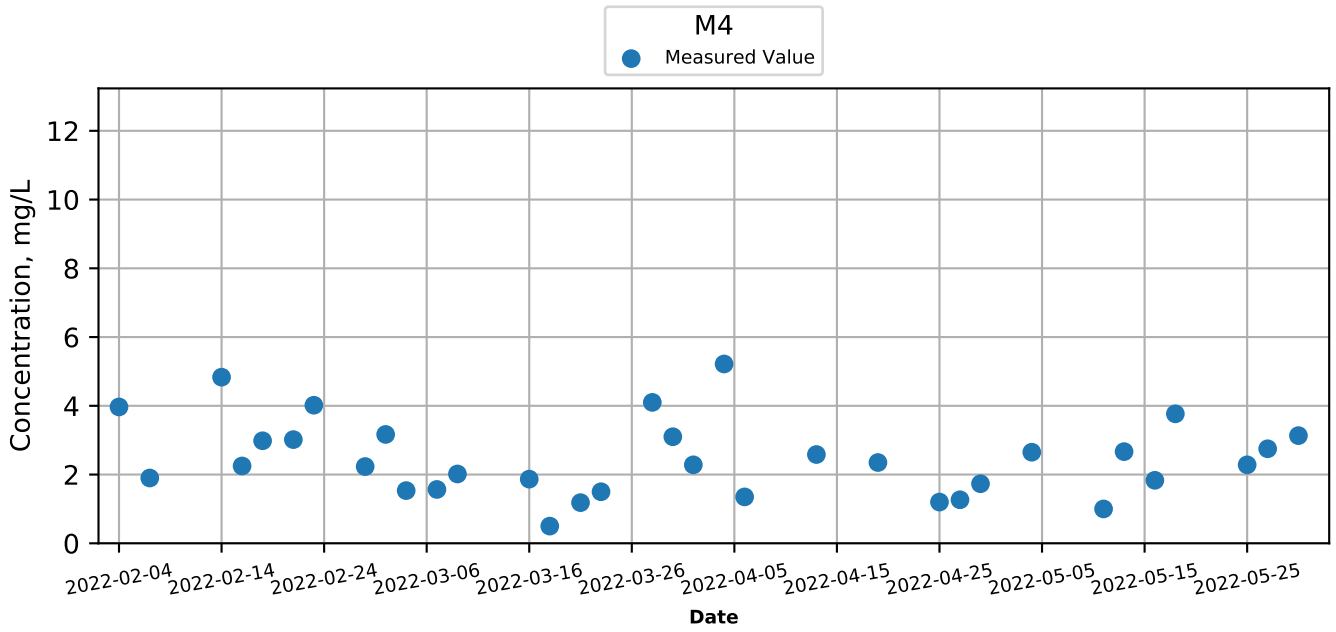


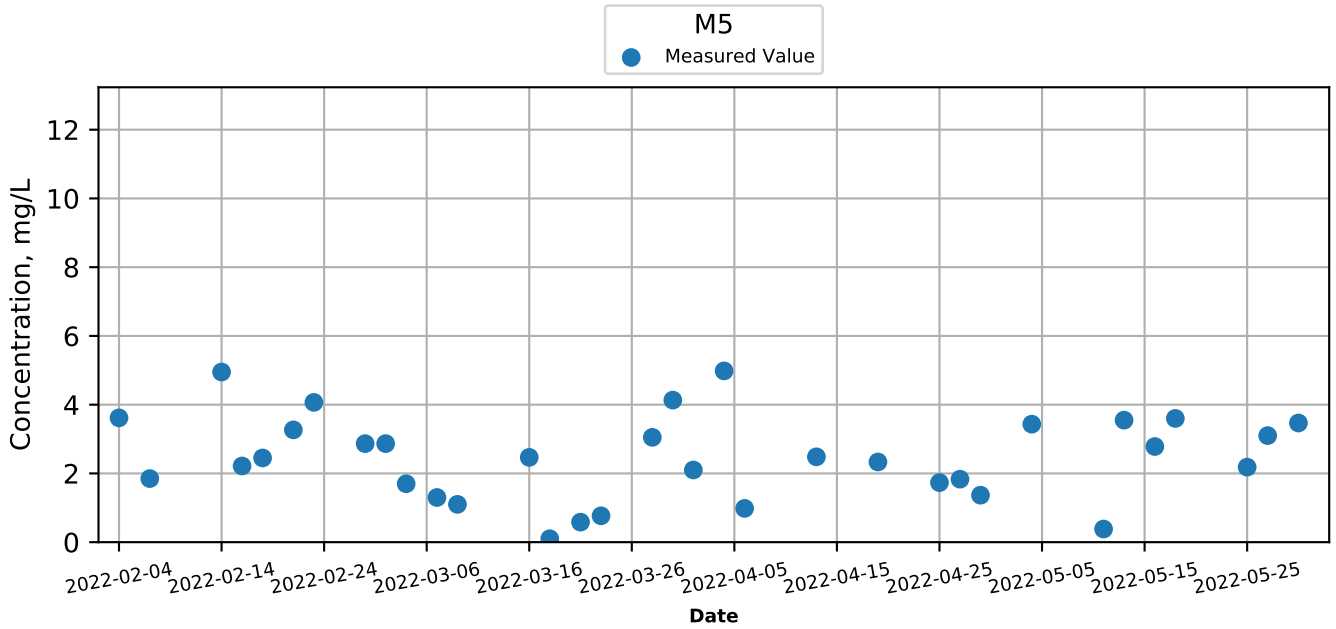




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

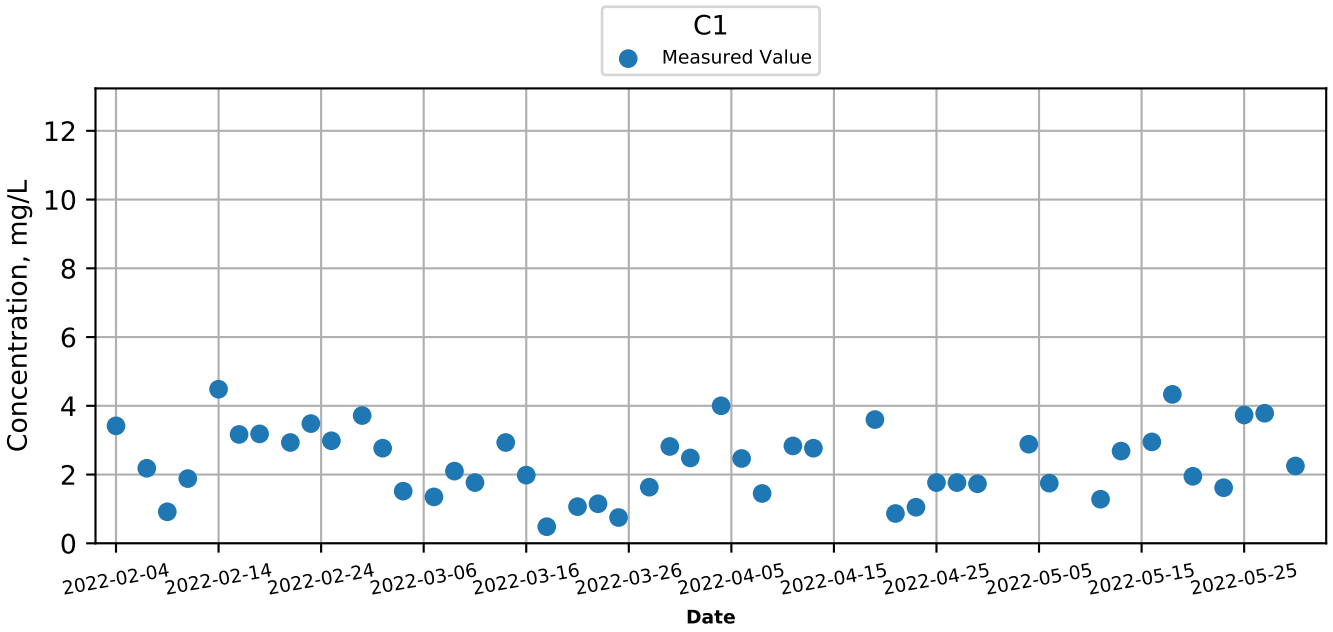
Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Ebb

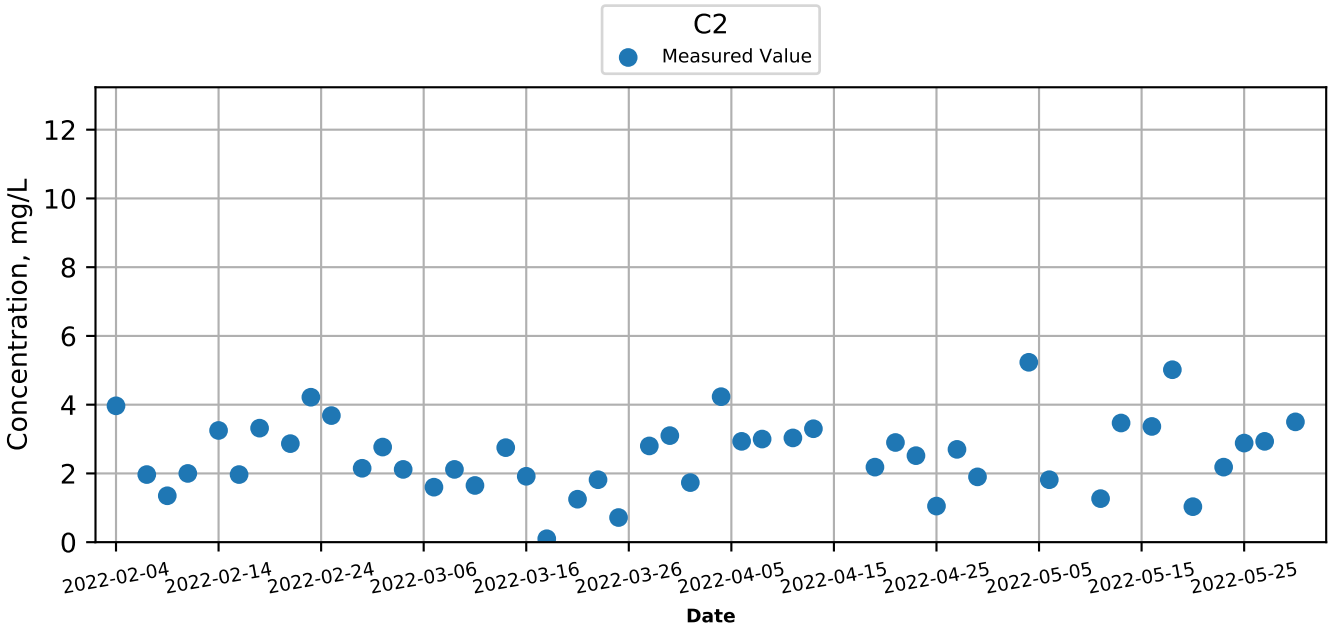


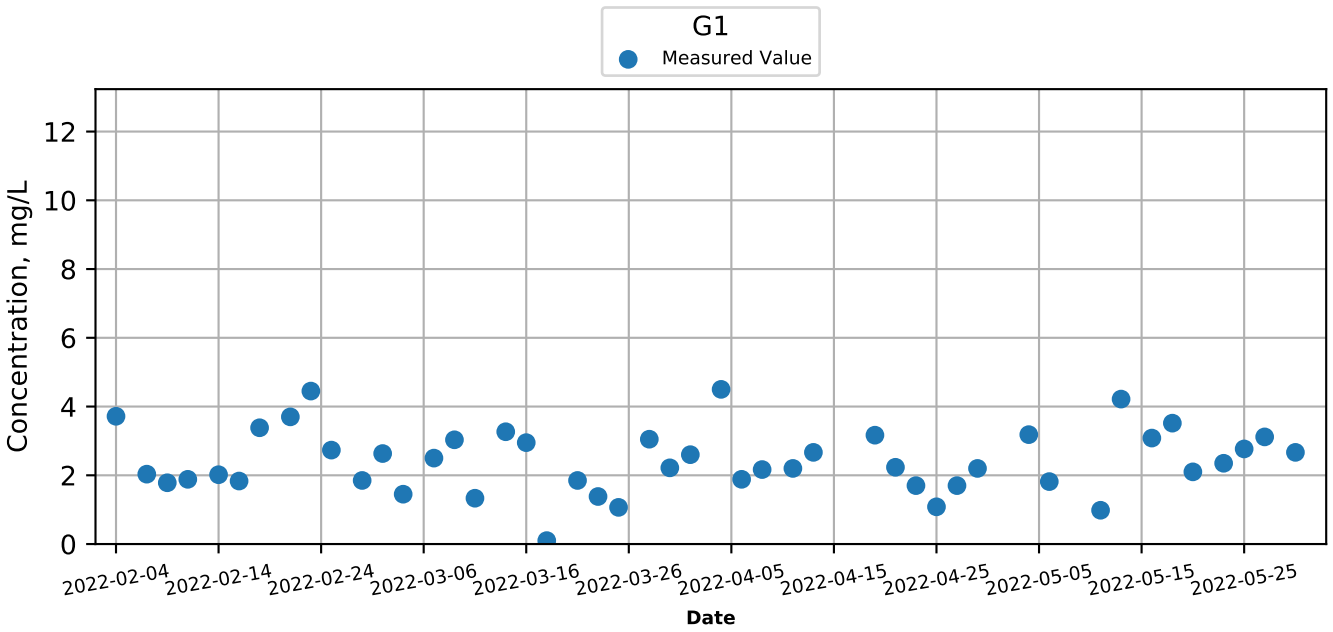


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Flood

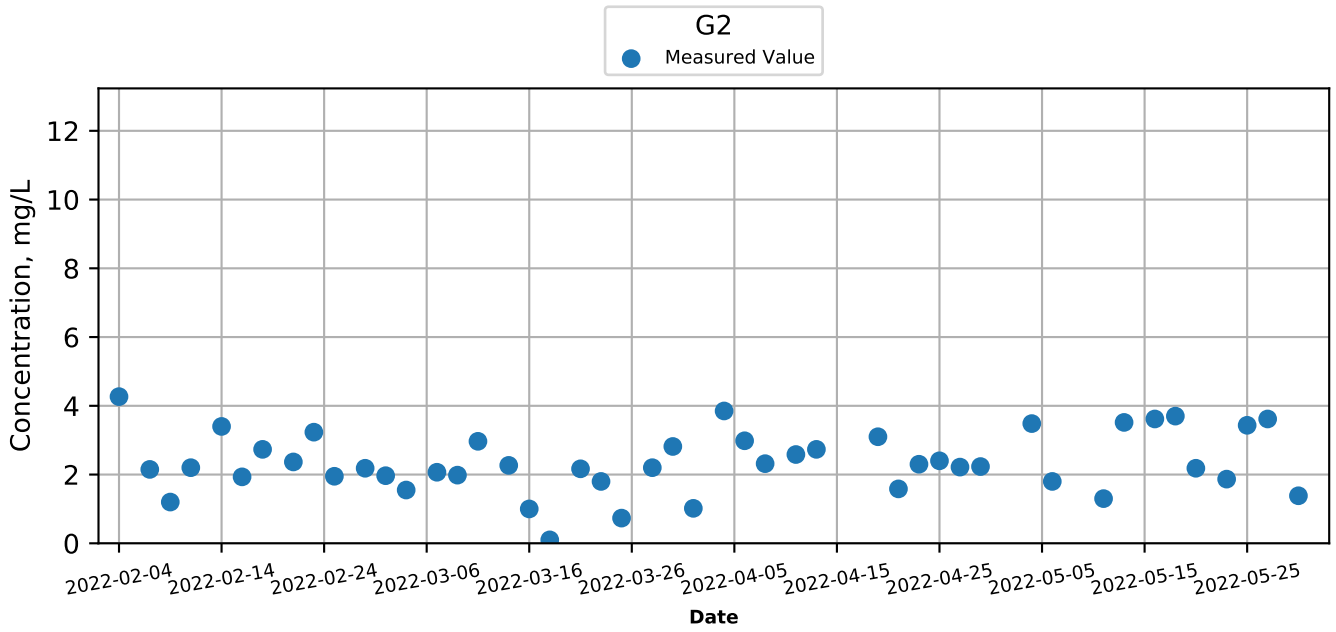


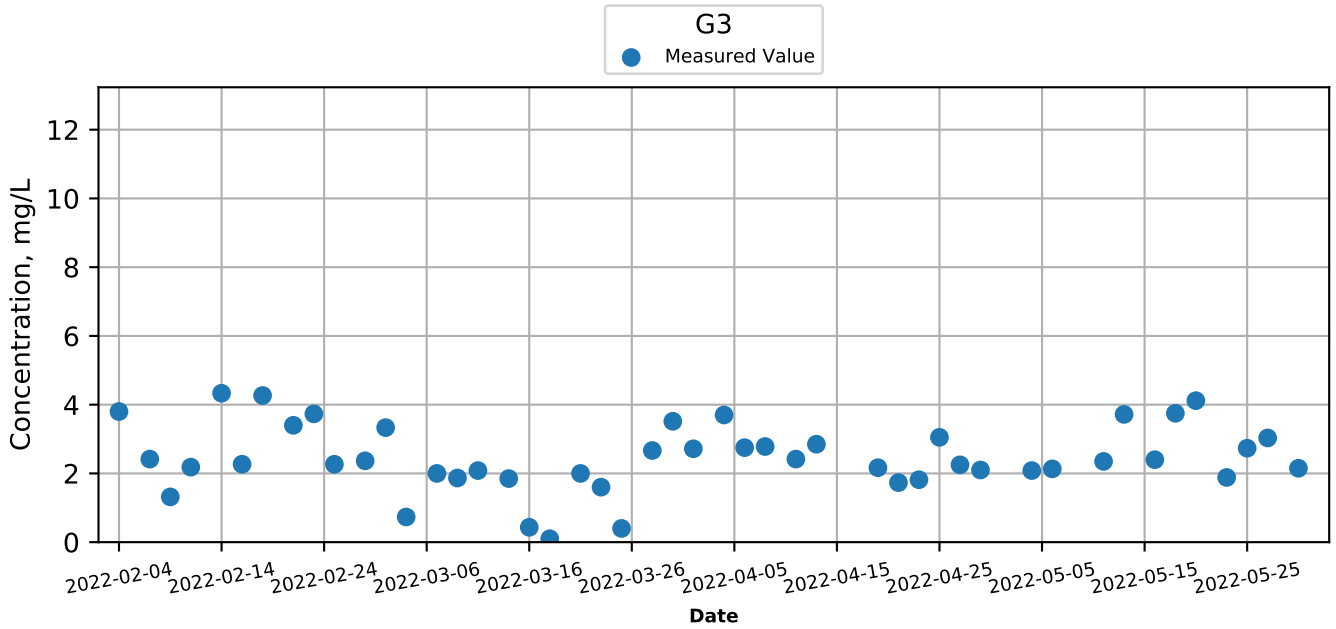


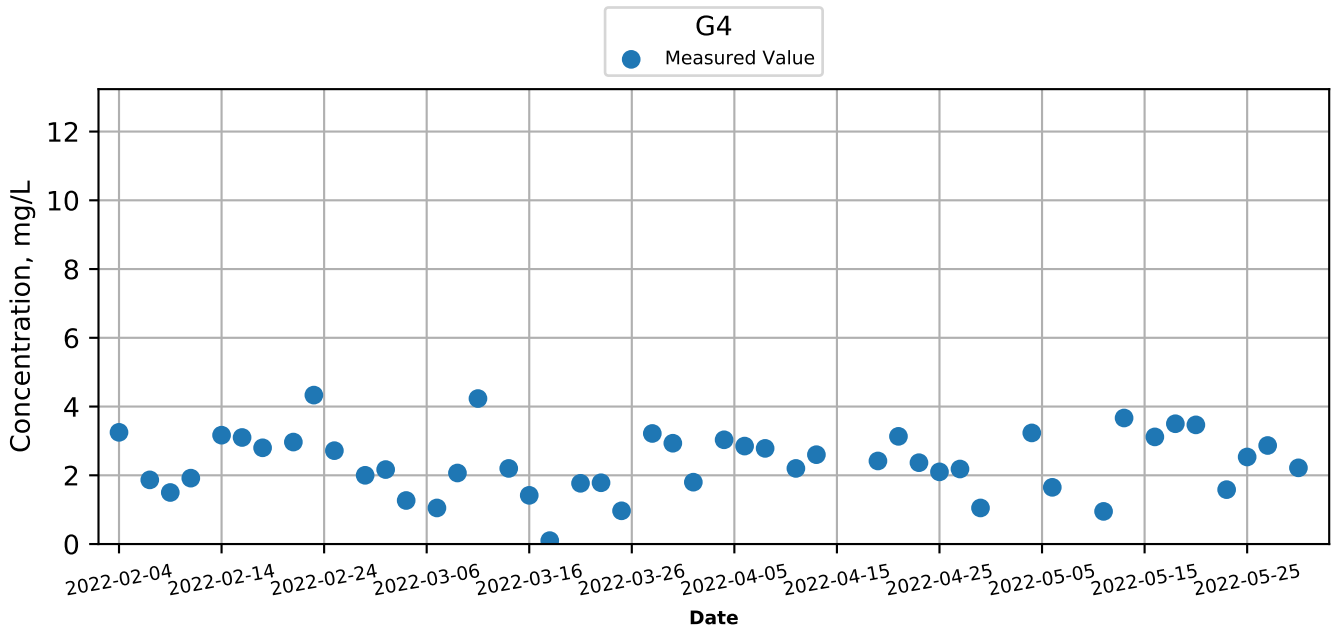


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Flood

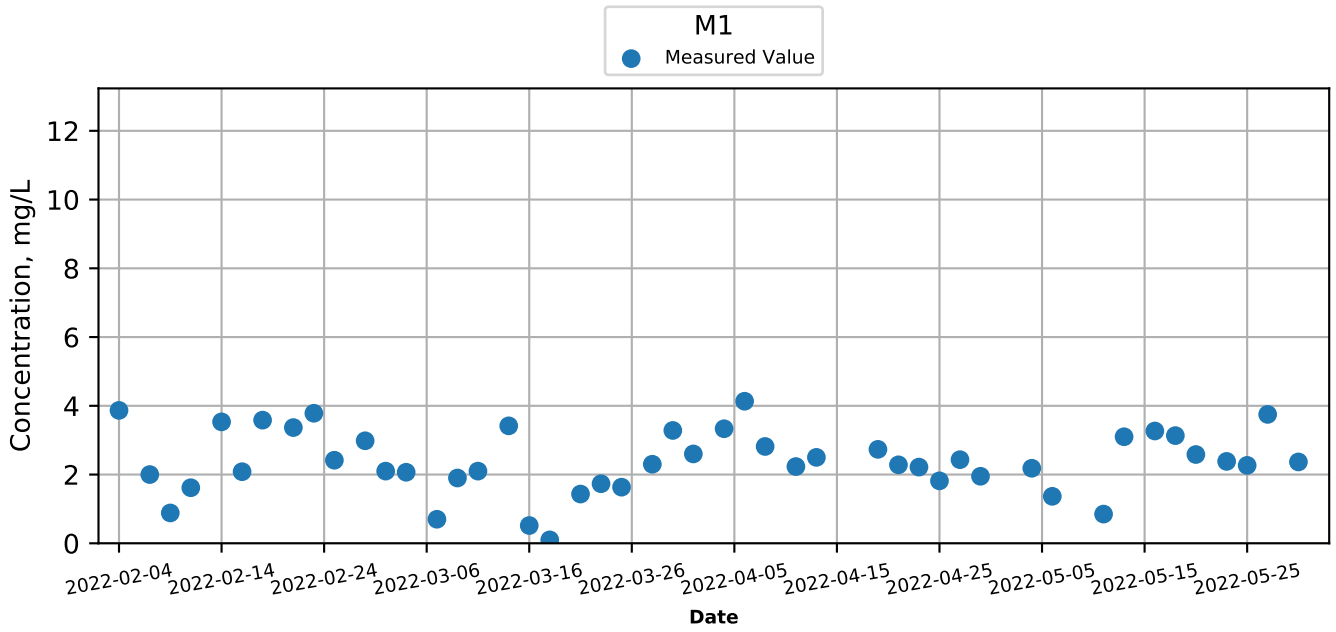


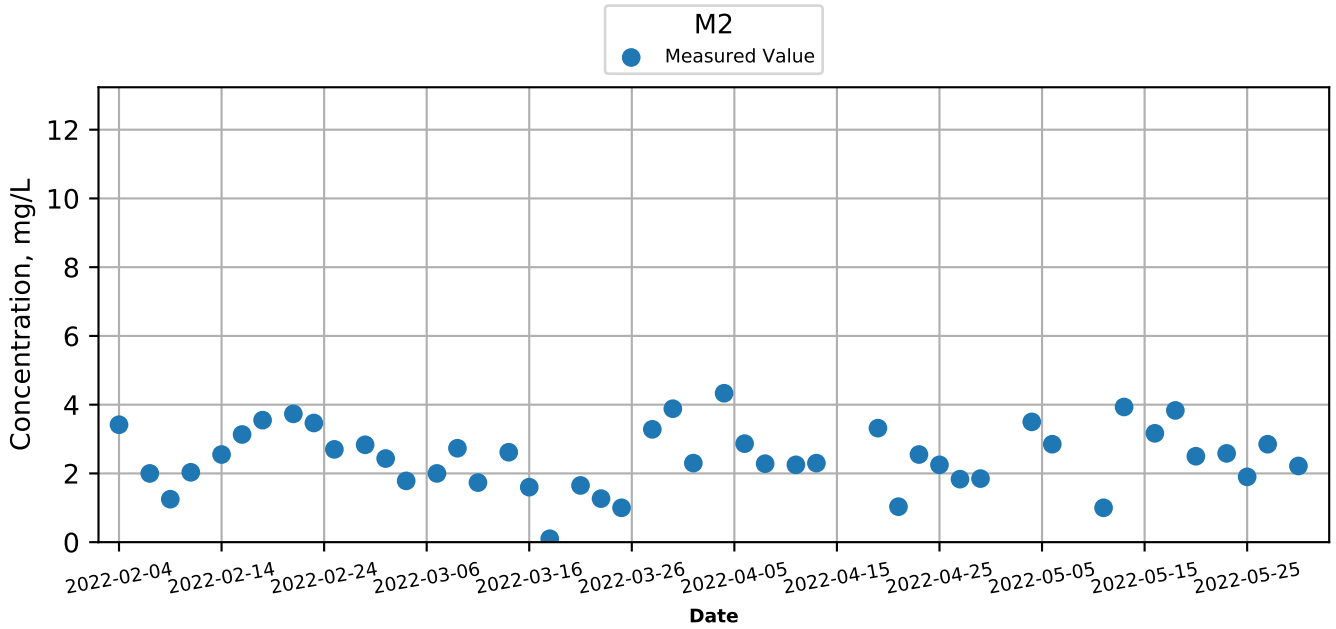


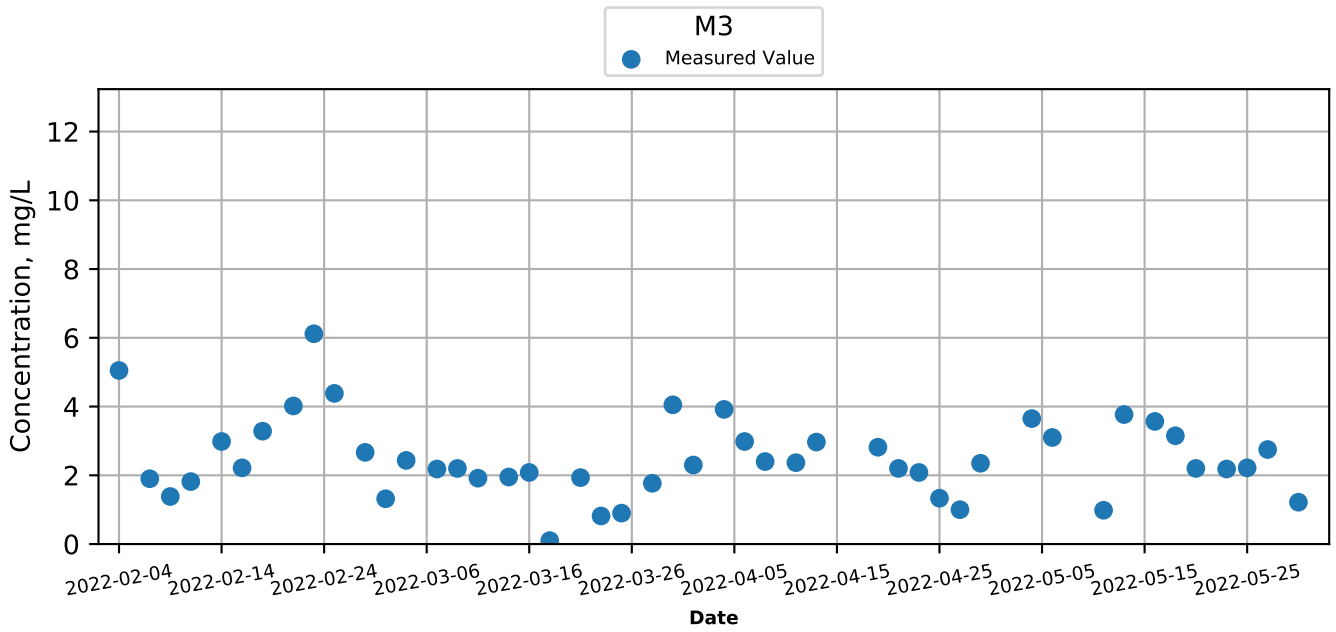


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Flood

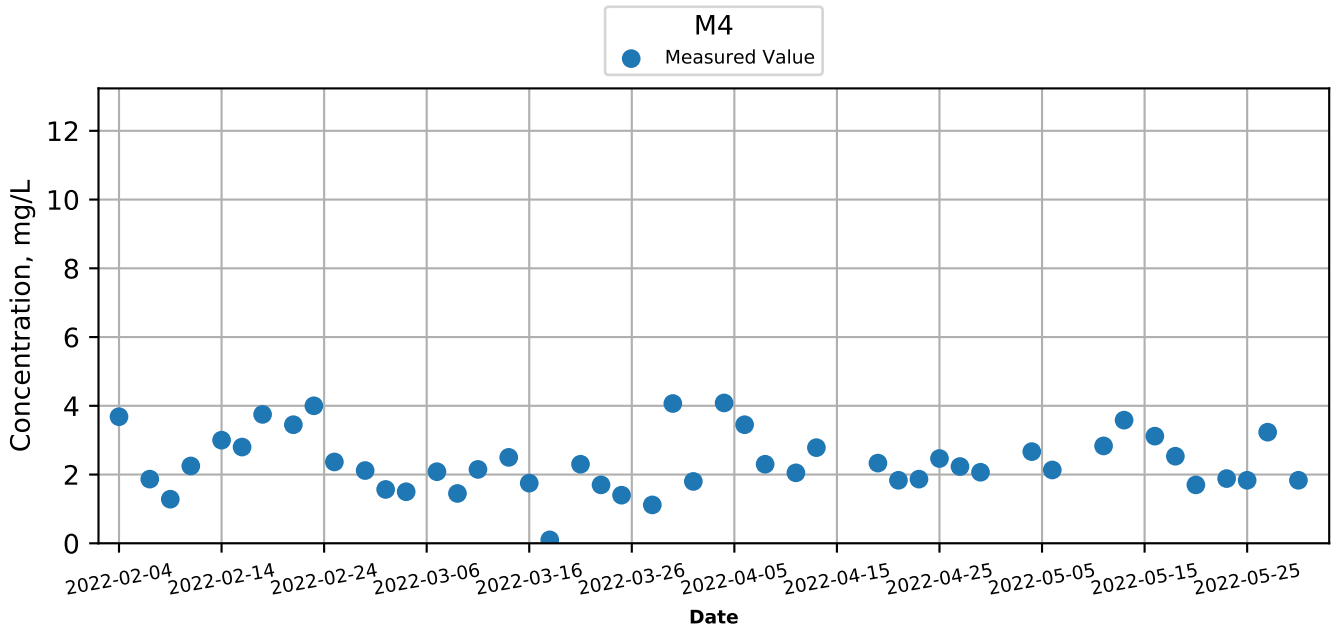


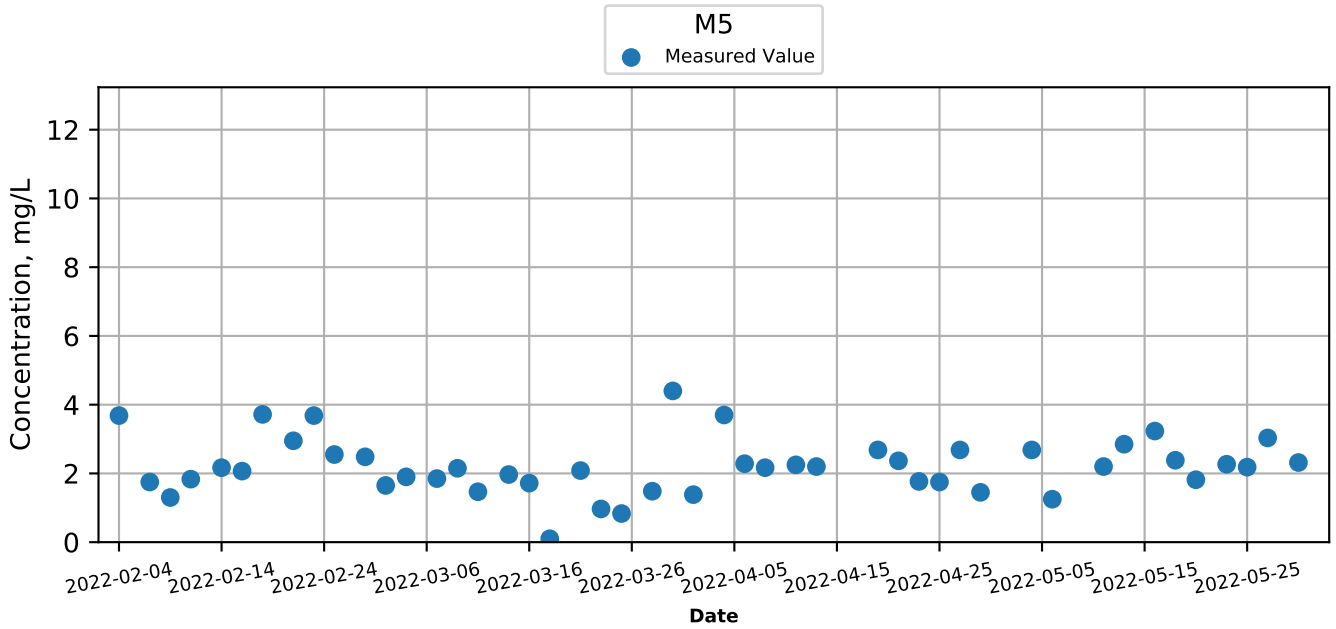




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

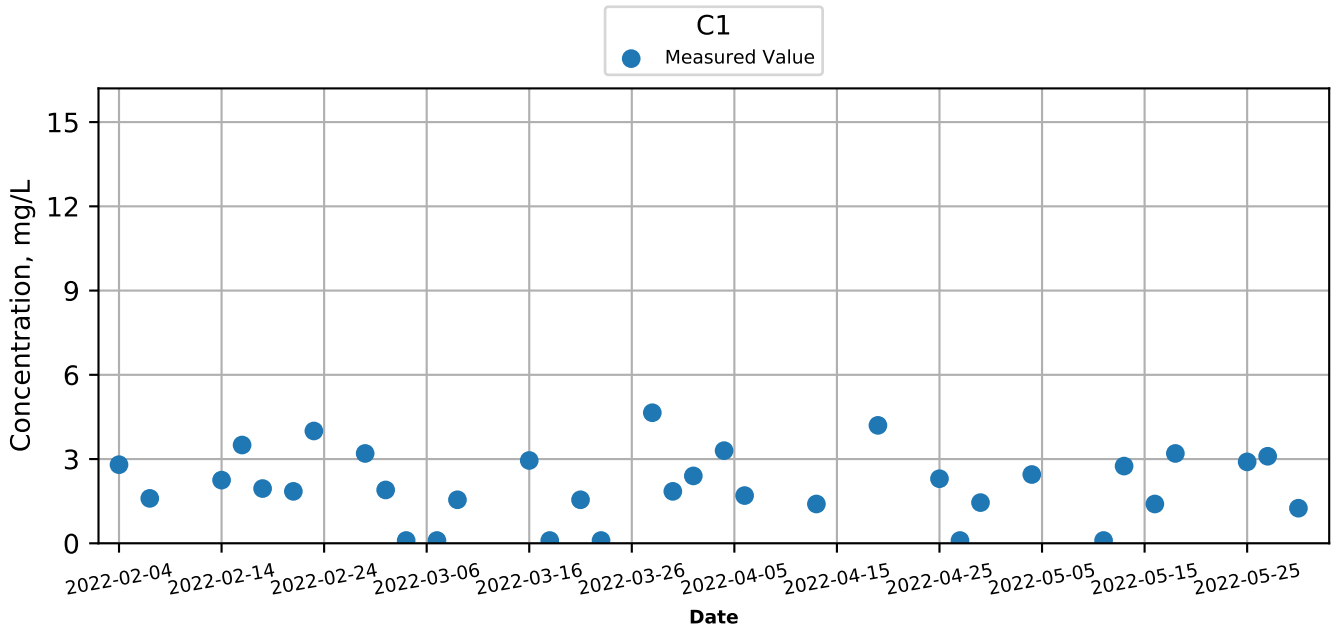
Suspended Solids (Depth-Averaged) at Monitoring Stations during Mid-Flood

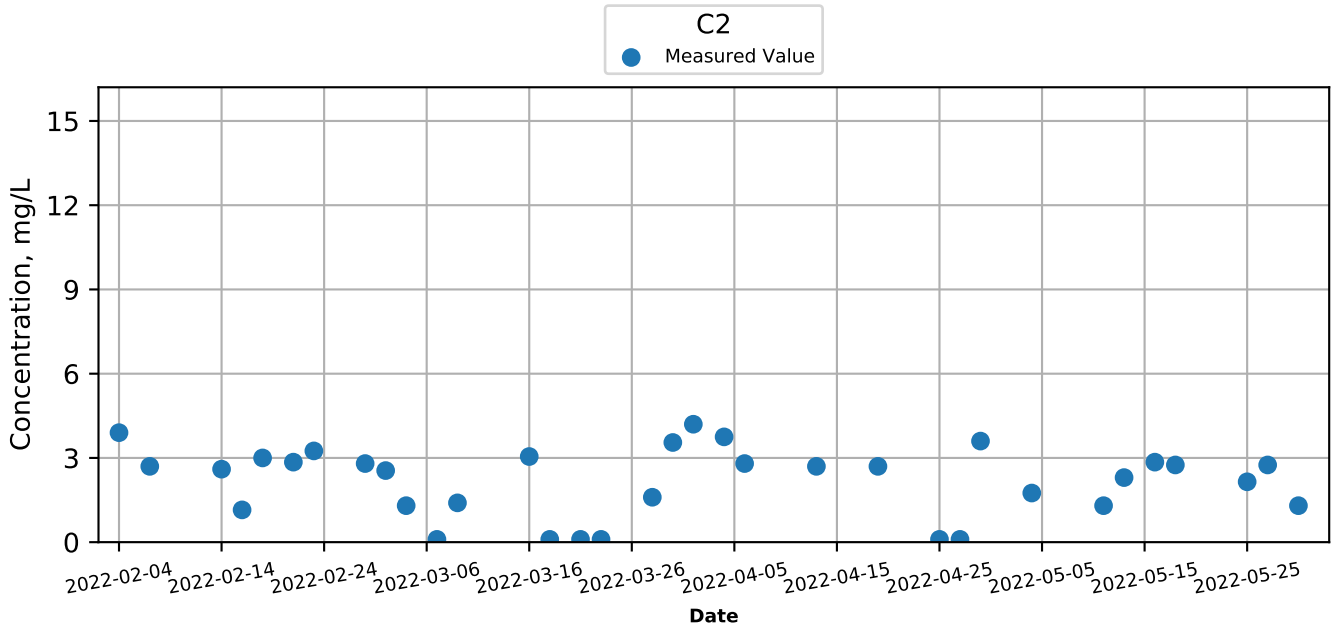


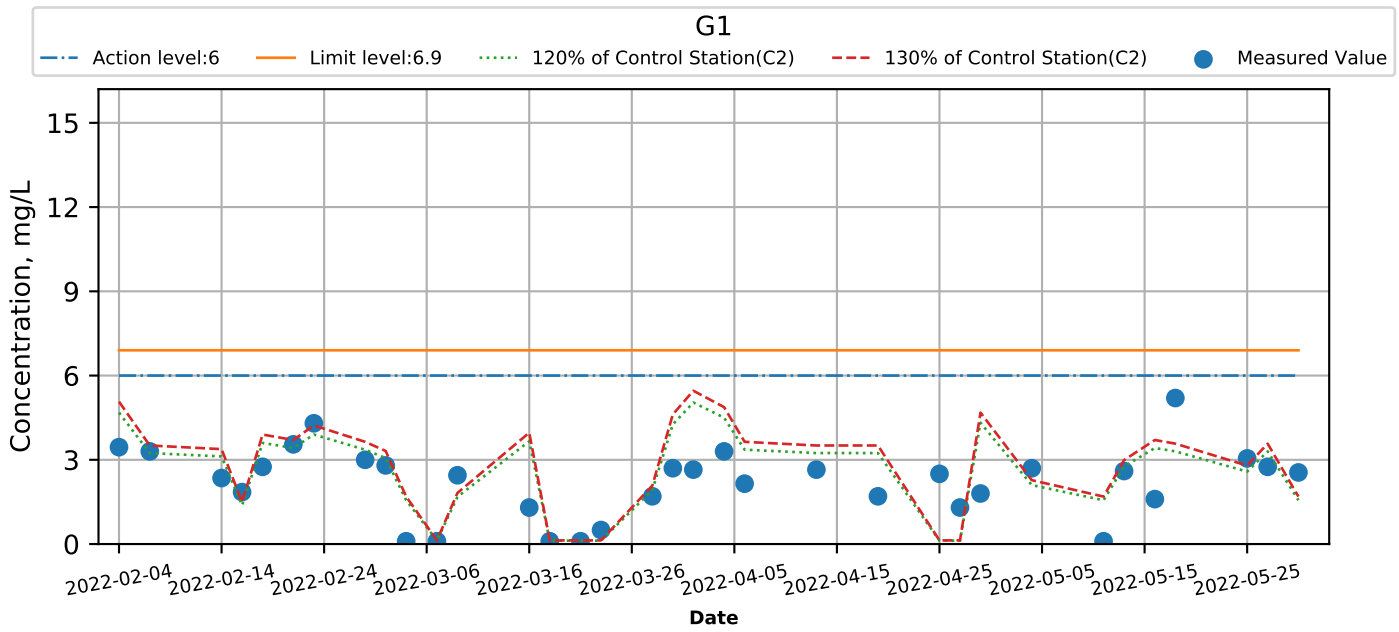


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Ebb

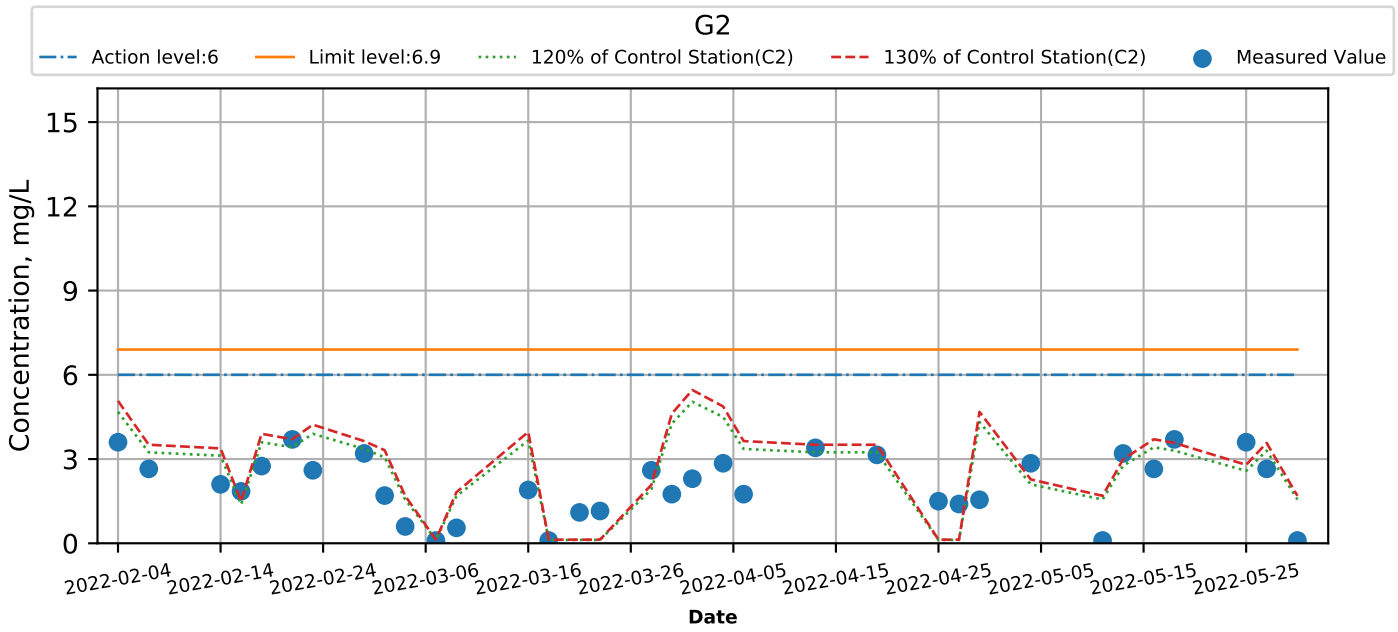


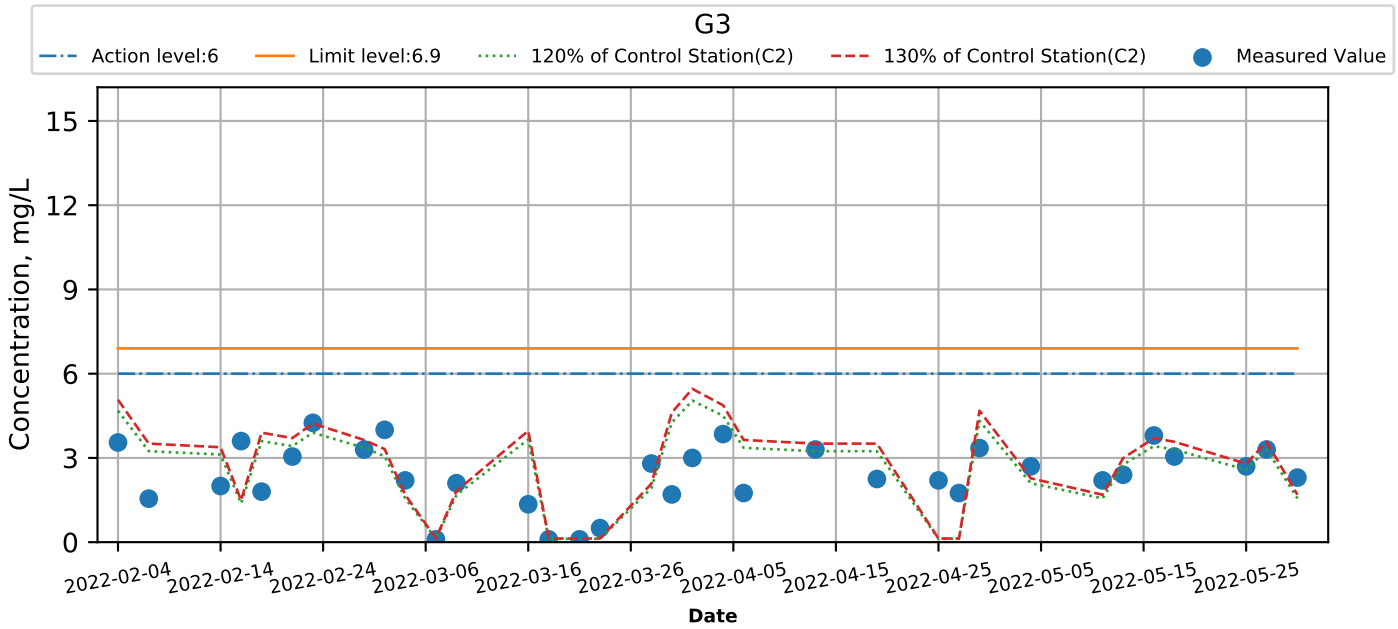


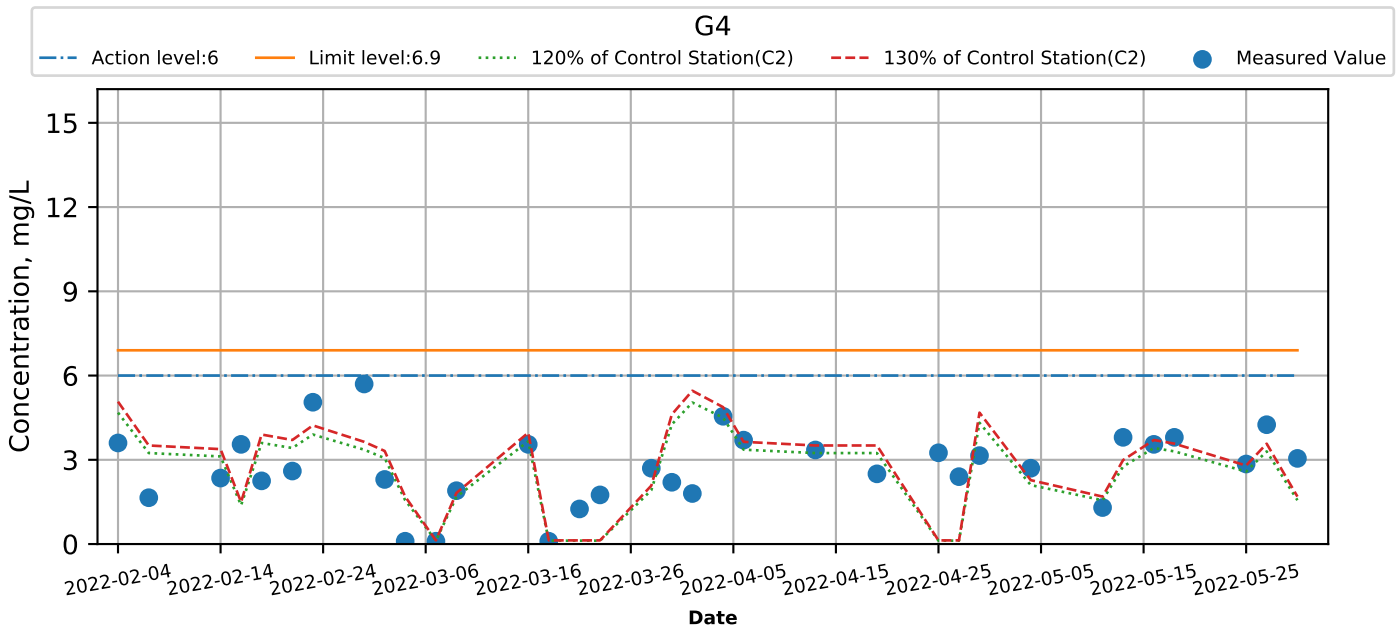


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Ebb

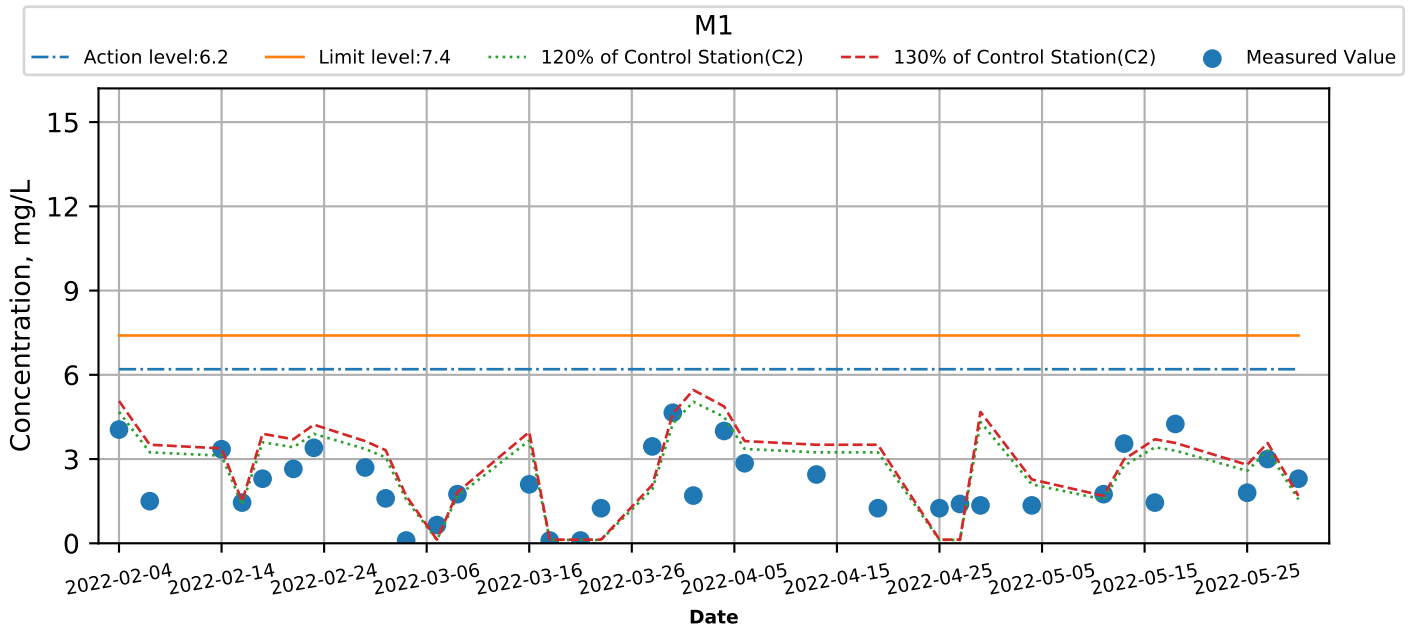


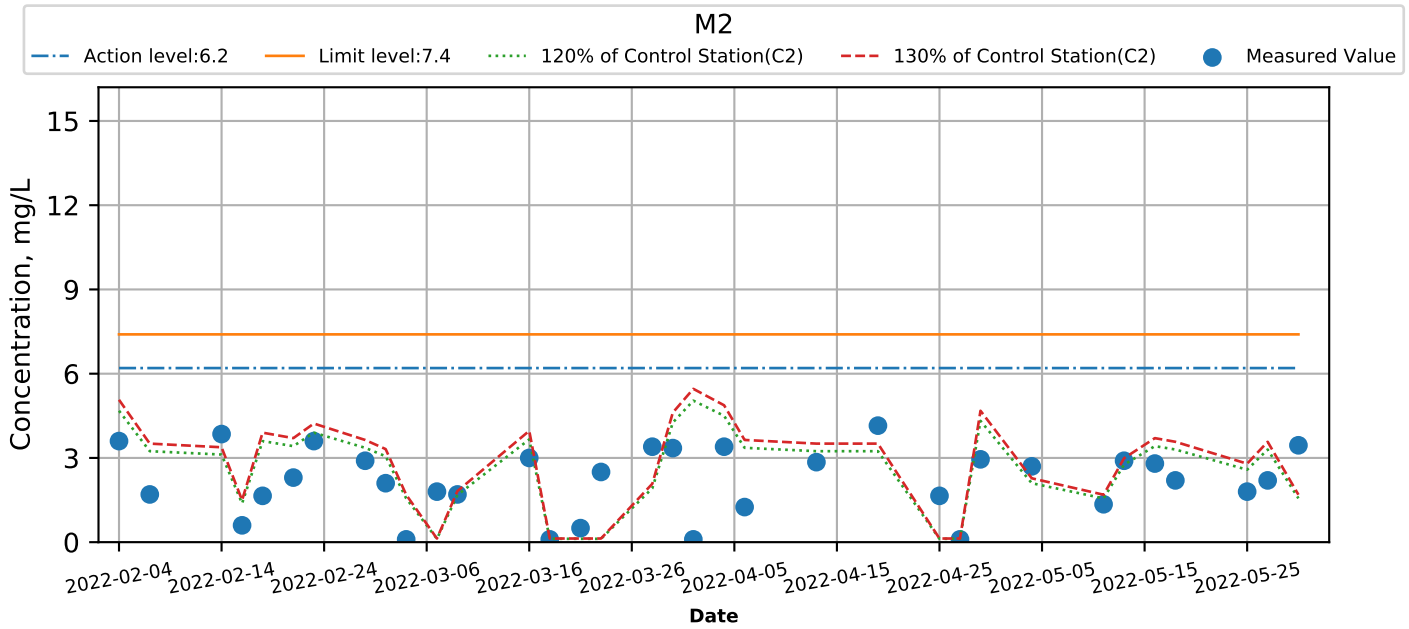


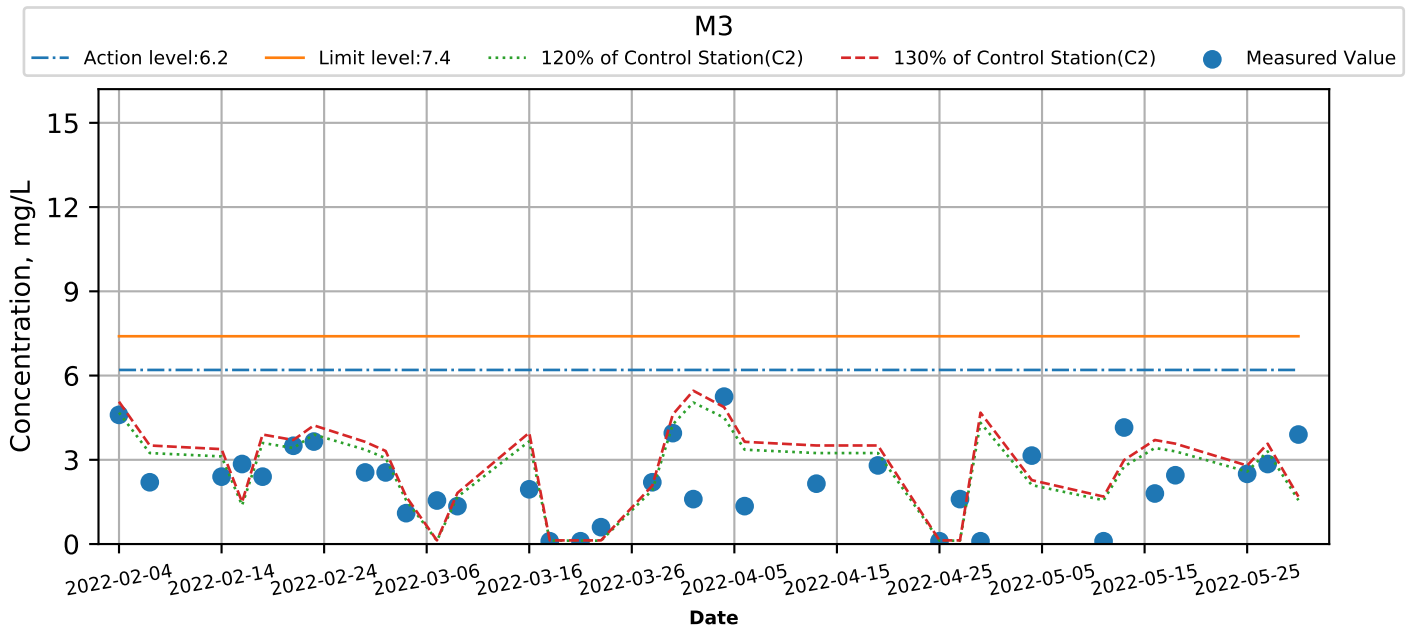


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Ebb

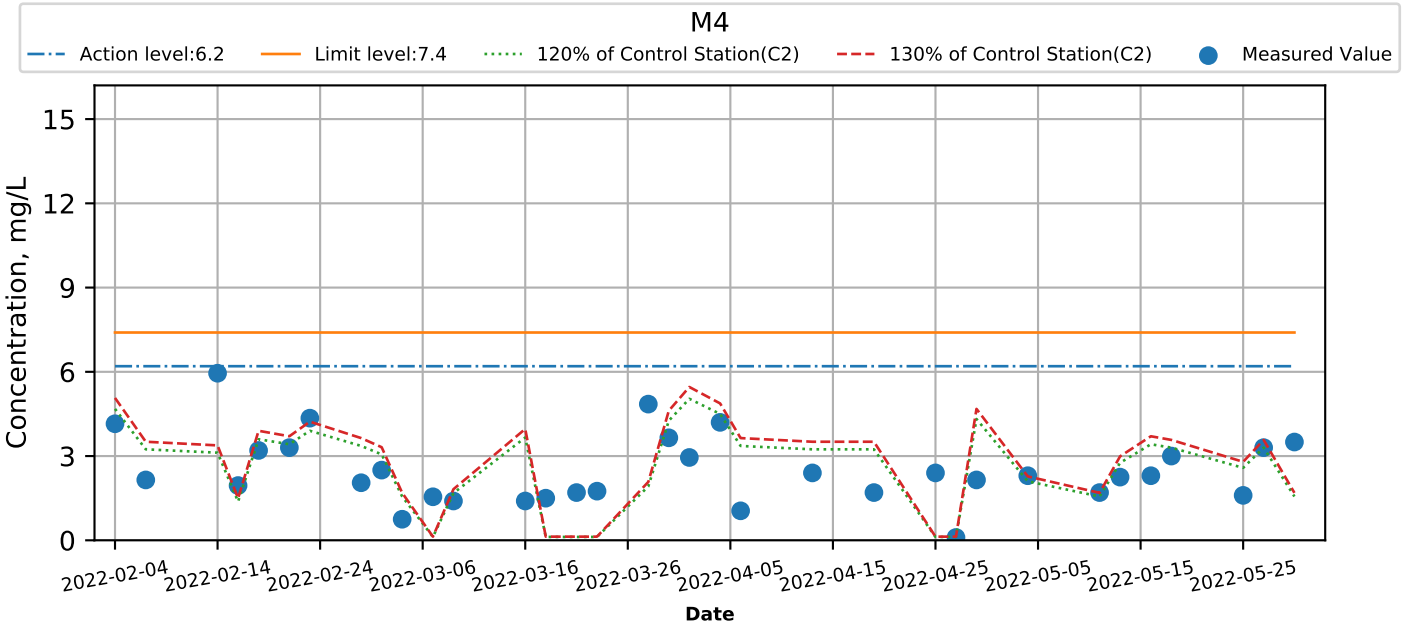


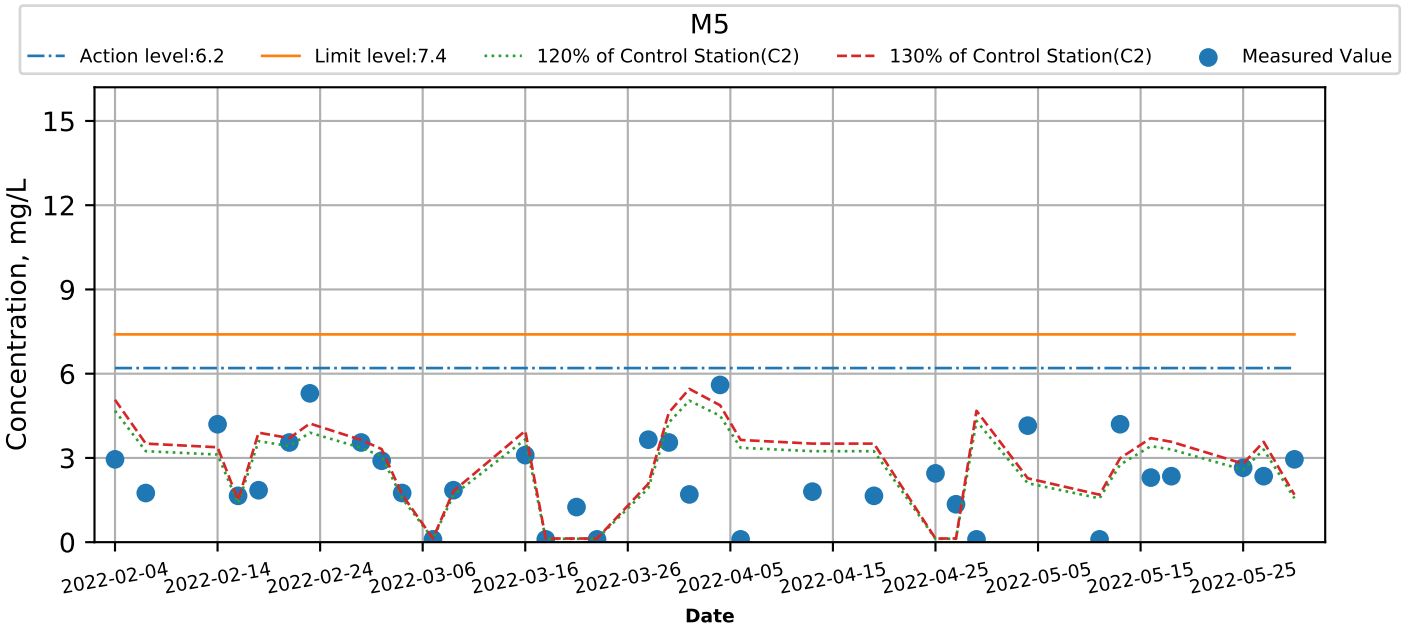




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

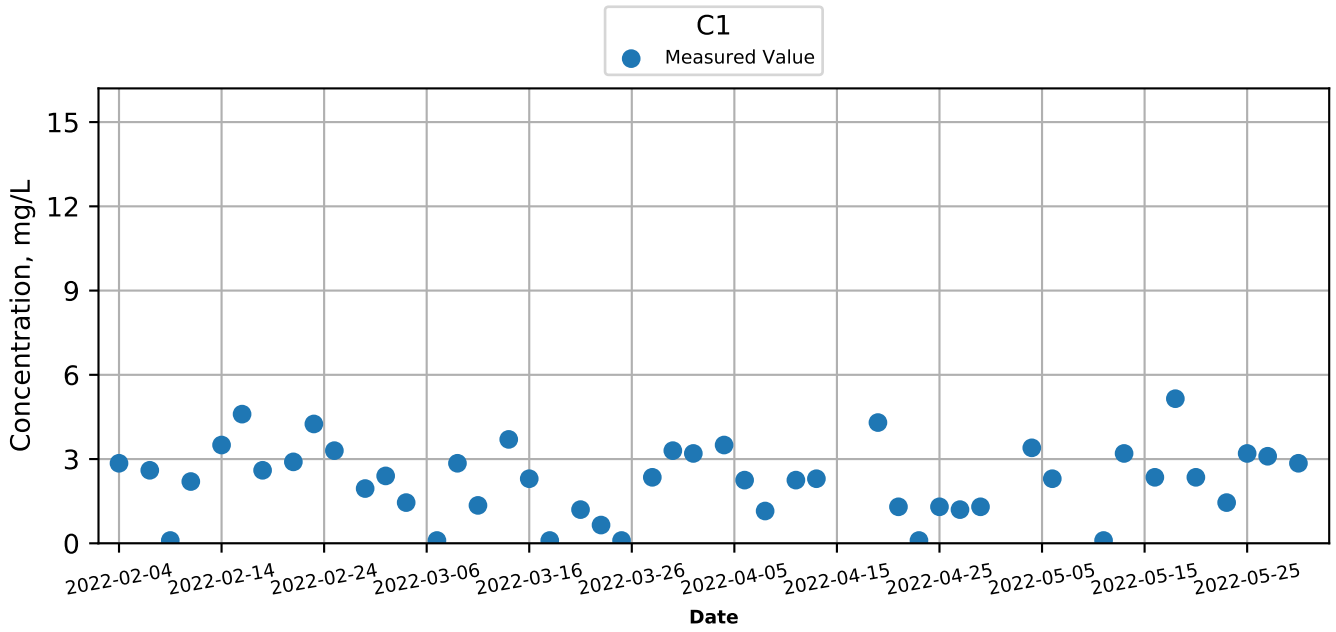
Suspended Solids (Surface) at Monitoring Stations during Mid-Ebb

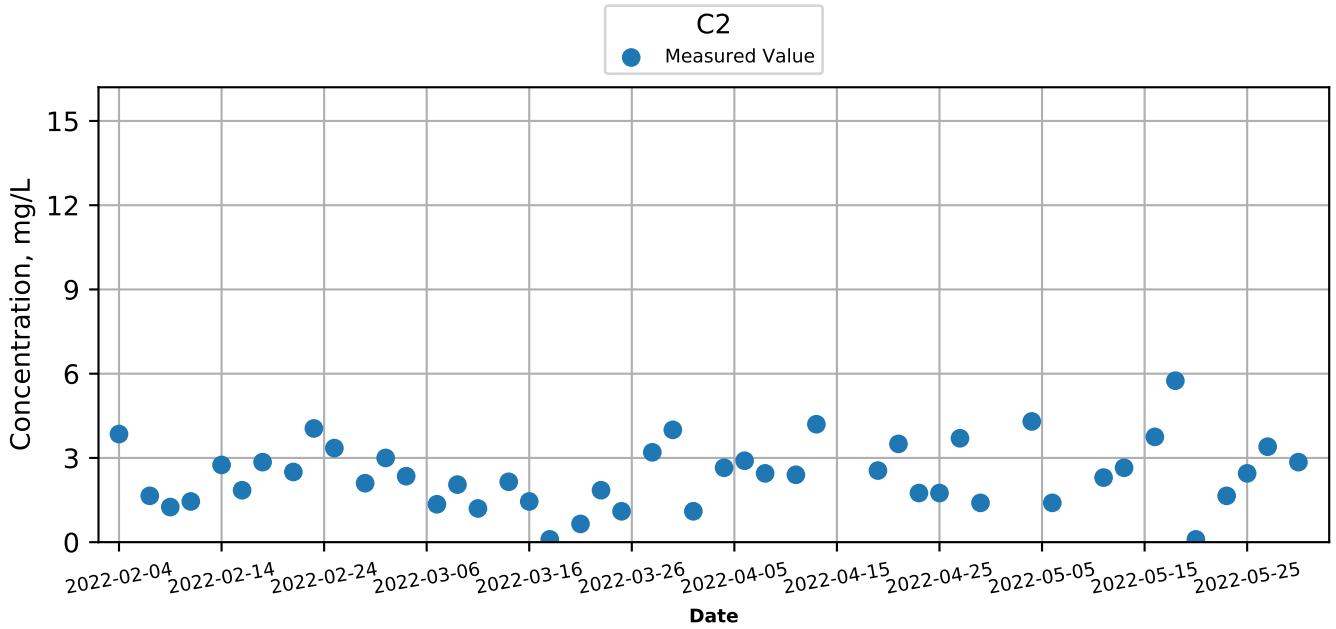


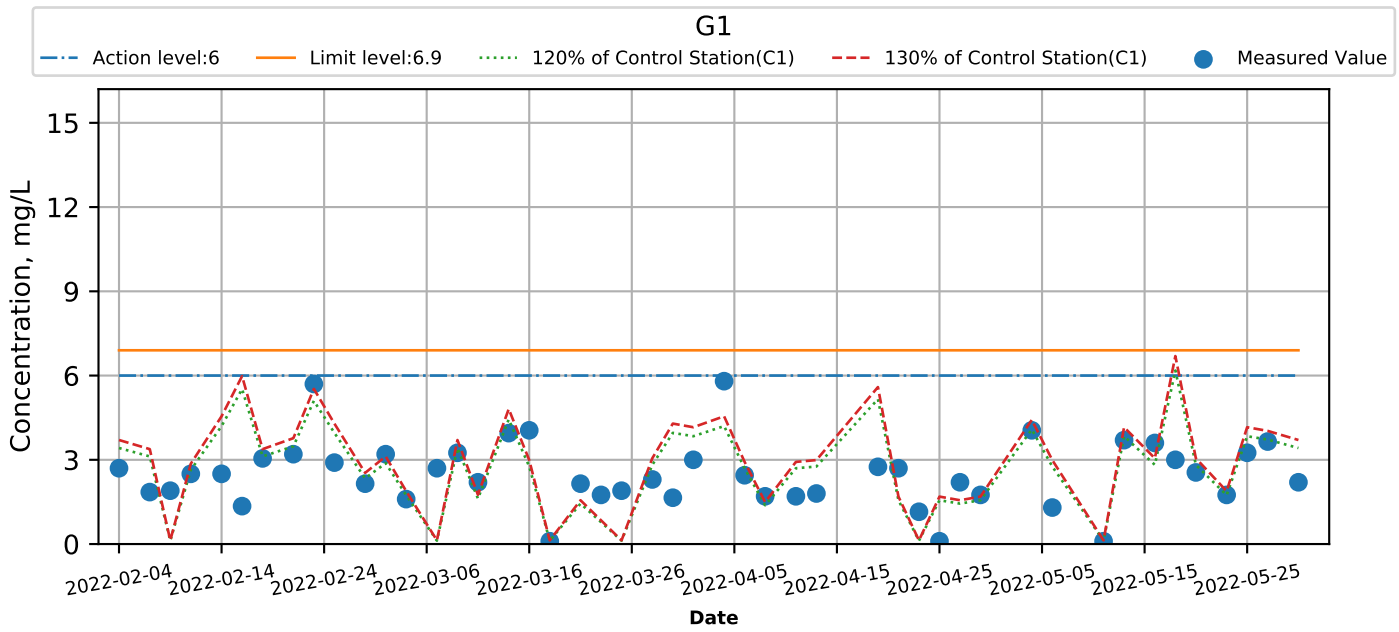


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Flood

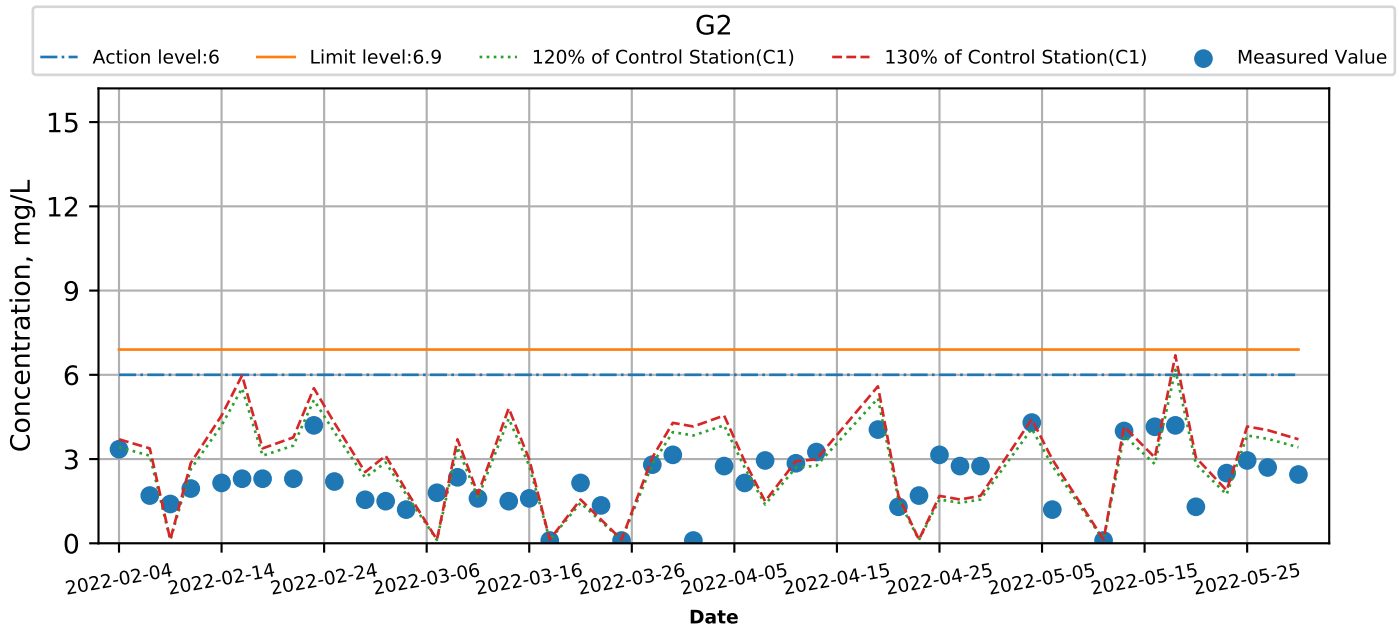


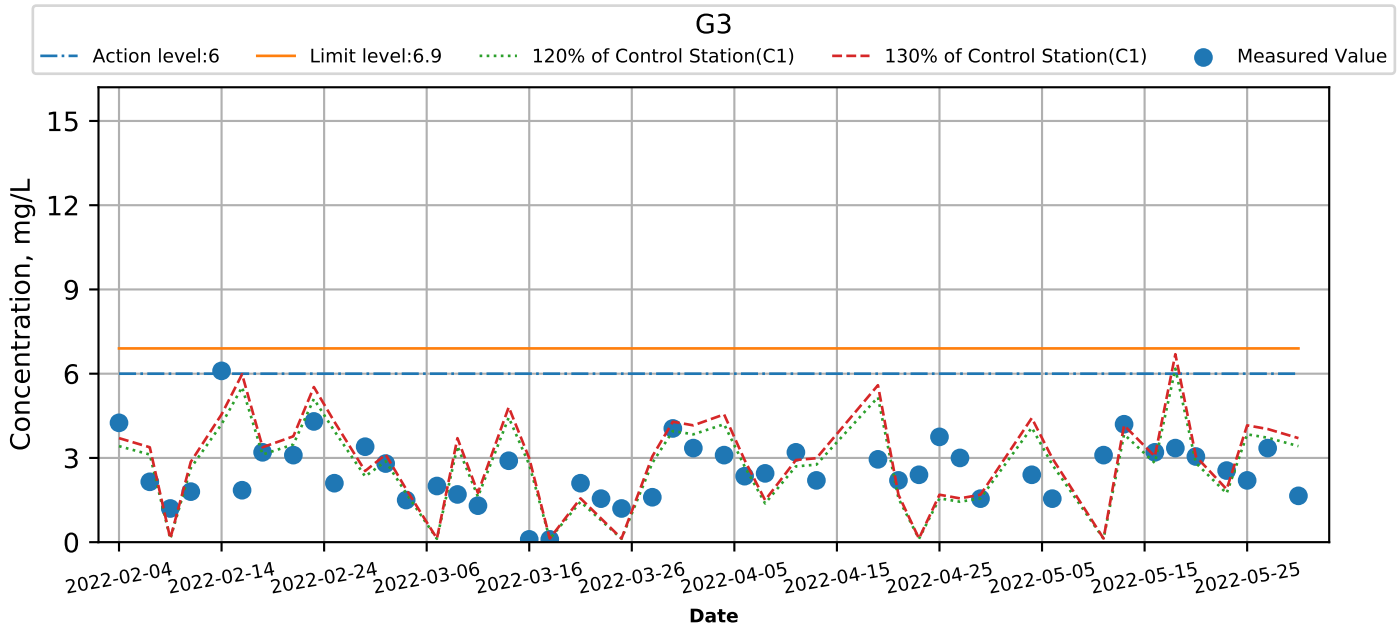


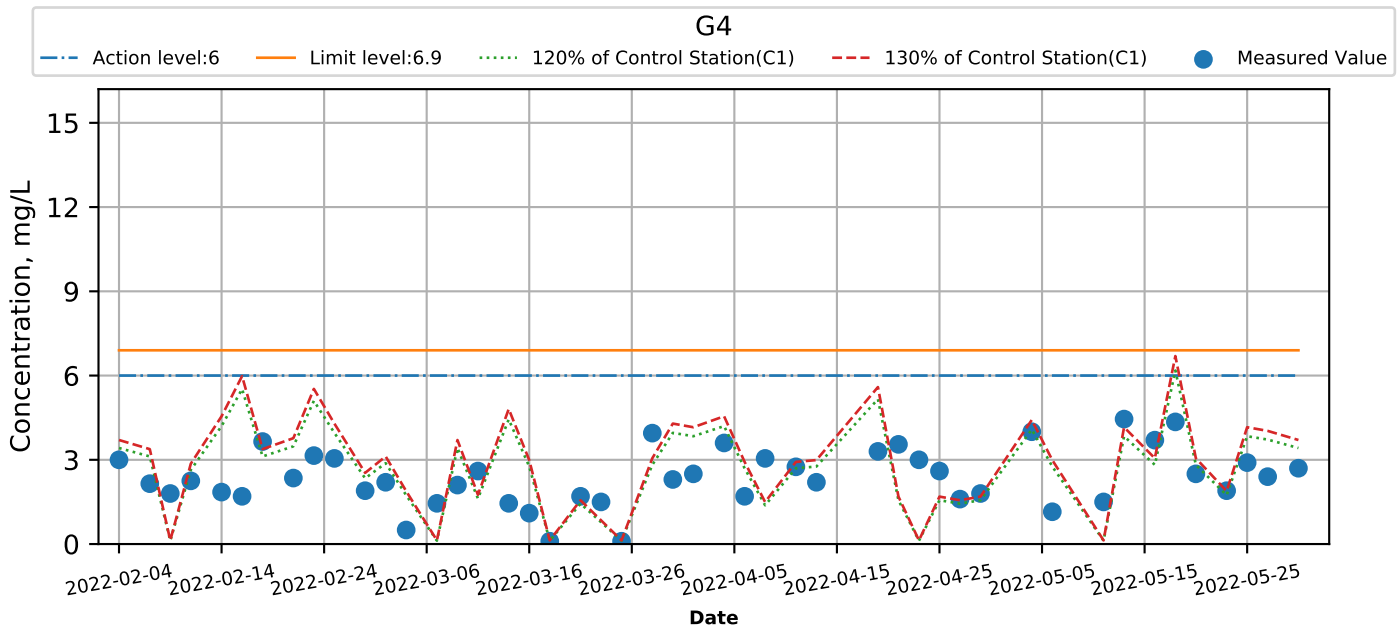


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Flood

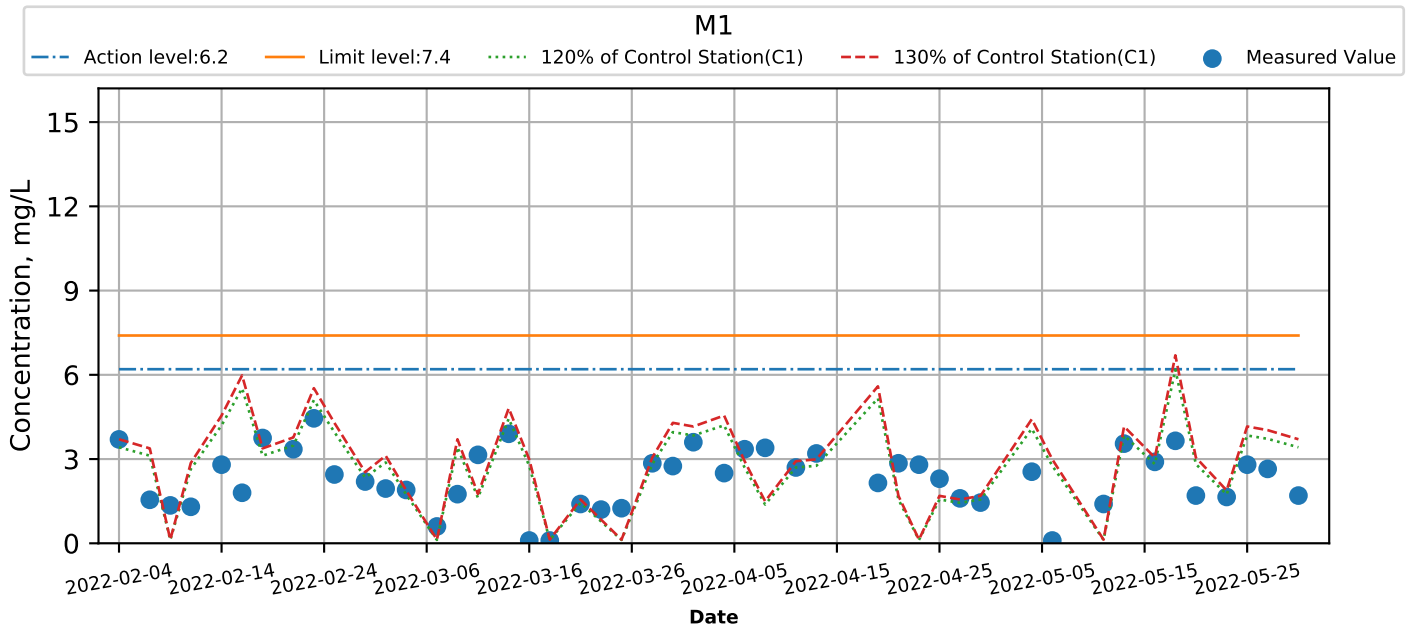


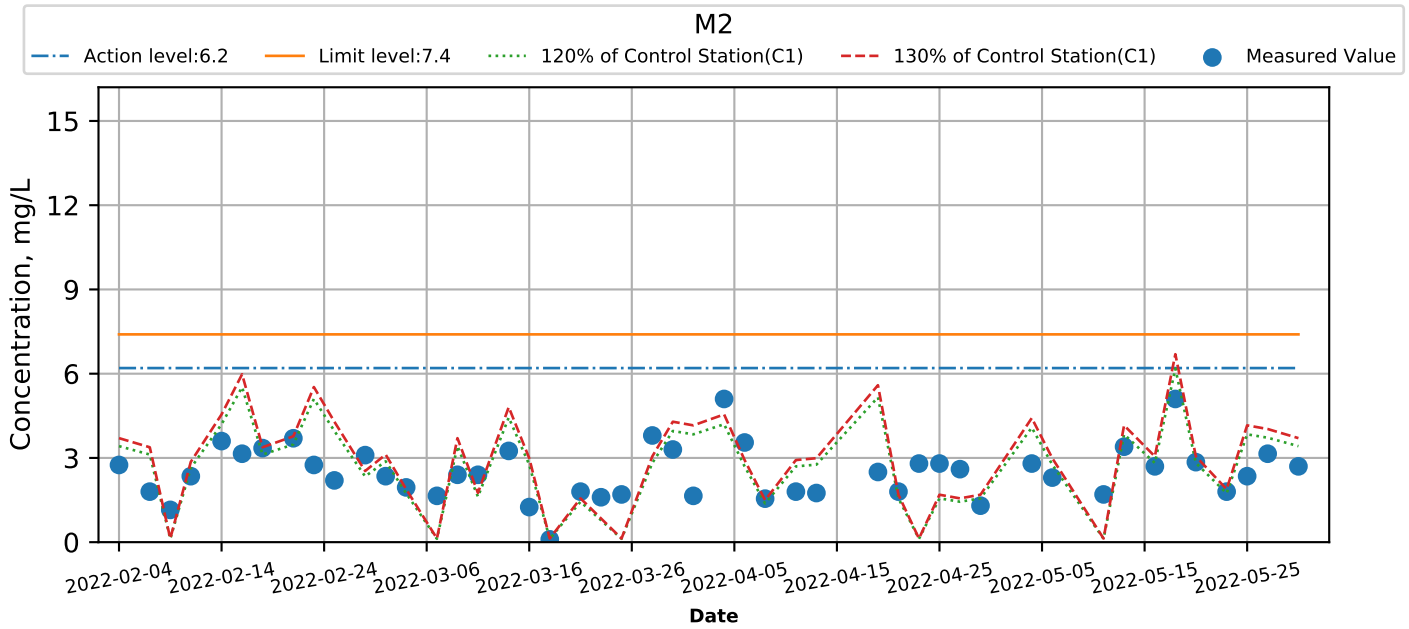


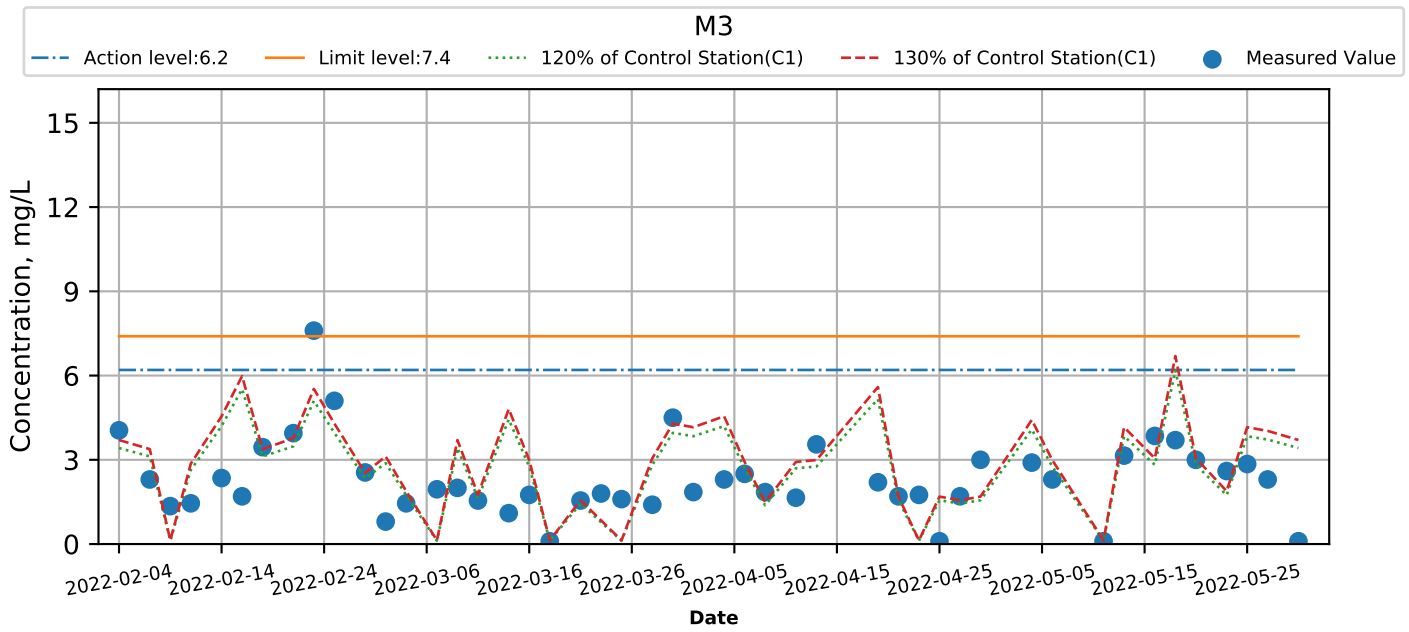


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Surface) at Monitoring Stations during Mid-Flood

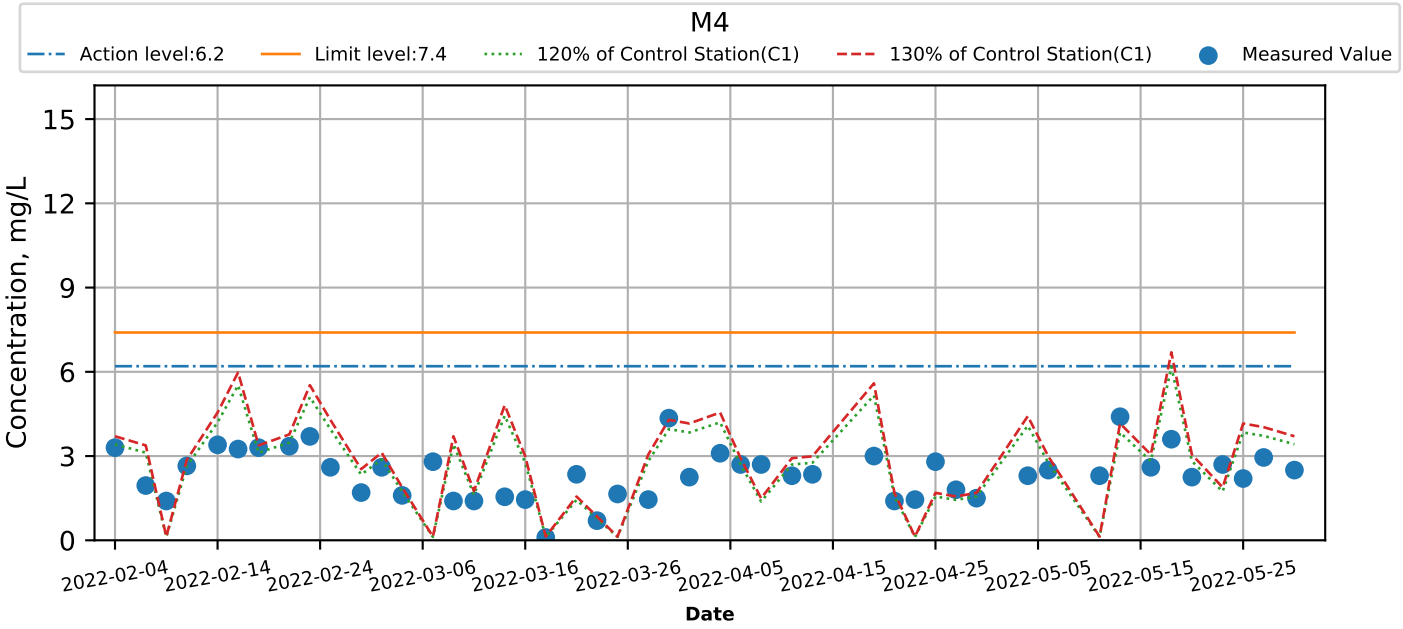


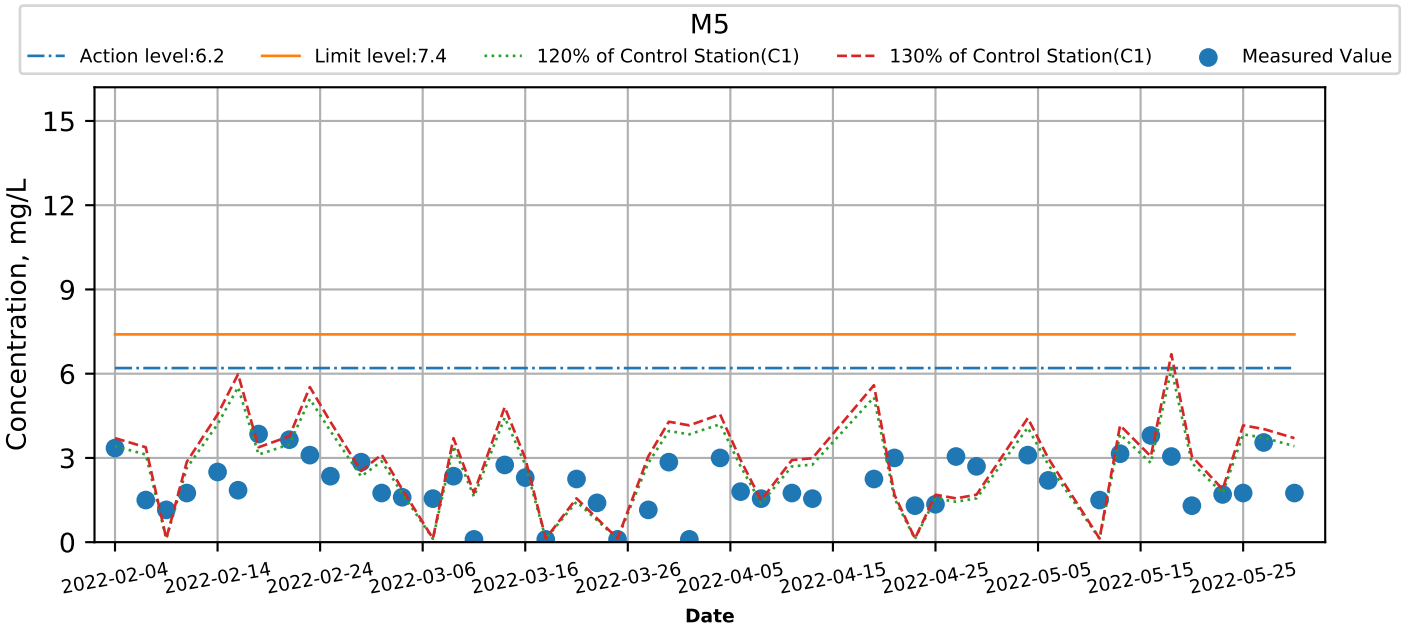




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

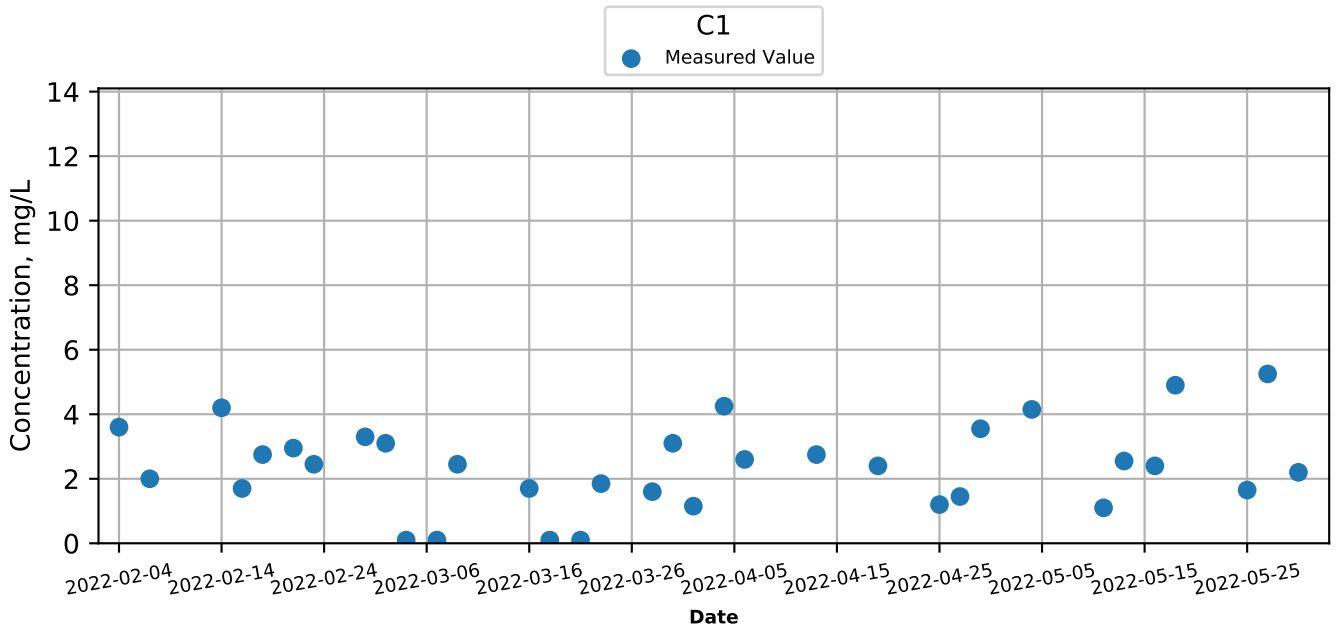
Suspended Solids (Surface) at Monitoring Stations during Mid-Flood

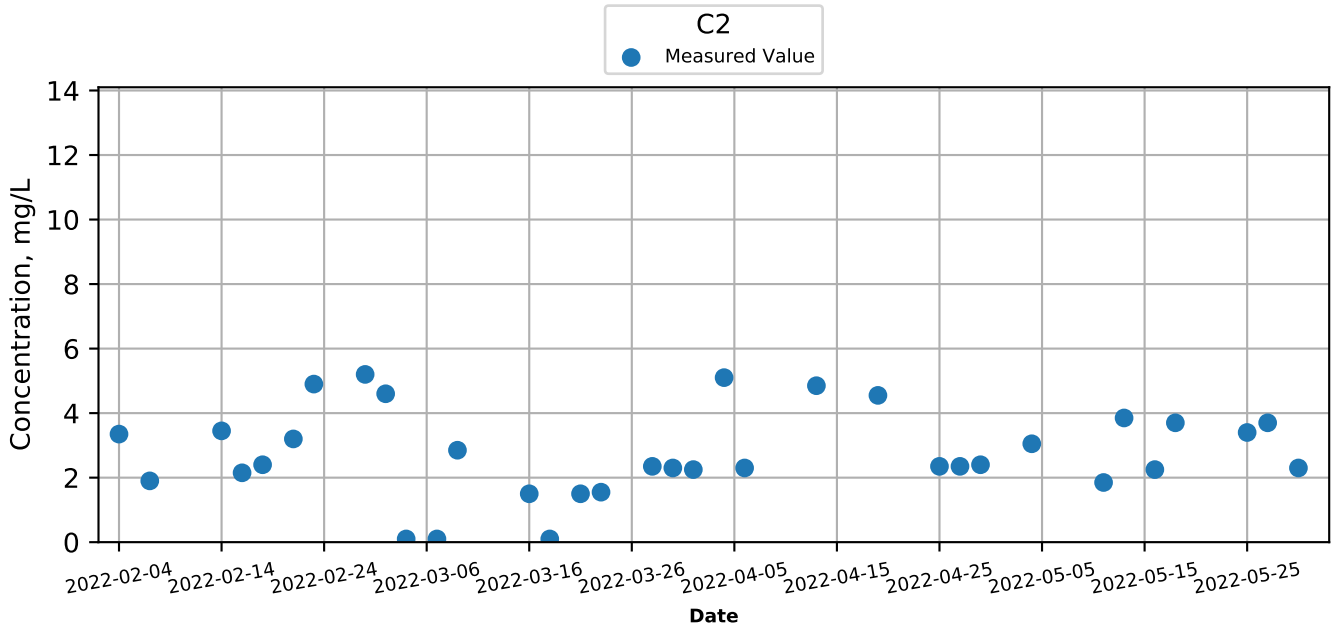


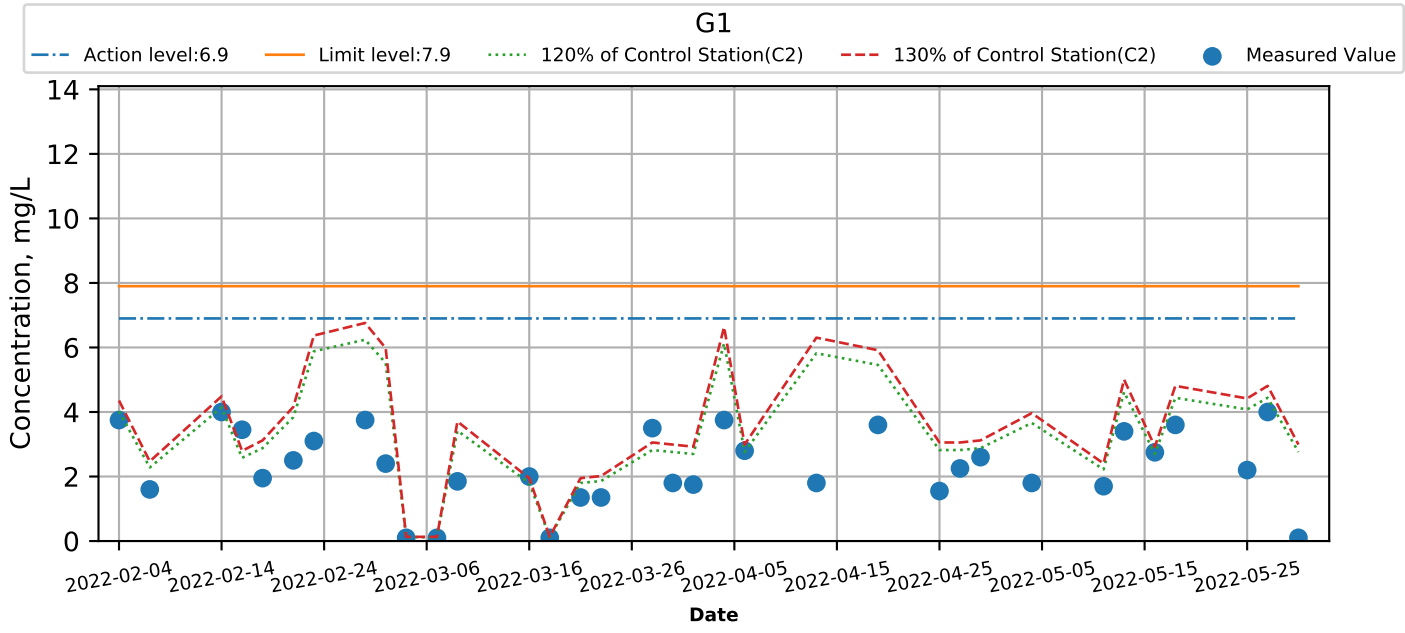


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Ebb

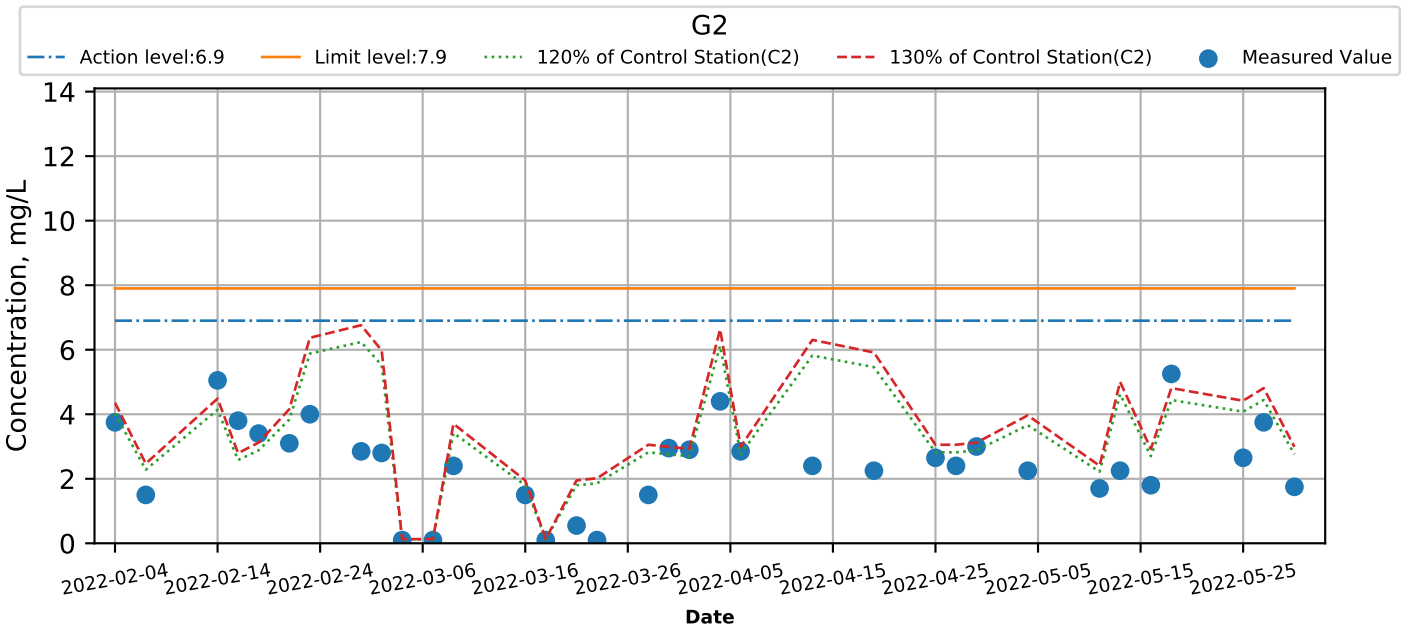


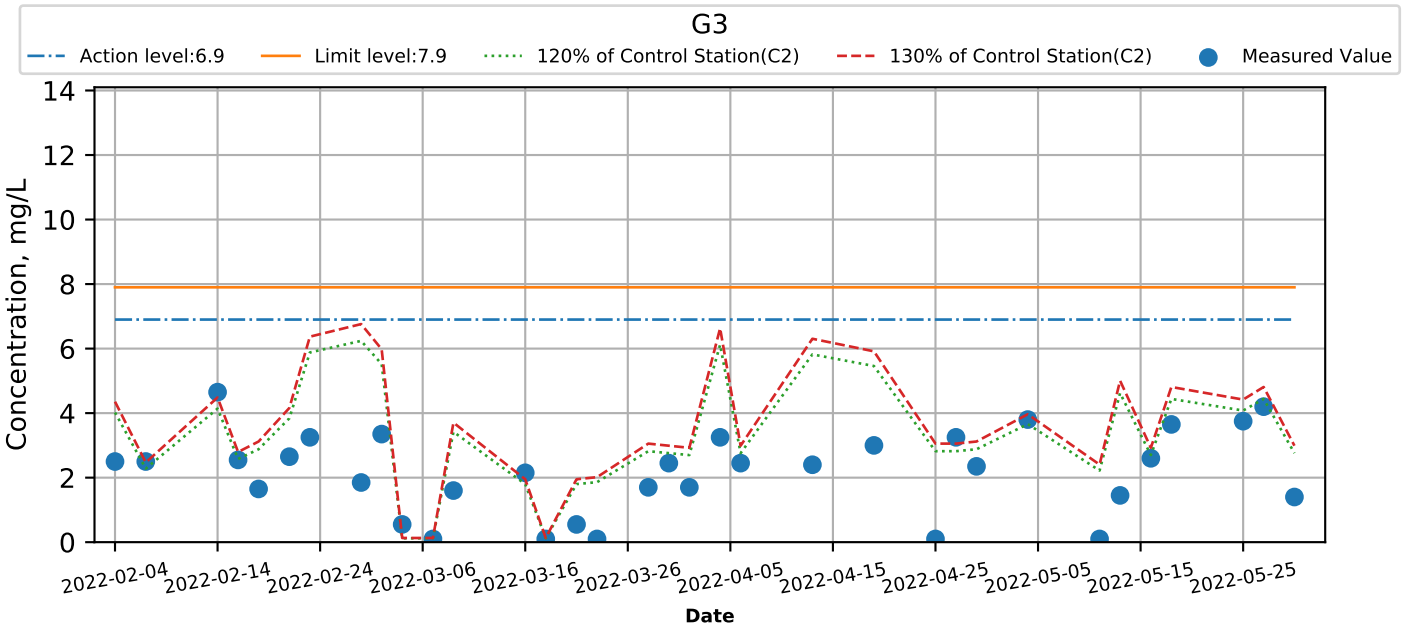


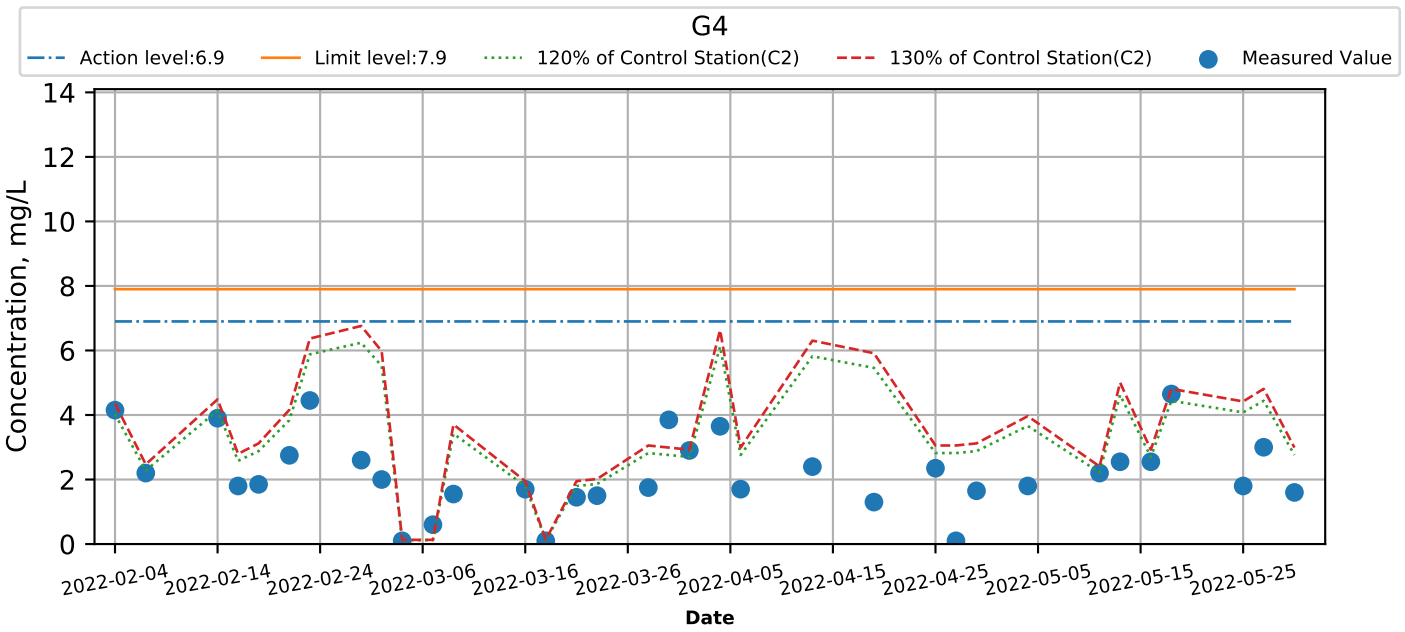


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Ebb

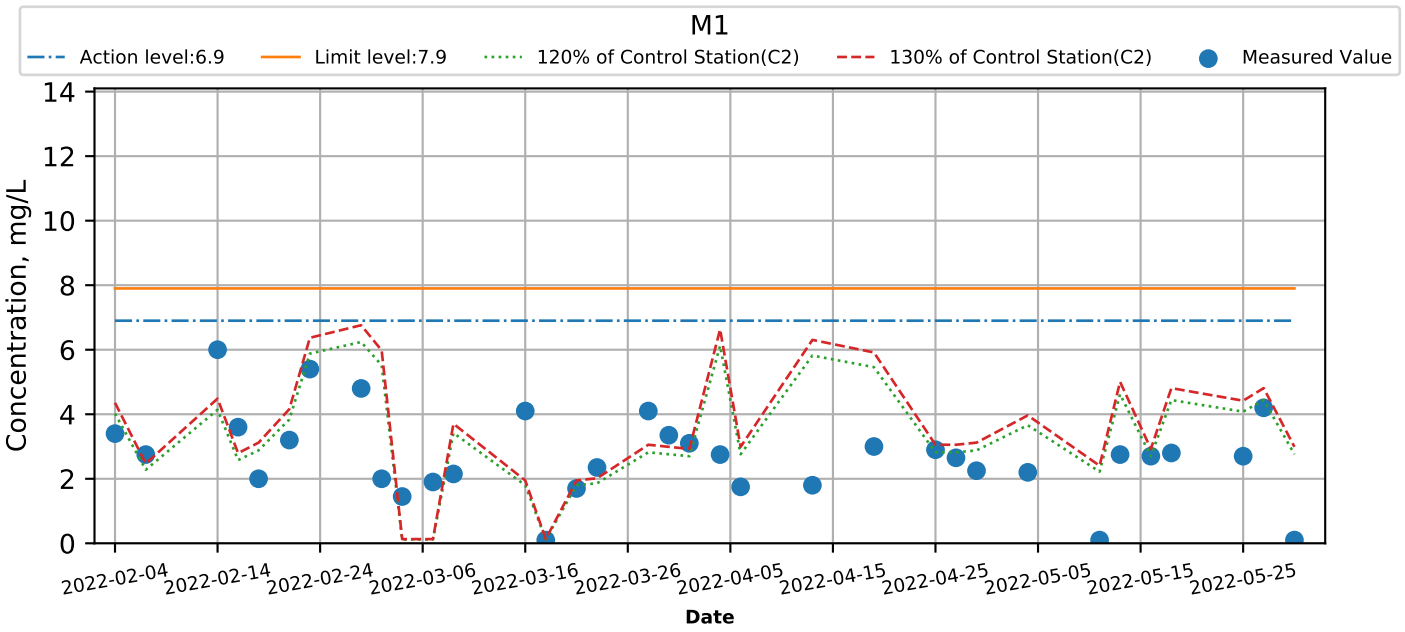


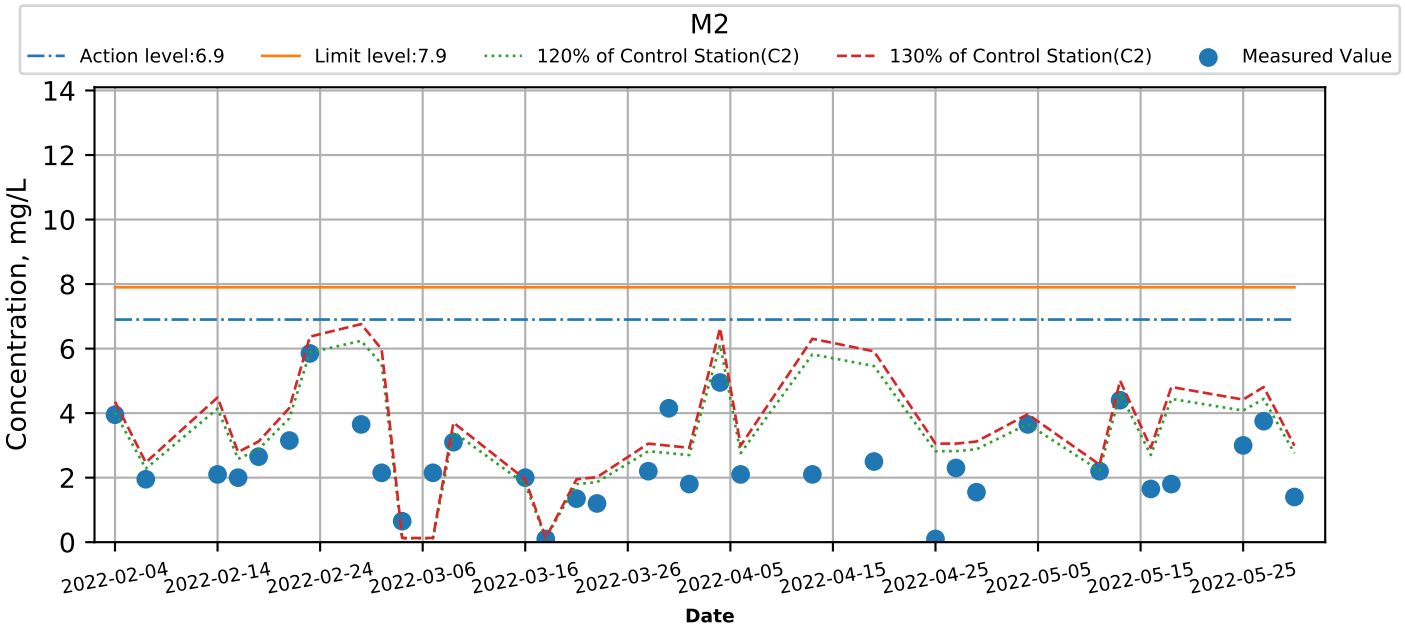


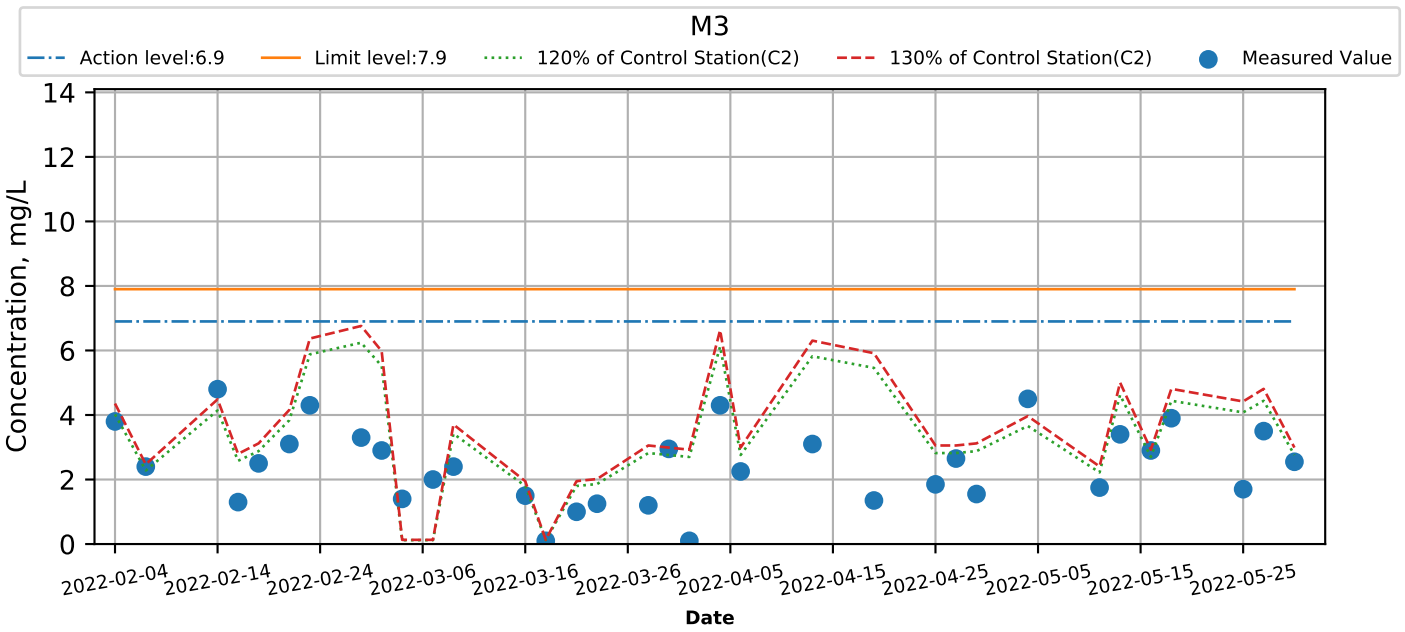


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Ebb

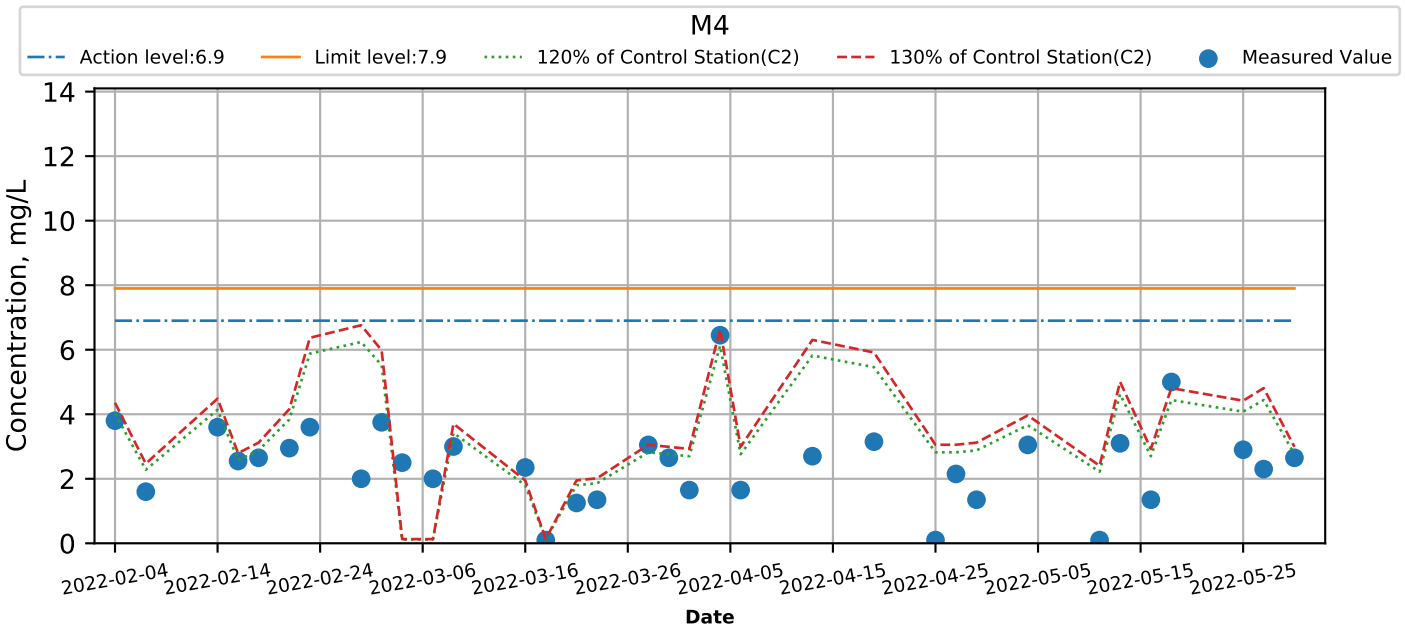


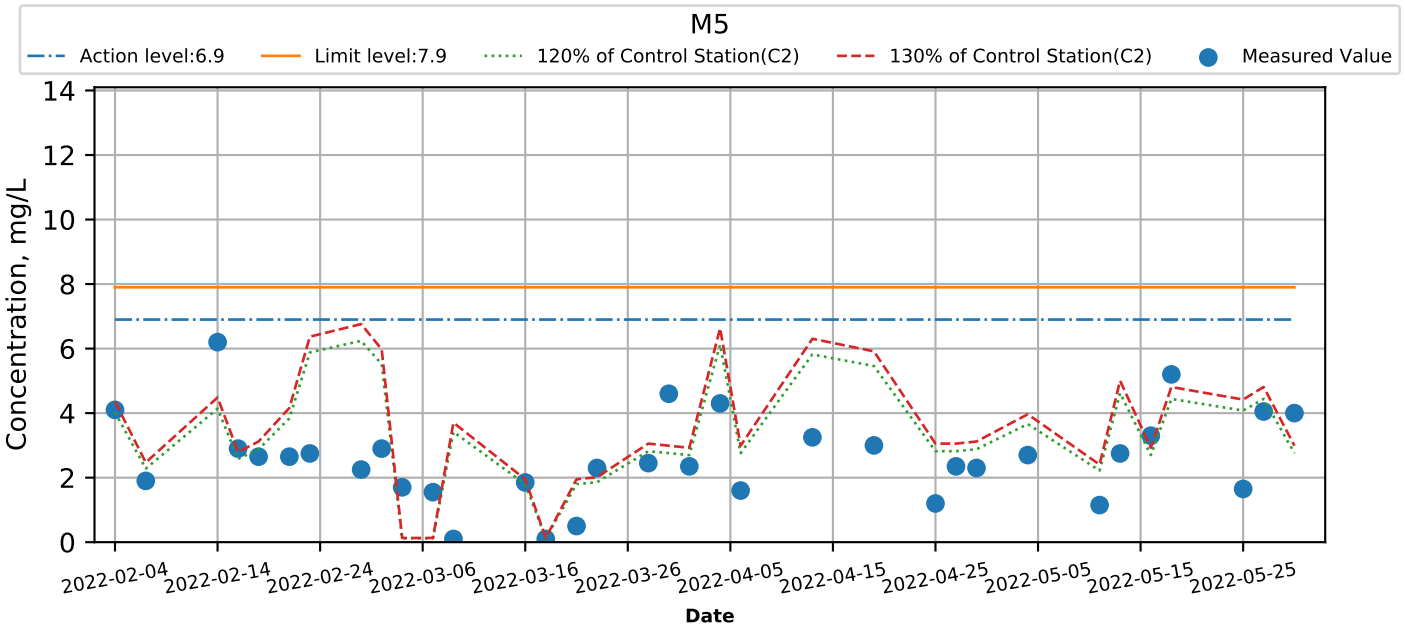




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

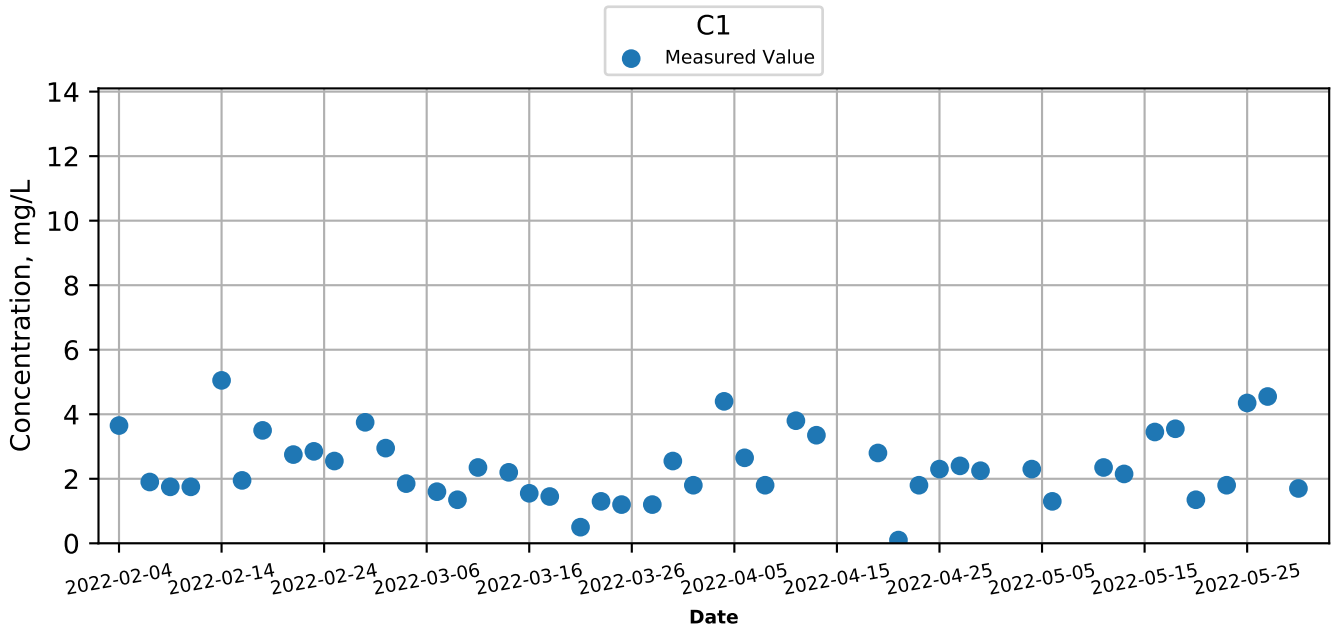
Suspended Solids (Bottom) at Monitoring Stations during Mid-Ebb

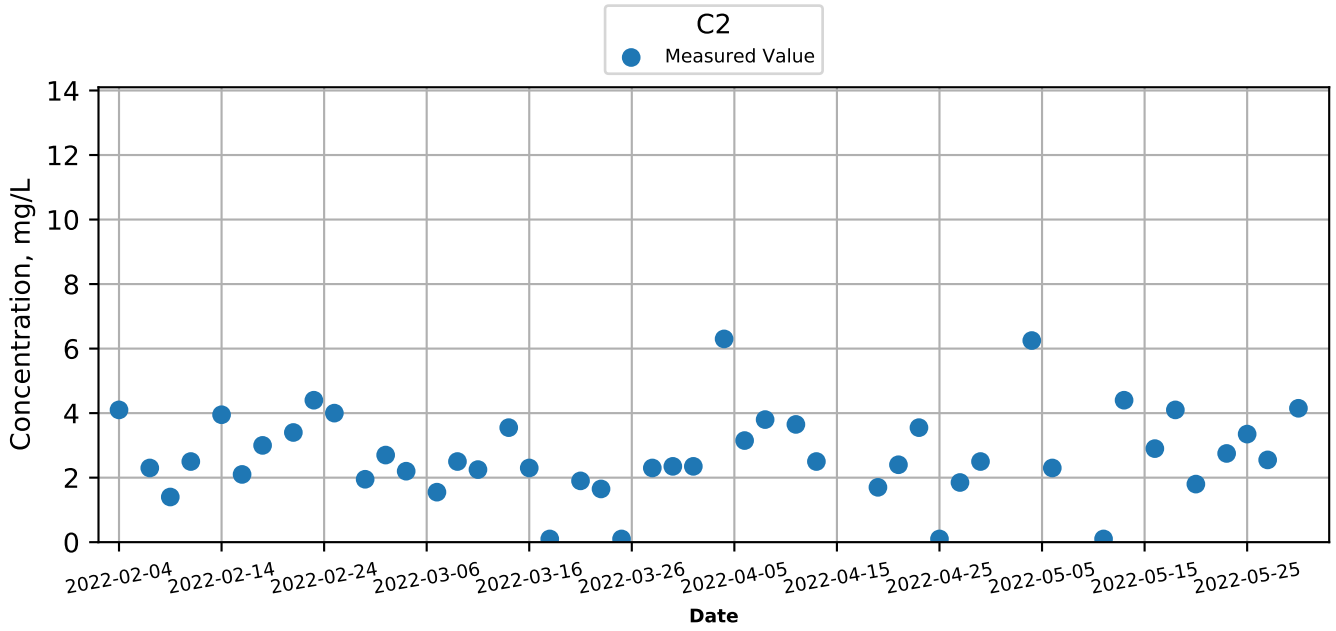


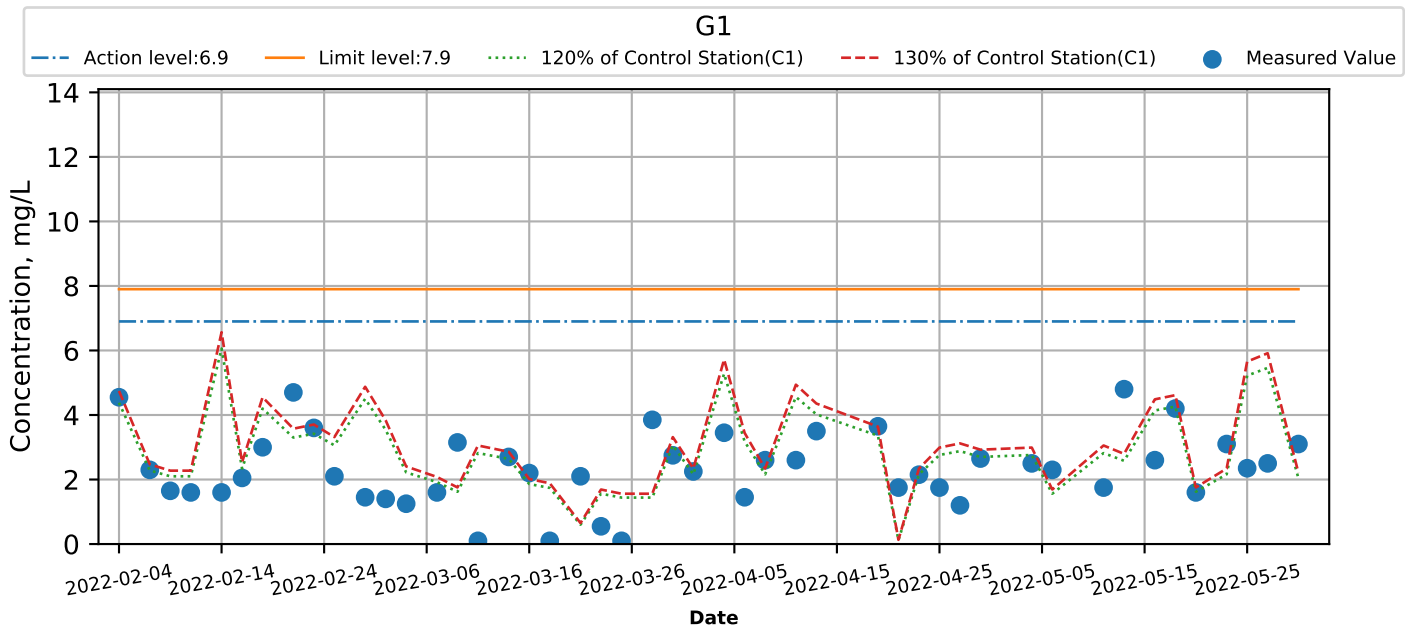


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Flood

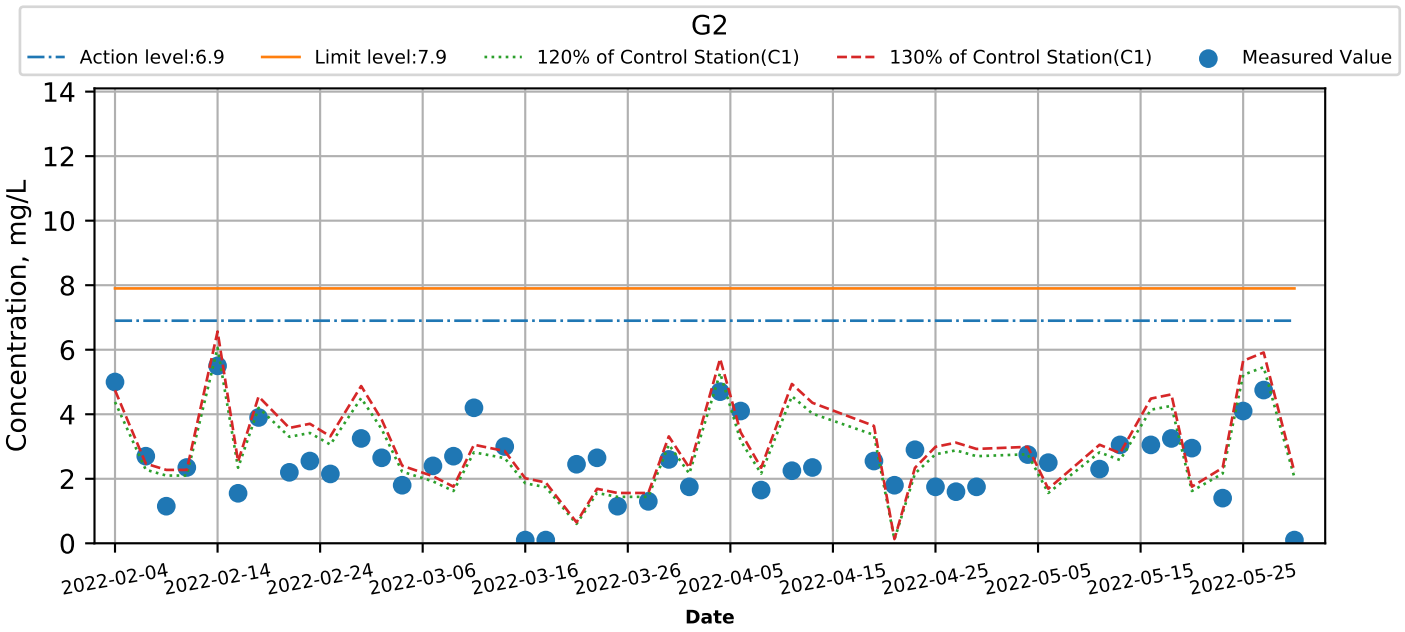


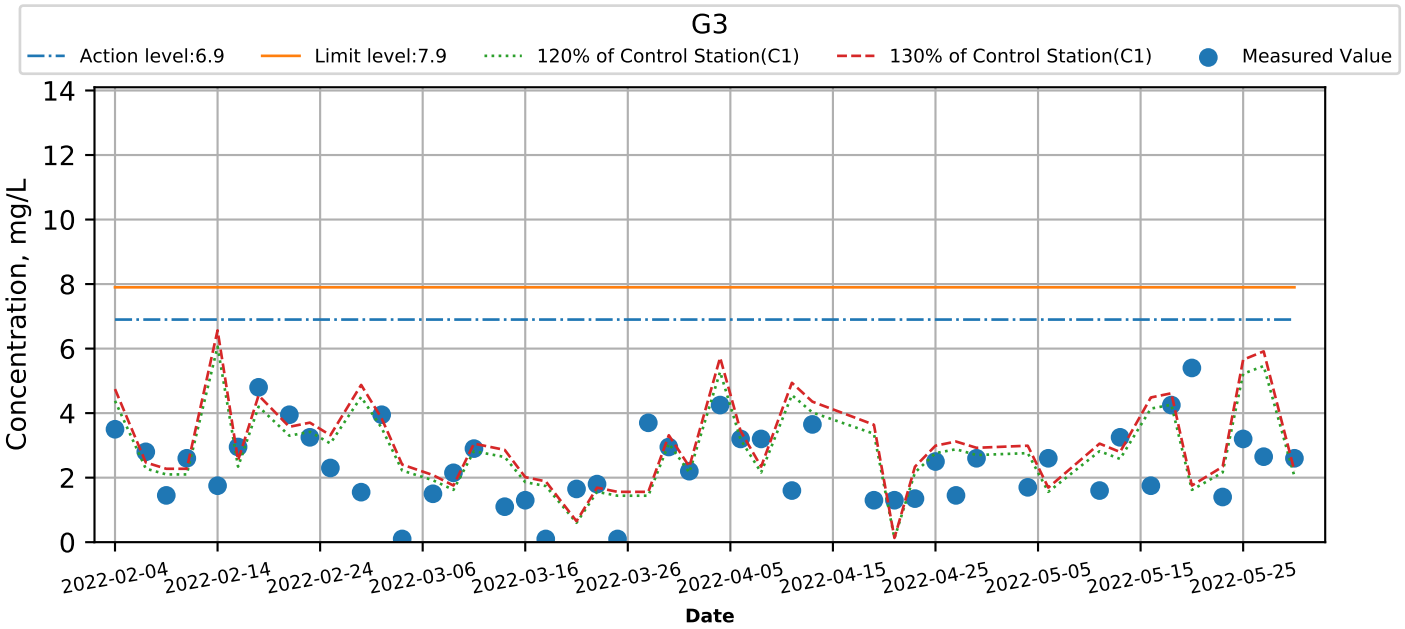


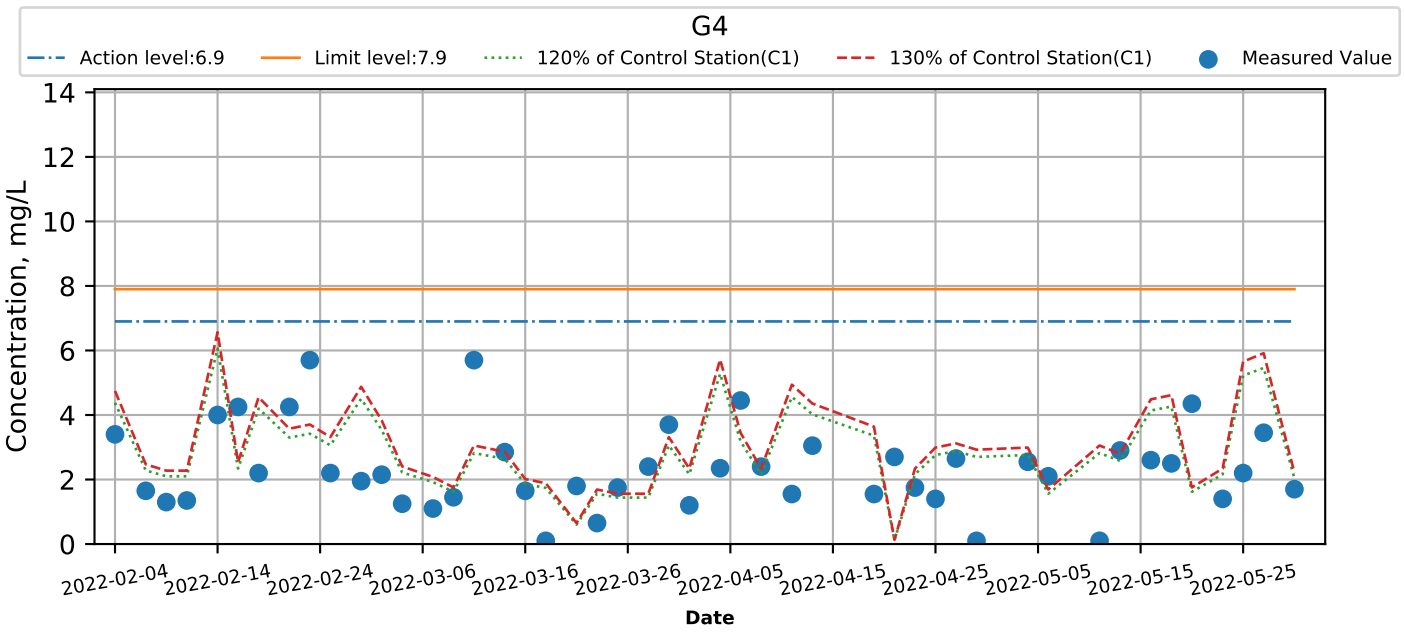


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Flood

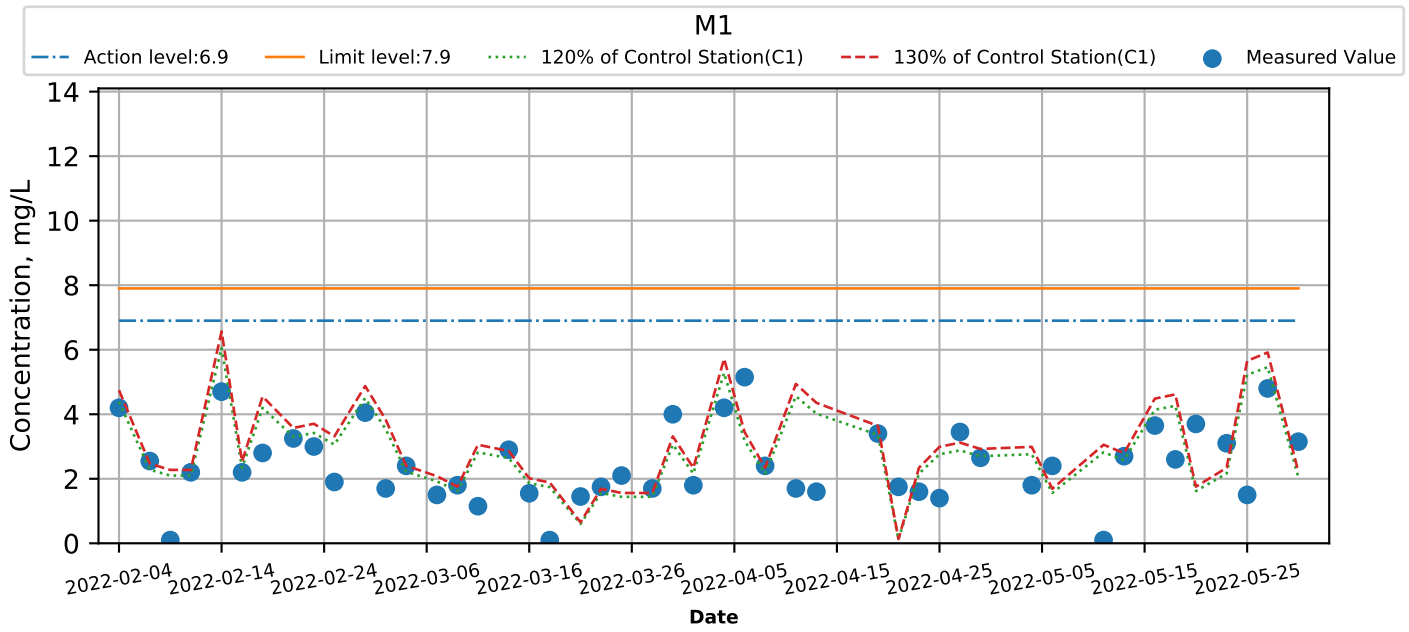


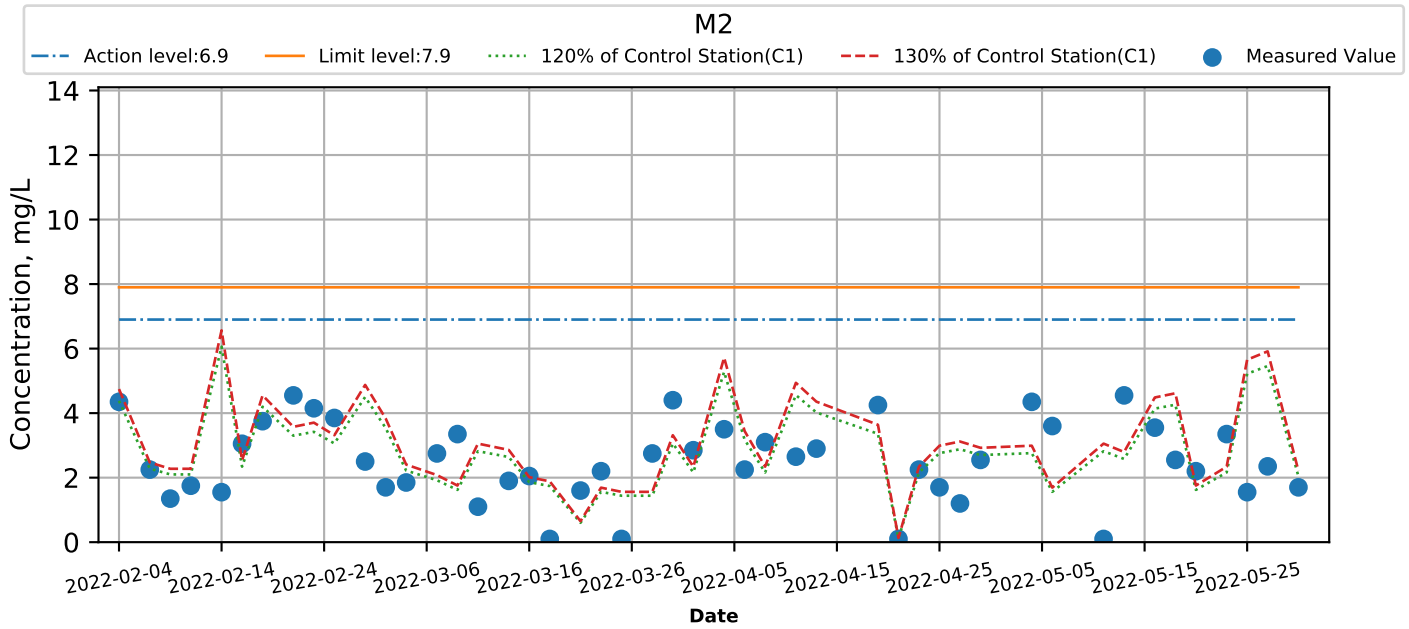


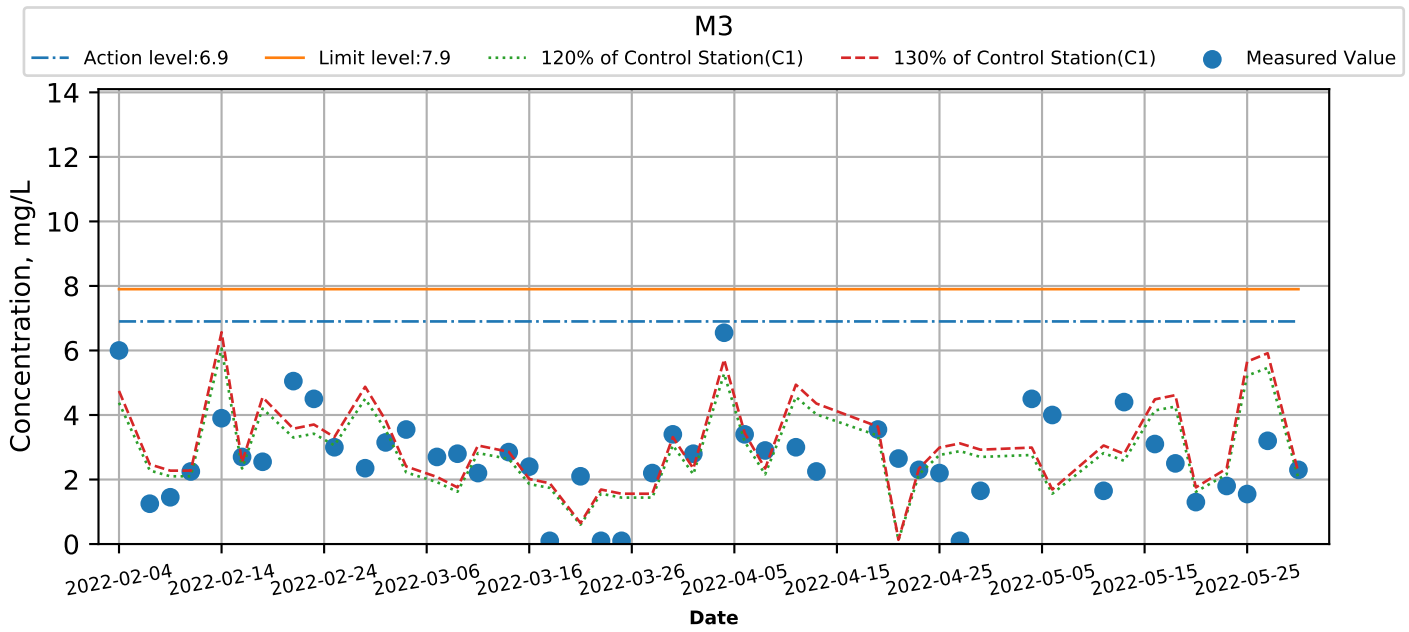


Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Bottom) at Monitoring Stations during Mid-Flood

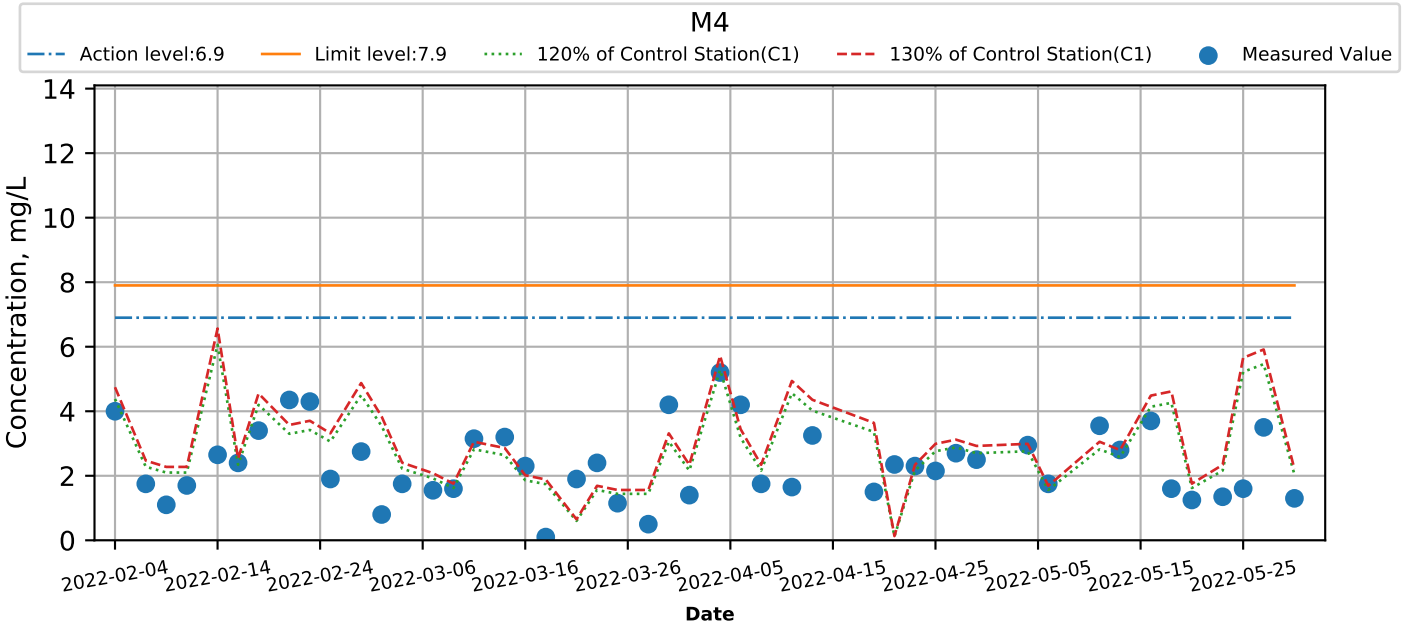


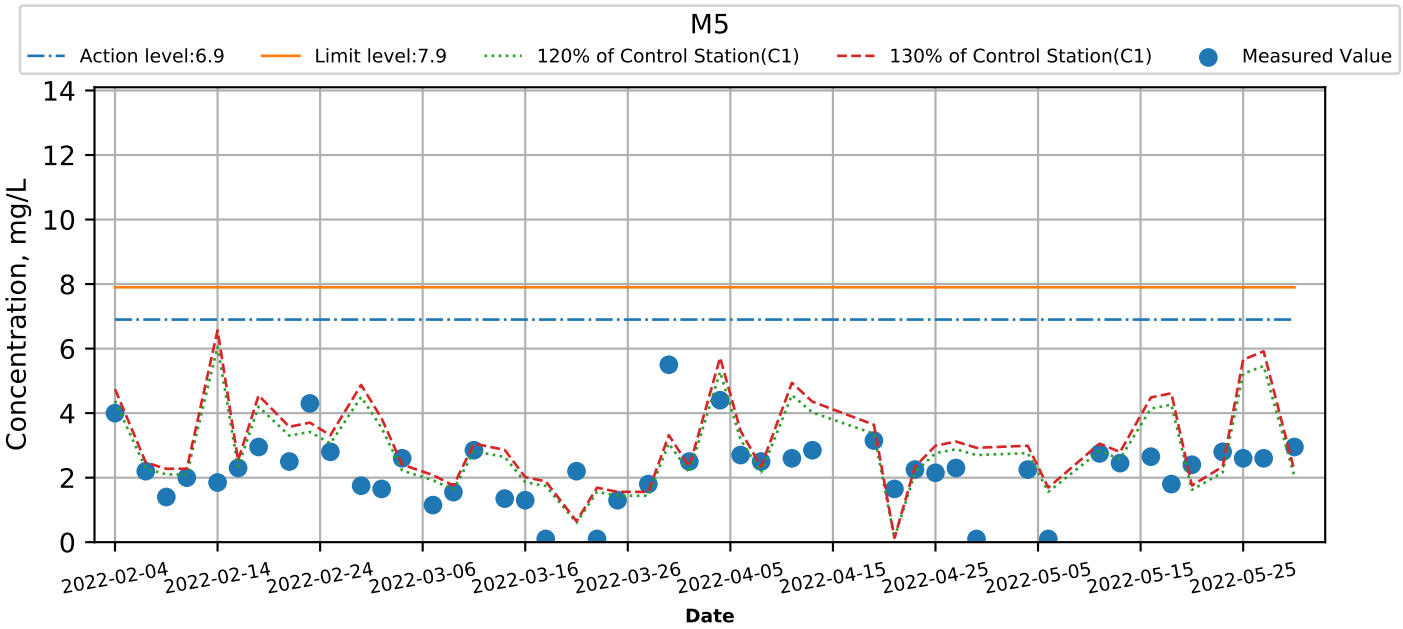




Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

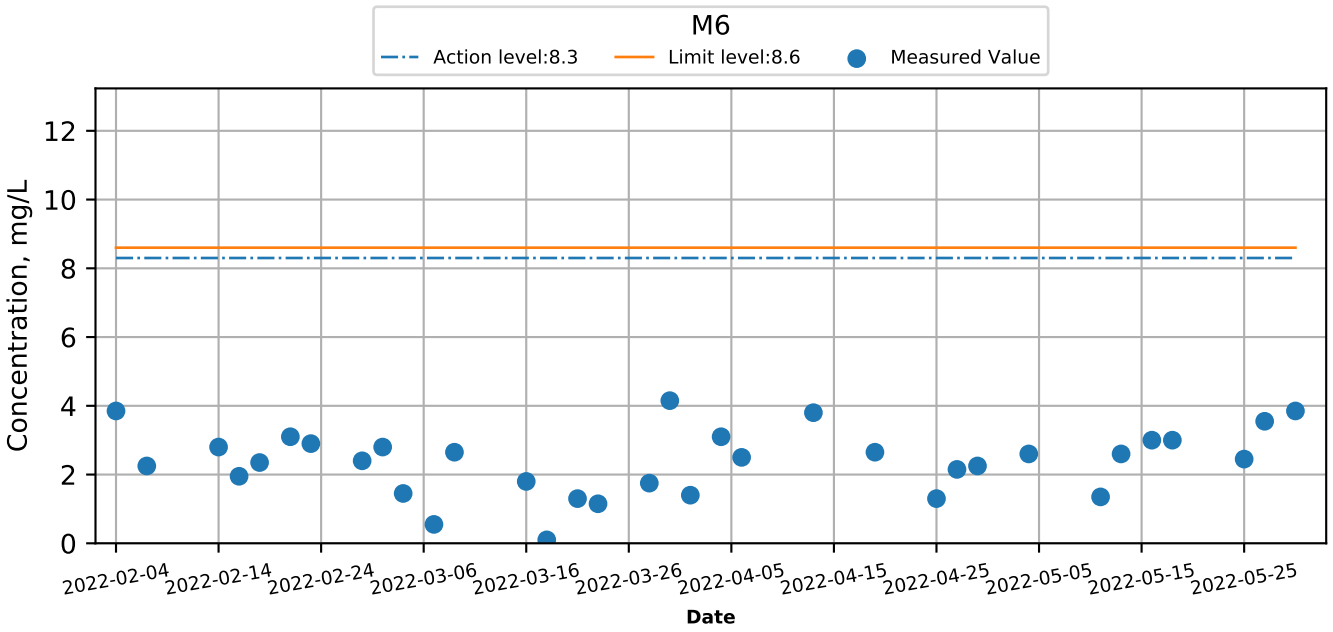
Suspended Solids (Bottom) at Monitoring Stations during Mid-Flood





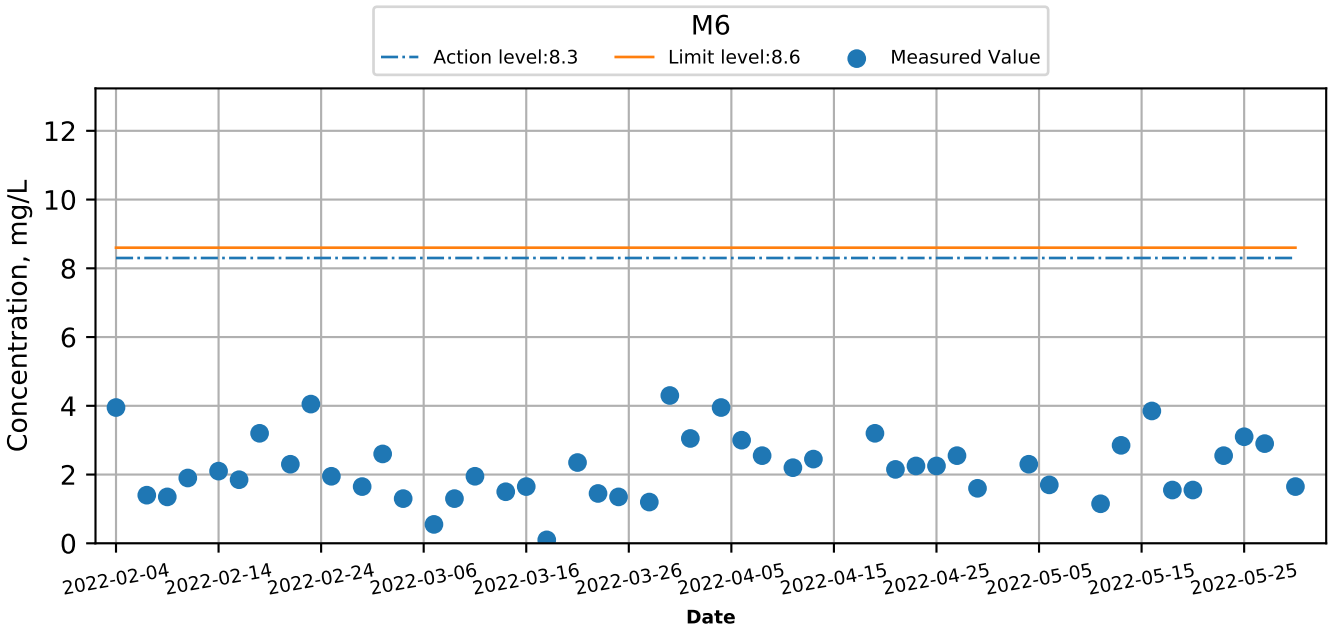
Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Intake level) at Monitoring Stations during Mid-Ebb



Graphical Presentation of Water Quality Monitoring Results (Feb-2022 to May-2022)

Suspended Solids (Intake level) at Monitoring Stations during Mid-Flood



APPENDIX J
QUALITY CONTROL REPORTS FOR LABORATORY ANALYSIS

ALS Environmental

QUALITY ASSURANCE & QUALITY CONTROL

ALS Hong Kong is staffed with qualified chemists who conduct analytical testing using well documented procedures based on the universally recognised methodologies of USEPA, APHA, ASTM.

All laboratory procedures are regulated by comprehensive QA / QC programmes established to monitor and control every aspect of the operation. A minimum of 10% of all samples analysed by ALS Technichem are part of the Quality Assurance protocol.

The laboratory is HOKLAS accredited (Reg. No. 066) for a large range of chemical and biological tests covering environmental and food analyses.

Our QA/QC procedures are designed to ensure reliable analytical results to our clients.

1. INSTRUMENT CALIBRATION

All equipment and instruments meet the requirements and specifications of the documented test procedures.

1.1 Daily Performance Checks

The performance checks are carried out once in every 24 hour operating period for most capital instruments, such as:

- Liquid Chromatography – Mass Spectrometry/Mass Spectrometry
- Gas Chromatography – Mass Selective Detector
- Gas Chromatography – Flame Ionization Detector
- Gas Chromatography – Electron Capture Detector
- Inductively Coupled Plasma – Mass Spectrometer
- Inductively Coupled Plasma – Atomic Emission Spectrometer
- Flow Injection Mercury Analyzer
- Automatic Discret Analyzer
- Flow Injection Analyzer
- Electronic Balance

Should the instrument fail the daily check repeatedly then the appropriate maintenance is undertaken to rectify the problem prior to sample analysis.

1.2 Calibration

A minimum 5 point calibration covering the working range of the samples to be analysed is run with each group of samples. Laboratory Blanks are run at a frequency of 1 in every 20 samples or 1 between each analytical lot of samples, which ever is the more frequent.

A mid-range calibration standard is analysed regularly during the operating period to ensure consistency.

1.3 Calibration Check

A calibration standard is analysed regularly during the operating period to ensure consistency.

2. QUALITY CONTROL (QC) SAMPLES

QC samples comprise those which monitor and control the laboratory performance namely Laboratory Control Sample (LCS), Duplicate Control Sample (DCS), Method Blanks and those which are used for data assessment and the evaluation of matrix effects by using Surrogates, Matrix Spike (MS), Matrix Spike Duplicate (MSD) and Sample Duplicates.

Field contamination is monitored by the analysis of Trip Blanks (VOCs) and Equipment Rinsate Samples.

The organics laboratory processes field samples in QC lots of 20 according to the analysis required. These 20 samples may consist of a number of sample batches independently submitted to the laboratory.

The inorganics laboratory lots samples in groups of 20 to 50 depending on the analyte to be determined. Quality control samples such as Laboratory Blanks and Quality Control Sample, and/or Certified Reference Materials (CRM) are run at a frequency of 1 in 20 per 'lot' of samples. Sample Duplicates and Matrix Spikes are run at a frequency of 1 in 20 or 1 per batch, whichever is more frequent.

2.1 Laboratory Control Sample (LCS) & Duplicate Control Sample (DCS) - (Organics only)

(a) Accuracy - the closeness of agreement between an observed value and a reference value.

The observed value is the average of the LCS and the DCS values. The reference value is the spike value. The accuracy is expressed as the % Recovery and is calculated as follows:

% Recovery = (Observed Value/Spiked Value) x 100

(b) Precision - the agreement among a set of replicate results.

Precision is expressed as the Relative Percent Difference (RPD) between the LCS and DCS detected levels, against the average of these levels.

The RPD is calculated as follows:

RPD = [(Results 1 - Result 2) / Average] x 100

QUALITY ASSURANCE & QUALITY CONTROL

The accuracy and precision data are evaluated against laboratory established control limits. (If laboratory control limits have not been established for a particular method, control limits as specified in USEPA SW 846 may be utilised).

QC results falling outside the control limits are automatically flagged.

The acceptance criterion used is that 80 percent of the precision and accuracy values must fall within the control limits. If this criterion is not met, corrective action must be taken. This may include repeat sample analysis.

2.2 Laboratory / Reagent Blank

For the laboratory blank to be acceptable, the concentration in the blank of any analyte of concern should not be higher than ½ of reporting limit (LOR) for that analyte.

Blank correction may be performed if the blank result is found to be greater than LOR and it is attributed to the analytical method and/or reagents involved.

2.3 Surrogates (Organics Only)

Surrogate results are reported as percent recovery. Since surrogate spike recoveries indicate the presence of sample specific interferences, USEPA documented recovery limits are used as a guidance only.

The surrogate standards are used for semivolatile and volatile analyses. The semivolatile analysis includes SVOC, pesticide and PCB tests. The volatile analysis includes VOC and BTEX.

2.4 Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

MS and MSD results are used for data assessment and evaluation of method precision and bias in a given matrix.

2.5 Sample Duplicate

The duplicate results are used for evaluation of laboratory precision in a given matrix.

The RPD values of the duplicates are used as the rejection or acceptance criteria.

Generally, water samples are repeated if the RPD is greater than 20 percent and there is sufficient sample for reanalysis.

The RPD for soils should be within 25 percent, however, this may be dependent upon sample homogeneity.

ALS Environmental

QUALITY ASSURANCE & QUALITY CONTROL

TABLE 1: QC TERMS, DEFINITIONS, PURPOSE FOR MONITORING & FREQUENCY

QC TERM	DEFINITION	TO MONITOR	FREQUENCY
Work Order	A set of samples received from a customer for analysis.	-	-
QC Lot	A set of 20 samples analysed under the same analytical conditions. A QC Lot may consist of samples from a number of work orders.	-	-
Analytical Lot	A group of samples prepared at the same time for a given analyte.	-	-
Control Limits	Upper and lower limits based on statistical analysis of laboratory historical performance data.	Laboratory precision and bias.	-
Laboratory Quality Control Samples			
Method Blank *(BLK)*	An analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation.	Contamination introduced in the laboratory.	1 per QC lot of 20 samples
Sample Duplicate *(DUP)*	An intra-laboratory split sample randomly selected from the sample batch.	Method precision in a given sample matrix.	1 per QC lot of 20 samples
Matrix Spike *(MS)*	A split sample spiked with the target analytes prior to sample preparation and analysis.	Method bias in a given sample matrix.	1 per QC lot of 20 samples
Matrix Spike Duplicate *(MSD)*	An split sample spiked as per the MS.	*Ditto*	*ditto*
Laboratory Control Sample *(LCS)*	A known, interference free matrix spiked with target analytes.	Laboratory preparation technique.	1 per QC lot of 20 samples
Duplicate Control Sample *(DCS)*	As per the SCS.	Preparation technique reproducibility (precision).	*Ditto*
Certified Reference Material (CRM)	A certified reference material containing target analytes with known concentrations and associated uncertainities and	Monitoring overall performance of each step during analysis, including sample preparation. For Inorganic analysis.	1 per QC Lot, per analytical method.
Surrogate Spike *(organic testing only)*	Compounds similar in composition and behaviour to the target analytes but not commonly found in samples.	Matrix interference on a per sample basis.	Surrogates are added to all samples for selected organic analyses.
Filed Quality Control Samples			
Equipment Rinsate	A sample of reagent water used by client in field to rinse the sampling equipment between the decontamination and sampling steps	Equipment decontamination.	as directed by client.
Trip Blank *(usually VOC testing)*	A sample of analyte free media is taken from the laboratory to the sampling site and returned to the laboratory unopened.	Contamination from shipping and field handling. Most applicable to volatile analysis.	as directed by client.

QUALITY ASSURANCE & QUALITY CONTROL

TABLE 2: LABORATORY QUALITY CONTROL SCHEDULES

ORGANICS –

QUALITY CONTROL ITEM	QCS2	QCS3	QCS4
Laboratory Blank	√	√	√
Batch Duplicate	√	√	√
Matrix Spike (MS)	•	√	√
Single Control Sample (SCS)	√	√	√
Duplicate Control Sample (DCS)	•	•	√
Surrogate *(organics only)*	√	√	√
Matrix Spike Duplicate (MSD)	•	•	√

INORGANICS -

QUALITY CONTROL ITEM	QCS2	QCS3	QCS4
Laboratory Blank	√	√	√
Batch Duplicate	√	√	√
Matrix Spike (MS)	√	√	√
Single Control Sample (SCS)	√	√	√
Duplicate Control Sample (DCS)	•	•	√
Matrix Spike Duplicate (MSD)	•	•	√

√ Analysis performed in the schedule.

• Analysis not performed in the schedule.

APPENDIX K
SUMMARY OF EXCEEDANCE

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction

Appendix K – Summary of Exceedance

Reporting Period: May 2022

(A) Exceedance Report for Air Quality

No limit level exceedance for air quality monitoring of 24-hr TSP was recorded in the reporting month.
No action level exceedance for air quality monitoring of 24-hr TSP was recorded in the reporting month.
No exceedance for air quality monitoring of 1-hr TSP was recorded in the reporting month.

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise

Eight (8) action level exceedances were recorded due to the documented complaints received in this reporting month.

Limit Level for Construction Noise

One (1) limit level exceedance for daytime construction noise monitoring was recorded in the reporting month.

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	Unit: dB (A) (30-min)					
			Measured Noise Level			Baseline Level	Limit Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
10-May-22	10:00	Sunny	77.9	79.6	76.8	65.5	75	*78*

No exceedance for evening-time construction noise monitoring was recorded in the reporting month.
No exceedance for nighttime construction noise monitoring was recorded in the reporting month.

Exceedance recorded during daytime

(NIL in the reporting month)

Exceedance recorded during night-time

(NIL in the reporting month)

(C) Exceedance Report for Water Quality

Eighteen (18) Action Level and fifty-five (55) Limit Level exceedances were recorded in Monitoring Stations (M) during marine water quality monitoring.

No action and limit level exceedance was recorded for post-reclamation marine water quality monitoring.

Refer to the attached notifications and investigation report for details.
Since October 2019, groundwater monitoring had been suspended.

(D) Exceedance Report for Ecology

(NIL in the reporting month)

(E) Exceedance Report for Cultural Heritage

(NIL in the reporting month)

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction

Appendix K – Summary of Exceedance

(F) Exceedance Report for Landfill Gas

(NIL in the reporting month)

Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel
- Notification & Investigation of Exceedances

NOE No. 220510_noise (CM1) **Exceedance Level**: Limit

Time of Measurement: 15:18 -16:18

Date of Noise Monitoring: 10 May 2022

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Starting Time	Measured Level (L_{eq} dB(A))	Baseline Noise Level (L_{eq} dB(A))	Construction Noise Level (L_{eq} dB(A))	Action Level	Limit Level (L_{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	15:18	77.9	65.5	***77.6***	When one documented complaint is received.	**75**	Limit
		15:48	77.2	65.5	***76.9***			

Investigation Summary

(a) Statement of exceedance(s)

Construction noise level(s) measured at CM1 exceed the construction noise (day time) limit level.

(b) Cause of exceedance(s) / Remarks

The exceedance is considered related to the Project works:

- Various construction noises were heard during the noise measurement, our field staff reported that the noise from the breaker was continuously heard through the first noise measurement. Other reported construction noises are believed to be occasionally generated from PMEs including bar bender and excavator.
- Some percussive / breaking noise from LTI and Portion IVC was also observed during monitoring.

Part B – Conclusion: The exceedance of daytime noise limit level is related to the Project.

Part C – Recommendation: Proper implementation of noise mitigation measures are required.

ETL Signature: _____ Date: 10 May 2022

Date of Water Quality Monitoring: **04 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	1.8	G1	17:29	6.0	6.9	2.1	2.3	**2.7**
Mid-Ebb	C2	surface	1.8	G2	17:17	6.0	6.9	2.1	2.3	**2.9**
Mid-Ebb	C2	surface	1.8	G3	17:39	6.0	6.9	2.1	2.3	**2.7**
Mid-Ebb	C2	surface	1.8	G4	17:54	6.0	6.9	2.1	2.3	**2.7**
Mid-Ebb	C2	surface	1.8	M2	17:12	6.2	7.4	2.1	2.3	**2.7**
Mid-Ebb	C2	surface	1.8	M3	17:46	6.2	7.4	2.1	2.3	**3.2**
Mid-Ebb	C2	surface	1.8	M4	17:04	6.2	7.4	2.1	2.3	**2.3**
Mid-Ebb	C2	surface	1.8	M5	18:05	6.2	7.4	2.1	2.3	**4.2**
Mid-Ebb	C2	bottom	3.1	G3	17:39	6.9	7.9	3.7	4.0	**3.8**
Mid-Ebb	C2	bottom	3.1	M3	17:46	6.9	7.9	3.7	4.0	**4.5**
Mid-Flood	C1	surface	3.4	G2	10:37	6.0	6.9	4.1	4.4	**4.3**
Mid-Flood	C1	bottom	2.3	M2	10:31	6.9	7.9	2.8	3.0	**4.4**
Mid-Flood	C1	bottom	2.3	M3	11:03	6.9	7.9	2.8	3.0	**4.5**
Mid-Flood	C1	bottom	2.3	M4	10:25	6.9	7.9	2.8	3.0	**3.0**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **04 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	1.4	G3	17:39	1.7	1.8	**1.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **06 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	bottom	1.3	G1	10:33	6.9	7.9	1.6	1.7	**2.3**
Mid-Flood	C1	bottom	1.3	G2	10:25	6.9	7.9	1.6	1.7	**2.5**
Mid-Flood	C1	bottom	1.3	G3	10:38	6.9	7.9	1.6	1.7	**2.6**
Mid-Flood	C1	bottom	1.3	G4	10:46	6.9	7.9	1.6	1.7	**2.1**
Mid-Flood	C1	bottom	1.3	M1	10:30	6.9	7.9	1.6	1.7	**2.4**
Mid-Flood	C1	bottom	1.3	M2	10:20	6.9	7.9	1.6	1.7	**3.6**
Mid-Flood	C1	bottom	1.3	M3	10:42	6.9	7.9	1.6	1.7	**4.0**
Mid-Flood	C1	bottom	1.3	M4	10:15	6.9	7.9	1.6	1.7	**1.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **06 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	1.4	G1	10:33	1.6	1.8	**1.9**
Bottom	19.3	22.2	Mid-flood	C1	1.4	M2	10:20	1.6	1.8	**1.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **11 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	1.3	G3	11:31	6.0	6.9	1.6	1.7	**2.2**
Mid-Ebb	C2	surface	1.3	M1	11:12	6.2	7.4	1.6	1.7	**1.8**
Mid-Ebb	C2	surface	1.3	M4	10:52	6.2	7.4	1.6	1.7	**1.7**
Mid-Flood	C1	bottom	2.4	M4	7:09	6.9	7.9	2.8	3.1	**3.6**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **11 May 2022**

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	1.1	G4	11:46	1.3	1.4	**2.0**
Bottom	19.3	22.2	Mid-Ebb	C2	1.1	M2	10:57	1.3	1.4	**1.4**
Bottom	19.3	22.2	Mid-Ebb	C2	1.1	M5	12:17	1.3	1.4	**2.4**
Bottom	19.3	22.2	Mid-flood	C1	1.5	M5	8:19	1.8	2.0	**2.4**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **13 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	2.3	G2	10:31	6.0	6.9	2.8	3.0	**3.2**
Mid-Ebb	C2	surface	2.3	G4	11:11	6.0	6.9	2.8	3.0	**3.8**
Mid-Ebb	C2	surface	2.3	M1	10:38	6.2	7.4	2.8	3.0	**3.6**
Mid-Ebb	C2	surface	2.3	M2	10:22	6.2	7.4	2.8	3.0	**2.9**
Mid-Ebb	C2	surface	2.3	M3	11:02	6.2	7.4	2.8	3.0	**4.2**
Mid-Ebb	C2	surface	2.3	M5	11:23	6.2	7.4	2.8	3.0	**4.2**
Mid-Flood	C1	surface	3.2	G2	13:43	6.0	6.9	3.8	4.2	**4.0**
Mid-Flood	C1	surface	3.2	G3	14:05	6.0	6.9	3.8	4.2	**4.2**
Mid-Flood	C1	surface	3.2	G4	14:17	6.0	6.9	3.8	4.2	**4.5**
Mid-Flood	C1	surface	3.2	M4	13:29	6.2	7.4	3.8	4.2	**4.4**
Mid-Flood	C1	bottom	2.2	G1	13:57	6.9	7.9	2.6	2.8	**4.8**
Mid-Flood	C1	bottom	2.2	G2	13:43	6.9	7.9	2.6	2.8	**3.1**
Mid-Flood	C1	bottom	2.2	G3	14:05	6.9	7.9	2.6	2.8	**3.3**
Mid-Flood	C1	bottom	2.2	G4	14:17	6.9	7.9	2.6	2.8	**2.9**
Mid-Flood	C1	bottom	2.2	M1	13:51	6.9	7.9	2.6	2.8	**2.7**
Mid-Flood	C1	bottom	2.2	M2	13:36	6.9	7.9	2.6	2.8	**4.6**
Mid-Flood	C1	bottom	2.2	M3	14:11	6.9	7.9	2.6	2.8	**4.4**
Mid-Flood	C1	bottom	2.2	M4	13:29	6.9	7.9	2.6	2.8	**2.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **13 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.4	M5	11:23	2.9	3.1	**4.2**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **16 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	2.9	G3	15:45	6.0	6.9	3.4	3.7	**3.8**
Mid-Ebb	C2	surface	2.9	G4	15:55	6.0	6.9	3.4	3.7	**3.6**
Mid-Ebb	C2	bottom	2.3	G1	15:39	6.9	7.9	2.7	2.9	**2.8**
Mid-Ebb	C2	bottom	2.3	M3	15:50	6.9	7.9	2.7	2.9	**2.9**
Mid-Ebb	C2	bottom	2.3	M5	16:00	6.9	7.9	2.7	2.9	**3.3**
Mid-Flood	C1	surface	2.4	G1	9:44	6.0	6.9	2.8	3.1	**3.6**
Mid-Flood	C1	surface	2.4	G2	9:36	6.0	6.9	2.8	3.1	**4.2**
Mid-Flood	C1	surface	2.4	G3	9:47	6.0	6.9	2.8	3.1	**3.2**
Mid-Flood	C1	surface	2.4	G4	9:54	6.0	6.9	2.8	3.1	**3.7**
Mid-Flood	C1	surface	2.4	M1	9:40	6.2	7.4	2.8	3.1	**2.9**
Mid-Flood	C1	surface	2.4	M3	9:51	6.2	7.4	2.8	3.1	**3.9**
Mid-Flood	C1	surface	2.4	M5	10:01	6.2	7.4	2.8	3.1	**3.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **16 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	1.8	M3	15:50	2.1	2.3	**2.9**
Bottom	19.3	22.2	Mid-Ebb	C2	1.8	M5	16:00	2.1	2.3	**2.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
- **Notification of Exceedance**

Date of Water Quality Monitoring: **18 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	2.8	G1	13:20	6.0	6.9	3.3	3.6	**5.2**
Mid-Ebb	C2	surface	2.8	G2	13:05	6.0	6.9	3.3	3.6	**3.7**
Mid-Ebb	C2	surface	2.8	G4	13:43	6.0	6.9	3.3	3.6	**3.8**
Mid-Ebb	C2	surface	2.8	M1	13:12	6.2	7.4	3.3	3.6	**4.3**
Mid-Ebb	C2	bottom	3.7	G2	13:05	6.9	7.9	4.4	4.8	**5.3**
Mid-Ebb	C2	bottom	3.7	G4	13:43	6.9	7.9	4.4	4.8	**4.7**
Mid-Ebb	C2	bottom	3.7	M4	12:50	6.9	7.9	4.4	4.8	**5.0**
Mid-Ebb	C2	bottom	3.7	M5	13:56	6.9	7.9	4.4	4.8	**5.2**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
- **Notification of Exceedance**

Date of Water Quality Monitoring: **18 May 2022**

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.1	G1	13:20	2.5	2.7	**3.1**
Bottom	19.3	22.2	Mid-Ebb	C2	2.1	M1	13:12	2.5	2.7	**2.6**
Bottom	19.3	22.2	Mid-Ebb	C2	2.1	M2	12:57	2.5	2.7	**2.8**
Bottom	19.3	22.2	Mid-flood	C1	1.6	G1	9:23	1.9	2.0	**3.2**
Bottom	19.3	22.2	Mid-flood	C1	1.6	G2	9:06	1.9	2.0	**2.1**
Bottom	19.3	22.2	Mid-flood	C1	1.6	G4	9:46	1.9	2.0	**2.2**
Bottom	19.3	22.2	Mid-flood	C1	1.6	M1	9:14	1.9	2.0	**2.0**
Bottom	19.3	22.2	Mid-flood	C1	1.6	M2	8:58	1.9	2.0	**2.6**
Bottom	19.3	22.2	Mid-flood	C1	1.6	M4	8:49	1.9	2.0	**2.1**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
- **Notification of Exceedance**

Date of Water Quality Monitoring: **20 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	surface	2.4	G3	11:22	6.0	6.9	2.8	3.1	**3.1**
Mid-Flood	C1	surface	2.4	M2	11:06	6.2	7.4	2.8	3.1	**2.9**
Mid-Flood	C1	surface	2.4	M3	11:26	6.2	7.4	2.8	3.1	**3.0**
Mid-Flood	C1	bottom	1.4	G2	11:10	6.9	7.9	1.6	1.8	**3.0**
Mid-Flood	C1	bottom	1.4	G3	11:22	6.9	7.9	1.6	1.8	**5.4**
Mid-Flood	C1	bottom	1.4	G4	11:31	6.9	7.9	1.6	1.8	**4.4**
Mid-Flood	C1	bottom	1.4	M1	11:14	6.9	7.9	1.6	1.8	**3.7**
Mid-Flood	C1	bottom	1.4	M2	11:06	6.9	7.9	1.6	1.8	**2.2**
Mid-Flood	C1	bottom	1.4	M5	11:39	6.9	7.9	1.6	1.8	**2.4**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
- **Notification of Exceedance**

Date of Water Quality Monitoring: **20 May 2022**

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	1.4	M2	11:06	1.6	1.8	**2.3**
Bottom	19.3	22.2	Mid-flood	C1	1.4	M4	11:00	1.6	1.8	**2.4**
Bottom	19.3	22.2	Mid-flood	C1	1.4	M5	11:39	1.6	1.8	**2.1**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **23 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	surface	1.5	G1	13:55	6.0	6.9	1.7	1.9	**1.8**
Mid-Flood	C1	surface	1.5	G2	13:37	6.0	6.9	1.7	1.9	**2.5**
Mid-Flood	C1	surface	1.5	G3	14:03	6.0	6.9	1.7	1.9	**2.6**
Mid-Flood	C1	surface	1.5	G4	14:18	6.0	6.9	1.7	1.9	**1.9**
Mid-Flood	C1	surface	1.5	M2	13:30	6.2	7.4	1.7	1.9	**1.8**
Mid-Flood	C1	surface	1.5	M3	14:10	6.2	7.4	1.7	1.9	**2.6**
Mid-Flood	C1	surface	1.5	M4	13:22	6.2	7.4	1.7	1.9	**2.7**
Mid-Flood	C1	bottom	1.8	G1	13:55	6.9	7.9	2.2	2.3	**3.1**
Mid-Flood	C1	bottom	1.8	M1	13:46	6.9	7.9	2.2	2.3	**3.1**
Mid-Flood	C1	bottom	1.8	M2	13:30	6.9	7.9	2.2	2.3	**3.4**
Mid-Flood	C1	bottom	1.8	M5	14:29	6.9	7.9	2.2	2.3	**2.8**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **23 May 2022**

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	1.5	G2	13:37	1.8	2.0	**2.3**
Bottom	19.3	22.2	Mid-flood	C1	1.5	G4	14:18	1.8	2.0	**3.5**
Bottom	19.3	22.2	Mid-flood	C1	1.5	M2	13:30	1.8	2.0	**3.9**
Bottom	19.3	22.2	Mid-flood	C1	1.5	M3	14:10	1.8	2.0	**1.9**
Bottom	19.3	22.2	Mid-flood	C1	1.5	M4	13:22	1.8	2.0	**2.0**
Bottom	19.3	22.2	Mid-flood	C1	1.5	M5	14:29	1.8	2.0	**2.2**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **25 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	2.2	G1	9:58	6.0	6.9	2.6	2.8	**3.1**
Mid-Ebb	C2	surface	2.2	G2	9:42	6.0	6.9	2.6	2.8	**3.6**
Mid-Ebb	C2	surface	2.2	G3	10:07	6.0	6.9	2.6	2.8	**2.7**
Mid-Ebb	C2	surface	2.2	G4	10:23	6.0	6.9	2.6	2.8	**2.9**
Mid-Ebb	C2	surface	2.2	M5	10:33	6.2	7.4	2.6	2.8	**2.7**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **25 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	1.6	M5	10:33	1.9	2.0	**3.0**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **27 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	2.8	G4	10:19	6.0	6.9	3.3	3.6	**4.3**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **30 May 2022**

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	surface	1.3	G1	13:46	6.0	6.9	1.6	1.7	**2.6**
Mid-Ebb	C2	surface	1.3	G3	13:53	6.0	6.9	1.6	1.7	**2.3**
Mid-Ebb	C2	surface	1.3	G4	14:11	6.0	6.9	1.6	1.7	**3.1**
Mid-Ebb	C2	surface	1.3	M1	13:37	6.2	7.4	1.6	1.7	**2.3**
Mid-Ebb	C2	surface	1.3	M2	13:22	6.2	7.4	1.6	1.7	**3.5**
Mid-Ebb	C2	surface	1.3	M3	14:02	6.2	7.4	1.6	1.7	**3.9**
Mid-Ebb	C2	surface	1.3	M4	13:14	6.2	7.4	1.6	1.7	**3.5**
Mid-Ebb	C2	surface	1.3	M5	14:22	6.2	7.4	1.6	1.7	**3.0**
Mid-Ebb	C2	bottom	2.3	M5	14:22	6.9	7.9	2.8	3.0	**4.0**
Mid-Flood	C1	bottom	1.7	G1	8:13	6.9	7.9	2.0	2.2	**3.1**
Mid-Flood	C1	bottom	1.7	G3	8:20	6.9	7.9	2.0	2.2	**2.6**
Mid-Flood	C1	bottom	1.7	M1	8:06	6.9	7.9	2.0	2.2	**3.2**
Mid-Flood	C1	bottom	1.7	M3	8:27	6.9	7.9	2.0	2.2	**2.3**
Mid-Flood	C1	bottom	1.7	M5	8:45	6.9	7.9	2.0	2.2	**3.0**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Date of Water Quality Monitoring: **30 May 2022**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	3.3	G4	14:11	4.0	4.3	**4.5**

Note: ***Bold*** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel Design and Construction

- Investigation Report of Environmental Quality Limit Exceedances

Part A Details of Investigation

For the reporting month, exceedances for suspended solids and turbidity have been recorded continuously at various monitoring stations. During the site inspection, the water outside the site boundary seemed to be clear and clean (Photos 1 to 3).

During regular water quality monitoring, the sea appears to be clear in general (Photo 4 to 6). No obvious muddy water was observed during the monitoring.

Sediment tanks were free from silt and sediments and the drainage system remained well-maintained. No sand plumes were observed during the site inspection.

No direct evidence that the recent exceedances were due to the ongoing reclamation activities of the Project. Therefore, no additional marine water quality monitoring is required.

Part B Photo Record

	
Photo 1 (Recorded on 19 May 2022)	Photo 2 (Recorded on 25 May 2022)
	
Photo 3 (Recorded on 25 May 2022)	Photo 4 (Recorded on 13 May 2022)

	
Photo 5 (Recorded on 13 May 2022)	Photo 6 (Recorded on 13 May 2022)

Part C – Recommendations

Heavy downpour had already occurred in June 2022. The Contractors are reminded to carry out measures such as clearing the drainage after rain and ensuring proper embankment had been placed around the site to prevent accidental discharge of muddy water.

Dive inspection shall be conducted regularly to ensure the condition of the silt curtain. Good site practices such as the provision of perimeter cut-off drain to direct off-site water, regular removal of silt and sediment from sediment tanks, and covering open stockpiles shall be conducted as far as possible. In addition, the drainage system shall be check and maintain after heavy downpours to ensure their capacity on handling future potential discharge from the site. For precautionary measures, it is recommended that chemicals shall be placed away from the seafront area to prevent accidental runoff.

Reviewed by: (Environmental Team Leader:(Dr. HF Chan)

Date: 13th June 2022

APPENDIX L
SITE AUDIT SUMMARY

Appendix L - Site Audit Summary

Contract No. — NE2015/01
Tseung Kwan O - Lam Tin Tunnel — Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Ecology			
--	--	--	--
Noise			
The Contractor is remided to replace damaged acoustic sheet.	4-May-22 11-May-22	✓	4-May-22 The acositic sheet of the breaker head has been replaced. 11-May-22 The conditions of acoustic sheets near WVB had improved.
Landscape and Visual			
--	--	--	--
Air Quality			
The Contractor is reminded to sprinkle water during drilling activities to suppress dust emission.	4-May-22	✓	4-May-22 The Contractor immediately requested the workers to sprinkle water.
The Contractor is reminded to suppress dust emission for the drill.	11-May-22	✓	12-May-22 A piece of trapaulin farbic is attached to the tail of the drill so that the dust will not be directly emitted into the air.
The Contractor is reminded to water haul road to suppress dust emission.	18-May-22	✓	18-May-22 The Contractor immediately requested the workers to sprinkle water on the haul road.
Waste/Chemical Management			
The Contractor is reminded to remove chemicals or provide drip tray to the chemicals.	11-May-22	✓	12-May-22 The chemical was removed.
The Contractor is reminded to remove water in the drip tray after the rain to ensure adequate capacity of the drip tray.	18-May-22	✓	19-May-22 The drip tray was cleared.
The Contractor is reminded to remove waste at a timely manner and sort waste accordingly.	25-May-22	✓	25-May-22 The waste was removed.
The Contractor is reminded to remove oil stain on the haul road.	25-May-22	✓	25-May-22 The oil stain was removed.
The Contractor is reminded to provide drip tray for the chemicals.	25-May-22	✓	25-May-22 The chemical was removed.
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

Appendix L - Site Audit Summary

Contract No. — NE2015/02
Tseung Kwan O - Lam Tin Tunnel — Road P2 and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Ecology			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste/Chemical Management			
The Contractor is reminded to remove waste in a timely manner	26-May-22	✓	26-May-22 The waste was removed.
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

Appendix L - Site Audit Summary

Contract No. — NE2017/02
Tseung Kwan O - Lam Tin Tunnel — Road P2/D4 and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Ecology			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
The Contractor is reminded to sprinkle water while unloading the materials.	21-Apr-22	✓	21-Apr-22: The Contractor immediately request the worker the sprinkle water to suppress dust emission to the surroundings.
Waste/Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

Appendix L - Site Audit Summary

Contract No. — NE2017/06
Tseung Kwan O - Lam Tin Tunnel — Traffic Control and Surveillance System (TCSS) and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Ecology			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste/Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

Appendix L - Site Audit Summary

Contract No. — NE2017/01
Tseung Kwan O - Lam Tin Tunnel — Tseung Kwan O Interchange and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Ecology			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste/Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

Appendix L - Site Audit Summary

Contract No. — NE2017/07
Tseung Kwan O - Lam Tin Tunnel — Cross Bay Link Main Bridge and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
The Contractor is reminded to avoid washing/cleaning near the edge of bridge as potential accidental discharge may occur.	6-Apr-22	✓	7-Apr-22: The Contractor has constructed embankment around the edge of bridge and request all washing/cleaning activities to conduct away from the edge with the use of bags made with trapaulin to prevent accidental discharge.
Ecology			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste/Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permit/Licenses			
--	--	--	--

✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month
✻ Non-compliance of mitigation measure
• Non-compliance but improved by the contractor

APPENDIX M
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality (Dust)

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action level being exceeded by one sampling	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	8. If exceedance stops, cease additional monitoring.			
Limit level being exceeded by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. 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 IEC and ER 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; 8. If exceedance stops, cease additional monitoring.	3. Supervise the implementation of remedial measures.	4. Ensure remedial measures properly implemented; 5. 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.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. 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. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.			

Event and Action Plan for Marine Water Quality

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; • If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • If exceedance occurs at WSD salt water intake, inform WSD; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance.	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Amend working methods if appropriate; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agree mitigation measures.
Action level being exceeded by two or more consecutive	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures;	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal;	• Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
sampling days at water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Ensure mitigation measures are implemented; • Prepare to increase the monitoring frequency to daily; • If exceedance occurs at WSD salt water intake, inform WSD; • Repeat measurement on next day of exceedance.	• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
	• If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC, contractor, AFCD and EPD • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and submit proposal of mitigation measures to IEC and ER within 3 working days of notification; • Implement the agreed mitigation measures.
Limit level being exceeded by two or more consecutive sampling days at	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IC(E), ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IC(E), AFCD, contractor and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IC(E), ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures; • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IC(E) and ER and submit proposal of mitigation measures to IC(E) and ER within 3 working days of notification; • Implement the agreed mitigation measures; • As directed by the Engineer, to slow down or to stop all or part of the construction activities.

Limit Levels and Action Plan for Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	• Ventilate to restore oxygen to >19%
	<18%	• Stop works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5% by volume)	• Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. > 1% by volume)	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon Dioxide	>0.5%	• Ventilate to restore carbon dioxide to < 0.5%
	>1.5%	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore carbon dioxide to < 0.5%

Event and Action Plan for Coral Post-Translocation Monitoring

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Check monitoring data; 2. Inform the IEC, ER and Contractor of the findings; 3. Increase the monitoring to at least once a month to confirm findings; 4. Propose mitigation measures for consideration	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.
Limit Level Exceedance	Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, suspend construction works until an effective solution is identified.	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

Mitigation Measures for Vibration Monitoring

Level	Contingency Action
Alert Level	● The Engineer shall be informed immediately. ● The Contractor shall submit an investigation report to describe works being undertaken. To review the instrument responses and to study the cause of undue response. ● The Contractor shall review and increase the instrumentation monitoring and reporting frequency, if applicable. ● The Contractor shall submit a detailed plan of action describing the measures to be taken should the concerned instrument reach the action level to the Engineer for approval.
Alarm Level	● The Engineer shall be informed immediately. ● The active construction works may require to be suspended subject to the Engineer's review of monitoring data. ● The Contractor shall immediately implement the measures as defined in the detailed plan of action to prevent further ground movement and groundwater drawdown etc. ● The Contractor shall prepare a detailed investigation report to study the cause of the exceedance ● The Contractor shall propose a contingency plan for the Engineer's approval in the event that alarm value is reached or exceeded ● The Contractor shall develop an emergency plan for the Engineer's approval in the event the applied contingency measures cannot control the situation. ● The Contractor shall meet the Engineer to discuss the instrument response and review the effectiveness of the implemented measures. ● The Contractor shall carry out design review of the works

Action Level	● Consideration shall be given to suspend all active construction works and the Engineer shall be informed immediately ● The Contractor shall immediately implement the measures defined in the contingency plan ● The Contractor shall implement the measures defined in the emergency plan in the event that the applied contingency measures are found inadequate ● The Contractor shall provide a complete report to examine the construction method and review the response of the instruments with full history of the monitoring data and construction activities and necessary design update ● To resume the suspended activities, the Contractor shall demonstrate to the Engineer's satisfaction that it is safe to do so with approval from the Engineer.

APPENDIX N
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

App N1 - IMPLEMENTATION SCHEDULE AND RECOMMANDED MITIGATION MEASURES

Table I - Recommended Mitigation Measures stipulated in EM&A Manual for the Project

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
Air Quality						
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO
S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7 S3.8.7	Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs.. • 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 shall be applied to aggregate fines. • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads 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 wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. • Imposition of speed controls for vehicles on site haul roads. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • 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.	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation
/	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	APCO

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	APCO
Noise Impact (Construction Phase)						
S4.8	• Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO
S4.9	**Good Site Practice** • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • 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 utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO
S4.9						
S4.9						
S4.9						
S4.9						
S4.9						
S4.9						
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO
Water Quality Impact (Construction Phase)						
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m^3, with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m^3 (i.e. 1,000 m^3 per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
Silt Curtain Deployment Plan	• Silt curtains should be deployed properly to surround the works area.	Control potential impacts from marine woroks	Contractor	NE/2015/01	Construction stage	EIAO
Silt Curtain Deployment Plan	• Maintenance of silt curtain should be provided.					
Silt Curtain Deployment Plan	• Sufficient stock of silt curtain should be provided on site.					
S5.8.3	Other good site practices should be undertaken during filling operations include:	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)
S5.8.3	• all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea;					
S5.8.3	• floating single silt curtain shall be employed for all marine works;					
S5.8.3	• all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;					
S5.8.3	• all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;					
S5.8.3	• excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;					
S5.8.3	• adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;					
S5.8.3	• loading of barges and hoppers should be controlled to prevent splashing of filling material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation;					
S5.8.3	• any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;					
S5.8.3	• construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds; and					
S5.8.3	• before commencement of the reclamation works, the holder of Environmental Permit has to submit plans showing the phased construction of the reclamation, design and operation of the silt curtain.					
S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
ERR S5.6.1	To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented: - Before carrying out any dredging and underwater filling works, a temporary barrier shall first be constructed to a height above the high water mark to completely enclose the works site (without any opening at the barrier wall) - The temporary barrier fully enclosing the dredging and underwater filling works site shall not be removed before completion of all dredging and underwater filling works. - Water quality sampling and testing shall be carried out to demonstrate that the water quality inside the enclosed barrier is comparable to the ambient or baseline levels prior to the removal of the fully enclosed barrier. - Silt curtains shall be deployed for the installation and removal of the temporary barrier and at the double water gates marine access opening during its operation.	Control potential impacts from dredging and filling works for Reclamation for Road P2	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
ERR S5.6.1						
ERR S5.6.1						
ERR S5.6.1						
ERR S5.6.1						
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ under the TM-DSS.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: • use of sediment traps; and • adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.8						
S5.8.8						
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.12	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.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.13	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.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
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 being washed into the drainage system and storm runoff being directed 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.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
S5.8.19	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 ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/ foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance
S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO

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S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO

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S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO
S5.8.44	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 with for control of chemical wastes.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO
S5.8.45	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 leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO
S5.8.46 S5.8.46 S5.8.46 S5.8.46	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: • suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; • chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and • storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
Ecological Impact						
S6.8.4	**Measures to Minimize Disturbance**	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation	Design Team / Contractor	Land-based works are	Construction Phase	N/A
S6.8.4	• Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.					
S6.8.4	• Hoarding or fencing should be erected around the works area boundaries during the construction phase. The hoarding would screen adjacent habitats from construction phase activities, reduce noise disturbance to these habitats and also to restrict access to habitats adjacent to works areas by site workers;					
S6.8.4	• Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities					
S6.8.5	**Standard Good Site Practice**	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A
S6.8.5	• Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.					
S6.8.5	• Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.					
S6.8.5	• Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.					
S6.8.5	• General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.					
S6.8.5	• Open burning on works sites is illegal, and should be strictly prohibited.					
S6.8.5	• Measures should also be put into place so that litter, fuel and solvents do not enter the nearby watercourses.					
S6.8.6	**Measure to Minimize Groundwater Inflow**	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A
S6.8.6	• The drained tunnel construction method with groundwater inflow control measures would generally be adopted.					
S6.8.6	• During the tunnel excavation, pre-excavation grouting could be adopted to reduce the groundwater inflow and ensure that the tunnel would meet the long term water tightness requirements.					

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S6.8.8	**Measure to Minimize Impact on Corals**	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A
S6.8.8	<u>Coral translocation</u>					
S6.8.8	• It is recommended to translocate the affected coral colonies, except the locally common *Oulastrea crispata* , within the reclamation area and bridge footprint to the other suitable locations as far as practicable.					
S6.8.8	• The coral translocation should be conducted during the winter months (November-March) in order to avoid disturbance during their spawning period (i.e. July to October).					
S6.8.8	• A detailed coral translocation plan with a description on the methodology for pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage.					
S6.8.8	• The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation.					
S6.8.8	<u>Post translocation Monitoring</u>					
S6.8.8	• A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities					
S6.8.8	• Information gathered during each posttranslocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.					
S6.8.9 S6.8.10	**Measure to Control Water Quality Impact** • Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. • Diverting of the site runoff to silt trap facilities before discharging into storm drain; • Proper waste and dumping management; and • Standard good-site practice for land-based construction.	Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies	Design Team, contractor	Marine and landbased works area	Construction phase	WQO
S6.8.11	**Compensation for Vegetation Loss** • Felling of mature trees should be compensated by planting of standard or heavy standard trees within or in vicinity of the affected area as far as practicable. Such compensatory planting for trees should be provided with at least a 1:1 ratio. In addition, vegetation at the temporarily affected area should be reinstated with species similar to the existing condition.	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A

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Fisheries Impact						
S7.7.3	**Measure to Control Water Quality Impact** • Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO
Waste Management (Construction Phase)						
S8.6.3	**Good Site Practices and Waste Reduction Measures** • Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • Training of site personnel in site cleanliness, proper waste management and chemical handling procedures; • Provision of sufficient waste disposal points and regular collection of waste; • Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)
S8.6.4	***Good Site Practices and Waste Reduction Measures (con't)*** • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; • Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)
S8.6.5	**Good Site Practices and Waste Reduction Measures (con't)** The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005
S8.6.6	**Good Site Practices and Waste Reduction Measures (con't)** • C&D materials would be reused in the project and other local concurrent projects as far as possible.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005

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S8.6.7	**Storage, Collection and Transportation of Waste**	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005
S8.6.7	Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:					
S8.6.7	• Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;					
S8.6.7	• Maintain and clean storage areas routinely;					
S8.6.7	• Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and					
S8.6.7	• Different locations should be designated to stockpile each material to enhance reuse.					
S8.6.8/ Waste Management Plan	**Storage, Collection and Transportation of Waste (con't)**	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005
S8.6.8/ Waste Management Plan	• Remove waste in timely manner;					
S8.6.8/ Waste Management Plan	• Waste collectors should only collect wastes prescribed by their permits;					
S8.6.8/ Waste Management Plan	• Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;					
S8.6.8/ Waste Management Plan	• Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28);					
S8.6.8/ Waste Management Plan	• Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and					
S8.6.8/ Waste Management Plan	• Maintain records of quantities of waste generated, recycled and disposed.					
S8.6.9/ Waste Management Plan	**Storage, Collection and Transportation of Waste (con't)** • Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010
S8.6.11 - S8.6.13/ Waste Management Plan	**Sorting of C&D Materials**	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010
S8.6.11 - S8.6.13/ Waste Management Plan	• Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.					
S8.6.11 - S8.6.13/ Waste Management Plan	• Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.					ETWB TCW No. 33/2002
S8.6.11 - S8.6.13/ Waste Management Plan	• The C&D materials should at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled in the reclamation as far as practicable before delivery to PFRFs. While opportunities for reusing the non-inert portion should be investigated before disposal of at designated landfills					ETWB TCW No. 19/2005

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S8.6.17 – S8.6.20	**Sediments (con't)**	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TCW No. 19/2005
S8.6.17 – S8.6.20	• Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment.					
S8.6.17 – S8.6.20	• A treatment area should be confined for carrying out the cement stabilization mixing and temporary stockpile. The area should be designed to prevent leachate from entering the ground. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).					
S8.6.17 – S8.6.20	• In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.					
S8.6.17 – S8.6.20	• In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.					
	Sediments (con't)	To ensure handling of sediments are in accordance to statutory requirements	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance
S8.6.24 - S8.6.28/ Waste Management Plan	• The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excaveted sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002.					
S8.6.24 - S8.6.28/ Waste Management Plan	• Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).					
S8.6.24 - S8.6.28/ Waste Management Plan	• In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.					
S8.6.24 - S8.6.28/ Waste Management Plan	• The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should 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.					

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S8.6.24 - S8.6.28/ Waste Management Plan S8.6.24 - S8.6.28/ Waste Management Plan	• In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. • Another possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.	To ensure handling of sediments are in accordance to statutory requirements	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance
S8.6.26/ Waste Management Plan	**Chemical Wastes.** • If chemical wastes are 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. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes Waste Disposal (Chemical Waste) (General) Regulation
S8.6.27/ Waste Management Plan	**General Refuse** • General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)
Impact on Cultural Heritage (Construction Phase)						
S9.6.4	**Dust and visual impacts** • Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided; • The open yard in front of the temple should be kept as usual for annual Tin Hau festival; • Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple.	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO

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S9.6.4	**Indirect vibration impact** • Vibration level is suggest to be controlled within a peak particle velocity (ppv) limit of 5mm/s measured inside the historical buildings; • Monitoring of vibration should be carried out during construction phase. • Tilting and settlement monitoring should will be applied on the Cha Kwo Ling Tin Hau Temple as well. • A proposal with details for the mitigation measures and monitoring of impacts on built heritage shall be submitted to AMO for comments before commencement of work.	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.
Built Heritage Mitigation Plan	• Established Alert, Alarm and Action Level for the monitoring parameters. • To increase the instrumentation monitoring and reporting frequency. • To propose detailed action plan or contingency plan for the Engineer's approval when AAA Level is reached or exceeded.	To prevent vibration impacts	NE/2015/01	Tin Hau Temple	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.
Landscape and Visual Impact (Construction Phase)						
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works. The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification
Table 10.8.1/ Landscape Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification
Table 10.8.1/ Landscape Mitigation Plan	CM5 - Trees unavoidably affected by the works shall be transplanted where practicable. Where possible, trees should be transplanted direct to permanent locations rather than temporary holding nurseries. A detailed tree transplanting specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance	ETWB TC 3/2006 and as per tree protection measures in Particular Specification
Table 10.8.1/ Landscape Mitigation Plan	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2 landscape deck, TKO	Beginning of construction period	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification
Table 10.8.1/ Landscape Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
Table 10.8.1/ Landscape Mitigation Plan	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion and integration with environment	CEDD (via Contractor)	Built structures	Design and construction stage	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	Construction planning and reclamation stages	N/A
Landfill Gas Hazard (Design and Construction Phase)						
S11.5.9	A Safety Officer, trained in the use of gas detection equipment and landfill gas-related hazards, should be present on site throughout the groundworks phase. The Safety Officer should be provided with an intrinsically safe portable instrument, which is appropriately calibrated and able to measure the following gases in the ranges indicated below: Methane 0-100% LEL and 0100% v/v Carbon dioxide 0-100% Oxygen 0-21%	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note
S11.5.10 S11.5.25	**Safety Measures**	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour Department's Code of Practice for Safety and Health at Work in Confined Space
S11.5.10 S11.5.25	• For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.					
S11.5.10 S11.5.25	• An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out.					
S11.5.10 S11.5.25	• No worker should be allowed to work alone at any time in or near to any excavation. At least one other worker should be available to assist with a rescue if needed.					
S11.5.10 S11.5.25	• Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. "No smoking" and "No naked flame" notices should be posted prominently on the construction site and, if necessary, special areas should be designed for smoking.					
S11.5.10 S11.5.25	• Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation.					
S11.5.10 S11.5.25	• Welding, flame-cutting or other hot works may only be carried out in trenches or confined spaces when controlled by a "permit to work" procedure, properly authorized by the Safety Officer (or, in the case of small developments, other appropriately qualified person).					

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
S11.5.10 S11.5.25	• The permit to work procedure should set down clearly the requirements for continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who should be responsible for reviewing the gas measurements as they are made, and who should have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas.	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour Department's Code of Practice for Safety and Health at Work in Confined Space
S11.5.10 S11.5.25	• Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an area which has been proven to be free of landfill gas (by survey using portable gas detectors); or be raised clear of the ground by a minimum of 500mm. This aims to create a clear void under the structure which is ventilated by natural air movement such that emission of gas from the ground are mixed and diluted by air.					
S11.5.10 S11.5.25	• Any electrical equipment, such as motors and extension cords, should be intrinsically safe. During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed to prevent the migration of gases through the pipeline/conduit. All piping /conduiting should be capped at the end of each working day.					
S11.5.10 S11.5.25	• During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site.					
S11.5.10 S11.5.25	• Fire drills should be organized at not less than six monthly intervals.					
S11.5.10 S11.5.25	• The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow.					
S11.5.10 S11.5.25	• All personnel who work on the site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices (in Chinese and English) should be posted at prominent position around the site warning danger of the potential hazards.					
S11.5.10 S11.5.25	• Service runs within the Consultation Zone should be designated as "special routes"; utilities companies should be informed of this and precautionary measures should be implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety and Health at Work in Confined Spaces (Labour Department, Hong Kong).					
S11.5.10 S11.5.25	• Periodically during ground-works construction within the 250m Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person.	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour Department's Code of Practice for Safety and Health at Work in Confined Space

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
	Monitoring					
S11.5.26 - S11.5.31	● Routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters into the area.	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note
S11.5.26 - S11.5.31	● For excavations **deeper than 1m**, measurements should be carried out:					
S11.5.26 - S11.5.31	• at the ground surface before excavation commences;-					
S11.5.26 - S11.5.31	• immediately before any worker enters the excavation;					
S11.5.26 - S11.5.31	• at the beginning of each working day for the entire period the excavation remains open; and					
S11.5.26 - S11.5.31	• periodically throughout the working day whilst workers are in the excavation.					
S11.5.26 - S11.5.31	● For excavations **between 300mm and 1m deep**, measurements should be carried out:					
S11.5.26 - S11.5.31	• directly after the excavation has been completed; and					
S11.5.26 - S11.5.31	• periodically whilst the excavation remains open.					
S11.5.26 - S11.5.31	● For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person.					
S11.5.26 - S11.5.31	● Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person.					
S11.5.26 - S11.5.31	● The exact frequency of monitoring should be determined prior to the commencement of works, but should be at least once per day, and be carried out by a suitably qualified or qualified person before starting the work of the day. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary and submitted to the Engineer for approval. The Contractor may elect to carry out monitoring via an automated monitoring system.					
	The hazards from landfill gas during the construction stage within the Sai Tso Wan Landfill	construction stage within the Sai Tso Wan		Project sites within the Sai		

Table II - Observation / Reminder / Non-compliance made during Site Audit

Key:
- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- ✻ Non-compliance of mitigation measure
- · Non-compliance but improved by the contractor

EIA Ref	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Reminder/Observation	Recorded Date	Status
Water Quality Impact						
--	--	--	--	--	--	--
Ecological Impact						
--	--	--	--	--	--	--
Construction Noise Impact						
S4.9	· Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.	NE2015/01	Portion III & WVB	The Contractor is remided to replace damaged acoustic sheet.	4-May-22 11-May-22	✓
Landscape and Visual Impact						
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Air Quality Impact						
S3.8.7	· Use of frequent watering for particularly dusty construction areas and areas close to ASRs..	NE2015/01	Portion III	The Contractor is reminded to sprinkle water during drilling activities to suppress dust emission	4-May-22	✓
S3.8.7	· Use of frequent watering for particularly dusty construction areas and areas close to ASRs..	NE2015/01	ADB	The Contractor is reminded to suppress dust emission for the drill.	11-May-22	✓
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	NE2015/01	Landscape Deck	The Contractor is reminded to water haul road to suppress dust emission.	18-May-22	✓
Fisheries Impact						
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Waste Management						
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	NE2015/01	Portion III	The Contractor is reminded to remove chemicals or provide drip tray to the chemicals.	11-May-22	✓
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	NE2015/01	Portion III	The Contractor is reminded to remove water in the drip tray after the rain to ensure adequate capacity of the drip tray.	18-May-22	✓
S8.6.8/ Waste Management Plan	· Remove waste in timely manner;	NE2015/01	Portion III	The Contractor is reminded to remove waste at a timely manner and sort waste accordingly.	25-May-22	✓
S.8.6.3	· Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.	NE2015/01	Portion III	The Contractor is reminded to remove waste at a timely manner and sort waste accordingly.	25-May-22	✓
S.8.6.4	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods	NE2015/01	Portion III	The Contractor is reminded to remove oil stain on the haul road.	25-May-22	✓
S.8.6.5	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters	NE2015/01	Portion III	The Contractor is reminded to provide drip tray for the chemicals.	25-May-22	✓
S8.6.8/ Waste Management Plan	· Remove waste in timely manner;	NE2015/02	Portion IX	The Contractor is reminded to remove waste in a timely manner	26-May-22	✓
Landfill Gas Hazards						
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APPENDIX O
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Table O1 - Cumulative Complaint Log for Tseung Kwan O - Lam Tin Tunnel

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
614	13-May-22	12-May-2022 / Portion III	Resident of Yau Lai Estate	Noise	Construction noise during restricted hours near Yau Lai Estate	Y	Investigation undergoing	On-going
611	30-May-22	9-May-2022 / Portion IX	Anonymous	Noise	Construction Noise during Holiday	Y	The contracts located near Tseung Kwan O Bay Area were investigated. Construction works had been conducted for NE2015/02. However, the Contractor of NE2015/02 held a valid CNP and no non-compliance was recorded. No conclusion has been made as not all information had been collected. The details shall be referred to CIR-N172.	Draft CIR submitted
610	23-May-22	30-Apr-2022 / Non-specific	Anonymous	Noise	Construction Noise Nuisance in Night-time (Apr 2022)	Y	The complaint is considered non-project-related as no construction is undergoing during the time of the complaint. The details shall be referred to CIR-N171.	Closed
609	23-May-22	23-May-22 / Non-specific	Resident of Yau Lai Estate	Air & Noise	Deteriation of Indoor Air Quality and Noise Nuisance	Y	Investigation undergoing	On-going
608	12-May-22	2-May-22 / Portion I of NE2017/07	Anonymous	Noise	Construction Noise during Holiday (CBL-C1)	Y	The complaint is considered project-related as construction is udergoing during the time of the complaint. However, the contractor held a valid CNP and no non-compliance was recorded for this particular event. The details shall be referred to CIR-N171.	Closed
607	11-May-22	11-May-22 / Cha Kwo Ling Road	Anonymous	Noise	Construction Noise Nuisance at May 2022 (C1)	Y	See Complaint #597	Closed
606	5-May-22	29-Apr-22 / Area A of NE2017/02	Anonymous	Noise	Construction Noise Nuisance in May 2022 (C3)	N	The complaint is considerd as project-related. The braking works had completed at the concerned location. The details can be referred to CIR-N170	Closed
605	4-May-22	4-May-22 / Portion III	Anonymous	Noise	Construction Noise Nuisance at May 2022 (C1)	Y	See Complaint #597	Closed
604	3-May-22	3-May-22 / Portion III	Resident of Yau Lai Estate	Noise	Construction Noise Nuisance at May 2022 (C1)	Y	See Complaint #597	Closed
603	29-Apr-22	29-Apr-22 / Portion III	Resident of Yau Lai Estate	Air & Noise	Deteriation of Indoor Air Quality and Noise Nuisance	Y	See Complaint #597	Closed
602	30-Apr-22	17-Mar-22 & 15-Apr-22 / Junk Bay	Anonymous	Noise	Construction noise at night-time during a holiday	Y	The complaint is considered non-project-related as no works invovling barge were conducted during the time of the complaint. The details shall be referred to CIR-N168.	Closed
601	25-Apr-22	24-Apr-22 / Portion IX	Anonymous	Noise	Construction noise nuisance during Easter holiday	Y	See Complaint #600	Closed
600	25-Apr-22	16-Apr-22 / Portion IX	Anonymous	Noise	Construction noise nuisance during Easter holiday	Y	The complaint is considered project-related as construction was undergoing during the time of complaint. The Contractor held a valid CNP and no non-complaince was found. The details can be referred to CIR-N167.	Closed
599	26-Apr-22	25-Apr-22 / Portion III and IVC	Resident of Yau Lai Estate	Noise	Construction Noise Nuisance on Weekaday during daytime (Lam Tin side)	Y	See Complaint #597	Closed
598	19-Apr-22	10-Apr-22 / Marine Works Area	Anonymous	Noise	Construction Noise Nuisance from Marine Works Area	Y	The complaint is considered project-related as construction was undergoing during the time of complaint. The Contractor held a valid CNP and no non-complaince was found. The details can be referred to CIR-N166.	Closed
597	11-Apr-22	11-Apr-22 / Portion III and IVC	Resident of Yau Lai Estate	Noise	Construction Noise Nuisance on Weekaday during daytime (Lam Tin side)	Y	The complaint is considered as project-related. Various construction activities were conducted during the time of complaint. The details shall be referred to CIR-N169.	Closed
596	11-Apr-22	11-Apr-22 / Portion VIII and IX	Resident of Ocean Shores	Noise	Construction Noise Nuisance on Weekday morning (TKO side)	Y	The complaint is considered project-related as construction was undergoing during the time of complaint. The Contractor held a valid CNP and no non-complaince was found. The details can be referred to CIR-N164.	Closed
595	14-Mar-22	27-Feb-22 / Marine Works Area	Anonymous	Noise	Construction noise nuisance on Sunday morning (Tseung Kwan O side)	Y	See Complaint #594	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
594	14-Mar-22	13-Mar-22 / Marine Works Area	Anonymous	Noise	Construction noise nuisance on Sunday morning (Tseung Kwan O side)	Y	The investigation result showed that the complaint should be considered as project-related in terms of construction noise. The details shall be referred to CIR-N163.	Closed
593	14-Mar-22	14-Mar-22 / Marine Works Area	Anonymous	Water	Suspecteed water pollution at Tseung Kwan O Bay	N	The complaint is considered non-project-related. The so-called "pollutant" was in fact natural occuring algal bloom. The details shall be referred to CIR-W19.	Closed
592	1-Mar-22	19-Feb-22 / Marine Works Area	Anonymous	Noise	Construction noise at night-time during a weekday	Y	See Complaint #590.	Closed
591	28-Feb-22	26-Feb-22 / Portion VII or IX	Resident of Ocean Shores	Noise	Noise nuisance by excavator during daytime	Y	No clear judgement has been made as it is difficult to identify which excavator the complainant is referring to. The details shall be referred to CIR-N162.	Closed
590	22-Feb-22	17-Feb-22 / Marine Works Area	Anonymous	Noise	Construction noise at night-time during a weekday	Y	The investigation results show that no construction works was carried out during the time period of complaint. The complaint is considered as non-project-related. The details shall be referred to CIR-N160.	Closed
589	14-Feb-22	11-Feb-22 / Portion III	Resident of Yau Lai Estate	Noise	Construction noise nuisance at normal hours (Yau Tong side, Feb 2021)	Y	The complaint is considered to be project-related as PME was operated during the time of complaint and no other nearby know noise source. The details shall be referred to CIR-N161.	Closed
588	31-Jan-22	30-Jan-22 / Along Tong Yin Street between the Capri and the Ocean Shores	Anonymous	Noise	Construction Noise at morning during holiday (Tseung Kwan O side)	Y	See Complaint #587	Closed
587	28-Jan-22	23-Jan-22 / Portion III	Anonymous	Noise	Construction Noise at morning during holiday (Tseung Kwan O side)	Y	The investigation results reveals the complaint is project-related. However, no PME was used on Sunday morning. The Contractor is reminded to follow valid CNP and the details can be referred to CIR-N159	Closed
586	6-Jan-22	6-Jan-2021 / Non-specific	Anonymous	Noise	Construction noise nuisance at normal hours (Yau Tong side, Jan 2021)	Y	See Complanint #577	Closed
585	2-Jan-22	2-Jan-2021 / Non-specific	Resident of Yau Lai Estate	Noise	Construction Noise at morning during holiday (Yau Tong side)	Y	See Complaint #584	Closed
584	30-Dec-21	30-Dec-21 / Portion III of NE2015/01	Resident of Yau Lai Estate	Noise	Construction Noise at morning during holiday (Yau Tong side)	Y	The complaint is considered as project-related. The monitoring result has been reviewed and no exceedance was recorded. The details shall be referred to CIR-N158.	Closed
583	28-Dec-21	18-Dec-21 / Portion I of NE2017/07	Anonymous	Noise	Construction noise nuisance near Ocean Shores (Dec 2021)	Y	The complaint is considered as project-related. The barges were used for installing pair segment between 1900 and 2000. Afterwards, only the lights were turned on forsafeguarding throughout the rest of the night. The details shall be referred to CIR-N157	Closed
582	22-Dec-21	22-Dec-21 / Portion IVC	Resident of Yau Lai Estate	Noise	Construction noise nuisance at normal hours (Yau Tong side, Dec 2021)	Y	See Complanint #577	Closed
581	22-Dec-21	15-Dec-21 / Portion IX of NE2015/02	Anonymous	Noise	Construction noise nuisance near Ocean Shores (Dec 2021)	Y	See Complaint #578	Closed
580	17-Dec-21	15-Dec-21 / non-specific (Yau Tong side)	Anonymous	Noise	Construction noise nuisance at normal hours (Yau Tong side, Dec 2021)	Y	See Complanint #577	Closed
579	17-Dec-21	17-Dec-21 / Portion IX of NE2015/02	Resident of Ocean Shores	Noise	Construction noise nuisance near Ocean Shores (Dec 2021)	Y	The complaint is considred as project-related. Various construction activities were conducted during the time of complaint. Acoustic box was used for the breaker. No non-compliance was found. The details shall be referred to CIR-N157.	Closed
578	16-Dec-21	15-Dec-21 / Marine Works Area	Resident of Ocean Shores	Noise	Construction noise nuisance near Ocean Shores (Dec 2021)	Y	The complaint is considred as project-related. Amour rocking unloading was conducted during the time of complaint. No non-compliance was found. The details shall be referred to CIR-N157.	Closed
577	10-Dec-21	10-Dec-21 / Cha Kwo Ling Road	Resident of Yau Lai Estate	Noise	Construction noise nuisance at normal hours (Yau Tong side, Dec 2021)	Y	The complaint is considered as project-related. Construction works such as formwork erection, backfilling and concreting were undergoing during the time of complaint. The details shall be referred to CIR-N156.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
576	16-Nov-21	15-Nov-21 / Portion IX of C2	Resident of Ocean Shores	Noise	High frequency noise nuisance during evening-time	N	It is believed that the complianant confused high- and low-frequency in the original complaint. See complaint #574 for more details.	Closed
575	17-Nov-21	Sep-21 / Cha Kwo Ling Road	Anonymous	Noise	Noise nuisance during Restricted Hours (September 2021)	Y	The complaint is considered as project-related as construction was undergoing at the time of complaint. The Contractor held a valid CNP and no non-compliance was found. Other potential noise source also exists and details shall be referred to CIR-N155	Closed
574	9-Nov-21	8-Nov-21 / Portion IX of C2	Resident of Ocean Shores	Noise	Low frequency noise nuisance during evening-time	N	The complaint is considered as non-project related as other potential low-frequency noise source exists. The details shall be referred to CIR-N154.	Closed
573C	16-Nov-21	7-Nov-2021 / Works Area of C1 (Cha Kwo Ling Road)	Resident living near Cha Kwo Ling Road	Noise	Noise nuisance between late October to early Novemer 2021	Y	See Complaint #573A	Closed
573B	5-Nov-21	31-Oct-21 / Works Area of C1 (Cha Kwo Ling Road)	Resident living near Cha Kwo Ling Road	Noise	Noise nuisance between late October to early Novemer 2021	Y	See Complaint #573A	Closed
573A	5-Nov-21	17-Oct-21 / Works Area of C1 (Cha Kwo Ling Road)	Resident living near Cha Kwo Ling Road	Noise	Noise nuisance between late October to early Novemer 2021	Y	The complaint is considered project-related as construction was undergoing during the time of complaint. The Contractor held a valid CNP and no non-complaince was found. The details can be referred to CIR-N153.	Closed
572	5-Nov-21	4-Nov-21 / Non-specific	Resident of Ocean Shores	Noise	Noise nuisance near Ocean Shores	N	See Complaint #571	Closed
571	26-Oct-21	25-Oct-21 / Non-specific	Resident of Ocean Shores	Noise	Noise nuisance near Ocean Shores	N	Preliminary results from noise monitoring showed no limit level of exceedance and no non-compliance regarding construction schedule was found. The details shall be referred to CIR-N152.	Closed
570	18-Oct-21	18-Oct-21 / Non-specific	Anonymous	Noise	Noise nuisance on holiday during daytime	Y	No clear judgement was made as other potential noise source existed. Nonetheless, the Contractor held a valid CNP and no non-compliance was found. The details shall be referred to CIR-N151.	Closed
569	8-Oct-21	8-Oct-21 / Tsueng Kwan O Bay	DSD	Water	Deteriation of Marine Water Quality in Tsueng Kwan O Bay under Adverse Weather	N	The complaint is considered as non-project related as the general condition of the sea is muddy during the date of incident. The details can be referred to CIR-W18.	Closed
568	4-Oct-21	29-Sep-21 / Marine Works Area	Pedestrian	Odour / Water	Odour Nuisance near Tsueng Kwan O Bay (Sep 2021)	N	The complaint is considered as non-project-related. Measures such as adopting low-sulphur content diseil as far as possible is recommended. The details can be referred to CIR-O9.	Closed
567	29-Sep-21	14-Sep-2021 / Marine Works Area (C6)	Anonymous	Noise	Construction Works during Restricted Hours (Sep 2021)	Y	The complaint is considered as project-related and no non-complaince was recorded. The monitoring result of evening noise at Tsueng Kwan O throughout September 2021 was reviewed and no limit level exceedance was found. The details shall be referred to CIR-N150.	Closed
566	17-Sep-21	16-Sep-21 / Portion IVC (C1)	Resident of Yau Lai Estate	Noise	Construction Noise nuisance from Portion IVC of NE/2015/01	Y	See Complaint #563	Closed
565	10-Sep-21	9-Sep-21 / Portion III	EPD	Air	Air pollution from construction dust	N	See complaint #564	Closed
564	10-Sep-21	6-Sep-21 / Portion I	Anonymous	Air	Air pollution from construction dust	N	Exceedance of 24hr TSP were recorded and evidence of air-quality-related environmental deficiencies were identified during site inspections. The complaint is considered project-related and details shall be referred to CIR-A22.	Closed
563	2-Sep-21	2-Sep-21 / Portion III	Resident living in Cha Kwo Ling	Noise	Construction noise during evening time (Sep 2021)	Y	The complaint is considered as project-related. Monitoring results indicate the construction noise are close to the limit level. The details shall be referred to CIR-N149.	Closed
562	19-Aug-21	15-Aug-21 / Lei Yu Mun Road	Anonymous	Noise	Construction noise nuisance near Lei Yu Mun Road on Sunday	Y	The complaint is considere as project-related as the construction works were carried out during the time of complaint. No monitoring was conducted on Public Holiday. The details shall be referred to CIR-N148.	Closed
561	6-Aug-21	6-Aug-2021 / Non-specific	Resident living in Tiu Keng Ling	Noise	Construction Noise Nuisance on Weekday during Daytime (Aug 2021)	Y	The complaint was considered as project-related. No non-compliance and limit level of daytime construction noise was recorded during late July 2021 and early August 2021. The details of complaint shall be referred to CIR-N147.	Closed

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560	31-Jul-21	31-Jul-2021 / Portion VIII	Resident from Ocean Shores	Noise	Construction Noise Nuisance on Saturnday near Ocean Shores (Jul 2021)	Y	The complaint is considered as project-related. Results of construction noise is reviewed and no limit level exceedance was recorded. No non-compliance was found. The details shall be referred to CIR-N146.	Closed
559	3-Aug-21	Jan 2021 - Jun 2021 / Marine Works Area	Resident from Ocean Shores	Noise	Noise Nuisance near Ocean Shores (Jan - Jun 2021)	Y	The complaint included a long-period of time and the current noise mitigation measures were reviewed. No limit level of construction noise was recorded throughout Jan 21 - Jun 21, Despite the complaint is considered as project-related, no non-compliance was recorded. The details shall be referred to the CIR-N145.	Closed
558	11-Jul-21	11-Jul-2021 / Marine Works Area	Anonymous	Working Hours	Operation of Marine Construction Works during Restricted Hours (Jul - 2021)	N	The barge shown in the photo provided by the Complainant was not belong to the Project. The compliant was non-valid and thus the complaint is considered as non-project-related. The details shall be referreed to CIR-O8.	Closed
557	20-Jul-21	19-Jul-2021 / Eastern Harbour Crossing	Resident from Bik Lai Estate	Noise	Noise Nuisance from Construction Works (C1 - Jul)	Y	The complaint is considered as project-related. Construction works were undergoing at the time of complaint and PMEs were operating. No non-compliance was recorded. The details shall be referred to CIR-N144.	Closed
556	27-Jun-21	27-Jun-2021 / Marine Works Area	Anonymous	Working Hours	Operation of Marine Construction Works during Restricted Hours	Y	Tug boat and crane barge were used for relocating barge and airlifting materials. The Contractors held valid and approved CNP. No non-compliance was recorded. The details shall referred to CIR-N143.	Closed
555	29-Jun-21	29-Jun-21 / Marine Works Area	Anonymous	Water	Suspected Muddy Water at the Marine Works Area	N	No ddirect evidewnce point towards C2 was the source of muddy water. The details of complaint shall be referred to CIR-W17.	Closed
554	29-Jun-21	25-Jun-21 / Marine Works Area	Anonymous	Light / Working Hours	Construction works during restricted hours and light nuisance	N	No construction was undergoing during the time of complaint. The light shown in photo was used as safeguarding purpose. Details shall be referred to CIR-O7.	Closed
553	27-May-21	26-May-21 / C3	Anonymous	Air	Air quality impact nuisance nearby Po Yap Road (C3 - Apr & May 2021)	N	See Complaint #551	Closed
552	18-May-21	17-May-21 / C1	Anonymous	Noise	Noise Nusiance from Construction Works (C1 - May)	Y	The complaint is considered as project-related. Construction activities were undergoing during the time of complaint and deficiencies of noise mitigation measures can be observed. The details shall be referred to CIR-N142.	Closed
551	21-May-21	23-Apr-21 / C3	Resident from Ocean Shores	Air	Air quality impact nuisance nearby Po Yap Road (C3 - Apr & May 2021)	N	The contractor had applied mitigation measures such as regular watering and covering stockpile of dusty materials. The complaint is considered as project-related and details shall be referred to CIR-A21	Closed
550	21-May-21	4-May-21 / C2 & C3	Resident from Ocean Shores	Noise	Noise nuisance at early morning (C2&C3 May 2021)	N	The complaint is considered as non-project-related as both contractor and RE confirmed that no construction was carried out on or before 8 a.m. on the date of incident. The details shall be referred to CIR-N139	Closed
549	26-Apr-21	21-Apr-21 / C1	Mr. Chan from Hong Nga Court	Noise	Noise nuisance at morning (C1-Late Apr)	Y	See Compliant #547	Closed
548	26-Apr-21	23-Apr-21 / C1	Mrs. Ho from Lung pak House	Noise	Noise nuisance at morning (C1-Late Apr)	Y	See Compliant #547	Closed
547	26-Apr-21	25-Apr-21 / C1	Mr. Lau from Yung Lai House	Noise	Noise nuisance at morning (C1-Late Apr)	Y	The complaint is considered as project-related. Construction works were undergoing at the time of complaint and PMEs were operating. No non-compliance was recorded. The details shall be referred to CIR-N141.	Closed
546	19-Apr-21	4&11-Mar-21 / Marine Works Area	Anonymous	Noise	Noise nuisance on holiday mornings (C6 - Apr)	Y	The complaint is considered as project-related and rebar fixing and framework erection was undergoing. No PME was operating during the time of complaint. A valid CNP is held by the Contractor and no non-compliance was identified. The details shall be referred to CIR-N140.	Closed
545	19-Apr-21	22-Mar-21 / Portion IX	Mr. Lai (Sai Kung District Council Member)	Noise	Noise nuisance on holiday mornings (C2 - Mar)	N	See Complaint #538	Closed
544	19-Apr-21	11-Mar-21 / Portion III	Resident of Yau Lai Estate	Noise	Noise Nusiance from Construction Works (C1 - Mar)	Y	See Complaint #521	Closed

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543	19-Apr-21	3-Apr-21 / Portion III	Resident of Yau Lai Estate	Noise	Noise Nusiance from Construction Works (C1 - Apr)	Y	See Complaint #534	Closed
542	19-Apr-21	3-Apr-21 / Portion III	Resident of Yau Lai Estate	Noise	Noise Nusiance from Construction Works (C1 - Apr)	Y	See Complaint #534	Closed
541	19-Apr-21	7-Apr-21 / Portion III	Resident of Ping Tin Estate	Noise	Noise Nusiance from Construction Works (C1 - Apr)	Y	See Complaint #534	Closed
540	19-Apr-21	14-Apr-21 / Portion III	Mr. Wang (Kwun Tong District Council Member)	Noise	Noise Nusiance from Construction Works (C1 - Apr)	Y	See Complaint #534	Closed
539	16-Apr-21	22-Mar-21 / Portion IX	Residentof Ocean Shores	Noise	Suspected Construction Works during evening-time (C2 - Mar)	N	See Complaint #534	Closed
538	16-Apr-21	Non-specific / Works area near Ocean Shores	Residentof Ocean Shores	Noise	Noise nuisance on holiday mornings (C2 - Mar)	N	No works was conducted during the time of complaint. The complaint is considered as non-project-related.Details shall be referred to CIR-N138.	Closed
537	15-Apr-21	14/4/2021 / Works area near Park Central	Resident of Park Central	Noise	Noise Nusiance due to Breaking Works (C3- Apr)	Y	Breaking works was conduced during the time of complaint. No limit level for noise monitoring was triggered. The complaint is considerd as project-related. Details shall be referred to CIR-N137.	Closed
536	14-Apr-21	7/4/2021 / Portion IX	Resident of Ocean Shores	Noise	Suspected low-frequency noise nuisance at Portion IX (Apr 2021)	N	The complaint is considered as non-project-related as no PME was turned on during the time of complaint. Details shall be referred to CIR-N136.	Closed
535	14-Apr-21	7/4/2021 / C1	Resident of Lam Tin Districct	Noise	Noise nuisance during nighttime (C1 - Apr 2021)	Y	See Complaint #534	Closed
534	8-Apr-21	3/4/2021 / C1	Resident of Yau Lai Estate	Noise	Noise nuisance during nighttime (C1 - Apr 2021)	Y	The complaint is considered as project-related as there was construction works conducted at Kwun Tong Bypass. The details shall be referred to CIR-N135.	Closed
533	26-Mar-21	15-Mar-2021 / Portion IVC or III	Resident of Yau Lai Estate	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	See Complaint #521	Closed
533A	2-Mar-21	2-Mar-2021 / Portion IVC or III	Anonymous	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	See Complaint #521	Closed
532	16-Mar-21	10-Mar-2021 / Zone C	Mr. Lui (Sai Kong District Council Member)	Noise	Noise nuisance during daytime (C3 - Mar 2021)	Y	See Complaint #529	Closed
531	10-Mar-21	10-Mar-2021 / Zone C	Resident of Park Central	Noise	Noise nuisance during daytime (C3 - Mar 2021)	Y	See Complaint #529	Closed
530	10-Mar-21	10-Mar-2021 / Zone C	Resident of Park Central	Noise	Noise nuisance during daytime (C3 - Mar 2021)	Y	See Complaint #529	Closed
529	10-Mar-21	10-Mar-2021 / Zone C	Resident of Park Central	Noise	Noise nuisance during daytime (C3 - Mar 2021)	Y	The complaint is considered as project-related and no non-compliance was found. The noise origin was believed to be the breaking works conducting at Po Yap Road. The concerned breaking works was completed on 13 Mar 2021. The details shall be referred to CIR-N134.	Closed
528	10-Mar-21	10-Mar-2021 / Portion IVC or III	Resident of Yau Lai Estate	Noise	Percussive Noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed
527	10-Mar-21	10-Mar-2021 / Portion IVC or III	Resident of Yau Lai Estate	Noise	Percussive Noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed
526	10-Mar-21	10-Mar-2021 / Portion IVC or III	Resident of Yau Lai Estate	Noise	Percussive noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed
525	9-Mar-21	5-Mar-2021 / Portion IX	Anonymous	Noise	Noise nuisance during daytime (C2 - Mar 2021)	Y	See Complaint #522	Closed
524	9-Mar-21	9-Mar-2021 / Portion IVC or III	Mr. Wong from District Councilers	Noise	Percussive noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed

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523	9-Mar-21	9-Mar-2021 / Portion IVC or III	Resident of Yau Lai Estate	Noise	Percussive noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed
523A	5-Mar-21	5-Mar-2021 / Portion III or IVC	Anonymous	Noise	Percussive noise nuisance at morning (C1 - Mar 2021)	Y	See Complaint #521	Closed
522	4-Mar-21	3-Mar-2021 / Portion IX	Resident of Ocean Shore	Noise	Noise nuisance during daytime (C2 - Mar 2021)	Y	The complaint case was considered as project-related. The Contractor is reminded to close the gap of noise barrier and repair damaged noise barriers. The details shall be referred to CIR-N132.	Closed
521	4-Mar-21	3-Mar-2021 / Portion IVC or III	Resident of Yau Lei Estate	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	The complaint is considered as project-related. No limit level of construction noise was recorede during March 2021 and the details shall be referred to CIR-N133.	Closed
521A	1-Mar-21	2-Mar-2021 / Portion IVC or III	Resident of Ping Tin Estate	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	See Complaint #521	Closed
520	1-Mar-21	1-Mar-2021 / Portion IVC or III	Resident of Yau Lei Estate	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	See Complaint #518	Closed
520A	1-Mar-21	Non-specific	Resident of Yau Lei Estate	Noise	Noise nuisance during daytime (C1 - Mar 2021)	Y	See Complaint #521	Closed
519	24-Feb-21	21-Feb-2021 / Non-specific	Resident of Ocean Shores	Noise	Noise nuisance on morning (Feb 2021)	N	No PME was operating on-site at the time of compliant and the complaint is considered as non-project-related. The details shall be referred to CIR-N131	Closed
518	19-Feb-21	12-13 & 18 Feb 2021 / Non-specific	Resident of Yau Lei Estate & Hong Pak Court	Noise	Percussive noise nuisance at morning (C1)	Y	Incestigation result shows that the percussive noise nuisance was generated from Portion IVC. The construction work started after 0700 and no limit level of daytime noise exceedance was recorded. The details shall be referred to CIR-N130	Closed
518A	1-Mar-20	27 Feb 2021 / Non-specific	Non-specific	Noise	Percussive noise nuisance at morning (C1)	Y	See complaint #518	Closed
518B	1-Mar-20	25 feb 2021 / Non-specific	Resident of Hong Pak Court	Noise	Percussive noise nuisance at morning (C1)	Y	See complaint #518	
517	8-Feb-21	8/2/2021 / Non-specific	Resident of Ocean Shores	Noise	Noise Nuisance from Excavator	Y	No clear judgement was made as the complainant's information is too vague and it is hard to pinpoint the excavator mentioned in the complaint was in fact the one located at the project site. The details shall be referred to CIR-N129.	Closed
516	26-Jan-21	21-Feb-2021 / Non-specific	Resident of Ocean Shores	Noise / Operating Hours	Continous Noise Nuisance during Nighttime (Jan 2021)	N	No PME was operating on-site on the date of complaint. The details shall be referred to CIR-N128	Closed
515	23-Jan-21	12-13 & 18 Feb 2021 / Non-specific	Resident of Yau Lei Estate & Hong Pak Court	Noise		N	See complaint #504	Closed
514	22-Jan-21	8/2/2021 / Non-specific	Resident of Ocean Shores	Noise		Y	See complaint #511	Closed
513	22-Jan-21	15-Jan-2021 / Zone D	Resident of Ocean Shores	Air	Air quality impact due to open stockpile	N	See Complaint #508	Closed
512	22-Jan-21	20-Jan-2021 / Zone D				N		
511	20-Jan-21	6/1/2021 & 15/1/2021 / Portion IX of C2	Resident of Ocean Shores	Noise	Continous Noise Nuisance during Nighttime (Jan 2021)	Y	The complaint is considered as project-related as barge was operating in during time of complaint. The details shall be referred to CIR-N128	Closed
510	19-Jan-21	Non-specific / Portion IX of C2	Resident of Ocean Shores	Noise		N	See complaint #505	Closed
509	15-Jan-21	15/1/2021 / Portion IX of C2	Resident of Ocean Shores	Noise		N	See complaint #505	Closed
508	13-Jan-21	5/1/2020 / Storage Area of C3	Resident of Ocean Shores	Air	Air quality impact due to open stockpile	N	The Complaint was found project-related. The dust origin was from the stockpile at Zone A of C3. The Contractor had sprayed water regularly to suppress the dust emission and improvement had been observed over Jan 2021. Details shall be referred to CIR-A20.	Closed

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507	13-Jan-21	5/1/2020 / Storage Area of C3	Resident of Ocean Shores	Air	Air quality impact due to open stockpile	N	The Complaint was found project-related. The dust origin was from the stockpile at Zone A of C3. The Contractor had sprayed water regularly to suppress the dust emission and improvement had been observed over Jan 2021. Details shall be referred to CIR-A20.	Closed
506	7-Jan-21	6-Jan-2020 / Portion IX	Resident of Ocean Shores	Noise	Continous Noise Nuisance during Nighttime (Jan 2021)	Y	See Complaint #500	Closed
505	4-Jan-21	22-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		N	No clear judgement was made. Other than the construction site, other source for low-frequncy noise was also identified. Details shall be referred to CIR-N128	Closed
504	4-Jan-21	1-Jan-2020/C1	Resident of Yau Lai Est.	Noise	Suspected noise nuisance from work site	N	The complaint was considered non-project-related as there was no PME working on site. The details shall be referred to CIR-N127.	Closed
503	30-Dec-20	21-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise	Noise nuisance at nighttime on a weekday	Y	See complaint #500	Closed
502	28-Dec-20	22&23-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		Y		Closed
501B	23-Dec-20	22-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		Y		Closed
501A	23-Dec-20	22-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		N	No direct evidence show that the Contractor operated barges at the time of complaint. Therefore the complaint was considered as non-project-related. The details shall be referred to CIR-N126.	Closed
501	23-Dec-20	22-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		Y	The Contractor operated PME(s) at evening-/night- time without an approved valid CNP. The complaint is considered as project-related.The details shall be referred to CIR-N126.	Closed
500	22-Dec-20	22-Dec-2020 / Portion IX	Resident of Ocean Shores	Noise		Y		Closed
499	21-Dec-20	20/12/2020 / marine works area	Resident of Ocean Shores	Operating hours / Noise	Horning noise nuisance on Sunday	N	The complaint is considered as non-project-related as no barge was working under the TKOLTT project at the time of complaint. The details shall be referred to CIR-O6.	Closed
498	18-Dec-20	17-Dec-2020 / Marine Works Area	Resident of Ocean Shores	Noise	Low frequency noise & occasional piling noise nuisance during night-time	Y	The complaint is considered as project-related as the noise nuisance was coming from water pumps that working 24/7. Details shall be referring to CIR-N125.	Closed
497	9-Dec-20	Days on/before 9/12/2020 / Portion IVC	Resident of Yau Lai Estate	Air & Noise	Dust & Noise Nuisance near Lam Tin Interchange (December)	Y	See Complaint #494	Closed
496	3-Dec-20	Days before 3-Dec-20 / Lam Tin Tunnel	Resident of Hong Pak Court	Noise	Dust & Noise Nuisance near Lam Tin Interchange (December)	Y	See Complaint #494	Closed
495	16-Dec-20	12-Dec-2020 / Po Yap Road	Resident of Park Central	Noise	Night time machenical noise nuisance	Y	The complaint is considered as project-related as the noise nuisance was coming from water pumps that working 24/7. Details shall be referring to N124.	Closed
494	5-Dec-20	Early Dec 2020 / Portion III	Resident of Lung Pak House / Staff from Elderly Hoouse nearby	Noise	Noise Nuisance near Lam Tin Interchange (December)	Y	The complaint is considered as project-related and no non-compliance in CNMP had been recorded. The contractor is reminded to ensure the effectiveness of noise mitigation measures by various measures including repairing damaged noise barrier. The details shall be referred to CIR-C40.	Closed
493	8-Dec-20	25-Nov-2020 & 2-Dec-2020 / Works area nearby Park Central	Resident of Park Central	Noise	Percussive noise nuisance from at early morning	N	The complaint is considered as non-project-related. No operating PME(s) under TKO-LTT project at the time of complaint was known to emit percussive noise at the time of complaint. The details shall be referred to CIR-N123.	Closed
492	18-Nov-20	18-Nov-2020 / Portion VIII (C2)	Resident of Ocean Shores	Noise	Construction Noise nuisance at Morning	Y	Prelimary result reveals that pre-boring and breaking works had been conducted at the time of complaint. The details shall be referred to CIR-N122.	Closed
491	18-Nov-20	16-Nov-2020 / C1	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Restricted Hour)	Y	See Complaint #490.	Closed

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490	13 & 16 Nov 20	5-12 & 14-Nov-2020 / C1	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Restricted Hour)	Y	The complaint is considered as project-related. The origin of noise nuisance was believed to be construction works at Tunnel S1 and S2. No non-compliance was found and the details shall be referred to CIR-N121	Closed
489	13-Nov-20	13-Nov-2020 / C1	Resident of Yau Lai Estate	Air & Noise	Dust and Noise Nuisance in Portion IVC	Y	The complaint was found project-related. The contractor had adpoted various noise mitigation measures suc as rock splitting method and erection of semi-enclosure to further reduce the noise impact to its surrounding. The details shall be referred to CIR-C39.	Closed
488	13-Nov-20	10-Nov-2020 / C2	Resident of Ocean Shores	Air	Dust emission from construction works	N	The complaint was found project-related. The Contractor is recommended to spray water more requently to suppress the dust nuisance. The details shall be referred to CIR-A19.	Closed
487	11-Nov-20	5-Nov-2020 / Portion IVC	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Late September to November)	Y	See Compliant #468	Closed
486	11-Nov-20	6-Nov-2020 / Portion IVC	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Late September to November)	Y	See Compliant #468	Closed
485	7-Nov-20	7-Nov-20	Resident of Park Central	Noise	Precussive noise nearby Park Central	Y	The complaint is considered non-project-related as no PME that know to emit percussive noise was operating during the time of complaint. The details shall be referred to CIR-N120.	Closed
484	7-Nov-20	7-Nov-20 / Portion IV	Resident of Ocean Shores	Noise	Noise Nuisance from Excavation Works	Y	See complaint #481	Closed
483	6-Nov-20	6-Nov-20	Resident of Ocean Shores	Noise	Low-frequency noise at night (Oct&Nov 2020)	N	The low-frequency noise was found coming from the water pumps that works 24/7 and other source may also contribute to the noise nuisace. The Contractor had followed the approved CNP. The complaint is considered project-related and shall be referred to CIR-N119	Closed
482	30-Oct-20	29-Oct-2020 / C2	Non-specific	Air	Dust emission from construction works	N	Despite the contractor had sprinkle water regularly, the haul road was found dry during site audit session. The Contractor is reminded to sprinkle water more frequently and cover stockpiles of dusty material to reduce dust emission. The details shall be referred to CIR-A19	Closed
481	3-Nov-20	2-Nov-2020 /Portion IV	Resident of Ocean Shores	Noise	Noise Nuisance from Excavation Works	Y	The complaint is considered project-related as no other possible noise origin is know to emit such kind of noise at the surrounding. The Contractor had been reminded to applied lubricants and tighten the screws to reduce noise level. The details shall be referred to CIR-N118	Closed
480	3-Nov-20	3-Nov-2020 / Portion IVC	Resident of Yau Lai Est	Noise	Noise Nuisance near Lam Tin Interchange (Late September to November)	Y	See Complaint #469	Closed
479	3-Nov-20	2-Nov-2020 / Portion IVC	Resident of Yau Lai Est	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	See Complaint #469	Closed
478	3-Nov-20	30-Oct-2020 / Portion IVC	Mr. Wong from District Councilers	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	See Complaint #469	Closed
477	30-Oct-20	15-Oct-2020 / Portion IVC	Non-specific	Air	Air & Noise Nuisance near Lam Tin Interchange (October)	N	See Complaint #469	Closed
476	29-Oct-20	29-Oct-2020 / Portion IVC	Resident of Yau Lai Est	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	See Compliant #468	Closed
475	28-Oct-20	Not specific / Lam Tin interchange	Non-specified (near Yau Lai Estate)	Noise	Air & Noise Nuisance near Lam Tin Interchange (October)	Y	See Complaint #469	Closed

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474	23-Oct-20	23-Oct-20 / Portion IX	Resident from Ocean Shores	Noise	Low-frequency noise at night (Oct-Nov 2020)	N	The low-frequency noise was found coming from the water pumps that works 24/7 and other source may also contribute to the noise nuisace. The Contractor had followed the approved CNP. The complaint is considered project-related and shall be referred to CIR-N119	Closed
473	21-Oct-20	19-Oct-20 / Portion IX	Resident from Ocean Shores	Noise	Noise Nuisance near Portion IX	Y	See complaint #459	Closed
472	20-Oct-20	20-Oct-20 / Portion IV	Resident from Ocean Shores	Noise	Noise Nuisance from Excavation Works	Y	Preliminary results show the noise source was from the backhoe at Portion IV. The Contractor had applied mitigation measures such as adding lubricant to mounting parts to alleviate the problem. The details shall be referred to CIR-N118	Closed
471	6-Oct-20	6-Oct-20 / Portion IX	Resident from Ocean Shores	Noise	Noise nuisance at morning (Oct 2020)	Y	See complaint #459	Closed
470	10-Oct-20	3-10 Oct 20 / Portion IVC	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	See Compliant #468	Closed
469	10-Oct-20	9-10 Oct 20 / Lam Tin Interchange	DC Member (Mr. Wang)	Noise	Air & Noise Nuisance near Lam Tin Interchange (October)	Y	The complaint is considered as project-related and no non-compliance in CNMP had been recorded. The contractor had adopted mitigation measures such as deploying noise absorbing materials among construction site and spraying water near dust generating activities. The details shall be referred to CIR-C38.	Closed
468	5-Oct-20	Mondays - Saturdays / Portion IVC	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	See complaint #468A	Closed
468A	5-Oct-20	Mondays - Saturdays / Portion IVC	Resident of Yau Lai Estate	Noise	Noise Nuisance near Lam Tin Interchange (Late September to Early November)	Y	The complaint was considered project-related. Mitigation measures such as deploying noise barrier and attempts on blocking direct line of sight from NSR was observed. The details shall be referred to CIR-N117.	Closed
467	23-Sep-20	19-Sep-2020 / Portion IX	Resident of Ocean Shores	Noise	Daytime noise nuisance (mid-September)	Y	See complaint #459	Closed
466	22-Sep-20	20-Sep-2020 / Portion IX		Noise / Working Hours	Noise nuisance on Sunday	Y	Investigation result shows none of the contract under TKOLTT conducted works on Sunday. The details shall be referred to CIR-O5	Closed
465	20-Sep-20	20-Sep-.2020 / Portion IX				Y		Closed
464	17-Sep-20	August 2020 / Portion IX	Resident of Ocean Shores	Noise	Continuous Noise Nuisance over Aug 2020	Y	The investigation shows no non-compliance and action level for noise is triggered. The details shall be referred to CIR-N113	Closed
463	15-Sep-20	15-Sep-2020 / Non-specific	Anonymous	Noise	Percussive noise nuisance at early morning	Y	The complaint is considered non-project-related. The investigation pointed out the Contractor had maintain wastewater treatment facilities properly and no action or limit level of surface SS was triggerred after the incident. The muddy water was coming from DSD desilting compound. Details shall be referred to CIR-W16	Closed
462	8-Sep-20	10-Sep-2020 / Potion IX	Anonymous	Noise	Suspected muddy water discharge	N		Closed
461	5-Sep-20	5-Sep-2020 / Portion IX	Resident of Ocean Shores	Noise	Squeaky noise on a Saturnday Morning	Y	The squeaky noise believed was coming from operating barges at C6. No non compliance was found. Details shall be referred to CIR-N115	Closed
460	8-Sep-20	8-Sep-2020 / Portion IVC	Resident of Yau Lai Estate	Noise	Noise nuisance near East Habour Cross Tunnel	Y	See complaint #456	Closed
459	4-Sep-20	1-Sep-2020 / Portion IX	Resident of Ocean Shores	Noise	Noise nuisance at morning (Early Sep 2020)	Y	The complainant had repeatedly complaint about the continuous noise nuisace from September to October 2020. The complaint is considered as project-related. The result of noise monitoring had been reviewed and no limit level of exceedance was found. The details of complaint shall be referred to CIR-N114.	Closed
458	28-Aug-20	Early August 20 / Lam Tin Tunnel	Resident from Yau Lai Estate	Noise	Long-term noise nuisance since early August	Y	See complaint #456	Closed
457	27-Aug-20	24&25-Aug-20 / Portion IX	Rersident from Ocean Shores	Noise	Noise nuisance at morning (Late August 2020)	Y	See complaint #456	Closed

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456	18-Aug-20	18-Aug-20 / Portion IVC	Resident from Yau Lai Estate	Noise	Noise nuisance near East Habour Cross Tunnel	Y	Investigation showed the nuisance was generated by breaking works. The contractor had promised to complete the semi-enclosure by October 2020. The details shall be referred to CIR-N112	Closed
455	18-Aug-20	Dates on/before 1-Aug-20 / Lam Tin Tunnel	Resident from Yau Lai Estate	Noise	Noise nuisance from tunnel works	Y	Breaking had been conducted during the time of complaint. The details shall be referred to CIR-N111	Closed
454	11-Aug-20	2-Aug-20 / Sea outside Ocean Shores	Resident from Ocean Shores	Operation Hours	Working on restricted hours and public holiday	N	The working barge was believed to be working under the Cross Bay Link project. None of the barges working on the time of complaint belongs to TKOLTT project. Despite works had been conducted, no PME was turned on during the time of complaint. The details shall be referred to CIR-O4.	Closed
453	3-Aug-20	3-Aug-20 / Western Marine Works Area	Resident from Ocean Shores	Water	Suspected muddy water and worn out silt curtain	N	The suspected muddy water was due to the strong tidal movement under typhoon influence. The silt curtain was not deployed properly when the typhoon was landed. Details shall be referred to CIR-W15	Closed
452	1-Aug-20	31-Jul-20 / Marine Works Area	Resident from Ocean Shores	Noise	Squeaky noise during nighttime	Y	The noise was originated from the wires that used for tightening the barge. The Contractor had not fasten the wire completely as strong wave and wind actionmay tear up the wire and made the barge stranded. The details shall be referred to CIR-N110.	Closed
451	28-Jul-20	28-Jul-20 / Portion IX	Resident from Ocean Shores	Noise	Breaking noise on the morning	Y	Breaking had been conducted during the time of complaint. The details shall be referred to CIR-N109	Closed
450	23-Jul-20 24-Jul-20	23&24-Jul-20 / Works area nearby Ocean Shores	Residents from Ocean Shores	Noise	Noise nuisance on weekdays	Y	The noise nuisance was originated from high-noise level works such as breaking and drilling. The details shall be referred to CIR-N108	Closed
449	16-Jul-20	12-Jul-20 / Lam Tin Tunnel	Resident of Hong Pak Court	Noise	Noise Nuisance Suspected from Tunnel (C1)	Y	Breaking work was conducted near the underground of Hong Pak Court. No non-conformance of CNP was identified, contractor is reminded to strictly follow the conditions of CNP and the time period of CNP. The details shall be referred to CIR-N110.	Closed
448	4-Jul-20	4-Jul-20 noon / Marine works area nearby Ocean Shores	Resident of Ocean Shores	Air	Dark Smoke Emission from Barge	N	The dark smoke was originated from the barge. It is common that dark smoke will be released when the barge's engine was starting. The details shall be referred to CIR-A18.	Closed
447C	10-Jul-20	28-Jun-2020 / TKO South open sea	Anonymous	Water	Suspected oil leakage at the TKO south open sea	N	The suspected oil leakage was believed to be an algae bloom over the whole bay area. The noise nuisance from speeding was considered not project related. The details shall be referred to CIR-C37	Closed
447B	10-Jul-20	29-Jun-2020 / TKO south open sea & flyover towards TKO Chinese Permanent Cemetery		Water / Noise	Suspected muddy water spillage and noise nuisance due to speeding	N		
447A	10-Jul-20	24-Jun-2020 / Non-specific		Noise	Long-term noise nuisance and insufficient noise mitigation measures	Y		
446	12-Jun-20	31-May-2020 / Area nearby Yau Lai Est	Resident of Yau Lai Estate	Noise	Noise nuisance at Morning nearby East Habour Crossing	Y	See complaint 442.	Closed
445	11-Jun-20	11-Jun-20 / Park Central	Resident of Park Central	Air	Pungent smell suspected coming from the work sites	N	See complaint 443B.	Closed
444	6-Jun-20	6-Jun-20 / Portion IX	Residents of Ocean Shores	Water	Flooding within work site and suspected muddy water spillage after downpour	N	The flooding is a normal phenonmenon as the site boundary have been embarked. The suspected muddy water is wide-spread among the open sea at TKO south and no exceedance of SS were recordede after the incident. The complaint is considered non-project-related and details shall be referred to CIR-W14.	Closed
443B	6-May-20	Non-specific	Anonymous	Air/Noise	Odour nuisance nearby TKO MTR Station	N	The preliminary result showed no direct relationship between the nuisance and the construction works. The details shall be referred to CIR-A17.	Closed
443A					Noise nuisance at Night and Air Quality Impact from Works	Y	The complaint is considered non-project-related. There is no direct evidence showing the project site is the origin of the nuisance. The details shall be refered to CIR-C36	Closed

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442	22-May-20	22-May-20 / LT Tunnel	Resident from Hong Pak Court	Noise	Noise nuisance from Tunnel Works	Y	The noise is believed to be breakin inside the tunnel. The CNP was compiled with and contractor is reminded to review breaking schedule to less sensitive hour. The details shall refer to CIR-N105.	Closed
441	8&9-Apr-20	9-Apr-20 / TKO surcharge area	Residents of Ocean Shores	Air/Noise	Noise Nuisance on early morning and Air Quality Works from Excavation Works	Y	The work schedule of C2 had been reviewed. The"beeping" noise is originated from C2 due to safety issue (for mobilization of materials with crane). The noise nuisance is believed to be coming from the vibration hammer. The Contractor had water the exposed area regular to reduce dust impact to the surrounding. The details shall be referred to CIR-C35	Closed
440	13&17-May-20	13-May-2020/Surcharge Area of TKO	Residents of Ocean Shores	Noise	Noise generation in early mornings of early May	Y	The work schedule of C2. C3 & C6 had been reviewed. The noise source is believed to be generated from C2 due to sheet-piling. The details shall be referred to CIR-N104.	Closed
439	7-Apr-20 & 24-Apr-20	April 2020 / Works area near Park Central (non-specific)	Residents of Park Central	Odour	Continuous diesel fuel odour nuisance near Park Central	N	No direct evidence proved that the odour source was originated from the work sites of TKOLTT. The details shall be referred to CIR-A16.	Closed
438	18-Apr-20	18-Apr-20 / Marine Works Area at TKO	Residents of Ocean Shores	Noise/ Light	Blasting, High Frequency Noise and Light in Tseung Kwan O	Y	The complaint was valid in regard of noise. Blasting had been carried out during the midnight and the Contractor is reminded to strictl follow requirements of CNP. The light source was originated from the construction vessels due to safety reason and guard watching. Details shall be referred to CIR-C34.	Closed
437	27-Mar-20	27-Mar-2020 / Surcharge Area (C2)	Resident of Ocean Shores	Noise	Low Frequency Noise during Midnight	Y	The noise source was the malfunctioned dewatering pumps. The details shall be referred to CIR-N103	Closed
436	26-Mar-20	26-Mar-20/ Portion IVC	District Council Member (Mr. Wong)	Noise	Noise nuisance, vibration and spectedly insufficient mitigation measures in Lam Tin	Y	See complaint #431-433.	Closed
435	23-Mar-20	23-Mar-20/ Lam Tin Tunnel	Resident of Cha Kwo Ling Village	Noise	Groundborne Noise from Blasting in the Evening	Y	Blasting was conducted at the time of complaint. The vibration monitoring conducted near Tin Hau Temple was considered the vibration level was acceptable. The details shall be referred to CIR-N102.	Closed
434	23-Mar-20	20-Mar-20/ Lam Tin	District Council Member (Mr. Wong)	Noise	Noise nuisance from Construction Works during Holiday	Y	See compliant #427.	Closed
433	20-Mar-20	20-Mar-20/ Lam Tin	Resident of Hong Pak Court	Noise	Noise nuisance, vibration and suspectedly insufficient mitigation measures in Lam Tin	Y	The time period and PMEs of major works conducted during daytime of the complaints, no non-compliance in CNMP and during site audits has been recorded. The Contractor is recommended to provide alternative noise mitigation measures such as acoustic box for noisy PMEs and regularly repair materials of the noise mitigation measures. Details shall be referred to CIR-N101.	Closed
432	18-Mar-20	18-Mar-20 / Portion IVC	Resident of Yau Lai Estate	Noise	Noise nuisance, vibration and suspectedly insufficient mitigation measures in Lam Tin	Y		
431	14-Mar-20	14-Mar-20 / Portion IVC	Residents of Yau Lai Estate	Noise	Noise nuisance, vibration and suspectedly insufficient mitigation measures in Lam Tin	Y		
430	17-Mar-20	17-Mar-20 / Surcharge Area / C2	Anonymous	Water	Muddy Water at the Surcharge Area	N	The “muddy water” was created by the tug boat’s screw propeller. The Contractor claimed the propeller stirred up seedbed sediment and generated “muddy water”. The details shall be referred to CIR-W13.	Closed
429	10-Mar-20	10-Mar-20 / Site Nearby Park Central	Resident of Park Central	Noise	Noise nuisance in early morning (Mar 2020)	Y	No construction works had been conducted at the time of complaint for C3 and the major works area in C2 was at least 300m away from the complainant. It is believed that the major noise source was coming from ASD’s work site. The details shall be referred to CIR-N100	Closed

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428	4-Mar-20	Not Specified / Tseung Kwan O	Mr. Lui, Sai Kung District Council	Odour / Noise	Odour and low frequency noise nuisance from construction site	Y	Only minor works had been conducted at the time of complaint. No direct evidence showed that the odour source was originated from C3. The suspected nuisance source is believed to be ASD's works area. The details shall be referred to CIR-C33	Closed
427	1-Mar-20	1-Mar-20 / Portion IVC	Resident of Yung Kai House	Noise	Noise nuisance from Construction Works during Holiday	Y	No construction works were conducted at the concerned locations and no direct evidence showing the complaint is project-related. The details shall be referred to CIR-N99	Closed
426	19-Feb-20	11-Feb-20 / Works area outside TKL Sports Centre	Anonymous	Noise	Noise nuisance from breaking works	Y	Refer to complaint #423 and #424.	Closed
425	18-Feb-20	29-Jan-2020 / Marine works Area	Mr. Chan from Ocean Shore		Noise nuisance from barge in morning	Y	No works had been conducted in the time period of complaint. The noise is believed to be non-project-related. The details shall be referred to CIR-N95.	Closed
424	11-Feb-20	8 and 11-Feb-2020 / Site near TKL Station	Resident of Park Central		Noise nuisance from breaking works	Y	The complaint was valid and the contractor had been operating only 1 breaker at a time. The contractor is suggested to further increase the mitigation measures to reduce impact to the surrounding neighborhood. The details shall be referred to CIR-N97	Closed
423	3-Feb-20	03-Feb-2020 / Site Near TKL Station				Y		
422	3-Feb-20	2-Feb-20 / Lam Tin Interchange	Resident of Cheuk Lai House, Yau Lai Estate		Noise nuisance suspected to be related to works involving metal hammering on Site near EHC	Y	No construction activities were conducted at the concerned locations during the period of complaint. The Contractor is reminded to keep conducting good site practice and strictly follows the requirements of approved CNP. The details shall be referred to CIR-N98	Closed
421	21-Jan-20	21-Jan-20 / Portion IX	Ocean Shores Residents	Noise	Noise nuisance due to Blasting at midnight	Y	Blasting was conducted around 1:30am due to the vicinity of the Railway protection zone of MTR. The Contractor is reminded to keep the blast door closed during blasting to minimize noise impacts and re-schedule blasting to less sensitive hours as far as practicable. The details shall be referred to CIR-N96.	Closed
420	7-Jan-20	7-Jan-20 / Portion IX	Ocean Shores Residents		Irritating loud noise nuisance from Portion IX (C2)	Y	See complaint #417	Closed
419	7-Jan-20	Sundays before 7-Jan-20 / Tunnel Works	Resident of Hong Pak Court		Noise nuisance from Tunnel Works	Y	See Complaint #416.	Closed
418	7-Jan-20	5-6-Jan-20 / C1 Marine Works Area	Ocean Shores Residents		High-frequency noise during night-time	Y	The high frequency noise was believe to be noise emitted from the marine works area of C1. The details shall be referred to CIR-N94.	Closed
417	3-Jan-20	2-Jan-20 / Portion IX	Former District Member (Mr. Chan)		Annoying noise emission and inefficient noise mitigation measures	Y	The noise source is believed to come from a breaker and mitigation was insufficient. The Contractor was requested to strictly follow the Noise Mitigation Plan. The details shall be referred to CIR-N93.	Closed
416	29-Dec-19	29-Dec-19 / Non-specific	Resident of Hong Pak Court	Noise	Groundborne Noise from Works area	Y	Project-related with valid CNP. Contractor is reminded to reduce noise emission and prevent breaking and noisy activities during restricted hours. The details shall be referred to CIR-N92.	Closed
415	27-Dec-19	25-Dec-19 / Lam Tin Interchange (Portion IVC)	Resident of Yau Estate	Noise	Noise nuisance from Portion IVC	Y	Non project-related due to maintenance works of East Cross-harbor Tunnel. The details shall be referred to CIR-N91.	Closed
414	24-Dec-19	22-Dec-19 / Lam Tin Interchange (Portion IVC)	Resident of Yau Estate	Noise	Piling noise nuisance near Lam Tin Interchange	Y	Project-related with valid CNP. Contractor is reminded to reduce noise emission and prevent breaking and noisy activities during restricted hours. The details shall be referred to CIR-N91.	Closed
413	24-Dec-19	24-Dec-19 / Portion IX of Contract 2	Resident of Capri & Ocean Shores	Noise	Loud and continuous noise emission from Portion IX	Y	No breaking activity was conducted by the C3. It was believed that C2 was the major noise source and the mitigation measures were insufficient. The details shall be referred to CIR-C32.	Closed
412	19-Dec-19	14-Dec-19 / marine works area	Resident of Ocean Shores	Noise	Noise nuisance from the marine works area	Y	The major construction work was driven by pin piles. The noise emitted due to the construction activities is considered to be reduced to an acceptable level as no NSR falls under the ambit of 300m study area of the work site. Details should be referred to CIR-N90.	Closed

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411	2-Dec-19	30-Nov-19 / Construction Sites Outside TKL Sports Center	Resident of Park Central	Air / Noise	Non-effective noise mitigation measures and related dust and noise nuisance	Y	The construction noise created by breaking works are considered non-project related due to the large separation distance between noise source and the Complainant's Location. Major dust emission from the works area next to C3 was recorded. The Contractor is reminded to provide regular watering to dusty works. Details should be referred to CIR-C31.	Closed
410	28-Nov-19	25-Nov-19 / Portion 4C	Anonymous	Noise	Noise nuisance from Lam Tin Works Area and operation hours	Y	Refer to Complaint #408	Closed
409	27-Nov-19	20&27-Nov-19 / Construction Sites near Po Yap Road & Chui Ling Road	Resident of Park Central	Air / Noise	Dust emission due to excavation works and noise nuisance from Piling works	Y	Although noise barrier had been erected and around the breakers, the direct line of sight to the NSRs at Park Central could not be totally blocked. The Contractor is recommended to provide cantilevered noise barrier with noise absorbing materials to minimise noise impact as far as practicable. Details should be referred to CIR-C31.	Closed
408	25-Nov-19	Non-specific (Nov-19) / Portion 4C	Resident of Yau Lai Estate	Noise	Serious Noise Nuisance from Lam Tin Works Area	Y	Despite the Contractor had applied different noise mitigation measures (e.g. semi enclosure and noise barrier). Environmental deficiency was observed during site audit session. The Contractor is recommended to apply alternative noise mitigation measures to improve the situation. The details shall be refer to CIR-N89.	Closed
407	12-Nov-19	Non-specific (Nov-19) / LT Construction Site	Non-specified(Complainant has previously made complaints on LTI)	Operation Hours	Inquiries on operating hours & Noise Nuisance	N	The time of complaint falls under day-time. According to the Contractor and RE, the general starting time of construction works are 08:15 on normal week days. The Contractor had avoid conduct noisy works on morning to minimize noise impacts for the nearby residents. The details shall be refer to CIR-O3	Closed
406	5-Nov-19	5-Nov-19 / Tunnel near TKO	District Council Member (Mr. Chan)	Noise	Noise nuisance from Blasting activities during night-time	Y	No blasting was carried out on that night. The construction activities were conducted inside the tunnel with the blast door closed. The CNP that the Contractor held remained valid during the time of complaint. The details shall be refer to CIR-N88	Closed
405	29-Oct-19	17-Oct-2019 / Marine Works area near Ocean Shore	District Council Member (Mr. Chan)	Noise	Daytime times noise nuisance	Y	The complaint details does not tally up with the information provided with the Contractor and RE. Referring to the Contractor, there was construction works was starting at 09:00. Noise mitigation measures, such as acoustic mats, were applied to minimize noise impact. The details shall be refer to CIR-N87	Closed
404	15-Oct-19	12-Oct-19 / Marine Works area near Ocean Shore	Residents of Ocean Shores	Noise / Working Hours	Noise nuisance due to operation of barge on Saturday early morning	Y	The time of complaint falls within daytime and the major works conducted are dredging and reclamation. The contractor did not require any extra mitigation measures. The contractor had applied sound-proofing mat on the engine floor of the barges and is recommended to strictly follow the requirements of noise mitigation plan. The details shall be refer to CIR-N86	Closed
403	15-Oct-19	Oct-19 (Not Specified) / C2 Construction Site	Residents of Ocean Shores	Noise / Working Hours	Operation of marine construction works during late hours	Y	The major construction works is trimming works for the rock mount during the time period of complaint. Mitigation measures provided by the Contractor included provision of noise insulating mats to the engine floor of the barges and shorten the work hours by ending construction works on or before 21:00 since early Oct 2019. Details shall be referred to CIR-N85.	Closed
402	10-Oct-19	09-Oct-2019/ Site near TKO CPC	Residents of Ocean Shores	Noise	Noise nuisance of construction works at marine work area during early morning	Y	No construction activity at both the Cavern near the BCMCP Bridge and Platform 1B, including the barge, in particular during the complaint period between 2am and 3am on 9 Oct 2019. Since no works had conducted during the time of complaint, no mitigation measures are required. The details shall be referred to CIR-N84.	Closed
401	5-Oct-19	05-Oct-2019 / C2 Portion IX	District Council Member (Mr. Chan)	Noise	High noise level from works area during daytime	Y	The time period of complaint falls under day-time and therefore the Contractor is required to carry out mitigation measures according to the latest CNMP only. The construction activities had been reviewed and no non-compliance was identified. No Limit Level of Exceedance at daytime was recorded during October 2019. For mitigation measures, the Contractor had set up sound-proofing mats and SlientUp to reduce noise impact. The details shall be refer to CIR-N83.	Closed

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400	16-Sep-19	10-Sep-19 / TKO Marine Works Area	District Council Member (Mr. Chan)	Water	Muddy water discharge and deficiency in water quality mitigation measures	N	With accordance to the Contractor and RE, the silt curtains were deployed regarding to SCDP ver. 8 since 10-Sep-19, site inspection on 12-Sep-19 also showed the silt curtains were deployed properly. Despite there are chances of accidental muddy water discharge due to the removal of cofferdam on 13-Sep-19, local silt curtain had been place in order to minimize the unavoidable impact by related loading and unloading of fill materials. No muddy water had been observed outside the silt curtain area. Nevertheless, the Contractor is recommend to expand the coverage of the local silt curtain in order to well-confine the muddy water released from the grab. On top of that, the Contractor shall always follow the SCDP to ensure the minimization of impacts. Details should be referred to CIR-C30.	Closed
399	16-Sep-19	16-Sep-19 (Not Specified) / LT Interchange Potion III	Resident of Bik Lai House, Yau Lai Estate	Noise	Noise emission from the tunnel entrance (Potion III)	Y	No construction works was carried out during the time of complaint. Details should be referred to CIR-N82.	Closed
398	16-Sep-19	13-Sep-19 / Works Area of LT-TKO Tunnel outside Tiu King Leng MTR Station	Anonymous	Air / Water	Dark smoke emission and muddy water discharge from the marine work vessels near shore	N	No dark smoke emission was observed during the site inspection conducted in the week of the complaint. The Contractor has applied an air filtering tank to clean the exhaust from the barge before emission. Details should be referred to CIR-C30.	Closed
397	6-Sep-19	30 Aug-19 / Works area near Ocean Shores	Resident of Ocean Shores	Noise / Working hours	Noise emitted from Barge during Evening times	Y	The unloading works had been reviewed and no limit level of exceedance were recorded during August to early September. Since the period of complaint falls under evening times, no mitigation measures were required by the CNP. Details should be referred to CIR-N81.	Closed
396	6-Sep-19	30 Aug-19 / Works area near Ocean Shores	Resident	Noise	Noise nuisance from LT-TKO Tunnel	Y	The major works conducted were shortcreting, mucking out, maintaining, drilling and unloading. No limit level of exceedance in the restricted hours (19:00-23:00) between late August and early September were recorded. The Contractor is recommended to keep following noise mitigation plan to minimize noise nuisance. Details should be referred to CIR-N80.	Closed
395	6-Sep-19	31 Aug-19 / Works area near Ocean Shores	District Council Member (Mr. Chan)	Noise	Noise Nuisance during evening and night times	Y		Closed
394	6-Sep-19	Not specified (Sep-19) / Works area near Ocean Shores	Anonymous	Noise / Operating Hours	Noise nuisance during Evening & occasionally in Night time	Y		Closed
393	30-Aug-19	30 Aug-19 / Marine works Area	District Council Member (Mr. Chan)	Water	Alleged muddy water discharge	N	High rainfall was recorded during period of complaint, therefore muddy water discharge at outfall from upstream and some surface runoff within the site is expected. However, no major silt curtain deficiency was observed during on-site observation and no leakage of muddy water from the marine works area was observed. Details should be referred to CIR-W12.	Closed
392	29-Aug-19	20-27 Aug-19/ Portion 4C	Resident of Bik Lai House, Yau Lai Estate	Noise	Noise nuisance from the operation of heavy machineries and missing of noise mitigation measures at Portion 4C	Y	A noise insulating cover was erected before the period of complaint, however, due to restricted site condition in the relocated breaking works area, the erection of the cover could not be carried out. Nevertheless, movable noise barriers and local semi-enclosure was adopted for breaking works. Details should be referred to CIR-N79.	Closed
391	26-Aug-19	10-Jul-19 / Construction site near Ocean shore	District Council Member (Mr. Chan)	Noise	Operation of construction works during late hours	Y	1 derrick barge was operated during the period of complaint with valid CNP. Regular maintenance and checking should be conducted for all operating barges. Details should be referred to CIR-N78.	Closed
390	26-Aug-19	31-Jul-19 / Construction site near Ocean shore	District Council Member (Mr. Chan)	Noise	Intermittent noise emitted from collision during night-time	Y	The noise source is suspected to be the collision between cofferdam and its broken part as the cofferdam was found damaged next morning. No construction was conducted at night time of 31 July. The contractor is recommended to maintain and check cofferdam regularly. Details should be referred to CIR-N77.	Closed

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389	29-Jul-19	17 to 24-Jul-19 / Marine Construction Site near O King Road	Resident of Ocean Shore	Noise	Noise nuisance from the barge operating in reclamation works area near O King Road during evening times.	Y	1 derrick barge was operated during the period of complaint with valid CNP. Regular maintenance should be provided for all operating barges. Details shall refer to CIR-N76.	Closed
388	12-Jul-19	8-Jul-19 / Construction Site near Ocean Shores	District Council Member (Mr. Chan)	Noise	Noise nuisance and inadequate noise barrier at the construction site near Ocean shore	Y	Although Contractor has adopted a noise mitigation measure of drill rigs at Portion IV near Ocean Shore such as noise barrier with sound insulating fabric, the existing noise barrier in Portion IX and some in Portion IV are not adequate in screening the direct line of sight to Ocean Shore. Details should be referred to CIR-N75.	Closed
387	12-Jul-19	8 to 12-Jul-19 / Portion 4C of C1 Construction Site	Resident of Bik Lai House	Noise	Breaking noise emitted from the operation of 2 PMEs at Portion 4C during weekday daytime.	Y	Two breakers were operated intermittently at the Portion 4C of C1 construction site during the period of complaint between 07:00 to 19:00. As observed during the site inspection/noise monitoring, movable noise barrier could not completely screen off the direct line-of-sight from PMEs to Yau Lai Estate. Contractor has adopted mitigation measure to minimize the noise impact from breakers including using a noise barrier with noise insulating fabric, adopted a less noisy hydraulic spiting method for breaking works and has been developing a semi-enclosure noise barrier to replace the existing movable noise barrier. Details should be referred to CIR-N74.	Closed
386	10-Jul-19	9 to 10-Jul-19 / Not Specific	District Council Member (Mr. Chan)	Noise	Noise nuisance and disturbance from the TKOLT tunnel construction site involves intermittent noise emitted from collision during night-time.	Y	No construction works was carried out during the time of complaint. Details should be referred to CIR-N73.	Closed
385	4-Jul-19	Late Jun-19 to 4-Jul-19 / Reclamation Area	Resident of Ocean Shore	Noise	The reclamation works continued into the evening during weekdays and works were also operated on Sunday.	Y	See Complaint no 384.	Closed
384	3-Jul-19	3-Jul-19 / Near Ocean Shore	District Council	Noise	The construction site was constantly emitting metallic percussion noise in the early morning.	Y	The concerned metallic percussion noise source was suspected from the collision between the detached sheet pile and the adjacent sheet pile of the broken cofferdam. The detached sheet pile was fixed by re-sealing it to the adjacent sheet pile. Details should be referred to CIR-N72.	Closed
383	29-Jun-19	Jun-19 / Lam Tin Interchange	Resident of Yau Lai Estate, Yung Lai House	Noise	Noise nuisance from construction works during weekday daytime and evening times. Noise barriers was found missing in certain parts of the construction areas.	Y	Some noise mitigation measures were observed during the site inspection including idle equipment were turned off and noise barrier has been erected close to noisy PMEs in the right direction facing Yau Lai Estate. However, the above mitigation measures were not applied to whole construction site such as noise barriers were not placed close enough to the noisy PMEs due to the uneven surface and other inconvenience. Details should be referred to CIR-N71.	Closed
382 (N08/RE/000110 19-19)	17-Jun-19	6-Jun-19 / Cofferdam area	District Council	Air	Dark smoke nuisance from the tug boat inside the cofferdam area.	N	During site audit, no violation of the Air Pollution Control (Smoke) Regulation from the construction site was observed by the ET. Air filter has been replaced on derrick barge to reduce the dark smoke emission upon the receipt of the complaint. The Contractor is recommended to replace the air filters regularly. Details should be referred to CIR-A15.	Closed
381 (N08/RE/000150 98-19)	11-Jun-19	1-Jun-19 / Near confferdam	District Council	Water	Muddy water discharge from construction site near the cofferdam area on 4 June 19	N	High volume of upstream muddy water was collected due high rainfall according to reports and observation. As a result, the muddy water from upstream was discharged into the Junk Bay via various outfalls in Junk Bay, as observed during the rainstorm events. No sand plume within the cofferdam area and no muddy water discharge at the designated discharge point within the Site was identified during the site inspection and water quality monitoring. Details should be referred to CIR-W11.	Closed

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380	11-Jun-19	6-Jun-19 / Near Tong Yin Street	Resident of Ocean Shore	Air	Odour nuisance from construction site near Tong Yin Street	N	No oil leakage from mobile crane was observed during the site inspection in June 2019. According to the testing reports, all ULSD fuel applied in the PMEs during the construction period contains sulphur content lower than 0.005% by weight, which complied with the Air Pollution Control (Fuel Restriction) Regulations. Details should be referred to CIR-A14.	Closed
379	11-Jun-19	4-Jun-19 / Near cofferdam area	General Public	Water	Discharge of mud water into Junk Bay from TKOLT construction site	N	See Complaint no 381.	Closed
378	11-Jun-19	13-Apr-19 / Near cofferdam area	General Public	Air	Dark smoke nuisance from construction site involves derrick barge operation near cofferdam area (daytime)	N	No violation of the Air Pollution Control (Smoke) Regulation was recorded from the construction site was observed. The contractor was recommended to install carbon filter at smoke exhaust of the barge as a more effective mitigation measures. Details should be referred to CIR-C27.	Closed
377	11-Jun-19	2-Jun-19 / Lam Tin Interchange	General Public	Noise	Complaint about the noise nuisance from Lam Tin Interchange construction site in daytime holiday.	Y	Only drilling works inside the tunnel was conducted during daytime under valid CNP. Groundborne noise is considered as the major factor contributing to the noise nuisance, the Contractor are recommended to re-schedule the drilling works inside the tunnel to less sensitive hours. Details should be referred to CIR-N70.	Closed
376	11-Jun-19	9-Jun-19 / Near Yau Lai Estate	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance near Yau Lai Estate involves vehicle movement (roller) during morning to 15:00 in holiday.	Y	No works involving roller was involved. Only drilling works inside the tunnel and ddismantling of crusher shelter was conducted during Sunday daytime under valid CNP. Groundborne noise is considered as the major factor contributing to the noise nuisance, the Contractor are recommended to re-schedule the drilling works inside the tunnel to less sensitive hours. Details should be referred to CIR-N70.	Closed
375	11-Jun-19	9-Jun-19 / Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance from Lam Tin Interchange construction site in daytime holiday.	Y	See Complaint no. 376.	Closed
374	4-Jun-19	3-Jun-19 / Near Ping Tin Estate	Resident of Ping Sin House in Ping Tin Estate	Noise	Vibration from the construction of Lam Tin Interchange in evening time at around 20:00	Y	Groundborne noise is considered as the major factor contributing to the noise nuisance. The reverse circulation drilling works may have emitted groundborne noise, however, only 1 unit was used in Portion II. Therefore, blasting is considered as the major cause for the vibration. Details should be referred to CIR-N69.	Closed
373	4-Jun-19	2-Jun-19 / Near ocean Shore	Resident of Ocean Shore	Noise	Complaint about the noise nuisance from the construction site near Ocean Shore and the construction site operation in day time holiday.	Y	No construction activity was conducted at the time of complaint as confirmed by Engineer. Therefore, the noise nuisance was not due to the construction site. Details should be referred to CIR-N68.	Closed
372	4-Jun-19	1-Jun-19 / Near ocean Shore	Resident of Ocean Shore	Others	Complaint about the construction site operation in the early morning on Saturday.	N	See Complaint no. 373.	Closed
371	30-May-19	30-May-19 / Near Ocean Shore	Resident of Ocean Shore	Noise	Noise nuisance from construction site near Ocean Shore during night time.	Y	See Complaint no. 373.	Closed
370 (N08/RE/00015098-19)	29-May-19	19 & 26-May-19 / Near Ocean Shore	Resident of Ocean Shore	Noise	Noise nuisance about dredging mud and loudspeaker in the construction site near Ocean Shore during daytime holiday.	Y	Noise barriers/ Noise absorptive materials have been used to mitigate the noise generated from the construction works. Only walkie-talkies were used for communication in the construction site. Details should be referred to CIR-N67.	Closed
369	13-May-19	Not specific / Lam Tin interchange	Resident of Yau Lai Estate	Noise	Noise nuisance from the blasting work inside tunnel which involves explosion noise impact during midnight	Y	Contractor has adopted a mitigation measure for reduce the blasting noise impact from the tunnel such as blasting doors and did not conduct blasting works during mid-night blasting since mid-May 2019. Details should be referred to CIR-N66.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
368	19-May-19	19-May-19 / Near cofferdam area	General Public	Noise	Noise nuisance from barge with in cofferdam area in daytime holiday	Y	See Investigation / Mitigation Action for complaint no. 361.	Closed
367	5-May-19	5-May-19 / Lam Tin Tunnel - TKO entrance	Resident near Lam Tin Tunnel - TKO entrance	Noise & Air	Noise and air nuisance from construction near Lam Tin Tunnel - TKO entrance	Y	The major works during the period of complaint is scaling by breaker on day time holiday (Sunday). The works is compiled with CNP and no air quality action and noise limit level exceedance during the monitoring. Regarding the existing air quality mitigation measures, the water spray for the breaker was insufficient and the dust emission during unloading of dusty materials was observed. As the review of exiting noise mitigation measure, a broken noise SilentMat was found on the hammer of breaker. According to the above observation, Contractor has adopted serval improvement such as conduct a sufficient water spray during breaking and unloading materials, replaced the noise SilentMat of the breaker and placed the noise barrier between PME and NSRs. Details should be referred to CIR-C29.	Closed
366	4-May-19	4-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime.	Y	Regarding the observation during site inspection, the hammer of the breaker was surrounded by a broken noise absorption material and a noise barrier of a driller was placed in the incorrect direction of NSRs. Contractor has improved the above mitigation measures including replaced the noise absorption materials and relocated the noise barrier to facing the NSRs. Details should be referred to CIR-N65.	Closed
365	1-May-19	1-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime.	Y	See investigation / mitigation actions for Complaint No.366	Closed
364	1-May-19	1-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime	Y	See investigation / mitigation actions for Complaint No.366	Closed
363	30-Apr-19	6th – 22th April -19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime and evening time	Y	See investigation / mitigation actions for Complaint No.366	Closed
362 (N08/RE/00013396-19)	8-May-19	7-May-2019 / Junk Bay	District Council	Noise	Noise nuisance from marine works in the Junk Bay in the night-time (06:45)	Y	No marine works in the Junk Bay was conducted as confirmed by RE. No CCTV footage was recorded during the time of complaint. It was suggested that Contractor should conduct 24 hours CCTV monitoring. Details should be referred to CIR-N64.	Closed
361	7-May-19	28 Apr 2019 / Cofferdam Area	General Public	Noise	Noise nuisance from construction site at cofferdam area in holiday	Y	The reclamation works involves barges during the time of complaints has been compiled with the CNP. As review of existing mitigation measure, the sound proofing canvases for the barges were hanged up. Details should be referred to CIR-N63.	Closed
360	2-May-19	27-04-2019/ Construction in Tong Tin Street	General Public	Noise	The complaint about the noise nuisance from cofferdam area during daytime and evening-time.	Y	The light source was found from the lighting of derrick barge within the cofferdam area and the noise source was found from the barge during filling works. Contractor has adopted The sound proofing canvases for the derrick barge was hanged up but no light mitigation measure. Details should be referred to CIR-C28.	Closed
359	30-Apr-19	30-04-2019/ Near Ocean Shore	Resident of Ocean Shore	Noise	The complaint about the noise nuisance involve percussion noise near Ocean Shore during daytime.	Y	See compliant #355.	Closed
358	30-Apr-19	27-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance during evening time.	Y	See compliant #355.	Closed
357	23-Apr-19	20-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance near cofferdam area during daytime.	Y	See compliant #355.	Closed
356	23-Apr-19	19-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance near cofferdam area during holiday.	Y	See compliant #355.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
355	17-Apr-19	17-04-2019/ Near cofferdam area	General Public	Noise & light	The complaint about the noise nuisance and light pollution near cofferdam area during evening-time.	Y	The light source was found from the lighting of derrick barge within the cofferdam area and the noise source was found from the barge during filling works. Contractor has adopted The sound proofing canvases for the derrick barge was hanged up but no light mitigation measure. Details should be referred to CIR-C28.	Closed
354	30-Apr-19	20 Apr 2019 / Cofferdam Area 19 Apr 2019 / Cofferdam Area 15 Apr 2019 / Cofferdam Area 07 Apr 2019 / Cofferdam Area 31 Mar 2019 / Cofferdam Area	Resident of Ocean Shore (Mr. Chan)	Others	The construction site near O King Road is operated in holiday during day-time and weekday during night-time.	N	The marine reclamation works at the Portion IX in C2 construction site was the major construction activity during the period of complaints. The concerned reclamation works is compiled with the relevant CNP. Details should be referred to CIR-O2.	Closed
353	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore (Mr. Chan)	Air	According to the complainant, large amount of smoke and exhaust was seen emitting from barges working within the cofferdam	N	See Investigation / Mitigation Action for complaint no. 329.	Closed
352	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore	Noise	The complainant complained about the noise nuisance from the cofferdam area in Tiu Keng Leng during day-time.	Y	The major works during the time of complaints was a crawler crane unloading H piles to the Portion V of C2 construction site. Noise barriers were erected between the crane and NSRs to reduce noise impact. Details should be referred to CIR-N62.	Closed
351	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore	Noise	The complainant complained the noise nuisance from the cofferdam area in Tiu Keng Leng during day-time.	Y		
350	8-Apr-19	07 Apr 2019 / Cofferdam Area in TKO	-	Air & Others	The complainant complained the dark smoke generation and the construction works from the cofferdam area in Tiu Keng Leng during holiday.	N	See Investigation / Mitigation Action for complaint no. 329.	Closed
349	7-Apr-19	07-04-2019/Cofferdam Area	Resident of Ocean Shore	Air	Dark smoke generation from the cofferdam area in Tiu Keng Leng during day-time.	N		Closed
348	2-Apr-19	02 Apr 2019 / LTT-TKO	-	Others	The complainant complained the LTT construction site was working during holiday.	N		Closed
347	1-Apr-19	01 Apr 2019 / Cofferdam Area	Resident of Ocean Shore	Noise	Percussive noise from the cofferdam area in Tiu Keng Leng during day-time.	Y		Closed
346	31-Mar-19	31st March 2019 / Construction of Road P2	District Council	Others	Complaint about the construction site operation of Road P2 in day time holiday	N	A tug boat and a derrick barge were operated for the marine reclamation work within the cofferdam area during the time of complaint. As the review of relevant CNP, no violation was observed. Details should be referred to CIR-O1.	Closed
345	26-Mar-19	26th March 2019 / Construction of Road D4	Resident of Park Central	Noise	Complaint about the noise nuisance in day time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
344	28-Mar-19	26th March 2019 / Construction of Road P2	District Council	Noise	Complaint letter received regarding noise nuisance and dark smoke generation from the marine barges	Y	See Investigation / Mitigation Action for complaint no. 378.	Closed
343	25-Mar-19	25th March 2019 / Construction of Road D4	Resident of Park Central	Noise	Complaint about the noise nuisance sound like a breaking works in day time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed
342	25-Mar-19	24th March 2019 / Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance from the construction of Lam Tin Interchange in day time hoilday (Sunday). The noise monitoring was conducted in Hong Nga Court by staff after the complaint and the noise level is result in acceptable level, but the complainant replied that the noise monitoring is meaningless and the noise nuisance is not acceptable for her.	Y	See Investigation / Mitigation Action for complaint no. 330.	Closed
341	24-Mar-19	24th March 2019 / Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complaint about the noise nuisance from Lam Tin Tunnel construction works in day time.	Y	See Investigation / Mitigation Action for complaint no. 330.	Closed
340	24-Mar-19	24th March 2019 / Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance from the construction site day time holiday (Sunday).	Y	See Investigation / Mitigation Action for complaint no. 330.	Closed
339	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the construction noise nuisance involving percussive noise in early morning (07:00)	Y	See Investigation / Mitigation Action for complaint no. 330.	Closed
338	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Ocean Shore	Noise	Construction noise	Y	See Investigation / Mitigation Action for complaint no. 323.	Closed
337	20-Mar-19	19th March 2019 / Construction of Road D4 and Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complaint about the noise nuisance from the construction vehicle near Park Central in night time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed
336	20-Mar-19	20th March 2019 / Construction of Road P2	Resident of Park Central	Noise & Pest	Complaint about the noise and pest nuisance from the construction site near Park Central in evening time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed
335	19-Mar-19	19th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Construction noise nuisance from reclamation works near the TKO-LTT reclamation site during the evening time (19:00-23:00).	Y	See Complaint #323.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
334	19-Mar-19	19th March 2019 / Construction of Road P2	District Council	Noise	Construction noise nuisance from the TKO-LTT reclamation site during evening time (after 19:00).	Y	See Complaint #323.	Closed
333	19-Mar-19	18th - 19th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Construction noise nuisance from construction noise in evening time (around 20:30).	Y	See Complaint #323.	Closed
332	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance during day time, evening time and night time.	Y	The construction activities in the complaint dates are complied with CNP. No noise limited level exceedance was recorded. During the site inspection, no noise barriers were erected between noisy PMEs and NSRs at LTI. Regarding the observation in the inspection, Contractor has adopted an improvement such as placed the noise barriers between the PMEs and NSPs to reduce noise nuisance. Details should be referred to CIR-N61.	Closed
331	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complaint about the noise nuisance in night time and the past few days. (Before 07:00)	Y		Closed
330	17-Mar-19	17th March 2019 / Construction of Lam Tin Interchange	General Public	Noise	Complaint about the noise nuisance from in night time holiday.	Y		Closed
329	15-Mar-19	15th March 2019 / Construction of Road D4	Resident of Park Central	Noise & Air	Complaint about the noise from the construction works and the odour nuisance involves engine oil from construction machine	Y	The construction activities in the complaint dates are compiled with the CNMP. No noise and air quality limit level exceedance were recorded. Contractor had implemented the mitigation measures for the noise and odour nuisances including acoustic mat was erected between the PME and NSR, ultra-low sulphur diesel was applied as fuel oil in PME and general refuses were disposed properly. Details should be referred to CIR-C26.	Closed
328	14-Mar-19	9th March 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complaint about the noise nuisance involve drilling work in the day time (08:00).	Y	A formation works was conducted in 7 am to 7pm on 9 Mar 2019. No noise limit level exceedance was recorded in the nearest noise monitoring result. However, there was no any adoption of mitigation measure to minimize the noise nuisance from the site. As response the received complaint, the contractor should place the noise barrier between the PMEs and NSR. Details should be referred to CIR-N58.	Closed
327	13-Mar-19	13th March 2019 / Construction of Lam Tin Interchange	Resident of Bik Lai House	Noise	Noise nuisance suspected from the construction works involving chiseling during evening time (22:07).	Y	A handing processed rock at Lam Tin Interchange was conducted on the complaint date in 7 pm to 11 pm involving dump truck and excavator which construction activities was compiled with the CNP. No noise limit level exceedance was record in the evening time monitoring. However, the noise barrier was not placed in the direction of the Yau Lai Estate during breaking works, the contractor had implemented a mitigation measure such as placed the noise barrier to reduce noise level from the breaker but the noise barrier was far from the concerned breaker. Details should be referred to CIR-N59.	Closed
326	13-Mar-19	13th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Noise nuisance suspected from marine works near Ocean Shores in the day time (16:30)	Y	See Investigation / Mitigation Action for complaint no. 322.	Closed
325	9-Mar-19	9th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involve machine and percussive noise in night time (02:00 -03:00).	Y	Only drilling works were conducted inside the tunnel in early morning under valid CNP. Groundborne noise is considered as the factor that contributes to the noise nuisance. The Contractor is recommended to reschedule drilling works to less sensitive hours. Details should be referred to CIR-N56.	Closed
324	7-Mar-19	7th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complaint about the noise nuisance involving chiseling noise from the construction site near Hong Pak Court during day time and evening time in the past few months.	Y	Only drilling works were conducted inside the tunnel in early morning and daytime under valid CNP. Groundborne noise is considered as the factor that contributes to the noise nuisance. The Contractor is recommended to reschedule drilling works to less sensitive hours. Details should be referred to CIR-N56.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
323 (EPD-N08/RE/00006523-19)	4-Mar-19	4th March 2019/ Cofferdam Area	Resident of Ocean Shore	Noise	Construction noise (Evening time)	Y	Only 1 derrick barge and a tug boat was used in the evening time under valid CNP. No Limit Level Exceedances were recorded at Station CM6(A) during evening time. Acoustic mat should be used to screen the engine of the barge to reduce the noise nuisance from the reclamation works. Lubricants should be applied to the barge to reduce the noise emission during barge movement.	Closed
322	13-Mar-19	1st March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Noise nuisance suspected from a yellow excavator near Ocean Shores in day time (15:44).	Y	No noise limit level exceedance was recorded and the number of operating PMEs complied with the CNMP. The sound proofing canvases were not always adopted as a mitigation measure to screen the noise emitted from the engine of the barge. Contractor should adopt the aforementioned mitigation measures as far as practicable. The contractor was also be recommended to enhance the mitigation measure including frequently checking the noise barriers/sound proofing canvases, frequent checking and repair the gaps or broken acoustic sheets and continue to strictly follow the requirements in the approved CNMP.	Closed
321	28-Feb-19	28th February 2019 / Construction of Lam Tin Interchange	Management Section of Yau Lai Estate	Noise	Construction noise (Night time)	Y	Only drilling works were conducted inside the tunnel in early morning under valid CNP. Groundborne noise is considered as the factor that contributes to the noise nuisance. The Contractor is recommended to reschedule drilling works to less sensitive hours. Details should be referred to CIR-N55.	Closed
320	22-Feb-19	22nd February 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complaint about the noise nuisance involving percussive noise in early morning (Day time). Complainant said the construction should be operated after 08:00.	Y	See Investigation / Mitigation Action for complaint no. 313.	Closed
319	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involving percussive noise in night time	Y	See Investigation / Mitigation Action for complaint no. 313.	Closed
318	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involving percussive noise from the construction in night time	Y	See Investigation / Mitigation Action for complaint no. 313.	Closed
317	25-Feb-19	23th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complained about the odour nuisance of petroleum smell	N	See Investigation/ Mitigation Action on Complaint no.294. Details should be referred to CIR-A12.	Closed
316	18-Feb-19	18th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complaint about the dark smoke and odour nuisances	N	See Investigation/ Mitigation Action on Complaint no.294. Details should be referred to CIR-A12.	Closed
315	17-Feb-19	15th February 2019 / Construction of Lam Tin Interchange, Road P2 and Tseung Kwan O Interchange	General Public	Noise	Complained about construction noise (Daytime)	Y	The metal wire used for anchoring the barge inside the cofferdam area are the source for the noise nuisance. Ropes were used to replace metal wire to reduce noise nuisance from metal collision while mooring boats. Details should be referred to CIR-N54.	Closed
314	17-Feb-19	16th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air	Dust nuisance suspected from the construction works and absence of water spraying near Lam Tin Interchange in daytime.	N	No Air Quality action level or limit level exceedance during the monitoring conducted by ETL. Contractor had implemented mitigation measure to reduce and prevent dust emission including conducted water sprays and covered the cement bags. Details should be referred to CIR-A13.	Closed

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313	17-Feb-19	17th February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Construction noise nuisance from the drilling and breaking works at Branch Tunnel in the morning (Day time)	Y	Breaking and drilling works were conducted during the time of complaint. The breakers were often seen wrapped with acoustic mat, however, they are easily damaged during the breaking works. Noise barrier are more effective in reducing the noise nuisance than the acoustic mat, but the erection of noise barrier are not often adopted properly to screen the noise from the NSR due to the additional works involved and the landform on site. Groundborne noise could also be a factor contributing to noise nuisance. Details should be referred to CIR-N53.	Closed
312	16-Feb-19	16th February 2019 / Construction of Lam Tin Interchange	District Council	Noise	Complained about the explosion noise (Daytime)	Y	No exceedances were recorded and recommendation were made to further enhance the mitigation measures, such as regularly and reviewing the noise control activities that are being carried out on site regularly to ensure compliance with statutory requirement, provide training for the workers to prevent unnecessary noise disturbance and frequently check and maintain the absorptive lining adhered on blasting doors on a regular basis.	Closed
311	15-Feb-19	15th February 2019 / Construction of Lam Tin Interchange	Public	Noise	Complained about the explosion noise (Daytime)	Y	See Investigation / Mitigation Action for complaint no. 312.	Closed
310	14-Feb-19	14th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Construction noise nuisance about the rock handling work at LTI (Daytime)	Y	Dump truck and excavator was used to transfer crushed rocks from the crusher with valid CNP. Additional noise barrier was added at the site boundary near Shun Lai house, Yau Lai Estate to reduce the direct-line of sight from the NSRs to the site. Details should be referred to the CIR-N51.	Closed
309	13-Feb-19	13th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Construction noise nuisance about the rock handling work at LTI (evening time)	Y		Closed
308	13-Feb-19	1th - 13th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Management Section of Kwong Tin Estate	Noise	Complaint about construction noise (Night time)	Y	See Investigation/ Mitigation Action on Complaint no.302. Details should be referred to CIR-N48.	Closed
307	13-Feb-19	13th February 2019 / Construction at Tsueng Kwan O (C1)	Resident of Ocean Shore	Noise	The complaint about the noise nuisance in day time	Y	Noise nuisance was originated from the beeping noise emitted during vehicle reversing of the loader. The total length of beeping noise should be less than 5 mins. The reverse alarm system is a necessary safety measure that cannot be revoked. Details should be referred to CIR-N50.	Closed
306	13-Feb-19	13th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction works involving chiseling noise in night time	Y	See Investigation/ Mitigation Action on Complaint no.302. Details should be referred to CIR-N48.	Closed
305	12-Feb-19	12th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction works involving chiseling noise in night time.	Y	See Investigation/ Mitigation Action on Complaint no.302. Details should be referred to CIR-N48.	Closed
304	8-Feb-19	8th February 2019 / Construction of Road P2 and Associated Works	Resident of Ocean Shore	Noise	Noise nuisance suspected from marine works near Ocean Shores in the day time	Y	There were two construction activities in the site including dredging and trimming in day time on 8 Feb 2019. Details should be referred to CIR-N49.	Closed
303	2-Feb-19	27th January - 2nd February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Ping Tin Estate	Noise	Noise nuisance suspected from the construction works involving chiseling noise during day time, evening time and night time.	Y	Project-related. The following recommendations were made to further enhance the mitigation measures: □ Frequent checking and repair the gaps or broken acoustic sheets; □ Replace any broken SilentMat for wrapping the breaker head; □ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively;	Closed

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302	2-Feb-19	27th January - 2nd February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Hong Pak Court	Noise	Noise nuisance suspected from the construction works involving chiseling noise during day time	Y	□ To adopt Cantilever noise barriers at Lam Tin interchange to screen noise effectively; □ The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers; □ To continue to strictly follow the requirements in the approved CNMP; □ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer; and □ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
301	31 Jan 2019	27th - 31th January 2019 / Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Noise nuisance suspected from the	Y	See Investigation/ Mitigation Action on Complaint no.290. Details should be referred to CIR-N45.	Closed
300	30 Jan 2019	30th January 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Beeping Noise nuisance suspected from the construction works involving mobile crane	Y	See investigation / Mitigation Action for complaint no. 296. Details should be referred to CIR-N47.	Closed
299	30 Jan 2019	27th - 29th January 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Beeping Noise nuisance suspected from the construction works involving mobile crane and also suspected from elevation platform	Y	See investigation / Mitigation Action for complaint no. 296. Details should be referred to CIR-N47.	Closed
298	30 Jan 2019	Not specific / Near Po Shun Road	Resident of Park Central	Noise & Air Quality	The dust generation and noise nuisance from the construction site near Po Shun Road	Y	There were several construction activities in the site including the removal of steel mould & scaffolding of bridge deck, erection of scaffolding for staircase and construction of Pour 1 of main deck (GL4-5) during time of complaint. Details should be referred to CIR-C25.	Closed
297	30 Jan 2019	27th - 30th January 2019 / Construction works at TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction involving chiselling works	Y	See Investigation/ Mitigation Action on Complaint no.290. Details should be referred to CIR-N45.	Closed
296	29 Jan 2019	27th - 29th January 2019 / Construction Site of Footbridge near Tiu Keng Leng Sport Centre.	Resident of Park Central	Noise	Beeping Noise nuisance suspected from the mobile crane at the Footbridge near Park Central Block 6	Y	Project-related. The following recommendations were made to further enhance the mitigation measures: □ To arrange a signalman instead of mobile crane reversing signal for minimize the beeping noise disturbance; □ Frequent checking and repair the operating PME; □ The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers; □ To continue to strictly follow the requirements in the approved CNMP; □ To ensure noise barrier and sound proofing canvases wrapped on PME are intact and in good condition.	Closed
295	29 Jan 2019	29th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complaint about the noise nuisance from the steel cable wire for anchoring between barge and pier	Y	There was a salvage works for the sunken barge (CS306) in a whole day on 27 Jan, 12 am to 3 pm on 28 Jan and 11:40 am on 29 Jan 2019. Details should be referred to CIR-N46.	Closed
294	29 Jan 2019	29th January 2019 / Construction of Road P2	Resident in O King Road	Air Quality	Complaint about the dark smoke and odour nuisances from barge.	Y	The sulphur content percentage of the adopted diesel fuel was lower than 0.05% which is compiled with the Hong Kong Air Pollution Control (Marine Light Diesel) Regulation, therefore the odour problem should be minimised. Smoke filtering tanks were adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell. The situation has improved after the filter has been replaced. Details should be referred to CIR-A12.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
293 (EPD-K15/RE/00003291-19)	29 Jan 2019	29th January 2019 / Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Night time)	Y	See investigation / Mitigation Action for complaint no. 270. Details should be referred to CIR-C29.	Closed
292	29 Jan 2019	29th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from breaking work.	Y	Project-related. The following recommendations were made to further enhance the mitigation measures: □ To arrange a signalman instead of mobile crane reversing signal for minimize the beeping noise disturbance; □ Frequent checking and repair the operating PME; □ The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers; □ To continue to strictly follow the requirements in the approved CNMP; □ To ensure noise barrier and sound proofing canvases wrapped on PME are intact and in good condition.	Closed
291	29 Jan 2019	29th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about the construction noise from breaking work.	Y		Closed
290	29 Jan 2019	29th January 2019 / Construction of Lam Tin Interchange	District Council	Noise	Complained about the construction noise from Tunnel Works	Y		Closed
289 (EPD-N08/RE/00000859-19)	24 Jan 2019	Early December 2018 -24-Jan-2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from Tunnel Works	Y	See Investigation/ Mitigation Action on Complaint no.288. Details should be referred to CIR-N44.	Closed
288	18 Jan 2019	18th January 2019 (Non-specific)/ Construction of Road P2	Public	Noise	Complained about the construction noise from Tunnel Works	Y	No major construction works at the concerned night time. There was only salvage operation carried out in 11 pm to 12 pm on 17 Jan 2019. No violation of CNP nor Noise Control Ordinance is found in this regard. Details should be referred to CIR-N44.	Closed
287	17 Jan 2019	17th January 2019 / Construction of Lam Tin Interchange	Resident of Yung Lai House	Noise	Complained about the construction noise from Kam Tin Interchange.	Y	Project-related. The following recommendations are made to further enhance the mitigation measures: □ To regularly check and review the noise control activities that are being carried out on site to ensure compliance with statutory requirement. □ Machines may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. □ To provide training for the workers to prevent unnecessary noise disturbance. □ To provide cantilever barrier to screen the construction noise from the NSRs	Closed
286	17 Jan 2019	17th January 2019 / Construction of Road D4	Resident of Park Central	Noise	High frequency machine noise nuisance involving air compressor from the construction site near the Park Central in day time	N	See Investigation/ Mitigation Action on Complaint no. 285. The concerned air compressor has been removed on 16th Jan 2019. Details should be referred to CIR-N41.	Closed
285	17 Jan 2019	17th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan with generator near Tiu Keng Leng Sport Centre and Park Central.	N	The concerned air compressor was removed from the construction site since 16 January 2019 afternoon, but the high frequency noise nuisance complaints were received on 17 January 2019. According to the CM8(A) noise monitoring record by environmental team, the other noise source from construction site are beeping noise of the reverse alarm system of the plant. Therefore, the high frequency noise nuisance is considered project related after 16 January 2019. Details should be referred to CIR-N41.	Closed
284	16 Jan 2019	16th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air compressor near Tiu Keng Leng Sport Centre and Park Central.	N	See Investigation/ Mitigation Action on Complaint no. 272. Additional noise barrier was erected around the said air compressor. Details should be referred to CIR-N41.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
283	15 Jan 2019	15th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air compressor near Tiu Keng Leng Sport Centre and Park Central.	N	See Investigation/ Mitigation Action on Complaint no. 272. Additional noise barrier was erected around the said air compressor. Details should be referred to CIR-N41.	Closed
282	15 Jan 2019	15th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air compressor near Tiu Keng Leng Sport Centre and Park Central.	N	See Investigation/ Mitigation Action on Complaint no. 272. Additional noise barrier was erected around the said air compressor. Details should be referred to CIR-N41.	Closed
281	15 Jan 2019	15th January 2019 / Construction of Road D4	Resident of Park Central	Noise	High frequency machine noise nuisance involving air compressor from the construction site near Chui Ling Road roundabout and Tiu Keng Leng Sport Centre in day time.	N	See Investigation/ Mitigation Action on Complaint no. 272. Additional noise barrier was erected around the said air compressor. Details should be referred to CIR-N41.	Closed
280	14 Jan 2019	14th January 2019 / Construction of Road D4	Resident of Park Central	Noise	High frequency machine noise nuisance involving air compressor from the construction site near Chui Ling Road roundabout and Tiu Keng Leng Sport Centre in day time.	N	See Investigation/ Mitigation Action on Complaint no. 272. Details should be referred to CIR-N41.	Closed
279	14 Jan 2019	14th January 2019 / Construction of Road D4	Resident of Park Central	Noise	High frequency machine noise nuisance involving air compressor from the construction site near Tiu Keng Leng Sport Centre in day time Saturday and Holiday (Sunday).	N	See Investigation/ Mitigation Action on Complaint no. 272. Details should be referred to CIR-N41.	Closed
278	12 Jan 2019	12th January 2019 / Construction of Road D4	Resident of Park Central	Noise	High frequency machine noise nuisance involving air compressor from the construction site between Tiu Keng Leng Sport Centre and Park Central in day time	Y	See Investigation/ Mitigation Action on Complaint no. 272. Details should be referred to CIR-N41.	Closed
277	12 Jan 2019	12th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the noise from breaking activities.	N	See investigation/ Mitigation Action on Complaint no. 264. Details should be referred to N39.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
276	11 - 12 January 2019	11th - 12th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	The complaints are considered as project-related. The following recommendations were made to further enhance the mitigation measures: □ Frequent checking and repair the gaps or broken acoustic sheets; □ Replace any broken SilentMat for wrapping the breaker head; □ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; □ The deployment of Cantilever noise barrier □ To continue to strictly follow the requirements in the relevant CNP. □ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer □ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP. Details can be referred to CIR-N40.	Closed
275	11 Jan 2019	11th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	See Investigation/ Mitigation Action on Complaint no. 272.	Closed
274 (EPD-N08/RE/000012 34-19)	11 Jan 2019	11th January 2019 / Construction of Road D4	Public	Noise	Complaint about the high frequency machine noise nuisance from the construction site of footbridge between Tiu Keng Leng Sport Centre and park Central.	Y	No high-frequency noise was detected near the complaint location, however, the noise similar to description was detected within the renovation works inside Park Central. Details should be referred to complaint no. 272 and CIR-N41.	Closed
273	10 Jan 2019	10th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	The complaints are considered as project-related. The following recommendations were made to further enhance the mitigation measures: □ Frequent checking and repair the gaps or broken acoustic sheets; □ Replace any broken SilentMat for wrapping the breaker head; □ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; □ The deployment of Cantilever noise barrier □ To continue to strictly follow the requirements in the relevant CNP. □ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer □ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
272	8 Jan 2019	8th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complaint about the high frequency machine noise nuisance from the construction site near Park Central in day time.	Y	High frequency noise emitted from an air compressor was suspected. Noise barrier was seen erected. Noise barrier using material with higher absorption coefficient such as mineral wool is recommended. Details should be referred to CIR-N41.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
271	8 Jan 2019	8th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	The complaints are considered as project-related. The following recommendations were made to further enhance the mitigation measures: □ Frequent checking and repair the gaps or broken acoustic sheets; □ Replace any broken SilentMat for wrapping the breaker head; □ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; □ The deployment of Cantilever noise barrier □ To continue to strictly follow the requirements in the relevant CNP. □ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer □ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
270 (EPD-K15/RE/000006 91-19)	7 Jan 2019	7th January 2019 / Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Night-time)	Y	Regular noise monitoring results for day time and night time show full compliance of the noise criteria. Air quality monitoring result in all stations show that no adverse air quality impact has been brought about to the nearby sensitive receivers during the time of complain. During Site audit, damaged acoustic material on the breaker was observed. Watering was provided at during rock breaking to avoid dust generation. The Contractor was reminded to deploy noise barrier to screen the line-of-sight from sensitive receiver.	Closed
269	7 Jan 2019	7th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the night time construction noise near Park Central.	Y	No noticeable high frequency noise was detected from the air compressor and noise barrier was seen erected in the line-of-sight from the NSR to the Air compressor. Refer to CIR-41 for details.	Closed
268	7 Jan 2019	7th January 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the construction noise at Lam Tin Interchange.	Y	No exceedances were record at the nearest monitoring station. The following recommendation were made to further enhance the mitigation measure: Ÿ Frequent checking and repair the gaps or broken acoustic sheets; Ÿ Replace any broken Silent Mat for wrapping the breaker head; Ÿ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; Ÿ The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receiver; Ÿ To continue to strictly follow the requirements in the relevant CNP; Ÿ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer; and Ÿ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
267	7 Jan 2019	7th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	Refer to Investigation/ Mitigation Action on Complaint no. 264. Details should be referred to N39.	Closed
266	7 Jan 2019	7th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	No exceedances were recorded at the nearest monitoring station, however, the approved location for noise monitoring was located at the podium of Ocean Shores. Due to inaccessibility to private unit, it is not possible to perform monitoring at higher floor. ET will keep approaching Ocean Shore Management Office for impact noise monitoring at higher floor. The recommendations for Contractor is as follows: · only well-maintained plant on-site and plant should be serviced regularly during the construction program; · Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby noise sensitive receivers;	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
							Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.	
265	7 Jan 2019	7th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	No exceedances were record at the nearest monitoring station. The following recommendation were made to further enhance the mitigation measure: Ÿ Frequent checking and repair the gaps or broken acoustic sheets; Ÿ Replace any broken Silent Mat for wrapping the breaker head; Ÿ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; Ÿ The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receiver; Ÿ To continue to strictly follow the requirements in the relevant CNP; Ÿ To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer; and Ÿ Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
264	2nd January 2019	2nd January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	No noise limit level exceedance was recorded at the noise monitoring stations near ocean shores. The contractor has applied lubricants to the joint of the excavators to dampen the noise emitted from the PMEs. The contractor is recommended to use noise barriers to screen the PMEs from the NSRs as per the Noise mitigation plan.	Closed
263 (EPD-)	1st January 2019	31st December 2018 / Coastal near TKO cemetery	General Public	Water	Complained concerning oil leakage/ on the sea surface near the sunken barge at C2 site.	N	Oil leakage happened due to the derrick lighter was submerged to the sea within the cofferdam. As the oil leakage was found outside the cofferdam during site inspection, there was a gap in the cofferdam. The oil leakage was cleaned up and the floating oil absorber has been used to surround the cofferdam by Contractor. The Contractor are reminded to1) regular check if the site vessels and cofferdam are in good-condition; 2) To regular monitor the operation of any activities in the cofferdam area; 3) To implement the proposed site vessels safety and the emergency responses including clearance measures. Details of the investigation should be referred to CIR-W10.	Closed
262	30 Dec 2018	26th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
261	26 Dec 2018	26th December 2018/ Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
260	26 Dec 2018	26th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
259	26 Dec 2018	26th December 2018/ Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about the construction noise of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
258							There was no major construction works at the concerned area during the time of complaint and confirmed by the Resident Engineer. Steel cable wire for anchoring between barge and pier is considered as a possible noise source. The complaint is considered project related.	
258								
258							Mitigation measures:	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
258	18 Dec 2018	18th December 2018/ Construction of Lam Tin Interchange	Engineering Section of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	Cable wire for anchoring between barge and pier has been replaced by rope between 27 Dec and 2 Jan to reduce noise impact. In addition, other good site practices recommended in the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved CNMP of this Contract had been implemented by the Contractor, including the following:	Closed
258							Ÿ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program;	
258							Ÿ Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby noise sensitive receivers;	
258							Ÿ Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.	
257	18 Dec 2018	18th December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	There was no major construction works at the concerned area during the time of complaint and confirmed by the Resident Engineer. Steel cable wire for anchoring between barge and pier is considered as a possible noise source. The Contractor has replaced the cable wire for anchoring between barge and pier with ropes between 27 Dec and 2 Jan to reduce noise impact.	Closed
256	17 Dec 2018	15th December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking and piling activities	N	No exceedance was recorded in the noise monitoring result. The number of PME operated in LTI was consistent with the proposed Construction Noise mitigation Plan (CNMP)	Closed
							The following recommendations were made for the Contractor to enhance the mitigation measures:	
							Ÿ To frequently check and repair operating PME if any loosen or worn parts of the equipment to reduce excessive noise disturbance;	
							Ÿ Noise barriers should be designed and erected around the noise sources to block the direct line-of-sight from the NSR as per the CNMP;	
							To ensure all erected noise barriers and sound proofing canvases wrapped on PME are intact and in good condition.	
254	16 Dec 2018	16th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Ÿ The night-time works were only conducted inside the tunnels with valid CNP. The noise nuisances are not considered as air-borne in nature, but ground-borne noise. 2.17 In order to confirm the possible ground-borne nature of the noise nuisances for complaints summarized in this report, CEDD has engaged the environmental team to conduct ad hoc ground-borne noise monitoring with the coordination of the Engineer. The findings will be provided in a separate report for the ad hoc monitoring.	Closed
253	15 Dec 2018	15th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Refer to the investigation for complaint no. 254	Closed
252	30 Nov 2018	30th November 2018/ Construction of Road D4	Resident of Park Central	Noise & Air	Complained about the construction noise and dust resuspension in Road D4.	Y	The number of PMEs operated on site and on-time percentage from 19 to 30 November complied with the CNMP, thus, no violation was identified.	Closed
							Based on the noise and air monitoring results in November 2018, no Limit Level Exceedance was recorded.	
							Mitigation Measures	
							Ÿ A more effective acoustic barrier was erected between the drill rig and Park Central.	
							Ÿ Frequent water spraying along the Po Yap Road for eight times a day,	
							Stockpile are covered with impervious material to avoid dust resuspension	
251							The complaint lodged on 25th November 2018 is considered as non-project related, as no works was conducted on that day.	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance	Investigation/ Mitigation Action	Status
251	28 Nov 2018	27th November 2018/ Construction of TKO portal	Public	Noise	Complained about the construction noise from the marine works.	Y	The complaint on 27th November 2018 is considered project related. The contractor is reminded to 1) frequently check and repair operating PME if any loosen or worn parts of the	Closed
251							equipment to reduce excessive noise disturbance; 2) Ensure no further use of PA system for marine works.	
250	26 Nov 2018	26th November 2018/ Public sea in TKO	Resident of Ocean Shore	Noise	Complained about the noise nuisance from the operation of derrick barge on Sunday.	Y	Refer to the investigation for complaint no. 251	Closed
249	25 Nov 2018	20th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from the Excavators in LTI on Sunday morning.	Y	Refer to the investigation for complaint no. 251	Closed
248	20 Nov 2018	20th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance during transfer of material in evening time at LTI	Y	Regular noise monitoring results for restricted and non-restricted hours show full compliance of the noise criteria (night-time noise exceedance is considered non-project related). The contractor is reminded to adopt cantilever noise barriers at Lam Tin Interchange to screen noise effectively by screening the line-of-sight from sensitive receivers	Closed
247	20 Nov 2018	19th November 2018/ Lam Tin Interchange	Public	Noise	Complained about the noise nuisance from rock dropping during evening time	Y	Refer to the investigation for complaint no. 248	Closed
246	19 Nov 2018	19th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from dump truck in evening time	Y	Refer to the investigation for complaint no. 248	Closed
245	8 Nov 2018	8th November 2018/ Lam Tin Interchange	Public	Noise	Complained about construction noise during night time from LTI	Y	Refer to the investigation for complaint no. 248	Closed
243	8 Nov 2018	8th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the construction noise during evening time from LTI.	Y	Refer to the investigation for complaint no. 248	Closed
242	7 Nov 2018	7th November 2018/ Lam Tin Interchange	Public	Noise	Complained about the construction noise and dust nuisance.	Y	Refer to the investigation for complaint no. 248	Closed
241	6 Nov 2018	6th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during evening time	Y	Refer to the investigation for complaint no. 248	Closed
240	6 Nov 2018	6th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during evening time	Y	Refer to the investigation for complaint no. 248	Closed

Appendix O - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Table O2 - Summary of Cumulative Complaint Log for Tseung Kwan O - Lam Tin Tunnel

Reporting Month/Year	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
2016	11	0	0
2017	99	1	0
2018	150	0	1
2019	156	0	0
2020	88	0	0
2021	85	0	0
Jan-22	4	0	0
Feb-22	3	0	0
Mar-22	4	0	0
Apr-22	11	0	0
May-22	9	0	0
Total	**620**	**1**	**1**

Table O3 - Cumulative Log for Notifications of Summons

Contract No.	Log Ref.	Date/Location	Subject	Status	Total no. Received in this Reporting Month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS24138/2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	The Summon was issued on 22 Dec 2017 First hearing on 29/3/2018	Noise nuisance during nighttime (C1 - Apr 2021)	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--
NE/2017/06	--	--	--	--	--	--
NE/2017/07	--	--	--	--	--	--

Table O4 - Cumulative Log for Successful Prosecutions

Contract No.	Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS24138/2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	Successful prosecution to the subcontractor on 27 June 2018	1	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--
NE/2017/06	--	--	--	--	--	--
NE/2017/07	--	--	--	--	--	--

APPENDIX P
WASTE GENERATION IN THE REPORTING MONTH

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01

Monthly Summary Waste Flow Table for May 2022

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	17.360	6.604	0.000	0.000	17.360	0.000	0.000	0.000	0.000	0.000	1.607
February	9.396	2.818	0.000	0.000	9.396	0.000	0.000	0.000	0.000	0.000	0.556
March	13.004	5.109	0.000	0.000	13.004	0.000	0.000	0.000	0.000	0.000	1.199
April	15.479	6.773	0.000	0.000	15.479	0.000	0.000	0.000	0.000	0.000	1.412
May	13.225	4.955	0.000	0.000	13.225	0.000	0.000	0.000	0.000	0.000	1.567
June											
Sub-total	68.464	26.259	0.000	0.000	68.464	0.000	0.000	0.000	0.000	0.000	6.341
July											
August											
September											
October											
November											
December											
Total	68.464	26.259	0.000	0.000	68.464	0.000	0.000	0.000	0.000	0.000	6.341

Total inert C&D waste generated = c+d+e

Total inert C&D waste recycled = c+d

% of recycled inert C&D waste = Total C&D waste recycled / Total C&D waste generated

Notes: (1) The performance target are given in PS Clause 6(14)

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

(4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3. (PS Clause 1.105(4) refers)

(5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.

(6) Conversion factors for reporting purpose:

in-situ: rock = 2.5 tonnes/m^3; soil = 2.0 tonnes/m^3

(7) excavated: rock = 2.0 tonnes/m^3; soil = 1.8 tonnes/m^3; broken concrete and bitumen = 2.4 tonnes/m^3, soil and rock = 1.9 tonnes/m^3

(8) C&D Waste = 0.9 tonnes/m^3; bentonite slurry = 2.8 tonnes/m^3

Diesel density: 0.8kg/l

Numbers are rounded off to the nearest three decimal places

The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"

Monthly Summary Waste Flow Table for 2022 Year

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (See note 3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
Jan	0.19505	0.00000	0.00000	0.00000	0.19505	0.00000	30.87000	0.00000	0.00000	0.00000	0.19012
Feb	0.40030	0.00000	0.00000	0.00000	0.40030	0.00000	34.60000	0.00000	0.00000	0.00000	0.12334
Mar	0.26404	0.00000	0.00000	0.00000	0.26404	0.00000	66.80000	0.00000	0.00000	0.00000	0.29312
Apr	0.19612	0.00000	0.00000	0.00000	0.19612	0.00000	8.38000	0.00000	0.00000	0.00000	0.29434
May	0.31517	0.00000	0.00000	0.00000	0.31517	0.00000	71.57000	0.00000	0.00000	0.00000	0.23950
June	0.00000										
SUB-TOTAL	1.37066	0.00000	0.00000	0.00000	1.37066	0.00000	212.22000	0.00000	0.00000	0.00000	1.14042
Jul	0.00000										
Aug	0.00000										
Sep	0.00000										
Oct	0.00000										
Nov	0.00000										
Dec	0.00000										
TOTAL	1.37066	0.00000	0.00000	0.00000	1.37066	0.00000	212.22000	0.00000	0.00000	0.00000	1.14042

Note: **Conversion to 1000m^3 for general refuse is weight in 1000kg multiply by 0.002**

Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Monthly Summary of Waste Flow Table for 2022

Name of Person completing the Record: Steve Wong

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete *(see Note 1)*	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics *(see Note 2)*	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m^3)
Jan	0.175	0	0	0	0.1716	0	0	0	0	0.00845
Feb	0.1881	0	0	0	0.1170	0	0	0	0	0.0711
Mar	0.3261	0	0	0	0.3220	0	0	0	0	0.00413
Apr	0.0405	0	0	0	0.0385	0	0	0	0	0.00195
May	0.7575	0	0	0	0.7300	0	0	0	0	0.0275
Jun	0.0000	0	0	0	0.0000	0	0	0	0	0
Sub-total	1.4872	0	0	0	1.3791	0	0	0	0	0.1047
Jul	0.0000	0	0	0	0.0000	0	0	0	0	0
Aug	0.0000	0	0	0	0.0000	0	0	0	0	0
Sep	0.0000	0	0	0	0.0000	0	0	0	0	0
Oct	0.0000	0	0	0	0.0000	0	0	0	0	0
Nov	0.0000	0	0	0	0.0000	0	0	0	0	0
Dec	0.0000	0	0	0	0.0000	0	0	0	0	0
Total	1.4872	0	0	0	1.3791	0	0	0	0	0.1047

Notes:

(1) Broken concrete for recycling into aggregates.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) Use the conversion factor: 1 full load of 24t / 30t dumping truck being equivalent to 6.5m3 / 8.125 m3 by volume.

GTECH Services (Hong Kong) Limited

Name of Department: Civil Engineering & Development Department

Contract No.: NE/2017/06

Monthly Summary Waste Flow Table For 2022

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. General Refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0	0	0	0	0	0	0	0	0	0	0.006
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0.006
May	0	0	0	0	0	0	0	0	0	0	0.003
Jun											
Sub-total	0	0	0	0	0	0	0	0	0	0	0.015
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0	0	0	0	0	0	0	0	0	0	0.015

Notes:

(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.

(3) Each dump truck carries 6m^3 of general refuse.

(4) The commencement date of the Contract is 9 November 2018. The current reporting period is from 1 May 2022 to 31 May 2022.

Tseung Kwan O - Lam Tin Tunnel - Tseung Kwan O Interchange and Associated Works
(NE/2017/01)

俊和－上隧－中冶聯營
CW - STEC - CMGC JV

Monthly Summary Waste Flow Table for 2022

Name of Department: Civil Engineering and Development Department

Contract No.: NE/2017/01

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0.0018	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0512
Feb	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0167
Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0297
Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0213
May	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0117
Jun											
Sub-total	0.0018	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.1305
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.0018	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.1305

Notes:

1. Assume the density of soil fill is 2 ton/m^3.
2. Assume the density of rock and broken concrete is 2.5 ton/m^3.
3. Assume the density of mixed rock and soil is 1.9 ton/m^3.
4. Assume the density of slurry and bentonite is 2.8 ton/m^3.
5. The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank.
6. Assume the density of C&D waste is 0.9 ton/m^3.
7. The non-inert C&D wastes are disposed at NENT.

Monthly Summary Waste Flow Table for 2022 (year)

Name of Person completing the record: Sedo Sze (EO)

Project : Cross Bay Link, TKO, Main Bridge and Associated Works

Contract No.: NE/2017/07

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0.162	0.000	0.000	0.000	0.162	0.000	0.000	0.171	0.000	0.000	0.768
Feb	0.066	0.000	0.000	0.000	0.066	0.000	0.000	0.210	0.000	0.000	0.513
Mar	0.306	0.000	0.000	0.000	0.306	0.000	0.000	0.163	0.000	0.000	0.750
Apr	0.126	0.000	0.000	0.000	0.126	0.000	0.000	0.182	0.000	0.000	0.552
May	0.054	0.000	0.000	0.000	0.054	0.000	0.000	0.194	0.000	0.000	0.600
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sub-total	0.714	0.000	0.000	0.000	0.714	0.000	0.000	0.920	0.000	0.000	3.184
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.714	0.000	0.000	0.000	0.714	0.000	0.000	0.920	0.000	0.000	3.184

Note:

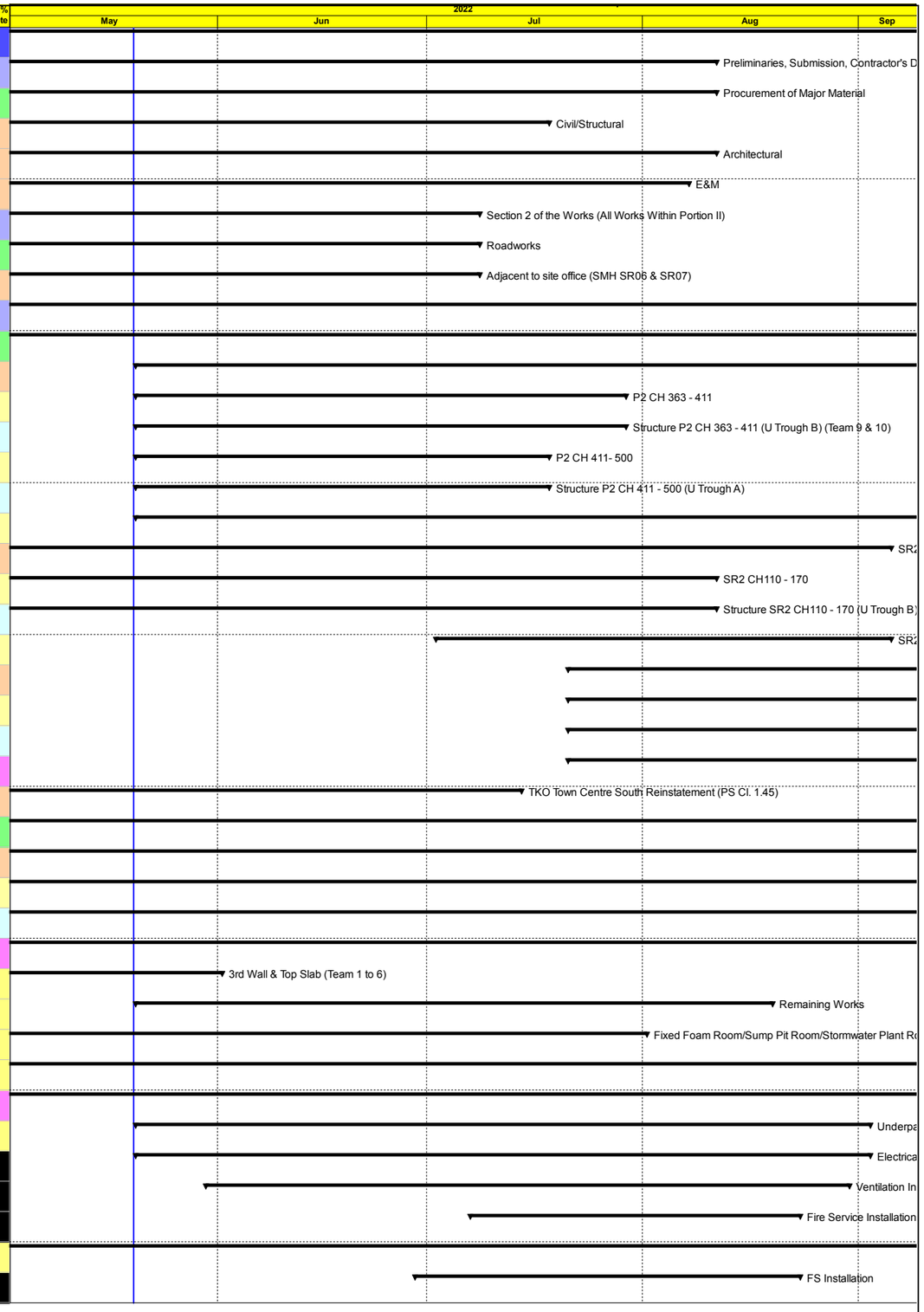
1. For non-inert portion of C&D material, assume the density of 1 m^3 general refuse is equal to 200 kg.
2. For inert portion of C&D material, assume 6 m^3 per each full-filled dump truck.
3. All values are round off to the third decimal places.

APPENDIX Q
TENTATIVE CONSTRUCTION PROGRAMME

High Level 3 Months Look Ahead Programme

Activities	Jun-22	Jul-22	Aug-22
Lam Tin Interchange			
EHC2 U-Trough			
EHC2 Noise Enclosure			
EHC7 U-Trough			
EHC7 Noise Enclosure			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Slope Stabilisation			
Site Formation - Retaining Wall			
Administration Building			
West Ventilation Building			
Bridge Construction			
Emergency Stormwater storage tank + Stormwater pumping station			
Sewage Pumping Station			
S01_2, EHC1 & 4 Construction			
CKLR Underground Utilities			
Underpass S01			
Landscape Deck & Noise Cover			
LTI Drainage			
Road EHC4 site formation works			
Tunnel			
Main Tunnel Lining Works			
Branch Tunnel Lining Works			
Profile Barrier / VE Panel			
S02_2 Excavation & Lining			
Tunnel E&M Works			
TKO Interchange			
Bridge Construction			
East Ventilation Building			
TKO - Underground Utilities / Drainage Works			
TKO - Slope Stabilisation Works			

Calendar	Activity ID	Activity Name	Actual Duration	Remaining Duration	Start	Finish	Activity % Complete
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works			257.0	124.0	08-Sep-21 A	17-Oct-22	
Preliminaries, Submission, Contractor's Design Submission and Approval			203.0	70.0	08-Sep-21 A	11-Aug-22	
Procurement of Major Material			203.0	70.0	08-Sep-21 A	11-Aug-22	
Civil/Structural			254.0	60.0	08-Sep-21 A	18-Jul-22	
Architectural			113.0	70.0	28-Dec-21 A	11-Aug-22	
E&M			242.0	80.0	20-Sep-21 A	07-Aug-22	
Section 2 of the Works (All Works Within Portion II)			113.0	41.0	28-Dec-21 A	08-Jul-22	
Roadworks			113.0	41.0	28-Dec-21 A	08-Jul-22	
Adjacent to site office (SMH SR06 & SR07)			113.0	41.0	28-Dec-21 A	08-Jul-22	
Section 3 of the Works All Works within Portion IV, V, VI, VII,VIII, and IX			197.0	110.0	20-Nov-21 A	28-Sep-22	
Existing Land Section			74.0	102.0	16-Feb-22 A	19-Sep-22	
P2 Road			0.0	98.0	20-May-22	14-Sep-22	
P2 CH 363 - 411			0.0	59.0	20-May-22	29-Jul-22	
Structure P2 CH 363 - 411 (U Trough B) (Team 9 & 10)			0.0	59.0	20-May-22	29-Jul-22	
P2 CH 411- 500			0.0	49.0	20-May-22	18-Jul-22	
Structure P2 CH 411 - 500 (U Trough A)			0.0	49.0	20-May-22	18-Jul-22	
Remaining Works			0.0	98.0	20-May-22	14-Sep-22	
SR2			58.0	91.0	07-Mar-22 A	05-Sep-22	
SR2 CH110 - 170			58.0	70.0	07-Mar-22 A	11-Aug-22	
Structure SR2 CH110 - 170 (U Trough B) (team 11 - 13)			58.0	70.0	07-Mar-22 A	11-Aug-22	
SR2 CH170 - 250			0.0	56.0	02-Jul-22	05-Sep-22	
Portion IV & VII			0.0	51.0	21-Jul-22	19-Sep-22	
Construction of DN2100 stormwater at Portion IV & VII			0.0	51.0	21-Jul-22	19-Sep-22	
Drainage works			0.0	51.0	21-Jul-22	19-Sep-22	
SMH9108-SMH9108A			0.0	51.0	21-Jul-22	19-Sep-22	
TKO Town Centre South Reinstatement (PS Cl. 1.45)			74.0	46.0	16-Feb-22 A	14-Jul-22	
New Reclaimed Section			197.0	110.0	20-Nov-21 A	28-Sep-22	
Land Works			197.0	110.0	20-Nov-21 A	28-Sep-22	
Road P2 Underpass (CH105-CH318)			143.0	96.0	20-Nov-21 A	12-Sep-22	
Underpass			143.0	96.0	20-Nov-21 A	12-Sep-22	
Underpass P2 CH 105 - 318			143.0	95.0	20-Nov-21 A	09-Sep-22	
3rd Wall & Top Slab (Team 1 to 6)			91.0	11.0	24-Jan-22 A	01-Jun-22	
Remaining Works			0.0	77.0	20-May-22	19-Aug-22	
Fixed Foam Room/Sump Pit Room/Stormwater Plant Room			64.0	61.0	28-Feb-22 A	01-Aug-22	
Footpath, Cycle Track, Road and Drainage Works P2 CH 105 - 318			143.0	95.0	20-Nov-21 A	09-Sep-22	
E&M Works			72.0	96.0	18-Feb-22 A	12-Sep-22	
Underpass			0.0	89.0	20-May-22	02-Sep-22	
Electrical Installation			0.0	89.0	20-May-22	02-Sep-22	
Ventilation Installation			0.0	78.0	30-May-22	30-Aug-22	
Fire Service Installation			0.0	41.0	07-Jul-22	23-Aug-22	
Stormwater Plant Room			72.0	96.0	18-Feb-22 A	12-Sep-22	
FS Installation			0.0	47.0	29-Jun-22	23-Aug-22	



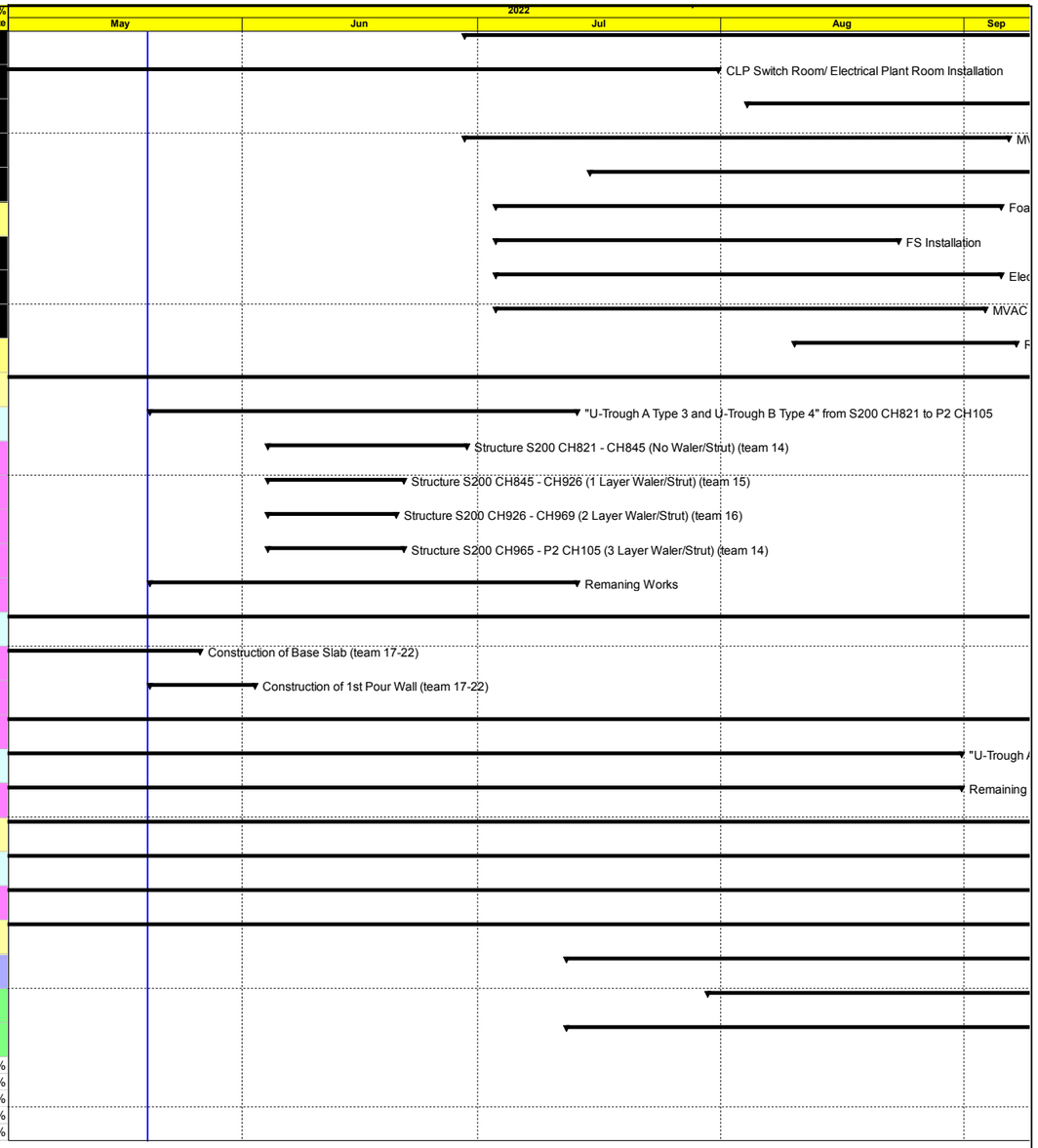
Summary

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works

3 Months Rolling Programme
(May 2022 - August 2022)

Date	Revision	Checked	Approved
08-Jun-22	R0		

Calendar	Activity ID	Activity Name	Actual Duration	Remaining Duration	Start	Finish	Activity % Complete
		Electrical Installation	0.0	76.0	29-Jun-22	12-Sep-22	
		CLP Switch Room/ Electrical Plant Room Installation	72.0	60.0	18-Feb-22 A	31-Jul-22	
		SCADA, MACS, ELV Installation	0.0	32.0	04-Aug-22	09-Sep-22	
		MVAC Installation	0.0	70.0	29-Jun-22	06-Sep-22	
		Plumbing & Drainage Installation	0.0	60.0	15-Jul-22	12-Sep-22	
		Foam Tank & Sump Pit Room	0.0	55.0	03-Jul-22	05-Sep-22	
		FS Installation	0.0	44.0	03-Jul-22	23-Aug-22	
		Electrical Installation	0.0	55.0	03-Jul-22	05-Sep-22	
		MVAC Installation	0.0	54.0	03-Jul-22	03-Sep-22	
		Road Lighting System	0.0	25.0	10-Aug-22	07-Sep-22	
		U-Trough A and B	172.0	110.0	20-Dec-21 A	28-Sep-22	
		"U-Trough A Type 3 and U-Trough B Type 4" from S200 CH821 to P2 CH105	0.0	45.0	20-May-22	13-Jul-22	
		Structure S200 CH821 - CH845 (No Waler/Strut) (team 14)	0.0	22.0	04-Jun-22	29-Jun-22	
		Structure S200 CH845 - CH926 (1 Layer Waler/Strut) (team 15)	0.0	15.0	04-Jun-22	21-Jun-22	
		Structure S200 CH926 - CH969 (2 Layer Waler/Strut) (team 16)	0.0	14.0	04-Jun-22	20-Jun-22	
		Structure S200 CH965 - P2 CH105 (3 Layer Waler/Strut) (team 14)	0.0	15.0	04-Jun-22	21-Jun-22	
		Remaning Works	0.0	45.0	20-May-22	13-Jul-22	
		Retaining Wall Type W1 S200 CH755 - CH821/ S300 CH326 - CH261	172.0	110.0	20-Dec-21 A	28-Sep-22	
		Construction of Base Slab (team 17-22)	49.0	6.0	17-Mar-22 A	26-May-22	
		Construction of 1st Pour Wall (team 17-22)	0.0	12.0	20-May-22	02-Jun-22	
		Remaining Works	172.0	110.0	20-Dec-21 A	28-Sep-22	
		"U-Trough A Type 1 & 2" from S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1	70.0	87.0	21-Feb-22 A	31-Aug-22	
		Remaining Works	70.0	87.0	21-Feb-22 A	31-Aug-22	
		U-Trough C Structures	76.0	96.0	14-Feb-22 A	12-Sep-22	
		"U-Trough C Type 1, 2, 3 & 4" from CT01 CH117.156 - CH366	76.0	96.0	14-Feb-22 A	12-Sep-22	
		Footpath, Cycle Track, Road and Drainage Works CT01 CH117.156 - CH366	76.0	96.0	14-Feb-22 A	12-Sep-22	
		Assoicated Works	107.0	103.0	05-Jan-22 A	20-Sep-22	
		Section 5 of the Works - Landscaping Works	0.0	81.0	12-Jul-22	17-Oct-22	
		Landscape Hardwork	0.0	60.0	30-Jul-22	11-Oct-22	
		Landscape Softwork	0.0	81.0	12-Jul-22	17-Oct-22	
P2-Cal.C	LC25360	Landscape Softworks for P2 Underpass	0.0	34.0	30-Aug-22	11-Oct-22	0%
P2-Cal.C	LC25380	Landscape Softworks for U-Trough C	0.0	81.0	12-Jul-22	17-Oct-22	0%
P2-Cal.C	LC25400	Landscape Softworks for U-Trough A and B	0.0	25.0	06-Aug-22	03-Sep-22	0%
P2-Cal.C	LC25420	Landscape Softworks (Remaining Area)	0.0	19.0	19-Aug-22	09-Sep-22	0%
P2-Cal.C	LC25440	Installation of Water Points for Landscape Works	0.0	60.0	05-Aug-22	17-Oct-22	0%



Summary

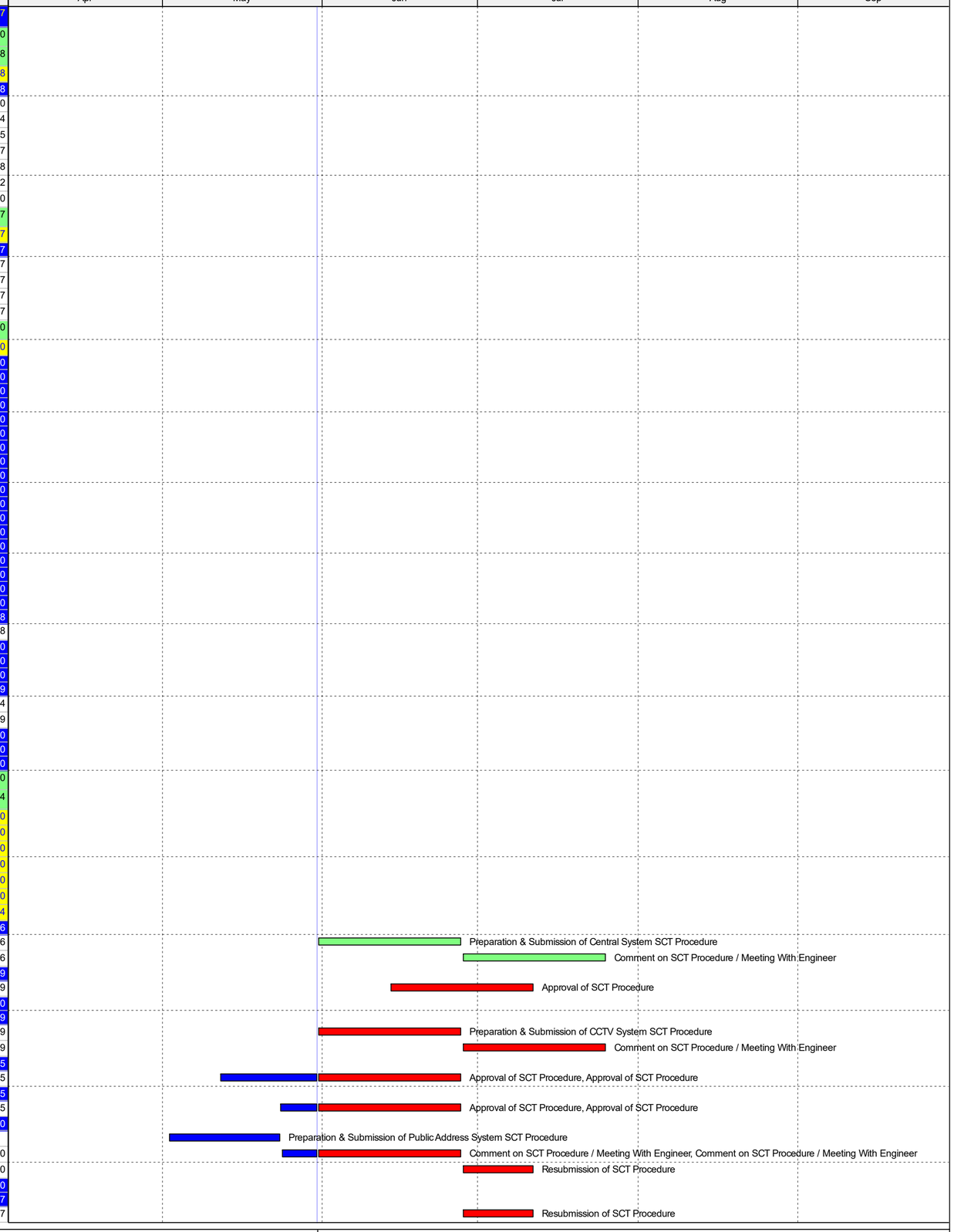
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works

3 Months Rolling Programme
(May 2022 - August 2022)

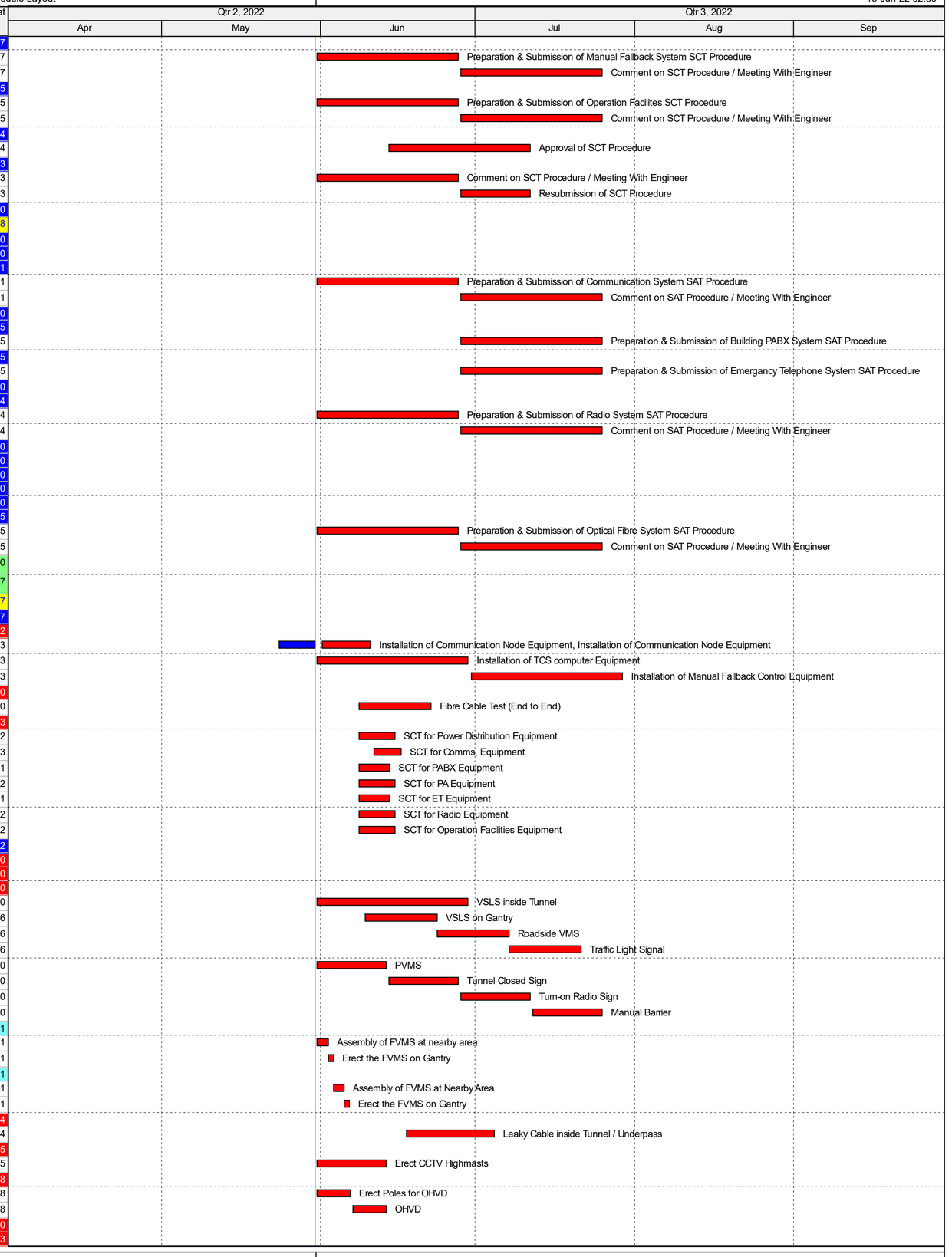
Date	Revision	Checked	Approved
08-Jun-22	R0		

High Level 3 Months Look Ahead Programme			
Activi ties	June -22	July -22	August-22
Trial pit			
Underground utilities detection			
Temporary traffic arrangement Setup			
Road construction			
Asphalt Paving			
Pier, Staircase and lift shaft construction			
Bridge Construction			

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
NE/2017/06-1	NE/2017/06 TKO-LTT TCSS_3MRP	97	52	0%	02-May-22 A	30-Jul-22	517
NE/2017/06-1.CW	Contract Award / Commencement of Works	0	0	0%			0
NE/2017/06-1.AD	Access Date	21	21	0%	31-May-22	21-Jun-22	8
NE/2017/06-1.AD.000	General	21	21	0%	31-May-22	21-Jun-22	8
NE/2017/06-1.AD.000.AD	Access Date	21	21	0%	31-May-22	21-Jun-22	8
DWP10672	Portion 1B of the Site	0	0	0%	31-May-22*		-400
DWP10674	Portion 1C of the Site	0	0	0%	31-May-22*		-444
DWP10676	Portion 2A of the Site	0	0	0%	31-May-22*		-375
DWP10680	Portion 3A of the Site	0	0	0%	31-May-22*		-407
DWP10686	Portion 5A of the Site	0	0	0%	21-Jun-22*		8
DWP10688	Portion 5B of the Site	0	0	0%	31-May-22*		-82
DWP10690	Portion 5C of the Site	0	0	0%	21-Jun-22*		0
NE/2017/06-1.KD	Key Date and Stages / Sections of the Achievement	0	0	0%	29-Jul-22	29-Jul-22	-397
NE/2017/06-1.KD.000	General	0	0	0%	29-Jul-22	29-Jul-22	-397
NE/2017/06-1.KD.000.03	Key Date and Stages / Sections of the Achievement	0	0	0%	29-Jul-22	29-Jul-22	-397
DWP8130	KD4 - Stage 2A Works	0	0	0%		29-Jul-22*	-397
DWP8140	KD5 - Stage 2B Works	0	0	0%		29-Jul-22*	-397
DWP8160	KD7 - Stage 4A Works	0	0	0%		29-Jul-22*	-397
DWP8170	KD8 - Stage 4B Works	0	0	0%		29-Jul-22*	-397
NE/2017/06-1.MD	Cost Centre Milestone Dates	36	36	0%	02-Jun-22	14-Jul-22	530
NE/2017/06-1.MD.1	General	36	36	0%	02-Jun-22	14-Jul-22	530
NE/2017/06-1.MD.1.1	CC B - Central System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.2	CC B1 - Central System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.3	CC C - Traffic Control Devices - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.4	CC C1 - Traffic Control Devices - CBL	0	0	0%			0
NE/2017/06-1.MD.1.5	CC D - Communication System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.6	CC D1 - Communication System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.7	CC E - CCTV System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.8	CC E1 - CCTV System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.9	CC F - Building PABX System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.11	CC G - ET System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.10	CC H - PA System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.12	CC I - Radio System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.13	CC J - Detection System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.15	CC J1 - Detection System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.14	CC K - Manual Fallback System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.16	CC L - Operation Facilities - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.17	CC M - Power Distribution System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.18	CC M1 - Power Distribution System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.19	CC N - Speed Enforcement System - TKOLTT	0	0	0%	30-Jun-22	30-Jun-22	-368
DWP9952	Complete Site Commissioning Test	0	0	0%		30-Jun-22	-368
NE/2017/06-1.MD.1.20	CC N1 - Speed Enforcement System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.21	CC O - Government Optical Fibre System - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.22	CC O1 - Government Optical Fibre System - CBL	0	0	0%			0
NE/2017/06-1.MD.1.23	CC P - Training and Documentation - TKOLTT	42	42	0%	02-Jun-22	14-Jul-22	619
DWP10220	Acceptance of all Training Manuals	0	0	0%		02-Jun-22	-224
DWP10450	Acceptance of Operation and Maintenance Manuals	0	0	0%		14-Jul-22	619
NE/2017/06-1.MD.1.24	CC P1 - Training and Documentation - CBL	0	0	0%			0
NE/2017/06-1.MD.1.25	CC Q - Comprehensive Maintenance Services and DLP - TKOLTT	0	0	0%			0
NE/2017/06-1.MD.1.26	CC Q1 - Comprehensive Maintenance Services and DLP - CBL	0	0	0%			0
NE/2017/06-1.1	Preliminary	0	0	0%			0
NE/2017/06-1.DS	Design Stage	93	48	0%	02-May-22 A	25-Jul-22	14
NE/2017/06-1.DS.PSP	Prepare / Submission of PSP for TKO-LTT TCSS and CBL TCSS	0	0	0%			0
NE/2017/06-1.DS.FSP	Prepare / Submission of FSP For TKO-LTT TCSS and CBL TCSS	0	0	0%			0
NE/2017/06-1.DS.FDS	Preparation of Functional Design Specification (FDS)	0	0	0%			0
NE/2017/06-1.DS.SWD	Software Development (except GUI) for TKO-LTT TCSS and CBL TCSS	0	0	0%			0
NE/2017/06-1.DS.GUI	GUI Development for TKO-LTT TCSS and CBL TCSS	0	0	0%			0
NE/2017/06-1.DS.FAT	Preparation / Submission of FAT Procedures	0	0	0%			0
NE/2017/06-1.DS.SCT	Preparation / Submission of SCT Procedures	93	48	0%	02-May-22 A	25-Jul-22	14
NE/2017/06-1.DS.SCT.1	Central System	56	56	0%	31-May-22	25-Jul-22	16
DWP8260	Preparation & Submission of Central System SCT Procedure	28	28	0%	31-May-22	27-Jun-22	16
DWP8270	Comment on SCT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	16
NE/2017/06-1.DS.SCT.2	Traffic Control Devices	28	28	0%	14-Jun-22	11-Jul-22	-419
DWP8330	Approval of SCT Procedure	28	28	0%	14-Jun-22	11-Jul-22	-419
NE/2017/06-1.DS.SCT.3	Communication System	0	0	0%			0
NE/2017/06-1.DS.SCT.4	CCTV System	56	56	0%	31-May-22	25-Jul-22	-489
DWP8380	Preparation & Submission of CCTV System SCT Procedure	28	28	0%	31-May-22	27-Jun-22	-489
DWP8390	Comment on SCT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-489
NE/2017/06-1.DS.SCT.5	Building PABX System	28	28	0%	12-May-22 A	27-Jun-22	-405
DWP8450	Approval of SCT Procedure	28	28	67.86%	12-May-22 A	27-Jun-22	-405
NE/2017/06-1.DS.SCT.6	Emergancy Telephone System	28	28	0%	24-May-22 A	27-Jun-22	-405
DWP8490	Approval of SCT Procedure	28	28	100%	24-May-22 A	27-Jun-22	-405
NE/2017/06-1.DS.SCT.7	Public Address System	71	42	0%	02-May-22 A	11-Jul-22	-440
DWP8500	Preparation & Submission of Public Address System SCT Procedure	28	0	100%	02-May-22 A	23-May-22 A	
DWP8510	Comment on SCT Procedure / Meeting With Engineer	28	28	25%	24-May-22 A	27-Jun-22	-440
DWP8520	Resubmission of SCT Procedure	14	14	0%	28-Jun-22	11-Jul-22	-440
NE/2017/06-1.DS.SCT.8	Radio System	0	0	0%			0
NE/2017/06-1.DS.SCT.9	Detection System	14	14	0%	28-Jun-22	11-Jul-22	-447
DWP8600	Resubmission of SCT Procedure	14	14	0%	28-Jun-22	11-Jul-22	-447



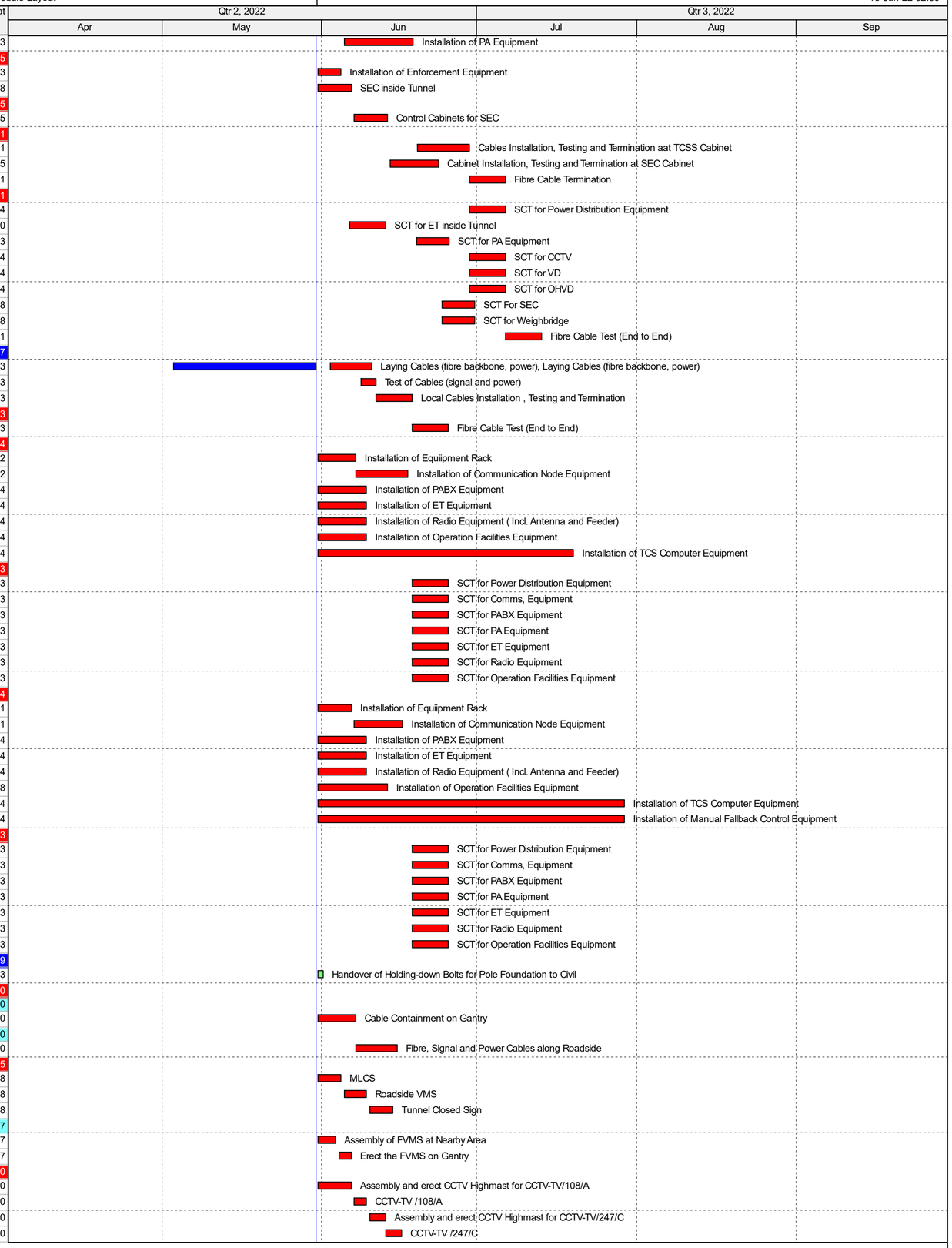
Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
NE/2017/06-1.DS.SCT.10	Manual Fallback System	56	56	0%	31-May-22	25-Jul-22	-447
DWP8620	Preparation & Submission of Manual Fallback System SCT Procedure	28	28	0%	31-May-22	27-Jun-22	-447
DWP8630	Comment on SCT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-447
NE/2017/06-1.DS.SCT.11	Operation Facilities	56	56	0%	31-May-22	25-Jul-22	-475
DWP8660	Preparation & Submission of Operation Facilites SCT Procedure	28	28	0%	31-May-22	27-Jun-22	-475
DWP8670	Comment on SCT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-475
NE/2017/06-1.DS.SCT.12	Power Distribution System	28	28	0%	14-Jun-22	11-Jul-22	-454
DWP8730	Approval of SCT Procedure	28	28	0%	14-Jun-22	11-Jul-22	-454
NE/2017/06-1.DS.SCT.13	Speed Enforcement System	42	42	0%	31-May-22	11-Jul-22	-403
DWP8750	Comment on SCT Procedure / Meeting With Engineer	28	28	0%	31-May-22	27-Jun-22	-403
DWP8760	Resubmission of SCT Procedure	14	14	0%	28-Jun-22	11-Jul-22	-403
NE/2017/06-1.DS.SCT.14	Optical Fibre system	0	0	0%			0
NE/2017/06-1.DS.SAT	Preparation / Submission of SAT Procedures	48	48	0%	31-May-22	25-Jul-22	-298
NE/2017/06-1.DS.SAT.1	Central System	0	0	0%			0
NE/2017/06-1.DS.SAT.2	Traffic control Devices	0	0	0%			0
NE/2017/06-1.DS.SAT.3	Communication System	56	56	0%	31-May-22	25-Jul-22	-391
DWP3190	Preparation & Submission of Communication System SAT Procedure	28	28	0%	31-May-22	27-Jun-22	-391
DWP3200	Comment on SAT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-391
NE/2017/06-1.DS.SAT.4	CCTV System	0	0	0%			0
NE/2017/06-1.DS.SAT.5	Building PABX System	28	28	0%	28-Jun-22	25-Jul-22	-405
DWP3270	Preparation & Submission of Building PABX System SAT Procedure	28	28	0%	28-Jun-22	25-Jul-22	-405
NE/2017/06-1.DS.SAT.6	Emergancy Telephone System	28	28	0%	28-Jun-22	25-Jul-22	-405
DWP3310	Preparation & Submission of Emergancy Telephone System SAT Procedure	28	28	0%	28-Jun-22	25-Jul-22	-405
NE/2017/06-1.DS.SAT.7	Public Address System	0	0	0%			0
NE/2017/06-1.DS.SAT.8	Radio System	56	56	0%	31-May-22	25-Jul-22	-354
DWP3390	Preparation & Submission of Radio System SAT Procedure	28	28	0%	31-May-22	27-Jun-22	-354
DWP3400	Comment on SAT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-354
NE/2017/06-1.DS.SAT.9	Detection System	0	0	0%			0
NE/2017/06-1.DS.SAT.10	Manual Fallback System	0	0	0%			0
NE/2017/06-1.DS.SAT.11	Operation Facilities	0	0	0%			0
NE/2017/06-1.DS.SAT.12	Power Distribution System	0	0	0%			0
NE/2017/06-1.DS.SAT.13	Speed Enforcement System	0	0	0%			0
NE/2017/06-1.DS.SAT.14	Optical Fibre system	56	56	0%	31-May-22	25-Jul-22	-405
DWP3630	Preparation & Submission of Optical Fibre System SAT Procedure	28	28	0%	31-May-22	27-Jun-22	-405
DWP3640	Comment on SAT Procedure / Meeting With Engineer	28	28	0%	28-Jun-22	25-Jul-22	-405
NE/2017/06-1.EMT	Equipment Manufacturing and FAT Stage for TKO-LTT TCSS	0	0	0%			0
NE/2017/06-1.CST	Construction Stage for TKO-LTT TCSS	76	52	0%	03-May-22 A	29-Jul-22	517
NE/2017/06-1.CST.S1A1B	Works For Section 1A and Section 1B	76	52	0%	03-May-22 A	29-Jul-22	517
NE/2017/06-1.CST.S1A1B.1A	Stage 1A Works (ADB within Portion 1A)	66	60	0%	24-May-22 A	29-Jul-22	-367
NE/2017/06-1.CST.S1A1B.1A.3	Administration Building	66	60	0%	24-May-22 A	29-Jul-22	-402
DWP4200	Installation of Communication Node Equipment	10	10	60%	24-May-22 A	10-Jun-22	-353
DWP4260	Installation of TCS computer Equipment	30	30	0%	31-May-22	29-Jun-22	-403
DWP4270	Installation of Manual Fallback Control Equipment	30	30	0%	30-Jun-22	29-Jul-22	-403
NE/2017/06-1.CST.S1A1B.1A.1	Site Commissioning Test of Fibre Cable	14	14	0%	08-Jun-22	22-Jun-22	-330
DWP4170	Fibre Cable Test (End to End)	14	14	0%	08-Jun-22	22-Jun-22	-330
NE/2017/06-1.CST.S1A1B.1A.2	Sub-system Site Comissioning Test	9	9	0%	08-Jun-22	16-Jun-22	-353
DWP4280	SCT for Power Distribution Equipment	7	7	0%	08-Jun-22	15-Jun-22	-352
DWP4290	SCT for Comms, Equipment	6	6	0%	11-Jun-22	16-Jun-22	-353
DWP4300	SCT for PABX Equipment	6	6	0%	08-Jun-22	14-Jun-22	-351
DWP4310	SCT for PA Equipment	7	7	0%	08-Jun-22	15-Jun-22	-352
DWP4320	SCT for ET Equipment	6	6	0%	08-Jun-22	14-Jun-22	-351
DWP4330	SCT for Radio Equipment	7	7	0%	08-Jun-22	15-Jun-22	-352
DWP4340	SCT for Operation Facilities Equipment	7	7	0%	08-Jun-22	15-Jun-22	-352
NE/2017/06-1.CST.S1A1B.1B	Stage 1B Works (Tunnel, Underpass and Open Roads within Portion 1B)	48	48	0%	31-May-22	25-Jul-22	-262
NE/2017/06-1.CST.S1A1B.1B.1	Installation of Cable Containment	0	0	0%			0
NE/2017/06-1.CST.S1A1B.1B.2	Laying Cables	0	0	0%			0
NE/2017/06-1.CST.S1A1B.1B.3	Installation of Traffic Control Field Equipment	56	56	0%	31-May-22	25-Jul-22	-400
DWP4490	VSLS inside Tunnel	30	30	0%	31-May-22	29-Jun-22	-380
DWP4520	VSLS on Gantry	14	14	0%	09-Jun-22	23-Jun-22	-396
DWP4530	Roadside VMS	14	14	0%	23-Jun-22	07-Jul-22	-396
DWP4540	Traffic Light Signal	14	14	0%	07-Jul-22	21-Jul-22	-396
DWP4550	PVMS	14	14	0%	31-May-22	13-Jun-22	-400
DWP4560	Tunnel Closed Sign	14	14	0%	14-Jun-22	27-Jun-22	-400
DWP4570	Turn-on Radio Sign	14	14	0%	28-Jun-22	11-Jul-22	-400
DWP4580	Manual Barrier	14	14	0%	12-Jul-22	25-Jul-22	-400
NE/2017/06-1.CST.S1A1B.1B.3.2	FVMS- FVMS/101/A	3	3	0%	31-May-22	03-Jun-22	-351
DWP44	Assembly of FVMS at nearby area	2	2	0%	31-May-22	02-Jun-22	-351
DWP44	Erect the FVMS on Gantry	1	1	0%	02-Jun-22	03-Jun-22	-351
NE/2017/06-1.CST.S1A1B.1B.3.1	FVMS- FVMS/102/A	3	3	0%	03-Jun-22	06-Jun-22	-351
DWP44	Assembly of FVMS at Nearby Area	2	2	0%	03-Jun-22	05-Jun-22	-351
DWP44	Erect the FVMS on Gantry	1	1	0%	05-Jun-22	06-Jun-22	-351
NE/2017/06-1.CST.S1A1B.1B.4	Installation of Leaky Cable and Radio Equipment	14	14	0%	17-Jun-22	04-Jul-22	-244
DWP4590	Leaky Cable inside Tunnel / Underpass	14	14	0%	17-Jun-22	04-Jul-22	-244
NE/2017/06-1.CST.S1A1B.1B.5	Installation of CCTV	14	14	0%	31-May-22	13-Jun-22	-365
DWP4600	Erect CCTV Highmasts	14	14	0%	31-May-22	13-Jun-22	-365
NE/2017/06-1.CST.S1A1B.1B.6	Installation of Vehicle Detectors	14	14	0%	31-May-22	13-Jun-22	-358
DWP4650	Erect Poles for OHVD	7	7	0%	31-May-22	06-Jun-22	-358
DWP4660	OHVD	7	7	0%	07-Jun-22	13-Jun-22	-358
NE/2017/06-1.CST.S1A1B.1B.7	Installation of ET Equipment insideTunnel	0	0	0%			0
NE/2017/06-1.CST.S1A1B.1B.8	Installation of PA Equipment	14	14	0%	05-Jun-22	18-Jun-22	-363



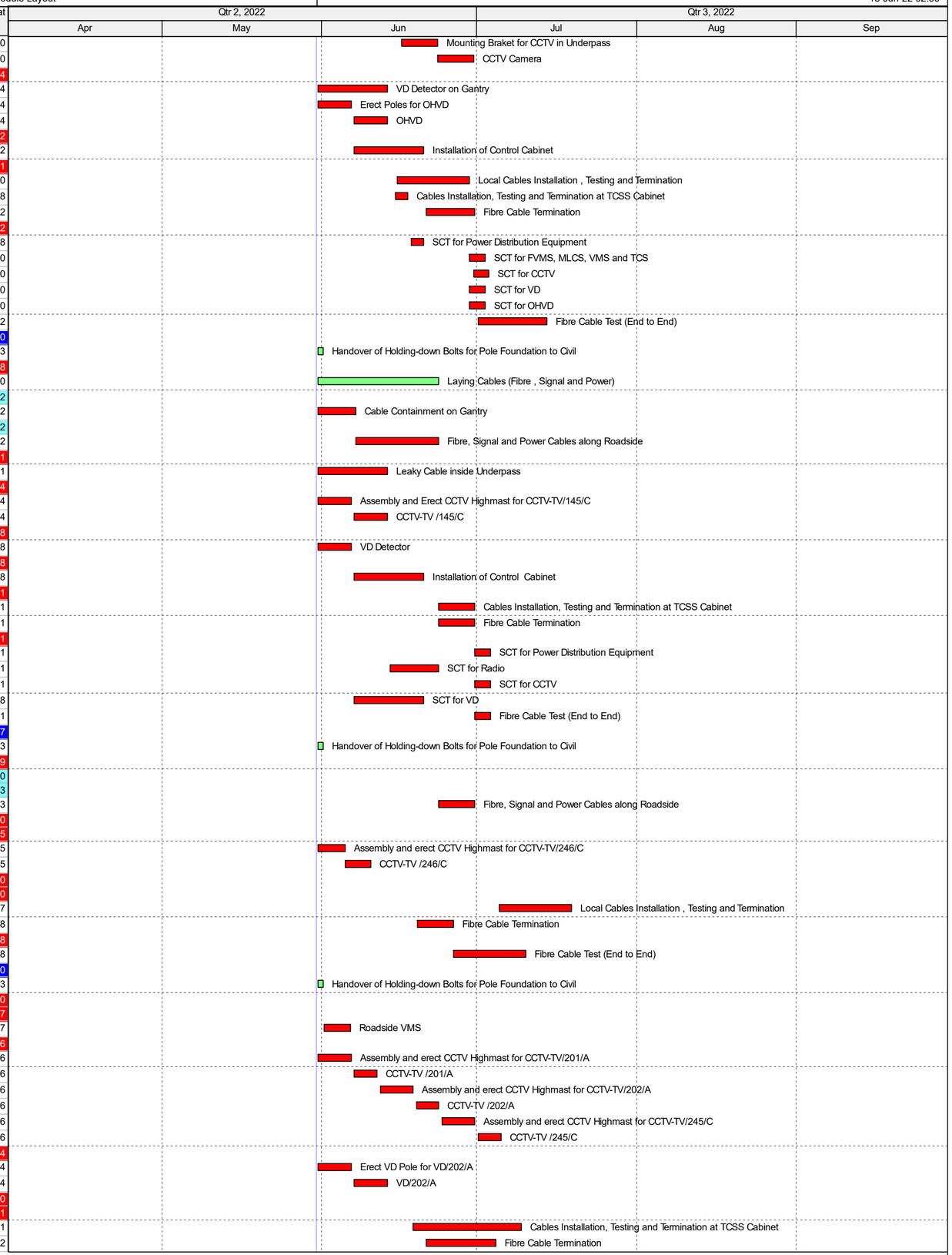
Actual Level of Effort | Remaining Work
Actual Work | Critical Remaining Work

TASK filter: 3M.

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
DWP7790	Installation of PA Equipment	14	14	0%	05-Jun-22	18-Jun-22	-363
NE/2017/06-1.CST.S1A1B.1B.9	Installation of Enforcement Equipment	7	7	0%	31-May-22	06-Jun-22	-365
DWP4665	Installation of Enforcement Equipment	5	5	0%	31-May-22	04-Jun-22	-363
DWP4670	SEC inside Tunnel	7	7	0%	31-May-22	06-Jun-22	-368
NE/2017/06-1.CST.S1A1B.1B.10	Installation of Control Cabinet	7	7	0%	07-Jun-22	13-Jun-22	-375
DWP4700	Control Cabinets for SEC	7	7	0%	07-Jun-22	13-Jun-22	-375
NE/2017/06-1.CST.S1A1B.1B.11	Local Cables Installation, Testing and Termination	23	23	0%	14-Jun-22	06-Jul-22	-381
DWP4710	Cables Installation, Testing and Termination aat TCSS Cabinet	10	10	0%	19-Jun-22	29-Jun-22	-381
DWP4720	Cabinet Installation, Testing and Termination at SEC Cabinet	10	10	0%	14-Jun-22	23-Jun-22	-375
DWP4730	Fibre Cable Termination	7	7	0%	29-Jun-22	06-Jul-22	-381
NE/2017/06-1.CST.S1A1B.1B.12	Site Commissioning Test of TCD and fibre Cable	37	37	0%	06-Jun-22	13-Jul-22	-381
DWP4740	SCT for Power Distribution Equipment	7	7	0%	29-Jun-22	06-Jul-22	-374
DWP4760	SCT for ET inside Tunnel	7	7	0%	06-Jun-22	13-Jun-22	-350
DWP4770	SCT for PA Equipment	7	7	0%	19-Jun-22	25-Jun-22	-363
DWP4780	SCT for CCTV	7	7	0%	29-Jun-22	06-Jul-22	-374
DWP4790	SCT for VD	7	7	0%	29-Jun-22	06-Jul-22	-374
DWP4800	SCT for OHVD	7	7	0%	29-Jun-22	06-Jul-22	-374
DWP4810	SCT For SEC	7	7	0%	24-Jun-22	30-Jun-22	-368
DWP4820	SCT for Weighbridge	7	7	0%	24-Jun-22	30-Jun-22	-368
DWP4830	Fibre Cable Test (End to End)	7	7	0%	06-Jul-22	13-Jul-22	-381
NE/2017/06-1.CST.S1A1B.1C	Stage 1C Works (EVB and WVB within Portion 1C)	88	60	0%	03-May-22 A	29-Jul-22	-367
DWP4880	Laying Cables (fibre backbone, power)	10	8	100%	03-May-22 A	10-Jun-22	-363
DWP4890	Test of Cables (signal and power)	3	3	0%	08-Jun-22	11-Jun-22	-363
DWP4900	Local Cables Installation , Testing and Termination	7	7	0%	11-Jun-22	18-Jun-22	-363
NE/2017/06-1.CST.S1A1B.1C.5	Site Commissioning Test of Fibre Cable	7	7	0%	18-Jun-22	25-Jun-22	-333
DWP5250	Fibre Cable Test (End to End)	7	7	0%	18-Jun-22	25-Jun-22	-333
NE/2017/06-1.CST.S1A1B.1C.2	West Ventilation Building	50	50	0%	31-May-22	19-Jul-22	-394
DWP4910	Installation of Equiipment Rack	8	8	0%	31-May-22	07-Jun-22	-362
DWP4920	Installation of Communication Node Equipment	10	10	0%	07-Jun-22	17-Jun-22	-362
DWP4930	Installation of PABX Equipment	10	10	0%	31-May-22	09-Jun-22	-354
DWP4950	Installation of ET Equipment	10	10	0%	31-May-22	09-Jun-22	-354
DWP4960	Installation of Radio Equipment (Incl. Antenna and Feeder)	10	10	0%	31-May-22	09-Jun-22	-354
DWP4970	Installation of Operation Facilities Equipment	10	10	0%	31-May-22	09-Jun-22	-354
DWP4975	Installation of TCS Computer Equipment	50	50	0%	31-May-22	19-Jul-22	-444
NE/2017/06-1.CST.S1A1B.1C.1	Sub-systems Site Commissioning Test	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP4990	SCT for Power Distribution Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5000	SCT for Comms, Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5010	SCT for PABX Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5020	SCT for PA Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5030	SCT for ET Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5040	SCT for Radio Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5050	SCT for Operation Facilities Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
NE/2017/06-1.CST.S1A1B.1C.3	East Ventilation Building	60	60	0%	31-May-22	29-Jul-22	-404
DWP5080	Installation of Equiipment Rack	7	7	0%	31-May-22	06-Jun-22	-361
DWP5090	Installation of Communication Node Equipment	10	10	0%	07-Jun-22	16-Jun-22	-361
DWP5100	Installation of PABX Equipment	10	10	0%	31-May-22	09-Jun-22	-354
DWP5120	Installation of ET Equipment	10	10	0%	31-May-22	09-Jun-22	-354
DWP5130	Installation of Radio Equipment (Incl. Antenna and Feeder)	10	10	0%	31-May-22	09-Jun-22	-354
DWP5140	Installation of Operation Facilities Equipment	14	14	0%	31-May-22	13-Jun-22	-358
DWP5145	Installation of TCS Computer Equipment	60	60	0%	31-May-22	29-Jul-22	-404
DWP5150	Installation of Manual Fallback Control Equipment	60	60	0%	31-May-22	29-Jul-22	-404
NE/2017/06-1.CST.S1A1B.1C.4	Sub-systems Site Commissioning Test-1	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5170	SCT for Power Distribution Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5180	SCT for Comms, Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5190	SCT for PABX Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5200	SCT for PA Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5210	SCT for ET Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5220	SCT for Radio Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
DWP5230	SCT for Operation Facilities Equipment	7	7	0%	18-Jun-22	25-Jun-22	-363
NE/2017/06-1.CST.S1A1B.2A	Stage 2A Works (Within Portion 2A)	45	45	0%	31-May-22	14-Jul-22	619
DWP5790	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
NE/2017/06-1.CST.S1A1B.2A.1	Laying Cables (Fibre , Signal and Power)	16	16	0%	31-May-22	15-Jun-22	-370
NE/2017/06-1.CST.S1A1B.2A.1.1	Installation of Cable Containment	8	8	0%	31-May-22	07-Jun-22	-370
DWP5€	Cable Containment on Gantry	8	8	0%	31-May-22	07-Jun-22	-370
NE/2017/06-1.CST.S1A1B.2A.1.2	Laying Cables	8	8	0%	07-Jun-22	15-Jun-22	-370
DWP5€	Fibre, Signal and Power Cables along Roadside	8	8	0%	07-Jun-22	15-Jun-22	-370
NE/2017/06-1.CST.S1A1B.2A.2	Installation of Traffic Control Field Equipment	15	15	0%	31-May-22	14-Jun-22	-355
DWP5940	MLCS	5	5	0%	31-May-22	04-Jun-22	-358
DWP5950	Roadside VMS	5	5	0%	05-Jun-22	09-Jun-22	-358
DWP5960	Tunnel Closed Sign	5	5	0%	10-Jun-22	14-Jun-22	-358
NE/2017/06-1.CST.S1A1B.2A.2.1	FVMS - FVMS/201/A	7	7	0%	31-May-22	06-Jun-22	-347
DWP5€	Assembly of FVMS at Nearby Area	4	4	0%	31-May-22	03-Jun-22	-347
DWP5€	Erect the FVMS on Gantry	3	3	0%	04-Jun-22	06-Jun-22	-347
NE/2017/06-1.CST.S1A1B.2A.3	Installation of CCTV	30	30	0%	31-May-22	30-Jun-22	-370
DWP5690	Assembly and erect CCTV Highmast for CCTV-TV/108/A	7	7	0%	31-May-22	06-Jun-22	-370
DWP5700	CCTV-TV /108/A	3	3	0%	07-Jun-22	09-Jun-22	-370
DWP5860	Assembly and erect CCTV Highmast for CCTV-TV/247/C	3	3	0%	10-Jun-22	13-Jun-22	-370
DWP5870	CCTV-TV /247/C	3	3	0%	13-Jun-22	16-Jun-22	-370



Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
DWP5880	Mounting Braket for CCTV in Underpass	7	7	0%	16-Jun-22	23-Jun-22	-370
DWP5890	CCTV Camera	7	7	0%	23-Jun-22	30-Jun-22	-370
NE/2017/06-1.CST.S1A1B.2A.4	Installation of Vehicle Detectors	14	14	0%	31-May-22	13-Jun-22	-354
DWP5720	VD Detector on Gantry	14	14	0%	31-May-22	13-Jun-22	-354
DWP5900	Erect Poles for OHVD	7	7	0%	31-May-22	06-Jun-22	-354
DWP5910	OHVD	7	7	0%	07-Jun-22	13-Jun-22	-354
NE/2017/06-1.CST.S1A1B.2A.5	Installation of Control Cabinet	14	14	0%	07-Jun-22	20-Jun-22	-382
DWP7830	Installation of Control Cabinet	14	14	0%	07-Jun-22	20-Jun-22	-382
NE/2017/06-1.CST.S1A1B.2A.6	Local Cables Installation , Testing and Termination	16	16	0%	15-Jun-22	30-Jun-22	-371
DWP5725	Local Cables Installation , Testing and Termination	14	14	0%	15-Jun-22	29-Jun-22	-370
DWP5730	Cables Installation, Testing and Termination at TCSS Cabinet	3	3	0%	15-Jun-22	17-Jun-22	-358
DWP5740	Fibre Cable Termination	10	10	0%	21-Jun-22	30-Jun-22	-382
NE/2017/06-1.CST.S1A1B.2A.7	Site Comissioning Test of TCD and Fibre Cable	27	27	0%	18-Jun-22	14-Jul-22	-382
DWP5750	SCT for Power Distribution Equipment	3	3	0%	18-Jun-22	20-Jun-22	-358
DWP5760	SCT for FVMS, MLCS, VMS and TCS	3	3	0%	29-Jun-22	02-Jul-22	-370
DWP5770	SCT for CCTV	3	3	0%	30-Jun-22	03-Jul-22	-370
DWP5780	SCT for VD	3	3	0%	29-Jun-22	02-Jul-22	-370
DWP5840	SCT for OHVD	3	3	0%	29-Jun-22	02-Jul-22	-370
DWP5850	Fibre Cable Test (End to End)	14	14	0%	01-Jul-22	14-Jul-22	-382
NE/2017/06-1.CST.S1A1B.2B	Stage 2B Works (Within Portion 2B)	29	29	0%	31-May-22	03-Jul-22	540
DWP5270	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
NE/2017/06-1.CST.S1A1B.2B.1	Laying Cables (Fibre , Signal and Power)	21	21	0%	31-May-22	23-Jun-22	548
DWP2315	Laying Cables (Fibre , Signal and Power)	24	24	0%	31-May-22	23-Jun-22	640
NE/2017/06-1.CST.S1A1B.2B.1.1	Installation of Cable Containment	8	8	0%	31-May-22	07-Jun-22	-372
DWP53	Cable Containment on Gantry	8	8	0%	31-May-22	07-Jun-22	-372
NE/2017/06-1.CST.S1A1B.2B.1.2	Laying Cables	14	14	0%	07-Jun-22	23-Jun-22	-312
DWP53	Fibre, Signal and Power Cables along Roadside	14	14	0%	07-Jun-22	23-Jun-22	-312
NE/2017/06-1.CST.S1A1B.2B.2	Installation of Leaky Cable and Radio Equipment	14	14	0%	31-May-22	13-Jun-22	-361
DWP5350	Leaky Cable inside Underpass	14	14	0%	31-May-22	13-Jun-22	-361
NE/2017/06-1.CST.S1A1B.2B.3	Installation of CCTV	14	14	0%	31-May-22	13-Jun-22	-354
DWP5330	Assembly and Erect CCTV Highmast for CCTV-TV/145/C	7	7	0%	31-May-22	06-Jun-22	-354
DWP5340	CCTV-TV /145/C	7	7	0%	07-Jun-22	13-Jun-22	-354
NE/2017/06-1.CST.S1A1B.2B.4	Installation of Vehicle Detectors	7	7	0%	31-May-22	06-Jun-22	-358
DWP5360	VD Detector	7	7	0%	31-May-22	06-Jun-22	-358
NE/2017/06-1.CST.S1A1B.2B.5	Installation of Control Cabinet	14	14	0%	07-Jun-22	20-Jun-22	-368
DWP7850	Installation of Control Cabinet	14	14	0%	07-Jun-22	20-Jun-22	-368
NE/2017/06-1.CST.S1A1B.2B.6	Local Cables Installation , Testing and Termination	7	7	0%	23-Jun-22	30-Jun-22	-371
DWP5370	Cables Installation, Testing and Termination at TCSS Cabinet	7	7	0%	23-Jun-22	30-Jun-22	-371
DWP5380	Fibre Cable Termination	7	7	0%	23-Jun-22	30-Jun-22	-371
NE/2017/06-1.CST.S1A1B.2B.7	Site Comissioning Test of TCD and Fibre Cable	27	27	0%	07-Jun-22	03-Jul-22	-371
DWP5390	SCT for Power Distribution Equipment	3	3	0%	30-Jun-22	03-Jul-22	-371
DWP5400	SCT for Radio	10	10	0%	14-Jun-22	23-Jun-22	-361
DWP5410	SCT for CCTV	3	3	0%	30-Jun-22	03-Jul-22	-371
DWP5420	SCT for VD	14	14	0%	07-Jun-22	20-Jun-22	-358
DWP5430	Fibre Cable Test (End to End)	3	3	0%	30-Jun-22	03-Jul-22	-371
NE/2017/06-1.CST.S1A1B.3	Stage 3 Works (Within Portion 3A)	42	42	0%	31-May-22	19-Jul-22	527
DWP5440	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
NE/2017/06-1.CST.S1A1B.3.1	Laying Cables (fibre , signal and power)	6	6	0%	23-Jun-22	30-Jun-22	-339
NE/2017/06-1.CST.S1A1B.3.1.1	Installation of Cable Containment	0	0	0%			0
NE/2017/06-1.CST.S1A1B.3.1.2	Laying Cables	7	7	0%	23-Jun-22	30-Jun-22	-403
DWP54	Fibre, Signal and Power Cables along Roadside	7	7	0%	23-Jun-22	30-Jun-22	-403
NE/2017/06-1.CST.S1A1B.3.2	Installation of Traffic Control Field Equipment	0	0	0%			0
NE/2017/06-1.CST.S1A1B.3.3	Installation of CCTV	11	11	0%	31-May-22	10-Jun-22	-355
DWP6020	Assembly and erect CCTV Highmast for CCTV-TV/246/C	6	6	0%	31-May-22	05-Jun-22	-355
DWP6030	CCTV-TV /246/C	5	5	0%	05-Jun-22	10-Jun-22	-355
NE/2017/06-1.CST.S1A1B.3.5	Installation of Control Cabinet	0	0	0%			0
NE/2017/06-1.CST.S1A1B.3.6	Local Cables Installation , Testing and Termination	30	30	0%	19-Jun-22	19-Jul-22	-400
DWP5515	Local Cables Installation , Testing and Termination	14	14	0%	05-Jul-22	19-Jul-22	-407
DWP5530	Fibre Cable Termination	7	7	0%	19-Jun-22	26-Jun-22	-378
NE/2017/06-1.CST.S1A1B.3.7	Site Comissioning Test of TCD and Fibre Cable	14	14	0%	26-Jun-22	10-Jul-22	-378
DWP5570	Fibre Cable Test (End to End)	14	14	0%	26-Jun-22	10-Jul-22	-378
NE/2017/06-1.CST.S1A1B.4A	Stage 4A Works (Bridges within Portion 4A)	39	39	0%	31-May-22	14-Jul-22	530
DWP5970	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
NE/2017/06-1.CST.S1A1B.4A.1	Laying Cables (fibre , signal and power)	0	0	0%			0
NE/2017/06-1.CST.S1A1B.4A.2	Installation of Traffic Control Field Equipment	5	5	0%	01-Jun-22	06-Jun-22	-347
DWP5665	Roadside VMS	5	5	0%	01-Jun-22	06-Jun-22	-347
NE/2017/06-1.CST.S1A1B.4A.3	Installation of CCTV	36	36	0%	31-May-22	05-Jul-22	-376
DWP6040	Assembly and erect CCTV Highmast for CCTV-TV/201/A	7	7	0%	31-May-22	06-Jun-22	-376
DWP6050	CCTV-TV /201/A	5	5	0%	07-Jun-22	11-Jun-22	-376
DWP6060	Assembly and erect CCTV Highmast for CCTV-TV/202/A	7	7	0%	12-Jun-22	18-Jun-22	-376
DWP6070	CCTV-TV /202/A	5	5	0%	19-Jun-22	23-Jun-22	-376
DWP6080	Assembly and erect CCTV Highmast for CCTV-TV/245/C	7	7	0%	24-Jun-22	30-Jun-22	-376
DWP6090	CCTV-TV /245/C	5	5	0%	01-Jul-22	05-Jul-22	-376
NE/2017/06-1.CST.S1A1B.4A.4	Installation of Vehicle Detectors	14	14	0%	31-May-22	13-Jun-22	-354
DWP6100	Erect VD Pole for VD/202/A	7	7	0%	31-May-22	06-Jun-22	-354
DWP6110	VD/202/A	7	7	0%	07-Jun-22	13-Jun-22	-354
NE/2017/06-1.CST.S1A1B.4A.5	Installation of Control Cabinet	0	0	0%			0
NE/2017/06-1.CST.S1A1B.4A.6	Local Cables Installation , Testing and Termination	21	21	0%	18-Jun-22	09-Jul-22	-381
DWP5600	Cables Installation, Testing and Termination at TCSS Cabinet	21	21	0%	18-Jun-22	09-Jul-22	-381
DWP5610	Fibre Cable Termination	14	14	0%	21-Jun-22	04-Jul-22	-382

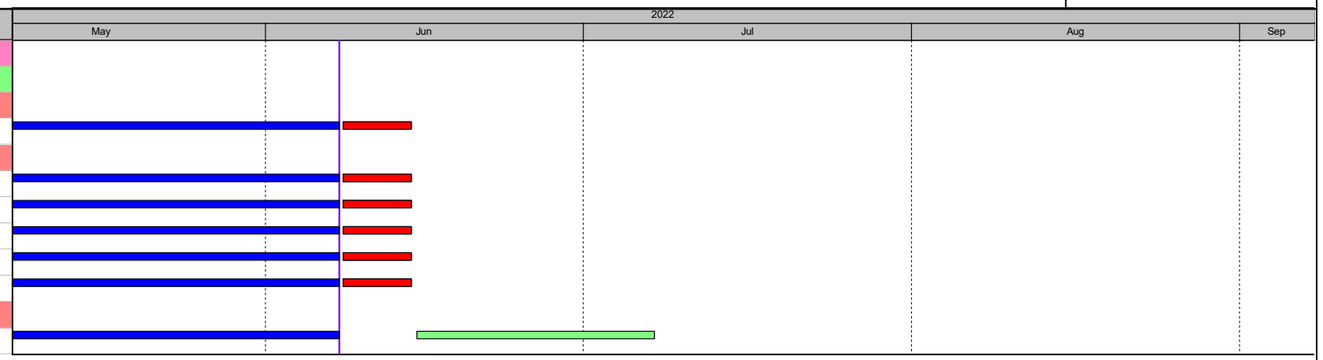


Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float
NE/2017/06-1.CST.S1A1B.4A.7	Site Comissioning Test of TCD and Fibre Cable	10	10	0%	05-Jul-22	14-Jul-22	-382
DWP5620	SCT for Power Distribution Equipment	4	4	0%	09-Jul-22	13-Jul-22	-381
DWP5625	SCT for VSLS and VMS	3	3	0%	09-Jul-22	12-Jul-22	-380
DWP5640	SCT for CCTV	3	3	0%	09-Jul-22	12-Jul-22	-380
DWP5645	SCT for VD	3	3	0%	09-Jul-22	12-Jul-22	-380
DWP5650	Fibre Cable Test (End to End)	10	10	0%	05-Jul-22	14-Jul-22	-382
NE/2017/06-1.CST.S1A1B.4B	Stage 4B Works (Bridges within Portion 4B)	17	17	0%	31-May-22	16-Jun-22	647
DWP6220	Handover of Holding-down Bolts for Pole Foundation to Civil	3	3	0%	31-May-22	02-Jun-22	661
DWP6270	Laying Cables (Fibre, Signal and Power) along Roadside	7	7	0%	31-May-22	06-Jun-22	-354
NE/2017/06-1.CST.S1A1B.4B.4	Installation of Vehicle Detectors	10	10	0%	31-May-22	09-Jun-22	-354
DWP6200	Erect VD Pole for VD/105/A	3	3	0%	31-May-22	02-Jun-22	-354
DWP6210	VD/105/A	7	7	0%	03-Jun-22	09-Jun-22	-354
NE/2017/06-1.CST.S1A1B.4B.1	Insstallation of Control Cabinet	1	1	0%	31-May-22	01-Jun-22	-352
DWP7870	Installation of Control Cabinet	1	1	0%	31-May-22	01-Jun-22	-352
NE/2017/06-1.CST.S1A1B.4B.6	Local Cables Installation , Testing and Termination	12	12	0%	01-Jun-22	12-Jun-22	-354
DWP6145	Local Cables Installation (fibre , signal and power) along Roadside	3	3	0%	07-Jun-22	09-Jun-22	-354
DWP6150	Cables Installation, Testing and Termination at TCSS Cabinet	3	3	0%	10-Jun-22	12-Jun-22	-354
DWP6160	Fibre Cable Termination	7	7	0%	01-Jun-22	08-Jun-22	-352
NE/2017/06-1.CST.S1A1B.4B.7	Site Comissioning Test of TCD and Fibre Cable	9	9	0%	08-Jun-22	16-Jun-22	-354
DWP6170	SCT for Power Distribution Equipment	3	3	0%	13-Jun-22	15-Jun-22	-353
DWP6180	SCT for VD	4	4	0%	13-Jun-22	16-Jun-22	-354
DWP6190	Fibre Cable Test (End to End)	7	7	0%	08-Jun-22	15-Jun-22	-352
NE/2017/06-1.SATT	SAT for TKO-LTT TCSS	0	0	0%			0
NE/2017/06-1.OPTT	Operability Period Test for the TKO-LTT TCSS	0	0	0%			0
NE/2017/06-1.DLPT	DLP for the TKO-LTT TCSS	0	0	0%			0
NE/2017/06-1.DOC1	Documentation Submission for TKO-LTT TCSS	45	45	0%	31-May-22	14-Jul-22	619
DWP10780	System Description	6	6	0%	31-May-22	05-Jun-22	658
DWP10790	Operation Manual	5	5	0%	31-May-22	04-Jun-22	-226
DWP10800	System Adminstration Manual	11	11	0%	31-May-22	11-Jun-22	653
DWP10820	Equipment Mainterance Manual	45	45	0%	31-May-22	14-Jul-22	619
NE/2017/06-1.TRT	Training for TKO-LTT TCSS	0	0	0%			0
NE/2017/06-1.EMC	Equipment Manufacturing and Delivery for CBL TCSS	0	0	0%			0
NE/2017/06-1.CSC1	Construction Stage for CBL TCSS	52	52	0%	31-May-22	30-Jul-22	517
NE/2017/06-1.CSC1.S2A2B	Works for Section 2A and Section 2B	52	52	0%	31-May-22	30-Jul-22	517
NE/2017/06-1.CSC1.S2A2B.5A	Stage 5 Works (Within Portion 5A)	21	21	0%	21-Jun-22	14-Jul-22	530
DWP6630	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	21-Jun-22	22-Jun-22	642
DWP6660	Rectification of Civil provisions Defects by others	16	16	0%	21-Jun-22	06-Jul-22	8
NE/2017/06-1.CSC1.S2A2B.5A.1	Laying Cables (fibre, signal and power)	8	8	0%	06-Jul-22	14-Jul-22	9
DWP6690	Installation of Cable Containment	8	8	0%	06-Jul-22	14-Jul-22	9
NE/2017/06-1.CSC1.S2A2B.5A.2	Installation of Traffic Control Field Equipment	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5A.3	Installation of CCTV	8	8	0%	06-Jul-22	14-Jul-22	27
DWP6740	Assembly and Erect CCTV Highmast for CCTV-TV/144/C	8	8	0%	06-Jul-22	14-Jul-22	27
NE/2017/06-1.CSC1.S2A2B.5A.4	Installation of Control Cabinet	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5A.5	Local Cables Installation, Testing and Termination	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5A.6	Site Commissioning Test of TCD and Fibre Cable	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B	Stage 5 Works (Within Portion 5B)	48	48	0%	31-May-22	25-Jul-22	521
DWP6830	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
DWP6860	Rectification of Civil provisions Defects by others	28	28	0%	28-Jun-22	25-Jul-22	-82
NE/2017/06-1.CSC1.S2A2B.5B.1	Laying Cables (fibre, signal and power)	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.2	Installation of Traffic Control Field Equipment	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.3	Installation of CCTV	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.4	Installation of Detection System Equipment	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.8	Installation of Enforcement Equipment	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.7	Installation of Control Cabinet	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.5	Local Cables Installation, Testing and Termination	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5B.6	Site Commissioning Test of TCD and Fibre Cable	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5C	Stage 5 Works (Within Portion 5C)	52	52	0%	31-May-22	30-Jul-22	517
DWP7130	Handover of Holding-down Bolts for Pole Foundation to Civil	1	1	0%	31-May-22	01-Jun-22	663
DWP7140	Portion 5C Access Date	0	0	0%	21-Jun-22	21-Jun-22	0
DWP7150	Inspection of Civil Provisions and Submit Inspection Report	8	8	0%	21-Jun-22	28-Jun-22	0
DWP7160	Rectification of Civil Provisions Defects by others	16	16	0%	28-Jun-22	14-Jul-22	0
NE/2017/06-1.CSC1.S2A2B.5C.1	Laying Cables (fibre, signal and power)	16	16	0%	14-Jul-22	30-Jul-22	0
DWP7165	Laying Cables (fibre , signal and power)	16	16	0%	14-Jul-22	30-Jul-22	0
DWP7170	Installation of Cable Containment	8	8	0%	14-Jul-22	22-Jul-22	0
NE/2017/06-1.CSC1.S2A2B.5C.2	Installation of Traffic Control Field Equipment	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5C.3	Installation of CCTV	5	5	0%	14-Jul-22	19-Jul-22	12
DWP7270	Mounting Bracket for CCTV in Enlosure / Underpass	5	5	0%	14-Jul-22	19-Jul-22	12
NE/2017/06-1.CSC1.S2A2B.5C.7	Installation of Control Cabinet	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5C.5	Local Cables Installation, Testing and Termination	0	0	0%			0
NE/2017/06-1.CSC1.S2A2B.5C.6	Site Commissioning Test of TCD and Fibre Cable	0	0	0%			0
NE/2017/06-1.SATC	SAT for CBL TCSS	0	0	0%			0
NE/2017/06-1.OPTC	Operability Period Test For the CBL TCSS	0	0	0%			0
NE/2017/06-1.DLPC	DLP for the CBL TCSS	0	0	0%			0
NE/2017/06-1.DOC	Documentation Submission for CBL TCSS	0	0	0%			0
NE/2017/06-1.TRC	Training for CBL TCSS	0	0	0%			0

NE/2017/01 Tseung Kwan O - Lam Tin Tunnel- Tseung Kwan O Interchange and Associated Works

4-months Rolling programme

Activity ID	Activity Name	Original Duration	Start	Finish
Tseung Kwan O Interchange and Associated Works 202205-env				
Construction Work				
Bridge Parapet & Utility Trough				
CON-15451	Installation of Movement Joint for Bridge S200	21	18-Aug-21 A	14-Jun-22
Bridge Furniture & Road Work				
CON-15560	Road Pavement and Road Marking for Bridge ML	58	10-Jul-21 A	14-Jun-22
CON-15629	Install Precast Cover for Bridge S100	40	20-Oct-21 A	14-Jun-22
CON-15650	Road Pavement and Road Marking for Bridge S100	49	29-Oct-21 A	14-Jun-22
CON-15590	Road Pavement and Road Marking for Bridge S300	43	05-Nov-21 A	14-Jun-22
CON-15620	Road Pavement and Road Marking for Bridge S200	43	05-Nov-21 A	14-Jun-22
Outstandarding Works				
CON-16090	Outstanding Works	72	15-Feb-22 A	07-Jul-22



Works Critical Works Actual

Data Date :08-May-22
Sheet 1 of 5

Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Physical % Complete
Cross Bay Link,Tseung Kwan O Main Bridge and Associated Works		732	180	12-Jun-21 A	03-Nov-22	
Access Date		0	0	08-May-22	08-May-22	
PAD1110	Access to Portion VI (NCE198 -Delay Access to Portion VI on 30 April 2022)	0	0	08-May-22*		0%
Contractual Key Dates and Section of the Works		0	0	08-May-22	08-May-22	
Resived Contractual Key Dates and Section of the Works		0	0	08-May-22	08-May-22	
Area Handover Date		0	0	08-May-22	08-May-22	
PAD1130	Access to Portion VI	0	0	08-May-22*		0%
Preliminaries, Contractor's Design & Method Statement Submission & Approval		111	10	12-Jun-21 A	17-May-22	
Contractor's Design Submission and Approval		111	10	12-Jun-21 A	17-May-22	
CDS1230	Design of cycle rack (incl. 14 days TRA)	111	10	12-Jun-21 A	17-May-22	75%
Precasting & Fabrication Works		20	0	20-Apr-22 A	03-May-22 A	
Fabrication of Precast Segments (TKOI Entrustment Works)		20	0	20-Apr-22 A	03-May-22 A	
Pre-stressing Works		20	0	20-Apr-22 A	03-May-22 A	
Pre-stressing Works for Bridge S400		18	0	20-Apr-22 A	25-Apr-22 A	
P-PF6080	Linking and stressing for 5F-5G (Linking yard No.2)	18	0	20-Apr-22 A	25-Apr-22 A	100%
Pre-stressing Works for Bridge CT		18	0	22-Apr-22 A	02-May-22 A	
P-PF7020	Linking and stressing for 9F-9G (Linking yard No.1)	10	0	22-Apr-22 A	26-Apr-22 A	100%
P-PF7080	Linking and stressing for 9G-9H (Linking yard No.2)	10	0	30-Apr-22 A	02-May-22 A	100%
Pre-stressing Works for Bridge S200		17	0	28-Apr-22 A	03-May-22 A	
P-PF8020	Linking and stressing for 2K-2L (Linking yard No.3)	10	0	28-Apr-22 A	29-Apr-22 A	100%
P-PF8040	Linking and stressing for 2J-2K (Linking yard No.2)	10	0	29-Apr-22 A	03-May-22 A	100%
Section 1 of the Works- All Works within Portion I of the Site (Entrusted Works of TKOI Viaduct)		262	142	31-Dec-21 A	26-Sep-22	
Construction Work (Works Available for Piles 5D,9D,5E, 9E, 5F, 9F, 5H, 9H, 1L, 2L)		159	37	31-Dec-21 A	15-Jun-22	
Stitching Work, TCSS, Duct and Handover Works		159	37	31-Dec-21 A	15-Jun-22	
S1-SW0095	Delivery of parapet skin for Bridge ML (NCE No.177 - target to Hong Kong on 10 May 2022)	0	0		10-May-22*	0%
S1-SW1000	Stitching works, lay TCSS duct and handover for ML (NCE185) (NCE177: delay delivery of parapet skin target on 10 May 22)	63	31	31-Dec-21 A	15-Jun-22	35%
S1-SW1015	Delivery of sign gantry at L1-W5 (NCE No.179: target to Hong Kong 23 May 22)	0	0		23-May-22*	0%
S1-SW1020	Construction of sign gantry at L1-W5	20	20	23-May-22	15-Jun-22	0%
S1-SW1040	Completion of Key Date 3A	0	0		15-Jun-22	0%
Construction Work (Works Available for Piles 5B,9B,5C,9C,5G,9G,2K)		155	142	11-Apr-22 A	26-Sep-22	
Footway and cycle track, Road Surfacing, Street Furniture Installation and Remaining Works		86	86	16-Jun-22	26-Sep-22	
S1-RW3000	Road pavemnt, street furniture installation, road marking and remaining works for Bridge ML	60	60	16-Jun-22	25-Aug-22	0%
S1-RW3020	Road pavement, street furniture installation, road marking and remaining works for Bridge S400	70	70	06-Jul-22	26-Sep-22	0%
S1-RW3040	Footway and cycle track, street furniture installation, and remaining Works for Bridge CT	70	70	06-Jul-22	26-Sep-22	0%
S1-RW3060	Road pavement, street furniture installation, road marking and remaining works for Bridge S200	49	49	15-Jul-22	09-Sep-22	0%
Construction Work for Piers 5B, 9B, 5C,9C, 5G,9G		83	70	15-Apr-22 A	16-Jul-22	
Installation of Precast Pier & 2nd Pour for Pile Cap		10	0	22-Apr-22 A	04-May-22 A	
Installation of Precast Pier & 2nd Pour for Pile Cap - 9G		7	0	24-Apr-22 A	04-May-22 A	
S1-PP3160	Installation of precast pier and 2st pour for pile cap 9G	7	0	24-Apr-22 A	04-May-22 A	100%
Installation of Precast Pier & 2nd Pour for Pile Cap - 5G		10	0	22-Apr-22 A	04-May-22 A	
S1-PP3240	Installation of precast pier and 2st pour for pile cap 5G	10	0	22-Apr-22 A	04-May-22 A	100%
Stage 2 - Erection of Bridge Segments		23	10	15-Apr-22 A	17-May-22	
Erection of Bridge Segments for Bridge S400 and Bridge CT		23	10	15-Apr-22 A	17-May-22	
Segment erection between Pier 5F and Pier 5G - Stage 2-13		1	1	13-May-22	13-May-22	
S1-EB2075	Segment erection between Pier 5Fand Pier 5G	1	1	13-May-22	13-May-22	0%
Segment erection between Pier 9F and Pier 9G - Stage 2-14		1	1	15-May-22	15-May-22	
S1-EB2081	Segment erection between Pier 9F and Pier 9G	1	1	15-May-22	15-May-22	0%
Segment erection between Pier 5G and Pier 5H - Stage 2-15		1	1	16-May-22	16-May-22	
S1-EB2091	Segment erection between Pier 5G and Pier 5H	1	1	16-May-22	16-May-22	0%
Segment erection between Pier 9G and Pier 9H- Stage 2-16		1	1	17-May-22	17-May-22	
S1-EB2101	Segment erection between Pier 9G and Pier 9H	1	1	17-May-22	17-May-22	0%
Delivery of Segments		21	10	15-Apr-22 A	17-May-22	
S1-EB2050	Preparation work and delivery works for segment between Pier 5C and 5D (B1-3)	10	0	15-Apr-22 A	07-May-22 A	100%
S1-EB2060	Preparation work and delivery works for segment between Pier 9C and Pier 9D (B2-3)	10	0	20-Apr-22 A	08-May-22 A	100%
S1-EB2070	Preparation work and delivery works for segment between Pier 5F and Pier 5G (B5-1)	10	0	27-Apr-22 A	07-May-22 A	100%
S1-EB2080	Preparation work and delivery works for segment between Pier 9F and Pier 9G (B6-1)	10	0	28-Apr-22 A	08-May-22 A	100%
S1-EB2090	Preparation work and delivery works for segment between Pier 5G and Pier 5H (B3-2)	10	4	27-Apr-22 A	11-May-22	35%
S1-EB2100	Preparation work and delivery works for segment between Pier 9G and Pier 9H (B4-2)	10	5	25-Apr-22 A	12-May-22	30%
S1-EB3010	Preparation work and delivery works for Pier 2J and Pier 2K (B5-2)	10	10	08-May-22	17-May-22	0%
S1-EB3020	Preparation work and delivery works for between Pier 2K and Pier 2L (B6-2)	10	10	08-May-22	17-May-22	0%
Segment erection between Pier 5B and Pier 5C - Stage 2-9		1	0	25-Apr-22 A	25-Apr-22 A	
S1-EB2035	Segment erection between Pier 5B and Pier 5C	1	0	25-Apr-22 A	25-Apr-22 A	100%
Segment erection between Pier 9B and Pier 9C - Stage 2-10		1	0	26-Apr-22 A	26-Apr-22 A	
S1-EB2045	Segment erection between Pier 9B and Pier 9C	1	0	26-Apr-22 A	26-Apr-22 A	100%

Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

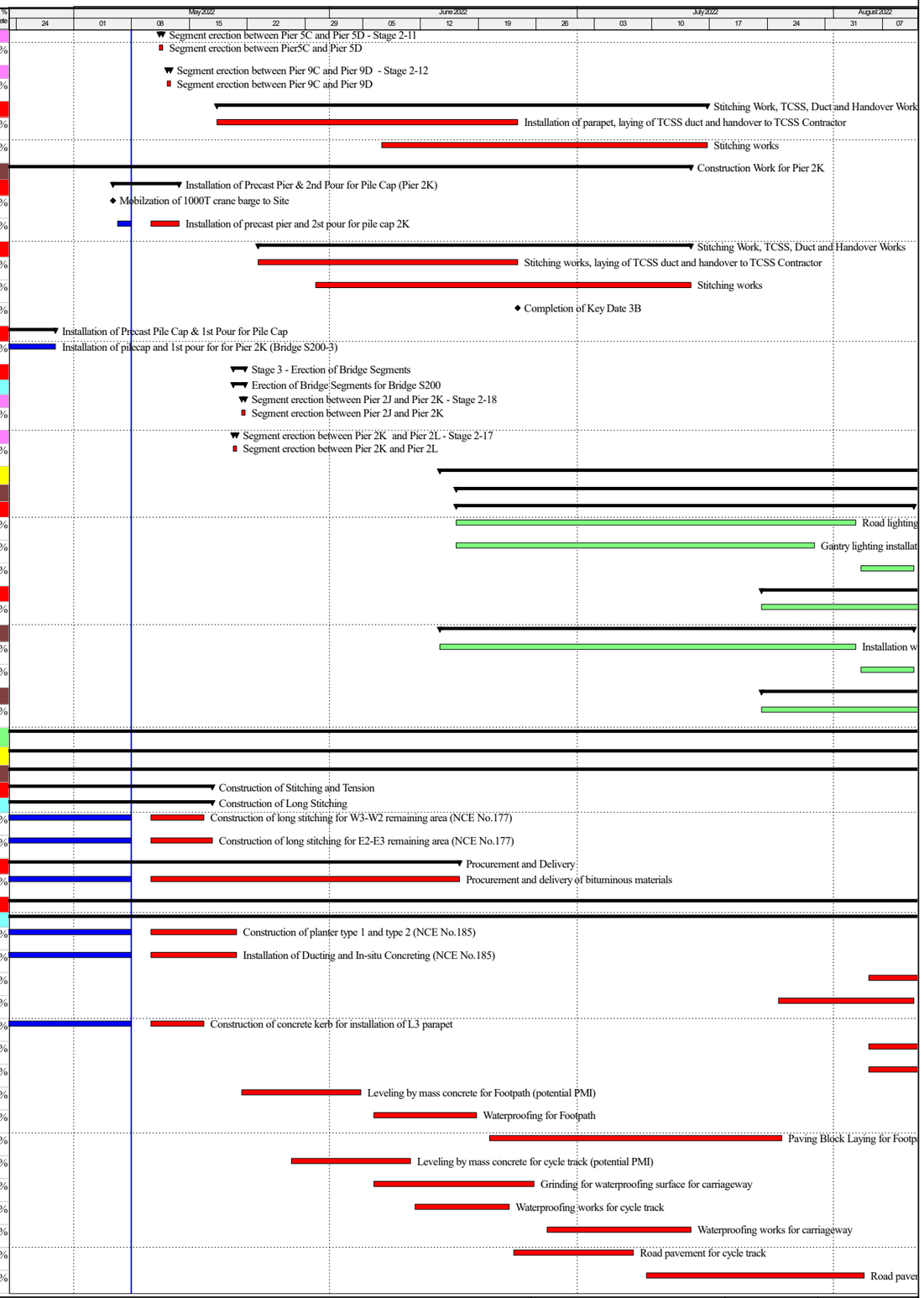
Three Month Rolling Programme (May 2022 - Aug 2022)

Date	Revision	Checked	Approved
08-May-22	3MRP (May 22 -Aug 22)		

Data Date :08-May-22
Sheet 2 of 5

Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Physical % Complete
	Segment erection between Pier 5C and Pier 5D - Stage 2-11	1	1	11-May-22	11-May-22	
S1-EB2055	Segment erection between Pier5C and Pier 5D	1	1	11-May-22	11-May-22	0%
	Segment erection between Pier 9C and Pier 9D - Stage 2-12	1	1	12-May-22	12-May-22	
S1-EB2061	Segment erection between Pier 9C and Pier 9D	1	1	12-May-22	12-May-22	0%
	Stitching Work, TCSS, Duct and Handover Works	50	50	18-May-22	16-Jul-22	
S1-EB2120	Installation of parapet, laying of TCSS duct and handover to TCSS Contractor	31	31	18-May-22	23-Jun-22	0%
S1-EB2125	Stitching works	34	34	07-Jun-22	16-Jul-22	0%
	Construction Work for Pier 2K	70	66	11-Apr-22 A	14-Jul-22	
	Installation of Precast Pier & 2nd Pour for Pile Cap (Pier 2K)	12	4	05-May-22 A	13-May-22	
S1-PP5595	Mobilzation of 1000T crane barge to Site	0	0		05-May-22 A	100%
S1-PP5600	Installation of precast pier and 2st pour for pile cap 2K	10	4	06-May-22 A	13-May-22	70%
	Stitching Work, TCSS, Duct and Handover Works	44	44	23-May-22	14-Jul-22	
S1-EB3030	Stitching works, laying of TCSS duct and handover to TCSS Contractor	27	27	23-May-22	23-Jun-22	0%
S1-EB3035	Stitching works	38	38	30-May-22	14-Jul-22	0%
S1-EB5000	Completion of Key Date 3B	0	0		23-Jun-22	0%
	Installation of Precast Pile Cap & 1st Pour for Pile Cap	15	0	11-Apr-22 A	28-Apr-22 A	
S1-PC5000	Installation of pilecap and 1st pour for for Pier 2K (Bridge S200-3)	15	0	11-Apr-22 A	28-Apr-22 A	100%
	Stage 3 - Erection of Bridge Segments	2	2	20-May-22	21-May-22	
	Erection of Bridge Segments for Bridge S200	2	2	20-May-22	21-May-22	
	Segment erection between Pier 2J and Pier 2K - Stage 2-18	1	1	21-May-22	21-May-22	
S1-EB5440	Segment erection between Pier 2J and Pier 2K	1	1	21-May-22	21-May-22	0%
	Segment erection between Pier 2K and Pier 2L - Stage 2-17	1	1	20-May-22	20-May-22	
S1-EB5460	Segment erection between Pier 2K and Pier 2L	1	1	20-May-22	20-May-22	0%
	E&M Works	91	91	14-Jun-22	12-Sep-22	
	Road Lighting & Gantry Lighting Installation	84	84	16-Jun-22	07-Sep-22	
	Road Lighting & Gantry Lighting Installationat Bridge ML	56	56	16-Jun-22	10-Aug-22	
S1-EM1000	Road lighting installation works	41	41	16-Jun-22	03-Aug-22	0%
S1-EM1020	Gantry lighting installation works	37	37	16-Jun-22	29-Jul-22	0%
S1-EM1060	Testing & Commissioning	7	7	04-Aug-22	10-Aug-22	0%
	Road Lighting Installationat Bridge S400, Bridge CT & Bridge S200	40	40	23-Jul-22	07-Sep-22	
S1-EM1080	Road lighting installation works	40	40	23-Jul-22	07-Sep-22	0%
	Concrete Deck Cell at Bridge ML - Eretctrial Work	58	58	14-Jun-22	10-Aug-22	
S1-EM1160	Installation works	43	43	14-Jun-22	03-Aug-22	0%
S1-EM1180	Testing & Commissioning	7	7	04-Aug-22	10-Aug-22	0%
	Concrete Deck Cell at Bridge S400, Bridge CT & Bridge S200 - Eretctrial Work	43	43	23-Jul-22	12-Sep-22	
S1-EM1200	Installation works	43	43	23-Jul-22	12-Sep-22	0%
	Section 2 of Works-All Works within Portion II,III,IV and VI	623	130	31-Aug-21 A	16-Sep-22	
	CBL Main Bridge and Marine Viaduct	623	130	31-Aug-21 A	16-Sep-22	
	Concrete Bridge	490	93	31-Aug-21 A	27-Aug-22	
	Construction of Stitching and Tension	34	7	23-Mar-22 A	17-May-22	
	Construction of Long Stitching	34	7	23-Mar-22 A	17-May-22	
S2-CB3435	Construction of long stitching for W3-W2 remaining area (NCE No.177)	22	6	23-Mar-22 A	16-May-22	50%
S2-CB5600	Construction of long stitching for E2-E3 remaining area (NCE No.177)	12	7	11-Apr-22 A	17-May-22	45%
	Procurement and Delivery	240	32	31-Aug-21 A	16-Jun-22	
S2-CB2488	Procurement and delivery of bituminous materials	240	32	31-Aug-21 A	16-Jun-22	83%
	Road Works and Surface Furniture	212	93	27-Oct-21 A	27-Aug-22	
	Road Works and Surface Furniture at W5 - W2	165	93	28-Jan-22 A	27-Aug-22	
S2-CB4900	Construction of planter type 1 and type 2 (NCE No.185)	30	10	28-Jan-22 A	20-May-22	81%
S2-CB4920	Installation of Ducting and In-situ Concreting (NCE No.185)	30	10	28-Jan-22 A	20-May-22	81%
S2-CB4930	Waterproofing and soiling for planter type 1 and type 2	10	10	05-Aug-22	16-Aug-22	0%
S2-CB4940	Installation of Lighting Post and Lighting Cabinet	15	15	25-Jul-22	10-Aug-22	0%
S2-CB4960	Construction of concrete kerb for installation of L3 parapet	20	6	25-Mar-22 A	16-May-22	70%
S2-CB4980	Installation of the L3 railing	15	15	05-Aug-22	22-Aug-22	0%
S2-CB5040	Installation of the balustrade	20	20	05-Aug-22	27-Aug-22	0%
S2-CB5055	Leveling by mass concrete for Footpath (potential PMI)	12	12	21-May-22	04-Jun-22	0%
S2-CB5060	Waterproofing for Footpath	12	12	06-Jun-22	18-Jun-22	0%
S2-CB5080	Paving Block Laying for Footpath	30	30	20-Jun-22	25-Jul-22	0%
S2-CB5090	Leveling by mass concrete for cycle track (potential PMI)	12	12	27-May-22	10-Jun-22	0%
S2-CB5095	Grinding for waterproofing surface for carriageway	18	18	06-Jun-22	25-Jun-22	0%
S2-CB5100	Waterproofing works for cycle track	10	10	11-Jun-22	22-Jun-22	0%
S2-CB5105	Waterproofing works for carriageway	15	15	27-Jun-22	14-Jul-22	0%
S2-CB5120	Road pavement for cycle track	12	12	23-Jun-22	07-Jul-22	0%
S2-CB5140	Road pavement for carriageway	23	23	09-Jul-22	04-Aug-22	0%



Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Three Month Rolling Programme (May 2022 - Aug 2022)

Date	Revision	Checked	Approved
08-May-22	3MRP (May 22 -Aug 22)		

Data Date :08-May-22
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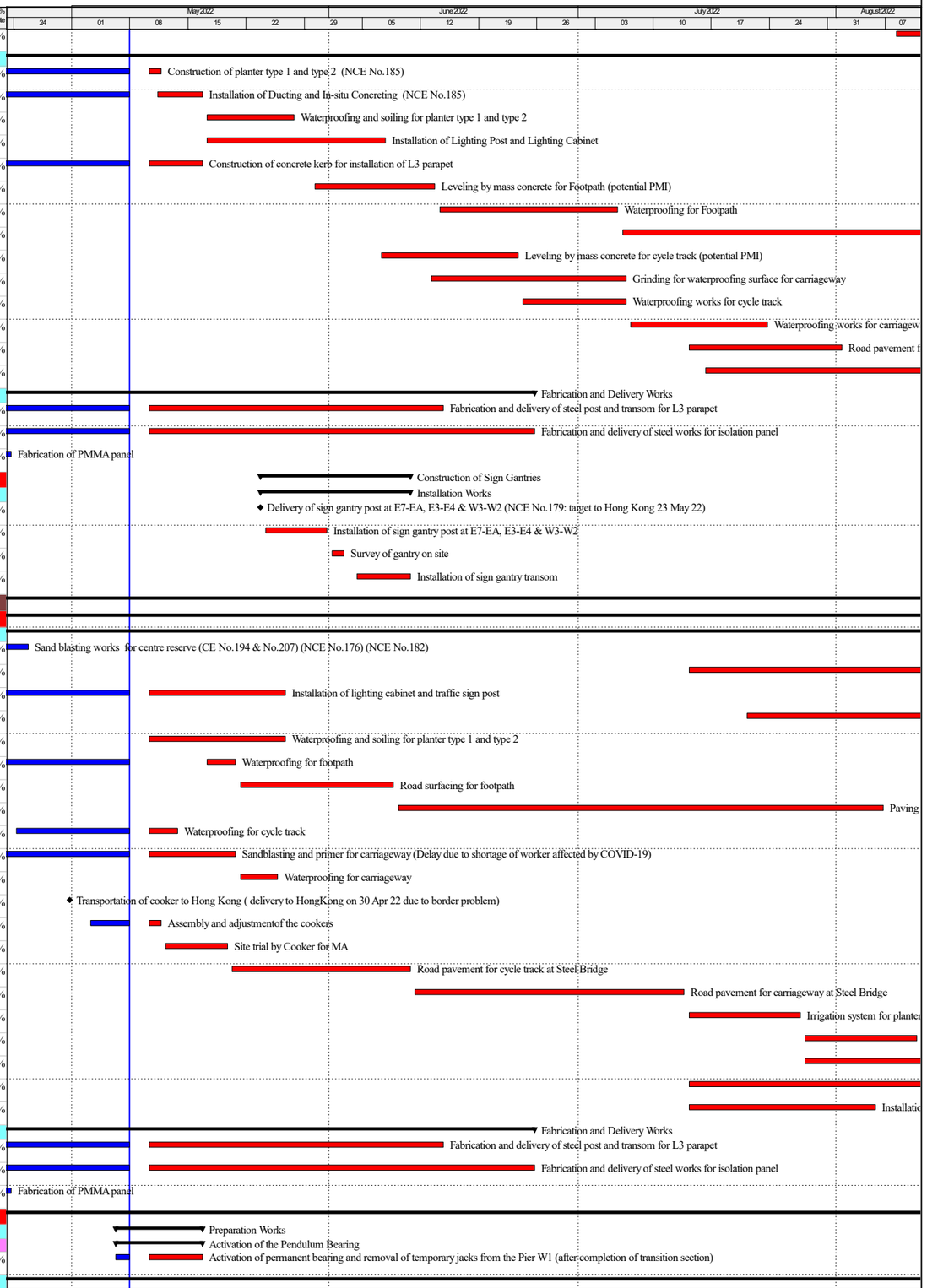
Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Physical % Complete
S2-CB5142	Irrigation system for planter type 2	10	10	08-Aug-22	18-Aug-22	0%
Road Works and Surface Furniture at E2 - EA		167	88	27-Oct-21 A	22-Aug-22	
S2-CB5160	Construction of planter type 1 and type 2 (NCE No.185)	35	2	27-Oct-21 A	11-May-22	90%
S2-CB5180	Installation of Ducting and In-situ Concreting (NCE No.185)	35	5	10-Jan-22 A	16-May-22	88%
S2-CB5190	Waterproofing and soiling for planter type 1 and type 2	10	10	17-May-22	27-May-22	0%
S2-CB5200	Installation of Lighting Post and Lighting Cabinet	18	18	17-May-22	07-Jun-22	0%
S2-CB5210	Construction of concrete kerb for installation of L3 parapet	25	6	10-Jan-22 A	16-May-22	90%
S2-CB5315	Leveling by mass concrete for Footpath (potential PMI)	12	12	30-May-22	13-Jun-22	0%
S2-CB5320	Waterproofing for Footpath	18	18	14-Jun-22	05-Jul-22	0%
S2-CB5340	Paving block Laying for Footpath	35	35	06-Jul-22	15-Aug-22	0%
S2-CB5350	Leveling by mass concrete for cycle track (potential PMI)	15	15	07-Jun-22	23-Jun-22	0%
S2-CB5355	Grinding for waterproofing surface for carriageway	20	20	13-Jun-22	06-Jul-22	0%
S2-CB5360	Waterproofing works for cycle track	10	10	24-Jun-22	06-Jul-22	0%
S2-CB5365	Waterproofing works for carriageway	15	15	07-Jul-22	23-Jul-22	0%
S2-CB5380	Road pavement for cycle track	16	16	14-Jul-22	01-Aug-22	0%
S2-CB5400	Road pavement for carriageway	32	32	16-Jul-22	22-Aug-22	0%
Fabrication and Delivery Works		161	40	13-Nov-21 A	25-Jun-22	
S2-CB5480	Fabrication and delivery of steel post and transom for L3 parapet	60	30	05-Jan-22 A	14-Jun-22	50%
S2-CB5500	Fabrication and delivery of steel works for isolation panel	80	40	13-Nov-21 A	25-Jun-22	60%
S2-CB5520	Fabrication of PMMA panel	90	0	09-Feb-22 A	23-Apr-22 A	100%
Construction of Sign Gantries		15	15	23-May-22	10-Jun-22	
Installation Works		15	15	23-May-22	10-Jun-22	
S2-CB4525	Delivery of sign gantry post at E7-EA, E3-E4 & W3-W2 (NCE No.179: target to Hong Kong 23 May 22)	0	0		23-May-22*	0%
S2-CB4530	Installation of sign gantry post at E7-EA, E3-E4 & W3-W2	7	7	24-May-22	31-May-22	0%
S2-CB4570	Survey of gantry on site	2	2	01-Jun-22	02-Jun-22	0%
S2-CB4610	Installation of sign gantry transom	6	6	04-Jun-22	10-Jun-22	0%
Steel Bridge		295	130	12-Nov-21 A	16-Sep-22	
Road Works and Surface Furniture		291	126	12-Nov-21 A	12-Sep-22	
Road Works and Surface Furniture		291	126	12-Jan-22 A	12-Sep-22	
S2-RW1012	Sand blasting works for centre reserve (CE No.194 & No.207) (NCE No.176) (NCE No.182)	65	0	18-Jan-22 A	25-Apr-22 A	100%
S2-RW1013	Waterproofing for centre reserve	25	25	14-Jul-22	11-Aug-22	0%
S2-RW1062	Installation of lighting cabinet and traffic sign post	28	15	12-Jan-22 A	26-May-22	85%
S2-RW1067	Installation of the balustrade	45	45	21-Jul-22	12-Sep-22	0%
S2-RW1068	Waterproofing and soiling for planter type 1 and type 2	15	15	10-May-22	26-May-22	0%
S2-RW1070	Waterproofing for footpath	4	4	21-Apr-22 A	20-May-22	60%
S2-RW1071	Road surfacing for footpath	15	15	21-May-22	08-Jun-22	0%
S2-RW1072	Paving block laying for footpath	50	50	09-Jun-22	06-Aug-22	0%
S2-RW1073-1	Waterproofing for cycle track	4	4	24-Apr-22 A	13-May-22	60%
S2-RW1074	Sandblasting and primer for carriageway (Delay due to shortage of worker affected by COVID-19)	25	10	05-Feb-22 A	20-May-22	50%
S2-RW1074-2	Waterproofing for carriageway	4	4	21-May-22	25-May-22	0%
S2-RW1074-5	Transportation of cooker to Hong Kong (delivery to HongKong on 30 Apr 22 due to border problem)	0	0		30-Apr-22 A	100%
S2-RW1074-52	Assembly and adjustmentof the cookers	7	2	03-May-22 A	11-May-22	65%
S2-RW1074-6	Site trial by Cooker for MA	7	7	12-May-22	19-May-22	0%
S2-RW1075	Road pavement for cycle track at Steel Bridge	18	18	20-May-22	10-Jun-22	0%
S2-RW1076	Road pavement for carriageway at Steel Bridge	27	27	11-Jun-22	13-Jul-22	0%
S2-RW1077	Irrigation system for planter type 2	12	12	14-Jul-22	27-Jul-22	0%
S2-RW1078	Planting works for planter type 1 and 2	12	12	28-Jul-22	10-Aug-22	0%
S2-RW1078-2	Installation of cycle race and dressing works of cycle track	25	25	28-Jul-22	25-Aug-22	0%
S2-RW1160	Installation of L3 railing	50	50	14-Jul-22	09-Sep-22	0%
S2-RW1202	Installation of isolation PMMA panel	20	20	14-Jul-22	05-Aug-22	0%
Fabrication and Delivery Works		161	40	12-Nov-21 A	25-Jun-22	
S2-CB5540	Fabrication and delivery of steel post and transom for L3 parapet	60	30	07-Mar-22 A	14-Jun-22	55%
S2-CB5560	Fabrication and delivery of steel works for isolation panel	60	40	12-Nov-21 A	25-Jun-22	60%
S2-CB5580	Fabrication of PMMA panel	90	0	09-Feb-22 A	23-Apr-22 A	100%
Welding & Painting Works		198	103	03-Jan-22 A	08-Sep-22	
Preparation Works		6	6	06-May-22 A	16-May-22	
Activation of the Pendulum Bearing		6	6	06-May-22 A	16-May-22	
S2-SB1520	Activation of permanent bearing and removal of temporary jacks from the Pier W1 (after completion of transition section)	6	6	06-May-22 A	16-May-22	10%
Painting of the Ring Weld		175	103	08-Jan-22 A	08-Sep-22	



Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

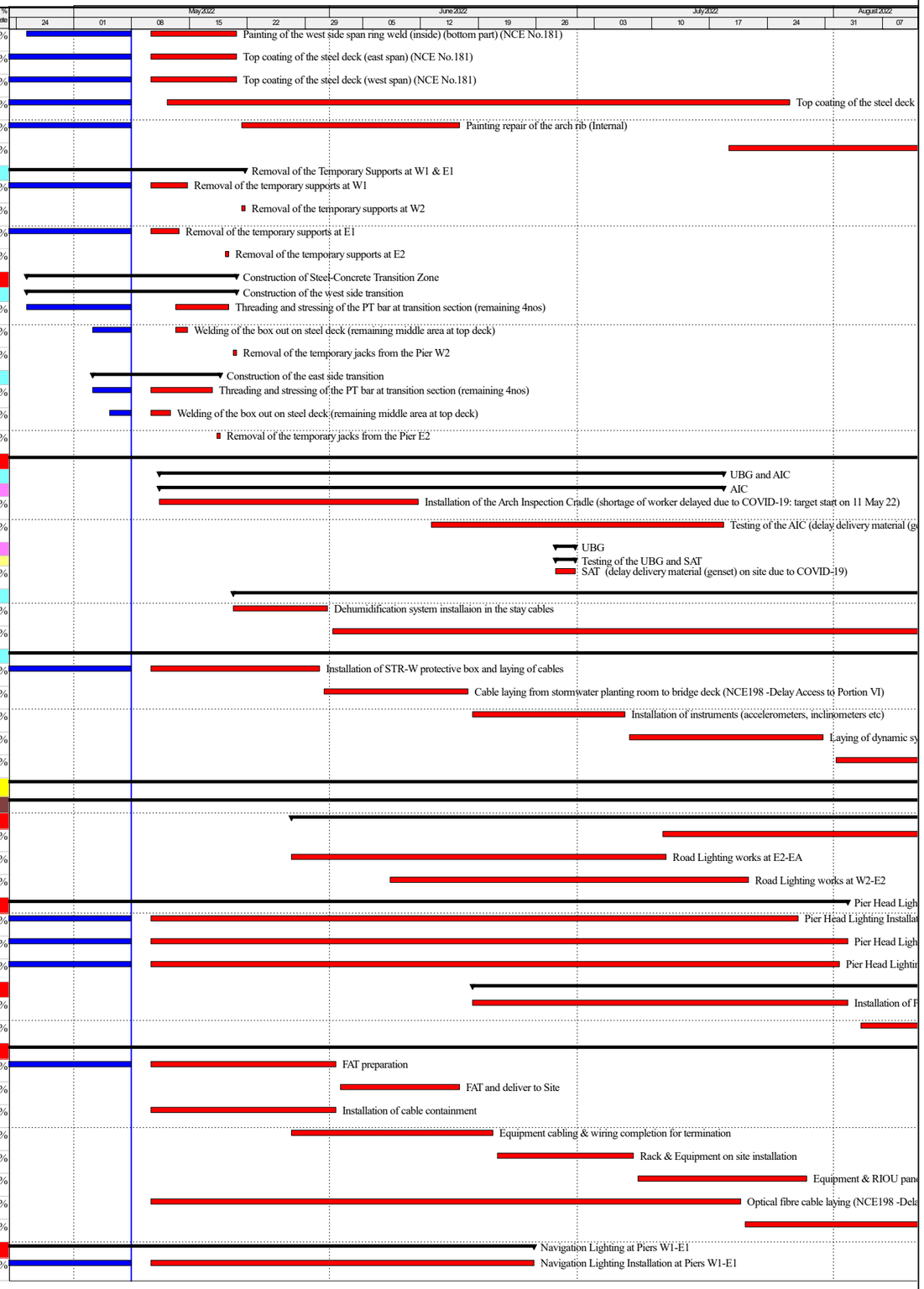
Three Month Rolling Programme (May 2022 - Aug 2022)

Date	Revision	Checked	Approved
08-May-22	3MRP (May 22 -Aug 22)		

Data Date :08-May-22
Sheet 4 of 5

Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Physical % Complete
S2-SB2045	Painting of the west side span ring weld (inside) (bottom part) (NCE No.181)	18	10	25-Apr-22 A	20-May-22	30%
S2-SB2072	Top coating of the steel deck (east span) (NCE No.181)	75	10	08-Jan-22 A	20-May-22	80%
S2-SB2076	Top coating of the steel deck (west span) (NCE No.181)	75	10	08-Jan-22 A	20-May-22	70%
S2-SB2080	Top coating of the steel deck (main span) (NCE No.181)	98	63	08-Jan-22 A	26-Jul-22	40%
S2-SB2100	Painting repair of the arch rib (Internal)	45	22	07-Apr-22 A	16-Jun-22	40%
S2-SB2105	Painting repair of the arch rib (External)	45	45	19-Jul-22	08-Sep-22	0%
Removal of the Temporary Supports at W1 & E1		106	11	03-Jan-22 A	21-May-22	
S2-SB2220	Removal of the temporary supports at W1	10	5	04-Jan-22 A	14-May-22	45%
S2-SB2240	Removal of the temporary supports at W2	1	1	21-May-22	21-May-22	0%
S2-SB2260	Removal of the temporary supports at E1	10	4	03-Jan-22 A	13-May-22	50%
S2-SB2280	Removal of the temporary supports at E2	1	1	19-May-22	19-May-22	0%
Construction of Steel-Concrete Transition Zone		24	10	25-Apr-22 A	20-May-22	
Construction of the west side transition		16	7	25-Apr-22 A	20-May-22	
S2-CT1090	Threading and stressing of the PT bar at transition section (remaining 4nos)	7	6	25-Apr-22 A	19-May-22	50%
S2-CT1095	Welding of the box out on steel deck (remaining middle area at top deck)	14	2	03-May-22 A	14-May-22	50%
S2-CT1100	Removal of the temporary jacks from the Pier W2	1	1	20-May-22	20-May-22	0%
Construction of the east side transition		17	8	03-May-22 A	18-May-22	
S2-CT1215	Threading and stressing of the PT bar at transition section (remaining 4nos)	7	7	03-May-22 A	17-May-22	45%
S2-CT1216	Welding of the box out on steel deck (remaining middle area at top deck)	14	3	05-May-22 A	12-May-22	55%
S2-CT1220	Removal of the temporary jacks from the Pier E2	1	1	18-May-22	18-May-22	0%
Associated, E&M Works for CBL Main Bridge and Marine Viaduct		109	109	10-Mar-22 A	16-Sep-22	
UBG and AIC		57	57	11-May-22	18-Jul-22	
AIC		57	57	11-May-22	18-Jul-22	
S2-EM1320	Installation of the Arch Inspection Cradle (shortage of worker delayed due to COVID-19: target start on 11 May 22)	27	27	11-May-22*	11-Jun-22	0%
S2-EM1340	Testing of the AIC (delay delivery material (genset) on site due to COVID-19)	30	30	13-Jun-22	18-Jul-22	0%
UBG		3	3	28-Jun-22	30-Jun-22	
Testing of the UBG and SAT		3	3	28-Jun-22	30-Jun-22	
S2-EM1300	SAT (delay delivery material (genset) on site due to COVID-19)	3	3	28-Jun-22	30-Jun-22	0%
Installation of Other Systems		100	100	20-May-22	16-Sep-22	
S2-EM1380	Dehumidification system installaion in the stay cables	10	10	20-May-22	31-May-22	0%
S2-EM1400	Commission and testing of the dehumidification system	90	90	01-Jun-22	16-Sep-22	0%
SHMS installation		83	83	10-Mar-22 A	16-Aug-22	
S2-EM1361	Installation of STR-W protective box and laying of cables	20	18	10-Mar-22 A	30-May-22	50%
S2-EM1362	Cable laying from stormwater planting room to bridge deck (NCE198 -Delay Access to Portion VI)	15	15	31-May-22	17-Jun-22	0%
S2-EM1363	Installation of instruments (accelerometers, inclinometers etc)	15	15	18-Jun-22	06-Jul-22	0%
S2-EM3140	Laying of dynamic systems	21	21	07-Jul-22	30-Jul-22	0%
S2-EM3160	Sensor connected with PXI to access system building service	14	14	01-Aug-22	16-Aug-22	0%
E&M Works		254	116	23-Dec-21 A	02-Sep-22	
E&M Works in Portion II,III & IV		254	116	23-Dec-21 A	02-Sep-22	
Road Lighting		73	73	27-May-22	22-Aug-22	
S2-EM1500	Road Lighting works at W5-W2	37	37	11-Jul-22	22-Aug-22	0%
S2-EM1560	Road Lighting works at E2-EA	37	37	27-May-22	11-Jul-22	0%
S2-EM1620	Road Lighting works at W2-E2	37	37	08-Jun-22	21-Jul-22	0%
Pier Head Lighting Installation at Piers W5-EA		105	71	19-Mar-22 A	02-Aug-22	
S2-EM3040	Pier Head Lighting Installation at Piers W2-W5	101	66	19-Mar-22 A	27-Jul-22	35%
S2-EM3060	Pier Head Lighting Installation at Piers E2-EA	105	71	19-Mar-22 A	02-Aug-22	22%
S2-EM3080	Pier Head Lighting Installation at Piers W1-E1	96	70	19-Mar-22 A	01-Aug-22	19%
Fixed Red Lighting Installation at Piers W1-E1		77	77	18-Jun-22	02-Sep-22	
S2-EM3100	Installation of Pier Head Lighting	38	38	18-Jun-22	02-Aug-22	0%
S2-EM3120	Testing & Commissioning	30	30	04-Aug-22	02-Sep-22	0%
SCADA System		203	97	23-Dec-21 A	01-Sep-22	
S5-PR3240	FAT preparation	75	20	23-Dec-21 A	01-Jun-22	75%
S5-PR3260	FAT and deliver to Site	12	12	02-Jun-22	16-Jun-22	0%
S5-PR3280	Installation of cable containment	20	20	10-May-22	01-Jun-22	0%
S5-PR3300	Equipment cabling & wiring completion for termination	20	20	27-May-22	20-Jun-22	0%
S5-PR3320	Rack & Equipment on site installation	14	14	21-Jun-22	07-Jul-22	0%
S5-PR3340	Equipment & RIOU panel termination	18	18	08-Jul-22	28-Jul-22	0%
S5-PR3360	Optical fibre cable laying (NCE198 -Delay Access to Portion VI)	60	60	10-May-22	20-Jul-22	0%
S5-PR3380	Cable & wiring Termination	37	37	21-Jul-22	01-Sep-22	0%
Navigation Lighting at Piers W1-E1		72	40	19-Mar-22 A	25-Jun-22	
S2-EM1630	Navigation Lighting Installation at Piers W1-E1	72	40	19-Mar-22 A	25-Jun-22	35%



Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

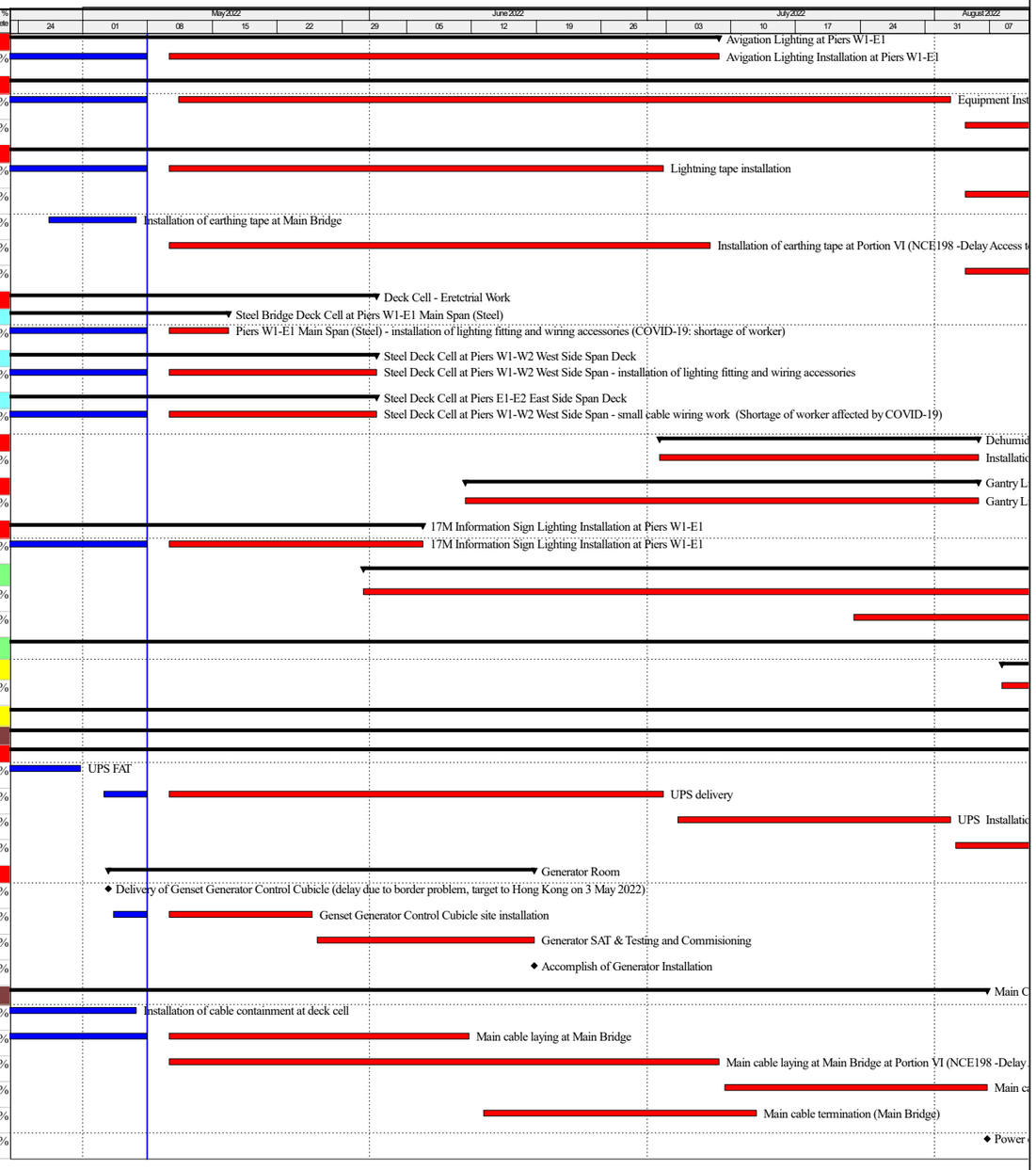
Three Month Rolling Programme (May 2022 - Aug 2022)

Date	Revision	Checked	Approved
08-May-22	3MRP (May 22 -Aug 22)		

Data Date :08-May-22
Sheet 5 of 5

Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Physical % Complete
Avigation Lighting at Piers W1-E1		88	50	19-Mar-22 A	08-Jul-22	
S2-EM1700	Avigation Lighting Installation at Piers W1-E1	88	50	19-Mar-22 A	08-Jul-22	30%
Functional Lighting at Piers W1-E1		116	115	09-Apr-22 A	02-Sep-22	
S2-EM1760	Equipment Installation of Functional Light	90	70	09-Apr-22 A	02-Aug-22	18%
S2-EM1920	Testing and Commissioning including SAT & Scene Program	30	30	04-Aug-22	02-Sep-22	0%
Lightning System and Main Earthing System		207	116	27-Jan-22 A	02-Sep-22	
S2-EM1940	Lightning tape installation	94	45	27-Jan-22 A	02-Jul-22	90%
S2-EM1960	T&C for lightning system	30	30	04-Aug-22	02-Sep-22	0%
S2-EM1980	Installation of earthing tape at Main Bridge	50	0	27-Apr-22 A	06-May-22 A	100%
S2-EM1985	Installation of earthing tape at Portion VI (NCE198 -Delay Access to Portion VI)	49	49	10-May-22	07-Jul-22	0%
S2-EM1990	T&C for main earthing system	30	30	04-Aug-22	02-Sep-22	0%
Deck Cell - Eretctrial Work		89	20	31-Jan-22 A	01-Jun-22	
Steel Bridge Deck Cell at Piers W1-E1 Main Span (Steel)		58	6	05-Feb-22 A	16-May-22	
S1-EM1360	Piers W1-E1 Main Span (Steel) - installation of lighting fitting and wiring accessories (COVID-19: shortage of worker)	58	6	05-Feb-22 A	16-May-22	90%
Steel Deck Cell at Piers W1-W2 West Side Span Deck		50	20	25-Mar-22 A	01-Jun-22	
S1-EM1420	Steel Deck Cell at Piers W1-W2 West Side Span - installation of lighting fitting and wiring accessories	50	20	25-Mar-22 A	01-Jun-22	75%
Steel Deck Cell at Piers E1-E2 East Side Span Deck		60	20	31-Jan-22 A	01-Jun-22	
S1-EM1460	Steel Deck Cell at Piers W1-W2 West Side Span - small cable wiring work (Shortage of worker affected by COVID-19)	60	20	31-Jan-22 A	01-Jun-22	60%
Dehumidification System at Piers W1-E1		30	30	02-Jul-22	05-Aug-22	
S1-EM1500	Installation of Dehumidification System at Piers W1-E1	30	30	02-Jul-22	05-Aug-22	0%
Gantry Lighting Installation at Piers W2 & E3		47	47	11-Jun-22	05-Aug-22	
S1-EM1520	Gantry Lighting Installation at Piers W2 & E3	47	47	11-Jun-22	05-Aug-22	0%
17M Information Sign Lighting Installation at Piers W1-E1		53	23	19-Mar-22 A	06-Jun-22	
S2-EM3020	17M Information Sign Lighting Installation at Piers W1-E1	53	23	19-Mar-22 A	06-Jun-22	40%
Section 3 of the Works-Comprises All of the Landscape Works		100	100	31-May-22	27-Sep-22	
S3-LW2000	Landscape works for CBL bridge	100	100	31-May-22	27-Sep-22	0%
S3-LW2020	Landscape works for TKO-LTT bridge	55	55	23-Jul-22	26-Sep-22	0%
Section 5 of the Works-All Works within Portion V (CBL E&M Plantroom)		322	178	02-Aug-21 A	03-Nov-22	
Remaining Work		76	76	08-Aug-22	03-Nov-22	
S5-PR2300	T&C for all systems after connection from plantroom to the bridge (incl. 15 days TRA)	76	76	08-Aug-22	03-Nov-22	0%
Major Services System		263	91	02-Aug-21 A	25-Aug-22	
Electrical System		121	91	01-Mar-22 A	25-Aug-22	
UPS Room		121	91	01-Mar-22 A	25-Aug-22	
S5-PR2570	UPS FAT	17	0	01-Mar-22 A	30-Apr-22 A	100%
S5-PR2575	UPS delivery	50	45	03-May-22 A	02-Jul-22	15%
S5-PR2580	UPS Installation (Including E&M Work)	26	26	04-Jul-22	02-Aug-22	0%
S5-PR2620	UPS SAT & Testing and Commisioning	20	20	03-Aug-22	25-Aug-22	0%
Generator Room		38	34	03-May-22 A	18-Jun-22	
S5-PR2515	Delivery of Genset Generator Control Cubicle (delay due to border problem, target to Hong Kong on 3 May 2022)	0	0		03-May-22 A	100%
S5-PR2520	Genset Generator Control Cubicle site installation	18	14	04-May-22 A	25-May-22	15%
S5-PR2540	Generator SAT & Testing and Commisioning	20	20	26-May-22	18-Jun-22	0%
S5-PR2560	Accomplish of Generator Installation	0	0		18-Jun-22	0%
Main Cable Laying (from Stormwater Plant Room to Main Bridge)		263	75	02-Aug-21 A	06-Aug-22	
S5-PR3500	Installation of cable containment at deck cell	220	0	02-Aug-21 A	06-May-22 A	100%
S5-PR3520	Main cable laying at Main Bridge	65	28	16-Feb-22 A	11-Jun-22	45%
S5-PR3540	Main cable laying at Main Bridge at Portion VI (NCE198 -Delay Access to Portion VI)	50	50	10-May-22	08-Jul-22	0%
S5-PR3560	Main cable termination (inside LV switchband)	25	25	09-Jul-22	06-Aug-22	0%
S5-PR3580	Main cable termination (Main Bridge)	25	25	13-Jun-22	12-Jul-22	0%
S5-PR3600	Power energization	0	0		06-Aug-22	0%



Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Three Month Rolling Programme (May 2022 - Aug 2022)

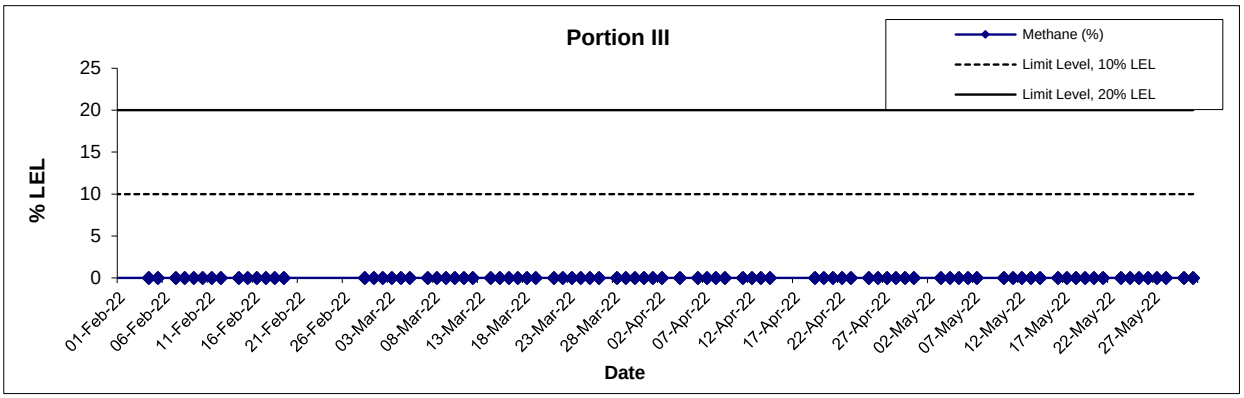
Date	Revision	Checked	Approved
08-May-22	3MRP (May 22 -Aug 22)		

APPENDIX R
RECORD OF LANDFILL GAS MONITORING BY CONTRACTOR

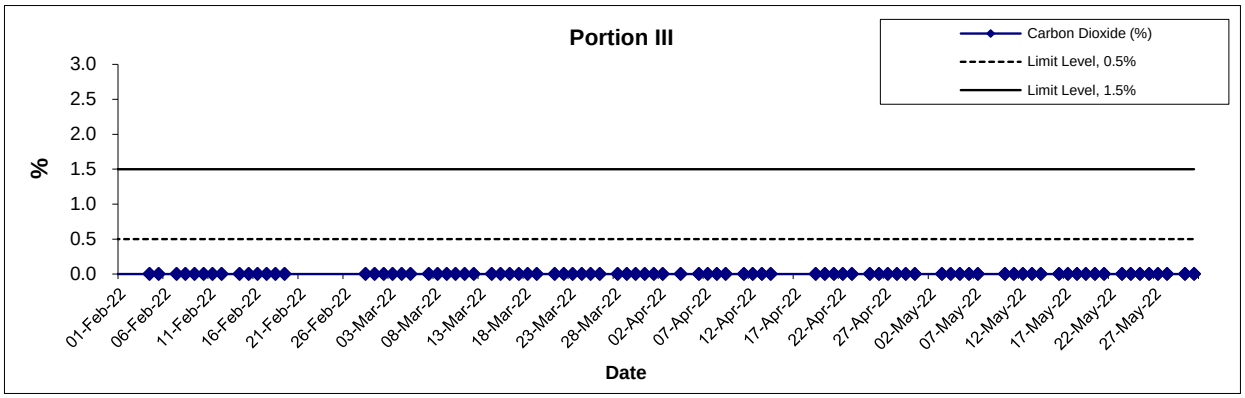
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	3-May-22	8:12	Sunny	20	0	0	20.9
Portion III	3-May-22	13:15	Sunny	26	0	0	20.9
Portion III	4-May-22	8:10	Sunny	22	0	0	20.9
Portion III	4-May-22	13:11	Sunny	27	0	0	20.9
Portion III	5-May-22	8:11	Sunny	25	0	0	20.9
Portion III	5-May-22	13:10	Sunny	29	0	0	20.9
Portion III	6-May-22	8:21	Sunny	24	0	0	20.9
Portion III	6-May-22	13:05	Sunny	28	0	0	20.9
Portion III	7-May-22	8:20	Sunny	26	0	0	20.9
Portion III	7-May-22	13:12	Sunny	29	0	0	20.9
Portion III	10-May-22	8:15	Rainy	25	0	0	20.9
Portion III	10-May-22	13:09	Rainy	27	0	0	20.9
Portion III	11-May-22	8:10	Rainy	25	0	0	20.9
Portion III	11-May-22	13:20	Rainy	25	0	0	20.9
Portion III	12-May-22	8:11	Rainy	25	0	0	20.9
Portion III	12-May-22	13:15	Rainy	27	0	0	20.9
Portion III	13-May-22	8:15	Rainy	25	0	0	20.9
Portion III	13-May-22	13:10	Rainy	26	0	0	20.9
Portion III	14-May-22	8:10	Rainy	26	0	0	20.9
Portion III	14-May-22	13:12	Rainy	24	0	0	20.9
Portion III	16-May-22	8:08	Rainy	20	0	0	20.9
Portion III	16-May-22	13:10	Rainy	20	0	0	20.9
Portion III	17-May-22	8:10	Rainy	25	0	0	20.9
Portion III	17-May-22	13:09	Cloudy	26	0	0	20.9
Portion III	18-May-22	8:05	Sunny	25	0	0	20.9
Portion III	18-May-22	13:10	Sunny	27	0	0	20.9
Portion III	19-May-22	8:09	Sunny	25	0	0	20.9
Portion III	19-May-22	13:11	Sunny	30	0	0	20.9
Portion III	20-May-22	8:10	Sunny	27	0	0	20.9
Portion III	20-May-22	13:08	Sunny	30	0	0	20.9
Portion III	21-May-22	8:09	Sunny	27	0	0	20.9
Portion III	21-May-22	13:10	Sunny	30	0	0	20.9
Portion III	23-May-22	8:08	Rainy	24	0	0	20.9
Portion III	23-May-22	13:11	Rainy	24	0	0	20.9
Portion III	24-May-22	8:10	Rainy	25	0	0	20.9
Portion III	24-May-22	13:09	Rainy	25	0	0	20.9
Portion III	25-May-22	8:05	Rainy	27	0	0	20.9
Portion III	25-May-22	13:10	Rainy	27	0	0	20.9
Portion III	26-May-22	8:07	Rainy	28	0	0	20.9
Portion III	26-May-22	13:12	Rainy	28	0	0	20.9
Portion III	27-May-22	8:10	Rainy	27	0	0	20.9
Portion III	27-May-22	13:11	Rainy	28	0	0	20.9
Portion III	28-May-22	8:12	Rainy	29	0	0	20.9
Portion III	28-May-22	13:10	Rainy	31	0	0	20.9
Portion III	30-May-22	8:12	Rainy	30	0	0	20.9
Portion III	30-May-22	13:07	Rainy	32	0	0	20.9
Portion III	31-May-22	8:15	Rainy	29	0	0	20.9
Portion III	31-May-22	13:08	Rainy	30	0	0	20.9

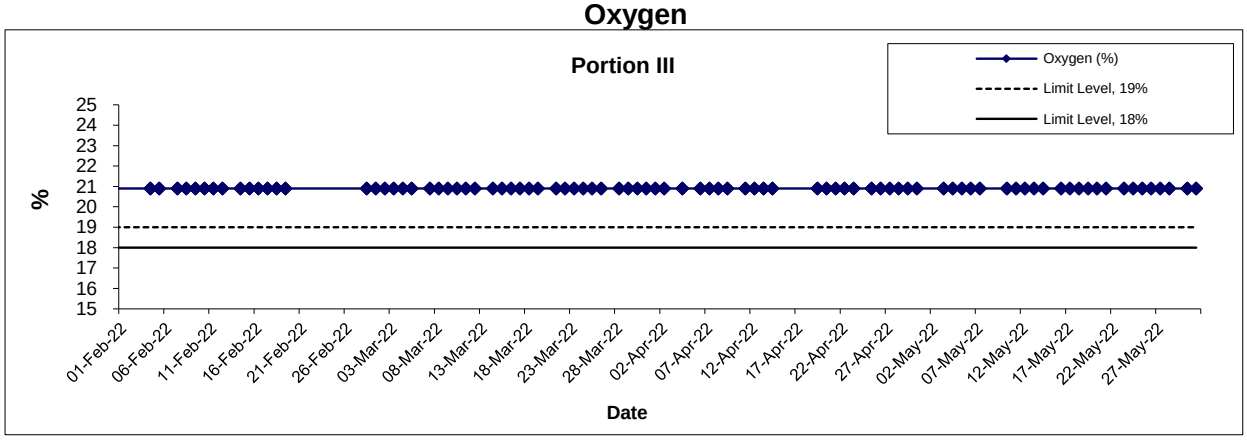
Methane



Carbon Dioxide



Oxygen



*Site closed between 20 Feb 2022 to 26 Feb 2022

Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction	Scale N.T.S Date May-22	Project No. MA16034 Appendix R	CINOTECH consultants limited

APPENDIX T
PHOTO RECORD OF POST-TRANSLOCATION CORAL MONITORING SURVEY

Appendix T – Cultural Heritage Monitoring Results

Date	Tilting				Settlement (mm)			Vibration (mm/s)		
								Measurement Direction		
	THT-TM-01	THT-TM-02	THT-TM-03	THT-TM-04	THT-BSP-1	THT-BSP-2	THT-BSP-3	Tran	Vertical	Longitude
3-May-22	-1 : 10227	1 : 17051	-1 : 12162	Pending arrangement for reinstatement	+2	Stop monitoring	Stop monitoring	0.110	0.126	0.102
4-May-22	-1 : 8490	1 : 32398	-1 : 18000	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.150	0.126	0.134
5-May-22	-1 : 7258	-1 : 16199	-1 : 64285	Pending arrangement for reinstatement	+1	Stop monitoring	Stop monitoring	0.118	0.166	0.205
6-May-22	-1 : 17307	1 : 323976	-1 : 18000	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.300	0.260	0.252
7-May-22	-1 : 8490	-1 : 7902	1 : 15517	Pending arrangement for reinstatement	OBS	Stop monitoring	Stop monitoring	0.126	0.307	0.166
10-May-22	-1 : 9000	-1 : 14086	-1 : 34615	Pending arrangement for reinstatement	OBS	Stop monitoring	Stop monitoring	0.173	0.158	0.158

Appendix T – Cultural Heritage Monitoring Results

11-May-22	-1 : 10975	-1 : 5225	-1 : 7377	Pending arrangement for reinstatement	OBS	Stop monitoring	Stop monitoring	0.276	0.213	0.260
12-May-22	-1 : 7258	-1 : 5785	-1 : 6716	Pending arrangement for reinstatement	Bad Weather	Stop monitoring	Stop monitoring	0.158	0.181	0.189
13-May-22	-1 : 8490	-1 : 23141	-1 : 10465	Pending arrangement for reinstatement	Bad Weather	Stop monitoring	Stop monitoring	0.158	0.284	0.166
14-May-22	-1 : 12857	-1 : 12461	-1 : 20454	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.307	0.197	0.268
16-May-22	-1 : 9000	-1 : 7902	-1 : 12162	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.118	0.118	0.134
17-May-22	-1 : 8490	-1 : 7902	1 : 11842	Pending arrangement for reinstatement	+1	Stop monitoring	Stop monitoring	0.150	0.126	0.134
18-May-22	-1 : 10227	-1 : 10124	1 : 5625	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.229	0.173	0.173

Appendix T – Cultural Heritage Monitoring Results

19-May-22	-1 : 12857	-1 : 14086	1 : 15517	Pending arrangement for reinstatement	OBS	Stop monitoring	Stop monitoring	0.292	0.331	0.292
20-May-22	-1 : 8035	-1 : 6893	1 : 56249	Pending arrangement for reinstatement	-1	Stop monitoring	Stop monitoring	0.150	0.213	0.205
21-May-22	-1 : 9000	-1 : 5785	1 : 12857	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.142	0.150	0.142
23-May-22	-1 : 10227	-1 : 8526	1 : 8490	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.229	0.236	0.268
24-May-22	-1 : 8490	-1 : 19057	1 : 10227	Pending arrangement for reinstatement	Bad Weather	Stop monitoring	Stop monitoring	0.307	0.520	0.504
25-May-22	-1 : 7258	-1 : 12461	1 : 10975	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.173	0.331	0.300
26-May-22	-1 : 19564	-1 : 29452	1 : 6618	Pending arrangement for reinstatement	Bad Weather	Stop monitoring	Stop monitoring	0.224	0.221	0.292

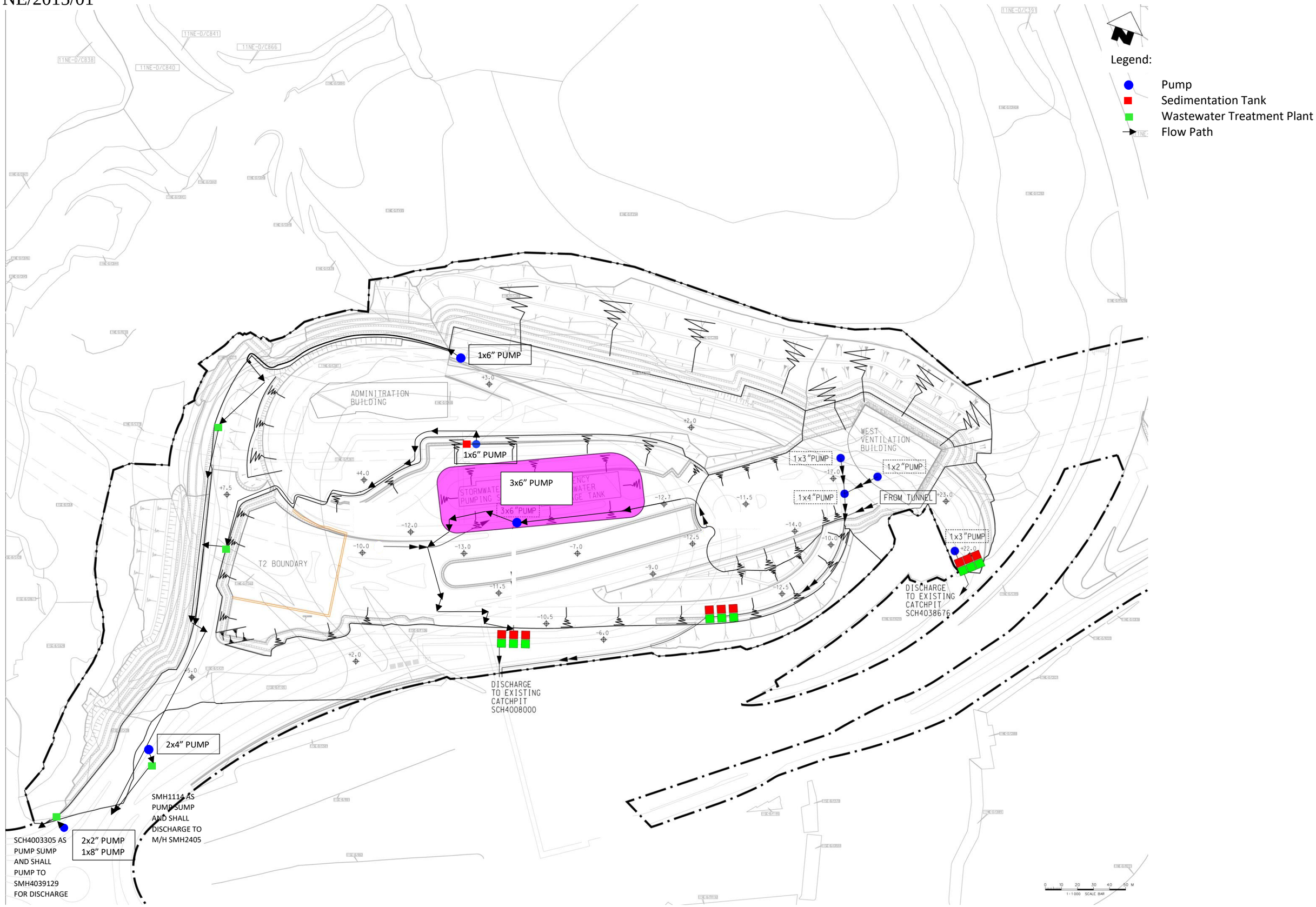
Appendix T – Cultural Heritage Monitoring Results

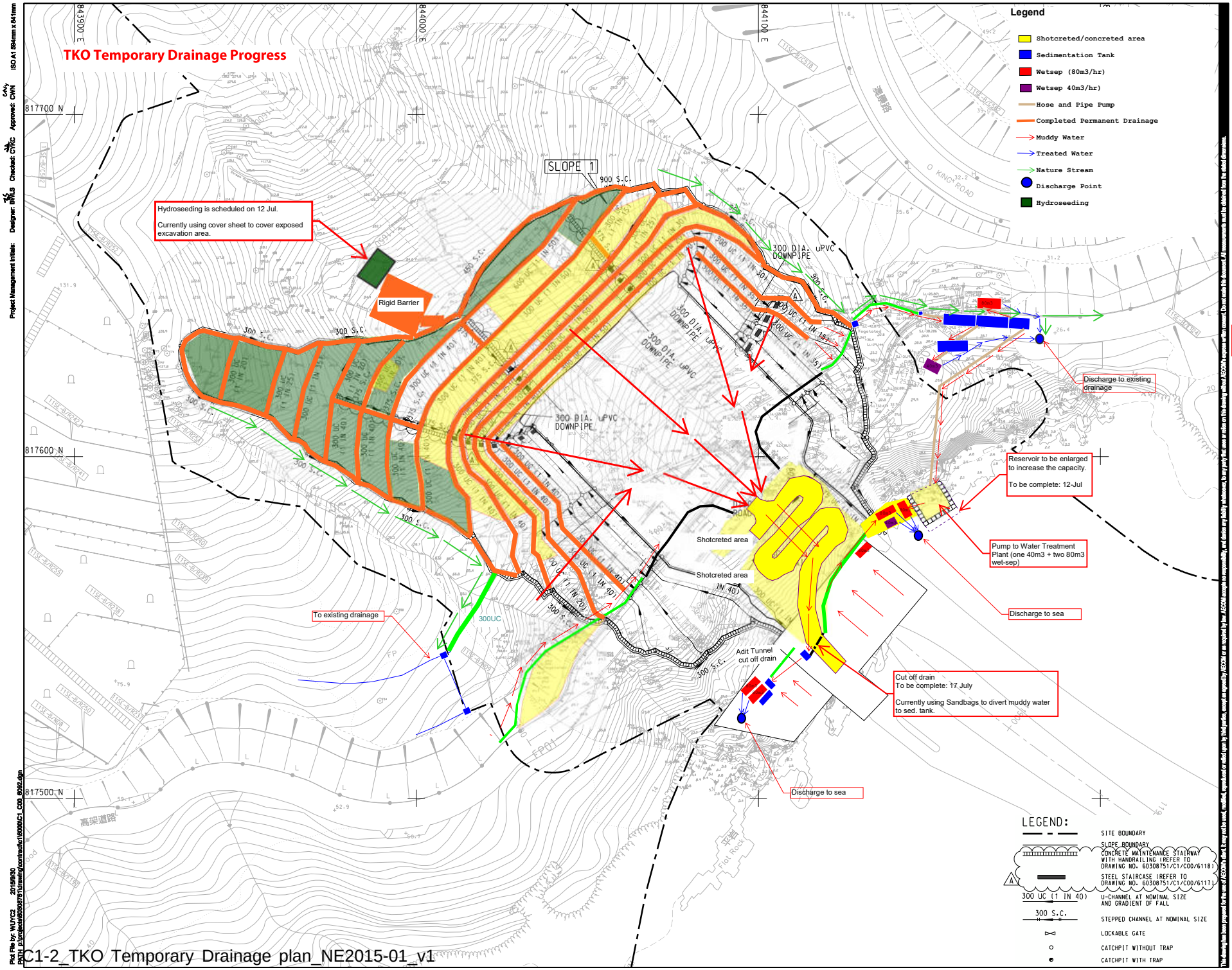
27-May-22	-1 : 14062	-1 : 10124	1 : 10975	Pending arrangement for reinstatement	OBS	Stop monitoring	Stop monitoring	0.134	0.134	0.142
28-May-22	-1 : 7258	-1 : 14086	1 : 8490	Pending arrangement for reinstatement	+0	Stop monitoring	Stop monitoring	0.244	0.300	0.244
30-May-22	-1 : 22499	-1 : 7902	1 : 9574	Pending arrangement for reinstatement	Bad Weather	Stop monitoring	Stop monitoring	0.260	0.244	0.315
31-May-22	-1 : 10227	-1 : 10124	1 : 15517	Pending arrangement for reinstatement	-1	Stop monitoring	Stop monitoring	0.717	0.221	0.229
Alert Level	1:2000				6			4.5		
Alarm Level	1:1500				8			4.8		
Action Level	1:1000				10			5		

Note:
Bold means Alert Level exceedance
Bold Italic means Alarm Level exceedance
Bold Italic with underline means Action Level exceedance

APPENDIX V
SURFACE RUNOFF MANAGEMENT PLAN

Contract No.
NE/2015/01





AECOM

PROJECT
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL MAIN TUNNEL AND ASSOCIATED WORKS

CLIENT
CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

FOR CONSTRUCTION

ISSUE/REVISION

B	JUL. 16	WORKING DRAWING	ALC
A	OCT.15	TENDER ADDENDUM NO.1	CYKC
-	AUG.15	TENDER DRAWING	CYKC
DR.	DATE	DESCRIPTION	CHK.

STATUS
WORKING DRAWING

SCALE
A1 1:500

DIMENSION UNIT
METRES

KEY PLAN

PROJECT NO.
60308751

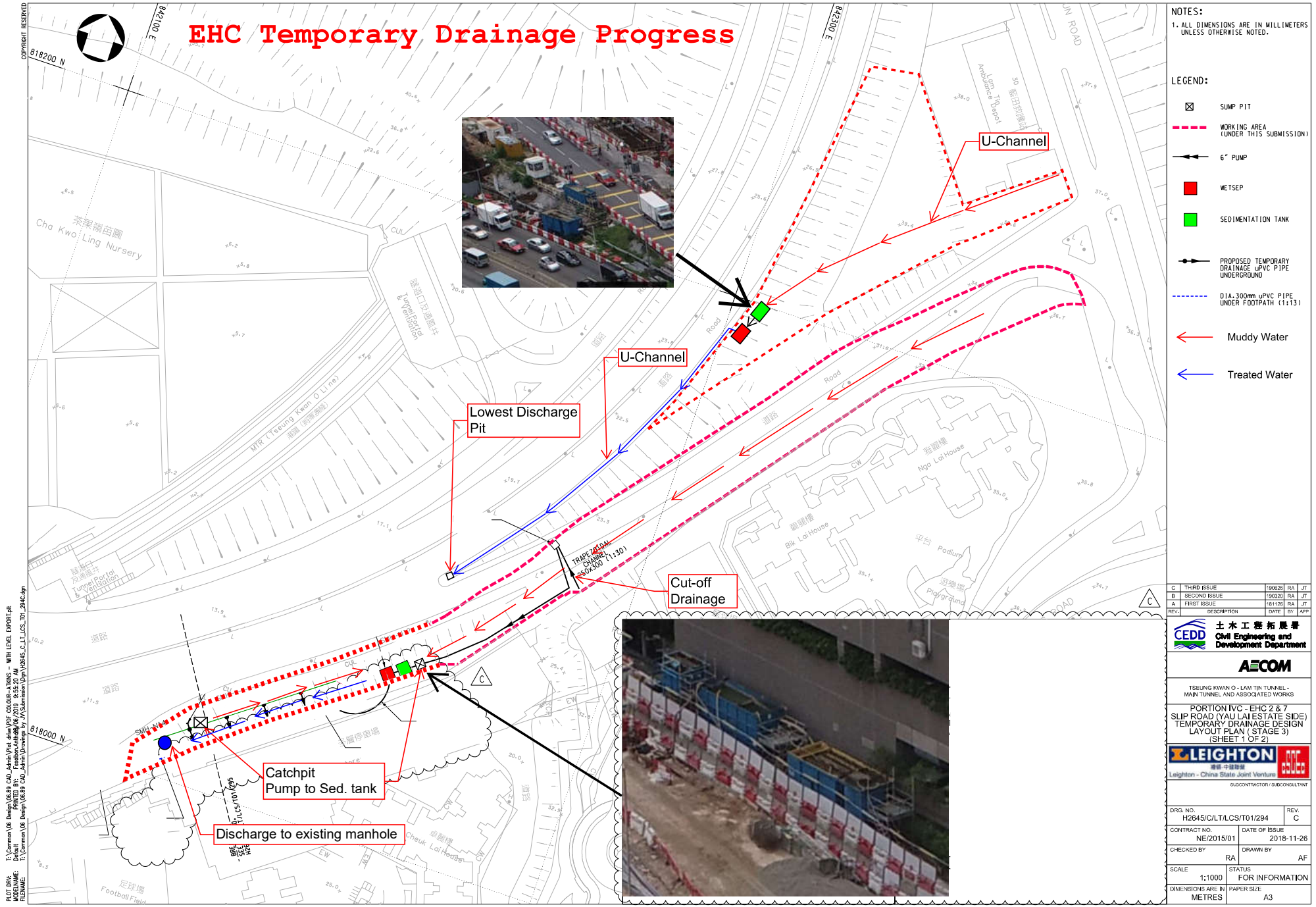
CONTRACT NO.
NE/2015/01

SHEET TITLE
TSEUNG KWAN O PORTAL
SITE FORMATION
DRAINAGE LAYOUT PLAN

SHEET NUMBER
60308751/C1/C00/6092B

Designer: BWLS Checked: CYKC Approved: CWN
Project Management Initials:
ISO A1 594mm x 841mm
Plot File by: WUYC2 2016/9/30
PATH: p:\projects\60308751\drawing\contract\c1\60000\C1_C00_6092.dgn


Maintenance Schedule
Wetsep ,Sed tanks and drainage will be clean once or twice per week.
(Depends on the weather condition)
Sed tanks
Site Clearance & provide cover to exposed excavation area
Contract Number NE/2015/01
Wetsep
Effluent
Extension of Sed tanks


EHC Temporary Drainage Progress
U-Channel
U-Channel
Lowest Discharge Pit
Cut-off Drainage
Catchpit
Pump to Sed. tank
Discharge to existing manhole
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
LEGEND:
SUMP PIT
WORKING AREA (UNDER THIS SUBMISSION)
6" PUMP
WETSEP
SEDIMENTATION TANK
PROPOSED TEMPORARY DRAINAGE uPVC PIPE UNDERGROUND
DIA.300mm uPVC PIPE UNDER FOOTPATH (1:13)
Muddy Water
Treated Water
TSEUNG KWAN O - LAM TIN TUNNEL - MAIN TUNNEL AND ASSOCIATED WORKS
PORTION IVC - EHC 2 & 7
SLIP ROAD (YAU LAI ESTATE SIDE)
TEMPORARY DRAINAGE DESIGN
LAYOUT PLAN (STAGE 3)
(SHEET 1 OF 2)
DRG. NO. H2645/C/LT/LCS/T01/294
REV. C
CONTRACT NO. NE/2015/01
DATE OF ISSUE 2018-11-26
CHECKED BY RA
DRAWN BY AF
SCALE 1:1000
STATUS FOR INFORMATION
DIMENSIONS ARE IN METRES
PAPER SIZE A3

CRBC-Build King Joint Venture

Our Ref.:JV/TKO-P2/NE201502/19.00.00.00/017621/L
Your Ref.: TLT/(NE/2015/02)/C30/650/(0205)

29 March 2021

* N E - 0 0 0 1 7 5 7 0 *

AECOM Asia Company Limited
8/F, Tower 2, Grand Central Plaza
138 Shatin Rural Committee Road
Shatin, Hong Kong

By Hand

Attn.: Mr C. W. Lam, Dominic (CRE)

Dear Sir,

Contract No.: NE/2015/02
Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works
Submission of Layout Plan for Site Surface Run-off Control

We would like to submit herewith a Layout Plan for Site Surface Run-off Control so as to illustrate our site preparedness for the coming typhoon and wet season as per PS Clause 25.08.

Yours faithfully,
For and on behalf of
CRBC-Build King Joint Venture

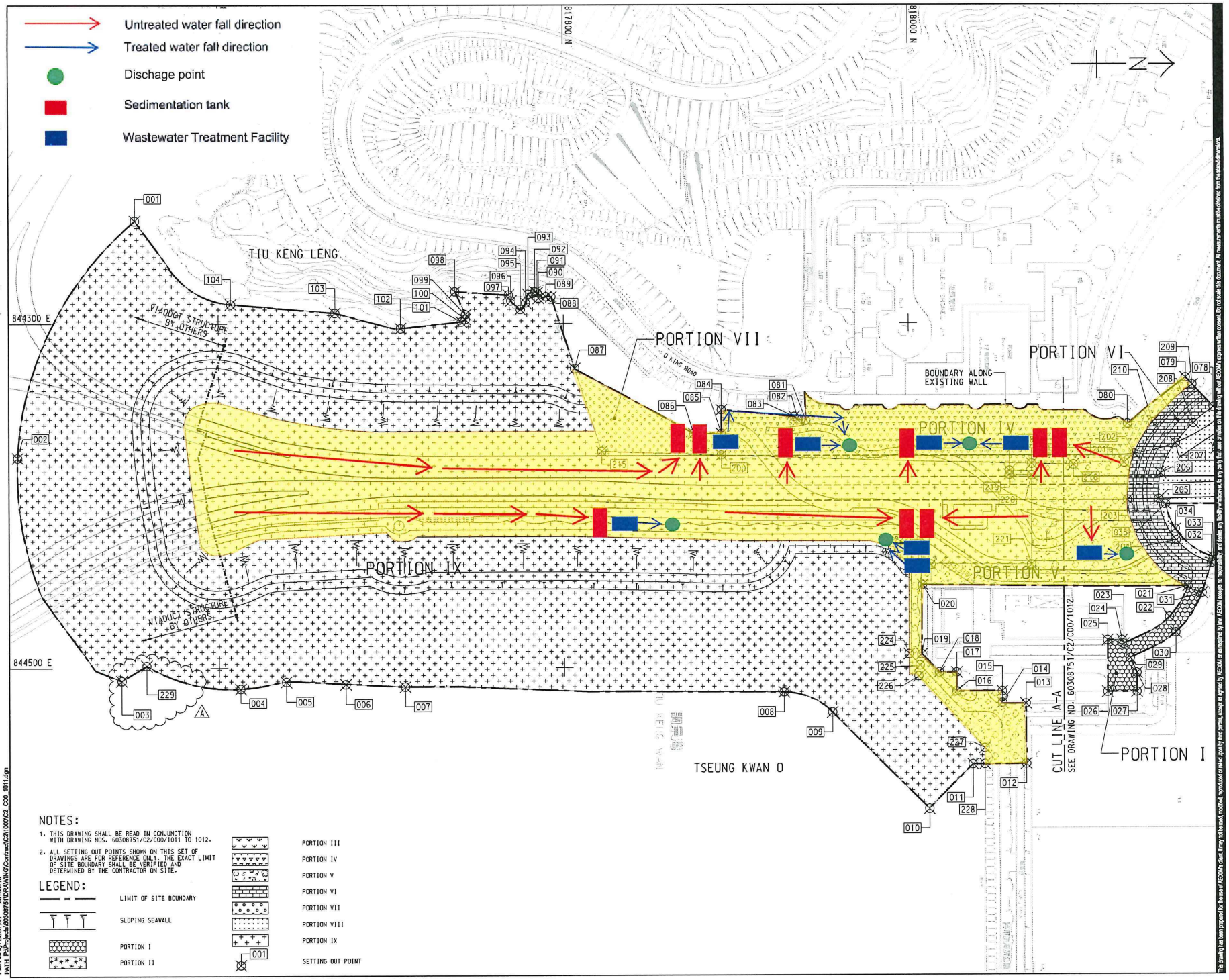
YU Man Kit, Andy
Site Agent

Encl.

c.c.:
The Project Manager for the contract, (CE/E1, CEDD) – Attn.: Mr. Sunny SP LO Fax: 2739 0076
The Project Manager's Delegate, AECOM (HO) - Attn: Mr. Ivan Tsang Fax: 3922 9797

AY/GN/WW/RP/KC

香港北角渣華道 191 號嘉華國際中心 23 A 字樓 07 - 11 室
Units 07-11, 23A/F., K. Wah Centre, 191 Java Road, North Point, Hong Kong
Tel: 852-2283 1688 Fax: 852-2283 1689



Project Management Initials: Designer: ATH Checked: RPCM Approved: GWN

ISO A1 594mm x 841mm

Plot File by: LUOFA 2016/2/18
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PROJECT
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL ROAD P2 AND ASSOCIATED WORKS

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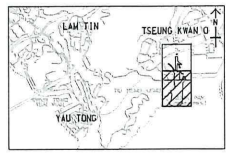
B	SEP. 16	WORKING DRAWING	RPCM
A	FEB.16	TENDER ADDENDUM NO. 1	RPCM
-	JAN.16	TENDER DRAWING	RPCM

STATUS
WORKING DRAWING

SCALE
A1 1 : 1000

DIMENSION UNIT
METRES

KEY PLAN A1 1 : 50000



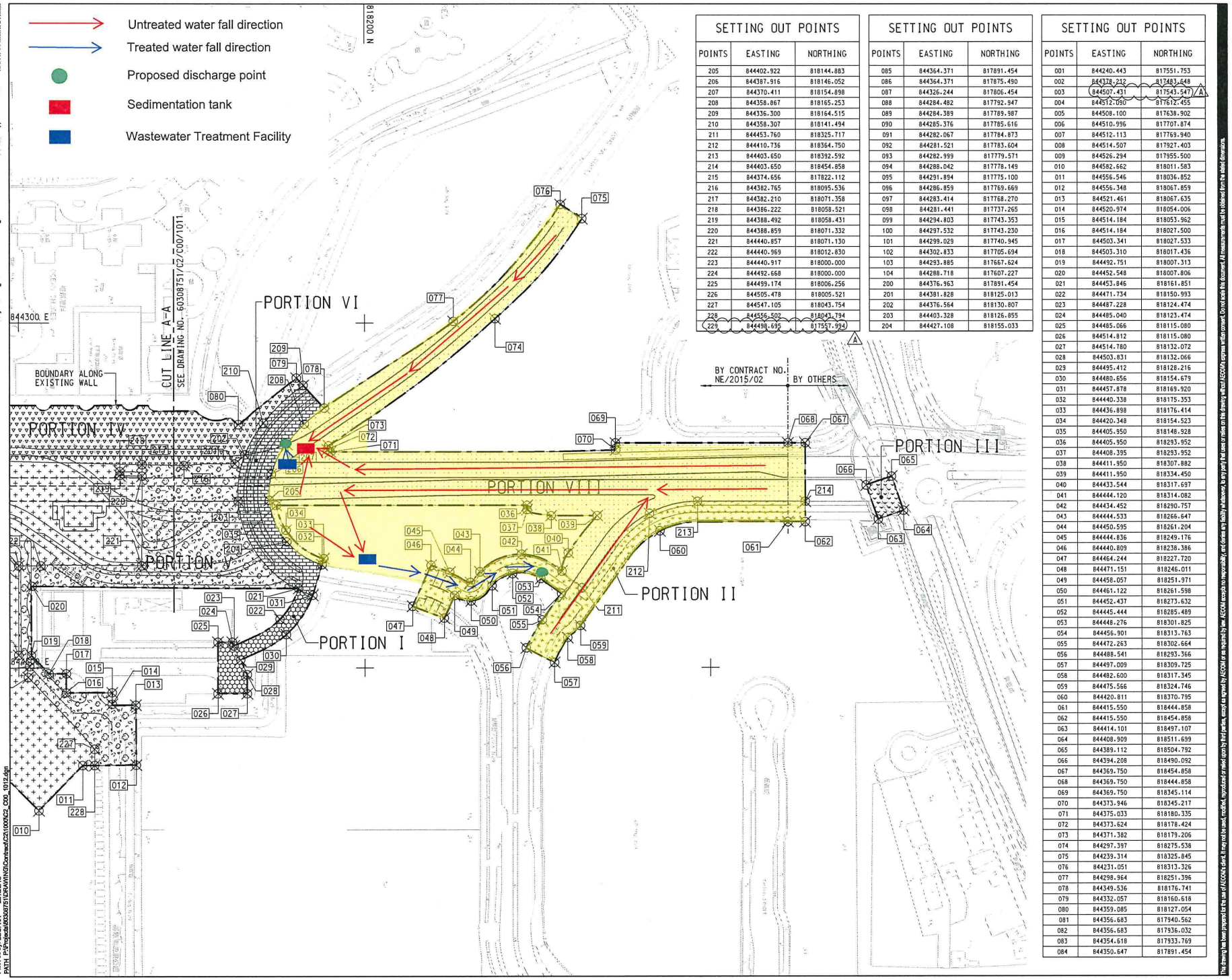
PROJECT NO.
60308751

CONTRACT NO.
NE/2015/02

SHEET TITLE
PORTION OF SITE

SHEET 1 OF 2

SHEET NUMBER
60308751/C2/C00/1011B



SETTING OUT POINTS

POINTS	EASTING	NORTHING
205	844402.922	818144.883
206	844387.916	818146.052
207	844370.411	818154.898
208	844358.867	818165.253
209	844336.300	818164.515
210	844358.307	818141.494
211	844453.760	818325.717
212	844410.736	818364.750
213	844403.650	818392.592
214	844403.650	818454.858
215	844374.656	817822.112
216	844382.765	818095.536
217	844382.210	818071.358
218	844386.222	818058.521
219	844388.492	818058.431
220	844388.859	818071.332
221	844440.857	818071.130
222	844440.969	818012.830
223	844440.917	818000.000
224	844492.668	818000.000
225	844499.174	818006.256
226	844505.478	818005.521
227	844547.105	818043.754
228	844556.502	818041.794
229	844498.695	817557.994

SETTING OUT POINTS

POINTS	EASTING	NORTHING
085	844364.371	817891.454
086	844364.371	817875.490
087	844326.244	817806.454
088	844284.482	817792.947
089	844284.389	817789.987
090	844285.376	817785.616
091	844282.067	817784.873
092	844281.521	817783.604
093	844282.999	817779.571
094	844288.042	817778.149
095	844291.894	817775.100
096	844286.859	817769.669
097	844283.414	817768.270
098	844281.441	817737.265
099	844294.803	817743.353
100	844297.532	817743.230
101	844299.029	817740.945
102	844302.833	817705.694
103	844293.885	817667.624
104	844288.718	817607.227
200	844376.963	817891.454
201	844381.828	818125.013
202	844376.564	818130.807
203	844403.328	818126.855
204	844427.108	818155.033

SETTING OUT POINTS

POINTS	EASTING	NORTHING
001	844240.443	817551.753
002	844378.212	817483.648
003	844507.431	817543.547
004	844512.090	817612.455
005	844508.100	817638.902
006	844510.996	817707.874
007	844512.113	817769.940
008	844514.507	817927.403
009	844526.294	817955.500
010	844582.662	818011.583
011	844556.546	818036.852
012	844556.348	818067.859
013	844521.461	818067.635
014	844520.974	818054.006
015	844514.184	818053.962
016	844514.184	818027.500
017	844503.341	818027.533
018	844503.310	818017.436
019	844492.751	818007.313
020	844452.548	818007.806
021	844453.846	818161.851
022	844471.734	818150.993
023	844487.228	818124.474
024	844485.040	818123.474
025	844485.066	818115.080
026	844514.812	818115.080
027	844514.780	818132.072
028	844503.831	818132.066
029	844495.412	818128.216
030	844480.656	818154.679
031	844457.878	818169.920
032	844440.338	818175.353
033	844436.898	818176.414
034	844420.348	818154.523
035	844405.950	818148.928
036	844405.950	818293.952
037	844408.395	818293.952
038	844411.950	818307.882
039	844411.950	818334.450
040	844433.544	818317.697
041	844444.120	818314.082
042	844434.452	818290.757
043	844444.533	818266.647
044	844450.595	818261.204
045	844444.836	818249.176
046	844440.809	818238.386
047	844464.244	818227.720
048	844471.151	818246.011
049	844458.057	818251.971
050	844461.122	818261.598
051	844452.437	818273.632
052	844445.444	818285.489
053	844448.276	818301.825
054	844456.901	818313.763
055	844472.263	818302.664
056	844488.541	818293.366
057	844497.009	818309.725
058	844482.600	818317.345
059	844475.566	818324.746
060	844420.811	818370.795
061	844415.550	818444.858
062	844415.550	818454.858
063	844414.101	818497.107
064	844408.909	818511.699
065	844389.112	818504.792
066	844394.208	818490.092
067	844369.750	818454.858
068	844369.750	818444.858
069	844369.750	818345.114
070	844373.946	818345.217
071	844375.033	818180.335
072	844373.624	818178.424
073	844371.382	818179.206
074	844297.397	818275.538
075	844239.314	818325.845
076	844231.051	818313.326
077	844298.964	818251.396
078	844349.536	818176.741
079	844332.057	818160.618
080	844359.085	818127.054
081	844356.683	817940.562
082	844356.683	817936.032
083	844354.618	817933.769
084	844350.647	817891.454

AECOM

PROJECT
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL ROAD P2 AND ASSOCIATED WORKS

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-	JAN.16	TENDER DRAWING	RPCM

STATUS
WORKING DRAWING

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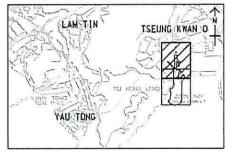
DIMENSION UNIT METRES

KEY PLAN A1 1 : 60000



PROJECT NO. 60308751
CONTRACT NO. NE/2015/02

SHEET TITLE
PORTION OF SITE

SHEET 2 OF 2

SHEET NUMBER
60308751/C2/C00/1012B

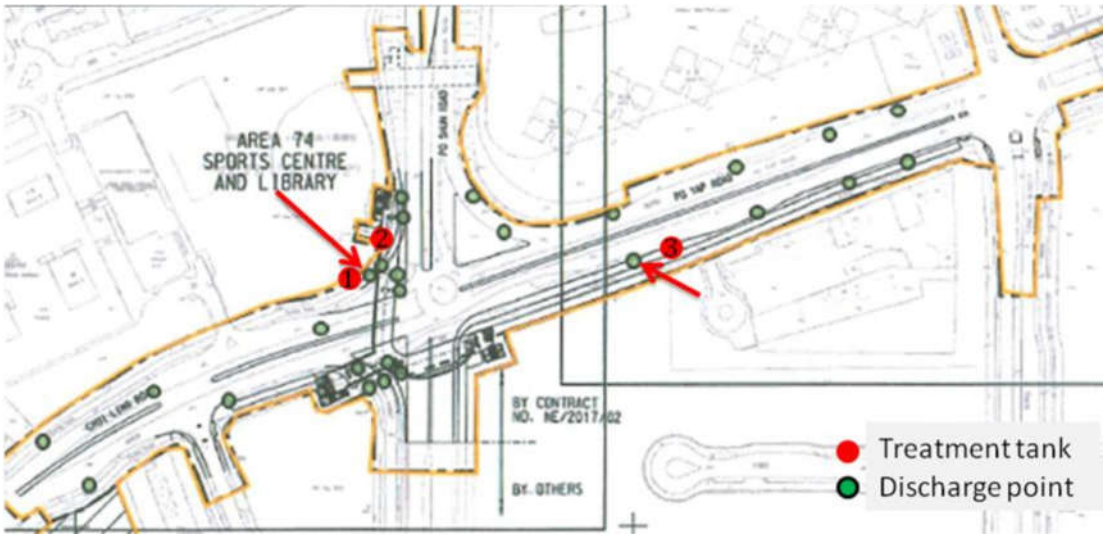
ISO A1 594mm x 841mm
Approved: CWN
Checked: RPCM
Designer: ATKH
Project Management Initials:
Plot File by: LUOFXA 2018/2/18
PATH: P:\Projects\60308751\DRAWING\Contract\C2\1000\C2_C00_1012.dgn

Contract No.: NE/2017/02

Contract Title: Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works

Flooding Mitigation Plan

Treatment facility
   

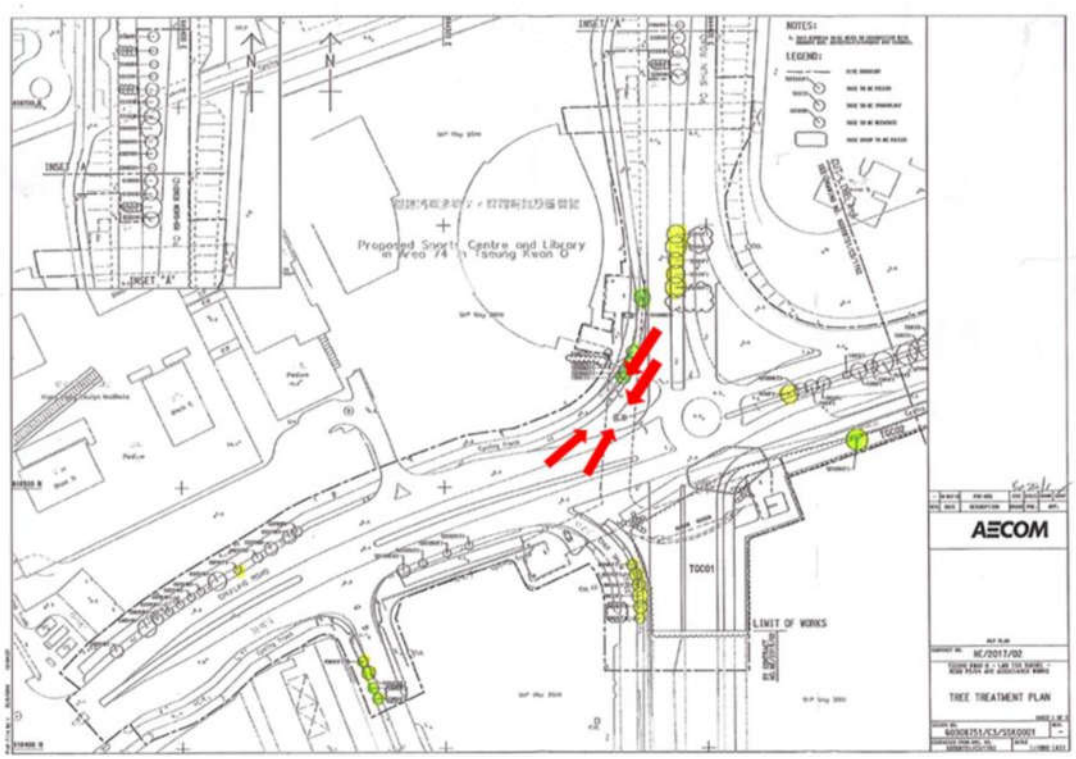


Three treatment facilities are provided on-site.

Bunding

Bunding is provided to prevent the surface runoff.

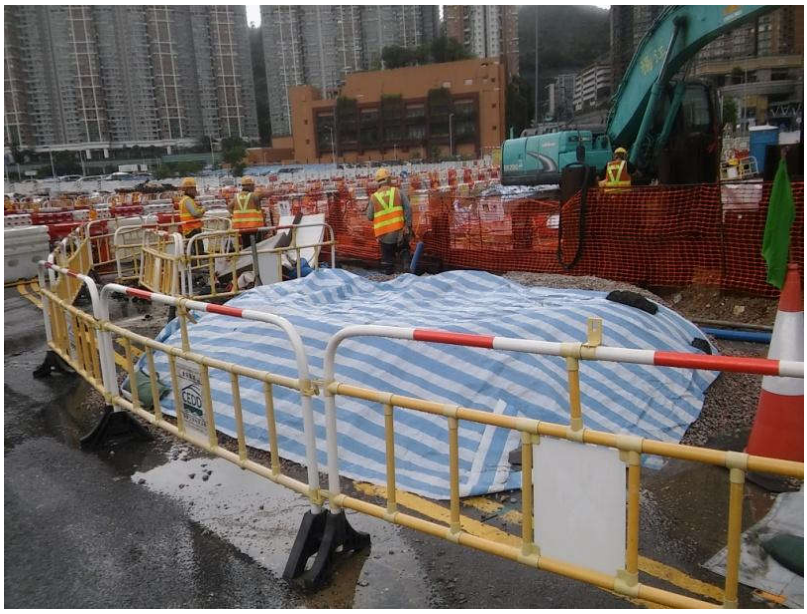
Surface runoff collection



Height difference between the road and site area to form a natural flow. Sump pit was provided for wastewater collection.

Gully Protection
 
Gully were protected and covered by geotextile.

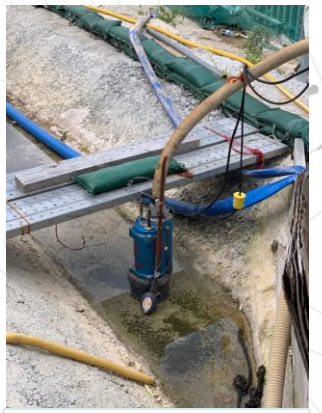
Stockpile Cover



Stockpile Should be proper cover with tarpaulin.

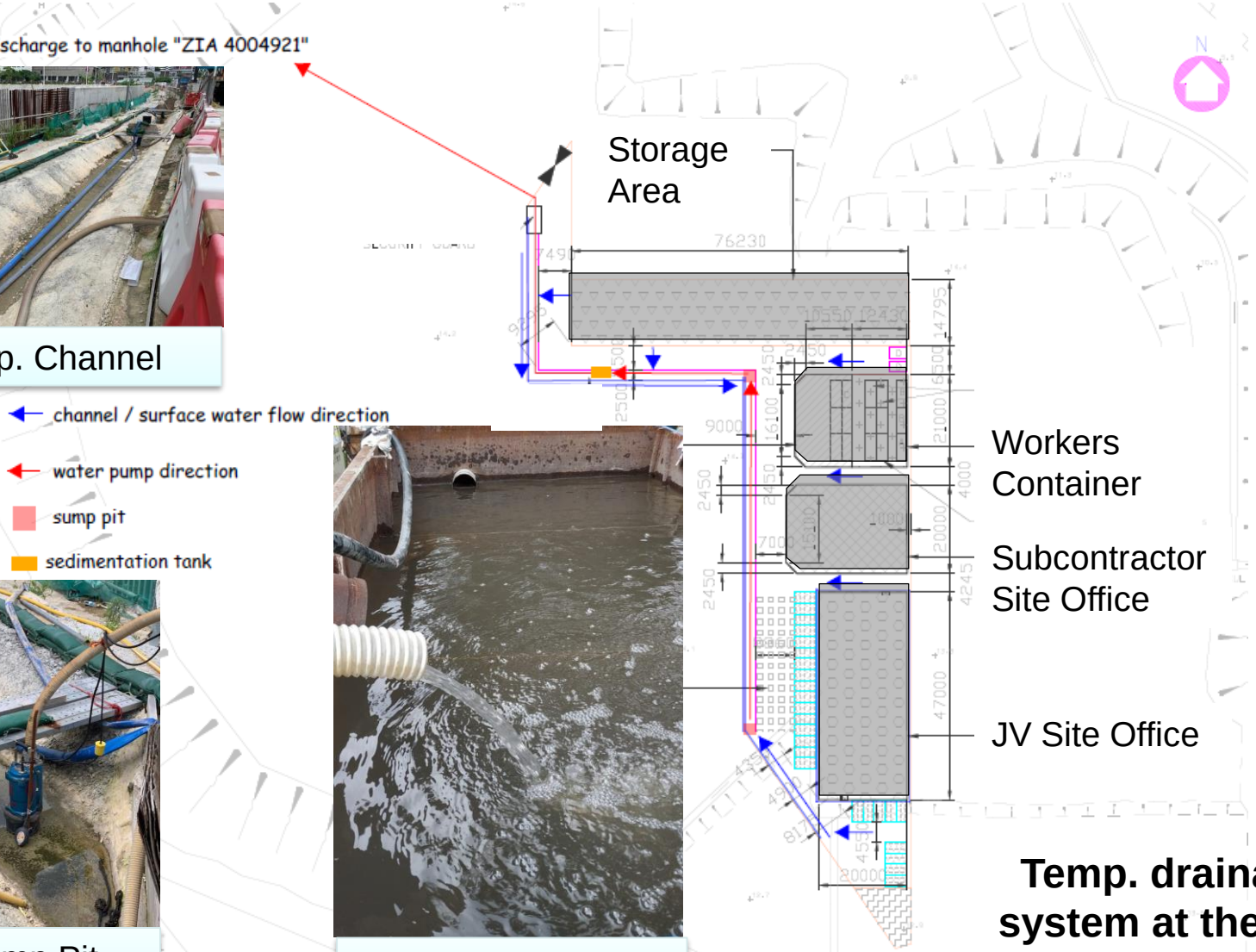
Site Surface Runoff Measures

Temp. Channel



Sump Pit

Sedimentation Tank



Temp. drainage system at the site office area

APPENDIX W
MONITORING RESULTS FOR POST-RECLAMATION MARINE WATER QUALITY MONITORING

Appendix W
Monitoring Results for Post Reclamation Marine Water Quality Monitoring

Part I – Review of Action and Limit Levels for Post Reclamation Marine Water Quality Monitoring

Parameter	Depth	Action Level	Limit Level
Dissolved Oxygen (DO) in mg/L (See Notes 1 and 2)	Surface Depth	Nil[3]	Nil[3]
	Depth Average	4.8 mg/L[4]	4 mg/L[5]
	Bottom	2.4 mg/L[4]	2 mg/L[5]

Notes:
1. "depth-averaged" is calculated by taking the arithmetic means of reading all sampling depths.
2. For DO, non-compliance with the water quality limits occurs when the monitoring result is lower than the limits.
3. No action and limit level is proposed for surface depth under the approved proposal for post-reclamation marine water quality monitoring.
3. As an alert for adverse water quality impact, the Action Level is set as 120% of the Current WQOs for marine Waters of Hong Kong
4. Current Water Quality Objectives (WQOs) for marine waters of Hong Kong.

The water depth at W2 on 13 May 2022 was **4.70m** and therefore the monitoring at the mid-depth will be omitted.

Part II – Review of Monitoring Results for Post Reclamation Marine Water Quality Monitoring at Surface Depth

Date	Depth (m)	DO (mg/L)	DO saturation (%)	Salinity (ppt)	pH	Temperature (°C)
13 May 2022	1.12	5.94	84.0	28.38	8.50	24.7
13 May 2022	1.02	5.81	82.1	28.34	8.51	24.7

Part III – Review of Monitoring Results for Post Reclamation Marine Water Quality Monitoring at Depth Average

Date	Depth (m)	DO (mg/L)	DO saturation (%)	Salinity (ppt)	pH	Temperature (°C)
13 May 2022	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted
13 May 2022	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted

Part IV – Review of Monitoring Results for Post Reclamation Marine Water Quality Monitoring at Bottom Depth

Date	Depth (m)	DO (mg/L)	DO saturation (%)	Salinity (ppt)	pH	Temperature (°C)
13 May 2022	3.72	5.02	71.8	30.79	8.45	24.6
13 May 2022	3.81	5.24	74.9	30.62	8.46	24.6

Part V – Short Summary
No exceedance of action or limit level of DO in mg/L was recorded in the reporting month.