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 June 2019

(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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New Territories East Development Office
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Your reference:

Our reference: HKCEDD08/50/105893

Date: 15 July 2019

Attention: Mr Lo Sai Pak, Sunny

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 June 2019 (version 1.0)

We refer to emails of 9 and 12 July 2019 from Cinotech Consultants Limited attaching the Monthly Environmental Monitoring and Audit Report for June 2019 (version 1.0).

We have no further 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 Ricky Lau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adr Lee
Independent Environmental Checker

LYMA/LCCR/lhmh

cc CEDD – Mr Edwin Leung (email: edwinleung@cedd.gov.hk)
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EXECUTIVE SUMMARY

Introduction

1. This is the 32th 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 June 2019.

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	N/A
Noise	6	0	Under investigation	0	Refer to Appendix K & O
Groundwater Quality	0	2	0	0	Refer to Appendix K
Marine Water Quality	41	224	*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/Limit Level exceedance for 24-hour TSP monitoring was recorded.

Construction Noise Monitoring

7. Six (6) Action Level exceedances were recorded due to the documented complaints received in this reporting month. The Summary of Documented Complaints in Reporting Month is tabulated in Table III.

8. No Limit Level exceedances for construction noise monitoring were recorded in the reporting month.

Groundwater Quality Monitoring

9. Two (2) Limit Level exceedances in groundwater quality monitoring were recorded in the reporting month.

Marine Water Quality Monitoring

10. All marine water quality monitoring was conducted as scheduled in the reporting month. There were forty-one (41) Action Level and two-hundred and twenty-four (224) Limit Level exceedances in 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 ongoing reclamation activities 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. No major deficiency of the silt curtains were also observed during site auditing.

11. 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. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month.

Ecological Monitoring

12. 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

13. 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

14. 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

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

Environmental Site Inspection

16. 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 NE/2015/01, NE/2015/02, NE/2015/03, NE/2017/01 and NE/2017/02 on 26, 20, 20, 18 and 20 June 2019 respectively. Details of the audit findings and implementation status are presented in **Section 10**.

Waste Management

17. 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 is presented in **Section 11** and **Appendix P**.

Key Information in the Reporting Month

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

Table II Summary Table for Complaints in the Reporting Month

Monthly Complaints	Event Details		Action Taken	Status
	Number	Nature		
June 2019	11	Noise / Air / Water / Working Hours[2]/	Details refer to App O	Draft CIRs submitted/On-going
May 2019	11	Noise/Air	Details refer to App O	Draft CIRs submitted
April 2019	17[1]	Noise / Light/ Air / Working Hours[2]	Details refer to App O	Draft CIRs submitted
March 2019	25	Noise / Air / Mosquitos	Details refer to App O	Draft CIRs submitted
February 2019	20	Noise/Air	Details refer to App O	Draft CIRs submitted
January 2019	39	Noise / Air / Water	Details refer to App O	Draft CIRs submitted/ Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

1. Four new complaints was received after the submission of the EMA Report (April 2019)
2. The validity of conducting works during Restricted Hours

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

Table III Summary of Documented Complaints in Reporting Month

Complaint Type	Investigation Findings	Follow-up Action / Mitigation Measure
Lam Tin Side		
Noise nuisance from construction works during weekday daytime and evening times. Noise barriers was found missing in certain parts of the construction areas.	Noise barriers for breakers and drill rigs have been adopted according to the CNMP, which is verified during the site audits.	- Contractors are reminded to use intact noise barrier properly in accordance to the CNMP at all times
Complaint about the noise nuisance from Lam Tin Interchange construction site in daytime holiday.	Dismantling of crusher shelter works were conducted in Portion III during the period of complaint. As confirmed by RE, only a cherry picker and an excavator was operated under valid CNP.	- Contractors are recommended to use quiet quality mechanical PMEs - Use of noise barriers to shield the PMEs from the direct-line of sight to Yau Lai Estate is recommended
Vibration from the construction of Lam Tin Tunnel	Ground-borne noise emitted from the drilling works inside the tunnel is suspected as the cause for the vibration. However	No further mitigation measures can be provided and hence no follow-up action is required.
Tseung Kwan O Side		

Complaint Type	Investigation Findings	Follow-up Action / Mitigation Measure
Operation of Construction works during restricted hours	Construction works were conducted under valid CNPs with confirmation from RE and CCTV footage of the works area	- No follow-up actions are required
Complaint about dark smoke nuisance from the tug boat inside the cofferdam area.	- Dark smoke has been seen emitting dark smoke intermittently from tug boats - No violation of the air pollution control (smoke) regulations have been observed	- The contractors have replaced the air filters in the tug boats - Contractors are reminded to replace the air filters regularly
Discharge of mud water into Junk Bay from TKOLT construction site	The muddy water in Junk Bay was suspected to be discharged from the upstream drainage due to heavy rainstorm, as sand plume was found near the outfalls at Junk Bay not within the cofferdam area	Contractors was reminded to cover all exposed grounds with tarpaulin and sandbags; and divert stormwater into wastewater treatment system where sufficient storage and treatment capacity is provided.
Odour nuisance from construction site near Tong Tin Street in daytime. Using impure oil in mobile crane was suspected as the source of odour.	- Only ULSD with Euro 5 standards was used in the mobile cranes at the site - No leakage of oil from the mobile cranes was observed or reported.	Contractor was reminded to store the oil tanks properly and avoid oil leakage from the tanks or PMEs at all times.

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

20. 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 (June 2019)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 3) Administration Building
		Main Tunnel	4) Main Tunnel Excavation 5) Main Tunnel Lining Works
		TKO Interchange	6) Haul Road Construction and Site Formation & Slope Works 7) Cavern Excavation 8) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Backfilling work of pipe trench for 2100 storm water drain pipe at Portion VII 3) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 4) Backfilling of P2A retaining wall	

Contract No.	Project Title	Site Activities (June 2019)
		5) ELS works for CH318 – CH363.50 6) Construction of manhole for 2100 pipe (upper part) 7) CCTV and air test works for 2100 pipe 8) Installation of irrigation system at Portion IV near Ocean Shore EVA 9) Site formation works and drainage for Road P2 CH500-CH650 10) Removal of sheet pile at Retaining Wall P2A 11) Reclamation works at Portion IX 12) Reinstatement of existing seawall at Portion VII 13) Pipe pile wall for modification of existing seawall of Portion V 14) Pre-drilling at P2 CH105 – CH264 15) Installation of socket H-pile at P2 CH105 – CH318 16) Pre-boring for s/p installation at P2 CH105 – CH318 17) Installation of interlock pipe pile wall 18) Surcharging of surcharge zone 1b1, 1b2, 2a1 – 2a3
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Installation of kalzip roofing systems on main deck 2) E&M inside Pillar box
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored Piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Predrilling 6) Construction of Temporary cycle track 7) Construction of drainage and watermain 8) Pile Cap construction
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O

Future Key Issues

21. 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 (July 2019)		Key Environmental Issues *
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 3) Administration Building	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	4) Main Tunnel Excavation 5) Main Tunnel Lining Works	(B)
	TKO Interchange	6) Haul Road Construction and Site Formation & Slope Works 7) Cavern Excavation 8) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Backfilling work of pipe trench for 2100 storm water drain pipe at Portion VII 3) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 4) Backfilling of P2A retaining wall 5) ELS works for CH318 – CH363.50 6) Construction of manhole for 2100 pipe (upper part) 7) CCTV and air test works for 2100 pipe 8) Installation of irrigation system at Portion IV near Ocean Shore EVA 9) Site formation works and drainage for Road P2 CH500-CH650 10) Removal of sheet pile at Retaining Wall P2A 11) Reclamation works at Portion IX 12) Reinstatement of existing seawall at Portion VII 13) Pipe pile wall for modification of existing seawall of Portion V 14) Pre-drilling at P2 CH105 – CH264 15) Installation of socket H-pile at P2 CH105 – CH318 16) Pre-boring for s/p installation at P2 CH105 – CH318 17) Installation of interlock pipe pile wall 18) Surcharging of surcharge zone 1b1, 1b2, 2a1 – 2a3		(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Installation of false ceiling & lighting 2) Planter and irrigation system 3) Floor finishing & M.J installation		(A) / (B) / (C) / (D) / (E)

Contract No. and Project Title	Site Activities (July 2019)	Key Environmental Issues *
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform 6) Construction of Pile Cap 7) Construction of Pier	(A) / (B) / (E) / (F) / (G)
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Predrilling 6) Construction of Temporary cycle track 7) Construction of drainage and watermain 8) Pile Cap construction	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

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 32th Monthly EM&A report summarizing the EM&A works for the Project in June 2019.

Purpose of the Report

1.2 This is the 32th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in June 2019.

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**.

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.

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. KY Chan	3922 9000	2759 1698
Cinotech	Environmental Team	Dr. HF Chan	2151 2088	3107 1388
		Mr. KS Lee	2151 2091	
AnewR	Independent Environmental Checker	Mr. Adi Lee	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 (June 2019)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 3) Administration Building
		Main Tunnel	4) Main Tunnel Excavation 5) Main Tunnel Lining Works
		TKO Interchange	6) Haul Road Construction and Site Formation & Slope Works 7) Cavern Excavation 8) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Backfilling work of pipe trench for 2100 storm water drain pipe at Portion VII 3) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 4) Backfilling of P2A retaining wall 5) ELS works for CH318 – CH363.50 6) Construction of manhole for 2100 pipe (upper part) 7) CCTV and air test works for 2100 pipe 8) Installation of irrigation system at Portion IV near Ocean Shore EVA 9) Site formation works and drainage for Road P2 CH500-CH650 10) Removal of sheet pile at Retaining Wall P2A 11) Reclamation works at Portion IX	

Contract No.	Project Title	Site Activities (June 2019)
		12) Reinstatement of existing seawall at Portion VII 13) Pipe pile wall for modification of existing seawall of Portion V 14) Pre-drilling at P2 CH105 – CH264 15) Installation of socket H-pile at P2 CH105 – CH318 16) Pre-boring for s/p installation at P2 CH105 – CH318 17) Installation of interlock pipe pile wall Surcharging of surcharge zone 1b1, 1b2, 2a1 – 2a3
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Installation of kalzip roofing systems on main deck 2) E&M inside Pillar box
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored Piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Predrilling 6) Construction of Temporary cycle track 7) Construction of drainage and watermain 8) Pile Cap construction
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O

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
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
Vessel Billing Account under construction waste disposal charging scheme				
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
Effluent Discharge License under Water Pollution Control Ordinance				

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
NE/2015/01	WT00025806-2016	18/07/2018	30/11/2021	Valid
	WT00026212-2016	16/05/2017	30/11/2021	Valid
	WT00027354-2017	22/03/2017	31/03/2022	Valid
	WT00027405-2017	22/03/2017	31/03/2022	Valid
	WT-00028495-2017	11/08/2017	31/08/2022	Valid
NE/2015/02	WT00026386-2016	15/12/2016	31/12/2021	Valid
	WT00027226-2017	23/02/2017	28/02/2022	Valid
	WT00030654-2018	16/04/2018	30/04/2023	Valid
NE/2015/03	WT00027295-2017	20/03/2017	31/03/2022	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
Construction Noise Permit (CNP)				
NE/2015/01	GW-RE0881-18	24/12/2018	22/06/2019	Expired on 22 June 2019
	GW-RE0171-19	08/03/2019	07/06/2019	Expired on 07 June 2019
	GW-RE0202-19	31/03/2019	30/06/2019	Expired on 30 June 2019
	GW-RE0272-19	22/04/2019	21/06/2019	Expired on 21 June 2019
	GW-RE0347-19	13/5/2019	13/07/2019	Valid
	GW-RE0424-19	11/6/2019	03/09/2019	Valid
	GW-RE0425-19	23/6/2019	22/12/2019	Valid
	GW-RE0427-19	21/6/2019	20/09/2019	Valid
NE/2015/02	GW-RE0833-18	02/12/2018	01/06/2019	Expired on 01 June 2019
	GW-RE0355-19	02/06/2019	01/12/2019	Valid
	GW-RE0366-19	14/05/2019	13/11/2019	Valid
	GW-RE0008-19	15/01/2019	14/07/2019	Valid
	GW-RE0228-19	11/04/2019	10/10/2019	Valid
	GW-RE0299-19	26/04/2019	16/10/2019	Valid
	GW-RE0218-19	30/04/2019	29/06/2019	Expired on 29 June 2019
NE/2017/01	GW-RE0350-19	08/05/2019	05/11/2019	Valid
	GW-RE0394-19	27/05/2019	26/08/2019	Valid
Marine Dumping Permit				
NE/2017/01	EP/MD/19-086	14/01/2019	13/07/2019	Valid
	EP/MD/20-021	01/06/2019	30/06/2019	Expired on 30 June 2019
Specified Process (SP) License				

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
NE/2015/01	L-11-053	09/03/2018	08/03/2021	Valid

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 June 2019.

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	3
	Met One Instruments Model No.: AEROCET-831	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	2
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)

- 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 meter 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 aluminum 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 (Wellab Ltd.) for weighing. The elapsed time will be also recorded.

3.19 Before weighing, all filters was 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 both 1-hour TSP and 24-hour TSP monitoring.

3.22 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**.

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

3.24 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)/Refuge floor (26/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 location has changed from 41/f to 26/f on 23rd Nov 2018.

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	4
Calibrator	SV30A	1
	Brüel & Kjær 4231	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 Six (6) Action Level exceedances were recorded due to the documented complaints received in this reporting month. No Limit Level exceedances for day-time, evening time and night-time construction noise monitoring were recorded in the reporting month.

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		

Current Tunnel Blasting Arrangement

4.13 The drill and blast method was evaluated as the most appropriate method and the general practice of this method was introduced during the EIA report assessment. The paragraphs 2.9.9 and 2.9.33 of the EIA Report mention that there might be one blast or multiple blasts and the maximum number of blast location per day would be determined by the Contractor to suite his method of working.

4.14 Notwithstanding the information provided by the Engineer at paragraphs 4.6.4 and 6.6.12 of the EIA Report, to minimize blast nuisance to the public and to respond to the community concerns, the tunnel blast should be arranged, where possible, avoiding the blast to be carried out during night time and shortening the blast duration by arranging various work fronts to be blasted at different time slots. Hence, it has become more desirable to split one tunnel blasting operation, which may consist of several blasting work fronts along the tunnels, into a total of two to three tunnel blasts per day. The tunnel blasts, which locate outside the MTR Protection Zone (RPZ) possessing insignificant risk to the MTR's structures would be carried out during day time and before 22:00. For the tunnel blasts within and in close vicinity to RPZ, Contractor's blasting assessment report revealed that those blasts have to be carried out after train service and, generally, at around 01:40.

4.15 Since the tunnelling works conducted in this reporting month are well outside the RPZ, no blasting was carried out during the mid-night.

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

5.1 Groundwater quality monitoring shall be conducted as identified in the EIA report (locations refer to **Figure 4**, Stream 1 to 3). According to the EM&A Manual, dissolved oxygen (DO), pH, temperature, turbidity, suspended solids (SS), 5-day biochemical oxygen demand (BOD_5), Total organic carbon (TOC), Total Nitrogen, Ammonia-N and Total Phosphate are the parameters for the monitoring. **Appendix A** shows the established Action and Limit Levels.

5.2 As stated in the Baseline Environmental Monitoring Plan submitted to EPD in September 2016, Groundwater quality monitoring could not be conducted at the other identified monitoring station in the EIA Report, Stream 4, as it was found to be not accessible due to safety reason. EPD has no further comment on the Plan in October 2016.

Marine Water Quality

5.3 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.

5.4 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.

5.5 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.

Groundwater Level Monitoring (Piezometer Monitoring)

5.6 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. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was

recorded in the reporting month.

Monitoring Locations

Groundwater Quality

5.7 Stream 1 – Stream 3 is designated for the groundwater quality monitoring according to EM&A Manual. The locations are summarized in **Table 5.1** and shown on **Figure 4**.

Table 5.1 Groundwater Quality Monitoring Stations

Monitoring Streams	Descriptions	Sampling Location
Stream 1	Stream running between the Kwong Tin Estate and Lei Yue Mun Road	1 sampling location for each stream
Stream 2	Stream on western coast of Chiu Keng Wan	
Stream 3	Stream on western coast of Chiu Keng Wan	

Marine Water Quality

5.8 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. The locations are also summarized in **Table 5.2** and shown on **Figure 5** and **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
W1	Ocean Shores (for WQM in temporary marine embayment)	844324	817791

Monitoring Equipment

5.9 For in-situ monitoring, a multi-parameter meter (Aquaread AP-2000-D) 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

5.10 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.

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

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

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

Turbidity

5.14 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

5.15 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

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

Water Sampler

5.17 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

5.18 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

5.19 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.

5.20 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.

5.21 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe of Aquaread AP-2000-D. The probe was then be calibrated with a solution of known NTU.

5.22 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.

5.23 **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

5.24 **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
Groundwater Quality			
Stream 1-Stream 3	• DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Turbidity, NTU • SS, mg/L • BOD_5, mg O_2/L • TOC, mg-TOC/L • Total Nitrogen, mg/L • Ammonia-N, mg NH_3-N/L • Total Phosphate, mg-P/L	Mid-depth	Biweekly (When the tunnel construction works are found within 50m of the location, weekly.)
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1	*In-situ*: Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity Laboratory Testing:	M1-M5, C1-C2, G1-G4 • 3 water depths: 1m below water surface, mid-depth and 1m above sea bed.	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)

Monitoring Stations	Parameters, unit	Depth	Frequency
C2 G1 G2 G3 G4	Suspended Solids (SS)	• 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)	
Water Quality Monitoring in Temporary Marine Embayment			
W1	• DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Salinity, ppt	• 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth monitoring only. • If the water depth is less than 6m, omit mid-depth monitoring	Weekly during the period when the fully enclosed barrier is installed

Monitoring Methodology

Groundwater Quality

5.25 At each monitoring location, two consecutive in-situ measurements for DO concentration, DO saturation, pH, temperature and turbidity were taken for water samples on site. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

5.26 For SS, BOD_5, TOC, Total Nitrogen, Ammonia-N and Total Phosphate, measurement and grab samples of surface water was collected. Water samples of about adequate volume was collected and stored in high density polythene bottles. Following collection, water samples was stored in high density polythene bottles. Preservation H_2SO_4 was appropriately added for water samples for TOC, Total Nitrogen, Ammonia-N and Total Phosphate testing. Water samples was packed in ice and cooled to 4°C (without being frozen), delivered to the HOKLAS accredited laboratory, Wellab Limited and analyzed.

Marine Water Quality

5.27 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.

5.28 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

5.29 The testing of all parameters were conducted by Wellab Ltd. (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

5.30 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

5.31 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.

5.32 QA/QC procedures as attached in **Appendix J** are available for the parameters analysed in the HOKLAS-accredited laboratory, WELLAB Ltd.

Results and Observations

Groundwater Quality Monitoring

5.33 Summary of groundwater quality monitoring results is shown in **Table 5.6**. Groundwater quality monitoring results, graphical presentations and laboratory testing reports are shown in **Appendix H**.

5.34 Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.

5.35 Action and Limit Level for groundwater quality monitoring has been reviewed with consideration of monitoring results obtained from November 2016 to June 2017, as there was no tunnel boring or tunnel construction works from November 2016 to June 2017. A "Review Report for Action and Limit Levels of Groundwater Quality Monitoring" was submitted to EPD in August 2017. EPD has no further comment on the report and the updated Action and Limit Level is shown in **Appendix A**.

Table 5.6 Summary of Groundwater Quality Monitoring Results

Date	Location	Parameters (unit)								
		pH	**Dissolved Oxygen (mg/L)**	**Turbidity (NTU)**	**SS (mg/L)**	**BOD_5 (mg O_2/L)**	**TOC (mg-TOC/L)**	**Total Nitrogen (mg/L)**	**NH_3-N (mg NH_3-N/L)**	**Total Phosphorus (mg-P/L)**
12 June 2019	Stream 1	7.5	8.2	2.1	2.4	***3***	4	1.2	0.04	0.03
	Stream 2	7.5	8.1	1.2	2.2	2	3	1.2	0.05	0.03
	Stream 3	7.4	8.5	1.4	2.5	2	4	1.2	0.13	0.02
21 June 2019	Stream 1	7.9	8.1	0.3	<1.0	***3***	3	0.6	0.03	0.02
	Stream 2	7.9	8.3	0.4	<1.0	2	2	0.6	0.04	0.02
	Stream 3	7.9	8.1	0.3	<1.0	2	2	0.6	0.03	0.02
No. of Exceedance	Action Level	0	0	0	0	0	0	0	0	0
	Limit Level	0	0	0	0	2	0	0	0	0

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

5.36 Two (2) Limit Level Exceedances in groundwater quality monitoring were recorded in the reporting month.

Marine Water Quality Monitoring

5.37 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.

5.38 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. Forty-one (41) Action Level and two-hundred and twenty-four (224) Limit Level exceedances were recorded in marine water quality monitoring.

5.39 The exceedance of SS has been recorded continuously and randomly at all monitoring stations in June. According to the data from Hong Kong Observatory, high rainfall was recorded in June and a high volume of upstream muddy water was discharged into the Junk Bay, as observed around the rainstorm events. No sand plume within the cofferdam area and no muddy water discharge at the designated discharge point within the Site were identified during the site inspection and water quality monitoring, and, as part of mitigation measures for marine works, silt curtains and cofferdam are deployed around the marine works area of the Project and no major deficiency of the conditions of the silt curtain and the cofferdam has been discovered.

5.40 In addition, muddy water was observed during weekly site inspection at a few outfalls in Junk Bay around the rainstorm events. The muddy water discharge occurred during the rainstorms would have resulted in an increase of the overall SS concentrations in Junk Bay and hence the SS limit level exceedance was recorded. No direct evidence that the recent exceedances were due to the ongoing reclamation activities of the Project. Therefore, no additional marine water quality monitoring was required. Details of the exceedance investigation report can be found in **Appendix K**.

5.41 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)

5.42 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.

5.43 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. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month. Details of the result are presented in **Appendix U**.

Mitigation Measures Adopted by Contractors for Surface runoff Prevention

5.44 During wet season, the Contractors have step up the mitigation measures adopted on Site, in order to prevent surface run-off and muddy water from discharging to the public areas. The Surface Run-off Management Plans for all contracts are attached in **Appendix V** and the mitigation measures adopted by each Contract are summarised below:

NE2015/01

5.45 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 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.

5.46 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.

5.47 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

1. The exposed sloped area at Portion 9 has been covered with tarpaulin to avoid surface run-off.
2. The bund wall near Area A has been extended to 300mm in depth along the drainage system at Area A, extra bund wall shall be provided at the gaps between the concrete block walls in Area A when necessary.
3. Soak away pit with a 600mm in diameter were bored into the ground, down to -14mPD, near the piling works area to cater for the surface runoff at portion 9. The stormwater and the water generated from the piling works are stored temporary at the pit around the soak away pit, which shall be pumped automatically into the soak away pit where they are soaked into the soil naturally.
4. The stormwater received in Portion 9 shall be directed and pumped via the flex tube and sump towards the water treatment system in Area A and Z. 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. 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

1. Existing manholes are covered with sandbags and geotextiles to avoid surface run-off from entering the channels.
2. Stockpiles are covered with tarpaulin to avoid surface run-off.
3. Concrete blocks and sandbags are placed along the periphery of the site boundary to avoid surface run-off.
4. 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 are treated before discharging into the designated discharge point.

NE2015/03

1. 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.
2. Sandbags were placed at the periphery of the site along the hoarding to prevent surface runoff from escaping the site.
3. Exposed slopes are covered with tarpaulin to prevent surface run-off.
4. The surface run-off shall be pumped into the sedimentation tank where they are treated before entering the designated discharge points

NE2017/01

1. 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 25 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 120 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: 5, 12, 19 and 26 June 2019
- Contract No. NE/2015/02: 6, 13,20 and 27 June 2019
- Contract No. NE/2015/03: 6, 13,20 and 27 June 2019
- Contract No. NE/2017/01: 4, 13, 18 and 25 June 2019
- Contract No. NE/2017/02: 6, 13,20 and 27 June 2019

Monthly joint site inspection with the representative of IEC was conducted for NE/2015/01, NE/2015/02, NE/2015/03, NE/2017/01 and NE/2017/02 on 26, 20, 20, 18 and 20 June 2019 respectively.

Implementation Status of Environmental Mitigation Measures

10.3 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**.

10.4 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 Six (6) Action Level exceedances were recorded due to the documented complaints received in the reporting month. No exceedances of construction noise monitoring were recorded for day-time, evening-time and night-time respectively in the reporting month.

12.2 Two (2) Limit Level Exceedances for groundwater quality monitoring were recorded in the reporting month.

12.3 Forty-one (41) Action Level and two-hundred and twenty-four (224) exceedances were recorded in marine water quality monitoring.

12.4 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 Non-Compliance

12.5 No non-compliance was recorded on this reporting month.

Summary of Environmental Complaint

12.6 Eleven (11) 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 (June 2019)		Key Environmental Issues *
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 3) Administration Building	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	4) Main Tunnel Excavation 5) Main Tunnel Lining Works	(B)
	TKO Interchange	6) Haul Road Construction and Site Formation & Slope Works 7) Cavern Excavation 8) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Backfilling work of pipe trench for 2100 storm water drain pipe at Portion VII 3) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 4) Backfilling of P2A retaining wall 5) ELS works for CH318 – CH363.50 6) Construction of manhole for 2100 pipe (upper part) 7) CCTV and air test works for 2100 pipe 8) Installation of irrigation system at Portion IV near Ocean Shore EVA 9) Site formation works and drainage for Road P2 CH500-CH650 10) Removal of sheet pile at Retaining Wall P2A 11) Reclamation works at Portion IX 12) Reinstatement of existing seawall at Portion VII 13) Pipe pile wall for modification of existing seawall of Portion V 14) Pre-drilling at P2 CH105 – CH264 15) Installation of socket H-pile at P2 CH105 – CH318 16) Pre-boring for s/p installation at P2 CH105 – CH318 17) Installation of interlock pipe pile wall 18) Surcharging of surcharge zone 1b1, 1b2, 2a1 – 2a3		(A) / (B) / (C) / (D) / (E) / (G) / (I)

Contract No. and Project Title	Site Activities (June 2019)	Key Environmental Issues *
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Installation of false ceiling & lighting 2) Planter and irrigation system 3) Floor finishing & M.J installation	(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Installation of Skylight glazing on Main Deck 2) Modification work of temporary platform on Main Deck 3) Installation of Precast Pile Cap Shell 4) Pre-drilling 5) Bored piling 6) Dismantling Works for Temporary Working Platform 7) Construction of Temporary Working Platform 8) Construction of Pile Cap 9) Construction of Pier	(A) / (B) / (E) / (F) / (G)
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Predrilling 6) Construction of Temporary cycle track 7) Construction of drainage and watermain 8) Pile Cap Construction	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

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;
- 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 32th Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in June 2019 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 Action/Limit Level exceedance for 24-hour TSP monitoring was recorded.

Construction Noise Monitoring

14.4 Six (6) Action Level exceedances were recorded due to the documented complaints received in this reporting month. No exceedance was recorded during night-time in the reporting month.

14.5 No Limit Level exceedance was recorded for daytime construction noise in the reporting month.

Water Quality Monitoring

14.6 Two (2) Limit Level Exceedances in groundwater quality monitoring were recorded in the reporting month.

14.7 Forty-one (41) Action Level and two-hundred and twenty-four (224) Limit Level exceedances were recorded in marine water quality monitoring.

14.8 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. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month. Details of the result are presented in **Appendix U**.

Ecological Monitoring

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

Monitoring on Cultural Heritage

14.10 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

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

Landfill Gas Monitoring

14.12 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

14.13 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

14.14 Eleven (11) environmental complaints, no successful prosecution and notification of summon were received during the reporting period.

Recommendations

14.15 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 at all times
- To repair the gaps between the noise barriers.
- To place the 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 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.
- To cover exposed ground with tarpaulin and sandbag to avoid surface run-off
- Provide sufficient storage/diversion for stormwater collected within the site during rainstorm, in order to avoid overflowing the water treatment tanks

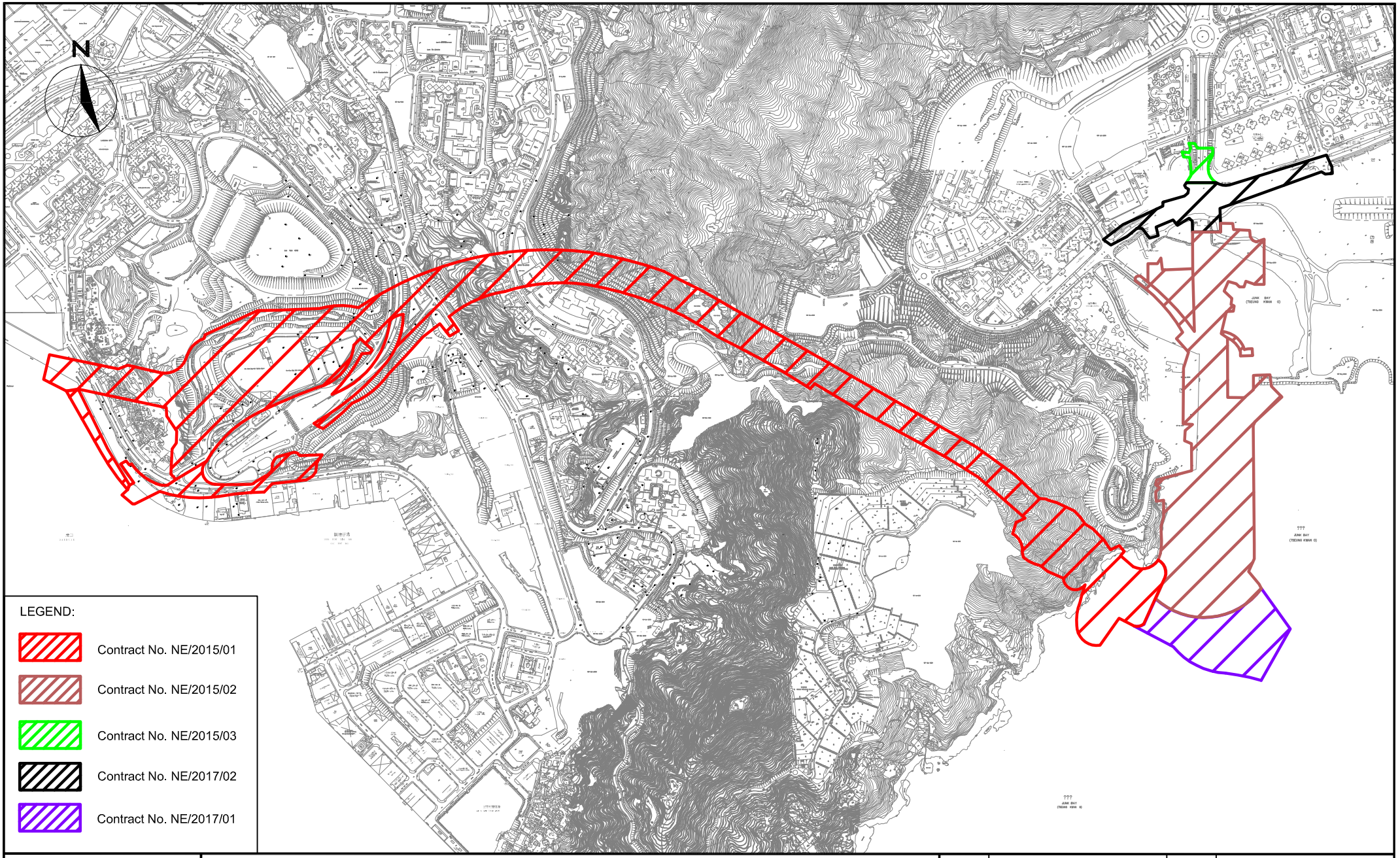
Waste/Chemical Management

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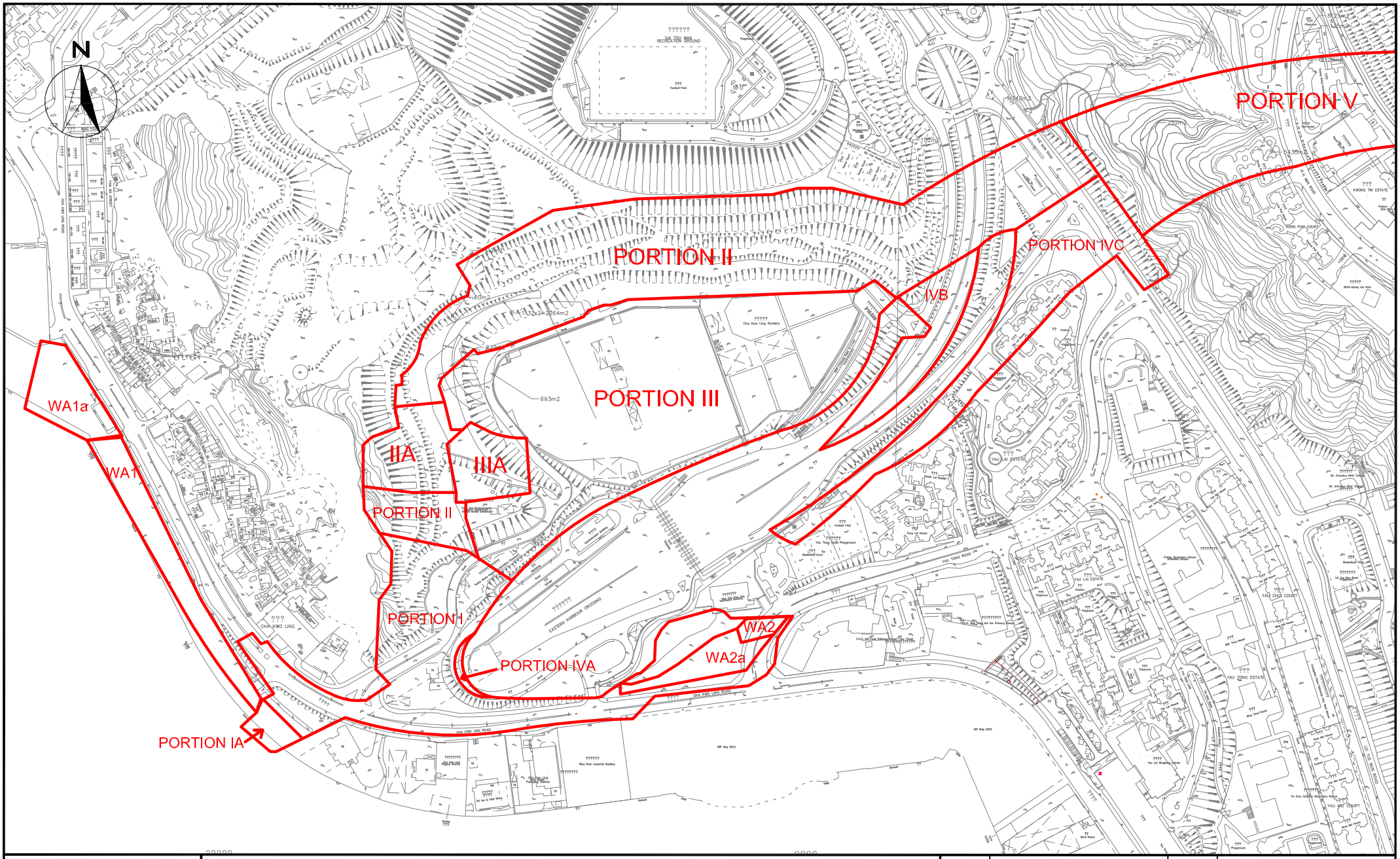
Environmental Team for Tseung Kwan O - Lam Tin Tunnel
- Design and Construction

Site Layout Plan

SCALE	1:15000 @ A4	DATE	APR 2018
CHECK	JF	DRAWN	AC
JOB No.	MA16034	FIGURE NO. 1	REV -



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

Site Portions under Works Contract No. NE/2015/01 (Lam, Tin Side)

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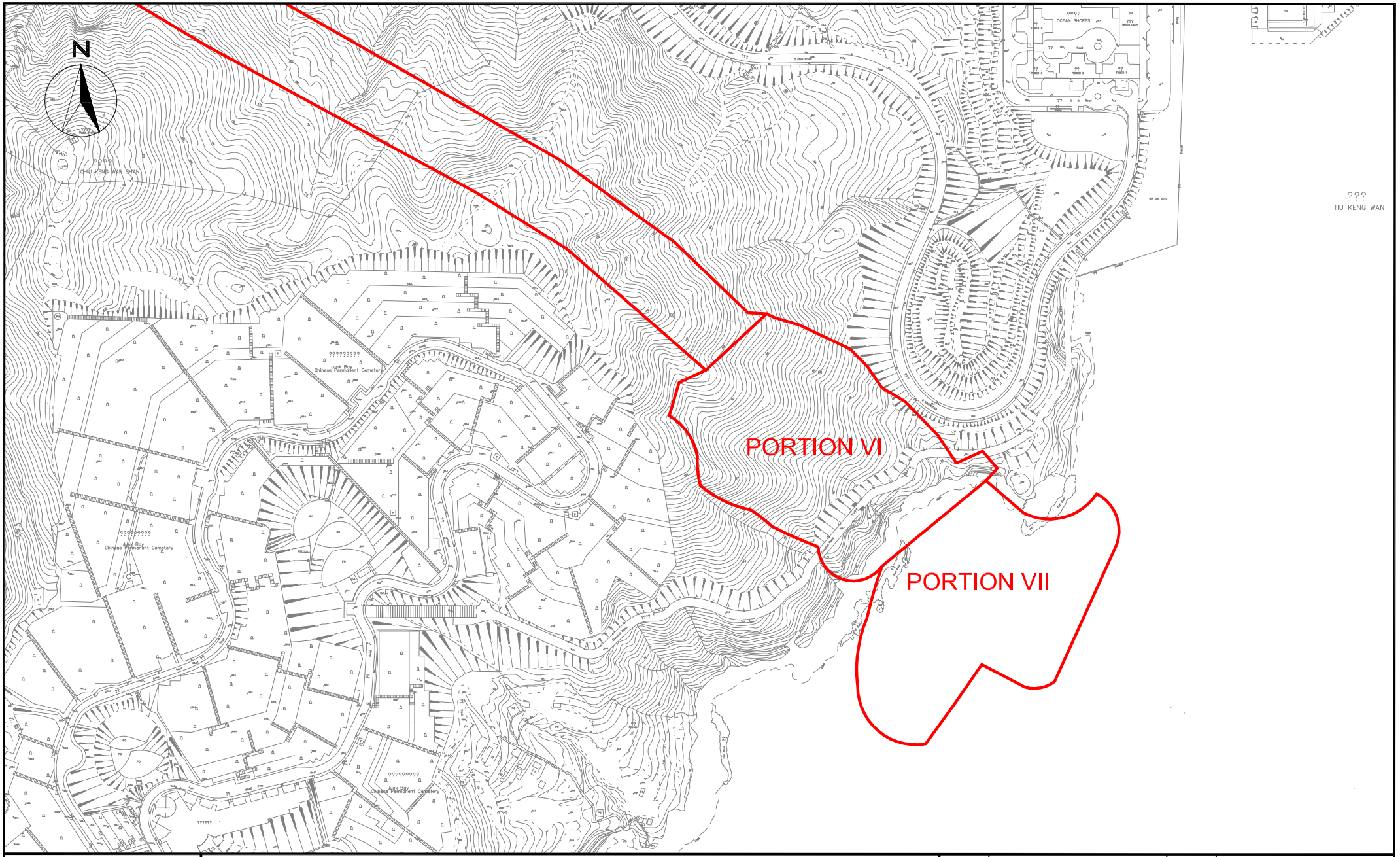

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- Design and Construction

Site Portions under Works Contract No. NE/2015/01 (Tsuneg Kwan O Side)

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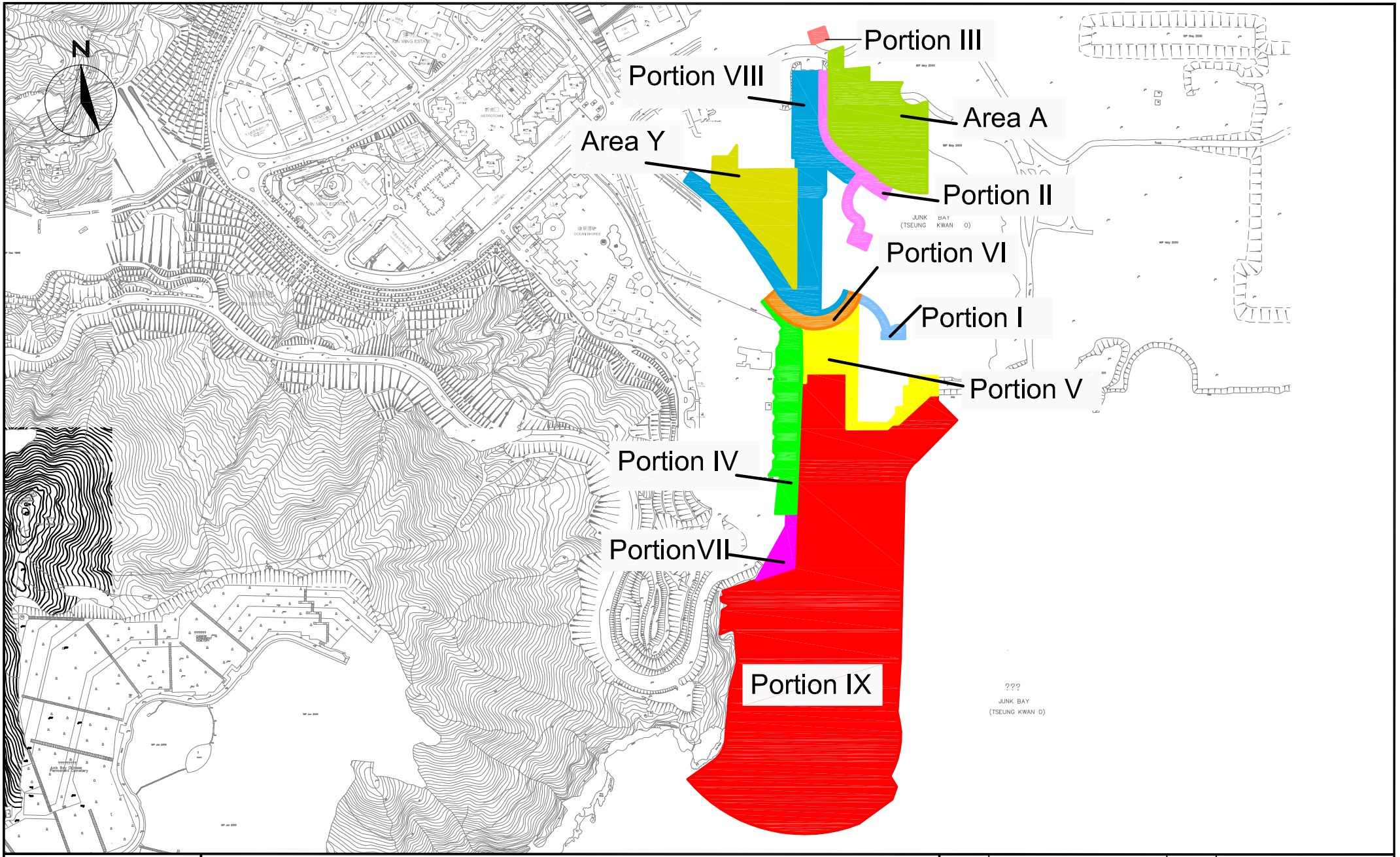

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Site Portions under Works Contract No. NE/2015/02

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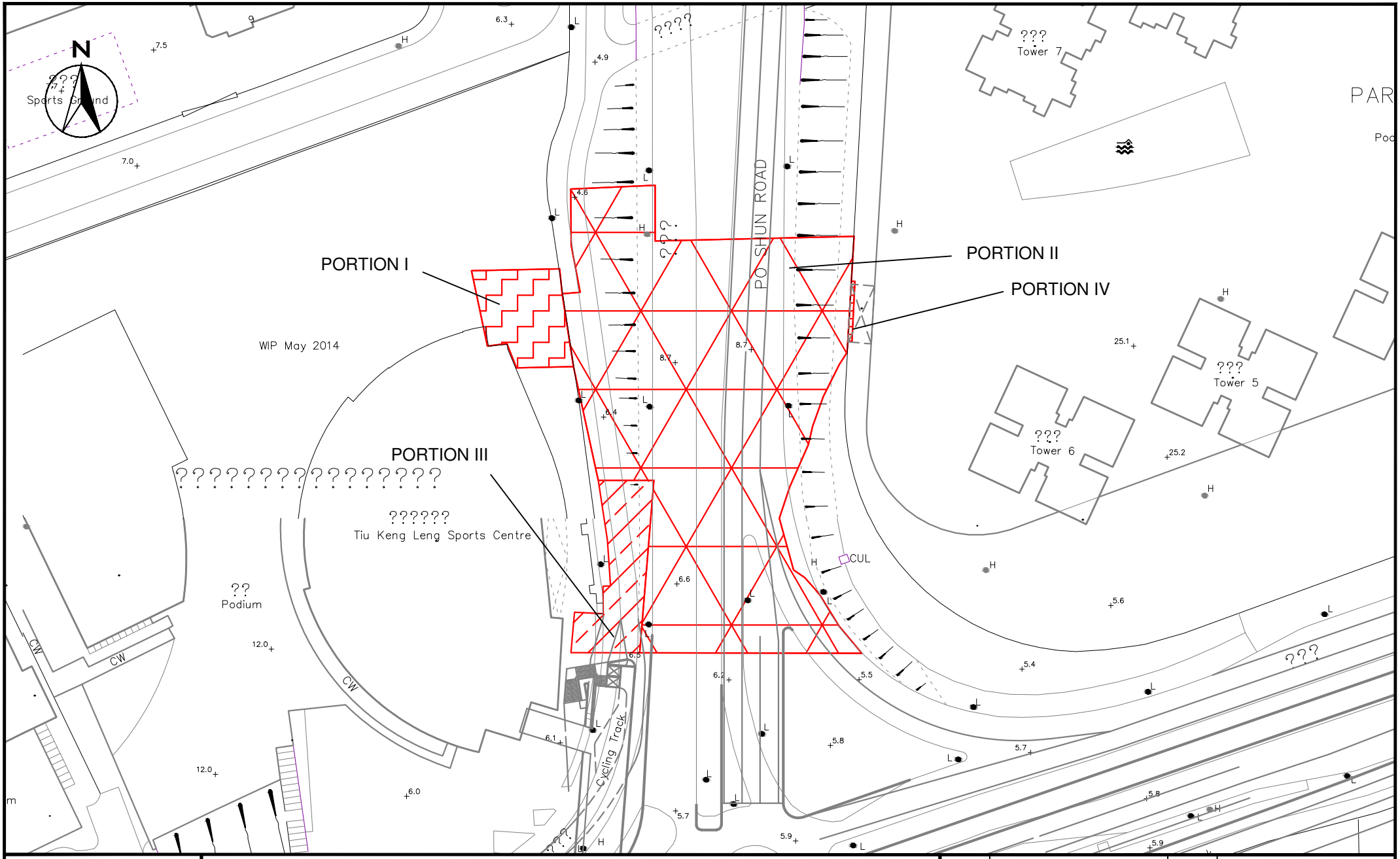
		REV	-



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- Design and Construction

Site Portions under Work Contract No. NE/2015/03

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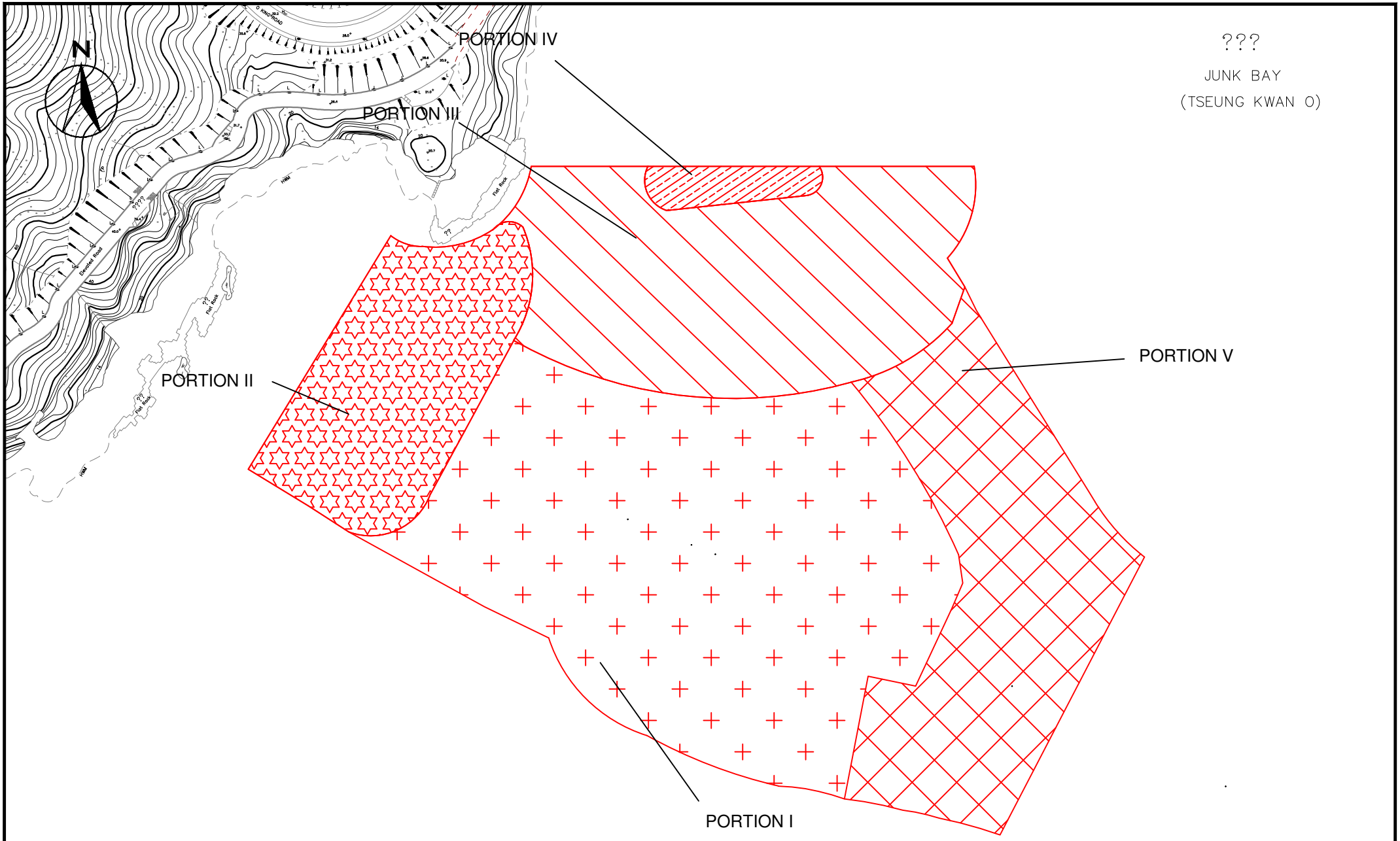

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- Design and Construction

Site Portions under Work Contract No. NE/2017/01

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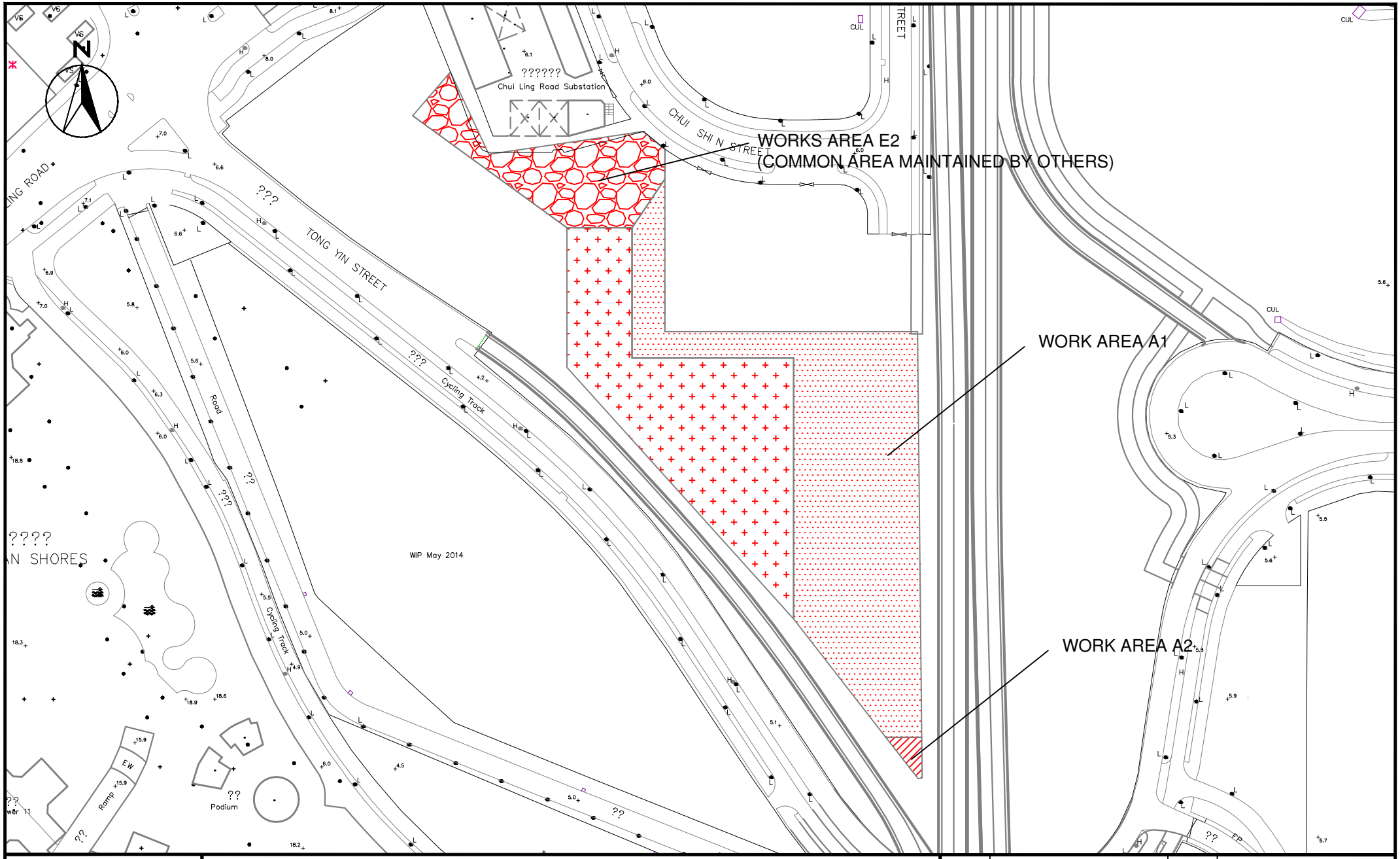

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Site Portions under Work Contract No. NE/2017/01

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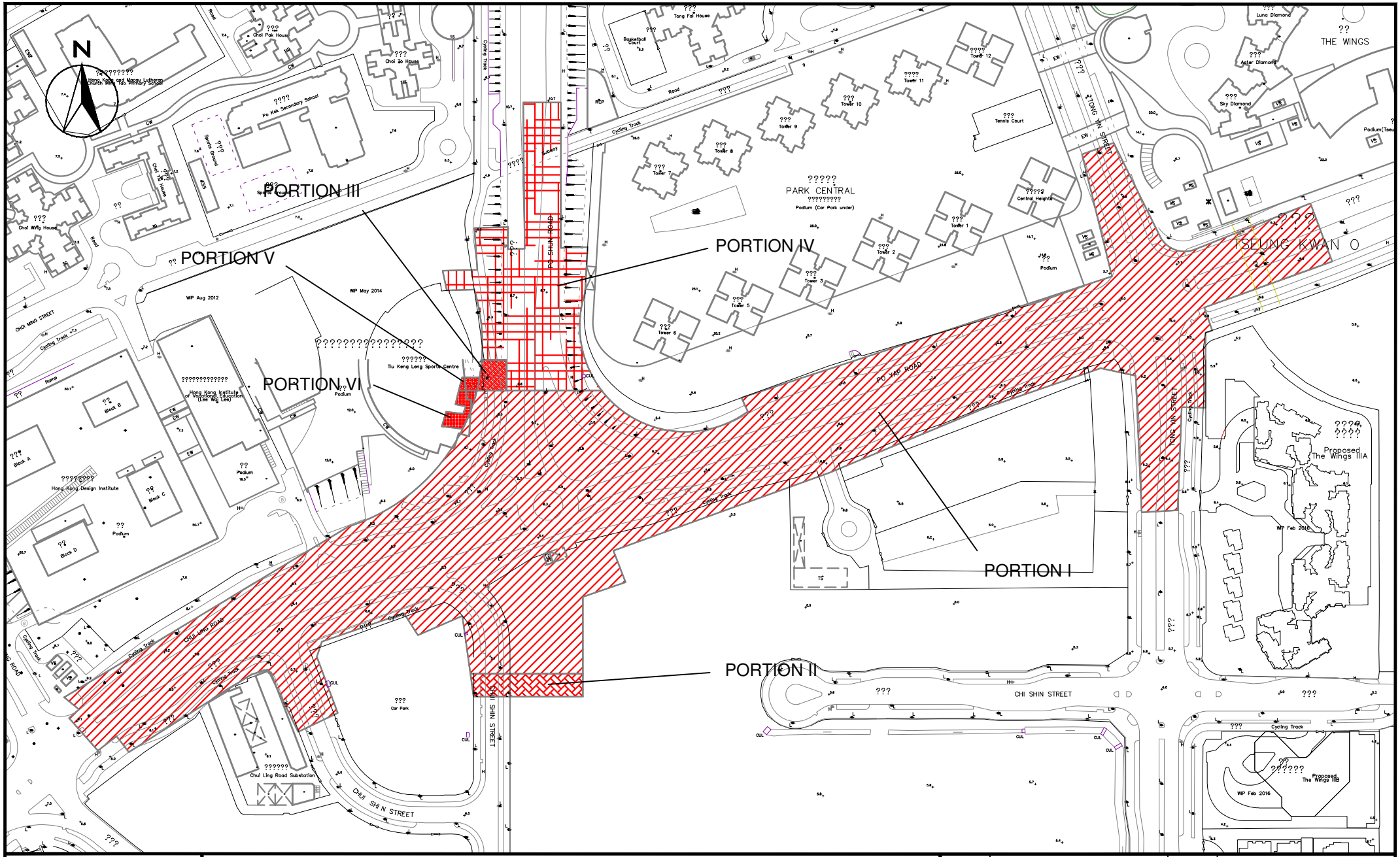

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- Design and Construction

Site Portions under Work Contract No. NE/2017/02

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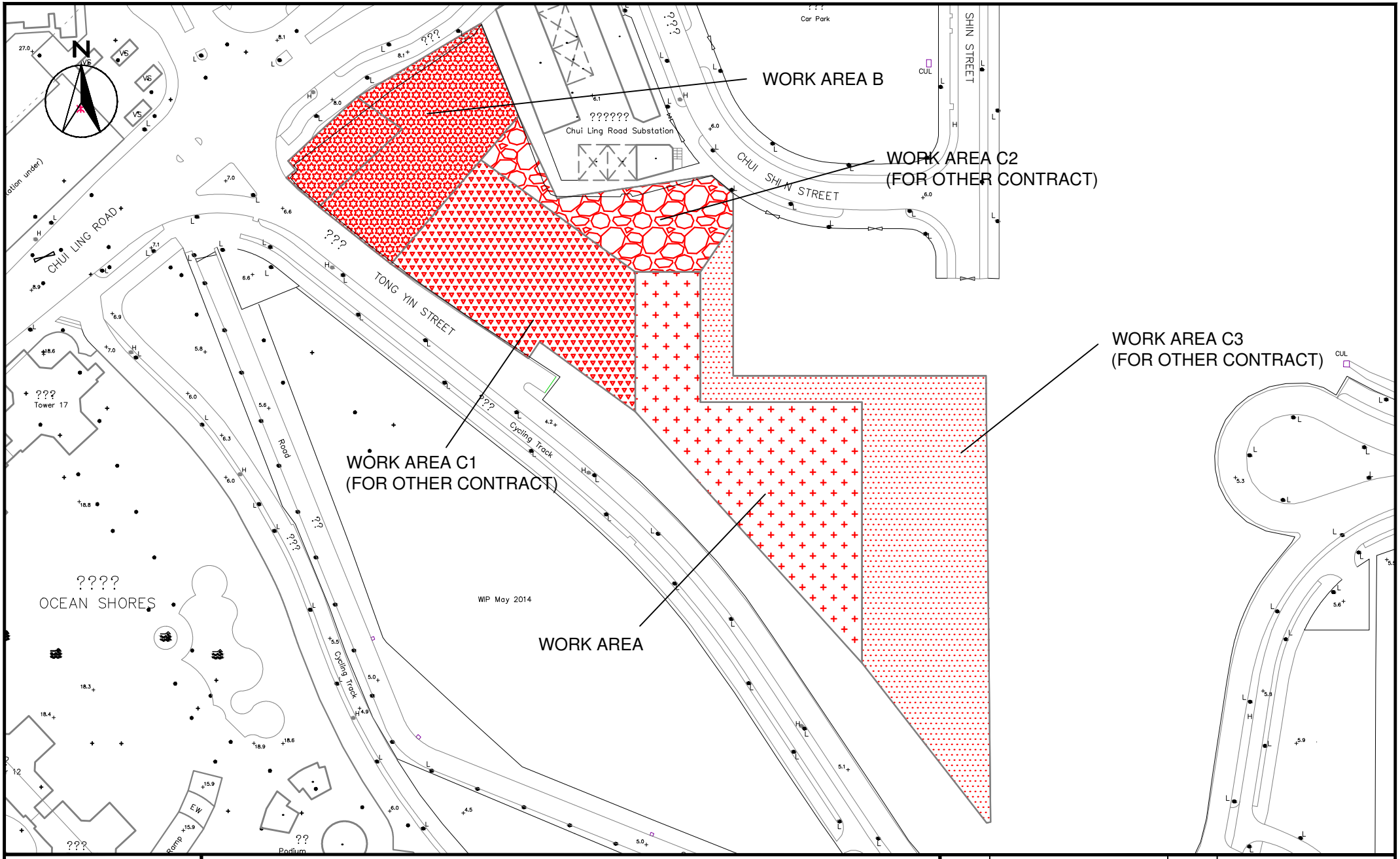

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Environmental Team for Tseung Kwan O - Lam Tin Tunnel
- Design and Construction

Site Portions under Work Contract No. NE/2017/02

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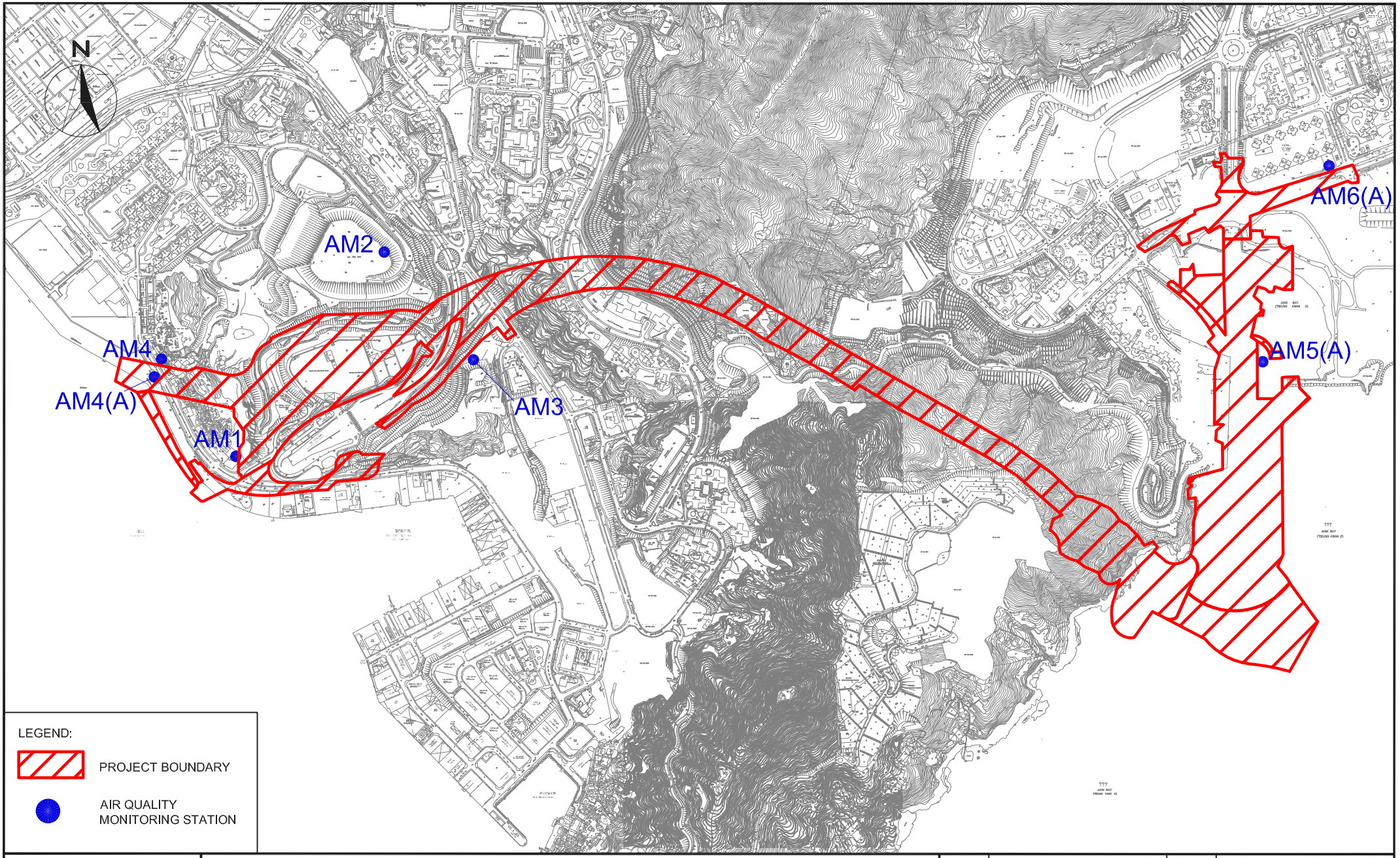

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Air Quality Monitoring Stations

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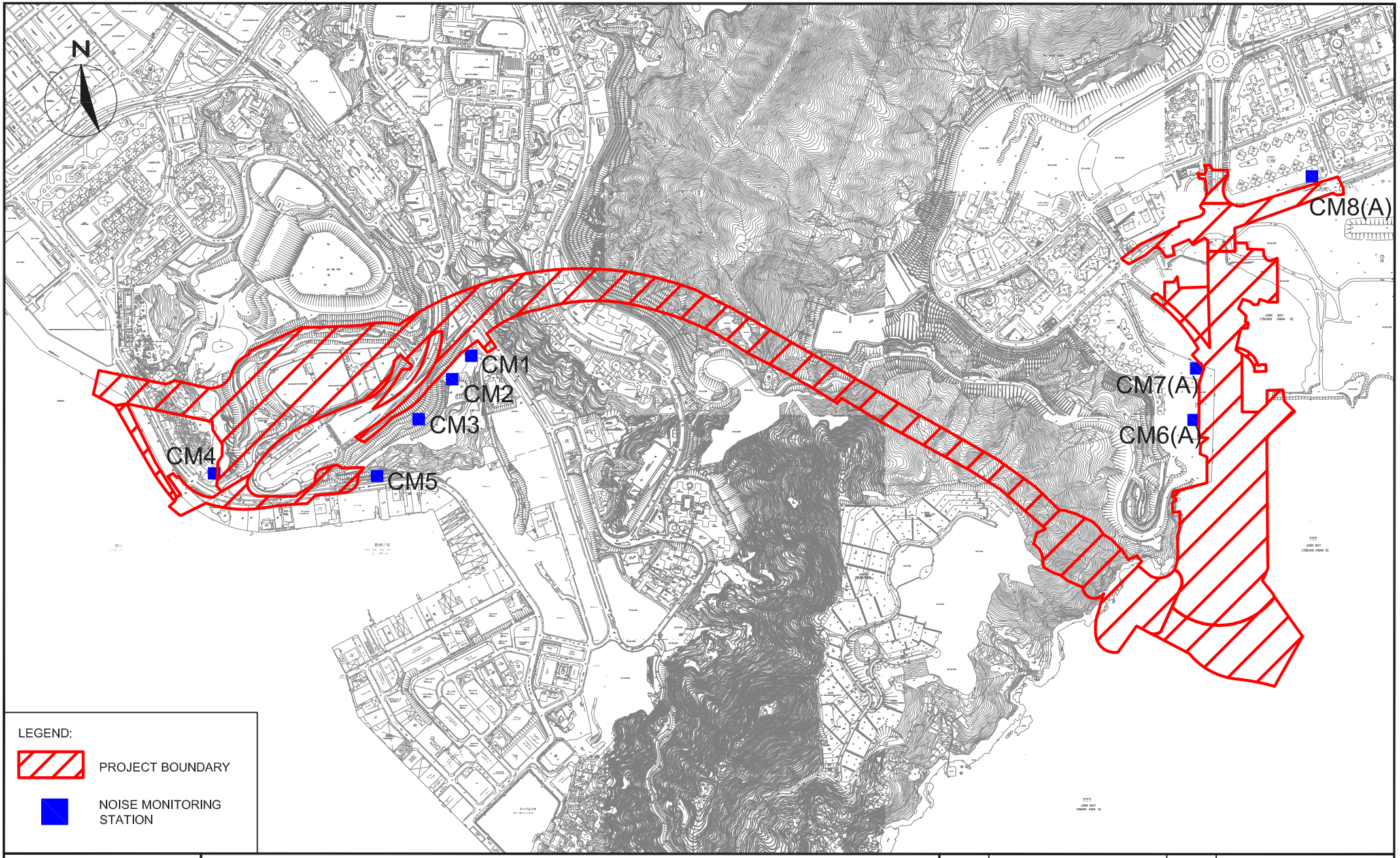

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Noise Monitoring Stations

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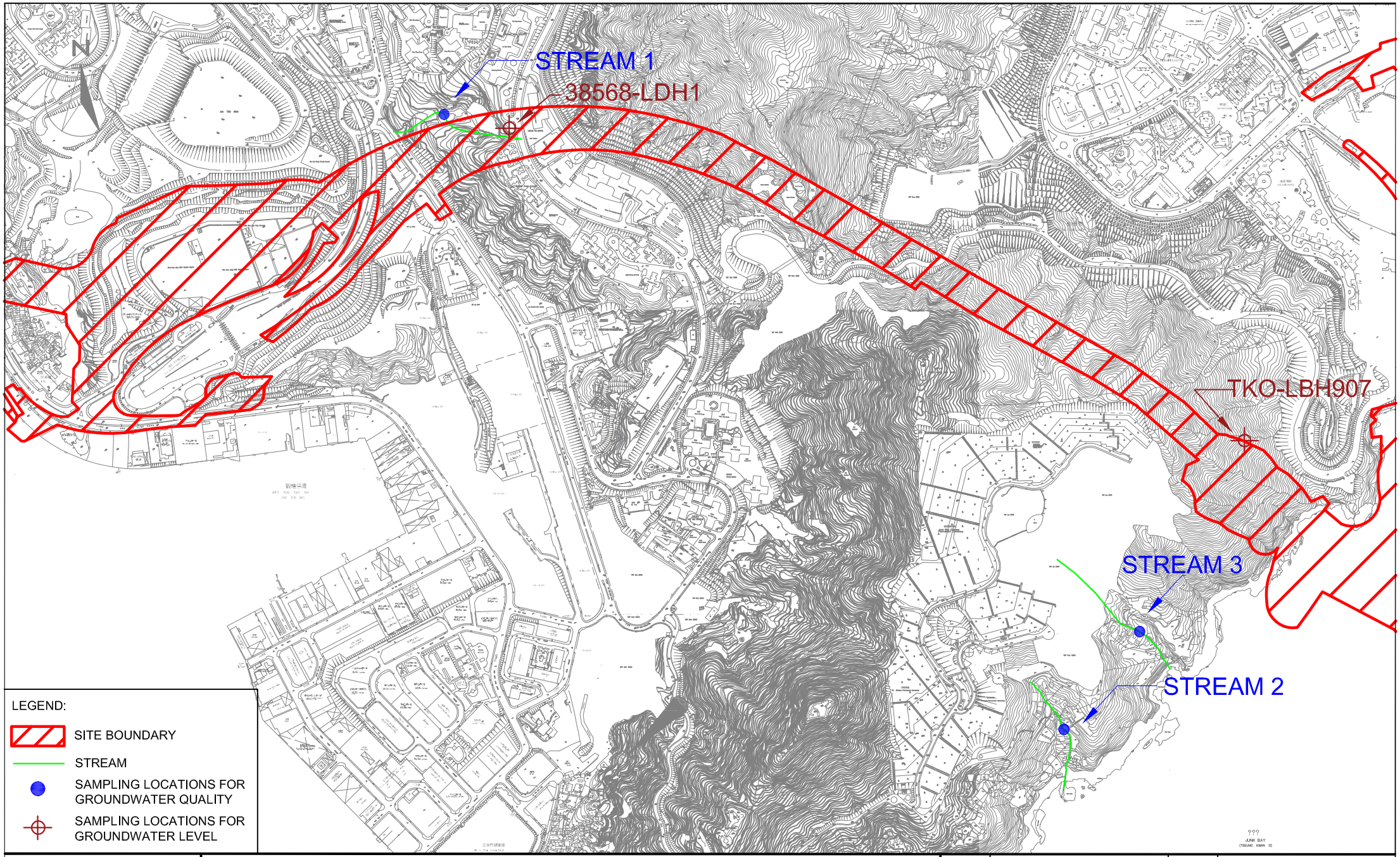

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Location of Streams for Groundwater Quality and Groundwater Level Monitoring

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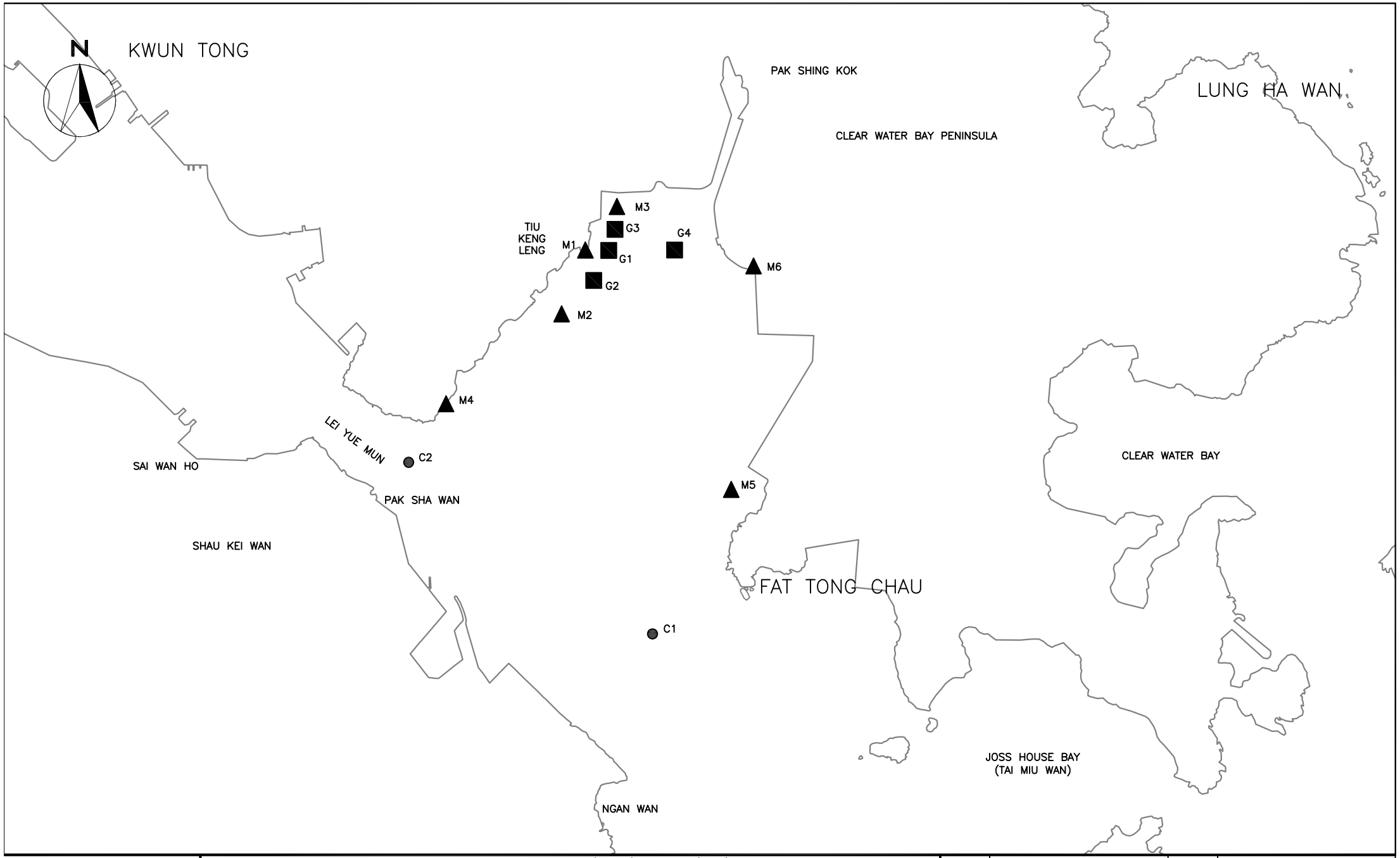

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction

Locations of Water Quality Monitoring Stations

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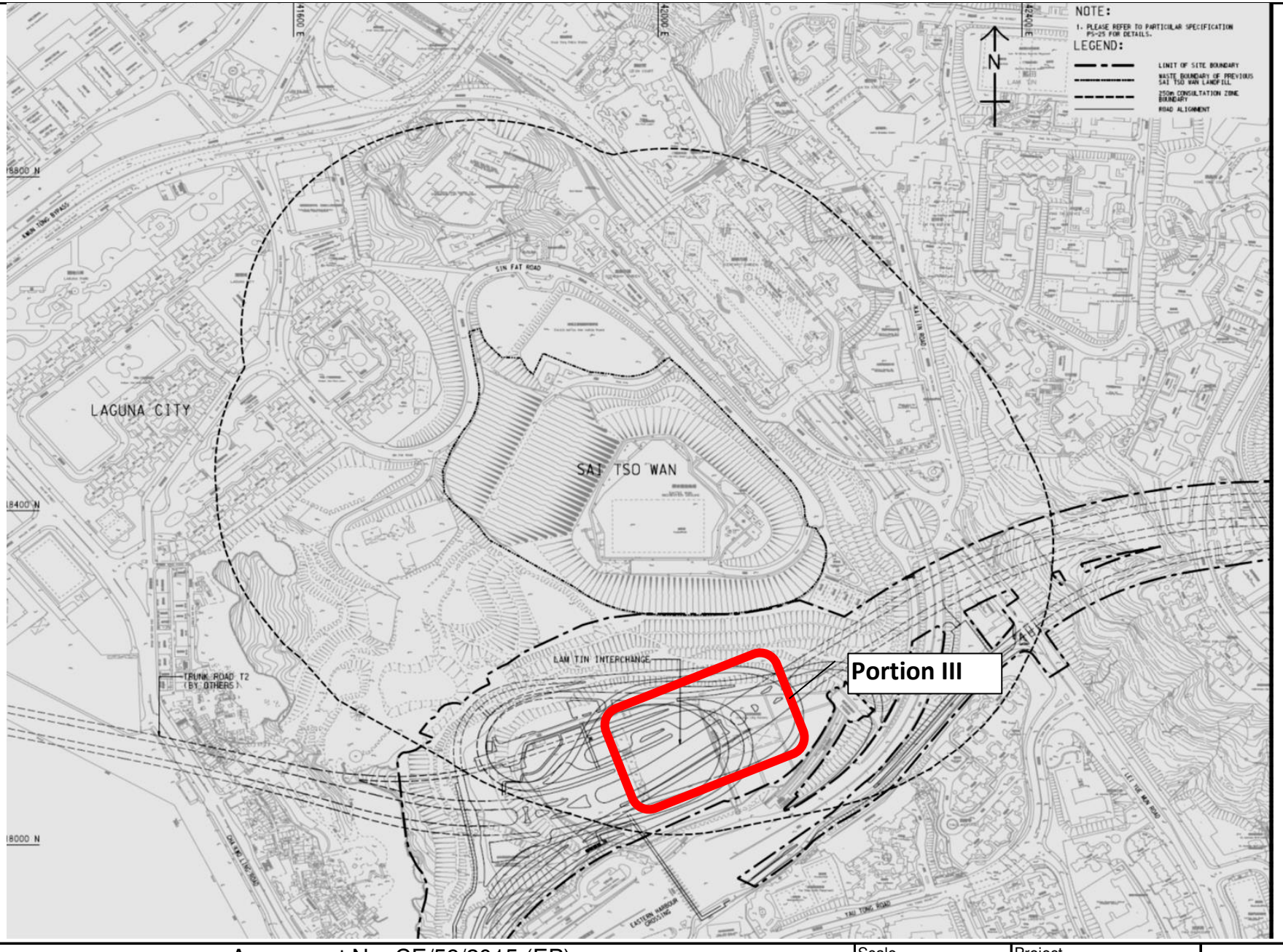
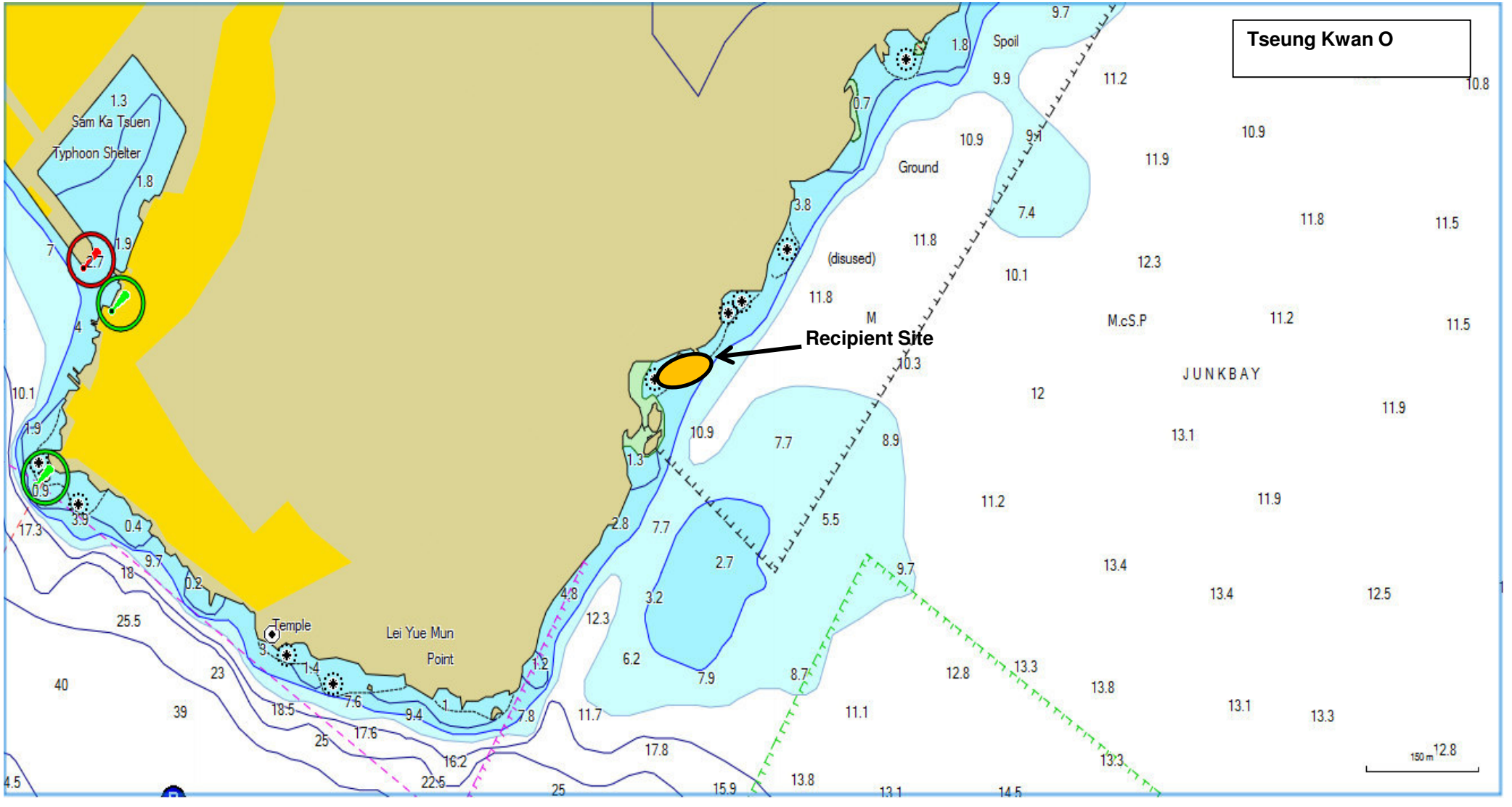
CHECK	JF	DRAWN	JW
PROJECT NO.	MA16034	FIGURE NO.	5
		REV	–

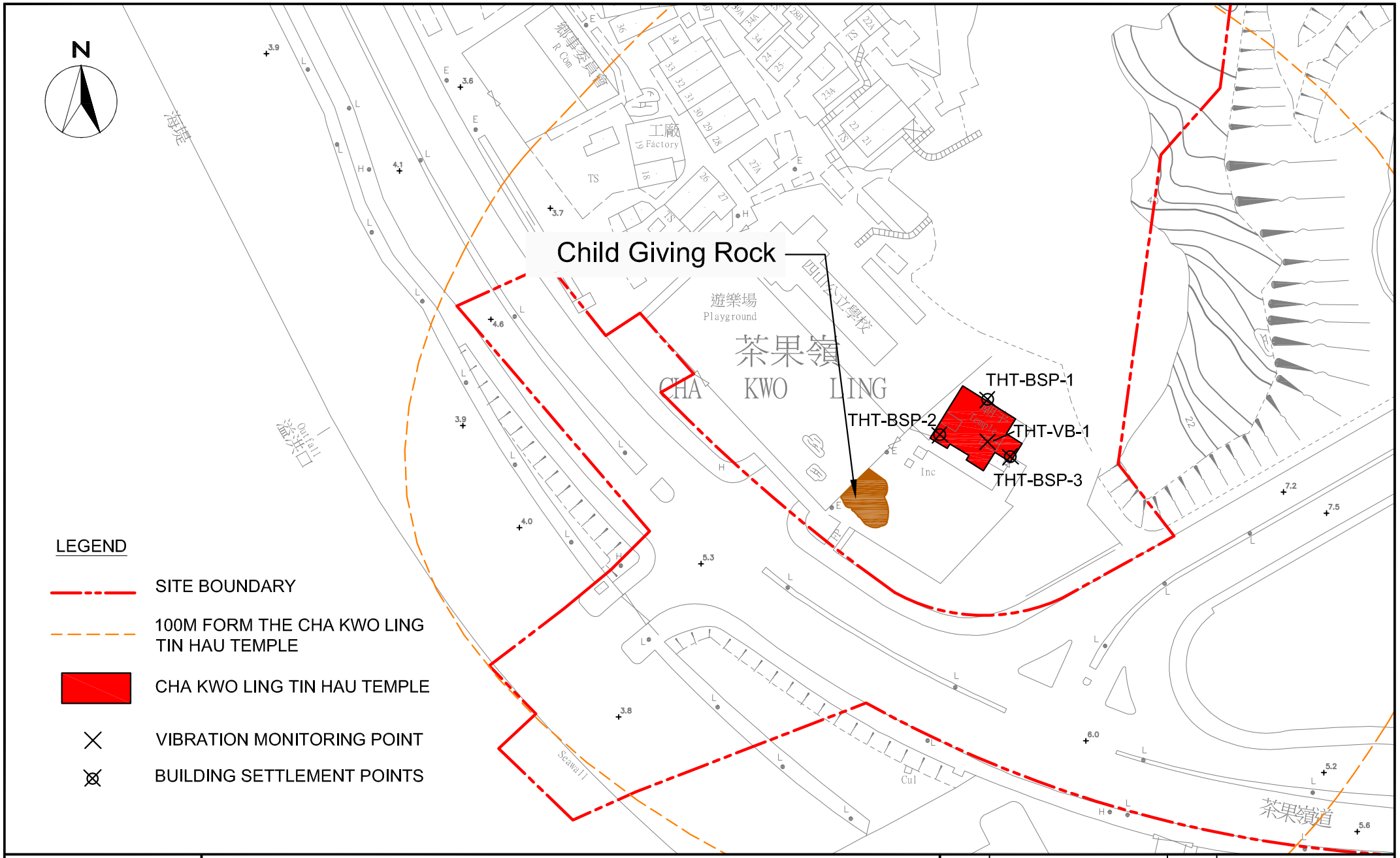


Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Locations of Landfill Gas Monitoring	Scale: N.T.S Date: Dec-16	Project No.: MA16034 Figure: 6

CINOTECH



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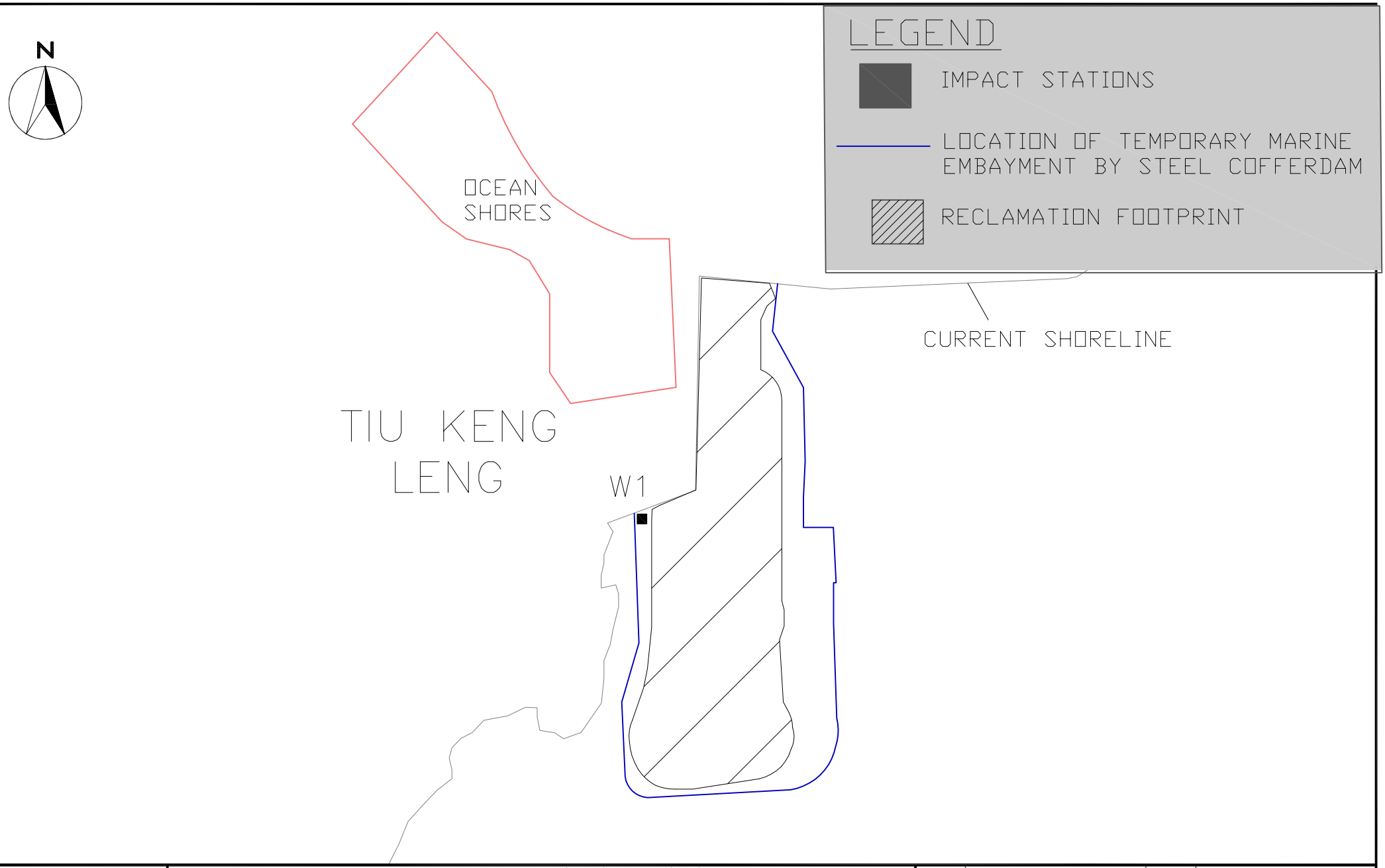
Agreement No. CE/59/2015 (EP)
Environmental Team for Tsueng Kwan O - Lam Tin Tunnel - Design and Construction

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 Water Quality Monitoring Stations within Temporary Marine Embayment

SCALE	N.T.S	DATE	MAY 2017
CHECK	JF	DRAWN	JW
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/m^3	Limit Level, µg/m^3
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/m^3	Limit Level, µg/m^3
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

Cerificate of Calibration

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

Description: Handheld Particle Counter

Manufacturer: Hal Technology

Model No.: Hal -HPC301

Serial No.: 3011701012

Equipment No.: A-27-07

High Volume Sampler No.: A-01-03

Tisch Calibration Orifice No.: 3607

Date of Calibration 11-Apr-19

Validity of Calibration Record 10-Jun-19

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	84	100.4
2	68	96.2
3	66	90.4
Average	**73**	**96**

By Linear Regression of Y on X

Slope , mw = **0.4432** **Intercept, bw =** **63.4644**

Correlation coefficient* = **0.8707**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	96
Particaulate Concentration by Dust Meter (µg/m^3)	73
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.32**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate of Calibration

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

Description: Handheld Particle Counter

Manufacturer: Hal Technology

Model No.: Hal -HPC301

Serial No.: 3011701012

Equipment No.: A-27-07

High Volume Sampler No.: A-01-03

Tisch Calibration Orifice No.: 3607

Date of Calibration 10-Jun-19

Validity of Calibration Record 9-Aug-19

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	120.5	127.1
2	114.0	121.8
3	108.0	115.0
Average	**114.2**	**121.3**

By Linear Regression of Y on X

Slope , mw = **0.9659** **Intercept, bw =** **11.0281**

Correlation coefficient* = **0.9955**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	121.3
Particaulate Concentration by Dust Meter (µg/m^3)	114.2
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μ g/m3)] **1.06**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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 25-Apr-19

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 24-Jun-19

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.: 3607

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	3189.0	53.2	58.7
2	3510.1	58.5	80.9
3	3660.5	61.0	89.8
Average		**57.55**	**76.47**

By Linear Regression of Y on X

Slope , mw = **3.9875**

Intercept, bw = **-153.0315**

Correlation coefficient* = **0.9994**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μg/m3)] **1.3**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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 25-Jun-19

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 24-Aug-19

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.: 3607

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	3492	58.2	70.5
2	3843	64.1	96.2
3	4008	66.8	106.4
Average		**63.02**	**91.03**

By Linear Regression of Y on X

Slope , mw = **4.2087**

Intercept, bw = **-174.1844**

Correlation coefficient* = **0.9992**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μ g/m3)] **1.4**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate of Calibration

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

Description: Handheld Particle Counter

Manufacturer: Hal Technology

Model No.: Hal -HPC300

Serial No.: 30117011019

Equipment No.: SA-01-03

High Volume Sampler No.: A-01-03

Tisch Calibration Orifice No.: 3607

Date of Calibration 25-Apr-19

Validity of Calibration Record 24-Jun-19

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	27.6	58.7
2	37.8	80.9
3	43.6	89.8
Average	**36.3**	**76.5**

By Linear Regression of Y on X

Slope , mw = **1.9703** **Intercept, bw =** **4.8798**

Correlation coefficient* = **0.9964**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	76.5
Particaulate Concentration by Dust Meter (µg/m^3)	36.3
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µ g/m3)] **2.10**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate of Calibration

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

Description: Handheld Particle Counter

Manufacturer: Hal Technology

Model No.: Hal -HPC300

Serial No.: 30117011019

Equipment No.: SA-01-03

High Volume Sampler No.: A-01-03

Tisch Calibration Orifice No.: 3607

Date of Calibration 25-Jun-19

Validity of Calibration Record 24-Aug-19

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	29.0	70.5
2	40.5	96.2
3	46.0	106.4
Average	**38.5**	**91.0**

By Linear Regression of Y on X

Slope , mw = **2.1306** **Intercept, bw =** **9.0066**

Correlation coefficient* = **0.9991**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	91.0
Particaulate Concentration by Dust Meter (µg/m^3)	38.5
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µ g/m3)] **2.36**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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: 11-Apr-19

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record: 10-Jun-19

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.: 3607 — 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	68	100.4
2	65	96.2
3	60	90.4
Average	**64.3**	**95.7**

By Linear Regression of Y on X

Slope , mw = **1.2408** **Intercept, bw =** **15.8408**

Correlation coefficient* = **0.9987**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	96
Particaulate Concentration by Dust Meter (µg/m^3)	64
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.5**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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 10-Jun-19
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 9-Aug-19
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.: 3607
After Sensitivity Adjustment 652

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (mg/m3) **X-axis**	**HVS** Mass concentration (mg/m^3) **Y-axis**
1	91.2	127.1
2	87.1	121.8
3	80.5	115.0
Average	**86.3**	**121.3**

By Linear Regression of Y on X

Slope , mw = **1.1214** **Intercept, bw =** **24.5645**

Correlation coefficient* = **0.9980**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (mg/m^3)	121.3
Particaulate Concentration by Dust Meter (mg/m^3)	86.3
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.4**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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 11-Apr-19
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 10-Jun-19
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.: 3607
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	67	100.4
2	64	96.2
3	58	90.4
Average	**63**	**96**

By Linear Regression of Y on X

Slope , mw = **1.0905** **Intercept, bw =** **26.9667**

Correlation coefficient* = **0.9952**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	96
Particaulate Concentration by Dust Meter (µg/m^3)	63
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.5**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

Cerificate 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 10-Jun-19
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 9-Aug-19
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.: 3607
After Sensitivity Adjustment 657

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (mg/m3) **X-axis**	**HVS** Mass concentration (mg/m^3) **Y-axis**
1	92.0	127.1
2	87.0	121.8
3	79.0	115.0
Average	**86.0**	**121.3**

By Linear Regression of Y on X

Slope , mw = **0.9233** **Intercept, bw =** **41.9000**

Correlation coefficient* = **0.9981**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (mg/m^3)	121.3
Particaulate Concentration by Dust Meter (mg/m^3)	86.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.4**

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 (Wellab Litimed)

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/05/0017

Project No. AM1 - Tin Hau Temple

Date: 18-Apr-19 Next Due Date: 17-Jun-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	297	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Jan-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	12.9	3.59	61.50	8.1	2.85
2	9.2	3.03	52.00	5.8	2.41
3	7.7	2.78	47.61	4.9	2.21
4	5.0	2.24	38.44	3.2	1.79
5	2.8	1.67	28.87	2.0	1.41

By Linear Regression of Y on X

Slope , mw = **0.0441** **Intercept, bw =** **0.1183**

Correlation coefficient* = **0.9994**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.06**

Remarks:

Conducted by: SK Wong Signature: Date: 18 April 2019

Checked by: Henry Leung Signature: Date: 18 April 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/05/0018

Project No. AM1 - Tin Hau Temple

Date: 17-Jun-19 Next Due Date: 16-Aug-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	755.7

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Jan-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	12.8	3.55	60.82	8.2	2.84
2	9.3	3.03	51.90	5.8	2.39
3	7.6	2.74	46.96	4.8	2.18
4	5.0	2.22	38.17	3.2	1.78
5	2.7	1.63	28.16	2.1	1.44

By Linear Regression of Y on X

Slope , mw = **0.0431** **Intercept, bw =** **0.1766**

Correlation coefficient* = **0.9968**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.18**

Remarks:

Conducted by: WONG SHING KWAI Signature: Date: 2019/6/17

Checked by: HENRY.LEUNG Signature: Date: 2019/6/17

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/08/0017

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 18-Apr-19 Next Due Date: 17-Jun-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	297	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Jan-20	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	12.8	3.58	61.26	8.2	2.86
2	9.5	3.08	52.84	6.0	2.45
3	8.0	2.83	48.52	5.1	2.26
4	4.8	2.19	37.68	3.1	1.76
5	2.9	1.70	29.38	2.0	1.41

By Linear Regression of Y on X

Slope , mw = **0.0454** **Intercept, bw =** **0.0634**

Correlation coefficient* = **0.9996**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.06**

Remarks:

Conducted by: SK Wong Signature: Date: 18 April 2019

Checked by: Henry Leung Signature: Date: 18 April 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/08/0018

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 17-Jun-19 Next Due Date: 16-Aug-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	755.7

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.9	3.57	61.06	8.3	2.86
2	9.6	3.08	52.73	6.0	2.43
3	8.0	2.81	48.17	5.1	2.24
4	4.9	2.20	37.79	3.2	1.78
5	2.8	1.66	28.67	2.1	1.44

By Linear Regression of Y on X

Slope , mw = **0.0438** **Intercept, bw =** **0.1503**

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) = **4.19**

Remarks:

Conducted by: WONG SHING KWAI Signature: Date: 2019/6/17

Checked by: HENRY.LEUNG Signature: Date: 2019/6/17

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0017

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

Date: 18-Apr-19 Next Due Date: 17-Jun-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	297	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.7	3.56	61.03	8.0	2.83
2	9.5	3.08	52.84	6.2	2.49
3	7.9	2.81	48.22	5.0	2.24
4	5.2	2.28	39.20	3.3	1.82
5	2.9	1.70	29.38	2.0	1.41

By Linear Regression of Y on X

Slope , mw = 0.0453 **Intercept, bw = 0.0653**

Correlation coefficient* = 0.9992

*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) = **4.06**

Remarks:

Conducted by: SK Wong Signature: Date: 18 April 2019

Checked by: Henry Leung Signature: Date: 18 April 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0018

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

Date: 17-Jun-19 Next Due Date: 16-Aug-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	755.7

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.5	3.51	60.11	7.9	2.79
2	9.4	3.04	52.18	6.2	2.47
3	7.9	2.79	47.87	5.0	2.22
4	5.2	2.26	38.92	3.2	1.78
5	2.8	1.66	28.67	2.0	1.40

By Linear Regression of Y on X

Slope , mw = **0.0452** **Intercept, bw =** **0.0728**

Correlation coefficient* = **0.9974**

*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) = **4.13**

Remarks:

Conducted by: WONG SHING KWAI Signature: Date: 2019/6/17

Checked by: HENRY.LEUNG Signature: Date: 2019/6/17

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/54/0017

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

Date: 18-Apr-19 Next Due Date: 17-Jun-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	297	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.9	3.59	61.50	8.5	2.92
2	9.8	3.13	53.66	6.4	2.53
3	7.8	2.79	47.91	5.3	2.30
4	5.2	2.28	39.20	3.4	1.84
5	3.2	1.79	30.84	2.1	1.45

By Linear Regression of Y on X

Slope , mw = **0.0478** **Intercept, bw =** **-0.0222**

Correlation coefficient* = **0.9995**

*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) = **4.14**

Remarks:

Conducted by: SK Wong Signature: Date: 18 April 2019

Checked by: Henry Leung Signature: Date: 18 April 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/54/0018

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

Date: 17-Jun-19 Next Due Date: 16-Aug-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	755.7

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.6	3.52	60.35	8.4	2.88
2	9.8	3.11	53.27	6.3	2.49
3	7.7	2.76	47.27	5.3	2.29
4	5.2	2.26	38.92	3.4	1.83
5	3.1	1.75	30.14	2.0	1.40

By Linear Regression of Y on X

Slope , mw = **0.0484** **Intercept, bw =** **-0.0469**

Correlation coefficient* = **0.9986**

*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: 2019/6/17

Checked by: HENRY.LEUNG Signature: Date: 2019/6/17

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/37/0017

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

Date: 18-Apr-19 Next Due Date: 17-Jun-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	297	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	13.4	3.66	62.67	8.5	2.92
2	10.1	3.18	54.47	6.5	2.55
3	8.1	2.85	48.82	5.2	2.28
4	5.4	2.32	39.94	3.5	1.87
5	3.3	1.82	31.31	2.3	1.52

By Linear Regression of Y on X

Slope , mw = 0.0450 **Intercept, bw = 0.0943**

Correlation coefficient* = 0.9997

*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) = **4.11**

Remarks:

Conducted by: SK Wong Signature: Date: 18 April 2019

Checked by: Henry Leung Signature: Date: 18 April 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/37/0018

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

Date: 17-Jun-19 Next Due Date: 16-Aug-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	755.7

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	12.8	3.55	60.82	8.6	2.91
2	10.1	3.16	54.07	6.5	2.53
3	8.1	2.83	48.47	5.2	2.26
4	5.3	2.29	39.28	3.4	1.83
5	3.2	1.78	30.62	2.2	1.47

By Linear Regression of Y on X

Slope , mw = **0.0474** **Intercept, bw =** **-0.0091**

Correlation coefficient* = **0.9985**

*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) = **4.18**

Remarks:

Conducted by: WONG SHING KWAI Signature: Date: 2019/6/17

Checked by: HENRY.LEUNG Signature: Date: 2019/6/17

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/07/0017

Project No. AM6 - Park Central

Date: 17-May-19 Next Due Date: 16-Jul-19 Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	302.6	Pressure, Pa (mmHg)	754.4

Orifice Transfer Standard Information					
Serial No.	3607	Slope, mc	0.0588	Intercept, bc	-0.02422
Last Calibration Date:	8-Jan-19	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	8-Jan-20	**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	10.8	3.25	55.67	6.6	2.54
2	8.6	2.90	49.72	5.3	2.28
3	6.8	2.58	44.26	4.2	2.03
4	4.3	2.05	35.28	2.6	1.59
5	2.8	1.65	28.55	1.8	1.33

By Linear Regression of Y on X

Slope , mw = **0.0453** **Intercept, bw =** **0.0190**

Correlation coefficient* = **0.9996**

*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) = **3.96**

Remarks:

Conducted by: SK Wong Signature: Date: 17 May 2019

Checked by: Henry Leung Signature: Date: 17 May 2019

TISCH Environmental

RECALIBRATION DUE DATE:
January 8, 2020

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	January 8, 2019	**Rootsmeter S/N:** 438320	**Ta:** 294	°K	
Operator:	Jim Tisch		**Pa:** 748.0	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3607**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4340	3.2	2.00
2	3	4	1	1.0190	6.3	4.00
3	5	6	1	0.9110	7.8	5.00
4	7	8	1	0.8650	8.7	5.50
5	9	10	1	0.7150	12.6	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9934	0.6927	1.4125	0.9957	0.6944	0.8866
0.9892	0.9708	1.9976	0.9916	0.9731	1.2538
0.9872	1.0837	2.2334	0.9896	1.0862	1.4018
0.9860	1.1399	2.3424	0.9884	1.1426	1.4703
0.9808	1.3718	2.8251	0.9832	1.3750	1.7732
QSTD	**m=**	**2.07879**	**QA**	**m=**	**1.30170**
	b=	**-0.02422**		**b=**	**-0.01520**
	r=	**0.99997**		**r=**	**0.99997**

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

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

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WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30760
Date of Issue:	2019-02-23
Date Received:	2019-02-22
Date Tested:	2019-02-22
Date Completed:	2019-02-23
Next Due Date:	2019-08-22

ATTN: **Mr. W.K. Tang**

Certificate of Calibration

Item for calibration:

Description	: Weather Monitor II
Manufacturer	: Davis Instruments
Model No.	: 7440
Serial No.	: MC01010A44

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70 %

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
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Technology Park, 18 On Lai Street,
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Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	30760
Date of Issue:	2019-02-23
Date Received:	2019-02-22
Date Tested:	2019-02-22
Date Completed:	2019-02-23
Next Due Date:	2019-08-22
Page:	2 of 2

Results:

1. Performance check of anemometer

Air Velocity, m/s		Difference D (m/s)
Instrument Reading (V1)	Reference Value (V1)	D = V1 – V2
2.00	1.95	0.05

2. Performance check of wind direction sensor

Wind Direction (°)		Difference D (°)
Instrument Reading (W1)	Reference Value (W2)	D = W1 - W2
0	0	0
45	45	0
90	90	0
135.5	135	0.5
180	180	0
225	225	0
270.5	270	0.5
315	315	0
360	360	0

**********END OF REPORT**********

WELLAB LIMITED
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Technology Park, 18 On Lai Street,
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30293
Date of Issue:	2018-11-24
Date Received:	2018-11-23
Date Tested:	2018-11-23
Date Completed:	2018-11-24
Next Due Date:	2019-11-23

ATTN: **Mr. W.K. Tang**

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23852
Microphone No.	: 43690
Equipment No.	: N-08-11

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30294
Date of Issue:	2018-11-24
Date Received:	2018-11-23
Date Tested:	2018-11-23
Date Completed:	2018-11-24
Next Due Date:	2019-11-23

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23851
Equipment No.	: N-08-12

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	29817A
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

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

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30289
Date of Issue:	2018-11-04
Date Received:	2018-11-03
Date Tested:	2018-11-03
Date Completed:	2018-11-04
Next Due Date:	2019-11-03
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

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

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70 %

Methodology:

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

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	29501
Date of Issue:	2018-08-27
Date Received:	2018-08-24
Date Tested:	2018-08-24
Date Completed:	2018-08-27
Next Due Date:	2019-08-26

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/171213/2
Date of Issue:	2018-12-13
Date Received:	2018-12-12
Date Tested:	2018-12-12
Date Completed:	2018-12-13
Next Due Date:	2019-12-12
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 979
Serial No.	: 27190
Microphone No.	: 167465
Equipment No.	: SN-01-02

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 58 %

Methodology:

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

Results:

Sound Pressure Level (1KHz)	Measured SPL	Tolerance
At 94.0 SPL	94.0	94.0 ± 0.1dB
At 114.0 SPL	114.0	114.0 ± 0.1dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse
PATRICK TSE
Laboratory Manager

WELLAB 匯力
consulting . testing . research

WELLAB LIMITED
Room 1701, Technology Park,
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TEST REPORT

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

Test Report No.:	31536
Date of Issue:	2019-05-28
Date Received:	2019-05-27
Date Tested:	2019-05-27 to 2019-05-28
Date Completed:	2019-05-28

ATTN: **Mr. Henry Leung**

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.: SW-08-06	
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO1 Sonde, 100 meter Depth, 4 Sensor ports	599501-02	16J100680
- EXO Optical DO Sensor, Ti	599100-01	16H102985
- EXO conductivity/Temperature Sensor, Ti	599870	16G102307
- EXO Turbuduty Sensor, Ti	599101-01	16H102463
- EXO pH Sensor Assembly, Guarded, Ti	599701	16H102985

Test conditions:

Room Temperatre : 17-22 degree Celsius
Relative Humidity : 40-70%

Test Specifications:

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

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

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PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
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Room 1701, Technology Park,
18 On Lai Street, Shatin,
N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	31536
Date of Issue:	2019-05-28
Date Received:	2019-05-27
Date Tested:	2019-05-27 to 2019-05-28
Date Completed:	2019-05-28

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (μS/cm)	Accetance Criteria	Comment
KCl stock solution (12890 μS/cm)	13000	12246-13534	Pass

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.000	0.000	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.09	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	7.86	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.01	9.0-11.0	Pass
50 NTU	50.04	45.0-55.0	Pass
100 NTU	99.5	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (m)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass

**********END OF REPORT**********

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG14849)
Model No.:	716A0403
Serial No.:	BE15892
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE15892)
Part Number:	714A9701
Serial No.:	BG14849
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE15892)
Model No.:	714A9801
Serial No.:	BH10228
Calibration Date:	18 March 2019
Next Calibration Date:	18 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 18 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG14853)
Model No.:	716A0403
Serial No.:	BE17906
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17906)
Part Number:	714A9701
Serial No.:	BG14853
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE17906)
Model No.:	714A9801
Serial No.:	BH11454
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG14852)
Model No.:	716A0403
Serial No.:	BE15890
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE15890)
Part Number:	714A9701
Serial No.:	BG14852
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE15890)
Model No.:	714A9801
Serial No.:	BH11455
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16955)
Model No.:	716A0403
Serial No.:	BE16223
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE16223)
Part Number:	714A9701
Serial No.:	BG16955
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE16223)
Model No.:	714A9801
Serial No.:	BH11458
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG20672)
Model No.:	716A0403
Serial No.:	BE17504
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17504)
Part Number:	714A9701
Serial No.:	BG20672
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE17504)
Model No.:	714A9801
Serial No.:	BH11460
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16515)
Model No.:	716A0403
Serial No.:	BE16354
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE16354)
Part Number:	714A9701
Serial No.:	BG16515
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE16354)
Model No.:	714A9801
Serial No.:	BH12477
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG15353)
Model No.:	716A0403
Serial No.:	BE15891
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE15891)
Part Number:	714A9701
Serial No.:	BG15353
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG15180)
Model No.:	716A0403
Serial No.:	BE15894
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE15894)
Part Number:	714A9701
Serial No.:	BG15180
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE17905)
Model No.:	714A9801
Serial No.:	BH14079
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 8 April 2019

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CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17905)
Part Number:	714A9701
Serial No.:	BG16514
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16514)
Model No.:	716A0403
Serial No.:	BE17905
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG20673)
Model No.:	716A0403
Serial No.:	BE13849
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE13849)
Part Number:	714A9701
Serial No.:	BG20673
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE13849)
Model No.:	714A9801
Serial No.:	BH13154
Calibration Date:	18 March 2019
Next Calibration Date:	18 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 18 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16512)
Model No.:	716A0403
Serial No.:	BE13853
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE13853)
Part Number:	714A9701
Serial No.:	BG16512
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16959)
Model No.:	716A0403
Serial No.:	BE17506
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17506)
Part Number:	714A9701
Serial No.:	BG16959
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE17506)
Model No.:	714A9801
Serial No.:	BH10227
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 8 April 2019

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CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE17904)
Model No.:	714A9801
Serial No.:	BH14080
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17904)
Part Number:	714A9701
Serial No.:	BG14847
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG14847)
Model No.:	716A0403
Serial No.:	BE17904
Calibration Date:	8 April 2019
Next Calibration Date:	8 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 8 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16957)
Model No.:	716A0403
Serial No.:	BE17505
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17505)
Part Number:	714A9701
Serial No.:	BG16957
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG19189)
Model No.:	716A0403
Serial No.:	BE21658
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE21658)
Part Number:	714A9701
Serial No.:	BG19189
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE21658)
Model No.:	714A9801
Serial No.:	BH12476
Calibration Date:	15 April 2019
Next Calibration Date:	15 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 15 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG17240)
Model No.:	716A0403
Serial No.:	BE20015
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE20015)
Part Number:	714A9701
Serial No.:	BG17240
Calibration Date:	19 March 2019
Next Calibration Date:	19 March 2020
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Isaac Au Yeung)

Date: 19 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Linear Microphone (Calibration with main unit BE20015)
Model No.:	714A9801
Serial No.:	BH12658
Calibration Date:	18 March 2019
Next Calibration Date:	18 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 18 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12902)
Part Number:	721A2901
Serial No.:	UM12902
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12902)
Model No.:	721A2501
Serial No.:	UM12902
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12902)
Model No.:	721A0201
Serial No.:	UL3397
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12904)
Model No.:	721A0201
Serial No.:	UL3400
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12904)
Model No.:	721A2501
Serial No.:	UM12904
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12904)
Part Number:	721A2901
Serial No.:	UM12904
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12905)
Model No.:	721A0201
Serial No.:	UL3401
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12905)
Part Number:	721A2901
Serial No.:	UM12905
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12905)
Model No.:	721A2501
Serial No.:	UM12905
Calibration Date:	14 May 2019
Next Calibration Date:	14 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 14 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12906)
Model No.:	721A2501
Serial No.:	UM12906
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12906)
Part Number:	721A2901
Serial No.:	UM12906
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12906)
Model No.:	721A0201
Serial No.:	UL3399
Calibration Date:	22 March 2019
Next Calibration Date:	22 March 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 22 March 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12907)
Part Number:	721A2901
Serial No.:	UM12907
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12907)
Model No.:	721A2501
Serial No.:	UM12907
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12907)
Model No.:	721A0201
Serial No.:	UL3398
Calibration Date:	28 February 2019
Next Calibration Date:	28 February 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Isaac Au Yeung)

Date: 28 February 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12928)
Part Number:	721A2901
Serial No.:	UM12928
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12928)
Model No.:	721A2501
Serial No.:	UM12928
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12928)
Model No.:	721A0201
Serial No.:	UL3383
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM12929)
Part Number:	721A2901
Serial No.:	UM12929
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM12929)
Model No.:	721A2501
Serial No.:	UM12929
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM12929)
Model No.:	721A0201
Serial No.:	UL3384
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13698)
Part Number:	721A2901
Serial No.:	UM13698
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13698)
Model No.:	721A2501
Serial No.:	UM13698
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13701)
Part Number:	721A2901
Serial No.:	UM13701
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13701)
Model No.:	721A2501
Serial No.:	UM13701
Calibration Date:	7 May 2019
Next Calibration Date:	7 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 7 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13695)
Part Number:	721A2901
Serial No.:	UM13695
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13695)
Model No.:	721A2501
Serial No.:	UM13695
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM13695)
Model No.:	721A0201
Serial No.:	UL3396
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM13696)
Model No.:	721A0201
Serial No.:	UL3394
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13696)
Part Number:	721A2901
Serial No.:	UM13696
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13696)
Model No.:	721A2501
Serial No.:	UM13696
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13699)
Part Number:	721A2901
Serial No.:	UM13699
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13699)
Model No.:	721A2501
Serial No.:	UM13699
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13702)
Model No.:	721A2501
Serial No.:	UM13702
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13702)
Part Number:	721A2901
Serial No.:	UM13702
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM13702)
Model No.:	721A0201
Serial No.:	UL3395
Calibration Date:	2 May 2019
Next Calibration Date:	2 May 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

INSTANTEL INC. hereby certifies that this unit has been calibrated and that the results are consistent with the specifications published regarding this instrument. The SENSORCHECK feature of the unit is sufficiently reliable to indicate proper operation, although it is recommended that this unit be sent to INSTANTEL or an authorized service center for regular calibration.

Authorized by: _____

(Wong, Keefe Solomon)

Date: 2 May 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13703)
Model No.:	721A2501
Serial No.:	UM13703
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13703)
Part Number:	721A2901
Serial No.:	UM13703
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13704)
Model No.:	721A2501
Serial No.:	UM13704
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13704)
Part Number:	721A2901
Serial No.:	UM13704
Calibration Date:	30 April 2019
Next Calibration Date:	30 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 30 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM13704)
Model No.:	721A0201
Serial No.:	UL3385
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Unit (Calibration with Geophone UM13708)
Model No.:	721A2501
Serial No.:	UM13708
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

*References are traceable to NIST or equivalent.

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit UM13708)
Part Number:	721A2901
Serial No.:	UM13708
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-001
In-house Testing Procedure No.:	MM-001

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Accelerometer*	4370	30323
Bruel & Kjaer Charge Amplifier*	2647	2518810
Bruel & Kjaer Conditional Amplifier*	269	2152173
LDS Air Cooled Vibrator	V556	92794/1
LDS Field Power Supply	FPS10L	ARA 04/05
LDS Power Amplifier	PA1000L	ARA 07/06

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

CALIBRATION CERTIFICATE

Calibration Item:	Micromate Linear Microphone (Calibration with main unit UM13708)
Model No.:	721A0201
Serial No.:	UL3386
Calibration Date:	25 April 2019
Next Calibration Date:	25 April 2020
Method Used:	In-house Method MM-002
In-house Testing Procedure No.:	MM-002

Test References	Model	Serial No.
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Aglient Multimeter*	34410A	MY47011119
HP Distortion Meter*	339A	810699
Bruel & Kjaer Microphone*	4193	2677340
Low Frequency Calibrator*	42AE	105366
Bruel & Kjaer Conditional Amplifier*	269	2152173

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Authorized by: _____

(Leung Man Hin, Eric)

Date: 25 April 2019

The Safety Company
MSA Corporate Center • 1000 Cranberry Woods Drive • Cranberry Township, PA 16066
www.msasafety.com
Telephone: (800) MSA-2222

ALTAIR5X
CERTIFICATE OF CALIBRATION

Serial Number: 152097
Part Number: A-ALT5X-A-N-K-D-1-B-0-T-0-0-0

Factory Calibration Date: 03/29/19

Set Points

	METHANE 0-100.00 %LEL	O2 0-30.00 %VOL	CO 0-2000.00 PPM	H2S 0-200.00 PPM	NH3 0-100.00 PPM	CO2 0-9.99 %VOL
(Low)	10.00 %LEL	19.50 %VOL	25.00 PPM	10.00 PPM	25.00 PPM	0.50 %VOL
(High)	20.00 %LEL	23.00 %VOL	100.00 PPM	15.00 PPM	50.00 PPM	1.50 %VOL
STEL			100.00 PPM	15.00 PPM	35.00 PPM	0.50 %VOL
TWA			25.00 PPM	10.00 PPM	25.00 PPM	1.50 %VOL
Calibrated Value	Methane 1.460 %VOL	O2 14.99 %VOL	CO 59.90 PPM	H2S 20.13 PPM	NH3 25 PPM	CO2 2.502 %VOL
Cylinder Lot #	122-401221543-1A	122-401221543-1A	122-401221543-1A	122-401221543-1A	224895	141-401019452-1N461052

Calibration Certification
All applicable inspections, testing, and calibrations were performed using NIST traceable equipment, where available, in accordance with MSA's ISO 9001 Certified Quality System. Each material, component, and/or instrument must be installed, operated and maintained in strict accordance with its labels, cautions, warnings, instructions, and within the limitations stated in the supplied instruction manual. Routine calibration checks, equipment inspections, and applicable preventative maintenance measures must be performed to verify that the materials, components, and/or instruments are operating properly. Failure to perform these tasks on a routine basis, or suggested intervals, with specified equipment or methods, may result in inaccurate readings.

Conformance Statement
MSA certifies that the materials, components, and/or instruments delivered in this shipment conform to all applicable specifications. The items delivered have been processed through the appropriate approved document controlled procedures for Receiving, Manufacturing and Inspection. The materials, components, and/or instruments were inspected, tested, and calibrated, as applicable, per the associated drawings, standards requirements, and/or specifications, and were deemed acceptable by appropriate authorized personnel.

Process Certified By:

Jim Hoffman

JIM HOFFMAN
QUALITY ENGINEER

Calibrated By: T. Skal

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 June 2019	27.2	87	32.6
2 June 2019	27.2	86	3.0
3 June 2019	27.5	85	34.1
4 June 2019	28.0	89	38.1
5 June 2019	29.4	82	0.0
6 June 2019	30.2	78	Trace
7 June 2019	30.1	77	0.0
8 June 2019	30.1	76	1.1
9 June 2019	30.1	79	4.1
10 June 2019	29.5	81	3.3
11 June 2019	27.5	91	111.6
12 June 2019	27.5	91	1.5
13 June 2019	27.7	88	55.8
14 June 2019	28.4	76	16.5
15 June 2019	28.6	74	Trace
16 June 2019	27.9	80	0.0
17 June 2019	27.6	88	4.7
18 June 2019	28.6	88	11.1
19 June 2019	28.9	87	14.0
20 June 2019	30.1	80	0.5

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
21 June 2019	30.8	77	0.7
22 June 2019	30.7	78	0.7
23 June 2019	30.3	80	3.2
24 June 2019	29.1	85	16.8
25 June 2019	27.2	89	35.4
26 June 2019	28.6	86	0.9
27 June 2019	30.2	83	3.5
28 June 2019	30.5	82	2.2
29 June 2019	31.0	79	0.6
30 June 2019	29.5	85	33.1

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

** Trace means rainfall less than 0.05 mm

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
1-Jun-19	00:00	0.3	NE
1-Jun-19	01:00	0.4	NE
1-Jun-19	02:00	0.9	ENE
1-Jun-19	03:00	0.4	WSW
1-Jun-19	04:00	0.4	SW
1-Jun-19	05:00	0	ENE
1-Jun-19	06:00	0.4	SW
1-Jun-19	07:00	1.3	ENE
1-Jun-19	08:00	2.2	SW
1-Jun-19	09:00	0	E
1-Jun-19	10:00	1.8	ENE
1-Jun-19	11:00	1.3	ENE
1-Jun-19	12:00	0.9	SSE
1-Jun-19	13:00	0.9	SW
1-Jun-19	14:00	1.3	ENE
1-Jun-19	15:00	2.2	SW
1-Jun-19	16:00	2.2	SW
1-Jun-19	17:00	0.9	SSW
1-Jun-19	18:00	0.9	SW
1-Jun-19	19:00	0.4	ENE
1-Jun-19	20:00	0.4	SW
1-Jun-19	21:00	0.4	SW
1-Jun-19	22:00	1.3	ENE
1-Jun-19	23:00	0.9	SW
2-Jun-19	00:00	0.9	SW
2-Jun-19	01:00	0	SSW
2-Jun-19	02:00	0	SW
2-Jun-19	03:00	0.4	SW
2-Jun-19	04:00	0.4	WSW
2-Jun-19	05:00	0.4	SW
2-Jun-19	06:00	0.9	SW
2-Jun-19	07:00	0.4	SW
2-Jun-19	08:00	0.9	SW
2-Jun-19	09:00	1.3	SW
2-Jun-19	10:00	0.9	SW
2-Jun-19	11:00	1.8	ENE
2-Jun-19	12:00	1.8	ENE
2-Jun-19	13:00	1.3	SW
2-Jun-19	14:00	1.3	ESE
2-Jun-19	15:00	1.3	SW
2-Jun-19	16:00	0.9	SE
2-Jun-19	17:00	2.2	SW
2-Jun-19	18:00	1.3	SW
2-Jun-19	19:00	1.3	SW
2-Jun-19	20:00	1.3	SW
2-Jun-19	21:00	0.4	SW
2-Jun-19	22:00	0	N
2-Jun-19	23:00	0	---
3-Jun-19	00:00	0.4	NNE
3-Jun-19	01:00	0.4	WSW
3-Jun-19	02:00	1.3	SW
3-Jun-19	03:00	0.4	SW
3-Jun-19	04:00	0.4	SW
3-Jun-19	05:00	0.4	N
3-Jun-19	06:00	0.4	WSW
3-Jun-19	07:00	0.4	SW
3-Jun-19	08:00	0.4	ENE
3-Jun-19	09:00	0.4	SE
3-Jun-19	10:00	0.9	SW
3-Jun-19	11:00	1.8	SW
3-Jun-19	12:00	0.4	SW
3-Jun-19	13:00	1.3	ENE
3-Jun-19	14:00	1.3	ENE
3-Jun-19	15:00	0.9	ESE
3-Jun-19	16:00	0.4	S
3-Jun-19	17:00	0	S
3-Jun-19	18:00	0.4	S
3-Jun-19	19:00	0.4	S
3-Jun-19	20:00	0.9	SW
3-Jun-19	21:00	0.9	SW
3-Jun-19	22:00	0.4	SW
3-Jun-19	23:00	0.9	SW

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
4-Jun-19	00:00	0	SW
4-Jun-19	01:00	0	SW
4-Jun-19	02:00	0.4	SW
4-Jun-19	03:00	0.4	SW
4-Jun-19	04:00	0.4	WSW
4-Jun-19	05:00	0.4	ESE
4-Jun-19	06:00	0	NE
4-Jun-19	07:00	0.4	SW
4-Jun-19	08:00	0.4	SW
4-Jun-19	09:00	1.8	ENE
4-Jun-19	10:00	2.7	ENE
4-Jun-19	11:00	1.8	ENE
4-Jun-19	12:00	1.3	SW
4-Jun-19	13:00	1.3	SW
4-Jun-19	14:00	1.3	SW
4-Jun-19	15:00	0.9	SSW
4-Jun-19	16:00	0.4	E
4-Jun-19	17:00	0.9	ENE
4-Jun-19	18:00	0.9	ENE
4-Jun-19	19:00	0.9	NE
4-Jun-19	20:00	0.9	ENE
4-Jun-19	21:00	0	ESE
4-Jun-19	22:00	0	ESE
4-Jun-19	23:00	0.4	NE
5-Jun-19	00:00	0	NNE
5-Jun-19	01:00	0.4	NE
5-Jun-19	02:00	0.4	NE
5-Jun-19	03:00	0.4	NNE
5-Jun-19	04:00	1.3	ENE
5-Jun-19	05:00	1.8	ENE
5-Jun-19	06:00	2.2	ENE
5-Jun-19	07:00	2.2	ENE
5-Jun-19	08:00	2.7	ENE
5-Jun-19	09:00	3.6	ENE
5-Jun-19	10:00	3.6	ENE
5-Jun-19	11:00	4	ENE
5-Jun-19	12:00	3.1	ENE
5-Jun-19	13:00	2.2	ENE
5-Jun-19	14:00	2.2	ENE
5-Jun-19	15:00	1.3	ENE
5-Jun-19	16:00	1.3	ENE
5-Jun-19	17:00	1.3	ENE
5-Jun-19	18:00	2.2	ENE
5-Jun-19	19:00	1.3	ENE
5-Jun-19	20:00	1.3	ENE
5-Jun-19	21:00	1.3	ENE
5-Jun-19	22:00	0.9	NNE
5-Jun-19	23:00	0.9	NNE
6-Jun-19	00:00	0.9	NNE
6-Jun-19	01:00	0.9	NNE
6-Jun-19	02:00	1.3	ENE
6-Jun-19	03:00	0.9	NE
6-Jun-19	04:00	0.9	NNE
6-Jun-19	05:00	2.2	ENE
6-Jun-19	06:00	2.7	ENE
6-Jun-19	07:00	2.7	ENE
6-Jun-19	08:00	4	ENE
6-Jun-19	09:00	3.1	ENE
6-Jun-19	10:00	1.8	ENE
6-Jun-19	11:00	1.8	ENE
6-Jun-19	12:00	3.1	ENE
6-Jun-19	13:00	3.1	ENE
6-Jun-19	14:00	2.7	ENE
6-Jun-19	15:00	2.7	ENE
6-Jun-19	16:00	1.3	ENE
6-Jun-19	17:00	2.2	ENE
6-Jun-19	18:00	2.2	ENE
6-Jun-19	19:00	2.2	ENE
6-Jun-19	20:00	1.8	ENE
6-Jun-19	21:00	1.8	ENE
6-Jun-19	22:00	1.3	ENE
6-Jun-19	23:00	0.9	NE

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
7-Jun-19	00:00	1.3	ENE
7-Jun-19	01:00	0.9	NNE
7-Jun-19	02:00	0.4	ENE
7-Jun-19	03:00	1.3	ENE
7-Jun-19	04:00	0.9	SW
7-Jun-19	05:00	0.9	SW
7-Jun-19	06:00	1.3	ENE
7-Jun-19	07:00	1.3	ESE
7-Jun-19	08:00	1.3	ESE
7-Jun-19	09:00	1.8	E
7-Jun-19	10:00	1.8	ESE
7-Jun-19	11:00	1.8	SW
7-Jun-19	12:00	1.8	E
7-Jun-19	13:00	1.3	E
7-Jun-19	14:00	1.3	ESE
7-Jun-19	15:00	2.2	ENE
7-Jun-19	16:00	0.9	SW
7-Jun-19	17:00	2.2	ENE
7-Jun-19	18:00	1.3	SE
7-Jun-19	19:00	1.3	ENE
7-Jun-19	20:00	1.8	ENE
7-Jun-19	21:00	1.3	ESE
7-Jun-19	22:00	0.9	ENE
7-Jun-19	23:00	0.9	ENE
8-Jun-19	00:00	1.3	ENE
8-Jun-19	01:00	1.3	ENE
8-Jun-19	02:00	1.3	ENE
8-Jun-19	03:00	1.3	ENE
8-Jun-19	04:00	1.3	E
8-Jun-19	05:00	0.9	SW
8-Jun-19	06:00	1.8	SW
8-Jun-19	07:00	2.2	ENE
8-Jun-19	08:00	1.3	E
8-Jun-19	09:00	1.8	ENE
8-Jun-19	10:00	1.8	E
8-Jun-19	11:00	1.3	ESE
8-Jun-19	12:00	1.3	ESE
8-Jun-19	13:00	0.9	ESE
8-Jun-19	14:00	1.3	E
8-Jun-19	15:00	1.3	ENE
8-Jun-19	16:00	2.7	ENE
8-Jun-19	17:00	2.2	ENE
8-Jun-19	18:00	2.2	ENE
8-Jun-19	19:00	2.2	ENE
8-Jun-19	20:00	2.2	ENE
8-Jun-19	21:00	1.8	ENE
8-Jun-19	22:00	1.8	ENE
8-Jun-19	23:00	1.3	ENE
9-Jun-19	00:00	1.3	ENE
9-Jun-19	01:00	1.3	ESE
9-Jun-19	02:00	1.8	ENE
9-Jun-19	03:00	0.4	S
9-Jun-19	04:00	0.4	E
9-Jun-19	05:00	0.4	SSW
9-Jun-19	06:00	0.4	S
9-Jun-19	07:00	0.4	E
9-Jun-19	08:00	0.4	E
9-Jun-19	09:00	0.4	E
9-Jun-19	10:00	0.4	SSW
9-Jun-19	11:00	0.4	S
9-Jun-19	12:00	0.4	S
9-Jun-19	13:00	0.4	S
9-Jun-19	14:00	0.4	E
9-Jun-19	15:00	0	E
9-Jun-19	16:00	0.4	SSW
9-Jun-19	17:00	0.9	SSW
9-Jun-19	18:00	0.4	ESE
9-Jun-19	19:00	0.4	E
9-Jun-19	20:00	0.4	E
9-Jun-19	21:00	0.9	S
9-Jun-19	22:00	0.4	S
9-Jun-19	23:00	0	S

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
10-Jun-19	00:00	0.4	ESE
10-Jun-19	01:00	0	S
10-Jun-19	02:00	0	S
10-Jun-19	03:00	0.4	SSW
10-Jun-19	04:00	0.4	ESE
10-Jun-19	05:00	0.4	ESE
10-Jun-19	06:00	0.4	E
10-Jun-19	07:00	0	SSW
10-Jun-19	08:00	0.4	E
10-Jun-19	09:00	0	ESE
10-Jun-19	10:00	0.4	E
10-Jun-19	11:00	0.4	ESE
10-Jun-19	12:00	0.4	ESE
10-Jun-19	13:00	0.9	SSW
10-Jun-19	14:00	2.2	SSW
10-Jun-19	15:00	1.8	SSW
10-Jun-19	16:00	0.4	S
10-Jun-19	17:00	0.9	S
10-Jun-19	18:00	0.9	S
10-Jun-19	19:00	0.9	S
10-Jun-19	20:00	1.8	SW
10-Jun-19	21:00	0	SW
10-Jun-19	22:00	0	SSW
10-Jun-19	23:00	0.4	ENE
11-Jun-19	00:00	0.4	ENE
11-Jun-19	01:00	1.3	ENE
11-Jun-19	02:00	1.8	ENE
11-Jun-19	03:00	1.3	ENE
11-Jun-19	04:00	1.3	ENE
11-Jun-19	05:00	0.9	E
11-Jun-19	06:00	1.8	SSW
11-Jun-19	07:00	1.3	S
11-Jun-19	08:00	1.3	WSW
11-Jun-19	09:00	1.8	ENE
11-Jun-19	10:00	1.8	ENE
11-Jun-19	11:00	1.8	ENE
11-Jun-19	12:00	1.3	ENE
11-Jun-19	13:00	1.3	ENE
11-Jun-19	14:00	0.9	NNE
11-Jun-19	15:00	1.3	NNE
11-Jun-19	16:00	0.9	NNE
11-Jun-19	17:00	0.9	NNE
11-Jun-19	18:00	0.9	NE
11-Jun-19	19:00	0.4	ENE
11-Jun-19	20:00	0.9	NNE
11-Jun-19	21:00	0.9	ENE
11-Jun-19	22:00	0.4	E
11-Jun-19	23:00	0.4	NE
12-Jun-19	00:00	0.4	ENE
12-Jun-19	01:00	0.9	ENE
12-Jun-19	02:00	1.8	ENE
12-Jun-19	03:00	0.9	SW
12-Jun-19	04:00	0.4	SW
12-Jun-19	05:00	0.9	SW
12-Jun-19	06:00	0.4	SW
12-Jun-19	07:00	0.9	ENE
12-Jun-19	08:00	0.9	SSW
12-Jun-19	09:00	1.3	SW
12-Jun-19	10:00	0.9	SW
12-Jun-19	11:00	0.9	SW
12-Jun-19	12:00	0.4	SW
12-Jun-19	13:00	0.9	SW
12-Jun-19	14:00	0.9	SW
12-Jun-19	15:00	0.4	SW
12-Jun-19	16:00	0.9	SW
12-Jun-19	17:00	0.9	SSW
12-Jun-19	18:00	0.4	S
12-Jun-19	19:00	0.9	SSW
12-Jun-19	20:00	0	ESE
12-Jun-19	21:00	0.4	S
12-Jun-19	22:00	0.4	NNE
12-Jun-19	23:00	0.4	SSW

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
13-Jun-19	00:00	0.9	SSW
13-Jun-19	01:00	0.9	S
13-Jun-19	02:00	1.8	SW
13-Jun-19	03:00	0.9	SSW
13-Jun-19	04:00	0.9	S
13-Jun-19	05:00	1.3	ENE
13-Jun-19	06:00	1.3	ENE
13-Jun-19	07:00	1.3	E
13-Jun-19	08:00	1.8	SW
13-Jun-19	09:00	1.3	ESE
13-Jun-19	10:00	0.9	E
13-Jun-19	11:00	0.9	NNE
13-Jun-19	12:00	0.9	ENE
13-Jun-19	13:00	1.3	ENE
13-Jun-19	14:00	1.3	ENE
13-Jun-19	15:00	0.9	ENE
13-Jun-19	16:00	0.4	ENE
13-Jun-19	17:00	0.4	N
13-Jun-19	18:00	0.4	SW
13-Jun-19	19:00	0.4	SSW
13-Jun-19	20:00	0.4	WSW
13-Jun-19	21:00	0.9	SSW
13-Jun-19	22:00	0.4	SW
13-Jun-19	23:00	0.4	SW
14-Jun-19	00:00	0.9	SW
14-Jun-19	01:00	1.3	SW
14-Jun-19	02:00	1.3	SSW
14-Jun-19	03:00	0.9	ENE
14-Jun-19	04:00	1.8	ENE
14-Jun-19	05:00	2.7	ENE
14-Jun-19	06:00	1.8	NNE
14-Jun-19	07:00	1.8	ENE
14-Jun-19	08:00	1.8	NE
14-Jun-19	09:00	1.8	ENE
14-Jun-19	10:00	1.8	ENE
14-Jun-19	11:00	1.3	ENE
14-Jun-19	12:00	1.3	NNE
14-Jun-19	13:00	1.3	NNE
14-Jun-19	14:00	1.3	ENE
14-Jun-19	15:00	1.3	NE
14-Jun-19	16:00	0.9	ENE
14-Jun-19	17:00	1.3	ENE
14-Jun-19	18:00	0.9	NNE
14-Jun-19	19:00	0.9	NNE
14-Jun-19	20:00	0.9	NNE
14-Jun-19	21:00	0.9	NNE
14-Jun-19	22:00	1.3	ENE
14-Jun-19	23:00	1.3	NNE
15-Jun-19	00:00	1.3	NNE
15-Jun-19	01:00	1.3	NE
15-Jun-19	02:00	1.3	NNE
15-Jun-19	03:00	1.3	NNE
15-Jun-19	04:00	1.3	NNE
15-Jun-19	05:00	1.3	NNE
15-Jun-19	06:00	2.2	ENE
15-Jun-19	07:00	2.2	ENE
15-Jun-19	08:00	1.8	ENE
15-Jun-19	09:00	1.8	NNE
15-Jun-19	10:00	1.8	NNE
15-Jun-19	11:00	1.3	NNE
15-Jun-19	12:00	1.3	NNE
15-Jun-19	13:00	0.9	NNE
15-Jun-19	14:00	1.3	ENE
15-Jun-19	15:00	1.3	ENE
15-Jun-19	16:00	1.3	NNE
15-Jun-19	17:00	1.3	NNE
15-Jun-19	18:00	1.3	NNE
15-Jun-19	19:00	0.9	NNE
15-Jun-19	20:00	1.3	NNE
15-Jun-19	21:00	0.9	NNE
15-Jun-19	22:00	0.9	NNE
15-Jun-19	23:00	0.9	NNE

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
16-Jun-19	0:00	0.9	NNE
16-Jun-19	1:00	0.9	NNE
16-Jun-19	2:00	1.3	NNE
16-Jun-19	3:00	1.3	NE
16-Jun-19	4:00	1.8	NNE
16-Jun-19	5:00	1.8	NNE
16-Jun-19	6:00	1.8	NNE
16-Jun-19	7:00	1.3	ENE
16-Jun-19	8:00	1.8	NNE
16-Jun-19	9:00	1.3	NE
16-Jun-19	10:00	0.9	NNE
16-Jun-19	11:00	1.8	ENE
16-Jun-19	12:00	1.3	ENE
16-Jun-19	13:00	1.3	ENE
16-Jun-19	14:00	1.3	ENE
16-Jun-19	15:00	1.3	ENE
16-Jun-19	16:00	1.3	ENE
16-Jun-19	17:00	1.3	ENE
16-Jun-19	18:00	1.3	ENE
16-Jun-19	19:00	1.3	ENE
16-Jun-19	20:00	0.9	NE
16-Jun-19	21:00	0.9	ENE
16-Jun-19	22:00	0.9	NE
16-Jun-19	23:00	0.9	ENE
17-Jun-19	0:00	0.9	N
17-Jun-19	1:00	1.3	NNE
17-Jun-19	2:00	2.7	ENE
17-Jun-19	3:00	3.1	ENE
17-Jun-19	4:00	3.1	ENE
17-Jun-19	5:00	1.8	ENE
17-Jun-19	6:00	1.8	ENE
17-Jun-19	7:00	1.8	ENE
17-Jun-19	8:00	1.3	SW
17-Jun-19	9:00	0.4	SSW
17-Jun-19	10:00	1.3	ENE
17-Jun-19	11:00	1.8	ENE
17-Jun-19	12:00	1.3	ENE
17-Jun-19	13:00	1.3	ENE
17-Jun-19	14:00	1.3	ENE
17-Jun-19	15:00	0.9	ENE
17-Jun-19	16:00	1.3	ENE
17-Jun-19	17:00	1.3	ENE
17-Jun-19	18:00	0.9	NE
17-Jun-19	19:00	0.4	NE
17-Jun-19	20:00	0.4	NE
17-Jun-19	21:00	0.4	NE
17-Jun-19	22:00	0.4	N
17-Jun-19	23:00	0.4	N
18-Jun-19	0:00	0.9	N
18-Jun-19	1:00	0.4	NE
18-Jun-19	2:00	0.9	ENE
18-Jun-19	3:00	0.9	ENE
18-Jun-19	4:00	2.2	ENE
18-Jun-19	5:00	1.8	ENE
18-Jun-19	6:00	1.8	SW
18-Jun-19	7:00	1.8	SW
18-Jun-19	8:00	2.7	ENE
18-Jun-19	9:00	3.1	ENE
18-Jun-19	10:00	2.7	ENE
18-Jun-19	11:00	2.2	ENE
18-Jun-19	12:00	0.9	SW
18-Jun-19	13:00	0	NNE
18-Jun-19	14:00	0.4	NE
18-Jun-19	15:00	0.9	ENE
18-Jun-19	16:00	0.9	ENE
18-Jun-19	17:00	0.4	NNE
18-Jun-19	18:00	0.4	NNE
18-Jun-19	19:00	0.4	NNE
18-Jun-19	20:00	0.4	NNE
18-Jun-19	21:00	0.9	NNE
18-Jun-19	22:00	0.4	NNE
18-Jun-19	23:00	0.9	NNE

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
19-Jun-19	0:00	0.4	NNE
19-Jun-19	1:00	0.9	ENE
19-Jun-19	2:00	0.4	ENE
19-Jun-19	3:00	0.9	SW
19-Jun-19	4:00	0.9	SSW
19-Jun-19	5:00	1.3	ESE
19-Jun-19	6:00	1.3	ENE
19-Jun-19	7:00	1.3	SW
19-Jun-19	8:00	1.3	E
19-Jun-19	9:00	1.3	SSW
19-Jun-19	10:00	1.3	ESE
19-Jun-19	11:00	0.9	ENE
19-Jun-19	12:00	0.9	ESE
19-Jun-19	13:00	0.9	ENE
19-Jun-19	14:00	2.2	ENE
19-Jun-19	15:00	1.8	ENE
19-Jun-19	16:00	1.8	ENE
19-Jun-19	17:00	2.2	ENE
19-Jun-19	18:00	2.2	ENE
19-Jun-19	19:00	2.2	ENE
19-Jun-19	20:00	1.8	ENE
19-Jun-19	21:00	1.8	ENE
19-Jun-19	22:00	0.9	ESE
19-Jun-19	23:00	0.9	SW
20-Jun-19	0:00	0.9	ESE
20-Jun-19	1:00	0.9	SW
20-Jun-19	2:00	0.9	ENE
20-Jun-19	3:00	1.3	ESE
20-Jun-19	4:00	1.3	ENE
20-Jun-19	5:00	1.8	E
20-Jun-19	6:00	1.3	E
20-Jun-19	7:00	1.8	ESE
20-Jun-19	8:00	1.8	ESE
20-Jun-19	9:00	1.8	S
20-Jun-19	10:00	1.3	ESE
20-Jun-19	11:00	0.9	S
20-Jun-19	12:00	1.3	SW
20-Jun-19	13:00	0.9	E
20-Jun-19	14:00	1.3	ENE
20-Jun-19	15:00	2.2	ENE
20-Jun-19	16:00	0.9	ENE
20-Jun-19	17:00	0.9	ENE
20-Jun-19	18:00	0.9	SW
20-Jun-19	19:00	0.9	E
20-Jun-19	20:00	0.9	SE
20-Jun-19	21:00	0.9	ENE
20-Jun-19	22:00	1.8	ENE
20-Jun-19	23:00	0.9	SW
21-Jun-19	0:00	0.9	SW
21-Jun-19	1:00	0.9	SW
21-Jun-19	2:00	0.9	ENE
21-Jun-19	3:00	1.3	SSW
21-Jun-19	4:00	1.3	E
21-Jun-19	5:00	0.4	ESE
21-Jun-19	6:00	0.4	ESE
21-Jun-19	7:00	0.4	SSW
21-Jun-19	8:00	0	SSW
21-Jun-19	9:00	0.4	SSW
21-Jun-19	10:00	0.4	SSW
21-Jun-19	11:00	1.3	SW
21-Jun-19	12:00	0.9	SW
21-Jun-19	13:00	0.9	ENE
21-Jun-19	14:00	0.9	SW
21-Jun-19	15:00	0.9	E
21-Jun-19	16:00	1.3	ENE
21-Jun-19	17:00	1.3	ENE
21-Jun-19	18:00	0.9	ENE
21-Jun-19	19:00	1.3	ESE
21-Jun-19	20:00	1.3	ENE
21-Jun-19	21:00	1.3	ENE
21-Jun-19	22:00	1.3	ESE
21-Jun-19	23:00	0.9	E

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
22-Jun-19	0:00	0.9	SW
22-Jun-19	1:00	1.3	SW
22-Jun-19	2:00	1.3	SW
22-Jun-19	3:00	1.8	E
22-Jun-19	4:00	1.3	ENE
22-Jun-19	5:00	1.8	ENE
22-Jun-19	6:00	1.3	ENE
22-Jun-19	7:00	1.3	ESE
22-Jun-19	8:00	1.3	E
22-Jun-19	9:00	1.3	ESE
22-Jun-19	10:00	0.9	E
22-Jun-19	11:00	1.3	SW
22-Jun-19	12:00	0.9	E
22-Jun-19	13:00	0.4	S
22-Jun-19	14:00	1.8	ENE
22-Jun-19	15:00	1.3	ENE
22-Jun-19	16:00	1.8	ENE
22-Jun-19	17:00	0.9	ENE
22-Jun-19	18:00	0.9	E
22-Jun-19	19:00	0.9	ENE
22-Jun-19	20:00	1.3	ENE
22-Jun-19	21:00	2.2	ENE
22-Jun-19	22:00	0.9	ENE
22-Jun-19	23:00	0.9	ENE
23-Jun-19	0:00	0.9	ENE
23-Jun-19	1:00	1.3	ESE
23-Jun-19	2:00	0.9	SE
23-Jun-19	3:00	1.3	ESE
23-Jun-19	4:00	1.8	ENE
23-Jun-19	5:00	0.9	SSW
23-Jun-19	6:00	0.9	SSW
23-Jun-19	7:00	1.3	SSW
23-Jun-19	8:00	2.2	SSW
23-Jun-19	9:00	2.2	SSW
23-Jun-19	10:00	1.3	SSW
23-Jun-19	11:00	2.2	SSW
23-Jun-19	12:00	1.3	SSW
23-Jun-19	13:00	0.4	SSW
23-Jun-19	14:00	1.3	SSW
23-Jun-19	15:00	0.4	SSW
23-Jun-19	16:00	0.9	SSW
23-Jun-19	17:00	0.4	ESE
23-Jun-19	18:00	0.9	SSW
23-Jun-19	19:00	0.9	ENE
23-Jun-19	20:00	0.9	ESE
23-Jun-19	21:00	0.4	E
23-Jun-19	22:00	0.4	ENE
23-Jun-19	23:00	0	NNE
24-Jun-19	0:00	0.4	ENE
24-Jun-19	1:00	1.8	ENE
24-Jun-19	2:00	1.3	ENE
24-Jun-19	3:00	1.3	ENE
24-Jun-19	4:00	1.8	ENE
24-Jun-19	5:00	0.9	ENE
24-Jun-19	6:00	1.8	ENE
24-Jun-19	7:00	2.2	SW
24-Jun-19	8:00	2.2	ENE
24-Jun-19	9:00	1.8	ENE
24-Jun-19	10:00	0.4	NE
24-Jun-19	11:00	0.4	SW
24-Jun-19	12:00	0.9	ENE
24-Jun-19	13:00	0.9	ENE
24-Jun-19	14:00	1.3	ENE
24-Jun-19	15:00	2.2	ENE
24-Jun-19	16:00	0.9	ENE
24-Jun-19	17:00	1.3	ENE
24-Jun-19	18:00	0.4	ENE
24-Jun-19	19:00	0.4	NE
24-Jun-19	20:00	0.9	ENE
24-Jun-19	21:00	0.4	NE
24-Jun-19	22:00	0.4	NE
24-Jun-19	23:00	1.3	NE

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
25-Jun-19	0:00	1.3	SW
25-Jun-19	1:00	0.4	SW
25-Jun-19	2:00	0.4	SW
25-Jun-19	3:00	0.9	SW
25-Jun-19	4:00	1.3	SW
25-Jun-19	5:00	1.3	SW
25-Jun-19	6:00	1.3	SW
25-Jun-19	7:00	0.9	SW
25-Jun-19	8:00	0.9	SW
25-Jun-19	9:00	1.3	SW
25-Jun-19	10:00	1.3	ENE
25-Jun-19	11:00	1.8	SW
25-Jun-19	12:00	1.3	SW
25-Jun-19	13:00	0.4	NE
25-Jun-19	14:00	0.9	SW
25-Jun-19	15:00	1.3	SW
25-Jun-19	16:00	1.3	ENE
25-Jun-19	17:00	1.3	ENE
25-Jun-19	18:00	1.8	ENE
25-Jun-19	19:00	1.3	ENE
25-Jun-19	20:00	1.3	ENE
25-Jun-19	21:00	0.9	NNE
25-Jun-19	22:00	0.9	NE
25-Jun-19	23:00	0.9	NNE
26-Jun-19	0:00	0.9	NNE
26-Jun-19	1:00	1.3	ENE
26-Jun-19	2:00	0.9	SW
26-Jun-19	3:00	1.8	ENE
26-Jun-19	4:00	1.3	NNE
26-Jun-19	5:00	2.2	ENE
26-Jun-19	6:00	1.3	SSW
26-Jun-19	7:00	0.9	ENE
26-Jun-19	8:00	0.9	NNE
26-Jun-19	9:00	3.1	ENE
26-Jun-19	10:00	1.8	ENE
26-Jun-19	11:00	1.8	NE
26-Jun-19	12:00	1.3	NE
26-Jun-19	13:00	1.3	NE
26-Jun-19	14:00	1.3	NE
26-Jun-19	15:00	1.3	NE
26-Jun-19	16:00	0.9	NNE
26-Jun-19	17:00	1.3	ENE
26-Jun-19	18:00	1.3	ENE
26-Jun-19	19:00	1.8	ENE
26-Jun-19	20:00	0.9	NE
26-Jun-19	21:00	0.9	NNE
26-Jun-19	22:00	1.3	ENE
26-Jun-19	23:00	1.3	ENE
27-Jun-19	0:00	0.4	NE
27-Jun-19	1:00	0.9	SW
27-Jun-19	2:00	1.3	ENE
27-Jun-19	3:00	1.3	ENE
27-Jun-19	4:00	2.7	ENE
27-Jun-19	5:00	1.8	ENE
27-Jun-19	6:00	1.3	ENE
27-Jun-19	7:00	1.3	ENE
27-Jun-19	8:00	2.2	ENE
27-Jun-19	9:00	2.2	ENE
27-Jun-19	10:00	1.3	ENE
27-Jun-19	11:00	2.2	ENE
27-Jun-19	12:00	1.8	NE
27-Jun-19	13:00	1.3	ENE
27-Jun-19	14:00	0.9	NNE
27-Jun-19	15:00	1.3	NE
27-Jun-19	16:00	0.9	NNE
27-Jun-19	17:00	0.9	ENE
27-Jun-19	18:00	1.3	NE
27-Jun-19	19:00	0.4	NE
27-Jun-19	20:00	0.9	ENE
27-Jun-19	21:00	0.9	SSW
27-Jun-19	22:00	0.9	ENE
27-Jun-19	23:00	0.4	NNE

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction
28-Jun-19	0:00	0.9	SW
28-Jun-19	1:00	0.4	NE
28-Jun-19	2:00	0.9	ENE
28-Jun-19	3:00	1.3	ENE
28-Jun-19	4:00	1.8	ENE
28-Jun-19	5:00	1.8	ENE
28-Jun-19	6:00	1.8	ENE
28-Jun-19	7:00	3.1	ENE
28-Jun-19	8:00	2.7	ENE
28-Jun-19	9:00	1.8	SSW
28-Jun-19	10:00	1.3	SSW
28-Jun-19	11:00	0.4	NNE
28-Jun-19	12:00	0.4	NNE
28-Jun-19	13:00	0.4	NNE
28-Jun-19	14:00	0.9	NNE
28-Jun-19	15:00	0.4	NNE
28-Jun-19	16:00	0.4	NNE
28-Jun-19	17:00	0.9	NNE
28-Jun-19	18:00	0.4	NE
28-Jun-19	19:00	0.4	NNE
28-Jun-19	20:00	0.4	NNE
28-Jun-19	21:00	1.3	NE
28-Jun-19	22:00	0.9	NNE
28-Jun-19	23:00	0.4	N
29-Jun-19	0:00	0.4	ENE
29-Jun-19	1:00	0.4	NE
29-Jun-19	2:00	0.9	ENE
29-Jun-19	3:00	0.4	N
29-Jun-19	4:00	1.3	NNE
29-Jun-19	5:00	1.8	NNE
29-Jun-19	6:00	2.2	NNE
29-Jun-19	7:00	1.8	NE
29-Jun-19	8:00	1.8	NNE
29-Jun-19	9:00	1.8	NNE
29-Jun-19	10:00	2.2	NNE
29-Jun-19	11:00	1.3	NNE
29-Jun-19	12:00	1.3	NNE
29-Jun-19	13:00	1.3	NNE
29-Jun-19	14:00	1.3	NNE
29-Jun-19	15:00	1.8	NNE
29-Jun-19	16:00	1.3	NNE
29-Jun-19	17:00	1.3	NNE
29-Jun-19	18:00	1.3	NNE
29-Jun-19	19:00	0.9	NNE
29-Jun-19	20:00	1.3	ENE
29-Jun-19	21:00	0.9	NNE
29-Jun-19	22:00	0.9	NNE
29-Jun-19	23:00	0.4	S
30-Jun-19	0:00	0.9	SSE
30-Jun-19	1:00	0.9	S
30-Jun-19	2:00	0.9	NNE
30-Jun-19	3:00	1.8	NNE
30-Jun-19	4:00	1.3	NNE
30-Jun-19	5:00	1.3	NNE
30-Jun-19	6:00	1.8	NNE
30-Jun-19	7:00	1.3	NNE
30-Jun-19	8:00	0.9	NNE
30-Jun-19	9:00	3.1	ENE
30-Jun-19	10:00	1.8	ENE
30-Jun-19	11:00	1.8	NE
30-Jun-19	12:00	1.3	NE
30-Jun-19	13:00	1.3	NE
30-Jun-19	14:00	1.3	NE
30-Jun-19	15:00	1.3	NE
30-Jun-19	16:00	0.9	NNE
30-Jun-19	17:00	1.3	ENE
30-Jun-19	18:00	1.3	ENE
30-Jun-19	19:00	1.8	ENE
30-Jun-19	20:00	0.9	NE
30-Jun-19	21:00	0.9	NNE
30-Jun-19	22:00	1.3	ENE
30-Jun-19	23:00	1.3	ENE

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 (June 2019)

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

Air Quality Monitoring Station

AM1 - Tin Hau Temple
AM2 - Sai Tso Wan Recreation Ground
AM3 - Yau Lai Estate Bik Lai House
AM4(") - Sitting-out Area at Cha Kwo Ling Village
AM4(A)(") - 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
Impact Water Quality Monitoring Schedule (June 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Jun
2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	8-Jun
	Mid-Ebb 10:26 Mid-Flood 16:47		Mid-Ebb 11:54 Mid-Flood 18:46			Mid-Flood 8:00 Mid-Ebb 14:11
9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun
	Mid-Flood 8:22 Mid-Ebb 15:44		Mid-Flood N/A Mid-Ebb 17:13		Mid-Flood 12:29 Mid-Ebb 18:57	
16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun
	Mid-Ebb 10:25 Mid-Flood 16:30		Mid-Ebb 11:21 Mid-Flood 18:02		Mid-Flood N/A Mid-Ebb 12:25	
23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun
	Mid-Flood 8:00 Mid-Ebb 14:32		Mid-Flood 8:55 Mid-Ebb 16:10		Mid-Flood 11:19 Mid-Ebb 18:10	
30-Jun						

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

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Impact Water Quality Monitoring Schedule in Temporary Marine Embayment June 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Jun
2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	8-Jun
	Mid-Ebb 12:19 Mid-Flood 19:02					
9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun
	Mid-Flood 11:21 Mid-Ebb 18:27					
16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun
	Mid-Ebb 12:22 Mid-Flood 19:26					
23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun
	Mid-Flood 9:45 Mid-Ebb 16:44					
30-Jun						

Monitoring Station:
W1

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Impact Groundwater Quality Monitoring Schedule (June 2019)

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

Monitoring Location:
Stream 1, Stream 2, Stream 3

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 ($\mu g/m^3$)
31-May-19	13:00	Cloudy	64.0
31-May-19	14:00	Cloudy	82.0
31-May-19	15:00	Cloudy	76.0
6-Jun-19	7:00	Sunny	165.2
6-Jun-19	8:00	Sunny	143.3
6-Jun-19	9:00	Sunny	142.3
13-Jun-19	10:15	Rainy	120.0
13-Jun-19	13:00	Rainy	117.0
13-Jun-19	14:00	Rainy	108.0
19-Jun-19	13:00	Cloudy	96.0
19-Jun-19	14:00	Cloudy	99.6
19-Jun-19	15:00	Cloudy	110.5
25-Jun-19	9:00	Rainy	109.5
25-Jun-19	10:00	Rainy	110.0
25-Jun-19	11:00	Rainy	113.7
		Average	110.5
		Maximum	165.2
		Minimum	64.0

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
31-May-19	9:00	Fine	92.4
31-May-19	10:00	Fine	103.0
31-May-19	11:00	Fine	105.6
6-Jun-19	10:15	Sunny	99.5
6-Jun-19	13:00	Sunny	94.5
6-Jun-19	14:00	Sunny	93.5
13-Jun-19	9:00	Rainy	68.9
13-Jun-19	10:00	Rainy	63.6
13-Jun-19	11:00	Rainy	66.8
19-Jun-19	9:00	Sunny	84.8
19-Jun-19	10:00	Sunny	79.5
19-Jun-19	11:00	Sunny	88.0
25-Jun-19	7:30	Cloudy	133.0
25-Jun-19	8:30	Cloudy	138.6
25-Jun-19	9:30	Cloudy	140.0
		Average	96.8
		Maximum	140.0
		Minimum	63.6

Appendix E - 1-hour TSP Monitoring Results

Location AM3 - Yau Lai Estate Bik Lai House			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
31-May-19	9:00	Cloudy	92.0
31-May-19	10:00	Cloudy	116.0
31-May-19	11:00	Cloudy	101.0
6-Jun-19	15:30	Sunny	83.6
6-Jun-19	16:30	Sunny	86.6
6-Jun-19	17:30	Sunny	87.6
13-Jun-19	7:00	Rainy	135.0
13-Jun-19	8:00	Rainy	133.5
13-Jun-19	9:00	Rainy	150.0
19-Jun-19	16:30	Cloudy	127.3
19-Jun-19	17:30	Cloudy	127.8
19-Jun-19	18:30	Cloudy	128.1
25-Jun-19	13:00	Rainy	120.7
25-Jun-19	14:00	Rainy	114.1
25-Jun-19	15:00	Rainy	117.1
		Average	114.7
		Maximum	150.0
		Minimum	83.6

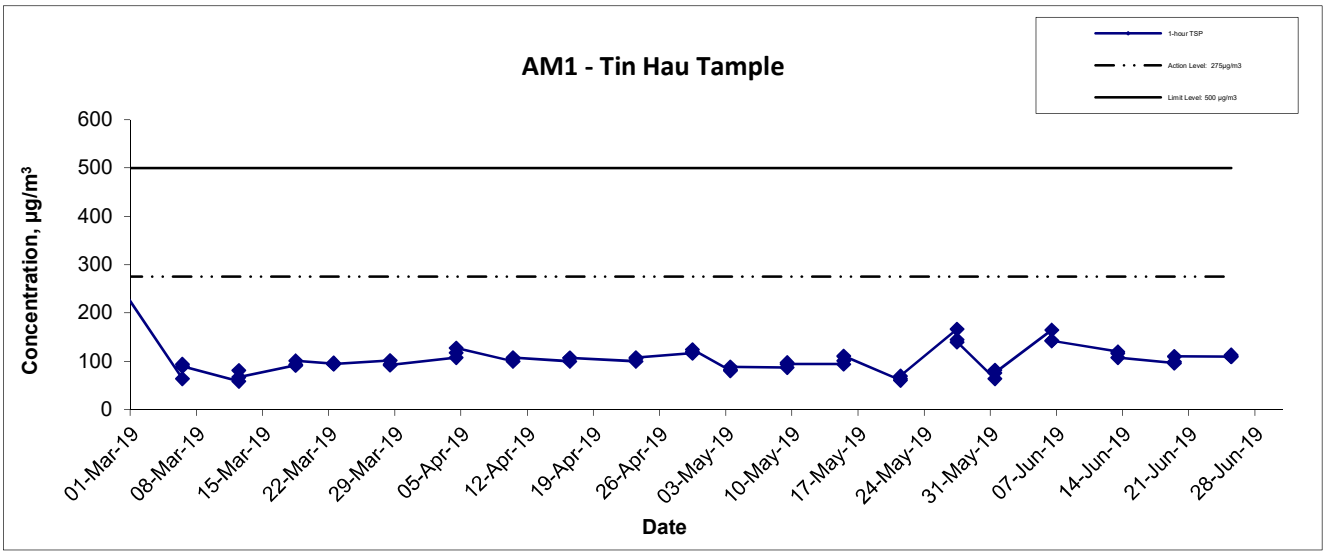
Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
31-May-19	16:00	Cloudy	68.0
31-May-19	17:00	Cloudy	114.0
31-May-19	18:00	Cloudy	76.0
6-Jun-19	9:00	Sunny	99.0
6-Jun-19	10:00	Sunny	95.0
6-Jun-19	11:00	Sunny	105.6
13-Jun-19	15:30	Rainy	117.0
13-Jun-19	16:30	Rainy	114.0
13-Jun-19	17:30	Rainy	105.0
19-Jun-19	9:00	Cloudy	86.2
19-Jun-19	10:00	Cloudy	92.3
19-Jun-19	11:00	Cloudy	97.9
25-Jun-19	16:00	Rainy	115.8
25-Jun-19	17:00	Rainy	118.9
25-Jun-19	18:00	Rainy	113.7
		Average	101.2
		Maximum	118.9
		Minimum	68.0

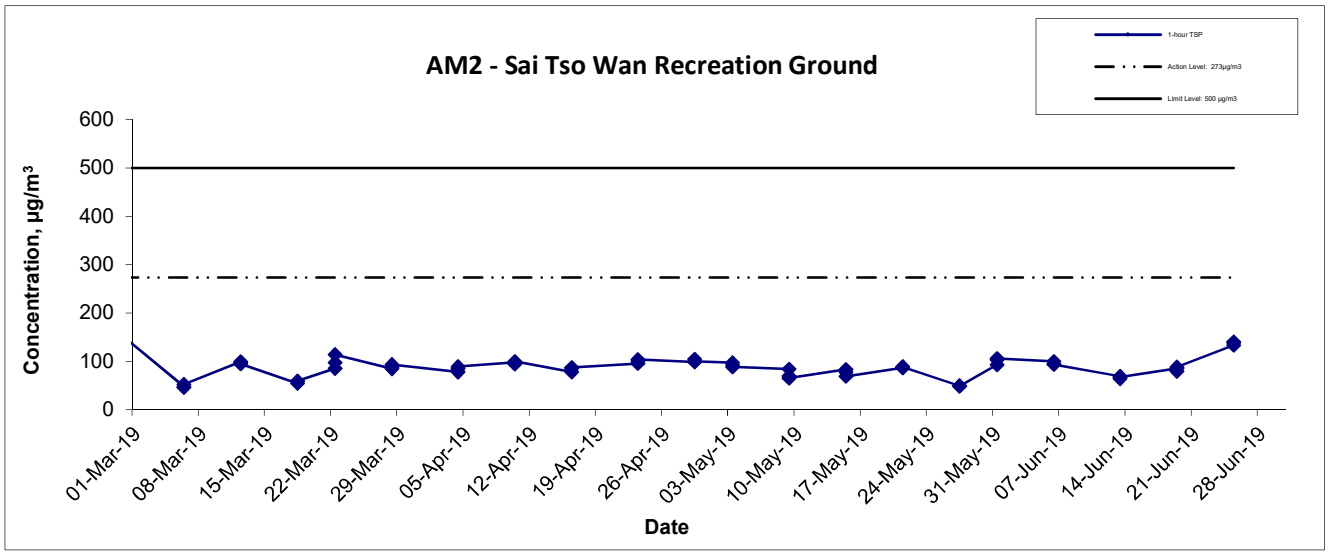
Appendix E - 1-hour TSP Monitoring Results

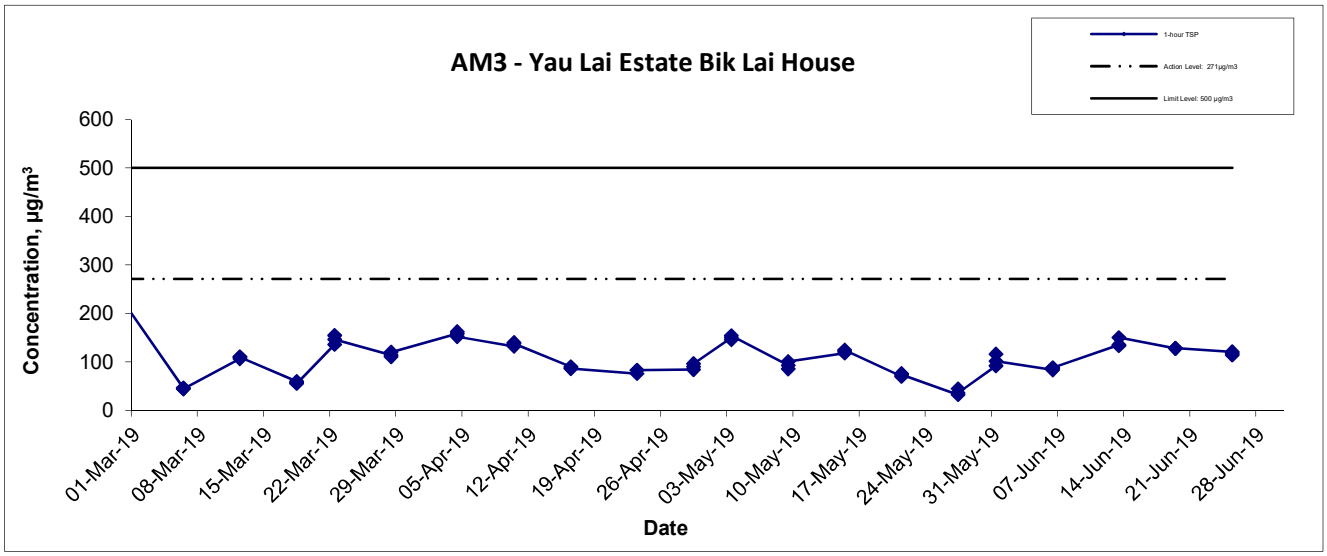
Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
31-May-19	13:00	Fine	105.6
31-May-19	14:00	Fine	112.2
31-May-19	15:00	Fine	122.8
6-Jun-19	13:00	Sunny	118.8
6-Jun-19	14:00	Sunny	122.8
6-Jun-19	15:00	Sunny	117.5
13-Jun-19	16:00	Rainy	86.9
13-Jun-19	17:00	Rainy	90.1
13-Jun-19	18:00	Rainy	98.6
19-Jun-19	13:00	Sunny	109.0
19-Jun-19	14:00	Sunny	100.7
19-Jun-19	15:00	Sunny	113.4
25-Jun-19	11:00	Cloudy	140.0
25-Jun-19	13:00	Cloudy	142.8
25-Jun-19	14:00	Cloudy	133.0
		Average	114.3
		Maximum	142.8
		Minimum	86.9

Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
31-May-19	16:00	Fine	85.8
31-May-19	17:00	Fine	89.8
31-May-19	18:00	Fine	96.4
6-Jun-19	16:00	Sunny	92.4
6-Jun-19	17:00	Sunny	85.8
6-Jun-19	18:00	Sunny	88.4
13-Jun-19	13:00	Rainy	74.2
13-Jun-19	14:00	Rainy	68.9
13-Jun-19	15:00	Rainy	79.5
19-Jun-19	16:00	Sunny	84.8
19-Jun-19	17:00	Sunny	75.0
19-Jun-19	18:00	Sunny	66.0
25-Jun-19	16:00	Cloudy	124.6
25-Jun-19	17:00	Cloudy	133.0
25-Jun-19	18:00	Cloudy	135.8
		Average	92.0
		Maximum	135.8
		Minimum	66.0

1-hr TSP Concentration Levels

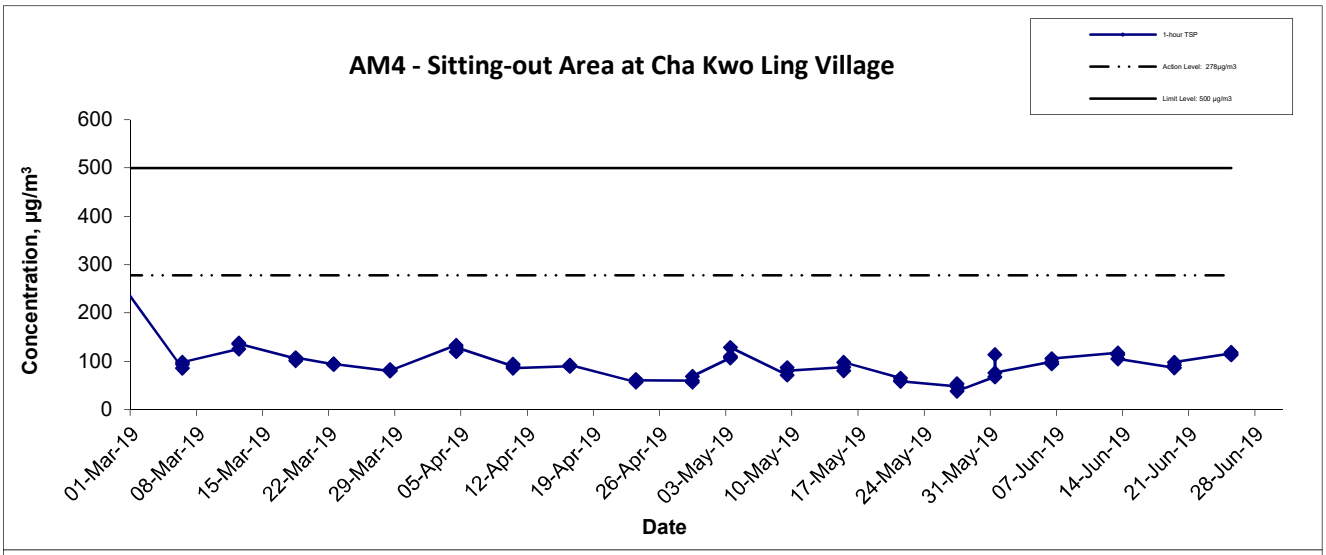


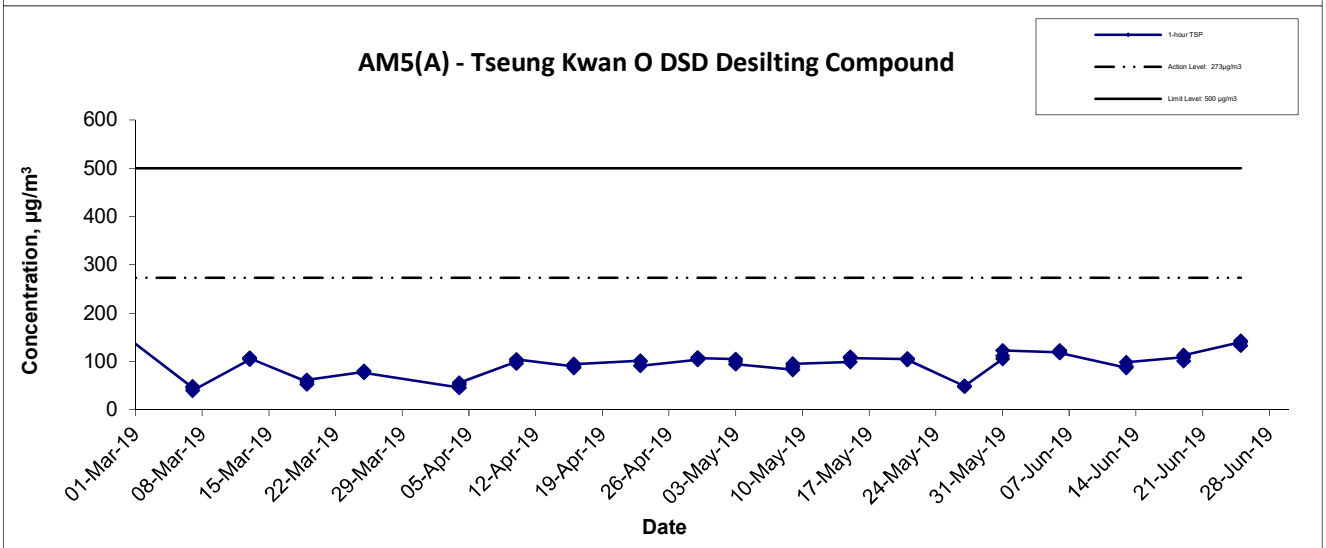


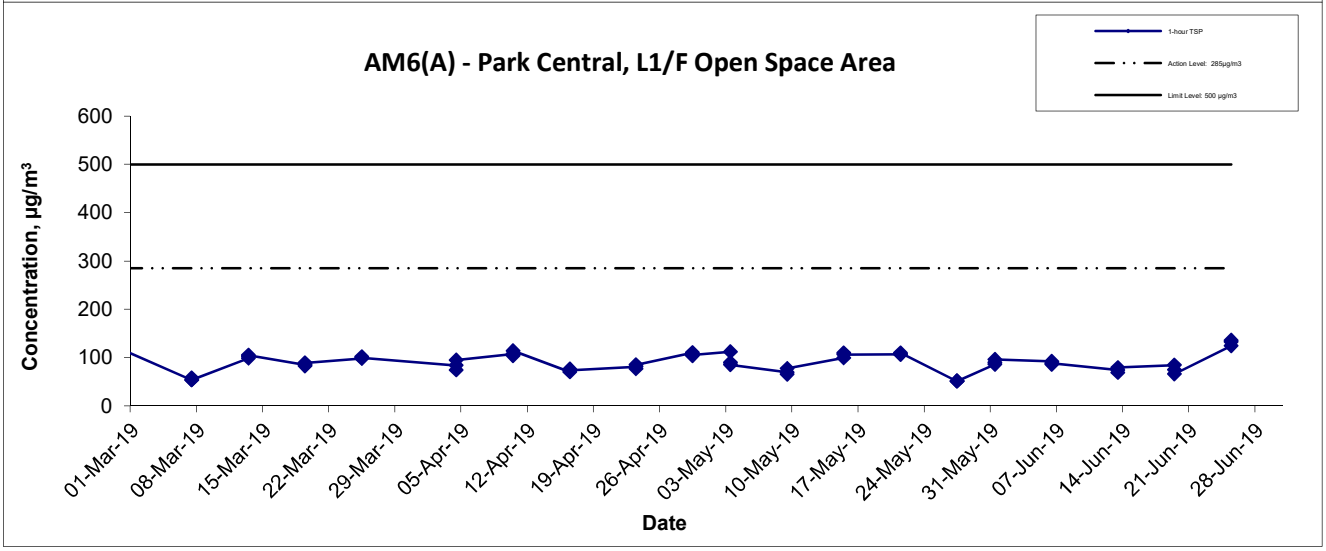


Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jun-19	Appendix: E	

1-hr TSP Concentration Levels







Title		Scale	Project No.
	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results	N.T.S	MA16034
		Date: Jun-19	Appendix: E

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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	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.4808	3.5945	0.1137	5364.8	5388.8	24.0	1.30	1.30	1.30	1871.9	60.7
6-Jun-19	Sunny	303.2	758.8	3.4680	3.5621	0.0941	5388.8	5412.8	24.0	1.29	1.29	1.29	1862.0	50.5
12-Jun-19	Rainy	300.6	754.1	3.5079	3.5957	0.0878	5412.8	5436.8	24.0	1.30	1.29	1.29	1864.2	47.1
18-Jun-19	Sunny	301.8	757.0	3.5424	3.5804	0.0380	5436.8	5460.8	24.0	1.22	1.22	1.22	1750.2	21.7
24-Jun-19	Cloudy	301.2	755.8	3.5160	3.6296	0.1136	5460.8	5484.8	24.0	1.21	1.22	1.22	1750.7	64.9
													Min	21.7
													Max	64.9
													Average	49.0

Location AM2 - Sai Tso Wan Recreation Ground

Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.5208	3.5590	0.0382	26276.0	26300.0	24.0	1.21	1.21	1.21	1743.9	21.9
6-Jun-19	Sunny	303.2	758.8	3.4783	3.5179	0.0396	26300.0	26324.0	24.0	1.20	1.20	1.20	1734.9	22.8
12-Jun-19	Rainy	300.6	754.1	3.5451	3.6244	0.0793	26324.0	26348.0	24.0	1.21	1.21	1.21	1736.9	45.7
18-Jun-19	Sunny	301.8	757.0	3.4500	3.5214	0.0714	26348.0	26372.0	24.0	1.22	1.21	1.21	1749.0	40.8
24-Jun-19	Cloudy	301.2	755.8	3.4877	3.5945	0.1068	26372.0	26396.0	24.0	1.21	1.22	1.21	1749.5	61.0
													Min	21.9
													Max	61.0
													Average	38.5

Location AM3 - Yau Lai Estate, Bik Lai House

Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	8	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.5011	3.6742	0.1731	483.3	507.3	24.0	1.21	1.21	1.21	1746.0	99.1
6-Jun-19	Sunny	303.2	758.8	3.4793	3.5785	0.0992	562.3	586.3	24.0	1.21	1.21	1.21	1737.0	57.1
12-Jun-19	Rainy	300.6	754.1	3.4634	3.5722	0.1088	586.3	610.3	24.0	1.21	1.21	1.21	1739.0	62.6
18-Jun-19	Sunny	301.8	757.0	3.4997	3.6080	0.1083	610.3	634.3	24.0	1.22	1.22	1.22	1751.5	61.8
24-Jun-19	Cloudy	301.2	755.8	3.4868	3.5834	0.0966	634.3	658.3	24.0	1.21	1.22	1.22	1754.2	55.1
													Min	55.1
													Max	99.1
													Average	67.1

Appendix F - 24-hour TSP Monitoring Results

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

Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.4987	3.7114	0.2127	11492.0	11516.0	24.0	1.21	1.21	1.21	1746.1	121.8
6-Jun-19	Sunny	303.2	758.8	3.4771	3.6250	0.1479	11576.4	11600.4	24.0	1.21	1.21	1.21	1738.2	85.1
12-Jun-19	Rainy	300.6	754.1	3.4669	3.6157	0.1488	11600.4	11624.4	24.0	1.21	1.21	1.21	1740.1	85.5
18-Jun-19	Sunny	301.8	757.0	3.4745	3.6137	0.1392	11624.4	11648.4	24.0	1.21	1.21	1.21	1748.8	79.6
24-Jun-19	Cloudy	301.2	755.8	3.4701	3.5633	0.0932	11648.4	11672.4	24.0	1.21	1.22	1.21	1749.2	53.3
													Min	53.3
													Max	121.8
													Average	85.1

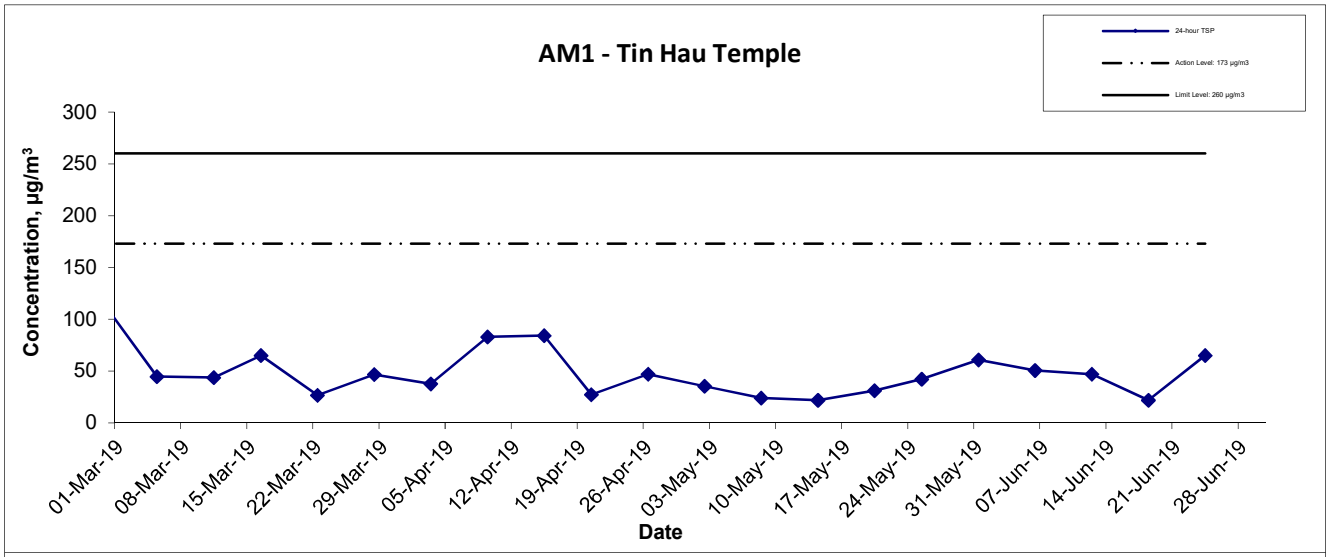
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

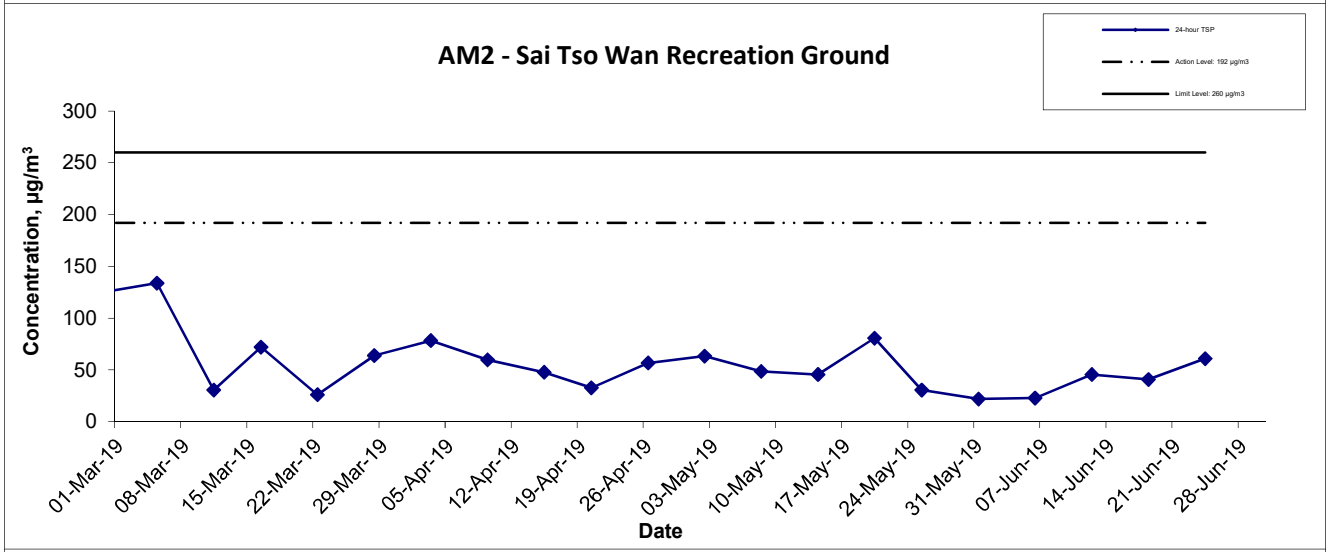
Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.4666	3.5622	0.0956	27989.3	28013.3	24.0	1.21	1.21	1.21	1742.6	54.9
6-Jun-19	Sunny	303.2	758.8	3.5321	3.6024	0.0703	28013.3	28037.3	24.0	1.20	1.20	1.20	1733.4	40.6
12-Jun-19	Rainy	300.6	754.1	3.4659	3.5572	0.0913	28053.1	28077.1	24.0	1.21	1.20	1.21	1735.5	52.6
18-Jun-19	Cloudy	301.8	757.0	3.4376	3.5444	0.1068	28077.1	28101.1	24.0	1.22	1.22	1.22	1751.1	61.0
24-Jun-19	Cloudy	301.2	755.8	3.4814	3.5787	0.0973	28101.1	28125.1	24.0	1.21	1.22	1.22	1751.6	55.6
													Min	40.6
													Max	61.0
													Average	52.9

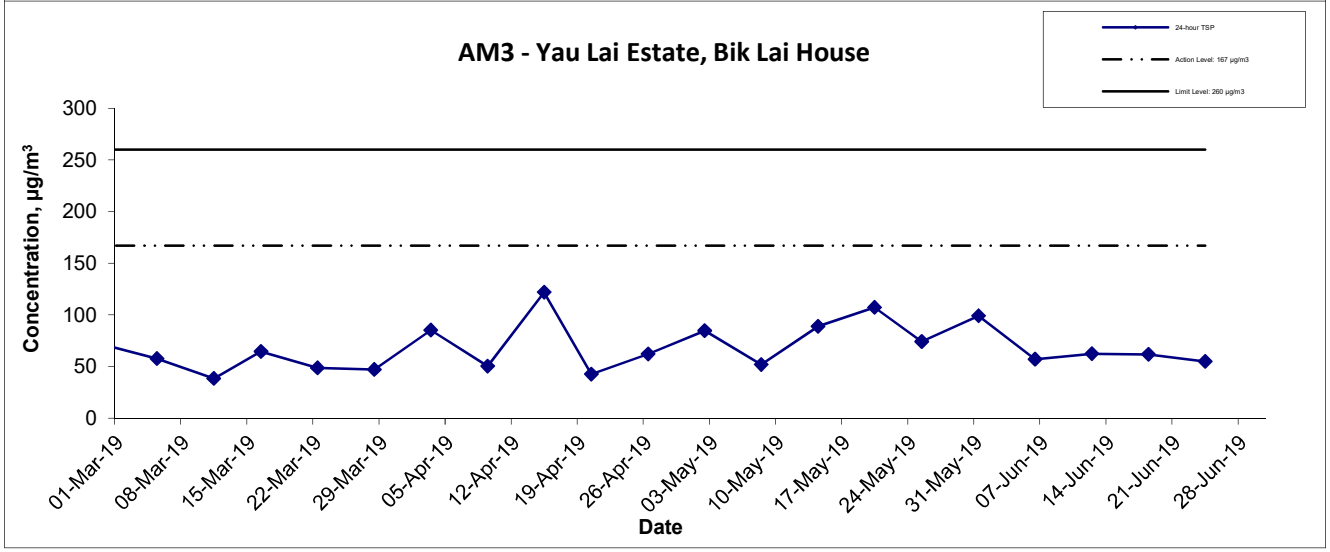
Location AM6(A) - Park Central, L1/F Open Space Area

Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m^3/min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m^3/min)	(m^3)	($\mu g/m^3$)
31-May-19	Sunny	299.5	757.1	3.4738	3.6059	0.1321	590.7	614.7	24.0	1.23	1.22	1.23	1765.3	74.8
6-Jun-19	Sunny	303.2	758.8	3.5187	3.5606	0.0419	614.7	638.7	24.0	1.22	1.22	1.22	1756.4	23.9
12-Jun-19	Rainy	300.6	754.1	3.4749	3.5573	0.0824	638.7	662.7	24.0	1.22	1.22	1.22	1758.4	46.9
18-Jun-19	Sunny	301.8	757.0	3.4713	3.5299	0.0586	662.7	686.7	24.0	1.22	1.22	1.22	1758.4	33.3
24-Jun-19	Cloudy	301.2	755.8	3.4747	3.5633	0.0886	686.7	710.7	24.0	1.22	1.22	1.22	1758.8	50.4
													Min	23.9
											1758.41		Max	74.8
													Average	45.8

24-hr TSP Concentration Levels







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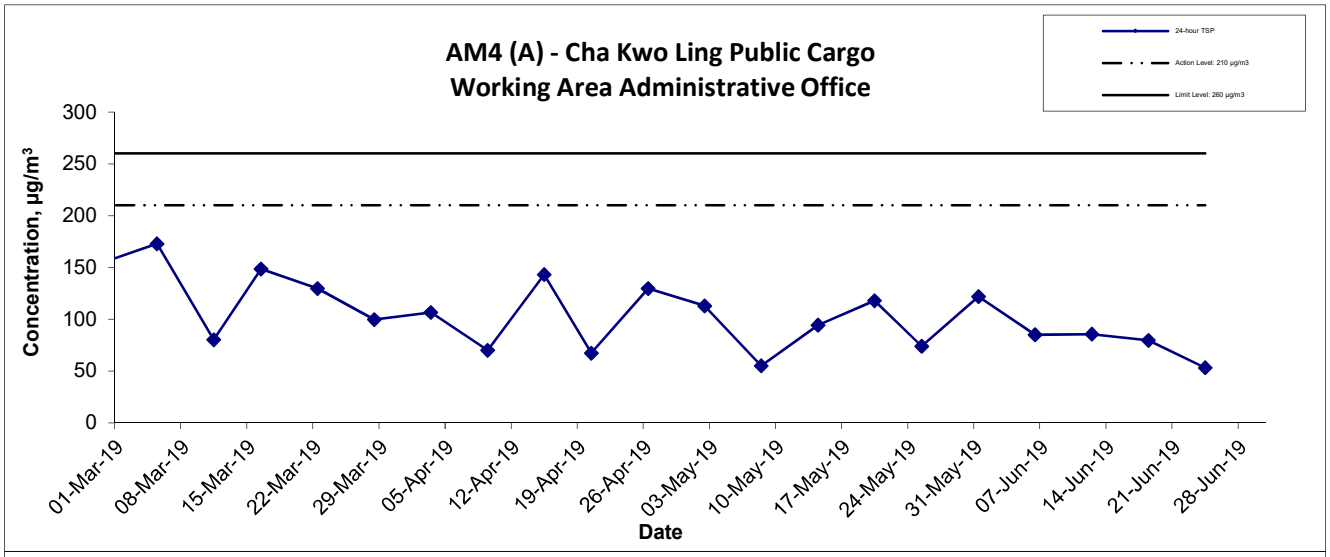
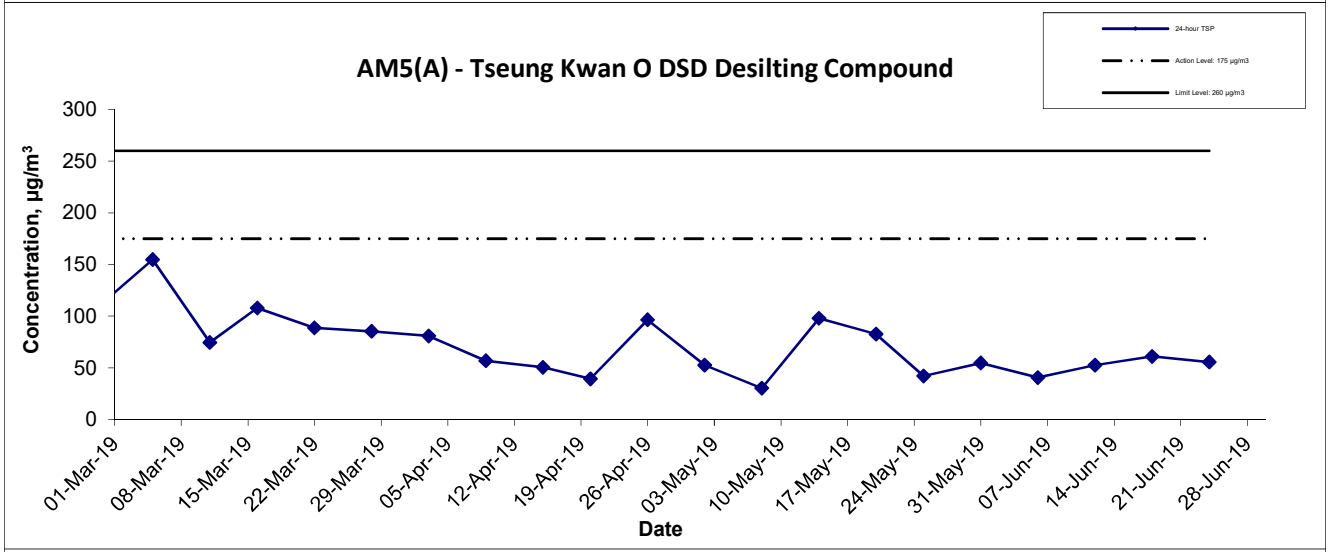
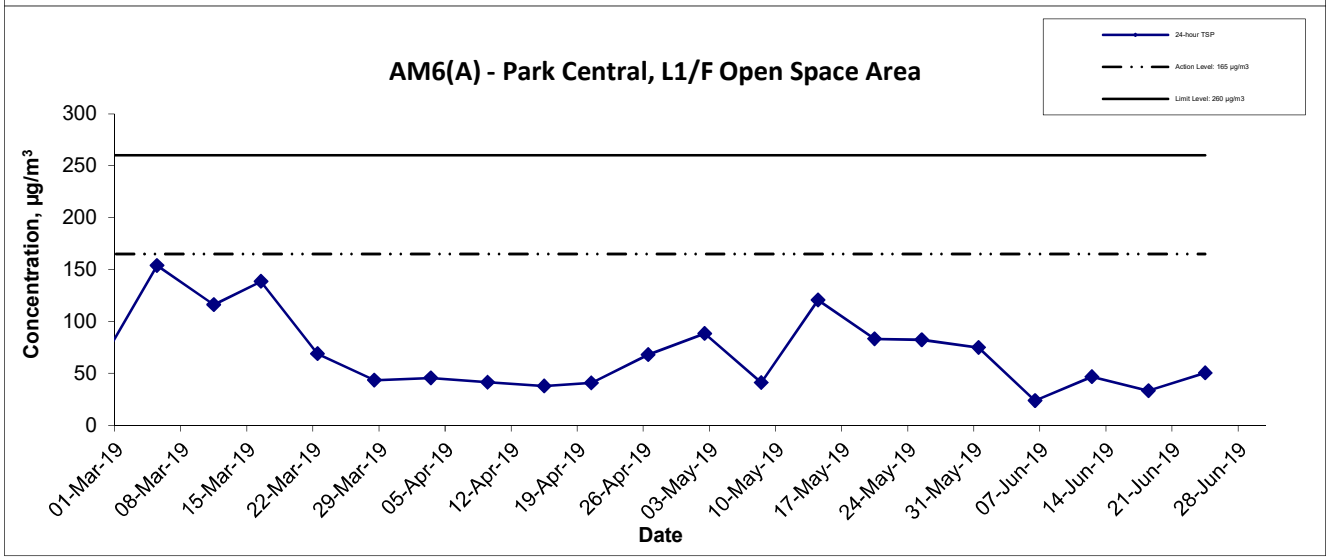
24-hr TSP Concentration Levels







Title		Scale	Project No.	
	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 24-hour TSP Monitoring Results	N.T.S	MA16034	CINOTECH
		Date Jun-19	Appendix F	

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

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}
3-Jun-19	14:00	Sunny	71.6	74.3	68.7	65.5	70
13-Jun-19	9:53	Rainy	66.6	67.9	65.1		60
19-Jun-19	14:00	Cloudy	72.0	75.1	70.2		71
25-Jun-19	13:45	Cloudy	71.4	74.9	69.9		70

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}
3-Jun-19	13:00	Sunny	69.9	72.4	65.7	63.6	69
13-Jun-19	18:30	Rainy	71.0	73.0	67.2		70
19-Jun-19	15:00	Cloudy	72.9	74.8	70.7		72
25-Jun-19	13:00	Cloudy	71.3	74.3	69.6		70

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}
3-Jun-19	15:00	Sunny	72.6	74.9	69.2	65.6	72
13-Jun-19	17:45	Rainy	69.0	69.9	67.3		66
19-Jun-19	13:00	Cloudy	71.5	73.8	69.3		70
25-Jun-19	15:30	Cloudy	69.8	73.9	69.1		68

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}
3-Jun-19	11:00	Sunny	66.4	69.2	63.9	62	64
13-Jun-19	13:00	Rainy	64.2	67.0	60.4		60
19-Jun-19	9:00	Cloudy	63.5	65.6	60.1		58
25-Jun-19	11:30	Cloudy	64.9	68.7	62.1		62

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}
3-Jun-19	10:00	Sunny	65.4	68.9	61.6	68.2	65Measured ≦ Baseline
13-Jun-19	14:00	Rainy	67.6	69.4	65.4		68Measured ≦ Baseline
19-Jun-19	10:00	Cloudy	65.1	67.4	62.3		65Measured ≦ Baseline
25-Jun-19	14:45	Cloudy	69.5	71.5	67.0		64

Appendix G - Noise Monitoring Results

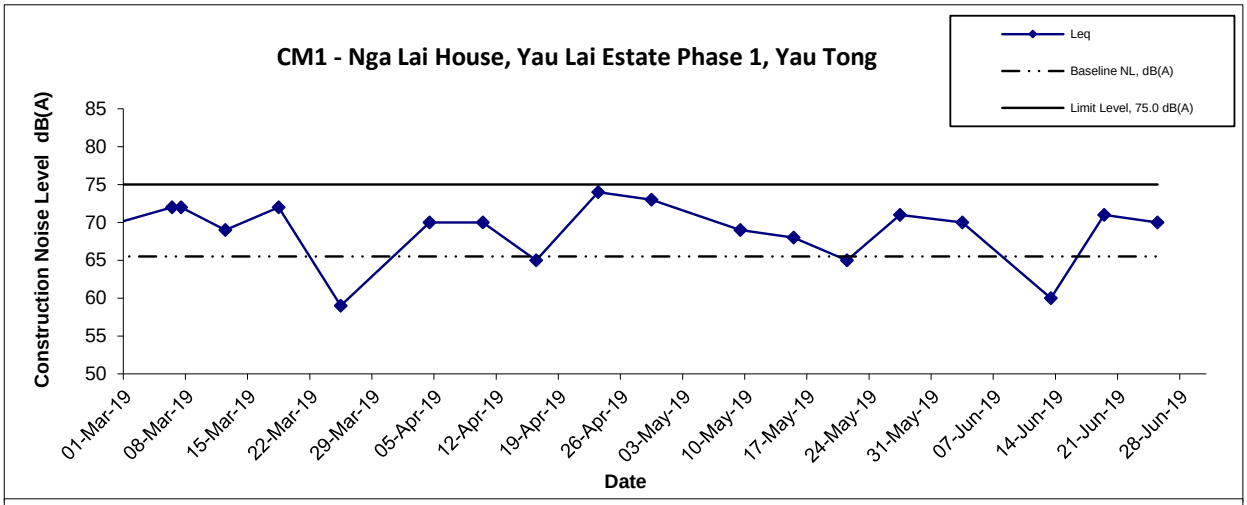
(0700-1900 hrs on Normal Weekdays)

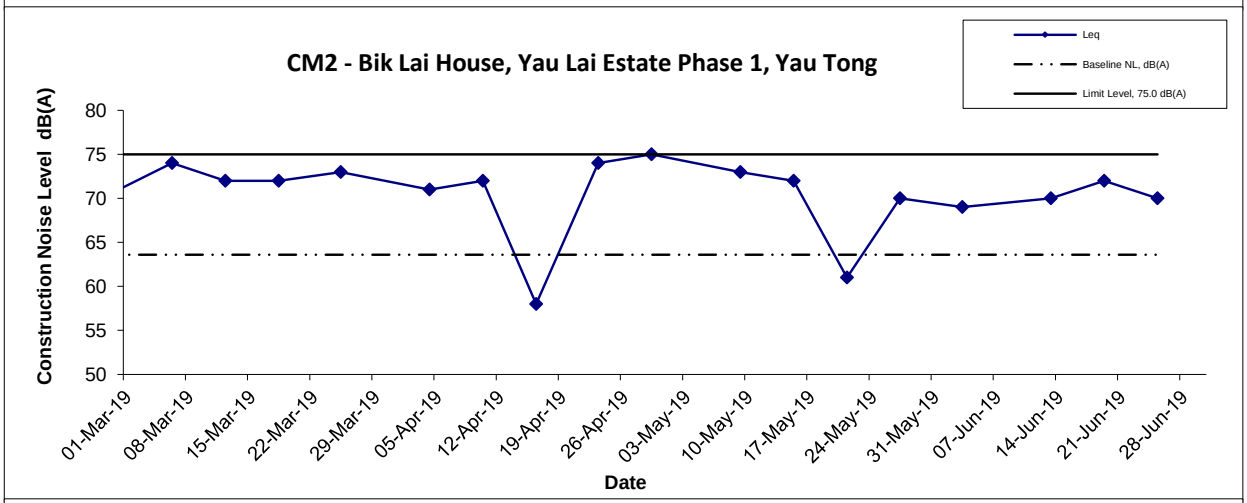
Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jun-19	15:00	Sunny	66.3	69.1	63.5	61.9	64
13-Jun-19	14:00	Rainy	67.6	70.6	63.2		66
19-Jun-19	13:30	Sunny	63.2	68.5	57.1		57
25-Jun-19	13:00	Cloudy	62.8	68.1	56.8		56

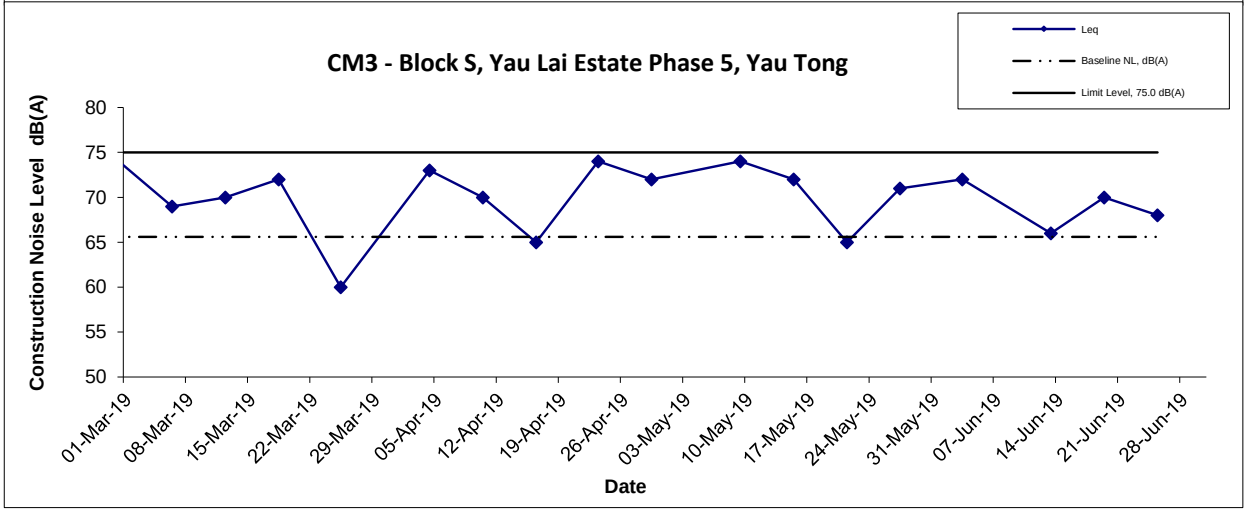
Location CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jun-19	14:00	Sunny	64.1	67.3	61.8	58.3	63
13-Jun-19	15:00	Rainy	67.8	71.2	64.0		67
19-Jun-19	14:30	Sunny	62.5	65.3	58.3		60
25-Jun-19	14:00	Cloudy	63.4	66.3	59.4		62

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}
3-Jun-19	13:00	Sunny	65.4	68.4	62.1	69.1	65Measured ≦ Baseline
13-Jun-19	13:00	Rainy	67.4	71.2	63.9		67Measured ≦ Baseline
19-Jun-19	16:00	Sunny	68.2	72.5	65.7		68Measured ≦ Baseline
25-Jun-19	11:30	Cloudy	69.1	73.5	66.8		69Measured ≦ Baseline

Noise Levels (Daytime)







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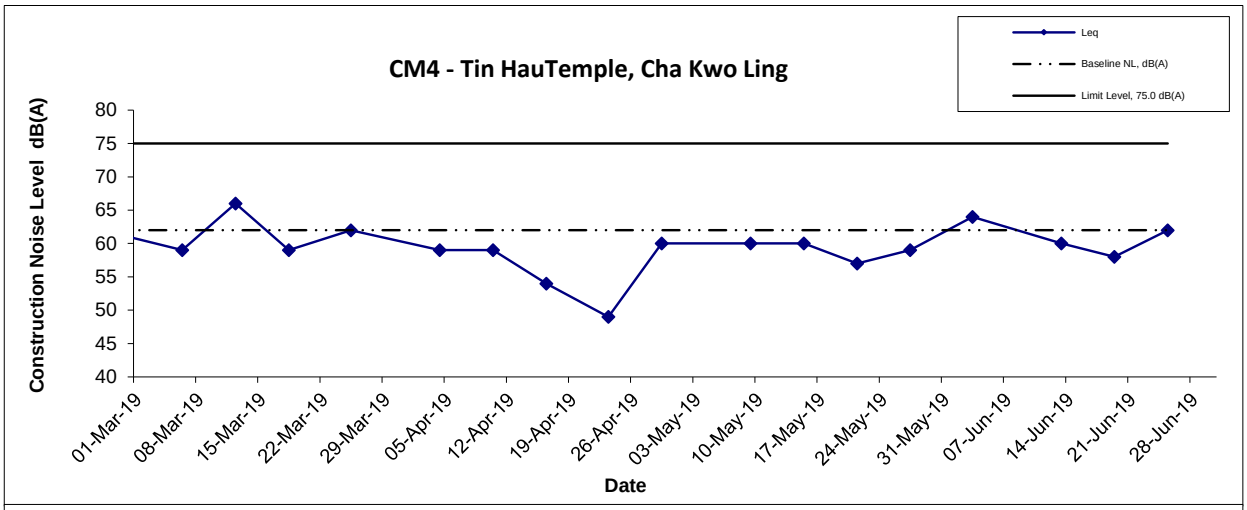
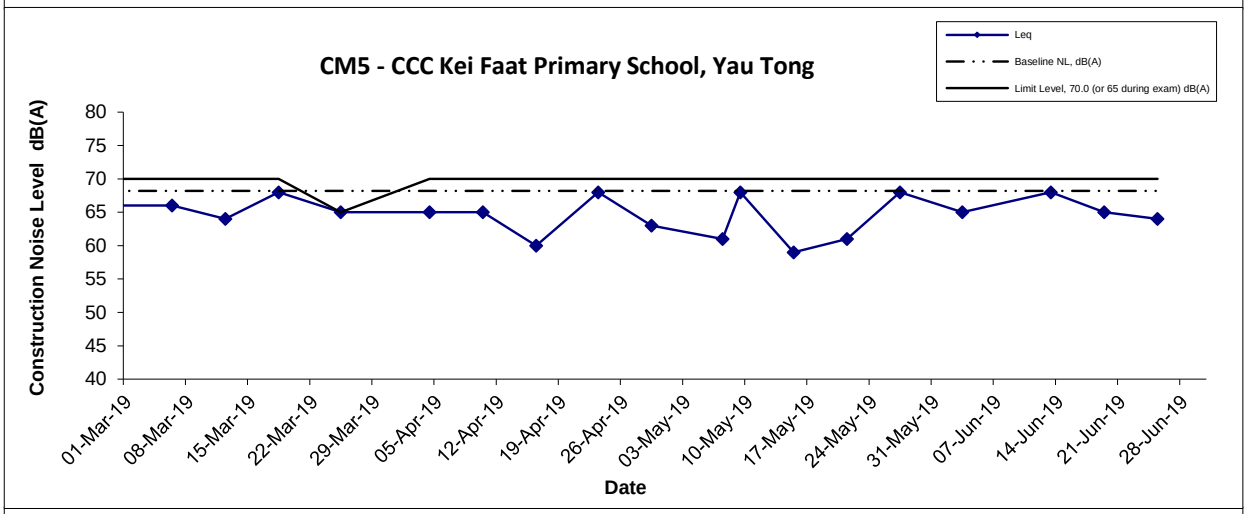
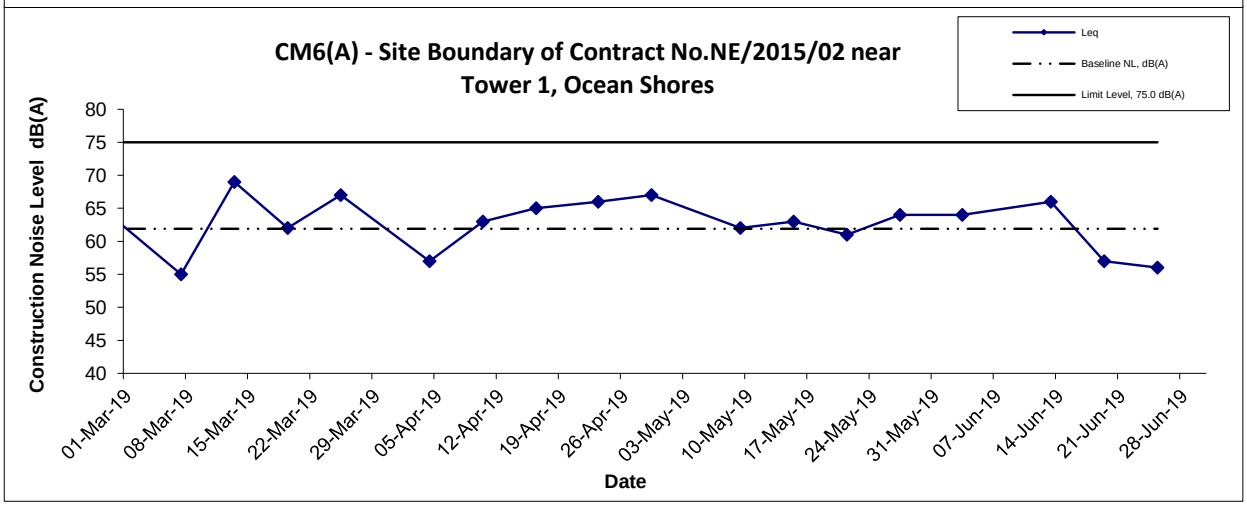
Noise Levels (Daytime)

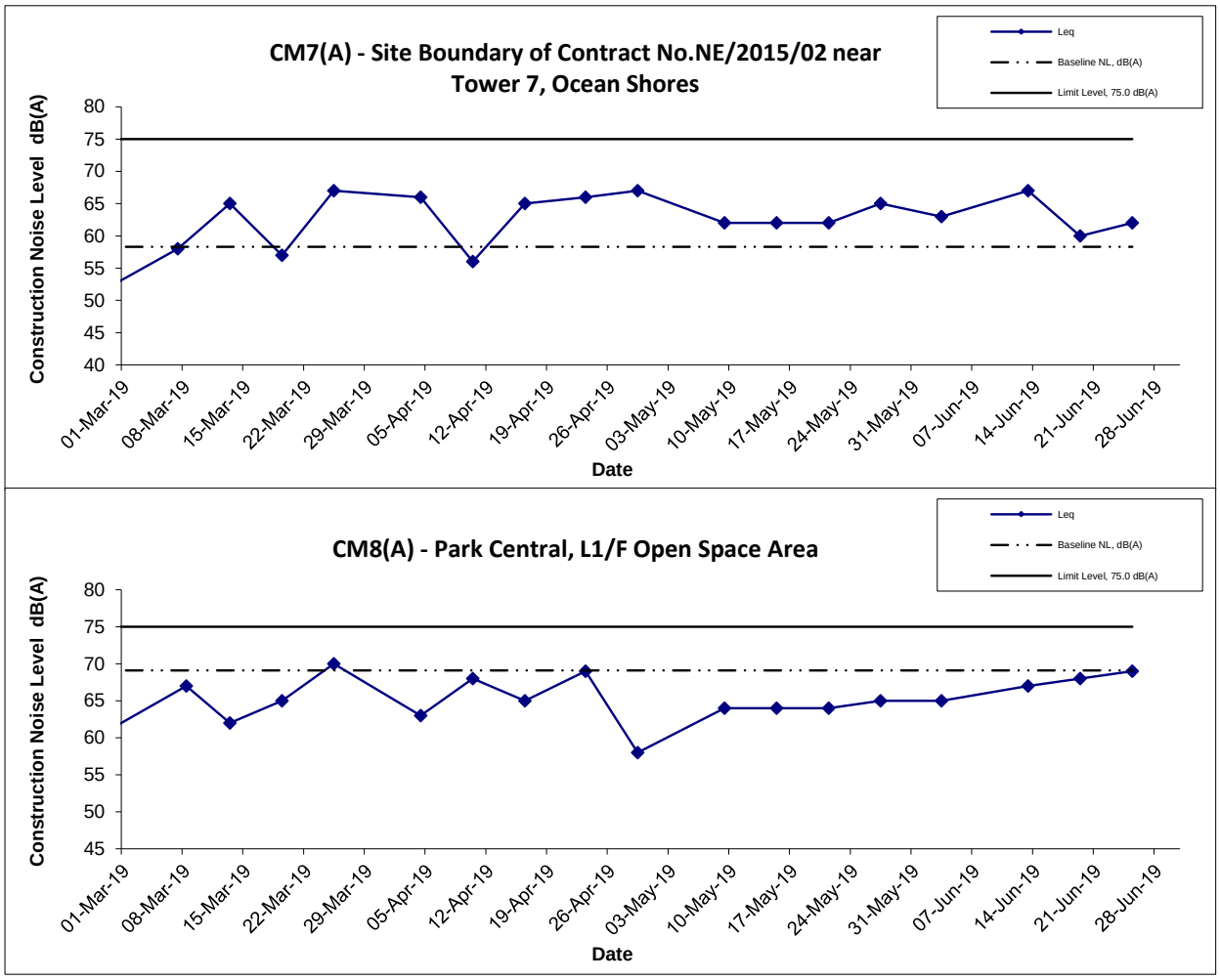






Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix G	

Noise Levels (Daytime)



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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-Jun-19	20:55	Cloudy	61.4	63.3	59.4	61.3	64.4	61Measured ≦ Baseline
	21:00		61.2	62.7	59.6			
	21:05		61.2	62.5	59.7			
14-Jun-19	19:50	Cloudy	70.0	71.2	67.0	69.8		68
	19:55		69.8	70.9	67.7			
	20:00		69.5	70.7	68.1			
21-Jun-19	20:30	Cloudy	63.7	65.9	60.2	63.6		64Measured ≦ Baseline
	20:35		63.5	66.1	60.3			
	20:40		63.5	65.7	60.3			
28-Jun-19	21:00	Cloudy	64.3	67.3	61.1	64.6		51
	21:05		64.9	67.6	60.9			
	21:10		64.6	67.4	60.9			

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-Jun-19	20:30	Cloudy	61.7	62.8	58.8	61.1	62.2	61Measured ≦ Baseline
	20:35		60.8	61.9	59.2			
	20:40		60.6	61.7	59.2			
14-Jun-19	20:15	Cloudy	70.0	72.9	69.3	70.8		70
	20:20		70.6	71.8	69.2			
	20:25		71.6	72.7	70.3			
21-Jun-19	20:00	Cloudy	63.4	66.6	60.1	63.4		57
	20:05		63.7	66.4	59.9			
	20:10		63.1	66.4	59.8			
28-Jun-19	21:30	Cloudy	63.9	65.3	61.1	63.9		59
	21:35		64.0	65.5	61.2			
	21:40		63.7	65.1	60.9			

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-Jun-19	20:00	Cloudy	60.7	62.0	59.1	60.2	64.7	60Measured ≦ Baseline
	20:05		60.3	61.5	59.0			
	20:10		59.6	60.7	58.3			
14-Jun-19	20:45	Cloudy	65.2	66.4	64.0	65.5		58
	20:50		65.9	67.4	64.2			
	20:55		65.5	66.8	64.1			
21-Jun-19	19:35	Cloudy	65.9	68.2	63.1	65.9		60
	19:40		66.1	67.4	64.3			
	19:45		65.6	67.9	63.0			
28-Jun-19	22:00	Cloudy	62.6	65.2	62.1	62.5		63Measured ≦ Baseline
	22:05		62.3	65.6	62.0			
	22:10		62.5	65.3	62.2			

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}
3-Jun-19	19:00	Sunny	64.2	67.4	61.9	64.2	60.2	62
	19:05		64.4	67.1	61.7			
	19:10		63.9	67.6	62.1			
13-Jun-19	19:00	Rainy	65.8	67.9	62.5	65.8		64
	19:05		66.2	68.2	62.4			
	19:10		65.3	68.0	62.1			
19-Jun-19	19:00	Sunny	63.8	66.5	61.2	63.8		61
	19:05		63.5	66.2	61.0			
	19:10		64.1	67.2	61.8			
25-Jun-19	19:00	Cloudy	65.4	67.5	62.1	65.6		64
	19:05		66.0	67.8	62.5			
	19:10		65.3	67.6	62.1			

Appendix G - Noise Monitoring Results

(Restricted Hours - 2300-0700 on all days)

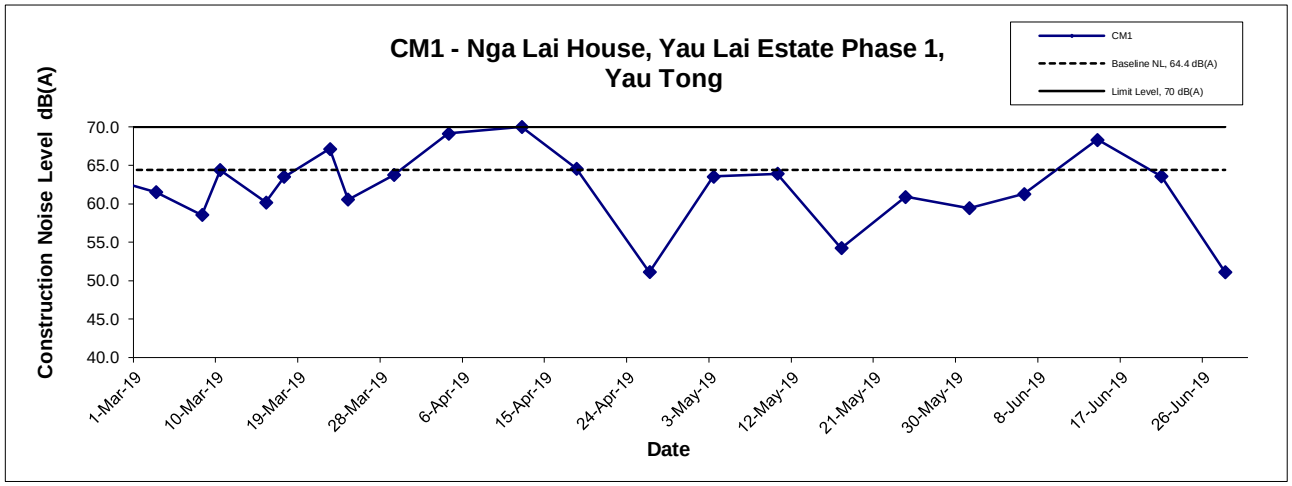
Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-Jun-19	23:01	Cloudy	61.1	62.1	59.7	61.5	63.7	62Measured ≦ Baseline[1]
	23:06		61.5	63.1	59.7			
	23:11		62.0	63.7	60.2			
14-Jun-19	23:00	Cloudy	62.3	63.7	59.1	62.1	63.7	62Measured ≦ Baseline[1]
	23:05		62.1	63.6	59.0			
	23:10		62.0	63.9	58.9			
21-Jun-19	23:00	Cloudy	61.3	63.6	58.4	61.4	63.7	61Measured ≦ Baseline[1]
	23:05		61.4	63.9	58.7			
	23:10		61.4	63.6	58.7			
28-Jun-19	23:03	Cloudy	61.9	65.2	59.1	62.1	63.7	62Measured ≦ Baseline[1]
	23:08		62.1	65.7	59.3			
	23:13		62.3	65.8	59.2			

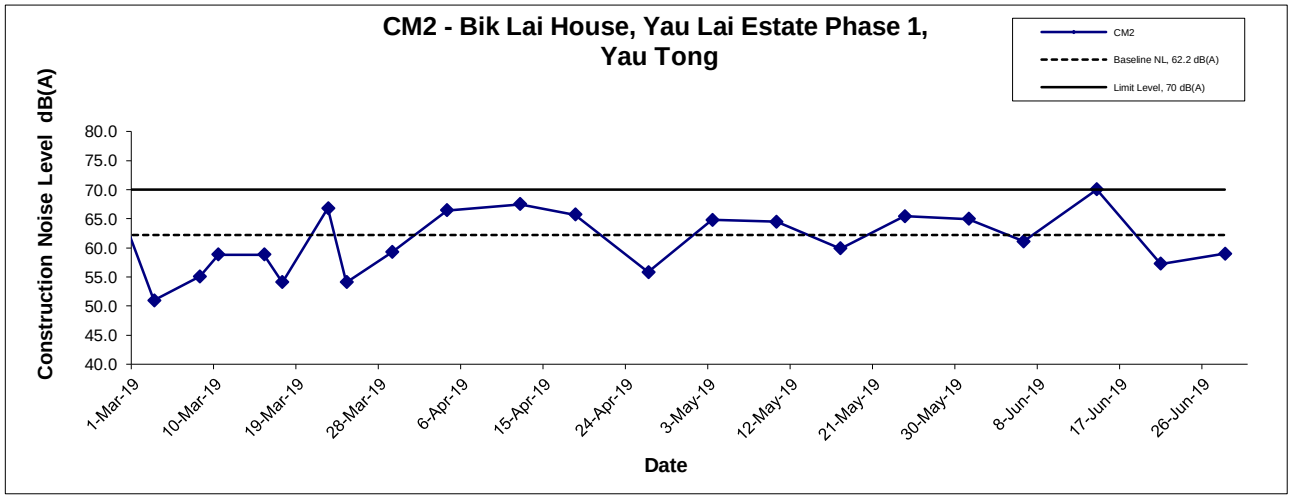
Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-Jun-19	23:20	Cloudy	60.4	61.8	59.0	60.7	61.2	61Measured ≦ Baseline[1]
	23:25		60.9	62.4	58.9			
	23:30		60.8	61.9	59.0			
14-Jun-19	23:20	Cloudy	61.5	63.9	58.5	61.3	61.2	45
	23:25		61.0	64.0	58.7			
	23:30		61.3	63.8	58.6			
21-Jun-19	23:20	Cloudy	61.5	63.9	58.7	61.3	61.2	45
	23:25		61.4	63.7	58.0			
	23:30		61.6	63.6	58.1			
28-Jun-19	23:23	Cloudy	61.9	66.0	60.1	62.1	61.2	55
	23:28		62.4	66.1	60.3			
	23:33		62.1	65.7	60.3			

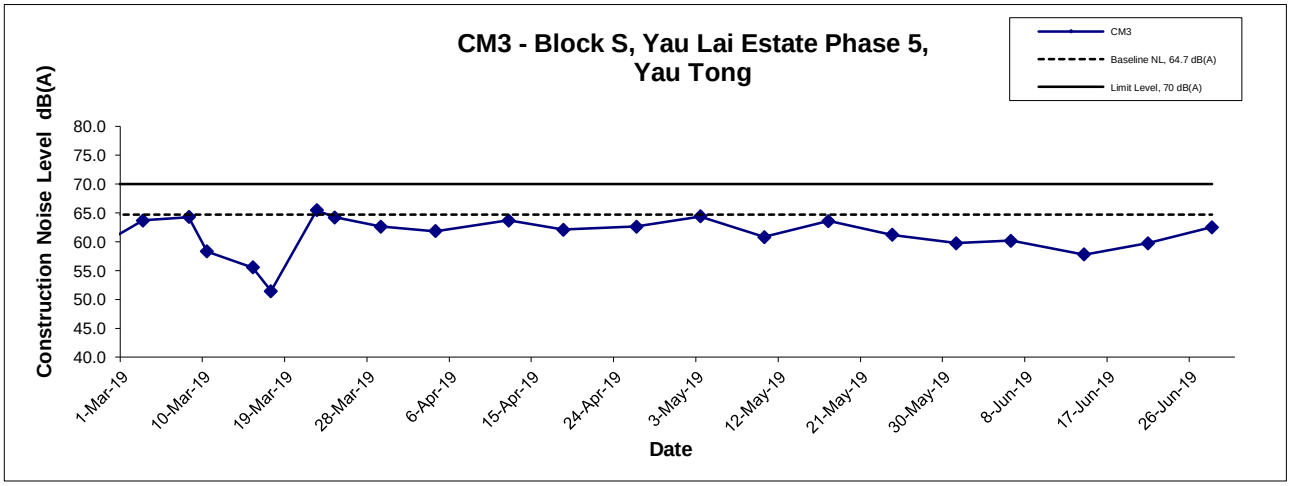
Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
6-Jun-19	23:45	Cloudy	59.5	60.5	57.5	59.0	62.9	59Measured ≦ Baseline[1]
	23:50		58.8	60.2	57.2			
	23:55		58.6	59.9	56.6			
14-Jun-19	23:40	Cloudy	58.7	61.9	57.2	58.9	62.9	59Measured ≦ Baseline[1]
	23:45		59.0	62.1	57.0			
	23:50		58.9	61.7	57.0			
21-Jun-19	23:40	Cloudy	60.9	63.4	58.9	61.1	62.9	61Measured ≦ Baseline[1]
	23:45		61.2	63.7	58.4			
	23:50		61.3	63.6	58.6			
28-Jun-19	23:45	Cloudy	60.1	62.1	57.9	60.1	62.9	60Measured ≦ Baseline[1]
	23:50		60.3	62.3	58.0			
	23:55		59.8	61.9	57.7			

Remark 1: Since baseline level is greater than the measured level, which indicates that the measured level dominated by the traffic noise from the nearby Eastern harbour Crossing Tunnel, the measured levels are not considered as valid exceedances.

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

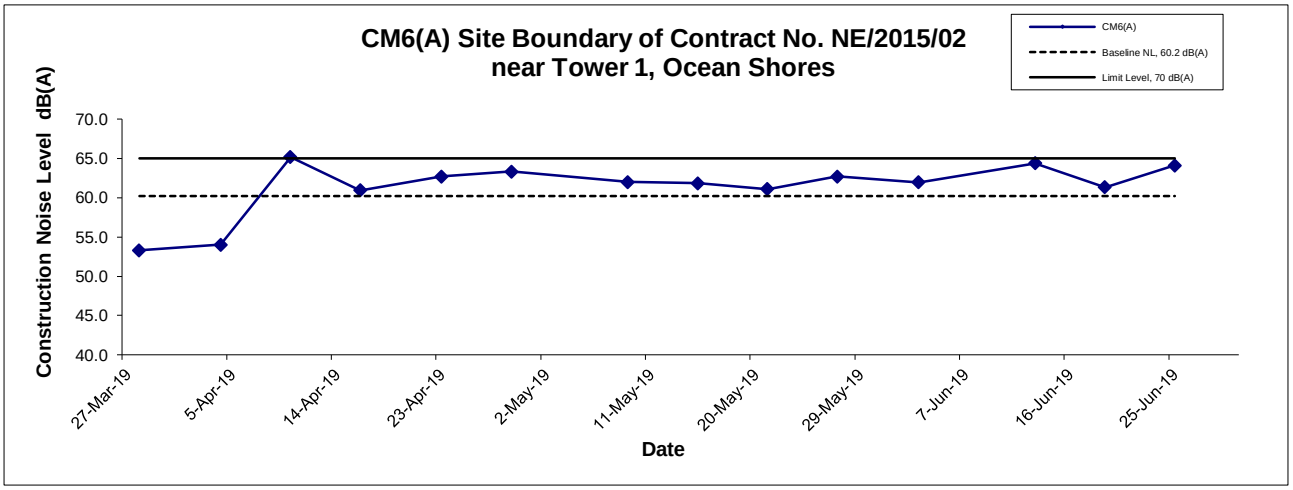






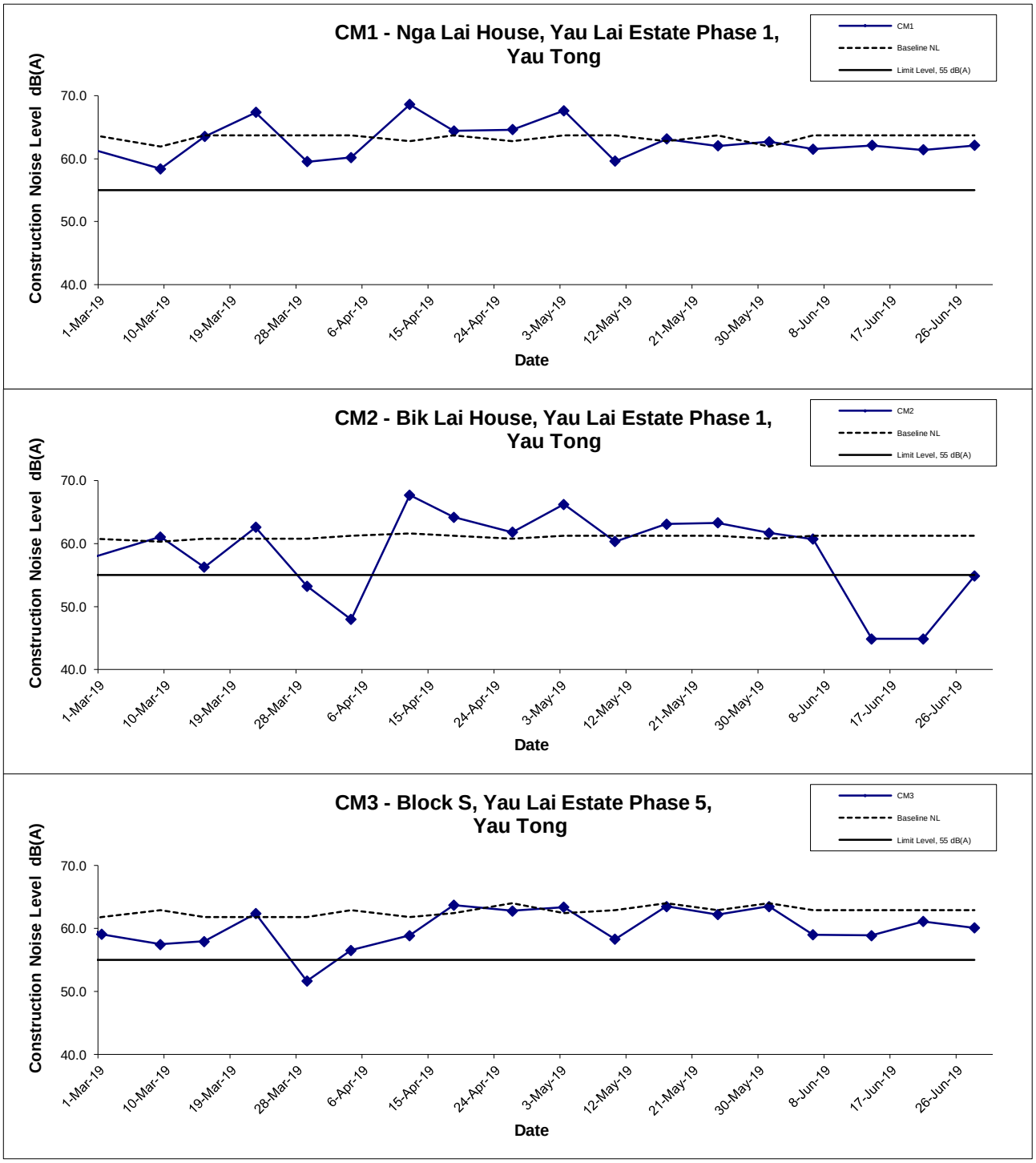
Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jun 19	Appendix G	

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



Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jun 19	Appendix G	

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



Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: G	CINOTECH

APPENDIX H
GROUNDWATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

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

Groundwater Quality Monitoring Results at Stream 1

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
12-Jun-19	Fine	16:46	Stream1	26.7 26.7	26.7	7.5 7.5	7.5	0.4 0.4	0.4	104.5 104.5	104.5	8.2 8.2	8.2	2.0 2.1	2.1
21-Jun-19	Fine	16:17	Stream1	28.2 28.2	28.2	7.9 7.9	7.9	0.6 0.6	0.6	104.0 104.0	104.0	8.1 8.1	8.1	0.2 0.3	0.3

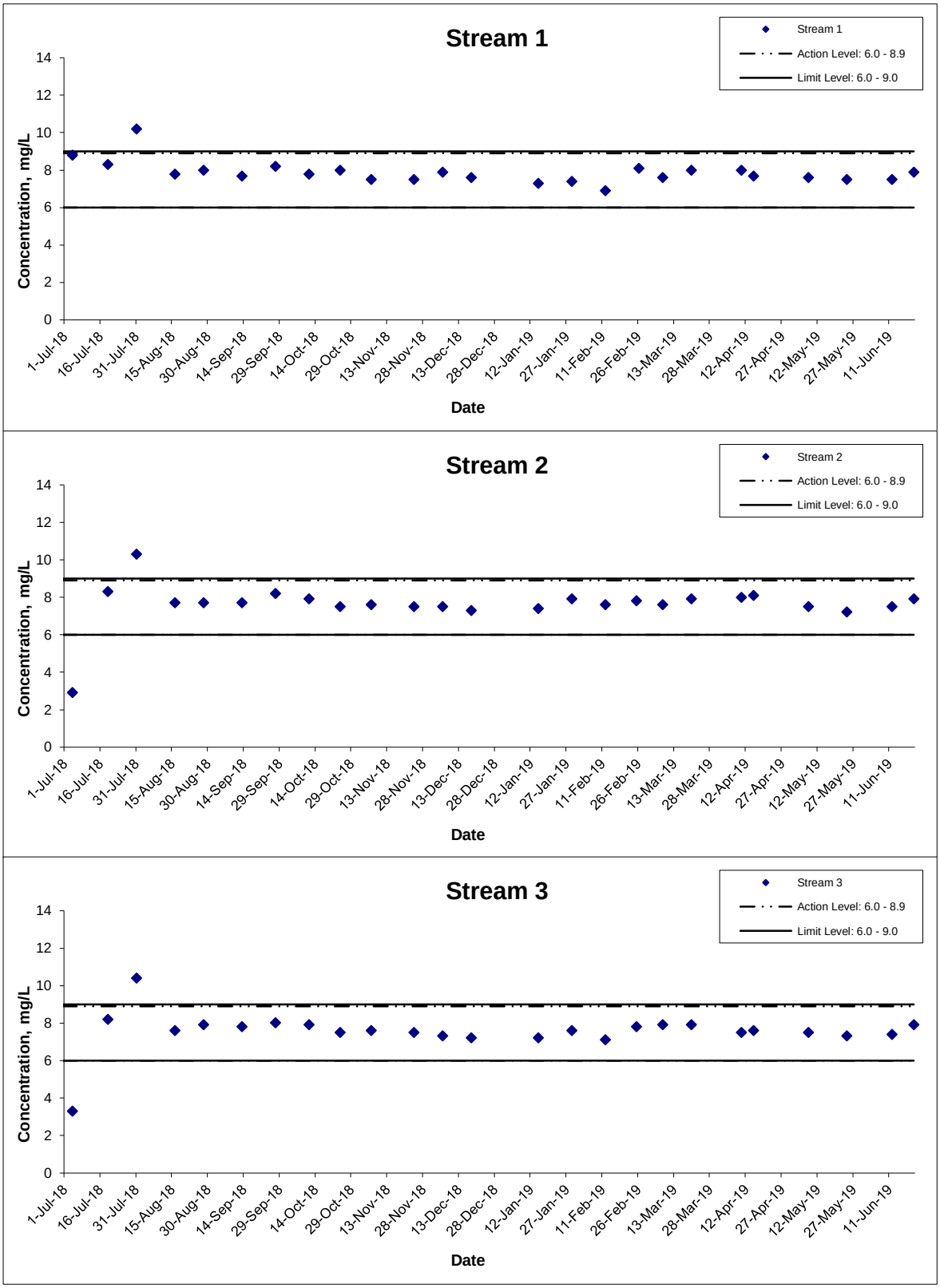
Groundwater Quality Monitoring Results at Stream 2

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
12-Jun-19	Fine	16:52	stream2	26.3 26.3	26.3	7.5 7.5	7.5	0.1 0.1	0.1	101.5 101.3	101.4	8.1 8.1	8.1	1.1 1.2	1.2
21-Jun-19	Fine	16:56	stream2	28.2 28.2	28.2	7.9 7.9	7.9	0.3 0.3	0.3	102.3 102.2	102.3	8.3 8.3	8.3	0.4 0.4	0.4

Groundwater Quality Monitoring Results at Stream 3

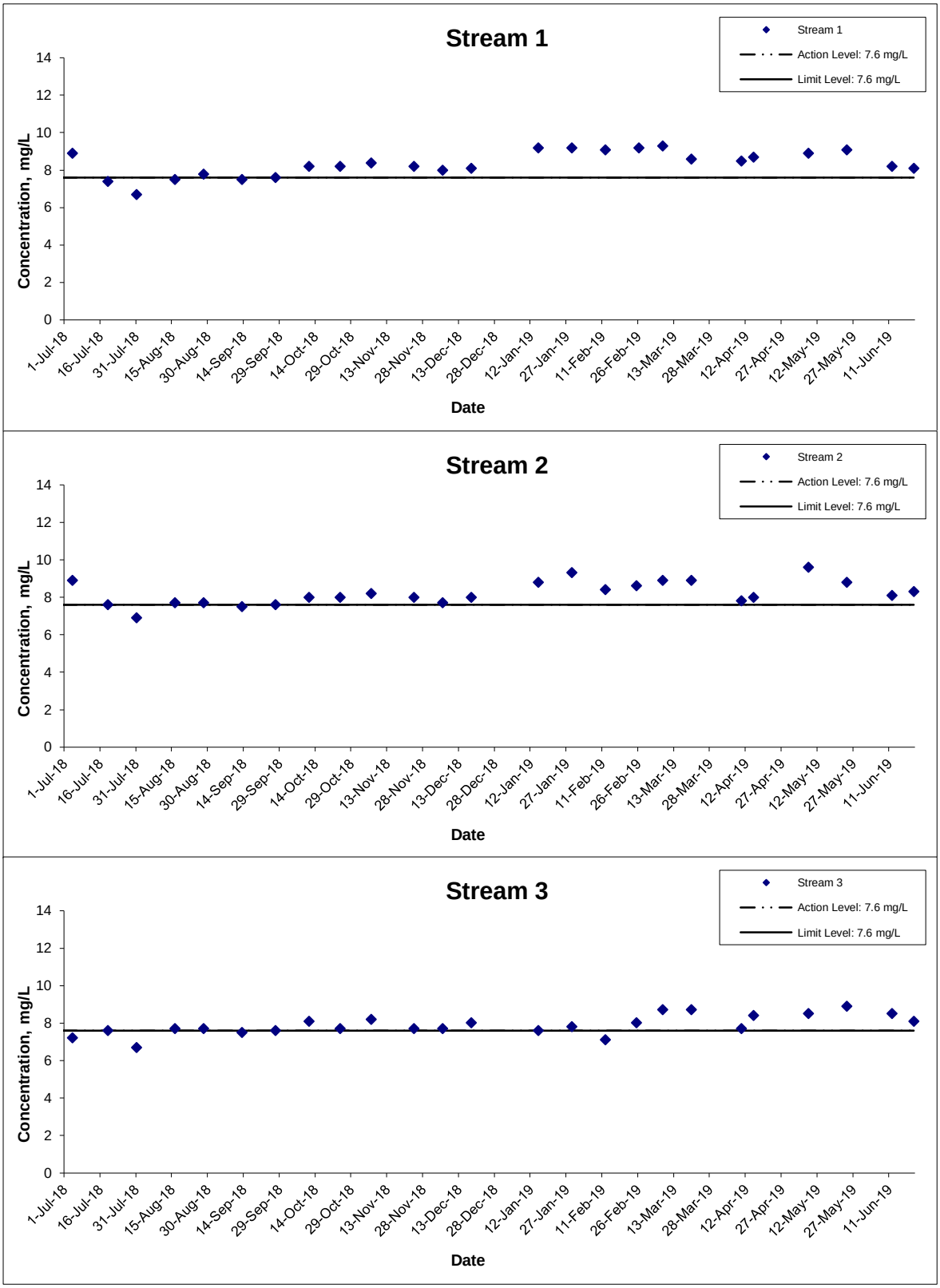
Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
12-Jun-19	Fine	17:02	stream3	26.6 26.6	26.6	7.4 7.4	7.4	0.1 0.1	0.1	98.4 98.2	98.3	8.6 8.5	8.5	1.4 1.4	1.4
21-Jun-19	Fine	17:08	stream3	28.3 28.3	28.3	7.9 7.9	7.9	0.4 0.4	0.4	100.1 100.1	100.1	8.1 8.1	8.1	0.3 0.3	0.3

pH



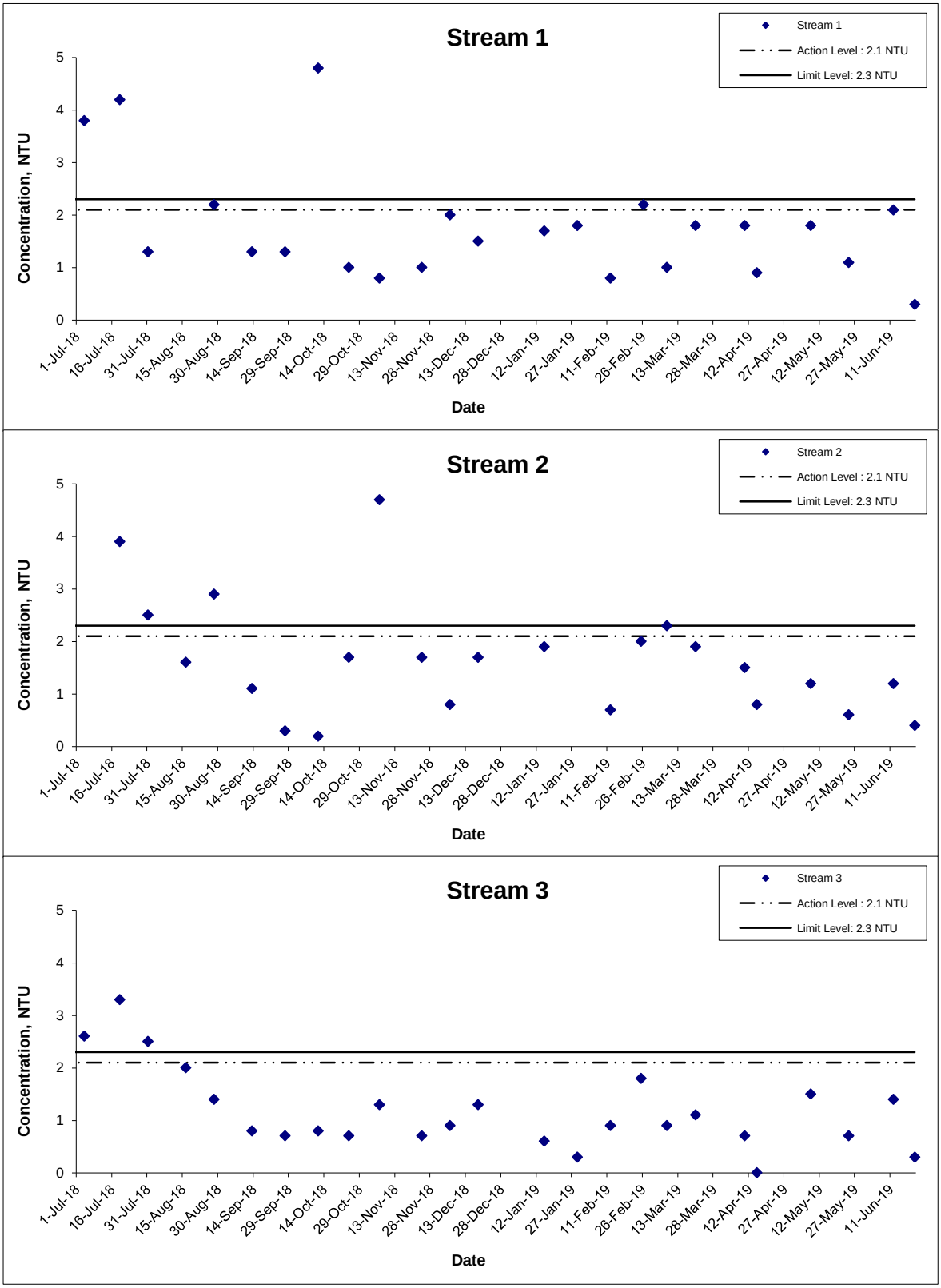
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale N.T.S Date Jun 19	Project No. MA16034 Appendix H	CINOTECH

Dissolved Oxygen



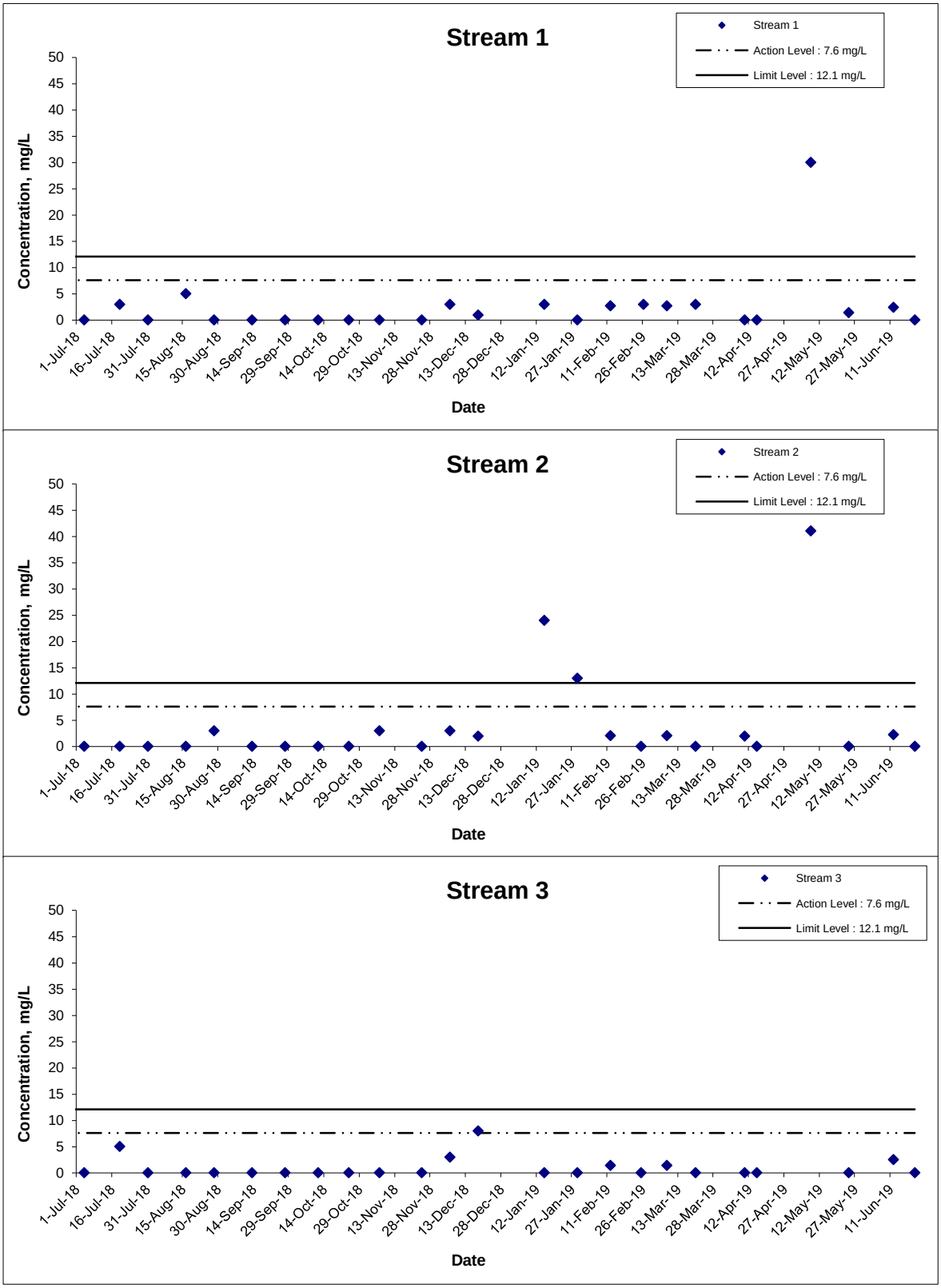
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

Turbidity



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jun 19	Appendix: H	

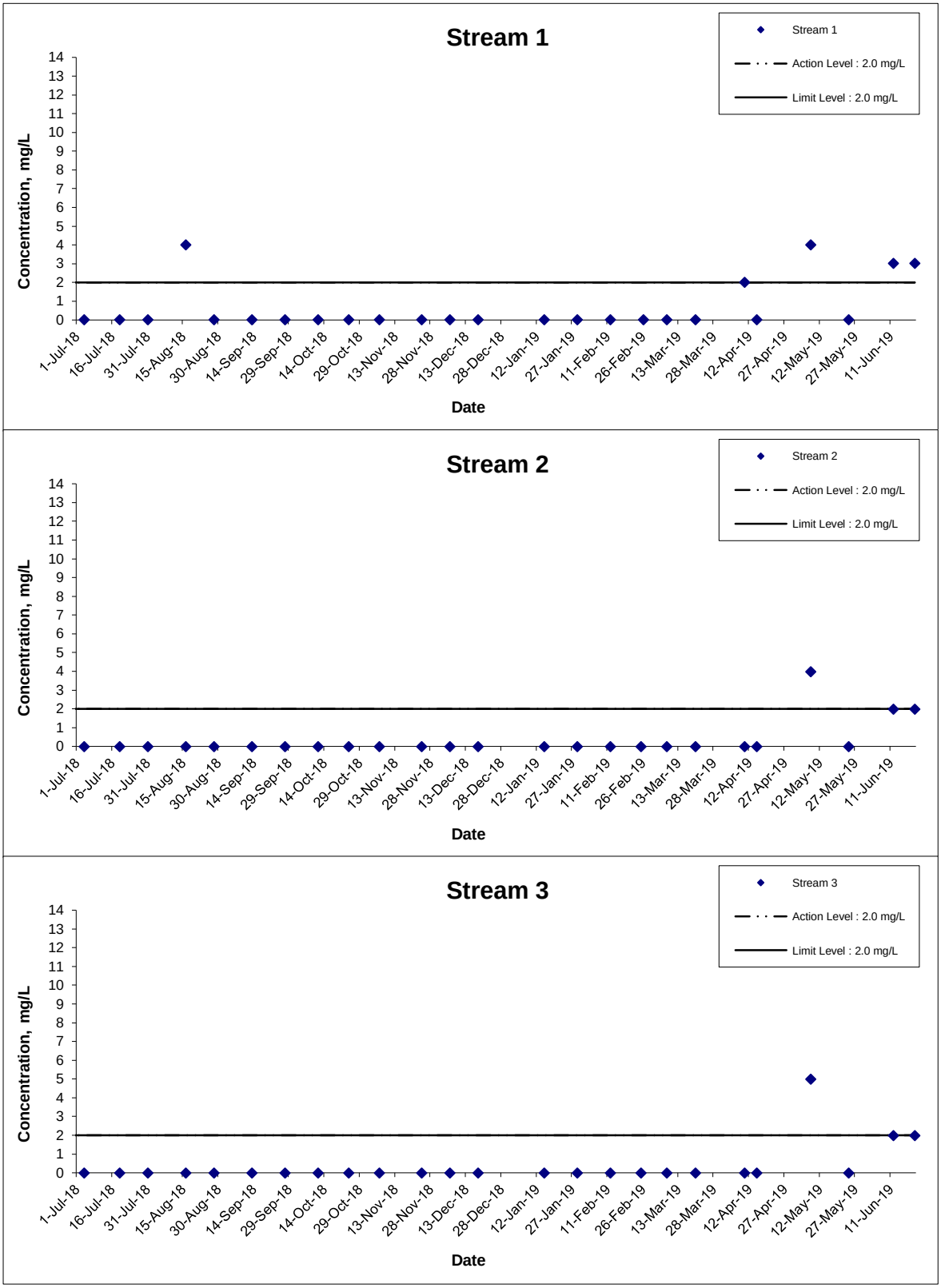
Suspended Solids



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

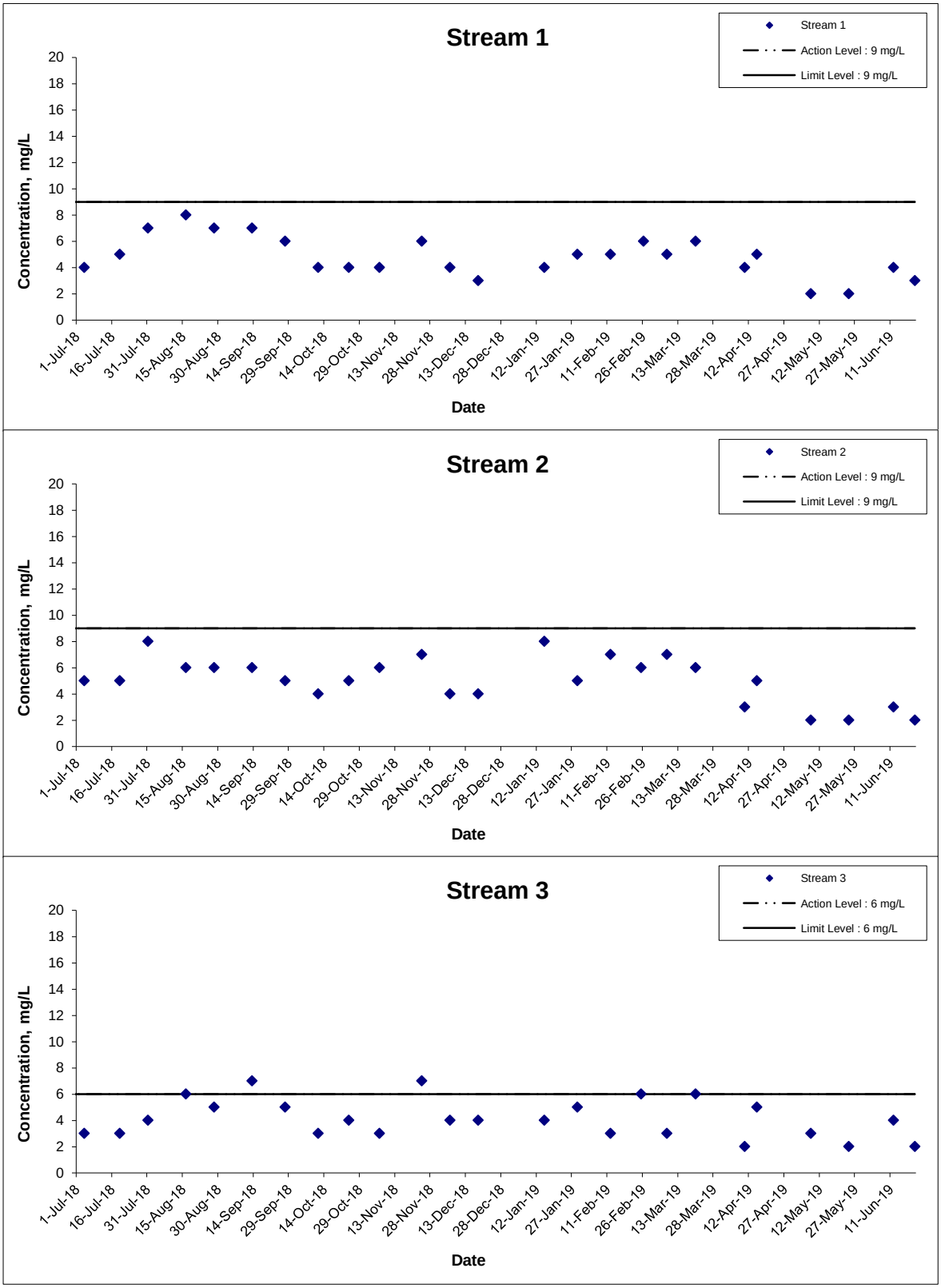
5-day Biochemical Oxygen Demand (BOD_5)



Remarks: The graphical point at zero concentration is presented as <2 mg/L

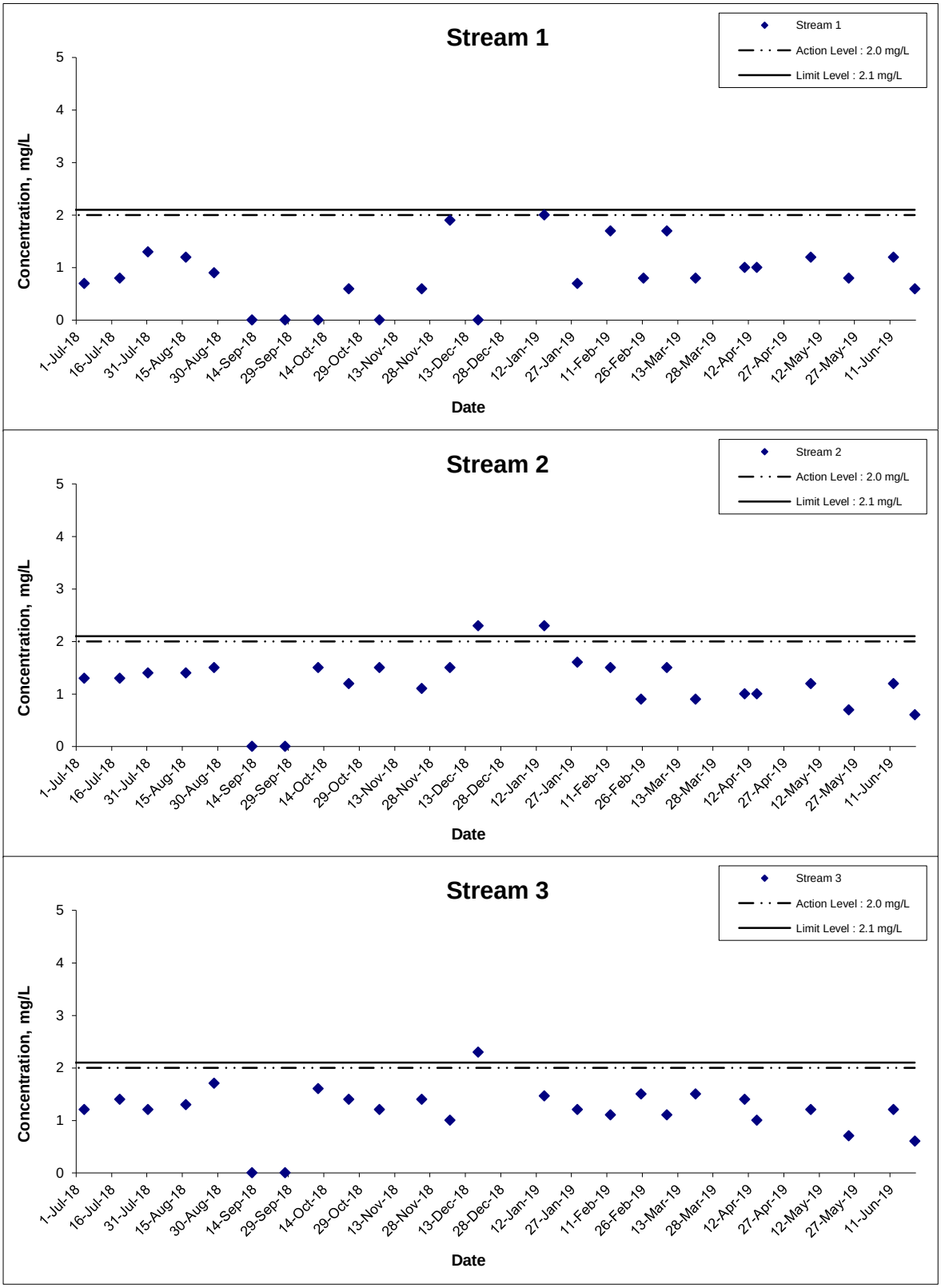
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

Total Organic Carbon (TOC)



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

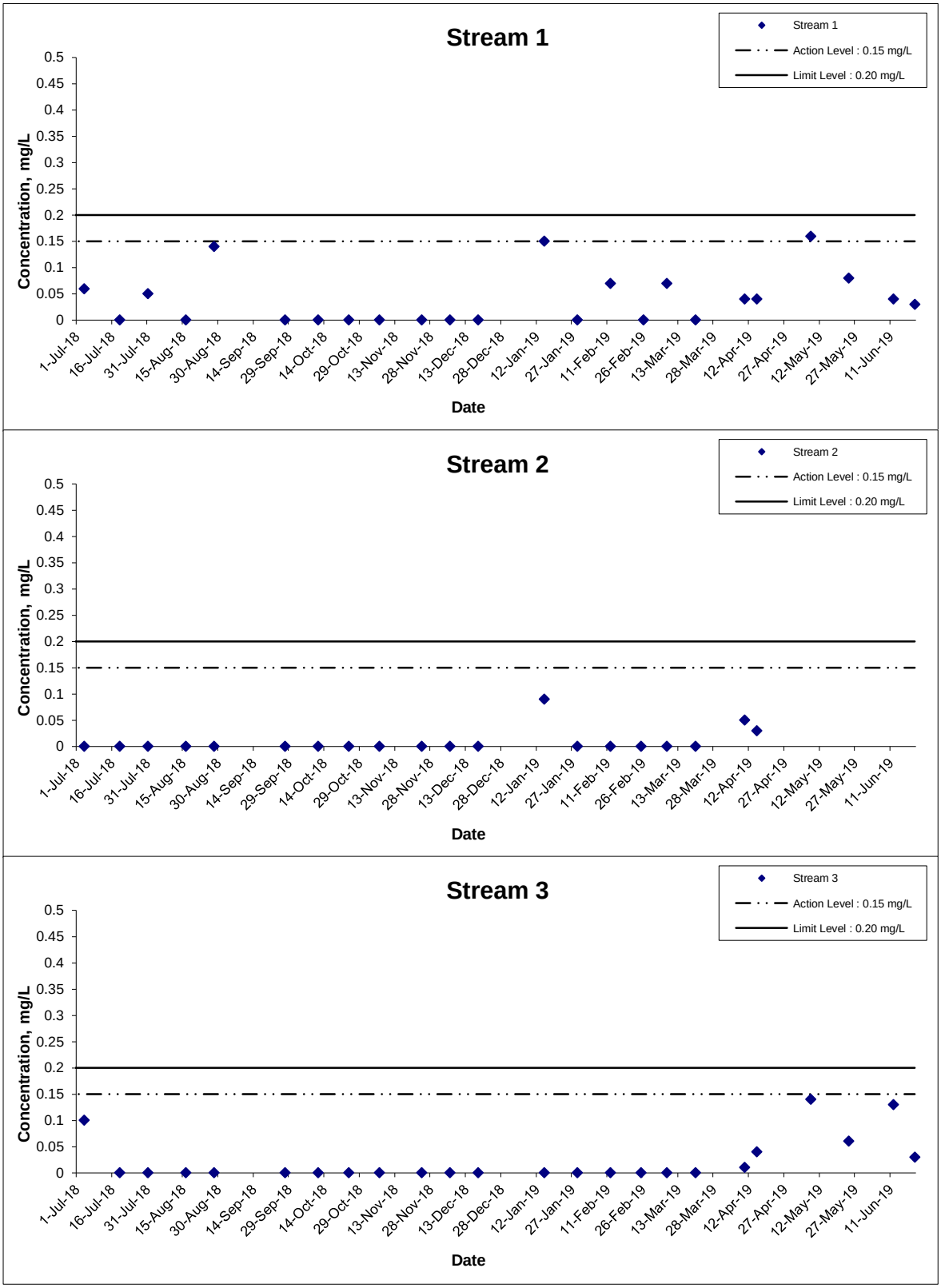
Total Nitrogen



Remarks: The graphical point at zero concentration is presented as <0.6 mg/L

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

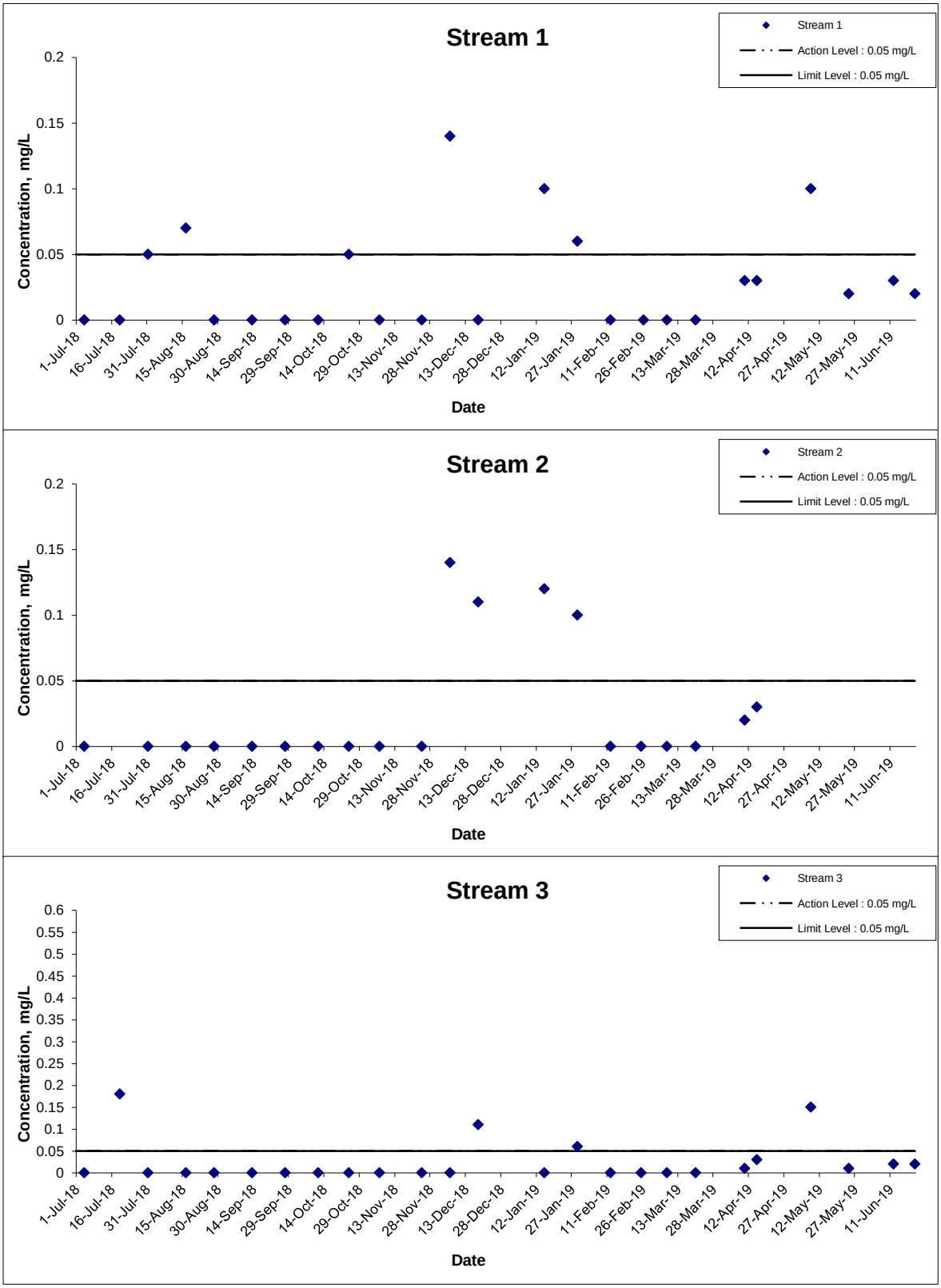
Ammonia-Nitrogen



Remarks: The graphical point at zero concentration is presented as <0.05 mg/L

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

Total Phosphate



Remarks: The graphical point at zero concentration is presented as <0.05 mg/L

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jun 19	Project No.: MA16034 Appendix: H	CINOTECH

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 03 June 2019

(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	Moderate	11:47	Surface	1.0	26.0 25.9	26.0	8.8 8.8	8.8	32.8 32.8	32.8	88.4 84.1	86.3	6.0 5.7	5.8	5.8	1.9 2.0	1.9	2.2	18.2 18.7	18.5	9.9
				Middle	9.0	25.7 25.8	25.7	8.8 8.8	8.8	33.6 33.4	33.5	84.9 84.2	84.6	5.7 5.7	5.7		2.5 2.9	2.7		6.1 6.2	6.2	
				Bottom	17.0	25.7 25.7	25.7	8.8 8.8	8.8	33.7 33.7	33.7	84.5 84.1	84.3	5.7 5.7	5.7	5.7	2.2 2.0	2.1		5.0 5.0	5.0	
C2	Cloudy	Moderate	10:50	Surface	1.1	26.0 26.0	26.0	8.9 9.0	8.9	32.0 32.0	32.0	83.4 82.6	83.0	5.7 5.6	5.6	5.6	2.7 2.6	2.6	3.5	16.6 16.4	16.5	15.5
				Middle	16.0	25.6 25.7	25.7	8.9 9.0	8.9	33.8 33.6	33.7	83.6 83.7	83.7	5.6 5.7	5.6		4.3 3.6	4.0		16.6 16.8	16.7	
				Bottom	31.0	25.7 25.6	25.6	8.9 9.0	8.9	33.6 33.9	33.8	83.6 83.4	83.5	5.6 5.6	5.6	5.6	4.2 3.8	4.0		13.3 13.4	13.4	
G1	Cloudy	Moderate	11:16	Surface	1.0	25.9 25.9	25.9	8.9 8.9	8.9	33.0 33.0	33.0	90.0 88.5	89.3	6.1 6.0	6.0	6.0	1.4 1.4	1.4	1.4	13.1 13.5	13.3	16.2
				Middle	4.0	25.9 25.9	25.9	8.9 8.9	8.9	33.0 33.0	33.0	89.1 88.7	88.9	6.0 6.0	6.0		1.5 1.4	1.4		23.0 22.3	22.7	
				Bottom	6.9	25.9 25.9	25.9	8.9 8.9	8.9	33.1 33.1	33.1	88.2 87.9	88.1	6.0 5.9	5.9	5.9	1.5 1.3	1.4		12.7 12.5	12.6	
G2	Cloudy	Moderate	11:07	Surface	1.0	25.8 25.8	25.8	8.9 9.0	8.9	33.1 33.3	33.2	94.2 87.1	90.7	6.4 5.9	6.1	6.1	0.9 1.0	1.0	1.2	11.5 11.5	11.5	17.2
				Middle	5.0	25.8 25.8	25.8	9.0 8.9	9.0	33.2 33.2	33.2	89.6 87.8	88.7	6.1 5.9	6.0		0.5 0.4	0.4		14.5 14.3	14.4	
				Bottom	9.0	25.6 25.7	25.6	8.9 8.9	8.9	34.0 33.8	33.9	86.1 86.1	86.1	5.8 5.8	5.8	5.8	2.2 2.3	2.2		25.4 26.0	25.7	
G3	Cloudy	Moderate	11:19	Surface	1.0	25.9 25.9	25.9	8.8 8.9	8.9	31.9 32.7	32.3	87.1 84.9	86.0	5.9 5.7	5.8	5.8	1.6 1.9	1.8	2.3	10.8 10.7	10.8	13.5
				Middle	4.0	25.9 25.9	25.9	8.9 8.9	8.9	33.0 32.6	32.8	85.0 84.6	84.8	5.7 5.7	5.7		2.3 2.1	2.2		13.0 13.0	13.0	
				Bottom	7.0	25.6 25.9	25.7	8.9 8.8	8.9	34.0 33.1	33.6	85.1 84.2	84.7	5.7 5.7	5.7	5.7	3.3 2.9	3.1		16.8 16.9	16.9	
G4	Cloudy	Moderate	11:30	Surface	1.0	26.0 25.9	25.9	8.8 8.8	8.8	31.5 32.5	32.0	91.4 86.4	88.9	6.2 5.9	6.0	5.9	2.3 2.6	2.4	2.2	16.6 16.2	16.4	9.6
				Middle	4.0	25.9 25.9	25.9	8.8 8.8	8.8	32.9 33.1	33.0	84.5 83.8	84.2	5.7 5.7	5.7		2.0 1.7	1.9		5.0 5.2	5.1	
				Bottom	7.0	25.8 25.7	25.7	8.8 8.8	8.8	33.6 33.9	33.7	84.2 84.5	84.4	5.7 5.7	5.7	5.7	2.3 2.5	2.4		7.3 7.0	7.2	
M1	Cloudy	Moderate	11:11	Surface	1.0	26.0 25.9	25.9	8.9 8.9	8.9	32.2 32.9	32.6	89.2 87.4	88.3	6.0 5.9	6.0	6.0	1.0 1.1	1.1	1.2	8.4 8.7	8.6	5.8
				Middle	3.0	25.9 25.9	25.9	8.9 8.9	8.9	32.6 32.8	32.7	88.2 87.1	87.7	6.0 5.9	5.9		1.2 0.9	1.0		5.5 5.5	5.5	
				Bottom	5.0	25.8 25.8	25.8	8.9 8.9	8.9	33.2 33.2	33.2	87.6 87.2	87.4	5.9 5.9	5.9	5.9	1.2 1.6	1.4		3.2 3.2	3.2	
M2	Cloudy	Moderate	11:03	Surface	1.0	25.8 25.8	25.8	8.9 8.9	8.9	33.3 33.3	33.3	90.5 87.3	88.9	6.1 5.9	6.0	5.9	2.2 2.5	2.4	2.5	18.5 18.8	18.7	24.9
				Middle	6.0	25.6 25.7	25.7	8.9 8.9	8.9	34.1 33.6	33.8	86.1 86.9	86.5	5.8 5.9	5.8		2.4 2.2	2.3		27.8 29.0	28.4	
				Bottom	11.0	25.5 25.5	25.5	9.0 9.0	9.0	34.2 34.2	34.2	86.0 86.2	86.1	5.8 5.8	5.8	5.8	2.8 3.1	2.9		27.6 27.5	27.6	
M3	Cloudy	Moderate	11:26	Surface	1.0	25.8 25.8	25.8	8.8 8.8	8.8	31.6 33.0	32.3	87.2 84.3	85.8	5.9 5.7	5.8	5.8	2.1 2.5	2.3	2.8	18.5 18.5	18.5	11.7
				Middle	4.0	25.9 25.9	25.9	8.8 8.8	8.8	33.0 32.7	32.9	84.5 84.0	84.3	5.7 5.7	5.7		2.9 2.6	2.7		8.6 8.5	8.6	
				Bottom	7.0	25.6 25.6	25.6	8.8 8.8	8.8	33.9 34.0	33.9	83.9 83.9	83.9	5.7 5.7	5.7	5.7	3.4 3.7	3.5		7.9 7.9	7.9	
M4	Cloudy	Moderate	10:57	Surface	1.0	25.9 25.8	25.8	9.0 9.0	9.0	32.5 33.2	32.8	84.0 84.6	84.3	5.7 5.7	5.7	5.7	4.0 3.3	3.6	3.6	13.1 13.4	13.3	11.2
				Middle	5.0	25.7 25.8	25.7	9.0 9.0	9.0	33.4 33.3	33.4	84.6 84.4	84.5	5.7 5.7	5.7		3.9 3.4	3.6		8.1 8.3	8.2	
				Bottom	8.9	25.7 25.7	25.7	9.0 8.9	8.9	33.5 33.6	33.6	84.6 85.3	85.0	5.7 5.8	5.7	5.7	3.4 3.9	3.6		12.0 12.1	12.1	
M5	Cloudy	Moderate	11:42	Surface	1.1	25.9 25.9	25.9	8.8 8.8	8.8	33.0 33.1	33.0	88.5 85.5	87.0	6.0 5.8	5.9	5.8	2.1 2.4	2.2	2.3	13.9 14.2	14.1	22.5
				Middle	6.0	25.8 25.8	25.8	8.8 8.8	8.8	33.1 33.1	33.1	85.8 85.3	85.6	5.8 5.8	5.8		2.5 2.2	2.3		35.2 36.9	36.1	
				Bottom	11.0	25.8 25.8	25.8	8.8 8.8	8.8	33.3 33.2	33.3	85.1 84.9	85.0	5.7 5.7	5.7	5.7	2.1 2.6	2.4		17.3 17.5	17.4	
M6	Cloudy	Moderate	11:35	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.1	- -	-	1.3	- -	-	14.3
				Middle	2.0	25.9 25.9	25.9	8.8 8.8	8.8	32.4 32.4	32.4	90.8 89.1	90.0	6.1 6.0	6.1		1.4 1.3	1.3		14.0 14.5	14.3	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 3 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.8 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.2 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 19.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 21.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 19.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 21.5 mg/L***
	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 ***C2: 16.0 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 17.4 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 03 June 2019

(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	18:45	Surface	1.0	26.1 26.1	26.1	8.7 8.8	8.7	31.7 31.9	31.8	84.2 81.2	82.7	5.7 5.5	5.6	5.5	2.8 3.2	3.0	3.6	19.4 19.4	19.4	17.9
				Middle	8.9	25.9 25.9	25.9	8.8 8.8	8.8	32.5 32.5	32.5	81.0 80.6	80.8	5.5 5.5	5.5		3.9 3.7	3.8		22.4 22.5	22.5	
				Bottom	17.0	25.7 25.4	25.5	8.8 8.8	8.8	33.5 34.4	34.0	81.4 81.3	81.4	5.5 5.5	5.5	5.5	3.9 4.3	4.1		11.8 12.0	11.9	
C2	Cloudy	Moderate	17:43	Surface	1.0	26.4 26.4	26.4	8.9 8.9	8.9	30.7 30.8	30.7	84.7 81.7	83.2	5.7 5.5	5.6	5.5	3.4 3.9	3.6	5.3	17.0 17.9	17.5	12.4
				Middle	15.9	25.8 25.8	25.8	8.9 8.9	8.9	32.9 33.1	33.0	80.0 80.8	80.4	5.4 5.5	5.4		6.1 5.9	6.0		8.8 8.8	8.8	
				Bottom	31.0	25.8 25.8	25.8	8.9 8.9	8.9	33.1 33.1	33.1	80.4 80.8	80.6	5.4 5.5	5.4	5.4	6.4 6.0	6.2		10.6 11.2	10.9	
G1	Cloudy	Moderate	18:09	Surface	1.0	26.1 26.1	26.1	8.8 8.8	8.8	32.2 32.3	32.2	93.5 89.8	91.7	6.3 6.1	6.2	6.1	2.3 2.4	2.4	2.3	20.0 20.5	20.3	16.9
				Middle	4.0	26.0 26.1	26.0	8.8 8.8	8.8	32.5 32.6	32.5	88.9 90.2	89.6	6.0 6.1	6.0		2.0 2.3	2.2		19.0 19.1	19.1	
				Bottom	7.0	26.0 26.0	26.0	8.8 8.8	8.8	32.9 32.8	32.9	87.9 88.4	88.2	5.9 6.0	5.9	5.9	2.3 2.6	2.5		11.4 11.5	11.5	
G2	Cloudy	Moderate	17:58	Surface	1.0	26.1 26.0	26.1	8.9 8.9	8.9	32.6 32.8	32.7	92.1 87.6	89.9	6.2 5.9	6.1	6.0	2.9 2.8	2.9	2.9	17.7 18.2	18.0	15.5
				Middle	5.0	26.0 26.0	26.0	8.9 8.9	8.9	32.8 33.0	32.9	89.6 86.9	88.3	6.0 5.9	5.9		2.8 2.7	2.8		9.9 9.8	9.9	
				Bottom	9.0	25.9 25.9	25.9	8.9 8.8	8.8	33.2 33.2	33.2	86.9 85.8	86.4	5.9 5.8	5.8	5.8	3.1 2.8	3.0		18.7 18.4	18.6	
G3	Cloudy	Moderate	18:14	Surface	1.0	26.3 25.9	26.1	8.8 8.8	8.8	31.3 31.6	31.4	93.1 89.9	91.5	6.3 6.1	6.2	6.2	2.3 2.6	2.5	2.1	13.2 13.4	13.3	12.2
				Middle	4.0	26.0 25.9	26.0	8.8 8.8	8.8	32.7 32.7	32.7	91.9 90.0	91.0	6.2 6.1	6.1		1.8 1.7	1.7		11.0 11.1	11.1	
				Bottom	7.0	25.9 25.9	25.9	8.8 8.8	8.8	33.1 33.0	33.0	84.3 83.8	84.1	5.7 5.7	5.7	5.7	2.2 2.1	2.2		12.2 12.1	12.2	
G4	Cloudy	Moderate	18:26	Surface	1.0	26.0 26.3	26.2	8.6 8.6	8.6	32.2 31.2	31.7	91.9 93.9	92.9	6.2 6.4	6.3	6.2	3.4 3.0	3.2	3.4	12.1 12.4	12.3	10.7
				Middle	4.5	26.0 26.0	26.0	8.6 8.6	8.6	32.6 32.8	32.7	90.1 89.8	90.0	6.1 6.1	6.1		3.3 3.4	3.3		7.3 7.0	7.2	
				Bottom	7.0	25.9 25.9	25.9	8.6 8.6	8.6	33.0 33.2	33.1	85.0 83.2	84.1	5.7 5.6	5.7	5.7	3.6 4.1	3.9		12.9 12.7	12.8	
M1	Cloudy	Moderate	18:04	Surface	1.0	26.4 26.0	26.2	8.8 8.8	8.8	31.8 32.8	32.3	93.1 85.5	89.3	6.3 5.8	6.0	6.0	3.6 3.9	3.7	3.8	6.2 6.2	6.2	11.0
				Middle	3.0	26.2 26.1	26.1	8.8 8.8	8.8	32.3 32.6	32.4	89.8 86.3	88.1	6.1 5.8	5.9		3.5 3.6	3.5		15.0 15.2	15.1	
				Bottom	4.9	26.0 26.0	26.0	8.8 8.8	8.8	32.9 32.8	32.9	85.3 85.0	85.2	5.8 5.7	5.7	5.7	3.8 4.2	4.0		11.8 11.7	11.8	
M2	Cloudy	Moderate	17:53	Surface	0.9	26.2 26.0	26.1	9.0 9.0	9.0	32.4 33.0	32.7	93.6 87.3	90.5	6.3 5.9	6.1	6.0	1.9 1.8	1.9	2.2	16.6 17.1	16.9	16.5
				Middle	6.0	25.9 26.0	26.0	9.0 8.9	9.0	33.1 32.9	33.0	88.5 88.9	88.7	6.0 6.0	6.0		1.2 1.5	1.4		20.6 20.6	20.6	
				Bottom	11.0	25.7 25.6	25.7	9.0 8.9	9.0	33.8 34.0	33.9	86.1 84.0	85.1	5.8 5.7	5.7	5.7	3.1 3.5	3.3		11.8 12.0	11.9	
M3	Cloudy	Moderate	18:22	Surface	1.0	26.1 25.9	26.0	8.7 8.7	8.7	31.8 32.7	32.2	91.9 88.3	90.1	6.2 6.0	6.1	5.9	3.6 3.4	3.5	3.4	10.0 10.1	10.1	11.7
				Middle	4.0	26.0 26.0	26.0	8.7 8.7	8.7	32.7 32.7	32.7	85.7 84.1	84.9	5.8 5.7	5.7		3.1 3.2	3.1		11.0 11.3	11.2	
				Bottom	7.0	25.9 25.9	25.9	8.7 8.7	8.7	33.0 33.2	33.1	84.9 82.4	83.7	5.7 5.6	5.6	5.6	3.6 3.5	3.6		14.1 13.8	14.0	
M4	Cloudy	Moderate	17:48	Surface	1.0	26.4 26.1	26.2	8.9 8.9	8.9	31.5 32.0	31.7	86.4 80.6	83.5	5.8 5.5	5.6	5.6	4.4 4.3	4.3	4.4	26.4 27.4	26.9	14.1
				Middle	4.9	26.0 26.0	26.0	8.9 9.0	8.9	32.2 32.4	32.3	81.0 80.8	80.9	5.5 5.5	5.5		4.0 4.4	4.2		7.9 7.6	7.8	
				Bottom	9.0	25.9 25.9	25.9	8.9 8.9	8.9	32.7 32.7	32.7	82.6 82.6	82.6	5.6 5.6	5.6	5.6	4.8 4.4	4.6		7.6 7.6	7.6	
M5	Cloudy	Moderate	18:38	Surface	1.0	26.3 26.1	26.2	8.7 8.7	8.7	32.0 32.1	32.0	87.5 81.6	84.6	5.9 5.5	5.7	5.6	3.5 3.3	3.4	3.2	11.2 10.9	11.1	8.6
				Middle	6.0	26.1 26.1	26.1	8.7 8.7	8.7	32.1 32.2	32.1	83.1 81.4	82.3	5.6 5.5	5.6		3.3 2.8	3.0		8.8 9.0	8.9	
				Bottom	11.1	26.1 26.1	26.1	8.7 8.7	8.7	32.1 32.2	32.2	81.6 81.4	81.5	5.5 5.5	5.5	5.5	3.0 3.2	3.1		5.9 5.7	5.8	
M6	Cloudy	Moderate	18:32	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.2	- -	-	2.4	- -	-	19.4
				Middle	2.0	26.2 26.0	26.1	8.7 8.7	8.7	31.9 32.7	32.3	93.3 90.1	91.7	6.3 6.1	6.2		2.4 2.5	2.4		19.3 19.4	19.4	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 3 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.9 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.3 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 23.3 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 25.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 23.3 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 25.2 mg/L***
	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 ***C1: 14.3 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 15.5 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 05 June 2019

(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	Fine	Calm	08:50	Surface	0.9	26.5 26.5	26.5	8.3 8.3	8.3	31.5 31.5	31.5	79.8 79.9	79.9	5.4 5.4	5.4	5.3	3.3 3.4	3.3	4.0	7.0 7.0	7.0	7.2
				Middle	9.0	25.9 25.9	25.9	8.3 8.3	8.3	33.4 33.4	33.4	76.9 76.9	76.9	5.2 5.2	5.2		4.2 4.2	4.2		8.2 8.5	8.4	
				Bottom	16.9	25.9 25.9	25.9	8.3 8.3	8.3	33.4 33.4	33.4	76.6 76.7	76.7	5.2 5.2	5.2	5.2	4.6 4.6	4.6		6.4 6.3	6.4	
C2	Fine	Calm	08:00	Surface	1.0	26.9 26.9	26.9	8.2 8.3	8.2	30.7 30.7	30.7	85.6 85.2	85.4	5.8 5.8	5.8	5.4	3.2 3.2	3.2	5.4	9.1 9.5	9.3	8.7
				Middle	16.0	25.9 25.9	25.9	8.3 8.3	8.3	33.3 33.3	33.3	75.5 75.4	75.5	5.1 5.1	5.1		6.5 6.6	6.5		6.0 6.0	6.0	
				Bottom	31.1	25.9 25.9	25.9	8.3 8.3	8.3	33.3 33.3	33.3	75.4 75.4	75.4	5.1 5.1	5.1	5.1	6.5 6.5	6.5		10.6 10.9	10.8	
G1	Fine	Calm	08:24	Surface	1.1	27.1 27.1	27.1	8.3 8.3	8.3	32.4 32.3	32.4	90.0 90.0	90.0	6.0 6.0	6.0	5.8	1.7 1.7	1.7	2.0	6.9 7.1	7.0	6.8
				Middle	4.0	26.8 26.5	26.7	8.3 8.3	8.3	32.6 32.9	32.8	84.7 84.5	84.6	5.7 5.7	5.7		1.7 1.7	1.7		5.7 5.8	5.8	
				Bottom	7.1	26.2 26.1	26.2	8.3 8.3	8.3	33.3 33.4	33.3	80.9 80.5	80.7	5.4 5.4	5.4	5.4	2.7 2.7	2.7		7.5 7.8	7.7	
G2	Fine	Calm	08:13	Surface	1.0	27.0 27.0	27.0	8.3 8.3	8.3	32.8 32.8	32.8	90.4 90.1	90.3	6.0 6.0	6.0	5.9	2.0 2.0	2.0	2.0	6.3 6.3	6.3	7.0
				Middle	4.1	26.5 26.5	26.5	8.3 8.3	8.3	33.1 33.1	33.1	85.1 85.1	85.1	5.7 5.7	5.7		1.9 1.9	1.9		6.4 6.5	6.5	
				Bottom	7.0	26.3 26.3	26.3	8.3 8.3	8.3	33.3 33.3	33.3	84.1 83.8	84.0	5.6 5.6	5.6	5.6	1.9 2.1	2.0		8.3 8.1	8.2	
G3	Fine	Calm	08:28	Surface	1.0	27.3 27.3	27.3	8.3 8.3	8.3	31.9 31.9	31.9	92.1 92.2	92.2	6.1 6.1	6.1	5.9	2.1 2.1	2.1	2.3	5.8 5.9	5.9	7.6
				Middle	4.0	26.9 26.8	26.9	8.3 8.3	8.3	32.5 32.5	32.5	85.2 84.8	85.0	5.7 5.7	5.7		2.3 2.3	2.3		11.2 11.5	11.4	
				Bottom	7.0	25.8 25.8	25.8	8.3 8.3	8.3	34.0 34.0	34.0	77.8 77.8	77.8	5.3 5.3	5.3	5.3	2.7 2.6	2.6		5.5 5.6	5.6	
G4	Fine	Calm	08:38	Surface	1.0	27.1 27.1	27.1	8.3 8.3	8.3	32.3 32.2	32.3	84.6 84.8	84.7	5.6 5.7	5.6	5.4	2.1 2.1	2.1	2.3	7.1 7.1	7.1	8.2
				Middle	4.0	26.7 26.6	26.7	8.3 8.3	8.3	32.3 32.4	32.3	78.3 77.9	78.1	5.3 5.2	5.2		2.0 1.9	1.9		7.7 7.4	7.6	
				Bottom	7.0	26.0 25.9	25.9	8.3 8.3	8.3	33.5 33.6	33.6	76.1 76.0	76.1	5.1 5.1	5.1	5.1	2.7 2.8	2.8		9.8 10.0	9.9	
M1	Fine	Calm	08:17	Surface	1.0	27.3 27.2	27.2	8.3 8.3	8.3	32.2 32.3	32.3	88.4 87.9	88.2	5.9 5.8	5.9	5.7	2.4 2.5	2.5	2.8	4.9 4.9	4.9	5.4
				Middle	3.0	26.7 26.7	26.7	8.3 8.3	8.3	32.8 32.8	32.8	83.3 83.3	83.3	5.6 5.6	5.6		2.4 2.3	2.4		5.4 5.4	5.4	
				Bottom	5.0	26.6 26.5	26.6	8.3 8.3	8.3	32.9 32.9	32.9	82.3 81.9	82.1	5.5 5.5	5.5	5.5	3.5 3.3	3.4		5.9 6.1	6.0	
M2	Fine	Calm	08:10	Surface	1.0	26.9 26.8	26.8	8.3 8.3	8.3	32.6 32.7	32.7	88.5 88.1	88.3	5.9 5.9	5.9	5.7	2.6 2.7	2.6	2.7	6.2 6.1	6.2	6.0
				Middle	6.0	26.1 26.1	26.1	8.3 8.3	8.3	33.6 33.6	33.6	82.1 82.0	82.1	5.5 5.5	5.5		2.4 2.4	2.4		5.1 5.1	5.1	
				Bottom	11.0	26.0 26.0	26.0	8.3 8.3	8.3	33.7 33.7	33.7	81.2 81.0	81.1	5.5 5.5	5.5	5.5	2.9 3.0	2.9		6.5 6.9	6.7	
M3	Fine	Calm	08:33	Surface	1.0	27.1 27.1	27.1	8.3 8.3	8.3	32.2 32.2	32.2	88.4 88.7	88.6	5.9 5.9	5.9	5.7	2.5 2.4	2.5	2.5	8.1 8.3	8.2	7.7
				Middle	4.1	26.5 26.4	26.5	8.3 8.3	8.3	32.9 33.0	33.0	80.8 80.9	80.9	5.4 5.4	5.4		2.5 2.4	2.4		8.0 8.4	8.2	
				Bottom	7.1	25.8 25.8	25.8	8.3 8.3	8.3	33.9 34.0	34.0	78.4 78.2	78.3	5.3 5.3	5.3	5.3	2.7 2.7	2.7		6.6 6.6	6.6	
M4	Fine	Calm	08:06	Surface	1.1	26.5 26.5	26.5	8.3 8.3	8.3	31.7 31.7	31.7	81.7 81.5	81.6	5.5 5.5	5.5	5.4	3.3 3.4	3.3	3.9	10.5 10.3	10.4	8.1
				Middle	5.0	26.1 26.1	26.1	8.3 8.3	8.3	32.7 32.7	32.7	77.6 77.6	77.6	5.2 5.2	5.2		4.4 4.5	4.4		7.1 7.3	7.2	
				Bottom	9.1	26.2 26.2	26.2	8.3 8.3	8.3	33.0 33.0	33.0	80.5 80.6	80.6	5.4 5.4	5.4	5.4	3.9 3.9	3.9		6.6 6.6	6.6	
M5	Fine	Calm	08:46	Surface	1.1	26.4 26.5	26.5	8.3 8.3	8.3	32.3 32.2	32.3	83.8 83.9	83.9	5.6 5.7	5.6	5.6	2.6 2.5	2.6	2.3	4.4 4.3	4.4	4.5
				Middle	6.0	26.4 26.4	26.4	8.3 8.3	8.3	32.3 32.3	32.3	81.3 81.5	81.4	5.5 5.5	5.5		2.2 2.3	2.2		4.2 4.2	4.2	
				Bottom	11.0	26.3 26.3	26.3	8.3 8.3	8.3	32.4 32.4	32.4	79.2 79.3	79.3	5.3 5.4	5.3	5.3	2.0 2.0	2.0		4.9 4.8	4.9	
M6	Fine	Calm	08:41	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.9	- -	-	2.3	- -	-	9.8
				Middle	2.0	27.0 27.2	27.1	8.3 8.3	8.3	32.5 32.3	32.4	88.6 88.5	88.6	5.9 5.9	5.9		2.4 2.2	2.3		9.7 9.9	9.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 5 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 7.8 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 8.4 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.2 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.2 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.1 mg/L***
	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 ***C2: 12.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 14.0 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 05 June 2019

(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	Fine	Calm	13:27	Surface	1.1	26.4 26.3	26.4	8.4 8.4	8.4	31.4 31.5	31.4	78.8 78.7	78.8	5.3 5.3	5.3	5.2	2.8 2.8	2.8	3.4	3.8 3.9	3.9	4.6
				Middle	8.9	25.8 25.8	25.8	8.3 8.3	8.3	33.1 33.1	33.1	76.7 76.7	76.7	5.2 5.2	5.2		3.5 3.4	3.5		6.6 6.6	6.6	
				Bottom	17.1	25.6 25.6	25.6	8.3 8.3	8.3	33.8 33.8	33.8	76.1 76.1	76.1	5.1 5.1	5.1	5.1	4.0 3.9	3.9		3.1 3.3	3.2	
C2	Fine	Calm	12:17	Surface	1.0	26.7 26.7	26.7	8.3 8.3	8.3	30.7 30.7	30.7	80.5 80.6	80.6	5.4 5.4	5.4	5.3	3.7 3.6	3.7	4.0	4.2 4.4	4.3	8.8
				Middle	16.0	25.8 25.7	25.7	8.3 8.3	8.3	33.1 33.2	33.1	75.5 75.4	75.5	5.1 5.1	5.1		4.0 4.0	4.0		6.5 6.7	6.6	
				Bottom	31.0	25.7 25.7	25.7	8.3 8.3	8.3	33.3 33.4	33.3	75.4 75.3	75.4	5.1 5.1	5.1	5.1	4.2 4.2	4.2		15.7 15.2	15.5	
G1	Fine	Calm	12:52	Surface	1.0	26.8 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.6 88.6	88.6	5.9 5.9	5.9	5.7	1.8 1.8	1.8	1.7	5.7 5.6	5.7	7.5
				Middle	4.1	26.4 26.5	26.5	8.3 8.3	8.3	32.8 32.8	32.8	83.2 83.3	83.3	5.6 5.6	5.6		1.7 1.7	1.7		8.9 9.0	9.0	
				Bottom	7.0	26.0 26.0	26.0	8.3 8.3	8.3	33.3 33.2	33.2	81.3 81.5	81.4	5.5 5.5	5.5	5.5	1.7 1.8	1.7		7.9 7.9	7.9	
G2	Fine	Calm	12:39	Surface	1.0	26.4 26.4	26.4	8.3 8.3	8.3	33.1 33.0	33.0	86.5 86.5	86.5	5.8 5.8	5.8	5.8	2.8 2.7	2.8	2.4	4.7 4.8	4.8	6.1
				Middle	4.0	26.5 26.5	26.5	8.3 8.3	8.3	32.9 33.0	33.0	85.8 85.7	85.8	5.7 5.7	5.7		2.3 2.3	2.3		4.9 4.9	4.9	
				Bottom	7.0	26.2 26.1	26.1	8.3 8.3	8.3	33.2 33.3	33.3	84.4 83.3	83.9	5.7 5.6	5.6	5.6	2.2 2.3	2.2		8.7 8.3	8.5	
G3	Fine	Calm	12:58	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.5	32.6	86.6 87.2	86.9	5.8 5.8	5.8	5.6	2.2 2.2	2.2	2.8	7.6 7.6	7.6	7.1
				Middle	4.0	26.4 26.1	26.3	8.3 8.3	8.3	32.8 33.1	33.0	82.2 81.9	82.1	5.5 5.5	5.5		2.7 2.8	2.7		6.6 6.7	6.7	
				Bottom	7.0	25.5 25.5	25.5	8.3 8.3	8.3	34.1 34.2	34.1	77.2 77.0	77.1	5.2 5.2	5.2	5.2	3.6 3.5	3.6		6.8 7.0	6.9	
G4	Fine	Calm	13:08	Surface	1.0	27.4 27.4	27.4	8.3 8.3	8.3	31.3 31.3	31.3	94.7 94.9	94.8	6.3 6.3	6.3	6.0	1.6 1.6	1.6	1.9	8.3 8.6	8.5	9.9
				Middle	4.0	26.3 26.3	26.3	8.3 8.3	8.3	32.9 32.9	32.9	85.8 86.1	86.0	5.8 5.8	5.8		1.8 1.8	1.8		6.5 6.4	6.5	
				Bottom	6.9	25.9 25.9	25.9	8.3 8.3	8.3	33.5 33.4	33.5	79.6 79.2	79.4	5.4 5.3	5.3	5.3	2.2 2.3	2.3		14.3 15.0	14.7	
M1	Fine	Calm	12:46	Surface	1.0	26.8 26.9	26.9	8.3 8.3	8.3	32.4 32.3	32.3	86.0 86.0	86.0	5.7 5.7	5.7	5.6	2.0 2.0	2.0	2.7	4.1 4.1	4.1	4.8
				Middle	3.0	26.4 26.4	26.4	8.3 8.3	8.3	32.8 32.8	32.8	82.8 82.8	82.8	5.5 5.5	5.5		2.8 2.8	2.8		4.5 4.5	4.5	
				Bottom	4.9	26.4 26.4	26.4	8.3 8.3	8.3	32.9 32.9	32.9	82.3 82.3	82.3	5.5 5.5	5.5	5.5	3.2 3.3	3.3		5.8 6.0	5.9	
M2	Fine	Calm	12:33	Surface	1.1	26.6 26.5	26.6	8.3 8.3	8.3	32.8 32.8	32.8	86.4 86.3	86.4	5.8 5.8	5.8	5.6	0.9 0.9	0.9	2.9	6.8 7.1	7.0	7.6
				Middle	5.0	25.8 25.8	25.8	8.3 8.3	8.3	33.7 33.7	33.7	81.6 81.5	81.6	5.5 5.5	5.5		1.1 0.9	1.0		5.3 5.5	5.4	
				Bottom	11.0	25.4 25.4	25.4	8.3 8.3	8.3	34.3 34.3	34.3	77.2 77.2	77.2	5.2 5.2	5.2	5.2	6.8 6.7	6.7		10.7 10.3	10.5	
M3	Fine	Calm	13:02	Surface	1.1	27.1 27.0	27.1	8.3 8.3	8.3	31.7 31.8	31.7	89.6 89.8	89.7	6.0 6.0	6.0	5.6	2.0 2.0	2.0	1.8	4.9 4.9	4.9	5.8
				Middle	4.0	26.4 26.3	26.4	8.3 8.3	8.3	32.5 32.6	32.5	77.9 77.6	77.8	5.2 5.2	5.2		1.7 1.7	1.7		5.8 5.7	5.8	
				Bottom	7.0	25.7 25.7	25.7	8.3 8.3	8.3	33.6 33.7	33.6	76.6 76.4	76.5	5.2 5.2	5.2	5.2	1.9 1.9	1.9		6.7 6.9	6.8	
M4	Fine	Calm	12:25	Surface	1.0	26.3 26.3	26.3	8.3 8.3	8.3	31.8 31.8	31.8	78.8 78.8	78.8	5.3 5.3	5.3	5.3	3.5 3.5	3.5	3.6	6.0 5.8	5.9	5.1
				Middle	4.9	26.1 26.1	26.1	8.3 8.3	8.3	32.4 32.5	32.4	78.5 78.5	78.5	5.3 5.3	5.3		4.0 4.1	4.1		4.6 4.9	4.8	
				Bottom	9.1	26.1 26.1	26.1	8.3 8.3	8.3	32.9 33.0	32.9	80.7 81.1	80.9	5.4 5.5	5.4	5.4	3.4 3.3	3.4		4.4 4.6	4.5	
M5	Fine	Calm	13:19	Surface	1.0	26.2 26.2	26.2	8.3 8.3	8.3	32.4 32.3	32.3	79.6 79.7	79.7	5.4 5.4	5.4	5.4	2.5 2.5	2.5	2.6	4.3 4.4	4.4	5.4
				Middle	6.0	26.2 26.2	26.2	8.3 8.3	8.3	32.3 32.3	32.3	80.2 80.2	80.2	5.4 5.4	5.4		2.6 2.7	2.6		4.6 4.8	4.7	
				Bottom	11.1	26.1 26.1	26.1	8.3 8.3	8.3	32.4 32.5	32.4	79.3 79.1	79.2	5.4 5.3	5.3	5.3	2.5 2.5	2.5		7.1 7.2	7.2	
M6	Fine	Calm	13:13	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.9	- -	-	2.0	- -	-	8.8
				Middle	2.0	26.9 26.8	26.9	8.3 8.3	8.3	32.5 32.5	32.5	88.5 88.6	88.6	5.9 5.9	5.9		2.0 2.0	2.0		8.8 8.8	8.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 5 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.7 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.1 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 4.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 4.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.0 mg/L***
	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 ***C1: 3.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 4.2 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.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 08 June 2019

(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	16:36	Surface	1.0	27.1 26.9	27.0	8.7 8.6	8.7	31.8 32.3	32.0	101.2 100.9	101.1	6.7 6.7	6.7	6.3	1.9 2.2	2.0	1.6	6.1 6.1	6.1	11.7
				Middle	9.0	26.1 26.5	26.3	8.6 8.6	8.6	33.8 33.2	33.5	87.3 91.0	89.2	5.8 6.1	6.0		1.0 1.2	1.1		17.4 17.8	17.6	
				Bottom	17.1	26.1 25.6	25.9	8.6 8.6	8.6	33.9 34.8	34.3	87.6 80.2	83.9	5.9 5.4	5.6	5.6	1.9 1.5	1.7		11.4 11.5	11.5	
C2	Sunny	Moderate	15:46	Surface	1.0	27.1 27.3	27.2	8.9 8.9	8.9	31.7 31.2	31.5	101.4 97.4	99.4	6.8 6.5	6.6	5.9	2.3 2.9	2.6	3.7	9.8 9.6	9.7	10.7
				Middle	15.9	25.3 25.4	25.4	9.0 8.9	8.9	35.4 35.4	35.4	75.7 75.6	75.7	5.1 5.1	5.1		4.2 3.7	4.0		9.2 9.4	9.3	
				Bottom	31.0	25.3 25.4	25.4	8.9 8.9	8.9	35.4 35.4	35.4	75.6 75.6	75.6	5.1 5.1	5.1	5.1	4.4 4.5	4.5		13.0 13.1	13.1	
G1	Sunny	Moderate	16:10	Surface	0.9	27.3 27.3	27.3	8.8 8.7	8.8	32.4 32.3	32.4	115.4 118.3	116.9	7.6 7.8	7.7	7.3	2.1 2.3	2.2	2.3	6.7 6.7	6.7	12.7
				Middle	4.0	26.5 26.8	26.6	8.8 8.8	8.8	33.0 32.8	32.9	101.9 102.2	102.1	6.8 6.8	6.8		1.9 2.2	2.0		13.0 12.7	12.9	
				Bottom	7.0	25.8 25.5	25.7	8.7 8.7	8.7	34.5 35.0	34.7	81.9 77.2	79.6	5.5 5.2	5.3	5.3	2.6 2.5	2.5		18.3 19.0	18.7	
G2	Sunny	Moderate	16:00	Surface	1.0	27.3 27.3	27.3	8.9 8.8	8.8	32.4 32.4	32.4	122.4 117.2	119.8	8.1 7.8	7.9	7.0	2.8 2.5	2.7	2.0	13.3 13.3	13.3	11.5
				Middle	5.0	26.1 26.8	26.4	8.8 8.8	8.8	33.9 33.0	33.4	86.9 93.8	90.4	5.8 6.2	6.0		1.7 2.0	1.8		13.8 13.2	13.5	
				Bottom	9.0	25.8 25.8	25.8	8.8 8.8	8.8	34.6 34.4	34.5	80.5 83.6	82.1	5.4 5.6	5.5	5.5	1.3 1.4	1.3		7.8 7.5	7.7	
G3	Sunny	Moderate	16:15	Surface	1.0	27.5 27.6	27.5	8.8 8.8	8.8	31.9 32.2	32.0	133.8 127.2	130.5	8.9 8.4	8.6	8.1	2.3 2.6	2.4	2.3	9.0 8.8	8.9	9.7
				Middle	4.0	27.0 26.8	26.9	8.8 8.8	8.8	32.4 32.6	32.5	116.6 112.7	114.7	7.7 7.5	7.6		1.8 2.3	2.0		8.0 8.3	8.2	
				Bottom	7.0	26.1 25.6	25.8	8.7 8.7	8.7	33.9 34.9	34.4	82.2 79.4	80.8	5.5 5.3	5.4	5.4	2.2 2.6	2.4		11.7 12.1	11.9	
G4	Sunny	Moderate	16:24	Surface	1.0	27.7 27.7	27.7	8.8 8.8	8.8	31.9 31.9	31.9	131.6 132.1	131.9	8.7 8.7	8.7	8.1	2.3 2.1	2.2	2.8	23.2 22.9	23.1	16.0
				Middle	4.0	27.1 26.9	27.0	8.8 8.7	8.7	32.4 32.5	32.4	114.1 110.7	112.4	7.6 7.4	7.5		1.8 2.1	1.9		12.1 12.1	12.1	
				Bottom	7.0	25.6 25.6	25.6	8.6 8.6	8.6	35.0 34.8	34.9	77.2 78.6	77.9	5.2 5.3	5.2	5.2	4.6 3.8	4.2		12.9 12.8	12.9	
M1	Sunny	Moderate	16:05	Surface	1.0	27.5 26.7	27.1	8.8 8.8	8.8	32.2 33.1	32.6	113.4 107.7	110.6	7.5 7.2	7.3	7.3	1.6 1.7	1.7	2.2	6.3 6.2	6.3	6.8
				Middle	3.0	27.0 27.0	27.0	8.8 8.8	8.8	32.6 32.6	32.6	109.1 107.8	108.5	7.2 7.2	7.2		1.7 1.8	1.8		7.2 7.6	7.4	
				Bottom	5.0	26.7 26.5	26.6	8.8 8.7	8.8	33.0 33.4	33.2	94.3 92.9	93.6	6.3 6.2	6.2	6.2	3.1 3.5	3.3		6.6 6.9	6.8	
M2	Sunny	Moderate	15:56	Surface	1.0	26.7 26.8	26.8	8.9 8.8	8.8	33.0 33.6	33.3	103.7 95.4	99.6	6.9 6.3	6.6	6.1	1.5 1.4	1.5	1.5	5.7 5.7	5.7	11.9
				Middle	6.0	25.7 25.7	25.7	8.8 8.8	8.8	34.8 34.7	34.7	82.5 81.8	82.2	5.5 5.5	5.5		0.9 0.8	0.8		18.0 18.4	18.2	
				Bottom	11.0	25.5 25.4	25.5	8.8 8.8	8.8	35.0 35.3	35.2	79.5 77.2	78.4	5.3 5.2	5.3	5.3	2.1 2.5	2.3		11.6 11.9	11.8	
M3	Sunny	Moderate	16:18	Surface	1.0	27.7 27.6	27.7	8.8 8.8	8.8	31.1 32.3	31.7	136.9 125.7	131.3	9.1 8.3	8.7	8.5	2.3 2.6	2.5	2.6	9.9 10.0	10.0	8.4
				Middle	4.1	27.5 27.3	27.4	8.8 8.8	8.8	31.6 31.9	31.8	126.5 124.1	125.3	8.4 8.2	8.3		1.9 1.6	1.7		9.6 9.7	9.7	
				Bottom	6.9	25.7 25.6	25.7	8.6 8.6	8.6	34.6 34.8	34.7	79.2 80.1	79.7	5.3 5.4	5.3	5.3	3.3 3.7	3.5		5.5 5.4	5.5	
M4	Sunny	Moderate	15:51	Surface	1.1	27.7 26.7	27.2	8.9 8.9	8.9	31.4 33.2	32.3	100.3 89.5	94.9	6.6 5.9	6.3	5.7	4.0 3.5	3.7	4.3	7.0 6.9	7.0	15.7
				Middle	4.9	25.3 25.4	25.4	9.0 8.8	8.9	35.4 35.2	35.3	76.5 76.6	76.6	5.1 5.1	5.1		4.8 4.7	4.7		20.2 20.0	20.1	
				Bottom	8.9	25.3 25.4	25.4	8.9 8.8	8.9	35.4 35.3	35.4	75.9 76.1	76.0	5.1 5.1	5.1	5.1	4.5 4.6	4.6		19.7 20.2	20.0	
M5	Sunny	Moderate	16:30	Surface	1.1	27.2 27.0	27.1	8.8 8.7	8.7	32.5 32.6	32.5	116.8 113.4	115.1	7.7 7.5	7.6	7.1	2.4 2.7	2.5	2.5	8.5 8.5	8.5	10.5
				Middle	6.0	26.6 26.6	26.6	8.7 8.7	8.7	33.0 33.1	33.1	101.5 93.5	97.5	6.8 6.2	6.5		1.3 1.4	1.3		11.6 11.4	11.5	
				Bottom	10.8	25.6 25.8	25.7	8.6 8.6	8.6	34.8 34.5	34.7	79.0 80.9	80.0	5.3 5.4	5.4	5.4	3.5 3.5	3.5		11.4 11.3	11.4	
M6	Sunny	Moderate	16:25	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.8	- -	-	1.8	- -	-	7.3
				Middle	2.0	27.4 27.1	27.2	8.7 8.7	8.7	32.1 32.4	32.2	117.5 116.6	117.1	7.8 7.7	7.8		1.9 1.7	1.8		7.1 7.4	7.3	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 8 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.8 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.6 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.6 mg/L***
	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 ***C2: 15.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 17.0 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 08 June 2019

(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	09:26	Surface	1.0	26.6 26.5	26.6	8.7 8.7	8.7	32.2 32.5	32.4	92.3 88.6	90.5	6.2 5.9	6.1	5.7	1.9 1.6	1.7	2.3	15.7 16.1	15.9	12.1
				Middle	9.1	25.5 25.6	25.5	8.7 8.7	8.7	35.1 34.9	35.0	79.3 80.2	79.8	5.3 5.4	5.4		1.3 1.5	1.4		13.7 14.2	14.0	
				Bottom	17.0	25.3 25.3	25.3	8.7 8.7	8.7	35.6 35.6	35.6	76.5 76.6	76.6	5.1 5.1	5.1	5.1	4.1 3.5	3.8		6.3 6.4	6.4	
C2	Sunny	Moderate	08:34	Surface	1.0	26.7 26.7	26.7	8.7 8.6	8.6	31.9 31.8	31.8	85.9 86.8	86.4	5.8 5.8	5.8	5.5	2.1 1.7	1.9	2.2	17.3 17.8	17.6	15.3
				Middle	16.0	25.5 25.5	25.5	8.7 8.7	8.7	35.1 35.0	35.0	76.5 77.3	76.9	5.1 5.2	5.2		2.3 2.4	2.3		12.3 12.5	12.4	
				Bottom	31.0	25.5 25.5	25.5	8.7 8.7	8.7	35.1 35.1	35.1	76.5 76.5	76.5	5.1 5.1	5.1	5.1	2.3 2.6	2.4		16.1 16.0	16.1	
G1	Sunny	Moderate	09:00	Surface	1.0	26.8 26.7	26.7	8.7 8.7	8.7	31.8 32.1	32.0	99.8 94.7	97.3	6.7 6.3	6.5	6.1	2.6 2.6	2.6	2.3	10.2 10.0	10.1	11.7
				Middle	4.0	26.4 26.3	26.3	8.7 8.7	8.7	33.0 33.4	33.2	84.0 87.3	85.7	5.6 5.8	5.7		2.2 2.0	2.1		13.6 13.6	13.6	
				Bottom	7.0	25.6 25.8	25.7	8.7 8.7	8.7	34.8 34.5	34.6	80.0 79.7	79.9	5.4 5.3	5.4	5.4	2.4 2.1	2.3		11.3 11.4	11.4	
G2	Sunny	Moderate	08:50	Surface	1.0	26.7 26.8	26.8	8.7 8.6	8.7	32.3 32.3	32.3	100.0 96.5	98.3	6.7 6.4	6.6	6.0	2.0 1.7	1.8	2.1	4.0 4.1	4.1	8.4
				Middle	5.0	25.8 25.9	25.8	8.6 8.6	8.6	34.4 34.2	34.3	82.3 82.3	82.3	5.5 5.5	5.5		2.2 1.8	2.0		6.1 6.0	6.1	
				Bottom	9.1	25.5 25.6	25.6	8.6 8.6	8.6	35.0 34.9	34.9	78.3 79.4	78.9	5.3 5.3	5.3	5.3	2.9 2.4	2.7		15.2 15.2	15.2	
G3	Sunny	Moderate	09:04	Surface	1.1	26.9 26.4	26.6	8.7 8.7	8.7	31.9 33.1	32.5	101.4 95.5	98.5	6.8 6.4	6.6	6.1	2.0 1.7	1.8	1.6	15.9 16.3	16.1	14.3
				Middle	4.0	25.9 26.5	26.2	8.7 8.7	8.7	34.2 32.8	33.5	80.0 84.9	82.5	5.4 5.7	5.5		1.7 1.6	1.6		16.7 17.5	17.1	
				Bottom	7.0	25.9 25.8	25.9	8.7 8.7	8.7	34.0 34.4	34.2	79.4 78.7	79.1	5.3 5.3	5.3	5.3	1.5 1.4	1.4		9.8 9.7	9.8	
G4	Sunny	Moderate	09:11	Surface	1.0	26.8 26.8	26.8	8.7 8.7	8.7	31.2 31.1	31.2	101.6 102.3	102.0	6.8 6.9	6.9	6.3	2.2 1.9	2.0	2.4	22.5 22.1	22.3	17.0
				Middle	4.0	26.1 26.2	26.2	8.7 8.7	8.7	33.5 33.6	33.6	83.9 86.1	85.0	5.6 5.8	5.7		1.2 0.9	1.0		14.0 14.2	14.1	
				Bottom	7.0	25.6 25.6	25.6	8.7 8.7	8.7	34.8 34.8	34.8	77.2 76.6	76.9	5.2 5.1	5.2	5.2	4.1 4.2	4.1		14.5 14.8	14.7	
M1	Sunny	Moderate	08:55	Surface	1.0	27.0 26.2	26.6	8.6 8.6	8.6	31.9 33.5	32.7	100.2 91.6	95.9	6.7 6.1	6.4	6.1	1.4 1.6	1.5	1.4	9.8 9.8	9.8	6.2
				Middle	3.0	26.6 26.6	26.6	8.6 8.6	8.6	32.8 32.9	32.8	86.2 85.3	85.8	5.8 5.7	5.7		1.4 1.2	1.3		4.6 4.8	4.7	
				Bottom	5.0	26.0 26.2	26.1	8.6 8.6	8.6	33.9 33.6	33.8	77.1 78.1	77.6	5.2 5.2	5.2	5.2	1.5 1.3	1.4		3.9 4.0	4.0	
M2	Sunny	Moderate	08:46	Surface	1.0	26.9 26.9	26.9	8.8 8.8	8.8	32.0 31.9	32.0	98.3 97.2	97.8	6.6 6.5	6.5	6.1	2.7 2.7	2.7	3.0	5.7 5.8	5.8	11.0
				Middle	6.0	26.0 25.9	26.0	8.8 8.8	8.8	34.0 34.1	34.1	85.0 84.0	84.5	5.7 5.6	5.7		2.6 2.3	2.5		12.7 12.9	12.8	
				Bottom	11.0	25.4 25.4	25.4	8.8 8.8	8.8	35.2 35.4	35.3	76.5 76.5	76.5	5.1 5.1	5.1	5.1	3.9 3.9	3.9		14.6 14.4	14.5	
M3	Sunny	Moderate	09:07	Surface	1.0	26.8 27.0	26.9	8.7 8.7	8.7	31.7 31.2	31.4	106.7 99.0	102.9	7.1 6.6	6.9	6.4	2.3 2.1	2.2	2.0	9.9 10.0	10.0	10.0
				Middle	4.0	26.6 26.4	26.5	8.7 8.7	8.7	32.6 33.1	32.9	88.9 85.3	87.1	5.9 5.7	5.8		2.0 1.6	1.8		8.6 8.8	8.7	
				Bottom	7.0	25.9 25.7	25.8	8.7 8.7	8.7	34.0 34.6	34.3	78.0 75.5	76.8	5.2 5.1	5.2	5.2	1.9 2.1	2.0		11.2 11.2	11.2	
M4	Sunny	Moderate	08:41	Surface	0.9	26.8 26.8	26.8	8.9 8.9	8.9	32.1 32.1	32.1	99.2 95.5	97.4	6.6 6.4	6.5	6.0	1.7 2.0	1.9	2.4	8.1 8.1	8.1	10.7
				Middle	5.0	26.4 25.6	26.0	8.9 8.8	8.9	33.0 34.7	33.9	85.3 80.5	82.9	5.7 5.4	5.6		1.8 2.0	1.9		7.1 7.5	7.3	
				Bottom	9.0	25.5 25.5	25.5	8.8 8.8	8.8	35.2 35.1	35.1	76.9 75.6	76.3	5.2 5.1	5.1	5.1	3.2 3.5	3.4		16.4 17.0	16.7	
M5	Sunny	Moderate	09:22	Surface	0.9	27.1 26.1	26.6	8.7 8.7	8.7	32.3 33.7	33.0	98.1 88.1	93.1	6.5 5.9	6.2	5.8	1.8 2.1	2.0	2.2	22.2 21.7	22.0	19.4
				Middle	6.0	25.6 25.7	25.7	8.7 8.7	8.7	34.9 34.5	34.7	79.4 79.7	79.6	5.3 5.4	5.3		2.2 1.9	2.0		28.1 28.6	28.4	
				Bottom	11.0	25.4 25.4	25.4	8.7 8.7	8.7	35.3 35.2	35.3	77.3 77.7	77.5	5.2 5.2	5.2	5.2	2.9 2.4	2.7		7.9 7.9	7.9	
M6	Sunny	Moderate	09:16	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.7	- -	-	1.2	- -	-	10.7
				Middle	2.0	26.8 26.8	26.8	8.7 8.7	8.7	31.5 31.6	31.5	99.7 99.4	99.6	6.7 6.7	6.7		1.2 1.3	1.2		10.6 10.7	10.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 8 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.5 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.9 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 19.1 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 20.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 19.1 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 20.7 mg/L***
	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 ***C1: 7.6 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.3 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 10 June 2019

(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	19:08	Surface	1.0	27.5 27.5	27.5	8.7 8.7	8.7	30.3 30.3	30.3	125.2 126.1	125.7	8.4 8.4	8.4	6.7	2.1 2.1	2.1	1.3	7.7 7.6	7.7	7.2
				Middle	9.1	25.2 25.3	25.2	8.5 8.5	8.5	35.4 35.2	35.3	74.5 75.2	74.9	5.0 5.1	5.0		0.7 0.7	0.7		8.3 8.7	8.5	
				Bottom	17.1	24.9 24.9	24.9	8.5 8.5	8.5	35.7 35.8	35.8	72.1 71.5	71.8	4.9 4.8	4.9	4.9	1.3 1.2	1.2		5.5 5.5	5.5	
C2	Cloudy	Calm	18:00	Surface	1.1	27.0 27.0	27.0	8.7 8.7	8.7	30.2 30.2	30.2	98.6 98.6	98.6	6.6 6.6	6.6	6.3	1.5 1.5	1.5	1.6	9.5 9.4	9.5	10.3
				Middle	16.5	26.0 26.1	26.1	8.6 8.6	8.6	33.7 33.6	33.6	87.7 88.7	88.2	5.9 6.0	5.9		1.4 1.4	1.4		8.6 8.5	8.6	
				Bottom	32.0	25.9 25.8	25.9	8.6 8.6	8.6	34.0 34.1	34.0	81.8 81.8	81.8	5.5 5.5	5.5	5.5	1.7 1.9	1.8		12.9 12.6	12.8	
G1	Cloudy	Calm	18:25	Surface	1.1	27.4 27.4	27.4	8.8 8.8	8.8	30.8 30.8	30.8	129.5 129.7	129.6	8.6 8.6	8.6	7.4	1.1 0.9	1.0	1.7	12.0 11.8	11.9	10.6
				Middle	4.0	25.9 25.9	25.9	8.5 8.5	8.5	34.0 34.1	34.0	90.0 96.5	93.3	6.0 6.5	6.3		1.5 1.6	1.6		10.5 11.0	10.8	
				Bottom	7.1	25.8 25.6	25.7	8.5 8.5	8.5	34.4 34.7	34.6	78.9 77.9	78.4	5.3 5.2	5.3	5.3	2.6 2.4	2.5		9.1 9.4	9.3	
G2	Cloudy	Calm	18:13	Surface	1.0	27.4 27.4	27.4	8.7 8.7	8.7	31.2 31.2	31.2	118.8 120.6	119.7	7.9 8.0	8.0	6.7	1.1 1.2	1.2	1.4	11.6 12.0	11.8	10.3
				Middle	5.0	25.6 25.6	25.6	8.5 8.5	8.5	34.8 34.8	34.8	79.6 81.0	80.3	5.4 5.4	5.4		1.3 1.4	1.3		7.6 7.5	7.6	
				Bottom	9.0	25.3 25.2	25.3	8.5 8.5	8.5	35.3 35.4	35.4	73.3 73.0	73.2	4.9 4.9	4.9	4.9	1.6 1.6	1.6		11.3 11.8	11.6	
G3	Cloudy	Calm	18:29	Surface	1.0	27.4 27.4	27.4	8.7 8.7	8.7	30.7 30.7	30.7	122.9 129.3	126.1	8.2 8.6	8.4	7.5	1.3 1.4	1.4	1.5	12.5 12.1	12.3	7.6
				Middle	4.0	26.2 26.2	26.2	8.5 8.5	8.5	33.4 33.5	33.5	93.6 105.4	99.5	6.3 7.1	6.7		1.2 1.3	1.2		6.2 6.3	6.3	
				Bottom	7.0	25.9 25.7	25.8	8.5 8.5	8.5	34.1 34.5	34.3	80.1 77.9	79.0	5.4 5.2	5.3	5.3	1.9 1.9	1.9		4.1 4.2	4.2	
G4	Cloudy	Calm	18:47	Surface	1.0	27.4 27.4	27.4	8.7 8.7	8.7	30.4 30.5	30.4	118.4 130.5	124.5	7.9 8.7	8.3	7.1	1.6 1.5	1.5	1.9	10.9 11.4	11.2	9.6
				Middle	4.1	25.9 25.8	25.9	8.5 8.5	8.5	34.1 34.2	34.1	84.0 93.5	88.8	5.6 6.3	6.0		1.6 1.6	1.6		9.1 9.3	9.2	
				Bottom	7.1	25.7 25.4	25.5	8.5 8.5	8.5	34.6 35.1	34.9	72.9 72.4	72.7	4.9 4.9	4.9	4.9	2.5 2.6	2.6		8.4 8.5	8.5	
M1	Cloudy	Calm	18:17	Surface	1.1	27.5 27.6	27.5	8.7 8.7	8.7	31.2 31.2	31.2	110.5 113.1	111.8	7.3 7.5	7.4	6.6	1.1 1.0	1.0	2.4	6.1 6.0	6.1	7.4
				Middle	3.0	26.3 26.3	26.3	8.5 8.5	8.5	33.4 33.4	33.4	86.7 87.0	86.9	5.8 5.8	5.8		1.7 1.6	1.6		3.6 3.6	3.6	
				Bottom	5.1	25.9 25.5	25.7	8.5 8.5	8.5	34.1 35.0	34.5	73.0 70.9	72.0	4.9 4.8	4.8	4.8	4.5 4.8	4.6		12.7 12.5	12.6	
M2	Cloudy	Calm	18:09	Surface	1.1	27.4 27.5	27.5	8.7 8.7	8.7	31.5 31.4	31.4	124.3 126.2	125.3	8.2 8.4	8.3	7.1	1.2 1.1	1.2	1.4	7.9 7.7	7.8	9.1
				Middle	5.5	25.9 25.8	25.9	8.5 8.5	8.5	33.6 33.1	33.3	85.4 90.4	87.9	5.8 6.1	5.9		1.3 1.2	1.2		9.6 9.7	9.7	
				Bottom	10.5	25.4 25.2	25.3	8.5 8.5	8.5	35.2 35.5	35.4	74.8 74.0	74.4	5.0 5.0	5.0	5.0	1.7 1.7	1.7		9.7 9.7	9.7	
M3	Cloudy	Calm	18:36	Surface	1.0	27.6 27.5	27.5	8.8 8.8	8.8	29.8 30.2	30.0	131.2 134.0	132.6	8.8 8.9	8.9	7.2	1.1 1.1	1.1	1.7	13.3 13.6	13.5	10.6
				Middle	4.0	25.9 25.9	25.9	8.5 8.5	8.5	34.2 34.2	34.2	80.5 86.2	83.4	5.4 5.8	5.6		1.8 1.5	1.7		9.7 9.8	9.8	
				Bottom	7.0	25.4 25.4	25.4	8.5 8.5	8.5	35.1 35.2	35.2	72.4 71.9	72.2	4.9 4.8	4.9	4.9	2.6 2.8	2.7		8.4 8.7	8.6	
M4	Cloudy	Calm	18:04	Surface	1.3	27.2 27.3	27.3	8.7 8.7	8.7	31.2 31.2	31.2	118.5 119.5	119.0	7.9 8.0	7.9	6.7	1.6 1.6	1.6	1.8	10.8 11.2	11.0	9.4
				Middle	5.4	25.9 25.9	25.9	8.5 8.5	8.5	34.0 34.1	34.1	81.2 80.4	80.8	5.5 5.4	5.4		1.6 1.7	1.6		12.9 13.0	13.0	
				Bottom	9.7	25.5 25.3	25.4	8.5 8.5	8.5	34.9 35.2	35.1	73.2 72.9	73.1	4.9 4.9	4.9	4.9	2.0 2.1	2.1		4.2 4.3	4.3	
M5	Cloudy	Calm	19:02	Surface	1.1	27.3 27.3	27.3	8.7 8.7	8.7	30.8 30.7	30.8	121.2 122.1	121.7	8.1 8.1	8.1	6.8	2.5 2.5	2.5	2.2	6.9 7.1	7.0	7.0
				Middle	6.1	25.6 25.6	25.6	8.5 8.5	8.5	34.8 34.8	34.8	80.7 81.5	81.1	5.4 5.5	5.5		2.1 2.0	2.1		7.7 7.8	7.8	
				Bottom	11.0	25.3 25.2	25.3	8.5 8.5	8.5	35.2 35.4	35.3	73.4 72.8	73.1	4.9 4.9	4.9	4.9	1.9 1.9	1.9		6.3 6.3	6.3	
M6	Cloudy	Calm	18:56	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.7	- -	-	1.3	- -	-	7.8
				Middle	2.3	27.5 27.5	27.5	8.7 8.7	8.7	30.6 30.6	30.6	130.0 130.1	130.1	8.7 8.7	8.7		1.3 1.3	1.3		7.7 7.8	7.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 10 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.2 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.3 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 11.3 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 12.3 mg/L***
	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 ***C2: 15.3 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 16.6 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 10 June 2019

(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	11:48	Surface	1.0	27.5 27.5	27.5	8.7 8.7	8.7	30.3 30.3	30.3	128.4 128.4	128.4	8.6 8.6	8.6	6.8	1.7 1.7	1.7	2.5	13.0 12.9	13.0	10.7
				Middle	9.0	25.1 25.0	25.1	8.5 8.5	8.5	35.6 35.6	35.6	74.2 73.2	73.7	5.0 4.9	5.0		2.4 2.5	2.4		11.7 11.2	11.5	
				Bottom	17.0	24.9 24.9	24.9	8.5 8.5	8.5	35.8 35.8	35.8	69.9 70.0	70.0	4.7 4.7	4.7	4.7	3.5 3.5	3.5		7.6 8.0	7.8	
C2	Cloudy	Calm	10:50	Surface	1.1	27.1 26.7	26.9	9.0 8.9	9.0	31.4 31.7	31.5	100.6 99.4	100.0	6.7 6.7	6.7	6.2	1.5 1.4	1.4	1.8	12.7 12.8	12.8	12.4
				Middle	16.1	26.0 26.0	26.0	8.8 8.8	8.8	33.8 33.8	33.8	86.1 86.3	86.2	5.8 5.8	5.8		1.7 1.6	1.7		12.0 11.6	11.8	
				Bottom	31.1	25.9 25.9	25.9	8.7 8.7	8.7	34.0 34.1	34.1	83.6 83.0	83.3	5.6 5.6	5.6	5.6	2.2 2.2	2.2		12.4 12.7	12.6	
G1	Cloudy	Calm	11:16	Surface	1.0	27.5 27.5	27.5	8.8 8.8	8.8	30.7 30.7	30.7	129.7 130.5	130.1	8.6 8.7	8.7	7.4	2.0 1.9	2.0	2.0	6.2 6.4	6.3	8.6
				Middle	4.1	26.3 26.6	26.5	8.6 8.6	8.6	33.3 32.6	32.9	91.1 93.2	92.2	6.1 6.2	6.2		2.2 2.6	2.4		9.3 8.9	9.1	
				Bottom	7.1	25.5 25.4	25.4	8.6 8.6	8.6	35.0 35.2	35.1	77.2 76.7	77.0	5.2 5.2	5.2	5.2	1.7 1.7	1.7		10.4 10.5	10.5	
G2	Cloudy	Calm	11:04	Surface	1.1	27.4 27.4	27.4	8.7 8.7	8.7	31.2 31.2	31.2	127.6 127.8	127.7	8.5 8.5	8.5	6.8	1.4 1.4	1.4	1.6	6.1 5.9	6.0	10.0
				Middle	5.1	25.5 25.7	25.6	8.5 8.5	8.5	34.9 34.6	34.8	75.1 77.4	76.3	5.1 5.2	5.1		1.8 1.8	1.8		13.0 13.6	13.3	
				Bottom	9.0	25.4 25.3	25.3	8.5 8.5	8.5	35.2 35.4	35.3	73.3 72.9	73.1	4.9 4.9	4.9	4.9	1.7 1.6	1.7		10.8 10.7	10.8	
G3	Cloudy	Calm	11:20	Surface	1.0	27.3 27.2	27.2	8.7 8.7	8.7	31.0 31.0	31.0	127.2 126.6	126.9	8.5 8.5	8.5	8.1	0.6 0.6	0.6	1.1	8.8 8.9	8.9	6.5
				Middle	2.0	27.0 27.2	27.1	8.7 8.7	8.7	31.4 31.1	31.2	112.4 116.1	114.3	7.5 7.8	7.6		0.7 0.6	0.7		6.7 6.6	6.7	
				Bottom	7.0	25.4 25.3	25.4	8.5 8.5	8.5	35.2 35.3	35.2	80.4 78.0	79.2	5.4 5.3	5.3	5.3	2.0 1.9	1.9		4.1 4.0	4.1	
G4	Cloudy	Calm	11:30	Surface	1.1	27.4 27.5	27.4	8.7 8.7	8.7	30.4 30.4	30.4	131.2 132.1	131.7	8.8 8.8	8.8	7.4	0.8 0.8	0.8	1.4	12.4 12.6	12.5	8.9
				Middle	4.0	25.8 25.8	25.8	8.5 8.5	8.5	34.4 34.2	34.3	86.6 95.0	90.8	5.8 6.4	6.1		1.3 1.3	1.3		5.7 5.9	5.8	
				Bottom	7.1	25.6 25.6	25.6	8.5 8.5	8.5	34.7 34.8	34.8	76.0 75.1	75.6	5.1 5.0	5.1	5.1	2.0 2.0	2.0		8.2 8.3	8.3	
M1	Cloudy	Calm	11:08	Surface	1.0	27.5 27.6	27.5	8.7 8.7	8.7	31.1 31.1	31.1	115.5 116.5	116.0	7.7 7.7	7.7	7.2	1.3 1.3	1.3	2.6	7.2 7.4	7.3	9.5
				Middle	3.0	26.8 26.8	26.8	8.6 8.6	8.6	32.4 32.4	32.4	99.0 100.6	99.8	6.6 6.7	6.7		1.5 1.4	1.5		10.1 10.1	10.1	
				Bottom	5.0	25.5 25.5	25.5	8.6 8.5	8.6	34.7 35.0	34.9	71.3 69.8	70.6	4.8 4.7	4.7	4.7	4.6 5.6	5.1		11.1 11.3	11.2	
M2	Cloudy	Calm	11:00	Surface	1.0	27.4 27.4	27.4	8.7 8.7	8.7	31.4 31.4	31.4	127.8 128.3	128.1	8.5 8.5	8.5	7.2	1.1 1.1	1.1	1.3	10.1 10.3	10.2	7.2
				Middle	5.5	25.8 25.8	25.8	8.5 8.5	8.5	33.8 33.2	33.5	84.1 89.6	86.9	5.7 6.1	5.9		1.4 1.3	1.4		5.8 6.0	5.9	
				Bottom	10.0	25.3 25.2	25.2	8.5 8.5	8.5	35.4 35.5	35.5	74.6 73.4	74.0	5.0 4.9	5.0	5.0	1.5 1.5	1.5		5.6 5.6	5.6	
M3	Cloudy	Calm	11:22	Surface	1.1	27.5 27.5	27.5	8.7 8.7	8.7	30.4 30.5	30.5	118.9 122.2	120.6	7.9 8.2	8.0	7.4	1.6 1.5	1.5	1.6	3.7 3.6	3.7	6.9
				Middle	4.0	26.3 26.1	26.2	8.5 8.5	8.5	33.2 33.7	33.4	97.0 107.7	102.4	6.5 7.2	6.9		1.4 1.3	1.4		6.3 6.4	6.4	
				Bottom	7.1	25.8 25.7	25.7	8.5 8.5	8.5	34.3 34.5	34.4	79.4 78.0	78.7	5.3 5.2	5.3	5.3	2.0 2.0	2.0		10.6 10.5	10.6	
M4	Cloudy	Calm	10:55	Surface	1.0	27.2 27.2	27.2	8.7 8.7	8.7	31.2 31.3	31.3	118.7 119.2	119.0	7.9 7.9	7.9	6.6	2.3 2.2	2.2	2.1	5.5 5.6	5.6	9.3
				Middle	5.0	25.9 25.9	25.9	8.6 8.6	8.6	34.1 34.1	34.1	79.5 80.4	80.0	5.3 5.4	5.4		2.2 2.1	2.2		13.2 13.0	13.1	
				Bottom	9.0	25.4 25.4	25.4	8.5 8.5	8.5	35.1 35.1	35.1	73.0 73.0	73.0	4.9 4.9	4.9	4.9	1.9 2.0	2.0		9.2 9.2	9.2	
M5	Cloudy	Calm	11:42	Surface	1.0	27.3 27.3	27.3	8.7 8.7	8.7	30.8 30.8	30.8	121.7 122.1	121.9	8.1 8.2	8.1	6.7	1.4 1.4	1.4	2.0	5.5 5.6	5.6	7.4
				Middle	5.5	25.6 25.6	25.6	8.5 8.5	8.5	34.8 34.8	34.8	77.7 78.8	78.3	5.2 5.3	5.3		1.9 1.5	1.7		6.4 6.4	6.4	
				Bottom	10.0	25.2 25.1	25.2	8.5 8.5	8.5	35.5 35.5	35.5	71.9 71.6	71.8	4.8 4.8	4.8	4.8	2.9 2.8	2.8		10.1 10.3	10.2	
M6	Cloudy	Calm	11:38	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.6	- -	-	1.0	- -	-	8.9
				Middle	2.2	27.5 27.5	27.5	8.7 8.7	8.7	30.6 30.6	30.6	129.4 129.6	129.5	8.6 8.6	8.6		0.9 1.1	1.0		9.1 8.7	8.9	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 10 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.2 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.5 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 15.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 16.8 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 15.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 16.8 mg/L***
	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 ***C1: 9.4 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 10.1 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 12 June 2019

(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	Moderate	09:04	Surface	1.1	26.4 26.4	26.4	8.6 8.6	8.6	30.9 30.9	30.9	89.8 89.7	89.8	6.1 6.1	6.1	5.3	1.7 1.6	1.7	2.5	7.0 6.9	7.0	6.4
				Middle	9.1	25.0 25.0	25.0	8.5 8.5	8.5	35.3 35.3	35.3	66.0 65.9	66.0	4.5 4.5	4.5		2.0 2.0	2.0		7.1 7.0	7.1	
				Bottom	17.1	24.7 24.7	24.7	8.5 8.4	8.4	35.8 35.8	35.8	63.5 63.2	63.4	4.3 4.3	4.3	4.3	3.8 3.7	3.8		5.3 5.2	5.3	
C2	Cloudy	Moderate	09:12	Surface	1.0	26.4 26.4	26.4	8.5 8.5	8.5	30.9 30.8	30.9	86.7 87.3	87.0	5.9 5.9	5.9	5.1	1.5 1.5	1.5	2.8	7.2 7.1	7.2	6.3
				Middle	16.2	25.0 25.0	25.0	8.4 8.4	8.4	35.3 35.3	35.3	65.0 65.2	65.1	4.4 4.4	4.4		2.2 2.3	2.3		4.3 4.2	4.3	
				Bottom	31.0	24.7 24.7	24.7	8.4 8.4	8.4	35.8 35.8	35.8	63.1 63.0	63.1	4.3 4.3	4.3	4.3	4.5 4.6	4.5		7.7 7.4	7.6	
G1	Cloudy	Moderate	08:39	Surface	1.0	26.2 26.2	26.2	8.7 8.7	8.7	31.6 31.7	31.7	84.0 83.4	83.7	5.7 5.6	5.7	5.3	1.7 1.5	1.6	1.6	5.5 5.6	5.6	5.5
				Middle	4.1	25.8 25.6	25.7	8.6 8.6	8.6	33.3 33.9	33.6	72.4 71.5	72.0	4.9 4.8	4.9		1.6 1.5	1.6		6.1 6.2	6.2	
				Bottom	7.1	25.3 25.3	25.3	8.6 8.5	8.5	35.0 35.0	35.0	63.4 62.8	63.1	4.3 4.2	4.3	4.3	1.7 1.6	1.7		4.7 4.7	4.7	
G2	Cloudy	Moderate	08:31	Surface	1.1	26.0 26.0	26.0	8.6 8.6	8.6	32.2 32.1	32.2	82.8 83.0	82.9	5.6 5.6	5.6	5.2	0.5 0.6	0.5	0.9	7.5 7.3	7.4	5.7
				Middle	5.0	25.5 25.5	25.5	8.6 8.6	8.6	34.1 34.1	34.1	72.2 71.9	72.1	4.9 4.9	4.9		1.0 1.0	1.0		4.5 4.4	4.5	
				Bottom	9.1	25.1 24.9	25.0	8.6 8.6	8.6	35.1 35.5	35.3	66.2 65.6	65.9	4.5 4.4	4.5	4.5	1.2 1.3	1.2		5.2 5.3	5.3	
G3	Cloudy	Moderate	08:43	Surface	1.1	26.3 26.2	26.3	8.6 8.6	8.6	31.2 31.5	31.4	87.8 86.3	87.1	6.0 5.8	5.9	5.3	2.1 2.0	2.0	2.4	6.1 6.2	6.2	5.6
				Middle	4.1	25.7 25.5	25.6	8.6 8.6	8.6	34.3 34.4	34.3	69.5 68.4	69.0	4.7 4.6	4.6		2.6 2.8	2.7		5.7 5.8	5.8	
				Bottom	7.1	25.3 25.3	25.3	8.5 8.5	8.5	34.9 35.1	35.0	61.7 60.3	61.0	4.2 4.1	4.1	4.1	2.3 2.5	2.4		4.9 5.0	5.0	
G4	Cloudy	Moderate	08:51	Surface	1.1	26.4 26.3	26.4	8.7 8.7	8.7	31.8 31.8	31.8	88.1 87.5	87.8	5.9 5.9	5.9	5.3	1.4 1.6	1.5	1.5	5.8 5.8	5.8	6.2
				Middle	4.1	25.3 25.3	25.3	8.6 8.6	8.6	34.7 34.7	34.7	71.2 69.7	70.5	4.8 4.7	4.8		1.3 1.2	1.2		6.5 6.5	6.5	
				Bottom	7.1	25.3 25.2	25.2	8.5 8.4	8.4	35.1 35.2	35.1	53.7 53.6	53.7	3.6 3.6	3.6	3.6	1.7 1.8	1.7		6.2 6.3	6.3	
M1	Cloudy	Moderate	08:35	Surface	1.1	26.3 26.2	26.2	8.7 8.6	8.7	31.6 31.7	31.6	83.9 82.0	83.0	5.7 5.5	5.6	5.4	1.3 1.2	1.2	1.2	4.6 4.5	4.6	6.1
				Middle	3.0	26.2 26.0	26.1	8.6 8.6	8.6	31.9 32.5	32.2	77.1 75.3	76.2	5.2 5.1	5.2		1.1 1.2	1.2		8.9 8.9	8.9	
				Bottom	5.0	25.7 25.6	25.7	8.6 8.6	8.6	33.4 33.8	33.6	70.7 70.1	70.4	4.8 4.7	4.8	4.8	1.2 1.3	1.3		4.9 4.9	4.9	
M2	Cloudy	Moderate	08:28	Surface	1.1	26.3 26.3	26.3	8.8 8.8	8.8	31.0 30.9	31.0	91.6 92.1	91.9	6.2 6.2	6.2	5.8	1.6 1.6	1.6	1.8	5.4 5.3	5.4	6.6
				Middle	6.0	25.9 25.7	25.8	8.7 8.7	8.7	32.7 33.4	33.1	80.1 79.0	79.6	5.4 5.3	5.4		1.3 1.5	1.4		6.2 6.2	6.2	
				Bottom	11.0	25.0 24.9	25.0	8.6 8.6	8.6	35.3 35.6	35.4	65.7 64.9	65.3	4.4 4.4	4.4	4.4	2.2 2.5	2.4		8.1 8.5	8.3	
M3	Cloudy	Moderate	08:46	Surface	1.1	26.2 26.2	26.2	8.6 8.6	8.6	31.9 31.8	31.9	81.5 83.0	82.3	5.5 5.6	5.6	5.1	1.2 1.2	1.2	1.1	11.3 11.7	11.5	9.5
				Middle	4.1	25.7 25.5	25.6	8.6 8.5	8.6	33.5 34.4	33.9	68.9 67.1	68.0	4.7 4.5	4.6		1.0 1.0	1.0		9.6 9.6	9.6	
				Bottom	7.0	25.4 25.3	25.4	8.5 8.5	8.5	34.9 35.0	34.9	60.1 60.0	60.1	4.1 4.0	4.0	4.0	1.0 1.1	1.1		7.2 7.3	7.3	
M4	Cloudy	Moderate	08:22	Surface	1.1	26.2 26.3	26.2	9.0 9.0	9.0	31.5 31.3	31.4	89.1 90.8	90.0	6.0 6.2	6.1	5.5	1.4 1.4	1.4	1.0	7.3 7.5	7.4	6.8
				Middle	5.1	25.5 25.5	25.5	8.8 8.8	8.8	33.9 34.1	34.0	74.5 72.4	73.5	5.0 4.9	5.0		0.6 0.5	0.5		5.6 5.8	5.7	
				Bottom	9.1	25.2 25.2	25.2	8.7 8.7	8.7	34.8 34.8	34.8	67.7 67.7	67.7	4.6 4.6	4.6	4.6	1.1 1.2	1.1		7.3 7.5	7.4	
M5	Cloudy	Moderate	08:59	Surface	1.1	26.5 26.1	26.3	8.7 8.7	8.7	31.4 31.8	31.6	91.8 91.0	91.4	6.2 6.2	6.2	5.5	1.4 1.3	1.3	1.4	5.6 5.8	5.7	7.5
				Middle	6.6	25.1 25.0	25.0	8.6 8.6	8.6	35.3 35.3	35.3	71.2 70.1	70.7	4.8 4.7	4.8		1.1 1.0	1.1		12.2 12.7	12.5	
				Bottom	12.0	24.9 24.9	24.9	8.5 8.5	8.5	35.5 35.5	35.5	65.2 65.1	65.2	4.4 4.4	4.4	4.4	2.0 1.7	1.8		4.5 4.4	4.5	
M6	Cloudy	Moderate	08:54	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.4	- -	-	2.2	- -	-	6.8
				Middle	2.2	26.0 26.0	26.0	8.6 8.6	8.6	32.6 32.5	32.5	79.1 79.7	79.4	5.3 5.4	5.4		2.2 2.2	2.2		6.7 6.9	6.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 12 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.9 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 8.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 9.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 8.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 9.3 mg/L***
	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 ***C2: 0.0 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 0.0 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 12 June 2019

(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	14:49	Surface	1.1	26.2 26.3	26.3	8.6 8.7	8.6	32.0 31.6	31.8	101.8 109.3	105.6	6.9 7.4	7.1	6.1	1.7 1.7	1.7	1.6	4.6 4.7	4.7	4.9
				Middle	9.0	25.5 25.7	25.6	8.5 8.5	8.5	34.0 33.5	33.8	73.3 75.7	74.5	5.0 5.1	5.0		1.4 1.4	1.4		4.6 4.5	4.6	
				Bottom	17.1	25.0 24.7	24.8	8.5 8.5	8.5	35.3 35.8	35.6	65.7 65.2	65.5	4.4 4.4	4.4	4.4	1.9 1.8	1.8		5.5 5.6	5.6	
C2	Cloudy	Moderate	14:55	Surface	1.1	26.7 26.7	26.7	8.7 8.6	8.7	30.9 30.9	30.9	109.8 107.6	108.7	7.4 7.3	7.3	5.9	1.8 1.7	1.7	1.7	5.9 5.9	5.9	6.6
				Middle	16.0	25.1 24.9	25.0	8.5 8.4	8.5	35.1 35.5	35.3	69.1 65.8	67.5	4.7 4.5	4.6		1.2 1.3	1.2		4.6 4.6	4.6	
				Bottom	31.0	24.8 24.8	24.8	8.5 8.4	8.4	35.6 35.6	35.6	65.9 64.8	65.4	4.5 4.4	4.4	4.4	2.0 1.9	2.0		9.1 9.2	9.2	
G1	Cloudy	Moderate	14:27	Surface	1.0	26.2 25.5	25.8	8.6 8.5	8.5	32.1 34.1	33.1	88.4 74.7	81.6	6.0 5.0	5.5	5.0	2.7 2.6	2.6	2.2	5.4 5.4	5.4	5.1
				Middle	4.1	25.7 25.6	25.7	8.5 8.5	8.5	33.7 33.9	33.8	67.2 66.7	67.0	4.5 4.5	4.5		2.2 2.0	2.1		5.5 5.7	5.6	
				Bottom	7.0	25.2 25.2	25.2	8.5 8.5	8.5	35.2 35.1	35.1	64.3 64.2	64.3	4.3 4.3	4.3	4.3	1.8 1.7	1.8		4.3 4.4	4.4	
G2	Cloudy	Moderate	14:16	Surface	1.1	26.1 26.3	26.2	8.5 8.6	8.5	32.3 31.9	32.1	84.7 88.4	86.6	5.7 6.0	5.8	5.2	2.0 2.1	2.0	2.0	6.2 6.4	6.3	6.0
				Middle	5.0	25.3 25.3	25.3	8.5 8.5	8.5	34.8 34.8	34.8	68.8 69.3	69.1	4.6 4.7	4.7		2.0 2.0	2.0		5.4 5.5	5.5	
				Bottom	9.0	24.9 25.0	25.0	8.5 8.5	8.5	35.5 35.4	35.4	65.6 66.1	65.9	4.4 4.5	4.5	4.5	1.9 2.0	2.0		6.2 6.3	6.3	
G3	Cloudy	Moderate	14:30	Surface	1.1	26.1 25.7	25.9	8.5 8.5	8.5	33.0 33.5	33.2	79.4 70.5	75.0	5.3 4.8	5.1	4.8	2.1 2.1	2.1	2.2	7.0 7.2	7.1	5.9
				Middle	4.1	25.6 25.6	25.6	8.5 8.5	8.5	33.8 33.8	33.8	68.7 67.1	67.9	4.6 4.5	4.6		2.1 2.0	2.0		5.9 6.1	6.0	
				Bottom	7.1	25.3 25.4	25.3	8.5 8.5	8.5	35.0 34.5	34.7	61.9 65.2	63.6	4.2 4.4	4.3	4.3	2.2 1.9	2.1		4.4 4.5	4.5	
G4	Cloudy	Moderate	14:36	Surface	1.0	25.9 26.2	26.1	8.5 8.5	8.5	33.2 32.5	32.9	82.3 85.8	84.1	5.5 5.8	5.7	5.1	3.0 3.1	3.1	4.1	5.6 5.6	5.6	6.5
				Middle	4.0	25.2 25.5	25.4	8.5 8.5	8.5	35.0 34.3	34.7	64.5 69.2	66.9	4.4 4.7	4.5		5.6 5.8	5.7		7.4 7.3	7.4	
				Bottom	7.0	25.0 25.0	25.0	8.4 8.4	8.4	35.4 35.4	35.4	62.5 63.5	63.0	4.2 4.3	4.3	4.3	3.6 3.6	3.6		6.6 6.3	6.5	
M1	Cloudy	Moderate	14:23	Surface	1.1	25.6 25.8	25.7	8.5 8.5	8.5	34.0 33.5	33.7	68.7 71.1	69.9	4.6 4.8	4.7	4.7	2.1 1.9	2.0	1.9	3.6 3.7	3.7	5.0
				Middle	3.0	25.5 25.9	25.7	8.5 8.5	8.5	34.3 33.4	33.8	65.8 71.1	68.5	4.4 4.8	4.6		1.5 1.6	1.5		5.5 5.3	5.4	
				Bottom	5.0	25.4 25.6	25.5	8.5 8.5	8.5	34.7 34.2	34.4	63.2 65.4	64.3	4.3 4.4	4.3	4.3	2.0 2.1	2.1		5.8 6.1	6.0	
M2	Cloudy	Moderate	14:13	Surface	1.1	26.2 26.0	26.1	8.6 8.5	8.6	32.1 32.8	32.4	89.9 80.1	85.0	6.1 5.4	5.7	5.2	2.1 1.9	2.0	1.7	4.1 4.2	4.2	5.7
				Middle	6.0	25.1 25.3	25.2	8.5 8.5	8.5	35.2 34.9	35.0	69.5 67.9	68.7	4.7 4.6	4.6		1.1 1.0	1.1		5.2 5.3	5.3	
				Bottom	10.9	24.9 24.9	24.9	8.5 8.5	8.5	35.6 35.6	35.6	65.4 64.8	65.1	4.4 4.4	4.4	4.4	2.1 2.0	2.0		7.7 7.8	7.8	
M3	Cloudy	Moderate	14:32	Surface	1.1	25.9 25.9	25.9	8.5 8.5	8.5	33.1 32.8	33.0	79.6 77.1	78.4	5.4 5.2	5.3	4.9	1.9 2.0	2.0	2.6	3.7 3.7	3.7	4.0
				Middle	4.0	25.6 25.4	25.5	8.5 8.5	8.5	34.0 34.6	34.3	67.0 64.9	66.0	4.5 4.4	4.4		2.4 2.4	2.4		3.4 3.6	3.5	
				Bottom	7.0	25.2 25.1	25.2	8.4 8.4	8.4	35.1 35.4	35.2	59.9 58.9	59.4	4.0 4.0	4.0	4.0	3.3 3.3	3.3		4.9 4.9	4.9	
M4	Cloudy	Moderate	14:08	Surface	1.0	26.9 26.9	26.9	8.8 8.8	8.8	30.2 30.3	30.2	115.9 114.1	115.0	7.8 7.7	7.7	6.9	2.1 2.1	2.1	1.9	5.0 5.0	5.0	5.0
				Middle	5.0	26.0 26.2	26.1	8.8 8.6	8.7	32.8 32.1	32.5	89.4 88.9	89.2	6.0 6.0	6.0		0.9 0.8	0.8		4.2 4.4	4.3	
				Bottom	9.0	25.4 25.4	25.4	8.7 8.7	8.7	34.3 34.3	34.3	71.9 72.1	72.0	4.9 4.9	4.9	4.9	2.6 2.6	2.6		5.6 5.7	5.7	
M5	Cloudy	Moderate	14:44	Surface	1.1	26.4 26.4	26.4	8.6 8.6	8.6	31.5 31.5	31.5	105.5 105.8	105.7	7.1 7.1	7.1	6.0	1.9 1.9	1.9	1.6	4.8 4.8	4.8	4.6
				Middle	6.0	25.0 25.2	25.1	8.5 8.5	8.5	35.1 34.7	34.9	69.8 72.8	71.3	4.7 4.9	4.8		1.6 1.5	1.5		5.0 4.9	5.0	
				Bottom	11.1	24.8 25.0	24.9	8.5 8.5	8.5	35.6 35.2	35.4	65.5 66.8	66.2	4.4 4.5	4.5	4.5	1.3 1.3	1.3		4.0 4.1	4.1	
M6	Cloudy	Moderate	14:40	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.3	- -	-	1.3	- -	-	9.0
				Middle	2.1	25.9 25.9	25.9	8.5 8.5	8.5	33.3 33.1	33.2	78.8 78.8	78.8	5.3 5.3	5.3		1.3 1.3	1.3		8.8 9.2	9.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 12 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.2 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.4 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.0 mg/L***
	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 ***C1: 6.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.2 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.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 14 June 2019

(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	Fine	Calm	11:01	Surface	1.1	27.1 27.0	27.1	8.8 8.7	8.7	31.4 31.5	31.5	111.5 102.5	107.0	7.4 6.9	7.1	6.0	2.3 2.1	2.2	2.0	8.0 8.1	8.1	5.9
				Middle	9.1	25.8 25.3	25.5	8.6 8.6	8.6	34.0 35.1	34.5	75.1 68.4	71.8	5.1 4.6	4.8		1.3 1.4	1.3		3.7 3.7	3.7	
				Bottom	17.1	25.3 25.1	25.2	8.6 8.6	8.6	35.1 35.6	35.3	71.4 68.1	69.8	4.8 4.6	4.7	4.7	2.3 2.3	2.3		5.8 5.9	5.9	
C2	Fine	Calm	10:04	Surface	1.1	27.0 27.3	27.2	9.0 8.8	8.9	30.9 30.7	30.8	107.0 112.9	110.0	7.2 7.5	7.4	5.9	1.6 2.0	1.8	4.0	10.3 10.6	10.5	7.1
				Middle	16.1	25.1 25.2	25.2	8.7 8.5	8.6	35.1 34.7	34.9	65.4 65.4	65.4	4.4 4.4	4.4		4.3 4.4	4.4		5.1 5.4	5.3	
				Bottom	31.2	25.1 25.1	25.1	8.6 8.6	8.6	35.2 35.2	35.2	64.3 64.1	64.2	4.4 4.3	4.3	4.3	5.7 6.0	5.9		5.6 5.6	5.6	
G1	Fine	Calm	10:30	Surface	1.0	27.4 27.5	27.4	8.8 8.8	8.8	30.8 30.6	30.7	114.6 111.7	113.2	7.6 7.4	7.5	6.3	2.8 2.8	2.8	3.8	9.9 10.2	10.1	9.1
				Middle	4.0	25.7 25.5	25.6	8.7 8.6	8.7	33.3 34.1	33.7	79.1 69.5	74.3	5.4 4.7	5.0		3.7 4.2	3.9		12.1 12.6	12.4	
				Bottom	7.1	25.5 25.3	25.4	8.7 8.7	8.7	34.1 34.5	34.3	67.1 65.3	66.2	4.5 4.4	4.5	4.5	4.6 5.1	4.8		4.7 4.8	4.8	
G2	Fine	Calm	10:19	Surface	1.0	27.4 27.3	27.4	8.8 8.8	8.8	30.8 31.5	31.2	120.4 106.6	113.5	8.0 7.1	7.6	6.4	3.2 3.1	3.2	2.8	2.0 2.0	2.0	3.0
				Middle	5.1	25.8 25.5	25.6	8.6 8.6	8.6	32.7 34.0	33.4	85.2 71.4	78.3	5.8 4.8	5.3		2.3 2.7	2.5		3.0 2.9	3.0	
				Bottom	9.1	25.6 25.3	25.4	8.6 8.6	8.6	34.0 34.7	34.4	70.1 67.7	68.9	4.7 4.6	4.7	4.7	2.6 2.6	2.6		3.8 4.0	3.9	
G3	Fine	Calm	10:35	Surface	1.0	27.9 27.9	27.9	8.8 8.8	8.8	30.0 29.2	29.6	122.5 119.4	121.0	8.1 8.0	8.0	6.8	4.5 4.5	4.5	3.9	7.4 7.1	7.3	8.1
				Middle	4.0	25.9 26.2	26.0	8.7 8.7	8.7	32.3 32.1	32.2	83.3 80.6	82.0	5.6 5.4	5.5		3.7 3.6	3.7		11.2 11.0	11.1	
				Bottom	7.1	25.8 25.4	25.6	8.7 8.6	8.6	33.3 34.3	33.8	66.4 62.5	64.5	4.5 4.2	4.4	4.4	3.5 3.3	3.4		6.1 6.0	6.1	
G4	Fine	Calm	10:44	Surface	1.1	27.5 27.7	27.6	8.8 8.8	8.8	30.8 30.9	30.8	121.3 122.7	122.0	8.1 8.1	8.1	6.5	2.4 2.3	2.3	2.2	6.7 6.9	6.8	8.0
				Middle	4.1	25.7 25.7	25.7	8.6 8.6	8.6	33.1 33.6	33.3	75.7 68.1	71.9	5.1 4.6	4.9		1.6 1.7	1.6		6.7 6.8	6.8	
				Bottom	7.2	25.5 25.4	25.5	8.6 8.6	8.6	34.1 34.3	34.2	64.1 63.5	63.8	4.3 4.3	4.3	4.3	2.6 2.7	2.7		10.2 10.6	10.4	
M1	Fine	Calm	10:25	Surface	1.0	27.7 26.8	27.2	8.9 8.8	8.9	30.5 31.7	31.1	119.2 101.8	110.5	7.9 6.8	7.4	6.5	2.1 2.2	2.1	2.2	6.4 6.7	6.6	8.5
				Middle	3.1	27.0 26.0	26.5	8.7 8.7	8.7	31.4 32.9	32.2	88.5 77.1	82.8	5.9 5.2	5.6		2.2 2.1	2.2		7.8 7.6	7.7	
				Bottom	5.1	26.1 25.7	25.9	8.7 8.7	8.7	32.9 33.6	33.2	75.5 69.3	72.4	5.1 4.7	4.9	4.9	2.2 2.3	2.2		11.3 11.1	11.2	
M2	Fine	Calm	10:14	Surface	1.1	27.6 26.7	27.1	9.0 8.8	8.9	30.6 31.6	31.1	110.2 110.2	110.2	7.4 7.4	7.4	6.5	2.2 2.1	2.1	2.6	7.8 7.8	7.8	7.4
				Middle	6.0	25.8 25.8	25.8	8.8 8.6	8.7	33.1 33.4	33.2	87.7 78.1	82.9	5.9 5.3	5.6		2.7 3.0	2.8		6.9 7.0	7.0	
				Bottom	11.1	25.5 25.2	25.3	8.7 8.6	8.7	34.1 34.9	34.5	71.2 66.7	69.0	4.8 4.5	4.7	4.7	2.9 3.0	2.9		7.4 7.4	7.4	
M3	Fine	Calm	10:39	Surface	1.1	27.2 26.8	27.0	8.8 8.7	8.7	29.7 30.1	29.9	103.9 95.2	99.6	7.0 6.4	6.7	6.2	3.6 3.6	3.6	3.7	8.1 8.0	8.1	9.1
				Middle	4.0	27.0 25.9	26.5	8.8 8.6	8.7	30.4 32.8	31.6	94.3 76.7	85.5	6.3 5.2	5.8		3.8 3.9	3.8		8.0 7.8	7.9	
				Bottom	7.1	25.8 25.5	25.6	8.6 8.6	8.6	33.4 33.9	33.7	69.8 62.6	66.2	4.7 4.2	4.5	4.5	3.8 3.6	3.7		11.3 11.4	11.4	
M4	Fine	Calm	10:10	Surface	1.1	27.6 27.4	27.5	8.9 8.9	8.9	30.5 30.6	30.6	129.7 128.3	129.0	8.6 8.6	8.6	7.7	2.6 2.8	2.7	2.2	7.1 7.1	7.1	6.7
				Middle	5.0	27.2 26.6	26.9	8.9 8.8	8.9	30.9 31.9	31.4	101.0 101.0	101.0	6.8 6.8	6.8		2.1 2.0	2.1		6.2 6.1	6.2	
				Bottom	9.1	26.4 26.3	26.4	8.8 8.8	8.8	32.3 32.4	32.3	98.1 96.4	97.3	6.6 6.5	6.5	6.5	1.7 1.8	1.8		6.9 6.8	6.9	
M5	Fine	Calm	10:57	Surface	1.0	27.1 27.1	27.1	8.8 8.7	8.7	31.2 31.5	31.3	114.5 105.5	110.0	7.7 7.0	7.3	6.1	1.3 1.3	1.3	2.3	7.2 7.0	7.1	5.3
				Middle	5.6	25.4 25.2	25.3	8.6 8.6	8.6	33.9 34.7	34.3	75.7 65.7	70.7	5.1 4.4	4.8		2.4 2.1	2.3		5.2 5.1	5.2	
				Bottom	10.0	25.2 25.1	25.2	8.6 8.6	8.6	34.8 35.1	34.9	67.1 66.0	66.6	4.5 4.5	4.5	4.5	3.4 3.4	3.4		3.8 3.7	3.8	
M6	Fine	Calm	10:51	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.5	- -	-	1.4	- -	-	4.3
				Middle	2.3	27.9 27.7	27.8	8.8 8.8	8.8	30.7 30.8	30.7	118.0 108.9	113.5	7.8 7.2	7.5		1.4 1.3	1.4		4.2 4.3	4.3	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 14 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 7.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 7.6 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 12.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 13.6 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 12.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 13.6 mg/L***
	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 ***C2: 6.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 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 14 June 2019

(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	Fine	Calm	16:30	Surface	1.1	27.1 27.0	27.1	8.8 8.7	8.7	31.4 31.5	31.5	111.6 103.9	107.8	7.4 6.9	7.2	6.0	2.3 2.3	2.3	3.1	4.6 4.8	4.7	4.6
				Middle	9.1	25.6 25.4	25.5	8.6 8.6	8.6	34.4 35.0	34.7	74.2 69.4	71.8	5.0 4.7	4.8		2.1 2.1	2.1		3.8 3.8	3.8	
				Bottom	17.3	25.2 25.1	25.1	8.6 8.6	8.6	35.3 35.6	35.4	70.4 67.4	68.9	4.8 4.5	4.6	4.6	4.9 4.7	4.8		5.5 5.3	5.4	
C2	Fine	Calm	15:32	Surface	1.1	27.1 27.3	27.2	9.0 8.8	8.9	30.9 30.7	30.8	107.4 114.0	110.7	7.2 7.6	7.4	5.9	2.0 2.0	2.0	3.4	6.9 6.7	6.8	4.6
				Middle	16.1	25.1 25.3	25.2	8.6 8.6	8.6	35.1 34.6	34.8	65.2 66.1	65.7	4.4 4.5	4.4		2.3 2.1	2.2		3.5 3.4	3.5	
				Bottom	31.1	25.1 25.1	25.1	8.6 8.6	8.6	35.2 35.2	35.2	64.3 64.1	64.2	4.4 4.3	4.3	4.3	5.8 5.9	5.9		3.4 3.5	3.5	
G1	Fine	Calm	15:58	Surface	1.1	27.4 27.5	27.4	8.8 8.8	8.8	30.8 30.6	30.7	114.6 115.3	115.0	7.6 7.7	7.7	6.3	2.8 2.7	2.7	3.8	2.6 2.7	2.7	3.9
				Middle	4.1	25.7 25.6	25.6	8.7 8.6	8.7	33.7 33.8	33.8	77.0 70.6	73.8	5.2 4.8	5.0		3.7 3.7	3.7		3.8 3.7	3.8	
				Bottom	7.0	25.4 25.3	25.4	8.7 8.6	8.7	34.3 34.5	34.4	66.1 64.4	65.3	4.5 4.4	4.4	4.4	4.6 5.1	4.8		5.2 5.3	5.3	
G2	Fine	Calm	15:47	Surface	1.0	27.4 27.4	27.4	8.8 8.8	8.8	30.8 31.1	31.0	120.0 110.9	115.5	8.0 7.4	7.7	6.4	3.3 3.0	3.1	2.6	8.4 8.4	8.4	7.1
				Middle	5.1	25.8 25.6	25.7	8.6 8.6	8.6	33.4 33.9	33.7	78.8 71.1	75.0	5.3 4.8	5.1		1.7 1.9	1.8		5.4 5.2	5.3	
				Bottom	9.0	25.3 25.2	25.3	8.6 8.6	8.6	34.6 34.8	34.7	69.1 67.0	68.1	4.7 4.5	4.6	4.6	2.7 2.7	2.7		7.4 7.5	7.5	
G3	Fine	Calm	16:03	Surface	1.2	27.8 27.9	27.9	8.8 8.8	8.8	30.2 29.3	29.7	121.4 121.0	121.2	8.1 8.1	8.1	6.8	3.7 3.4	3.6	3.6	4.3 4.3	4.3	6.2
				Middle	4.0	26.1 26.2	26.1	8.7 8.7	8.7	32.5 32.0	32.2	85.6 80.4	83.0	5.8 5.4	5.6		3.3 2.9	3.1		8.4 8.6	8.5	
				Bottom	7.1	25.6 25.3	25.4	8.6 8.6	8.6	33.9 34.4	34.2	64.3 61.1	62.7	4.3 4.1	4.2	4.2	4.0 4.2	4.1		5.7 5.7	5.7	
G4	Fine	Calm	16:13	Surface	1.1	27.5 27.7	27.6	8.8 8.8	8.8	30.7 30.7	30.7	121.5 124.4	123.0	8.1 8.3	8.2	6.4	2.0 2.1	2.0	3.5	9.4 9.1	9.3	7.3
				Middle	4.1	25.7 25.7	25.7	8.6 8.6	8.6	33.5 33.6	33.5	72.1 68.0	70.1	4.9 4.6	4.7		3.4 3.0	3.2		6.5 6.4	6.5	
				Bottom	7.1	25.4 25.4	25.4	8.6 8.6	8.6	34.4 34.3	34.4	63.4 63.0	63.2	4.3 4.3	4.3	4.3	5.4 5.3	5.4		6.0 6.1	6.1	
M1	Fine	Calm	15:54	Surface	1.1	27.7 27.2	27.4	8.9 8.8	8.9	30.5 31.1	30.8	120.0 109.8	114.9	8.0 7.3	7.7	6.5	2.6 2.7	2.7	2.5	4.4 4.7	4.6	5.7
				Middle	3.0	26.5 26.2	26.3	8.7 8.7	8.7	32.2 32.6	32.4	82.6 78.5	80.6	5.5 5.3	5.4		2.2 2.3	2.3		6.6 6.5	6.6	
				Bottom	5.1	25.8 25.7	25.8	8.7 8.7	8.7	33.3 33.6	33.5	74.1 68.5	71.3	5.0 4.6	4.8	4.8	2.5 2.4	2.4		5.9 5.9	5.9	
M2	Fine	Calm	15:43	Surface	1.0	27.5 26.5	27.0	9.0 8.7	8.9	30.7 31.8	31.2	99.4 99.4	99.4	6.7 6.7	6.7	6.1	2.4 2.6	2.5	2.6	4.6 4.7	4.7	4.7
				Middle	6.1	25.8 25.8	25.8	8.8 8.6	8.7	33.2 33.4	33.3	83.4 78.8	81.1	5.6 5.3	5.5		1.9 1.9	1.9		2.8 2.8	2.8	
				Bottom	11.0	25.2 25.2	25.2	8.7 8.6	8.6	34.8 35.0	34.9	67.8 65.9	66.9	4.6 4.5	4.5	4.5	3.5 3.3	3.4		6.7 6.7	6.7	
M3	Fine	Calm	16:07	Surface	1.1	27.3 26.9	27.1	8.8 8.7	8.8	29.6 30.1	29.9	104.5 94.9	99.7	7.0 6.4	6.7	6.1	3.5 3.6	3.5	3.6	2.4 2.4	2.4	4.3
				Middle	4.1	26.8 26.2	26.5	8.8 8.6	8.7	31.1 32.3	31.7	86.4 77.7	82.1	5.8 5.2	5.5		3.6 3.9	3.7		4.4 4.4	4.4	
				Bottom	7.1	25.6 25.5	25.6	8.6 8.6	8.6	33.8 33.9	33.9	65.6 63.2	64.4	4.4 4.3	4.4	4.4	3.8 3.6	3.7		6.1 6.2	6.2	
M4	Fine	Calm	15:38	Surface	1.0	27.7 27.6	27.6	8.9 8.9	8.9	30.4 30.5	30.4	131.1 129.4	130.3	8.7 8.6	8.7	7.6	2.8 2.8	2.8	2.1	4.8 4.8	4.8	5.0
				Middle	5.1	27.3 26.5	26.9	8.9 8.8	8.9	30.8 32.2	31.5	97.0 97.0	97.0	6.5 6.5	6.5		1.6 1.6	1.6		3.8 3.9	3.9	
				Bottom	9.2	26.3 26.3	26.3	8.8 8.8	8.8	32.4 32.5	32.4	98.5 91.5	95.0	6.6 6.2	6.4	6.4	1.8 1.8	1.8		6.4 6.4	6.4	
M5	Fine	Calm	16:25	Surface	1.1	27.1 27.1	27.1	8.8 8.7	8.7	31.2 31.2	31.2	114.7 106.9	110.8	7.7 7.1	7.4	6.1	1.3 1.5	1.4	1.8	5.5 5.7	5.6	5.9
				Middle	6.2	25.4 25.3	25.3	8.6 8.6	8.6	34.3 34.6	34.5	74.0 66.6	70.3	5.0 4.5	4.8		1.5 1.8	1.6		8.0 8.1	8.1	
				Bottom	11.0	25.2 25.1	25.1	8.6 8.6	8.6	34.9 35.2	35.1	66.4 65.1	65.8	4.5 4.4	4.4	4.4	2.4 2.6	2.5		4.1 4.1	4.1	
M6	Fine	Calm	16:19	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.3	- -	-	1.6	- -	-	7.6
				Middle	2.3	27.8 27.5	27.7	8.8 8.8	8.8	30.7 31.0	30.8	117.4 103.4	110.4	7.8 6.9	7.3		1.7 1.5	1.6		7.6 7.5	7.6	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 14 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.8 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 6.3 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.1 mg/L***
	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 ***C1: 6.5 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 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 17 June 2019

(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	Moderate	12:47	Surface	1.0	29.7 29.8	29.7	8.9 8.9	8.9	32.4 32.3	32.4	105.6 105.4	105.5	7.1 7.0	7.0	6.8	1.7 1.9	1.8	1.9	6.3 6.5	6.4	5.6
				Middle	8.9	29.5 29.5	29.5	8.9 8.8	8.8	32.4 32.5	32.4	99.2 100.4	99.8	6.5 6.6	6.6		1.7 2.1	1.9		6.6 6.5	6.6	
				Bottom	17.0	29.5 29.4	29.4	8.8 8.8	8.8	32.5 32.4	32.5	99.0 94.8	96.9	6.5 6.2	6.4	6.4	1.9 2.3	2.1		3.7 3.8	3.8	
C2	Cloudy	Moderate	11:52	Surface	1.0	29.7 29.8	29.7	8.9 8.8	8.9	32.4 32.3	32.4	106.2 106.0	106.1	7.0 7.0	7.0	6.8	2.0 2.1	2.0	2.2	2.9 2.9	2.9	3.7
				Middle	15.9	29.5 29.5	29.5	8.8 8.8	8.8	32.4 32.4	32.4	98.0 99.2	98.6	6.5 6.6	6.5		2.0 2.2	2.1		4.2 4.3	4.3	
				Bottom	31.0	29.5 29.4	29.4	8.8 8.8	8.8	32.5 32.4	32.5	97.8 93.6	95.7	6.5 6.2	6.3	6.3	2.2 2.6	2.4		4.0 4.0	4.0	
G1	Cloudy	Moderate	12:20	Surface	1.1	29.5 29.5	29.5	8.9 8.9	8.9	31.7 31.7	31.7	104.8 105.0	104.9	7.0 7.0	7.0	6.9	2.5 2.6	2.6	2.5	12.7 12.2	12.5	7.9
				Middle	4.0	29.6 29.6	29.6	8.9 8.9	8.9	32.0 32.2	32.1	104.3 103.5	103.9	6.9 6.9	6.9		1.9 1.6	1.8		5.3 5.2	5.3	
				Bottom	7.0	29.5 29.4	29.5	8.9 8.9	8.9	32.5 32.5	32.5	95.2 95.0	95.1	6.3 6.3	6.3	6.3	3.1 3.4	3.2		5.9 6.1	6.0	
G2	Cloudy	Moderate	12:08	Surface	1.0	29.5 29.6	29.5	8.8 8.8	8.8	32.1 32.1	32.1	105.0 105.2	105.1	7.0 7.0	7.0	6.8	2.5 2.5	2.5	1.7	2.8 2.8	2.8	3.0
				Middle	5.0	29.5 29.5	29.5	8.8 8.8	8.8	32.4 32.4	32.4	101.2 101.1	101.2	6.7 6.7	6.7		0.3 0.3	0.3		3.1 3.1	3.1	
				Bottom	9.1	29.5 29.4	29.4	8.8 8.8	8.8	32.5 32.6	32.6	94.4 94.3	94.4	6.2 6.2	6.2	6.2	2.1 2.6	2.4		3.1 3.1	3.1	
G3	Cloudy	Moderate	12:24	Surface	1.0	29.3 29.4	29.4	8.9 8.9	8.9	28.8 31.9	30.4	101.9 102.7	102.3	6.9 6.8	6.9	6.7	2.2 1.9	2.0	1.8	2.7 2.7	2.7	5.1
				Middle	3.9	29.5 29.4	29.5	8.9 8.9	8.9	32.3 32.3	32.3	97.7 97.5	97.6	6.5 6.5	6.5		1.4 1.6	1.5		8.5 8.8	8.7	
				Bottom	7.0	29.4 29.4	29.4	8.8 8.8	8.8	32.5 32.5	32.5	90.8 90.5	90.7	6.0 6.0	6.0	6.0	1.8 1.7	1.7		4.1 4.0	4.1	
G4	Cloudy	Moderate	12:34	Surface	1.0	29.5 29.5	29.5	8.8 8.8	8.8	32.2 32.2	32.2	105.7 105.8	105.8	7.0 7.0	7.0	7.0	3.3 3.3	3.3	2.8	5.1 5.3	5.2	4.5
				Middle	4.0	29.6 29.6	29.6	8.8 8.8	8.8	32.2 32.3	32.3	105.6 104.7	105.2	7.0 6.9	7.0		2.9 2.4	2.6		4.6 4.6	4.6	
				Bottom	7.0	29.5 29.5	29.5	8.8 8.8	8.8	32.5 32.5	32.5	96.1 95.4	95.8	6.4 6.3	6.3	6.3	2.3 2.6	2.5		3.7 3.6	3.7	
M1	Cloudy	Moderate	12:16	Surface	1.0	29.5 29.4	29.4	8.9 9.1	9.0	31.7 31.8	31.7	92.7 91.8	92.3	6.2 6.1	6.1	6.1	2.5 2.7	2.6	2.9	2.6 2.6	2.6	4.1
				Middle	3.0	29.5 29.5	29.5	9.1 9.1	9.1	31.8 31.9	31.9	91.5 91.6	91.6	6.1 6.1	6.1		2.8 2.8	2.8		3.7 3.8	3.8	
				Bottom	5.0	29.4 29.4	29.4	9.1 9.1	9.1	32.4 32.4	32.4	88.5 88.7	88.6	5.9 5.9	5.9	5.9	2.9 3.4	3.1		5.9 5.9	5.9	
M2	Cloudy	Moderate	12:03	Surface	1.1	29.7 29.7	29.7	8.8 8.8	8.8	32.3 32.3	32.3	107.2 107.2	107.2	7.1 7.1	7.1	6.9	2.1 2.1	2.1	1.9	6.7 6.4	6.6	6.8
				Middle	6.0	29.6 29.6	29.6	8.8 8.8	8.8	32.4 32.4	32.4	102.5 102.3	102.4	6.8 6.8	6.8		1.5 1.6	1.5		6.6 6.4	6.5	
				Bottom	10.6	29.5 29.4	29.5	8.8 8.8	8.8	32.5 32.6	32.5	93.4 91.7	92.6	6.2 6.1	6.1	6.1	2.0 2.3	2.1		7.3 7.4	7.4	
M3	Cloudy	Moderate	12:30	Surface	1.0	29.5 29.5	29.5	8.8 8.8	8.8	32.2 32.2	32.2	100.4 100.2	100.3	6.7 6.6	6.6	6.6	1.5 1.5	1.5	1.7	6.4 6.6	6.5	5.6
				Middle	4.1	29.5 29.5	29.5	8.8 8.8	8.8	32.3 32.3	32.3	100.1 100.1	100.1	6.6 6.6	6.6		1.7 1.8	1.7		4.4 4.4	4.4	
				Bottom	7.0	29.4 29.4	29.4	8.8 8.8	8.8	32.4 32.4	32.4	94.6 94.3	94.5	6.3 6.3	6.3	6.3	1.8 1.7	1.8		5.8 5.9	5.9	
M4	Cloudy	Moderate	11:57	Surface	0.9	29.7 29.7	29.7	8.8 8.8	8.8	32.3 32.3	32.3	106.1 106.2	106.2	7.0 7.0	7.0	7.0	2.3 2.4	2.3	2.2	6.9 6.9	6.9	4.3
				Middle	5.0	29.7 29.7	29.7	8.8 8.8	8.8	32.3 32.3	32.3	106.2 106.3	106.3	7.0 7.0	7.0		2.5 2.5	2.5		2.8 2.8	2.8	
				Bottom	8.9	29.7 29.7	29.7	8.8 8.8	8.8	32.4 32.4	32.4	103.5 103.4	103.5	6.8 6.8	6.8	6.8	1.6 1.9	1.7		3.1 3.1	3.1	
M5	Cloudy	Moderate	12:42	Surface	1.0	29.4 29.4	29.4	8.8 8.8	8.8	32.6 32.6	32.6	99.2 98.1	98.7	6.6 6.5	6.5	6.4	3.6 3.6	3.6	3.6	8.8 8.9	8.9	5.4
				Middle	6.0	29.3 29.3	29.3	8.8 8.8	8.8	32.7 32.7	32.7	95.3 95.1	95.2	6.3 6.3	6.3		2.8 3.0	2.9		4.0 3.9	4.0	
				Bottom	11.0	29.3 29.3	29.3	8.8 8.8	8.8	32.7 32.7	32.7	93.2 92.4	92.8	6.2 6.1	6.2	6.2	4.2 4.5	4.4		3.4 3.4	3.4	
M6	Cloudy	Moderate	12:37	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.9	- -	-	2.8	- -	-	2.7
				Middle	2.0	29.6 29.6	29.6	8.8 8.8	8.8	32.4 32.4	32.4	104.0 103.7	103.9	6.9 6.8	6.9		2.8 2.8	2.8		2.7 2.7	2.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 17 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.9 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 3.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 3.8 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 3.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 3.8 mg/L***
	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 ***C2: 4.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.2 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.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 17 June 2019

(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	19:47	Surface	1.0	27.5 27.6	27.5	8.9 8.8	8.9	32.5 32.4	32.4	105.8 105.6	105.7	7.0 7.1	7.0	6.8	1.7 1.9	1.8	1.9	4.8 4.8	4.8	5.4
				Middle	8.9	27.3 27.3	27.3	8.9 8.7	8.8	32.4 32.5	32.5	99.4 100.6	100.0	6.5 6.7	6.6		1.7 2.1	1.9		4.3 4.4	4.4	
				Bottom	17.0	27.3 27.2	27.2	8.9 8.8	8.8	32.5 32.5	32.5	99.2 95.0	97.1	6.5 6.3	6.4	6.4	1.9 2.3	2.1		6.9 7.0	7.0	
C2	Cloudy	Moderate	18:52	Surface	1.0	27.4 27.6	27.5	8.9 8.9	8.9	32.4 32.4	32.4	106.0 105.4	105.7	7.1 7.0	7.0	6.8	1.8 1.9	1.8	1.9	5.4 5.6	5.5	6.7
				Middle	15.9	27.2 27.3	27.3	8.9 8.9	8.9	32.5 32.5	32.5	97.8 98.6	98.2	6.5 6.6	6.6		1.8 2.0	1.9		9.3 9.3	9.3	
				Bottom	31.0	27.2 27.2	27.2	8.9 8.8	8.8	32.5 32.4	32.5	97.6 93.0	95.3	6.5 6.2	6.4	6.4	1.9 2.3	2.1		5.1 5.4	5.3	
G1	Cloudy	Moderate	19:20	Surface	1.0	27.3 27.4	27.4	8.9 8.9	8.9	31.7 31.7	31.7	105.1 105.0	105.1	7.0 7.0	7.0	6.9	2.8 2.9	2.8	2.9	6.6 6.5	6.6	6.3
				Middle	4.0	27.4 27.3	27.4	8.9 8.9	8.9	32.2 32.2	32.2	103.2 102.9	103.1	6.8 6.8	6.8		1.3 1.5	1.4		6.3 6.6	6.5	
				Bottom	7.1	27.2 27.2	27.2	8.9 8.9	8.9	32.6 32.6	32.6	94.5 94.3	94.4	6.3 6.2	6.2	6.2	4.3 4.5	4.4		5.8 5.9	5.9	
G2	Cloudy	Moderate	19:08	Surface	1.0	27.4 27.4	27.4	8.8 8.8	8.8	32.0 32.0	32.0	105.4 105.5	105.5	7.0 7.0	7.0	6.8	2.6 2.6	2.6	2.2	6.9 6.9	6.9	5.2
				Middle	5.0	27.3 27.3	27.3	8.8 8.8	8.8	32.4 32.4	32.4	101.0 101.0	101.0	6.7 6.7	6.7		0.3 0.4	0.3		3.5 3.6	3.6	
				Bottom	9.0	27.2 27.2	27.2	8.8 8.8	8.8	32.6 32.6	32.6	93.8 93.7	93.8	6.2 6.2	6.2	6.2	3.5 3.8	3.7		5.2 5.3	5.3	
G3	Cloudy	Moderate	19:24	Surface	1.0	27.3 27.3	27.3	8.9 8.9	8.9	32.0 31.9	32.0	103.3 104.0	103.7	6.9 6.9	6.9	6.7	1.5 1.3	1.4	1.7	5.3 5.4	5.4	5.3
				Middle	4.0	27.2 27.2	27.2	8.9 8.9	8.9	32.4 32.4	32.4	97.2 97.1	97.2	6.4 6.4	6.4		1.9 1.9	1.9		5.7 5.8	5.8	
				Bottom	7.0	27.1 27.1	27.1	8.8 8.8	8.8	32.5 32.5	32.5	90.1 89.9	90.0	6.0 6.0	6.0	6.0	1.7 1.7	1.7		4.8 4.8	4.8	
G4	Cloudy	Moderate	19:34	Surface	1.0	27.4 27.4	27.4	8.8 8.8	8.8	32.1 32.1	32.1	105.8 105.9	105.9	7.0 7.0	7.0	6.9	3.3 3.4	3.4	3.1	4.4 4.3	4.4	7.1
				Middle	4.0	27.4 27.4	27.4	8.8 8.8	8.8	32.4 32.4	32.4	104.4 103.1	103.8	6.9 6.8	6.9		2.2 1.8	2.0		10.6 10.8	10.7	
				Bottom	7.1	27.3 27.2	27.3	8.8 8.8	8.8	32.5 32.6	32.5	94.0 93.4	93.7	6.2 6.2	6.2	6.2	3.5 4.1	3.8		6.3 6.2	6.3	
M1	Cloudy	Moderate	19:16	Surface	0.9	27.2 27.2	27.2	9.1 9.1	9.1	31.8 31.8	31.8	91.7 91.6	91.7	6.1 6.1	6.1	6.1	2.9 2.9	2.9	3.6	3.3 3.4	3.4	7.3
				Middle	3.0	27.3 27.3	27.3	9.1 9.1	9.1	32.2 32.3	32.2	92.3 92.5	92.4	6.1 6.1	6.1		2.6 2.8	2.7		4.3 4.3	4.3	
				Bottom	5.0	27.2 27.2	27.2	9.1 9.0	9.0	32.5 32.5	32.5	88.7 88.6	88.7	5.9 5.9	5.9	5.9	5.1 5.2	5.2		14.2 14.0	14.1	
M2	Cloudy	Moderate	19:03	Surface	1.0	27.5 27.5	27.5	8.8 8.8	8.8	32.3 32.3	32.3	108.0 106.8	107.4	7.1 7.1	7.1	6.9	1.7 1.7	1.7	3.4	8.0 8.0	8.0	6.6
				Middle	5.9	27.4 27.4	27.4	8.8 8.8	8.8	32.4 32.4	32.4	102.3 102.2	102.3	6.8 6.7	6.7		2.8 2.5	2.6		6.3 6.3	6.3	
				Bottom	10.9	27.1 27.1	27.1	8.7 8.7	8.7	32.7 32.7	32.7	89.9 89.5	89.7	6.0 5.9	5.9	5.9	5.9 6.1	6.0		5.3 5.5	5.4	
M3	Cloudy	Moderate	19:30	Surface	1.0	27.3 27.3	27.3	8.8 8.8	8.8	32.1 32.1	32.1	100.3 100.0	100.2	6.6 6.6	6.6	6.6	1.5 1.5	1.5	1.7	5.6 5.5	5.6	7.0
				Middle	4.0	27.3 27.2	27.2	8.8 8.8	8.8	32.3 32.4	32.4	100.6 100.2	100.4	6.6 6.6	6.6		1.8 1.9	1.9		7.1 6.8	7.0	
				Bottom	7.0	27.2 27.2	27.2	8.8 8.8	8.8	32.4 32.4	32.4	93.9 93.1	93.5	6.2 6.2	6.2	6.2	1.7 1.8	1.7		8.3 8.6	8.5	
M4	Cloudy	Moderate	18:57	Surface	1.0	27.5 27.5	27.5	8.8 8.8	8.8	32.3 32.3	32.3	106.5 104.8	105.6	7.0 7.0	7.0	7.0	1.9 2.2	2.1	2.3	4.3 4.3	4.3	3.7
				Middle	5.1	27.5 27.5	27.5	8.8 8.8	8.8	32.3 32.3	32.3	105.2 104.2	104.7	7.0 7.0	7.0		2.5 2.4	2.5		4.0 4.0	4.0	
				Bottom	9.0	27.5 27.5	27.5	8.8 8.8	8.8	32.4 32.4	32.4	104.7 103.7	104.2	6.8 6.8	6.8	6.8	2.4 2.4	2.4		2.9 2.9	2.9	
M5	Cloudy	Moderate	19:42	Surface	1.0	27.2 27.1	27.2	8.8 8.8	8.8	32.6 32.7	32.7	97.4 96.7	97.1	6.4 6.4	6.4	6.3	3.6 3.6	3.6	3.9	6.8 6.9	6.9	6.3
				Middle	6.0	27.1 27.1	27.1	8.8 8.8	8.8	32.7 32.7	32.7	94.5 94.7	94.6	6.3 6.3	6.3		3.6 3.6	3.6		6.7 7.0	6.9	
				Bottom	10.9	27.1 27.1	27.1	8.8 8.8	8.8	32.7 32.7	32.7	92.6 92.7	92.7	6.1 6.1	6.1	6.1	4.5 4.3	4.4		5.1 5.1	5.1	
M6	Cloudy	Moderate	19:37	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.8	- -	-	2.9	- -	-	6.8
				Middle	2.0	27.4 27.4	27.4	8.8 8.8	8.8	32.4 32.4	32.4	103.1 102.8	103.0	6.8 6.8	6.8		2.9 2.9	2.9		6.7 6.9	6.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 17 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.5 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.2 mg/L***
	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 ***C1: 8.3 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 9.0 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 19 June 2019

(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	14:09	Surface	1.0	27.4 27.5	27.5	8.8 8.7	8.7	31.9 31.8	31.8	86.3 86.1	86.2	5.7 5.7	5.7	5.7	2.3 2.2	2.2	3.2	5.0 5.1	5.1	6.3
				Middle	9.0	27.2 27.2	27.2	8.8 8.8	8.8	32.7 32.6	32.7	86.6 86.5	86.6	5.7 5.7	5.7		3.8 3.2	3.5		7.3 7.3	7.3	
				Bottom	17.1	27.2 27.2	27.2	8.8 8.8	8.8	32.8 32.8	32.8	86.4 86.3	86.4	5.7 5.7	5.7	5.7	3.4 4.0	3.7		6.3 6.5	6.4	
C2	Sunny	Calm	13:14	Surface	1.1	27.6 27.6	27.6	8.9 8.8	8.8	31.6 31.7	31.7	86.7 86.2	86.5	5.7 5.7	5.7	5.7	2.0 2.1	2.0	2.6	11.0 10.9	11.0	6.5
				Middle	16.5	27.3 27.2	27.2	8.9 8.8	8.9	32.3 32.5	32.4	84.8 84.9	84.9	5.6 5.6	5.6		2.6 2.8	2.7		4.5 4.6	4.6	
				Bottom	32.0	27.2 27.2	27.2	8.9 8.8	8.8	32.6 32.6	32.6	85.0 85.3	85.2	5.6 5.6	5.6	5.6	3.1 3.2	3.1		4.1 4.0	4.1	
G1	Sunny	Calm	13:39	Surface	1.0	28.0 27.9	27.9	8.9 8.9	8.9	31.6 31.7	31.6	99.5 97.4	98.5	6.5 6.4	6.5	6.3	1.5 1.5	1.5	1.6	4.5 4.5	4.5	4.1
				Middle	4.0	27.5 27.6	27.5	8.9 8.9	8.9	32.3 32.1	32.2	91.6 91.8	91.7	6.0 6.1	6.0		1.6 1.7	1.7		3.7 3.5	3.6	
				Bottom	7.1	27.4 27.4	27.4	8.9 8.8	8.9	32.4 32.4	32.4	89.6 90.2	89.9	5.9 6.0	5.9	5.9	1.5 1.8	1.7		4.3 4.3	4.3	
G2	Sunny	Calm	13:29	Surface	1.0	27.7 27.7	27.7	8.8 8.8	8.8	32.0 32.0	32.0	97.2 94.9	96.1	6.4 6.3	6.3	6.2	0.6 0.7	0.7	0.8	4.0 4.0	4.0	4.3
				Middle	5.0	27.6 27.5	27.5	8.8 8.8	8.8	32.2 32.2	32.2	94.0 92.9	93.5	6.2 6.1	6.2		1.0 1.1	1.0		5.1 5.3	5.2	
				Bottom	9.1	27.4 27.4	27.4	8.8 8.8	8.8	32.4 32.4	32.4	91.2 92.0	91.6	6.0 6.1	6.0	6.0	0.7 0.8	0.7		3.6 3.6	3.6	
G3	Sunny	Calm	13:42	Surface	1.1	28.0 27.9	28.0	8.9 8.8	8.8	31.2 31.3	31.3	98.3 98.0	98.2	6.5 6.5	6.5	6.2	2.2 2.1	2.2	2.4	4.0 4.0	4.0	4.5
				Middle	4.1	27.6 27.5	27.5	8.8 8.8	8.8	32.1 32.3	32.2	91.4 90.8	91.1	6.0 6.0	6.0		2.3 2.6	2.4		5.3 5.2	5.3	
				Bottom	7.0	27.3 27.3	27.3	8.8 8.9	8.8	32.5 32.4	32.5	84.7 85.0	84.9	5.6 5.6	5.6	5.6	2.7 2.4	2.6		4.2 4.3	4.3	
G4	Sunny	Calm	13:48	Surface	1.0	27.9 28.2	28.0	8.8 8.8	8.8	31.4 31.1	31.2	97.5 98.2	97.9	6.4 6.5	6.4	6.1	2.5 2.1	2.3	2.4	3.4 3.4	3.4	4.9
				Middle	4.0	27.5 27.5	27.5	8.8 8.8	8.8	32.3 32.3	32.3	83.8 89.4	86.6	5.5 5.9	5.7		2.0 2.1	2.0		3.0 2.9	3.0	
				Bottom	7.0	27.3 27.1	27.2	8.8 8.8	8.8	32.5 32.5	32.5	83.4 81.5	82.5	5.5 5.5	5.5	5.5	2.8 2.7	2.7		8.0 8.4	8.2	
M1	Sunny	Calm	13:33	Surface	1.1	28.0 27.9	27.9	8.8 8.8	8.8	31.8 31.8	31.8	91.1 88.7	89.9	6.0 5.8	5.9	5.8	1.4 1.6	1.5	1.9	3.1 3.0	3.1	3.3
				Middle	3.1	27.6 27.6	27.6	8.8 8.8	8.8	32.2 32.2	32.2	87.6 87.3	87.5	5.8 5.8	5.8		1.8 2.0	1.9		3.4 3.3	3.4	
				Bottom	5.0	27.4 27.5	27.4	8.8 8.8	8.8	32.4 32.3	32.3	85.9 87.0	86.5	5.7 5.7	5.7	5.7	2.6 2.1	2.4		3.6 3.6	3.6	
M2	Sunny	Calm	13:25	Surface	1.0	27.8 27.9	27.9	8.9 8.8	8.8	31.9 31.9	31.9	97.3 96.3	96.8	6.4 6.3	6.4	6.3	1.5 1.8	1.7	1.4	2.7 2.6	2.7	3.4
				Middle	5.5	27.5 27.5	27.5	8.9 8.8	8.8	32.4 32.4	32.4	93.7 93.5	93.6	6.2 6.2	6.2		0.7 0.8	0.8		4.2 4.1	4.2	
				Bottom	10.0	27.3 27.4	27.3	8.8 8.8	8.8	32.7 32.5	32.6	87.9 89.6	88.8	5.8 5.9	5.9	5.9	1.9 1.9	1.9		3.3 3.3	3.3	
M3	Sunny	Calm	13:44	Surface	1.1	27.9 27.9	27.9	8.8 8.8	8.8	31.5 31.4	31.4	96.7 98.1	97.4	6.4 6.5	6.4	6.0	2.2 2.6	2.4	2.4	4.3 4.1	4.2	5.0
				Middle	4.0	27.4 27.5	27.5	8.8 8.8	8.8	32.3 32.2	32.3	89.3 82.6	86.0	5.9 5.5	5.7		2.0 2.2	2.1		6.2 6.1	6.2	
				Bottom	7.0	27.3 27.2	27.3	8.8 8.8	8.8	32.6 32.6	32.6	84.5 78.7	81.6	5.6 5.2	5.4	5.4	2.8 2.9	2.9		4.5 4.6	4.6	
M4	Sunny	Calm	13:20	Surface	1.0	28.0 28.0	28.0	8.8 8.9	8.8	32.1 32.1	32.1	98.9 98.3	98.6	6.5 6.4	6.5	6.4	1.9 1.6	1.8	1.4	6.7 6.7	6.7	4.7
				Middle	5.0	27.8 27.8	27.8	8.8 8.8	8.8	32.2 32.2	32.2	95.9 96.5	96.2	6.3 6.3	6.3		1.3 1.1	1.2		3.2 3.3	3.3	
				Bottom	9.0	27.7 27.7	27.7	8.9 8.9	8.9	32.3 32.2	32.2	95.1 95.7	95.4	6.3 6.3	6.3	6.3	1.4 1.1	1.3		4.0 4.1	4.1	
M5	Sunny	Calm	14:03	Surface	1.0	27.7 27.6	27.6	8.8 8.8	8.8	32.3 32.3	32.3	95.4 93.5	94.5	6.3 6.2	6.2	6.2	2.1 2.0	2.1	1.8	4.5 4.4	4.5	4.8
				Middle	6.0	27.5 27.4	27.4	8.8 8.8	8.8	32.4 32.4	32.4	92.8 92.2	92.5	6.1 6.1	6.1		1.4 1.4	1.4		4.6 4.5	4.6	
				Bottom	11.0	27.4 27.4	27.4	8.8 8.8	8.8	32.5 32.5	32.5	91.5 91.3	91.4	6.0 6.0	6.0	6.0	2.0 2.1	2.1		5.6 5.4	5.5	
M6	Sunny	Calm	13:57	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.3	- -	-	2.4	- -	-	3.8
				Middle	2.2	27.6 27.6	27.6	8.8 8.8	8.8	32.2 32.2	32.2	95.6 95.1	95.4	6.3 6.3	6.3		2.4 2.4	2.4		3.8 3.8	3.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 19 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 3.8 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.1 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 13.1 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 14.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 13.1 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 14.2 mg/L***
	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 ***C2: 4.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.3 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 19 June 2019

(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	09:59	Surface	1.1	27.4 27.4	27.4	8.9 8.9	8.9	32.1 32.2	32.1	91.8 91.5	91.7	6.1 6.1	6.1	6.2	2.2 2.1	2.2	2.5	5.3 5.3	5.3	4.5
				Middle	9.0	27.4 27.4	27.4	8.9 8.9	8.9	32.9 32.9	32.9	95.4 94.3	94.9	6.3 6.2	6.3		2.0 2.1	2.0		4.0 3.9	4.0	
				Bottom	17.1	27.2 27.2	27.2	8.9 8.9	8.9	33.1 33.1	33.1	90.8 91.1	91.0	6.0 6.0	6.0	6.0	3.5 3.3	3.4		4.1 4.1	4.1	
C2	Sunny	Calm	09:08	Surface	1.0	27.3 27.3	27.3	9.3 9.0	9.1	32.1 32.1	32.1	88.8 88.9	88.9	5.9 5.9	5.9	5.9	2.0 2.1	2.1	1.2	3.4 3.4	3.4	3.7
				Middle	16.0	27.4 27.4	27.4	9.0 9.0	9.0	32.4 32.3	32.4	89.9 89.8	89.9	5.9 5.9	5.9		0.5 0.6	0.6		4.3 4.3	4.3	
				Bottom	31.1	27.2 27.3	27.2	9.0 9.0	9.0	32.9 32.7	32.8	89.2 89.3	89.3	5.9 5.9	5.9	5.9	0.9 0.8	0.9		3.4 3.4	3.4	
G1	Sunny	Calm	09:31	Surface	1.0	27.4 27.4	27.4	8.9 8.9	8.9	30.6 31.4	31.0	93.3 89.6	91.5	6.2 6.0	6.1	6.0	2.0 2.5	2.2	1.6	5.4 5.5	5.5	7.1
				Middle	4.0	27.4 27.4	27.4	8.9 8.9	8.9	32.0 32.3	32.2	90.0 89.1	89.6	6.0 5.9	5.9		0.5 0.4	0.5		9.3 9.4	9.4	
				Bottom	7.0	27.3 27.3	27.3	8.9 8.9	8.9	32.4 32.5	32.5	83.9 82.9	83.4	5.6 5.5	5.5	5.5	2.0 2.0	2.0		6.7 6.5	6.6	
G2	Sunny	Calm	09:21	Surface	1.1	27.4 27.4	27.4	9.1 9.0	9.1	32.0 32.2	32.1	91.2 90.2	90.7	6.0 6.0	6.0	6.0	0.6 0.5	0.5	0.9	4.9 4.9	4.9	5.4
				Middle	5.0	27.4 27.3	27.4	9.1 9.0	9.1	32.3 32.3	32.3	90.2 89.6	89.9	6.0 5.9	5.9		0.6 0.7	0.6		8.1 7.9	8.0	
				Bottom	9.1	27.3 27.3	27.3	9.1 9.0	9.0	32.7 32.7	32.7	89.9 91.0	90.5	5.9 6.0	6.0	6.0	1.5 1.4	1.4		3.4 3.4	3.4	
G3	Sunny	Calm	09:34	Surface	1.0	27.4 27.4	27.4	8.9 8.9	8.9	31.0 31.6	31.3	92.1 91.0	91.6	6.1 6.0	6.1	6.0	0.2 0.1	0.1	0.3	4.8 4.5	4.7	4.3
				Middle	4.1	27.4 27.4	27.4	8.9 8.9	8.9	32.2 32.2	32.2	90.8 90.7	90.8	6.0 6.0	6.0		0.5 0.4	0.4		3.7 3.8	3.8	
				Bottom	7.0	27.5 27.4	27.4	9.0 8.9	8.9	32.3 32.3	32.3	91.8 90.2	91.0	6.1 6.0	6.0	6.0	0.4 0.4	0.4		4.4 4.4	4.4	
G4	Sunny	Calm	09:42	Surface	1.1	27.5 27.4	27.4	8.9 8.9	8.9	30.9 31.7	31.3	92.6 90.9	91.8	6.2 6.0	6.1	6.1	1.9 1.8	1.8	1.5	8.6 9.0	8.8	5.5
				Middle	4.0	27.4 27.4	27.4	8.9 8.9	8.9	32.0 31.8	31.9	90.7 90.9	90.8	6.0 6.0	6.0		1.9 1.8	1.9		2.9 3.0	3.0	
				Bottom	7.0	27.4 27.4	27.4	8.9 8.9	8.9	32.2 32.2	32.2	89.5 89.7	89.6	5.9 5.9	5.9	5.9	0.9 0.9	0.9		4.9 4.8	4.9	
M1	Sunny	Calm	09:26	Surface	1.0	27.5 27.5	27.5	8.9 9.0	8.9	31.5 31.7	31.6	89.4 84.9	87.2	5.9 5.6	5.8	5.7	2.0 1.8	1.9	3.1	6.0 6.0	6.0	6.0
				Middle	3.0	27.4 27.4	27.4	8.9 9.0	8.9	32.0 32.1	32.0	85.4 83.8	84.6	5.7 5.5	5.6		2.6 2.7	2.6		5.9 5.8	5.9	
				Bottom	5.1	27.4 27.3	27.3	9.0 9.0	9.0	32.3 32.5	32.4	84.8 82.6	83.7	5.6 5.5	5.5	5.5	4.2 5.2	4.7		6.2 6.1	6.2	
M2	Sunny	Calm	09:17	Surface	1.1	27.4 27.4	27.4	9.1 9.1	9.1	32.1 32.4	32.3	91.7 91.5	91.6	6.1 6.0	6.1	6.0	1.5 1.7	1.6	1.5	4.7 4.8	4.8	7.6
				Middle	5.3	27.4 27.4	27.4	9.1 9.1	9.1	32.4 32.5	32.5	91.0 91.0	91.0	6.0 6.0	6.0		1.7 1.5	1.6		5.3 5.2	5.3	
				Bottom	9.5	27.3 27.3	27.3	9.1 9.1	9.1	32.6 32.6	32.6	91.0 91.1	91.1	6.0 6.0	6.0	6.0	1.6 1.3	1.4		13.1 12.7	12.9	
M3	Sunny	Calm	09:38	Surface	1.1	27.4 27.4	27.4	9.0 8.9	8.9	31.3 31.7	31.5	91.9 91.2	91.6	6.1 6.0	6.1	6.1	1.3 1.3	1.3	1.1	4.0 4.1	4.1	3.5
				Middle	4.0	27.4 27.4	27.4	9.0 8.9	8.9	32.1 32.2	32.2	91.4 91.0	91.2	6.0 6.0	6.0		1.1 1.0	1.1		3.7 3.8	3.8	
				Bottom	7.1	27.4 27.4	27.4	8.9 8.9	8.9	32.3 32.3	32.3	85.0 86.1	85.6	5.6 5.7	5.6	5.6	1.1 1.1	1.1		2.8 2.7	2.8	
M4	Sunny	Calm	09:13	Surface	1.0	27.4 27.4	27.4	8.9 8.9	8.9	32.2 32.3	32.2	91.5 90.7	91.1	6.1 6.0	6.0	6.0	2.3 2.2	2.2	1.7	5.7 5.6	5.7	5.9
				Middle	5.0	27.4 27.4	27.4	8.9 8.9	8.9	32.2 32.3	32.2	91.3 90.8	91.1	6.0 6.0	6.0		2.0 1.8	1.9		7.1 7.0	7.1	
				Bottom	9.1	27.4 27.4	27.4	8.9 8.9	8.9	32.3 32.3	32.3	90.8 90.4	90.6	6.0 6.0	6.0	6.0	1.1 1.1	1.1		5.0 5.0	5.0	
M5	Sunny	Calm	09:54	Surface	1.1	27.4 27.4	27.4	8.9 8.9	8.9	32.1 32.1	32.1	89.8 89.2	89.5	5.9 5.9	5.9	5.9	2.3 2.0	2.2	2.1	3.2 3.3	3.3	4.9
				Middle	5.5	27.4 27.4	27.4	8.9 8.9	8.9	32.4 32.4	32.4	89.1 89.0	89.1	5.9 5.9	5.9		1.8 1.7	1.7		6.4 6.2	6.3	
				Bottom	10.0	27.3 27.3	27.3	8.9 8.9	8.9	32.5 32.6	32.5	88.5 88.0	88.3	5.9 5.8	5.8	5.8	2.4 2.5	2.5		5.2 5.3	5.3	
M6	Sunny	Calm	09:47	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.0	- -	-	2.0	- -	-	4.7
				Middle	2.2	27.5 27.4	27.4	8.9 8.9	8.9	32.1 32.1	32.1	91.2 90.8	91.0	6.0 6.0	6.0		2.0 2.1	2.0		4.7 4.6	4.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 19 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.1 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.5 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.9 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.9 mg/L***
	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 ***C1: 4.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.1 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 21 June 2019

(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	14:45	Surface	1.1	27.5 27.6	27.5	7.9 7.9	7.9	31.7 31.6	31.6	80.7 80.2	80.5	5.3 5.3	5.3	5.2	3.1 3.1	3.1	3.2	6.4 6.7	6.6	8.4
				Middle	9.0	26.8 27.1	27.0	7.9 7.9	7.9	33.0 32.7	32.9	75.1 77.3	76.2	5.0 5.1	5.1		3.5 3.2	3.4		9.7 9.7	9.7	
				Bottom	17.1	26.4 25.8	26.1	7.9 7.9	7.9	33.7 34.6	34.1	68.7 64.9	66.8	4.6 4.4	4.5	4.5	3.3 3.4	3.3		9.1 8.8	9.0	
C2	Sunny	Calm	13:54	Surface	1.0	27.9 27.8	27.9	8.5 8.1	8.3	30.5 30.7	30.6	83.0 81.3	82.2	5.5 5.4	5.4	5.0	2.5 2.7	2.6	4.9	3.7 3.8	3.8	5.2
				Middle	16.5	26.2 26.3	26.3	8.5 8.1	8.3	33.9 33.7	33.8	67.3 68.6	68.0	4.5 4.6	4.5		6.3 5.8	6.0		5.5 5.6	5.6	
				Bottom	32.0	26.1 26.4	26.3	8.5 8.1	8.3	34.1 33.5	33.8	66.0 68.5	67.3	4.4 4.6	4.5	4.5	6.5 5.7	6.1		6.2 6.3	6.3	
G1	Sunny	Calm	14:18	Surface	1.0	28.2 28.2	28.2	8.0 8.0	8.0	31.8 31.8	31.8	98.1 97.0	97.6	6.4 6.4	6.4	6.2	1.5 1.6	1.6	1.9	3.8 3.7	3.8	3.6
				Middle	4.0	27.9 27.9	27.9	8.0 8.0	8.0	32.0 32.0	32.0	92.1 92.8	92.5	6.0 6.1	6.1		1.3 1.3	1.3		2.6 2.5	2.6	
				Bottom	7.1	27.4 27.3	27.3	8.0 8.0	8.0	32.6 32.7	32.7	82.1 78.5	80.3	5.4 5.2	5.3	5.3	2.6 3.0	2.8		4.6 4.5	4.6	
G2	Sunny	Calm	14:09	Surface	1.1	28.0 28.1	28.1	8.0 8.0	8.0	32.1 32.0	32.0	94.7 93.6	94.2	6.2 6.1	6.2	6.0	1.4 1.6	1.5	1.3	3.0 3.0	3.0	4.1
				Middle	5.0	27.7 27.7	27.7	8.0 7.9	8.0	32.2 32.1	32.1	88.8 87.8	88.3	5.8 5.8	5.8		1.9 1.9	1.9		3.2 3.1	3.2	
				Bottom	9.0	26.5 26.6	26.6	8.0 7.9	8.0	33.7 33.6	33.7	74.3 75.0	74.7	4.9 5.0	5.0	5.0	0.5 0.5	0.5		6.2 6.2	6.2	
G3	Sunny	Calm	14:23	Surface	1.0	28.4 28.4	28.4	8.0 8.0	8.0	31.6 31.5	31.5	103.2 100.8	102.0	6.7 6.6	6.7	6.3	1.9 1.8	1.9	2.0	4.7 4.8	4.8	5.8
				Middle	4.0	27.9 28.0	28.0	8.0 8.0	8.0	31.9 31.8	31.9	92.9 91.2	92.1	6.1 6.0	6.0		1.4 1.5	1.4		6.6 6.7	6.7	
				Bottom	7.0	27.3 27.4	27.3	8.0 8.0	8.0	32.9 32.7	32.8	77.8 79.0	78.4	5.1 5.2	5.2	5.2	2.9 2.8	2.8		5.9 5.9	5.9	
G4	Sunny	Calm	14:30	Surface	1.1	28.6 28.6	28.6	8.0 7.9	7.9	31.4 31.4	31.4	107.5 107.5	107.5	7.0 7.0	7.0	6.5	1.5 1.3	1.4	1.4	7.0 7.0	7.0	5.8
				Middle	4.1	27.8 28.0	27.9	8.0 7.9	7.9	32.0 31.8	31.9	91.2 92.8	92.0	6.0 6.1	6.0		1.1 1.2	1.2		3.5 3.4	3.5	
				Bottom	7.0	27.3 27.4	27.3	7.9 7.9	7.9	32.8 32.6	32.7	71.7 79.6	75.7	4.7 5.3	5.0	5.0	1.5 1.7	1.6		6.8 7.1	7.0	
M1	Sunny	Calm	14:14	Surface	1.0	28.5 28.5	28.5	8.0 8.0	8.0	31.9 31.9	31.9	94.7 93.7	94.2	6.2 6.1	6.1	6.0	0.7 0.8	0.7	1.0	3.9 4.0	4.0	4.1
				Middle	3.1	28.2 28.2	28.2	8.0 8.0	8.0	32.0 32.0	32.0	90.3 91.9	91.1	5.9 6.0	6.0		1.1 0.9	1.0		5.3 5.3	5.3	
				Bottom	5.1	27.9 27.9	27.9	8.0 8.0	8.0	32.1 32.1	32.1	88.5 85.5	87.0	5.8 5.6	5.7	5.7	1.5 1.3	1.4		3.1 3.0	3.1	
M2	Sunny	Calm	14:05	Surface	1.0	28.2 28.0	28.1	8.0 8.0	8.0	32.1 32.1	32.1	96.8 93.3	95.1	6.3 6.1	6.2	6.0	1.6 1.3	1.4	1.3	6.7 6.6	6.7	5.7
				Middle	5.5	27.4 27.4	27.4	8.0 8.0	8.0	32.5 32.5	32.5	86.1 86.4	86.3	5.7 5.7	5.7		0.9 0.9	0.9		5.8 5.8	5.8	
				Bottom	10.1	26.5 26.5	26.5	8.0 8.0	8.0	33.7 33.7	33.7	73.7 73.6	73.7	4.9 4.9	4.9	4.9	1.5 1.6	1.5		4.7 4.6	4.7	
M3	Sunny	Calm	14:26	Surface	1.0	28.0 28.2	28.1	7.9 7.9	7.9	31.7 31.6	31.7	85.1 94.6	89.9	5.6 6.2	5.9	5.9	1.7 1.6	1.6	2.3	4.7 4.6	4.7	6.3
				Middle	4.0	27.7 27.8	27.7	7.9 7.9	7.9	32.0 32.0	32.0	87.6 89.5	88.6	5.8 5.9	5.8		1.5 1.4	1.5		5.5 5.4	5.5	
				Bottom	7.1	27.5 27.3	27.4	8.0 7.9	7.9	32.5 32.8	32.7	80.1 77.7	78.9	5.3 5.1	5.2	5.2	3.8 3.9	3.8		8.8 8.7	8.8	
M4	Sunny	Calm	14:00	Surface	1.1	27.6 27.7	27.7	8.0 8.0	8.0	32.0 31.9	31.9	85.9 85.7	85.8	5.7 5.7	5.7	5.7	1.5 1.7	1.6	1.8	7.3 7.7	7.5	5.6
				Middle	5.1	27.7 27.7	27.7	8.1 8.0	8.0	32.0 32.0	32.0	86.5 86.5	86.5	5.7 5.7	5.7		1.6 2.0	1.8		5.9 5.8	5.9	
				Bottom	9.0	27.1 27.0	27.0	8.1 8.0	8.0	32.9 33.1	33.0	81.0 78.5	79.8	5.4 5.2	5.3	5.3	2.0 2.2	2.1		3.6 3.5	3.6	
M5	Sunny	Calm	14:39	Surface	1.1	27.7 27.8	27.7	7.9 7.9	7.9	32.0 32.1	32.0	88.4 87.2	87.8	5.8 5.7	5.8	5.7	1.0 0.9	1.0	2.3	4.4 4.4	4.4	3.6
				Middle	6.0	27.6 27.6	27.6	7.9 7.9	7.9	32.1 32.1	32.1	84.8 86.0	85.4	5.6 5.7	5.6		0.8 0.7	0.7		2.9 3.0	3.0	
				Bottom	11.1	26.2 26.3	26.2	7.9 7.9	7.9	34.2 34.1	34.1	68.2 70.2	69.2	4.6 4.7	4.6	4.6	5.2 5.0	5.1		3.6 3.5	3.6	
M6	Sunny	Calm	14:34	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.3	- -	-	1.0	- -	-	8.2
				Middle	2.2	28.1 28.0	28.0	7.9 7.9	7.9	31.8 31.8	31.8	97.4 96.2	96.8	6.4 6.3	6.3		0.9 1.0	1.0		8.4 8.0	8.2	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 21 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 7.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 7.9 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 4.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 4.9 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 4.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 4.9 mg/L***
	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 ***C2: 7.5 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 8.1 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 21 June 2019

(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	10:08	Surface	1.0	27.7 27.7	27.7	7.8 7.8	7.8	32.0 32.0	32.0	88.9 87.3	88.1	5.9 5.7	5.8	5.6	0.9 1.1	1.0	1.3	2.6 2.7	2.7	3.1
				Middle	9.1	27.1 27.3	27.2	7.8 7.8	7.8	32.8 32.6	32.7	79.5 81.3	80.4	5.3 5.4	5.3		1.3 1.5	1.4		2.4 2.4	2.4	
				Bottom	17.0	26.4 26.8	26.6	7.8 7.8	7.8	33.8 33.4	33.6	71.5 77.7	74.6	4.8 5.2	5.0	5.0	1.4 1.5	1.4		4.4 4.3	4.4	
C2	Sunny	Calm	09:16	Surface	1.1	27.8 27.8	27.8	8.4 8.2	8.3	31.6 31.7	31.7	88.2 87.4	87.8	5.8 5.8	5.8	5.4	1.8 1.9	1.8	2.3	8.0 8.1	8.1	4.4
				Middle	16.0	26.8 26.6	26.7	8.3 8.3	8.3	33.3 33.6	33.5	75.0 73.9	74.5	5.0 4.9	4.9		2.2 2.7	2.5		2.5 2.4	2.5	
				Bottom	31.1	26.6 26.2	26.4	8.3 8.3	8.3	33.7 34.1	33.9	74.9 68.8	71.9	5.0 4.6	4.8	4.8	2.7 2.8	2.7		2.8 2.8	2.8	
G1	Sunny	Calm	09:41	Surface	1.1	27.9 27.8	27.8	8.0 8.0	8.0	31.8 31.9	31.8	90.1 87.1	88.6	5.9 5.7	5.8	5.6	2.4 2.5	2.5	1.8	3.9 4.0	4.0	2.8
				Middle	4.1	27.5 27.4	27.5	8.0 8.0	8.0	32.4 32.4	32.4	82.4 81.8	82.1	5.4 5.4	5.4		1.2 1.2	1.2		2.4 2.4	2.4	
				Bottom	7.0	27.0 27.2	27.1	8.0 8.0	8.0	33.1 32.8	32.9	78.5 80.0	79.3	5.2 5.3	5.2	5.2	1.9 1.7	1.8		2.0 2.1	2.1	
G2	Sunny	Calm	09:32	Surface	1.0	28.1 28.0	28.0	8.0 8.0	8.0	31.8 31.8	31.8	90.6 88.5	89.6	5.9 5.8	5.9	5.6	1.4 1.5	1.5	1.9	2.7 2.7	2.7	2.5
				Middle	5.0	27.4 26.9	27.2	8.0 8.0	8.0	32.6 33.3	33.0	81.2 78.5	79.9	5.4 5.2	5.3		1.5 1.8	1.6		2.5 2.5	2.5	
				Bottom	9.0	26.7 26.6	26.7	8.1 8.0	8.0	33.6 33.6	33.6	75.2 73.6	74.4	5.0 4.9	4.9	4.9	2.6 2.6	2.6		2.4 2.3	2.4	
G3	Sunny	Calm	09:45	Surface	1.1	28.0 27.9	27.9	7.9 7.9	7.9	31.6 31.8	31.7	92.1 89.0	90.6	6.1 5.9	6.0	5.6	1.2 1.4	1.3	2.4	2.7 2.6	2.7	4.4
				Middle	4.0	27.5 27.4	27.5	7.9 7.9	7.9	32.5 32.5	32.5	80.4 80.4	80.4	5.3 5.3	5.3		2.7 3.2	2.9		3.2 3.3	3.3	
				Bottom	7.0	27.1 27.2	27.1	8.0 7.9	7.9	33.0 32.9	33.0	77.4 77.4	77.4	5.1 5.1	5.1	5.1	2.7 3.0	2.9		7.4 7.4	7.4	
G4	Sunny	Calm	09:52	Surface	1.1	28.0 28.1	28.0	7.9 7.9	7.9	31.3 31.1	31.2	92.6 91.4	92.0	6.1 6.0	6.1	5.8	2.5 2.1	2.3	3.4	7.5 7.4	7.5	6.3
				Middle	4.0	27.6 27.6	27.6	7.9 7.9	7.9	32.2 32.2	32.2	84.3 84.1	84.2	5.6 5.5	5.5		2.7 2.5	2.6		6.4 6.7	6.6	
				Bottom	7.0	27.2 27.2	27.2	7.9 7.9	7.9	32.9 32.8	32.8	74.3 74.5	74.4	4.9 4.9	4.9	4.9	5.7 4.8	5.2		4.9 5.0	5.0	
M1	Sunny	Calm	09:36	Surface	1.0	27.9 28.0	27.9	8.0 8.0	8.0	32.0 31.9	31.9	85.7 84.1	84.9	5.6 5.5	5.6	5.5	1.5 1.6	1.6	1.9	4.9 4.9	4.9	7.1
				Middle	3.0	27.7 27.9	27.8	8.0 8.0	8.0	32.2 32.0	32.1	80.1 83.5	81.8	5.3 5.5	5.4		2.0 1.8	1.9		6.6 6.6	6.6	
				Bottom	5.0	27.5 27.4	27.4	8.0 8.0	8.0	32.5 32.7	32.6	76.4 75.8	76.1	5.0 5.0	5.0	5.0	2.2 2.1	2.2		9.8 9.9	9.9	
M2	Sunny	Calm	09:27	Surface	1.0	28.0 27.9	28.0	8.2 8.1	8.1	31.8 31.9	31.8	92.4 88.8	90.6	6.1 5.8	5.9	5.5	1.0 1.2	1.1	1.8	8.3 8.4	8.4	6.0
				Middle	5.3	26.9 26.7	26.8	8.2 8.1	8.1	33.4 33.5	33.4	78.5 76.3	77.4	5.2 5.1	5.1		1.0 1.0	1.0		4.5 4.6	4.6	
				Bottom	9.5	26.3 26.3	26.3	8.2 8.1	8.1	34.0 34.0	34.0	70.1 70.3	70.2	4.7 4.7	4.7	4.7	3.3 3.5	3.4		5.1 5.1	5.1	
M3	Sunny	Calm	09:48	Surface	1.1	28.0 28.1	28.0	7.9 7.9	7.9	31.3 31.3	31.3	93.0 90.4	91.7	6.1 5.9	6.0	5.8	1.1 1.3	1.2	2.1	4.4 4.5	4.5	4.1
				Middle	4.0	27.7 27.7	27.7	7.9 7.9	7.9	32.1 32.1	32.1	83.4 84.1	83.8	5.5 5.5	5.5		1.9 1.7	1.8		5.5 5.4	5.5	
				Bottom	7.0	27.2 27.1	27.1	7.9 7.9	7.9	32.9 33.0	32.9	75.8 76.9	76.4	5.0 5.1	5.0	5.0	3.3 3.4	3.4		2.5 2.5	2.5	
M4	Sunny	Calm	09:23	Surface	1.1	27.9 28.0	27.9	8.2 8.1	8.2	31.7 31.7	31.7	91.4 91.1	91.3	6.0 6.0	6.0	6.0	1.2 1.2	1.2	1.4	2.4 2.3	2.4	1.8
				Middle	5.0	27.9 27.9	27.9	8.2 8.1	8.2	31.7 31.7	31.7	90.7 91.1	90.9	6.0 6.0	6.0		1.2 1.3	1.3		1.0 1.0	1.0	
				Bottom	9.0	27.7 27.7	27.7	8.1 8.1	8.1	32.2 32.2	32.2	84.3 84.7	84.5	5.5 5.6	5.6	5.6	1.9 1.6	1.7		2.0 2.1	2.1	
M5	Sunny	Calm	10:02	Surface	1.1	27.7 27.8	27.7	7.8 7.8	7.8	31.7 31.7	31.7	83.9 83.6	83.8	5.5 5.5	5.5	5.5	2.9 2.4	2.6	2.6	1.7 1.7	1.7	3.8
				Middle	5.6	27.6 27.6	27.6	7.8 7.8	7.8	31.8 31.9	31.9	83.4 82.7	83.1	5.5 5.5	5.5		2.4 2.4	2.4		4.7 4.8	4.8	
				Bottom	10.0	27.1 27.0	27.1	7.9 7.8	7.8	32.8 32.9	32.8	76.7 75.3	76.0	5.1 5.0	5.0	5.0	2.8 3.0	2.9		4.8 4.8	4.8	
M6	Sunny	Calm	09:57	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.5	- -	-	0.6	- -	-	4.1
				Middle	2.3	27.6 27.6	27.6	7.9 7.9	7.9	32.0 32.0	32.0	83.5 84.5	84.0	5.5 5.6	5.5		0.7 0.6	0.6		4.1 4.1	4.1	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 21 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 1.7 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 1.9 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 3.2 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 3.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 3.2 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 3.4 mg/L***
	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 ***C1: 5.2 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***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 24 June 2019

(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	16:29	Surface	1.1	27.8 27.8	27.8	7.9 7.9	7.9	29.4 29.4	29.4	103.2 103.2	103.2	6.9 6.9	6.9	5.3	1.5 1.4	1.4	1.5	2.8 2.9	2.9	3.3
				Middle	9.0	24.8 24.8	24.8	7.9 7.9	7.9	35.4 35.4	35.4	56.1 56.3	56.2	3.8 3.8	3.8		0.6 0.6	0.6		3.1 3.0	3.1	
				Bottom	17.0	24.3 24.3	24.3	7.9 7.9	7.9	35.8 35.8	35.8	54.6 54.6	54.6	3.7 3.7	3.7	3.7	2.3 2.4	2.4		3.9 3.9	3.9	
C2	Sunny	Moderate	15:26	Surface	1.1	26.7 26.7	26.7	8.5 8.1	8.3	31.3 31.3	31.3	76.4 76.3	76.4	5.1 5.1	5.1	4.4	0.6 0.6	0.6	2.1	2.8 2.8	2.8	2.3
				Middle	15.9	24.6 24.6	24.6	8.5 8.1	8.3	35.6 35.6	35.6	53.9 54.0	54.0	3.7 3.7	3.7		2.3 2.2	2.2		1.5 1.5	1.5	
				Bottom	31.1	24.4 24.4	24.4	8.5 8.1	8.3	35.8 35.8	35.8	53.1 53.1	53.1	3.6 3.6	3.6	3.6	3.5 3.7	3.6		2.6 2.5	2.6	
G1	Sunny	Moderate	15:55	Surface	1.1	28.1 28.0	28.1	8.0 8.0	8.0	29.7 29.7	29.7	117.3 117.3	117.3	7.8 7.8	7.8	6.7	1.0 0.9	1.0	1.4	2.5 2.4	2.5	4.0
				Middle	4.0	27.4 27.5	27.5	8.0 8.0	8.0	32.5 32.4	32.4	84.2 86.5	85.4	5.6 5.7	5.6		1.5 1.4	1.4		4.7 4.9	4.8	
				Bottom	7.2	25.1 25.1	25.1	8.0 8.0	8.0	34.8 35.0	34.9	60.5 59.8	60.2	4.1 4.1	4.1	4.1	2.0 1.9	1.9		4.9 4.7	4.8	
G2	Sunny	Moderate	15:45	Surface	1.1	28.1 28.1	28.1	8.0 8.0	8.0	30.3 30.3	30.3	119.7 120.1	119.9	7.9 7.9	7.9	6.2	1.7 1.9	1.8	1.6	2.8 2.7	2.8	3.8
				Middle	5.0	25.8 25.8	25.8	8.0 8.0	8.0	33.7 33.6	33.7	66.9 67.3	67.1	4.5 4.5	4.5		1.7 1.6	1.7		3.0 3.1	3.1	
				Bottom	9.0	25.2 25.1	25.1	8.0 7.9	8.0	34.8 35.0	34.9	56.8 56.6	56.7	3.8 3.8	3.8	3.8	1.6 1.4	1.5		5.6 5.5	5.6	
G3	Sunny	Moderate	16:00	Surface	1.1	28.0 28.0	28.0	8.0 8.0	8.0	29.6 29.6	29.6	117.1 117.4	117.3	7.8 7.8	7.8	6.2	0.4 0.4	0.4	1.0	4.0 4.2	4.1	4.1
				Middle	4.1	25.7 25.7	25.7	8.0 8.0	8.0	34.1 34.1	34.1	67.6 69.6	68.6	4.5 4.7	4.6		0.9 0.9	0.9		5.2 5.1	5.2	
				Bottom	7.0	25.2 25.1	25.1	8.0 8.0	8.0	35.1 35.2	35.1	53.5 53.2	53.4	3.6 3.6	3.6	3.6	1.8 1.9	1.8		3.2 3.1	3.2	
G4	Sunny	Moderate	16:13	Surface	1.1	27.9 27.9	27.9	7.9 7.9	7.9	30.0 30.0	30.0	116.5 116.6	116.6	7.7 7.7	7.7	6.3	0.1 0.1	0.1	0.8	4.0 4.1	4.1	5.8
				Middle	4.0	26.1 26.1	26.1	8.0 7.9	7.9	32.9 32.7	32.8	71.7 72.6	72.2	4.8 4.9	4.9		0.7 0.6	0.7		5.5 5.6	5.6	
				Bottom	7.0	25.7 25.5	25.6	8.0 7.9	7.9	34.2 34.4	34.3	56.6 56.0	56.3	3.8 3.8	3.8	3.8	1.7 1.8	1.7		7.7 7.8	7.8	
M1	Sunny	Moderate	15:50	Surface	1.1	28.0 27.9	28.0	7.9 8.0	8.0	30.3 30.3	30.3	116.2 116.4	116.3	7.7 7.7	7.7	7.1	0.4 0.4	0.4	0.7	2.3 2.3	2.3	3.0
				Middle	3.1	27.7 27.7	27.7	8.0 8.0	8.0	31.0 31.0	31.0	99.0 99.1	99.1	6.6 6.6	6.6		0.9 0.9	0.9		3.7 3.8	3.8	
				Bottom	5.1	25.9 25.9	25.9	8.0 8.0	8.0	34.2 34.2	34.2	58.5 58.8	58.7	3.9 3.9	3.9	3.9	0.9 0.9	0.9		2.8 2.9	2.9	
M2	Sunny	Moderate	15:41	Surface	1.1	27.9 27.9	27.9	8.0 8.0	8.0	30.5 30.5	30.5	119.0 119.0	119.0	7.9 7.9	7.9	6.0	2.4 2.4	2.4	1.8	3.1 3.1	3.1	3.1
				Middle	6.1	25.1 25.1	25.1	8.0 8.0	8.0	35.0 35.0	35.0	59.6 59.8	59.7	4.0 4.1	4.0		1.3 1.4	1.4		3.2 3.2	3.2	
				Bottom	11.1	24.7 24.6	24.6	8.0 8.0	8.0	35.5 35.6	35.6	56.1 55.6	55.9	3.8 3.8	3.8	3.8	1.6 1.7	1.7		3.0 3.0	3.0	
M3	Sunny	Moderate	16:05	Surface	1.0	27.9 27.9	27.9	8.0 8.0	8.0	29.6 29.6	29.6	113.6 113.6	113.6	7.6 7.6	7.6	6.2	1.4 1.3	1.3	1.7	3.4 3.3	3.4	3.1
				Middle	4.0	25.9 25.9	25.9	7.9 7.9	7.9	34.0 34.0	34.0	68.6 73.1	70.9	4.6 4.9	4.8		1.6 1.5	1.6		2.8 2.7	2.8	
				Bottom	7.0	25.4 25.3	25.4	7.9 7.9	7.9	34.8 34.9	34.8	53.9 53.4	53.7	3.6 3.6	3.6	3.6	2.1 2.2	2.1		3.1 3.2	3.2	
M4	Sunny	Moderate	15:34	Surface	1.0	27.8 27.8	27.8	8.0 8.0	8.0	30.0 30.1	30.1	107.3 108.6	108.0	7.1 7.2	7.2	5.7	1.0 0.8	0.9	1.6	6.1 6.2	6.2	4.0
				Middle	5.0	25.3 25.3	25.3	8.1 8.0	8.0	34.7 34.7	34.7	62.1 63.0	62.6	4.2 4.3	4.2		1.4 1.1	1.2		2.4 2.3	2.4	
				Bottom	8.9	24.7 24.6	24.7	8.1 8.0	8.0	35.5 35.6	35.5	57.5 56.9	57.2	3.9 3.9	3.9	3.9	2.5 2.7	2.6		3.5 3.5	3.5	
M5	Sunny	Moderate	16:25	Surface	1.0	27.7 27.7	27.7	7.9 7.9	7.9	29.5 29.5	29.5	100.7 100.7	100.7	6.7 6.7	6.7	5.3	2.5 2.5	2.5	2.6	1.8 1.8	1.8	2.6
				Middle	6.0	25.1 25.1	25.1	7.9 7.9	7.9	34.9 34.9	34.9	58.1 58.3	58.2	3.9 3.9	3.9		2.2 2.1	2.1		3.1 3.1	3.1	
				Bottom	10.8	24.4 24.4	24.4	7.9 7.9	7.9	35.8 35.8	35.8	54.3 54.3	54.3	3.7 3.7	3.7	3.7	3.1 3.2	3.1		2.9 2.8	2.9	
M6	Sunny	Moderate	16:17	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.5	- -	-	0.8	- -	-	2.9
				Middle	2.0	27.9 27.9	27.9	7.9 7.9	7.9	29.9 29.9	29.9	112.5 112.6	112.6	7.5 7.5	7.5		0.9 0.8	0.8		2.9 2.9	2.9	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 24 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 3.4 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 3.6 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 3.4 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 3.6 mg/L***
	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 ***C2: 3.1 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 3.3 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 24 June 2019

(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	10:28	Surface	1.0	27.8 24.8	26.3	7.8 7.8	7.8	29.4 29.4	29.4	103.3 103.2	103.3	6.9 6.9	6.9	5.3	1.4 1.5	1.5	1.4	2.1 2.1	2.1	2.2
				Middle	9.0	27.8 24.4	26.1	7.8 7.8	7.8	35.5 35.5	35.5	55.8 56.0	55.9	3.8 3.8	3.8		0.7 0.6	0.6		3.0 3.1	3.1	
				Bottom	17.1	24.8 24.3	24.6	7.8 7.8	7.8	35.8 35.8	35.8	54.5 54.5	54.5	3.7 3.7	3.7		2.2 2.2	2.2		1.5 1.6	1.6	
C2	Sunny	Moderate	09:25	Surface	1.1	26.7 26.7	26.7	8.4 8.2	8.3	31.2 31.3	31.3	76.6 76.5	76.6	5.1 5.1	5.1	4.4	0.6 0.6	0.6	2.0	1.9 1.9	1.9	2.1
				Middle	15.9	24.6 24.6	24.6	8.3 8.3	8.3	35.6 35.6	35.6	53.8 53.9	53.9	3.7 3.7	3.7		2.3 2.3	2.3		1.4 1.4	1.4	
				Bottom	31.0	24.4 24.4	24.4	8.3 8.3	8.3	35.8 35.8	35.8	53.2 53.1	53.2	3.6 3.6	3.6	3.6	3.1 3.2	3.1		3.1 3.1	3.1	
G1	Sunny	Moderate	09:54	Surface	1.0	28.0 28.0	28.0	8.0 8.0	8.0	29.9 29.9	29.9	121.5 121.2	121.4	8.1 8.0	8.0	6.4	1.6 1.6	1.6	2.0	2.9 2.9	2.9	4.5
				Middle	4.0	26.1 26.1	26.1	8.0 8.0	8.0	33.8 33.8	33.8	70.4 70.9	70.7	4.7 4.8	4.7		2.4 2.3	2.4		4.8 4.8	4.8	
				Bottom	7.0	25.1 25.0	25.1	8.0 8.0	8.0	35.1 35.2	35.2	56.4 56.2	56.3	3.8 3.8	3.8	3.8	2.0 2.0	2.0		5.7 5.8	5.8	
G2	Sunny	Moderate	09:44	Surface	1.1	28.1 28.1	28.1	8.0 8.0	8.0	30.3 30.3	30.3	122.9 123.0	123.0	8.1 8.1	8.1	6.3	1.7 1.7	1.7	1.6	6.4 6.2	6.3	4.3
				Middle	4.6	25.7 25.7	25.7	8.0 8.0	8.0	33.8 33.6	33.7	65.0 65.5	65.3	4.4 4.4	4.4		1.5 1.5	1.5		2.4 2.4	2.4	
				Bottom	9.0	24.9 24.8	24.9	8.1 8.0	8.0	35.3 35.4	35.3	56.8 56.6	56.7	3.8 3.8	3.8	3.8	1.6 1.6	1.6		4.3 4.2	4.3	
G3	Sunny	Moderate	09:59	Surface	1.0	27.9 26.7	27.3	7.9 7.9	7.9	29.7 29.7	29.7	113.3 113.7	113.5	7.5 7.6	7.5	6.4	0.6 0.6	0.6	0.9	2.9 2.8	2.9	3.3
				Middle	4.0	27.9 25.2	26.6	7.9 7.9	7.9	32.4 32.0	32.2	75.9 80.7	78.3	5.1 5.4	5.2		0.8 0.7	0.7		4.5 4.3	4.4	
				Bottom	7.0	26.8 25.2	26.0	8.0 7.9	7.9	34.9 35.0	35.0	53.9 53.4	53.7	3.6 3.6	3.6	3.6	1.3 1.3	1.3		2.6 2.5	2.6	
G4	Sunny	Moderate	10:12	Surface	1.0	28.0 26.0	27.0	7.9 7.9	7.9	29.9 29.9	29.9	113.7 114.0	113.9	7.5 7.6	7.6	6.4	1.6 1.5	1.5	2.4	1.7 1.7	1.7	2.6
				Middle	4.2	28.0 25.4	26.7	7.9 7.9	7.9	33.6 33.6	33.6	76.1 80.3	78.2	5.1 5.4	5.3		1.6 1.6	1.6		3.2 3.2	3.2	
				Bottom	7.0	26.0 25.3	25.7	7.9 7.9	7.9	34.7 34.8	34.8	56.0 55.5	55.8	3.8 3.7	3.8	3.8	4.0 4.1	4.0		2.8 2.8	2.8	
M1	Sunny	Moderate	09:49	Surface	1.0	27.9 27.9	27.9	8.0 8.0	8.0	30.5 30.4	30.4	113.2 113.6	113.4	7.5 7.5	7.5	7.1	0.5 0.5	0.5	0.5	3.5 3.5	3.5	3.2
				Middle	3.0	27.7 27.7	27.7	8.0 8.0	8.0	31.0 30.9	31.0	102.5 102.5	102.5	6.8 6.8	6.8		0.2 0.3	0.2		3.2 3.1	3.2	
				Bottom	5.0	26.0 26.0	26.0	8.0 8.0	8.0	34.0 33.9	34.0	61.2 61.2	61.2	4.1 4.1	4.1	4.1	0.7 0.7	0.7		3.0 3.1	3.1	
M2	Sunny	Moderate	09:40	Surface	1.2	27.9 25.1	26.5	8.2 8.1	8.1	30.5 30.5	30.5	112.1 112.8	112.5	7.4 7.5	7.4	5.7	1.7 1.7	1.7	1.9	4.8 4.7	4.8	3.7
				Middle	6.0	27.9 24.8	26.3	8.2 8.1	8.1	35.0 35.0	35.0	57.7 61.2	59.5	3.9 4.1	4.0		1.8 1.8	1.8		3.6 3.6	3.6	
				Bottom	11.2	25.1 24.7	24.9	8.2 8.1	8.1	35.4 35.5	35.4	55.1 54.9	55.0	3.7 3.7	3.7	3.7	2.2 2.3	2.2		2.9 2.8	2.9	
M3	Sunny	Moderate	10:04	Surface	1.1	27.9 26.0	26.9	7.9 7.9	7.9	29.9 29.9	29.9	114.9 114.9	114.9	7.6 7.6	7.6	6.2	2.3 2.3	2.3	2.3	2.1 2.1	2.1	3.0
				Middle	4.0	27.9 25.1	26.5	7.9 7.9	7.9	33.7 33.6	33.6	70.4 72.6	71.5	4.7 4.9	4.8		2.4 2.4	2.4		4.2 4.1	4.2	
				Bottom	7.1	26.0 25.0	25.5	7.9 7.9	7.9	35.1 35.3	35.2	52.9 52.6	52.8	3.6 3.6	3.6	3.6	2.3 2.3	2.3		2.6 2.7	2.7	
M4	Sunny	Moderate	09:33	Surface	1.1	27.8 25.3	26.5	8.2 8.1	8.2	30.2 30.2	30.2	108.8 109.0	108.9	7.2 7.2	7.2	5.6	0.8 0.9	0.9	2.3	3.8 3.7	3.8	2.7
				Middle	5.0	27.8 24.5	26.1	8.2 8.1	8.2	34.7 34.7	34.7	59.0 59.1	59.1	4.0 4.0	4.0		2.5 2.5	2.5		3.3 3.3	3.3	
				Bottom	9.0	25.3 24.5	24.9	8.1 8.1	8.1	35.7 35.7	35.7	53.6 53.5	53.6	3.6 3.6	3.6	3.6	3.4 3.6	3.5		1.1 1.1	1.1	
M5	Sunny	Moderate	10:24	Surface	1.0	27.6 25.2	26.4	7.8 7.8	7.8	29.6 29.6	29.6	97.8 98.1	98.0	6.5 6.6	6.5	5.3	1.2 1.2	1.2	1.5	2.4 2.5	2.5	2.5
				Middle	6.2	27.6 24.7	26.2	7.8 7.8	7.8	34.8 34.8	34.8	61.0 61.5	61.3	4.1 4.2	4.1		1.5 1.4	1.5		2.6 2.7	2.7	
				Bottom	10.8	25.2 24.6	24.9	7.9 7.8	7.8	35.5 35.5	35.5	55.0 55.0	55.0	3.7 3.7	3.7	3.7	1.9 2.0	2.0		2.4 2.4	2.4	
M6	Sunny	Moderate	10:16	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.4	- -	-	0.8	- -	-	3.5
				Middle	2.0	27.8 27.9	27.8	7.9 7.9	7.9	29.9 29.9	29.9	112.0 112.0	112.0	7.4 7.5	7.4		0.8 0.8	0.8		3.5 3.4	3.5	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 24 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 2.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 2.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 2.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 2.7 mg/L***
	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 ***C1: 1.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 2.0 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 26 June 2019

(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	9:07	Surface	1.1	26.8 26.8	26.8	7.8 7.8	7.8	30.6 30.8	30.7	75.5 75.8	75.7	5.1 5.1	5.1	4.3	0.5 0.5	0.5	2.1	2.6 2.6	2.6	3.8
				Middle	9.0	24.6 24.6	24.6	7.8 7.8	7.8	35.4 35.4	35.4	51.9 52.3	52.1	3.5 3.6	3.5		2.8 2.8	2.8		6.1 5.9	6.0	
				Bottom	17.1	24.5 24.4	24.4	7.8 7.8	7.8	35.6 35.7	35.6	50.6 50.0	50.3	3.5 3.4	3.4	3.4	3.0 3.1	3.0		2.9 2.8	2.9	
C2	Cloudy	Calm	8:04	Surface	1.1	27.1 27.0	27.1	8.4 8.2	8.3	28.6 28.9	28.7	73.7 71.2	72.5	5.0 4.8	4.9	4.2	1.6 1.5	1.6	2.7	3.9 4.1	4.0	4.3
				Middle	15.9	24.5 24.6	24.6	8.3 8.3	8.3	35.5 35.4	35.4	50.7 50.6	50.7	3.5 3.4	3.4		3.0 2.9	2.9		2.4 2.4	2.4	
				Bottom	31.1	24.5 24.6	24.6	8.3 8.3	8.3	35.5 35.4	35.5	50.6 50.4	50.5	3.4 3.4	3.4	3.4	3.5 3.5	3.5		6.6 6.4	6.5	
G1	Cloudy	Calm	8:37	Surface	1.1	26.8 26.7	26.7	8.0 8.0	8.0	30.6 30.8	30.7	81.3 79.7	80.5	5.5 5.4	5.4	5.2	1.3 1.3	1.3	1.3	6.4 6.2	6.3	4.7
				Middle	4.1	26.4 26.4	26.4	8.0 8.0	8.0	32.8 32.1	32.4	74.5 73.2	73.9	5.0 4.9	5.0		1.1 1.1	1.1		4.0 4.0	4.0	
				Bottom	7.1	25.9 25.4	25.7	8.0 8.0	8.0	33.3 34.2	33.7	57.6 56.0	56.8	3.9 3.8	3.8	3.8	1.4 1.5	1.4		3.7 3.7	3.7	
G2	Cloudy	Calm	8:26	Surface	1.1	26.7 26.6	26.7	8.0 8.0	8.0	30.7 30.9	30.8	79.8 79.5	79.7	5.4 5.4	5.4	4.9	2.0 2.0	2.0	2.1	2.3 2.3	2.3	2.3
				Middle	5.1	26.1 26.1	26.1	8.0 8.0	8.0	32.9 32.9	32.9	66.8 67.3	67.1	4.5 4.5	4.5		1.2 1.2	1.2		2.9 3.1	3.0	
				Bottom	9.0	24.7 24.7	24.7	8.1 8.0	8.0	35.4 35.4	35.4	51.7 51.2	51.5	3.5 3.5	3.5	3.5	3.3 3.2	3.3		1.7 1.7	1.7	
G3	Cloudy	Calm	8:43	Surface	1.0	26.7 26.8	26.8	7.9 7.9	7.9	30.1 29.9	30.0	77.4 78.8	78.1	5.2 5.3	5.3	5.0	1.7 1.7	1.7	1.8	3.5 3.6	3.6	5.7
				Middle	4.1	26.3 26.5	26.4	7.9 7.9	7.9	32.5 32.3	32.4	68.5 69.5	69.0	4.6 4.7	4.6		1.4 1.5	1.5		8.8 8.6	8.7	
				Bottom	7.1	25.4 25.4	25.4	8.0 7.9	7.9	34.3 34.3	34.3	53.7 52.0	52.9	3.6 3.5	3.6	3.6	2.3 2.3	2.3		4.8 5.1	5.0	
G4	Cloudy	Calm	8:52	Surface	1.1	26.7 26.4	26.6	7.9 7.9	7.9	30.5 30.7	30.6	78.7 79.2	79.0	5.3 5.3	5.3	5.1	0.5 0.5	0.5	1.2	3.3 3.3	3.3	4.4
				Middle	4.2	26.7 25.3	26.0	7.9 7.9	7.9	32.4 32.2	32.3	71.5 71.8	71.7	4.8 4.8	4.8		0.1 0.1	0.1		3.7 3.7	3.7	
				Bottom	7.0	26.4 25.3	25.9	7.9 7.9	7.9	34.4 34.4	34.4	51.6 50.8	51.2	3.5 3.4	3.5	3.5	2.9 2.9	2.9		6.1 6.0	6.1	
M1	Cloudy	Calm	8:32	Surface	1.0	26.7 26.7	26.7	8.0 8.0	8.0	30.5 30.6	30.6	73.2 72.9	73.1	5.0 4.9	4.9	4.8	1.6 1.6	1.6	1.6	2.9 3.0	3.0	4.1
				Middle	3.1	26.3 26.5	26.4	8.0 8.0	8.0	32.0 31.3	31.6	67.9 68.5	68.2	4.6 4.6	4.6		1.7 1.8	1.7		3.8 3.9	3.9	
				Bottom	5.0	26.1 26.1	26.1	8.0 8.0	8.0	32.5 32.8	32.7	66.3 65.3	65.8	4.5 4.4	4.4	4.4	1.5 1.4	1.5		5.3 5.4	5.4	
M2	Cloudy	Calm	8:23	Surface	1.1	26.4 26.4	26.4	8.2 8.1	8.1	31.6 31.6	31.6	71.7 72.0	71.9	4.8 4.9	4.8	4.6	1.1 1.1	1.1	1.7	3.2 3.1	3.2	2.7
				Middle	6.0	26.0 25.9	26.0	8.2 8.1	8.1	32.8 33.0	32.9	64.6 64.7	64.7	4.4 4.4	4.4		1.3 1.3	1.3		2.2 2.3	2.3	
				Bottom	10.3	24.5 24.6	24.6	8.2 8.1	8.1	35.0 35.5	35.3	53.1 50.9	52.0	3.6 3.5	3.5	3.5	2.6 2.6	2.6		2.6 2.7	2.7	
M3	Cloudy	Calm	8:45	Surface	1.0	26.9 26.1	26.5	7.9 7.9	7.9	29.1 29.7	29.4	82.2 81.2	81.7	5.6 5.5	5.5	5.1	1.3 1.3	1.3	1.2	5.4 5.4	5.4	4.5
				Middle	4.1	26.8 25.4	26.1	7.9 7.9	7.9	32.4 32.2	32.3	69.0 69.6	69.3	4.7 4.7	4.7		0.7 0.7	0.7		4.5 4.6	4.6	
				Bottom	7.1	26.2 25.4	25.8	7.9 7.9	7.9	34.4 34.4	34.4	48.7 48.1	48.4	3.3 3.3	3.3	3.3	1.7 1.7	1.7		3.6 3.7	3.7	
M4	Cloudy	Calm	8:13	Surface	1.1	26.7 26.7	26.7	8.2 8.1	8.2	31.1 31.2	31.1	80.0 79.0	79.5	5.4 5.3	5.4	5.3	0.5 0.5	0.5	1.2	3.5 3.4	3.5	2.4
				Middle	5.0	26.6 26.5	26.5	8.2 8.1	8.2	32.9 33.0	33.0	77.8 76.8	77.3	5.2 5.1	5.2		0.3 0.3	0.3		2.0 2.0	2.0	
				Bottom	9.1	24.8 24.8	24.8	8.1 8.1	8.1	35.3 35.2	35.2	52.0 51.4	51.7	3.5 3.5	3.5	3.5	2.9 2.9	2.9		1.6 1.6	1.6	
M5	Cloudy	Calm	9:02	Surface	1.0	26.6 26.6	26.6	7.8 7.8	7.8	31.1 31.0	31.1	70.5 70.9	70.7	4.8 4.8	4.8	4.2	0.6 0.5	0.6	1.4	3.0 2.8	2.9	2.6
				Middle	6.1	25.0 25.0	25.0	7.8 7.8	7.8	35.0 35.0	35.0	52.9 55.7	54.3	3.6 3.8	3.7		1.8 1.4	1.6		2.6 2.7	2.7	
				Bottom	11.1	24.6 24.6	24.6	7.9 7.8	7.8	35.6 35.6	35.6	50.2 50.2	50.2	3.4 3.4	3.4	3.4	2.1 2.1	2.1		2.4 2.3	2.4	
M6	Cloudy	Calm	8:56	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.1	- -	-	0.8	- -	-	3.7
				Middle	2.2	26.5 26.5	26.5	7.9 7.9	7.9	31.5 31.6	31.5	76.1 75.2	75.7	5.1 5.1	5.1		0.9 0.8	0.8		3.7 3.7	3.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 26 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.2 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.5 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 4.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 4.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.2 mg/L***
	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 ***C2: 7.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 8.5 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 26 June 2019

(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	13:09	Surface	1.1	26.8 26.8	26.8	7.9 7.9	7.9	30.5 30.4	30.5	71.4 72.1	71.8	4.8 4.9	4.8	4.2	1.1 1.1	1.1	2.5	3.0 3.2	3.1	3.5
				Middle	8.9	24.6 24.6	24.6	7.9 7.9	7.9	35.4 35.4	35.4	50.8 51.8	51.3	3.5 3.5	3.5		2.5 2.6	2.6		4.3 4.2	4.3	
				Bottom	17.0	24.4 24.5	24.5	7.9 7.9	7.9	35.6 35.6	35.6	49.7 49.8	49.8	3.4 3.4	3.4	3.4	4.0 3.7	3.8		3.2 3.2	3.2	
C2	Cloudy	Calm	12:06	Surface	1.1	27.2 27.1	27.2	8.5 8.1	8.3	28.3 28.5	28.4	71.7 70.4	71.1	4.9 4.8	4.8	4.1	1.5 1.4	1.4	2.3	7.6 7.5	7.6	4.6
				Middle	15.8	24.6 24.5	24.6	8.5 8.1	8.3	35.4 35.5	35.4	50.5 50.5	50.5	3.4 3.4	3.4		2.9 3.1	3.0		1.4 1.4	1.4	
				Bottom	31.0	24.6 24.5	24.5	8.5 8.1	8.3	35.4 35.5	35.5	50.4 50.1	50.3	3.4 3.4	3.4	3.4	2.4 2.3	2.4		4.8 5.1	5.0	
G1	Cloudy	Calm	12:39	Surface	1.1	26.5 26.5	26.5	8.0 8.0	8.0	31.3 31.4	31.4	75.9 75.5	75.7	5.1 5.1	5.1	5.0	0.7 0.7	0.7	0.5	3.5 3.4	3.5	4.3
				Middle	4.1	26.4 26.4	26.4	8.0 8.0	8.0	32.6 32.5	32.5	73.2 72.4	72.8	4.9 4.9	4.9		0.3 0.2	0.3		3.0 3.0	3.0	
				Bottom	7.1	25.7 25.6	25.7	8.0 8.0	8.0	33.6 33.7	33.6	62.2 58.3	60.3	4.2 3.9	4.1	4.1	0.5 0.6	0.6		6.6 6.4	6.5	
G2	Cloudy	Calm	12:29	Surface	1.0	26.5 26.5	26.5	8.0 8.0	8.0	31.3 31.2	31.2	74.7 74.8	74.8	5.0 5.0	5.0	4.8	1.3 1.3	1.3	1.6	2.8 2.7	2.8	3.5
				Middle	5.1	26.0 26.2	26.1	8.0 8.0	8.0	32.9 32.6	32.7	66.3 68.4	67.4	4.5 4.6	4.5		1.2 1.2	1.2		2.5 2.5	2.5	
				Bottom	9.1	25.0 24.8	24.9	8.0 7.9	8.0	34.9 35.2	35.1	52.5 52.3	52.4	3.6 3.6	3.6	3.6	2.3 2.6	2.5		5.1 5.1	5.1	
G3	Cloudy	Calm	12:46	Surface	1.1	26.9 26.9	26.9	8.0 8.0	8.0	28.8 29.1	28.9	84.8 84.0	84.4	5.8 5.7	5.7	5.2	2.0 1.9	2.0	1.9	4.4 4.4	4.4	4.2
				Middle	4.0	26.2 26.2	26.2	8.0 8.0	8.0	32.7 32.6	32.7	69.5 69.5	69.5	4.7 4.7	4.7		1.1 1.2	1.1		3.9 4.0	4.0	
				Bottom	7.1	25.4 25.3	25.4	8.0 8.0	8.0	34.2 34.4	34.3	51.2 50.6	50.9	3.5 3.4	3.4	3.4	2.5 2.5	2.5		4.4 4.3	4.4	
G4	Cloudy	Calm	12:55	Surface	1.1	26.9 26.8	26.8	7.9 7.9	7.9	30.2 30.4	30.3	85.6 84.0	84.8	5.8 5.7	5.7	5.4	0.8 0.8	0.8	1.2	4.2 4.3	4.3	4.2
				Middle	4.0	26.5 26.4	26.5	8.0 7.9	7.9	32.4 32.5	32.4	75.0 74.3	74.7	5.0 5.0	5.0		0.0 0.0	0.0		3.4 3.4	3.4	
				Bottom	7.0	25.4 25.3	25.4	8.0 7.9	7.9	34.3 34.4	34.4	53.7 51.3	52.5	3.6 3.5	3.5	3.5	2.7 2.7	2.7		4.9 5.1	5.0	
M1	Cloudy	Calm	12:34	Surface	1.1	26.7 26.7	26.7	7.9 8.0	8.0	30.2 30.4	30.3	74.8 74.2	74.5	5.1 5.0	5.0	4.9	1.4 1.4	1.4	1.4	4.6 4.5	4.6	4.1
				Middle	3.1	26.6 26.6	26.6	8.0 8.0	8.0	31.0 30.6	30.8	69.5 70.3	69.9	4.7 4.8	4.7		1.6 1.5	1.5		3.2 3.0	3.1	
				Bottom	5.1	26.2 26.2	26.2	8.0 8.0	8.0	32.4 32.5	32.5	67.6 67.0	67.3	4.6 4.5	4.5	4.5	1.4 1.3	1.4		4.7 4.7	4.7	
M2	Cloudy	Calm	12:25	Surface	1.1	26.5 26.5	26.5	8.0 8.0	8.0	31.5 31.6	31.6	75.3 74.9	75.1	5.1 5.0	5.1	4.6	0.7 0.7	0.7	1.8	4.0 4.1	4.1	3.9
				Middle	5.6	25.6 25.8	25.7	8.0 8.0	8.0	33.7 33.2	33.4	57.9 63.2	60.6	3.9 4.3	4.1		2.1 2.2	2.1		2.4 2.3	2.4	
				Bottom	10.1	25.2 24.6	24.9	8.0 8.0	8.0	34.5 35.5	35.0	51.5 50.6	51.1	3.5 3.4	3.5	3.5	2.6 2.5	2.5		5.1 5.2	5.2	
M3	Cloudy	Calm	12:48	Surface	1.1	26.7 26.7	26.7	8.0 8.0	8.0	30.1 30.1	30.1	76.5 77.2	76.9	5.2 5.2	5.2	4.9	1.0 1.0	1.0	0.9	6.8 6.7	6.8	4.6
				Middle	4.0	26.1 26.3	26.2	7.9 7.9	7.9	32.4 31.9	32.2	67.6 68.1	67.9	4.6 4.6	4.6		0.5 0.5	0.5		3.8 3.8	3.8	
				Bottom	7.0	25.7 25.5	25.6	7.9 7.9	7.9	33.4 34.1	33.7	56.6 51.9	54.3	3.8 3.5	3.7	3.7	1.1 1.1	1.1		3.1 3.2	3.2	
M4	Cloudy	Calm	12:16	Surface	1.1	26.7 26.7	26.7	8.0 8.0	8.0	30.9 30.9	30.9	78.3 78.7	78.5	5.3 5.3	5.3	5.3	1.2 1.2	1.2	1.5	4.2 4.2	4.2	4.6
				Middle	5.1	26.6 26.6	26.6	8.1 8.0	8.0	32.8 32.4	32.6	78.3 78.4	78.4	5.2 5.3	5.2		0.9 1.0	0.9		3.3 3.2	3.3	
				Bottom	9.0	24.9 24.9	24.9	8.1 8.0	8.0	35.2 35.1	35.1	51.9 51.5	51.7	3.5 3.5	3.5	3.5	2.5 2.5	2.5		6.3 6.1	6.2	
M5	Cloudy	Calm	13:05	Surface	1.1	26.7 26.7	26.7	7.9 7.9	7.9	30.7 30.7	30.7	75.9 75.4	75.7	5.1 5.1	5.1	4.4	0.4 0.4	0.4	1.1	3.8 3.9	3.9	3.9
				Middle	6.1	25.0 25.0	25.0	7.9 7.9	7.9	34.9 35.0	34.9	53.1 53.8	53.5	3.6 3.7	3.6		1.4 1.3	1.3		4.8 4.8	4.8	
				Bottom	11.1	24.6 24.5	24.6	7.9 7.9	7.9	35.6 35.6	35.6	50.7 50.6	50.7	3.5 3.4	3.4	3.4	1.6 1.7	1.7		3.1 3.1	3.1	
M6	Cloudy	Calm	12:58	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.0	- -	-	0.8	- -	-	6.9
				Middle	2.2	26.5 26.5	26.5	7.9 7.9	7.9	31.6 31.5	31.5	74.8 74.5	74.7	5.0 5.0	5.0		0.8 0.8	0.8		6.8 6.9	6.9	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 26 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.0 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 3.7 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 4.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 3.7 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 4.0 mg/L***
	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 ***C1: 3.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 4.2 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.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 28 June 2019

(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	10:26	Surface	1.0	26.7 26.7	26.7	8.8 8.8	8.8	32.8 32.8	32.8	88.5 84.2	86.4	6.0 5.7	5.8	5.8	1.5 1.7	1.6	1.9	8.3 8.1	8.2	6.4
				Middle	9.0	26.4 26.5	26.4	8.8 8.8	8.8	33.6 33.4	33.5	85.0 84.3	84.7	5.8 5.7	5.7		2.2 2.6	2.4		6.1 6.1	6.1	
				Bottom	17.0	26.4 26.4	26.4	8.8 8.8	8.8	33.7 33.7	33.7	84.6 84.2	84.4	5.7 5.7	5.7	5.7	1.8 1.6	1.7		4.8 5.1	5.0	
C2	Cloudy	Calm	9:29	Surface	1.1	26.7 26.7	26.7	8.9 9.0	8.9	32.0 32.0	32.0	83.5 82.7	83.1	5.7 5.6	5.6	5.7	2.4 2.3	2.3	3.2	5.6 5.7	5.7	4.8
				Middle	16.0	26.4 26.4	26.4	8.9 9.0	8.9	33.8 33.6	33.7	83.7 83.8	83.8	5.7 5.7	5.7		4.0 3.3	3.6		3.7 3.7	3.7	
				Bottom	31.0	26.4 26.3	26.4	8.9 8.9	8.9	33.7 33.9	33.8	83.7 83.5	83.6	5.7 5.7	5.7	5.7	3.9 3.4	3.7		4.9 5.0	5.0	
G1	Cloudy	Calm	9:55	Surface	1.0	26.6 26.6	26.6	8.9 8.9	8.9	33.0 33.0	33.0	90.1 88.6	89.4	6.1 6.0	6.0	6.0	1.0 1.0	1.0	1.1	4.2 4.3	4.3	4.8
				Middle	4.0	26.6 26.6	26.6	8.9 8.9	8.9	33.0 33.0	33.0	89.2 88.8	89.0	6.0 6.0	6.0		1.1 1.0	1.1		5.1 5.1	5.1	
				Bottom	6.9	26.6 26.6	26.6	8.9 8.9	8.9	33.1 33.1	33.1	88.3 88.0	88.2	6.0 6.0	6.0	6.0	1.2 1.0	1.1		5.2 5.1	5.2	
G2	Cloudy	Calm	9:46	Surface	1.0	26.5 26.5	26.5	8.9 8.9	8.9	33.2 33.3	33.2	94.3 87.2	90.8	6.4 5.9	6.1	6.1	0.6 0.6	0.6	0.9	4.3 4.2	4.3	5.1
				Middle	5.0	26.5 26.5	26.5	9.0 8.9	9.0	33.2 33.2	33.2	89.7 87.9	88.8	6.1 5.9	6.0		0.1 0.2	0.2		6.9 7.0	7.0	
				Bottom	9.0	26.3 26.4	26.4	8.9 8.9	8.9	34.1 33.8	33.9	86.2 86.2	86.2	5.8 5.8	5.8	5.8	1.8 2.0	1.9		4.2 4.2	4.2	
G3	Cloudy	Calm	9:58	Surface	1.0	26.6 26.6	26.6	8.8 8.9	8.8	31.9 32.7	32.3	87.2 85.0	86.1	5.9 5.8	5.8	5.8	1.3 1.5	1.4	2.0	4.0 3.9	4.0	4.3
				Middle	4.0	26.6 26.7	26.6	8.8 8.8	8.8	33.1 32.6	32.8	85.1 84.7	84.9	5.8 5.7	5.7		1.9 1.7	1.8		5.3 5.5	5.4	
				Bottom	7.1	26.3 26.6	26.5	8.9 8.8	8.9	34.0 33.1	33.6	85.2 84.3	84.8	5.8 5.7	5.7	5.7	3.0 2.6	2.8		3.5 3.5	3.5	
G4	Cloudy	Calm	10:09	Surface	1.0	26.7 26.6	26.6	8.8 8.8	8.8	31.5 32.5	32.0	91.5 86.5	89.0	6.2 5.9	6.1	5.9	1.9 2.3	2.1	1.9	7.0 7.0	7.0	5.6
				Middle	4.0	26.7 26.7	26.7	8.8 8.8	8.8	32.9 33.1	33.0	84.6 83.9	84.3	5.7 5.7	5.7		1.7 1.4	1.5		4.2 4.2	4.2	
				Bottom	7.0	26.5 26.4	26.4	8.8 8.8	8.8	33.6 33.9	33.7	84.3 84.6	84.5	5.7 5.7	5.7	5.7	2.0 2.1	2.0		5.4 5.5	5.5	
M1	Cloudy	Calm	9:50	Surface	1.0	26.7 26.6	26.6	8.9 8.9	8.9	32.2 32.9	32.6	89.3 87.5	88.4	6.1 5.9	6.0	6.0	0.7 0.8	0.7	0.8	3.6 3.4	3.5	4.7
				Middle	3.0	26.6 26.6	26.6	8.9 8.9	8.9	32.6 32.8	32.7	88.3 87.2	87.8	6.0 5.9	5.9		0.8 0.9	0.8		5.2 5.2	5.2	
				Bottom	5.0	26.5 26.5	26.5	8.9 8.9	8.9	33.2 33.2	33.2	87.7 87.3	87.5	5.9 5.9	5.9	5.9	0.9 0.9	0.9		5.3 5.3	5.3	
M2	Cloudy	Calm	9:42	Surface	1.0	26.5 26.5	26.5	8.9 8.9	8.9	33.3 33.3	33.3	90.6 87.4	89.0	6.1 5.9	6.0	5.9	1.9 2.2	2.0	2.2	4.7 4.9	4.8	4.4
				Middle	6.0	26.3 26.5	26.4	8.9 8.9	8.9	34.1 33.6	33.8	86.2 87.0	86.6	5.8 5.9	5.9		2.1 1.9	2.0		4.6 4.8	4.7	
				Bottom	11.0	26.3 26.3	26.3	9.0 9.0	9.0	34.2 34.2	34.2	86.1 86.3	86.2	5.8 5.8	5.8	5.8	2.5 2.8	2.6		3.6 3.6	3.6	
M3	Cloudy	Calm	10:05	Surface	1.0	26.6 26.6	26.6	8.8 8.8	8.8	31.6 33.0	32.3	87.3 84.4	85.9	6.0 5.7	5.8	5.8	1.7 2.2	2.0	2.5	4.9 4.8	4.9	5.0
				Middle	4.0	26.6 26.6	26.6	8.8 8.8	8.8	33.0 32.8	32.9	84.6 84.1	84.4	5.7 5.7	5.7		2.5 2.2	2.4		5.5 5.5	5.5	
				Bottom	7.0	26.4 26.4	26.4	8.8 8.8	8.8	33.9 34.0	33.9	84.0 84.0	84.0	5.7 5.7	5.7	5.7	3.1 3.3	3.2		4.7 4.5	4.6	
M4	Cloudy	Calm	9:36	Surface	1.0	26.6 26.5	26.6	8.9 8.9	8.9	32.5 33.2	32.9	84.1 84.7	84.4	5.7 5.7	5.7	5.7	3.6 2.9	3.3	3.3	7.0 6.8	6.9	5.2
				Middle	5.0	26.5 26.5	26.5	9.0 9.0	9.0	33.4 33.3	33.4	84.7 84.5	84.6	5.7 5.7	5.7		3.6 3.1	3.3		4.0 4.1	4.1	
				Bottom	8.9	26.4 26.4	26.4	9.0 8.9	8.9	33.6 33.6	33.6	84.7 85.4	85.1	5.7 5.8	5.8	5.8	3.0 3.6	3.3		4.6 4.5	4.6	
M5	Cloudy	Calm	10:21	Surface	1.1	26.6 26.6	26.6	8.8 8.8	8.8	33.0 33.1	33.0	88.6 85.6	87.1	6.0 5.8	5.9	5.8	1.7 2.0	1.9	2.0	3.3 3.2	3.3	4.6
				Middle	6.0	26.5 26.6	26.5	8.8 8.8	8.8	33.1 33.1	33.1	85.9 85.4	85.7	5.8 5.8	5.8		2.1 1.9	2.0		4.0 4.1	4.1	
				Bottom	11.0	26.5 26.5	26.5	8.8 8.8	8.8	33.3 33.3	33.3	85.2 85.0	85.1	5.8 5.8	5.8	5.8	1.8 2.3	2.0		6.4 6.3	6.4	
M6	Cloudy	Calm	10:14	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.1	- -	-	1.0	- -	-	7.8
				Middle	2.0	26.6 26.6	26.6	8.8 8.8	8.8	32.4 32.4	32.4	90.9 89.2	90.1	6.2 6.1	6.1		1.1 1.0	1.0		7.8 7.7	7.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Appendix I - Action and Limit Levels for Marine Water Quality on 28 June 2019 (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*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.8 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*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	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 ***C2: 5.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 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 28 June 2019

(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	15:01	Surface	1.0	26.9 26.8	26.9	8.7 8.7	8.7	31.7 31.9	31.8	84.3 81.3	82.8	5.7 5.5	5.6	5.6	2.5 2.9	2.7	3.3	7.6 7.8	7.7	6.0
				Middle	9.0	26.7 26.7	26.7	8.8 8.7	8.7	32.5 32.5	32.5	81.1 80.7	80.9	5.5 5.5	5.5		3.6 3.4	3.5		5.8 5.6	5.7	
				Bottom	17.0	26.4 26.1	26.3	8.8 8.8	8.8	33.5 34.4	34.0	81.5 81.4	81.5	5.5 5.5	5.5	5.5	3.5 3.9	3.7		4.6 4.7	4.7	
C2	Cloudy	Calm	14:00	Surface	1.0	27.2 27.1	27.1	8.9 8.9	8.9	30.7 30.8	30.8	84.8 81.8	83.3	5.8 5.6	5.7	5.6	3.1 3.5	3.3	4.9	5.4 5.4	5.4	4.8
				Middle	15.9	26.6 26.5	26.5	8.9 8.9	8.9	32.9 33.1	33.0	80.1 80.9	80.5	5.4 5.5	5.5		5.8 5.5	5.7		3.8 3.8	3.8	
				Bottom	31.0	26.5 26.5	26.5	8.9 8.9	8.9	33.1 33.1	33.1	80.5 80.9	80.7	5.5 5.5	5.5	5.5	6.1 5.6	5.9		5.1 5.1	5.1	
G1	Cloudy	Calm	14:26	Surface	1.0	26.8 26.8	26.8	8.8 8.8	8.8	32.2 32.4	32.3	93.6 89.9	91.8	6.3 6.1	6.2	6.1	1.9 2.1	2.0	2.0	4.2 4.4	4.3	5.2
				Middle	4.0	26.8 26.8	26.8	8.8 8.8	8.8	32.5 32.6	32.6	89.0 90.3	89.7	6.0 6.1	6.1		1.7 2.0	1.8		4.7 4.7	4.7	
				Bottom	7.0	26.7 26.7	26.7	8.8 8.7	8.8	33.0 32.8	32.9	88.0 88.5	88.3	5.9 6.0	6.0	6.0	2.0 2.3	2.1		6.5 6.5	6.5	
G2	Cloudy	Calm	14:15	Surface	1.0	26.9 26.8	26.8	8.9 8.9	8.9	32.6 32.8	32.7	92.2 87.7	90.0	6.2 5.9	6.1	6.0	2.6 2.5	2.5	2.5	9.1 9.5	9.3	4.9
				Middle	5.0	26.8 26.7	26.7	8.9 8.9	8.9	32.8 33.0	32.9	89.7 87.0	88.4	6.1 5.9	6.0		2.5 2.4	2.4		2.8 2.9	2.9	
				Bottom	9.0	26.6 26.6	26.6	8.9 8.8	8.8	33.2 33.2	33.2	87.0 85.9	86.5	5.9 5.8	5.8	5.8	2.8 2.5	2.6		2.5 2.5	2.5	
G3	Cloudy	Calm	14:31	Surface	1.0	27.1 26.7	26.9	8.8 8.8	8.8	31.3 31.6	31.4	93.2 90.0	91.6	6.3 6.1	6.2	6.2	2.0 2.3	2.1	1.8	4.1 4.1	4.1	3.6
				Middle	4.0	26.7 26.7	26.7	8.8 8.8	8.8	32.7 32.7	32.7	92.0 90.1	91.1	6.2 6.1	6.2		1.4 1.4	1.4		3.2 3.4	3.3	
				Bottom	7.0	26.6 26.6	26.6	8.8 8.8	8.8	33.1 33.0	33.0	84.4 83.9	84.2	5.7 5.7	5.7	5.7	1.9 1.8	1.8		3.2 3.3	3.3	
G4	Cloudy	Calm	14:43	Surface	1.0	26.7 27.0	26.9	8.6 8.6	8.6	32.2 31.2	31.7	92.0 94.0	93.0	6.2 6.4	6.3	6.2	3.1 2.6	2.8	3.1	3.9 3.8	3.9	4.3
				Middle	4.5	26.7 26.7	26.7	8.6 8.6	8.6	32.6 32.8	32.7	90.2 89.9	90.1	6.1 6.1	6.1		3.0 3.0	3.0		5.0 4.8	4.9	
				Bottom	7.0	26.6 26.6	26.6	8.6 8.6	8.6	33.1 33.2	33.1	85.1 83.3	84.2	5.8 5.6	5.7	5.7	3.3 3.8	3.5		4.1 4.1	4.1	
M1	Cloudy	Calm	14:21	Surface	1.0	27.1 26.7	26.9	8.8 8.8	8.8	31.8 32.8	32.3	93.2 85.6	89.4	6.3 5.8	6.0	6.0	3.3 3.5	3.4	3.4	4.9 4.9	4.9	5.7
				Middle	3.0	26.9 26.8	26.8	8.8 8.8	8.8	32.3 32.6	32.4	89.9 86.4	88.2	6.1 5.8	6.0		3.2 3.2	3.2		5.5 5.5	5.5	
				Bottom	4.9	26.7 26.7	26.7	8.8 8.8	8.8	32.9 32.9	32.9	85.4 85.1	85.3	5.8 5.8	5.8	5.8	3.5 3.9	3.7		6.6 6.6	6.6	
M2	Cloudy	Calm	14:10	Surface	0.9	27.0 26.7	26.8	9.0 8.9	8.9	32.4 33.0	32.7	93.7 87.4	90.6	6.3 5.9	6.1	6.1	1.6 1.5	1.5	1.8	3.7 3.8	3.8	4.0
				Middle	6.0	26.6 26.7	26.7	9.0 8.9	8.9	33.1 32.9	33.0	88.6 89.0	88.8	6.0 6.0	6.0		0.9 1.1	1.0		2.5 2.5	2.5	
				Bottom	11.1	26.4 26.4	26.4	9.0 8.9	8.9	33.8 34.0	33.9	86.2 84.1	85.2	5.8 5.7	5.8	5.8	2.8 3.2	3.0		5.8 5.9	5.9	
M3	Cloudy	Calm	14:39	Surface	1.0	26.8 26.7	26.7	8.7 8.7	8.7	31.8 32.7	32.2	92.0 88.4	90.2	6.3 6.0	6.1	5.9	3.3 3.0	3.1	3.1	6.7 6.8	6.8	6.3
				Middle	4.0	26.7 26.7	26.7	8.7 8.7	8.7	32.7 32.7	32.7	85.8 84.2	85.0	5.8 5.7	5.8		2.7 2.9	2.8		7.8 7.9	7.9	
				Bottom	7.0	26.6 26.6	26.6	8.7 8.7	8.7	33.0 33.2	33.1	85.0 82.5	83.8	5.7 5.6	5.7	5.7	3.3 3.2	3.2		4.1 4.2	4.2	
M4	Cloudy	Calm	14:05	Surface	1.0	27.1 26.8	26.9	8.9 8.9	8.9	31.5 32.0	31.7	86.5 80.7	83.6	5.9 5.5	5.7	5.6	4.1 3.9	4.0	4.0	10.1 10.0	10.1	6.6
				Middle	4.9	26.7 26.7	26.7	8.9 9.0	8.9	32.2 32.4	32.3	81.1 80.9	81.0	5.5 5.5	5.5		3.6 4.0	3.8		5.1 5.2	5.2	
				Bottom	9.0	26.7 26.7	26.7	8.9 8.9	8.9	32.7 32.7	32.7	82.7 82.7	82.7	5.6 5.6	5.6	5.6	4.4 4.1	4.2		4.6 4.5	4.6	
M5	Cloudy	Calm	14:55	Surface	1.0	27.0 26.8	26.9	8.7 8.7	8.7	32.0 32.1	32.0	87.6 81.7	84.7	5.9 5.5	5.7	5.7	3.2 2.9	3.1	2.8	6.4 6.4	6.4	6.5
				Middle	6.0	26.8 26.8	26.8	8.7 8.7	8.7	32.1 32.2	32.1	83.2 81.5	82.4	5.6 5.5	5.6		2.9 2.5	2.7		6.4 6.6	6.5	
				Bottom	11.1	26.8 26.8	26.8	8.7 8.7	8.7	32.1 32.2	32.2	81.7 81.5	81.6	5.5 5.5	5.5	5.5	2.7 2.9	2.8		6.6 6.6	6.6	
M6	Cloudy	Calm	14:49	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.2	- -	-	2.1	- -	-	5.0
				Middle	2.0	26.9 26.7	26.8	8.6 8.6	8.6	31.9 32.7	32.3	93.4 90.2	91.8	6.3 6.1	6.2		2.0 2.2	2.1		5.0 5.0	5.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

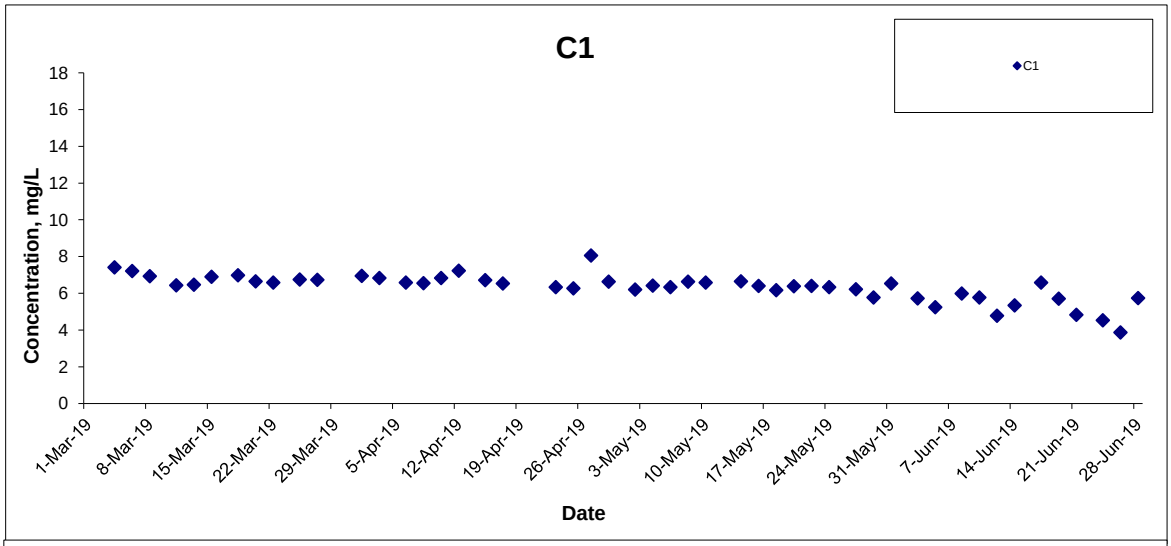
Appendix I - Action and Limit Levels for Marine Water Quality on 28 June 2019 (Mid-Flood Tide)

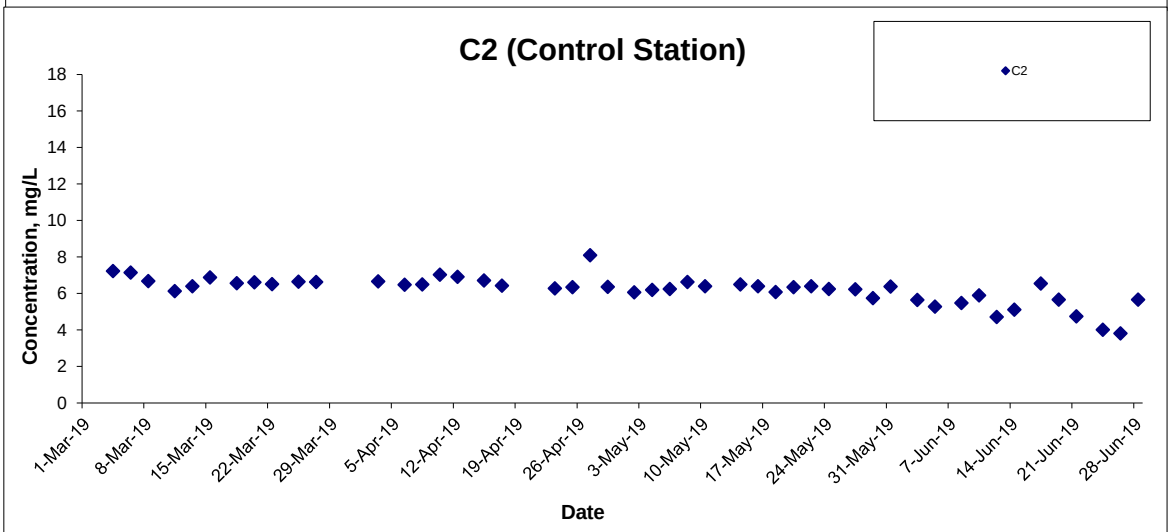
Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.5 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.9 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*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 9.2 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 10.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 9.2 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 10.0 mg/L***
	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 ***C1: 5.6 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

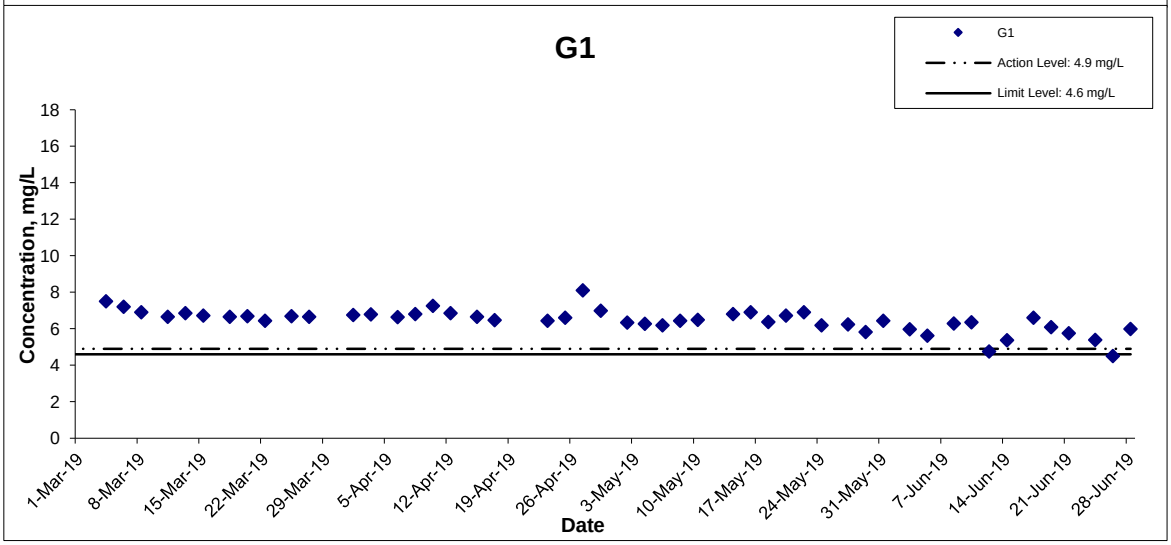
Notes:

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.

Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide

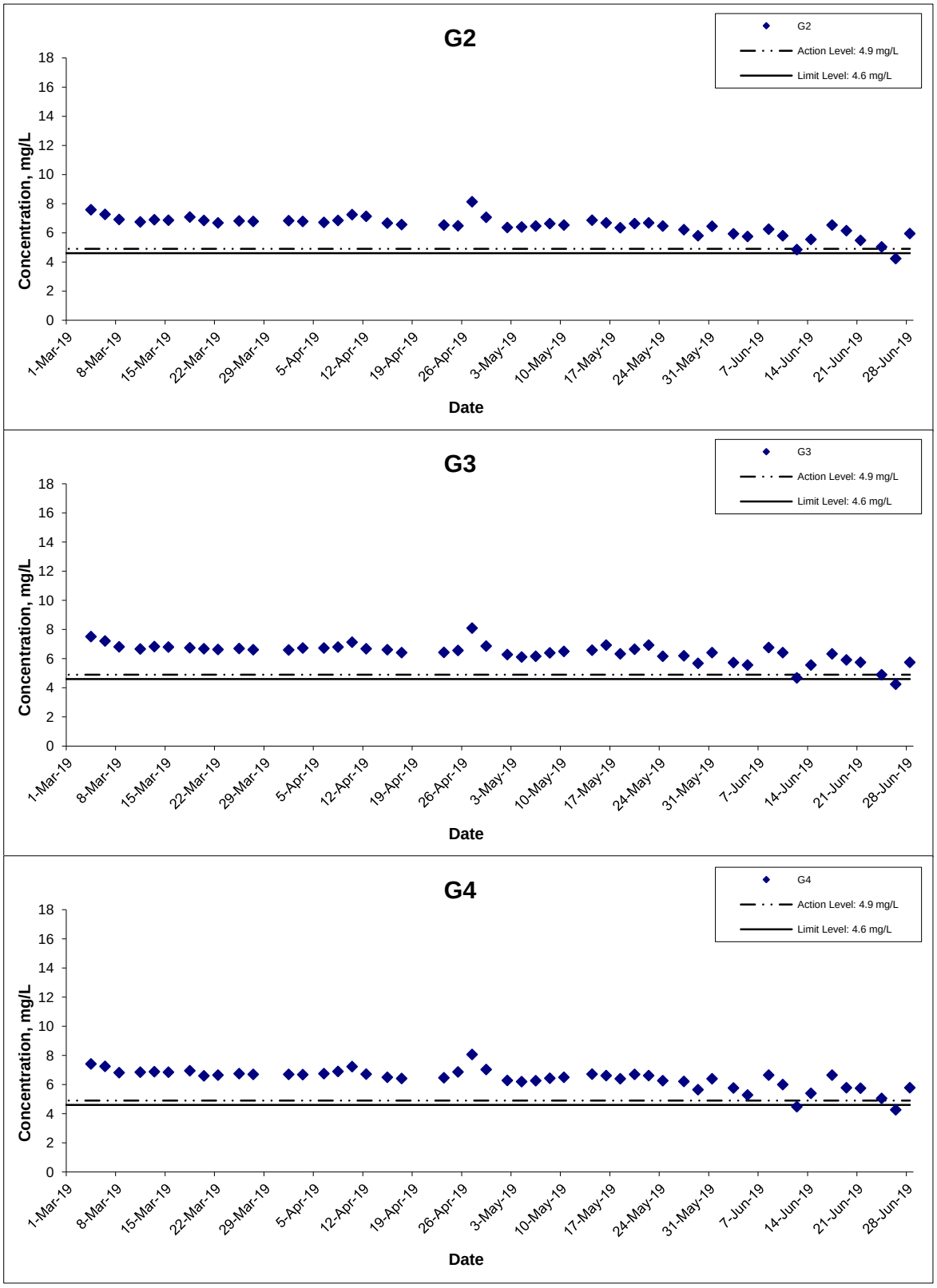






Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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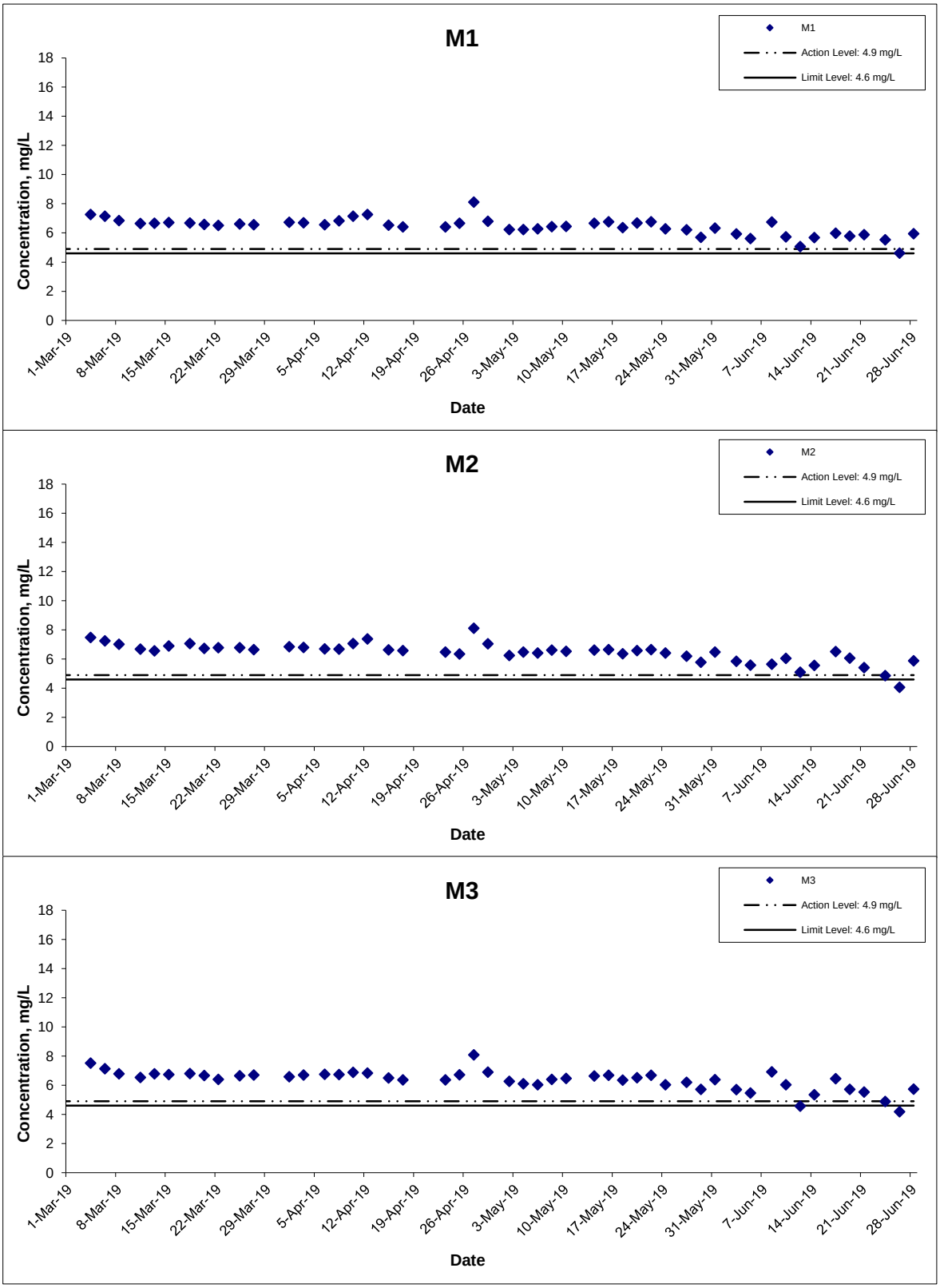
		Date June 19	Appendix I	

Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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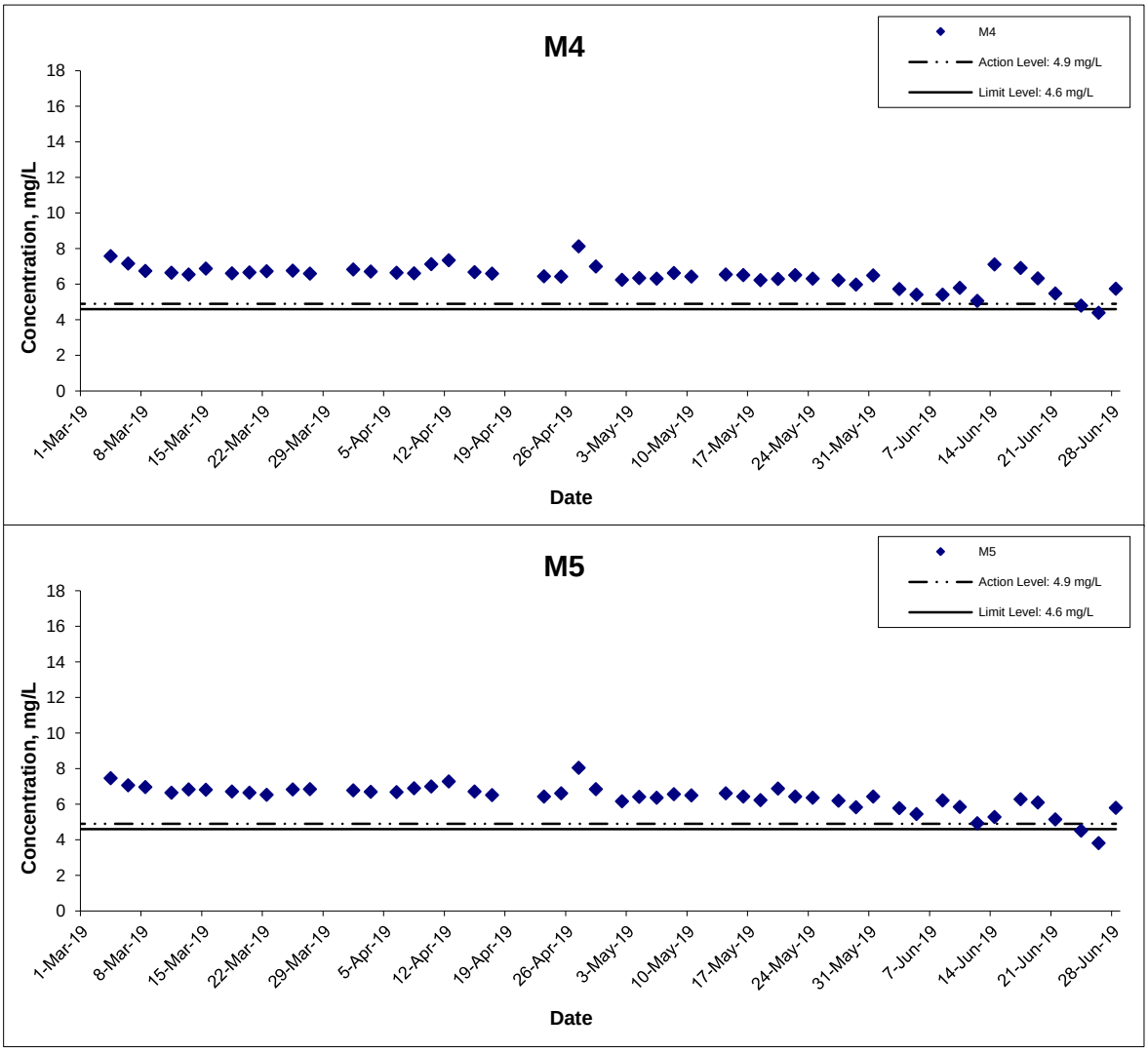
		Date June 19	Appendix I	

Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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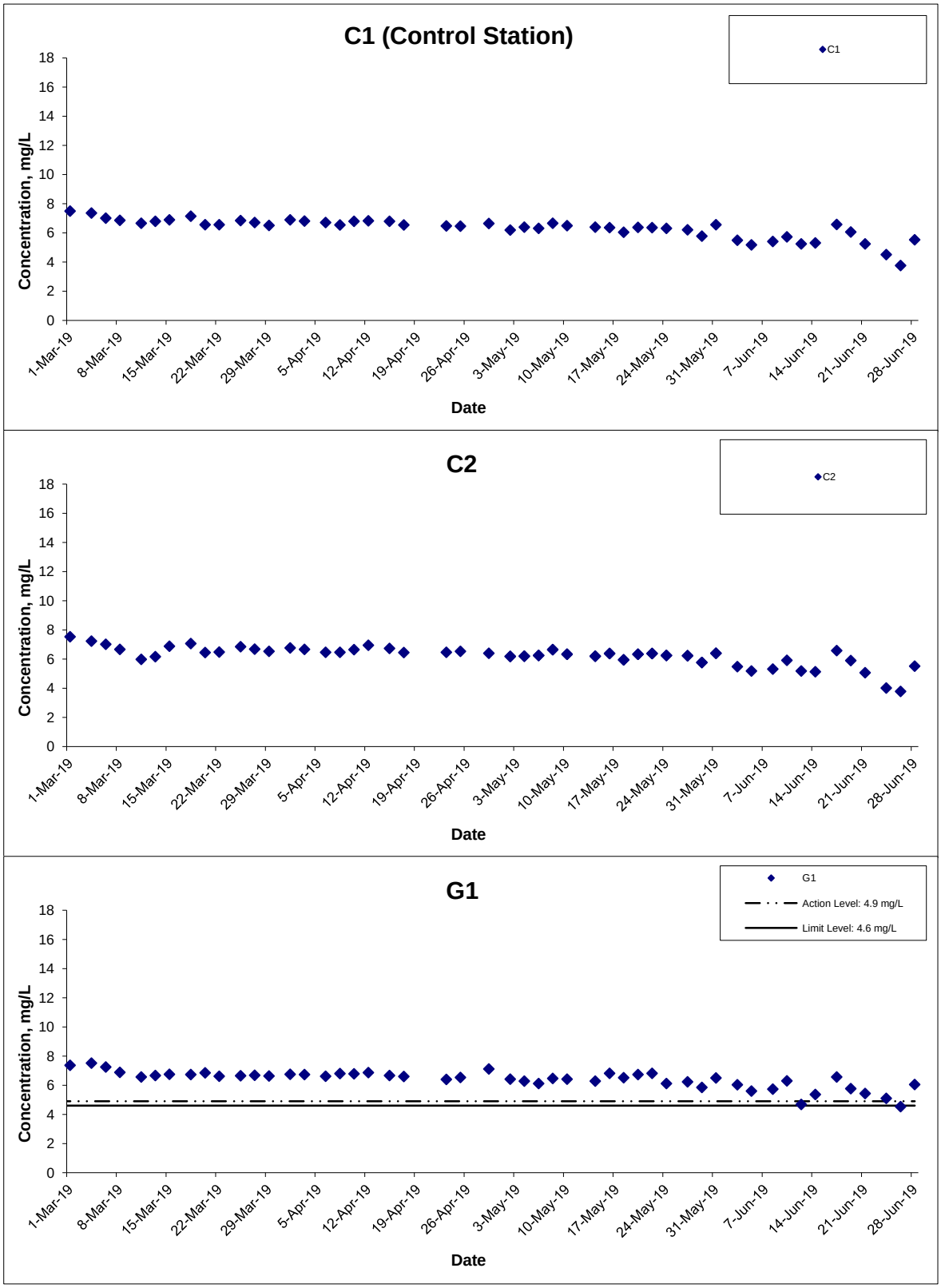
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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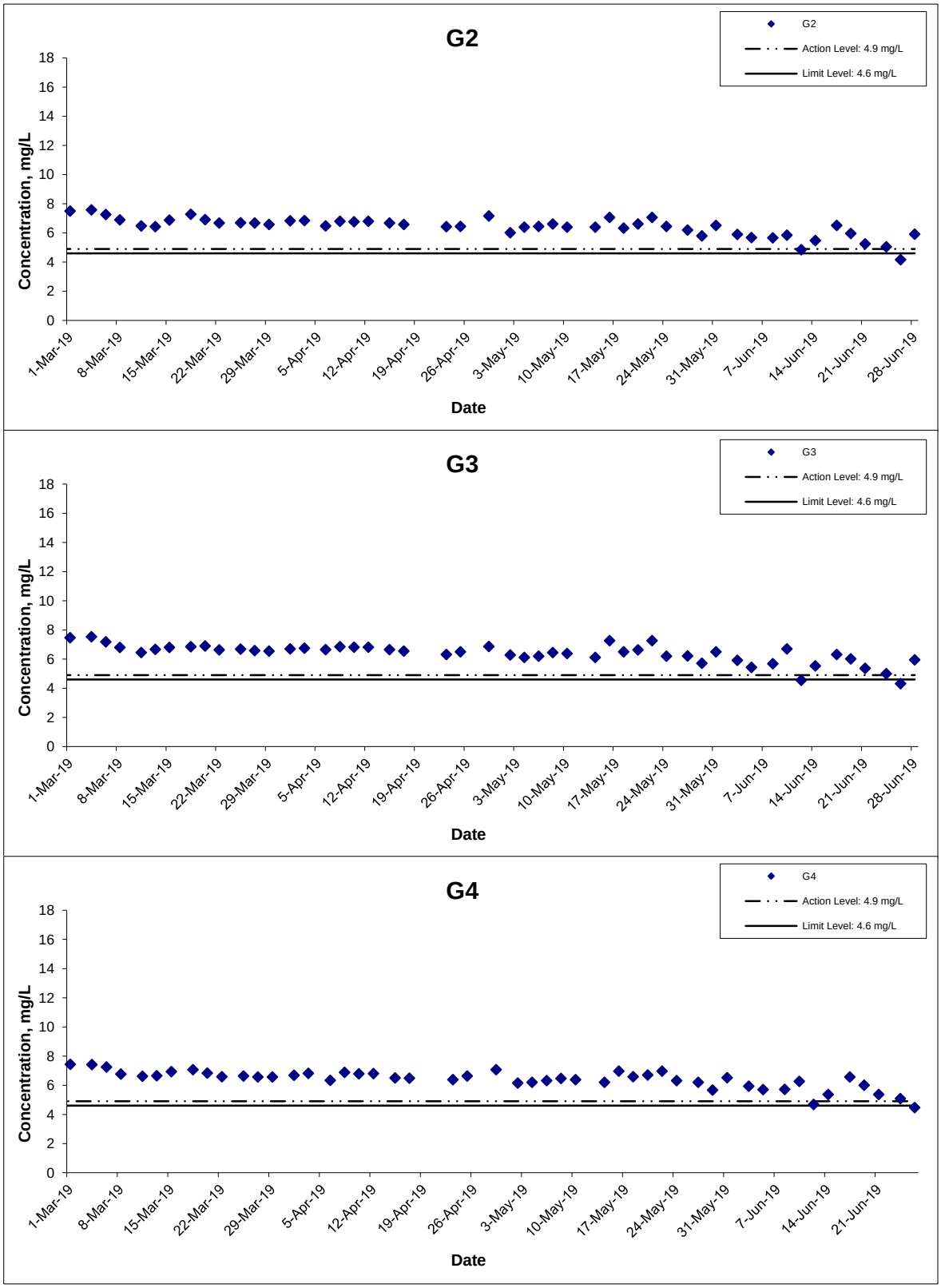
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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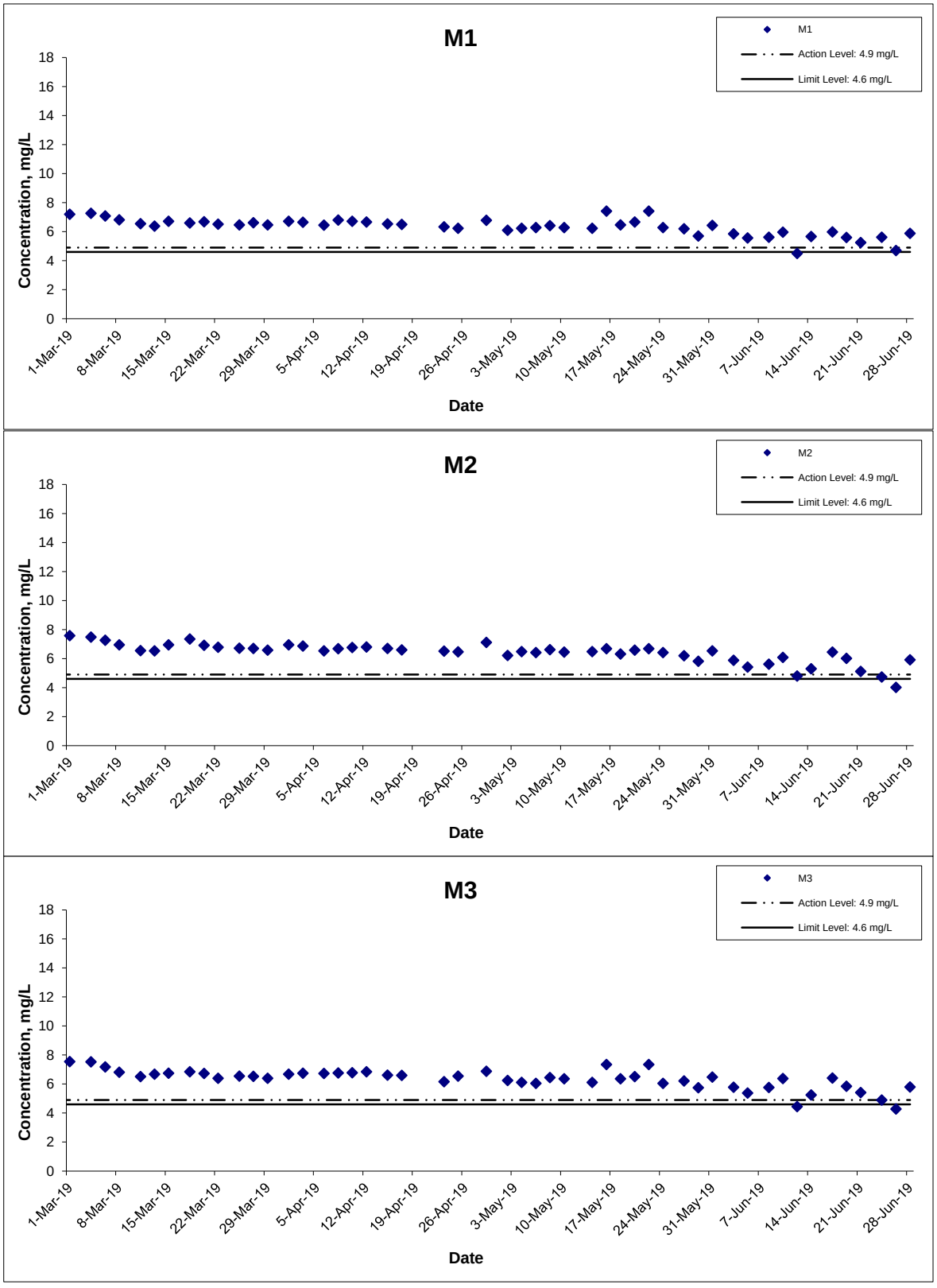
		Date June 19	Appendix I	

Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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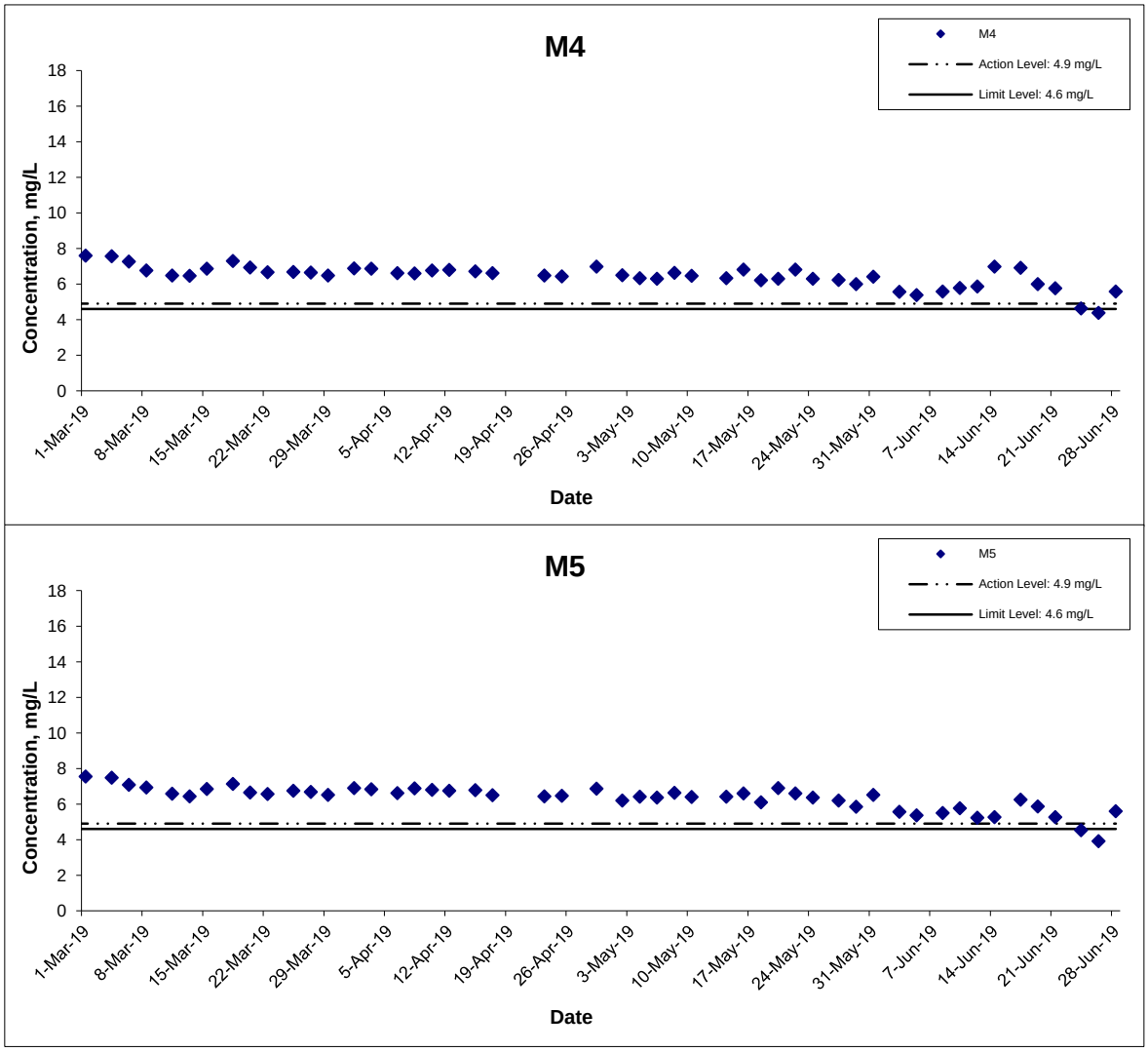
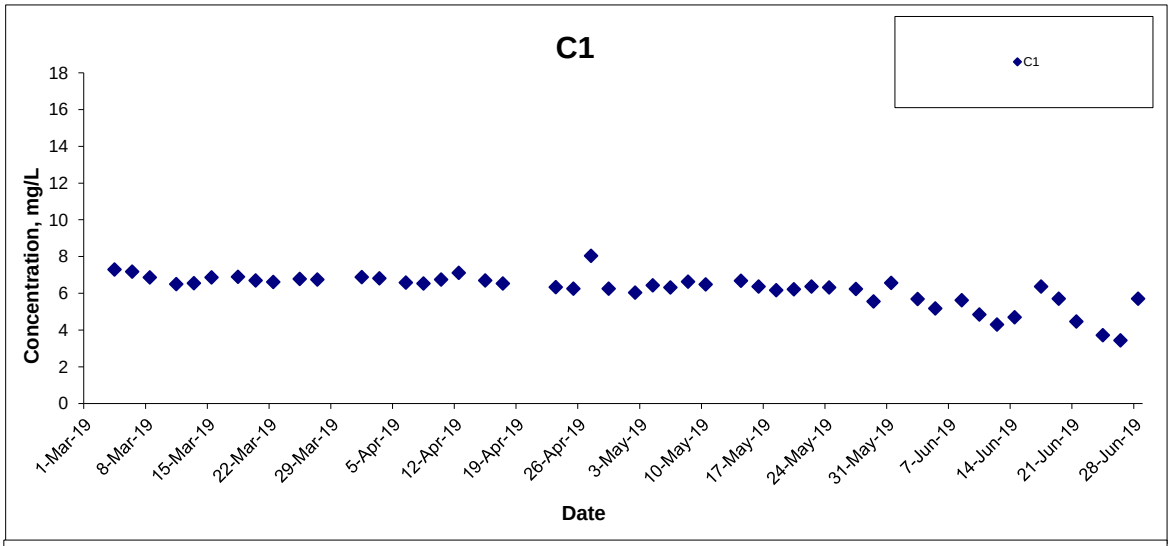
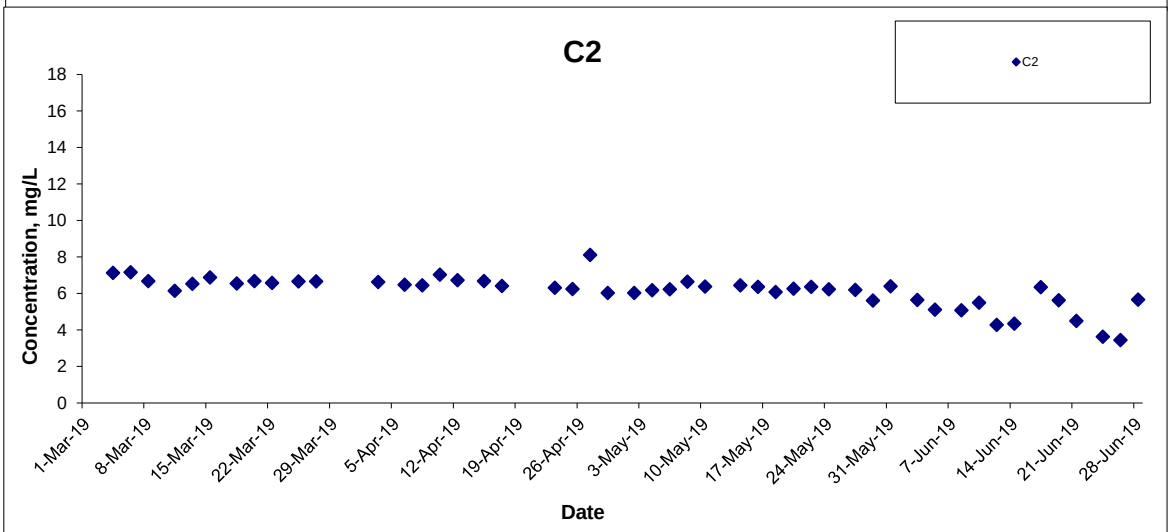
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide

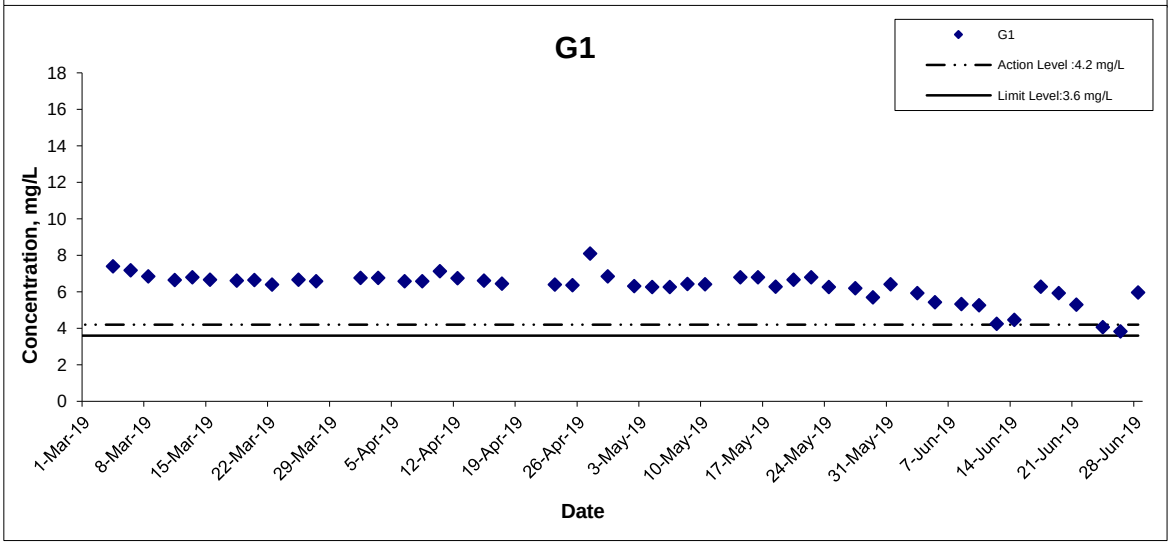


Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date June 19	Project No. MA16034 Appendix I	CINOTECH

Dissolved Oxygen (Bottom) at Mid-Ebb Tide







Title		Scale	Project No.
	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	N.T.S	MA16034
	Graphical Presentation of Water Quality Monitoring Results	Date: June 19	Appendix: I

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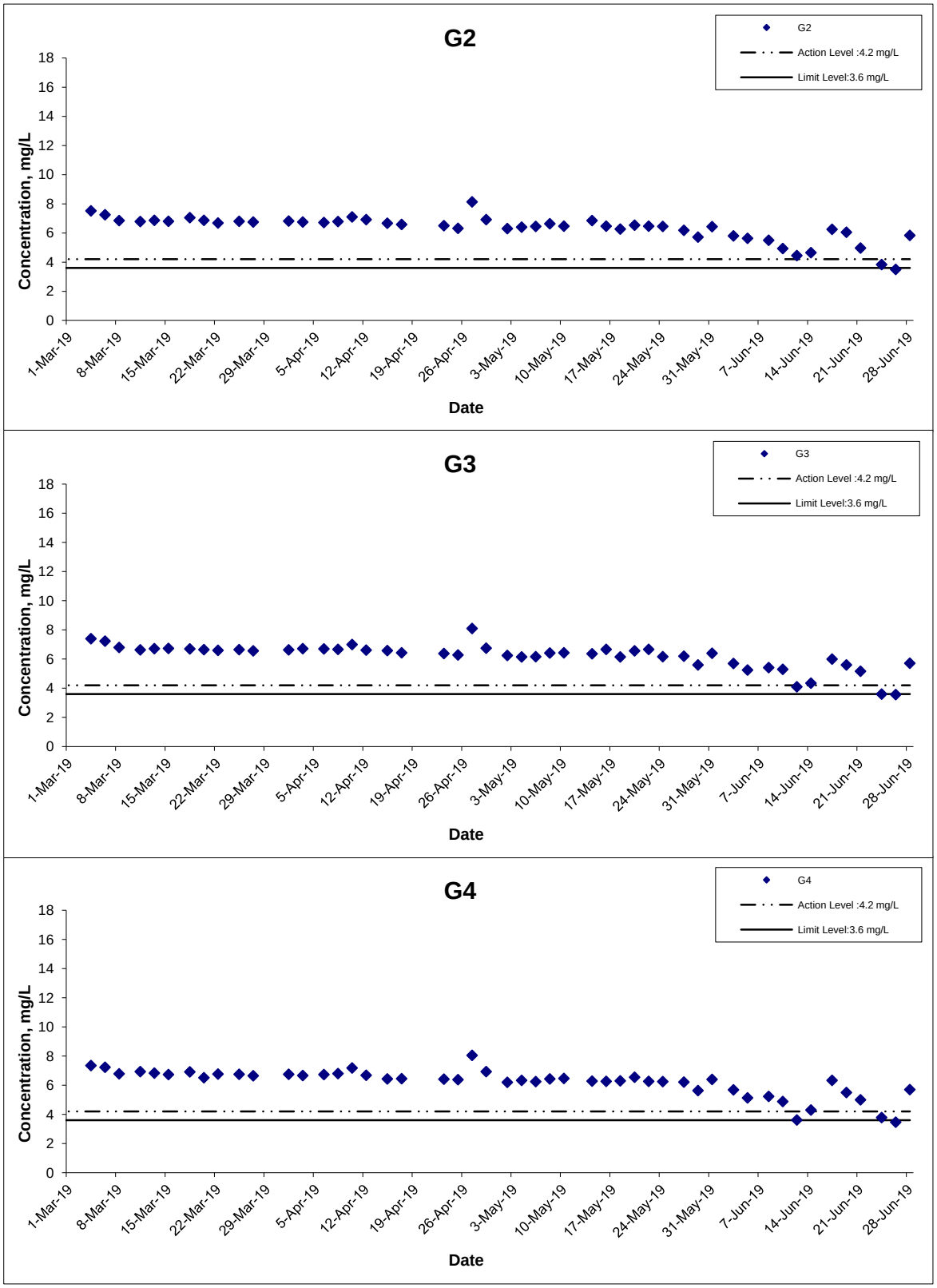
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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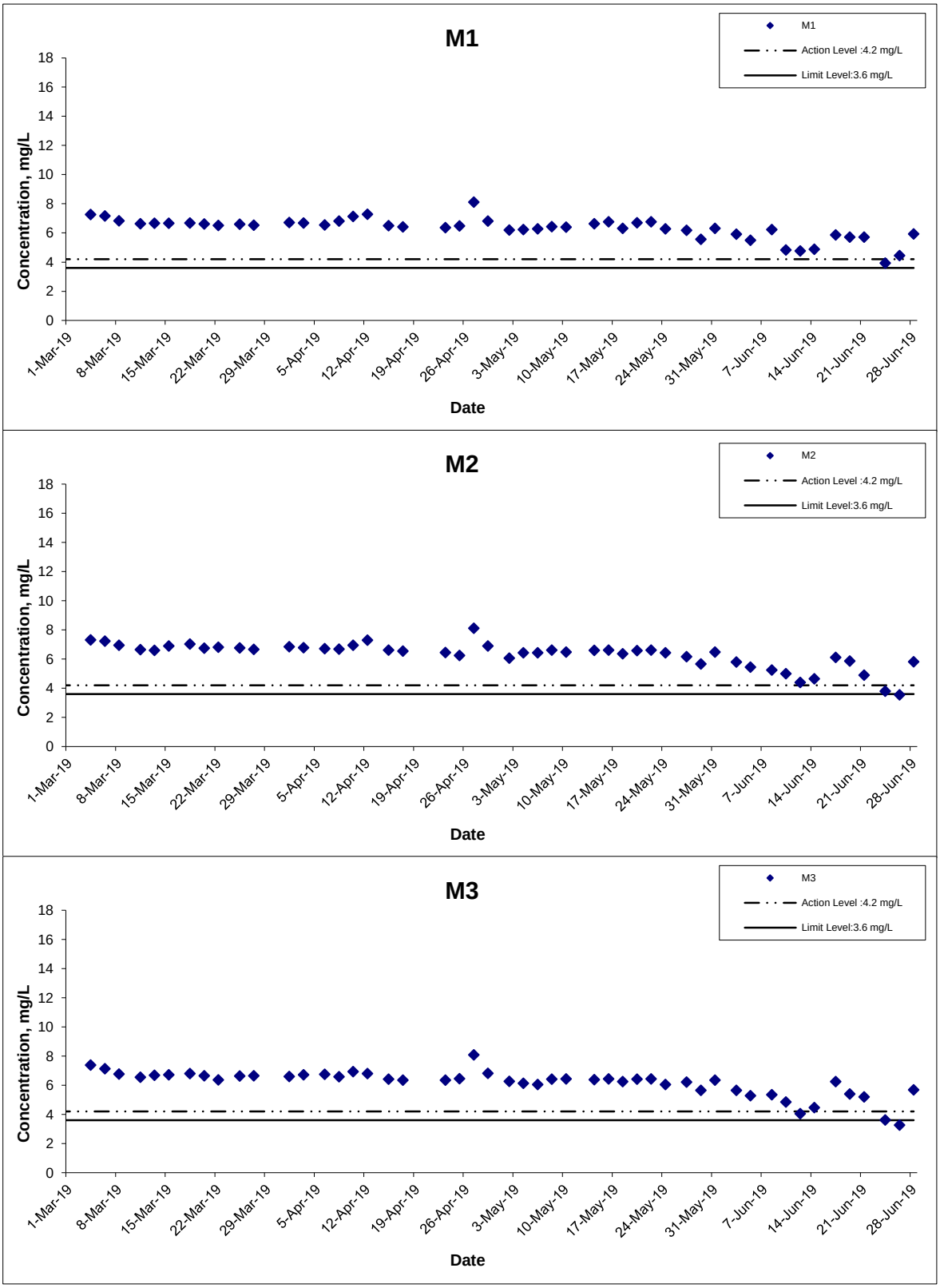
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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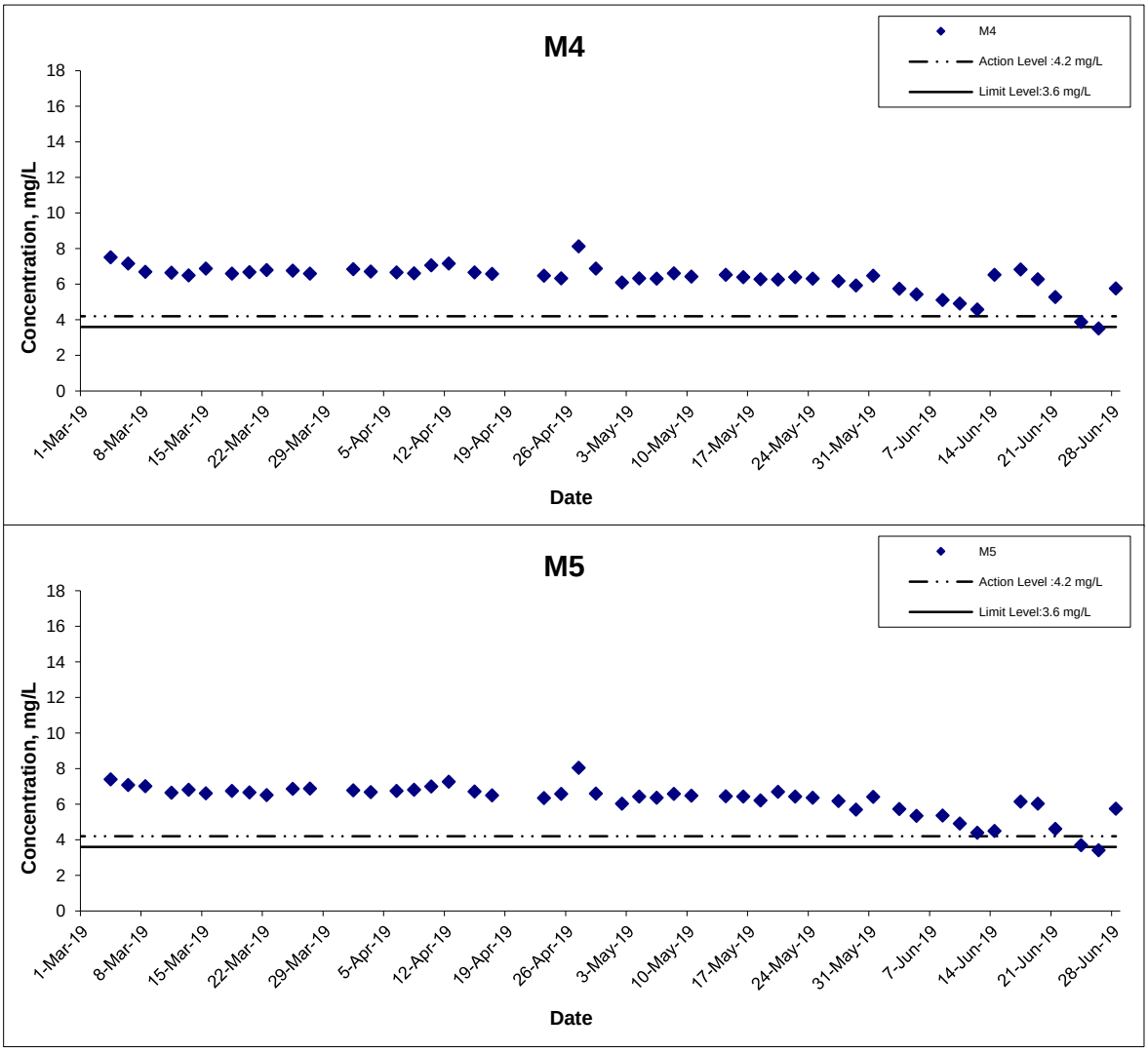
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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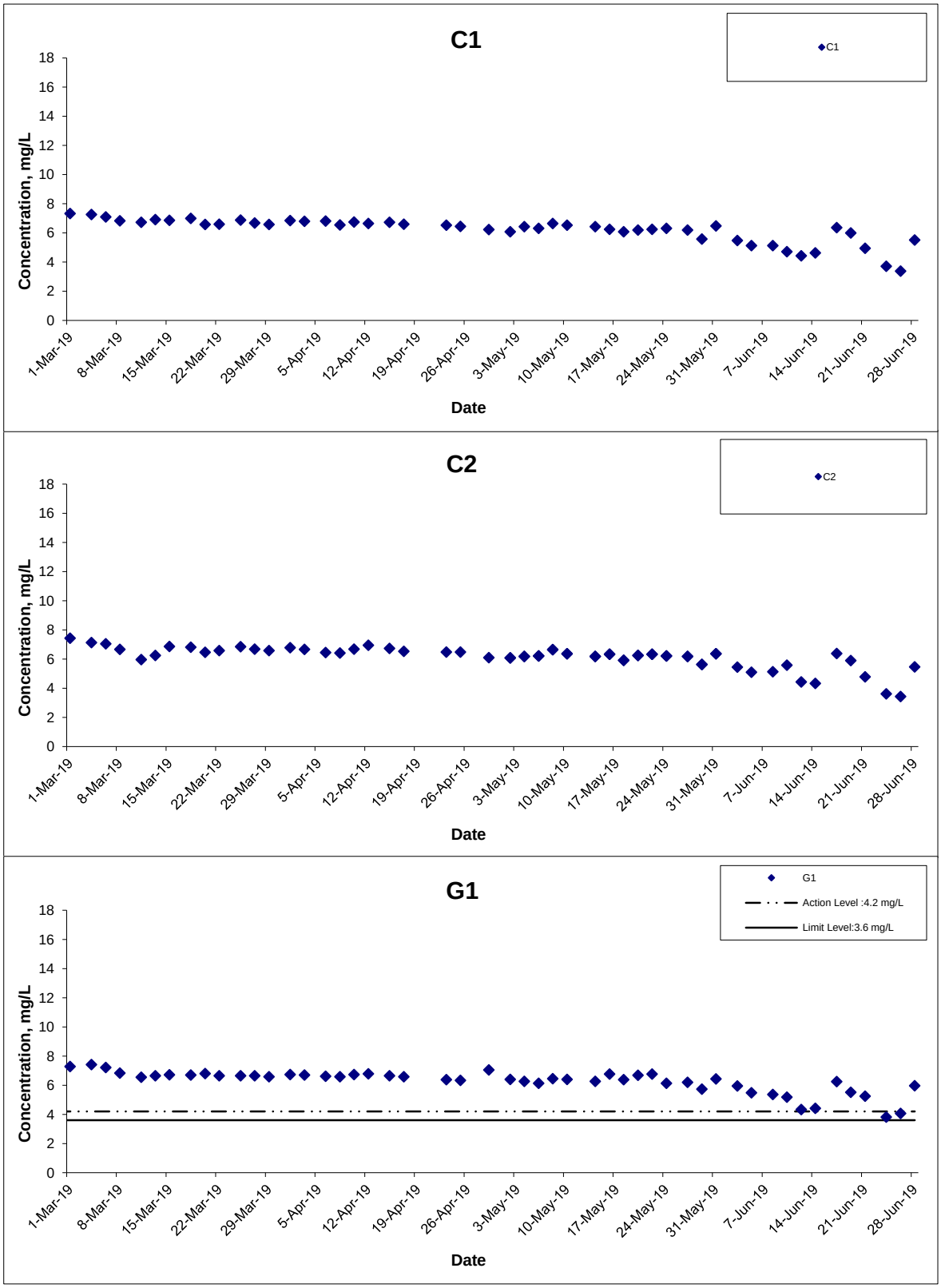
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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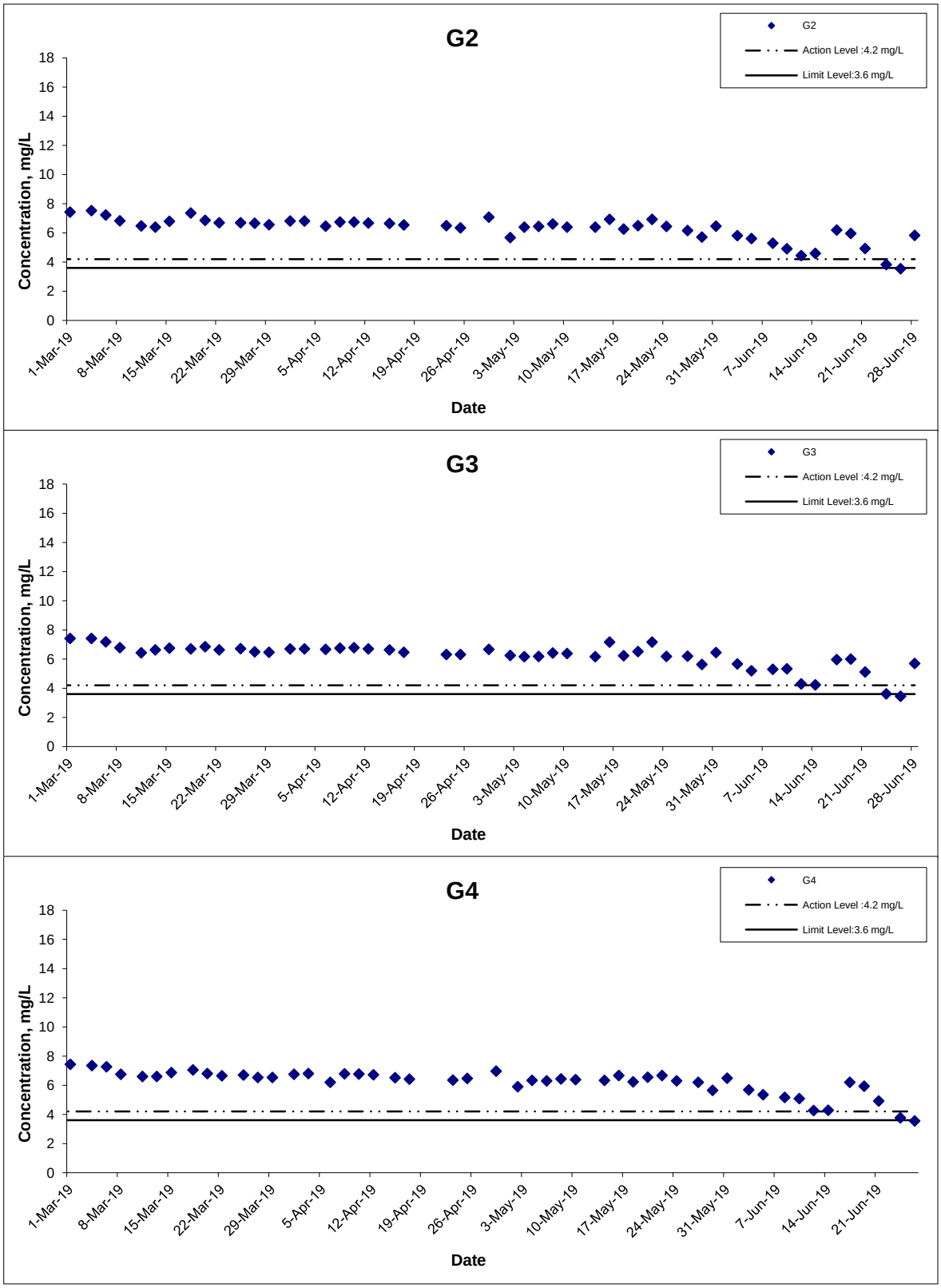
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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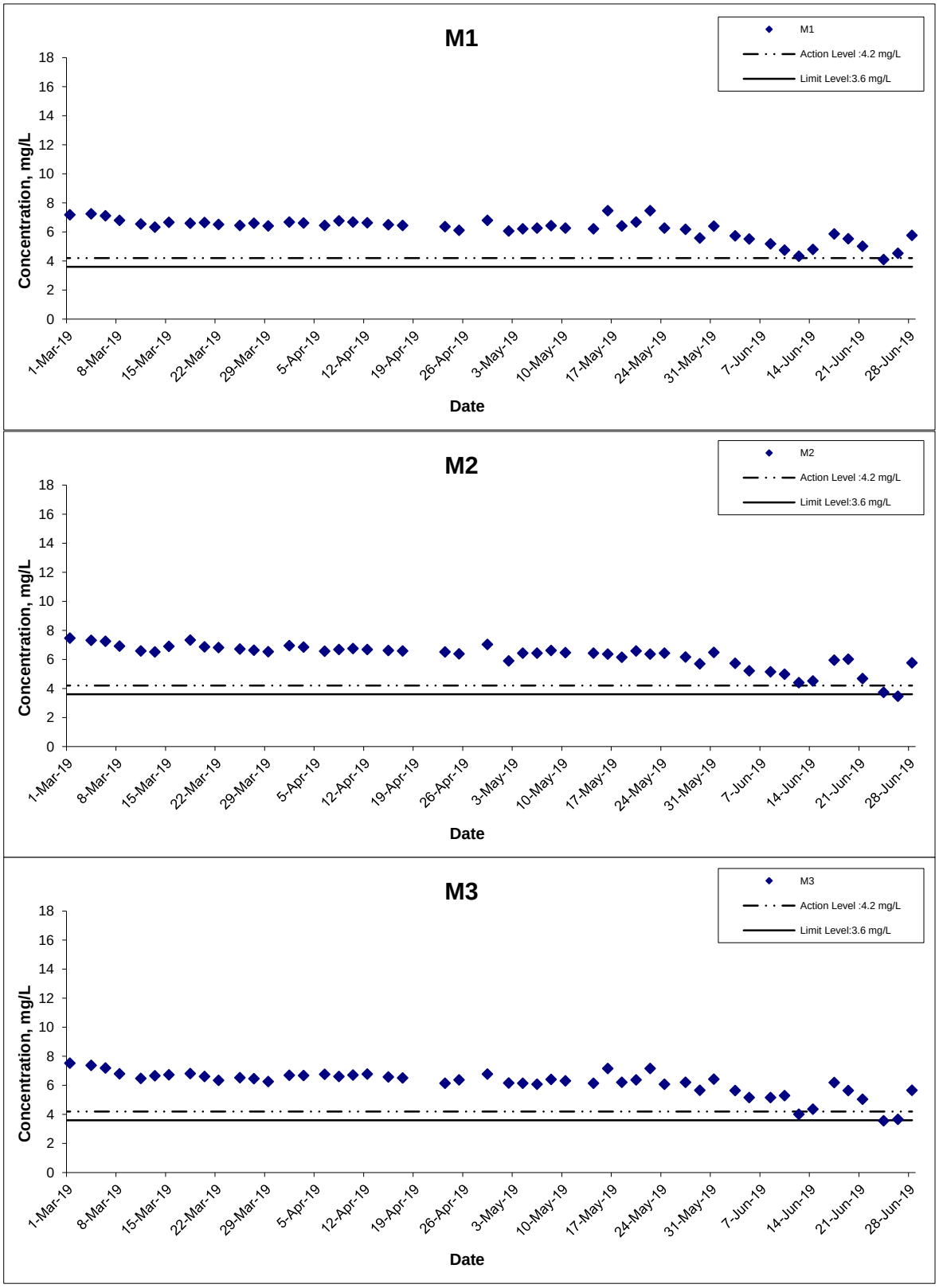
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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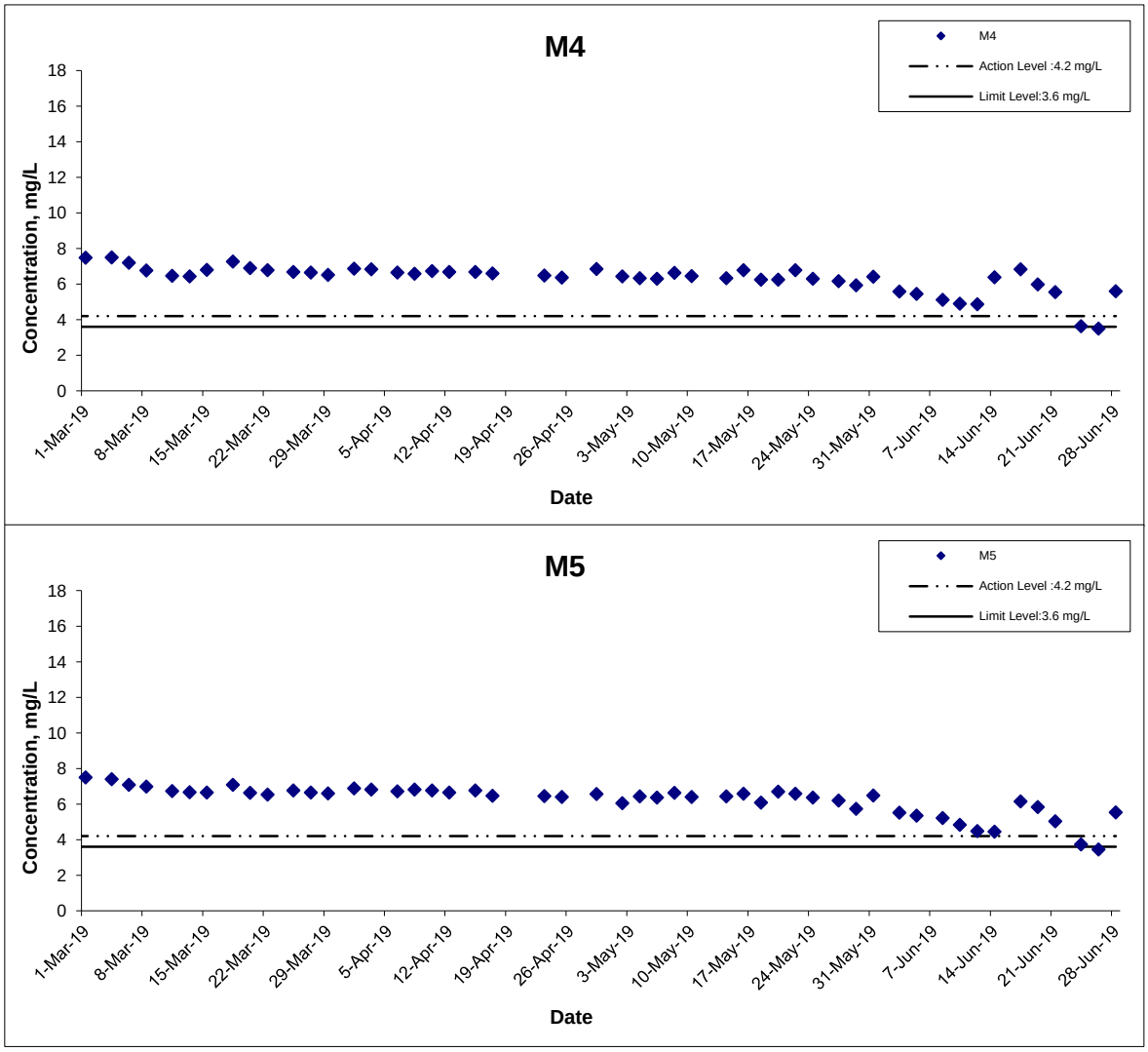
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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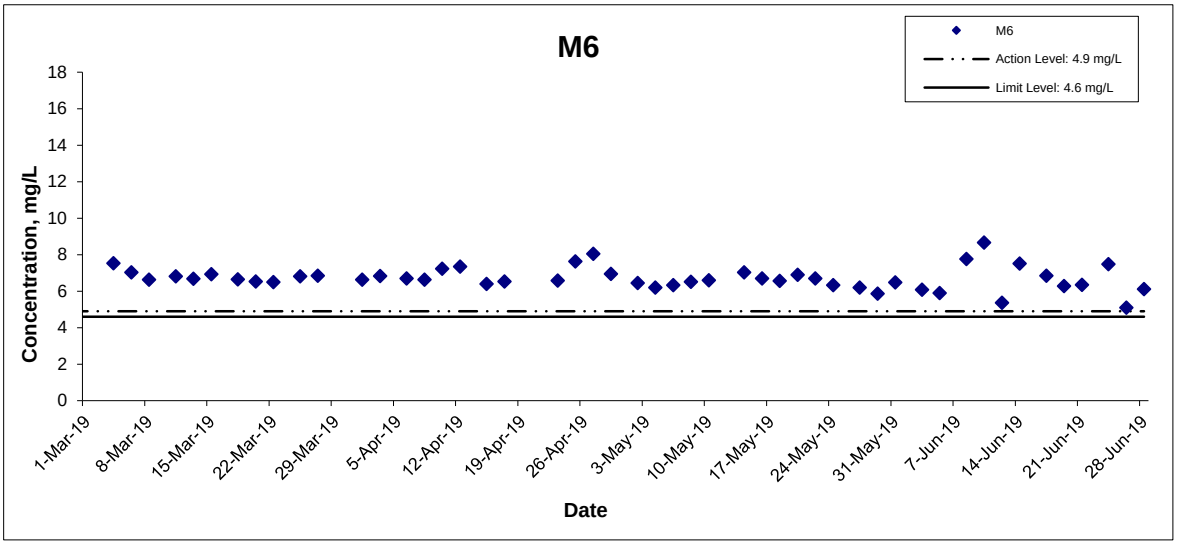
Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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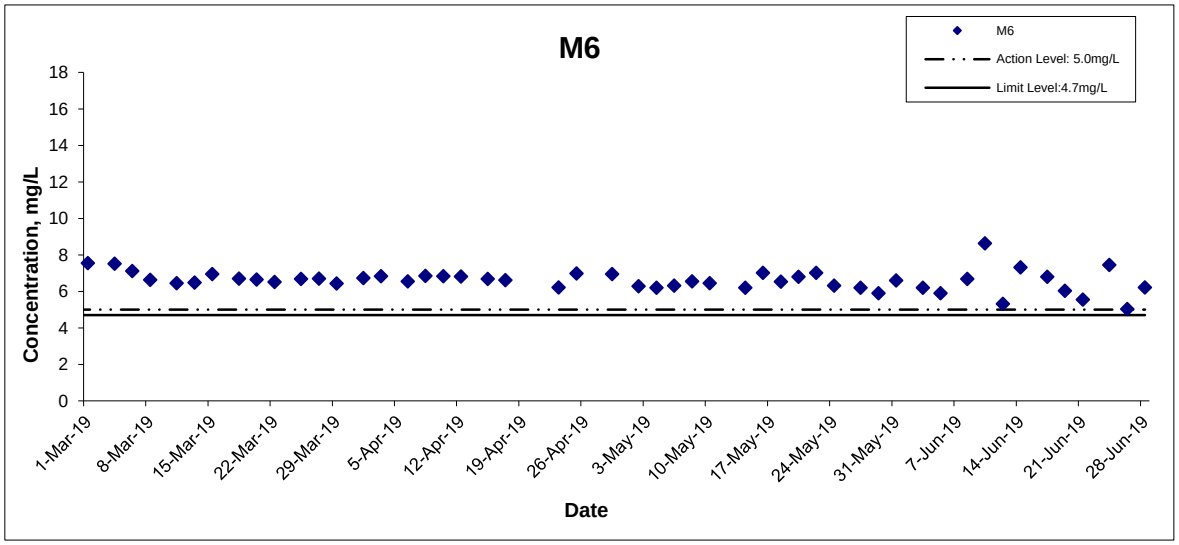
Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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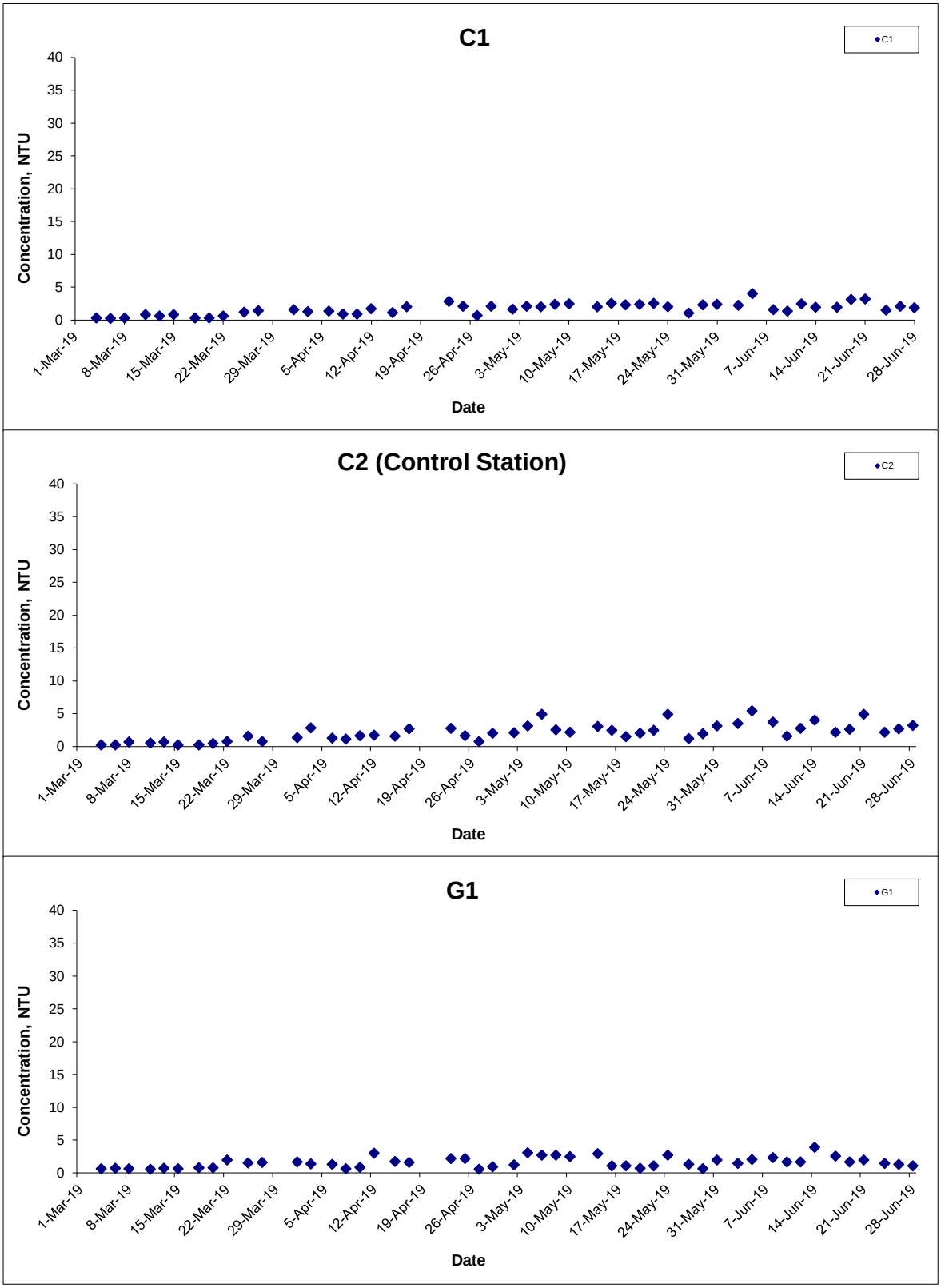
Turbidity (Depth-averaged) at Mid-Ebb Tide



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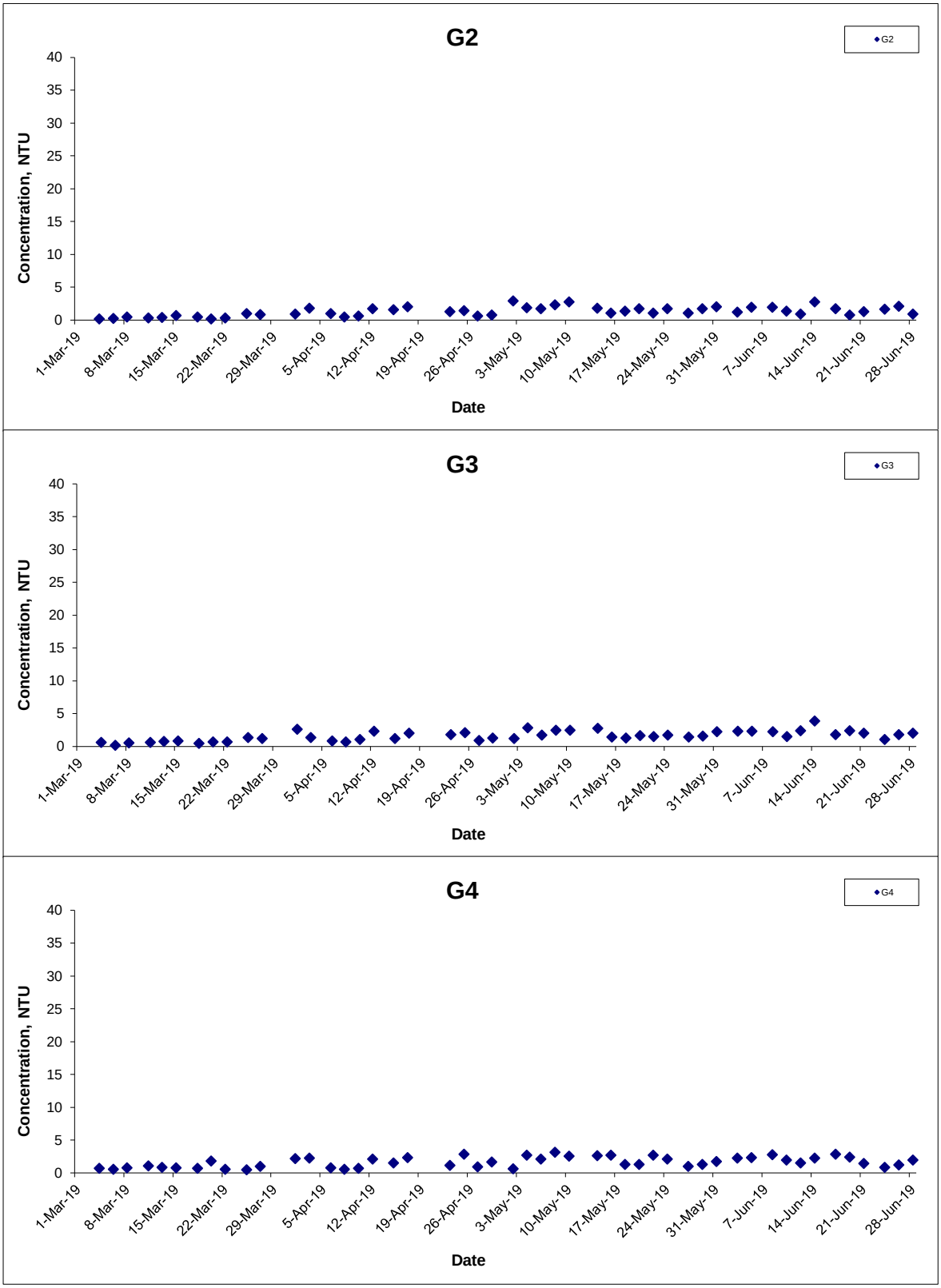
Turbidity (Depth-averaged) at Mid-Ebb Tide



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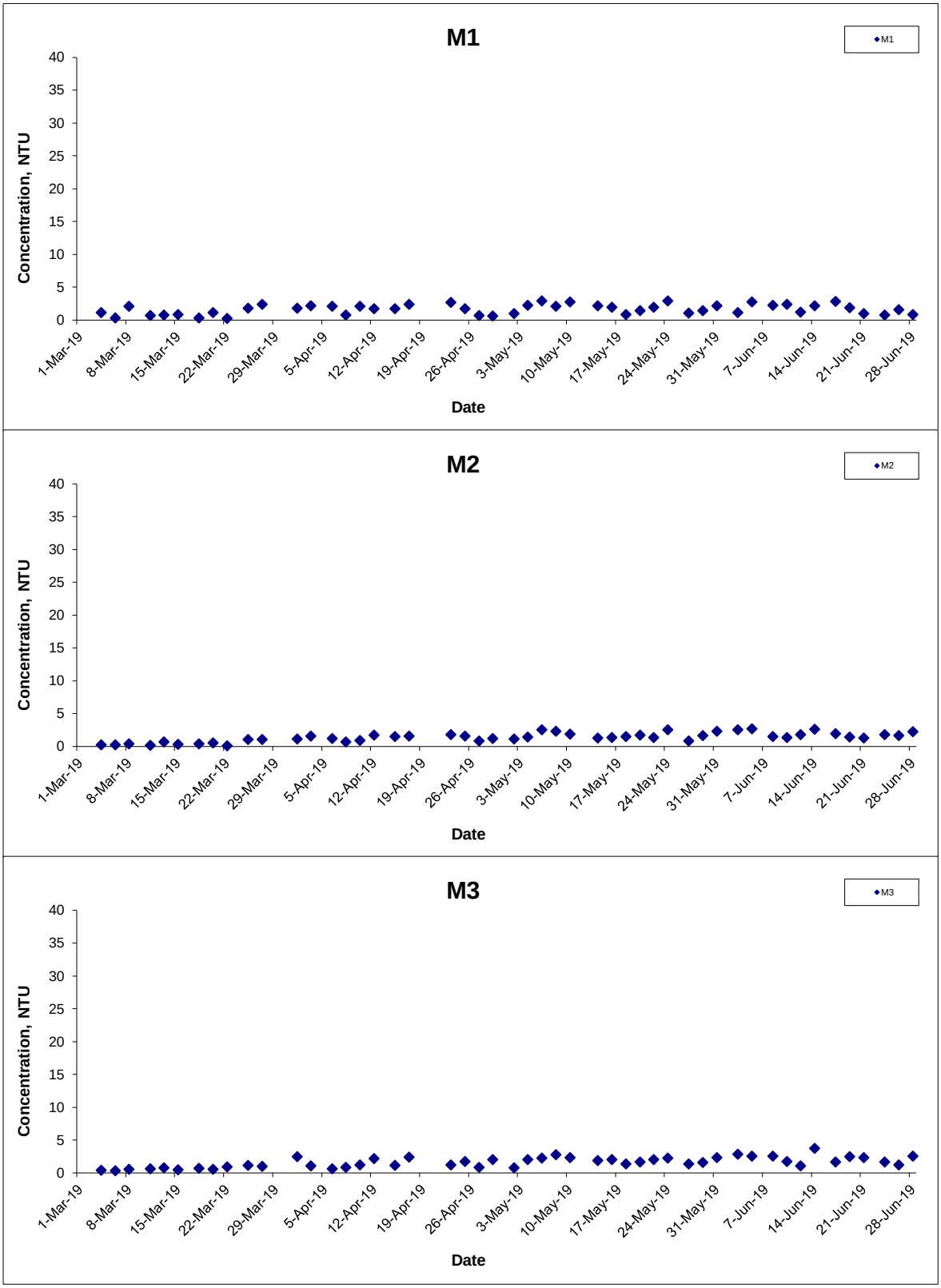
Turbidity (Depth-averaged) at Mid-Ebb Tide



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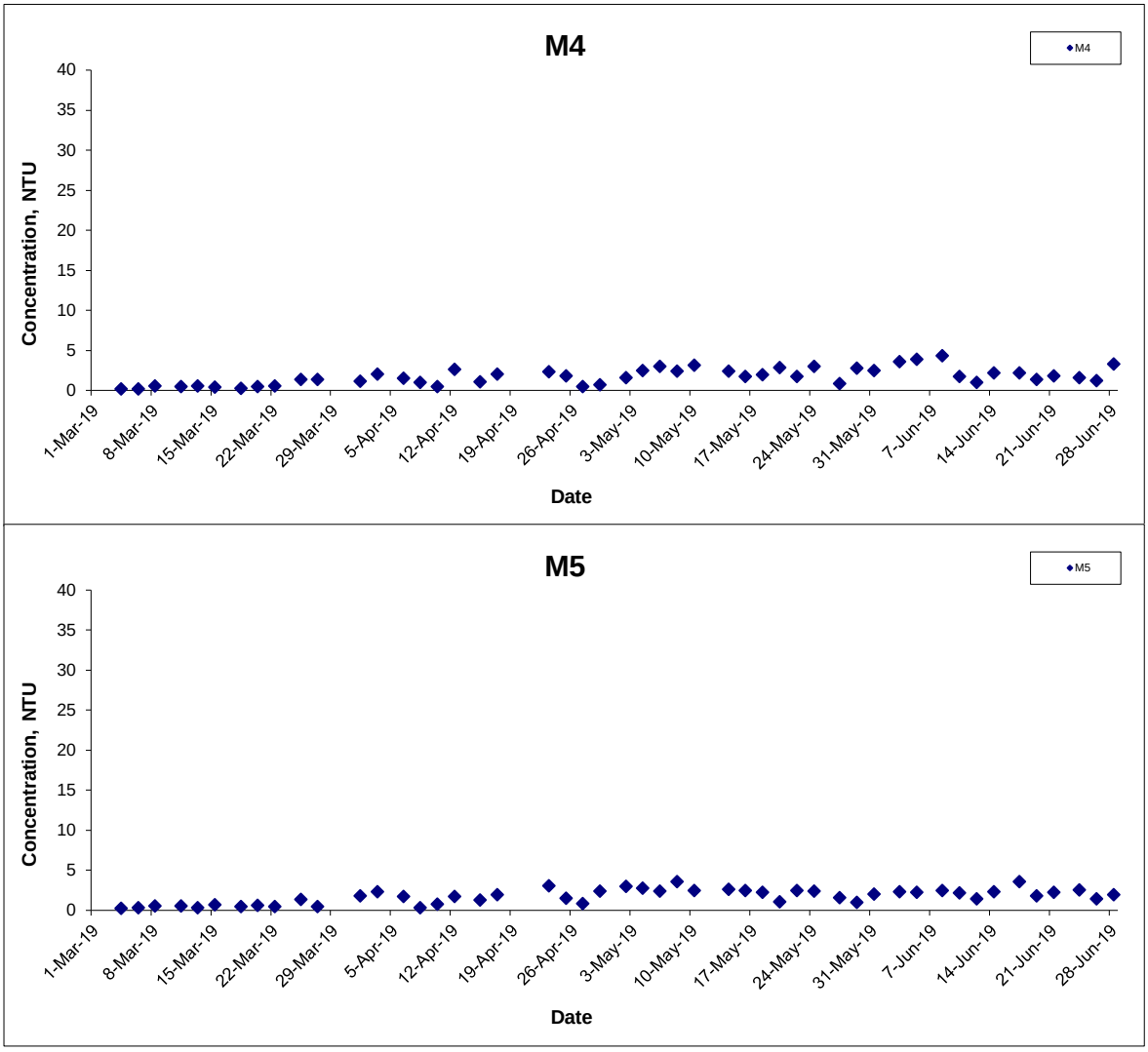
Turbidity (Depth-averaged) at Mid-Ebb Tide



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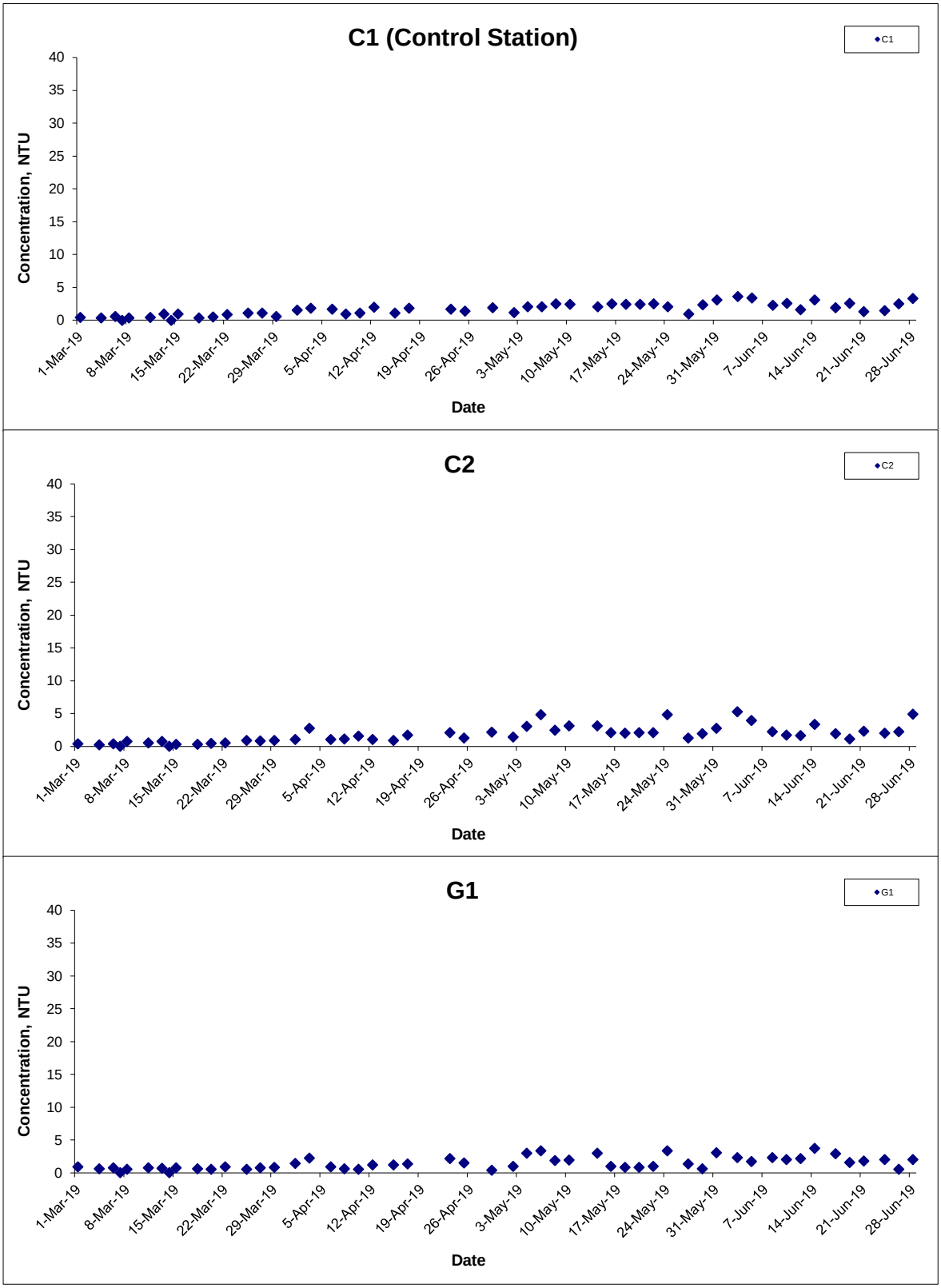
Turbidity (Depth-averaged) at Mid-Flood Tide



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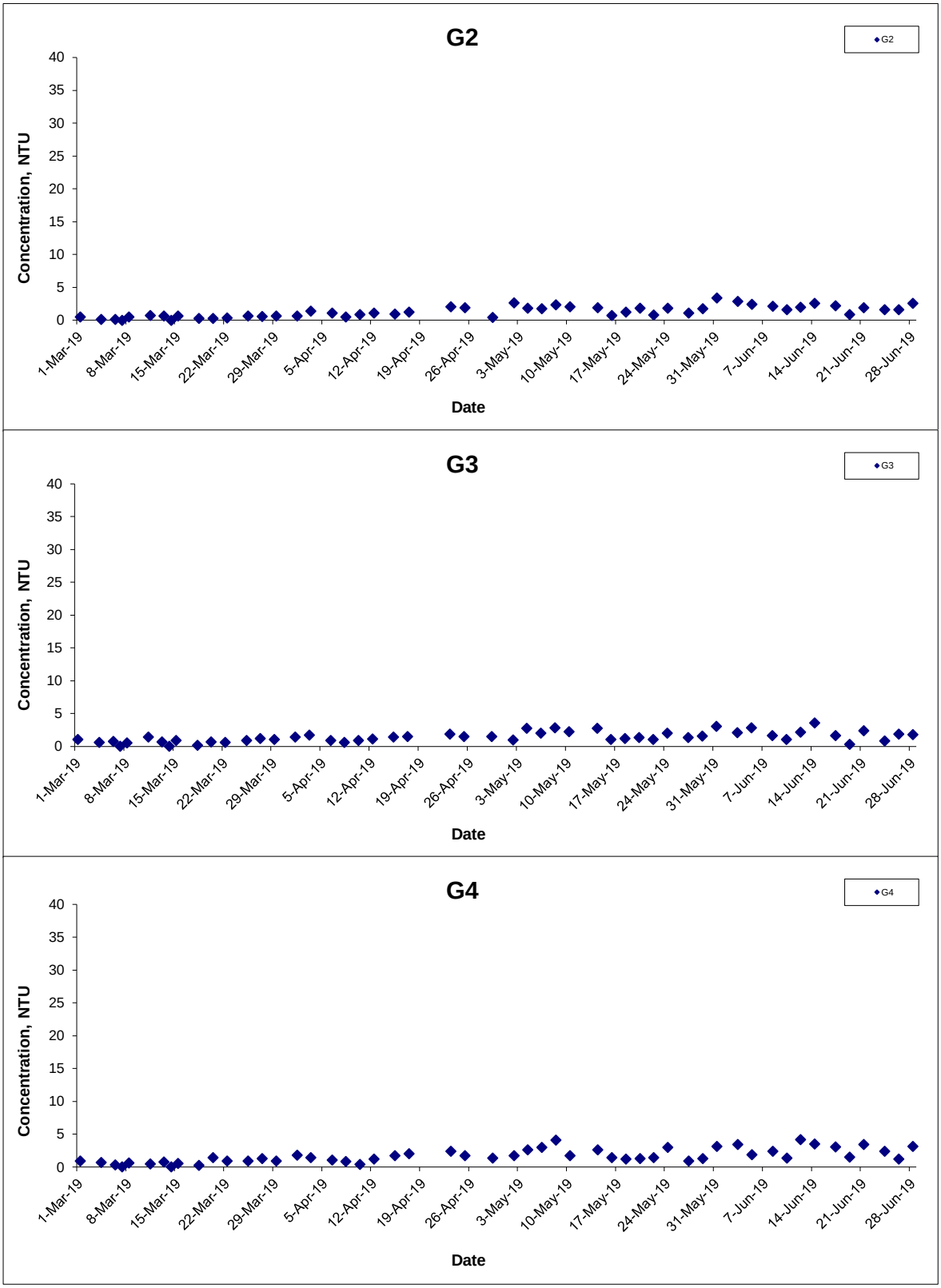
Turbidity (Depth-averaged) at Mid-Flood Tide



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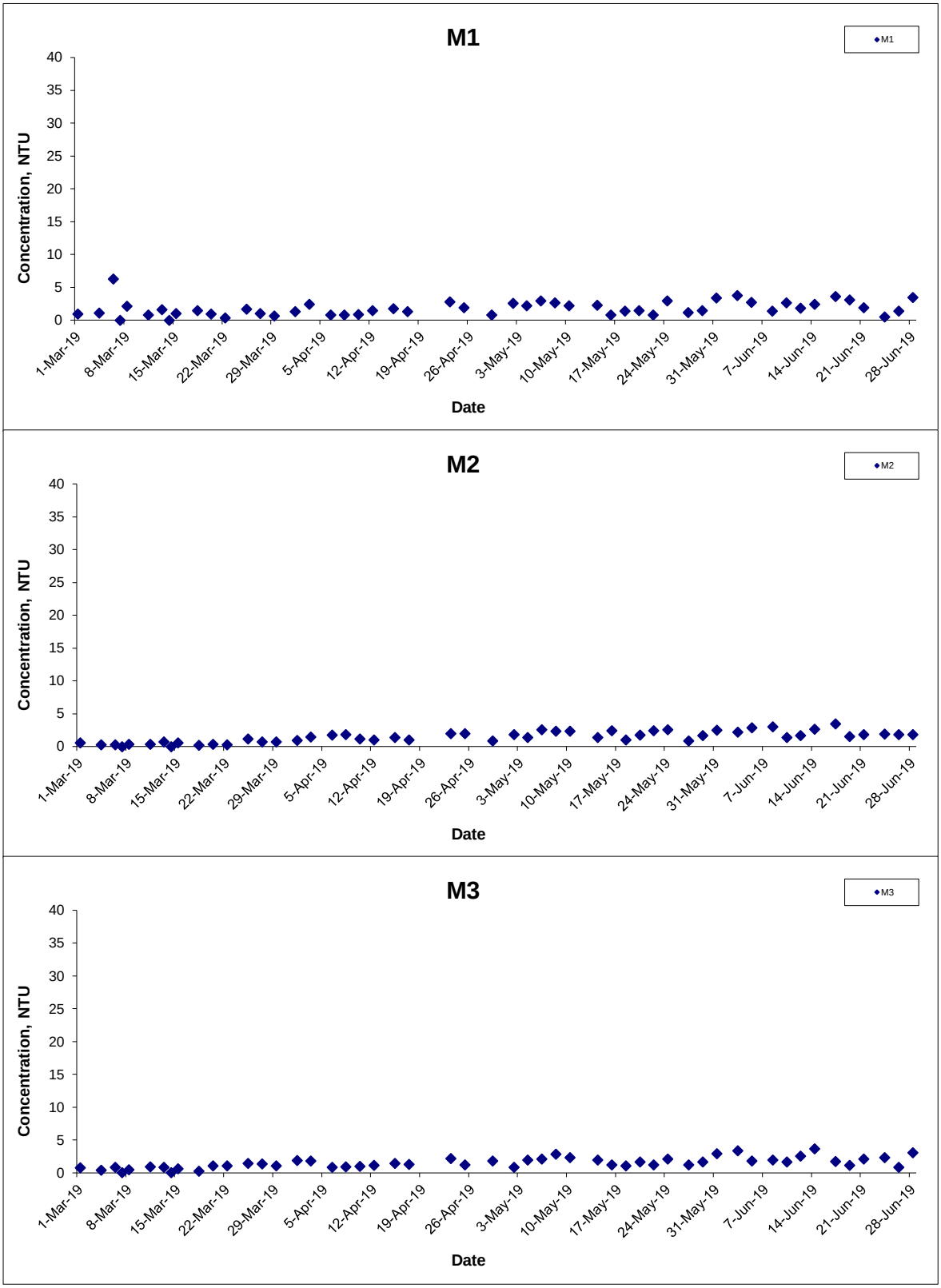
Turbidity (Depth-averaged) at Mid-Flood Tide



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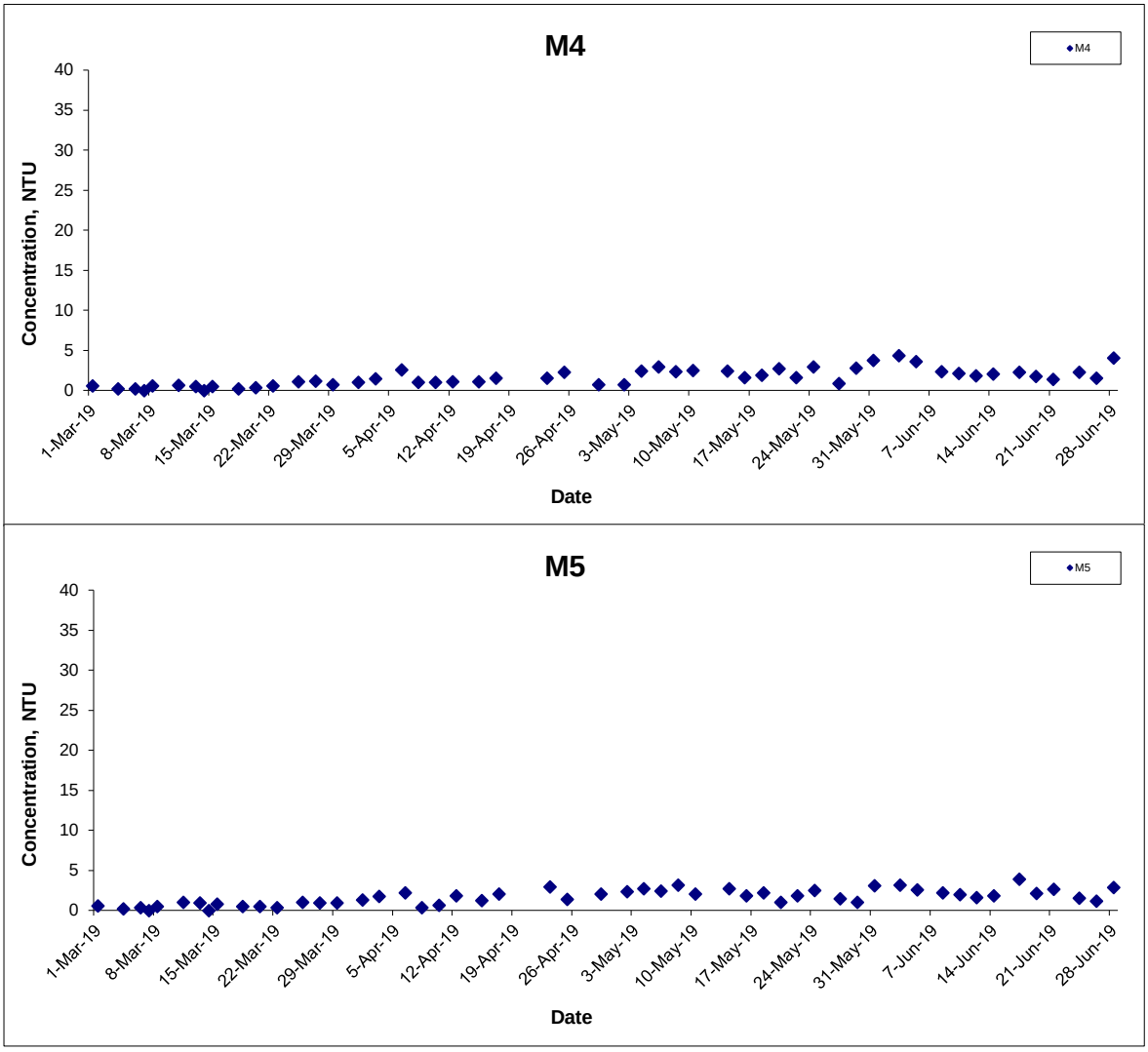
Turbidity (Depth-averaged) at Mid-Flood Tide



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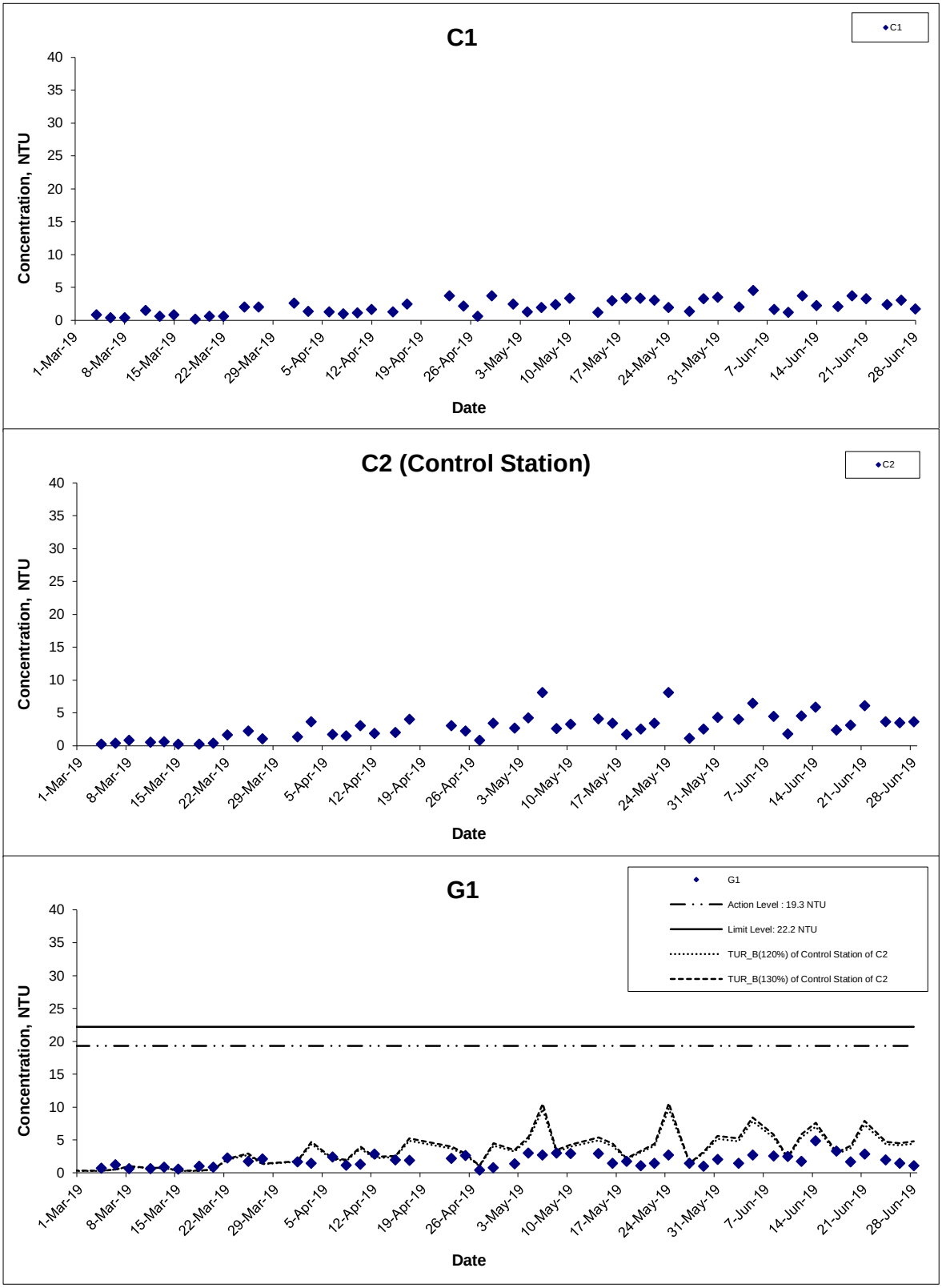
Turbidity (Bottom) at Mid-Ebb Tide



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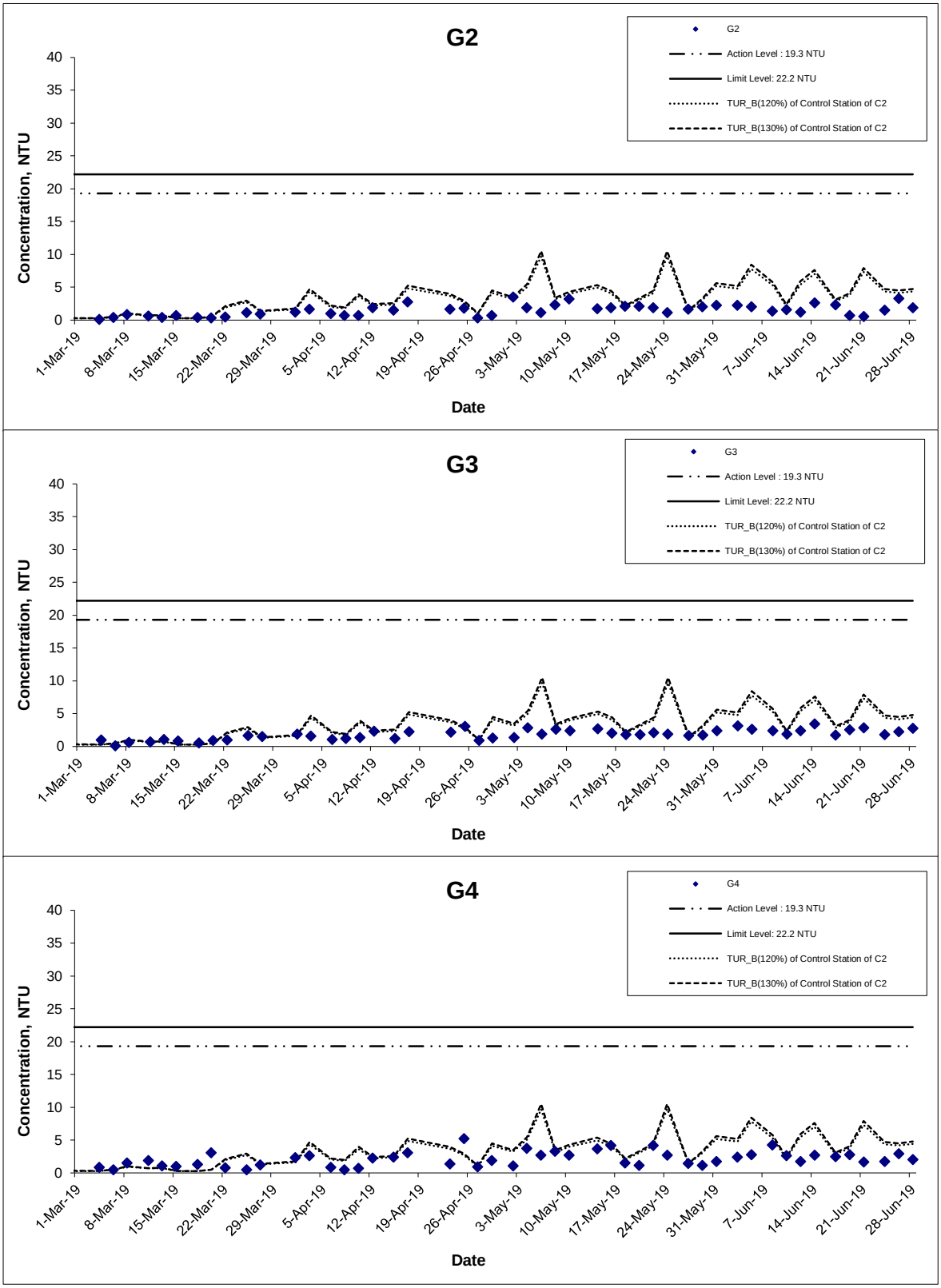
Turbidity (Bottom) at Mid-Ebb Tide



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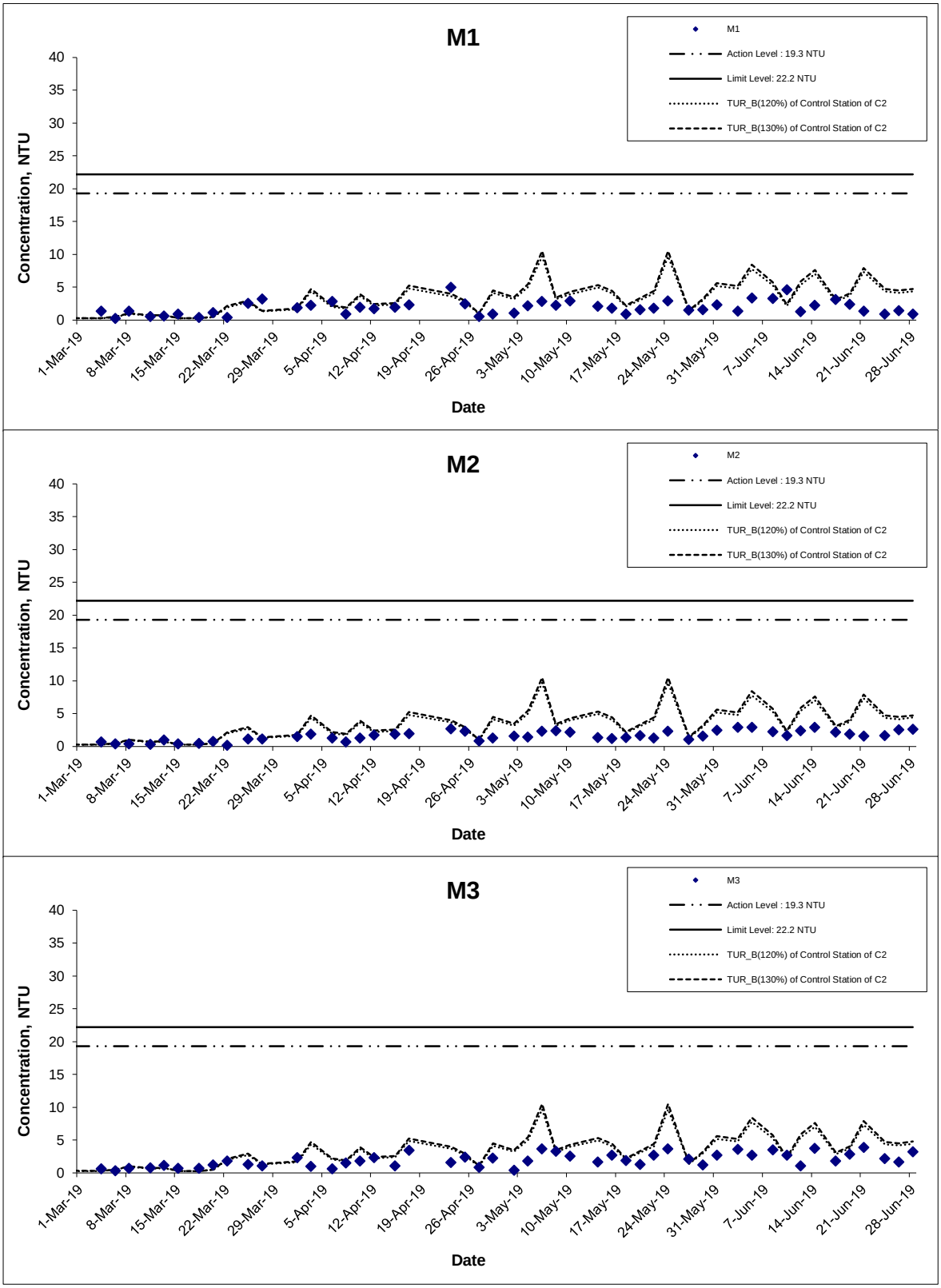
Turbidity (Bottom) at Mid-Ebb Tide



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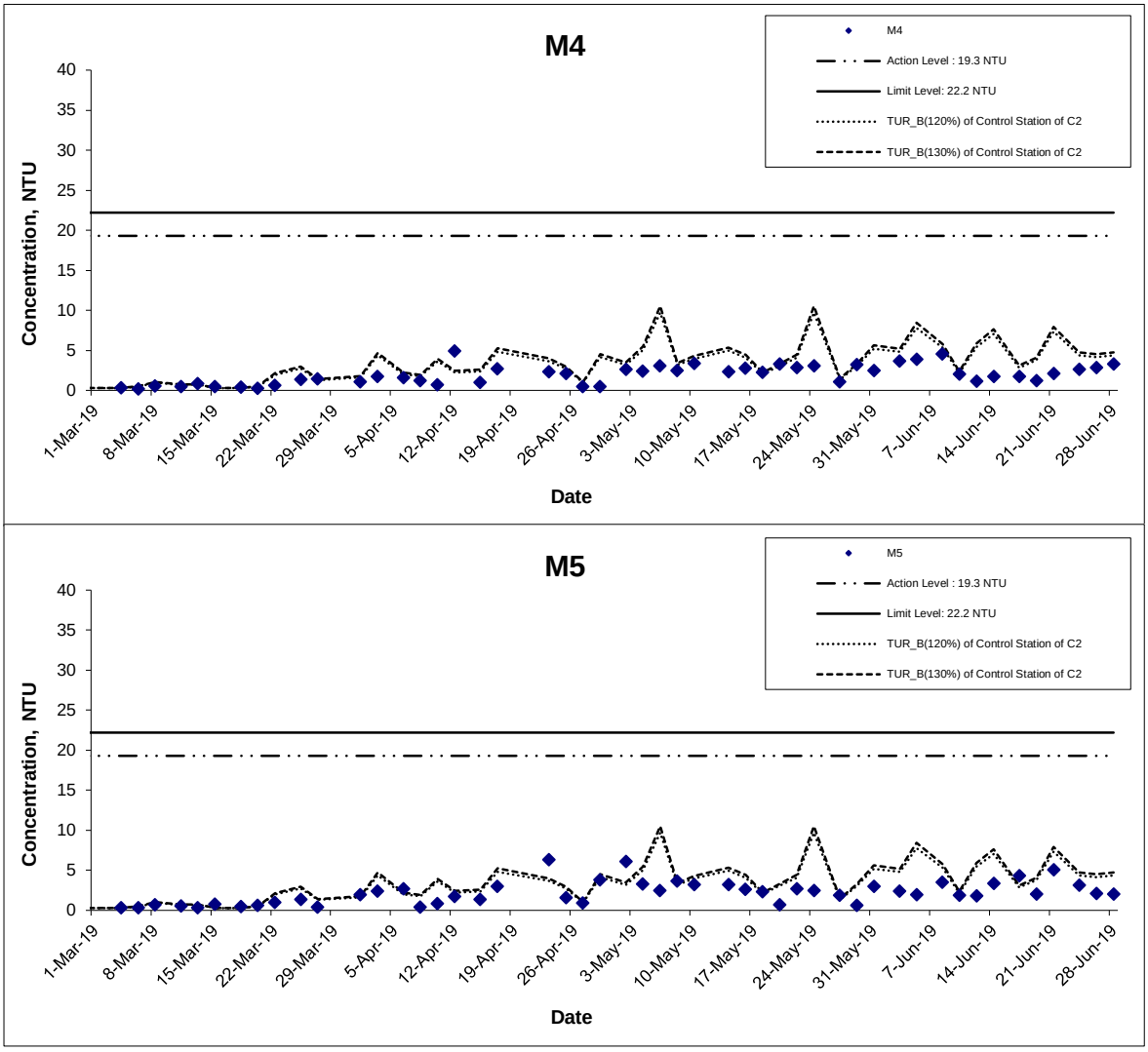

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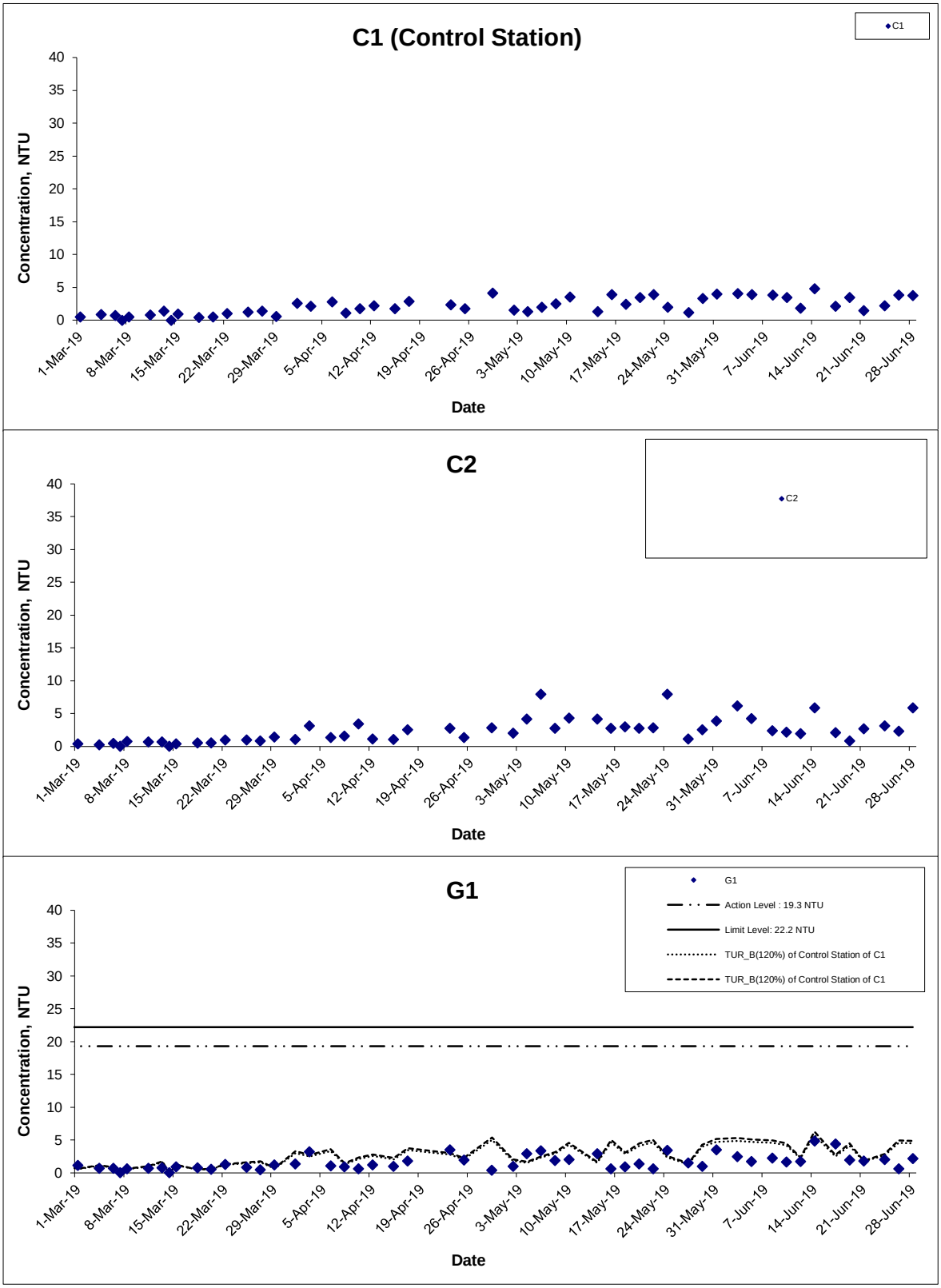
Turbidity (Bottom) at Mid-Flood Tide



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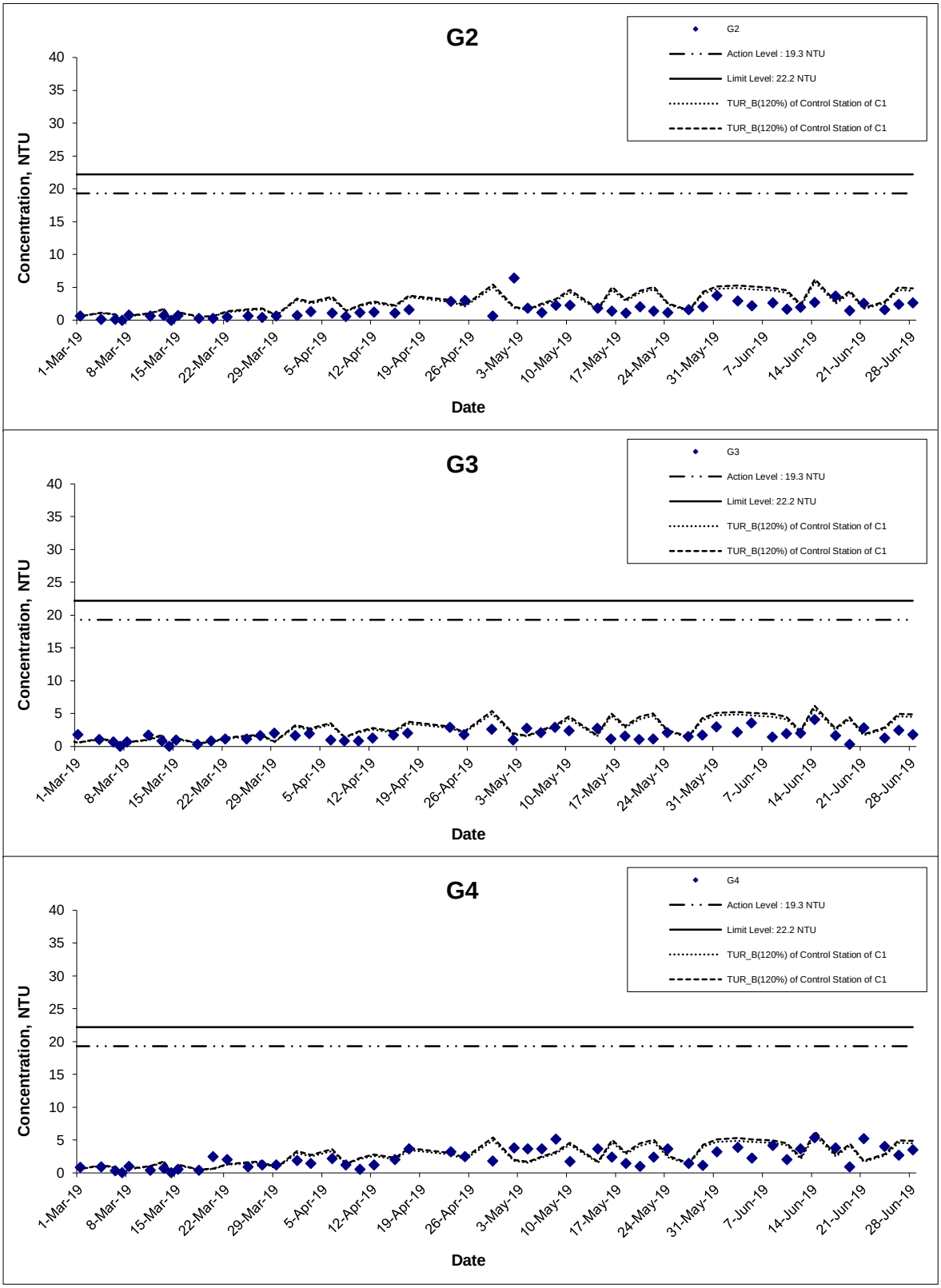
Turbidity (Bottom) at Mid-Flood Tide



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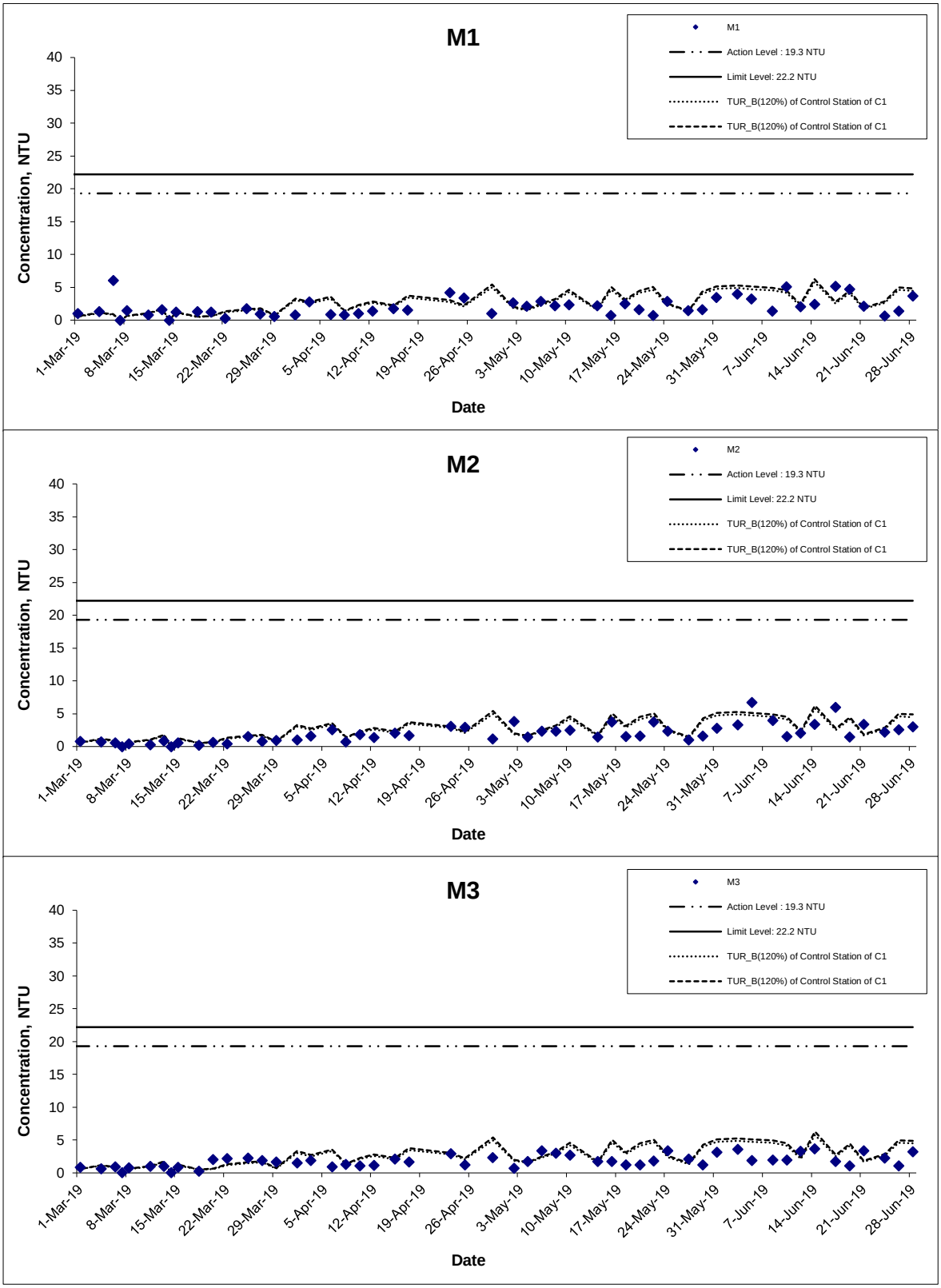
Turbidity (Bottom) at Mid-Flood Tide



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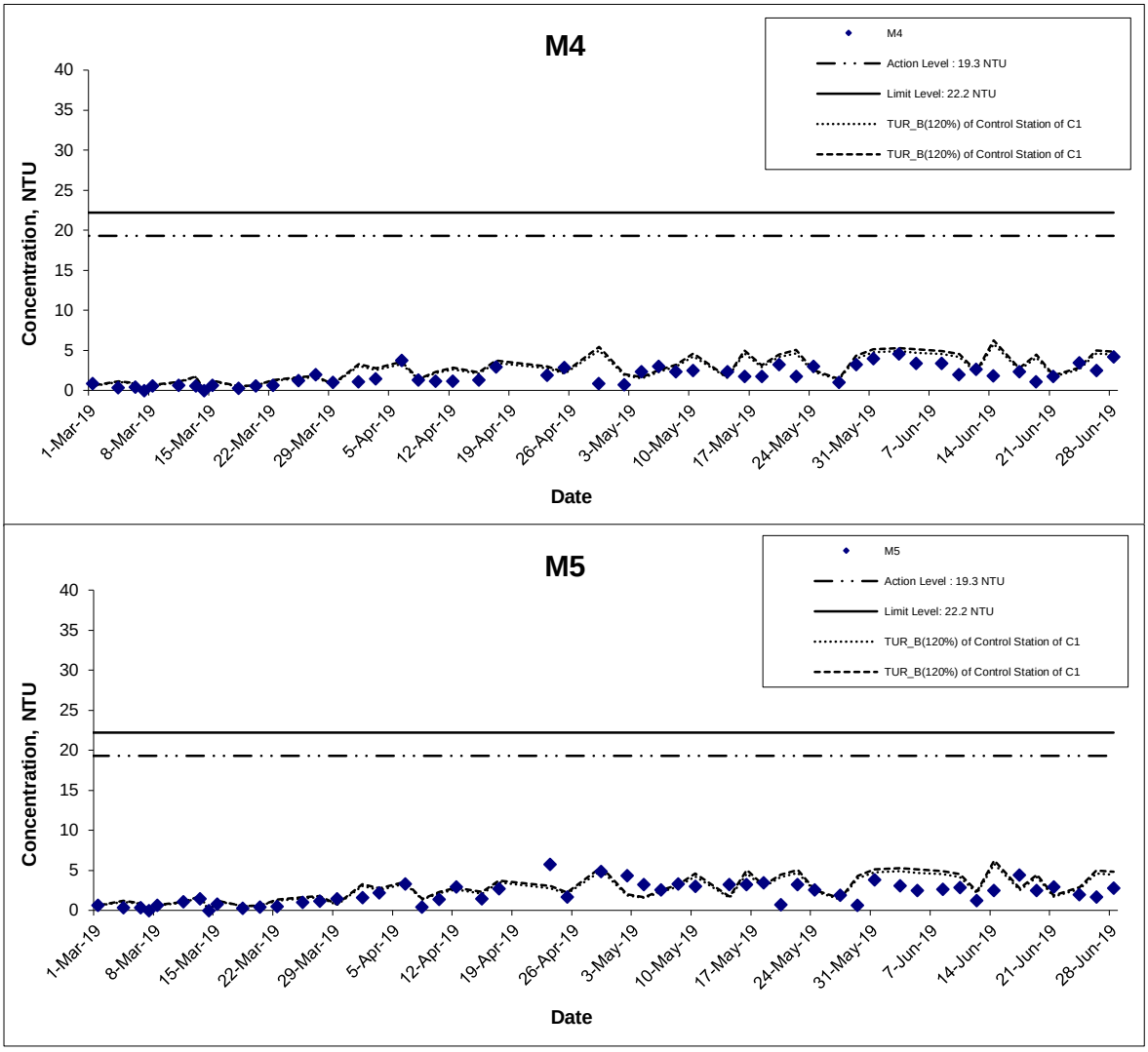
Turbidity (Bottom) at Mid-Flood Tide



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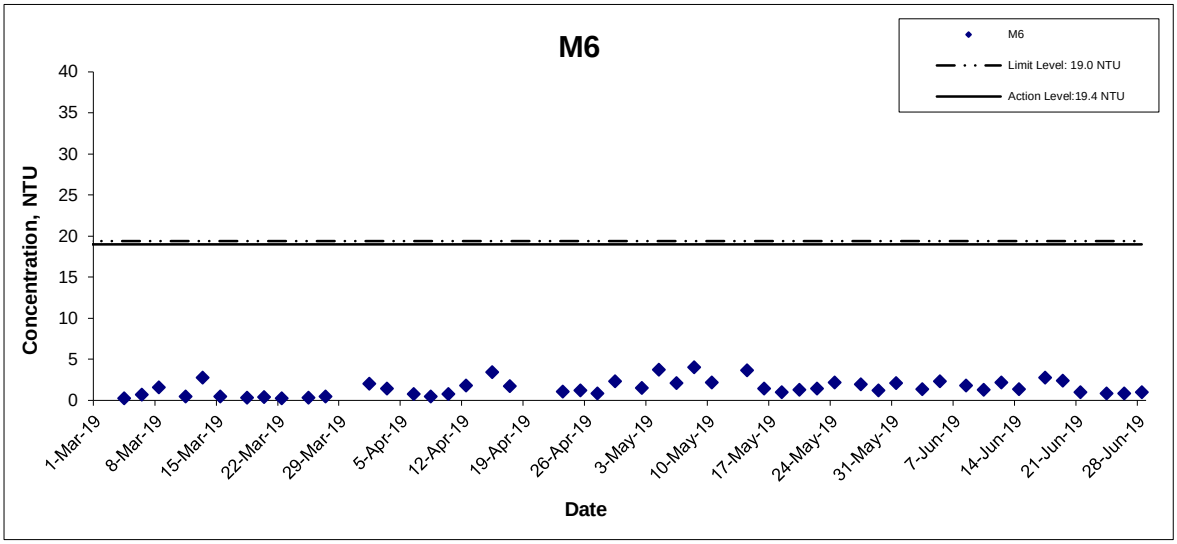
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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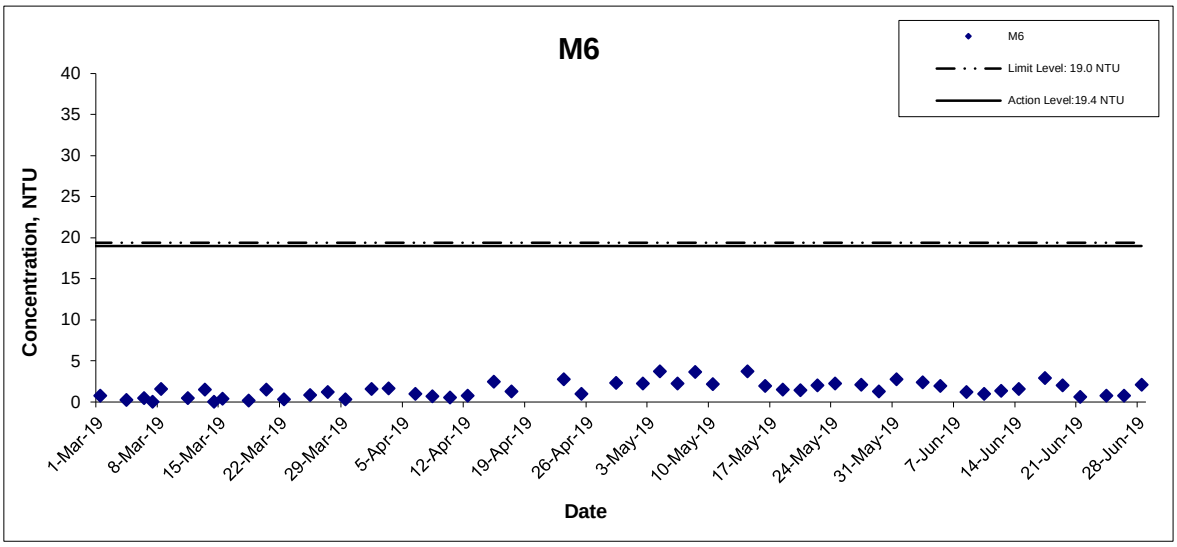
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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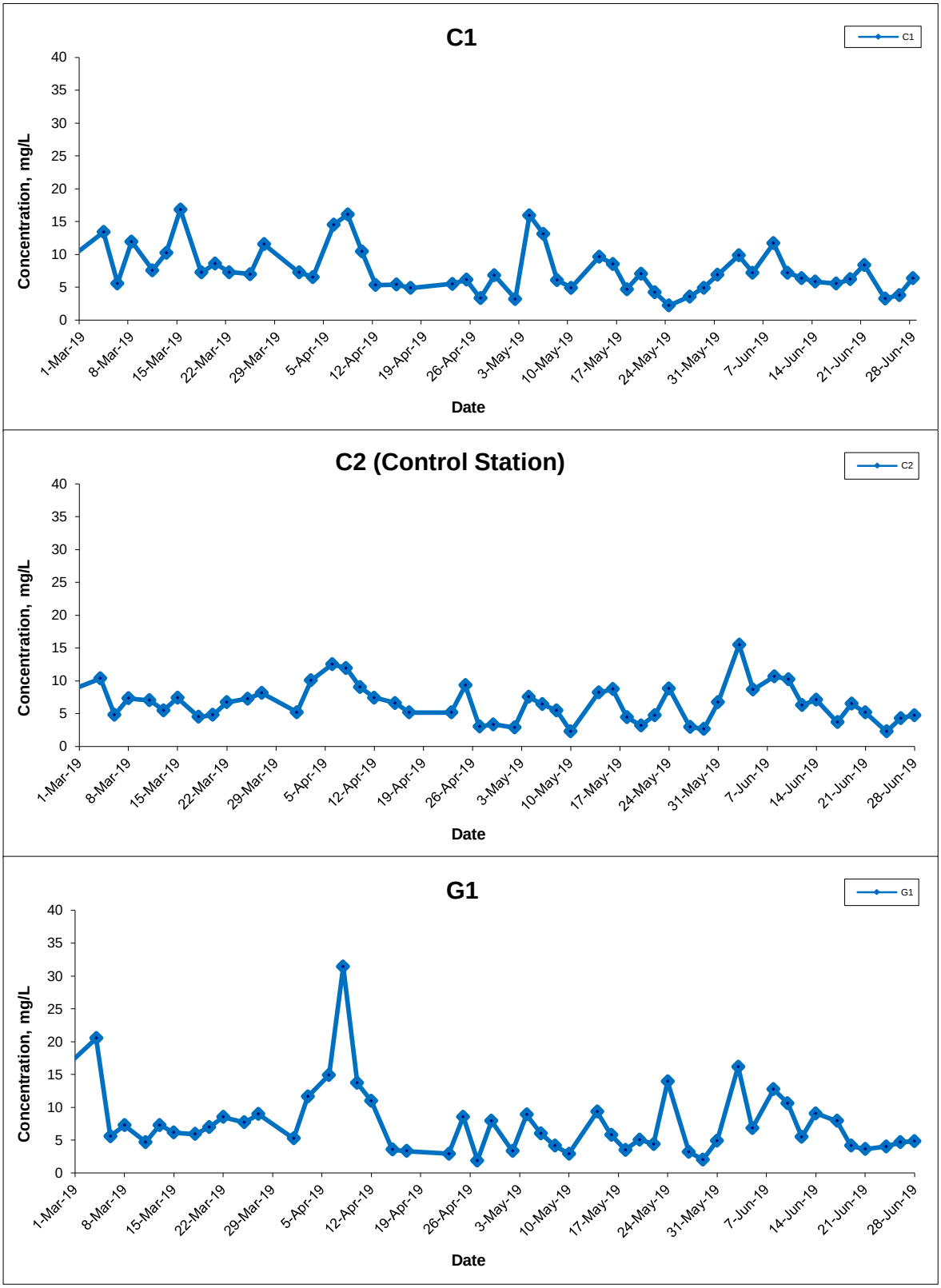
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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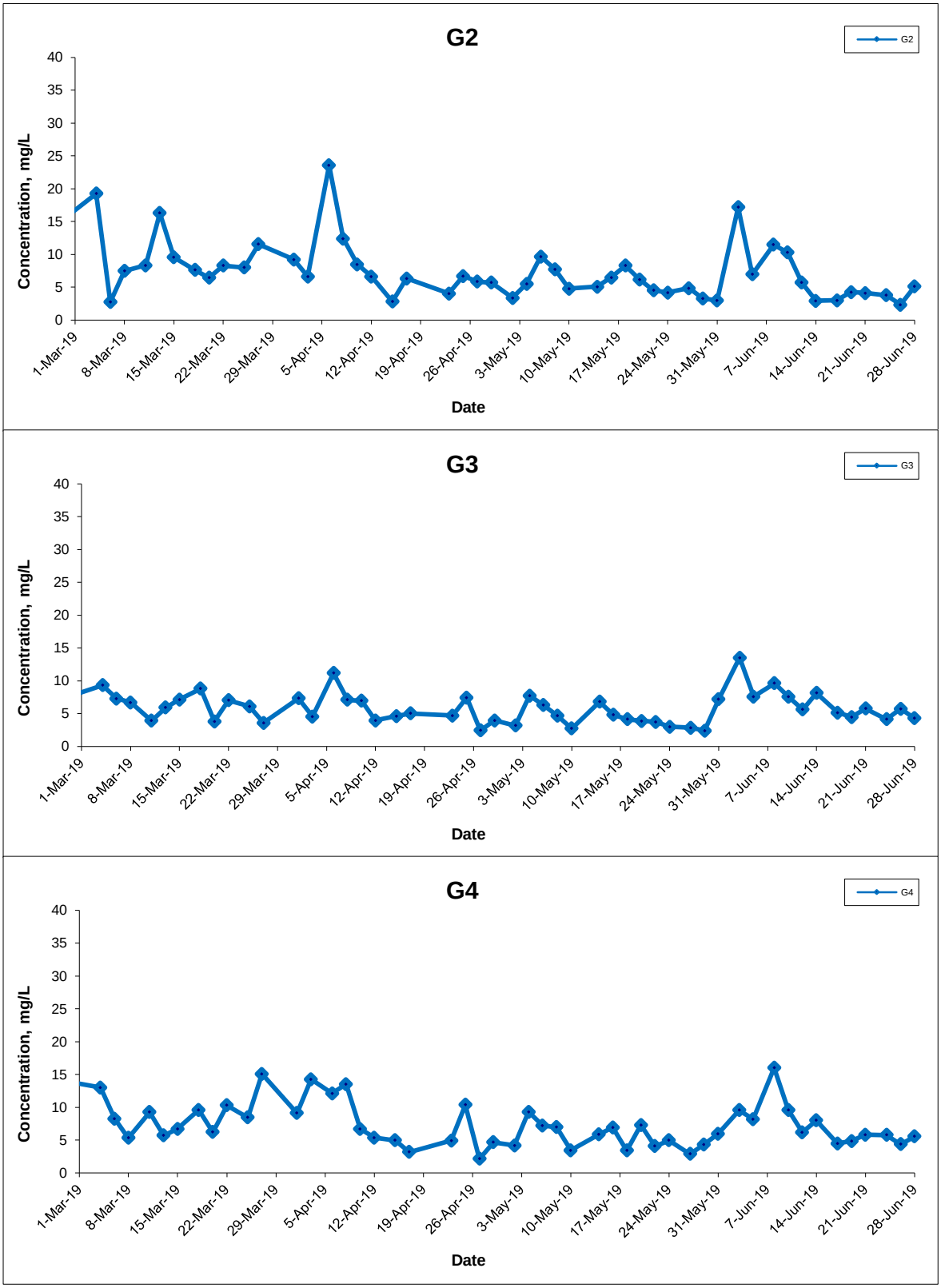

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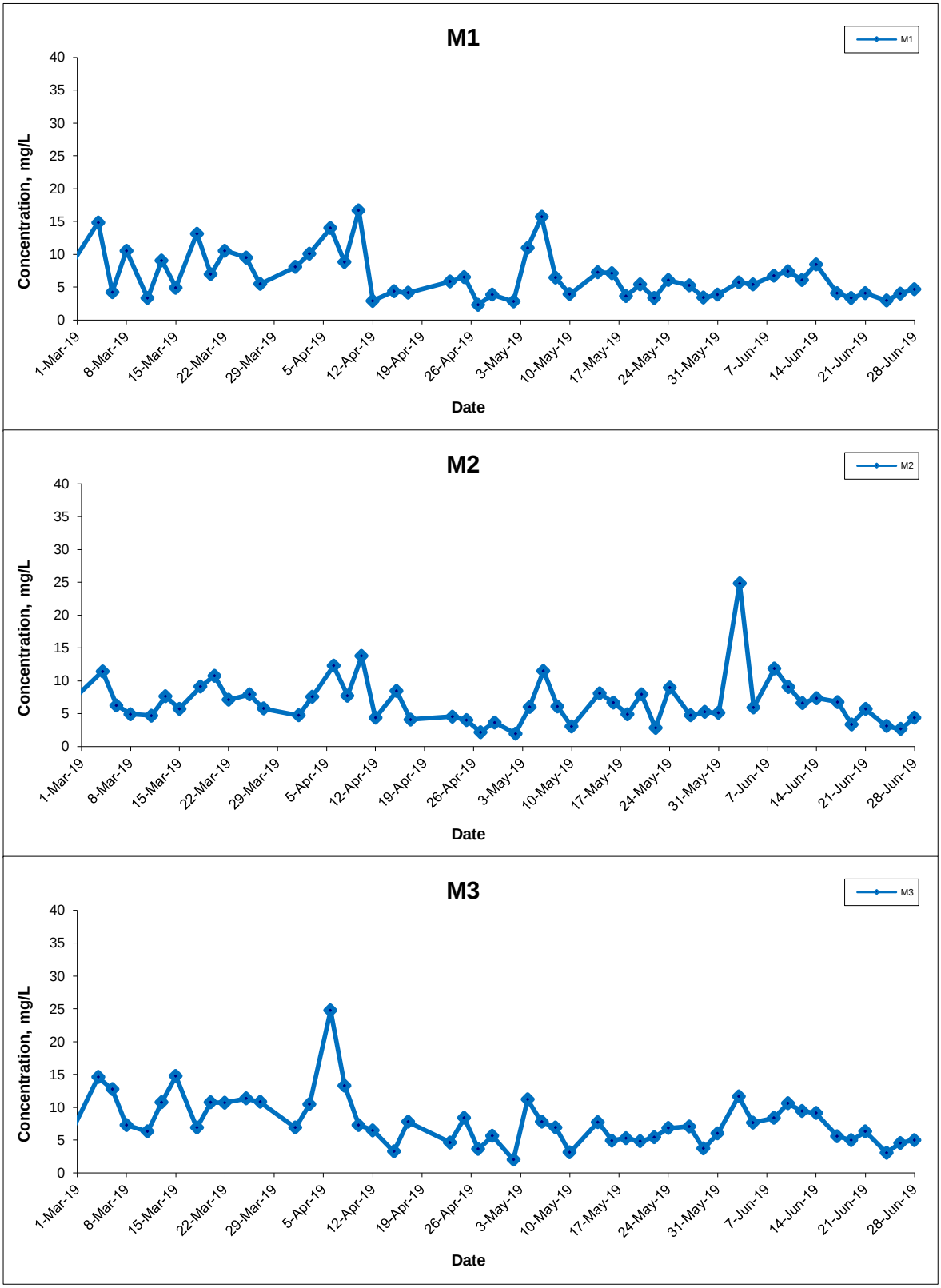
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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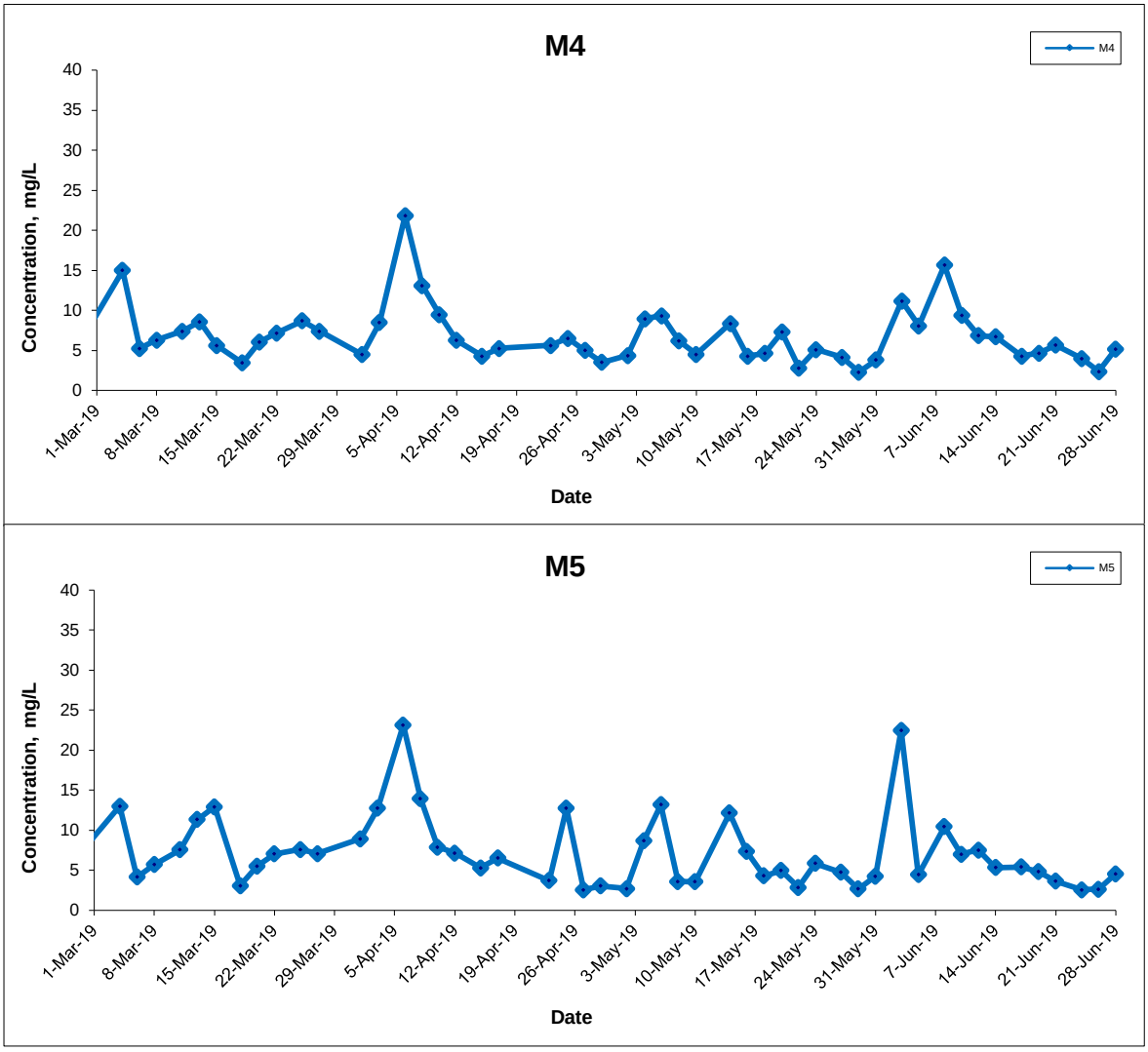

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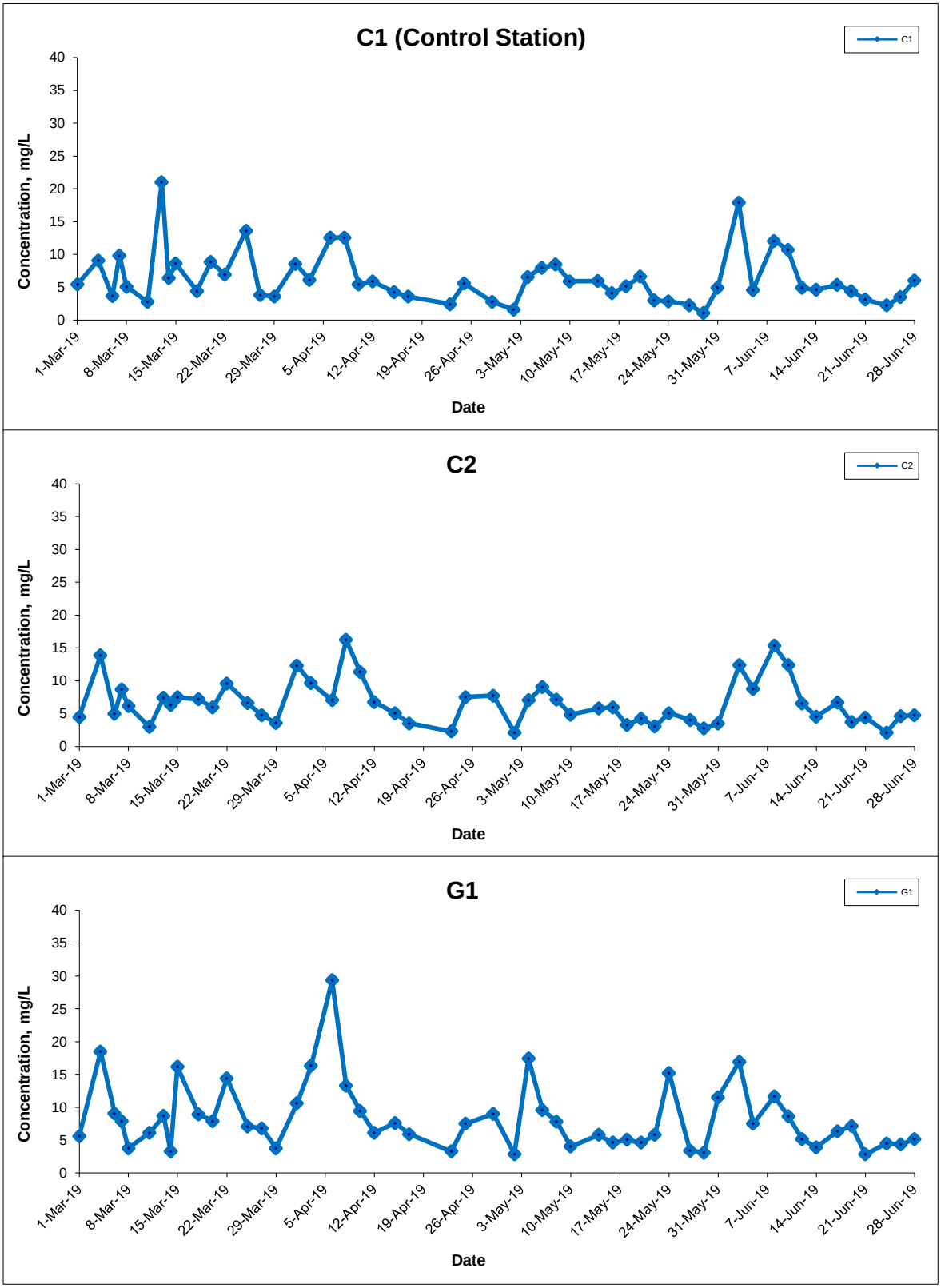

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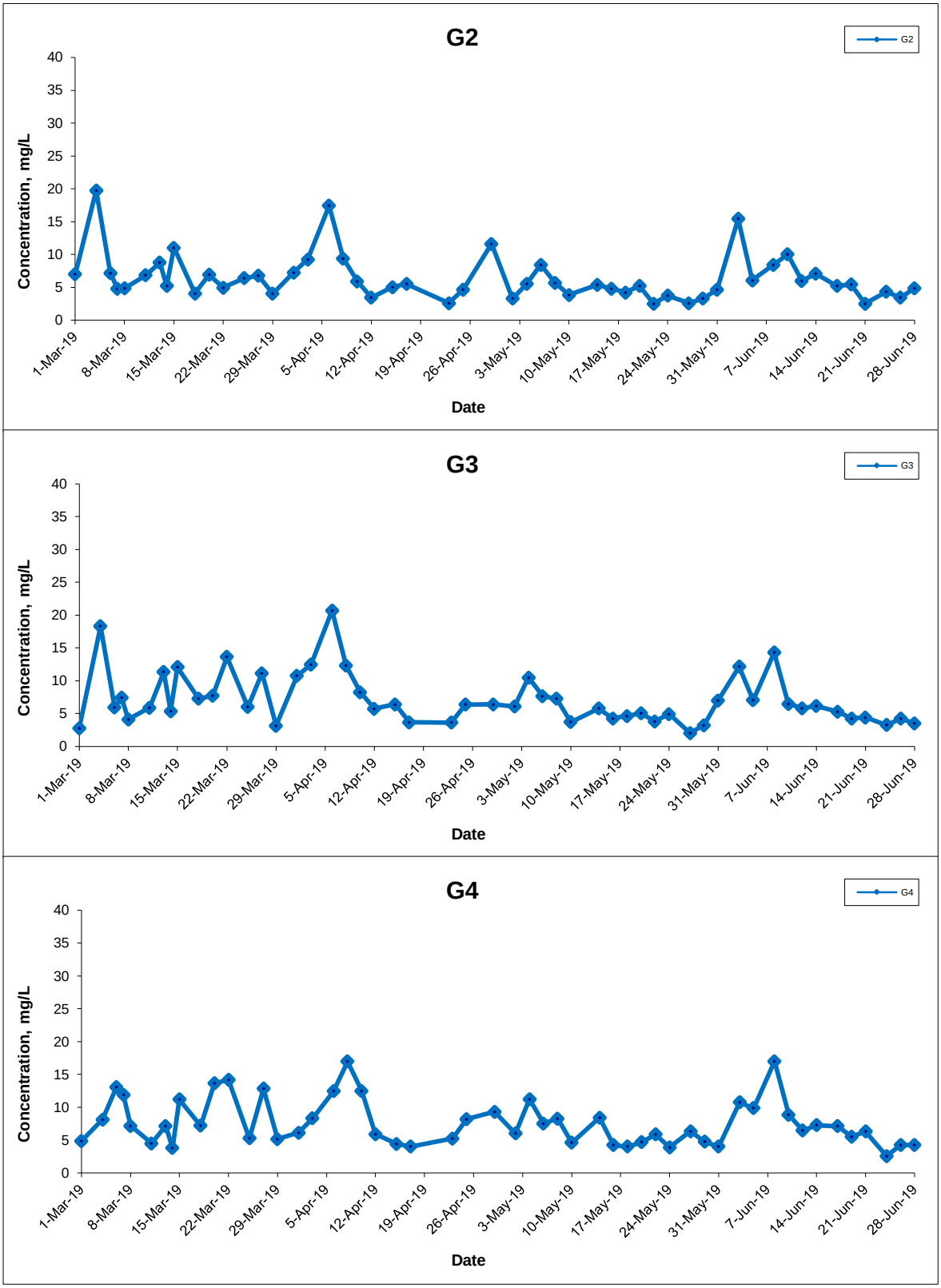

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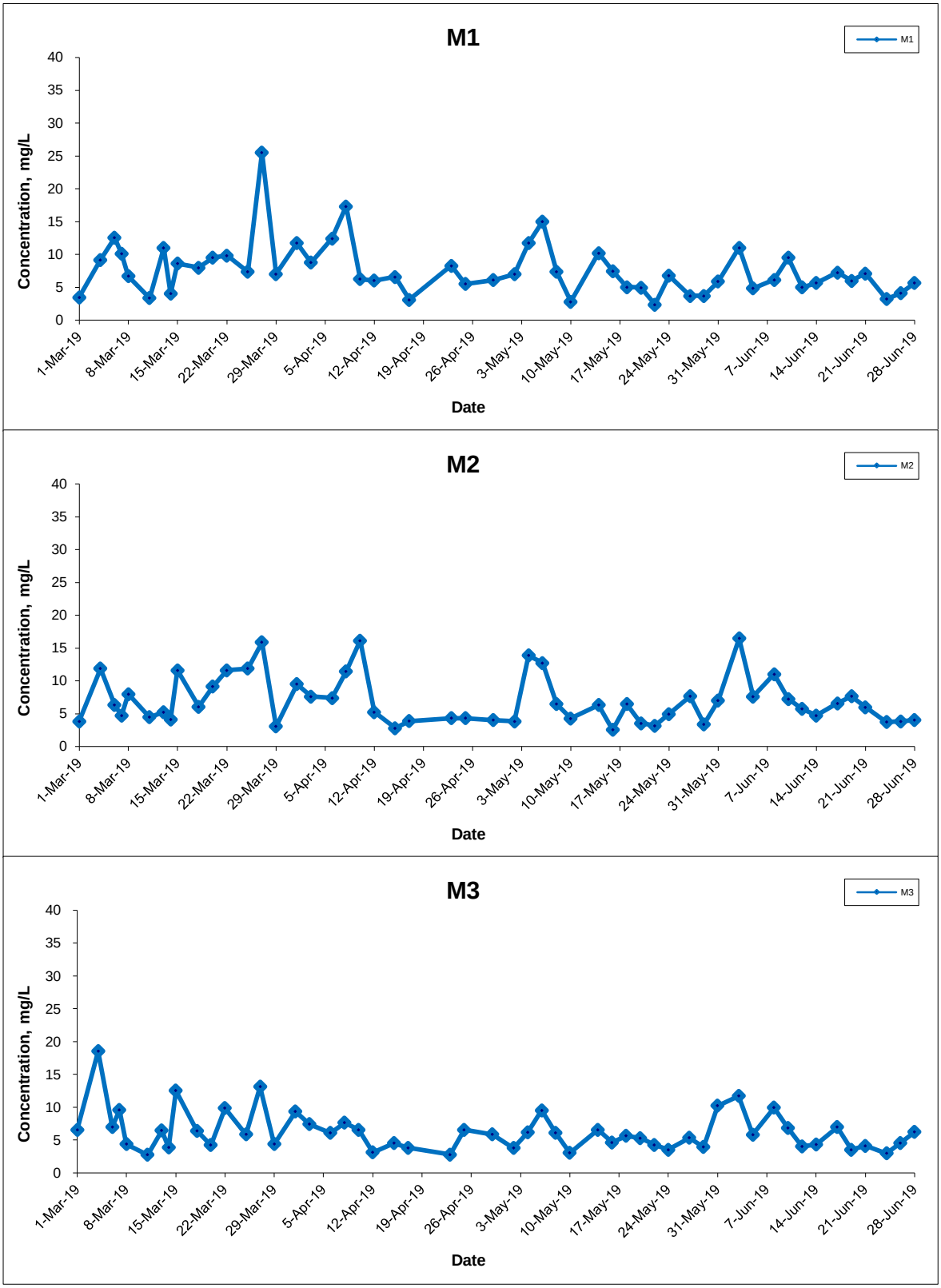
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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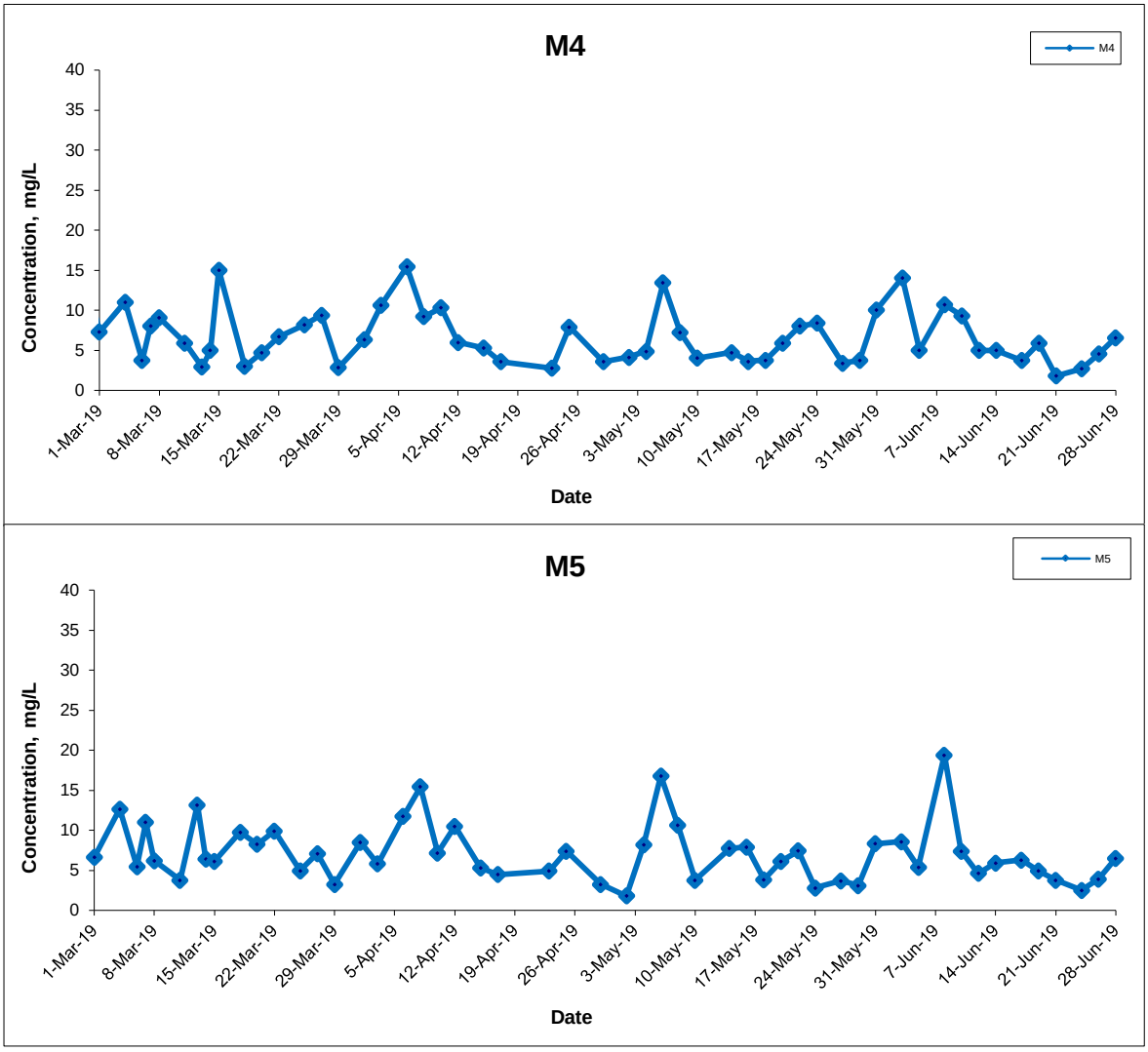
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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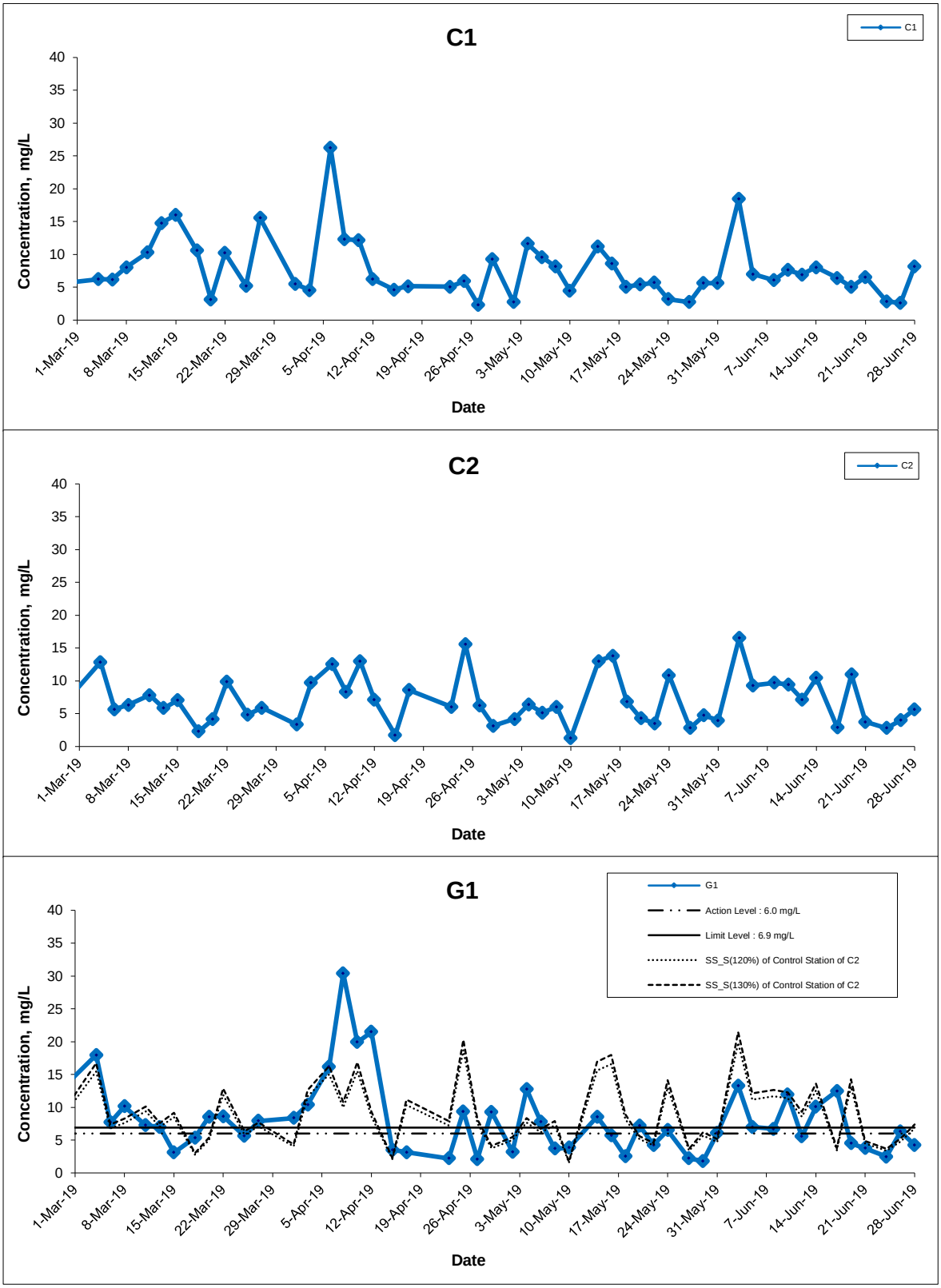
Suspended Solids (Surface) at Mid-Ebb Tide



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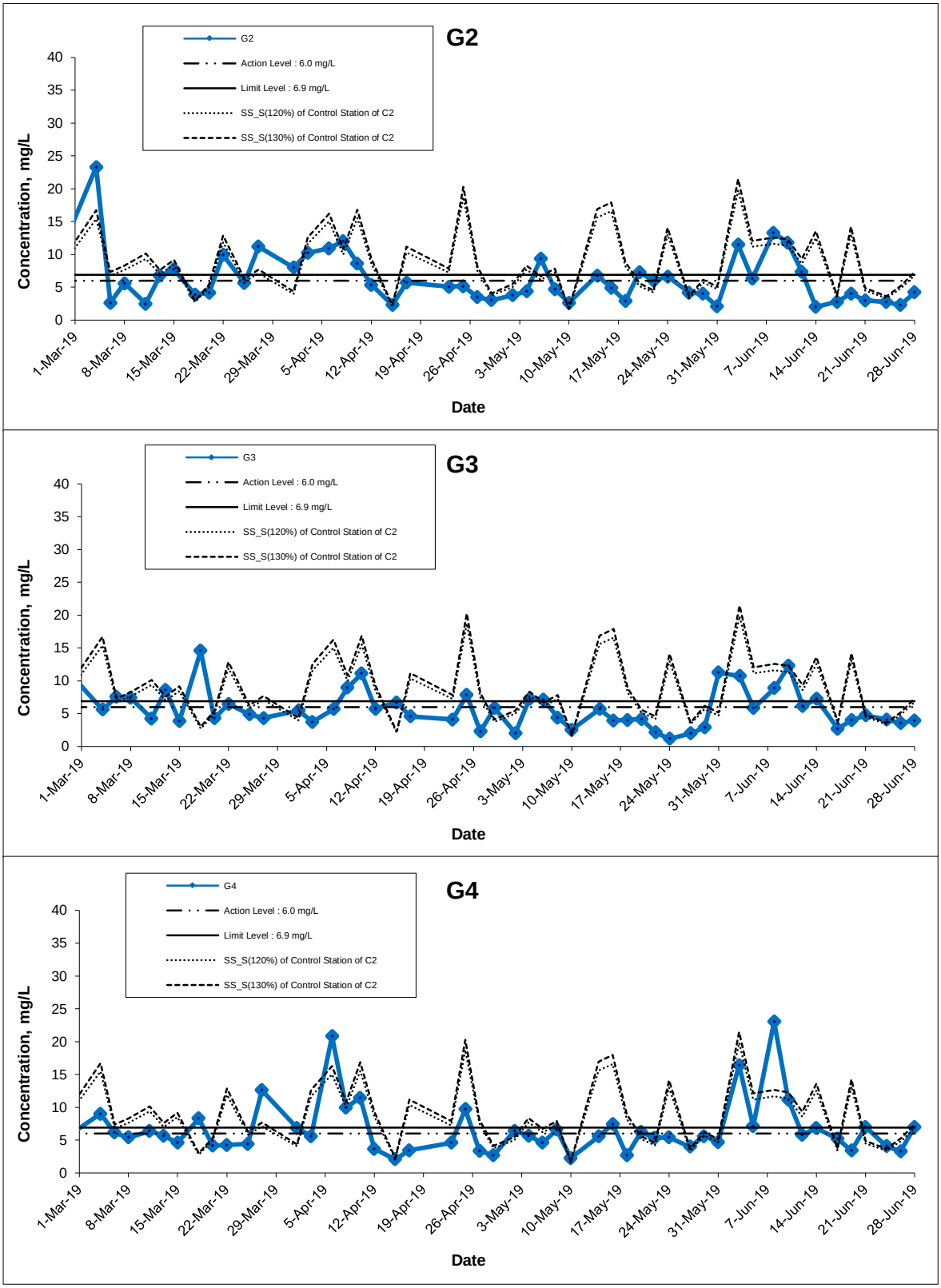
Suspended Solids (Surface) at Mid-Ebb Tide



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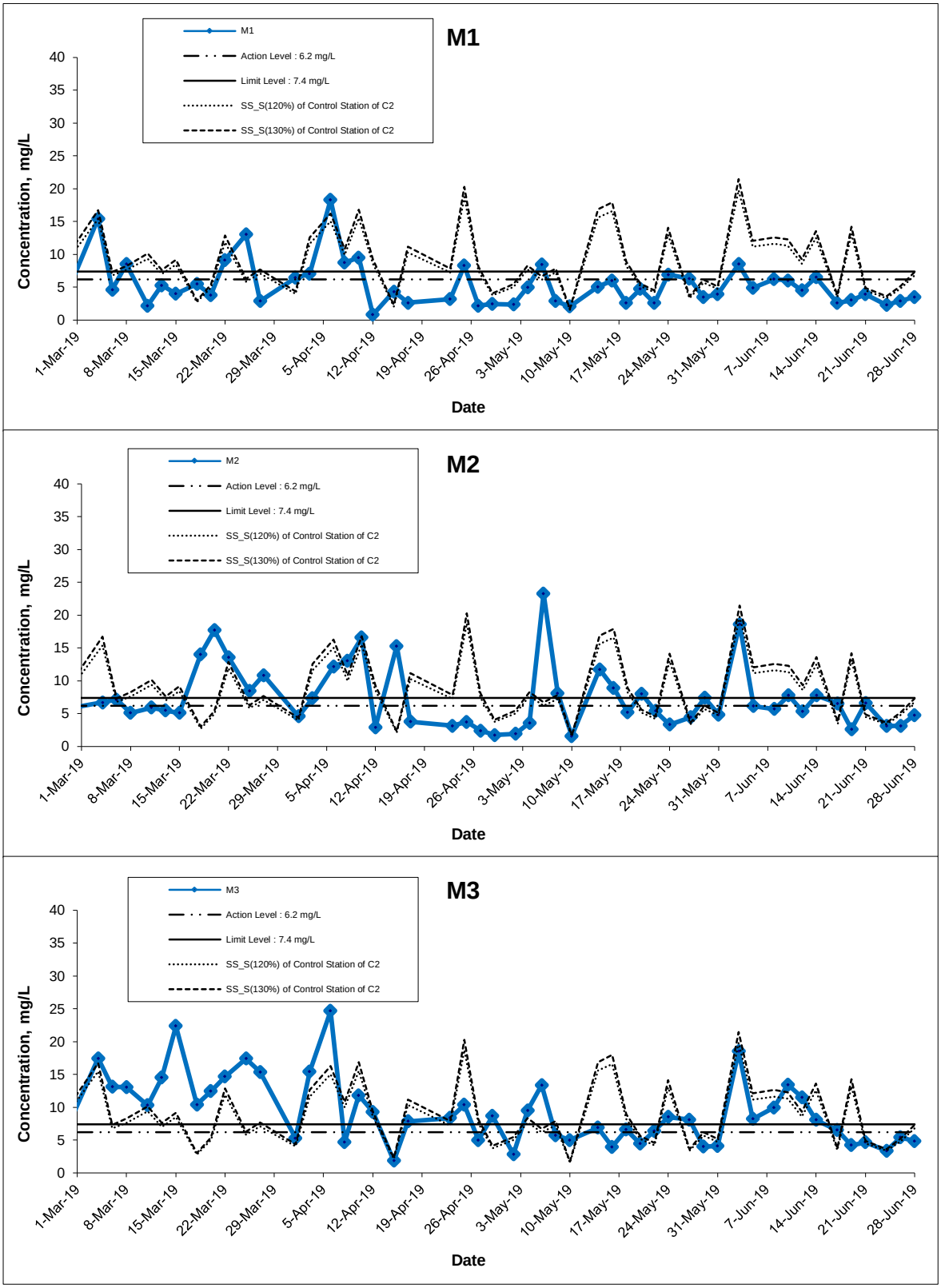
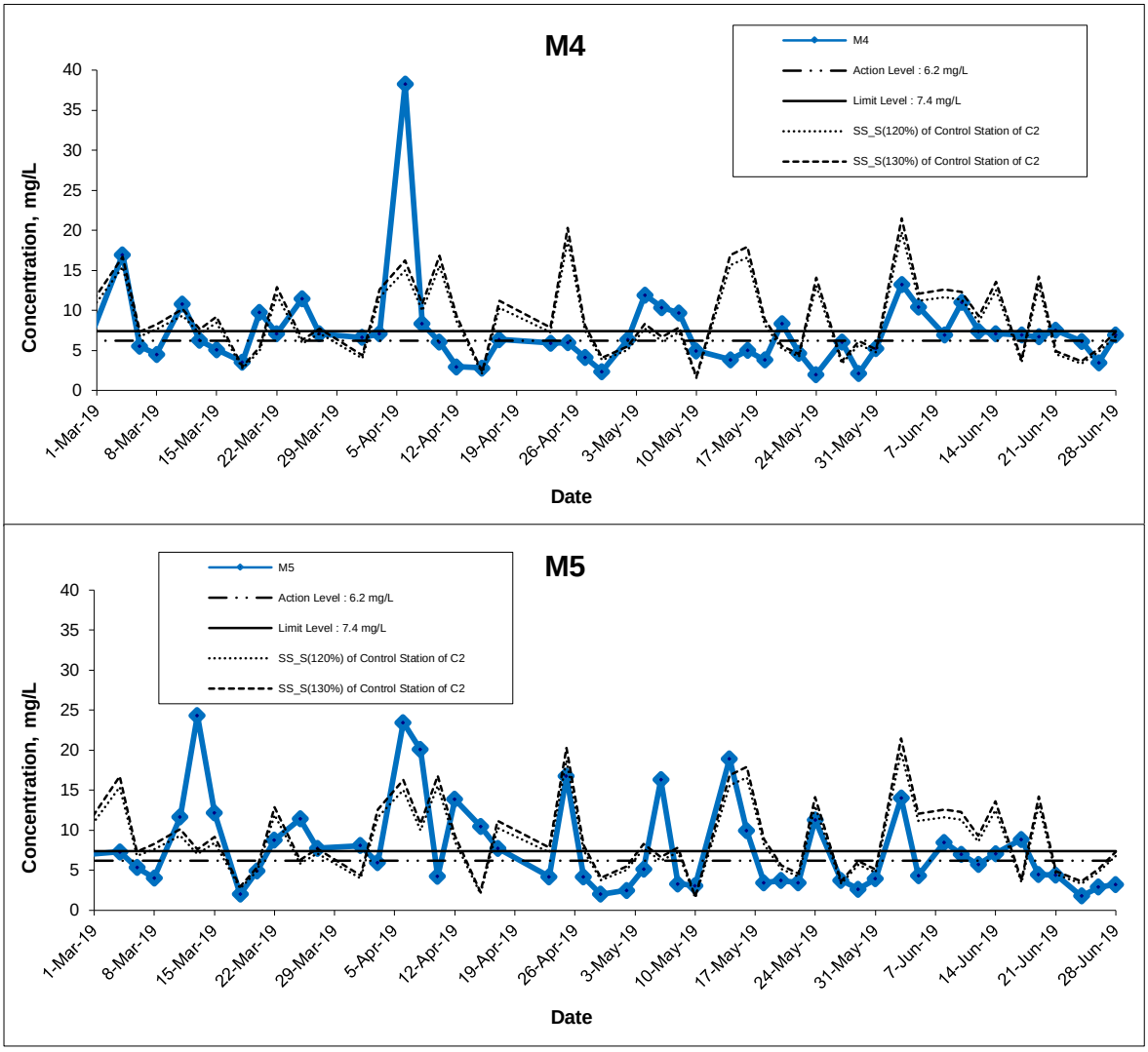
Suspended Solids (Surface) at Mid-Ebb Tide



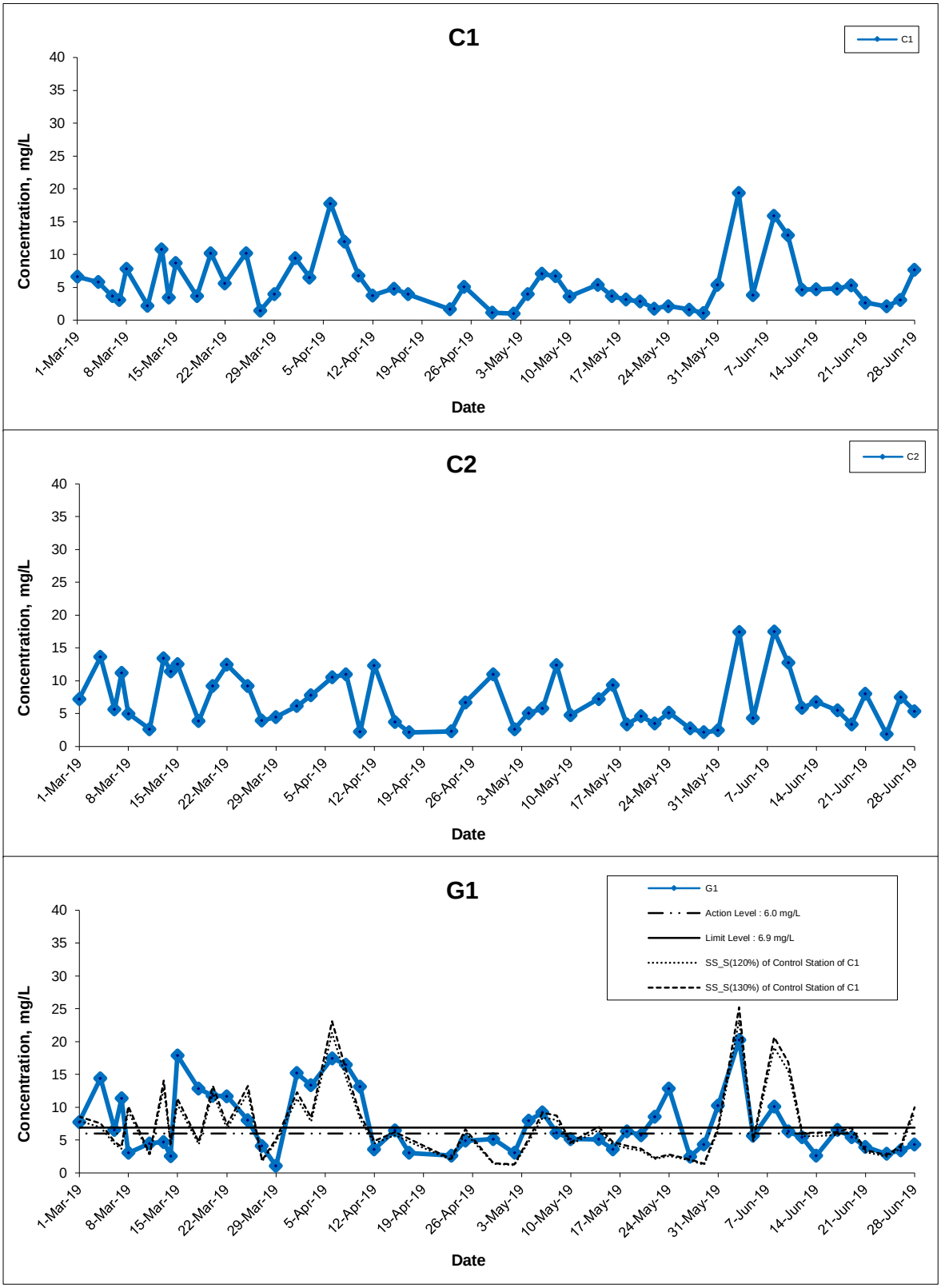
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Surface) at Mid-Ebb Tide



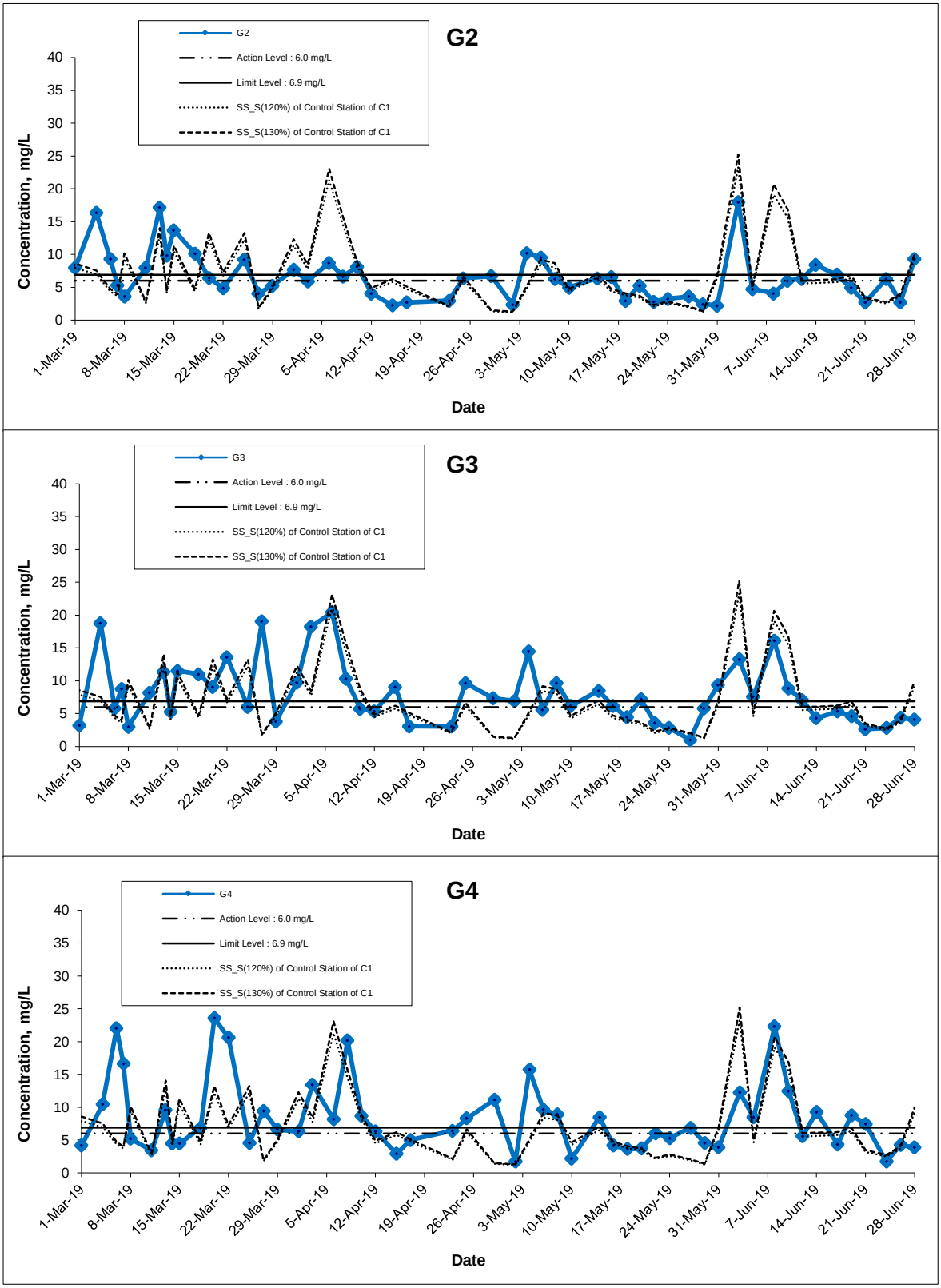
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Surface) at Mid-Flood Tide



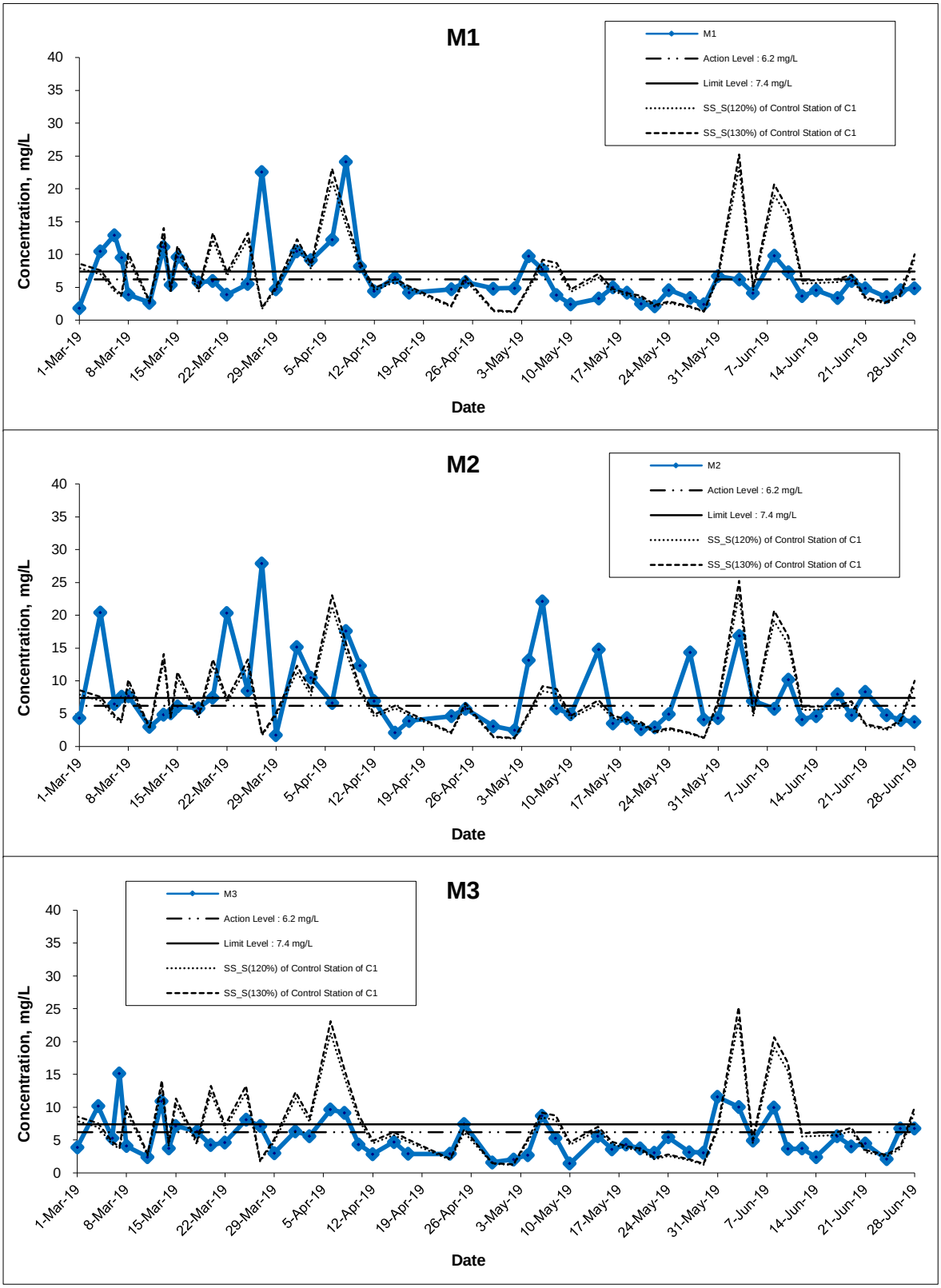
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



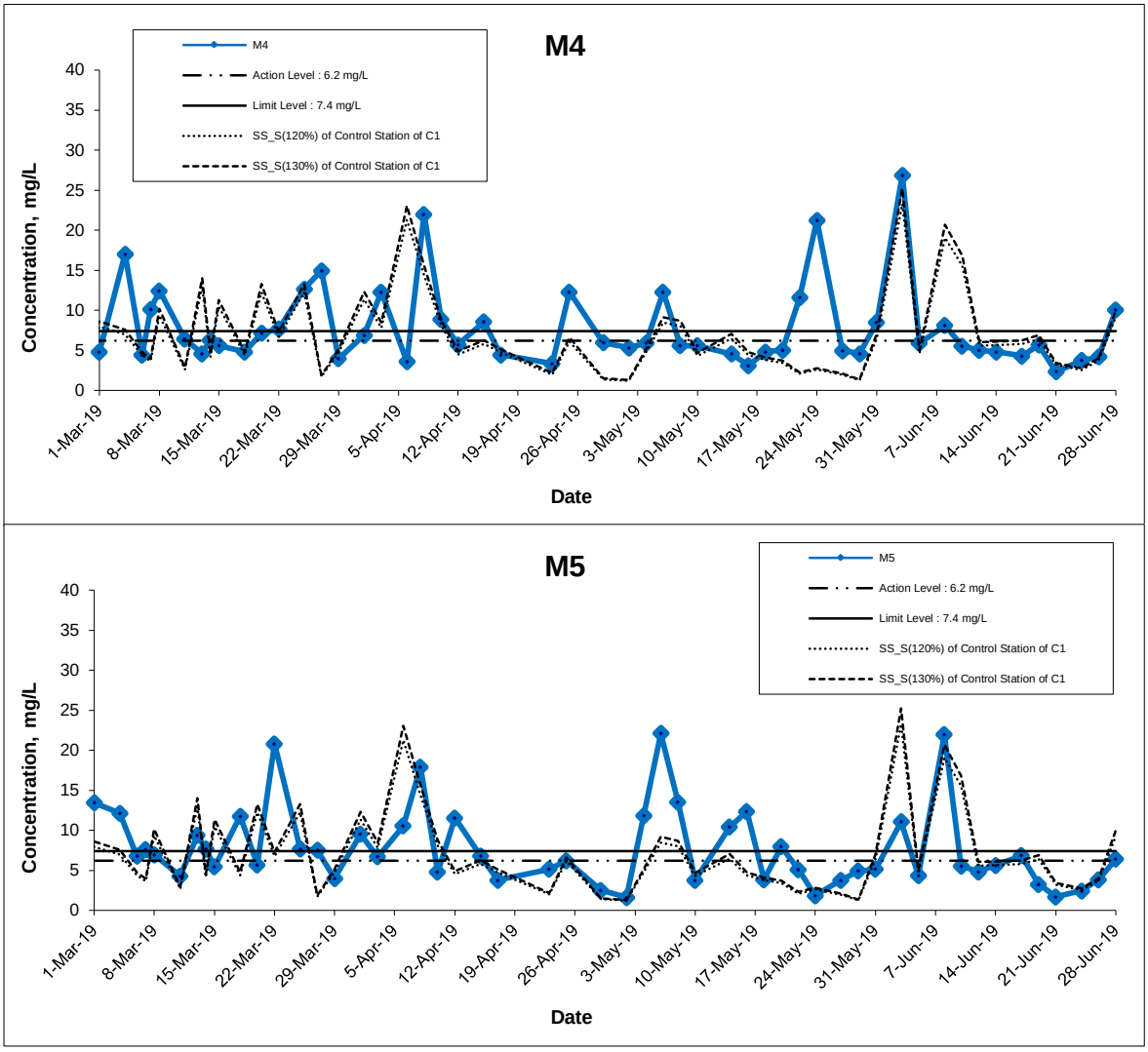
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



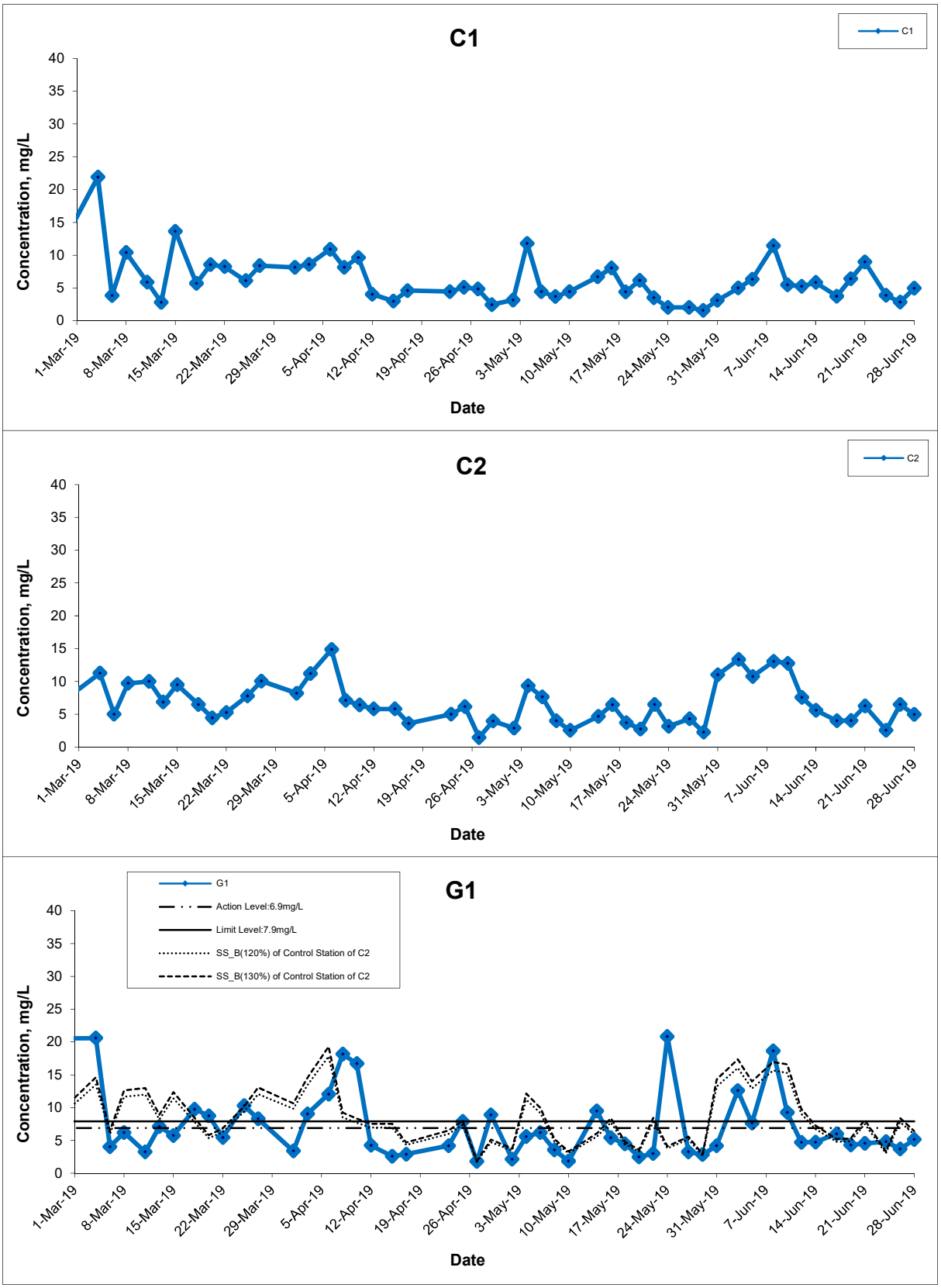
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



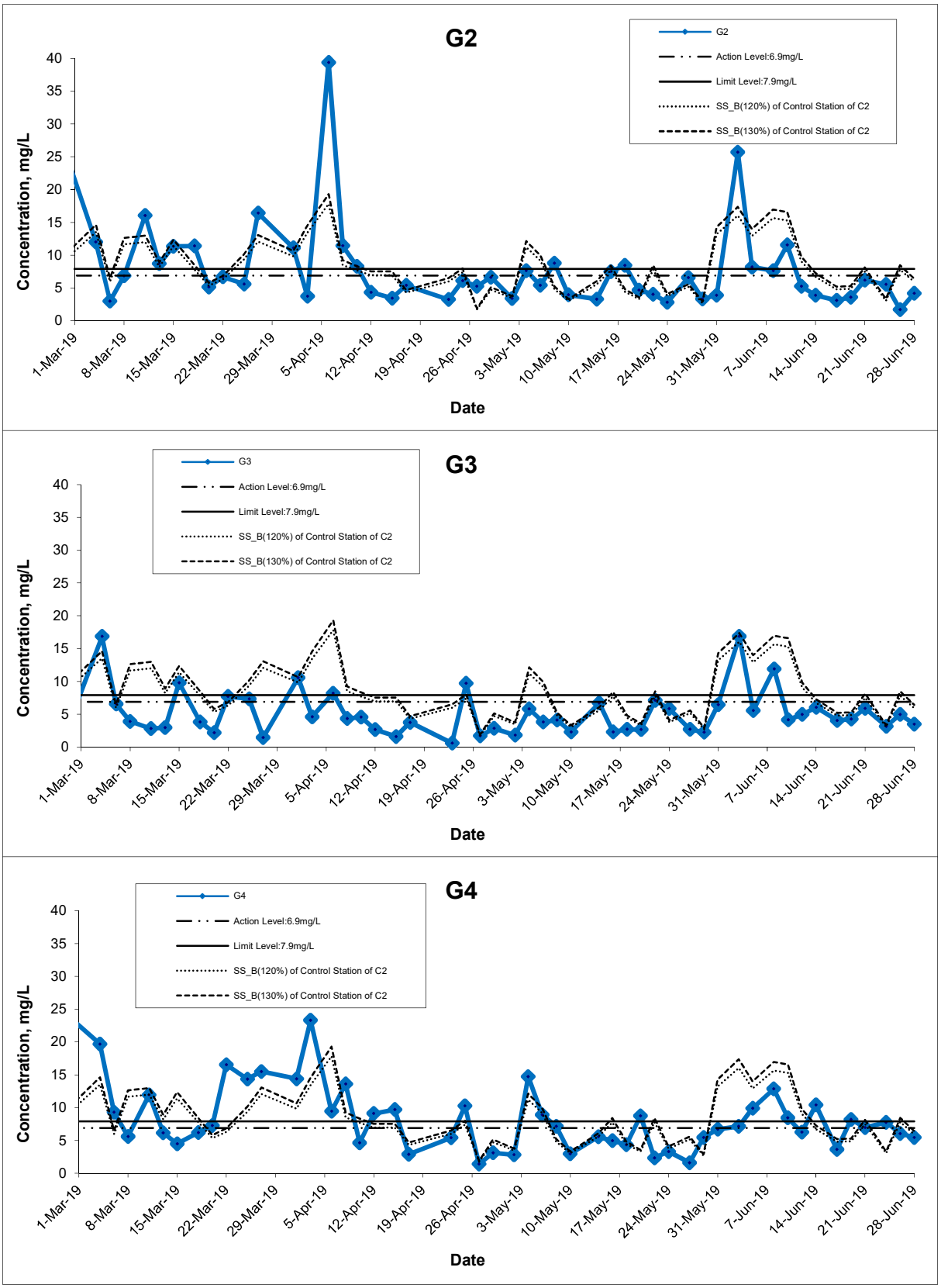
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Bottom) at Mid-Ebb Tide



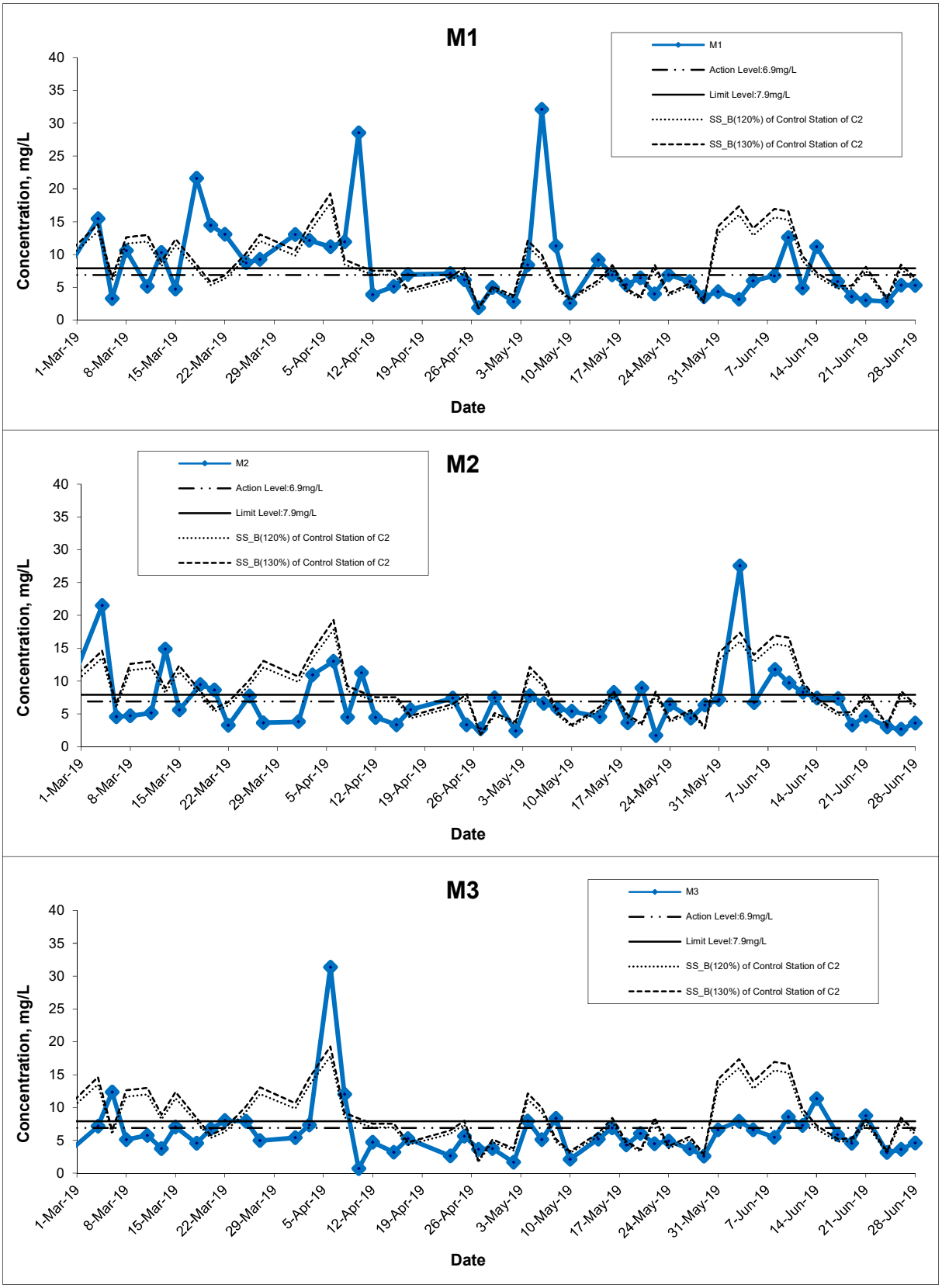
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Bottom) at Mid-Ebb Tide



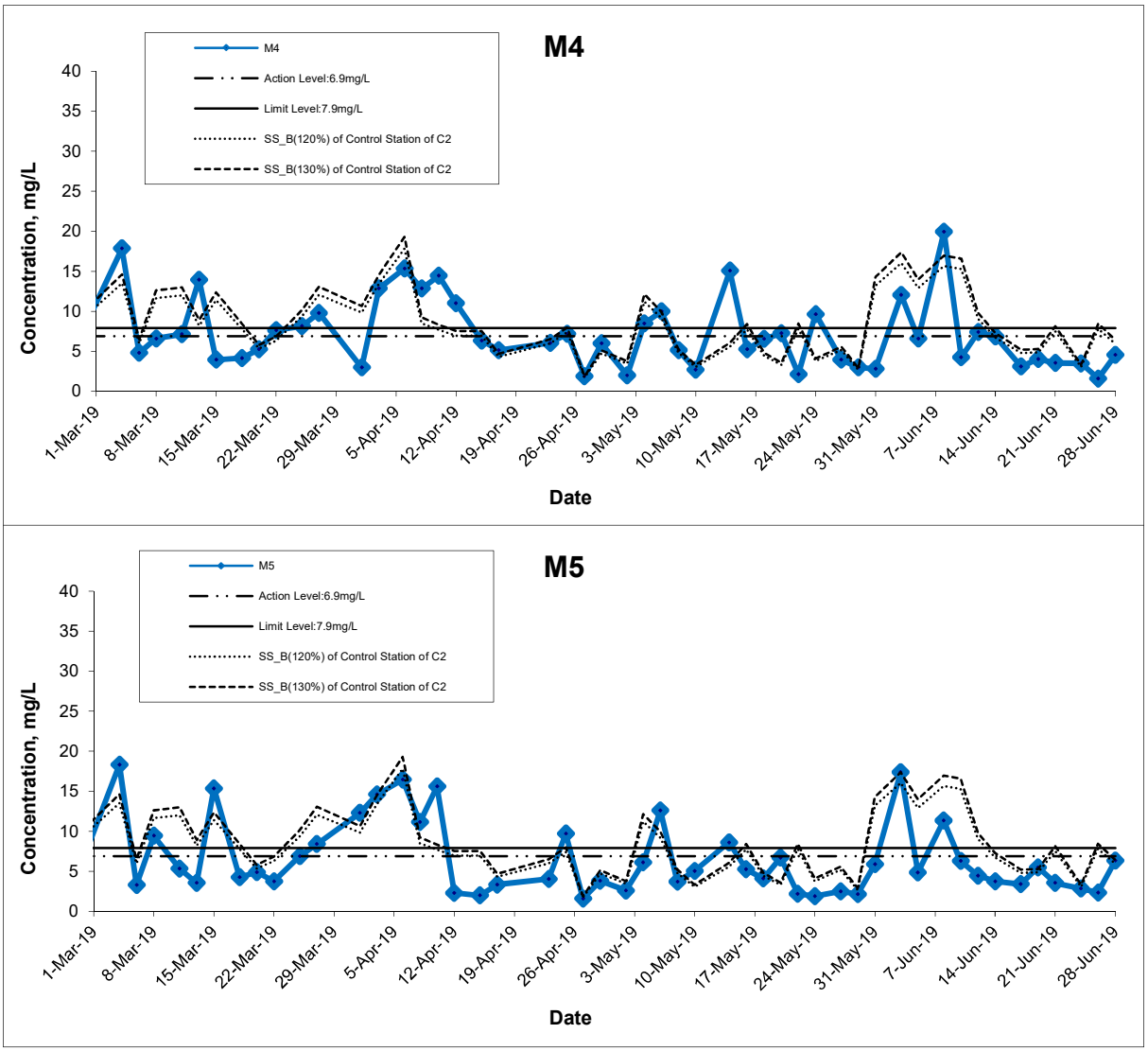
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Bottom) at Mid-Ebb Tide



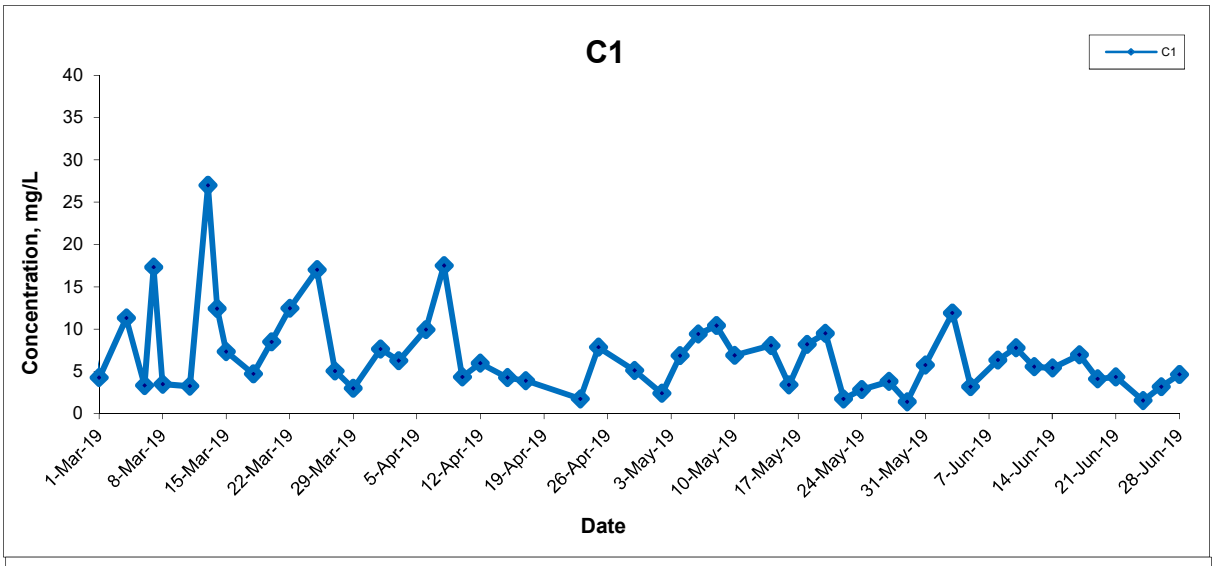
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

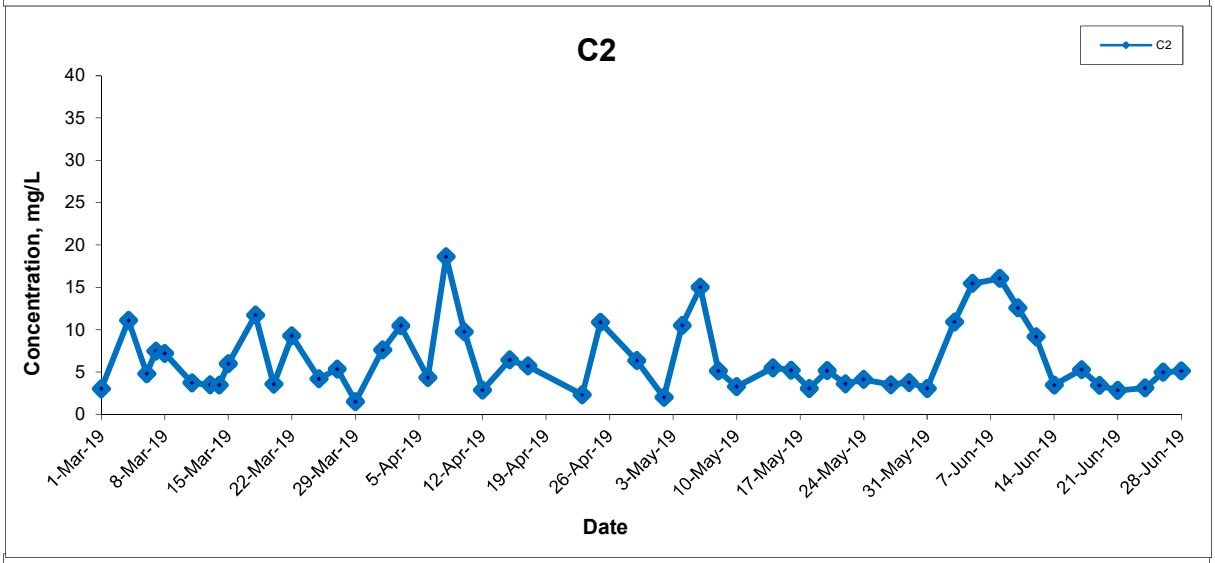
Suspended Solids (Bottom) at Mid-Ebb Tide

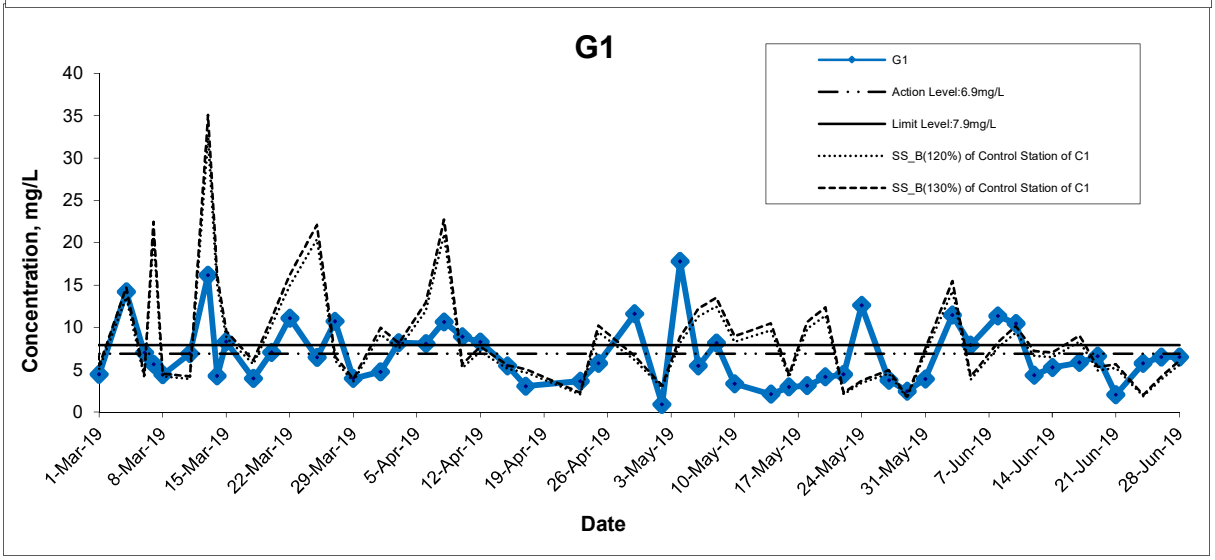


Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Bottom) at Mid-Flood Tide

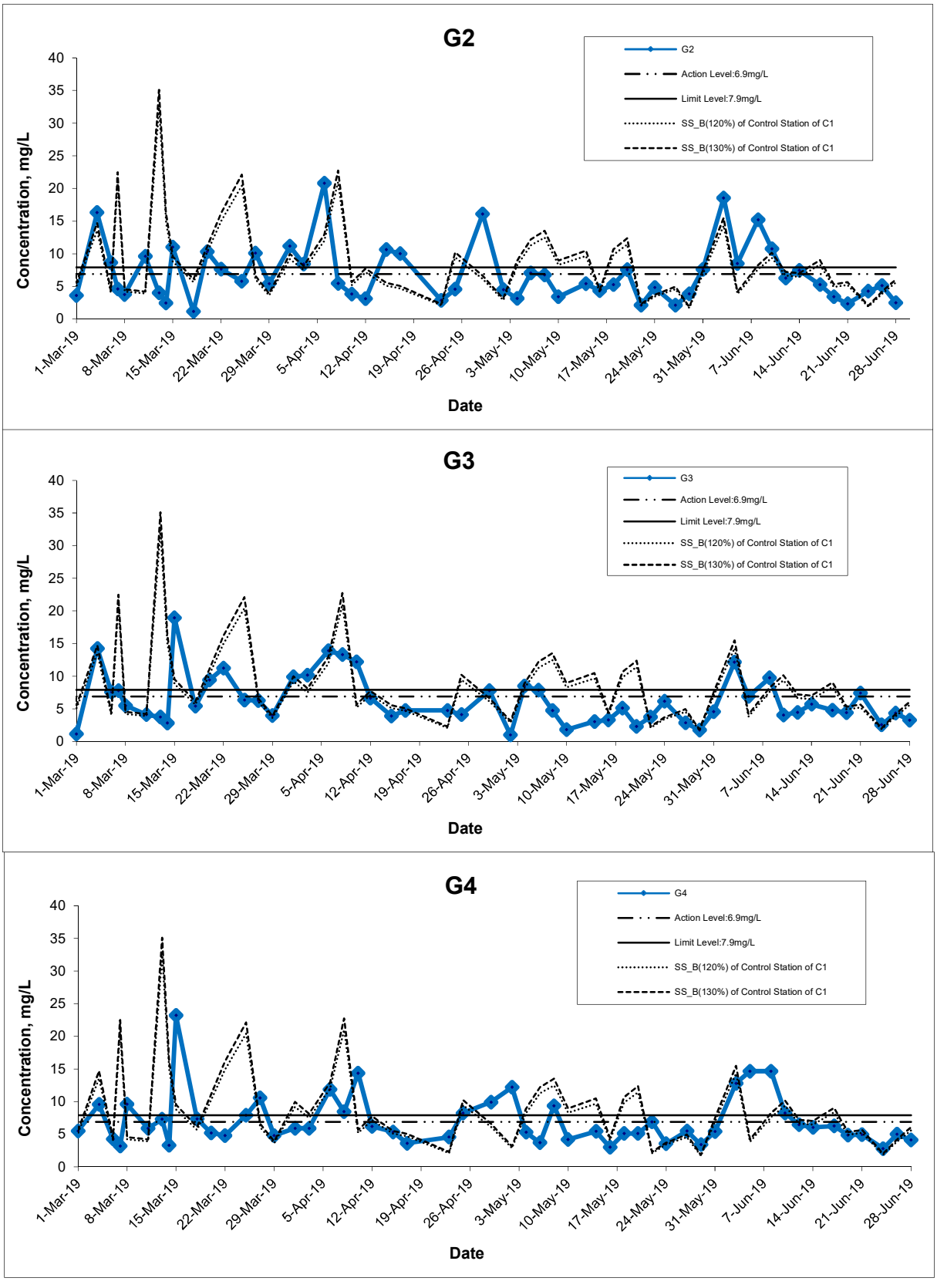






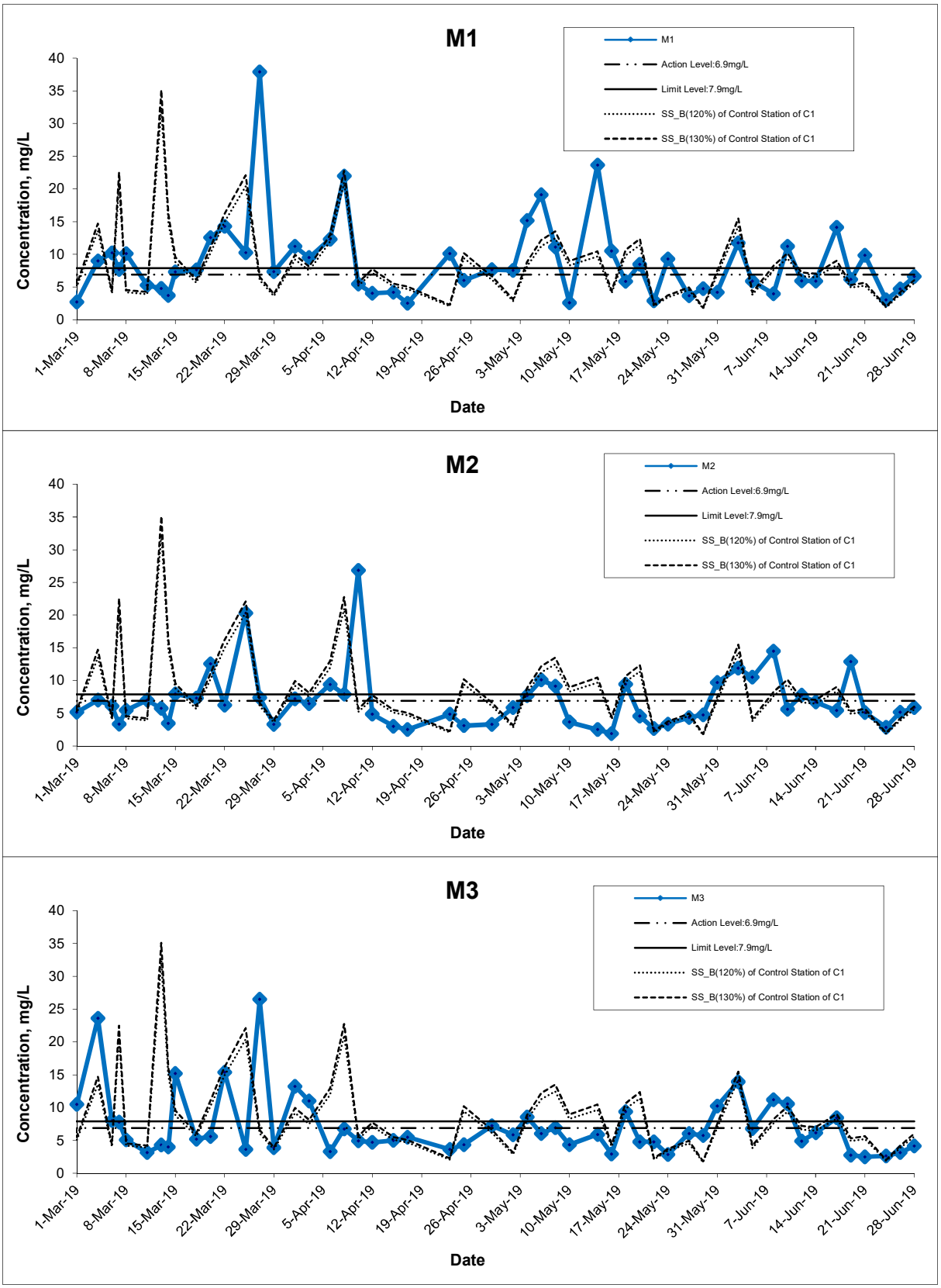
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide



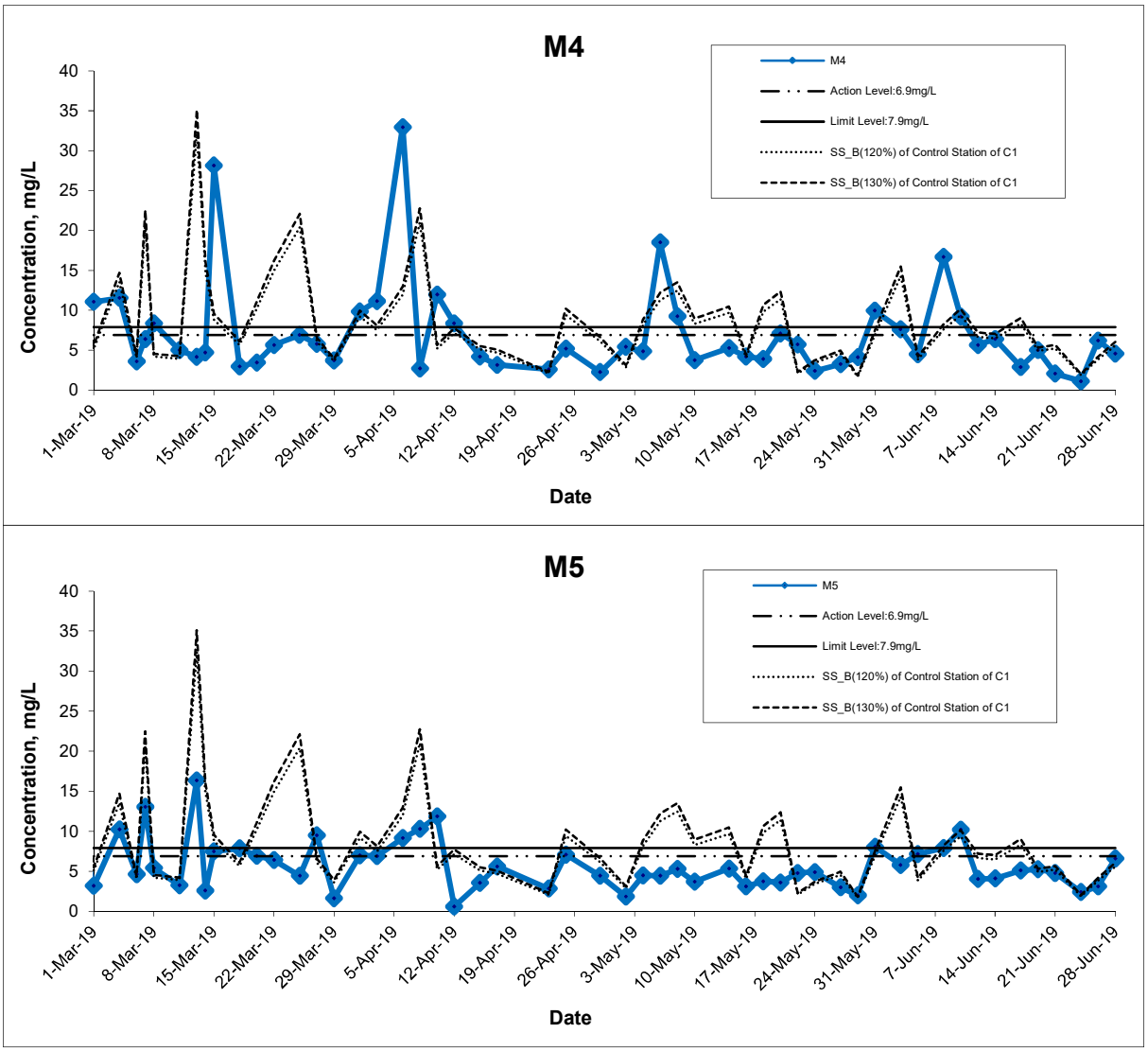
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Bottom) at Mid-Flood Tide



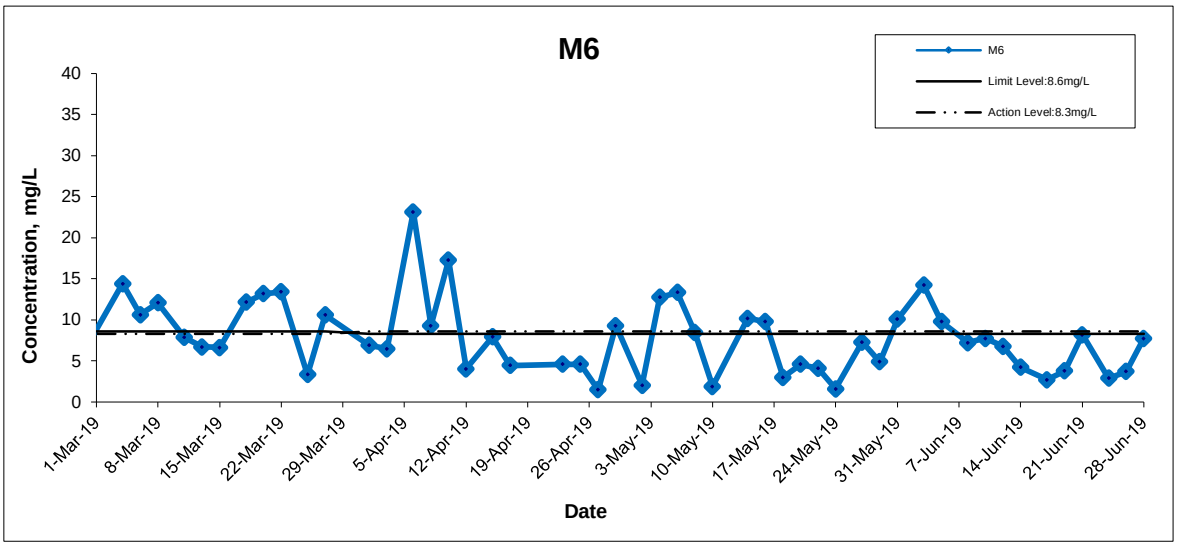
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: June 19	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide



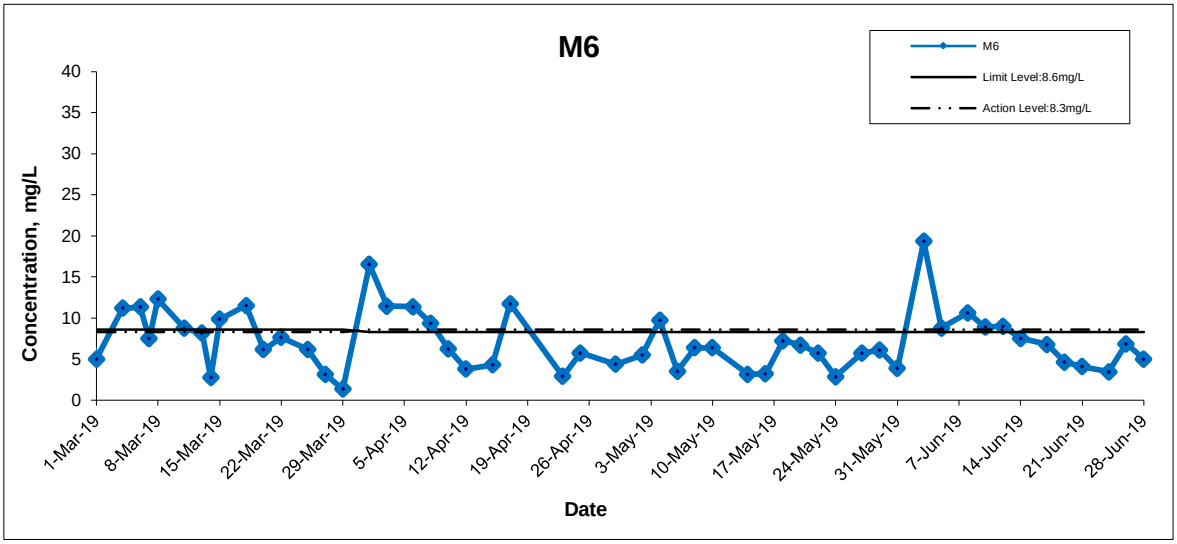
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date June 19	Appendix I	

Water Quality Monitoring Results at W1 - Mid-Ebb Tide

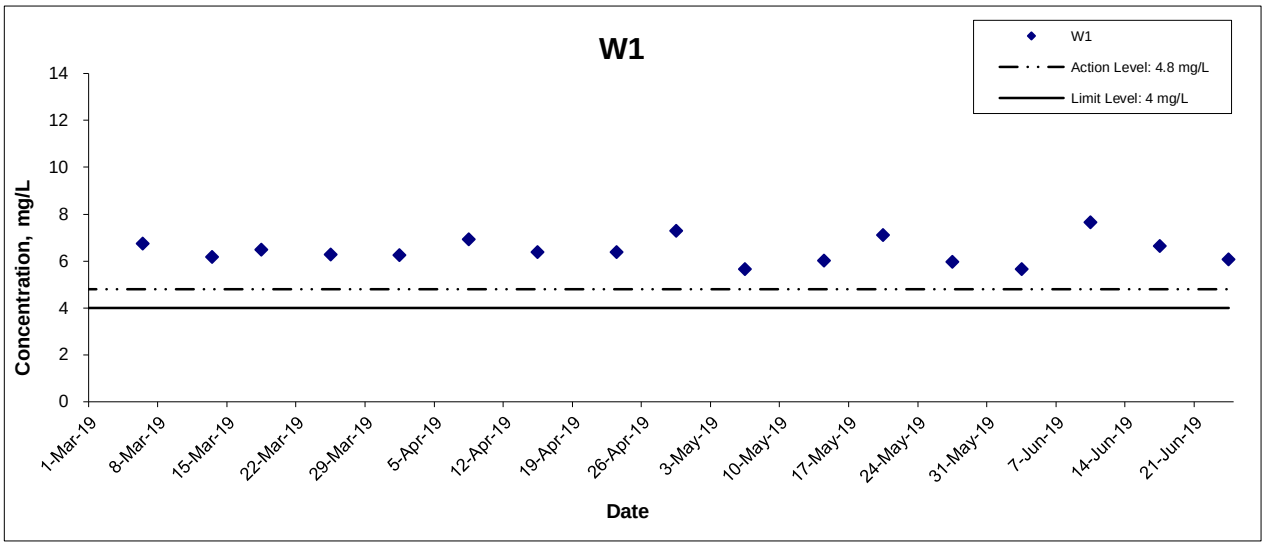
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
3-Jun-19	Cloudy	Moderate	11:24	Surface	1.0	26.2 26.1	26.1	8.8 8.8	8.8	32.7 32.6	32.7	86.0 82.2	84.1	5.8 5.5	5.7	5.7
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	25.9 26.0	26.0	8.8 8.8	8.8	33.1 33.0	33.0	81.9 81.8	81.9	5.5 5.5	5.5	5.5
10-Jun-19	Cloudy	Calm	18:40	Surface	1.0	27.2 26.9	27.1	8.7 8.7	8.7	31.5 32.5	32.0	114.3 115.9	115.1	7.6 7.7	7.7	7.7
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	26.9 26.9	26.9	8.7 8.7	8.7	32.4 32.6	32.5	101.4 102.2	101.8	6.8 6.8	6.8	6.8
17-Jun-19	Cloudy	Moderate	12:27	Surface	1.0	29.3 29.2	29.2	8.8 8.8	8.8	32.1 32.2	32.1	97.4 98.7	98.1	6.6 6.7	6.6	6.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	2.9	29.1 29.2	29.2	8.8 8.8	8.8	32.2 32.3	32.2	98.5 98.4	98.5	6.7 6.7	6.7	6.7
24-Jun-19	Fine	Moderate	15:43	Surface	1.0	27.5 27.5	27.5	9.0 9.0	9.0	31.9 31.9	31.9	92.3 92.1	92.2	6.1 6.1	6.1	6.1
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	2.9	27.1 27.1	27.1	9.0 9.0	9.0	32.6 32.6	32.6	79.5 79.5	79.5	5.3 5.3	5.3	5.3

Water Quality Monitoring Results at W1 - Mid-Flood Tide

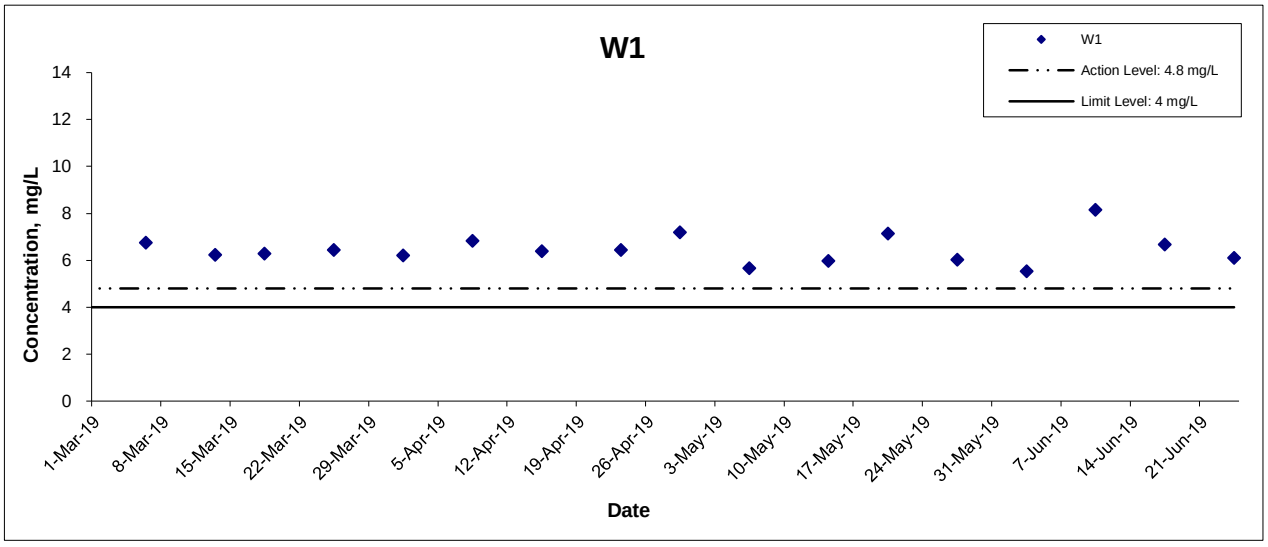
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
3-Jun-19	Cloudy	Moderate	17:20	Surface	1.0	26.1 26.1	26.1	8.8 8.8	8.8	31.9 31.9	31.9	82.1 81.9	82.0	5.6 5.5	5.6	5.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	26.1 26.1	26.1	8.8 8.8	8.8	31.9 31.9	31.9	82.0 81.9	82.0	5.6 5.5	5.5	5.5
10-Jun-19	Cloudy	Calm	11:25	Surface	1.2	27.2 27.2	27.2	8.7 8.7	8.7	31.7 31.8	31.7	122.7 122.9	122.8	8.2 8.2	8.2	8.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	26.9 26.9	26.9	8.7 8.7	8.7	32.6 32.5	32.6	106.4 106.5	106.5	7.1 7.1	7.1	7.1
17-Jun-19	Cloudy	Moderate	19:28	Surface	1.0	27.4 27.3	27.3	8.8 8.8	8.8	32.2 32.2	32.2	97.0 96.8	96.9	6.7 6.7	6.7	6.7
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	27.2 27.1	27.1	8.8 8.8	8.8	32.3 32.3	32.3	96.3 96.5	96.4	6.6 6.7	6.6	6.6
24-Jun-19	Fine	Moderate	10:11	Surface	1.0	27.5 27.6	27.5	9.0 9.0	9.0	31.9 31.9	31.9	92.7 92.5	92.6	6.1 6.1	6.1	6.1
				Middle	-	-	-	-	-	-	-	-	-	-	6.1	
				Bottom	3.0	27.1 27.1	27.1	9.0 9.0	9.0	32.6 32.6	32.6	79.4 79.5	79.5	5.3 5.3	5.3	5.3

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen (Depth-Averaged) at Mid-Ebb Tide



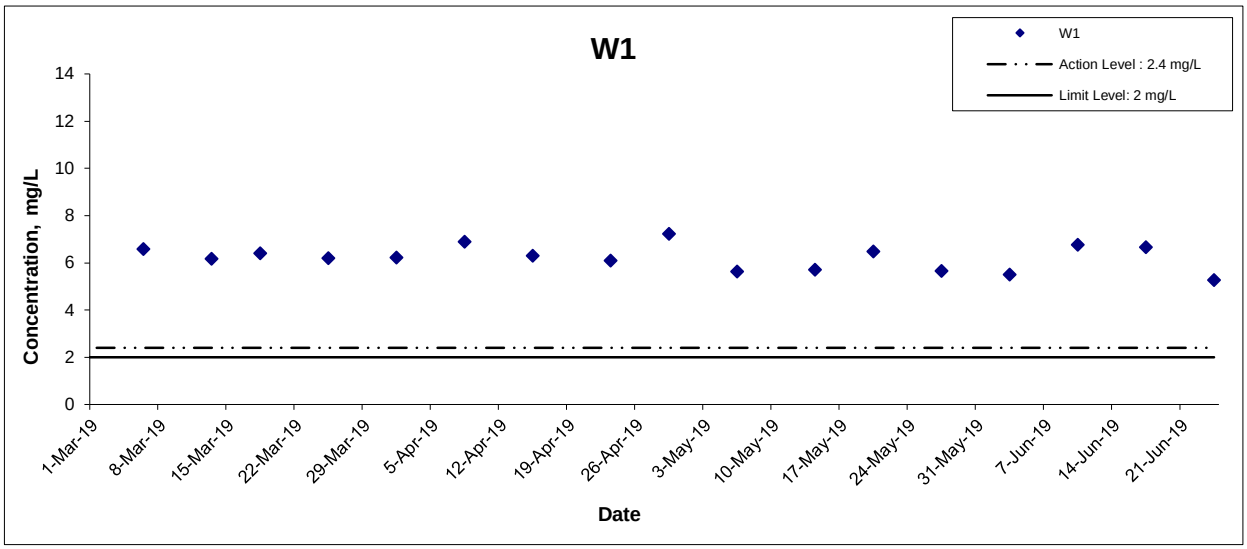
Dissolved Oxygen (Depth-Averaged) at Mid-Flood Tide



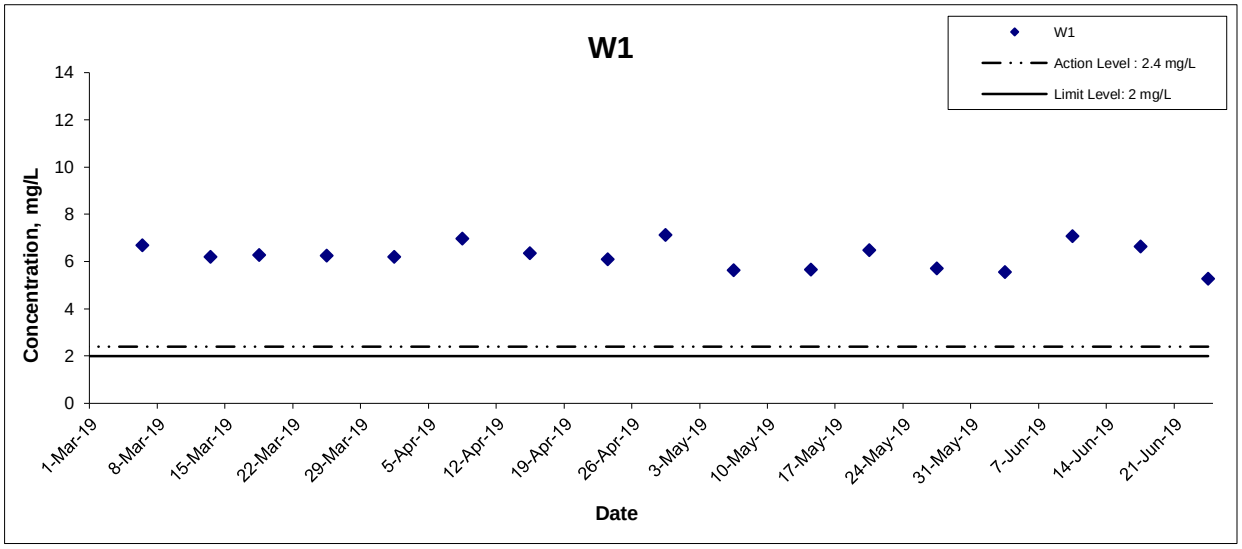
Title	Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Additional Water Quality Monitoring Results	N.T.S	MA16034
	Date: Jun-19	Appendix: I

CINOTECH

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Dissolved Oxygen (Bottom) at Mid-Flood Tide



Title	Scale	Project No.	
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Additional Water Quality Monitoring Results	N.T.S	MA16034	CINOTECH
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APPENDIX J
QUALITY CONTROL REPORTS FOR LABORATORY ANALYSIS

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: CINOTECH CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 5
Contact	: HENRY LEUNG	Contact	: Richard Fung	Work Order	: HK1926827
Address	: RM 1710, TECHNOLOGY PARK, 18 ON LAI STREET, SHATIN, N.T. HONG KONG HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: henry.leung@cinotech.com.hk	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2151 2083	Telephone	: +852 2610 1044		
Facsimile	: +852 3107 1388	Facsimile	: +852 2610 2021		
Project	: CEDD TSEUNG KWAN O-LAM TIN TUNNEL			Date Samples Received	: 21-Jun-2019
Order number	:	Quote number	: HKE/1722a/2019 revision 1	Issue Date	: 03-Jul-2019
C-O-C number	: ----			No. of samples received	: 3
Site	: ----			No. of samples analysed	: 3

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

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	General Manager	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 21-Jun-2019 to 02-Jul-2019.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1926827

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on as received basis.

Analytical Results

Sub-Matrix: GROUNDWATER			Client sample ID	Stream 1	Stream 2	Stream 3	----	----
			Client sampling date / time	[21-Jun-2019]	[21-Jun-2019]	[21-Jun-2019]	----	----
Compound	CAS Number	LOR	Unit	HK1926827-001	HK1926827-002	HK1926827-003	-------	-------
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	1.0	mg/L	<1.0	<1.0	<1.0	----	----
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.03	----	----
EK062P: Total Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.6	----	----
EK067P: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.02	----	----
EP: Aggregate Organics								
EP005: Total Organic Carbon	----	1	mg/L	3	2	2	----	----
EP030: Biochemical Oxygen Demand	----	2	mg/L	3	2	2	----	----

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2432017)								
HK1926765-001	Anonymous	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	1.7	1.7	0.00
HK1926906-005	Anonymous	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	6.4	6.2	1.59
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2422316)								
HK1926827-003	Stream 3	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	0.03	0.03	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423491)								
HK1926872-004	Anonymous	**EK062P: Total Nitrogen as N**	----	0.1	mg/L	4.2	4.6	8.14
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423492)								
HK1926872-004	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.64	0.68	6.06
EP: Aggregate Organics (QC Lot: 2434246)								
HK1926854-008	Anonymous	**EP005: Total Organic Carbon**	----	1	mg/L	<1	<1	0.00

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2432017)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	102	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2422316)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	93.6	----	88	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423491)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	103	----	92	116	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423492)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.6	----	90	104	----	----
EP: Aggregate Organics (QC Lot: 2420686)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	105	----	84	119	----	----
EP: Aggregate Organics (QC Lot: 2434246)											
EP005: Total Organic Carbon	----	1	mg/L	<1	5 mg/L	104	----	87	114	----	----
				<1	100 mg/L	96.8	----	88	109	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2422316)										
HK1926827-003	Stream 3	**EK055K: Ammonia as N**	7664-41-7	0.5 mg/L	111	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423491)										
HK1926872-004	Anonymous	**EK062P: Total Nitrogen as N**	----	5 mg/L	110	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2423492)										
HK1926872-004	Anonymous	**EK067P: Total Phosphorus as P**	----	0.5 mg/L	84.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 2434246)										
HK1926854-008	Anonymous	**EP005: Total Organic Carbon**	----	5 mg/L	95.5	----	75	125	----	----

CERTIFICATE OF ANALYSIS

Client	: CINOTECH CONSULTANTS LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 5
Contact	: HENRY LEUNG	Contact	: Richard Fung	Work Order	: HK1925132
Address	: RM 1710, TECHNOLOGY PARK, 18 ON LAI STREET, SHATIN, N.T. HONG KONG HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: henry.leung@cinotech.com.hk	E-mail	: richard.fung@alsglobal.com		
Telephone	: +852 2151 2083	Telephone	: +852 2610 1044		
Facsimile	: +852 3107 1388	Facsimile	: +852 2610 2021		
Project	: CEDD TSEUNG KWAN O-LAM TIN TUNNEL			Date Samples Received	: 12-Jun-2019
Order number	:	Quote number	: HKE/1722a/2019 revision 1	Issue Date	: 21-Jun-2019
C-O-C number	: ----			No. of samples received	: 3
Site	: ----			No. of samples analysed	: 3

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

Signatories	*Position*	*Authorised results for*
Fung Lim Chee, Richard	General Manager	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 12-Jun-2019 to 20-Jun-2019.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1925132

Sample(s) were received in chilled condition.

Water sample(s) analysed and reported on as received basis.

Analytical Results

Sub-Matrix: GROUNDWATER			Client sample ID	Stream1	Stream2	Stream3	----	----
			Client sampling date / time	12-Jun-2019	12-Jun-2019	12-Jun-2019	----	----
Compound	CAS Number	LOR	Unit	HK1925132-001	HK1925132-002	HK1925132-003	-------	-------
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	1.0	mg/L	2.4	2.2	2.5	----	----
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.05	0.13	----	----
EK062P: Total Nitrogen as N	----	0.1	mg/L	1.2	1.2	1.2	----	----
EK067P: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.02	----	----
EP: Aggregate Organics								
EP005: Total Organic Carbon	----	1	mg/L	4	3	4	----	----
EP030: Biochemical Oxygen Demand	----	2	mg/L	3	2	2	----	----

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2408576)								
HK1925132-001	Stream1	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	2.4	2.2	7.73
HK1925834-004	Anonymous	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	2.3	2.0	15.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2405313)								
HK1925183-010	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	6.73	7.09	5.29
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409163)								
HK1925135-001	Anonymous	**EK062P: Total Nitrogen as N**	----	0.1	mg/L	16.1	15.3	5.10
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409164)								
HK1925135-001	Anonymous	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	3.70	3.50	5.56
EP: Aggregate Organics (QC Lot: 2406490)								
HK1925183-002	Anonymous	**EP005: Total Organic Carbon**	----	1	mg/L	4	3	0.00

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2408576)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	100	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2405313)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	103	----	88	109	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409163)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	104	----	92	116	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409164)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.0	----	90	104	----	----
EP: Aggregate Organics (QC Lot: 2403251)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	104	----	84	119	----	----
EP: Aggregate Organics (QC Lot: 2406490)											
EP005: Total Organic Carbon	----	1	mg/L	<1	5 mg/L	101	----	87	114	----	----
				<1	100 mg/L	92.2	----	88	109	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2405313)										
HK1925183-010	Anonymous	**EK055K: Ammonia as N**	7664-41-7	5 mg/L	120	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409163)										
HK1925135-001	Anonymous	**EK062P: Total Nitrogen as N**	----	5 mg/L	82.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 2409164)										
HK1925135-001	Anonymous	**EK067P: Total Phosphorus as P**	----	5 mg/L	94.0	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 2406490)										
HK1925183-002	Anonymous	**EP005: Total Organic Carbon**	----	5 mg/L	115	----	75	125	----	----

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: June 2019

(A) Exceedance Report for Air Quality

(NIL in the reporting month)

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise

Six (6) Action Level exceedances were recorded due to the documented complaints received in this reporting month.

Limit Level for Construction Noise

No Limit Level exceedance for daytime construction noise monitoring was recorded in the reporting month.

No Limit Level exceedances for nighttime construction noise monitoring were recorded in the reporting month.

Exceedance recorded during daytime

(NIL in the reporting month)

Exceedance recorded during night-time

(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

(C) Exceedance Report for Water Quality

Forty-one (41) Action Level and two-hundred and twenty-four (224) Limit Level exceedances in marine water quality monitoring. Refer to the attached notifications for details. The reasons are under investigation.

Two (2) Limit Level exceedances in groundwater quality monitoring. The exceedances are considered not project-related as detailed in relevant notification of exceedance below.

(D) Exceedance Report for Ecology

(NIL in the reporting month)

(E) Exceedance Report for Cultural Heritage

(NIL in the reporting month)

(F) Exceedance Report for Landfill Gas

(NIL in the reporting month)

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 3 June 2019

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	16.5	G1	11:16	6.0	6.9	19.8	21.5	***13.3***
				G2	11:07					***11.5***
				G3	11:19					***10.8***
				G4	11:30					***16.4***
				M1	11:11	6.2	7.4			***8.6***
				M2	11:03					***18.7***
				M3	11:26					***18.5***
				M4	10:57					***13.3***
				M5	11:42					***14.1***
		Intake	n.a.	M6	11:35	8.3	8.6	n.a.	n.a.	***14.3***
		Bottom	13.4	G1	11:16	6.9	7.9	16.0	17.4	***12.6***
				G2	11:07					***25.7***
				G3	11:19					***16.9***
				G4	11:30					***7.2***
				M2	11:03					***27.6***
				M3	11:26					***7.9***
				M4	10:57					***12.1***
				M5	11:42					***17.4***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	19.4	G1	18:09	6.0	6.9	23.3	25.2	***20.3***
				G2	17:58					***18.0***
				G3	18:14					***13.3***
				G4	18:26					***12.3***
				M2	17:53	6.2	7.4			***16.9***
				M3	18:22					***10.1***
				M4	17:48					***26.9***
				M5	18:38					***11.1***
		Intake	n.a.	M6	18:32	8.3	8.6	n.a.	n.a.	***19.4***
		Bottom	11.9	G1	18:09	6.9	7.9	14.3	15.5	***11.5***
				G2	17:58					***18.6***
				G3	18:14					***12.2***
				G4	18:26					***12.8***
				M1	18:04					***11.8***
				M2	17:53					***11.9***
				M3	18:22					***14.0***
				M4	17:48					***7.6***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 5 June 2019

Part A – Exceedance Summary Tables

Table I: 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	3.9	M2	12:33	4.7	5.1	***6.7***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	9.3	G1	8:24	6.0	6.9	11.2	12.1	***7.0***
				G2	8:13					***6.3***
				G4	8:38					***7.1***
				M3	8:33	6.2	7.4			***8.2***
				M4	8:06					***10.4***
		Intake	n.a.	M6	8:41	8.3	8.6	n.a.	n.a.	***9.8***
		Bottom	10.8	G1	8:24	6.9	7.9	12.9	14.0	***7.7***
				G2	8:13					***8.2***
				G4	8:38					***9.9***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	3.9	G1	12:52	6.0	6.9	4.6	5.0	***5.7***
				G2	12:39					***4.8***
				G3	12:58					***7.6***
				G4	13:08					***8.5***
				M2	12:33	6.2	7.4			***7.0***
				M3	13:02					***4.9***
				M4	12:25					***5.9***
		Intake	n.a.	M6	13:13	8.3	8.6	n.a.	n.a.	***8.8***
		Bottom	3.2	G1	12:52	6.9	7.9	3.8	4.2	***7.9***
				G2	12:39					***8.5***
				G3	12:58					***6.9***
				G4	13:08					***14.7***
				M1	12:46					***5.9***
				M2	12:33					***10.5***
				M3	13:02					***6.8***
				M4	12:25					***4.5***
				M5	13:19					***7.2***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 8 June 2019

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	9.7	G1	16:10	6.0	6.9	11.6	12.6	***6.7***
				G2	16:00					***13.3***
				G3	16:15					***8.9***
				G4	16:24					***23.1***
				M1	16:05	6.2	7.4			***6.3***
				M3	16:18					***10.0***
				M4	15:51					***7.0***
				M5	16:30					***8.5***
		Bottom	13.1	G1	16:10	6.9	7.9	15.7	17.0	***18.7***
				G2	16:00					***7.7***
				G3	16:15					***11.9***
				G4	16:24					***12.9***
				M2	15:56					***11.8***
				M4	15:51					***20.0***
				M5	16:30					***11.4***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	15.9	G1	9:00	6.0	6.9	19.1	20.7	***10.1***
				G3	9:04					***16.1***
				G4	9:11					***22.3***
				M1	8:55	6.2	7.4			***9.8***
				M3	9:07					***10.0***
				M4	8:41					***8.1***
				M5	9:22					***22.0***
		Intake	n.a.	M6	9:16	8.3	8.6	n.a.	n.a.	***10.7***
		Bottom	6.4	G1	9:00	6.9	7.9	7.6	8.3	***11.4***
				G2	8:50					***15.2***
				G3	9:04					***9.8***
				G4	9:11					***14.7***
				M2	8:46					***14.5***
				M3	9:07					***11.2***
				M4	8:41					***16.7***
				M5	9:22					***7.9***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 10 June 2019

Part A – Exceedance Summary Tables

Table I: 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	G1	18:25	2.2	2.3	***2.5***
						G4	18:47			***2.6***
						M1	18:17			***4.6***
						M3	18:36			***2.7***
			Mid-Flood	C1	3.5	M1	11:08	4.2	4.5	***5.1***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	9.5	G1	18:25	6.0	6.9	11.3	12.3	***11.9***
				G2	18:13					***11.8***
				G3	18:29					***12.3***
				G4	18:47					***11.2***
				M2	18:09	6.2	7.9			***7.8***
				M3	18:36					***13.5***
				M4	18:04					***11.0***
				M5	19:02					***7.0***
		Bottom	12.8	G1	18:25	6.9	7.9	15.3	16.6	***9.3***
				G2	18:13					***11.6***
				G4	18:47					***8.5***
				M1	18:17					***12.6***
				M2	18:09					***9.7***
				M3	18:36					***8.6***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	13.0	G1	11:16	6.0	6.9	15.5	16.8	***6.3***
				G3	11:20					***8.9***
				G4	11:30					***12.5***
				M1	11:08	6.2	7.4			***7.3***
				M2	11:00					***10.2***
		Intake	n.a.	M6	11:38	8.3	8.6	n.a.	n.a.	***8.9***
		Bottom	7.8	G1	11:16	6.9	7.9	9.4	10.1	***10.5***
				G2	11:04					***10.8***
				G4	11:30					***8.3***
				M1	11:08					***11.2***
				M3	11:22					***10.6***
				M4	10:55					***9.2***
				M5	11:42					***10.2***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 12 June 2019

Part A – Exceedance Summary Tables

Table I: 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	1.8	G4	14:36	2.2	2.4	***3.6***
						M3	14:32			***3.3***
						M4	14:08			***2.6***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	7.2	G2	8:31	6.0	6.9	8.6	9.3	***7.4***
				G3	8:43					***6.2***
				M3	8:46	6.2	7.4			***11.5***
				M4	8:22					***7.4***
		Bottom	7.6	M2	8:28	6.9	7.9	9.1	9.8	***8.3***
				M3	8:46					***7.3***
				M4	8:22					***7.4***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	4.7	G2	14:16	6.0	6.9	5.6	6.0	***6.3***
				G3	14:30					***7.1***
		Intake	n.a.	M6	14:40	8.3	8.6	n.a.	n.a.	***9.0***
		Bottom	5.6	M2	14:13	6.9	7.9	6.7	7.2	***7.8***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 14 June 2019

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	10.5	G1	10:30	6.0	6.9	12.5	13.6	***10.1***
				G3	10:35					***7.3***
				G4	10:44					***6.8***
				M1	10:25	6.2	7.4			***6.6***
				M2	10:14					***7.8***
				M3	10:39					***8.1***
				M4	10:10					***7.1***
				M5	10:57					***7.1***
		Bottom	5.6	G4	10:44	6.9	7.9	6.7	7.3	***10.4***
				M1	10:25					***11.2***
				M2	10:14					***7.4***
				M3	10:39					***11.4***
				M4	10:10					***6.9***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	4.7	G2	15:47	6.0	6.9	5.6	6.1	***8.4***
				G4	16:13					***9.3***
		Bottom	5.4	G2	15:47	6.9	7.9	6.5	7.0	***7.5***
				M2	15:43					***6.7***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 17 June 2019

Part A – Exceedance Summary Tables

Table I: 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	G1	12:20	2.9	3.1	***3.2***
						M1	12:16			***3.1***
						M5	12:42			***4.4***
			Mid-Flood	C1	2.1	G1	19:20	2.5	2.7	***4.4***
						G2	19:08			***3.7***
						G4	19:34			***3.8***
						M1	19:16			***5.2***
						M2	19:03			***6.0***
						M5	19:42			***4.4***

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Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	G1	12:20	6.0	6.9	3.5	3.8	***12.5***
				G4	12:34					***5.2***
				M2	12:03	6.2	7.9			***6.6***
				M3	12:30					***6.5***
				M4	11:57					***6.9***
				M5	12:42					***8.9***
		Bottom	4.0	G1	12:20	6.9	7.9	4.8	5.2	***6.0***
				M1	12:16					***5.9***
				M2	12:03					***7.4***
				M3	12:30					***5.9***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	4.8	G1	19:20	6.0	6.9	5.8	6.2	***6.6***
				G2	19:08					***6.9***
				M2	19:03	6.2	7.4			***8.0***
				M5	19:42					***6.9***
		Bottom	7.0	M1	19:16	6.9	7.9	8.3	9.0	***14.1***
				M3	19:30					***8.5***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 19 June 2019

Part A – Exceedance Summary Tables

Table I: 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	3.4	M1	9:26	4.1	4.5	***4.7***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	11.0	M4	13:20	6.2	7.4	13.1	14.2	***6.7***
		Bottom	4.1	G4	13:48	6.9	7.9	4.9	5.3	***8.2***
				M5	14:03					***5.5***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	5.3	G4	9:42	6.0	6.9	6.4	6.9	***8.8***
		Bottom	4.1	G1	9:31	6.9	7.9	4.9	5.3	***6.6***
				M1	9:26					***6.2***
				M2	9:17					***12.9***
				M4	9:13					***5.0***
				M5	9:54					***5.3***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 21 June 2019

Part A – Exceedance Summary Tables

Table I: 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	9:41	1.7	1.9	***1.8***
						G2	9:32			***2.6***
						G3	9:45			***2.9***
						G4	9:52			***5.2***
						M1	9:36			***2.2***
						M2	9:27			***3.4***
						M3	9:48			***3.4***
						M5	10:02			***2.9***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	3.8	G3	14:23	6.0	6.9	4.5	4.9	***4.8***
				G4	14:30					***7.0***
				M2	14:05					***6.7***
				M3	14:26	6.2	7.4			***4.7***
				M4	14:00					***7.5***
		Bottom	6.3	G4	14:30	6.9	7.9	7.5	8.1	***7.0***
				M3	14:26					***8.8***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	2.7	G1	9:41	6.0	6.9	3.2	3.4	***4.0***
				G4	9:52					***7.5***
				M1	9:36	6.2	7.4			***4.9***
				M2	9:27					***8.4***
				M3	9:48					***4.5***
		Bottom	4.4	G3	9:45	6.9	7.9	5.2	5.7	***7.4***
				M1	9:36					***9.9***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 24 June 2019

Part A – Exceedance Summary Tables

Table I: 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	2.2	G4	10:12	2.6	2.9	***4.0***
						M4	9:33			***3.5***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Table II: 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	G3	16:00	6.0	6.9	3.4	3.6	***4.1***
				G4	16:13					***4.1***
				M4	15:34	6.2	7.4			***6.2***
		Bottom	2.6	G1	15:55	6.9	7.9	3.1	3.3	***4.8***
				G2	15:45					***5.6***
				G3	16:00					***3.2***
				G4	16:13					***7.8***
				M3	16:05					***3.2***
				M4	15:34					***3.5***

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	2.1	G1	9:54	6.0	6.9	2.5	2.7	***2.9***
				G2	9:44					***6.3***
				G3	9:59					***2.9***
				M1	9:49	6.2	7.4			***3.5***
				M2	9:40					***4.8***
				M4	9:33					***3.8***
		Bottom	1.6	G1	9:54	6.9	7.9	1.9	2.0	***5.8***
				G2	9:44					***4.3***
				G3	9:59					***2.6***
				G4	10:12					***2.8***
				M1	9:49					***3.1***
				M2	9:40					***2.9***
				M3	10:04					***2.7***
				M5	10:24					***2.4***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 26 June 2019

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	4.0	G1	8:37	6.0	6.9	4.8	5.2	***6.3***
				M3	8:45	6.2	7.4			***5.4***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	3.1	G3	12:46	6.0	6.9	3.7	4.0	***4.4***
				G4	12:55					***4.3***
				M1	12:34	6.2	7.4			***4.6***
				M2	12:25					***4.1***
				M3	12:48					***6.8***
				M4	12:16					***4.2***
				M5	13:05					***3.9***
		Bottom	3.2	G1	12:39	6.9	7.9	3.8	4.2	***6.5***
				G2	12:29					***5.1***
				G3	12:46					***4.4***
				G4	12:55					***5.0***
				M1	12:34					***4.7***
				M2	12:25					***5.2***
				M4	12:16					***6.2***

Note: ***Bold Italic*** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 28 June 2019

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	5.7	G4	10:09	6.0	6.9	6.8	7.3	***7.0***
				M4	9:36	6.2	7.4			***6.9***
		Bottom	5.0	M5	10:21	6.9	7.9	5.9	6.4	***6.4***

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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	7.7	G2	14:15	6.0	6.9	9.2	10.0	***<u>9.3</u>***
				M3	14:39	6.2	7.4			***6.8***
				M4	14:05					***<u>10.1</u>***
				M5	14:55					***6.4***
		Bottom	4.7	G1	14:26	6.9	7.9	5.6	6.0	***<u>6.5</u>***
				M1	14:21					***<u>6.6</u>***
				M2	14:10					***5.9***
				M5	14:55					***<u>6.6</u>***

Note: ***Bold Italic*** means Action Level exceedance
<u>Bold Italic with underline</u> means Limit Level exceedance

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 (June 2019)

Part A–Details of Investigation

The exceedance of SS has been recorded continuously in June. According to the data from Hong Kong Observatory, high rainfall was recorded in June and amber rainstorm warning signal was hoisted on 1, 4, 11, 13, 14 and 25 June which resulted in a high volume of upstream muddy water discharge into the Junk Bay, as observed during the rainstorm events (Photo 1 & 2). 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 (Photo 7, 8 and 9), and, as part of mitigation measures for marine works, silt curtains and cofferdam are deployed around the marine works area of the Project and no major deficiency of the conditions of the silt curtain and the cofferdam has been discovered.

In addition, muddy water was observed during weekly site inspection at the discharge point adjoining Tseung Kwan O South Landing Steps during rainstorm (see photo 3, 4 and 5); muddy water was also found discharging from the DSD desilting compound following to a few rainstorms that took place in June 2019, but no obvious sand plume was observed inside the marine works area (see photo 6). Besides the Project, other construction activities within Junk Bay might have also lead to the on-going exceedance of SS. It was reported that discharge of muddy water was found at the seafront off the Industrial Estate and was suspected to be originated from a construction site at the Industrial Estate. The muddy water discharge would result in an increase of the overall SS concentrations in Junk Bay and hence the SS limit level exceedance was recorded.

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.

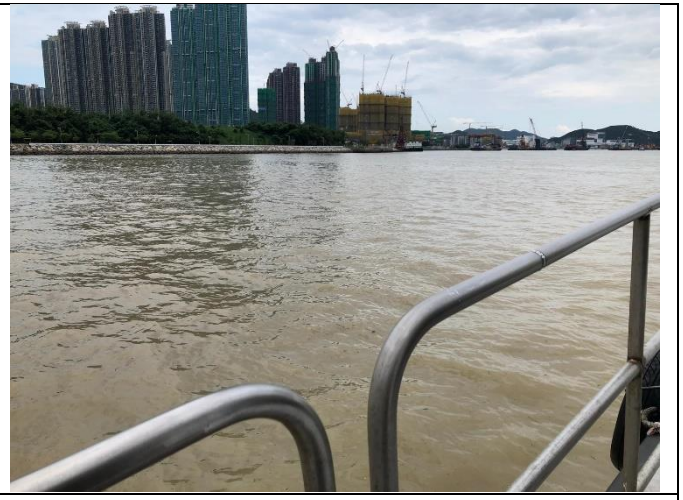
Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Investigation Report of Environmental Quality Limit Exceedances (June 2019)

Part B–Photo Record

	
Photo 1	Photo 2

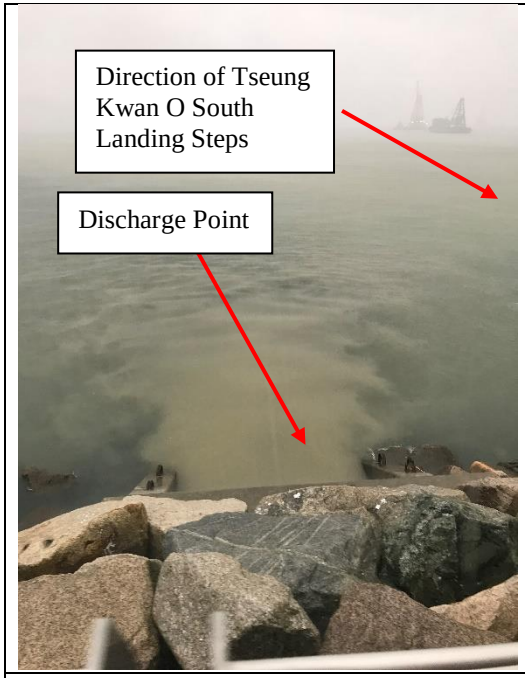
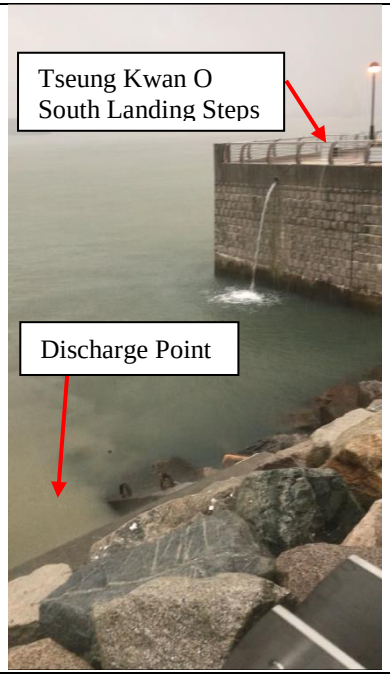
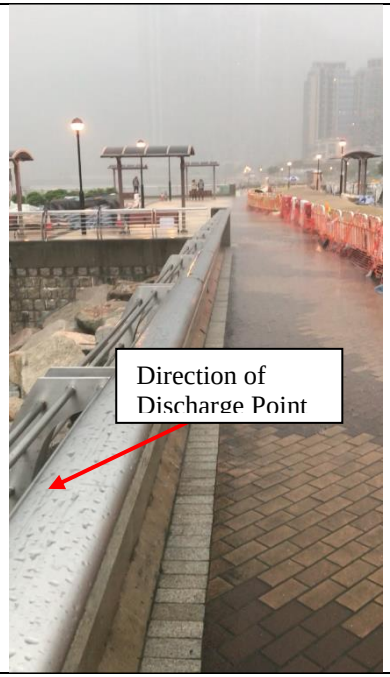
		

Photo 3 (13 June)	Photo 4 (13 June)	Photo 5 (13 June)

	
Photo 6	Photo 7

	
Photo 8	Photo 9

Contract No. CE 59/2015 (EP)

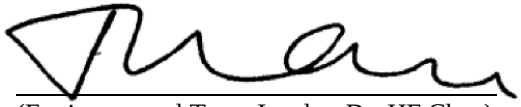
Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Investigation Report of Environmental Quality Limit Exceedances (June 2019)

Part C – Recommendations

The contractor is reminded to cover the exposed ground with sandbags and tarpaulin and provide appropriate diversion of the received rainwater to the wastewater treatment system within the site, where sufficient storage and treatment capacity should be provided. The conditions of the cofferdam and silt curtain should be monitored and maintained at all times, weekly diver inspections should be conducted to ensure that there are no damages or leakages within the cofferdam and silt curtains.

Reviewed by:  Date: 2 July, 2019

(Environmental Team Leader: Dr. HF Chan)

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

- Notification and Investigation Report for Environmental Quality Action & Limit Exceedances

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 12 June 2019

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
12 June 2019	Biochemical Oxygen Demand (mg O_2/L)	Stream 1	***3.0***	2.0	2.0	(1)	No

Note: **Bold Italic** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

*Remarks
(1) – Stream 1 is at a higher ground level than the construction site, therefore construction runoff cannot reach Stream 1.
(2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

Part B – Conclusions:

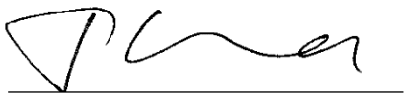
1. Based on the justification in the above table, there is no direct evidence showing that the exceedance was due to Project. The exceedance is considered properly due to non-project related factor, such as, the degradation of naturally occurring organic matter, manmade sources or domestic sewage (as observed and reported in the EIA report).
2. No increase in monitoring frequency for groundwater quality monitoring and no further action are required.

Part C – Recommendations

The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

Therefore, ET recommends to suspend the water quality monitoring for the streams in accordance with the EM&A Manual, Section 4. For the details, please refer to the separate proposal for suspension of stream water monitoring.

Reviewed by: Dr. HF Chan (Environmental Team Leader) Date: 15 June, 2019

Signature: 

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

- Notification and Investigation Report for Environmental Quality Action & Limit Exceedances

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 21 June 2019

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
21 June 2019	Biochemical Oxygen Demand (mg O_2/L)	Stream 1	***3.0***	2.0	2.0	(1)	No

Note: **Bold Italic** means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

*Remarks
(1) – Stream 1 is at a higher ground level than the construction site, therefore construction runoff cannot reach Stream 1.
(2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

Part B – Conclusions:

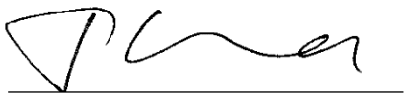
1. Based on the justification in the above table, there is no direct evidence showing that the exceedance was due to Project. The exceedance is considered properly due to non-project related factor, such as, the degradation of naturally occurring organic matter, manmade sources or domestic sewage (as observed and reported in the EIA report).
2. No increase in monitoring frequency for groundwater quality monitoring and no further action are required.

Part C – Recommendations

The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

Therefore, ET recommends to suspend the water quality monitoring for the streams in accordance with the EM&A Manual, Section 4. For the details, please refer to the separate proposal for suspension of stream water monitoring.

Reviewed by: Dr. HF Chan (Environmental Team Leader) Date: 24 June, 2019

Signature: 

APPENDIX L
SITE AUDIT SUMMARY

Appendix L - Site Audit Summary (June 2019)

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

Items	Date	Status*	Follow up Action
Water Quality			
Still water was found in Portion VI and Area WA1. Contractor is reminded to pump out still water in the construction site.	29 May 2019	✓	Improved/rectified on 5 June 2019.
Parts of silt curtains for Platform 1C and 1D were missing and need to be placed completely.	5 June 2019	✓	Improved/rectified on 12 June 2019.
Mud, branches and still water were found in a perimeter drain and a soldier pile wall near East Cross Harbour Tunnel, and a drain near Cha Kwo Ling Rd. They need to be cleared to prevent overflow when raining.	19 June 2019	✓	Improved/rectified on 26 June 2019.
Part of a silt curtain at the western end of TKO site was floating and it should be fixed.	19 June 2019	✓	Improved/rectified on 26 June 2019.
Part of silt curtain was broken and stranded on shores near the barging point at Tseung Kwan O site. The Contractor is reminded to repair and fix silt curtain regularly.	26 June 2019	#	Follow up action will be reported in the next reporting month.
Ecology			
--	--	--	--
Noise			
In Portion III, an idle excavator was found. Idle machines and equipment need to be turned off to minimize noise impacts to nearby NSRs.	12 June 2019	✓	Improved/rectified on 19 June 2019.
In Portion VI, breakers were found with a broken piece of acoustic material. Contractor is reminded to wrap complete noise absorption materials to each breaker.	19 June 2019	✓	Improved/rectified on 26 June 2019.
Landscape and Visual			
--	--	--	--
Air Quality			
In Portion III, dust was emitted during unloading of materials from trucks and a driller. Contractor is reminded to provide sufficient water sprays to dust-generating activities.	12 June 2019	✓	Improved/rectified on 19 June 2019.
Waste / Chemical Management			
Garbage was found in Area WA1a. Contractor is reminded to provide rubbish bin(s) to collect refuse properly.	29 May 2019	✓	Improved/rectified on 5 June 2019.
A drip tray in Portion VI was filled with water. It is required to pump out	5 June 2019	✓	Improved/rectified on 12 June 2019.
Three chemical tanks in Portion WA1 were found without a drip tray.	5 June 2019	✓	Improved/rectified on 12 June 2019.
Oil stain was found in the barging point at Tseung Kwan O site and needs to be cleaned.	26 June 2019	#	Follow up action will be reported in the next reporting month.

Appendix L - Site Audit Summary (June 2019)

Items	Date	Status*	Follow up Action
Impact on Cultural Heritage			
--			
Permits / 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 (June 2019)

Contract No. NE/2015/02

Tseung Kwan O - Lam Tin Tunnel - Road P2 and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
The silt curtain was floating outside the cofferdam at portion IX.	30 May 2019	✓	Improved/rectified on 6 June 2019.
Some floating refuse was observed in the water within the double water gate of the cofferdam.	20 June 2019	✓	Improved/rectified on 27 June 2019.
Noise			
Landscape and Visual			
--	--	--	--
Air Quality			
Waste / Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permits / 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 rectified by the contractor

Appendix L - Site Audit Summary (June 2019)

Contract No. NE/2017/02
Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
Noise			
Landscape and Visual			
--	--	--	--
Air Quality			
Waste / Chemical Management			
--	--	--	--
Impact on Cultural Heritage			
--	--	--	--
Permits / 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 rectified by the contractor

Appendix L - Site Audit Summary (June 2019)

Contract No. NE/2015/03
Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
Uncovered stockpile was observed at west pier.	20 June 2019	✓	Improved/rectified on 27 June 2019.
Waste / Chemical Management			
Stagnant water was observed in the drip tray for the oil drum.	20 June 2019	✓	Improved/rectified on 27 June 2019.
Impact on Cultural Heritage			
--	--	--	--
Permits / 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 rectified by the contractor

Appendix L - Site Audit Summary (June 2019)

Contract No. NE/2017/01

Tseung Kwan O - Lam Tin Tunnel – Tsueng Kwan O Interchange and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
A small section of the silt curtain in Portion I was found without the buoys on the surface.	28 May 2019	✓	Improved/rectified on 4 June 2019.
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste / Chemical Management			
Impact on Cultural Heritage			
--			
Permits / 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 rectified 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)

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract:NE/2015/01

Key:
^ Mitigation measure was fully implemented.
* Observation/reminder was made during site audit but improved/rectified by the contractor.
\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor
N/A Not Applicable

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?	Status
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	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,	To minimize the dust impact	Contractor#	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	* (1) ^

	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.						^ ^ ^ ^ ^ ^ ^ ^ ^
/	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	Reduce air pollution emission from construction vehicles and	Contractor	All construction sites	Construction stage	• APCO	^ ^ ^

	ultra low sulphur diesel fuel (ULSD)	plants					
/	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	*(2)
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.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^

	- 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.						* (3) ^ ^
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	N/A
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	N/A
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	N/A
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	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

	access.						
Silt Curtain Deployment Plan	- Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site.	Control potential impacts from marine woroks	Contractor	NE/2015/01	Construction stage	EIAO	# (1) * (4) (5) ^
S5.8.3	Other good site practices should be undertaken during filling operations include: - 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; - floating single silt curtain shall be employed for all marine works; - 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; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; - 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; - any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; - 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	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	^ ^ ^ ^ ^ ^ ^ ^

	grounds; and - 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.						N/A
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	N/A
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	N/A N/A N/A N/A

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	* (6)
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	^ N/A ^

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	^
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	^
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	^

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	^
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	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

	periods of heavy rain.	runoff and land-based construction					
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	^
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	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

	temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	based construction					
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	* (7)
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/	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	N/A

	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.						
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	N/A
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	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

	should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	construction					
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	N/A
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	N/A
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	N/A
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	N/A

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	N/A
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	N/A
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

		runoff and land-based construction					
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	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,	^
Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - 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; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	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	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access	Reduce disturbance to	Contractor	Land-based works are	Construction Phase	N/A	^

	routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter the nearby watercourses.	surrounding habitats					^ ^ ^ ^ ^
S6.8.6	***Measure to Minimize Groundwater Inflow*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - 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.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - 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. - 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). - A detailed coral translocation plan with a description on the methodology for pretranslocation coral survey, translocation methodology, identification/proposal of	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^ ^ ^

	coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage. - 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. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - 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	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	N/A ^ ^ ^

		bodies					
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	^
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	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ * (8) ^

	containers; and - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.						^
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	^
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8/ Waste Management Plan	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - 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); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^ ^ ^ ^ ^ ^
S8.6.9/ Waste	***Storage, Collection and Transportation of Waste (con't)*** - Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010,	To minimize potential	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

Management Plan	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.	adverse environmental impacts arising from waste collection and disposal					
S8.6.11 - S8.6.13/ Waste Management Plan	***Sorting of C&D Materials*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - 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	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
S8.6.17 – S8.6.20	***Sediments (con't)*** - 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. - 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). - 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	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^

	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. - 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.						N/A
S8.6.24 - S8.6.28/ Waste Management Plan	***Sediments (con't)*** - 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. - 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). - 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. - The barge transporting the sediments to the designated disposal sites should be	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	^ ^ ^ ^

	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. - 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.						N/A N/A
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	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	* (9) (10) # (2)

	(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	^ ^ ^
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	- 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	To prevent vibration impacts	NE/2015/01	Tin Hau Temple	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA;	^ ^ ^

Plan	when AAA Level is reached or exceeded.					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	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	^

	Application stage).						
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	N/A
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	^
Table 10.8.1/	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	^

Landscape Mitigation Plan							
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	Construction planning and reclamation stages	N/A	N/A

				slip roads and Road P2			
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*** - 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. - An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out. - 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. - 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.	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	^ ^ ^ ^

	- Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation. - 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). - 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. - 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. - 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. - During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site. - Fire drills should be organized at not less than six monthly intervals. - The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow. - 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. - 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). - 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.						^ ^ ^ ^ ^ ^
S11.5.26 -	***Monitoring*** ● Routine monitoring should be carried out in all excavations, manholes,	Protect the workers from	Contractor	Project sites within the	Construction phase	EPD's Landfill Gas Hazard	^

S11.5.31	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. ● For excavations **deeper than 1m**, measurements should be carried out: - 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. ● For excavations **between 300mm and 1m deep**, measurements should be carried out: - 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. ● 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. ● 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.	landfill gas hazards		Sai Tso Wan Landfill Consultation Zone		Assessment Guidance Note	^ ^ ^ ^ ^
S11.5.32	The hazards from landfill gas during the construction stage within the Sai Tso Wan	construction	Contractor	Project sites	Construction	EPD's Landfill Gas	N/A

	Landfill Consultation Zone should be minimized by suitable precautionary measures recommended in Chapter 8 of the Landfill Gas Hazard Assessment Guidance Note.	stage within the Sai Tso Wan Protect the workers from landfill gas hazards		within the Sai Tso Wan Landfill Consultation Zone	phase	Hazard Assessment Guidance Note	

Table II - Observations/reminders/non-compliance made during Site Audit

Key: * Observation/reminder was made during site audit but improved/rectified by the contractor.

Observation/reminder was made during site audit but not yet improved/rectified by the contractor.

X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
Air Quality Impact (Construction Phase)					
* (1)	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	NE/2015/01	Construction of Lam Tin Interchange	• In Portion III, dust was emitted during unloading of materials from trucks and a driller. Contractor is reminded to provide sufficient water sprays to dust-generating activities.

		covered. Where possible, prevent placing dusty material storage piles near ASRs.			
Noise Impact (Construction Phase)					
* (2)	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	NE/2015/01	Construction of Lam Tin Interchange	• In Portion VI, breakers were found with a broken piece of acoustic material. Contractor is reminded to wrap complete noise absorption materials to each breaker.
* (3)	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	NE/2015/01	Construction of Lam Tin Interchange	• In Portion III, an idle excavator was found. Idle machines and equipment need to be turned off to minimize noise impacts to nearby NSRs.

		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.			
Water Quality Impact (Construction Phase)					
* (4) (5) # (1)	Silt curtain deployment Plan	- Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided.	NE/2015/01	Construction of Lam Tin Interchange	• Parts of silt curtains for Platform 1C and 1D were missing and need to be placed completely.
			NE/2015/01	Construction of Lam Tin Interchange	• Part of a silt curtain at the western end of TKO site was floating and it should be fixed.
			NE/2015/01	Construction of Lam Tin Interchange	• Part of silt curtain was broken and stranded on shores near the barging point at Tseung Kwan O site. The Contractor is reminded to repair and fix silt curtain regularly.
* (6)	S5.8.7	- Construction site runoff and drainage should be prevented or minimised in accordance with the	NE/2015/01	Construction of Lam Tin Interchange	• Mud, branches and still water were found in a perimeter drain and a soldier pile wall near East Cross Harbour Tunnel, and a drain near Cha Kwo Ling Rd. They need to be cleared to

		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.			prevent overflow when raining.
* (7)	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.	NE/2015/01	Construction of Lam Tin Interchange	• Still water was found in Portion VI and Area WA1. Contractor is reminded to pump out still water in the construction site.

Waste/ Chemical Management					
* (8)	S8.6.3	- Provision of sufficient waste disposal points and regular collection of waste	NE/2015/01	Construction of Lam Tin Interchange	• Garbage was found in Area WA1a. Contractor is reminded to provide rubbish bin(s) to collect refuse properly.
* (9) (10)	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	NE/2015/01	Construction of Lam Tin Interchange	• A drip tray in Portion VI was filled with water. It is required to pump out
			NE/2015/01	Construction of Lam Tin Interchange	• Three chemical tanks in Portion WA1 were found without a drip tray.
# (2)			NE/2015/01	Construction of Lam Tin Interchange	• Oil stain was found in the barging point at Tseung Kwan O site and needs to be cleaned.

		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.			

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract: NE/2015/02

Key:
^ Mitigation measure was fully implemented.
* Observation/reminder was made during site audit but improved/rectified by the contractor.
# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor
N/A Not Applicable

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?	Status
Air Quality Impact							
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	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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?	Status
	- 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						^

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?	Status
	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.						^
/	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	^ ^ ^
/	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	^
Sediment Management Plan	- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite. - Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation - Subject to the odour intensity and instruction by the *Supervisor*, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	^ ^ ^

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	- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact. - The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement. - Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions. - The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission. - The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment. - Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front. - The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control. - Any excessive air emissions will be inspected and recorded. - Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.						^ ^ ^ ^ ^ ^ ^ ^ ^

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?	Status
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.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^ ^ ^

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	- 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.						^ ^
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	N/A
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	N/A
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	N/A
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	Control potential	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	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.	impacts from filling activities					
Silt Curtain Deployment Plan	- Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site.	Control potential impacts from marine woroks	Contractor	NE/2015/02	Construction stage	EIAO	^ ^ * (1)
Sediment Management Plan	- Loading of barges and hoppers will be controlled to prevent splashing of dredged materials into the surrounding water. Barges or hoppers will not be filled to a level that will cause the overflow of materials or pollute water during loading or transportation. - Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. - Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation. - Transport barges or vessels shall be equipped with automatic self-monitoring devices. - Vehicles containing any untreated / treated marine sediments will be suitably covered to limit potential dust emissions or potential contaminated wastewater run-off, and truck	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	^ ^ ^ ^

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	bodies and tailgates will be sealed to prevent any discharge during transport or wet conditions. - The leachate from the untreated marine sediment will be collected and treated in the mixing pool for cement s/s treatment. - A 300mm diameter U-channel will be constructed along the perimeter of the cement s/s treatment facility to collect the run-off, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). Cleaning for the u-channel and desilting pits shall be conducted on weekly basic. - The stockpile area of treated marine sediment will be surrounded by the perimeter concrete block walls with geotextile membranes installed at the inner face of the concrete block walls. The types of perimeter wall can be used interchangeably. The Structural Feasibility of the perimeter wall for the changes of height of the stockpile had been checked and certified by ICE. - The mixing areas will be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater and will be confined by partition concrete block walls for carrying out the mixing and temporary stockpile of treated sediment.						^ ^ ^ ^
S5.8.3	Other good site practices should be undertaken during filling operations include: - 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	Control potential impacts from	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal	^

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	sepFarate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; - 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; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; - 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; - any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; - 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 - 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.	filling activities and marine-based construction				Ordinance (WDO)	^ ^ ^ ^ ^ ^ ^ ^ N/A

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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	N/A
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	^ ^ N/A ^

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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	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	^

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	under the 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	N/A ^
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	^
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
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	^
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	^
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^

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		construction					
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
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	N/A
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	^
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
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	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A

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	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.	construction					
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	N/A
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	^

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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	N/A
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	N/A

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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	N/A
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	N/A
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	N/A

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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	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?	Status
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	^
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	^

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?	Status
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	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	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^

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?	Status
	allocated to the storage area.						^
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,	* (2)
Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - 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; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	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	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	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?	Status
	demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - 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*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - 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.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - 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. - 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).	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	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?	Status
	- 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. - 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. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - 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	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	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?	Status
		contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies					^
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	^
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	Design Team / Contractor	Marine work area	Construction phase	WQO	^

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?	Status
		solid level					
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	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance	^ ^ ^ ^

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?	Status
	and avoid unnecessary generation of waste.					(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	^
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^

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?	Status
	materials from wind-blown or being washed away; and - 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)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - 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); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^ ^ ^ ^ ^ ^
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	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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?	Status
		collection and disposal					
S8.6.11 - S8.6.13/ Waste Management Plan	***Sorting of C&D Materials*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - 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	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
S8.6.15 – S8.6.16/ Waste Management Plan	***Sediments*** - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02	All works areas with sediments concern	Construction Phase	RBRG	N/A

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	results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						N/A
S8.6.17 – S8.6.20	***Sediments (con't)*** - 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. - 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). - In order to minimise the potential odour / dust emissions during boring, excavation and	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^

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?	Status
	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. - 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.						N/A
S8.6.21/ Waste Management Plan	***Sediments (con't)*** - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP.	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	***Sediments (con't)*** - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	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?	Status
	construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.						
S8.6.24 - S8.6.28/ Waste Management Plan	***Sediments (con't)*** - 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. - 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). - 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.	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	^ ^ ^

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?	Status
	- 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. - 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.						^ N/A N/A
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,	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of	^

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?	Status
	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.					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	^ ^ ^
S9.6.4	Indirect vibration impact	To prevent	Contractors	Work areas	Construction	Vibration Limits	

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?	Status
	- 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.	indirect vibration impact			Phase	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	^

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?	Status
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/	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce	CEDD (via	General	Throughout	As per	N/A

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Landscape Mitigation Plan		visual intrusion	Contractor)		construction period	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	^
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	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?	Status
				roadworks			
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 permanent reclamation for TKO Interchange slip roads and Road P2.	Construction planning and reclamation stages	N/A	N/A

Table II - Observations/reminders/non-compliance made during Site Audit

Key: * Observation/reminder was made during site audit but improved/rectified by the contractor.

\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.

X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
Water Quality Impact (Construction Phase)					
* (1)	Silt curtain deployment Plan	- Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site.	NE/2015/02	Construction of Road P2	• The silt curtain was floating outside the cofferdam at portion IX.
* (2)	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.	NE/2015/02	Construction of Road P2	• Some floating refuse was observed in the water within the double water gate of the cofferdam.

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract: NE/2017/02

Key:
^ Mitigation measure was fully implemented.
* Observation/reminder was made during site audit but improved/rectified by the contractor.
# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor
N/A Not Applicable

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?	Status
Air Quality (Construction Phase)							
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	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - 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	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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?	Status
	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						^

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?	Status
	construction process in order to enforce controls and modify method of work if dusty conditions arise.						
/	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	^ ^ ^
/	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	^
Sediment Management Plan	- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite. - Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation - Subject to the odour intensity and instruction by the *Supervisor*, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, 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?	Status
	- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact. - The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement. - Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions. - The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission. - The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment. - Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front. - The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control. - Any excessive air emissions will be inspected and recorded. - Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.						^ ^ ^ ^ ^ ^ ^ ^

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?	Status
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.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^

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?	Status
	- 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.						^ ^
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	N/A
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	N/A
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	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	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?	Status
	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.						
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	N/A
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	^

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?	Status
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	^ N/A ^
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?	Status
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	^
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	^
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	Control potential impacts from construction site	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?	Status
	should be discharged into storm drains via silt removal facilities.	runoff and land-based construction				S5	
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	^

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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	N/A
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	^
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	^

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?	Status
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-	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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?	Status
		based construction					
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	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?	Status
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	N/A
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	^

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?	Status
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	N/A
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	N/A
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	N/A
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-	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	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?	Status
		based construction					
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	N/A
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	^

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?	Status
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	N/A
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	^
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	Control potential impacts from construction site runoff and land-	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?	Status
	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.	based construction					
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	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	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^

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?	Status
	- storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.						^
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,	^
Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - 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; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	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	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	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?	Status
	- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - 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*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - 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.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - 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. - 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). - A detailed coral translocation plan with a description on the methodology for	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	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?	Status
	pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage. - 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. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - 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	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	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?	Status
		discharge, accidental chemical spillage and construction site runoff to the receiving water bodies					
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	^
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	^

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?	Status
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	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^

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?	Status
	- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.						^
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	^
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely;	To minimize potential adverse environmental impacts arising from waste	Contractor	All work sites	Construction Phase	-	^ ^

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?	Status
	- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	storage					^ ^
S8.6.8/ Waste Management Plan	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - 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); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^ ^ ^ ^ ^ ^
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	To minimize potential adverse environmental impacts arising	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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?	Status
	(including disposal sites) should be proposed.	from waste collection and disposal					
S8.6.11 - S8.6.13/ Waste Management Plan	***Sorting of C&D Materials*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - 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	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
S8.6.15 – S8.6.16/ Waste Management Plan	***Sediments*** - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	RBRG	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?	Status
	sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						N/A
S8.6.17 – S8.6.20	***Sediments (con't)*** - 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. - 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	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^

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?	Status
	discharged according to the Water Pollution Control Ordinance (WPCO). - 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. - 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.						^ N/A
S8.6.21/ Waste Management Plan	***Sediments (con't)*** - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP.	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	***Sediments (con't)*** - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to	To determine the best handling and disposal option of	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	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?	Status
	confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.	sediment					
S8.6.24 - S8.6.28/ Waste Management Plan	***Sediments (con't)*** - 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. - 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). - In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet	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	^ ^ ^

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?	Status
	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. - 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. - 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.						^ N/A N/A
S8.6.26/ Waste	***Chemical Wastes.*** - If chemical wastes are produced at the construction site, the Contractor would be	To ensure proper	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging,	^

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?	Status
Management Plan	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.	management of chemical waste				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)	^
Landscape and Visual Impact (Construction Phase)							
Table 10.8.1/ Landscape	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	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?	Status
Mitigation Plan					period		
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	CM5 - Trees unavoidably affected by the works shall be transplanted where	To maximize	CEDD (via	As per	Site clearance	ETWB TC 3/2006	^

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?	Status
10.8.1/ Landscape Mitigation Plan	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.	preservation of existing trees	Contractor)	approved Tree Removal Application(s)		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	N/A
Table 10.8.1/ Landscape Mitigation	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?	Status
Plan							
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 bodies	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 character	Minimise loss of Junk Bay and	CEDD (via Contractor)	Temporary reclamation	Construction planning and	N/A	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?	Status
		integration with existing coastline		for barging points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	reclamation stages		

Table II - Observations/reminders/non-compliance made during Site Audit

Key:
* Observation/reminder was made during site audit but improved/rectified by the contractor.
# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
		-			

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract: NE/2015/03

Key:
^ Mitigation measure was fully implemented.
* Observation/reminder was made during site audit but improved/rectified by the contractor.
\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor
N/A Not Applicable

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?	Status
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	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - 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,	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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	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.						N/A
	- 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						^

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	dusty conditions arise.						
/	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	^ ^ ^
/	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	^

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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	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A

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		Project at the affected NSRs					
Water Quality Impact (Construction Phase)							
	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	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	^

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	discharged into the corresponding WCZ under the 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	^ N/A ^
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	^
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	^

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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	^
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	^
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	^
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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (1)

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		based construction					
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	N/A

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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	^
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	^

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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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		based construction					
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	N/A
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	N/A

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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	N/A

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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	N/A
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	N/A
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	N/A
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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
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	N/A

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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	^
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)	Control potential impacts from accidental	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
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	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,	^

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Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - 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; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	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	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^ ^ ^ ^

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	the nearby watercourses.						
S6.8.8	-						
S6.8.9 S6.8.10	***Measure to Control Water Quality Impact*** - 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	^ ^

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?	Status
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	^
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	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)	^

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?	Status
	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.					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	^

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?	Status
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8/ Waste Management Plan	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - 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); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^ ^ ^ ^ ^ ^

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?	Status
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*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - 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	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
	-						
S8.6.17 – S8.6.20	***Sediments (con't)*** - Requirements of the Air Pollution Control (Construction Dust) Regulation, where	To determine the best handling	Contractor	All works areas with	Construction Phase		^

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?	Status
	relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment. - 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). - 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. - 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.	and treatment of sediment		sediments concern			^ ^ N/A
	-						
	-						
S8.6.26/ Waste Management	***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	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of	* (2)

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?	Status
Plan	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.					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	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^ ^ ^

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?	Status
	works are less than 100m from the temple.						
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/	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	To minimize tree loss	CEDD (via Contractor)	As per approved	Site clearance and	ETWB TC 3/2006 and as per tree	^

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?	Status
Landscape Mitigation Plan	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).			Tree Removal Application(s)	throughout construction period	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	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	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?	Status
Plan							
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	^
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/ Landsca	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses	CEDD (via Contractor)	TKO reclamation, TKO	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?	Status
pe Mitigation Plan		and water bodie		tunnel portal, Cha Kwo Ling roadworks			
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	N/A

Table II - Observations/reminders/non-compliance made during Site Audit

Key: * Observation/reminder was made during site audit but improved/rectified by the contractor.

\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.

X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
***Air Quality** (Construction Phase)*					
*(1)	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.	NE/2017/02	Road P2/D4 and Associated Works	Uncovered stockpile was observed at west pier.
Waste/ Chemical Management					
* (2)	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	NE/2015/03	Construction of Northern Footbridge	Stagnant water was observed in the drip tray for the oil drum.

		the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.			

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract: NE/2017/01

Key:
^ Mitigation measure was fully implemented.
* Observation/reminder was made during site audit but improved/rectified by the contractor.
# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor
N/A Not Applicable

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?	Status
Air Quality Impact (Construction Phase)							
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	N/A
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	N/A
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	N/A 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?	Status
	- 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.						N/A
	- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.						N/A
	- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.						N/A
	- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.						N/A
	- 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.						N/A
	- 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.						N/A
	- Imposition of speed controls for vehicles on site haul roads.						N/A
	- 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.						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?	Status
	- 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.						N/A
/	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	^ ^ ^
/	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	^
Sediment Management Plan	- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite. - Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	N/A 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?	Status
	- Subject to the odour intensity and instruction by the *Supervisor*, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.						N/A
	- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact.						N/A
	- The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement.						N/A
	- Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions.						N/A
	- The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission.						^
	- The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment.						N/A
	- Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front.						N/A
	- The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control.						N/A
	- Any excessive air emissions will be inspected and recorded.						

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?	Status
	- Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.						N/A
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.	To minimize construction noise impact arising from the Project at the	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^

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?	Status
	- 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.	affected NSRs					^ ^ ^ ^
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	N/A
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	N/A
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	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?	Status
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	N/A
Silt Curtain Deployment Plan	- Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site.	Control potential impacts from marine woroks	Contractor	NE/2015/01, NE/2015/02, NE/2017/01	Construction stage	EIAO	^ ^ *(1)
Sediment Management Plan	- Loading of barges and hoppers will be controlled to prevent splashing of dredged materials into the surrounding water. Barges or hoppers will not be filled to a level that will cause the overflow of materials or pollute water during loading or transportation. - Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. - Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation.	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	N/A N/A 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?	Status
	- Transport barges or vessels shall be equipped with automatic self-monitoring devices.						N/A
	- Vehicles containing any untreated / treated marine sediments will be suitably covered to limit potential dust emissions or potential contaminated wastewater run-off, and truck bodies and tailgates will be sealed to prevent any discharge during transport or wet conditions.						N/A
	- The leachate from the untreated marine sediment will be collected and treated in the mixing pool for cement s/s treatment.						N/A
	- A 300mm diameter U-channel will be constructed along the perimeter of the cement s/s treatment facility to collect the run-off, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). Cleaning for the u-channel and desilting pits shall be conducted on weekly basic.						N/A
	- The stockpile area of treated marine sediment will be surrounded by the perimeter concrete block walls with geotextile membranes installed at the inner face of the concrete block walls. The types of perimeter wall can be used interchangeably. The Structural Feasibility of the perimeter wall for the changes of height of the stockpile had been checked and certified by ICE.						N/A
	- The mixing areas will be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater and will be confined by partition concrete block walls for carrying out the mixing and temporary stockpile of treated sediment.						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?	Status
S5.8.3	Other good site practices should be undertaken during filling operations include: - 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; - floating single silt curtain shall be employed for all marine works; - 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; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; - 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; - any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; - 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	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	^ ^ ^ ^ ^ ^ N/A ^ ^ ^

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	grounds; and - 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.						N/A
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	N/A
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	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	N/A N/A N/A N/A

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	barrier and at the double water gates marine access opening during its operation.						
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	N/A
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	N/A
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	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	N/A

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	discharged into the corresponding WCZ under the 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	N/A N/A N/A
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	N/A
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	N/A

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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	N/A
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	N/A
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	N/A
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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
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	N/A
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	N/A
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	N/A

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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	N/A
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	N/A
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	N/A

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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	N/A
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	N/A
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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
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	N/A
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	N/A

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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	N/A
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	N/A
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	N/A

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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	N/A
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	N/A
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	N/A
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-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
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	N/A
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	N/A
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	N/A

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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	N/A
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	N/A
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)	Control potential impacts from accidental	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
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	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,	^

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Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - 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; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	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	^ N/A N/A
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	N/A ^ ^ N/A ^ ^

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	the nearby watercourses.						
S6.8.6	***Measure to Minimize Groundwater Inflow*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - 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.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - 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. - 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). - 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. - 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)	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	N/A N/A N/A N/A

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	who is/are approved by AFCD prior to commencement of coral translocation. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - 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.						N/A N/A
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	Design Team, contractor	Marine and land based works area	Construction phase	WQO	N/A ^ ^ N/A

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		receiving water bodies					
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	N/A
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;	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions)	^ ^ ^

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?	Status
	- 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.					Ordinance (Cap. 28)	^ N/A
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)	^ N/A ^ ^
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	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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?	Status
	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.						
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	N/A
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ N/A ^
S8.6.8/ Waste Management	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase		^ ^ ^

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?	Status
Plan	the use of covered trucks or in enclosed containers; - 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); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	impacts arising from waste collection and disposal					^ ^ ^
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*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - The C&D materials should at least be segregated into inert and non-inert	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002	^ ^ ^

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?	Status
	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	
S8.6.15 – S8.6.16/ Waste Management Plan	***Sediments*** - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	RBRG	N/A 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?	Status
	contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						
S8.6.17 – S8.6.20	***Sediments (con't)*** - 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. - 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). - 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. - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^ 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?	Status
	handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						
S8.6.21/ Waste Management Plan	***Sediments (con't)*** - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP.	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^
S8.6.23	***Sediments (con't)*** - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.	To determine the best handling and disposal option of sediment	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 Manage	***Sediments (con't)*** - 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	To ensure handling of sediments are in accordance to	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^

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?	Status
ment Plan	options and ETWB TC(W) No. 34/2002. - 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). - 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. - 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	statutory requirements					^ ^ ^

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?	Status
	specified by the DEP. - 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.						N/A N/A
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	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	^

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?	Status
	at Tsing Yi, or other licensed facility, in accordance with the 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	N/A N/A N/A
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.	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	N/A N/A 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?	Status
	- 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.						N/A
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.	N/A N/A N/A
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	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	N/A
Table	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical,	To allow re-use	CEDD (via	General	Site clearance	As per the	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?	Status
10.8.1/ Landscape Mitigation Plan	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.	of topsoil	Contractor)			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	N/A
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	N/A
Table 10.8.1/ Landscape	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	Beginning of construction period	N/A	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?	Status
Mitigation Plan				landscape deck, TKO			
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	N/A
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	N/A
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	N/A
Table 10.8.1/	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion	CEDD (via Contractor)	Built structures	Design and construction	N/A	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?	Status
Landscape Mitigation Plan		and integration with environment			stage		
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	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	Construction planning and reclamation stages	N/A	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?	Status
				and Road P2			

Table II - Observations/reminders/non-compliance made during Site Audit

Key:
* Observation/reminder was made during site audit but improved/rectified by the contractor.
# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
X Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
Water Quality Impact (Construction Phase)					
* (1)	Silt Curtain Deployment Plan	- Sufficient stock of silt curtain should be provided on site.	NE/2017/01	Construction of TKO Interchange	• The silt curtain was not completed.

APPENDIX O
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Appendix O - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

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 (Y/N)	Investigation/ Mitigation Action	File 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	Under Investigation.	On-going
382 (N08/RE/000 11019-19)	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.	Draft CIR submitted
381 (N08/RE/000 15098-19)	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.	Draft CIR submitted
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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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.	Draft CIR submitted.
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.	Draft CIR submitted.
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.	Draft CIR submitted.
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.	Draft CIR submitted.
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.	Draft CIR submitted.

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted.
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.	Draft CIR submitted.
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.	Draft CIR submitted
370 (N08/RE/000 15098-19)	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.	Draft CIR submitted
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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-N66	Draft CIR submitted
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. 354.	Draft CIR submitted
367	5-May-19	5-May-19 / Lam Tin Tunnel - TKO entrance	Resident near Lam Tin Tunnel - TKO entrance	Noise & Air Quality	Noise and air nuisance from construction near Lam Tin Tunnel - TKO entrance	Y	Investigation has been completed but yet to be finalised. Details should be referred to CIR-C29.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-N65.	Draft CIR submitted
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		Draft CIR submitted
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		Draft CIR submitted
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		Draft CIR submitted
362 (N08/RE/000 13396-19)	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.	Draft CIR submitted
361	7-May-19	28 Apr 2019 / Cofferdam Area	General Public	Noise	Noise nuisance from construction site at cofferdam area in holiday	Y	Investigation has been completed but yet to be finalised. Details should be referred to CIR-N63.	Draft CIR submitted
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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-C28.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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		Draft CIR submitted.
358	30-Apr-19	27-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance during evening time.	Y		Draft CIR submitted.
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		Draft CIR submitted.
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		Draft CIR submitted.
355	17-Apr-19	17-04-2019/ Near cofferdam area	General Public	Noise & light nuisanc e	The complaint about the noise nuisance and light pollution near cofferdam area during evening-time.	Y		Draft CIR submitted.
354	30-Apr-19	20 Apr 2019 / Cofferdam Area 19 Apr 2019 / Cofferdam Area 15 Apr 2019 / Cofferdam Area 07 Apr 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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-O2.	Draft CIR submitted.

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		31 Mar 2019 / Cofferdam Area						
353	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore (Mr. Chan)	Air Quality	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.	Draft CIR submitted.
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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-N62.	Draft CIR submitted.
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		Draft CIR submitted.
350	8-Apr-19	07 Apr 2019 / Cofferdam Area in TKO	-	Air Quality & 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.	Draft CIR submitted.
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		Draft CIR submitted.

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
348	2-Apr-19	02 Apr 2019 / LTT-TKO	-	Others	The complainant complained the LTT construction site was working during holiday.	N		Draft CIR submitted.
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		Draft CIR submitted.
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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-O1.	Draft CIR submitted
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.	Draft CIR submitted
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.	Draft CIR submitted
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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
342	25-Mar-19	24th March 2019 / Construction of 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.	Draft CIR submitted
341	24-Mar-19	24th March 2019 / Construction of 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		Draft CIR submitted
340	24-Mar-19	24th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance from the construction site day time holiday (Sunday).	Y		Draft CIR submitted
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		Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
338	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Ocean Shore	Noise	Construction noise nuisance in night time (03:00 – 04:00)	Y	See Investigation / Mitigation Action for complaint no. 323.	Draft CIR submitted
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.	Draft CIR submitted
336	20-Mar-19	20th March 2019 / Construction of Road	Resident of Park Central	Noise & Pest	Complaint about the noise and pest nuisance from the construction site near Park Central in evening time.	Y		Draft CIR submitted
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 Investigation / Mitigation Action for complaint no. 323.	Draft CIR submitted
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		Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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		Draft CIR submitted
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	Investigation has been completed but yet to be finalised. Details should be referred to CIR-N61.	Draft CIR submitted
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		Draft CIR submitted
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		Draft CIR submitted
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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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.	Draft CIR submitted
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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
323 (EPD-N08/RE/0000 6523-19)	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.	Draft CIR submitted
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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		Draft CIR submitted
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		Draft CIR submitted
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.	Draft CIR submitted
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		Draft CIR submitted
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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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.	Draft CIR submitted
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Draft CIR submitted
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; 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
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		Closed
301	31th January 2019	27th - 31th January 2019 / Construction of Lam Tin Interchange	Management Section 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
300	30th January 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	30th January 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	30th January 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.	Draft CIR submitted
297	30th January 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
296	29th January 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	29th January 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.	Draft CIR submitted
294	29th January 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
293 (EPD-K15/RE/00003291-19)	29th January 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.	Draft CIR submitted
292	29th January 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: 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 should screen the line-of-sight from sensitive receivers To continue to strictly follow the requirements in the approved CNMP. RE/RSS should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
291	29th January 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	29th January 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)	24th January 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.	Draft CIR submitted
288	18th January 2019	18th January 2019 (Unknown)/ 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
287	17th January 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	17th January 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.	Draft CIR submitted
285	17th January 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.	Draft CIR submitted

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284	16th January 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.	Draft CIR submitted
283	15th January 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.	Draft CIR submitted
282	15th January 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.	Draft CIR submitted
281	15th January 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
280	14th January 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.	Draft CIR submitted
279	14th January 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.	Draft CIR submitted
278	12th January 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.	Draft CIR submitted
277	12th January 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 (Y/N)	Investigation/ Mitigation Action	File Closed
276	11th - 12th 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 refer to CIR-N40.	Closed
275	11th January 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.	Draft CIR submitted
274 (EPD-N08/RE/0000 1234-19)	11th January 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
273	10th January 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	8th January 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
271	8th January 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/0000 0691-19)	7th January 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; during breaking works.	Draft CIR submitted
269	7th January 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.	Draft CIR submitted

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
268	7th January 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: • Frequent checking and repair the gaps or broken acoustic sheets; • Replace any broken Silent Mat for wrapping the breaker head; • 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 receiver; • 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; and • Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	Closed
267	7th January 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
266	7th January 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; Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
265	7th January 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: • Frequent checking and repair the gaps or broken acoustic sheets; • Replace any broken Silent Mat for wrapping the breaker head; • 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 receiver; • 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; and • 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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	Draft CIR submitted
262	30th December 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	26th December 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	26th December 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	26th December 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
258	18th December 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	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. Mitigation measures: 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: • Only well-maintained plant should be operated 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; • Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
257	18th December 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	17th December 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) The following recommendations were made for the Contractor to enhance the mitigation measures: • To frequently check and repair operating PME if any loosen or worn parts of the equipment to reduce excessive noise disturbance; • 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.	Closed
254	16th December 2018	16th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	• 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
253	15th December 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	30th November 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. Based on the noise and air monitoring results in November 2018, no Limit Level Exceedance was recorded. **Mitigation Measures** • A more effective acoustic barrier was erected between the drill rig and Park Central. • Frequent water spraying along the Po Yap Road for eight times a day, Stockpile are covered with impervious material to avoid dust resuspension	Closed
251	28th November 2018	27th November 2018/ Construction of TKO portal	Public	Noise	Complained about the construction noise from the marine works.	Y	The complaint lodged on 25th November 2018 is considered as non-project related, as no works was conducted on that day. 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 equipment to reduce excessive noise disturbance; 2) Ensure no further use of PA system for marine works.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
250	26th November 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	25th November 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	20th November 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	20th November 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	19th November 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	8th November 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	8th November 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	7th November 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
241	6th November 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	6th November 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
239	25th October 2018	25th October 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about daytime construction noise near Ocean Shore.	Y	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) **Additional mitigation measures adopted by Contractor upon receipt of complaint:** ➢ A more effective acoustic barrier was erected that covered the direct line of sight from the entire Ocean Shore during piling works. **Existing Mitigation Measures adopted by Contractor** ➢ Silent up barrier was provided for drill rig/vibration hammer. Acoustic barriers was erected along site boundary); ➢ Maintenance for acoustic barriers along the site boundary to ensure the integrity effectiveness of sound barrier; ➢ Metal chain attached on the vibration hammer was wrapped with rubbery material to reduce the excessive noise produced during piling works.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
238	23rd October 2018	23rd October 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the noise created by an excavator during morning	Y	See Investigation / Mitigation Measures for Complaint No. 239	Closed
237	18th October 2018	18th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about construction noise at LTI	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
236	18th October 2018	18th October 2018/ Lam Tin Interchange	Resident of Cha Kwo Ling Village	Noise	Complained about the vibration and noise near	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
235	18th October 2018	18th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI and Portion 4C	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
234	18th October 2018	18th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the Excavator in LTI was not properly wrapped and produce noise nuisance from LTI.	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
233	15th October 2018	15th October 2018/ Lam Tin Interchange	DC member	Noise	Complained about the noise and dust nuisance from LTI	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
232	14th October 2018	14th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during night time	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
231	12th October 2018	12th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
230	11th October 2018	11th October 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise from rocks unloading in LTI	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
229	9th October 2018	9th October 2018/ Lam Tin Interchange	Resident of Bik Lai House, Yau Lai Estate	Noise	Complained about the noise nuisance from LTI, and lack of effective noise barrier.	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
228	9th October 2018	9th October 2018/ Lam Tin Interchange	Public	Noise	Complained about the noise nuisance from LTI	Y	See Investigation / Mitigation Measures for Complaint No. 227	Closed
227	3rd October 2018	3rd October 2018/ Lam Tin Interchange	Resident of Yung Lai House, Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during night time	Y	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) and approved Construction Noise Permit (CNP). **Mitigation Measures adopted by Contractor** <u>Noise:</u> ➢ Noise barriers were repaired to reduce noise nuisance at Portion 4C; ➢ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance at Portion 4C; Powered mechanical equipment (PME) for breaker was equipped with noise barriers at Portion 4C.	Closed
226	28th September 2018	28th September 2018/ Construction of Road P2	Resident of Ocean Shores	Noise	Complained about noise nuisance from portion IV	Y	➢ See Investigation / Mitigation Measures for Complaint No. 222	Closed
225	26th September 2018	26th September 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise from rocks unloading in LTI	Y	See Investigation / Mitigation Measures for Complaint No. 218	Closed
224	18th September 2018	18th September 2018/ Construction of Road P2	Public	Noise	Complained about noise nuisance from derrick barge	Y	See Investigation / Mitigation Measures for Complaint No. 219	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
223	13th September 2018	9th September 2018/Construction of Portion VII on TKO side	Resident of Ocean Shores	Noise	Complained about noise nuisance from derrick barges	Y	See Investigation / Mitigation Measures for Complaint No. 218	Closed
222	12th September 2018	12th September 2018/ Construction of Road P2	Resident of Ocean Shores	Noise	Complained about the noise nuisance from piling works	Y	**Mitigation Measures adopted by the Contractor** ➢ Acoustics barriers were provided to the vibration hammer for piling works. ➢ Maintenance for acoustic barriers on the PME and along the site boundary to ensure the integrity and effectiveness of sound barriers. ➢ Regular site checking would be performed to ensure the type and quantity of powered mechanical equipment are in order with the updated Construction Noise Assessment. ➢ Acoustics mats were provided to cover the noise source from vibration hammer. ➢ The metal chain on vibration hammer was wrapped with rubbery material to minimize sound impact. ➢ The schedule for piling works was set with a 5 minutes interval to reduce the accumulated noise level.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
221	11th September 2018	9th September 2018/ Construction of Portion VII on TKO side	Public	Noise	Complained about the noise from broadcasting at barging point	Y	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: <u>Noise:</u> Walkie-talkie was used instead of broadcasting to reduce the noise nuisance.	Closed
220	11th September 2018	26th September 2018/ Lam Tin Interchange	Public	Noise	Complained about the construction noise	Y	➢ See Investigation / Mitigation Measures for Complaint No. 218	Closed
219	7th September 2018	7th September 2018/ Construction of Road P2	Resident of Ocean Shores	Noise	Complained about the noise from sheet piling	Y	**Mitigation Measures adopted by the Contractor** ➢ Silent up barrier was provided for piling works in between vibration hammer and Ocean Shores. Acoustic barriers was erected along site boundary ➢ Noise barrier surround the engine of the derrick barge ➢ Acoustic material wrapped on vibration hammer for sheet piling works	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
218	6th September 2018	6th September 2018/ Construction in LTI	Public	Noise	Complained about noise nuisance in LTI	Y	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: <u>Noise:</u> ➢ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance at Portion 4C; ➢ Powered mechanical equipment (PME) for breaker was equipped with noise barriers at Portion 4C.	Closed
217	5th September 2018	5th September 2018/ Construction of Road P2	Public	Air Quality	Complained about dark smoke emission from derrick barges.	N	The Contractors has adopted the following environmental mitigation measures to reduce dark smoke nuisance from construction barges since June for dark smoke complaints: ➢ Smoke filtering tanks were adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell; ➢ New engine has been installed on derrick barge to reduce the dark smoke emission.	Closed
216	5th September 2018	5th September 2018/ Construction of Road P2	Public	Air Quality	Complained about dark smoke emission from derrick barges.	N	See Investigation / Mitigation Measures for Complaint No. 217	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
215	5th September 2018	5th September 2018/ Construction of Road P2	Public	Water Quality	Complained about the oil leakage within the cofferdam	N	The Contractors had taken measures to clean up and prevent any further oil spillage for marine works in the future: ➢ Oil was absorbed and cleared with sorbents ➢ Wire was applied with suitable amount of oil to prevent further oil spill ➢ Training was provided for frontline staff on applying lubricant oil on wire rope of derrick barge. The Contractor had implemented environmental measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: ➢ Construction activities should not cause foam, oil, grease, scum, little or other objectionable matter to be present on the water within the site. Standard good-site practice is adopted to prevent any fuels and solvent entering the nearby watercourses.	Closed
214	4th September 2018	4th September 2018/ Construction of Road P2	Ocean Shores Management Office	Air Quality	Follow up complaint on 21 and 22 August, regarding dark smoke emission from derrick barges.	N	➢ See Investigation / Mitigation Measures for Complaint No. 217	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
213	31st August 2018	31st August 2018/ Construction of Lam Tin Interchange	Public	Air Quality	The complainant complained about the dust nuisance at LTI.	N	See Investigation / Mitigation Measures for Complaint No. 207	Closed
212	27th August 2018	27th August 2018/ Construction of Road P2	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from breaker and excavator in LTI.	Y	See Investigation / Mitigation Measures for Complaint No. 203	Closed
211	22nd August 2018	22nd August 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores.	N	See Investigation / Mitigation Measures for Complaint No. 209	Closed
210	21st August 2018	21st August 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores.	N	See Investigation / Mitigation Measures for Complaint No. 209	Closed
209	21st August 2018	20th & 21st August 2018/ Construction of Road P2	DC Member	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores on 20 and 21 of August.	N	The Contractors had implemented environmental mitigation measures to reduce dark smoke nuisance from construction barges to the nearby sensitive receivers as follows: ➢ Additional water filter tank was adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell ➢ There were five derrick barges operating on 20 & 22 of August and four of them had water filter installed. The one without water filter was demobilized away from the site on 22 August.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
208	20th August 2018	17th August/ Construction of Road P2	DC Member	Water Quality	The complainant complained that muddy water was discharged from the construction site.	N	Based on the information gathered in the investigation. As the location of muddy discharge was appeared adjoining the Tseung Kwan O DSD Desilting Compound, a high volume of upstream discharge collected from rain events is a possible cause of such muddy discharge event. There are no direct evidence that the muddy discharge near the outfall of DSD Desilting Compound was due to the Project. Measure Taken by the Contractor The Contractors had taken initiatives to ensure the quality of wastewater discharge from land-based works and to enhance mitigation measure to prevent silt from marine works from entering surrounding waters: ➢ Additional geotextile was installed between steel tanks to prevent migration of filling materials outside the cofferdam ➢ Cofferdams in form of steel tanks filled with aggregated material were covered with geotextile to prevent spillage of silty materials into nearby waters	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
207	18th August 2018	18th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air Quality	The complainant complained about dust nuisance from surface blasting.	N	According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at following Stations. AM2 – Sai Tso Wan Recreation Ground; AM3 Yau Lai Estate, Bik Lai House. No exceedance was recorded in the above station during August. Mitigation Measures and Follow up Actions by Contractor The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: Air Quality: ➢ Blasting cage were surrounded with impervious material during surface blasting ➢ Water spraying was provided at the blasting cage and stone crusher to enhance dust suppression	Closed
206	13th August 2018	13th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from the breaker at LTI and complained lack of noise barrier.	Y	See Investigation / Mitigation Measures for Complaint No. 203	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
205	10th August 2018	10th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance of construction work starting from 7 am and lack of noise barrier.	Y	See Investigation / Mitigation Measures for Complaint No. 203	Closed
204	9th August 2018	9th August 2018/ Construction of Lam Tin Interchange	Resident of Tak Tin Estate	Noise	The complainant complained about noise nuisance and vibration from blasting activity	Y	According to the EM&A Manual of this Project, weekly noise monitoring in Cha Kwo Ling and Lam Tin during s been carried out at the following Stations. CM1 – Nga Lai House, Yau Lai Estate Phase 1, Yau Tong, Station; CM2 – Bik Lai House, Yau Lai Estate Phase 1, Yau Tong; CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong. There was no exceedance recorded in the above station during daytime in August.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
203	9th August 2018	9th August 2018/ Construction of Lam Tin Interchange	Property Management of Tak Tin Estate	Noise	The complainant complained about the noise nuisance during 8pm	Y	Mitigation Measures and Follow up Actions by Contractor The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: Noise: ➢ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance at Portion 4C ➢ Powered mechanical equipment (PME) for rock breaking were equipped with noise barriers at Portion 4C According to the EM&A Manual of this Project, weekly noise monitoring in Cha Kwo Ling and Lam Tin during s been carried out at the following Stations. CM1 – Nga Lai House, Yau Lai Estate Phase 1, Yau Tong, Station; CM2 – Bik Lai House, Yau Lai Estate Phase 1, Yau Tong; CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong. There was no exceedance recorded in the above station during daytime in August.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
202	1st August 2018	1st August 2018/ Construction of Lam Tin Interchange	Resident of Yeung Mei House	Noise	The complainant complained about the construction noise during night-time.	Y	A valid Construction Noise Permit (CNP) (No. GW-RE0421-18) was granted to the Contractor for the construction site at Lam Tin Interchange The number of excavators that were used on 01 August was covered by the CNP. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance ➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat	Closed
201	26th July 2018	26th July 2018 / Construction of P2/D4	Public	Water quality	The complainant complained about the polluted effluent at the nearby surface drain near the construction of elevator.	N	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Sandbags barrier was placed along the working area to prevent direct discharge	Closed
200	26th July 2018	26th July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on 24th July 2018, the situation has yet been addressed.	Y	See Investigation / Mitigation Measures for Complaint No. 197	Closed
199	24th July 2018	23rd July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about a yellow breaker working without noise barrier.	Y	See Investigation / Mitigation Measures for Complaint No. 197	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
	25th July 2018	25th July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained about the noise from piling works at Portion IV.	Y	See Investigation / Mitigation Measures for Complaint No. 198	Closed
198	21st July 2018	21st July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained about the noise from metal occasionally in the marine works area.	Y	Based on the noise monitoring results in July 2018, no Limit Level Exceedance was recorded at Station CM6(A) and CM7(A). It is considered that no adverse construction noise impact was brought to the nearby sensitive receivers during the construction. The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Noise:</u> ➢ Acoustic box was utilized for breaking works to minimize noise nuisance ➢ Acoustic barriers were provided for pre-boring works ➢ Regular site checking would be performed to ensure the type and quantity of PME are in order with the updated Construction Noise Assessment. ➢ Additional acoustic materials were wrapped around the vibration hammer ➢ Quieter plant, i.e. quality powered mechanical equipment was used as far as practicable to minimize noise impact from PME	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
197	21st July 2018	21st July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from breaker.	Y	According to the EM&A Manual of this Project, additional weekly noise monitoring in Cha Kwo Ling and Lam Tin during night-time has been carried out at Station CM1 – Nga Lai House, Yau Lai Estate Phase 1, Yau Tong, Station CM2 – Bik Lai House, Yau Lai Estate Phase 1, Yau Tong, CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong. no Limit Level Exceedance was recorded at Station CM1, CM2 and CM3. The summary of daytime and evening time noise monitoring results which conducted by ET in July and early August 2018 at Station CM1, CM2 and CM3 The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance ➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat	Closed
196	20th July 2018	Not specified / Construction of Lam Tin Interchange	Property Management Office of Hong Pak Court	Air Quality	The complainant complained about the dust problem after blasting work in the afternoon.	N	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Blasting cage were surrounded with impervious material during surface blasting ➢ Water spraying was provided at the blasting cage to enhance dust suppression	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
195	17th July 2018	16th July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained the noise from works area near Ocean Shores	Y	See Investigation / Mitigation Measures for Complaint No. 198	Closed
194	12th July 2018	12th July 2018/ Construction of Road P2/ D4 and Northern Footbridge	Residents of Metrotown	Air Quality	The complainant complained the dusty problem next to Chui Ling Road Substation.	N	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Water spraying was provided at least 8 times a day. ➢ Access road was paved to minimize dust emission from truck traffic.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
193	12th July 2018	12th July 2018 / Construction of Road P2	Residents of Metrotown	Air Quality	The complainant complained the dust problem from the partially covered stockpile in Work Area A.	N	According to the information provided and confirmed by the Engineer, loading and unloading of treated sediment was conducted in Work Area A. According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at Station AM5(A) – Tseung Kwan O DSD Desilting Compound and AM6(A) – Park Central, L1/F Open Space Area. no Action or Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) from 3 to 12 July 2018. It is considered that no adverse air quality impact was brought to the nearby sensitive receivers during the construction period The Contractors had implemented environmental mitigation measures to reduce dust nuisance from construction activities to the nearby sensitive receivers as follows: ➢ Covered the stockpile of treated marine sediment with tarpaulin sheets	Closed
192	23rd July 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27th June, 2nd and 3rd July 2018, the complainant complained that the situation has not yet been addressed.	Y	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Replaced and fixed the uneven metal plate on Lei Yue Mun Road near ambulance depot	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
191	3rd July 2018	3rd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27th June, 2nd July 2018, the complainant complained that the situation has not yet been addressed.	Y	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Replaced and fixed the uneven metal plate on Lei Yue Mun Road near ambulance depot According to the information provided and confirmed by the Engineer, dredging and welding works are conducted on 23 June 2018 during the time of complaint. The Contractors had implemented environmental mitigation measures to reduce odour nuisance from construction activities to the nearby sensitive receivers as follows: ➢ Air blowers were provided at the location where welding works to be carried out to dilute the smell ➢ Additional water filter tank was adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell	Closed
	2nd July 2018	2nd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27th June 2018, the complainant complained that the situation has not yet been addressed.	Y		Closed
	27th June 2018	26th and 27th June 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the construction noise at Lam Tin Interchange during night-time.	Y		Closed
	25th June 2018	23rd June 2018/ Construction of Road P2	Public	Air Quality	The complainant complained the dark smoke emission from construction barge and the smell from welding works.	N		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
190	22nd June 2018	Not Specific/ Construction of Lam Tin Interchange	Public	Waste Management	The complainant complaint about the housekeeping of the construction site.	N	From the Daily Record Summary provided by the Contractor and confirmation by the RE, there was no irregularity, and together with the site inspection conducted by the environmental team in June, construction waste on pavement was not observed. Despite, the Contractor was reminded to follow the relevant mitigation measures related to waste management: ➢ Ensure trucks have enclosed the containers before leaving the site to reduce the impact during transportation (Photo 3); ➢ Training of site personnel in proper waste management and chemical handling procedures to ensure proper disposal of construction waste; ➢ Proper storage and site practices to minimize the potential for damage or contamination of construction materials	Closed
189	20th June 2018	28th May 2018/ Construction of Road P2	SKDC member	Air Quality	The complainant complained the dark smoke emission from the same construction vessel.	N	See Investigation / Mitigation Measures for Complaint No. 181.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
188	20th June 2018	20th June 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about construction noise starting from 6 am.	Y	The construction activities in Lam Tin Interchange (Work site No.101) on 20th of June possessed of 6 no. of excavators between 7-8 am, 6 no. of breakers, excavator mounted between 8-10 am. The quantity of excavators and breakers were consistent with the Construction Noise Mitigation Plan (Construction Activity Group 1.1) The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: ➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
187	7th June 2018	7th June 2018/ Construction of Road P2	Resident of Ocean Shores	Air Quality	The complainant complained about the smell of machinery exhaust affecting the podium of Ocean Shores (swimming pool). The complainant suspected the exhaust was originated from the nearby barges.	N	According to the information provided and confirmed by the Engineer, dredging works and placing rock fill were conducted during the time of complaint. Dredger, derrick barge, tug boat and hopper barge were being operated for the mentioned works. According to the site inspections conducted by ET and IEC in May and June 2018, no exhausted smell from construction vessel was identified in Portion IV, VII and IX. The Contractors had implemented environmental mitigation measures to minimize the air nuisance to the nearby sensitive receivers as follows: *Odour Emission from Exhausted Gas:* ➢ Additional water filter tank was adopted on the deck level of derrick barges to reduce emission of dark smoke and exhaust smell	Closed
186	6th June 2018	6th June 2018/ Construction of Lam Tin Interchange	Resident of Chung Pak House, Hong Pak Court	Noise	The complainant complained about the construction noise at Lam Tin Interchange.	Y	A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange. The number of excavator and dump trucks that were used on 6 June were covered by the CNP.	Closed
185	6th June 2018	30th May and 30th September 2017/ Construction of Road P2	SKDC member	Noise	The complainant complained about the noise affecting nearby resident in early morning near Ocean Shores.	Y	See Investigation / Mitigation Measures for Complaint No. 50 and 81.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
184	6th June 2018	Not specified / Construction of Road P2	SKDC member	Landscape	The complainant complained about excessive tree felling near Ocean Shores.	N	According to the information provided and confirmed by the Engineer, tree removal application for the concerned area has granted approval from District Lands Office (DLO) on 1 August 2017 and 18 April 2018 together with the tree compensatory plans. The felling of a total of 85 trees at the concerned area were in accordance with the approved tree removal application by the DLO. None of them are registered Old and Valuable Tree and neither of them are rare nor endangered species. The number of retained trees at the concerned location complies with the latest tree removal application. The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows: ➢ Tree protection zones were established and surrounded by fences to protect retained trees adjacent to the construction area. ➢ Tree protection zone were free of machinery and material that are likely to be injurious to the tree. ➢ Regular tree assessments were conducted by qualified Arborist to monitor the condition of retained trees.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
183	4th June 2018	4th June 2018/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	N/A	The complainant complained about the blasting works during night-time.	N	The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" ➢ Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel ➢ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel	Closed
182	1st June 2018	Not specified/ Construction of Lam Tin Interchange	Sin Fat Road Tennis Court	Air Quality	The complainant complained about the dust	N	The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows: ➢ Frequent water spraying along the slope area at LTI. ➢ Tarpaulin sheets were provided along the slope adjacent to the tennis court during preparation of surface blasting.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
181	29th May 2018	Not specified/ Construction of Road P2	Public	Air Quality	The complainant complained about the black smoke emission from the construction vessel.	N	According to the information provided and confirmed by the Engineer, dredging and placing rock fill material were conducted during the time of complaint. The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Air Quality:</u> As confirmed by the Engineer, the concerned s removed off site for further maintenance; Additional water filter tank was adopted to mission of dark smoke and exhaust. The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
180	25th May 2018	24th May 2018/ Construction of Road P2	SKDC member Mr. Cheung Chin Pang	Odour	The complainant complained about smell of exhaust gas affecting high level residents (60/F and above) of Metrotown Tower 10.	N	According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint. The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Air Quality:</u> Additional water filter tank was adopted to mission of dark smoke and exhaust. The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
179	24th May 2018	24th May 2018/ Construction of Northern footbridge , Road P2/D4 and Road P2	Public	Air Quality	The complainant complained construction dust generated from the CEDD construction works site between Tong Yin Street and Tiu Keng Leng Sport Centre (Po Yap Road) as a result of insufficient dust suppression measures	N	According to the information provided and confirmed by the Engineer, construction works including steel bar fixing, scaffolding, trimming formation level, compaction, removal of road marking and handling of treated sediment were conducted during the time of complaint. As shown in the Air Quality Monitoring Results**,** no Action/ Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: raying was provided at least 8 times a day; near public access was hard paved; e in Work Area A was covered except the operating area The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
178	23rd May 2018	22nd May 2018/ Construction of TKO Portal	Public	N/A	The complainant complained construction works was carried out on 22 May (which was a public holiday) around 1500 hour at the sea area near Ocean shore Block 2.	N	According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint. One valid Construction Nosie Permit (CNP) (No. GE-RE0309-18) was granted to the Contractor (Leighton – China State Joint Venture) (Contract No. NE/2015/01) for the marine construction site near Ocean Shores. According to the CNP, Group O to T of the PME listed in condition 3.a. are allowed to operate during general holiday (including Sunday) from 0900 – 2300 hours. As confirmed by the Engineer, only a group of PME (listed in Group Q) was operated during the time of complaint. No welding machine was operated in Zone A. No derrick barge and flat top barge were operated beyond Zone C. The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Noise:</u> Preinstalled speaker was used on derrick barge ize the noise disturbance from on-site communication. The Engineer and the Environmental Team inded the Contractor to properly implement mitigation s to effectively minimize construction nuisance caused onstruction works to the nearby residents.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
177	22nd May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air Quality & Noise	The complainant complained about the dust nuisance and construction noise at Lam Tin Interchange	Y	According to the Engineer's Site Diaries, the major construction activities performed in May 2018 included rock breaking, drilling and excavation at Lam Tin Interchange. Construction works for night-time included blasting and excavation. According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at Station AM2 – Sai Tso Wan Recreation Ground and AM3 – Yau Lai Estate, Bik Lai House. Based on the Air Quality Monitoring Results which conducted by ET**,** no Action or Limit Level Exceedance was recorded at Station AM2 and AM3. It is considered that no adverse air quality impact was brought to the nearby sensitive receivers during the time of complaint. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows: <u>Air Quality:</u> water spraying on unpaved area and haul roads at Lam change Noise: ➢ Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel ➢ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel ➢ Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD;	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat ➢ Drill rig was covered with Silent Mat and TMR The environmental conditions of the site and the control of works will be continuously reviewed and monitored by the Engineer and the Environmental Team.	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
176	21st May 2018	21st May 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about dust/dirt being brought onto Tong Yin Street by the vehicles travelling to and from TKO-LTT construction site, causing dust problem and air nuisance.	N	According to the information confirmed by the Engineer, all dump trucks were covered and wheel washed before leaving the works site on 21 May 2018. As shown in the Air Quality Monitoring Results, no Action/ Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project The Contractors had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows: Water spraying was provided at least 8 times a day. Street washing truck would be provided once a week to clean the dust on the public street. Additional notice would be set up to remind the truck driver to perform wheel-washing properly before leaving site. Deployed staff at the access to check the dump trucks to ensure the dump truck are properly covered and wheel-washed before leaving site. The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.	Closed
175	19th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
174	19th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
173	16th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court,	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
172	15th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
171	15th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Bik Lai Estate	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
170	15th May 2018	Not specified/ Construction site near Cha Kwo Ling Tsuen	Anonymous	Noise	The complainant complained the noise nuisance due to the construction work near Cha Kwo Ling Tsuen during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
169	14th May 2018	Not specified/ Construction of Lam Tin Interchange	Kowloon East District Council Member Mr. Tam Man Ho	Noise	The complainant complained the noise nuisance due to the construction work and night time blasting works at the Lam Tin Interchange.	Y	According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period: The construction activities of Lam Tin Interchange (Work site No.101) on 14th of May 2018 possessed of 6 no. of breakers, excavator mounted which were consistent with the quantities of breaker in the Construction Noise Mitigation Plan (Construction Activity Group1.1) Noise: Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel; Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD; Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat; As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4. The environmental conditions of the site and the control of works will be continuously reviewed and monitored by the Engineer and the Environmental Team.	Closed
168	14th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Yung Lai House	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
167	13th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court, Chung Pak House	Noise	The complainant complained the noise nuisance due to the construction work on Sunday morning and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
166	13th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Noise nuisance due to the construction work at around 5:00 am and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
165	13th May 2018	13th May 2018/ Construction of Lam Tin Interchange	Property Management Office of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange on 13th May 2018 (Sunday morning).	Y	A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange (location of construction site is shown in Figure 1). According to the conditions in the CNP, only one group among Group A to R of the powered mechanical equipment is allowed to be operated during 0800-2300 hours on general holidays (including Sundays); and 1900-2300 hours on any day not being a general holiday. The number of excavators, dump trucks, craned lorry and breakers that were used on 13th, 14th, 15th & 22nd of May were covered by the CNP. Other good site practices recommended in the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the Noise Mitigation Plan of this Contract had been implemented by the Contractor, including the following: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Mobile plant, if any, should be sited as far away from NSRs as possible; • Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
164	12th May 2018	12th May 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
163	12th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
162	11th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Lung Pak House	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed

Cumulative Complaint Log since commencement of Project

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
November 2016	0	0	0
December 2016	11	0	0
January 2017	15	0	0
February 2017	4	0	0
March 2017	6	0	0
April 2017	1	0	0
May 2017	10	0	0
June 2017	8	0	0
July 2017	3	0	0
August 2017	8	0	0
September 2017	14	0	0
October 2017	8	0	0
November 2017	12	0	0
December 2017	10	1	0
January 2018	11	0	0
February 2018	6	0	0
March 2018	17	0	0
April 2018	15	0	0
May 2018	22	0	0
June 2018	11	0	1
July 2018	9	0	0
August 2018	12	0	0
September 2018	11	0	0
October 2018	13	0	0
November 2018	13	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
December 2018	10	0	0
January 2019	39	0	0
February 2019	20	0	0
March 2019	25	0	0
April 2019	17[1]	0	0
May 2019	11	0	0
June 2019	11	0	0
Total	**383**	**1**	**1**

1. Complaint No. 378, 363, 362 were received after the submission of EMA Monthly Report (April 2019)

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	KTS24 138/2017	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 Mar 2018	0	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

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	KTS24 138/2017	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	--	--	--	--	--	--

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 2019

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	131.655	73.591	0.000	103.085	28.570	0.000	0.000	0.421	0.000	2.400	0.140
February	105.752	52.675	0.000	55.650	50.103	0.000	0.000	0.333	0.000	0.000	0.088
March	147.872	85.219	0.000	85.219	62.653	0.000	0.000	0.654	0.000	0.000	0.102
April	86.872	63.871	0.000	65.710	21.162	0.000	0.000	0.000	0.000	0.000	0.101
May	88.182	56.127	0.000	56.5945	31.587	0.000	0.000	0.410	0.000	3.200	0.126
June	103.458	59.644	0.000	59.644	43.814	0.000	0.000	0.000	0.000	1.120	0.102
Sub-total	663.791	391.127	0.000	425.903	237.888	0.000	0.000	1.818	0.000	6.720	0.658
July											
August											
September											
October											
November											
December											
Total	663.791	391.127	0.000	425.903	237.888	0.000	0.000	1.818	0.000	6.720	0.658

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"

NE/2015/02-Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works

Monthly Summary Waste Flow Table for 2019 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	39.06133	0.00000	1.09752	0.00000	2.94501	35.01880	140.97000	0.00000	0.00000	4.11000	0.07932
Feb	27.16095	0.00000	0.73212	0.00000	1.09407	25.33476	0.00000	0.00000	0.00000	0.72000	0.01610
Mar	48.33586	0.00000	0.00000	0.00000	3.29905	45.03681	18.33000	0.00000	0.00000	0.00000	0.04866
Apr	103.60117	0.00000	0.00000	0.00000	2.04236	101.55882	0.00000	0.00000	0.00000	0.00000	0.03052
May	179.02844	0.00000	7.33100	0.00000	4.51844	167.17900	0.00000	0.00000	0.00000	0.00000	0.07562
June	119.80242	0.00000	30.10000	0.00000	2.16472	87.53770	95.27000	0.00000	0.00000	0.00000	0.03852
SUB-TOTAL	516.99016	0.00000	39.26064	0.00000	16.06364	461.66589	254.57000	0.00000	0.00000	4.83000	0.28874
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	516.99016	0.00000	39.26064	0.00000	16.06364	461.66589	254.57000	0.00000	0.00000	4.83000	0.28874

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 2019

Name of Person completing the Record: Martin Yiu

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	0.3363	0	0	0	0.3363	0	0	0	0	0.0065
Feb	0.0650	0	0	0	0.0650	0	0	0	0	0.0065
Mar	0.2925	0	0	0	0.2925	0	0	0	0	0.0065
Apr	0.3331	0	0	0	0.3331	0	0	0	0	0.0065
May	0.4330	0	0	0	0.4330	0	0	0	0	0.0065
Jun	0.8912	0	0	0	0.8912	0	0	0	0	0.0065
Sub-total	2.3511	0	0	0	2.3511	0	0	0	0	0.0390
Jul	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0
Sept	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0
Total	2.3511	0	0	0	2.3511	0	0	0	0	0.0390

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 2019

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
Feb	0	0	0	0	0	0	0	0	0	0	0.018
Mar	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0	0	0	0.018
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0	0	0	0	0	0	0	0	0	0	0.018

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 June 2019 to 30 June 2019.

NE/2015/03-Tseung Kwan O-Lam Tin Tunnel-Northen Footbridge

Monthly Summary Waste Flow Table for 2019 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]
Accumuated from 2018	1.23	0.00	0.18	0.43	0.60	0.03	0.00	0.00	0.00	0.00	0.04
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apr	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
May	0.55	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00
June	0.48	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.01
SUB-TOTAL	1.05	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.01
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	2.29	0.00	0.18	0.43	1.65	0.03	0.00	0.00	0.00	0.00	0.05

Note:

1. **Conversion to 1000m^3 for general refuse is weight in 1000kg multiply by 0.002**
2. **Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005**
3. **Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material**
4. **The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the works, together with a breakdown 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**

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 2019

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	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015
Feb	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017
Mar	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006
Apr	0.0420	0.0000	0.0000	0.0000	0.0420	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012
May	0.0608	0.0000	0.0000	0.0000	0.0608	0.0000	0.0148	0.0000	0.0080	0.0000	0.0010
Jun	0.1055	0.0000	0.0000	0.0400	0.0655	0.0000	0.0000	0.0000	0.0000	0.0000	0.0040
Sub-total	0.3283	0.0000	0.0000	0.1600	0.1683	0.0000	0.0148	0.0000	0.0080	0.0000	0.0100
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.3283	0.0000	0.0000	0.1600	0.1683	0.0000	0.0148	0.0000	0.0080	0.0000	0.0100

Notes:

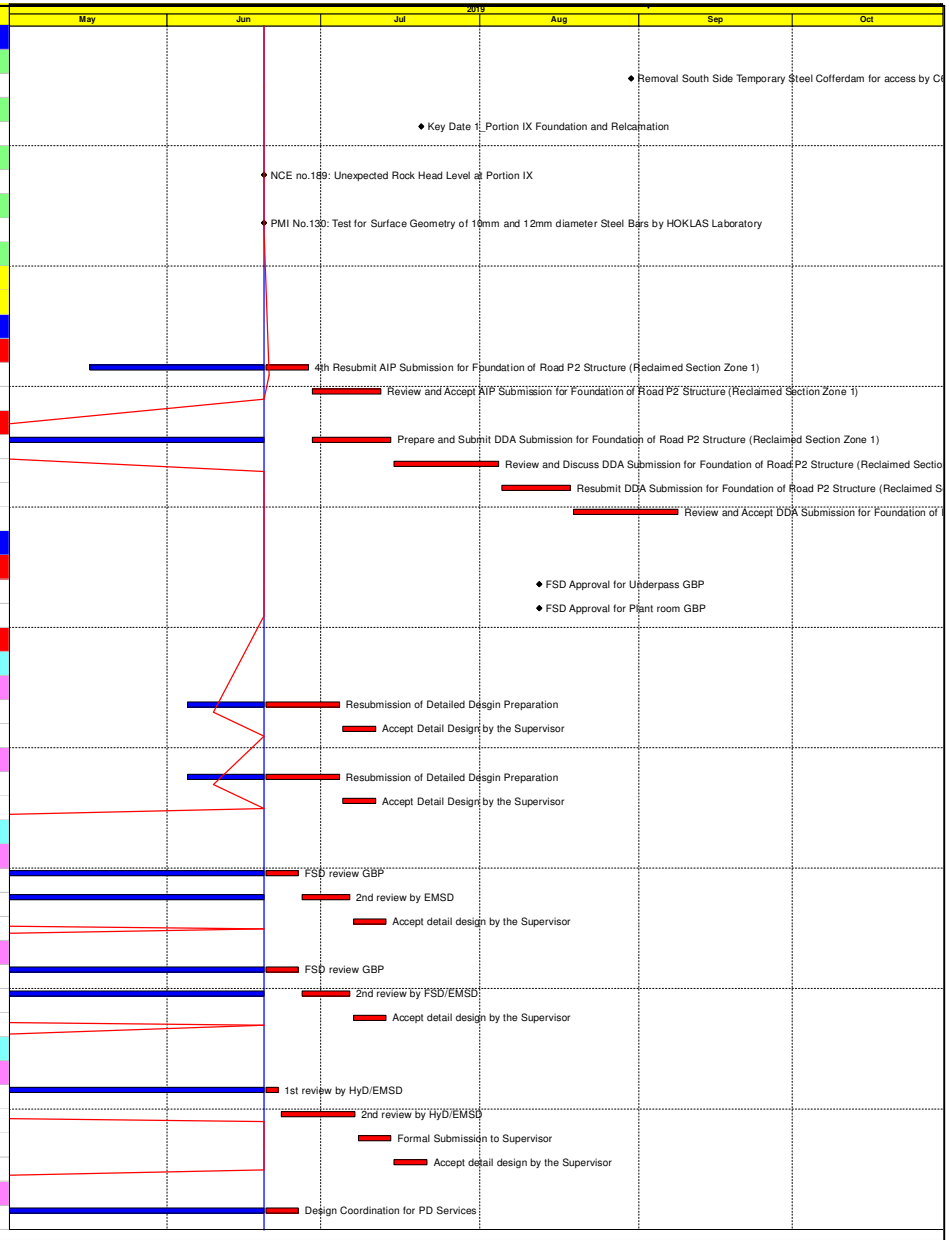
1. Assume the density of soil fill is 2 ton/m^3.
2. Assume the density of rock and broken concrete is 2.5 ton/m^3.
3. Assume the density of mixed rock and soil is 1.9 ton/m^3.
4. Assume the density of slurry and bentonite is 2.8 ton/m^3.
5. The slurry and bentonite are disposed at Tseung Kwan O Area 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.

APPENDIX Q
TENTATIVE CONSTRUCTION PROGRAMME

High Level 3 Months Look Ahead Programme

Activities	Jul-19	Aug-19	Sep-19
Lam Tin Interchange			
EHC2 U-Trough			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Area 3			
Site Formation - Area 4			
Administration Building			
Main Tunnel			
MT Excavation			
MT Lining Works			
TKO Interchange			
Haul Road Construction, Site Formation & Slope Works			
Steel Platform for Bridge Construction			
Cavern Excavation			
East Ventilation Building Advance Works			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Wks (Jun-18) SUI		1563	12-Jan-17 A	17-Jul-21			366		
Target Key Date for Interfacing Works		0	30-Aug-19	30-Aug-19		P2-Cal.A	-41		
K10419-21	Removal South Side Temporary Steel Cofferdam for access by C6(Subject to Consent of Early Removal of Cofferdam by EPD)	0		30-Aug-19*	0%	P2-Cal.A	-41	MC14090	
Revised Contract Key Date and Section Completion of the Works		0	20-Jul-19	20-Jul-19		P2-Cal.A	0		
A10420	Key Date 1_Portion IX Foundation and Relcamation	0		20-Jul-19*	0%	P2-Cal.A	0	S10700	
Notification of Compensation Event (NCE)		0	20-Jun-19 A	20-Jun-19 A		P2-Cal.A			
B22370	NCE no.189: Unexpected Rock Head Level at Portion IX	0	20-Jun-19 A		100%	P2-Cal.A			
PMI		0	20-Jun-19 A	20-Jun-19 A		P2-Cal.A			
B41590	PMI No.130: Test for Surface Geometry of 10mm and 12mm diameter Steel Bars by HOKLAS Laboratory	0	20-Jun-19 A		100%	P2-Cal.A			
Preliminaries, Submission, Contractor's Design Submission and Approval		1415	20-Jan-17 A	04-Dec-20		P2-Cal.A	26		
General Submission and Acceptance		30	21-Aug-17 A	05-Jul-19		P2-Cal.A	544		
Contractor's Design Submission and Acceptance		721	01-Apr-17 A	08-Sep-19		P2-Cal.A	66		
Foundation Design		168	05-Mar-19 A	08-Sep-19		P2-Cal.A	-74		
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-2		18	17-May-19 A	12-Jul-19		P2-Cal.A	-74		
S11260-05	4th Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	5	17-May-19 A	28-Jun-19	0%	P2-Cal.A	-74	S11260-04	S11360, S11260-06
S11260-06	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	14	29-Jun-19	12-Jul-19	0%	P2-Cal.A	-74	S11260-05	S11360
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-		168	05-Mar-19 A	08-Sep-19		P2-Cal.A	-74		
S11360	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	15	05-Mar-19 A	14-Jul-19	45%	P2-Cal.A	-74	S15820, S11260-04, S11260-05,	S11380
S11380	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	21	15-Jul-19	04-Aug-19	0%	P2-Cal.A	-74	S11360	S11400
S11400	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	14	05-Aug-19	18-Aug-19	0%	P2-Cal.A	-74	S11380, S15420	S11420
S11420	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	21	19-Aug-19	08-Sep-19	0%	P2-Cal.A	-74	S11400	S12620, LC20840,
E&M Design		694	01-Apr-17 A	12-Aug-19		P2-Cal.A	-1		
Statutory Approval for E&M Works		0	12-Aug-19	12-Aug-19		P2-Cal.A	-1		
S11570-11	FSD Approval for Underpass GBP	0		12-Aug-19	0%	P2-Cal.A	-1	S11570-10, S11651	S15146
S11570-12	FSD Approval for Plant room GBP	0		12-Aug-19	0%	P2-Cal.A	-1	S11570-10, S11652-23	S15146
Detail Design for E&M Works (Tunnel and associated)		674	01-Apr-17 A	23-Jul-19		P2-Cal.A	-11		
MVAC Detail Design		22	05-Jun-19 A	11-Jul-19		P2-Cal.A	-29		
Plantroom		22	05-Jun-19 A	11-Jul-19		P2-Cal.A	-29		
S11578	Resubmission of Detailed Desgin Preparation	5	05-Jun-19 A	04-Jul-19	0%	P2-Cal.A	-29		S11578-02
S11578	Accept Detail Design by the Supervisor	7	05-Jul-19	11-Jul-19	0%	P2-Cal.A	-29	S11578-01	S15144
Underpass		22	05-Jun-19 A	11-Jul-19		P2-Cal.A	-29		
S11640	Resubmission of Detailed Desgin Preparation	5	05-Jun-19 A	04-Jul-19	0%	P2-Cal.A	-29	S11640	S11640-02
S11640	Accept Detail Design by the Supervisor	7	05-Jul-19	11-Jul-19	0%	P2-Cal.A	-29	S11640-01	S15144
FS Detail Design		664	19-Oct-17 A	13-Jul-19		P2-Cal.A	-1		
Underpass		664	19-Oct-17 A	13-Jul-19		P2-Cal.A	-1		
S11649	FSD review GBP	28	19-Oct-17 A	26-Jun-19	75%	P2-Cal.A	-1	S11648	S11649-02, S11649-01
S11650	2nd review by EMSD	15	19-Mar-18 A	06-Jul-19	33.33%	P2-Cal.A	-1	S11650	S11651
S11651	Accept detail design by the Supervisor	7	07-Jul-19	13-Jul-19	0%	P2-Cal.A	-1	S11647, S11650-01	S15146, S11570-11
Plantroom		594	19-Oct-17 A	13-Jul-19		P2-Cal.A	-1		
S11652	FSD review GBP	28	19-Oct-17 A	26-Jun-19	75%	P2-Cal.A	-1	S11652-09	S11652-19, S11652-11
S11652	2nd review by FSD/EMSD	15	19-Mar-18 A	06-Jul-19	33.33%	P2-Cal.A	-1	S11652-20	S11652-23
S11652	Accept detail design by the Supervisor	7	07-Jul-19	13-Jul-19	0%	P2-Cal.A	-1	S11652-06, S11652-21	S15146, S11570-12
Plumbing and Drainage Detail Design		535	01-Apr-17 A	23-Jul-19		P2-Cal.A	-41		
Underpass		451	09-Apr-18 A	21-Jul-19		P2-Cal.A	-39		
S11657	1st review by HyD/EMSD	15	09-Apr-18 A	22-Jun-19	80%	P2-Cal.A	-39	S11656	S11657-01
S11657	2nd review by HyD/EMSD	15	23-Jun-19	07-Jul-19	0%	P2-Cal.A	-39	S11657	S11658
S11658	Formal Submission to Supervisor	7	08-Jul-19	14-Jul-19	0%	P2-Cal.A	-39	S11657-01	S11659
S11659	Accept detail design by the Supervisor	7	15-Jul-19	21-Jul-19	0%	P2-Cal.A	-39	S11658	S15148, S14973
Plantroom		535	01-Apr-17 A	23-Jul-19		P2-Cal.A	-41		
S11660	Design Coordination for PD Services	60	01-Apr-17 A	26-Jun-19	88.33%	P2-Cal.A	-41	S11659-01	S11660-08



Actual Work

Remaining Work

Critical Remaining Work

Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update

(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
S11660	2nd review by HyD/EMSD	15	17-May-18 A	09-Jul-19	13.33%	P2-Cal.A	-41	S11660-08	S11660-10
S11660	Formal Submission to Supervisor	7	10-Jul-19	16-Jul-19	0%	P2-Cal.A	-41	S11660-09	S11660-11
S11660	Accept detail design by the Supervisor	7	17-Jul-19	23-Jul-19	0%	P2-Cal.A	-41	S11660-10	S15148, S14973
Electrical Detail Design		620	06-Jul-18 A	08-Jul-19		P2-Cal.A	-56		
Underpass Lighting		7	20-Jun-19	26-Jun-19		P2-Cal.A	-44		
S11660	Accept detail design by the Supervisor	7	20-Jun-19	26-Jun-19	0%	P2-Cal.A	-44	S11660-15, S11660-19	S15150
External Road Lighting		613	06-Jul-18 A	01-Jul-19		P2-Cal.A	-49		
S11660	2nd review by EMSD/CLP/ HyD	15	06-Jul-18 A	24-Jun-19	85%	P2-Cal.A	-49	S11660-24	S11660-26, S11660-27
S11660	Accept detail design by the Supervisor	7	25-Jun-19	01-Jul-19	0%	P2-Cal.A	-49	S11660-27	LC19550, S15150
Plantroom		435	06-Jul-18 A	08-Jul-19		P2-Cal.A	-56		
S11666	2nd review by EMSD/HyD	15	06-Jul-18 A	24-Jun-19	85%	P2-Cal.A	-56	S11665	S11667
S11667	Formal Submission to Supervisor	7	25-Jun-19	01-Jul-19	0%	P2-Cal.A	-56	S11666	S11668
S11668	Accept detail design by the Supervisor	7	02-Jul-19	08-Jul-19	0%	P2-Cal.A	-56	S11667	S15150, LC19550,
ELV And SCADA Detail Design		7	20-Jun-19	26-Jun-19		P2-Cal.A	-44		
Underpass		7	20-Jun-19	26-Jun-19		P2-Cal.A	-44		
S11669	Accept detail design by the Supervisor	7	20-Jun-19	26-Jun-19	0%	P2-Cal.A	-44	S11669-29	LC19562, S15150
Plantroom		7	20-Jun-19	26-Jun-19		P2-Cal.A	-44		
S11670	Accept detail design by the Supervisor	7	20-Jun-19	26-Jun-19	0%	P2-Cal.A	-44	S11670-29	LC19562, S15150
Design of Architectural Finishes for Internal Walls of U-Trough Structures		340	15-Sep-18 A	25-Aug-19		P2-Cal.A	48		
S11675	Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	21	15-Sep-18 A	30-Jun-19	0%	P2-Cal.A	48	K10000, S15820, B21200, S15160	S11680
S11680	Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	21	01-Jul-19	21-Jul-19	0%	P2-Cal.A	48	S11675	S11700
S11700	Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	14	22-Jul-19	04-Aug-19	0%	P2-Cal.A	48	S11680, S15420	S11720
S11720	Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	21	05-Aug-19	25-Aug-19	0%	P2-Cal.A	48	S11700, B10220	S15142
Irrigation System		77	20-Jun-19	04-Sep-19		P2-Cal.A	-18		
S11788	Prepare & Submission of Form 542	14	20-Jun-19	03-Jul-19	0%	P2-Cal.A	-18	S11782, S11781, S11787, S11787-01	S11789
S11789	Reviewed by WSD	28	04-Jul-19	31-Jul-19	0%	P2-Cal.A	-18	S11788	S11790
S11790	Formal Submission to Supervisor	14	01-Aug-19	14-Aug-19	0%	P2-Cal.A	-18	S11789, S11786, S11787	S11800
S11800	Review and Accept Submission for Waterpoints and associated elements	21	15-Aug-19	04-Sep-19	0%	P2-Cal.A	-18	S11790	LC25540, LC25440
Contractor Cost Saving Design		79	13-Jun-19 A	06-Sep-19		P2-Cal.A	68		
DDA Submission for CSD3(A) of Reclaimed Section (P2 CH105 - P2 CH305)		65	13-Jun-19 A	23-Aug-19		P2-Cal.A	82		
S11975	Prepare and Submit DDA Submission for CSD of Reclaimed Section (P2 CH105 - P2 CH305)	26	13-Jun-19 A	28-Jun-19	0%	P2-Cal.A	82	S11973, S11974, S11973-02, S18008,	S11976
S11976	Review and Discuss DDA Submission for CSD of Reclaimed Section (P2 CH105 - P2 CH305)	21	29-Jun-19	19-Jul-19	0%	P2-Cal.A	82	S11975	S11977
S11977	Resubmit DDA Submission for CSD of Reclaimed Section (P2 CH105 - P2 CH305)	14	20-Jul-19	02-Aug-19	0%	P2-Cal.A	82	S11976	S11978
S11978	Review and Accept DDA Submission for CSD of Reclaimed Section (P2 CH105 - P2 CH305)	21	03-Aug-19	23-Aug-19	0%	P2-Cal.A	82	S11977	S14201, LC21070, S13190
DDA Submission for CSD3(B) of Reclaimed Section (S200 CH821 - P2 CH105)		79	16-Jun-19 A	06-Sep-19		P2-Cal.A	68		
S18028	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH105)	21	16-Jun-19 A	05-Jul-19	0%	P2-Cal.A	68	S11973, S11974, S11973-02, S18008,	S18048
S18048	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH105)	21	06-Jul-19	26-Jul-19	0%	P2-Cal.A	68	S18028	S18068
S18068	Resubmit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH105)	14	27-Jul-19	09-Aug-19	0%	P2-Cal.A	68	S18048	S18088, S18108
S18088	Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (S200 CH821 - P2 CH105)	21	10-Aug-19	30-Aug-19	0%	P2-Cal.A	75	S18068	S14201, LC21070, S13190
S18108	Review and Accept DDA Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH105)	28	10-Aug-19	06-Sep-19	0%	P2-Cal.A	68	S18068	LC21070, S14201, S13190
Major Temporary Works Design		39	30-Aug-19	07-Oct-19		P2-Cal.A	-12		
ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)		39	30-Aug-19	07-Oct-19		P2-Cal.A	-12		
S12620	Prepare and Submit ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	18	30-Aug-19	16-Sep-19	0%	P2-Cal.A	-64	S11420, S11430, S11439-04	S12640, S12780
S12640	Review and Discuss ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	21	17-Sep-19	07-Oct-19	0%	P2-Cal.A	-12	S12620	S12660
ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)		18	09-Sep-19	26-Sep-19		P2-Cal.A	-64		
S12780	Prepare and Submit ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)	18	09-Sep-19	26-Sep-19	0%	P2-Cal.A	-64	S12620	S12800
Major Construction Works Method Statement		288	19-Dec-18 A	03-Oct-19		P2-Cal.A	73		
Construction Road P2 Underpass Structure CH105-318		18	07-Sep-19	24-Sep-19		P2-Cal.A	68		
S13190	Prepare and Submit Method Statement for Construction Road P2 Underpass Structure	18	07-Sep-19	24-Sep-19	0%	P2-Cal.A	68	K10000, S11978, S18108, S18088	S13200
Installation of bored pile for construction of abutment		67	20-Jun-19	25-Aug-19		P2-Cal.A	73		

Actual Work

Remaining Work

Critical Remaining Work

Milestone

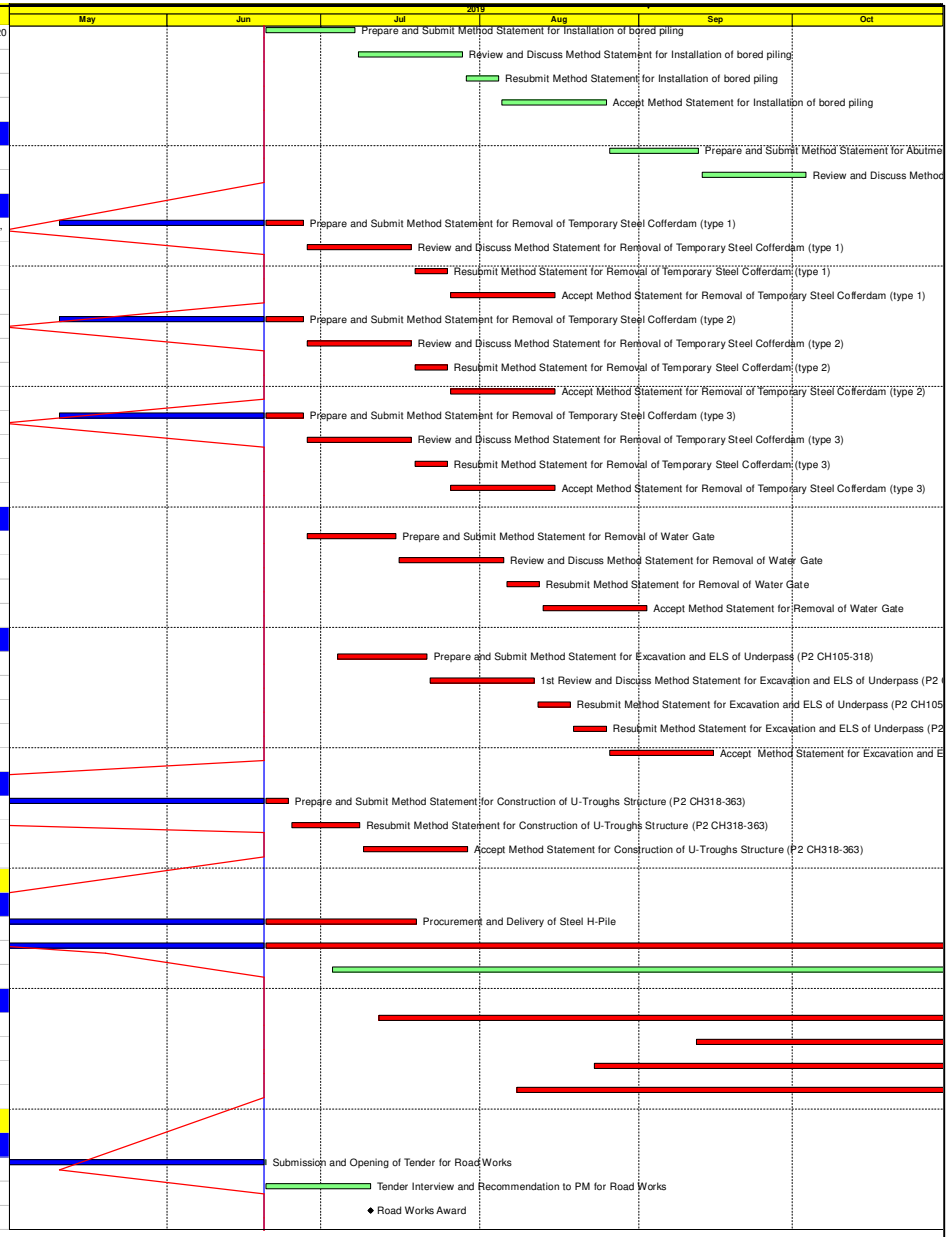
Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update

(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
S13420	Prepare and Submit Method Statement for Installation of bored piling	18	20-Jun-19	07-Jul-19	0%	P2-Cal.A	73	K10000, S13179-04	S13440, LC24920
S13440	Review and Discuss Method Statement for Installation of bored piling	21	08-Jul-19	28-Jul-19	0%	P2-Cal.A	73	S13420	S13460
S13460	Resubmit Method Statement for Installation of bored piling	7	29-Jul-19	04-Aug-19	0%	P2-Cal.A	73	S13440	S13480
S13480	Accept Method Statement for Installation of bored piling	21	05-Aug-19	25-Aug-19	0%	P2-Cal.A	73	S13460	S13500
Abutment Pile Cap Construction		39	26-Aug-19	03-Oct-19		P2-Cal.A	73		
S13500	Prepare and Submit Method Statement for Abutment Pile Cap Construction	18	26-Aug-19	12-Sep-19	0%	P2-Cal.A	73	K10000, S13480	S13520
S13520	Review and Discuss Method Statement for Abutment Pile Cap Construction	21	13-Sep-19	03-Oct-19	0%	P2-Cal.A	73	S13500	S13540
Removal of Temporary Steel Cofferdam		118	11-May-19 A	15-Aug-19		P2-Cal.A	-115		
S13810	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	18	11-May-19 A	27-Jun-19	35%	P2-Cal.A	-128	K10000	S13811, S13814, S13882
S13811	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 1)	21	28-Jun-19	18-Jul-19	0%	P2-Cal.A	-128	S13810	S13812
S13812	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	7	19-Jul-19	25-Jul-19	0%	P2-Cal.A	-128	S13811	S13813
S13813	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 1)	21	26-Jul-19	15-Aug-19	0%	P2-Cal.A	-128	S13812	MC14090
S13814	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	18	11-May-19 A	27-Jun-19	35%	P2-Cal.A	-128	S13810	S13815, S13818-1
S13815	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 2)	21	28-Jun-19	18-Jul-19	0%	P2-Cal.A	-128	S13814	S13816
S13816	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	7	19-Jul-19	25-Jul-19	0%	P2-Cal.A	-128	S13815	S13817
S13817	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 2)	21	26-Jul-19	15-Aug-19	0%	P2-Cal.A	-128	S13816	MC14090
S13818-1	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	18	11-May-19 A	27-Jun-19	35%	P2-Cal.A	-115	S13814	S13818-2
S13818-2	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 3)	21	28-Jun-19	18-Jul-19	0%	P2-Cal.A	-115	S13818-1	S13818-3
S13818-3	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	7	19-Jul-19	25-Jul-19	0%	P2-Cal.A	-115	S13818-2	S13818-4
S13818-4	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 3)	21	26-Jul-19	15-Aug-19	0%	P2-Cal.A	-115	S13818-3	MC14095
Removal of Water Gate		67	28-Jun-19	02-Sep-19		P2-Cal.A	-77		
S13882	Prepare and Submit Method Statement for Removal of Water Gate	18	28-Jun-19	15-Jul-19	0%	P2-Cal.A	-77	K10000, S13810	S13884
S13884	Review and Discuss Method Statement for Removal of Water Gate	21	16-Jul-19	05-Aug-19	0%	P2-Cal.A	-77	S13882	S13886
S13886	Resubmit Method Statement for Removal of Water Gate	7	06-Aug-19	12-Aug-19	0%	P2-Cal.A	-77	S13884	S13888
S13888	Accept Method Statement for Removal of Water Gate	21	13-Aug-19	02-Sep-19	0%	P2-Cal.A	-77	S13886	MC14115
ELS of Underpass (P2 CH105-318)		74	04-Jul-19	15-Sep-19		P2-Cal.A	-79		
S14056	Prepare and Submit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	18	04-Jul-19*	21-Jul-19	0%	P2-Cal.A	-79	S17968, S12768, S13973	S14057
S14057	1st Review and Discuss Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	21	22-Jul-19	11-Aug-19	0%	P2-Cal.A	-79	S14056	S14058
S14058	Resubmit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	7	12-Aug-19	18-Aug-19	0%	P2-Cal.A	-79	S14057	S14059, S14058_1
S14058_1	Resubmit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	7	19-Aug-19	25-Aug-19	0%	P2-Cal.A	-79	S14058	S14059
S14059	Accept Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	21	26-Aug-19	15-Sep-19	0%	P2-Cal.A	-79	S14058, S14058_1	LC18020
Construction of U-Troughs structure (P2 CH318-363)		222	19-Dec-18 A	29-Jul-19		P2-Cal.A	-59		
S14122	Prepare and Submit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	18	19-Dec-18 A	24-Jun-19	80%	P2-Cal.A	-59	S12520, S12524, S14080, S14120-01	S14126
S14126	Resubmit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	14	25-Jun-19	08-Jul-19	0%	P2-Cal.A	-59	S14122	S14128
S14128	Accept Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	21	09-Jul-19	29-Jul-19	0%	P2-Cal.A	-59	S14126	LC09600
Procurement of Major Material		1415	20-Jan-17 A	04-Dec-20		P2-Cal.A	-1		
Civil/Structural		1015	20-Jan-17 A	01-Dec-19		P2-Cal.A	309		
S14981	Procurement and Delivery of Steel H-Pile	800	31-Jan-17 A	19-Jul-19	89%	P2-Cal.A	-103	S11140	LC14480, LC14560,
S14983	Procurement and Delivery of ELS Wailing & Struts Members	1015	20-Jan-17 A	01-Dec-19	65.25%	P2-Cal.A	-103	S12200	LC13960, LC17160,
S14987	Cast-in for sign gantry and Road Works	120	03-Jul-19	30-Oct-19	0%	P2-Cal.A	341	K10000, LC11954	LC25160
E&M		512	12-Jul-19	04-Dec-20		P2-Cal.A	-1		
S15144	Procurement and Delivery of MVAC Plant	450	12-Jul-19	03-Oct-20	0%	P2-Cal.A	-29	S11640, S11578, S17425, S11578-02,	LC90000
S15146	Procurement and Delivery of FS Equipment	450	12-Sep-19	04-Dec-20	0%	P2-Cal.A	-1	S11651, S17429, S11570-11,	LC90000
S15148	Procurement and Delivery of P/D Equipment	450	23-Aug-19	14-Nov-20	0%	P2-Cal.A	-41	S11659, S17433, S11660-11	LC90000
S15150	Procurement and Delivery of EL Equipment (Incl. SCADA and ELV)	450	08-Aug-19	30-Oct-20	0%	P2-Cal.A	-56	S11668, S17420, S11660-20,	LC90000
Subletting Package		96	02-Apr-19 A	31-Jul-19		P2-Cal.A	372		
Road Works		75	02-Apr-19 A	10-Jul-19		P2-Cal.A	279		
S17220	Submission and Opening of Tender for Road Works	14	02-Apr-19 A	20-Jun-19	100%	P2-Cal.A	279	S17200	S17240
S17240	Tender Interview and Recommendation to PM for Road Works	21	20-Jun-19	10-Jul-19	0%	P2-Cal.A	279	S17220	S17260
S17260	Road Works Award	0		10-Jul-19	0%	P2-Cal.A	279	S17240	LC17560, LC17590



Actual Work

Remaining Work

Critical Remaining Work

Milestone

Program with Progress as of 20-Jun-19

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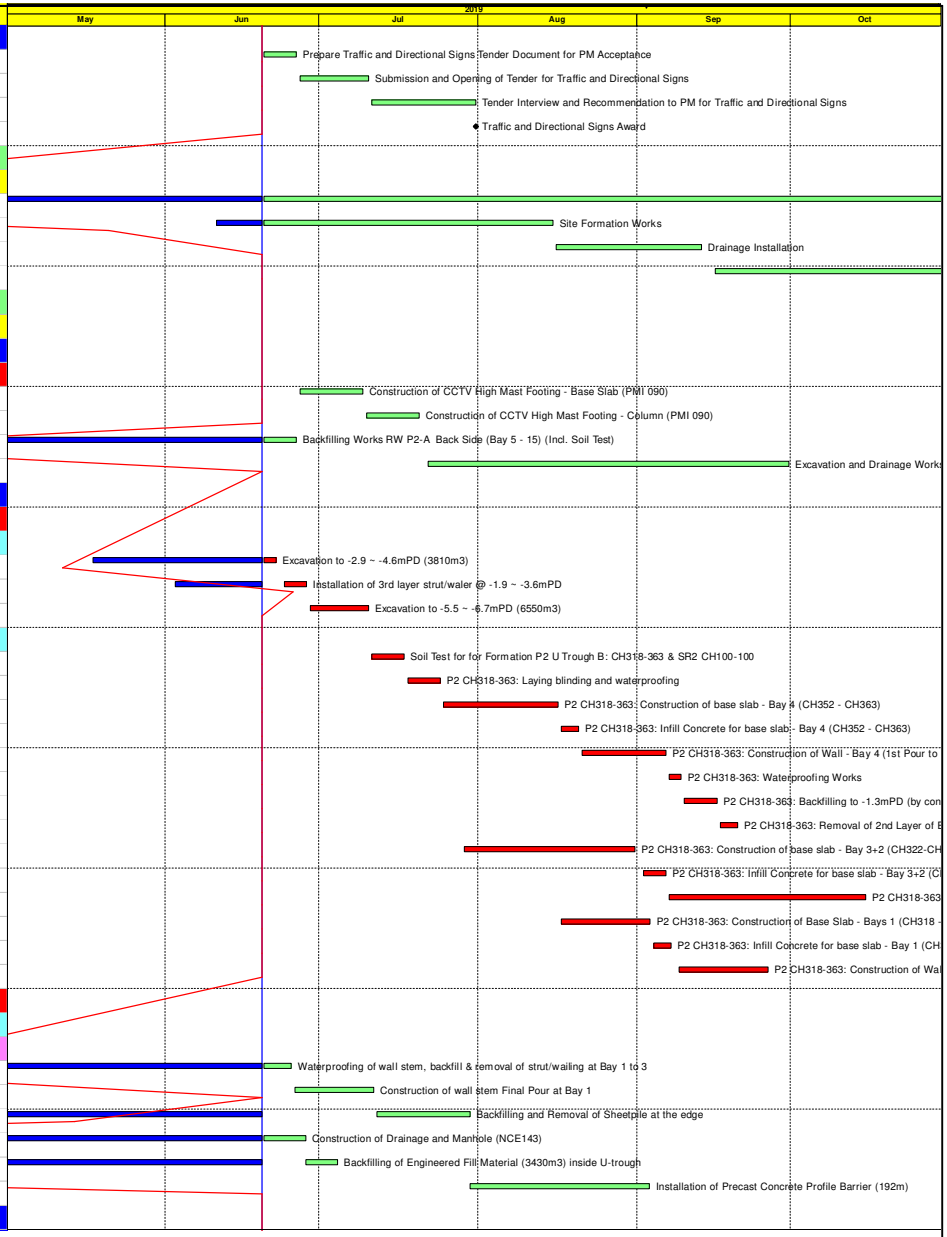
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
Traffic and Directional Signs		42	20-Jun-19	31-Jul-19		P2-Cal.A	372		
S17440	Prepare Traffic and Directional Signs Tender Document for PM Acceptance	7	20-Jun-19	26-Jun-19	0%	P2-Cal.A	372	K10000, LC11947	S17460
S17460	Submission and Opening of Tender for Traffic and Directional Signs	14	27-Jun-19	10-Jul-19	0%	P2-Cal.A	372	S17440	S17480
S17480	Tender Interview and Recommendation to PM for Traffic and Directional Signs	21	11-Jul-19	31-Jul-19	0%	P2-Cal.A	372	S17460	S17500
S17500	Traffic and Directional Signs Award	0		31-Jul-19	0%	P2-Cal.A	372	S17480	S14999
Section 2 of the Works (All Works Within Portion II)		205	20-Mar-19 A	26-Nov-19		P2-Cal.C	102		
Roadworks		205	20-Mar-19 A	26-Nov-19		P2-Cal.C	102		
LC12000	Removal of Treated Sediment Facilities	45	20-Mar-19 A	11-Nov-19	100%	P2-Cal.C	84		LC12050
LC12100	Site Formation Works	18	11-Jun-19 A	15-Aug-19	30%	P2-Cal.C	102	LC12050	LC12150
LC12150	Drainage Installation	25	16-Aug-19	13-Sep-19	0%	P2-Cal.C	102	LC12100	LC12200
LC12200	Profile Barrier/Utilities Trough Construction	60	16-Sep-19	26-Nov-19	0%	P2-Cal.C	102	LC12150	LC12250
Section 3 of the Works All Works within Portion IV, V, VI, VII,VIII, and IX		676	06-Jan-18 A	07-Dec-19			954		
Existing Land Section		480	06-Apr-18 A	15-Oct-19			182		
Retaining Wall P2-A CH 500- 650		209	07-Aug-18 A	30-Sep-19		P2-Cal.C	97		
Bay 5-15		209	07-Aug-18 A	30-Sep-19		P2-Cal.C	97		
LC11972-1	Construction of CCTV High Mast Footing - Base Slab (PMI 090)	10	27-Jun-19	09-Jul-19	0%	P2-Cal.C	97	LC11988	LC11972-2
LC11972-2	Construction of CCTV High Mast Footing - Column (PMI 090)	10	10-Jul-19	20-Jul-19	0%	P2-Cal.C	97	LC11972-1	LC11989
LC11988	Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)	35	07-Aug-18 A	26-Jun-19	91%	P2-Cal.C	97	LC11987	LC11990, LC11972-1
LC11989	Excavation and Drainage Works (Bay 1 - 15)	60	22-Jul-19	30-Sep-19	0%	P2-Cal.C	97	S17108, LC11987, LC11972-2	K10280, LC11990,
P2 Road		443	06-Apr-18 A	15-Oct-19			182		
P2 CH 318 - 363		169	18-May-19 A	15-Oct-19			-71		
ELS P2 CH318-363 & SR2 CH100-110		58	18-May-19 A	10-Jul-19		P2-Cal.C	-81		
LC12961	Excavation to -2.9 ~ -4.6mPD (3810m3)	5	18-May-19 A	22-Jun-19	89.58%	P2-Cal.C	-81	LC12959	LC12962
LC12962	Installation of 3rd layer strut/waler @ -1.9 ~ -3.6mPD	7	03-Jun-19 A	28-Jun-19	26.5%	P2-Cal.C	-81	LC12961	LC12964
LC12964	Excavation to -5.5 ~ -6.7mPD (6550m3)	9	29-Jun-19	10-Jul-19	0%	P2-Cal.C	-81	LC12962	LC09010, LC09000
Structure P2 CH 318 - 363 & SR2 CH100-110 (U Trough B)		97	11-Jul-19	15-Oct-19			-71		
LC09000	Soil Test for for Formation P2 U Trough B: CH318-363 & SR2 CH100-100	6	11-Jul-19	17-Jul-19	0%	P2-Cal.C	-81	LC12964	LC09010
LC09010	P2 CH318-363: Laying blinding and waterproofing	6	18-Jul-19	24-Jul-19	0%	P2-Cal.C	-81	LC12964, LC09000	LC09600, LC09300,
LC09020	P2 CH318-363: Construction of base slab - Bay 4 (CH352 - CH363)	20	25-Jul-19	16-Aug-19	0%	P2-Cal.C	-81	LC09010	LC09300, LC09600,
LC09025	P2 CH318-363: Infill Concrete for base slab - Bay 4 (CH352 - CH363)	4	17-Aug-19	20-Aug-19	0%	P2-Cal.A	-96	LC09020	LC09050, LC09630
LC09050	P2 CH318-363: Construction of Wall - Bay 4 (1st Pour to -1.0mPD) (CH352 - CH363)	15	21-Aug-19	06-Sep-19	0%	P2-Cal.C	-80	LC09025	LC09090, LC09060,
LC09060	P2 CH318-363: Waterproofing Works	2	07-Sep-19	09-Sep-19	0%	P2-Cal.C	-67	LC09050	LC09070, LC09110,
LC09070	P2 CH318-363: Backfilling to -1.3mPD (by concrete)	5	10-Sep-19	16-Sep-19	0%	P2-Cal.C	-67	LC09060	LC09080
LC09080	P2 CH318-363: Removal of 2nd Layer of ELS	4	17-Sep-19	20-Sep-19	0%	P2-Cal.C	-67	LC09070	LC09090
LC09300	P2 CH318-363: Construction of base slab - Bay 3+2 (CH322-CH352)	30	29-Jul-19	31-Aug-19	0%	P2-Cal.C	-58	LC09010, LC09020, LC09010	LC09330
LC09330	P2 CH318-363: Infill Concrete for base slab - Bay 3+2 (CH322-CH352)	5	02-Sep-19	06-Sep-19	0%	P2-Cal.C	-58	LC09300	LC09340
LC09340	P2 CH318-363: Construction of Wall - Bay 3+2 (1st Pour to -1.0mPD) (CH322 - CH352)	30	07-Sep-19	15-Oct-19	0%	P2-Cal.C	-58	LC09330	LC09350, LC09350
LC09600	P2 CH318-363: Construction of Base Slab - Bays 1 (CH318 - CH332)	15	17-Aug-19	03-Sep-19	0%	P2-Cal.C	-81	LC09010, S14128, LC09020	LC09630
LC09630	P2 CH318-363: Infill Concrete for base slab - Bay 1 (CH318-CH332)	4	04-Sep-19	07-Sep-19	0%	P2-Cal.C	-81	LC09600, LC09025	LC09640
LC09640	P2 CH318-363: Construction of Wall - Bay 1 (1st Pour to -1.0mPD) (CH318 - CH332)	15	09-Sep-19	26-Sep-19	0%	P2-Cal.C	-81	LC09630, LC09050	LC09650, LC09650
P2 CH 411- 500		327	06-Apr-18 A	03-Sep-19		P2-Cal.C	179		
Structure P2 CH 411 - 500 (U Trough A)		327	06-Apr-18 A	03-Sep-19		P2-Cal.C	179		
Wall Stem		327	06-Apr-18 A	03-Sep-19		P2-Cal.C	179		
LC1518	Waterproofing of wall stem, backfill & removal of strut/wailing at Bay 1 to 3	30	17-Dec-18 A	25-Jun-19	100%	P2-Cal.C	179	LC15150, LC15160	LC15230
LC1523	Construction of wall stem Final Pour at Bay 1	13	26-Jun-19	11-Jul-19	0%	P2-Cal.C	179	LC15185, LC15235	LC15240
LC1524	Backfilling and Removal of Sheetpile at the edge	30	19-Mar-19 A	30-Jul-19	50%	P2-Cal.C	179	LC15230, LC15235, LC15190	LC15270
LC1525	Construction of Drainage and Manhole (NCE143)	60	06-Apr-18 A	28-Jun-19	87.5%	P2-Cal.C	201	S17180, S17108, S17340, LC15150,	LC15260
LC1526	Backfilling of Engineered Fill Material (3430m3) inside U-trough	15	15-May-18 A	04-Jul-19	70.7%	P2-Cal.C	201	LC15250	LC15270
LC1527	Installation of Precast Concrete Profile Barrier (192m)	30	30-Jul-19	03-Sep-19	0%	P2-Cal.C	179	LC15260, LC15240	LC17560
SR2		373	28-May-18 A	23-Sep-19		P2-Cal.C	163		



Actual Work
Remaining Work
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Milestone

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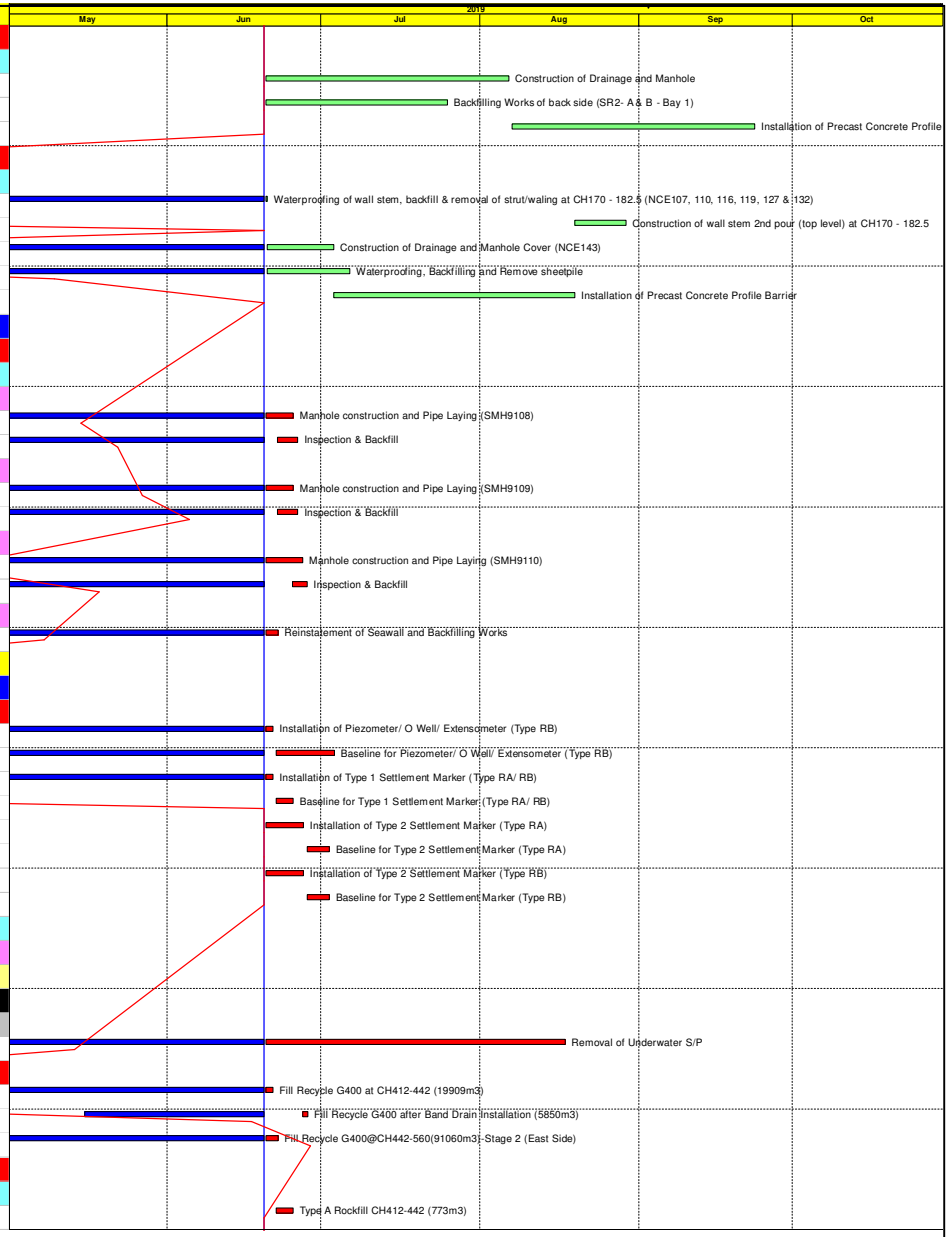
3 Month Rolling Programme Update
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
	Retaining Wall SR2-A & B CH250 - 310	80	20-Jun-19	23-Sep-19		P2-Cal.C	163		
	Retaining Wall SR2-B	80	20-Jun-19	23-Sep-19		P2-Cal.C	163		
LC16860	Construction of Drainage and Manhole	40	20-Jun-19	06-Aug-19	0%	P2-Cal.C	163	LC16620	LC16880
LC16865	Backfilling Works of back side (SR2- A & B - Bay 1)	30	20-Jun-19	25-Jul-19	0%	P2-Cal.C	173	LC16620	LC16880
LC16880	Installation of Precast Concrete Profile Barrier	40	07-Aug-19	23-Sep-19	0%	P2-Cal.C	163	LC16860, LC16865	LC17590
	SR2 CH170 - 250	353	28-May-18 A	29-Aug-19		P2-Cal.C	183		
	Structure SR2 CH 170 - 250 (U Trough A)	353	28-May-18 A	29-Aug-19		P2-Cal.C	183		
LC17340	Waterproofing of wall stem, backfill & removal of strut/waling at CH170 - 182.5 (NCE107, 110, 116, 119, 127 & 132)	10	28-May-18 A	20-Jun-19	97%	P2-Cal.C	183	LC17310, LC17315, LC17320, LC17325,	LC17385, LC17345,
LC17395	Construction of wall stem 2nd pour (top level) at CH170 - 182.5	9	19-Aug-19	29-Aug-19	0%	P2-Cal.C	183	LC17520	LC17590
LC17400	Construction of Drainage and Manhole Cover (NCE143)	40	28-Jun-18 A	03-Jul-19	75%	P2-Cal.C	183	LC17390	LC17520
LC17510	Waterproofing, Backfilling and Remove sheetpile	40	28-Feb-19 A	06-Jul-19	66.7%	P2-Cal.C	229	LC17390	LC17590
LC17520	Installation of Precast Concrete Profile Barrier	40	03-Jul-19	19-Aug-19	0%	P2-Cal.C	183	LC17390, LC17400	LC17590, LC17395
	Portion IV & VII	63	28-Feb-19 A	28-Jun-19		P2-Cal.C	-60		
	Construction of DN2100 stormwater at Portion IV & VII	63	28-Feb-19 A	28-Jun-19		P2-Cal.C	-60		
	Drainage works	63	28-Feb-19 A	28-Jun-19		P2-Cal.C	-60		
	SMH9107-SMH9108	24	20-Mar-19 A	26-Jun-19		P2-Cal.C	-59		
LC1769	Manhole construction and Pipe Laying (SMH9108)	16	20-Mar-19 A	25-Jun-19	77%	P2-Cal.C	-59	LC17695, LC17695-01	LC17698
LC1769	Inspection & Backfill	14	04-Apr-19 A	26-Jun-19	86%	P2-Cal.C	-59	LC17696	LC17717
	SMH9108-SMH9109	26	01-Apr-19 A	26-Jun-19		P2-Cal.C	-59		
LC1770	Manhole construction and Pipe Laying (SMH9109)	16	01-Apr-19 A	25-Jun-19	80%	P2-Cal.C	-59	LC17701, LC17701-01	LC17704
LC1770	Inspection & Backfill	14	18-Apr-19 A	26-Jun-19	83%	P2-Cal.C	-59	LC17702	LC17717
	SMH9109-SMH9110	47	28-Feb-19 A	28-Jun-19		P2-Cal.C	-60		
LC1770	Manhole construction and Pipe Laying (SMH9110)	16	28-Feb-19 A	27-Jun-19	75%	P2-Cal.C	-60	LC17707, LC17707-01	LC17710
LC1771	Inspection & Backfill	14	13-Mar-19 A	28-Jun-19	84%	P2-Cal.C	-60	LC17708	LC17717
	SMH9110-Outfall	30	02-Mar-19 A	22-Jun-19		P2-Cal.C	-56		
LC1771	Reinstatement of Seawall and Backfilling Works	30	02-Mar-19 A	22-Jun-19	90%	P2-Cal.C	-56	LC17715, LC17714	LC17717
	New Reclaimed Section	676	06-Jan-18 A	07-Dec-19			954		
	Marine Works	676	06-Jan-18 A	07-Dec-19			954		
	Initial Works	265	03-May-18 A	17-Aug-19		P2-Cal.C	-97		
MC10060	Installation of Piezometer/ O Well/ Extensometer (Type RB)	7	28-Jun-18 A	21-Jun-19	70%	P2-Cal.C	-78	MC12883	MC10070
MC10070	Baseline for Piezometer/ O Well/ Extensometer (Type RB)	10	03-Jul-18 A	03-Jul-19	85%	P2-Cal.C	-78	MC10060	MC12915
MC10080	Installation of Type 1 Settlement Marker (Type RA/ RB)	7	03-May-18 A	21-Jun-19	80%	P2-Cal.C	-72	MC12163	MC10120, MC10050
MC10120	Baseline for Type 1 Settlement Marker (Type RA/ RB)	3	22-Jun-19	25-Jun-19	0%	P2-Cal.C	-72	MC10080	MC12915
MC10156	Installation of Type 2 Settlement Marker (Type RA)	7	20-Jun-19	27-Jun-19	0%	P2-Cal.C	-77	MC10500, B30480, MC10844, MC10855	MC10160, MC10170
MC10160	Baseline for Type 2 Settlement Marker (Type RA)	3	28-Jun-19	02-Jul-19	0%	P2-Cal.C	-77	MC10156	MC12915
MC10170	Installation of Type 2 Settlement Marker (Type RB)	7	20-Jun-19	27-Jun-19	0%	P2-Cal.C	-77	MC12885, MC10156	MC10175
MC10175	Baseline for Type 2 Settlement Marker (Type RB)	3	28-Jun-19	02-Jul-19	0%	P2-Cal.C	-77	MC10170	MC12915
	Steel Cofferdam and Water Gate	60	02-Apr-19 A	17-Aug-19		P2-Cal.C	-97		
	Steel Cofferdam Installation	60	02-Apr-19 A	17-Aug-19		P2-Cal.C	-97		
	Reinstatement works	60	02-Apr-19 A	17-Aug-19		P2-Cal.C	-97		
	Type 1	60	02-Apr-19 A	17-Aug-19		P2-Cal.C	-97		
	Removal of S/P at transition zone	60	02-Apr-19 A	17-Aug-19		P2-Cal.C	-97		
M	Removal of Underwater S/P	60	02-Apr-19 A	17-Aug-19	0%	P2-Cal.C	-97	MC10304-01, MC10461, MC10490	MC14095
	Filling of Recycle G400 Rock at Dredged Trench	175	13-Nov-18 A	28-Jun-19		P2-Cal.C	-103		
MC11205	Fill Recycle G400 at CH412-442 (19909m3)	10	13-Nov-18 A	21-Jun-19	100%	P2-Cal.C	-108	MC11185, MC11015	MC11305, MC11228,
MC11228	Fill Recycle G400 after Band Drain Installation (5850m3)	6	16-May-19 A	28-Jun-19	100%	P2-Cal.C	-106	MC12215-1, MC12225-1,	MC11318
MC11245	Fill Recycle G400@CH442-560(91060m3)-Stage 2 (East Side)	43	16-Mar-19 A	22-Jun-19	70%	P2-Cal.C	-99	MC11035	MC11585, MC12495,
	Construction of Seawall Foundation (Dredged Area)	37	10-May-19 A	06-Jul-19		P2-Cal.C	899		
	Laying of Type A Rockfill (Base)	8	22-Jun-19	02-Jul-19		P2-Cal.C	902		
MC11305	Type A Rockfill CH412-442 (773m3)	3	22-Jun-19	25-Jun-19	0%	P2-Cal.C	-108	MC11205, MC11295	MC11315, MC11395



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3 Month Rolling Programme Update

(Data Date : 20 Jun 2019)

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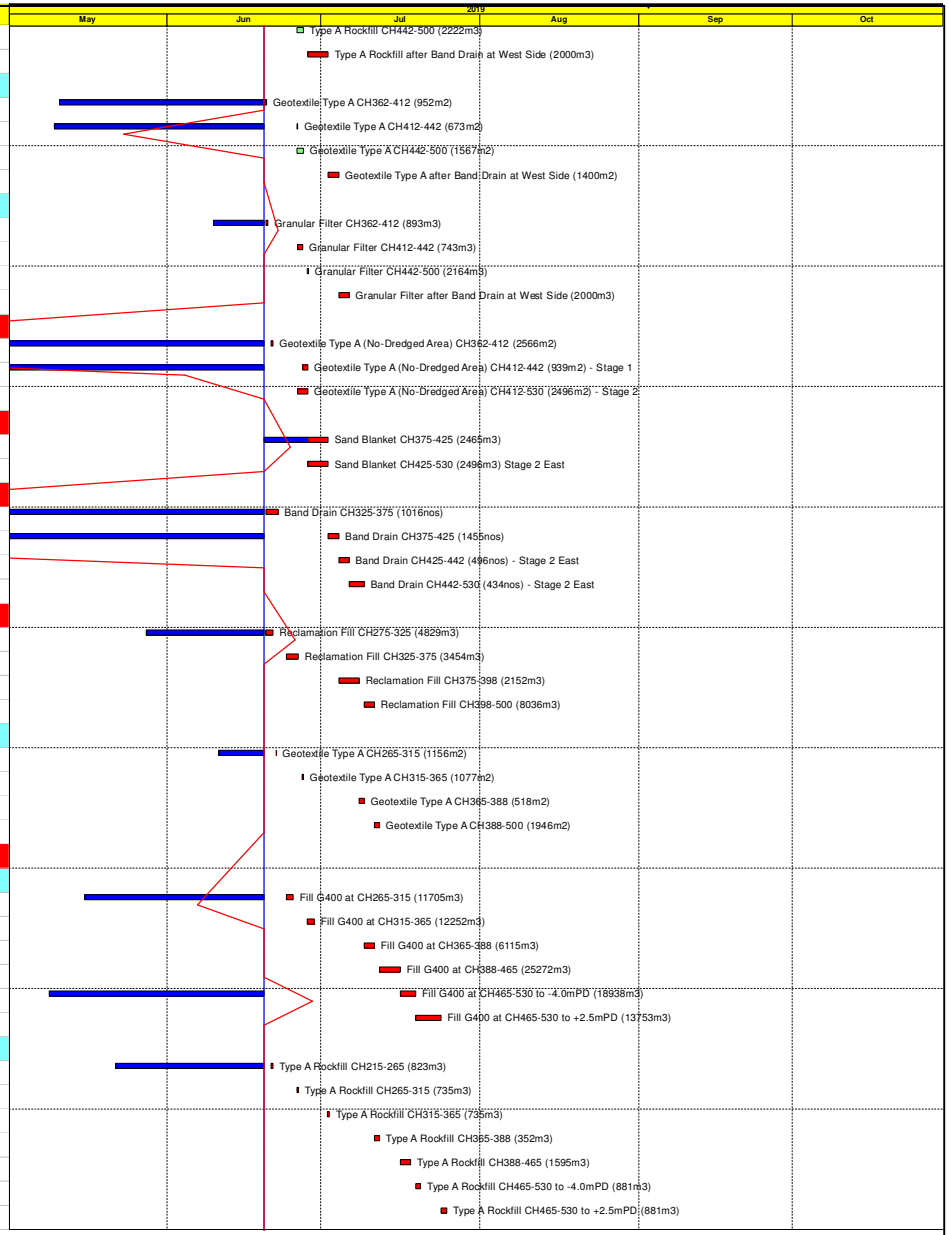
MC11315	Type A Rockfill CH442-500 (2222m3)	2	26-Jun-19	27-Jun-19	0%	P2-Cal.C	904	MC11245, MC11305, MC11225	MC11405
MC11318	Type A Rockfill after Band Drain at West Side (2000m3)	2	28-Jun-19	02-Jul-19	0%	P2-Cal.C	-106	MC11228	MC11408
Laying of Geotextile Type A (Base)		35	10-May-19 A	04-Jul-19		P2-Cal.C	900		
MC11385	Geotextile Type A CH362-412 (952m2)	1	11-May-19 A	20-Jun-19 A	100%	P2-Cal.C		MC11295, MC11375	MC11475, MC11395
MC11395	Geotextile Type A CH412-442 (673m2)	1	10-May-19 A	26-Jun-19	50%	P2-Cal.C	-108	MC11305, MC11385	MC11485, MC11405,
MC11405	Geotextile Type A CH442-500 (1567m2)	2	26-Jun-19	27-Jun-19	0%	P2-Cal.C	904	MC11395, MC11315	MC11495
MC11408	Geotextile Type A after Band Drain at West Side (1400m2)	2	02-Jul-19	04-Jul-19	0%	P2-Cal.C	-106	MC11318	MC11498
Laying of Granular Filter (Base)		11	10-Jun-19 A	06-Jul-19		P2-Cal.C	899		
MC11475	Granular Filter CH362-412 (893m3)	1	10-Jun-19 A	20-Jun-19	50%	P2-Cal.C	-102	MC11465, MC11465, MC11385	MC12065, MC11485,
MC11485	Granular Filter CH412-442 (743m3)	1	26-Jun-19	27-Jun-19	0%	P2-Cal.C	-106	MC11475, MC11395	MC11495, MC12075 - 1,
MC11495	Granular Filter CH442-500 (2164m3)	1	28-Jun-19	28-Jun-19	0%	P2-Cal.C	904	MC11485, MC11405	MC12085-1, MC12085-1
MC11498	Granular Filter after Band Drain at West Side (2000m3)	2	04-Jul-19	06-Jul-19	0%	P2-Cal.C	-106	MC11408	MC12405
Laying Geotextile Type A		142	06-Aug-18 A	28-Jun-19		P2-Cal.C	-106		
MC12065	Geotextile Type A (No-Dredged Area) CH362-412 (2566m2)	4	06-Aug-18 A	21-Jun-19	100%	P2-Cal.C	-102	MC12055, MC11475,	MC12135, MC12075 - 1
MC12075 - 1	Geotextile Type A (No-Dredged Area) CH412-442 (939m2) - Stage 1	3	23-Mar-19 A	28-Jun-19	100%	P2-Cal.C	-106	MC12065, MC11485	MC12145-1
MC12075 - 2	Geotextile Type A (No-Dredged Area) CH412-530 (2496m2) - Stage 2	2	26-Jun-19	28-Jun-19	0%	P2-Cal.C	-108	MC11395, MC11905, MC11485	MC12155-1, MC12145-2,
Placing Sand Blanket (Non-Dredged Area)		7	20-Jun-19 A	02-Jul-19		P2-Cal.C	-106		
MC12135	Sand Blanket CH375-425 (2465m3)	5	20-Jun-19 A	02-Jul-19	20%	P2-Cal.C	-108	MC12125, MC12065, MC12075	MC12205, MC12515
MC12145-2	Sand Blanket CH425-530 (2496m3) Stage 2 East	2	28-Jun-19	02-Jul-19	0%	P2-Cal.C	-106	MC12075 - 2	MC12215-2
Installation of Band Drain (Non-Dredged Area)		153	30-Oct-18 A	09-Jul-19		P2-Cal.C	-108		
MC12195	Band Drain CH325-375 (1016nos)	7	30-Oct-18 A	22-Jun-19	25.9%	P2-Cal.C	-101	MC12125	MC12385, MC12205,
MC12205	Band Drain CH375-425 (1455nos)	10	06-Nov-18 A	04-Jul-19	40.3%	P2-Cal.C	-108	MC12135, MC12195	MC12395, MC12405,
MC12215-2	Band Drain CH425-442 (496nos) - Stage 2 East	2	04-Jul-19	06-Jul-19	0%	P2-Cal.C	-108	MC12145-1, MC12205,	MC12405, MC12225-2
MC12225-2	Band Drain CH442-530 (434nos) - Stage 2 East	2	06-Jul-19	09-Jul-19	0%	P2-Cal.C	-108	MC12215-2	MC12405
Filling of Reclamation Fill to Seabed Level		18	28-May-19 A	12-Jul-19		P2-Cal.C	-108		
MC12375	Reclamation Fill CH275-325 (4829m3)	5	28-May-19 A	21-Jun-19	80%	P2-Cal.C	-100	MC12365, MC11275	MC12385, MC12455,
MC12385	Reclamation Fill CH325-375 (3454m3)	3	24-Jun-19	26-Jun-19	0%	P2-Cal.C	-101	MC12375, MC12195	MC12395, MC12465,
MC12395	Reclamation Fill CH375-398 (2152m3)	3	04-Jul-19	08-Jul-19	0%	P2-Cal.C	-107	MC12385, MC12205	MC12475, MC12485,
MC12405	Reclamation Fill CH398-500 (8036m3)	2	09-Jul-19	11-Jul-19	0%	P2-Cal.C	-108	MC11498, MC12205,	MC12485, MC12525
Laying of Geotextile Type A on Top of Reclamation Fill		18	11-Jun-19 A	12-Jul-19		P2-Cal.C	-108		
MC12455	Geotextile Type A CH265-315 (1156m2)	1	11-Jun-19 A	22-Jun-19	90%	P2-Cal.C	-97	MC12445, MC12365, MC12375	MC12465, MC11545
MC12465	Geotextile Type A CH315-365 (1077m2)	1	27-Jun-19	27-Jun-19	0%	P2-Cal.C	-100	MC12455, MC12375, MC12385	MC12475, MC11555
MC12475	Geotextile Type A CH365-388 (518m2)	1	08-Jul-19	09-Jul-19	0%	P2-Cal.C	-107	MC12465, MC12385, MC12395	MC12485, MC11565
MC12485	Geotextile Type A CH388-500 (1946m2)	1	11-Jul-19	12-Jul-19	0%	P2-Cal.C	-108	MC12475, MC12405, MC12395	MC11575, MC11585
Construction of Eastern Seawall Up to +2.5mPD		49	09-May-19 A	27-Jul-19		P2-Cal.C	-103		
Filling of G400 Rock as East Seawall Core (+2.5mPD)		49	09-May-19 A	24-Jul-19		P2-Cal.C	-103		
MC11545	Fill G400 at CH265-315 (11705m3)	7	16-May-19 A	25-Jun-19	0%	P2-Cal.C	-98	MC11535, MC12455,	MC11555, MC11645
MC11555	Fill G400 at CH315-365 (12252m3)	2	28-Jun-19	29-Jun-19	0%	P2-Cal.C	-100	MC11545, MC12465	MC11565, MC11655
MC11565	Fill G400 at CH365-388 (6115m3)	2	09-Jul-19	11-Jul-19	0%	P2-Cal.C	-107	MC12475, MC11555	MC11575, MC11665
MC11575	Fill G400 at CH388-465 (25272m3)	3	12-Jul-19	16-Jul-19	0%	P2-Cal.C	-108	MC11565, MC12485	MC11675, MC11585
MC11585	Fill G400 at CH465-530 to -4.0mPD (18938m3)	7	09-May-19 A	19-Jul-19	0%	P2-Cal.C	-103	MC12485, MC11575, MC11245	MC11685, MC11595
MC11595	Fill G400 at CH465-530 to +2.5mPD (13753m3)	4	19-Jul-19	24-Jul-19	0%	P2-Cal.C	-103	MC11585	MC11695, MC13875
Laying of Type A Rockfill as East Seawall Core (+2.5mPD)		29	22-May-19 A	25-Jul-19		P2-Cal.C	-103		
MC11635	Type A Rockfill CH215-265 (823m3)	1	22-May-19 A	21-Jun-19	60%	P2-Cal.C	-95	MC11625, MC11535,	MC11645, MC11735
MC11645	Type A Rockfill CH265-315 (735m3)	1	26-Jun-19	26-Jun-19	0%	P2-Cal.C	-97	MC11635, MC11545	MC11655, MC11745
MC11655	Type A Rockfill CH315-365 (735m3)	1	02-Jul-19	02-Jul-19	0%	P2-Cal.C	-99	MC11645, MC11555	MC11665, MC11755
MC11665	Type A Rockfill CH365-388 (352m3)	1	11-Jul-19	12-Jul-19	0%	P2-Cal.C	-107	MC11655, MC11565	MC11675, MC11765
MC11675	Type A Rockfill CH388-465 (1595m3)	2	16-Jul-19	18-Jul-19	0%	P2-Cal.C	-108	MC11665, MC11575	MC11775, MC11685
MC11685	Type A Rockfill CH465-530 to -4.0mPD (881m3)	1	19-Jul-19	20-Jul-19	0%	P2-Cal.C	-101	MC11585, MC11675	MC11785, MC11695
MC11695	Type A Rockfill CH465-530 to +2.5mPD (881m3)	1	24-Jul-19	25-Jul-19	0%	P2-Cal.C	-103	MC11595, MC11685	MC11795



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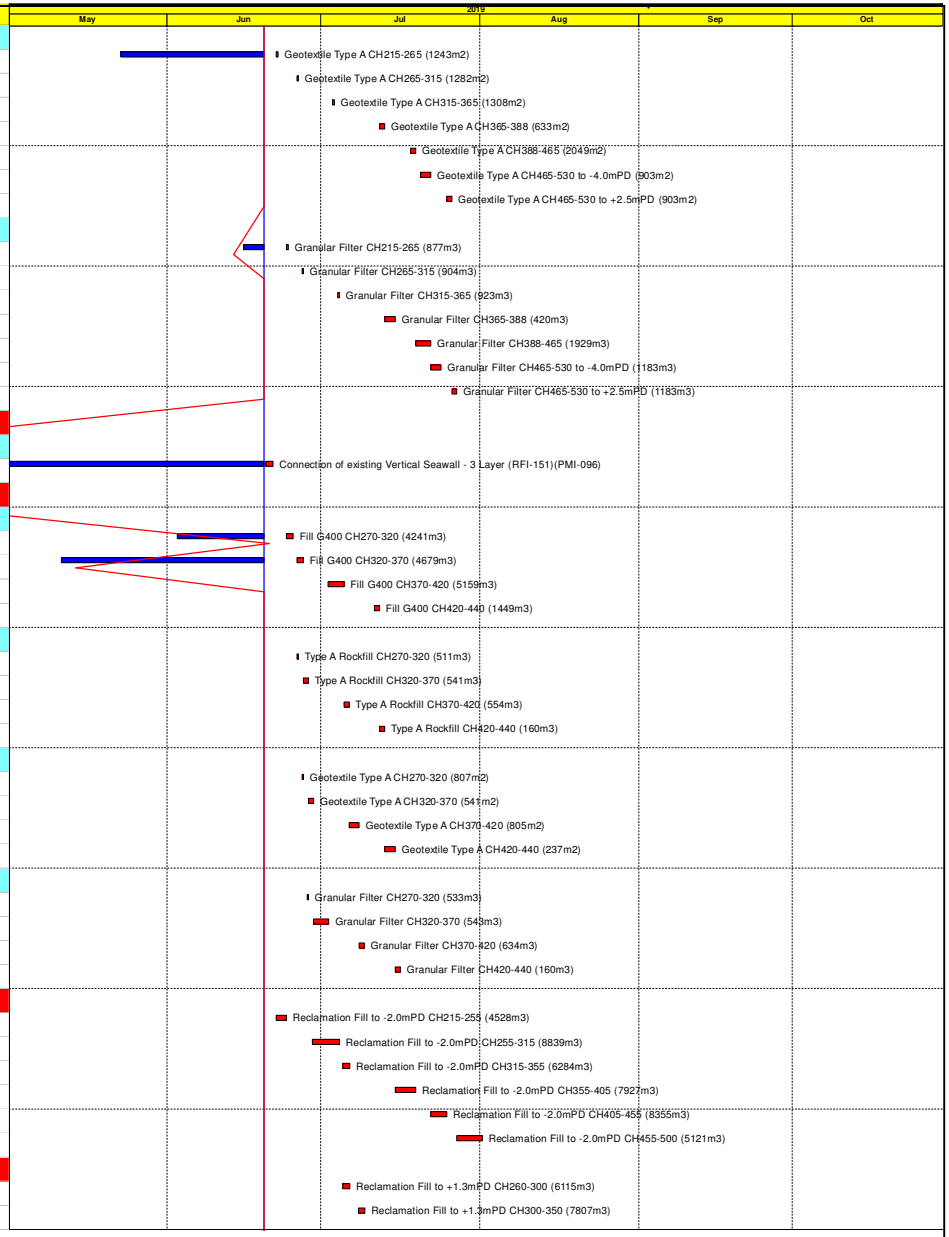
Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
	Laying of Geotextile Type A as East Seawall Core (+2.5mPD)	29	23-May-19 A	26-Jul-19		P2-Cal.C	-103		
MC11735	Geotextile Type A CH215-265 (1243m2)	1	23-May-19 A	22-Jun-19	60%	P2-Cal.C	-95	MC11725, MC11635	MC11745, MC11835
MC11745	Geotextile Type A CH265-315 (1282m2)	1	26-Jun-19	26-Jun-19	0%	P2-Cal.C	-97	MC11735, MC11645	MC11755, MC11845
MC11755	Geotextile Type A CH315-365 (1308m2)	1	03-Jul-19	03-Jul-19	0%	P2-Cal.C	-99	MC11745, MC11655	MC11765, MC11855
MC11765	Geotextile Type A CH365-388 (633m2)	1	12-Jul-19	13-Jul-19	0%	P2-Cal.C	-107	MC11755, MC11665	MC11775, MC11865
MC11775	Geotextile Type A CH388-465 (2049m2)	1	18-Jul-19	19-Jul-19	0%	P2-Cal.C	-108	MC11765, MC11675	MC11875, MC11795
MC11785	Geotextile Type A CH465-530 to -4.0mPD (903m2)	1	20-Jul-19	22-Jul-19	0%	P2-Cal.C	-101	MC11685, MC11775	MC11795, MC11885
MC11795	Geotextile Type A CH465-530 to +2.5mPD (903m2)	1	25-Jul-19	26-Jul-19	0%	P2-Cal.C	-103	MC11695, MC11785	MC11895
	Laying of Granular Filter as East Seawall Core (+2.5mPD)	35	16-Jun-19 A	27-Jul-19		P2-Cal.C	-103		
MC11835	Granular Filter CH215-265 (877m3)	1	16-Jun-19 A	24-Jun-19	40%	P2-Cal.C	-95	MC11825, MC11735	MC11845, MC12675
MC11845	Granular Filter CH265-315 (904m3)	1	27-Jun-19	27-Jun-19	0%	P2-Cal.C	-97	MC11835, MC11745	MC11855, MC12675-01
MC11855	Granular Filter CH315-365 (923m3)	1	04-Jul-19	04-Jul-19	0%	P2-Cal.C	-99	MC11845, MC11755	MC11865, MC12685
MC11865	Granular Filter CH365-388 (420m3)	1	13-Jul-19	15-Jul-19	0%	P2-Cal.C	-107	MC11855, MC11765	MC11875, MC12685-01
MC11875	Granular Filter CH388-465 (1929m3)	2	19-Jul-19	22-Jul-19	0%	P2-Cal.C	-108	MC11865, MC11775	MC11885, MC12695
MC11885	Granular Filter CH465-530 to -4.0mPD (1183m3)	2	22-Jul-19	24-Jul-19	0%	P2-Cal.C	-101	MC11785, MC11875	MC11895
MC11895	Granular Filter CH465-530 to +2.5mPD (1183m3)	1	26-Jul-19	27-Jul-19	0%	P2-Cal.C	-103	MC11795, MC11885	MC12915, MC12695-01
	Construction of Vertical Seawall	3	07-Dec-18 A	21-Jun-19		P2-Cal.C	-95		
	Construction of Vertical Seawall (Type 2 & 3)	3	07-Dec-18 A	21-Jun-19		P2-Cal.C	-95		
MC11950	Connection of existing Vertical Seawall - 3 Layer (RFI-151)(PMI-096)	3	07-Dec-18 A	21-Jun-19	0%	P2-Cal.C	-95	MC11945	MC11605
	Construction of Western Seawall Up to +1.3mPD	54	11-May-19 A	16-Jul-19		P2-Cal.C	-103		
	Filling of G400 Rock as West Seawall Core (+1.3mPD) (West)	51	11-May-19 A	12-Jul-19		P2-Cal.C	-103		
MC12495	Fill G400 CH270-320 (4241m3)	2	03-Jun-19 A	25-Jun-19	0%	P2-Cal.C	-99	MC12115, MC11245	MC12505, MC12535
MC12505	Fill G400 CH320-370 (4679m3)	2	11-May-19 A	27-Jun-19	60%	P2-Cal.C	-99	MC12495	MC12515, MC12545
MC12515	Fill G400 CH370-420 (5159m3)	3	02-Jul-19	05-Jul-19	0%	P2-Cal.C	-102	MC12505, MC12135	MC12525, MC12555
MC12525	Fill G400 CH420-440 (1449m3)	1	11-Jul-19	12-Jul-19	0%	P2-Cal.C	-103	MC12515, MC12405	MC12565
	Laying of Type A Rockfill as West Seawall Core (+1.3mPD)	15	26-Jun-19	13-Jul-19		P2-Cal.C	-103		
MC12535	Type A Rockfill CH270-320 (511m3)	1	26-Jun-19	26-Jun-19	0%	P2-Cal.C	-98	MC12495	MC12575, MC12545
MC12545	Type A Rockfill CH320-370 (541m3)	1	27-Jun-19	28-Jun-19	0%	P2-Cal.C	-97	MC12535, MC12505	MC12585, MC12555
MC12555	Type A Rockfill CH370-420 (554m3)	1	05-Jul-19	06-Jul-19	0%	P2-Cal.C	-102	MC12545, MC12515	MC12595, MC12565
MC12565	Type A Rockfill CH420-440 (160m3)	1	12-Jul-19	13-Jul-19	0%	P2-Cal.C	-103	MC12525, MC12555	MC12605
	Laying of Geotextile Type A as West Seawall Core (+1.3mPD)	15	27-Jun-19	15-Jul-19		P2-Cal.C	-103		
MC12575	Geotextile Type A CH270-320 (807m2)	1	27-Jun-19	27-Jun-19	0%	P2-Cal.C	-98	MC12535	MC12585, MC12615
MC12585	Geotextile Type A CH320-370 (541m2)	1	28-Jun-19	29-Jun-19	0%	P2-Cal.C	-97	MC12545, MC12575	MC12595, MC12625
MC12595	Geotextile Type A CH370-420 (805m2)	1	06-Jul-19	08-Jul-19	0%	P2-Cal.C	-102	MC12555, MC12585	MC12605, MC12635
MC12605	Geotextile Type A CH420-440 (237m2)	1	13-Jul-19	15-Jul-19	0%	P2-Cal.C	-103	MC12595, MC12565	MC12645
	Laying of Granular Filter as West Seawall Core (+1.3mPD)	15	28-Jun-19	16-Jul-19		P2-Cal.C	-103		
MC12615	Granular Filter CH270-320 (533m3)	1	28-Jun-19	28-Jun-19	0%	P2-Cal.C	-98	MC12575	MC12625, MC12675-01
MC12625	Granular Filter CH320-370 (543m3)	1	29-Jun-19	02-Jul-19	0%	P2-Cal.C	-97	MC12615, MC12585	MC12635, MC12685
MC12635	Granular Filter CH370-420 (634m3)	1	08-Jul-19	09-Jul-19	0%	P2-Cal.C	-102	MC12625, MC12595	MC12645, MC12695,
MC12645	Granular Filter CH420-440 (160m3)	1	15-Jul-19	16-Jul-19	0%	P2-Cal.C	-103	MC12635, MC12605	MC12695
	Filling of Reclamation Fill to -2.0mPD	34	22-Jun-19	01-Aug-19		P2-Cal.C	-103		
MC12675	Reclamation Fill to -2.0mPD CH215-255 (4528m3)	1	22-Jun-19	24-Jun-19	0%	P2-Cal.C	-93	MC11835, MC12655-01,	MC12905, MC12705,
MC12675-0	Reclamation Fill to -2.0mPD CH255-315 (8839m3)	4	29-Jun-19	04-Jul-19	0%	P2-Cal.C	-98	MC11845, MC12615, MC12675	MC12705, MC12705-01,
MC12685	Reclamation Fill to -2.0mPD CH315-355 (6284m3)	2	05-Jul-19	06-Jul-19	0%	P2-Cal.C	-98	MC12625, MC11855,	MC12715, MC12705-01
MC12685-0	Reclamation Fill to -2.0mPD CH355-405 (7927m3)	4	15-Jul-19	19-Jul-19	0%	P2-Cal.C	-107	MC11865, MC12635	MC12715
MC12695	Reclamation Fill to -2.0mPD CH405-455 (8355m3)	3	22-Jul-19	25-Jul-19	0%	P2-Cal.C	-108	MC12645, MC12635, MC11875	MC12725, MC12915
MC12695-0	Reclamation Fill to -2.0mPD CH455-500 (5121m3)	4	27-Jul-19	01-Aug-19	0%	P2-Cal.C	-103	MC11895	MC12915
	Filling of Reclamation Fill to -2.0 to +1.3mPD	23	05-Jul-19	31-Jul-19		P2-Cal.C	-108		
MC12705	Reclamation Fill to +1.3mPD CH260-300 (6115m3)	2	05-Jul-19	06-Jul-19	0%	P2-Cal.C	-95	MC12675, MC12675-01	MC12735, MC12755
MC12705-0	Reclamation Fill to +1.3mPD CH300-350 (7807m3)	2	08-Jul-19	09-Jul-19	0%	P2-Cal.C	-98	MC12685, MC12675-01	MC12715, MC12735-01



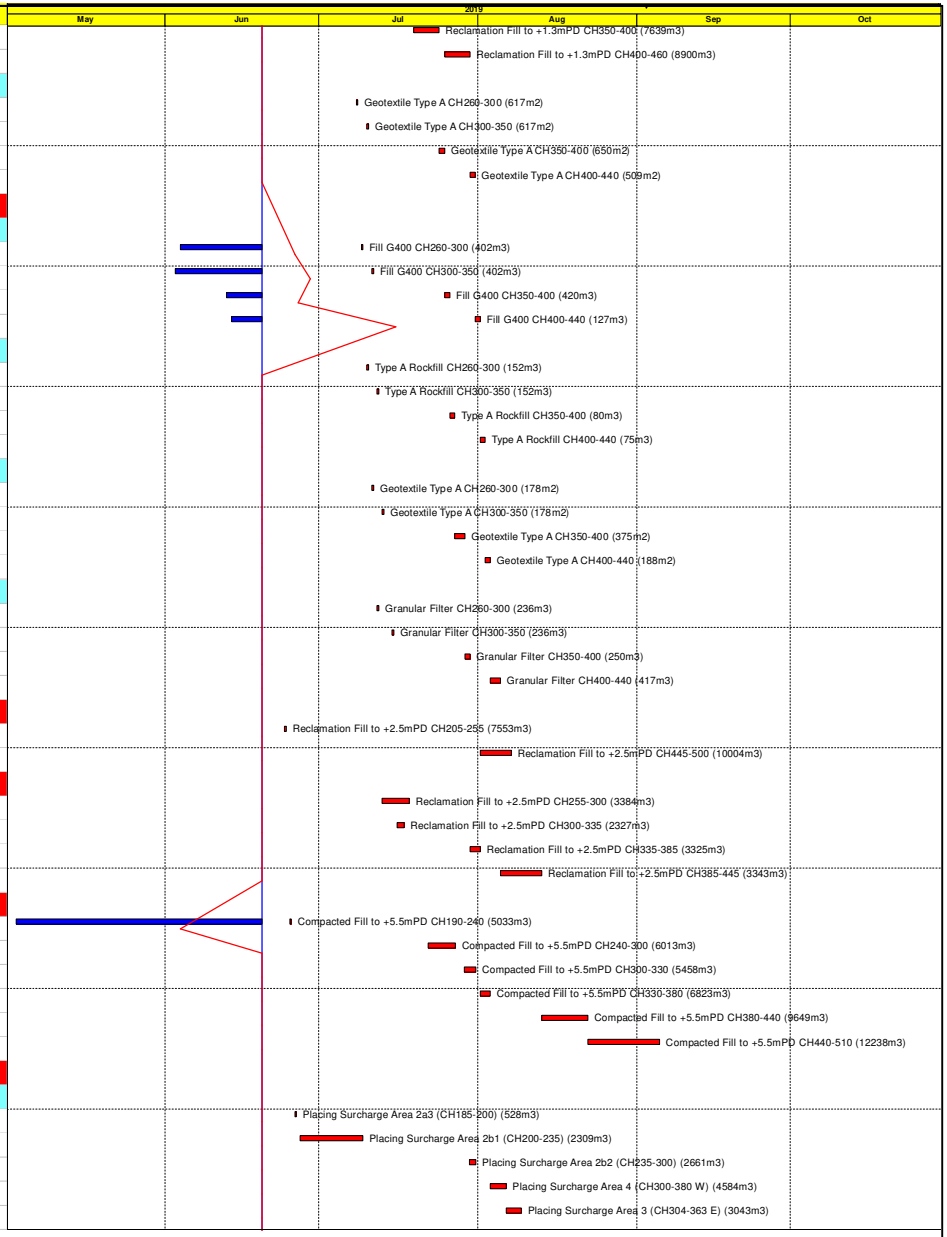
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
MC12715	Reclamation Fill to +1.3mPD CH350-400 (7639m3)	4	19-Jul-19	24-Jul-19	0%	P2-Cal.C	-107	MC12685, MC12685-01,	MC12745, MC12725
MC12725	Reclamation Fill to +1.3mPD CH400-460 (8900m3)	4	25-Jul-19	30-Jul-19	0%	P2-Cal.C	-108	MC12715, MC12695	MC12755
Laying Geotextile Type A at West Side		21	08-Jul-19	31-Jul-19		P2-Cal.C	-108		
MC12735	Geotextile Type A CH260-300 (617m2)	1	08-Jul-19	08-Jul-19	0%	P2-Cal.C	-95	MC12705	MC12765
MC12735	Geotextile Type A CH300-350 (617m2)	1	10-Jul-19	10-Jul-19	0%	P2-Cal.C	-94	MC12705-01	MC12745, MC12765-01
MC12745	Geotextile Type A CH350-400 (650m2)	1	24-Jul-19	25-Jul-19	0%	P2-Cal.C	-105	MC12715, MC12735-01	MC12775
MC12755	Geotextile Type A CH400-440 (509m2)	1	30-Jul-19	31-Jul-19	0%	P2-Cal.C	-108	MC12705, MC12725	MC12785
Construction of Western Seawall Up to +2.5mPD		46	03-Jun-19 A	05-Aug-19		P2-Cal.C	-108		
Filling of G400 Rock as West Seawall Core (+2.5mPD)		40	03-Jun-19 A	01-Aug-19		P2-Cal.C	-108		
MC12765	Fill G400 CH260-300 (402m3)	1	04-Jun-19 A	09-Jul-19	50%	P2-Cal.C	-95	MC12735, MC11245	MC12795
MC12765	Fill G400 CH300-350 (402m3)	1	03-Jun-19 A	11-Jul-19	50%	P2-Cal.C	-94	MC12735-01	MC12775, MC12795-01
MC12775	Fill G400 CH350-400 (420m3)	1	13-Jun-19 A	26-Jul-19	50%	P2-Cal.C	-105	MC12745, MC12765-01	MC12785, MC12805
MC12785	Fill G400 CH400-440 (127m3)	1	14-Jun-19 A	01-Aug-19	50%	P2-Cal.C	-108	MC12775, MC12755	MC12815
Laying of Type A Rockfill as West Seawall Core (+2.5mPD)		21	10-Jul-19	02-Aug-19		P2-Cal.C	-108		
MC12795	Type A Rockfill CH260-300 (152m3)	1	10-Jul-19	10-Jul-19	0%	P2-Cal.C	-95	MC12765	MC12825
MC12795	Type A Rockfill CH300-350 (152m3)	1	12-Jul-19	12-Jul-19	0%	P2-Cal.C	-94	MC12765-01	MC12805, MC12825-01
MC12805	Type A Rockfill CH350-400 (80m3)	1	26-Jul-19	27-Jul-19	0%	P2-Cal.C	-105	MC12775, MC12795-01	MC12835, MC12815
MC12815	Type A Rockfill CH400-440 (75m3)	1	01-Aug-19	02-Aug-19	0%	P2-Cal.C	-108	MC12785, MC12805	MC12845
Laying of Geotextile Type A as West Seawall Core (+2.5mPD)		21	11-Jul-19	03-Aug-19		P2-Cal.C	-108		
MC12825	Geotextile Type A CH260-300 (178m2)	1	11-Jul-19	11-Jul-19	0%	P2-Cal.C	-95	MC12795	MC12855
MC12825	Geotextile Type A CH300-350 (178m2)	1	13-Jul-19	13-Jul-19	0%	P2-Cal.C	-94	MC12795-01	MC12835, MC12855-01
MC12835	Geotextile Type A CH350-400 (375m2)	1	27-Jul-19	29-Jul-19	0%	P2-Cal.C	-105	MC12805, MC12825-01	MC12845, MC12865
MC12845	Geotextile Type A CH400-440 (188m2)	1	02-Aug-19	03-Aug-19	0%	P2-Cal.C	-108	MC12835, MC12815	MC12875
Laying of Granular Filter as West Seawall Core (+2.5mPD)		21	12-Jul-19	05-Aug-19		P2-Cal.C	-108		
MC12855	Granular Filter CH260-300 (236m3)	1	12-Jul-19	12-Jul-19	0%	P2-Cal.C	-95	MC12825	MC12925
MC12855	Granular Filter CH300-350 (236m3)	1	15-Jul-19	15-Jul-19	0%	P2-Cal.C	-94	MC12825-01	MC12865, MC12925-01
MC12865	Granular Filter CH350-400 (250m3)	1	29-Jul-19	30-Jul-19	0%	P2-Cal.C	-105	MC12835, MC12855-01	MC12875, MC12935
MC12875	Granular Filter CH400-440 (417m3)	1	03-Aug-19	05-Aug-19	0%	P2-Cal.C	-108	MC12865, MC12845	MC12945
Filling of Reclamation Fill -2.0 to +2.5mPD		38	24-Jun-19	07-Aug-19		P2-Cal.C	-103		
MC12905	Reclamation Fill to +2.5mPD CH205-255 (7553m3)	1	24-Jun-19	24-Jun-19	0%	P2-Cal.C	-75	MC12895, MC12665,	MC12915, MC13795,
MC12915	Reclamation Fill to +2.5mPD CH445-500 (10004m3)	5	01-Aug-19	07-Aug-19	0%	P2-Cal.C	-103	MC12905, MC12695,	MC13005, MC14090
Filling of Reclamation Fill to +1.3 to +2.5mPD		27	13-Jul-19	13-Aug-19		P2-Cal.C	-108		
MC12925	Reclamation Fill to +2.5mPD CH255-300 (3384m3)	5	13-Jul-19	18-Jul-19	0%	P2-Cal.C	-95	MC12855	MC12935, MC13615,
MC12925-0	Reclamation Fill to +2.5mPD CH300-335 (2327m3)	2	16-Jul-19	17-Jul-19	0%	P2-Cal.C	-94	MC12855-01	MC12935, MC13615,
MC12935	Reclamation Fill to +2.5mPD CH335-385 (3325m3)	2	30-Jul-19	01-Aug-19	0%	P2-Cal.C	-105	MC12865, MC12925,	MC12945, MC13635,
MC12945	Reclamation Fill to +2.5mPD CH385-445 (3343m3)	7	05-Aug-19	13-Aug-19	0%	P2-Cal.C	-108	MC12875, MC12935	MC12995, MC13655,
Filling of Compacted Fill +2.5 to +3.5 & Temp Fill +3.5 to +5.5mPD		82	03-May-19 A	05-Sep-19		P2-Cal.C	-28		
MC12975	Compacted Fill to +5.5mPD CH190-240 (5033m3)	5	03-May-19 A	25-Jun-19	0%	P2-Cal.C	-75	MC12905, MC12965-01	MC13055, MC12975-01,
MC12975-0	Compacted Fill to +5.5mPD CH240-300 (6013m3)	6	22-Jul-19	27-Jul-19	0%	P2-Cal.C	-72	MC12925, MC12905, MC12975	MC12985, MC13055-01
MC12985	Compacted Fill to +5.5mPD CH300-330 (5458m3)	3	29-Jul-19	31-Jul-19	0%	P2-Cal.C	-70	MC12925, MC12925-01,	MC13095, MC13075,
MC12985-0	Compacted Fill to +5.5mPD CH330-380 (6823m3)	2	01-Aug-19	03-Aug-19	0%	P2-Cal.C	-71	MC12935, MC12925-01,	MC13095, MC13075
MC12995	Compacted Fill to +5.5mPD CH380-440 (9649m3)	8	13-Aug-19	22-Aug-19	0%	P2-Cal.C	-60	MC12945, MC12935	MC13115, MC13005
MC13005	Compacted Fill to +5.5mPD CH440-510 (12238m3)	12	22-Aug-19	05-Sep-19	0%	P2-Cal.C	-28	MC12915, MC12995	MC13135
Surcharge		278	04-Mar-19 A	07-Dec-19			273		
Placing Surcharge		66	26-Jun-19	11-Sep-19		P2-Cal.C	-28		
MC13035	Placing Surcharge Area 2a3 (CH185-200) (528m3)	1	26-Jun-19	26-Jun-19	0%	P2-Cal.C	-75	MC12975, MC12965,	LC17850-1, LC17860,
MC13055	Placing Surcharge Area 2b1 (CH200-235) (2309m3)	10	27-Jun-19	09-Jul-19	0%	P2-Cal.C	-70	MC12975, MC13035,	MC13195, MC13075
MC13055	Placing Surcharge Area 2b2 (CH235-300) (2661m3)	2	30-Jul-19	31-Jul-19	0%	P2-Cal.C	-72	MC12975, MC13035,	MC13075, MC13195-01
MC13075	Placing Surcharge Area 4 (CH300-380 W) (4584m3)	2	03-Aug-19	06-Aug-19	0%	P2-Cal.C	-71	MC12985, MC13055,	MC13215, MC13095
MC13095	Placing Surcharge Area 3 (CH304-363 E) (3043m3)	3	06-Aug-19	09-Aug-19	0%	P2-Cal.C	-49	MC12985, MC13075,	MC13235, MC13115



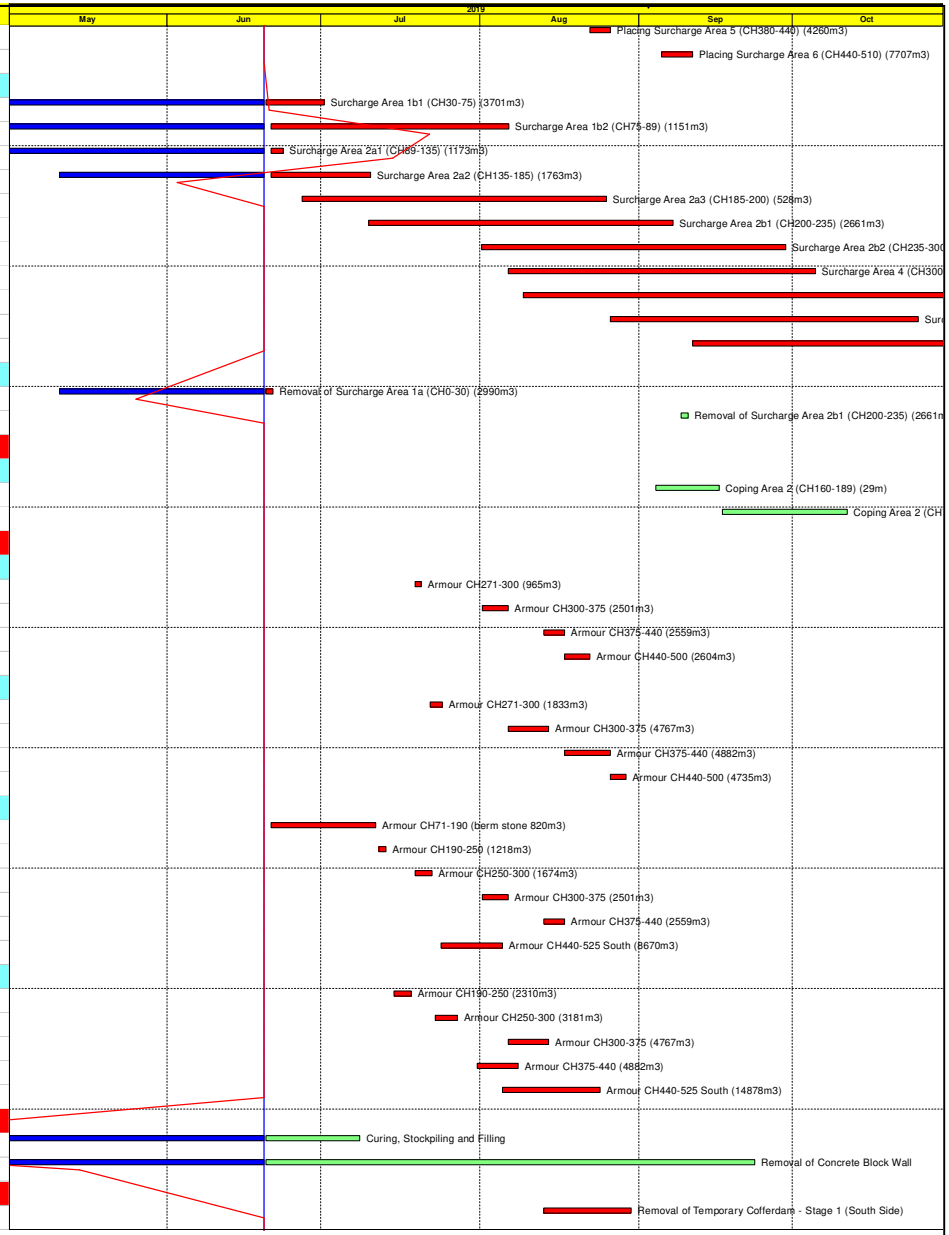
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
MC13115	Placing Surcharge Area 5 (CH380-440) (4260m3)	3	22-Aug-19	26-Aug-19	0%	P2-Cal.C	-60	MC12995, MC13095	MC13255, MC13135,
MC13135	Placing Surcharge Area 6 (CH440-510) (7707m3)	5	05-Sep-19	11-Sep-19	0%	P2-Cal.C	-28	MC13005, MC13115	MC13275
Surcharging		278	04-Mar-19 A	07-Dec-19		P2-Cal.A	-39		
MC13160	Surcharge Area 1b1 (CH30-75) (3701m3)	120	04-Mar-19 A	01-Jul-19	38%	P2-Cal.A	-57	MC13020	LC17835, LC17825,
MC13161	Surcharge Area 1b2 (CH75-89) (1151m3)	120	08-Apr-19 A	06-Aug-19	10%	P2-Cal.A	-76	MC13021	LC17778, LC17838,
MC13175	Surcharge Area 2a1 (CH89-135) (1173m3)	60	24-Apr-19 A	23-Jun-19	0%	P2-Cal.A	-90	MC13035	LC17815, LC17815-1,
MC13175	Surcharge Area 2a2 (CH135-185) (1763m3)	60	11-May-19 A	10-Jul-19	0%	P2-Cal.A	-90	MC13035-01	LC17815, LC17820,
MC13175	Surcharge Area 2a3 (CH185-200) (528m3)	60	27-Jun-19	25-Aug-19	0%	P2-Cal.A	-96	MC13035-02, MC12965-01	LC17840, LC17815,
MC13195	Surcharge Area 2b1 (CH200-235) (2661m3)	60	10-Jul-19	07-Sep-19	0%	P2-Cal.A	-90	MC13055	MC13335, LC20800,
MC13195	Surcharge Area 2b2 (CH235-300) (2661m3)	60	01-Aug-19	29-Sep-19	0%	P2-Cal.A	-87	MC13055-01	MC13335-01, LC17805,
MC13215	Surcharge Area 4 (CH300-380 W) (4584m3)	60	06-Aug-19	05-Oct-19	0%	P2-Cal.A	-86	MC13075	MC13355, LC20805,
MC13235	Surcharge Area 3 (CH304-363 E) (3043m3)	120	09-Aug-19	07-Dec-19	0%	P2-Cal.A	-39	MC13095	MC13375, LC20810,
MC13255	Surcharge Area 5 (CH380-440) (4260m3)	60	26-Aug-19	25-Oct-19	0%	P2-Cal.A	-72	MC13115	MC13395, LC22180,
MC13275	Surcharge Area 6 (CH440-510) (7707m3)	60	11-Sep-19	10-Nov-19	0%	P2-Cal.A	-33	MC13135	MC13415, LC23385,
Removal of Surcharge		96	11-May-19 A	10-Sep-19		P2-Cal.C	292		
MC13295	Removal of Surcharge Area 1a (CH0-30) (2990m3)	3	11-May-19 A	21-Jun-19	70%	P2-Cal.C	-59	MC13155	LC17870, LC17841
MC13335	Removal of Surcharge Area 2b1 (CH200-235) (2661m3)	2	09-Sep-19	10-Sep-19	0%	P2-Cal.C	292	MC13195	MC13475
Concrete Coping		30	04-Sep-19	11-Oct-19		P2-Cal.C	268		
Eastern Seawall		30	04-Sep-19	11-Oct-19		P2-Cal.C	268		
MC13435	Coping Area 2 (CH160-189) (29m)	10	04-Sep-19	16-Sep-19	0%	P2-Cal.C	268	LC17845	MC13455, MC13475
MC13455	Coping Area 2 (CH71-160) (93m)	20	17-Sep-19	11-Oct-19	0%	P2-Cal.C	268	MC13435	MC13475
Armour Protection		59	21-Jun-19	29-Aug-19		P2-Cal.C	-107		
Laying of Underlayer Armour Rock (West)		30	19-Jul-19	22-Aug-19		P2-Cal.C	-104		
MC13615	Armour CH271-300 (965m3)	2	19-Jul-19	20-Jul-19	0%	P2-Cal.C	-94	MC12925, MC12925-01	MC13635, MC13695
MC13635	Armour CH300-375 (2501m3)	4	01-Aug-19	06-Aug-19	0%	P2-Cal.C	-104	MC13615, MC12925,	MC13655, MC13715
MC13655	Armour CH375-440 (2559m3)	4	13-Aug-19	17-Aug-19	0%	P2-Cal.C	-107	MC13635, MC12935, MC12945	MC13675, MC13735
MC13675	Armour CH440-500 (2604m3)	4	17-Aug-19	22-Aug-19	0%	P2-Cal.C	-104	MC13655, MC12945	MC13755
Laying of Armour Rock (West)		34	22-Jul-19	29-Aug-19		P2-Cal.C	-107		
MC13695	Armour CH271-300 (1833m3)	3	22-Jul-19	24-Jul-19	0%	P2-Cal.C	-93	MC13615	MC13715, MC13555
MC13715	Armour CH300-375 (4767m3)	7	06-Aug-19	14-Aug-19	0%	P2-Cal.C	-104	MC13695, MC13635	MC13735, MC13555,
MC13735	Armour CH375-440 (4882m3)	7	17-Aug-19	26-Aug-19	0%	P2-Cal.C	-107	MC13715, MC13655	MC13755, MC13575
MC13755	Armour CH440-500 (4735m3)	3	26-Aug-19	29-Aug-19	0%	P2-Cal.C	-107	MC13735, MC13675	MC13595, MC14095
Laying of Underlayer Armour Rock (East)		49	21-Jun-19	17-Aug-19		P2-Cal.C	-97		
MC13775	Armour CH71-190 (berm stone 820m3)	17	21-Jun-19	11-Jul-19	0%	P2-Cal.C	-83	MC12895, MC12895-01	MC13795
MC13795	Armour CH190-250 (1218m3)	2	12-Jul-19	13-Jul-19	0%	P2-Cal.C	-83	MC13775, MC12895,	MC13815, MC13895
MC13815	Armour CH250-300 (1674m3)	3	19-Jul-19	22-Jul-19	0%	P2-Cal.C	-86	MC13795, MC12925,	MC13835, MC13915
MC13835	Armour CH300-375 (2501m3)	4	01-Aug-19	06-Aug-19	0%	P2-Cal.C	-94	MC13815, MC12925,	MC13855, MC13935
MC13855	Armour CH375-440 (2559m3)	4	13-Aug-19	17-Aug-19	0%	P2-Cal.C	-97	MC13835, MC12935, MC12945	MC13955
MC13875	Armour CH440-525 South (8670m3)	10	24-Jul-19	05-Aug-19	0%	P2-Cal.C	-103	MC11595	MC13975, MC14090
Laying of Armour Rock (East)		36	15-Jul-19	24-Aug-19		P2-Cal.C	-103		
MC13895	Armour CH190-250 (2310m3)	4	15-Jul-19	18-Jul-19	0%	P2-Cal.C	-83	MC13795	MC13915
MC13915	Armour CH250-300 (3181m3)	5	23-Jul-19	27-Jul-19	0%	P2-Cal.C	-86	MC13895, MC13815	MC13935
MC13935	Armour CH300-375 (4767m3)	7	06-Aug-19	14-Aug-19	0%	P2-Cal.C	-94	MC13915, MC13835	MC13955
MC13955	Armour CH375-440 (4882m3)	7	31-Jul-19	08-Aug-19	0%	P2-Cal.C	-97	MC13935, MC13855	MC13515, MC14090
MC13975	Armour CH440-525 South (14878m3)	17	05-Aug-19	24-Aug-19	0%	P2-Cal.C	-103	MC13875	MC13495, MC14095,
Full-scale Treatment of Cement S/S of Marine Sediment		450	06-Jan-18 A	23-Sep-19		P2-Cal.C	144		
MC14080	Curing, Stockpiling and Filling	313	06-Jan-18 A	08-Jul-19	91%	P2-Cal.C	174	MC14075, MC12905	MC14085
MC14085	Removal of Concrete Block Wall	70	29-Apr-19 A	23-Sep-19	33%	P2-Cal.C	144	MC14080, MC14075	LC13950
Removal of Temporary Works		60	13-Aug-19	25-Oct-19		P2-Cal.C	-108		
MC14090	Removal of Temporary Cofferdam - Stage 1 (South Side)	15	13-Aug-19	30-Aug-19	0%	P2-Cal.C	-108	MC13875, MC13975,	MC14095, K10419-21



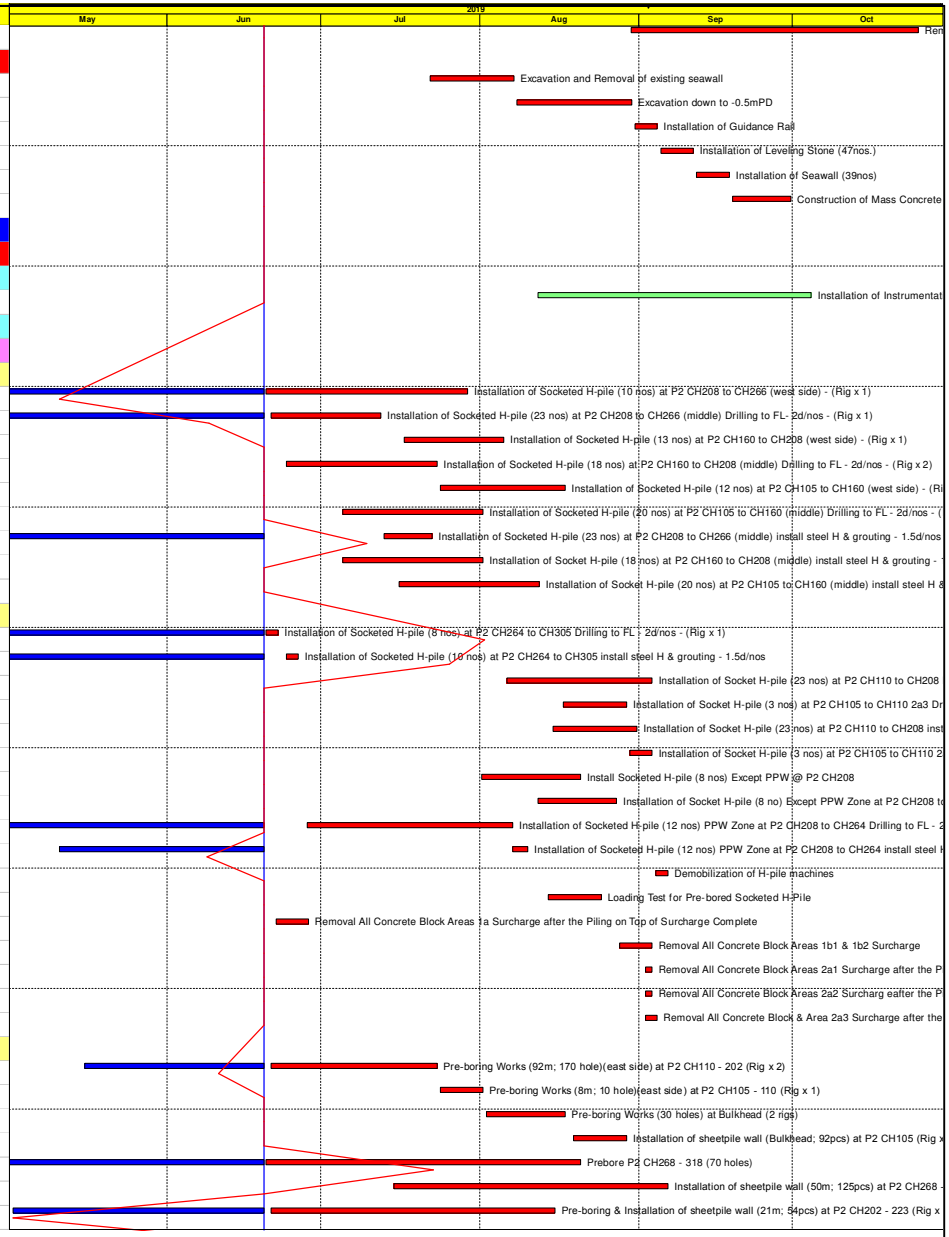
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
MC14095	Removal of Temporary Cofferdam - Stage 2	45	30-Aug-19	25-Oct-19	0%	P2-Cal.C	-108	MC13755, MC13975,	MC14115
Modification Works of Existing Seawall		60	22-Jul-19	30-Sep-19		P2-Cal.C	-70		
MC14145	Excavation and Removal of existing seawall	15	22-Jul-19*	07-Aug-19	0%	P2-Cal.C	-70	MC11995	MC14165
MC14165	Excavation down to -0.5mPD	20	08-Aug-19	30-Aug-19	0%	P2-Cal.C	-70	MC14145	MC14185
MC14185	Installation of Guidance Rail	4	31-Aug-19	04-Sep-19	0%	P2-Cal.C	-70	MC14165	MC14205
MC14205	Installation of Leveling Stone (47nos.)	6	05-Sep-19	11-Sep-19	0%	P2-Cal.C	-70	MC14185	MC14225
MC14225	Installation of Seawall (39nos)	5	12-Sep-19	18-Sep-19	0%	P2-Cal.C	-70	MC14205	MC14245
MC14245	Construction of Mass Concrete Coping	10	19-Sep-19	30-Sep-19	0%	P2-Cal.C	-70	MC14225	MC14265
Land Works		170	19-Mar-19 A	14-Nov-19		P2-Cal.C	-26		
Road P2 Underpass (CH105-CH318)		136	19-Mar-19 A	04-Oct-19		P2-Cal.C	8		
Instrumentation and Monitoring for Road P2 Structure Construction		45	12-Aug-19	04-Oct-19		P2-Cal.C	8		
LC17740	Installation of Instrumentation including observation well & piezometers, etc	45	12-Aug-19	04-Oct-19	0%	P2-Cal.C	8	S15980, LC18010	LC17760
Underpass		132	19-Mar-19 A	28-Sep-19		P2-Cal.C	-81		
Underpass P2 CH 105 - 318		132	19-Mar-19 A	28-Sep-19		P2-Cal.C	-81		
Foundation (Non Surcharge)		97	19-Mar-19 A	17-Aug-19		P2-Cal.C	-63		
LC17	Installation of Socketed H-pile (10 nos) at P2 CH208 to CH266 (west side) - (Rig x 1)	40	30-Apr-19 A	29-Jul-19	60%	P2-Cal.C	-78	LC17765	LC17775, LC17773
LC17	Installation of Socketed H-pile (23 nos) at P2 CH208 to CH266 (middle) Drilling to FL- 2d/nos - (Rig x 1)	40	19-Mar-19 A	12-Jul-19	61%	P2-Cal.C	-81	MC13020, LC17768, MC13021	LC17778, LC17823,
LC17	Installation of Socketed H-pile (13 nos) at P2 CH160 to CH208 (west side) - (Rig x 1)	17	17-Jul-19	05-Aug-19	0%	P2-Cal.C	-78	LC17766, LC17772, LC17771	LC17838, LC17775,
LC17	Installation of Socketed H-pile (18 nos) at P2 CH160 to CH208 (middle) Drilling to FL - 2d/nos - (Rig x 2)	25	24-Jun-19	23-Jul-19	0%	P2-Cal.C	-81	LC17770, LC17772	LC17776, LC17838,
LC17	Installation of Socketed H-pile (12 nos) at P2 CH105 to CH160 (west side) - (Rig x 2)	22	24-Jul-19	17-Aug-19	0%	P2-Cal.C	-63	LC17771, LC17769, LC17767, LC17773	LC17838
LC17	Installation of Socketed H-pile (20 nos) at P2 CH105 to CH160 (middle) Drilling to FL - 2d/nos - (Rig x 2)	24	05-Jul-19	01-Aug-19	0%	P2-Cal.C	-81	LC17774	LC17838, LC17779-01
LC17	Installation of Socketed H-pile (23 nos) at P2 CH208 to CH266 (middle) install steel H & grouting - 1.5d/nos	7	25-Mar-19 A	22-Jul-19	43%	P2-Cal.C	-44	LC17777, LC17772, MC13161	LC18013
LC17	Installation of Socket H-pile (18 nos) at P2 CH160 to CH208 (middle) install steel H & grouting - 1.5d/no	24	05-Jul-19	01-Aug-19	0%	P2-Cal.C	-63	LC17766, LC17774	LC17840, LC17838
LC17	Installation of Socket H-pile (20 nos) at P2 CH105 to CH160 (middle) install steel H & grouting - 1.5d/no	24	16-Jul-19	12-Aug-19	0%	P2-Cal.C	-81	LC17773, LC17776	LC18013, LC17823,
Foundation (On Top Surcharge)		65	30-Mar-19 A	06-Sep-19		P2-Cal.C	-77		
LC17	Installation of Socketed H-pile (8 nos) at P2 CH264 to CH305 Drilling to FL - 2d/nos - (Rig x 1)	16	30-Mar-19 A	22-Jun-19	75%	P2-Cal.C	-33	LC17780, MC13195-01	LC17840, LC17810
LC17	Installation of Socketed H-pile (10 nos) at P2 CH264 to CH305 install steel H & grouting - 1.5d/nos	12	13-Apr-19 A	26-Jun-19	60%	P2-Cal.C	-33	LC17780, LC17805	LC17840
LC17	Installation of Socket H-pile (23 nos) at P2 CH110 to CH208 Drilling to FL - 2d/nos - (Rig x 3)	25	06-Aug-19	03-Sep-19	0%	P2-Cal.C	-81	LC17789, LC17850, MC13175-02,	LC17840, LC18027,
LC17	Installation of Socket H-pile (3 nos) at P2 CH105 to CH110 2a3 Drilling to FL - 2d/nos - (Rig x 1)	11	17-Aug-19	29-Aug-19	0%	P2-Cal.C	-81	MC13035-02, LC17850-1,	LC17820-1, LC17820
LC17	Installation of Socket H-pile (23 nos) at P2 CH110 to CH208 install steel H & grouting - 1.5d/nos	15	15-Aug-19	31-Aug-19	0%	P2-Cal.C	-81	LC17850-1, LC17815-1,	LC18013, LC17847
LC17	Installation of Socket H-pile (3 nos) at P2 CH105 to CH110 2a3 install steel H & grouting - 1.5d/nos	4	30-Aug-19	03-Sep-19	0%	P2-Cal.C	-81	LC17815-1, LC17850-1,	LC18013, LC17838,
LC17	Install Socketed H-pile (8 nos) Except PPW @ P2 CH208	17	01-Aug-19	20-Aug-19	0%	P2-Cal.C	-81	LC17880, LC17782, LC17772,	LC17840, LC17825,
LC17	Installation of Socket H-pile (8 no) Except PPW Zone at P2 CH208 to CH264 1b1 install steel&grout- 1.5d/no	14	12-Aug-19	27-Aug-19	0%	P2-Cal.C	-81	LC17823, MC13160, MC13195-01,	LC18013, LC17845
LC17	Installation of Socketed H-pile (12 nos) PPW Zone at P2 CH208 to CH264 Drilling to FL - 2d/nos - (Rig x 2)	12	09-Apr-19 A	07-Aug-19	35%	P2-Cal.C	-60	LC18005, LC17782, MC13195, LC17783	LC17840, LC17835
LC17	Installation of Socketed H-pile (12 nos) PPW Zone at P2 CH208 to CH264 install steel H & grouting - 1.5d/no	10	11-May-19 A	10-Aug-19	33.3%	P2-Cal.C	-56	MC13160, LC17830, MC13195-01,	LC17840, LC17838,
LC17	Demobilization of H-pile machines	3	04-Sep-19	06-Sep-19	0%	P2-Cal.C	-77	LC17773, LC17774, LC17775, LC17776,	LC18013, LC18027
LC17	Loading Test for Pre-bored Socketed H-Pile	10	14-Aug-19	24-Aug-19	0%	P2-Cal.C	-73	LC17830, LC17805, LC17835, LC17815,	LC18027, LC18027,
LC17	Removal All Concrete Block Areas 1a Surcharge after the Piling on Top of Surcharge Complete	6	22-Jun-19	28-Jun-19	0%	P2-Cal.C	-25	MC13295, MC13155	LC18013, LC18010
LC17	Removal All Concrete Block Areas 1b1 & 1b2 Surcharge	6	28-Aug-19	03-Sep-19	0%	P2-Cal.C	-81	MC13161, MC13160, LC17825	LC18013, LC18010,
LC17	Removal All Concrete Block Areas 2a1 Surcharge after the Piling on Top of Surcharge Complete	2	02-Sep-19	03-Sep-19	0%	P2-Cal.C	-81	MC13175, LC17774, LC17779-01,	LC18010, LC18013
LC17	Removal All Concrete Block Areas 2a2 Surcharg eafter the Piling on Top of Surcharge Complete	2	02-Sep-19	03-Sep-19	0%	P2-Cal.C	-81	MC13175-01, LC17820, LC18000	LC18010, LC18013
LC90	Removal All Concrete Block & Area 2a3 Surcharge after the Piling on Top of Surcharge Complete	3	02-Sep-19	04-Sep-19	0%	P2-Cal.C	-75	LC17820-1, LC17840,	LC18010, LC18013
ELS		111	25-Apr-19 A	28-Sep-19		P2-Cal.C	-81		
LC17	Pre-boring Works (92m; 170 hole)(east side) at P2 CH110 - 202 (Rig x 2)	45	16-May-19 A	23-Jul-19	24%	P2-Cal.C	-81	MC13035, MC13035-01	LC18000, LC17815,
LC17	Pre-boring Works (8m; 10 hole)(east side) at P2 CH105 - 110 (Rig x 1)	8	24-Jul-19	01-Aug-19	0%	P2-Cal.C	-81	MC13035-02, LC17850, MC13175	LC17820, LC17815-1,
LC17	Pre-boring Works (30 holes) at Bulkhead (2 rigs)	14	02-Aug-19	17-Aug-19	0%	P2-Cal.C	-81	MC13035-02, LC17850-1,	LC17860
LC17	Installation of sheetpile wall (Bulkhead; 92pcs) at P2 CH105 (Rig x 1)	10	19-Aug-19	29-Aug-19	0%	P2-Cal.C	-81	LC17855, MC13035-02	LC18010, LC17815-1
LC17	Prebore P2 CH268 - 318 (70 holes)	63	25-Apr-19 A	20-Aug-19	24%	P2-Cal.C	-77		LC17870
LC17	Installation of sheetpile wall (50m; 125pcs) at P2 CH268 - 318 (Rig x 1)	47	15-Jul-19	06-Sep-19	0%	P2-Cal.C	-77	LC17780, MC13295, LC17865	LC18010
LC17	Pre-boring & Installation of sheetpile wall (21m; 54pcs) at P2 CH202 - 223 (Rig x 1)	25	02-May-19 A	15-Aug-19	35%	P2-Cal.C	-47	MC13020, MC13021	LC17823



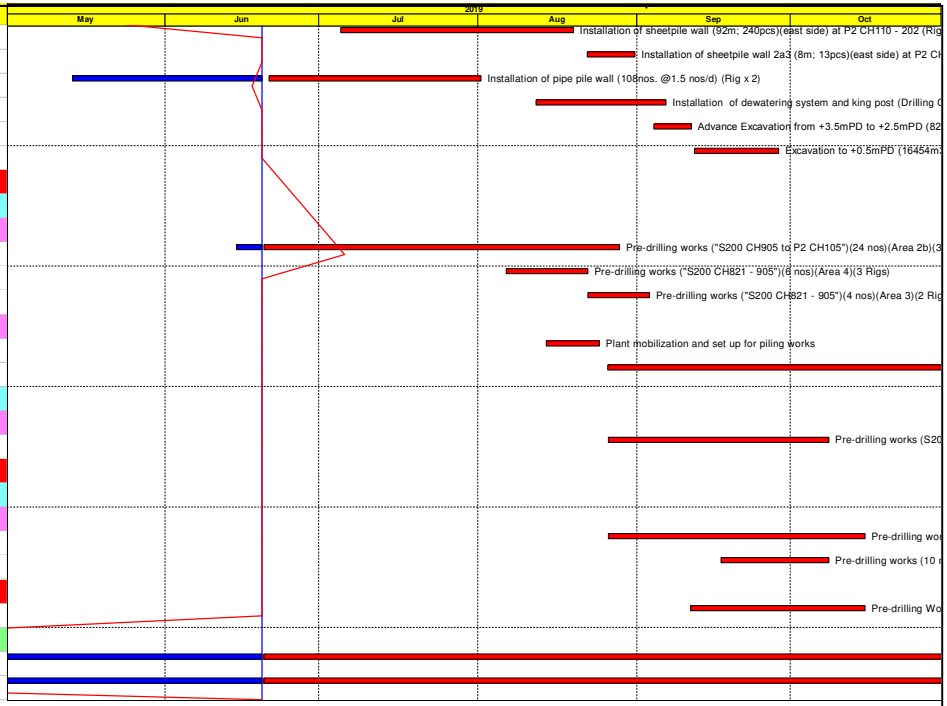
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update
(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Calendar	Total Float	Predecessors	Successors
LC18(	Installation of sheetpile wall (92m; 240pcs)(east side) at P2 CH110 - 202 (Rig x 1)	39	05-Jul-19	19-Aug-19	0%	P2-Cal.C	-81	LC17850, LC18005, MC13175,	LC18000-1, LC17847
LC18(	Installation of sheetpile wall 2a3 (8m; 13pcs)(east side) at P2 CH105 - 110 (Rig x 1)	9	22-Aug-19	31-Aug-19	0%	P2-Cal.C	-81	LC17850-1, LC18000,	LC17846, LC90120
LC18(	Installation of pipe pile wall (108nos. @1.5 nos/d) (Rig x 2)	35	14-May-19 A	01-Aug-19	50%	P2-Cal.C	-70	MC13020, MC13021	LC18027, LC17830,
LC18(	Installation of dewatering system and king post (Drilling Only)	23	12-Aug-19	06-Sep-19	0%	P2-Cal.C	-77	LC17860, LC17870, LC17845, LC90120,	LC18027, LC17740,
LC18(	Advance Excavation from +3.5mPD to +2.5mPD (8226m3) (1200m3/day; plant x 3)	7	04-Sep-19	11-Sep-19	0%	P2-Cal.C	-81	LC17838, LC17845, LC17840, LC18010,	LC18020
LC18(	Excavation to +0.5mPD (16454m3) (1200m3/day; plant x 3)	14	12-Sep-19	28-Sep-19	0%	P2-Cal.C	-81	S14059, LC18013	LC18025
U-Trough A and B		108	15-Jun-19 A	14-Nov-19		P2-Cal.C	-75		
"U-Trough A Type 3 and U-Trough B Type 4" from S200 CH821 to P2 CH105		108	15-Jun-19 A	14-Nov-19		P2-Cal.C	-75		
Ground Investigation		60	15-Jun-19 A	03-Sep-19		P2-Cal.C	-16		
LC2080	Pre-drilling works ("S200 CH905 to P2 CH105")(24 nos)(Area 2b)(3 Rigs)	60	15-Jun-19 A	28-Aug-19	2%	P2-Cal.C	-66	MC12905, MC12925,	LC20830, LC20820
LC2080	Pre-drilling works ("S200 CH821 - 905")(6 nos)(Area 4)(3 Rigs)	14	06-Aug-19	22-Aug-19	0%	P2-Cal.C	-48	MC13215	LC23385, LC20840,
LC2081	Pre-drilling works ("S200 CH821 - 905")(4 nos)(Area 3)(2 Rigs)	10	22-Aug-19	03-Sep-19	0%	P2-Cal.C	-16	MC13235, LC20805	LC20850
Foundation		77	14-Aug-19	14-Nov-19		P2-Cal.C	-75		
LC2082	Plant mobilization and set up for piling works	10	14-Aug-19	24-Aug-19	0%	P2-Cal.C	-75	S16384, LC20800, MC13195-01,	LC20830
LC2083	Installation of Pre-bored socketed H-Pile("S200 CH905 to P2 CH105")(53 nos)(Area 2b)(4 Rigs)	67	26-Aug-19	14-Nov-19	0%	P2-Cal.C	-75	LC20820, LC20800	LC20860, LC21000,
"U-Trough A Type 1 & 2" from S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1		34	26-Aug-19	08-Oct-19		P2-Cal.C	-53		
Ground Investigation		34	26-Aug-19	08-Oct-19		P2-Cal.C	-53		
LC2214	Pre-drilling works (S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1)(27 nos)(Area 5)(4 Rigs)	34	26-Aug-19	08-Oct-19	0%	P2-Cal.C	-53	MC13115	LC22160, LC22150
U-Trough C Structures		40	26-Aug-19	15-Oct-19		P2-Cal.C	-33		
"U-Trough C Type 1, 2, 3 & 4" from CT01 CH117.156 - CH366		40	26-Aug-19	15-Oct-19		P2-Cal.C	-33		
Ground Investigation		40	26-Aug-19	15-Oct-19		P2-Cal.C	-33		
LC2338	Pre-drilling works (20 nos)(Area 5)(2 Rigs)	40	26-Aug-19	15-Oct-19	0%	P2-Cal.C	-33	LC12859, MC13255	LC23400, LC20860
LC2338	Pre-drilling works (10 nos)(Area 6)(3 Rigs)	16	17-Sep-19	08-Oct-19	0%	P2-Cal.C	-27	LC20805, MC13275	LC23400, LC20860
TKO Bridge Abutment		26	11-Sep-19	15-Oct-19		P2-Cal.C	-7		
LC24900	Pre-drilling Works (10 nos)	26	11-Sep-19	15-Oct-19	0%	P2-Cal.C	-7	MC13275	LC24920
Section 4 of the Works - Preservation and Protection of Existing Trees		1563	12-Jan-17 A	17-Jul-21		P2-Cal.A	-89		
LC25260	Preservation and Protection of Existing Trees	1451	12-Jan-17 A	17-Jul-21	42.18%	P2-Cal.A	-89	K10000, S10960, S15660, S10970	K10360, K10680
LC25280	Nursery Transplanted Trees at the Contractor's holding nursery	1177	28-Apr-17 A	17-Jul-21	28.72%	P2-Cal.A	-89	S10220, S10720, LC25340, S15660	K10360, K10680



Actual Work

Remaining Work

Critical Remaining Work

Milestone

Program with Progress as of 20-Jun-19

3 Month Rolling Programme Update

(Data Date : 20 Jun 2019)

Date	Revision	Checked	Approved
20-jun-19			

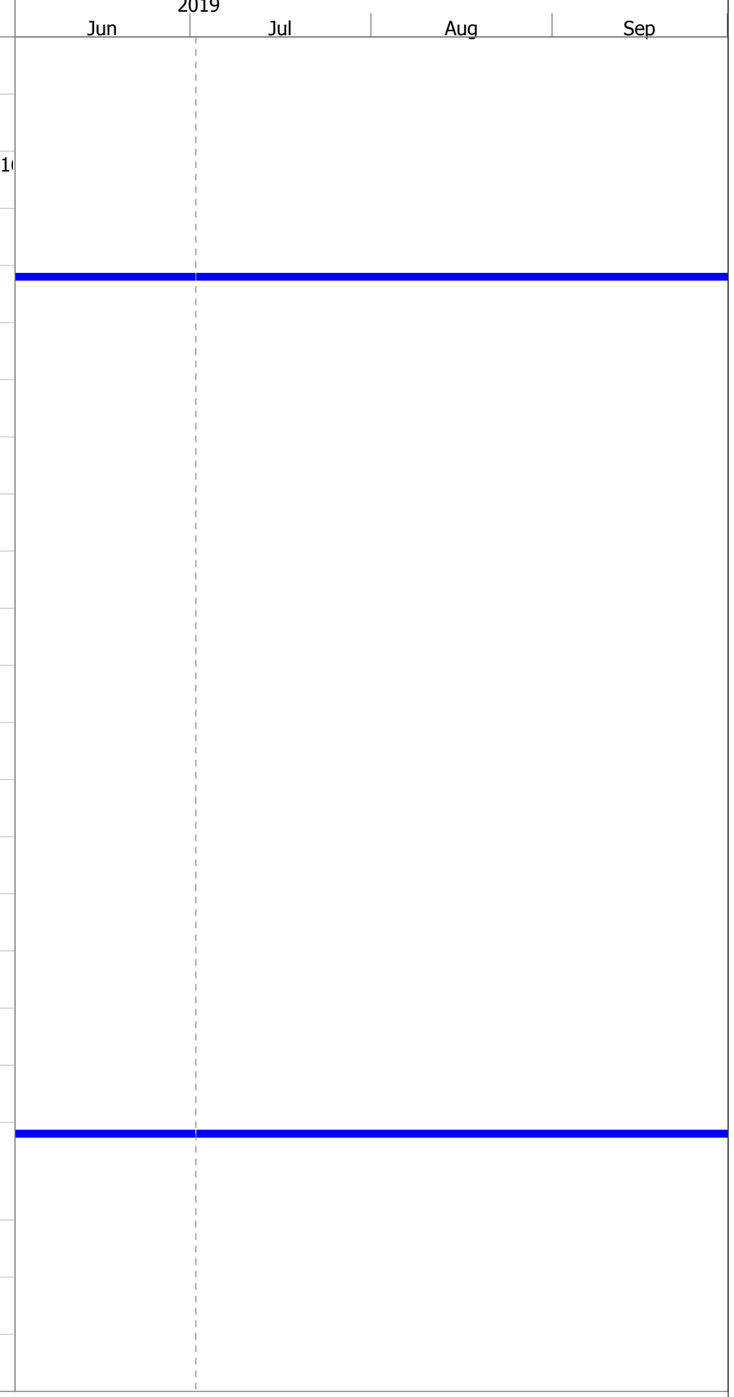
NE2017/02 (C3)

High Level 3 Months Look Ahead Programme			
Activities	Jul-19	Aug-19	Sep-19
Trial pit			
Underground utilities detection			
Temporary traffic arrangement Setup			
Predrilling			
Construction of Temporary cycle track			
Construction of drainage and watermain			
Bored Piles			
Pile Cap construction			
Pre-bored Socket-H Pile			

CONTRACT NO. NE/2017/06
TSEUNG KWAN O – LAM TIN TUNNEL
TRAFFIC CONTROL SURVEILLANCE SYSTEM (TCSS) AND ASSOCIATED WORKS
3-MONTH ROLLING PROGRAMME

Issue Date: 4 July 2019

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
1	**Contract Award**	**0 days**	**Mon 29 Oct '18**	**Mon 29 Oct '18**	**NA**		
2	Letter of Acceptance	0 days	Mon 29 Oct '18	Mon 29 Oct '18	NA		6,20,10,9,8
3	Commencement of the Works	0 days	Fri 9 Nov '18	Fri 9 Nov '18	NA		18,14,11,12,13,1
4							
5	**Design Stage**	**373 days?**	**Mon 29 Oct '18**	**Tue 5 Nov '19**	**NA**		
6	Prepare and Submit Initial Works Programme	5 days	Mon 29 Oct '18	Fri 2 Nov '18	Fri 2 Nov '18	2	
7	Submit Staffing Proposal	7 days	Fri 9 Nov '18	Thu 15 Nov '18	Thu 15 Nov '18	3	
8	Submit Quality Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18	2	
9	Submit Draft Safety Plan	12 days	Mon 29 Oct '18	Fri 9 Nov '18	Fri 9 Nov '18	2	
10	Submit Safety Plan	46 days	Mon 29 Oct '18	Thu 13 Dec '18	Thu 13 Dec '18	2	
11	Submit Draft Environmental Management Plan	6 days	Fri 9 Nov '18	Wed 14 Nov '18	Wed 14 Nov '18	3	
12	Submit Environmental Management Plan	53 days	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18	3	
13	Submit Site Management Plan for Trip Ticket System	36 days	Fri 9 Nov '18	Fri 14 Dec '18	Fri 14 Dec '18	3	
14	Submit Sub-contractor Management Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18	3	
15							
16	Submit Software Quality Plan	57 days	Mon 29 Oct '18	Mon 24 Dec '18	Mon 24 Dec '18	3	
17	Submit Software Configuration Management Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18	3	
18	Submit Software Vertification & Validation Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18	3	
19							
20	**Prepare / Submission of PSP for TKO-LTT TCSS and CBL TCSS**	**373 days?**	**Mon 29 Oct '18**	**Tue 5 Nov '19**	**NA**	**2**	
21	Submission of PSP - Central System Software	56 days	Fri 9 Nov '18	Thu 3 Jan '19	Thu 3 Jan '19		22
22	Review and Comment the PSP	54 days	Thu 3 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	21	23
23	Resubmission of the PSP	31 days	Tue 26 Feb '19	Fri 29 Mar '19	Fri 29 Mar '19	22	24



Task	Project Summary	Inactive Summary	Manual Summary	External Milestone
Split	External Tasks	Manual Task	Start-only	Progress
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Summary	Inactive Milestone	Manual Summary Rollup	External Tasks	

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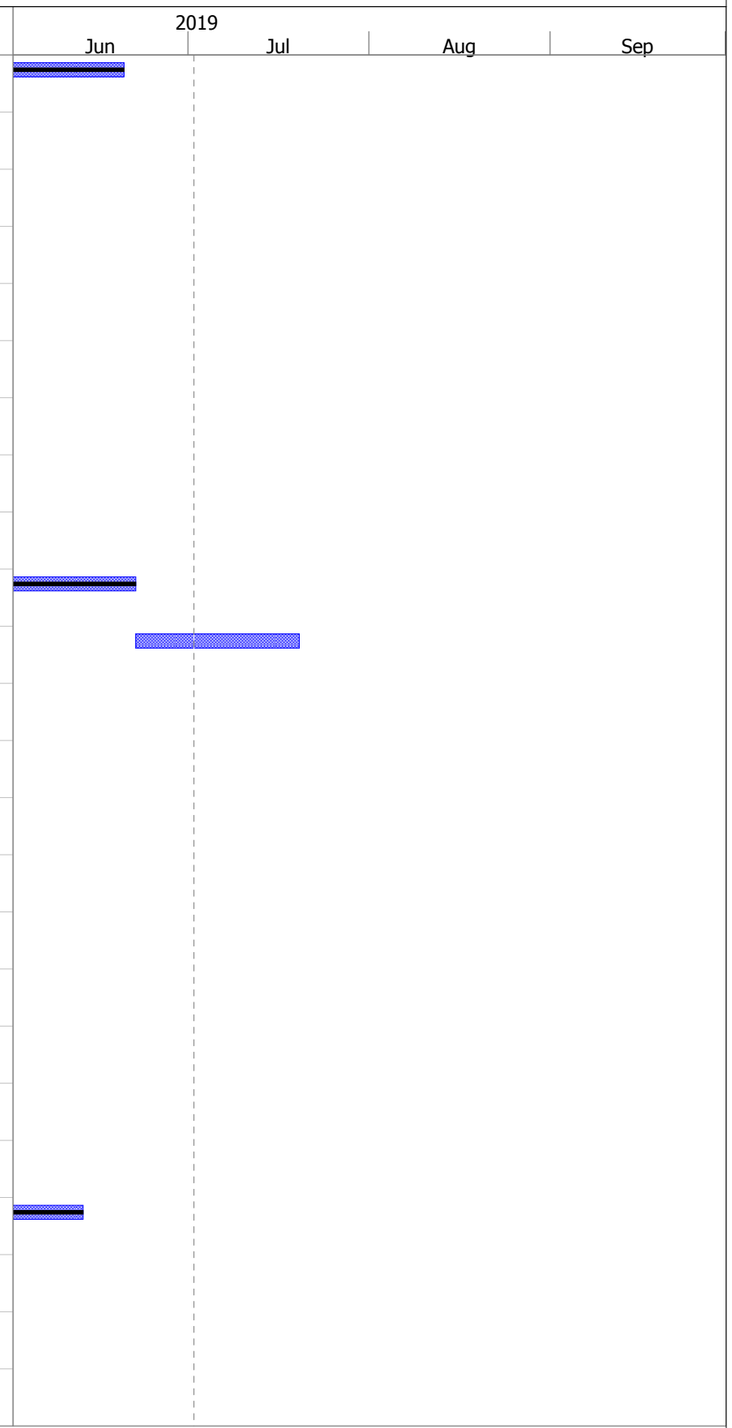
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
24	Review and Approval of the PSP	82 days	Fri 29 Mar '19	Wed 19 Jun '19	Wed 19 Jun '19	23	102
25							
26	Submission of PSP - Central System Hardware	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18		27
27	Review and Comment the PSP	73 days	Mon 31 Dec '18	Thu 14 Mar '19	Thu 14 Mar '19	26	28
28	Resubmission of the PSP	67 days	Thu 14 Mar '19	Mon 20 May '19	Mon 20 May '19	27	29
29	Review and Approval of the PSP	11 days	Mon 20 May '19	Fri 31 May '19	Fri 31 May '19	28	107
30							
31	Submission of PSP - Traffic Control Devices	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18		32
32	Review and Comment the PSP	87 days	Mon 31 Dec '18	Thu 28 Mar '19	Thu 28 Mar '19	31	33
33	Resubmission of the PSP	85 days	Thu 28 Mar '19	Fri 21 Jun '19	Fri 21 Jun '19	32	34
34	Review and Approval of the PSP	28 days	Fri 21 Jun '19	Fri 19 Jul '19	NA	33	112
35							
36	Submission of PSP - Communication System	57 days?	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		37
37	Review and Comment the PSP	53 days	Fri 4 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	36	38
38	Resubmission of the PSP	35 days	Tue 26 Feb '19	Tue 2 Apr '19	Tue 2 Apr '19	37	39
39	Review and Approval of the PSP	30 days	Tue 2 Apr '19	Thu 2 May '19	Thu 2 May '19	38	117
40							
41	Submission of PSP - Closed Circuit Television System	49 days?	Fri 9 Nov '18	Thu 27 Dec '18	Thu 27 Dec '18		42
42	Review and Comment the PSP	62 days	Thu 27 Dec '18	Wed 27 Feb '19	Wed 27 Feb '19	41	43
43	Resubmission of the PSP	85 days	Wed 27 Feb '19	Thu 23 May '19	Thu 23 May '19	42	44
44	Review and Approval of the PSP	20 days	Thu 23 May '19	Wed 12 Jun '19	Wed 12 Jun '19	43	122
45							
46	Submission of PSP - Building PABX System	50 days?	Fri 9 Nov '18	Fri 28 Dec '18	Fri 28 Dec '18		47
47	Review and Comment the PSP	77 days	Fri 28 Dec '18	Fri 15 Mar '19	Fri 15 Mar '19	46	48



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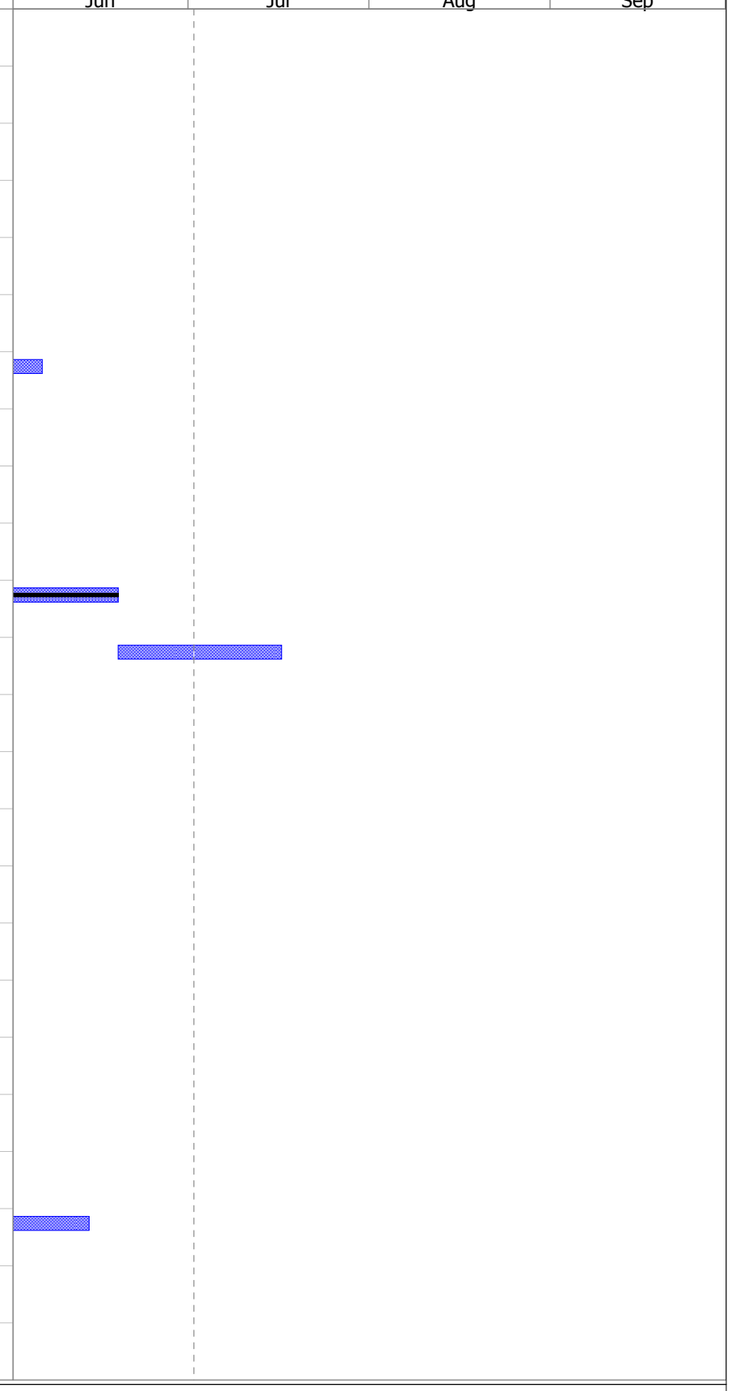
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
48	Resubmission of the PSP	46 days	Fri 15 Mar '19	Tue 30 Apr '19	Tue 30 Apr '19	47	49
49	Review and Approval of the PSP	28 days	Tue 30 Apr '19	Tue 28 May '19	NA	48	127
50							
51	Submission of PSP - Emergency Telephone System	57 days?	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		52
52	Review and Comment the PSP	87 days	Fri 4 Jan '19	Mon 1 Apr '19	Mon 1 Apr '19	51	53
53	Resubmission of the PSP	37 days	Mon 1 Apr '19	Wed 8 May '19	Wed 8 May '19	52	54
54	Review and Approval of the PSP	28 days	Wed 8 May '19	Wed 5 Jun '19	NA	53	132
55							
56	Submission of PSP - Public Address System	71 days	Mon 29 Oct '18	Mon 7 Jan '19	Mon 7 Jan '19		57
57	Review and Comment the PSP	86 days	Mon 7 Jan '19	Wed 3 Apr '19	Wed 3 Apr '19	56	58
58	Resubmission of the PSP	76 days	Wed 3 Apr '19	Tue 18 Jun '19	Tue 18 Jun '19	57	59
59	Review and Approval of the PSP	28 days	Tue 18 Jun '19	Tue 16 Jul '19	NA	58	137
60							
61	Submission of PSP - Radio System	71 days	Mon 29 Oct '18	Mon 7 Jan '19	Mon 7 Jan '19		62
62	Review and Comment the PSP	50 days	Mon 7 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	61	63
63	Resubmission of the PSP	59 days	Tue 26 Feb '19	Fri 26 Apr '19	Fri 26 Apr '19	62	64
64	Review and Approval of the PSP	11 days	Fri 26 Apr '19	Tue 7 May '19	Tue 7 May '19	63	142
65							
66	Submission of PSP - Detection System	53 days	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18		67
67	Review and Comment the PSP	126 days	Mon 31 Dec '18	Mon 6 May '19	Mon 6 May '19	66	68
68	Resubmission of the PSP	10 days	Mon 6 May '19	Thu 16 May '19	NA	67	69
69	Review and Approval of the PSP	28 days	Thu 16 May '19	Thu 13 Jun '19	NA	68	147
70							
71	Submission of PSP - Manual Fallback System	46 days	Fri 9 Nov '18	Mon 24 Dec '18	Mon 24 Dec '18		72



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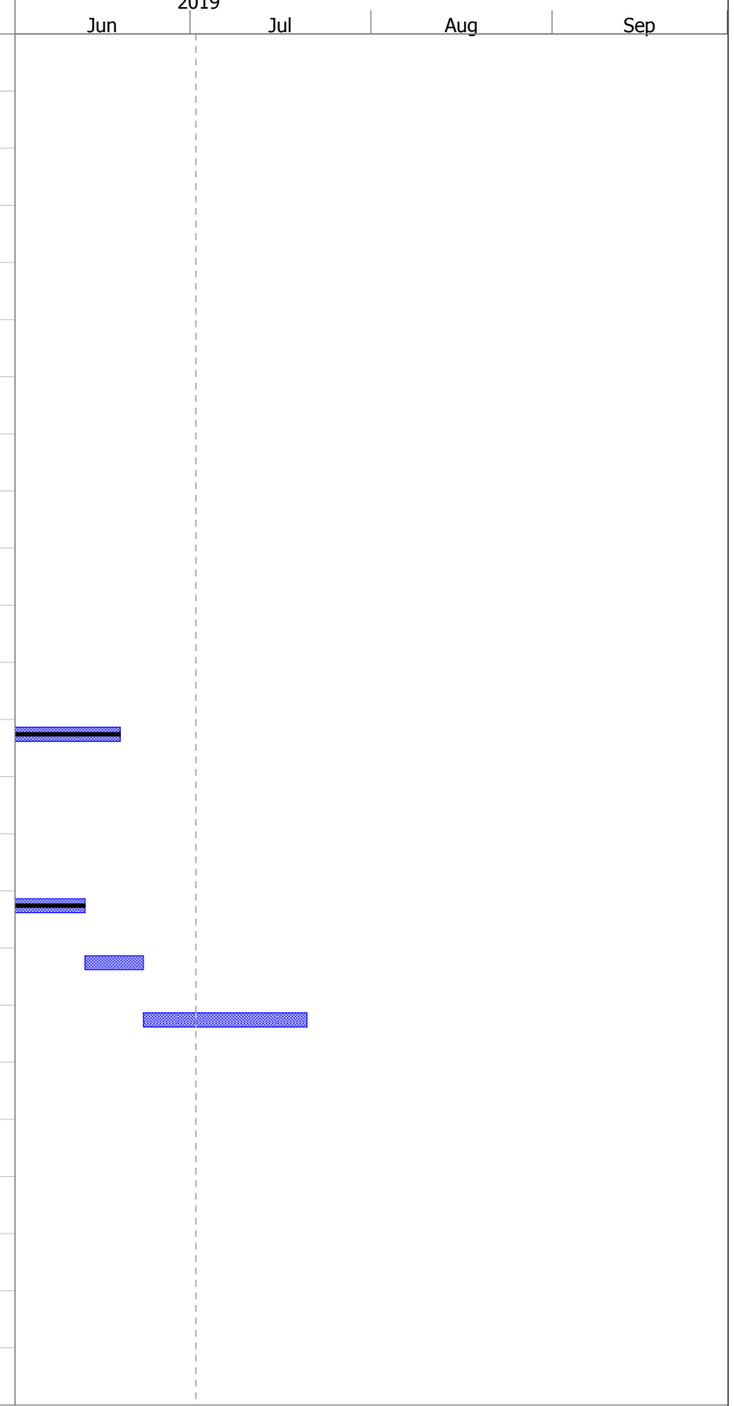
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
72	Review and Comment the PSP	63 days	Mon 24 Dec '18	Mon 25 Feb '19	Mon 25 Feb '19	71	73
73	Resubmission of the PSP	32 days	Mon 25 Feb '19	Fri 29 Mar '19	Fri 29 Mar '19	72	74
74	Review and Approval of the PSP	28 days	Fri 29 Mar '19	Fri 26 Apr '19	NA	73	152
75							
76	Submission of PSP - Operation Facilities	57 days	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		77
77	Review and Comment the PSP	53 days	Fri 4 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	76	78
78	Resubmission of the PSP	28 days	Tue 26 Feb '19	Tue 26 Mar '19	Tue 26 Mar '19	77	79
79	Review and Approval of the PSP	29 days	Tue 26 Mar '19	Wed 24 Apr '19	Wed 24 Apr '19	78	157
80							
81	Submission of PSP - Power Distribution System	57 days	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		82
82	Review and Comment the PSP	55 days	Fri 4 Jan '19	Thu 28 Feb '19	Thu 28 Feb '19	81	83
83	Resubmission of the PSP	61 days	Thu 28 Feb '19	Tue 30 Apr '19	Tue 30 Apr '19	82	84
84	Review and Approval of the PSP	49 days	Tue 30 Apr '19	Tue 18 Jun '19	Tue 18 Jun '19	83	162
85							
86	Submission of PSP - Enforcement System	68 days	Mon 29 Oct '18	Fri 4 Jan '19	Fri 4 Jan '19		87
87	Review and Comment the PSP	159 days	Fri 4 Jan '19	Wed 12 Jun '19	Wed 12 Jun '19	86	88
88	Resubmission of the PSP	10 days	Wed 12 Jun '19	Sat 22 Jun '19	NA	87	89
89	Review and Approval of the PSP	28 days	Sat 22 Jun '19	Sat 20 Jul '19	NA	88	167
90							
91	Submission of PSP - Government Optical Fibre System	60 days	Fri 9 Nov '18	Mon 7 Jan '19	Mon 7 Jan '19		92
92	Review and Comment the PSP	50 days	Mon 7 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	91	93
93	Resubmission of the PSP	28 days	Tue 26 Feb '19	Tue 26 Mar '19	Tue 26 Mar '19	92	94
94	Review and Approval of the PSP	23 days	Tue 26 Mar '19	Thu 18 Apr '19	Thu 18 Apr '19	93	172
95							



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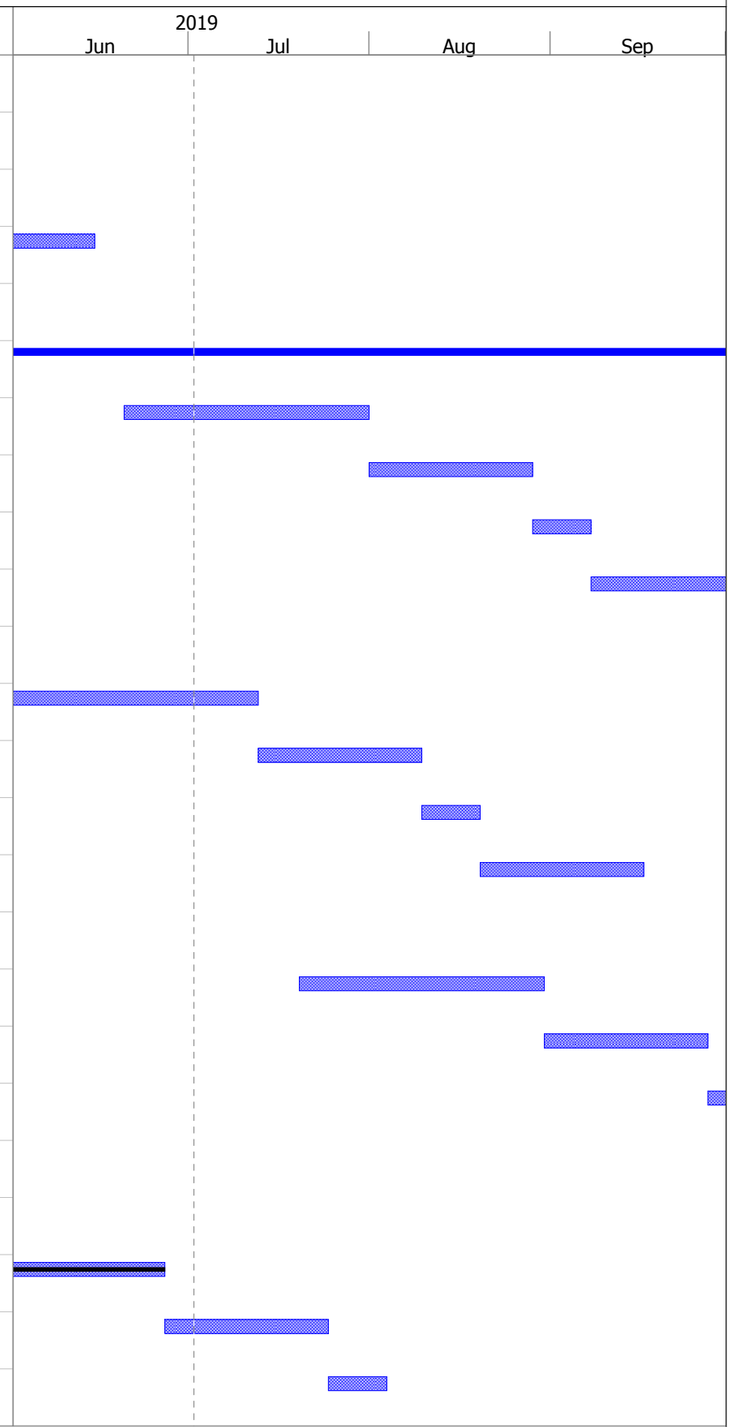
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
96	Submission of PSP - Overview	60 days	Fri 9 Nov '18	Mon 7 Jan '19	Mon 7 Jan '19		97
97	Review and Comment the PSP	120 days	Mon 7 Jan '19	Tue 7 May '19	Tue 7 May '19	96	98
98	Resubmission of the PSP	10 days	Tue 7 May '19	Fri 17 May '19	NA	97	99
99	Review and Approval of the PSP	28 days	Fri 17 May '19	Fri 14 Jun '19	NA	98	
100							
101	**Prepare / Submission of FSP for TKO-LTT TCSS and CBL TCSS**	**201 days**	**Thu 18 Apr '19**	**Tue 5 Nov '19**	**NA**		
102	Submission of FSP - Central System Software	42 days	Wed 19 Jun '19	Wed 31 Jul '19	NA	24	103
103	Review and Comment the FSP	28 days	Wed 31 Jul '19	Wed 28 Aug '19	NA	102	104
104	Resubmission of the FSP	10 days	Wed 28 Aug '19	Sat 7 Sep '19	NA	103	105
105	Review and Approval of the FSP	28 days	Sat 7 Sep '19	Sat 5 Oct '19	NA	104	
106							
107	Submission of FSP- Central System Hardware	42 days	Fri 31 May '19	Fri 12 Jul '19	NA	29	108
108	Review and Comment the FSP	28 days	Fri 12 Jul '19	Fri 9 Aug '19	NA	107	109
109	Resubmission of the FSP	10 days	Fri 9 Aug '19	Mon 19 Aug '19	NA	108	110
110	Review and Approval of the FSP	28 days	Mon 19 Aug '19	Mon 16 Sep '19	NA	109	
111							
112	Submission of FSP - Trafffic Control Devices	42 days	Fri 19 Jul '19	Fri 30 Aug '19	NA	34	113
113	Review and Comment the FSP	28 days	Fri 30 Aug '19	Fri 27 Sep '19	NA	112	114
114	Resubmission of the FSP	10 days	Fri 27 Sep '19	Mon 7 Oct '19	NA	113	115
115	Review and Approval of the FSP	28 days	Mon 7 Oct '19	Mon 4 Nov '19	NA	114	
116							
117	Submission of FSP - Communication System	55 days	Thu 2 May '19	Wed 26 Jun '19	Wed 26 Jun '19	39	118
118	Review and Comment the FSP	28 days	Wed 26 Jun '19	Wed 24 Jul '19	NA	117	119
119	Resubmission of the FSP	10 days	Wed 24 Jul '19	Sat 3 Aug '19	NA	118	120



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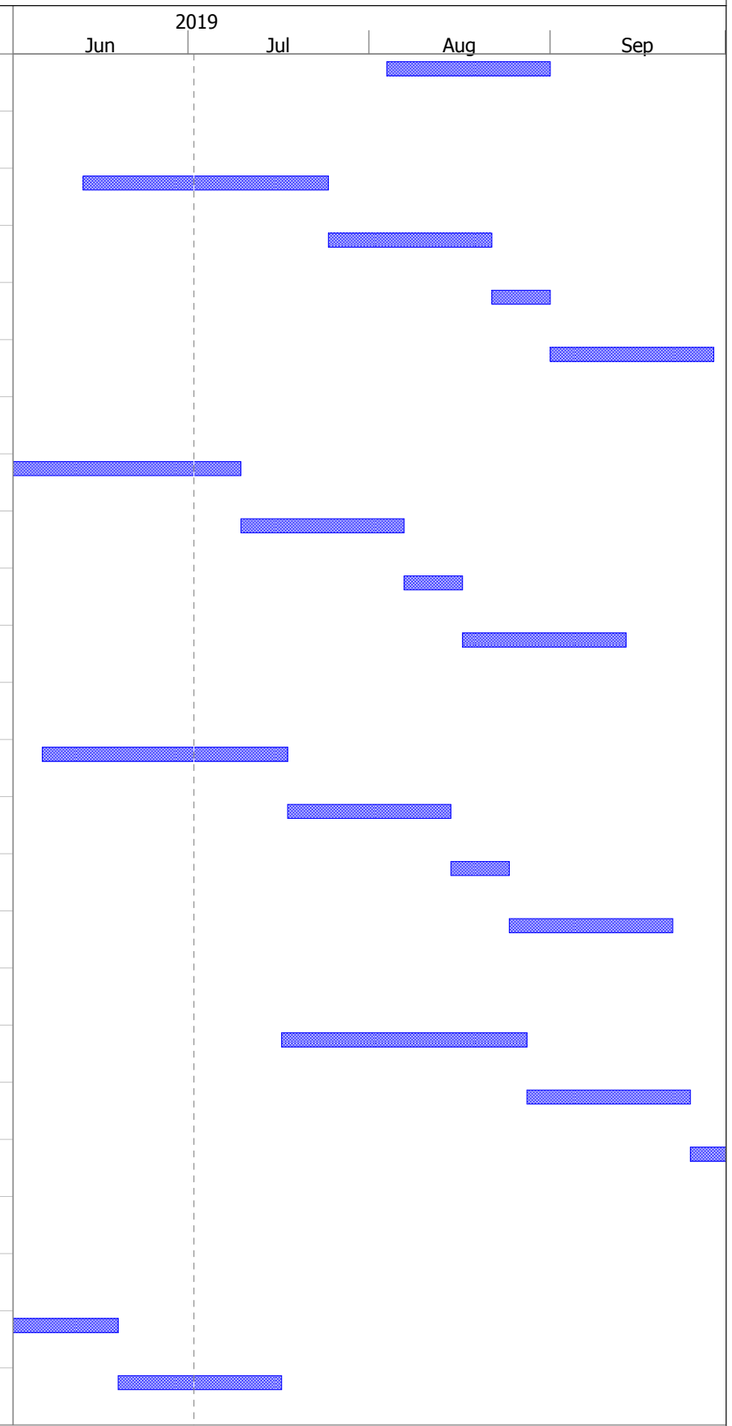
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
120	Review and Approval of the FSP	28 days	Sat 3 Aug '19	Sat 31 Aug '19	NA	119	
121							
122	Submission of FSP - Closed Circuit Television System	42 days	Wed 12 Jun '19	Wed 24 Jul '19	NA	44	123
123	Review and Comment the FSP	28 days	Wed 24 Jul '19	Wed 21 Aug '19	NA	122	124
124	Resubmission of the FSP	10 days	Wed 21 Aug '19	Sat 31 Aug '19	NA	123	125
125	Review and Approval of the FSP	28 days	Sat 31 Aug '19	Sat 28 Sep '19	NA	124	
126							
127	Submission of FSP - Building PABX System	42 days	Tue 28 May '19	Tue 9 Jul '19	NA	49	128
128	Review and Comment the FSP	28 days	Tue 9 Jul '19	Tue 6 Aug '19	NA	127	129
129	Resubmission of the FSP	10 days	Tue 6 Aug '19	Fri 16 Aug '19	NA	128	130
130	Review and Approval of the FSP	28 days	Fri 16 Aug '19	Fri 13 Sep '19	NA	129	
131							
132	Submission of FSP - Emergency Telephone System	42 days	Wed 5 Jun '19	Wed 17 Jul '19	NA	54	133
133	Review and Comment the FSP	28 days	Wed 17 Jul '19	Wed 14 Aug '19	NA	132	134
134	Resubmission of the FSP	10 days	Wed 14 Aug '19	Sat 24 Aug '19	NA	133	135
135	Review and Approval of the FSP	28 days	Sat 24 Aug '19	Sat 21 Sep '19	NA	134	
136							
137	Submission of FSP - Public Address System	42 days	Tue 16 Jul '19	Tue 27 Aug '19	NA	59	138
138	Review and Comment the FSP	28 days	Tue 27 Aug '19	Tue 24 Sep '19	NA	137	139
139	Resubmission of the FSP	10 days	Tue 24 Sep '19	Fri 4 Oct '19	NA	138	140
140	Review and Approval of the FSP	28 days	Fri 4 Oct '19	Fri 1 Nov '19	NA	139	
141							
142	Submission of FSP - Radio System	42 days	Tue 7 May '19	Tue 18 Jun '19	NA	64	143
143	Review and Comment the FSP	28 days	Tue 18 Jun '19	Tue 16 Jul '19	NA	142	144



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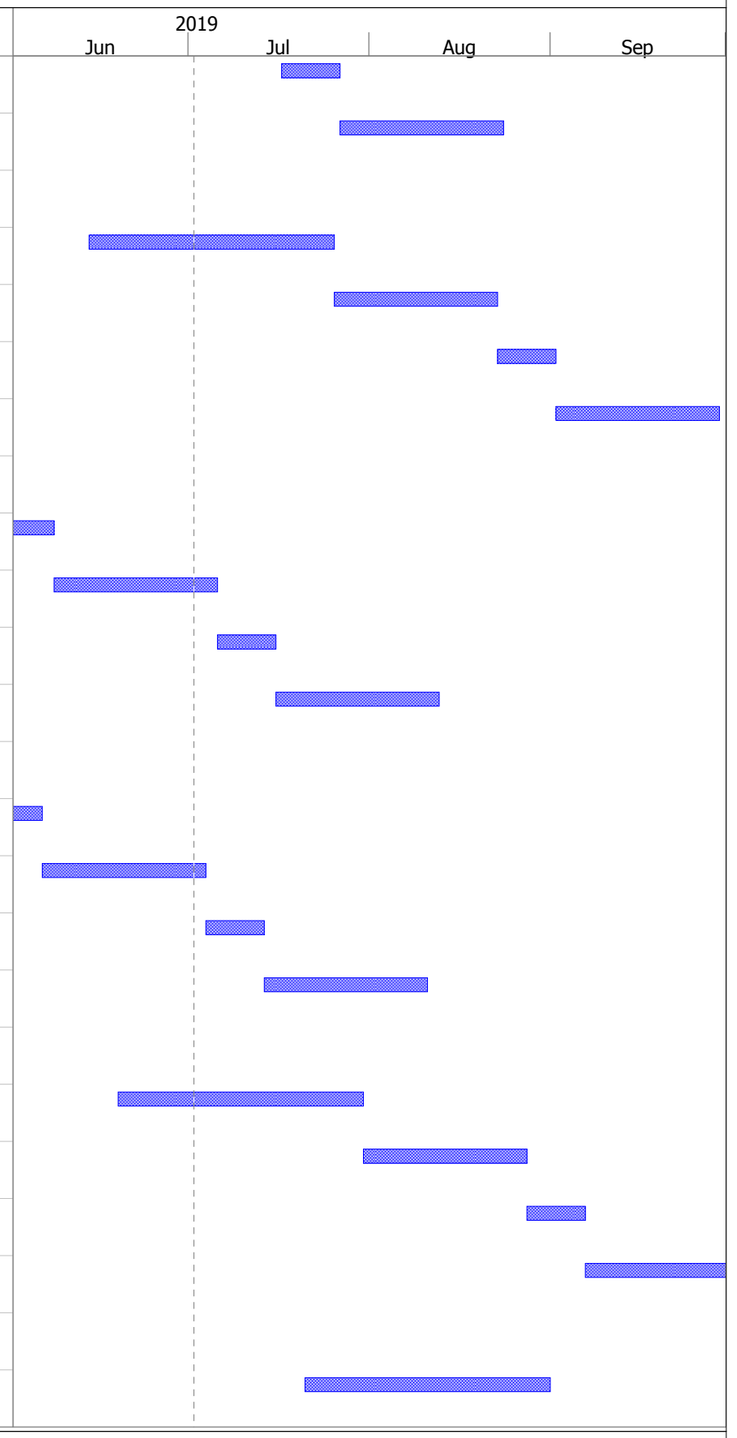
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
144	Resubmission of the FSP	10 days	Tue 16 Jul '19	Fri 26 Jul '19	NA	143	145
145	Review and Approval of the FSP	28 days	Fri 26 Jul '19	Fri 23 Aug '19	NA	144	
146							
147	Submission of FSP - Detection System	42 days	Thu 13 Jun '19	Thu 25 Jul '19	NA	69	148
148	Review and Comment the FSP	28 days	Thu 25 Jul '19	Thu 22 Aug '19	NA	147	149
149	Resubmission of the FSP	10 days	Thu 22 Aug '19	Sun 1 Sep '19	NA	148	150
150	Review and Approval of the FSP	28 days	Sun 1 Sep '19	Sun 29 Sep '19	NA	149	
151							
152	Submission of FSP - Manual Fallback System	42 days	Fri 26 Apr '19	Fri 7 Jun '19	NA	74	153
153	Review and Comment the FSP	28 days	Fri 7 Jun '19	Fri 5 Jul '19	NA	152	154
154	Resubmission of the FSP	10 days	Fri 5 Jul '19	Mon 15 Jul '19	NA	153	155
155	Review and Approval of the FSP	28 days	Mon 15 Jul '19	Mon 12 Aug '19	NA	154	
156							
157	Submission of FSP - Operation Facilities	42 days	Wed 24 Apr '19	Wed 5 Jun '19	NA	79	158
158	Review and Comment the FSP	28 days	Wed 5 Jun '19	Wed 3 Jul '19	NA	157	159
159	Resubmission of the FSP	10 days	Wed 3 Jul '19	Sat 13 Jul '19	NA	158	160
160	Review and Approval of the FSP	28 days	Sat 13 Jul '19	Sat 10 Aug '19	NA	159	
161							
162	Submission of FSP - Power Distribution System	42 days	Tue 18 Jun '19	Tue 30 Jul '19	NA	84	163
163	Review and Comment the FSP	28 days	Tue 30 Jul '19	Tue 27 Aug '19	NA	162	164
164	Resubmission of the FSP	10 days	Tue 27 Aug '19	Fri 6 Sep '19	NA	163	165
165	Review and Approval of the FSP	28 days	Fri 6 Sep '19	Fri 4 Oct '19	NA	164	
166							
167	Submission of FSP - Enforcement System	42 days	Sat 20 Jul '19	Sat 31 Aug '19	NA	89	168



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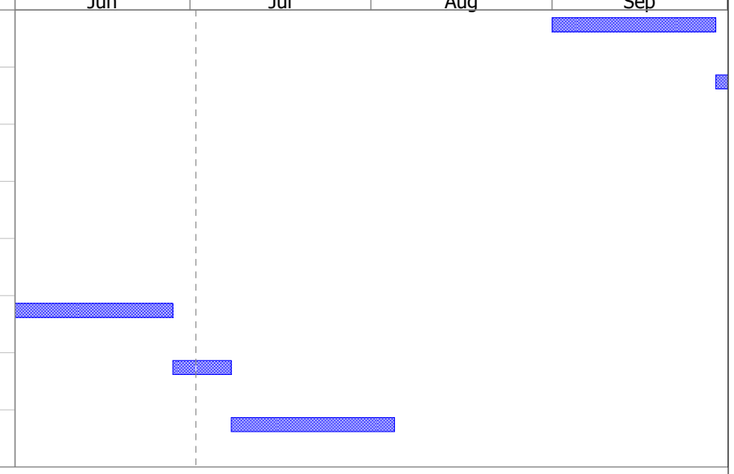
Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors
168	Review and Comment the FSP	28 days	Sat 31 Aug '19	Sat 28 Sep '19	NA	167	169
169	Resubmission of the FSP	10 days	Sat 28 Sep '19	Tue 8 Oct '19	NA	168	170
170	Review and Approval of the FSP	28 days	Tue 8 Oct '19	Tue 5 Nov '19	NA	169	
171							
172	Submission of FSP - Government Optical Fibre System	42 days	Thu 18 Apr '19	Thu 30 May '19	NA	94	173
173	Review and Comment the FSP	28 days	Thu 30 May '19	Thu 27 Jun '19	NA	172	174
174	Resubmission of the FSP	10 days	Thu 27 Jun '19	Sun 7 Jul '19	NA	173	175
175	Review and Approval of the FSP	28 days	Sun 7 Jul '19	Sun 4 Aug '19	NA	174	



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Contract No. NE 2015/03 (C5)

Subject: 3 Months Look Ahead Programme

Activities	Jul, 2019	Aug, 2019	Sep, 2019
Installation of false ceiling & lighting			
Planter and irrigation system			
Floor finishing & M.J installation			

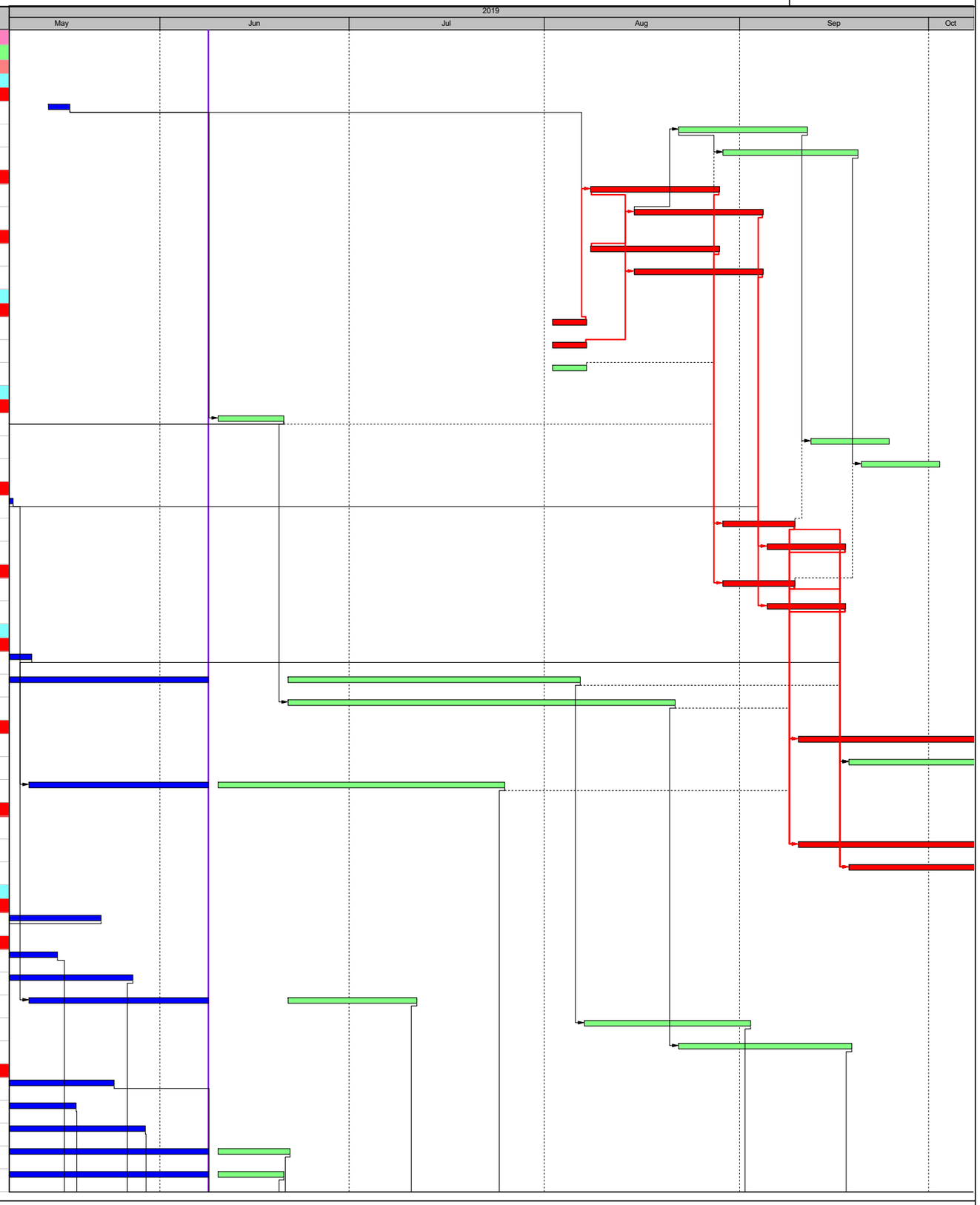
Subject: Construction Programme (Jun, 2019)

Activities	Week 1	Week 2	Week 3	Week 4
Installation of kalzip roofing systems on main deck				
E&M inside Pillar box				

NE/2017/01 Tseung Kwan O - Lam Tin Tunnel- Tseung Kwan O Interchange and Associated Works

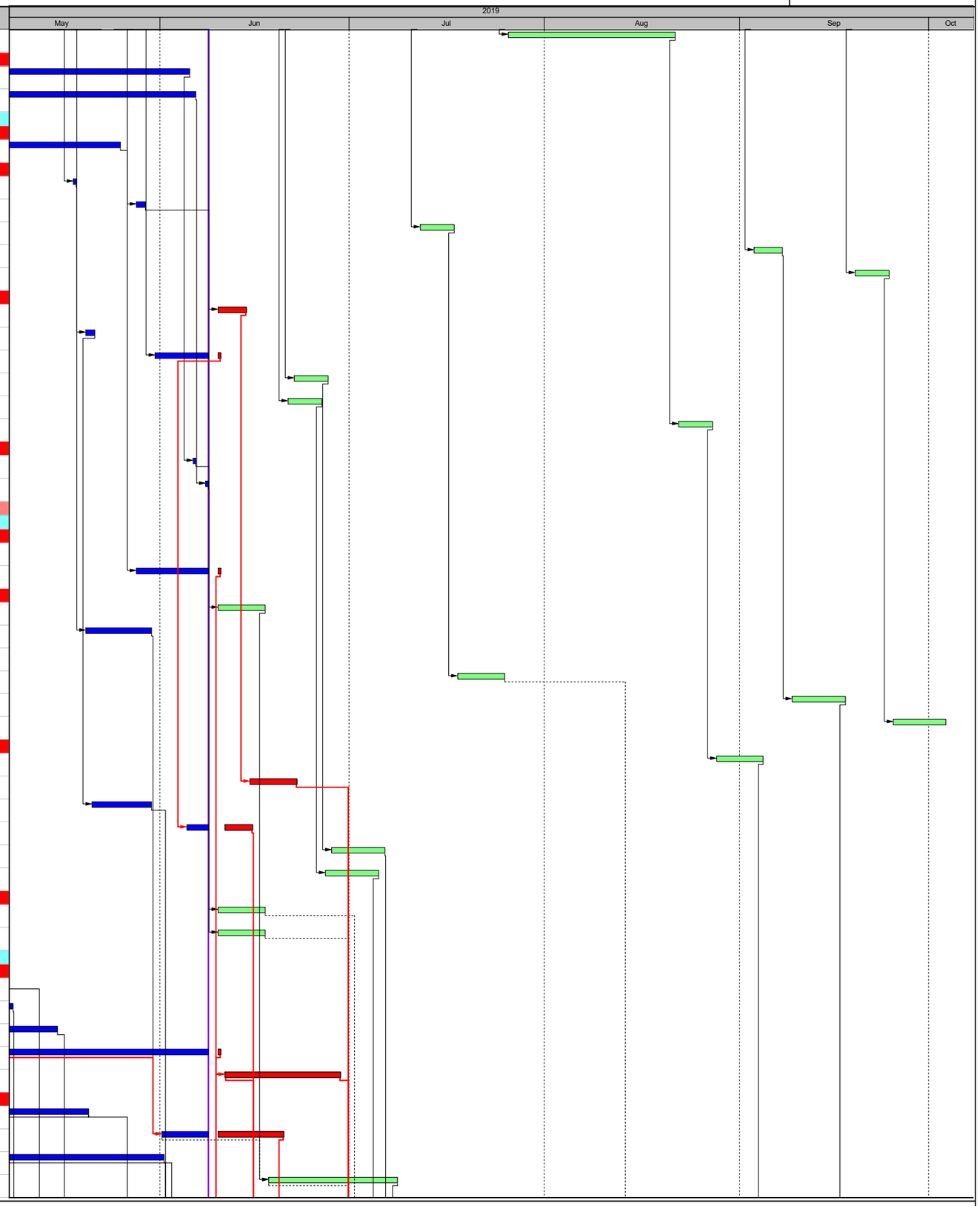
Rolling programme (June 2019 to Sept 2019)

Activity ID	Activity Name	Original Duration	Start	Finish
Tseung Kwan O Lam Tin Tunnel - Tseung Kwan O Interchange and Associated Works		250	27-Nov-18 A	19-Nov-19
Construction Work		250	27-Nov-18 A	19-Nov-19
Pre-Drilling & Piling Work		250	27-Nov-18 A	19-Nov-19
Temporary Platform erection for Pre-drilling & Piling		111	14-May-19 A	19-Sep-19
Bridge S300		111	14-May-19 A	19-Sep-19
CON-10140	Temporary Platform Erection & Silt Curtain Installation for Pier 4H	8	14-May-19 A	17-May-19 A
CON-10150	Temporary Platform Erection & Silt Curtain Installation for Pier 4J (Portion III Possession)	18	22-Aug-19	11-Sep-19
CON-10160	Temporary Platform Erection & Silt Curtain Installation for Pier 4K (Portion III Possession)	18	29-Aug-19	19-Sep-19
Bridge S200		24	08-Aug-19	04-Sep-19
CON-10230	Temporary Platform Erection & Silt Curtain Installation for Pier 2B (Portion III Possession)	18	08-Aug-19	28-Aug-19
CON-10240	Temporary Platform Erection & Silt Curtain Installation for Pier 2C (Portion III Possession)	18	15-Aug-19	04-Sep-19
Bridge S100		24	08-Aug-19	04-Sep-19
CON-10270	Temporary Platform Erection & Silt Curtain Installation for Pier 3D (Portion III Possession)	18	08-Aug-19	28-Aug-19
CON-10280	Temporary Platform Erection & Silt Curtain Installation for Pier 3E (Portion III Possession)	18	15-Aug-19	04-Sep-19
Sloping Sea Wall for Pier 2B(Bridge S200) , 3E (Bridge S100) and 4K (Bridge S300)		5	02-Aug-19	07-Aug-19
Work to Facilitate Piling		5	02-Aug-19	07-Aug-19
CON-10290	Removal of Armour Rock and All Necessary Work To Facilitate piling work at Pier 2B	5	02-Aug-19	07-Aug-19
CON-10300	Removal of Armour Rock and All Necessary Work To Facilitate piling work at Pier 3E	5	02-Aug-19	07-Aug-19
CON-10310	Removal of Armour Rock and All Necessary Work To Facilitate piling work at Pier 4K	5	02-Aug-19	07-Aug-19
Pre-drilling		143	25-Apr-19 A	02-Oct-19
Bridge S300		96	10-Jun-19	02-Oct-19
CON-10490	Pre-drill 4H Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	10-Jun-19	20-Jun-19
CON-10500	Pre-drill 4J Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	12-Sep-19	24-Sep-19
CON-10510	Pre-drill 4K Including Plant Mobilisation and Demobilisation (2 nos./Team 2)	10	20-Sep-19	02-Oct-19
Bridge S200		131	25-Apr-19 A	17-Sep-19
CON-10570	Pre-drill 2D Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	25-Apr-19 A	08-May-19 A
CON-10580	Pre-drill 2B Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	29-Aug-19	09-Sep-19
CON-10590	Pre-drill 2C Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	05-Sep-19	17-Sep-19
Bridge S100		16	29-Aug-19	17-Sep-19
CON-10620	Pre-drill 3D Including Plant Mobilisation and Demobilisation (2 nos./Team 2)	10	29-Aug-19	09-Sep-19
CON-10630	Pre-drill 3E Including Plant Mobilisation and Demobilisation (2 nos./Team 4)	10	05-Sep-19	17-Sep-19
Bored Pile Include Fabrication & Delivery of Pile Cage and Casing		183	22-Mar-19 A	19-Nov-19
Bridge S300		91	22-Mar-19 A	21-Aug-19
CON-10770	Bored Pile 4F Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	22-Mar-19 A	11-May-19 A
CON-10780	Bored Pile 4G Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	16-Apr-19 A	06-Aug-19
CON-10790	Bored Pile 4H Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	21-Jun-19	21-Aug-19
Bridge S200		136	11-May-19 A	19-Nov-19
CON-10820	Bored Pile 2B Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	10-Sep-19	12-Nov-19
CON-10830	Bored Pile 2C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	18-Sep-19	19-Nov-19
CON-10840	Bored Pile 2D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	11-May-19 A	25-Jul-19
Bridge S100		183	09-Apr-19 A	19-Nov-19
CON-10910	Bored Pile 3C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	09-Apr-19 A	03-May-19 A
CON-10920	Bored Pile 3D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	10-Sep-19	12-Nov-19
CON-10930	Bored Pile 3E Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	18-Sep-19	19-Nov-19
Curing and Bored Pile Test (Sonic + Interface Core/Full Core)		199	27-Nov-18 A	18-Sep-19
Bridge ML		23	30-Dec-18 A	22-May-19 A
CON-11010	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1K Including Plant Mobilisation and Demobilisation	23	30-Dec-18 A	22-May-19 A
Bridge S300		162	29-Jan-19 A	18-Sep-19
CON-11030	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4C Including Plant Mobilisation and Demobilisation	23	10-Mar-19 A	15-May-19 A
CON-11060	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4B Including Plant Mobilisation and Demobilisation	23	29-Jan-19 A	27-May-19 A
CON-11070	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4F Including Plant Mobilisation and Demobilisation	23	11-May-19 A	11-Jul-19
CON-11080	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4G Including Plant Mobilisation and Demobilisation	23	07-Aug-19	02-Sep-19
CON-11090	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4H Including Plant Mobilisation and Demobilisation	23	22-Aug-19	18-Sep-19
Bridge S200		134	27-Nov-18 A	21-Aug-19
CON-11120	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2E Including Plant Mobilisation and Demobilisation	23	27-Nov-18 A	24-May-19 A
CON-11130	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2F Including Plant Mobilisation and Demobilisation	23	23-Dec-18 A	18-May-19 A
CON-11140	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2G Including Plant Mobilisation and Demobilisation	23	19-Feb-19 A	29-May-19 A
CON-11150	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2H Including Plant Mobilisation and Demobilisation	23	11-Apr-19 A	21-Jun-19
CON-11160	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2J Including Plant Mobilisation and Demobilisation	23	30-Mar-19 A	20-Jun-19



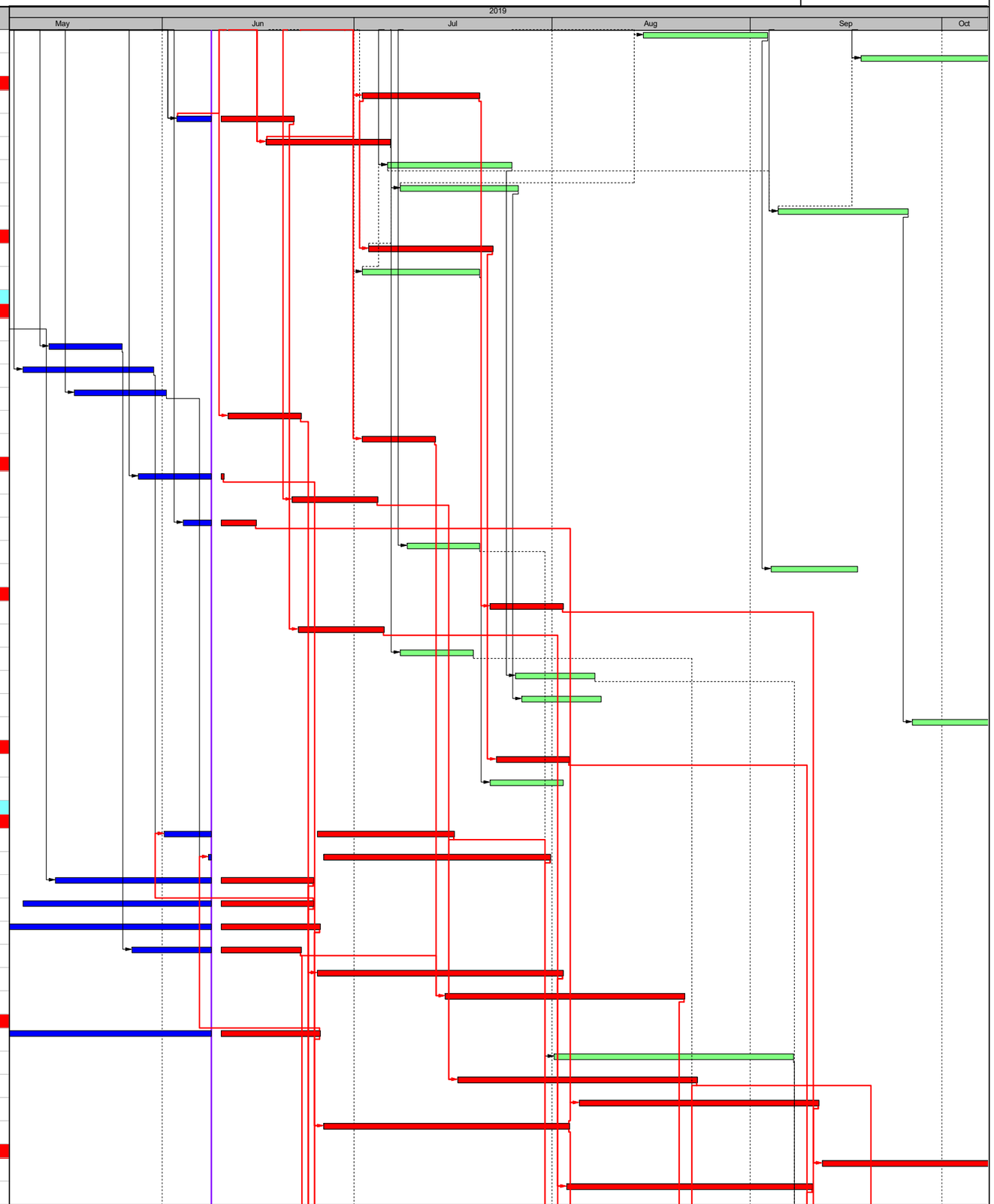
Works Critical Works Actual

Activity ID	Activity Name	Original Duration	Start	Finish
CON-11170	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2D Including Plant Mobilisation and Demobilisation	23	26-Jul-19	21-Aug-19
Bridge S100		42	17-Feb-19 A	06-Jun-19 A
CON-11200	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 3B Including Plant Mobilisation and Demobilisation	23	17-Feb-19 A	05-Jun-19 A
CON-11210	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 3C Including Plant Mobilisation and Demobilisation	23	03-May-19 A	06-Jun-19 A
Removal of Temp. Working platform		137	24-Apr-19 A	24-Sep-19
Bridge ML		5	24-Apr-19 A	25-May-19 A
CON-11290	Removal of Temporary Platform Erection for Pier 1KN & 1KS	5	24-Apr-19 A	25-May-19 A
Bridge S300		115	18-May-19 A	24-Sep-19
CON-11310	Removal of Temporary Platform Erection for Pier 4C	5	18-May-19 A	18-May-19 A
CON-11340	Removal of Temporary Platform Erection for Pier 4B	5	28-May-19 A	29-May-19 A
CON-11350	Removal of Temporary Platform Erection for Pier 4F	5	12-Jul-19	17-Jul-19
CON-11360	Removal of Temporary Platform Erection for Pier 4G	5	03-Sep-19	07-Sep-19
CON-11370	Removal of Temporary Platform Erection for Pier 4H	5	19-Sep-19	24-Sep-19
Bridge S200		92	20-May-19 A	27-Aug-19
CON-11400	Removal of Temporary Platform Erection for Pier 2E	5	10-Jun-19	14-Jun-19
CON-11410	Removal of Temporary Platform Erection for Pier 2F	5	20-May-19 A	21-May-19 A
CON-11420	Removal of Temporary Platform Erection for Pier 2G	5	31-May-19 A	10-Jun-19
CON-11430	Removal of Temporary Platform Erection for Pier 2H	5	22-Jun-19	27-Jun-19
CON-11440	Removal of Temporary Platform Erection for Pier 2J	5	21-Jun-19	26-Jun-19
CON-11450	Removal of Temporary Platform Erection for Pier 2D	5	22-Aug-19	27-Aug-19
Bridge S100		5	06-Jun-19 A	08-Jun-19 A
CON-11480	Removal of Temporary Platform Erection for Pier 3B	5	06-Jun-19 A	06-Jun-19 A
CON-11490	Removal of Temporary Platform Erection for Pier 3C	5	08-Jun-19 A	08-Jun-19 A
Pile Cap Construction		178	18-Mar-19 A	23-Oct-19
Preparation Work for the Installation of Precast Shell		144	24-Apr-19 A	03-Oct-19
Bridge ML		34	24-Apr-19 A	10-Jun-19
CON-15720	Preparation work Installation of Precast Shell for Pier 1J	7	24-Apr-19 A	06-May-19 A
CON-15730	Preparation work Installation of Precast Shell for Pier 1K	7	28-May-19 A	10-Jun-19
Bridge S300		117	27-Apr-19 A	03-Oct-19
CON-15750	Preparation work Installation of Precast Shell for Pier 4B	7	10-Jun-19	17-Jun-19
CON-15760	Preparation work Installation of Precast Shell for Pier 4C	7	20-May-19 A	30-May-19 A
CON-15770	Preparation work Installation of Precast Shell for Pier 4D	7	27-Apr-19 A	06-May-19 A
CON-15790	Preparation work Installation of Precast Shell for Pier 4F	7	18-Jul-19	25-Jul-19
CON-15800	Preparation work Installation of Precast Shell for Pier 4G	7	09-Sep-19	17-Sep-19
CON-15810	Preparation work Installation of Precast Shell for Pier 4H	7	25-Sep-19	03-Oct-19
Bridge S200		94	21-May-19 A	04-Sep-19
CON-15860	Preparation work Installation of Precast Shell for Pier 2D	7	28-Aug-19	04-Sep-19
CON-15870	Preparation work Installation of Precast Shell for Pier 2E	7	15-Jun-19	22-Jun-19
CON-15880	Preparation work Installation of Precast Shell for Pier 2F	7	21-May-19 A	30-May-19 A
CON-15890	Preparation work Installation of Precast Shell for Pier 2G	7	05-Jun-19 A	15-Jun-19
CON-15900	Preparation work Installation of Precast Shell for Pier 2H	7	28-Jun-19	06-Jul-19
CON-15910	Preparation work Installation of Precast Shell for Pier 2J	7	27-Jun-19	05-Jul-19
Bridge S100		7	10-Jun-19	17-Jun-19
CON-15920	Preparation work Installation of Precast Shell for Pier 3B	7	10-Jun-19	17-Jun-19
CON-15930	Preparation work Installation of Precast Shell for Pier 3C	7	10-Jun-19	17-Jun-19
Installation of Precast Shell and Sealing		166	18-Mar-19 A	09-Oct-19
Bridge ML		83	18-Mar-19 A	29-Jun-19
CON-11550	Install Precast Shell and Sealing for Pier 1H (1 nos. Shell / Team 1)	17	19-Mar-19 A	02-May-19 A
CON-11560	Install Precast Shell and Sealing for Pier 1E-N (1 nos. Shell / Team 2)	17	18-Mar-19 A	08-May-19 A
CON-11570	Install Precast Shell and Sealing for Pier 1E-S (1 nos. Shell / Team 1)	17	04-Apr-19 A	15-May-19 A
CON-11580	Install Precast Shell and Sealing for Pier 1J (1 nos. Shell / Team 1)	17	07-May-19 A	10-Jun-19
CON-11590	Install Precast Shell and Sealing for Pier 1K (1 nos. Shell / Team 2)	17	11-Jun-19	29-Jun-19
Bridge S300		150	06-Apr-19 A	09-Oct-19
CON-11610	Install Precast Shell and Sealing for Pier 4E (1 nos. Shell / Team 2)	17	06-Apr-19 A	20-May-19 A
CON-11620	Install Precast Shell and Sealing for Pier 4C (1 nos. Shell / Team 1)	17	01-Jun-19 A	20-Jun-19
CON-11630	Install Precast Shell and Sealing for Pier 4D (1 nos. Shell / Team 2)	17	06-May-19 A	01-Jun-19 A
CON-11640	Install Precast Shell and Sealing for Pier 4B (1 nos. Shell / Team 1)	17	18-Jun-19	08-Jul-19



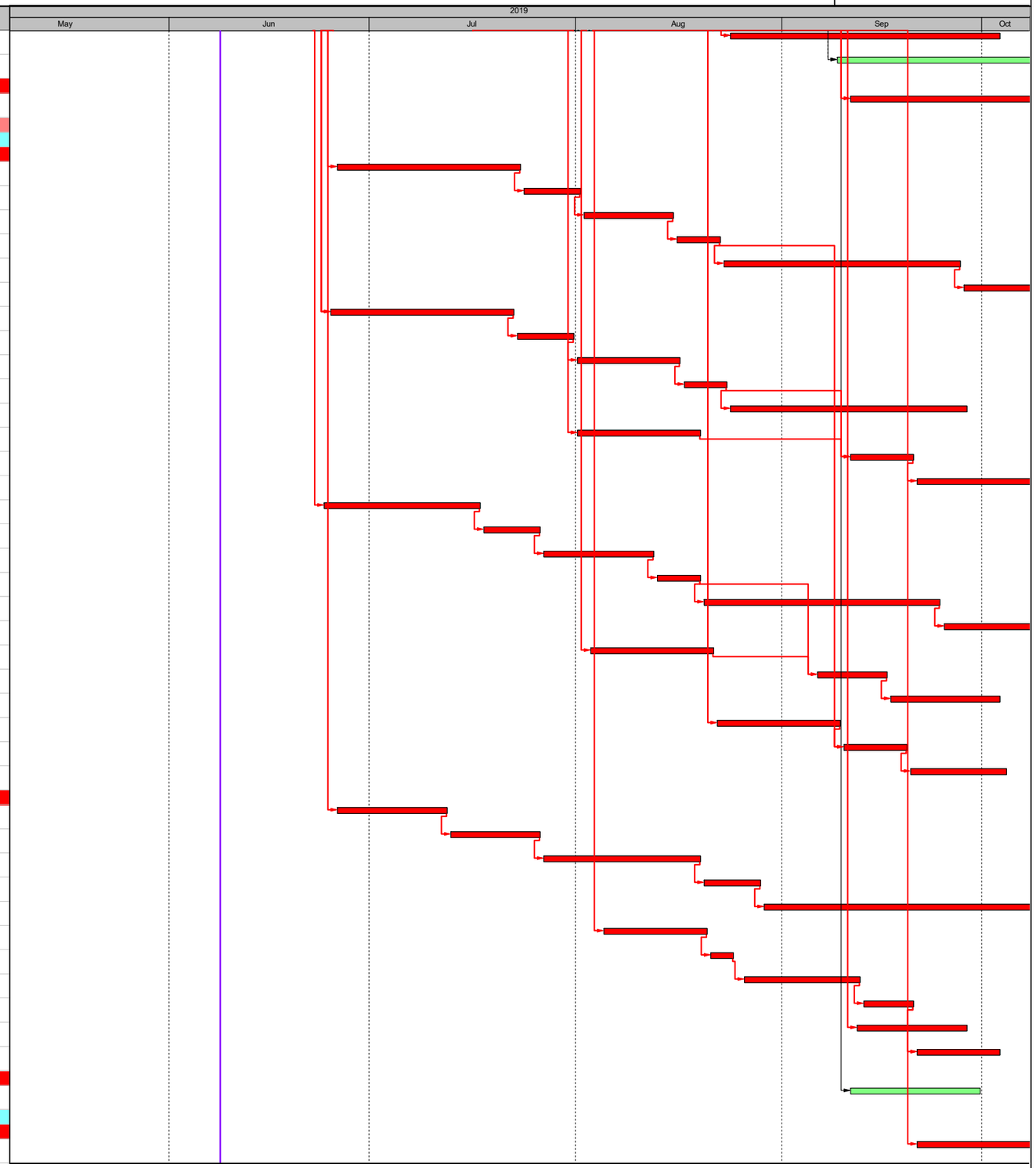
Works Critical Works Actual

Activity ID	Activity Name	Original Duration	Start	Finish
CON-11650	Install Precast Shell and Sealing for Pier 4F (1 nos. Shell / Team 2)	17	15-Aug-19	03-Sep-19
CON-11660	Install Precast Shell and Sealing for Pier 4G (1 nos. Shell / Team 1)	17	18-Sep-19	09-Oct-19
Bridge S200		85	03-Jun-19 A	25-Sep-19
CON-11700	Install Precast Shell and Sealing for Pier 2E (1 nos. Shell / Team 2)	17	02-Jul-19	20-Jul-19
CON-11710	Install Precast Shell and Sealing for Pier 2F (1 nos. Shell / Team 2)	17	03-Jun-19 A	21-Jun-19
CON-11720	Install Precast Shell and Sealing for Pier 2G (1 nos. Shell / Team 2)	17	17-Jun-19	06-Jul-19
CON-11730	Install Precast Shell and Sealing for Pier 2J (1 nos. Shell / Team 1)	17	06-Jul-19	25-Jul-19
CON-11740	Install Precast Shell and Sealing for Pier 2H (1 nos. Shell / Team 2)	17	08-Jul-19	26-Jul-19
CON-11750	Install Precast Shell and Sealing for Pier 2D (1 nos. Shell / Team 1)	17	05-Sep-19	25-Sep-19
Bridge S100		18	02-Jul-19	22-Jul-19
CON-11780	Install Precast Shell and Sealing for Pier 3B (1 nos. Shell / Team 2)	17	03-Jul-19	22-Jul-19
CON-11790	Install Precast Shell and Sealing for Pier 3C (1 nos. Shell / Team 1)	17	02-Jul-19	20-Jul-19
Trimming of Bored Pile Head		149	09-Apr-19 A	10-Oct-19
Bridge ML		76	09-Apr-19 A	13-Jul-19
CON-11830	Trimming Bored Pile 1F-N	11	09-Apr-19 A	04-May-19 A
CON-11850	Trimming Bored Pile 1H	11	14-May-19 A	25-May-19 A
CON-11860	Trimming Bored Pile 1E-N	11	10-May-19 A	30-May-19 A
CON-11870	Trimming Bored Pile 1E-S	11	18-May-19 A	01-Jun-19 A
CON-11880	Trimming Bored Pile 1J	11	11-Jun-19	22-Jun-19
CON-11890	Trimming Bored Pile 1K	11	02-Jul-19	13-Jul-19
Bridge S300		103	28-May-19 A	17-Sep-19
CON-11910	Trimming Bored Pile 4E	11	28-May-19 A	10-Jun-19
CON-11920	Trimming Bored Pile 4C	11	21-Jun-19	04-Jul-19
CON-11930	Trimming Bored Pile 4D	11	04-Jun-19 A	15-Jun-19
CON-11940	Trimming Bored Pile 4B	11	09-Jul-19	20-Jul-19
CON-11950	Trimming Bored Pile 4F	11	04-Sep-19	17-Sep-19
Bridge S200		91	22-Jun-19	10-Oct-19
CON-12000	Trimming Bored Pile 2E	11	22-Jul-19	02-Aug-19
CON-12010	Trimming Bored Pile 2F	11	22-Jun-19	05-Jul-19
CON-12020	Trimming Bored Pile 2G	11	08-Jul-19	19-Jul-19
CON-12030	Trimming Bored Pile 2J	11	26-Jul-19	07-Aug-19
CON-12040	Trimming Bored Pile 2H	11	27-Jul-19	08-Aug-19
CON-12050	Trimming Bored Pile 2D	11	26-Sep-19	10-Oct-19
Bridge S100		12	22-Jul-19	03-Aug-19
CON-12080	Trimming Bored Pile 3B	11	23-Jul-19	03-Aug-19
CON-12090	Trimming Bored Pile 3C	11	22-Jul-19	02-Aug-19
Pile Cap Rebar Erection, Concreting and Curing		159	18-Apr-19 A	23-Oct-19
Bridge ML		108	18-Apr-19 A	21-Aug-19
CON-12120	Pile Cap Rebar Erection, Concreting and Curing for Pier 1E-N (1 nos.Pile Cap/Team 3)	33	01-Jun-19 A	16-Jul-19
CON-12130	Pile Cap Rebar Erection, Concreting and Curing for Pier 1E-S (1 nos.Pile Cap/Team 4)	33	08-Jun-19 A	31-Jul-19
CON-12140	Pile Cap Rebar Erection, Concreting and Curing for Pier 1F-N (1 nos.Pile Cap/Team 2)	27	15-May-19 A	24-Jun-19
CON-12150	Pile Cap Rebar Erection, Concreting and Curing for Pier 1F-S (1 nos.Pile Cap/Team 3)	27	10-May-19 A	24-Jun-19
CON-12160	Pile Cap Rebar Erection, Concreting and Curing for Pier 1G (1 nos.Pile Cap/Team 1)	27	18-Apr-19 A	25-Jun-19
CON-12170	Pile Cap Rebar Erection, Concreting and Curing for Pier 1H (1 nos.Pile Cap/Team 5)	33	27-May-19 A	22-Jun-19
CON-12180	Pile Cap Rebar Erection, Concreting and Curing for Pier 1J (1 nos.Pile Cap/Team 2)	33	25-Jun-19	02-Aug-19
CON-12190	Pile Cap Rebar Erection, Concreting and Curing for Pier 1K (1 nos.Pile Cap/Team 5)	33	15-Jul-19	21-Aug-19
Bridge S300		126	24-Apr-19 A	11-Sep-19
CON-12200	Pile Cap Rebar Erection and Concreting for Pier 4A (1 nos.Pile Cap/Team 4)	27	24-Apr-19 A	25-Jun-19
CON-12210	Pile Cap Rebar Erection, Concreting and Curing for Pier 4B (1 nos.Pile Cap/Team 4)	33	01-Aug-19	07-Sep-19
CON-12220	Pile Cap Rebar Erection, Concreting and Curing for Pier 4C (1 nos.Pile Cap/Team 3)	33	17-Jul-19	23-Aug-19
CON-12230	Pile Cap Rebar Erection, Concreting and Curing for Pier 4D (1 nos.Pile Cap/Team 1)	33	05-Aug-19	11-Sep-19
CON-12240	Pile Cap Rebar Erection, Concreting and Curing for Pier 4E (1 nos.Pile Cap/Team 1)	33	26-Jun-19	03-Aug-19
Bridge S200		67	03-Aug-19	23-Oct-19
CON-12330	Pile Cap Rebar Erection, Concreting and Curing for Pier 2E (1 nos.Pile Cap/Team 1)	33	12-Sep-19	23-Oct-19
CON-12340	Pile Cap Rebar Erection, Concreting and Curing for Pier 2F (1 nos.Pile Cap/Team 2)	33	03-Aug-19	10-Sep-19



Works Critical Works Actual

Activity ID	Activity Name	Original Duration	Start	Finish
CON-12350	Pile Cap Rebar Erection, Concreting and Curing for Pier 2G (1 nos.Pile Cap/Team 3)	33	24-Aug-19	03-Oct-19
CON-12370	Pile Cap Rebar Erection, Concreting and Curing for Pier 2J (1 nos.Pile Cap/Team 4)	33	09-Sep-19	19-Oct-19
Bridge S100		33	11-Sep-19	22-Oct-19
CON-12380	Pile Cap Rebar Erection, Concreting and Curing for Pier 3B (1 nos.Pile Cap/Team 2)	33	11-Sep-19	22-Oct-19
Construction Pier Element		93	24-Jun-19	14-Oct-19
Construction of Pier		92	24-Jun-19	12-Oct-19
Bridge ML		89	24-Jun-19	09-Oct-19
CON-12420	Construction of Pier 1G, Type 4M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 1) - 1st Pour	23	26-Jun-19	23-Jul-19
CON-12421	Construction of Pier 1G, Type 4M (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 1)- 1st Pour	8	24-Jul-19	01-Aug-19
CON-12422	Construction of Pier 1G, Type 4M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 1) - 2nd Pour	12	02-Aug-19	15-Aug-19
CON-12423	Construction of Pier 1G, Type 4M (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 1)- 2nd Pour	6	16-Aug-19	22-Aug-19
CON-12424	Construction of Pier 1G, Type 4M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 1) - 3rd Pour	30	23-Aug-19	27-Sep-19
CON-12425	Construction of Pier 1G, Type 4M (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 1)- 3rd Pour	8	28-Sep-19	09-Oct-19
CON-12430	Construction of Pier 1F, Type 3 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 2)-1st Pour	23	25-Jun-19	22-Jul-19
CON-12431	Construction of Pier 1F, Type 3 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 2) -1st Pour	8	23-Jul-19	31-Jul-19
CON-12432	Construction of Pier 1F, Type 3 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 2)-2nd Pour	14	01-Aug-19	16-Aug-19
CON-12433	Construction of Pier 1F, Type 3 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 2) -2nd Pour	6	17-Aug-19	23-Aug-19
CON-12434	Construction of Pier 1F, Type 3 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 2)-3rd Pour	30	24-Aug-19	28-Sep-19
CON-12440	Construction of Pier 1E, Type 3 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 2) - 1st Pour	16	01-Aug-19	19-Aug-19
CON-12441	Construction of Pier 1E, Type 3 (3 Pours)Falsework, Formwork and Concreting (1 nos.Pier /Team 2) - 1st Pour	8	11-Sep-19	20-Sep-19
CON-12442	Construction of Pier 1E, Type 3 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 2) - 2nd Pour	14	21-Sep-19	09-Oct-19
CON-12450	Construction of Pier 1H, Type 4 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 5) - 1st Pour	20	24-Jun-19	17-Jul-19
CON-12451	Construction of Pier 1H, Type 4 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 5) - 1st Pour	8	18-Jul-19	26-Jul-19
CON-12452	Construction of Pier 1H, Type 4 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 5) - 2nd Pour	14	27-Jul-19	12-Aug-19
CON-12453	Construction of Pier 1H, Type 4 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 5) - 2nd Pour	6	13-Aug-19	19-Aug-19
CON-12454	Construction of Pier 1H, Type 4 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 5) - 3rd Pour	30	20-Aug-19	24-Sep-19
CON-12455	Construction of Pier 1H, Type 4 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 5) - 3rd Pour	10	25-Sep-19	08-Oct-19
CON-12460	Construction of Pier 1J ,Type 4 (3 Pours)Erection of Platform & Rebar (1 nos.Pier /Team 5) - 1st Pour	16	03-Aug-19	21-Aug-19
CON-12461	Construction of Pier 1J ,Type 4 (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 5) - 1st Pour	8	06-Sep-19	16-Sep-19
CON-12462	Construction of Pier 1J ,Type 4 (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 5)- 2nd Pour	14	17-Sep-19	03-Oct-19
CON-12470	Construction of Pier 1K , Type 4M (4 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 1) -1st Pour	16	22-Aug-19	09-Sep-19
CON-12471	Construction of Pier 1K , Type 4M (4 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 1) - 1st Pour	8	10-Sep-19	19-Sep-19
CON-12472	Construction of Pier 1K , Type 4M (4 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 1) -2nd Pour	12	20-Sep-19	04-Oct-19
Bridge S300		90	26-Jun-19	12-Oct-19
CON-12480	Construction of Pier 4A, type 1M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 3) - 1st Pour	14	26-Jun-19	12-Jul-19
CON-12481	Construction of Pier 4A, type 1M (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 3) - 1st Pour	12	13-Jul-19	26-Jul-19
CON-12482	Construction of Pier 4A, type 1M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 3) - 2nd Pour	20	27-Jul-19	19-Aug-19
CON-12483	Construction of Pier 4A, type 1M (3 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 3) - 2nd Pour	8	20-Aug-19	28-Aug-19
CON-12484	Construction of Pier 4A, type 1M (3 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 3) - 3rd Pour	36	29-Aug-19	12-Oct-19
CON-12490	Construction of Pier 4E, type 1 (2 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 4) - 1st Pour	14	05-Aug-19	20-Aug-19
CON-12491	Construction of Pier 4E, type 1 (2 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 4) - 1st Pour	4	21-Aug-19	24-Aug-19
CON-12494	Construction of Pier 4E, type 1 (2 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 4)- 2nd Pour	16	26-Aug-19	12-Sep-19
CON-12495	Construction of Pier 4E, type 1 (2 Pours) Falsework, Formwork and Concreting (1 nos.Pier /Team 4)- 2nd Pour	6	13-Sep-19	20-Sep-19
CON-12500	Construction of Pier 4D, type 1 (2 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 7) - 1st Pour	14	12-Sep-19	28-Sep-19
CON-12510	Construction of Pier 4C, type 1(2 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 4) -1st Pour	10	21-Sep-19	03-Oct-19
Bridge S200		16	11-Sep-19	30-Sep-19
CON-12580	Construction of Pier 2F, type 6 (4 Pours) Erection of Platform & Rebar (1 nos.Pier /Team 6) -1st Pour	16	11-Sep-19	30-Sep-19
Concrete Curing and Removal of Temp. Work		18	21-Sep-19	14-Oct-19
Bridge S300		18	21-Sep-19	14-Oct-19
CON-12770	Concrete Curing and Removal Temp. Work of Pier 4E	18	21-Sep-19	14-Oct-19



Works Critical Works Actual

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	1-Jun-19	8:10	Cloudy	27	0	0	20.9
	1-Jun-19	13:30	Cloudy	27	0	0	20.9
	1-Jun-19	14:30	Cloudy	28	0	0	20.9
	1-Jun-19	14:35	Cloudy	28	0	0	20.9
	1-Jun-19	14:45	Cloudy	28	0	0	20.9
	3-Jun-19	8:15	Sunny	27	0	0	20.9
	3-Jun-19	13:20	Sunny	28	0	0	20.9
	3-Jun-19	14:30	Sunny	28	0	0	20.9
	3-Jun-19	14:40	Sunny	28	0	0	20.9
	3-Jun-19	14:50	Sunny	28	0	0	20.9
	4-Jun-19	8:20	Cloudy	28	0	0	20.9
	4-Jun-19	13:30	Cloudy	29	0	0	20.9
	4-Jun-19	14:45	Cloudy	29	0	0	20.9
	4-Jun-19	14:55	Cloudy	29	0	0	20.9
	4-Jun-19	15:05	Cloudy	29	0	0	20.9
	5-Jun-19	8:10	Sunny	28	0	0	20.9
	5-Jun-19	13:05	Sunny	30	0	0	20.9
	5-Jun-19	14:10	Sunny	30	0	0	20.9
	5-Jun-19	14:20	Sunny	30	0	0	20.9
	5-Jun-19	14:30	Sunny	30	0	0	20.9
	6-Jun-19	8:15	Sunny	28	0	0	20.9
	6-Jun-19	13:30	Sunny	30	0	0	20.9
	6-Jun-19	14:15	Sunny	30	0	0	20.9
	6-Jun-19	14:25	Sunny	30	0	0	20.9
	6-Jun-19	14:35	Sunny	30	0	0	20.9
	8-Jun-19	8:05	Sunny	30	0	0	20.9
	8-Jun-19	13:05	Sunny	31	0	0	20.9
	8-Jun-19	14:30	Sunny	32	0	0	20.9
	8-Jun-19	14:40	Sunny	32	0	0	20.9
	8-Jun-19	14:50	Sunny	32	0	0	20.9
	10-Jun-19	8:15	Cloudy	26	0	0	20.9
	10-Jun-19	13:20	Cloudy	27	0	0	20.9
	10-Jun-19	14:40	Cloudy	27	0	0	20.9
	10-Jun-19	14:50	Cloudy	27	0	0	20.9
	10-Jun-19	15:00	Cloudy	27	0	0	20.9
	11-Jun-19	8:00	Cloudy	26	0	0	20.9
	11-Jun-19	13:10	Rainy	27	0	0	20.9
	11-Jun-19	14:30	Rainy	27	0	0	20.9
	11-Jun-19	14:40	Rainy	27	0	0	20.9
	11-Jun-19	14:50	Rainy	27	0	0	20.9
	12-Jun-19	8:10	Cloudy	26	0	0	20.9
	12-Jun-19	13:15	Rainy	26	0	0	20.9

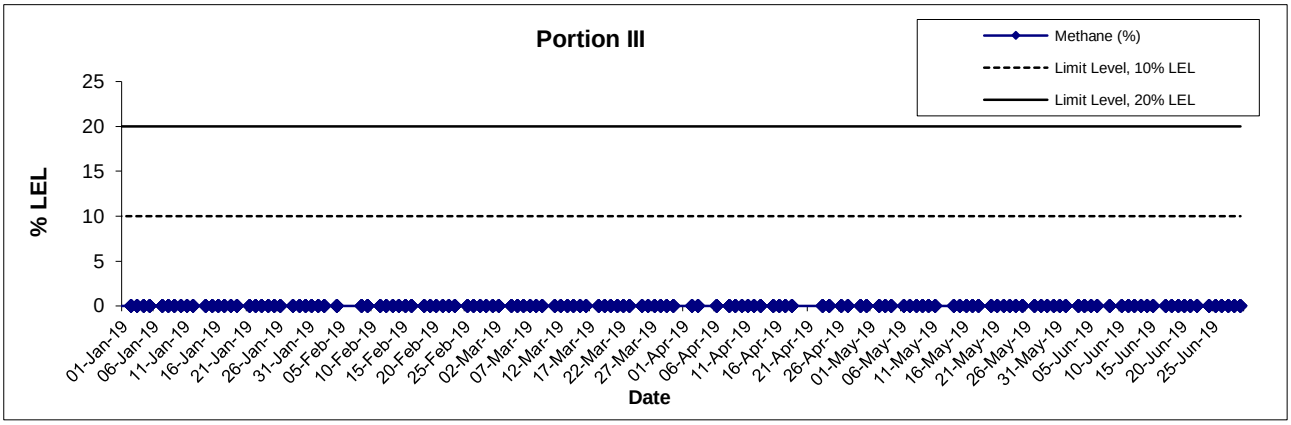
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
	12-Jun-19	14:20	Rainy	26	0	0	20.9
	12-Jun-19	14:30	Rainy	26	0	0	20.9
	12-Jun-19	14:40	Rainy	26	0	0	20.9
	13-Jun-19	8:20	Cloudy	27	0	0	20.9
	13-Jun-19	13:05	Rainy	28	0	0	20.9
	13-Jun-19	14:30	Rainy	28	0	0	20.9
	13-Jun-19	14:40	Rainy	28	0	0	20.9
	13-Jun-19	14:50	Rainy	28	0	0	20.9
	14-Jun-19	8:00	Rainy	27	0	0	20.9
	14-Jun-19	13:05	Cloudy	28	0	0	20.9
	14-Jun-19	14:45	Sunny	28	0	0	20.9
	14-Jun-19	15:55	Sunny	26	0	0	20.9
	14-Jun-19	15:05	Sunny	28	0	0	20.9
	15-Jun-19	8:00	Sunny	26	0	0	20.9
	15-Jun-19	13:20	Sunny	26	0	0	20.9
	15-Jun-19	15:00	Sunny	28	0	0	20.9
	15-Jun-19	15:10	Sunny	28	0	0	20.9
	15-Jun-19	15:20	Sunny	28	0	0	20.9
	17-Jun-19	8:20	Cloudy	25	0	0	20.9
	17-Jun-19	13:20	Cloudy	27	0	0	20.9
	17-Jun-19	15:00	Cloudy	27	0	0	20.9
	17-Jun-19	15:10	Cloudy	27	0	0	20.9
	17-Jun-19	15:20	Cloudy	27	0	0	20.9
	18-Jun-19	8:20	Cloudy	24	0	0	20.9
	18-Jun-19	13:30	Cloudy	26	0	0	20.9
	18-Jun-19	14:20	Cloudy	26	0	0	20.9
	18-Jun-19	14:30	Cloudy	26	0	0	20.9
	18-Jun-19	14:40	Cloudy	26	0	0	20.9
	19-Jun-19	8:20	Cloudy	27	0	0	20.9
	19-Jun-19	13:30	Cloudy	28	0	0	20.9
	19-Jun-19	14:40	Sunny	28	0	0	20.9
	19-Jun-19	14:50	Sunny	28	0	0	20.9
	19-Jun-19	15:00	Sunny	29	0	0	20.9
	20-Jun-19	8:15	Sunny	29	0	0	20.9
	20-Jun-19	13:20	Sunny	30	0	0	20.9
	20-Jun-19	15:00	Sunny	30	0	0	20.9

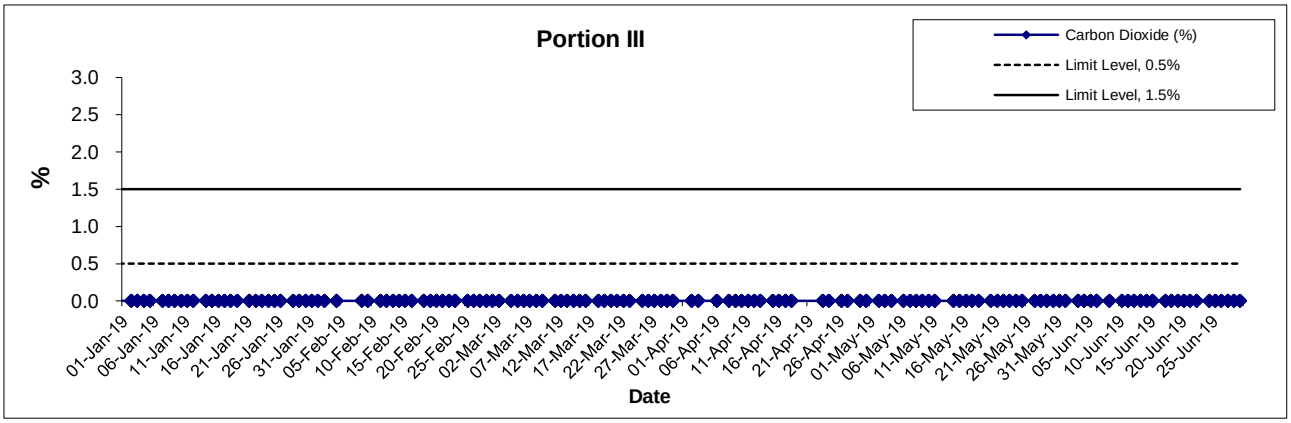
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
	20-Jun-19	15:10	Sunny	30	0	0	20.9
	20-Jun-19	15:20	Sunny	30	0	0	20.9
	21-Jun-19	8:05	Sunny	29	0	0	20.9
	21-Jun-19	13:00	Sunny	29	0	0	20.9
	21-Jun-19	14:30	Sunny	30	0	0	20.9
	21-Jun-19	14:40	Sunny	30	0	0	20.9
	21-Jun-19	14:50	Sunny	30	0	0	20.9
	22-Jun-19	8:20	Sunny	29	0	0	20.9
	22-Jun-19	13:30	Sunny	32	0	0	20.9
	22-Jun-19	14:50	Sunny	32	0	0	20.9
	22-Jun-19	15:00	Sunny	32	0	0	20.9
	22-Jun-19	15:10	Sunny	32	0	0	20.9
	24-Jun-19	8:20	Cloudy	26	0	0	20.9
	24-Jun-19	13:30	Cloudy	27	0	0	20.9
	24-Jun-19	14:20	Cloudy	27	0	0	20.9
	24-Jun-19	14:30	Cloudy	27	0	0	20.9
	24-Jun-19	14:40	Cloudy	27	0	0	20.9
	25-Jun-19	8:15	Cloudy	25	0	0	20.9
	25-Jun-19	13:30	Cloudy	26	0	0	20.9
	25-Jun-19	14:45	Cloudy	25	0	0	20.9
	25-Jun-19	14:55	Rainy	25	0	0	20.9
	25-Jun-19	15:05	Rainy	25	0	0	20.9
	26-Jun-19	8:00	Cloudy	28	0	0	20.9
	26-Jun-19	13:10	Cloudy	28	0	0	20.9
	26-Jun-19	14:20	Cloudy	29	0	0	20.9
	26-Jun-19	14:40	Cloudy	29	0	0	20.9
	26-Jun-19	14:50	Sunny	29	0	0	20.9
	27-Jun-19	8:00	Cloudy	27	0	0	20.9
	27-Jun-19	13:30	Sunny	28	0	0	20.9
	27-Jun-19	14:50	Sunny	29	0	0	20.9
	27-Jun-19	15:00	Sunny	29	0	0	20.9
	27-Jun-19	15:10	Sunny	29	0	0	20.9
	28-Jun-19	8:00	Sunny	29	0	0	20.9
	28-Jun-19	13:05	Sunny	30	0	0	20.9
	28-Jun-19	14:50	Sunny	31	0	0	20.9
	28-Jun-19	15:00	Sunny	31	0	0	20.9
	28-Jun-19	15:10	Sunny	31	0	0	20.9
	29-Jun-19	8:00	Cloudy	30	0	0	20.9
	29-Jun-19	13:05	Cloudy	31	0	0	20.9
	29-Jun-19	14:05	Sunny	32	0	0	20.9
	29-Jun-19	14:15	Sunny	32	0	0	20.9
	29-Jun-19	14:25	Sunny	32	0	0	20.9

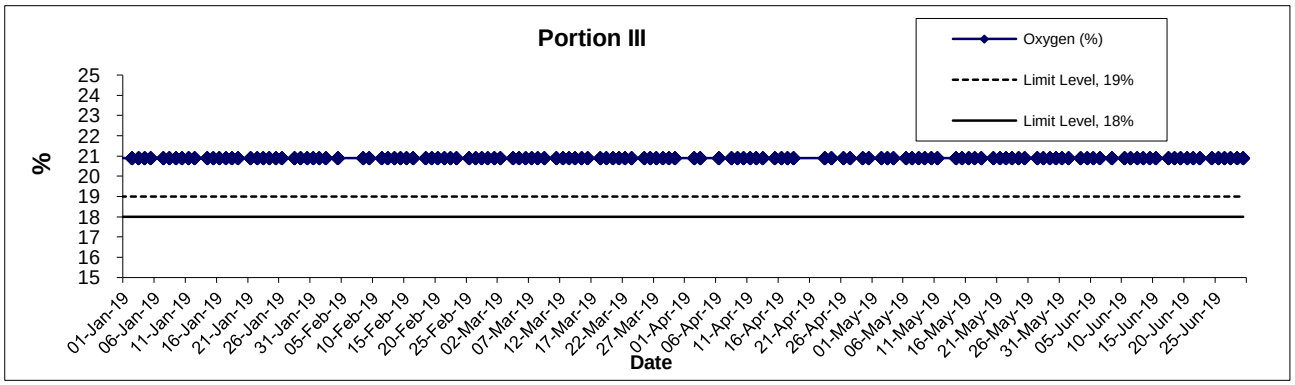
Methane



Carbon Dioxide



Oxygen



Title	Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jun-19	Appendix R	

APPENDIX T
CULTURAL HERITAGE MONITORING RESULTS

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	Longitudinal
1-Jun-19	1 : 40906	-1 : 11842	1 : 5422	1 : 23684	+2	Stop monitoring	Stop monitoring	0.134	0.110	0.087
3-Jun-19	-1 : 449967	-1 : 9574	1 : 6618	1 : 18000	Bad weather	Stop monitoring	Stop monitoring	0.134	0.126	0.110
4-Jun-19	1 : 89993	-1 : 14062	1 : 7627	1 : 28125	Bad weather	Stop monitoring	Stop monitoring	0.134	0.118	0.126
5-Jun-19	1 : 32140	-1 : 19564	1 : 9000	1 : 449996	+3	Stop monitoring	Stop monitoring	0.118	0.110	0.102
6-Jun-19	-1 : 44997	-1 : 14062	1 : 5232	-1 : 40909	+3	Stop monitoring	Stop monitoring	0.142	0.118	0.087
8-Jun-19	1 : 56246	-1 : 10975	1 : 3879	1 : 14516	+3	Stop monitoring	Stop monitoring	0.118	0.189	0.102
10-Jun-19	1 : 89993	-1 : 22499	1 : 4737	1 : 18000	+3	Stop monitoring	Stop monitoring	0.126	0.126	0.110
11-Jun-19	-1 : 11249	-1 : 12857	1 : 4592	1 : 13235	+2	Stop monitoring	Stop monitoring	0.134	0.110	0.095
12-Jun-19	-1 : 8653	1 : 64283	1 : 3214	1 : 9783	+2	Stop monitoring	Stop monitoring	0.126	0.166	0.087
13-Jun-19	-1 : 14515	1 : 34614	1 : 4327	1 : 14516	Bad weather	Stop monitoring	Stop monitoring	0.118	0.118	0.102
14-Jun-19	-1 : 28123	1 : 6716	1 : 6338	1 : 6716	+3	Stop monitoring	Stop monitoring	0.126	0.142	0.095
15-Jun-19	-1 : 10464	1 : 6164	1 : 5422	1 : 8182	+2	Stop monitoring	Stop monitoring	0.150	0.118	0.142
17-Jun-19	-1 : 6716	1 : 3383	1 : 6923	1 : 13235	+1	Stop monitoring	Stop monitoring	0.118	0.110	0.095
18-Jun-19	-1 : 9183	1 : 3813	1 : 4891	1 : 5696	+3	Stop monitoring	Stop monitoring	0.126	0.118	0.102
19-Jun-19	-1 : 12161	1 : 5294	1 : 3688	1 : 5114	+1	Stop monitoring	Stop monitoring	0.126	0.118	0.110
20-Jun-19	-1 : 17999	1 : 5696	1 : 3879	1 : 10465	+2	Stop monitoring	Stop monitoring	0.118	0.118	0.142

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	Longitudinal
21-Jun-19	1 : 40906	1 : 7031	1 : 3285	1 : 9184	+2	Stop monitoring	Stop monitoring	0.126	0.110	0.102
22-Jun-19	-1 : 34613	1 : 4787	1 : 3600	1 : 6429	+1	Stop monitoring	Stop monitoring	0.118	0.150	0.102
24-Jun-19	1 : 26469	1 : 3913	1 : 4206	1 : 8654	+1	Stop monitoring	Stop monitoring	0.126	0.118	0.087
25-Jun-19	1 : 17306	1 : 3719	1 : 6618	1 : 8182	+2	Stop monitoring	Stop monitoring	0.126	0.599	0.363
26-Jun-19	1 : 56246	1 : 4369	1 : 5232	1 : 7031	+3	Stop monitoring	Stop monitoring	0.118	0.118	0.087
27-Jun-19	1 : 11841	1 : 4945	1 : 4455	1 : 6429	+3	Stop monitoring	Stop monitoring	0.166	0.126	0.102
28-Jun-19	1 : 10227	1 : 8181	1 : 3781	1 : 8182	Bad weather	Stop monitoring	Stop monitoring	0.110	0.110	0.087
29-Jun-19	1 : 15516	1 : 23683	1 : 4327	1 : 14516	+3	Stop monitoring	Stop monitoring	0.126	0.158	0.095
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 U
PIEZOMETER MONITORING RESULTS

Appendix U – Construction Phase Daily Piezometer Monitoring Results

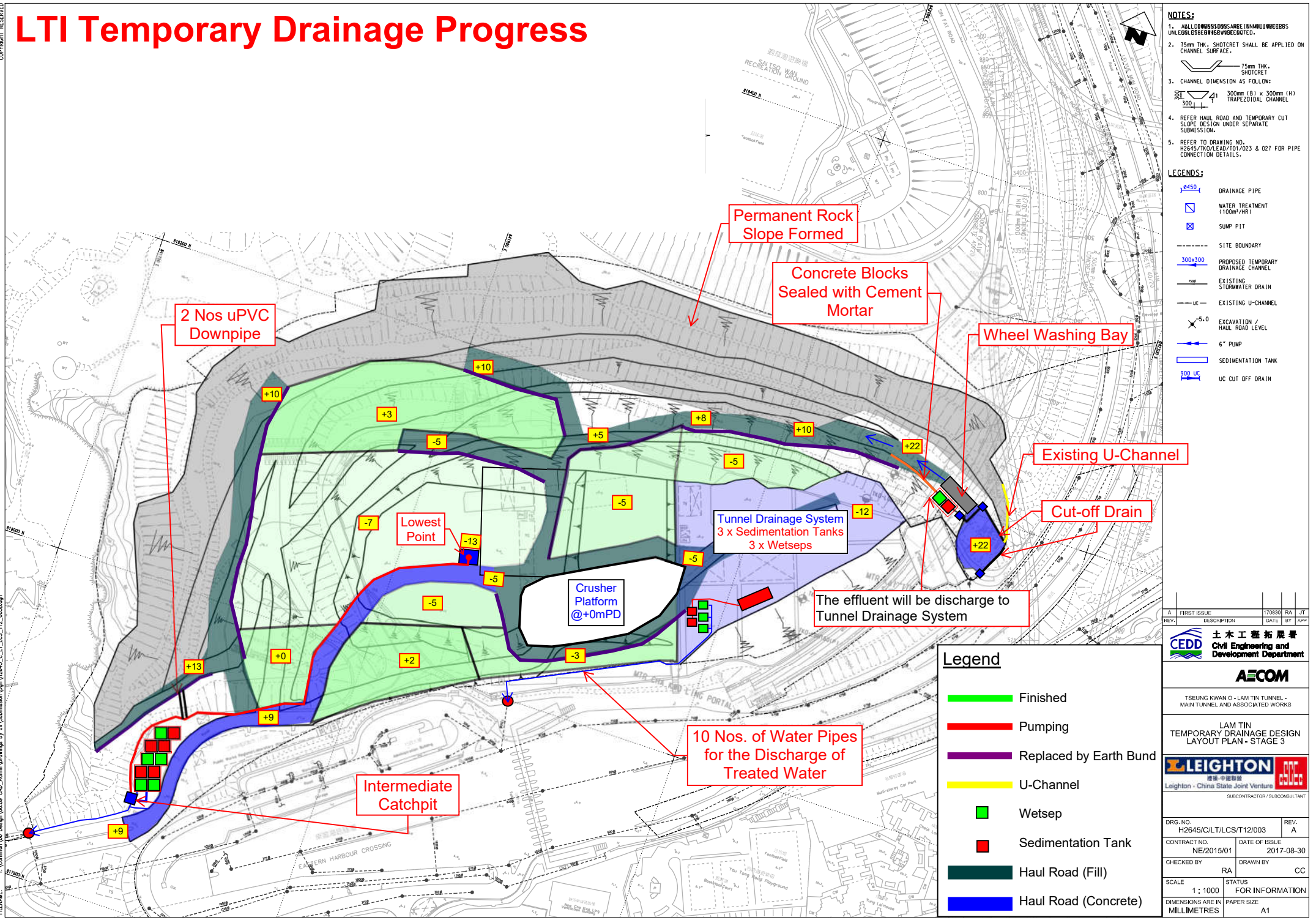
Date	Daily Piezometer Monitoring	
	38568-LDH1 (P)	**TKO-LBH907**
31-May-19	87.65	
1-Jun-19	n.a.	
3-Jun-19	n.a.	
4-Jun-19	n.a.	
5-Jun-19	n.a.	
6-Jun-19	87.65	
8-Jun-19	n.a.	
10-Jun-19	n.a.	
11-Jun-19	n.a.	
12-Jun-19	n.a.	
13-Jun-19	n.a.	
14-Jun-19	87.65	
15-Jun-19	n.a.	
17-Jun-19	n.a.	
18-Jun-19	n.a.	
19-Jun-19	n.a.	
20-Jun-19	n.a.	
21-Jun-19	87.65	
22-Jun-19	n.a.	
24-Jun-19	n.a.	
25-Jun-19	n.a.	
26-Jun-19	n.a.	
27-Jun-19	n.a.	
28-Jun-19	n.a.	
29-Jun-19	n.a.	
Action Level (mPD)	+74.65	+17.59

Note:
Bold Italic with underline means Action Level exceedance
n.a – The daily ground water level monitoring was not required as the tunnel construction activities were conducted out of +/- 50m of the piezometer gate.

APPENDIX V
SURFACE RUNOFF MANAGEMENT PLAN

Contract No. NE/2015/01

LTI Temporary Drainage Progress



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. 75mm THK. SHOTCRET SHALL BE APPLIED ON CHANNEL SURFACE.
3. CHANNEL DIMENSION AS FOLLOW:
   - 300mm (B) x 300mm (H) TRAPEZOIDAL CHANNEL
4. REFER HAUL ROAD AND TEMPORARY CUT SLOPE DESIGN UNDER SEPARATE SUBMISSION.
5. REFER TO DRAWING NO. H2645/TKO/LEAD/T01/023 & 027 FOR PIPE CONNECTION DETAILS.

LEGENDS:

- ø450 — DRAINAGE PIPE
- WATER TREATMENT (100m³/HR)
- SUMP PIT
- SITE BOUNDARY
- 300x300 — PROPOSED TEMPORARY DRAINAGE CHANNEL
- EXISTING STORMWATER DRAIN
- UC — EXISTING U-CHANNEL
- -5.0 — EXCAVATION / HAUL ROAD LEVEL
- 6" PUMP
- SEDIMENTATION TANK
- 900 UC — UC CUT OFF DRAIN

Legend

- Finished
- Pumping
- Replaced by Earth Bund
- U-Channel
- Wetsep
- Sedimentation Tank
- Haul Road (Fill)
- Haul Road (Concrete)

REV.	DESCRIPTION	DATE	BY	APP
A	FIRST ISSUE	170830	RA	JT

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

AECOM

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

LAM TIN TEMPORARY DRAINAGE DESIGN LAYOUT PLAN - STAGE 3

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

SUBCONTRACTOR / SUBCONSULTANT

DRG. NO. H2645/C/LT/LCS/T12/003	REV. A
CONTRACT NO. NE/2015/01	DATE OF ISSUE 2017-08-30
CHECKED BY RA	DRAWN BY CC
SCALE 1 : 1000	STATUS FOR INFORMATION
DIMENSIONS ARE IN MILLIMETRES	PAPER SIZE A1

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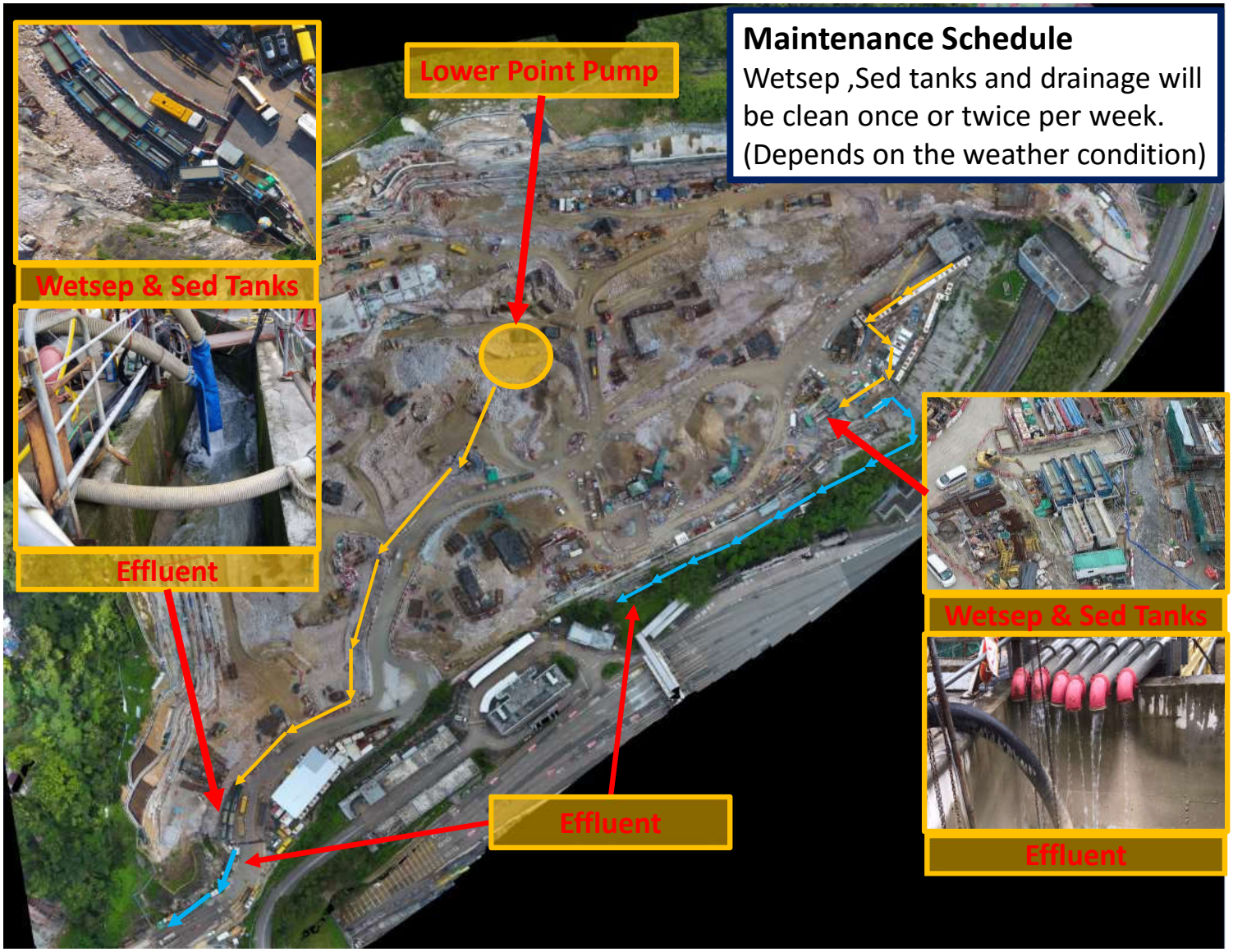
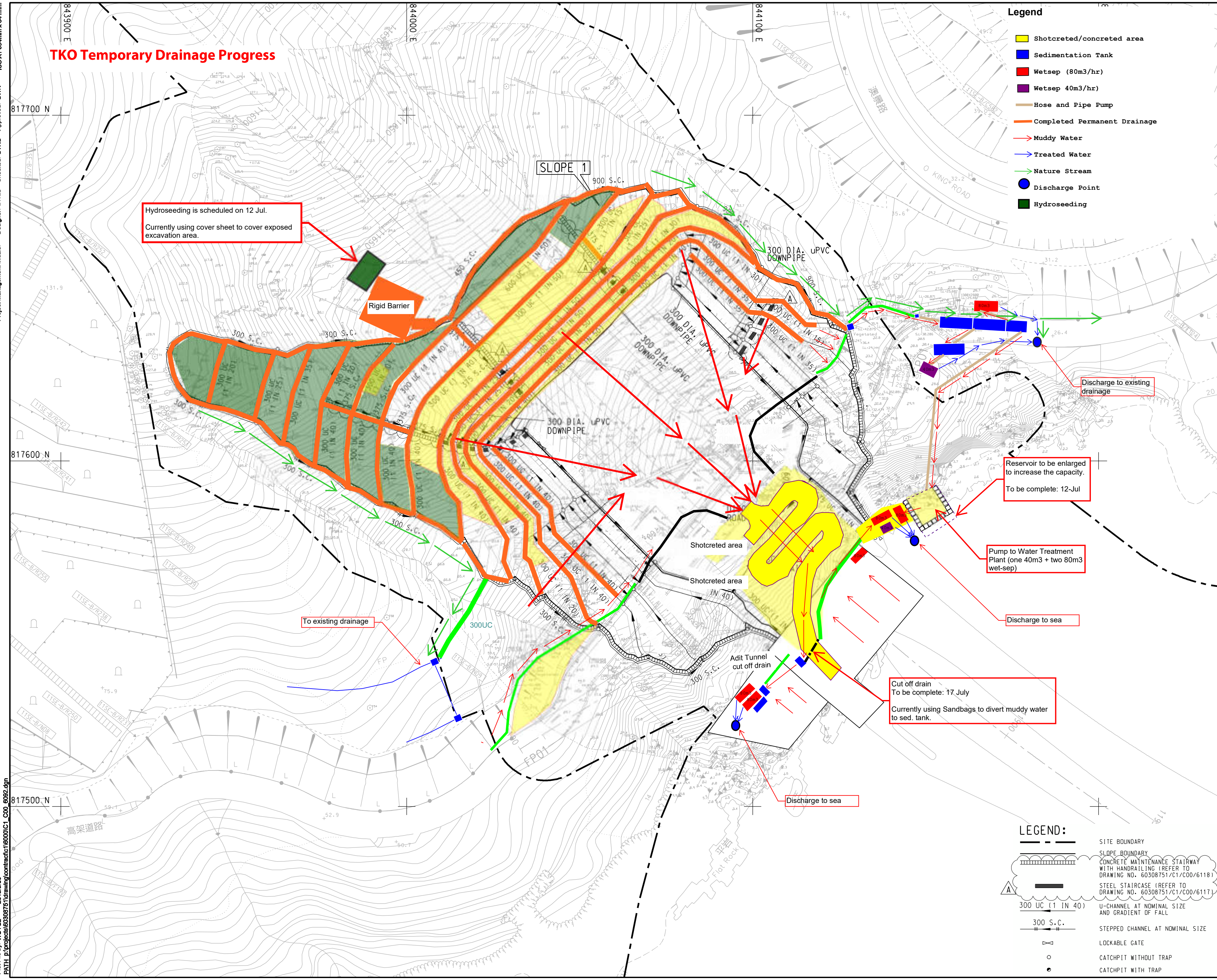

Lower Point Pump
Maintenance Schedule
Wetsep ,Sed tanks and drainage will be clean once or twice per week.
(Depends on the weather condition)
Wetsep & Sed Tanks
Effluent
Wetsep & Sed Tanks
Effluent
Effluent

Contract No. NE/2015/01



ISO A1 594mm x 841mm

Approved: CWN

Checked: CYKC

Designer: BWLS

Project Management Initials:

Plot File by: WUYC2 2015/9/30

PATH: p:\projects\60308751\drawing\contract\c1\6000\C1_C00_6092.dgn

AECOM

PROJECT 項目

TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE

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

CLIENT 業主

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

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

FOR CONSTRUCTION

ISSUE/REVISION 修訂

I/R	DATE	DESCRIPTION	CHK.
B	JUL. 16	WORKING DRAWING	ALCF
A	OCT.15	TENDER ADDENDUM NO.1	CYKC
-	AUG.15	TENDER DRAWING	CYKC

STATUS 階段

WORKING DRAWING

SCALE 比例 A1 1:500

DIMENSION UNIT 尺寸單位 METRES

KEY PLAN 索引圖

PROJECT NO. 項目編號 60308751

CONTRACT NO. 合約編號 NE/2015/01

SHEET TITLE 圖紙名稱

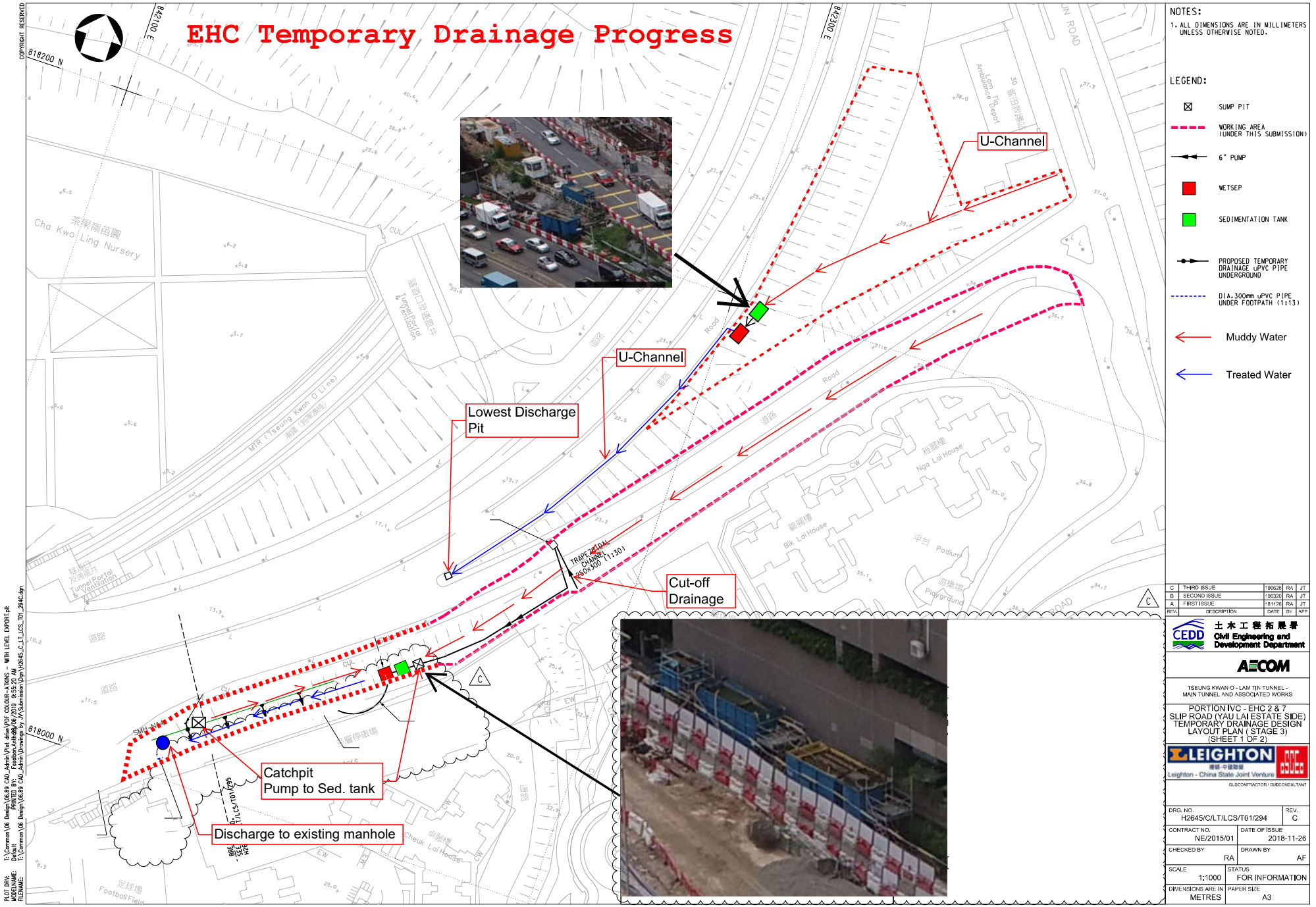
TSEUNG KWAN O PORTAL SITE FORMATION DRAINAGE LAYOUT PLAN

SHEET NUMBER 圖紙編號

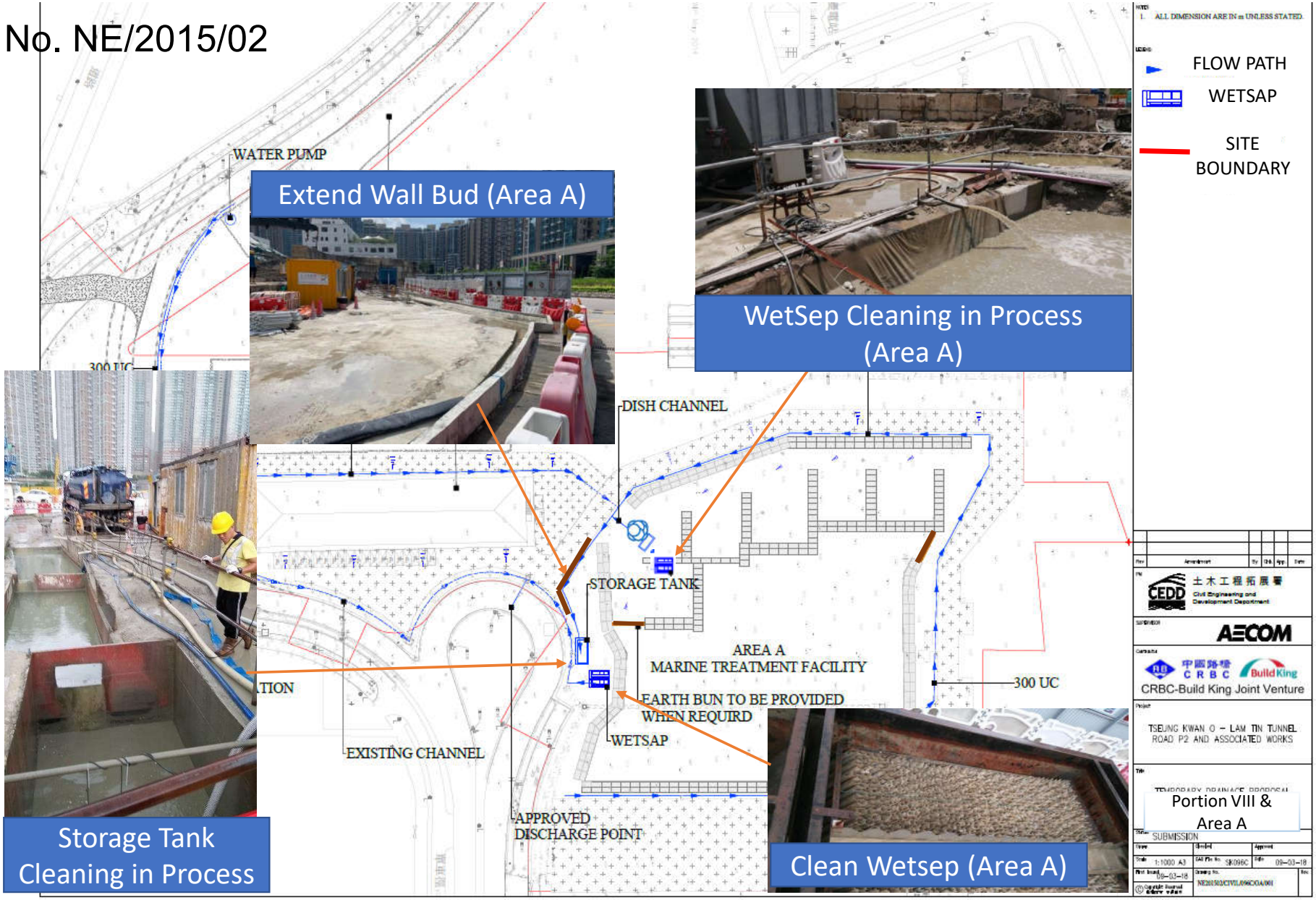
60308751/C1/C00/6092B


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

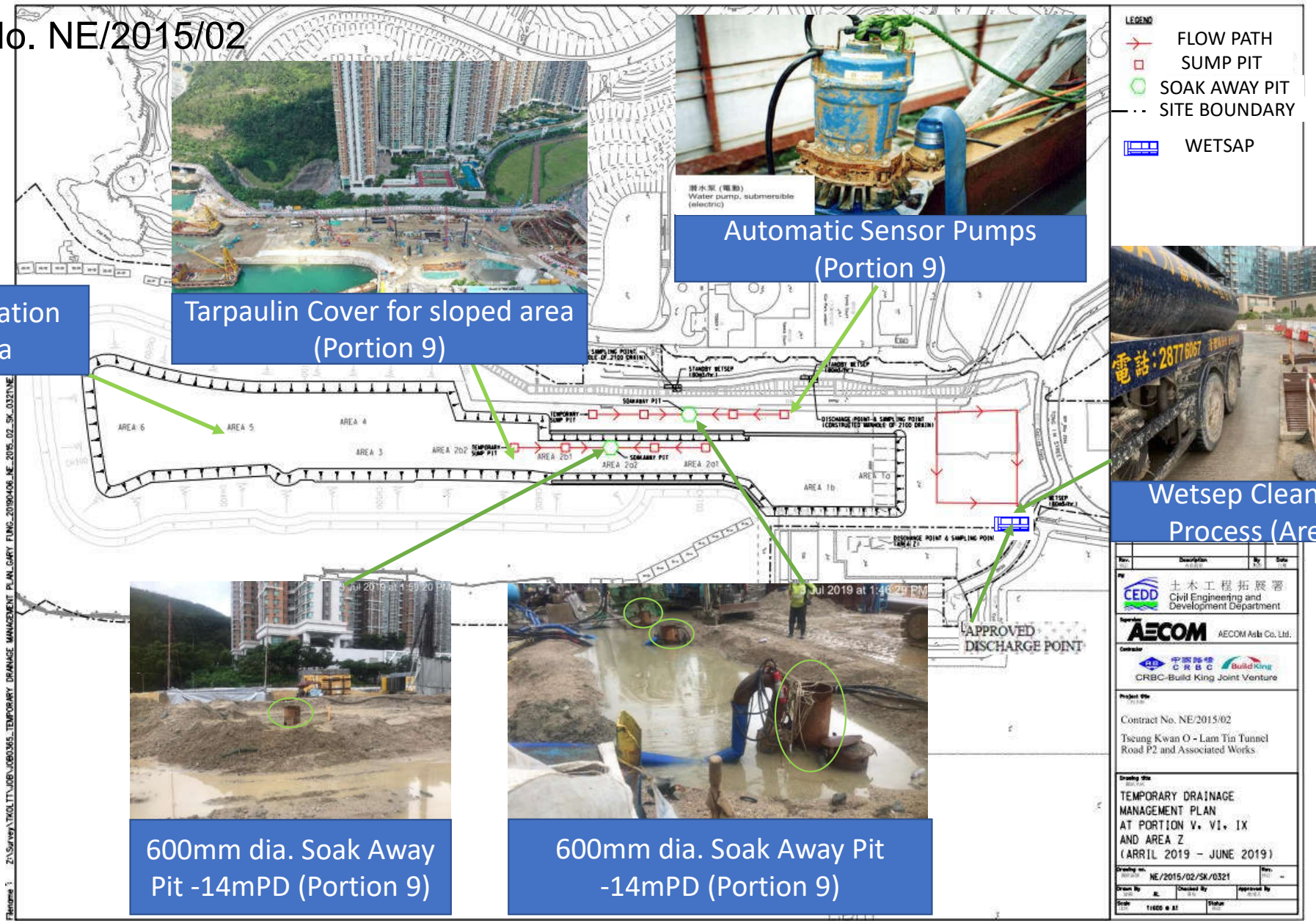
Contract No. NE/2015/01



Contract No. NE/2015/02



Contract No. NE/2015/02



Reclamation Area

Tarpaulin Cover for sloped area (Portion 9)

Automatic Sensor Pumps (Portion 9)

Wetsep Cleaning in Process (Area Z)

600mm dia. Soak Away Pit -14mPD (Portion 9)

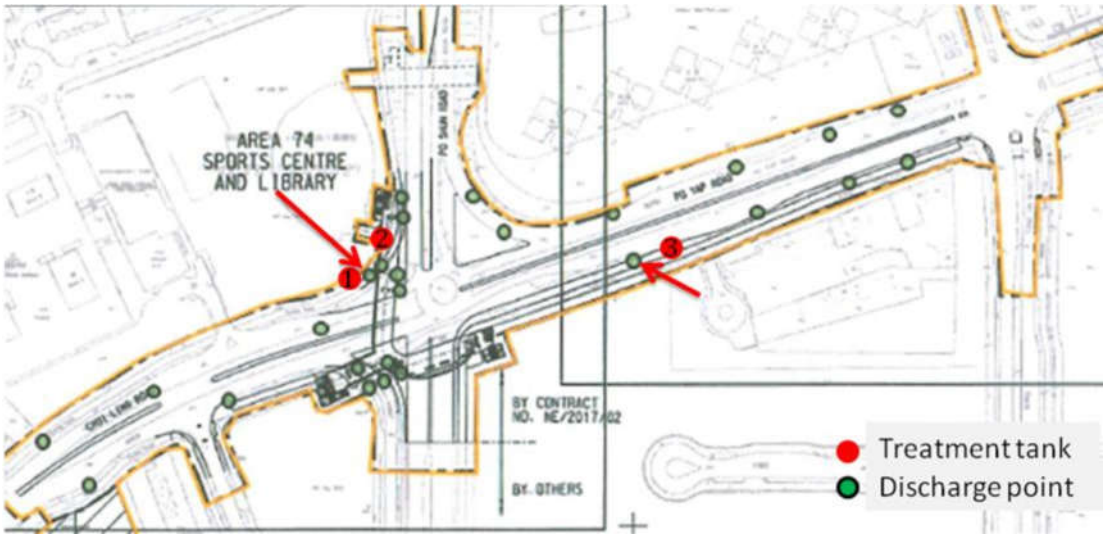
600mm dia. Soak Away Pit -14mPD (Portion 9)

Contract No.: NE/2017/02

Contract Title: Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works

Flooding Mitigation Plan

Treatment facility

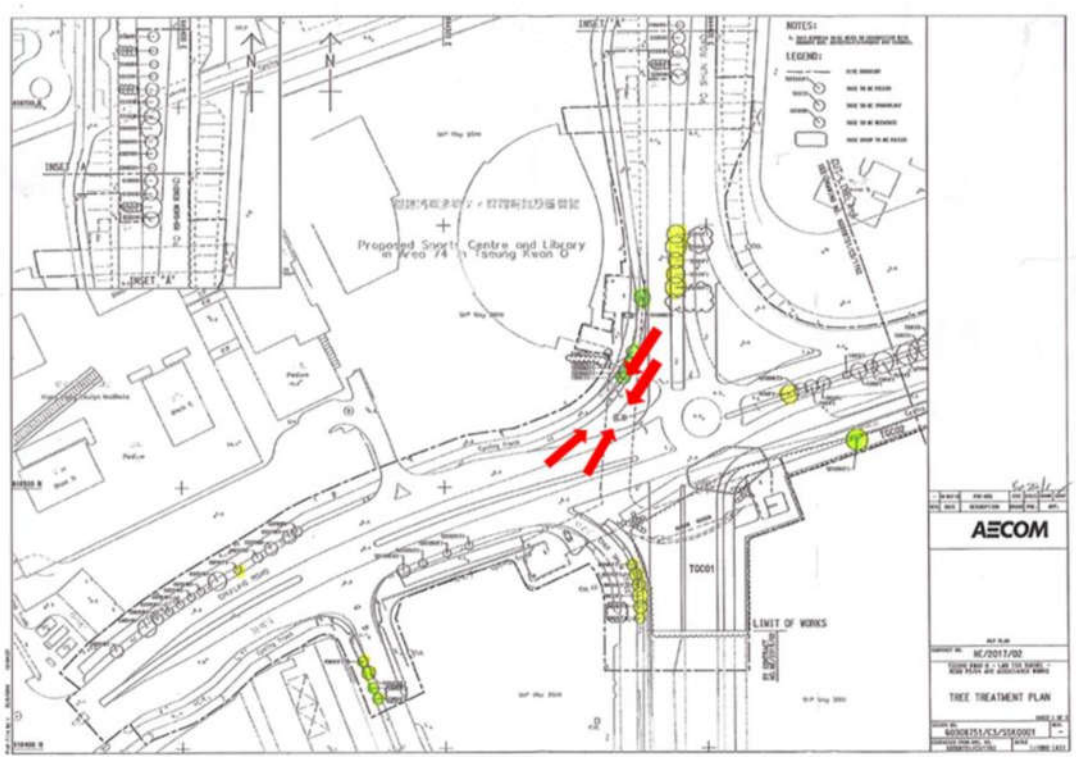


Three treatment facilities are provided on-site.

Bunding

Bunding is provided to prevent the surface runoff.

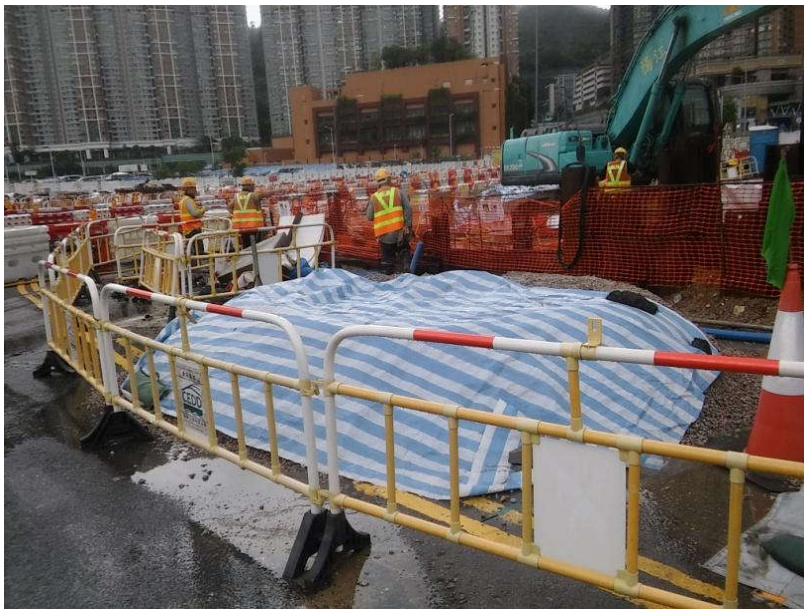
Surface runoff collection



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.

Contract Number NE/2015/03

CATCHPIT SCHEDULE

U/S ID	D/S ID	U/S G.L. (mPD)	D/S G.L. (mPD)	LENGTH (m)	GRADIENT 1 IN	U/S I.L. (mPD)	D/S I.L. (mPD)	UC SIZE (mm)	U/S ID TYPE	UC MATERIAL	BEDDING
CP01	CP02	6.50	6.50	6	100	6.275	6.219	225	CATCHPIT	CONCRETE	B
CP03	CP04	8.00	5.60	6	2	7.775	5.342	225	CATCHPIT	CONCRETE	B

Water Flow
Precautionary measures
Silt Measurement
Sedimentation tank
Sampling Point

Geotextiles are on the top of gully cover along the site as a filter to avoid any muddy water discharge directly into the drainage system.

Exposed slope is covered by taupaulin

Works Area B

Sedimentation tank

Sampling & Discharge Point

CONNECTED FROM LIFT SHAFT DRAINAGE SYSTEM (DRAWING NO. 60308751/CS/M00/8101 AND 8120 REFER)

DOWN PIPE FROM DECK CONNECT TO 300 U

DOWN PIPE FROM DECK

Sedimentation tank

Sampling & Discharge Point

DOWN PIPE FROM DECK

FOOTBRIDGE NOT SHOWN FOR CLARITY

AREA 74 SPORTS CENTRE AND LIBRARY

PARK CENTRAL

PO SHUN ROAD

818650 N

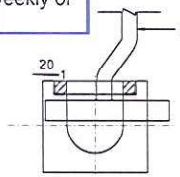
818600 N

Sandbag is placed along the water barrier boundary to avoid the surface runoff.

Manhole Inspection for Silt measurement,we have regular cleaning the channel weekly or in an emergency

DN400 to ... culvert

Manhole Inspection for Silt measurement,we have regular cleaning the channel weekly or in an emergency



DETAILS CONNECTION OF DOWNPIPE TO U-CHANNEL WITH GRATING

WIP May 2014

AECOM

PROJECT
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL NORTHERN FOOTBRIDGE

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

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

-	AUG.16	TENDER DRAWING	AH(L)
VER	DATE	DESCRIPTION	CHK

STATUS

SCALE: A1 1 : 250
DIMENSION UNIT: METRES

KEY PLAN

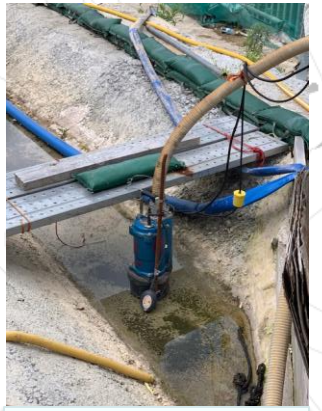
PROJECT NO.: 60308751
CONTRACT NO.: NE/2015/03

SHEET TITLE
DRAINAGE LAYOUT

SHEET NUMBER
60308751/CS/C00/1301

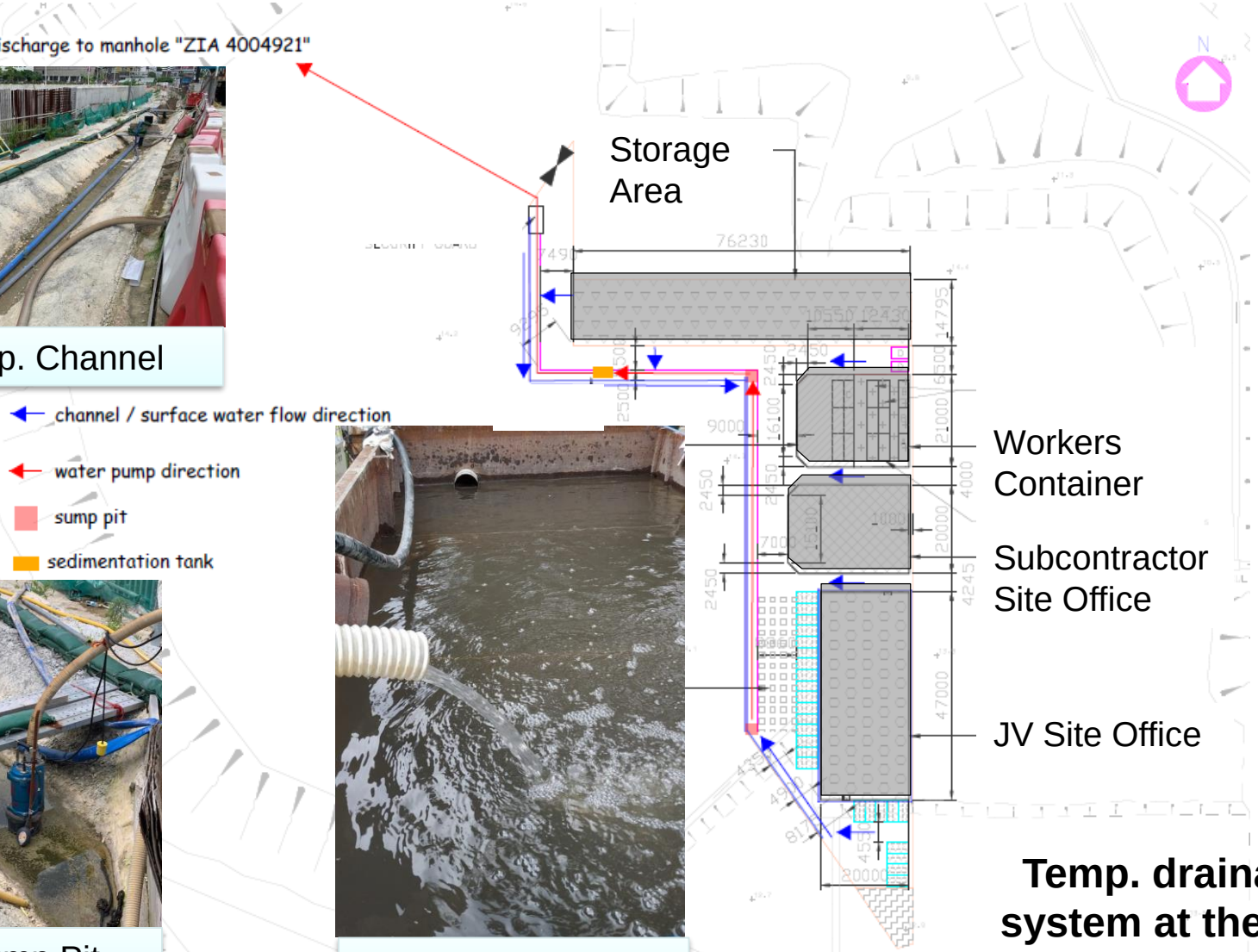
Site Surface Runoff Measures

Temp. Channel



Sump Pit

Sedimentation Tank



Temp. drainage system at the site office area