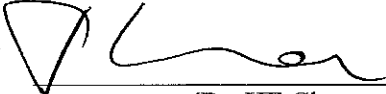


Civil Engineering and Development Department

**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
October 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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Civil Engineering and Development Department
New Territories East Development Office
Suite 1213, Chinachem Golden Plaza
77 Mody Road
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Your reference:

Our reference: HKCEDD08/50/106133

Date: 14 November 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 October 2019 (version 1.0)

We refer to emails of 7, 11 and 13 November 2019 from Cinotech Consultants Limited attaching the Monthly Environmental Monitoring and Audit Report for October 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

Ad Lee
Independent Environmental Checker

LYMA/LCCR/lhnh

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EXECUTIVE SUMMARY

Introduction

1. This is the 36th 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 October 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	5	9	4	0	Refer to Appendix K & O
Groundwater Quality	--	--	--	--	Not measured since Oct 19
Marine Water Quality	51	208	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

- No Action/Limit Level exceedance for 1-hour TSP monitoring was recorded.
- No Action/Limit Level exceedance for 24-hour TSP monitoring was recorded.

Construction Noise Monitoring

- Five (5) 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.
- Nine (9) Limit Level exceedances for night time construction noise monitoring was recorded in the reporting month. The exceedance of night time noise limit level was not due to the project, as the road traffic noise was identified as the dominant noise source.

Water Quality Monitoring

- Groundwater quality monitoring had been suspended since October 2019 upon the agreement by EPD. Further details should be founded at **Section 5.1**.
- All marine water quality monitoring was conducted as scheduled in the reporting month. There were fifty-one (51) Action Level and two-hundred and eight (208) 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-translocation 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 30, 17, 17, 29 and 17 October 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 Key Information in the Reporting Month

Monthly Complaints	Event Details		Action Taken	Status
	Number	Nature		
October 2019	5	Noise / Working Hours ²	Details refer to App O	Draft CIRs submitted / On-going
September 2019	4	Air / Noise / Water	Details refer to App O	Draft CIRs submitted / Closed
August 2019	5	Noise / Water / Working Hours ²	Details refer to App O	Draft CIRs submitted / Closed
July 2019	8 ¹	Noise	Details refer to App O	Draft CIRs submitted / Closed
June 2019	11	Noise / Air / Water / Working Hours ²	Details refer to App O	Closed
May 2019	11	Noise/Air	Details refer to App O	Closed
April 2019	17	Noise / Light/ Air / Operating Hours ²	Details refer to App O	Closed
March 2019	25	Noise / Air / Mosquitos	Details refer to App O	Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

1. Two new complaints was received after the submission of the EMA Report (July 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 Complaints Details in Reporting Month

Complaint Type	Investigation Findings	Follow-up Action / Mitigation Measure
Tseung Kwan O Side		
High noise level from works area during daytime	The time period of complaint falls under day-time and therefore the Contractor is required to carry out mitigation measures according to the latest CNMP only.	The Contractor is reminded to strictly follow the CNMP.
Noise nuisance of construction works at marine work area during early morning	No construction activity at both the Cavern near the BCMCP Bridge and Platform 1B, including the barge, in particular during the complaint period between 2am and 3am on 9 Oct 2019.	Since no works was conducted during the time of complaint, no mitigation measures are required.
Operation of marine construction works during late hours	The major construction works is trimming works for the rock mount during the time period of complaint.	Mitigation measures provided by the Contractor included provision of noise insulating mats to the engine floor of the barges and shorten the work hours by ending

Complaint Type	Investigation Findings	Follow-up Action / Mitigation Measure
		construction works on or before 21:00 since early Oct 2019.
Noise nuisance due to operation of barge on Saturday early morning	The time of complaint falls within daytime and the major works conducted are dredging and reclamation. The contractor did not require any extra mitigation measures except the specification listed within the noise mitigation plan.	The contractor had applied sound-proofing mat on the engine floor of the barges and is recommended to strictly follow the requirements of noise mitigation plan.
Daytime noise nuisance	Requesting information / Investigation undergoing	Investigation undergoing

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 (October 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) Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling of P2A retaining wall 2) Site formation works and drainage for Road P2 CH500-CH650 3) Site formation and drainage works for SR2 CH250 – CH350 4) Structure works for U-trough CH318 – CH363.50 5) Construction of utility trough and pre-cast concrete barrier at P2 U-trough CH411 – CH500 and SR2 CH170 – CH250 6) Reclamation works at Portion IX 7) Installation of socket H-pile at P2 CH105 – CH318 8) Pre-boring for s/p installation at P2 CH105 – CH318 9) Installation of sheetpile at P2 CH105 – CH318 10) Surcharging of surcharge areas 2b1 – 2b2, 3, 4, 5, 6 11) Transporting treated marine sediment from Area	

Contract No.	Project Title	Site Activities (October 2019)
		A to Portion IX for reclamation 12) Removal of surcharge area 1b2, 2a2, 2a3, 2b1a 13) Advance works and pre-drilling works at S200 CH821 – P2 CH105 14) Site establishment for construction of underpass at CH105 – CH318 15) Drilling for dewatering system at P2 CH105 – CH318
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Floor tiles installation at kerb side at +12.15mPD platform 2) Installation of stainless steel hand railing at Main Deck 3) Footpath and cycle track reinstatement works
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Construction of Pile Cap 3) Construction of Pier 4) Construction of Pier Head Works 5) Segment erection Works
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) Pile Cap construction 5) Construction of drainage and watermain Predrilling 6) Bored Piles Works
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	Nil

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 (November 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)

Contract No. and Project Title	Site Activities (November 2019)		Key Environmental Issues *
	TKO Interchange	6) Haul Road Construction and Site Formation & Slope Works 7) Cavern Excavation 8) Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling of P2A retaining wall 2) Construction of pillar box and ducting system at Portion IV adjacent to Ocean Shores EVA 3) Construction of utility trough and road barriers at road P2 (land section) 4) Site formation at Road P2 CH500-CH650 and SR1 5) Structure works for U-trough CH318-CH363 6) Drainage works at Road P2 CH500-CH650 7) Drainage works at slip road SR2 (CH250 – CH350) 8) Surcharging at surcharge areas 2b1, 2b2, 3, 4, 5, 6 9) Pre-boring at P2 H-pile CH105 – CH305 10) ELS at P2 CH105 – CH318 (Pre-boring for s/p installation and interlock pipe pile installation) 11) Installation of dewatering system (P2 105 – 318) 12) Pre-boring at S200 (CH821 – P2 CH905) 13) Additional excavation works for underpass section		(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Floor finishing work 2) Reinstatement of footpath and cycle track		(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Construction of Temporary Working Platform 2) Pre-drilling Works 3) Bored Piling Works 4) Dismantling Works for Temporary Working Platform 5) Installation of Precast Pile Cap Shell 6) Construction of Pile Cap 7) Construction of Pier 8) Construction of Pier Head 9) Segment erection works		(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) Pile Cap construction 5) Construction of drainage and watermain Predrilling 6) Bored Piles Works		(A) / (B) / (E) / (F) / (G)

Contract No. and Project Title	Site Activities (November 2019)	Key Environmental Issues *
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	Nil	N/A

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 35th Monthly EM&A report summarizing the EM&A works for the Project in September 2019.

Purpose of the Report

- 1.2 This is the 36th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in October 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**. CBL was also entrusted with part of the marine viaducts near Tseung Kwan O Interchange since the commencement of the CBL project the December 2018.
- 2.3 The Environmental Impact Assessment (EIA) Report for the TKO-LTT project was approved under the Environmental Impact Assessment Ordinance (EIAO) in July 2013. The corresponding Environmental Permit (EP) was issued in August 2013 (EP no.: EP-458/2013). Variations to the EP was applied and the latest EP (EP no.: EP-458/2013/C) was issued by the Director of Environmental Protection (DEP) in January 2017.
- 2.4 The commencement dates of construction of this Project are:
- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
 - Contract No. NE/2015/03: 29 May 2017.
 - Contract No. NE/2017/02: 15 March 2018.
 - Contract No. NE/2017/01: 23 May 2018.
 - Contract No. NE/2017/06: 09 November 2018.

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 (October 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) Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling of P2A retaining wall 2) Installation of irrigation system at Portion IV near Ocean Shore EVA 3) Site formation works and drainage for Road P2 CH500-CH650 4) Site formation and drainage works for SR2 CH250 – CH350 5) Structure works for U-trough CH318 – CH363.50 6) Construction of utility trough and pre-cast concrete barrier at P2 U-trough CH411 – CH500 and SR2 CH170 – CH250 7) Reclamation works at Portion IX 8) Installation of socket H-pile at P2 CH105 – CH318 9) Pre-boring for s/p installation at P2 CH105 – CH318 10) Installation of interlock pipe pile wall 11) Surcharging of surcharge areas 2a3, 2b1 – 2b2, 3, 4, 5, 6	

Contract No.	Project Title	Site Activities (October 2019)
		12) Transporting treated marine sediment from Area A to Portion IX for reclamation
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Remove of temporary platform 2) Installation of planter and irrigation system 3) Floor finishing work
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Construction of Pile Cap 3) Construction of Pier 4) Construction of Pier Head Works 5) Segment Erection Works
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) Pile Cap construction 5) Construction of drainage and watermain Predrilling 6) Bored Piles Works
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	Nil

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	<ul style="list-style-type: none"> • 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	30/09/2020	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
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				
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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
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-RE0425-19	23/06/2019	22/12/2019	Valid
	GW-RE0712-19	23/09/2019	22/11/2019	Valid
	GW-RE0732-19	13/09/2019	05/12/2019	Valid
	GW-RE0790-19	08/10/2019	03/12/2019	Valid
NE/2015/02	GW-RE0355-19	02/06/2019	01/12/2019	Valid
	GW-RE0366-19	14/05/2019	13/11/2019	Valid
	GW-RE0228-19	11/04/2019	10/10/2019	Expired on 10 October 2019
	GW-RE0299-19	26/04/2019	16/10/2019	Expired on 16 October 2019
	GW-RE0225-19	01/05/2019	30/10/2019	Expired on 30 October 2019
	GW-RE0697-19	03/09/2019	04/10/2019	Expired on 04 October 2019
	GW-RE0733-19	16/09/2019	15/12/2019	Valid
	GW-RE0791-19	11/10/2019	10/04/2020	Valid
NE/2017/01	GW-RE0350-19	08/05/2019	05/11/2019	Valid
	GW-RE0907-19	05/11/2019	04/05/2020	Valid
	GW-RE0909-19	13/11/2019	05/05/2020	Valid
NE/2017/02	GW-RE0742-19	18/09/2019	11/10/2019	Expired on 11 October 2019
Marine Dumping Permit				
NE/2017/01	EP/MD/20-034	06/08/2019	31/12/2019	Valid
Specified Process (SP) License				
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 September 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	4
	Met One Instruments Model No.: AEROCET-831	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	0
HVS Sampler	TISCH Model: TE-5170	1
	GMW Model: GS2310	5
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1
	Davis Weather Stations, Vantage Pro 2, Model No. 6152CUK	0

Monitoring Parameters and Frequency

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

Table 3.3 Frequency and Parameters of Air Quality Monitoring

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

Monitoring Methodology***1-hour TSP Monitoring***Measuring Procedures

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

(Model LD3 / LD3B)

- 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 0.5 μ m and 5 μ m channels will show the cumulative counts of particles larger than 0.5 μ m and 5 μ m 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 MonitoringInstrumentation

- 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 m³/min. and 1.4 m³/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 respectively.
- 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
CM9(A) ¹	Rooftop of Capri Tower 10	Rooftop (12/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.

¹ Ad-hoc noise monitoring at station CM9(A) was commenced in September 2019.

- 4.3 Since the population intake of Capri had commenced during the construction of the TKOLTT, the noise monitoring work in daytime period was conducted at CM9(A) – Rooftop of Capri Tower 10 on normal weekdays. The background Noise Level was recorded during the Lunch Hour of Construction Site (i.e. 12:00-13:00) and to be used as the referencing value for compliance checking for Noise Action and Limit Level.

Monitoring Equipment

- 4.4 Integrating Sound Level Meter was used for impact noise monitoring. The meters are Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x) that also complied with International Electrotechnical

Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. **Table 4.2** summarizes the noise monitoring equipment being used. Copies of calibration certificates are attached in **Appendix B**.

Table 4.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 957/ 959 / 979	5
Calibrator	SV30A	1
	Brüel & Kjær 4231	1

- 4.5 **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
CM9(A)				Façade
CM1	L ₁₀ (5 min) dB(A)	1900 – 0700 hrs on normal weekdays		Façade
CM2	L ₉₀ (5 min) dB(A)			Façade
CM3				Façade
CM6(A)	L _{eq} (5 min) dB(A)	1900 – 2300 hrs on normal weekdays		Free Field

Monitoring Methodology and QA/QC Procedure

- 4.6 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

- 4.7 The microphone head of the sound level meter and calibrator was cleaned with a soft cloth at quarterly intervals.
- 4.8 The sound level meter and calibrator was checked and calibrated at yearly intervals.
- 4.9 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

- 4.10 Five (5) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Nine (9) exceedance for night-time construction noise monitoring was recorded and no Limit Level exceedance for day time was recorded in the reporting month.
- 4.11 Noise monitoring results and graphical presentations are shown in **Appendix G**.
- 4.12 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
CM9(A)	Rooftop of Capri Tower 10	Construction Noise from Portion V/Area A of NE/2015/02 site area

- 4.13 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	
CM9(A)	N/A ⁽¹⁾	

(*) Noise Limit Level is 65 dB(A) during school examination periods.
(1) The background Noise Level was recorded during the Lunch Hour of Construction Site (i.e. 12:00-13:00) and to be used as the referencing value for compliance checking for Noise Action and Limit Level.

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

- 4.14 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.
- 4.15 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.
- 4.16 Since part of the tunnelling works conducted in this reporting month has encroached on the vicinity of the RPZ, some blasting works were carried out during the mid-night.

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

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

Marine Water Quality

- 5.2 Marine water quality monitoring was conducted three times per week at the designated monitoring stations. Monitoring took place two times per monitoring day during mid ebb and mid flood tides at three depths (1 meter from surface, mid depth and 1 meter from the bottom). For Tseung Kwan O Salt Water Intake (i.e. Station M6), water sampling and in-situ measurements was taken at the vertical level where the water abstraction point of the intake is located (i.e. approximately mid-depth level). If the water depth is less than 6m, the mid-depth measurement may be omitted. If the depth is less than 3m, only the mid-depth measurements need to be taken.
- 5.3 Duplicate in-situ measurements (Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity) and water samples (suspended solids (SS)) at each depth were monitored in accordance with the requirements in the EM&A Manual. For selection of tides for in-situ measurement and water sampling, tidal range of individual flood and ebb tides were not less than 0.5m.
- 5.4 According to the Environmental Review Report (ERR) for Variations of Environmental Permit (Ref: C45-03), water quality monitoring and audit programme was implemented for monitoring of oxygen depletion (e.g. Dissolved Oxygen (DO) level) in this embayed waters during the period when the fully enclosed barrier is installed. A “Proposal for Water Quality Monitoring in Temporary Marine Embayment” has been submitted to EPD in July 2017 to propose the monitoring frequency, parameter, location, etc. EPD has no further comment on the Proposal.

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.5 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan. The monitoring commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. 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

- 5.6 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

- 5.7 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

- 5.8 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, BOD₅, TOC, Total Nitrogen, Ammonia-N and Total Phosphate.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

- 5.9 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.
- 5.10 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 5.11 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.
- 5.12 Salinity compensation was built-in in the DO equipment.

Turbidity

- 5.13 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

- 5.14 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

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

Water Sampler

- 5.16 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

- 5.17 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

- 5.18 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.
- 5.19 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.

- 5.20 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.
- 5.21 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.
- 5.22 **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

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

Table 5.4 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1 C2 G1 G2 G3 G4	<i>In-situ:</i> Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity <i>Laboratory Testing:</i> Suspended Solids (SS)	<u>M1-M5, C1-C2, G1-G4</u> <ul style="list-style-type: none"> 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If the water depth is less than 6m, omit mid-depth sampling. <u>M6</u> <ul style="list-style-type: none"> at the vertical level where the water abstraction point of the intake 	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)

Monitoring Stations	Parameters, unit	Depth	Frequency
		is located(i.e. approximately mid-depth level)	
Water Quality Monitoring in Temporary Marine Embayment			
W1	<ul style="list-style-type: none"> • DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Salinity, ppt 	<ul style="list-style-type: none"> • 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

Marine Water Quality

5.24 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.

5.25 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

5.26 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

- 5.27 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

- 5.28 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.
- 5.29 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

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

Marine Water Quality Monitoring

- 5.31 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.
- 5.32 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. Fifty-one (51) Action Level and two-hundred and eight (208) exceedance were recorded in marine water quality monitoring.

- 5.33 Exceedances of turbidity and suspended solid were recorded on from various monitoring stations non-specifically among all stations including the control stations. Investigations over October 2019 showed that the range of SS levels recorded in October 2019 remained consistent with the records in recent months. The condition of silt curtains were checked during daily visual inspections and weekly diver inspections to ensure no accidental muddy water discharge. Precaution measures were also adopted by the Contractor to further enhance the mitigation measures for water quality; the deployment of local double-layered silt curtains to surround the works with potential release of muddy water, and spare silt curtains were placed near the works area to replace any damaged silt curtains. Further details of the exceedance investigation reports can be found in **Appendix K**.
- 5.34 Silt curtain inspections are carried out before the commencement of the construction works every day and diving surveys are also conducted once a week to inspect the silt curtain below the water level. The inspection report are verified by both the RE and the diving specialist and the records are reviewed weekly during the site audits.

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.35 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan.
- 5.36 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

5.37 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

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

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

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

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

NE2015/02

1. The exposed sloped area at Portion 9 has been covered with geotextile or tarpaulin to avoid surface run-off. Temporary peripheral open U-channel are also provided along the surcharge area within the rock mount to collect stormwater and 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 Instatel. 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 Instatel 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 125 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: 2, 9, 16, 23, 30 October 2019
 - Contract No. NE/2015/02: 3, 10, 17, 24, 31 October 2019
 - Contract No. NE/2015/03: 3, 10, 17, 24, 31 October 2019
 - Contract No. NE/2017/01: 3, 8, 17, 22, 29 October 2019
 - Contract No. NE/2017/02: 3, 10, 17, 24, 31 October 2019
- 10.3 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 30, 24, 24, 29 and 24 October 2019 respectively.

Implementation Status of Environmental Mitigation Measures

- 10.4 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**.
- 10.5 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 Five (5) Action Level exceedances were recorded due to the documented complaints received in the reporting month. Nine (9) Limit Level exceedances of construction noise monitoring were recorded for night-time respectively in the reporting month. The night time Limit Level exceedances were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.
- 12.2 Fifty-one (51) Action Level and two-hundred and eight (208) exceedances were recorded in marine water quality monitoring.
- 12.3 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

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

Summary of Environmental Complaint

- 12.5 Five (5) 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

- 12.6 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 (November 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) Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling of P2A retaining wall 2) Construction of pillar box and ducting system at Portion IV adjacent to Ocean Shores EVA 3) Construction of utility trough and road barriers at road P2 (land section) 4) Site formation at Road P2 CH500-CH650 and SR1 5) Structure works for U-trough CH318-CH363 6) Drainage works at Road P2 CH500-CH650 7) Drainage works at slip road SR2 (CH250 – CH350) 8) Surcharging at surcharge areas 2b1, 2b2, 3, 4, 5, 6 9) Installation of dewatering system (P2 105 – 318) 10) Additional excavation works for underpass section 11) Pre-boring and sheetpile installation at S200 CH821 – P2 CH105 12) Installation of socketed H-pile at P2 CH105 – CH318 13) Installation of socketed H-pile at S200 CH821 – P2 CH105 14) Removal of surcharge and concrete blockes at area 1b2, 2a1, 2a2, 2a3, 2b1a, 2b1b, 2b2a, 2b2b, 4, 5, 6 15) Advance works and pre-drilling works at CT01 CH213 – CH366 16) Advance works and pre-drilling works at S200		(A) / (B) / (C) / (D) / (E) / (G) / (I)

Contract No. and Project Title	Site Activities (November 2019)	Key Environmental Issues *
	CH821 – P2 CH105 17) Site establishment for construction of underpass at CH105 – CH318 18) Excavation and ELS works at CH105 – CH318 underpass 19) Construction of de-watering system at CH105 – CH318 underpass 20) Construction of 900 pipe from SMH9101 – SMH9103	
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Reinstate the beam barrier 2) Re-plant of shrubs at roadside 3) Re-surfacing of Po Shun Road	(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Construction of Temporary Working Platform 2) Pre-drilling Works 3) Bored Pilling Works 4) Dismantling Works for Temporary Working Platform 5) Installation of Precast Pile Cap Shell 6) Construction of Temporary Working Platform 7) Pre-drilling 8) Construction of Pile Cap 9) Construction of Pier 10) Construction of Pier Head 11) Segment erection works	(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) Pile Cap construction 5) Construction of drainage and watermain Predrilling 6) Bored Piles Works	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	Nil	N/A

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 36th Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in October 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 Five (5) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Nine (9) Limit Level exceedances were recorded during night-time in the reporting month.
- 14.5 No Action/Limit Level exceedances was recorded for daytime construction noise in the reporting month.

Water Quality Monitoring

- 14.6 Groundwater quality monitoring had been suspended since October 2019. Details shall be referred to **Section 5.1**.
- 14.7 Fifty-one (51) Action Level and two-hundred and eight (208) 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 K.

Complaint, Prosecution and Notification of Summons

14.14 Five (5) 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.
- To repair the gaps between the noise barriers.
- To place compatible noise barrier close to the breaking point for effective noise screening.
- To erect sound proof canvases on derrick lighter barge

Water Quality Impact

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

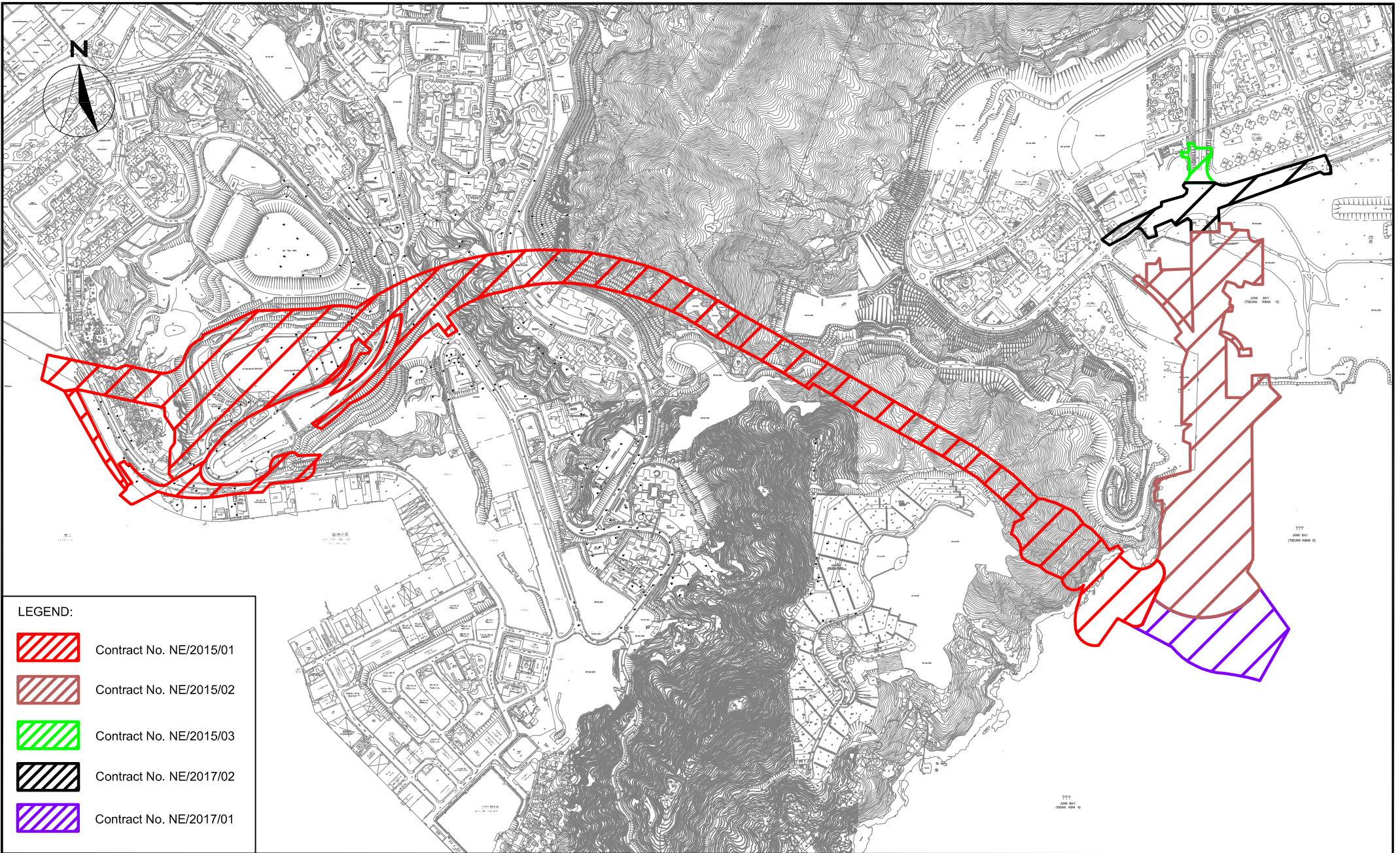
Waste/Chemical Management

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






Landscape and Visual

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

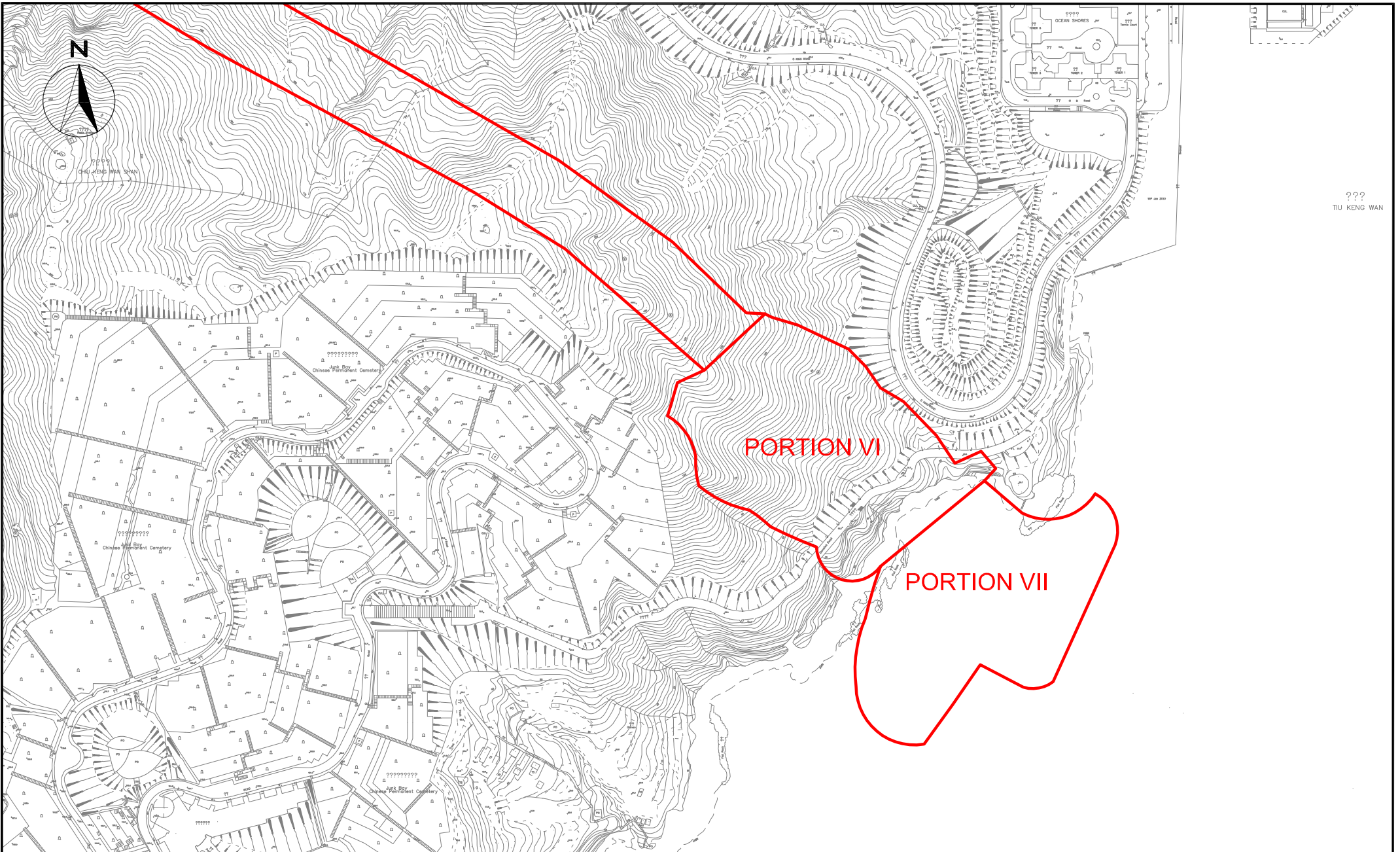
FIGURES



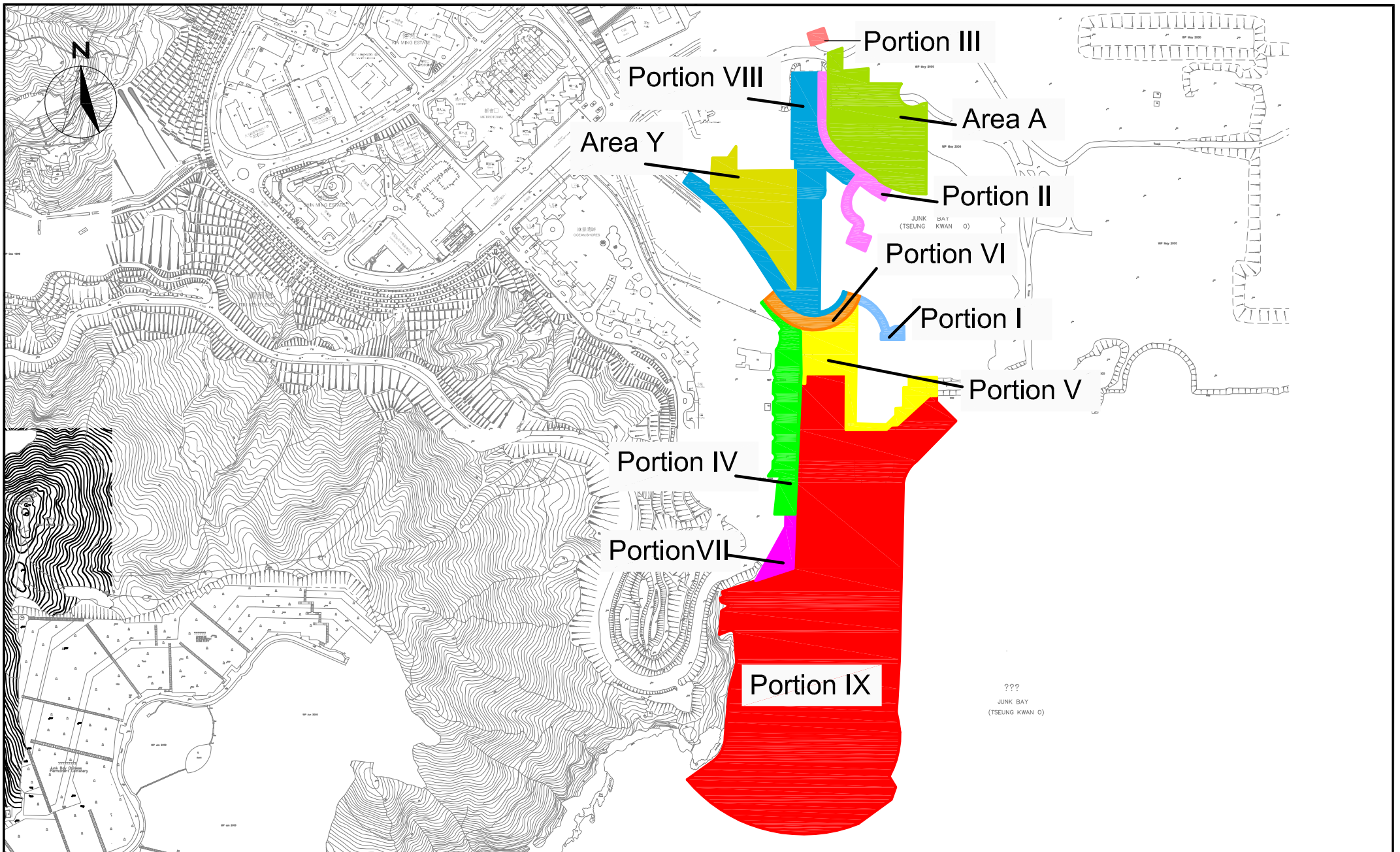
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-  Contract No. NE/2015/02
-  Contract No. NE/2015/03
-  Contract No. NE/2017/02
-  Contract No. NE/2017/01

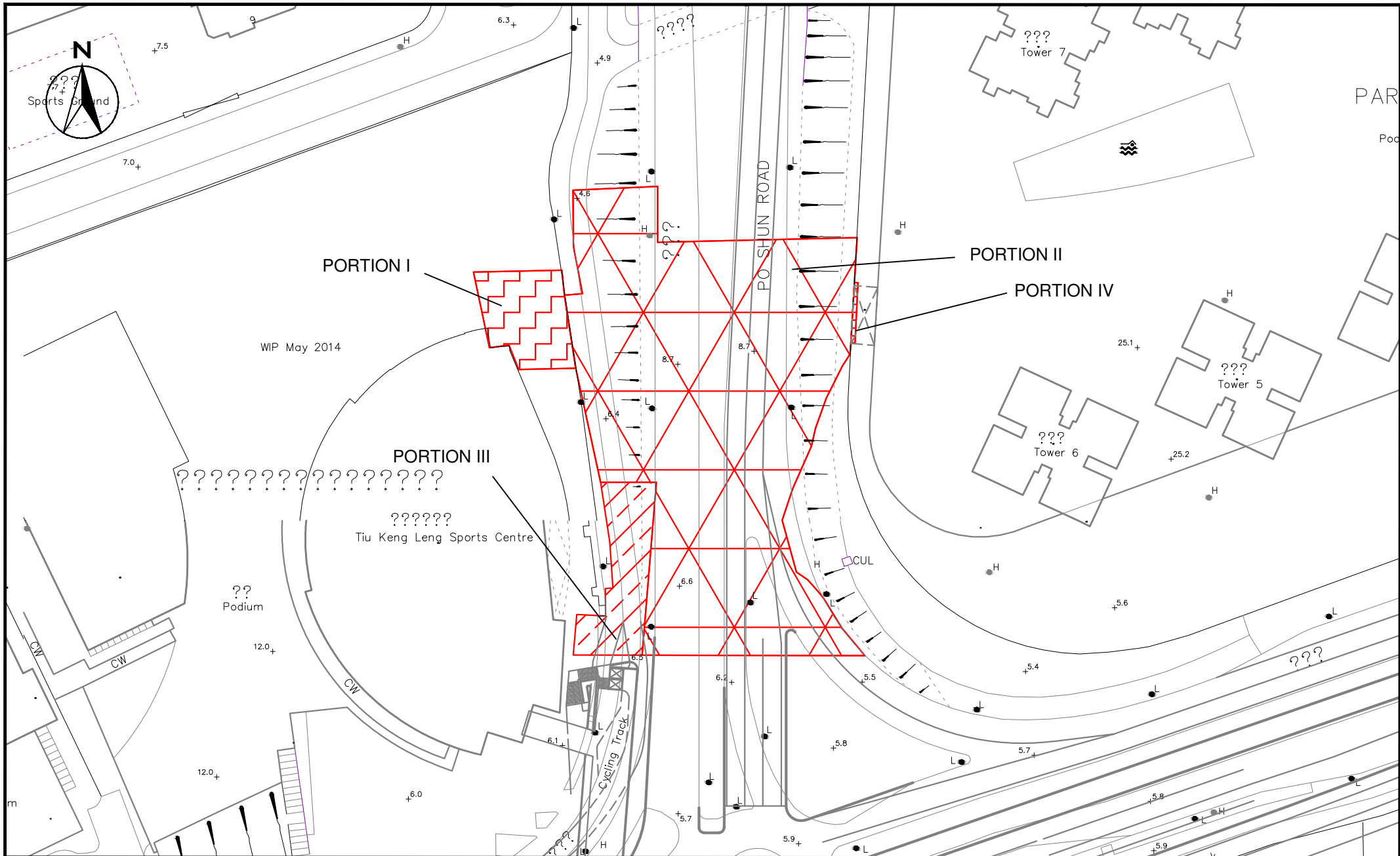
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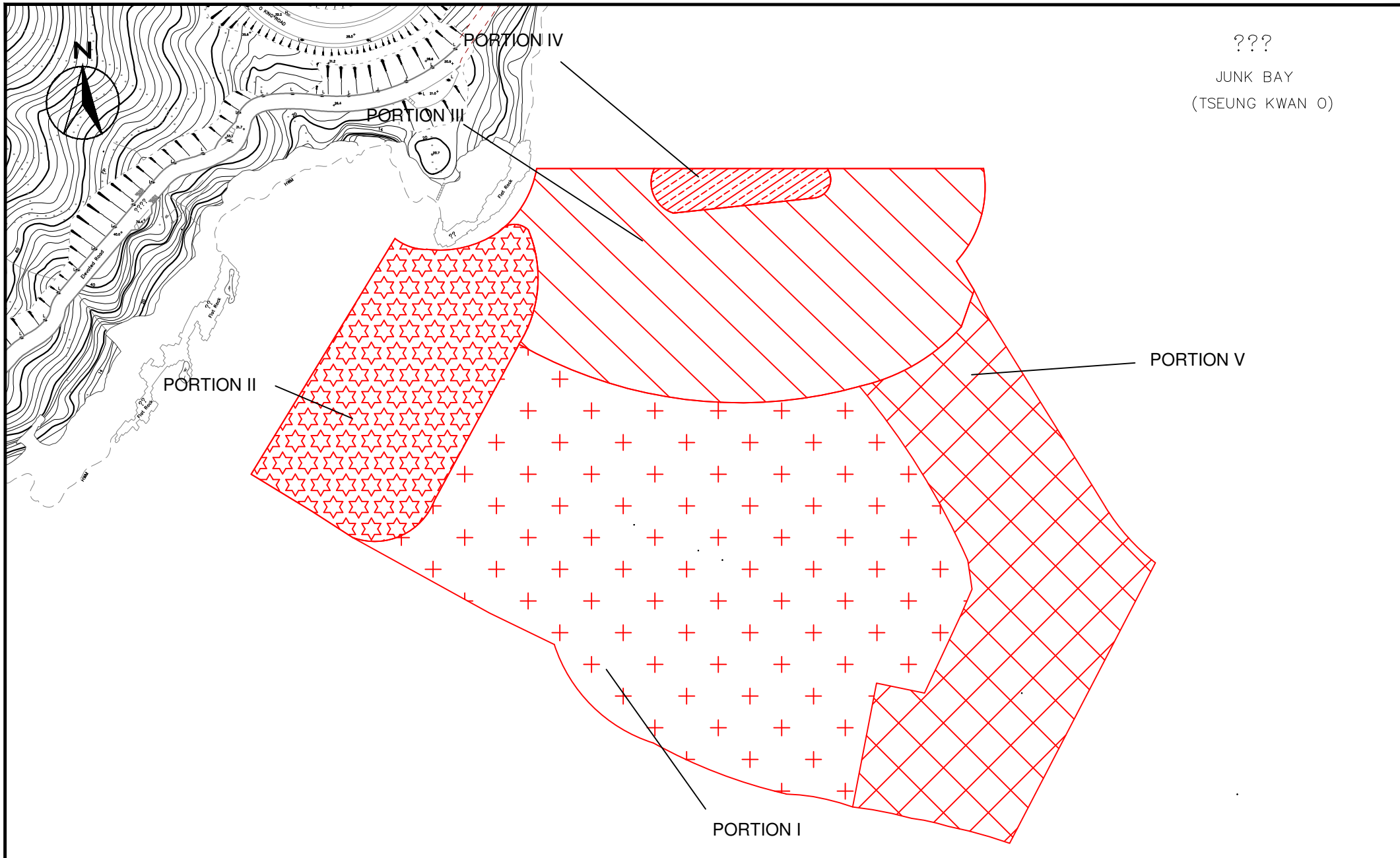
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JOB No.	MA16034	FIGURE NO.	1c	REV -



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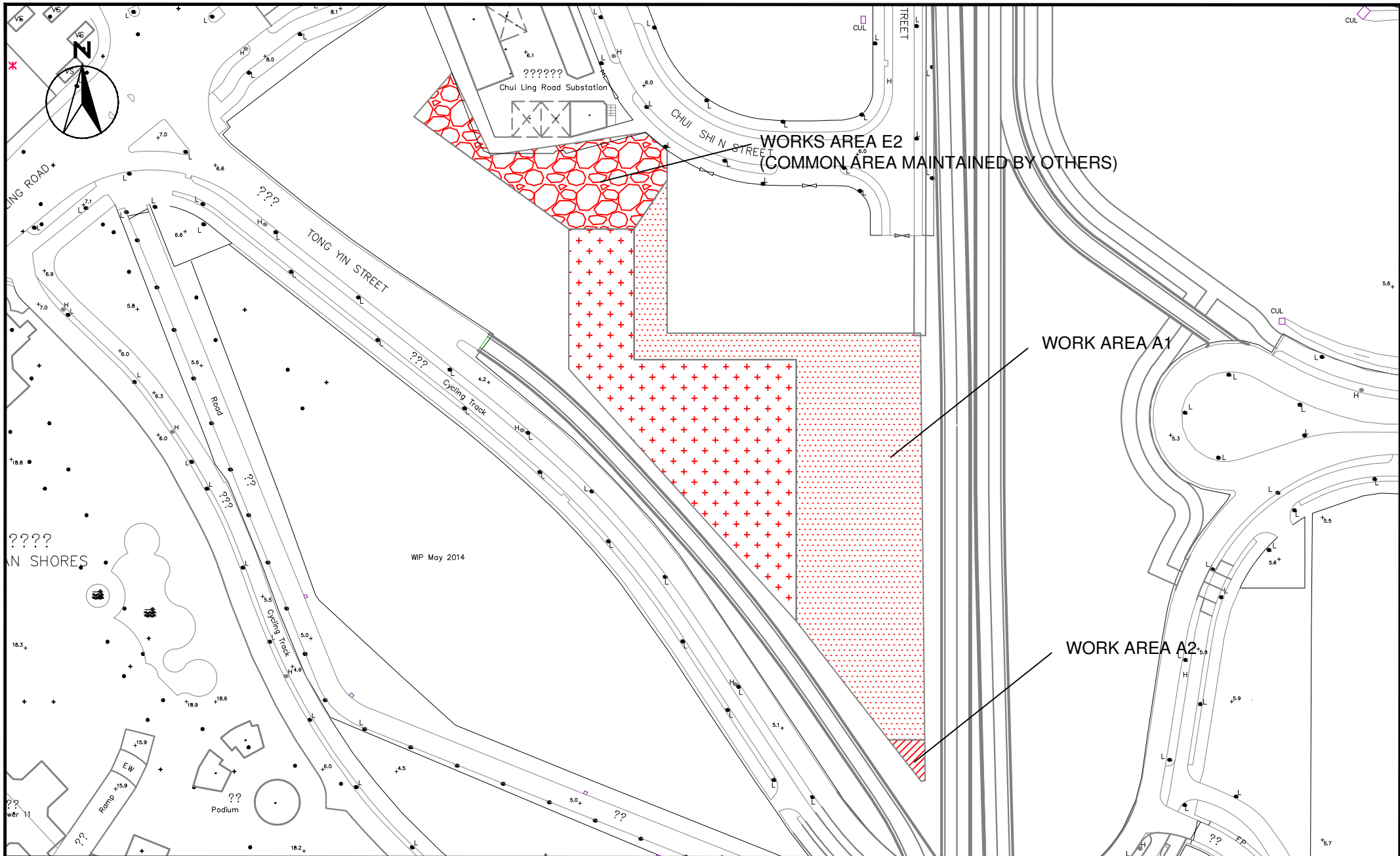
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JUNK BAY
(TSEUNG KWAN O)

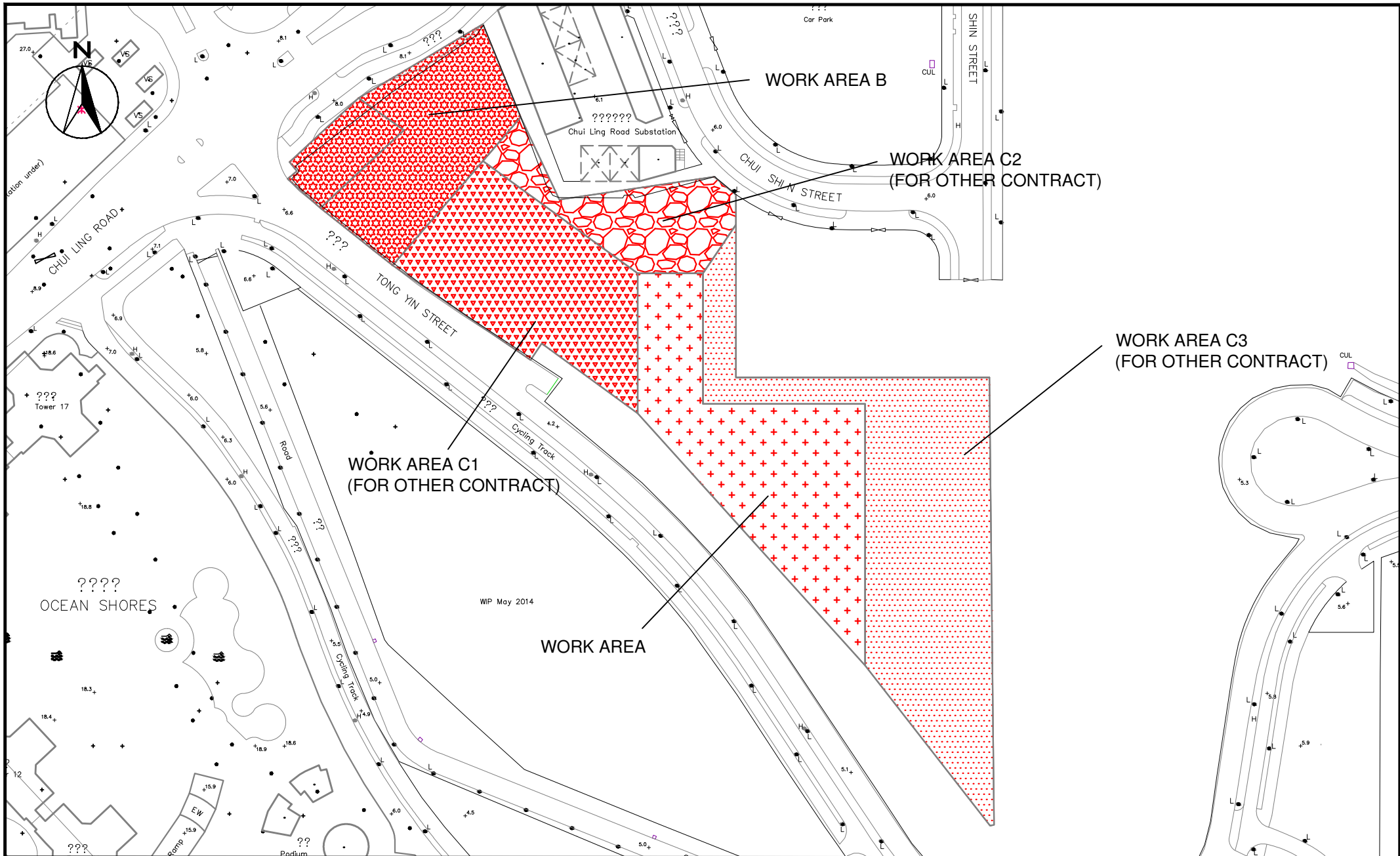


Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel
- Design and Construction
Site Portions under Work Contract No. NE/2017/01

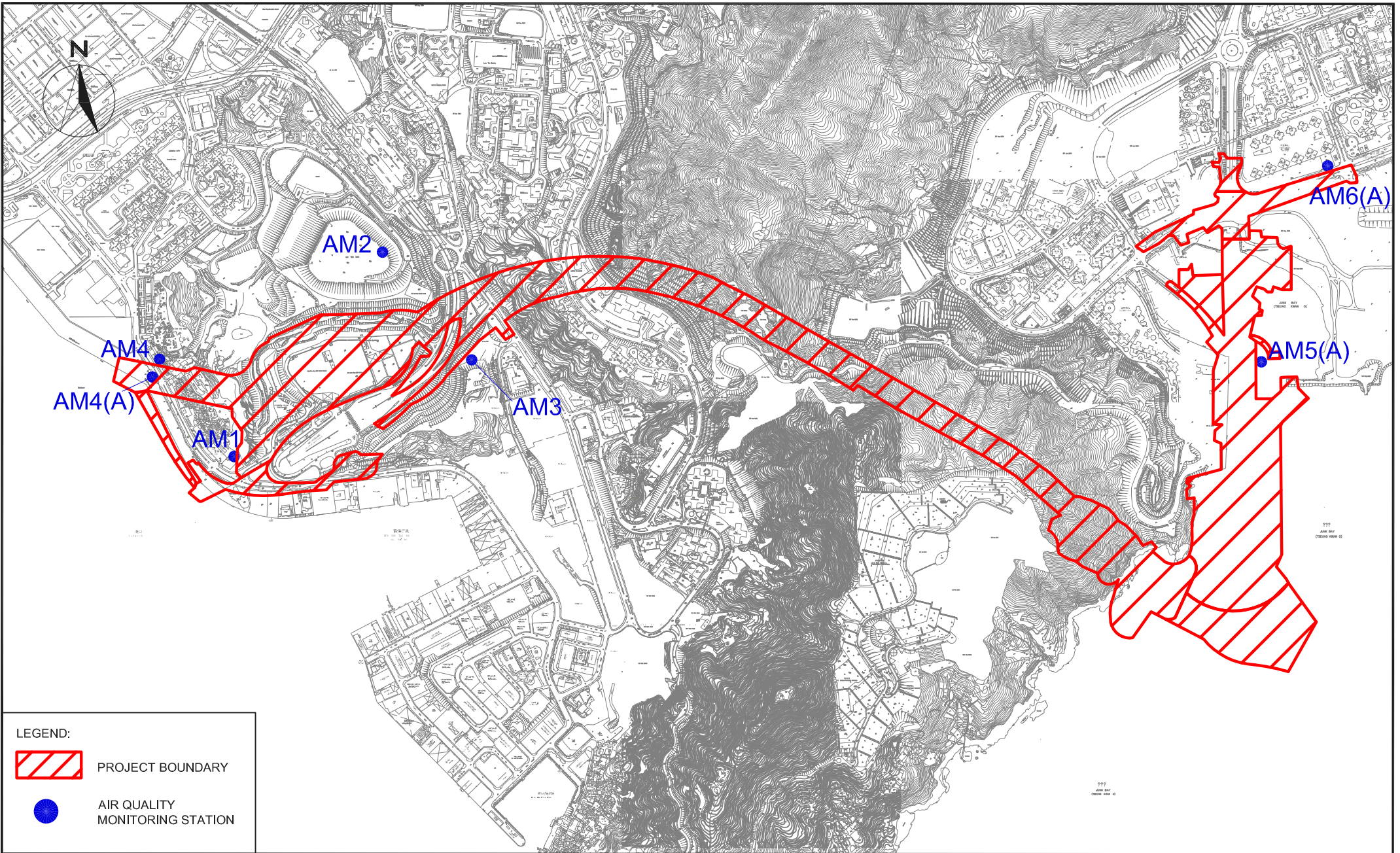
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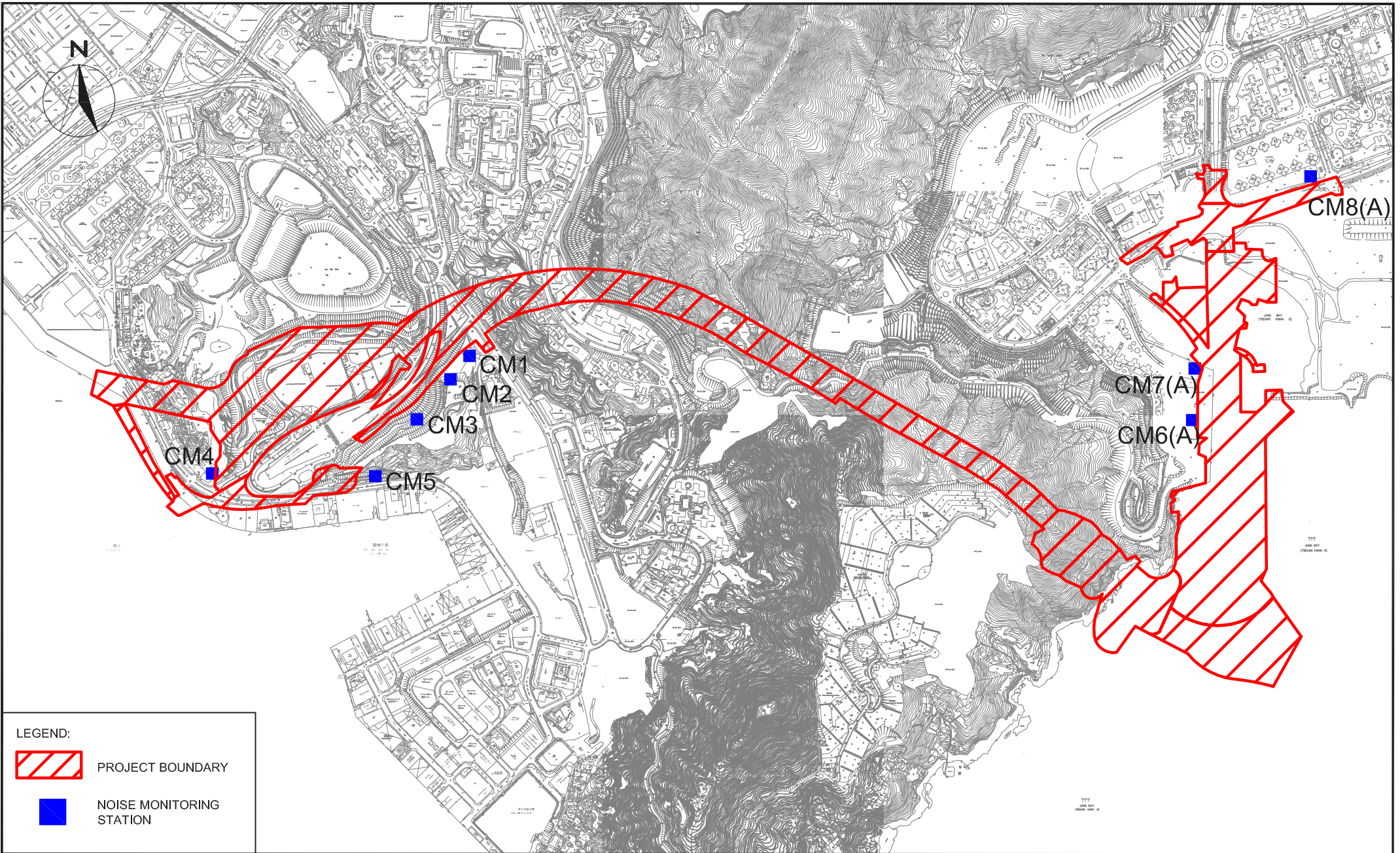


PROJECT BOUNDARY





AIR QUALITY MONITORING STATION

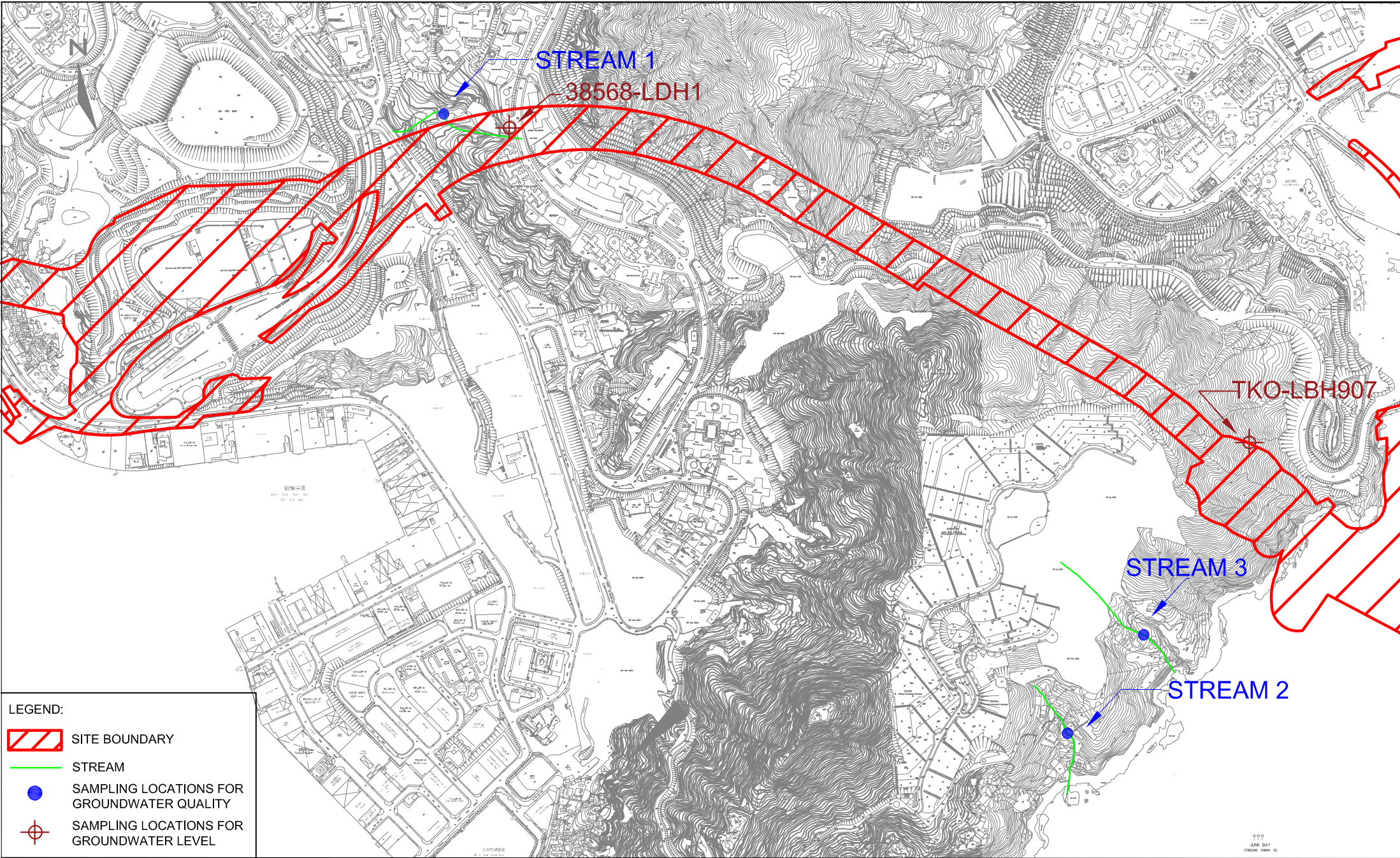
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LEGEND:

-  PROJECT BOUNDARY
-  NOISE MONITORING STATION

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JOB No.	MA16034	FIGURE NO.	3	REV -



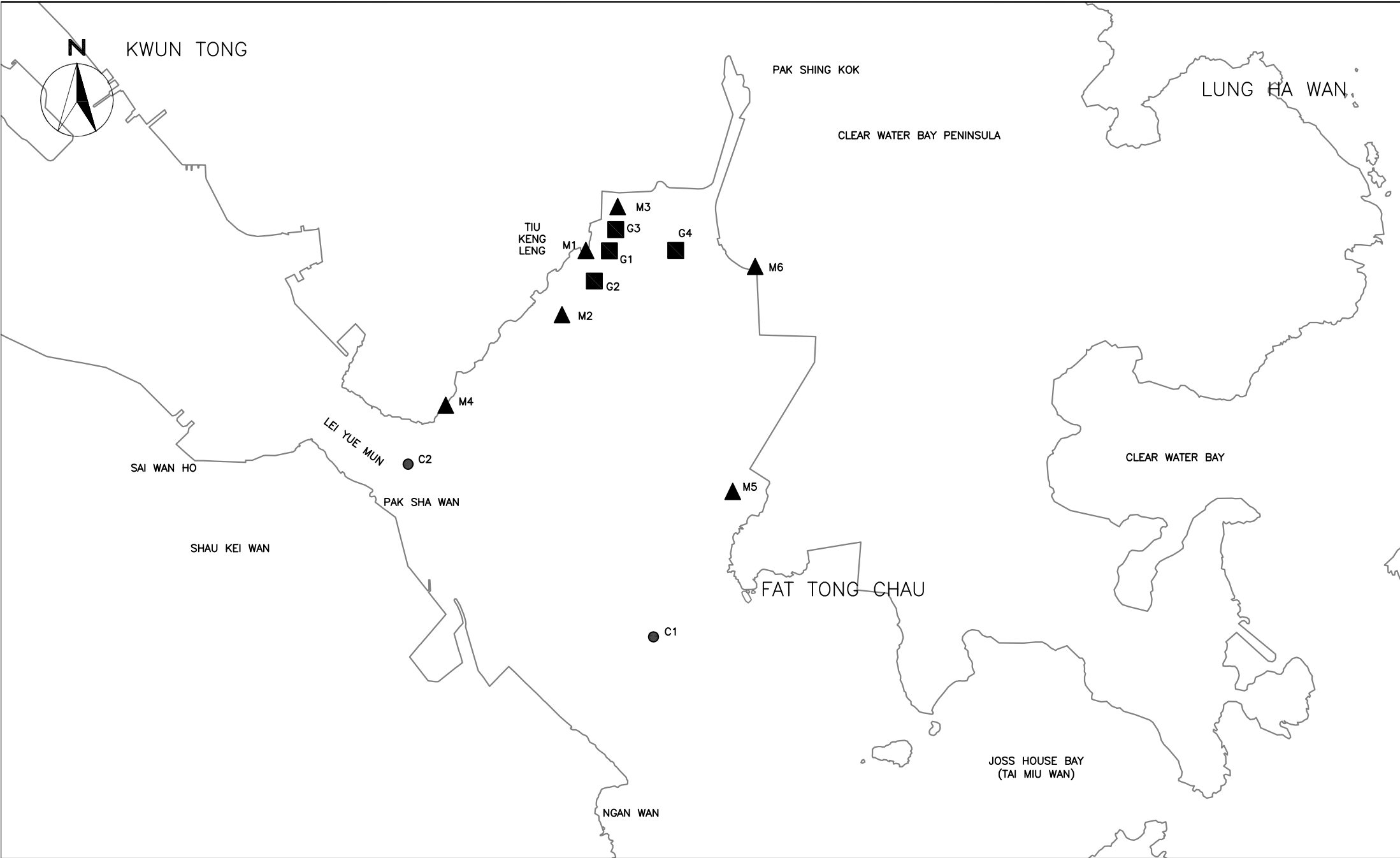
LEGEND:

-  SITE BOUNDARY
-  STREAM
-  SAMPLING LOCATIONS FOR GROUNDWATER QUALITY
-  SAMPLING LOCATIONS FOR GROUNDWATER LEVEL



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

SCALE	1:10000 @ A4	DATE	APR 2017	
CHECK	JF	DRAWN	JW	
JOB No.	MA16034	FIGURE NO.	4	REV
				-



CINOTECH

Cinotech Consultants Limited

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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PROJECT NO.	MA16034	FIGURE NO.	5	REV —

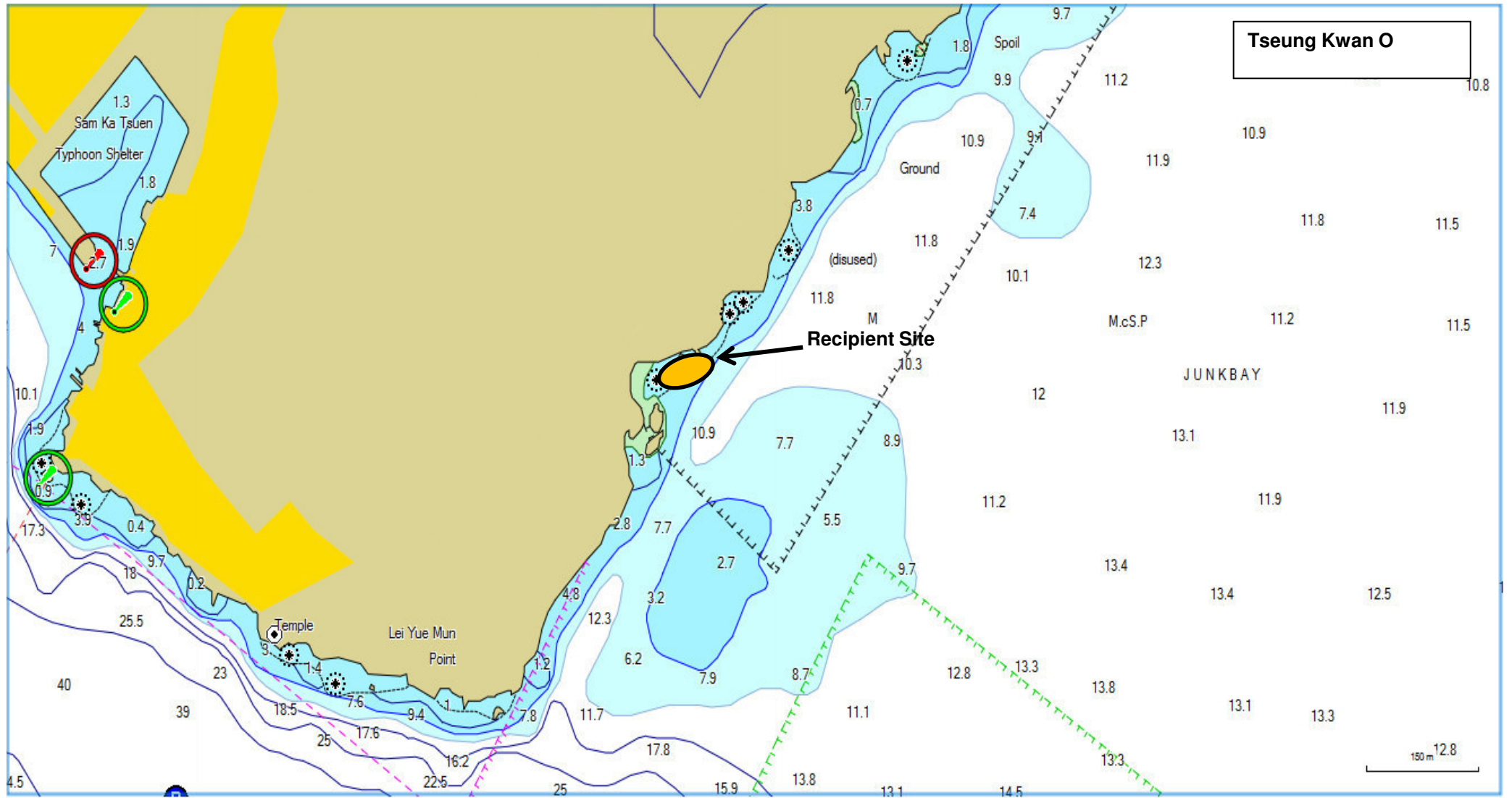


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Locations of Landfill Gas Monitoring

Scale N.T.S
 Date Dec-16

Project No. MA16034
 Figure 6



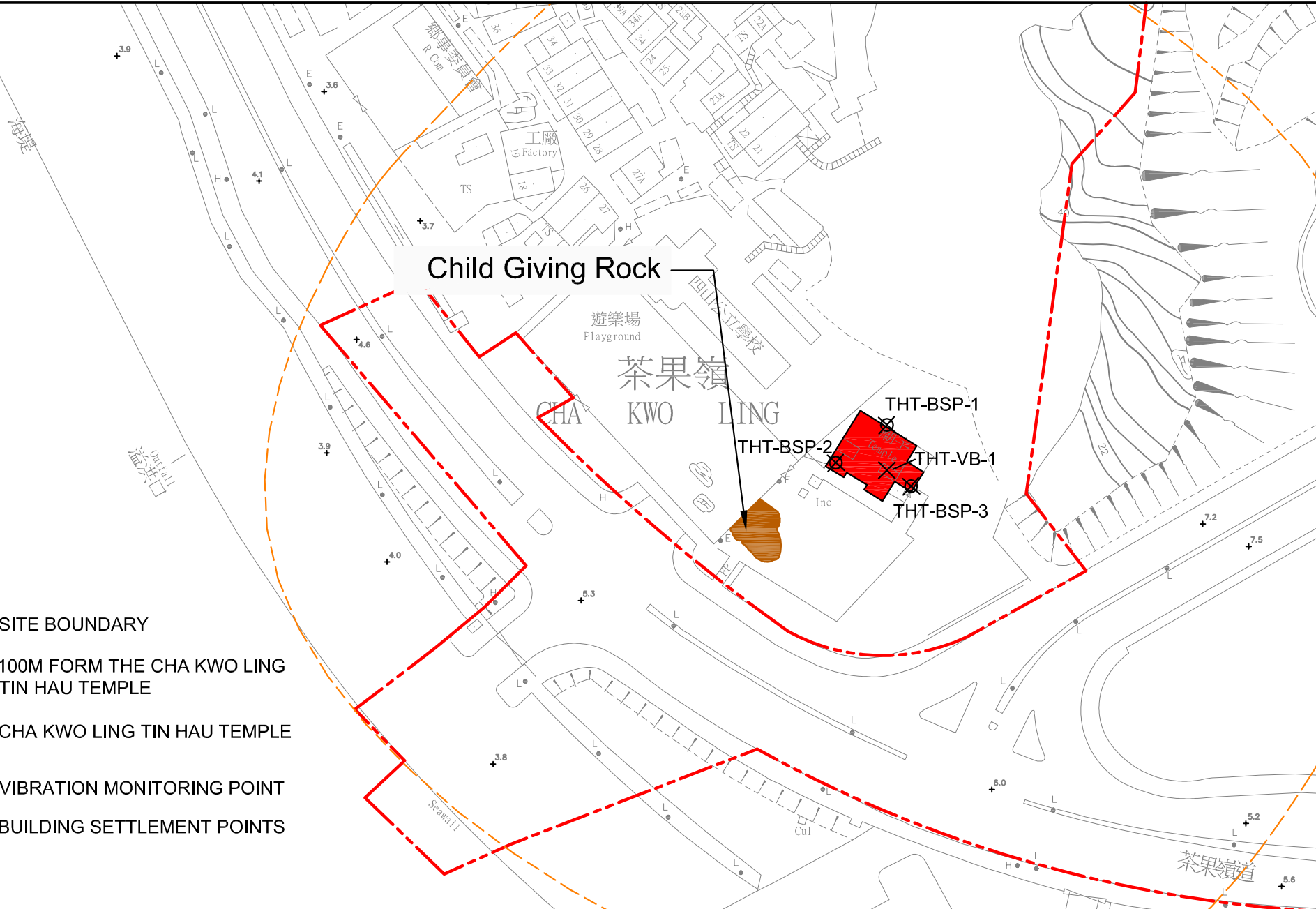


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Location of Post-translocation Coral Monitoring

Scale N.T.S
 Date Mar-17

Project No. MA16034
 Figure 7

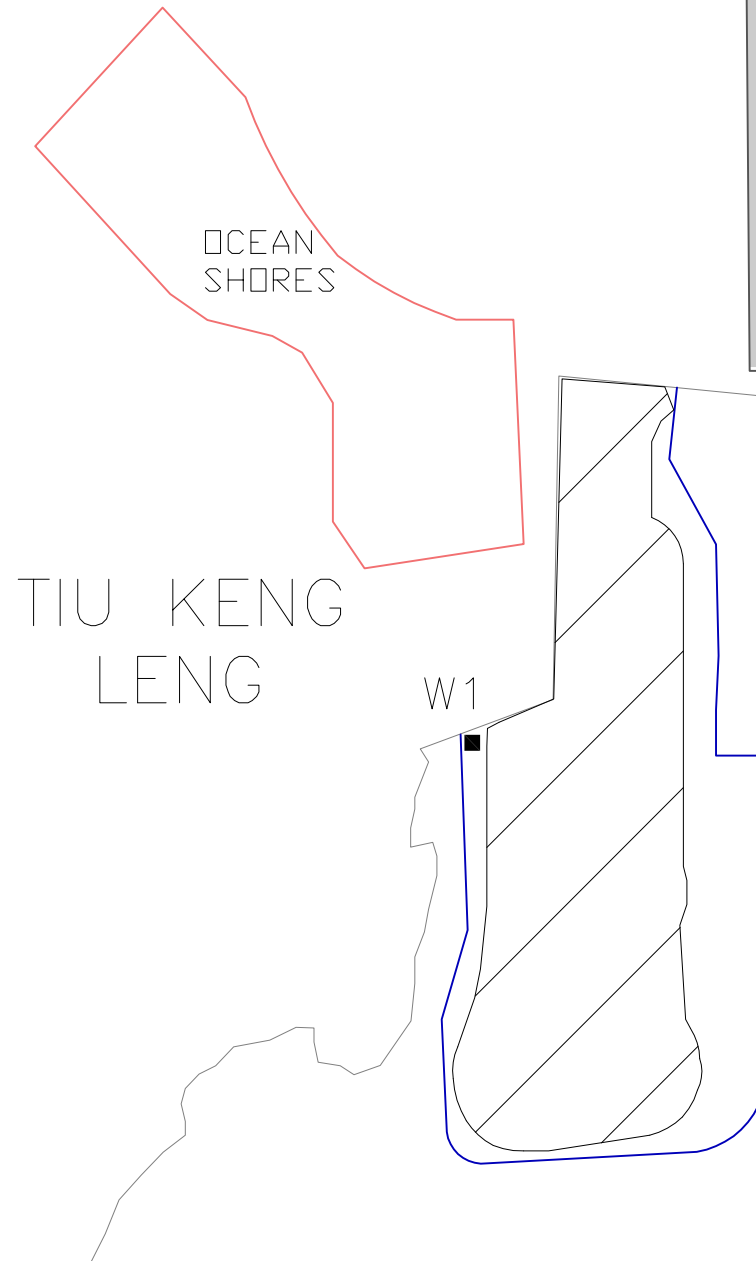
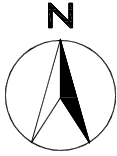




LEGEND

- SITE BOUNDARY
- 100M FORM THE CHA KWO LING TIN HAU TEMPLE
- CHA KWO LING TIN HAU TEMPLE
- X VIBRATION MONITORING POINT
- ⊗ BUILDING SETTLEMENT POINTS

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



LEGEND

- IMPACT STATIONS
- LOCATION OF TEMPORARY MARINE EMBAYMENT BY STEEL COFFERDAM
- ▨ RECLAMATION FOOTPRINT

CURRENT SHORELINE

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, μgn^3	Limit Level, μgn^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, μgn^3	Limit Level, μgn^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 (BOD₅), 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

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

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	<u>4.8 mg/L</u> ⁽⁴⁾	<u>4 mg/L</u> ⁽³⁾
	Bottom	<u>2.4 mg/L</u> ⁽⁴⁾	<u>2 mg/L</u> ⁽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**

Certificate of Calibration

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


Description: Laser Dust Monitor Date of Calibration 23-Aug-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 22-Oct-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

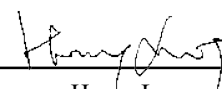
Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	3450	57.5	81.0
2	3822	63.7	110.6
3	3984	66.4	122.5
Average		62.53	104.70
<p>By Linear Regression of Y on X Slope , mw = <u>4.6822</u> Intercept, bw = <u>-188.0965</u> Correlation coefficient* = <u>0.9998</u></p> <p>Set Correlation Factor , SCF SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)] <u>1.7</u></p>			

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

Certificate of Calibration

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

Description: Laser Dust Monitor Date of Calibration 8-Oct-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 7-Dec-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	3450	102.0	215.4
2	3822	95.0	206.5
3	3984	86.0	196.5
Average		94.33	206.13
<p>By Linear Regression of Y on X</p> <p>Slope, mw = <u>1.1780</u> Intercept, bw = <u>95.0106</u></p> <p>Correlation coefficient* = <u>0.9993</u></p> <p>Set Correlation Factor, SCF</p> <p>SCF = [K=High Volume Sampler / Dust Meter, (µ g/m³)] <u>2.2</u></p>			

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

Certificate of Calibration

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

Description: Digital Dust Indicator Date of Calibration 10-Aug-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 9-Oct-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 ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	82.9	139.2
2	78.6	133.4
3	71.7	125.9
Average	77.7	132.8
By Linear Regression of Y on X Slope , mw = <u>1.1781</u> Intercept, bw = <u>41.2570</u> Correlation coefficient* = <u>0.9982</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	132.8	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	77.7	
Measuring time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>1.7</u>	

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
 Wong Shing Kwai

Approved by: Henry Leung
 Henry Leung

Certificate of Calibration

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


Description: Digital Dust Indicator Date of Calibration 8-Oct-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 7-Dec-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

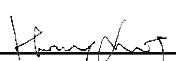
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	99.0	215.4
2	94.0	206.5
3	87.0	196.5
Average	93.3	206.1
By Linear Regression of Y on X Slope , mw = <u>1.5656</u> Intercept, bw = <u>60.0110</u> Correlation coefficient* = <u>0.9981</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	206.1	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	93.3	
Measuring time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>2.2</u>	

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

Certificate of Calibration

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


Description: Digital Dust Indicator Date of Calibration 10-Aug-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 9-Oct-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

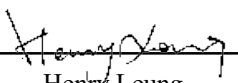
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	84.3	139.2
2	79.5	133.4
3	70.5	125.9
Average	78.1	132.8
By Linear Regression of Y on X Slope , mw = <u>0.9470</u> Intercept, bw = <u>58.8707</u> Correlation coefficient* = <u>0.9950</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	132.8	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	78.1	
Measureing time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>1.7</u>	

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

Certificate of Calibration

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


Description: Digital Dust Indicator Date of Calibration 8-Oct-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 7-Dec-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

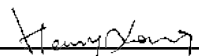
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	101.0	215.4
2	95.0	206.5
3	86.0	196.5
Average	94.0	206.1
By Linear Regression of Y on X Slope , mw = <u>1.2482</u> Intercept, bw = <u>88.7982</u> Correlation coefficient* = <u>0.9967</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	206.1	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	94.0	
Measureing time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>2.2</u>	

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

Certificate of Calibration

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


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 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 9-Oct-19
 Model No.: LD-5R
 Serial No.: 972777
 Equipment No.: SA-01-06 Sensitivity 0.001 mg/m3
 High Volume Sampler No.: A-01-03 Before Sensitivity Adjustment 645
 Tisch Calibration Orifice No.: 3607 After Sensitivity Adjustment 645


Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	86.5	139.2
2	80.5	133.4
3	72.0	125.9
Average	79.7	132.8
By Linear Regression of Y on X Slope , mw = <u>0.9149</u> Intercept, bw = <u>59.9452</u> Correlation coefficient* = <u>0.9997</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	132.8	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	79.7	
Measureing time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>1.7</u>	

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

Certificate of Calibration

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


Description: Digital Dust Indicator Date of Calibration 8-Oct-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 7-Dec-19
 Model No.: LD-5R
 Serial No.: 972777
 Equipment No.: SA-01-06 Sensitivity 0.001 mg/m3
 High Volume Sampler No.: A-01-03 Before Sensitivity Adjustment 645
 Tisch Calibration Orifice No.: 3607 After Sensitivity Adjustment 645

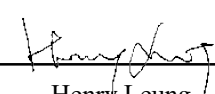
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	112.0	215.4
2	104.0	206.5
3	94.0	196.5
Average	103.3	206.1
By Linear Regression of Y on X Slope , mw = <u>1.0480</u> Intercept, bw = <u>97.8451</u> Correlation coefficient* = <u>0.9995</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	206.1	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	103.3	
Measureing time, (min)	60.0	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>2.0</u>	

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. MA16034/05/0019

Project No. AM1 - Tin Hau Temple
 Date: 16-Aug-19 Next Due Date: 15-Oct-19 Operator: SK
 Equipment No.: A-01-05 Model No.: GS2310 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	<u>303</u>	Pressure, Pa (mmHg)	<u>755</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.6</u>	3.51	60.08	<u>8.4</u>	2.86
2	<u>9.2</u>	3.00	51.40	<u>6.2</u>	2.46
3	<u>7.5</u>	2.71	46.45	<u>4.8</u>	2.17
4	<u>5.0</u>	2.21	38.00	<u>3.0</u>	1.71
5	<u>2.8</u>	1.65	28.54	<u>1.8</u>	1.33

By Linear Regression of Y on X

Slope, mw = 0.0498 Intercept, bw = -0.1295
 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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.14

Remarks: _____

Conducted by: SK Wong Signature: [Signature] Date: 16 August 2019
 Checked by: Henry Leung Signature: [Signature] Date: 16 August 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/05/0020

Project No. AM1 - Tin Hau Temple
 Date: 14-Oct-19 Next Due Date: 13-Dec-19 Operator: SK
 Equipment No.: A-01-05 Model No.: GS2310 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	<u>298.8</u>	Pressure, Pa (mmHg)	<u>763.1</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.3</u>	3.51	60.10	<u>8.3</u>	2.88
2	<u>9.0</u>	3.00	51.47	<u>6.1</u>	2.47
3	<u>7.4</u>	2.72	46.71	<u>4.8</u>	2.19
4	<u>4.9</u>	2.22	38.08	<u>3.0</u>	1.73
5	<u>2.7</u>	1.64	28.38	<u>1.8</u>	1.34

By Linear Regression of Y on X

Slope, mw = 0.0495 Intercept, bw = -0.0982
 Correlation coefficient* = 0.9982

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.11

Remarks: _____

Conducted by: SK Wong Signature: _____ Date: 14 October 2019

Checked by: Henry Leung Signature: _____ Date: 14 October 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/08/0019

Project No. AM2 - Sai Tso Wan Recreation Ground
 Date: 16-Aug-19 Next Due Date: 15-Oct-19 Operator: SK
 Equipment No.: A-01-08 Model No.: GS2310 Serial No. 1287

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	755

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	12.7	3.52	60.32	8.4	2.86
2	9.7	3.08	52.77	6.0	2.42
3	8.0	2.80	47.96	5.1	2.23
4	4.8	2.17	37.24	3.1	1.74
5	2.7	1.62	28.03	1.9	1.36

By Linear Regression of Y on X

Slope, mw = 0.0459 Intercept, bw = 0.0485
 Correlation coefficient* = 0.9978

*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: SK Wong Signature:  Date: 16 August 2019

Checked by: Henry Leung Signature:  Date: 16 August 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/08/0020

Project No. AM2 - Sai Tso Wan Recreation Ground
 Date: 14-Oct-19 Next Due Date: 13-Dec-19 Operator: SK
 Equipment No.: A-01-08 Model No.: GS2310 Serial No. 1287

Ambient Condition			
Temperature, Ta (K)	<u>298.8</u>	Pressure, Pa (mmHg)	<u>763.1</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.4</u>	3.52	60.34	<u>8.2</u>	2.87
2	<u>9.5</u>	3.08	52.87	<u>5.8</u>	2.41
3	<u>7.8</u>	2.79	47.94	<u>4.9</u>	2.22
4	<u>4.7</u>	2.17	37.31	<u>3.0</u>	1.73
5	<u>2.6</u>	1.61	27.85	<u>1.8</u>	1.34

By Linear Regression of Y on X

Slope, mw = 0.0460 Intercept, bw = 0.0304
 Correlation coefficient* = 0.9972

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.03

Remarks: _____

Conducted by: SK Wong Signature: Date: 14 October 2019

Checked by: Henry Leung Signature: Date: 14 October 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/03/0019

Project No. AM3 - Yau Lai Estate, Bik Lai House
 Date: 16-Aug-19 Next Due Date: 15-Oct-19 Operator: SK
 Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	755

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.6	3.51	60.08	8.3	2.85
2	9.4	3.03	51.95	6.3	2.48
3	7.9	2.78	47.66	5.0	2.21
4	5.1	2.23	38.37	3.3	1.80
5	2.7	1.62	28.03	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0457 Intercept, bw : 0.0785
 Correlation coefficient* = 0.9976

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.28

Remarks: _____

Conducted by: SK Wong Signature: Date: 16 August 2019
 Checked by: Henry Leung Signature: Date: 16 August 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/03/0020

Project No. AM3 - Yau Lai Estate, Bik Lai House
 Date: 14-Oct-19 Next Due Date: 13-Dec-19 Operator: SK
 Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	<u>298.8</u>	Pressure, Pa (mmHg)	<u>763.1</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.1</u>	3.48	59.61	<u>8.0</u>	2.83
2	<u>9.0</u>	3.00	51.47	<u>6.0</u>	2.45
3	<u>7.6</u>	2.76	47.33	<u>4.8</u>	2.19
4	<u>4.9</u>	2.22	38.08	<u>3.2</u>	1.79
5	<u>2.6</u>	1.61	27.85	<u>1.9</u>	1.38

By Linear Regression of Y on X

Slope, mw = 0.0459 Intercept, bw = 0.0675
 Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.17

Remarks: _____

Conducted by: SK Wong Signature: Date: 14 October 2019

Checked by: Henry Leung Signature: Date: 14 October 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/54/0019

Project No. AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office
 Date: 16-Aug-19 Next Due Date: 15-Oct-19 Operator: SK
 Equipment No.: A-01-54 Model No.: TE-5170 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	755

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	3.54	60.55	8.5	2.88
2	9.8	3.09	53.04	6.3	2.48
3	7.6	2.72	46.75	5.2	2.25
4	5.2	2.25	38.75	3.4	1.82
5	3.0	1.71	29.53	1.9	1.36

By Linear Regression of Y on X

Slope, mw = 0.0485 Intercept, bw = -0.0591
 Correlation coefficient* = 0.9988

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.21

Remarks: _____

Conducted by: SK Wong Signature: Date: 16 August 2019
 Checked by: Henry Leung Signature: Date: 16 August 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/54/0020

Project No. AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office
 Date: 14-Oct-19 Next Due Date: 13-Dec-19 Operator: SK
 Equipment No.: A-01-54 Model No.: TE-5170 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	<u>298.8</u>	Pressure, Pa (mmHg)	<u>763.1</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.3</u>	3.51	60.10	<u>8.2</u>	2.87
2	<u>9.4</u>	3.07	52.59	<u>6.0</u>	2.45
3	<u>7.3</u>	2.70	46.39	<u>5.0</u>	2.24
4	<u>5.0</u>	2.24	38.47	<u>3.3</u>	1.82
5	<u>2.9</u>	1.70	29.39	<u>1.8</u>	1.34

By Linear Regression of Y on X

Slope, mw = 0.0489 Intercept, bw = -0.0747
 Correlation coefficient* = 0.9984

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.10

Remarks: _____

Conducted by: SK Wong Signature: _____ Date: 14 October 2019

Checked by: Henry Leung Signature: _____ Date: 14 October 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/37/0019

Project No. AM5(A) - Tseung Kwan O DSD Desilting Compound
 Date: 16-Aug-19 Next Due Date: 15-Oct-19 Operator: SK
 Equipment No.: A-01-37 Model No.: GS2310 Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	755

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	3.55	60.79	8.7	2.92
2	10.1	3.14	53.84	6.5	2.52
3	8.0	2.80	47.96	5.2	2.25
4	5.3	2.28	39.11	3.3	1.80
5	3.1	1.74	30.01	2.1	1.43

By Linear Regression of Y on X

Slope, mw = 0.0482 Intercept, bw = -0.0512
 Correlation coefficient* = 0.9982

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation


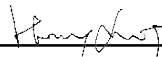
From the TSP Field Calibration Curve, take Qstd = 43 CFM

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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.19

Remarks: _____

Conducted by: SK Wong Signature:  Date: 16 August 2019
 Checked by: Henry Leung Signature:  Date: 16 August 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/37/0020

Project No. AM5(A) - Tseung Kwan O DSD Desilting Compound
 Date: 14-Oct-19 Next Due Date: 13-Dec-19 Operator: SK
 Equipment No.: A-01-37 Model No.: GS2310 Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	<u>298.8</u>	Pressure, Pa (mmHg)	<u>763.1</u>

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	<u>12.4</u>	3.52	60.34	<u>8.4</u>	2.90
2	<u>9.7</u>	3.12	53.42	<u>6.2</u>	2.49
3	<u>7.7</u>	2.78	47.64	<u>5.0</u>	2.24
4	<u>5.1</u>	2.26	38.85	<u>3.2</u>	1.79
5	<u>3.0</u>	1.73	29.89	<u>2.0</u>	1.42

By Linear Regression of Y on X

Slope, mw = 0.0485 Intercept, bw = -0.0657
 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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.08

Remarks: _____

Conducted by: SK Wong Signature: _____ Date: 14 October 2019

Checked by: Henry Leung Signature: _____ Date: 14 October 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/07/0019

Project No. AM6 - Park Central
 Date: 16-Sep-19 Next Due Date: 15-Nov-19 Operator: SK
 Equipment No.: A-01-07 Model No.: GS2310 Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	302.3	Pressure, Pa (mmHg)	756.0

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	11.2	3.31	56.77	6.9	2.60
2	8.4	2.87	49.22	5.5	2.32
3	6.9	2.60	44.65	4.4	2.08
4	4.3	2.05	35.33	2.8	1.66
5	2.8	1.66	28.59	1.8	1.33

By Linear Regression of Y on X

Slope, mw = 0.0457 Intercept, bw = 0.0376
 Correlation coefficient* = 0.9988

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.08

Remarks: _____

Conducted by: SK Wong Signature:  Date: 16 September 2019

Checked by: Henry Leung Signature:  Date: 16 September 2019



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)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (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= $\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va= $\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$
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= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

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

Certificate of Calibration - Wind Monitoring Station

Description: Yau Lai Estate, Bik Lai House
 Manufacturer: Davis Instruments
 Model No.: Davis7440
 Serial No.: MC01010A44
 Equipment No.: SA-03-04
 Date of Calibration: 22-Aug-2019
 Next Due Date: 21-Feb-2020

1. Performance check of Wind Speed


Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V1)	$D = V1 - V2$
0.5	0.5	0.0
1.5	1.5	0.0
1.8	1.9	0.1
2.3	2.5	0.2

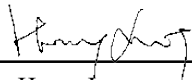
2. Performance check of Wind Direction

Wind Direction (°)		Difference D (°)
Wind Direction Reading (V1)	Marine Compass Value (V1)	$D = W1 - W2$
0	0	0.0
90.1	90	0.1
180	180	0.0
270.2	270	0.2

Test Specification:

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

Calibrated by: 
 Wong Shing Kwai

Approved by: 
 Henry Leung

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 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

TEST REPORT

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

Test Report No.:	32150
Date of Issue:	2019-09-27
Date Received:	2019-09-26
Date Tested:	2019-09-26
Date Completed:	2019-09-27
Next Due Date:	2020-09-26

ATTN: Mr. Henry Leung

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 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

TEST REPORT

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

Test Report No.:	C/N/181213/1
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.	: 27189
Microphone No.	: 165399
Equipment No.	: SN-01-01

Test conditions:

Room Temperature	: 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
Laboratory Manager

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 Temperature	: 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

TEST REPORT

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

Test Report No.:	C/N/181221/1
Date of Issue:	2018-12-21
Date Received:	2018-12-19
Date Tested:	2018-12-19
Date Completed:	2018-12-21
Next Due Date:	2019-12-20

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description : 'SVANTEK' Integrating Sound Level Meter
Manufacturer : SVANTEK
Model No. : SVAN 959
Serial No. : 11275
Microphone No. : 86553
Equipment No. : N-08-01

Test conditions:

Room Temperature : 22 degree Celsius
Relative Humidity : 55%

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
Laboratory Manager

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

Page: 1 of 1

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 Temperature	: 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

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 Temperature	: 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
Laboratory Manager

TEST REPORT

RPLIN: Metech Consultants Limited
Room 1701, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Test Report No.	9
Date of Issue:	08/02
Date Received	08/02
Date Tested	08/02
Date Completed	08/02

ATTN Mr. Henry Leung

Pag: 162

Certificate of Calibration

Item for calibration:

SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06
SI Unit	Parameter	Serial No.	SW-06

Test conditions:

Room Temperature : 23 Degree Celsius
Relative Humidity : 40%

Test Specifications:

Performance check of Humidity, Temperature, Pressure

Method:

According to manufacturer's instruction, ASME

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


PARK TSE
Chief

TEST REPORT

Test Rept No	8
Date Issued	08/02
Date Received	08/02
Date Tested	08/02
Date Completed	08/02

Page: 2

Certificate of Calibration

Results:

Conductivity performance checking

Instrument	Instrument Reading ($\mu\text{S/cm}$)	Acceptance Criteria	Comment
K1101	0	Pass	

Temperature performance checking

Reference thermometer	Instrument Reading ($^{\circ}\text{C}$)	Correction ($^{\circ}\text{C}$)	Comment
0	0	0	NA

pH performance checking

Instrument	Instrument Reading (pH)	Acceptance Criteria	Comment
101	4	4 \pm 0.05	Pass
101	6	6 \pm 0.05	Pass
101	9	9 \pm 0.05	Pass

DO performance checking

Instrument	Instrument Reading (mg/L)	Acceptance Criteria	Comment
Zero	0	< 0.1 mg/L	Pass

Water Titratable Acidity (mg/L)	Instrument Reading (mg/L)	Acceptance Criteria	Comment
0	0	Difference between Titratable Acidity and instrument reading < 0.1 mg/L	Pass

Turbidity performance checking

Instrument	Instrument Reading (NTU)	Acceptance Criteria	Comment
0	0	0	Pass
0	0	0	Pass
0	97	0	Pass

Depth performance checking

Water Depth (meter)	Instrument Reading (m)	Acceptance Criteria	Comment
0	0	0	Pass

END 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
Blastmate III	714A0801	BA15521
ISEE Triaxial Geophone	714A9701	BG14463
GLOBAL SPECIALISTS 3MHZ*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Agilent 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Agilent 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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.

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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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: _____

Eric
(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.

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 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.

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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: _____



(Wong, Keefe Solomon)

Date: 2 May 2019

CALIBRATION CERTIFICATE

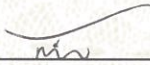
Calibration Item: Micromate Unit (Calibration with Geophone
UM13703)
Model No.: 721A2501
Serial No.: UM13703
Calibration Date: 25 April 2019
Next Calibration Date: 25 April 2020
Method Used: In-house Method MM-001
In-house Testing Procedure No.: MM-001

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.

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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

*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: 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
Blastmate III	714A0801	BA15521
Linear Microphone	714A9801	BH11561
GLOBAL SPECIALISTS 3MHz*	2030	256812
Stanford Spectrum Analyzer	SR760	41550
Agilent 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: _____

(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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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 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

<u>Test References</u>	<u>Model</u>	<u>Serial No.</u>
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: _____

(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:

Calibrated By: T. Skal

JIM HOFFMAN
QUALITY ENGINEER

APPENDIX C
WEATHER INFORMATION

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table I: Mean Temperature, Relative Humidity and Percipitation			
Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1-Oct-19	30.3	59	0
2-Oct-19	29.5	71	0
3-Oct-19	29	67	0
4-Oct-19	28.6	70	0
5-Oct-19	29.1	69	0
6-Oct-19	26.3	81	46.8
7-Oct-19	26.3	86	17.9
8-Oct-19	27.7	79	4.9
9-Oct-19	27.8	75	Trace
10-Oct-19	27.9	76	0
11-Oct-19	28.5	75	0
12-Oct-19	28.6	78	0.3
13-Oct-19	27.2	84	13.6
14-Oct-19	25.8	86	52.1
15-Oct-19	26	74	10.4
16-Oct-19	25.5	67	0
17-Oct-19	26.2	70	0
18-Oct-19	26.5	70	Trace
19-Oct-19	26.2	72	0
20-Oct-19	25.4	76	3.5
21-Oct-19	25.3	72	0
22-Oct-19	25	68	0
23-Oct-19	25.5	71	0
24-Oct-19	26.2	71	0
25-Oct-19	25.8	75	0
26-Oct-19	25.9	75	Trace
27-Oct-19	25.7	76	Trace
28-Oct-19	25.2	77	Trace
29-Oct-19	22.7	65	0
30-Oct-19	24	60	0
31-Oct-19	24.8	68	0

* 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**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
01-10-19	0:00	5.0	SSE
01-10-19	1:00	2.9	SE
01-10-19	2:00	2.9	SE
01-10-19	3:00	4.1	SSE
01-10-19	4:00	5.0	NNW
01-10-19	5:00	2.9	SE
01-10-19	6:00	2.9	SSE
01-10-19	7:00	4.1	NE
01-10-19	8:00	5.0	NNW
01-10-19	9:00	4.1	N
01-10-19	10:00	5.0	SE
01-10-19	11:00	6.1	SE
01-10-19	12:00	5.0	SE
01-10-19	13:00	4.1	SSE
01-10-19	14:00	4.1	SSE
01-10-19	15:00	5.0	SSE
01-10-19	16:00	4.1	NW
01-10-19	17:00	5.0	SE
01-10-19	18:00	4.1	SE
01-10-19	19:00	4.1	SSE
01-10-19	20:00	4.1	SE
01-10-19	21:00	4.1	SSE
01-10-19	22:00	2.9	NNW
01-10-19	23:00	4.1	NW
02-10-19	0:00	4.1	NW
02-10-19	1:00	2.0	NW
02-10-19	2:00	2.9	NW
02-10-19	3:00	2.9	W
02-10-19	4:00	2.9	NW
02-10-19	5:00	2.9	NW
02-10-19	6:00	2.0	W
02-10-19	7:00	2.9	NNW
02-10-19	8:00	2.9	N
02-10-19	9:00	2.9	SE
02-10-19	10:00	2.9	SE
02-10-19	11:00	4.1	SSE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
02-10-19	12:00	2.9	SE
02-10-19	13:00	4.1	SSE
02-10-19	14:00	4.1	SSE
02-10-19	15:00	6.7	NW
02-10-19	16:00	5.8	NNW
02-10-19	17:00	6.3	NNW
02-10-19	18:00	5.8	NNW
02-10-19	19:00	4.9	NNW
02-10-19	20:00	4.5	NNW
02-10-19	21:00	4	NNW
02-10-19	22:00	2.7	NNW
02-10-19	23:00	3.6	NNW
03-10-19	0:00	4	NW
03-10-19	1:00	4.9	NNW
03-10-19	2:00	3.1	NNW
03-10-19	3:00	2.7	NNW
03-10-19	4:00	3.1	NNW
03-10-19	5:00	4.9	NW
03-10-19	6:00	4.9	NW
03-10-19	7:00	3.1	NW
03-10-19	8:00	4.5	NW
03-10-19	9:00	4.9	NW
03-10-19	10:00	4.9	NW
03-10-19	11:00	4.5	---
03-10-19	12:00	5.8	---
03-10-19	13:00	6.3	NW
03-10-19	14:00	7.6	SE
03-10-19	15:00	6.3	SSE
03-10-19	16:00	5.4	NW
03-10-19	17:00	4.5	NNW
03-10-19	18:00	4.9	NNW
03-10-19	19:00	4.9	NW
03-10-19	20:00	4.5	NW
03-10-19	21:00	4.5	NNW
03-10-19	22:00	4.5	NNW
03-10-19	23:00	4	NNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
04-10-19	0:00	4	SSE
04-10-19	1:00	3.6	N
04-10-19	2:00	4	WNW
04-10-19	3:00	3.6	NNW
04-10-19	4:00	3.6	WNW
04-10-19	5:00	4.5	SE
04-10-19	6:00	2.2	SSE
04-10-19	7:00	1.8	SE
04-10-19	8:00	2.2	SSE
04-10-19	9:00	2.7	SSE
04-10-19	10:00	4	NW
04-10-19	11:00	5.4	NNW
04-10-19	12:00	6.3	NNW
04-10-19	13:00	6.7	NNW
04-10-19	14:00	6.7	NNW
04-10-19	15:00	7.2	NNW
04-10-19	16:00	7.2	NNW
04-10-19	17:00	5.8	NNW
04-10-19	18:00	5.8	NNW
04-10-19	19:00	4.9	NW
04-10-19	20:00	4	NNW
04-10-19	21:00	4	NNW
04-10-19	22:00	3.6	NNW
04-10-19	23:00	2.2	NNW
05-10-19	0:00	2.2	NW
05-10-19	1:00	2.2	NW
05-10-19	2:00	1.8	NW
05-10-19	3:00	0.9	NW
05-10-19	4:00	0.9	NW
05-10-19	5:00	0.9	NW
05-10-19	6:00	0	---
05-10-19	7:00	0	---
05-10-19	8:00	1.3	NW
05-10-19	9:00	3.1	SE
05-10-19	10:00	3.6	SSE
05-10-19	11:00	4.5	NW

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
05-10-19	12:00	4.9	NNW
05-10-19	13:00	5.4	NNW
05-10-19	14:00	6.7	NW
05-10-19	15:00	5.8	NW
05-10-19	16:00	4.9	NNW
05-10-19	17:00	4.9	NNW
05-10-19	18:00	4.5	NNW
05-10-19	19:00	1.8	SSE
05-10-19	20:00	4	N
05-10-19	21:00	4	WNW
05-10-19	22:00	4.9	NNW
05-10-19	23:00	4.5	WNW
06-10-19	0:00	4.5	W
06-10-19	1:00	4.5	NW
06-10-19	2:00	5.8	W
06-10-19	3:00	7.2	N
06-10-19	4:00	6.3	WNW
06-10-19	5:00	5.8	NW
06-10-19	6:00	5.8	E
06-10-19	7:00	6.7	S
06-10-19	8:00	5.8	E
06-10-19	9:00	6.7	NW
06-10-19	10:00	6.7	W
06-10-19	11:00	4.9	NNW
06-10-19	12:00	9.4	W
06-10-19	13:00	7.6	N
06-10-19	14:00	19.2	NNW
06-10-19	15:00	9.4	NNW
06-10-19	16:00	6.7	W
06-10-19	17:00	3.6	WNW
06-10-19	18:00	3.6	N
06-10-19	19:00	4	E
06-10-19	20:00	4.9	SSE
06-10-19	21:00	4	SSE
06-10-19	22:00	5.8	WNW
06-10-19	23:00	10.3	N

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
07-10-19	0:00	6.3	WSW
07-10-19	1:00	6.3	N
07-10-19	2:00	7.6	WSW
07-10-19	3:00	11.2	W
07-10-19	4:00	9.8	WNW
07-10-19	5:00	7.6	W
07-10-19	6:00	6.7	NNW
07-10-19	7:00	8.9	W
07-10-19	8:00	8.5	SE
07-10-19	9:00	6.7	WNW
07-10-19	10:00	10.7	W
07-10-19	11:00	7.2	WNW
07-10-19	12:00	8	WNW
07-10-19	13:00	8	W
07-10-19	14:00	6.7	W
07-10-19	15:00	5.8	WNW
07-10-19	16:00	5.4	WNW
07-10-19	17:00	4.9	NNE
07-10-19	18:00	4	W
07-10-19	19:00	4	WNW
07-10-19	20:00	4	W
07-10-19	21:00	4.9	WNW
07-10-19	22:00	3.1	WNW
07-10-19	23:00	3.1	WNW
08-10-19	0:00	2.7	W
08-10-19	1:00	4	W
08-10-19	2:00	4	NW
08-10-19	3:00	4.5	N
08-10-19	4:00	4.5	W
08-10-19	5:00	3.6	WNW
08-10-19	6:00	4.5	NNW
08-10-19	7:00	4	W
08-10-19	8:00	4.5	WNW
08-10-19	9:00	4	WNW
08-10-19	10:00	7.6	NNW
08-10-19	11:00	10.3	W

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
08-10-19	12:00	8	WNW
08-10-19	13:00	7.2	W
08-10-19	14:00	5.8	WNW
08-10-19	15:00	5.8	NW
08-10-19	16:00	5.8	NNW
08-10-19	17:00	5.8	NNW
08-10-19	18:00	4.5	NNW
08-10-19	19:00	4.9	W
08-10-19	20:00	5.8	W
08-10-19	21:00	4.5	NW
08-10-19	22:00	4.9	W
08-10-19	23:00	5.8	NW
09-10-19	0:00	5.8	NW
09-10-19	1:00	4.9	WNW
09-10-19	2:00	5.4	WNW
09-10-19	3:00	4.9	W
09-10-19	4:00	5.8	WSW
09-10-19	5:00	7.2	WNW
09-10-19	6:00	6.7	WNW
09-10-19	7:00	6.7	W
09-10-19	8:00	6.7	W
09-10-19	9:00	7.2	W
09-10-19	10:00	7.6	SW
09-10-19	11:00	7.2	WNW
09-10-19	12:00	6.7	WNW
09-10-19	13:00	6.3	W
09-10-19	14:00	4.9	W
09-10-19	15:00	8.5	WNW
09-10-19	16:00	6.3	NW
09-10-19	17:00	6.3	WNW
09-10-19	18:00	6.3	WNW
09-10-19	19:00	6.3	WNW
09-10-19	20:00	4.9	W
09-10-19	21:00	4.9	W
09-10-19	22:00	4	W
09-10-19	23:00	4	NNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
10-10-19	0:00	5.4	NNW
10-10-19	1:00	4.5	W
10-10-19	2:00	3.6	NNW
10-10-19	3:00	3.6	NW
10-10-19	4:00	4	NNW
10-10-19	5:00	3.1	W
10-10-19	6:00	3.1	W
10-10-19	7:00	3.6	WNW
10-10-19	8:00	4.9	NW
10-10-19	9:00	4	NW
10-10-19	10:00	4.5	NNW
10-10-19	11:00	5.8	W
10-10-19	12:00	6.3	NNW
10-10-19	13:00	6.3	NNW
10-10-19	14:00	6.7	NW
10-10-19	15:00	8.5	NNW
10-10-19	16:00	7.2	NNW
10-10-19	17:00	6.7	NW
10-10-19	18:00	6.7	NNW
10-10-19	19:00	5.8	NNW
10-10-19	20:00	4.5	NW
10-10-19	21:00	4	NNW
10-10-19	22:00	4	NW
10-10-19	23:00	4	NW
11-10-19	0:00	2.2	NW
11-10-19	1:00	1.8	NW
11-10-19	2:00	3.1	SE
11-10-19	3:00	4	SE
11-10-19	4:00	4	SE
11-10-19	5:00	3.1	SE
11-10-19	6:00	2.7	SSE
11-10-19	7:00	2.2	SSE
11-10-19	8:00	3.1	SSE
11-10-19	9:00	3.6	SE
11-10-19	10:00	3.6	SE
11-10-19	11:00	4	SE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
11-10-19	12:00	3.6	SE
11-10-19	13:00	5.4	NW
11-10-19	14:00	5.4	SSE
11-10-19	15:00	4.9	SSE
11-10-19	16:00	4.9	SE
11-10-19	17:00	3.6	SE
11-10-19	18:00	4	S
11-10-19	19:00	4.5	SE
11-10-19	20:00	5.4	SE
11-10-19	21:00	3.6	SE
11-10-19	22:00	4	SE
11-10-19	23:00	4	SSE
12-10-19	0:00	4.5	SE
12-10-19	1:00	4.5	ESE
12-10-19	2:00	4	SE
12-10-19	3:00	4	SE
12-10-19	4:00	3.6	SE
12-10-19	5:00	3.6	ESE
12-10-19	6:00	3.1	SE
12-10-19	7:00	1.8	SE
12-10-19	8:00	1.8	SE
12-10-19	9:00	3.1	SE
12-10-19	10:00	2.7	ESE
12-10-19	11:00	4	SE
12-10-19	12:00	4.5	NNW
12-10-19	13:00	4.5	NNW
12-10-19	14:00	5.8	NNW
12-10-19	15:00	5.4	NW
12-10-19	16:00	8	ESE
12-10-19	17:00	1.3	SE
12-10-19	18:00	3.6	NNW
12-10-19	19:00	4.9	NW
12-10-19	20:00	4.5	NNW
12-10-19	21:00	4.9	NNW
12-10-19	22:00	3.6	NNW
12-10-19	23:00	4.5	NNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
13-10-19	0:00	4.5	NNW
13-10-19	1:00	3.6	NNW
13-10-19	2:00	2.7	NW
13-10-19	3:00	2.2	NW
13-10-19	4:00	2.2	NW
13-10-19	5:00	6.3	E
13-10-19	6:00	4.9	SSE
13-10-19	7:00	3.6	SE
13-10-19	8:00	2.7	NNW
13-10-19	9:00	1.8	NNW
13-10-19	10:00	4.5	SE
13-10-19	11:00	4.5	SSE
13-10-19	12:00	5.4	S
13-10-19	13:00	4.9	SSE
13-10-19	14:00	4.9	W
13-10-19	15:00	5.4	W
13-10-19	16:00	5.8	WNW
13-10-19	17:00	4.9	SW
13-10-19	18:00	3.1	WNW
13-10-19	19:00	4	W
13-10-19	20:00	3.1	NW
13-10-19	21:00	6.3	W
13-10-19	22:00	2.7	NNW
13-10-19	23:00	3.1	SSE
14-10-19	0:00	2.2	SSE
14-10-19	1:00	2.7	SSE
14-10-19	2:00	3.6	SSE
14-10-19	3:00	3.6	NNW
14-10-19	4:00	4.9	SSE
14-10-19	5:00	0	---
14-10-19	6:00	2.2	NNW
14-10-19	7:00	1.8	NW
14-10-19	8:00	2.7	NNW
14-10-19	9:00	3.1	WNW
14-10-19	10:00	4.9	NNW
14-10-19	11:00	4	SSE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
14-10-19	12:00	5.4	SE
14-10-19	13:00	6.3	SSE
14-10-19	14:00	6.3	NNW
14-10-19	15:00	4.9	W
14-10-19	16:00	3.6	SSE
14-10-19	17:00	5.4	SSE
14-10-19	18:00	5.8	SE
14-10-19	19:00	5.8	SSE
14-10-19	20:00	3.1	SE
14-10-19	21:00	4.9	SE
14-10-19	22:00	5.8	SSE
14-10-19	23:00	6.7	ESE
15-10-19	0:00	7.2	SE
15-10-19	1:00	4.5	S
15-10-19	2:00	4	ESE
15-10-19	3:00	5.8	SSE
15-10-19	4:00	3.6	SE
15-10-19	5:00	4	SE
15-10-19	6:00	3.6	E
15-10-19	7:00	4.9	NW
15-10-19	8:00	6.3	W
15-10-19	9:00	4.9	E
15-10-19	10:00	6.3	SSE
15-10-19	11:00	8.9	NW
15-10-19	12:00	6.3	W
15-10-19	13:00	5.8	W
15-10-19	14:00	6.3	WSW
15-10-19	15:00	8.5	W
15-10-19	16:00	6.3	W
15-10-19	17:00	6.7	WNW
15-10-19	18:00	5.8	WNW
15-10-19	19:00	4.9	WNW
15-10-19	20:00	4.5	WNW
15-10-19	21:00	5.4	WNW
15-10-19	22:00	8	W
15-10-19	23:00	5.8	W

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
16-10-19	0:00	4.9	WNW
16-10-19	1:00	6.3	NW
16-10-19	2:00	7.2	WNW
16-10-19	3:00	8.9	WNW
16-10-19	4:00	9.8	NNW
16-10-19	5:00	8.9	NNW
16-10-19	6:00	7.2	NNW
16-10-19	7:00	8.9	WNW
16-10-19	8:00	8.5	WNW
16-10-19	9:00	7.6	WNW
16-10-19	10:00	8.5	WNW
16-10-19	11:00	8	WNW
16-10-19	12:00	5.8	WNW
16-10-19	13:00	5.8	WNW
16-10-19	14:00	5.8	NNW
16-10-19	15:00	6.3	NW
16-10-19	16:00	8.5	NNW
16-10-19	17:00	5.4	N
16-10-19	18:00	4	W
16-10-19	19:00	3.6	NW
16-10-19	20:00	3.1	WNW
16-10-19	21:00	3.1	W
16-10-19	22:00	3.1	W
16-10-19	23:00	1.8	W
17-10-19	0:00	2.7	W
17-10-19	1:00	3.1	WNW
17-10-19	2:00	2.7	WNW
17-10-19	3:00	3.6	SE
17-10-19	4:00	2.7	SSE
17-10-19	5:00	2.7	E
17-10-19	6:00	1.8	N
17-10-19	7:00	4.5	SSE
17-10-19	8:00	5.4	E
17-10-19	9:00	4.9	SE
17-10-19	10:00	6.7	SE
17-10-19	11:00	5.8	SSE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
17-10-19	12:00	5.8	S
17-10-19	13:00	4.5	NNW
17-10-19	14:00	4.9	SSE
17-10-19	15:00	4.5	E
17-10-19	16:00	4	WNW
17-10-19	17:00	4.5	W
17-10-19	18:00	3.1	WNW
17-10-19	19:00	3.6	W
17-10-19	20:00	4	WNW
17-10-19	21:00	3.6	NW
17-10-19	22:00	2.7	NNW
17-10-19	23:00	2.7	W
18-10-19	0:00	3.6	W
18-10-19	1:00	3.6	W
18-10-19	2:00	3.6	NW
18-10-19	3:00	4.9	WNW
18-10-19	4:00	4	WNW
18-10-19	5:00	2.7	SE
18-10-19	6:00	3.1	SE
18-10-19	7:00	3.6	SE
18-10-19	8:00	4	SE
18-10-19	9:00	4	SSE
18-10-19	10:00	4.5	W
18-10-19	11:00	4	NW
18-10-19	12:00	4.9	N
18-10-19	13:00	7.6	SSE
18-10-19	14:00	5.4	SE
18-10-19	15:00	4	SE
18-10-19	16:00	5.4	SE
18-10-19	17:00	5.4	SE
18-10-19	18:00	4.5	SE
18-10-19	19:00	4	NW
18-10-19	20:00	3.6	NW
18-10-19	21:00	1.8	NW
18-10-19	22:00	1.3	NW
18-10-19	23:00	1.3	WNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
19-10-19	0:00	1.8	WNW
19-10-19	1:00	3.1	WNW
19-10-19	2:00	2.2	WNW
19-10-19	3:00	1.8	W
19-10-19	4:00	1.8	SSE
19-10-19	5:00	2.7	SSE
19-10-19	6:00	3.1	ESE
19-10-19	7:00	4.9	SSE
19-10-19	8:00	5.4	SE
19-10-19	9:00	5.4	SSE
19-10-19	10:00	5.8	SSE
19-10-19	11:00	4.5	SSE
19-10-19	12:00	4.9	WSW
19-10-19	13:00	4.9	W
19-10-19	14:00	7.6	NNW
19-10-19	15:00	8	NW
19-10-19	16:00	7.2	NW
19-10-19	17:00	7.6	NNW
19-10-19	18:00	4.5	NNW
19-10-19	19:00	4.9	W
19-10-19	20:00	3.6	NW
19-10-19	21:00	3.6	NNW
19-10-19	22:00	3.1	W
19-10-19	23:00	3.6	NNW
20-10-19	0:00	3.6	W
20-10-19	1:00	3.6	W
20-10-19	2:00	3.1	WNW
20-10-19	3:00	5.4	W
20-10-19	4:00	4.9	WNW
20-10-19	5:00	3.1	W
20-10-19	6:00	4.5	SE
20-10-19	7:00	4	W
20-10-19	8:00	5.4	WNW
20-10-19	9:00	6.3	NNW
20-10-19	10:00	5.8	NNW
20-10-19	11:00	4.9	WNW

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
20-10-19	12:00	4.9	W
20-10-19	13:00	5.4	NNW
20-10-19	14:00	6.7	WSW
20-10-19	15:00	6.3	NW
20-10-19	16:00	4.5	NW
20-10-19	17:00	4	NNW
20-10-19	18:00	3.6	W
20-10-19	19:00	2.7	W
20-10-19	20:00	3.1	WNW
20-10-19	21:00	2.7	W
20-10-19	22:00	3.1	W
20-10-19	23:00	3.6	WSW
21-10-19	0:00	2.2	NW
21-10-19	1:00	2.2	NW
21-10-19	2:00	1.8	SSE
21-10-19	3:00	1.8	NNE
21-10-19	4:00	2.2	WNW
21-10-19	5:00	1.3	WSW
21-10-19	6:00	1.8	WNW
21-10-19	7:00	1.8	W
21-10-19	8:00	4	W
21-10-19	9:00	4.5	WNW
21-10-19	10:00	6.3	NNW
21-10-19	11:00	5.8	W
21-10-19	12:00	6.3	NNW
21-10-19	13:00	5.4	W
21-10-19	14:00	6.3	NNW
21-10-19	15:00	6.7	NNW
21-10-19	16:00	5.4	W
21-10-19	17:00	4.9	NNW
21-10-19	18:00	6.3	NNW
21-10-19	19:00	4.5	W
21-10-19	20:00	3.1	W
21-10-19	21:00	2.7	W
21-10-19	22:00	3.1	WNW
21-10-19	23:00	2.7	WNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
22-10-19	0:00	3.1	WNW
22-10-19	1:00	2.7	W
22-10-19	2:00	2.7	WNW
22-10-19	3:00	1.8	W
22-10-19	4:00	1.8	S
22-10-19	5:00	1.8	W
22-10-19	6:00	4	WNW
22-10-19	7:00	4.9	WNW
22-10-19	8:00	4	SSE
22-10-19	9:00	5.4	W
22-10-19	10:00	5.8	WNW
22-10-19	11:00	7.6	NNW
22-10-19	12:00	8.5	NNW
22-10-19	13:00	7.6	W
22-10-19	14:00	7.6	WNW
22-10-19	15:00	7.2	N
22-10-19	16:00	7.2	WNW
22-10-19	17:00	5.4	WNW
22-10-19	18:00	4.5	NNW
22-10-19	19:00	4.9	W
22-10-19	20:00	4.5	NNW
22-10-19	21:00	3.1	WNW
22-10-19	22:00	2.7	WNW
22-10-19	23:00	3.6	W
23-10-19	0:00	3.6	WNW
23-10-19	1:00	3.6	W
23-10-19	2:00	3.6	W
23-10-19	3:00	2.7	W
23-10-19	4:00	1.8	NNW
23-10-19	5:00	3.6	NNW
23-10-19	6:00	2.2	NNW
23-10-19	7:00	3.1	WNW
23-10-19	8:00	2.7	E
23-10-19	9:00	5.8	W
23-10-19	10:00	5.8	W
23-10-19	11:00	5.4	NW

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
23-10-19	12:00	5.4	WNW
23-10-19	13:00	5.4	W
23-10-19	14:00	4.9	NW
23-10-19	15:00	4.5	NNW
23-10-19	16:00	6.3	W
23-10-19	17:00	7.2	WNW
23-10-19	18:00	4.9	WNW
23-10-19	19:00	2.7	W
23-10-19	20:00	3.1	W
23-10-19	21:00	4.5	W
23-10-19	22:00	4	NNW
23-10-19	23:00	4	WNW
24-10-19	0:00	3.6	NNW
24-10-19	1:00	4.9	W
24-10-19	2:00	4.9	NW
24-10-19	3:00	4.9	W
24-10-19	4:00	4.9	SSE
24-10-19	5:00	3.1	SSE
24-10-19	6:00	4.5	S
24-10-19	7:00	4.5	W
24-10-19	8:00	5.4	NNW
24-10-19	9:00	4.5	SSE
24-10-19	10:00	5.8	WNW
24-10-19	11:00	7.2	W
24-10-19	12:00	6.3	NNW
24-10-19	13:00	5.4	WNW
24-10-19	14:00	8.5	NNW
24-10-19	15:00	8.5	N
24-10-19	16:00	6.3	NNW
24-10-19	17:00	4.9	W
24-10-19	18:00	5.4	W
24-10-19	19:00	4	WNW
24-10-19	20:00	5.4	WNW
24-10-19	21:00	5.8	WNW
24-10-19	22:00	4.9	WNW
24-10-19	23:00	6.3	WNW

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
25-10-19	0:00	5.8	W
25-10-19	1:00	5.4	WNW
25-10-19	2:00	5.4	W
25-10-19	3:00	5.4	NNW
25-10-19	4:00	4	SE
25-10-19	5:00	3.1	ESE
25-10-19	6:00	4	NW
25-10-19	7:00	2.7	W
25-10-19	8:00	5.4	SW
25-10-19	9:00	6.3	WSW
25-10-19	10:00	6.7	NW
25-10-19	11:00	5.4	WNW
25-10-19	12:00	5.8	NW
25-10-19	13:00	7.6	WNW
25-10-19	14:00	7.2	NW
25-10-19	15:00	7.2	W
25-10-19	16:00	5.8	WNW
25-10-19	17:00	6.3	W
25-10-19	18:00	5.4	WNW
25-10-19	19:00	3.6	NW
25-10-19	20:00	3.1	E
25-10-19	21:00	3.6	NNW
25-10-19	22:00	4	WNW
25-10-19	23:00	4.9	NW
26-10-19	0:00	4	W
26-10-19	1:00	3.6	WNW
26-10-19	2:00	4	WNW
26-10-19	3:00	3.6	NW
26-10-19	4:00	4	WNW
26-10-19	5:00	4.5	N
26-10-19	6:00	4.9	W
26-10-19	7:00	4.9	WNW
26-10-19	8:00	6.3	W
26-10-19	9:00	5.8	WNW
26-10-19	10:00	5.4	W
26-10-19	11:00	4.9	W

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
26-10-19	12:00	6.3	WNW
26-10-19	13:00	4.9	WNW
26-10-19	14:00	4.9	WSW
26-10-19	15:00	5.4	W
26-10-19	16:00	6.3	NNW
26-10-19	17:00	4.9	WNW
26-10-19	18:00	4	WNW
26-10-19	19:00	3.6	WSW
26-10-19	20:00	3.1	W
26-10-19	21:00	4.5	WNW
26-10-19	22:00	5.4	NW
26-10-19	23:00	4.9	WNW
27-10-19	0:00	3.6	WNW
27-10-19	1:00	3.1	W
27-10-19	2:00	4.5	W
27-10-19	3:00	4.9	SE
27-10-19	4:00	3.1	SSE
27-10-19	5:00	3.6	SE
27-10-19	6:00	3.1	SE
27-10-19	7:00	2.7	ESE
27-10-19	8:00	2.2	SSE
27-10-19	9:00	3.1	SSE
27-10-19	10:00	3.6	WNW
27-10-19	11:00	4.9	SSE
27-10-19	12:00	4	SSE
27-10-19	13:00	5.4	ENE
27-10-19	14:00	6.3	NNW
27-10-19	15:00	8	NNW
27-10-19	16:00	8	N
27-10-19	17:00	5.4	NNW
27-10-19	18:00	4.5	NW
27-10-19	19:00	4	NNW
27-10-19	20:00	4	NW
27-10-19	21:00	3.6	NNW
27-10-19	22:00	4	W
27-10-19	23:00	2.7	W

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
28-10-19	0:00	4.9	NNW
28-10-19	1:00	4.5	N
28-10-19	2:00	3.6	W
28-10-19	3:00	3.1	WNW
28-10-19	4:00	3.1	W
28-10-19	5:00	1.8	W
28-10-19	6:00	2.7	NW
28-10-19	7:00	4	SW
28-10-19	8:00	4.5	NNW
28-10-19	9:00	3.6	W
28-10-19	10:00	4.9	NNW
28-10-19	11:00	4	NW
28-10-19	12:00	6.7	NNW
28-10-19	13:00	6.3	NNW
28-10-19	14:00	2.7	NW
28-10-19	15:00	4	SSE
28-10-19	16:00	4.9	SSE
28-10-19	17:00	5.8	E
28-10-19	18:00	7.6	S
28-10-19	19:00	7.2	SSE
28-10-19	20:00	4.9	SE
28-10-19	21:00	5.4	SE
28-10-19	22:00	8.5	SSE
28-10-19	23:00	6.3	SE
29-10-19	0:00	4.9	SE
29-10-19	1:00	5.4	SSE
29-10-19	2:00	7.2	SSE
29-10-19	3:00	4.5	SSE
29-10-19	4:00	5.8	E
29-10-19	5:00	4.5	SE
29-10-19	6:00	5.4	SE
29-10-19	7:00	4.9	ESE
29-10-19	8:00	4.5	SE
29-10-19	9:00	7.6	E
29-10-19	10:00	7.2	SE
29-10-19	11:00	7.6	ESE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
29-10-19	12:00	7.6	SE
29-10-19	13:00	4.5	SE
29-10-19	14:00	6.3	SSE
29-10-19	15:00	5.4	SE
29-10-19	16:00	4.5	SE
29-10-19	17:00	5.4	SSE
29-10-19	18:00	2.2	E
29-10-19	19:00	3.1	SE
29-10-19	20:00	3.6	ESE
29-10-19	21:00	2.2	ESE
29-10-19	22:00	3.6	SE
29-10-19	23:00	4.9	SSE
30-10-19	0:00	4.5	SE
30-10-19	1:00	4.5	SSE
30-10-19	2:00	4.9	SSE
30-10-19	3:00	4.5	ESE
30-10-19	4:00	4.5	ESE
30-10-19	5:00	4.9	SSE
30-10-19	6:00	4	SE
30-10-19	7:00	4.5	SE
30-10-19	8:00	6.3	SSE
30-10-19	9:00	4.9	SE
30-10-19	10:00	5.8	SE
30-10-19	11:00	4.5	ESE
30-10-19	12:00	5.8	E
30-10-19	13:00	4.9	E
30-10-19	14:00	5.4	S
30-10-19	15:00	6.3	SE
30-10-19	16:00	5.8	ESE
30-10-19	17:00	5.4	SSE
30-10-19	18:00	5.4	SE
30-10-19	19:00	4.5	SSE
30-10-19	20:00	3.1	SE
30-10-19	21:00	4.5	SSE
30-10-19	22:00	4	SSE
30-10-19	23:00	4.5	SE

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
31-10-19	0:00	4.9	SE
31-10-19	1:00	3.6	SSE
31-10-19	2:00	3.1	E
31-10-19	3:00	4.5	ESE
31-10-19	4:00	5.4	SE
31-10-19	5:00	3.6	SE
31-10-19	6:00	2.7	ESE
31-10-19	7:00	3.6	SE
31-10-19	8:00	4.9	ESE
31-10-19	9:00	4.9	SE
31-10-19	10:00	5.4	SE
31-10-19	11:00	5.4	SE
31-10-19	12:00	4	SE

Table II: Wind Speed and Directions			
Date	Time	Wind Speed m-s	Direction
31-10-19	13:00	4.5	SE
31-10-19	14:00	4	WNW
31-10-19	15:00	4	WNW
31-10-19	16:00	4.5	W
31-10-19	17:00	4.5	W
31-10-19	18:00	3.1	W
31-10-19	19:00	4.5	W
31-10-19	20:00	5.8	W
31-10-19	21:00	4	NNW
31-10-19	22:00	4.5	W
31-10-19	23:00	5.8	WNW

**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 (October 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
	1 hr TSP X3 [AM5(A), AM6(A)] [AM1, AM2, AM3, AM4] Noise [Daytime (07:00-19:00)] [CM6(A), CM7(A), CM8(A), CM9(A)] [CM1, CM2, CM3, CM4, CM5] Noise [Evening time (19:00-23:00)] [CM6(A)]			24 hrs TSP	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]	
6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct
			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 (19:00-23:00)] [CM6(A)]	Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3]	
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
		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), CM9(A)] [CM1, CM2, CM3, CM4, CM5] Noise [Evening time (19:00-23:00)] [CM6(A)]		Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3]	
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	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 (19:00-23:00)] [CM6(A)]			Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3]	24 hrs TSP
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
	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 (19:00-23:00)] [CM6(A)]			24 hrs TSP		

Air Quality Monitoring Station

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

Noise Monitoring Station

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

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
	Mid-Flood 8:00 Mid-Ebb 13:25		Mid-Flood 8:52 Mid-Ebb 14:53		Mid-Flood 10:59 Mid-Ebb 16:33	
6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct
		Mid-Ebb 8:35 Mid-Flood 16:35		Mid-Ebb 10:19 Mid-Flood 17:24		Mid-Ebb 11:33 Mid-Flood 18:06
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Mid-Ebb 12:37 Mid-Flood 18:44		Mid-Flood 8:00 Mid-Ebb 13:42		Mid-Flood 9:18 Mid-Ebb 14:46	
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Mid-Ebb 8:00 Mid-Flood N/A		Mid-Ebb 8:00 Mid-Flood 15:32		Mid-Ebb 9:53 Mid-Flood 16:39	
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	1-Nov	
	Mid-Ebb 12:21 Mid-Flood 18:18		Mid-Flood 8:00 Mid-Ebb 13:49		Mid-Flood 9:47 Mid-Ebb 15:20	

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

Monitoring Station:

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
	Mid-Flood 8:00 Mid-Ebb 13:25					
6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct
		Mid-Ebb 8:35 Mid-Flood 16:35				
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Mid-Ebb 12:37 Mid-Flood 18:44					
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Mid-Ebb 8:00 Mid-Flood N/A					
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	1-Nov	
	Mid-Ebb 12:21 Mid-Flood 18:18					

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

Monitoring Station:
W1

**APPENDIX E
1-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS**

Appendix E - 1-hour TSP Monitoring Results

Location - Tinian Temple			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	13:00	Sunny	73.1
4-Oct-19	14:00	Sunny	74.8
4-Oct-19	15:00	Sunny	68.0
10-Oct-19	16:00	Sunny	76.1
10-Oct-19	17:00	Sunny	78.4
10-Oct-19	18:00	Sunny	69.2
16-Oct-19	13:00	Sunny	59.5
16-Oct-19	14:00	Sunny	56.1
16-Oct-19	15:00	Sunny	52.7
22-Oct-19	9:00	Sunny	61.2
22-Oct-19	10:00	Sunny	62.5
22-Oct-19	11:00	Sunny	60.1
28-Oct-19	13:00	Sunny	45.1
28-Oct-19	14:00	Sunny	46.2
28-Oct-19	15:00	Sunny	46.9
Average			62.0
Max			78.4
Min			45.1

Location - Saitsowan Creation Ground			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	16:00	Sunny	47.6
4-Oct-19	17:00	Sunny	54.4
4-Oct-19	18:00	Sunny	57.8
10-Oct-19	9:00	Sunny	79.9
10-Oct-19	10:00	Sunny	86.7
10-Oct-19	11:00	Sunny	93.5
16-Oct-19	16:00	Sunny	83.3
16-Oct-19	17:00	Sunny	78.2
16-Oct-19	18:00	Sunny	81.6
22-Oct-19	9:00	Sunny	66.3
22-Oct-19	10:00	Sunny	49.3
22-Oct-19	11:00	Sunny	42.5
28-Oct-19	9:00	Cloudy	63.8
28-Oct-19	10:00	Cloudy	61.6
28-Oct-19	11:00	Cloudy	57.2
Average			66.9
Max			93.5
Min			42.5

Appendix E - 1-hour TSP Monitoring Results

Location - Yau Lai Est at Le Lai Lu			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	16:00	Sunny	71.4
4-Oct-19	17:00	Sunny	74.8
4-Oct-19	18:00	Sunny	76.5
10-Oct-19	9:00	Sunny	67.3
10-Oct-19	10:00	Sunny	63.1
10-Oct-19	11:00	Sunny	65.8
16-Oct-19	9:00	Sunny	66.3
16-Oct-19	10:00	Sunny	62.9
16-Oct-19	11:00	Sunny	61.2
22-Oct-19	16:00	Sunny	59.9
22-Oct-19	17:00	Sunny	62.7
22-Oct-19	18:00	Sunny	60.8
28-Oct-19	9:00	Cloudy	64.3
28-Oct-19	10:00	Cloudy	66.2
28-Oct-19	11:00	Cloudy	72.1
Average			66.4
Max			76.5
Min			59.9

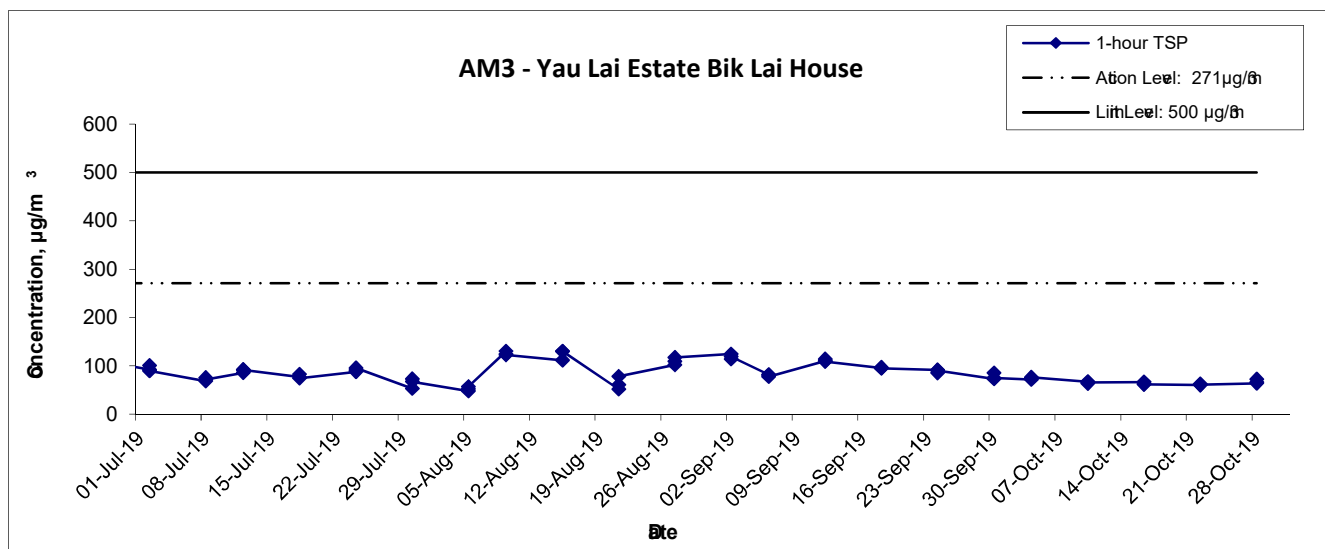
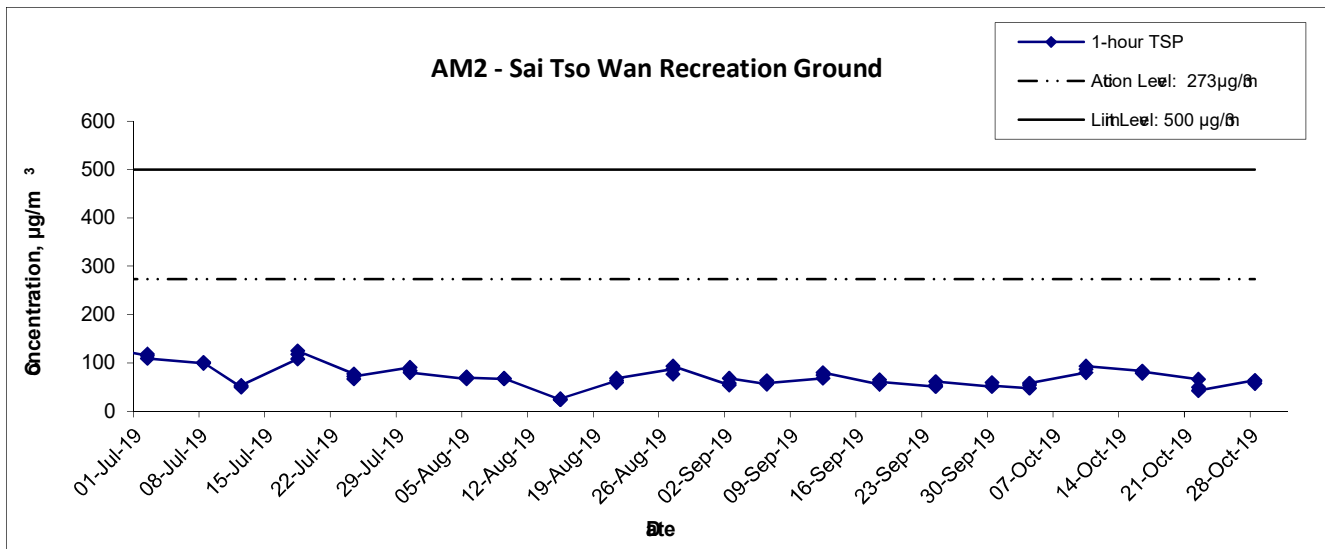
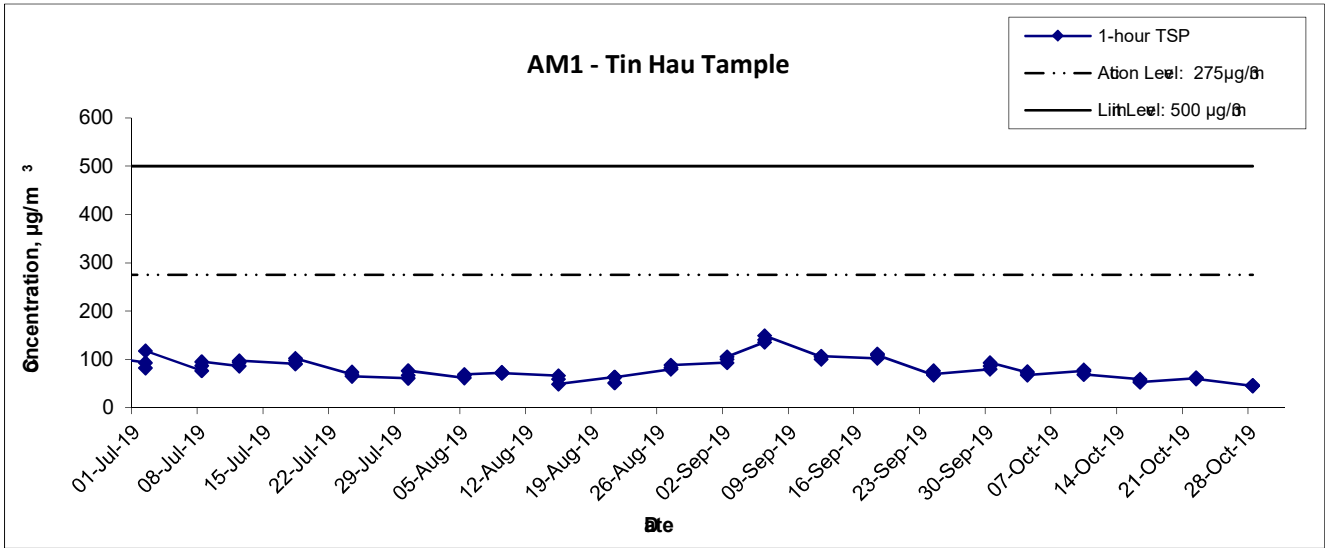
Location - Sit Tin Go ut Area at Ba Wo Ling Village			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	9:00	Sunny	51.0
4-Oct-19	10:00	Sunny	59.5
4-Oct-19	11:00	Sunny	62.9
10-Oct-19	13:00	Sunny	62.7
10-Oct-19	14:00	Sunny	67.4
10-Oct-19	15:00	Sunny	61.1
16-Oct-19	16:00	Sunny	66.3
16-Oct-19	17:00	Sunny	73.1
16-Oct-19	18:00	Sunny	71.4
22-Oct-19	13:00	Sunny	62.8
22-Oct-19	14:00	Sunny	64.3
22-Oct-19	15:00	Sunny	65.1
28-Oct-19	16:00	Cloudy	72.4
28-Oct-19	17:00	Cloudy	76.7
28-Oct-19	18:00	Cloudy	71.0
Average			65.8
Max			76.7
Min			51.0

Appendix E - 1-hour TSP Monitoring Results

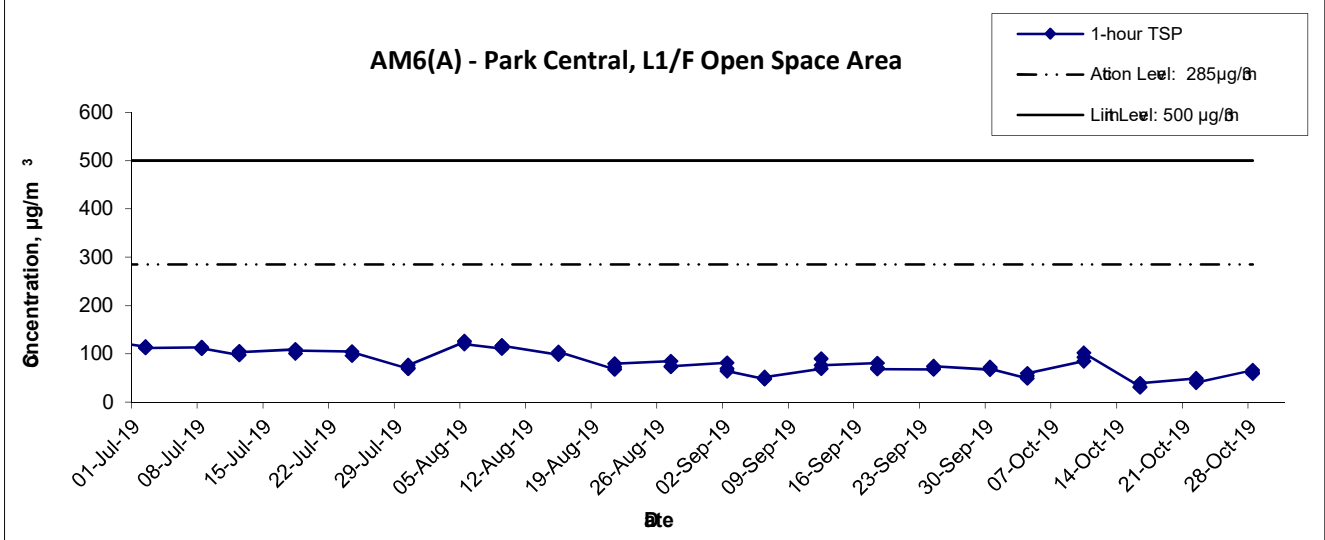
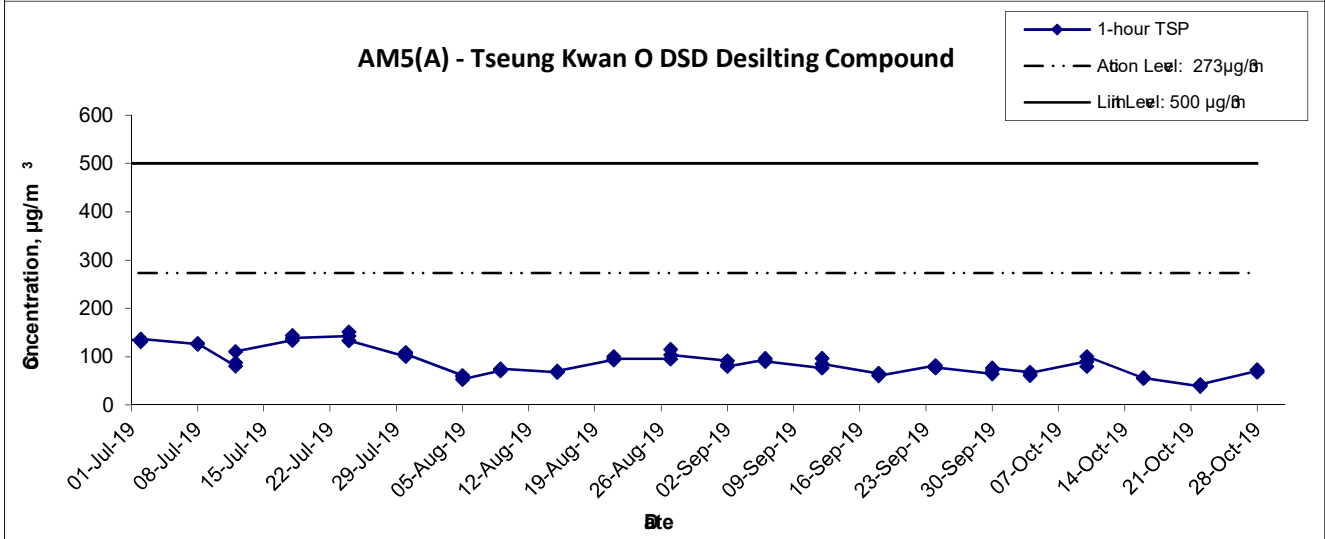
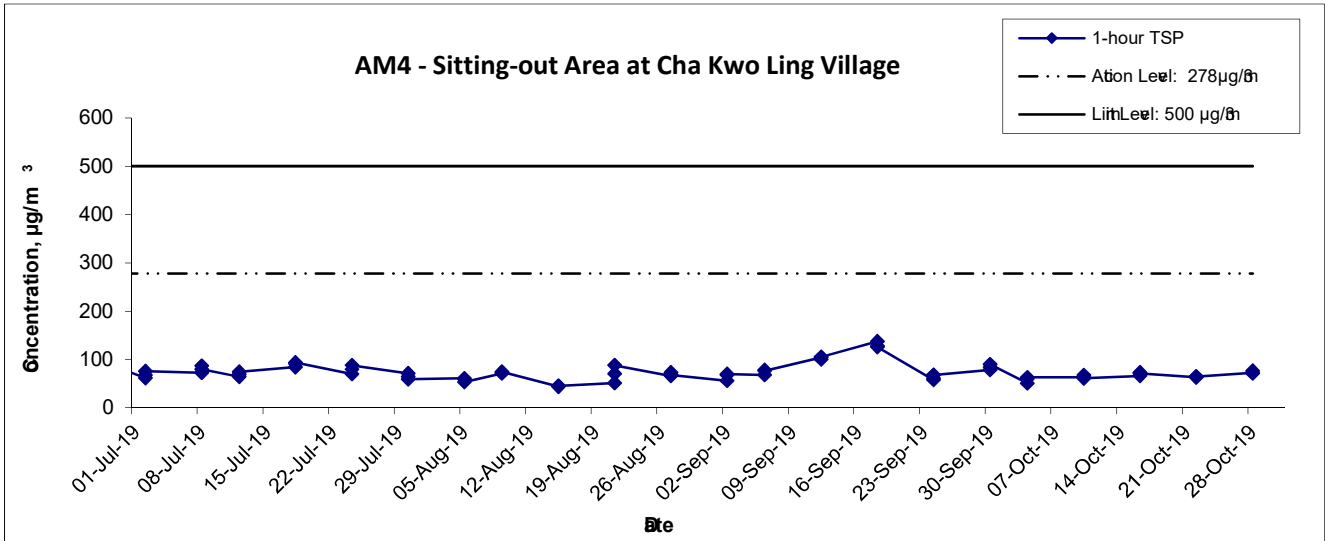
Location: A-Tsuingwan ODS site in Gmpour			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	13:00	Sunny	68.0
4-Oct-19	14:00	Sunny	61.3
4-Oct-19	15:00	Sunny	66.3
10-Oct-19	16:00	Sunny	90.1
10-Oct-19	17:00	Sunny	79.9
10-Oct-19	18:00	Sunny	100.3
16-Oct-19	13:00	Sunny	55.4
16-Oct-19	14:00	Sunny	55.4
16-Oct-19	15:00	Sunny	56.1
22-Oct-19	13:00	Sunny	39.1
22-Oct-19	14:00	Sunny	40.8
22-Oct-19	15:00	Sunny	42.5
28-Oct-19	16:00	Cloudy	70.4
28-Oct-19	17:00	Cloudy	72.6
28-Oct-19	18:00	Cloudy	68.2
Average			64.4
Max			100.3
Min			39.1

Location: A-Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
4-Oct-19	9:00	Sunny	49.3
4-Oct-19	10:00	Sunny	54.4
4-Oct-19	11:00	Sunny	59.5
10-Oct-19	13:00	Sunny	85.0
10-Oct-19	14:00	Sunny	93.5
10-Oct-19	15:00	Sunny	102.0
16-Oct-19	9:00	Sunny	32.3
16-Oct-19	10:00	Sunny	30.6
16-Oct-19	11:00	Sunny	39.1
22-Oct-19	16:00	Sunny	49.3
22-Oct-19	17:00	Sunny	45.9
22-Oct-19	18:00	Sunny	40.8
28-Oct-19	13:00	Cloudy	66.0
28-Oct-19	14:00	Cloudy	61.6
28-Oct-19	15:00	Cloudy	59.4
Average			57.9
Max			102.0
Min			30.6

1-hr TSP Concentration Levels



1-hr TSP Concentration Levels



**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)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	2.9864	3.0319	0.0455	5912.6	5936.6	24.0	1.22	1.22	1.22	1755.9	25.9
9-Oct-19	Sunny	301.1	761.6	3.4566	3.5879	0.1313	5936.6	5960.6	24.0	1.23	1.23	1.23	1764.1	74.4
15-Oct-19	Sunny	298.8	765.0	3.4736	3.5373	0.0637	5959.3	5983.3	24.0	1.23	1.23	1.23	1771.2	36.0
21-Oct-19	Sunny	298.2	760.8	3.4551	3.6642	0.2091	5983.3	6007.3	24.0	1.22	1.22	1.22	1750.4	119.5
26-Oct-19	Sunny	298.8	763.1	3.4633	3.6326	0.1693	6007.3	6031.3	24.0	1.22	1.22	1.22	1751.1	96.7
31-Oct-19	Sunny	298.5	762.9	3.4730	3.7021	0.2291	6031.3	6055.3	24.0	1.22	1.22	1.22	1751.8	130.8
													Min	25.9
													Max	130.8
													Average	80.5

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)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	3.4483	3.5461	0.0978	26829.4	26853.4	24.0	1.22	1.22	1.22	1760.8	55.5
9-Oct-19	Sunny	301.1	761.6	2.9510	3.1007	0.1497	26853.4	26877.4	24.0	1.23	1.23	1.23	1761.7	85.0
15-Oct-19	Sunny	298.8	765.0	3.2745	3.3899	0.1154	26877.4	26901.4	24.0	1.23	1.23	1.23	1771.2	65.2
21-Oct-19	Sunny	298.2	760.8	3.4710	3.5454	0.0744	26901.5	26925.5	24.0	1.22	1.22	1.22	1754.2	42.4
26-Oct-19	Sunny	298.8	763.1	3.4459	3.5558	0.1099	26925.5	26949.6	24.0	1.22	1.22	1.22	1756.4	62.6
31-Oct-19	Sunny	298.5	762.9	3.4459	3.5558	0.1099	26925.5	26949.6	24.0	1.22	1.22	1.22	1757.2	62.5
													Min	42.4
													Max	85.0
													Average	63.8

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)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	2.9563	3.0352	0.0789	1137.1	1161.1	24.0	1.22	1.22	1.22	1763.3	44.7
9-Oct-19	Sunny	301.1	761.6	3.4701	3.5668	0.0967	1161.1	1185.1	24.0	1.23	1.23	1.23	1767.2	54.7
15-Oct-19	Sunny	298.8	765.0	3.4695	3.5672	0.0977	1185.1	1209.1	24.0	1.22	1.22	1.22	1756.8	55.6
21-Oct-19	Sunny	298.2	760.8	3.4468	3.5509	0.1041	1209.1	1233.1	24.0	1.22	1.22	1.22	1753.6	59.4
26-Oct-19	Sunny	298.8	763.1	3.4605	3.5838	0.1233	1233.1	1257.1	24.0	1.22	1.22	1.22	1754.4	70.3
31-Oct-19	Sunny	298.5	762.9	3.4607	3.5960	0.1353	1257.1	1281.1	24.0	1.22	1.22	1.22	1755.2	77.1
													Min	54.7
													Max	70.3
													Average	60.0

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)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	3.4646	3.5991	0.1345	12097.1	12121.1	24.0	1.22	1.22	1.22	1762.9	76.3
9-Oct-19	Sunny	301.1	761.6	3.4734	3.6530	0.1796	12121.1	12145.1	24.0	1.23	1.23	1.23	1766.6	101.7
15-Oct-19	Sunny	298.8	765.0	3.4574	3.6322	0.1748	12145.3	12169.3	24.0	1.22	1.22	1.22	1753.1	99.7
21-Oct-19	Sunny	298.2	760.8	3.4720	3.6540	0.1820	12169.3	12193.3	24.0	1.22	1.22	1.22	1750.2	104.0
26-Oct-19	Sunny	298.8	763.1	3.4997	3.7072	0.2075	12193.3	12217.3	24.0	1.22	1.22	1.22	1750.9	118.5
31-Oct-19	Sunny	298.5	762.9	3.4637	3.7489	0.2852	12217.3	12241.3	24.0	1.22	1.22	1.22	1751.6	162.8
													Min	99.7
													Max	118.5
													Average	106.0

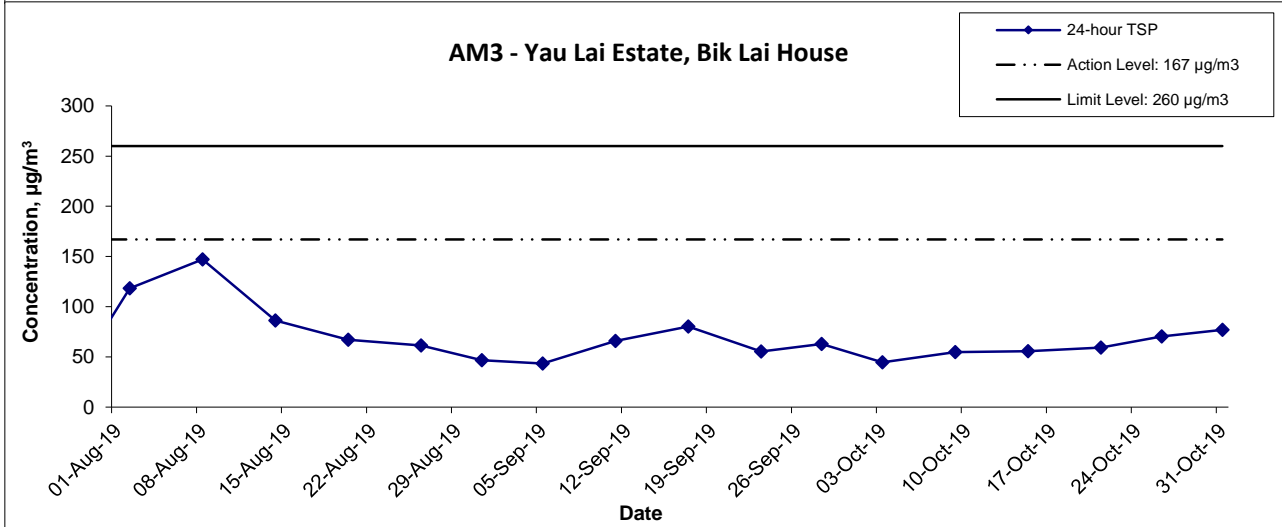
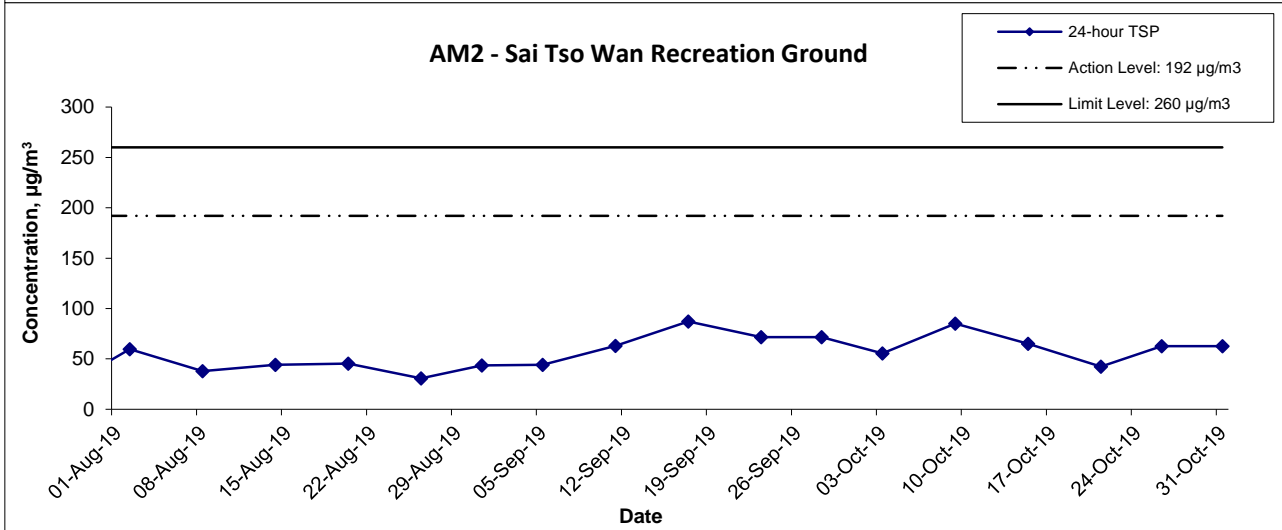
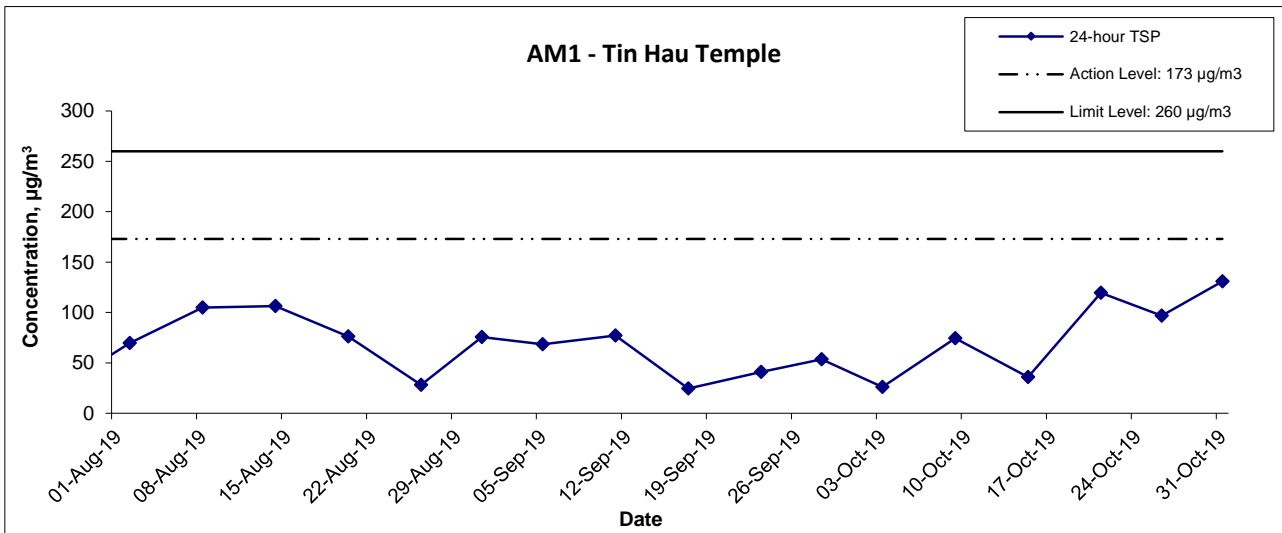
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

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)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	3.4672	3.6150	0.1478	28389.0	28413.0	24.0	1.22	1.22	1.22	1763.1	83.8
9-Oct-19	Sunny	301.1	761.6	3.4771	3.6073	0.1302	28557.0	28581.0	24.0	1.23	1.23	1.23	1764.6	73.8
15-Oct-19	Sunny	298.8	765.0	3.2688	3.4076	0.1388	28581.0	28605.0	24.0	1.22	1.22	1.22	1755.8	79.1
21-Oct-19	Sunny	298.2	760.8	3.4533	3.5949	0.1416	28605.0	28629.0	24.0	1.22	1.22	1.22	1755.1	80.7
26-Oct-19	Sunny	298.8	763.1	3.4832	3.6553	0.1721	28629.0	28653.1	24.0	1.22	1.22	1.22	1757.3	97.9
31-Oct-19	Sunny	298.5	762.9	3.4669	3.5666	0.0997	28629.0	28653.1	24.0	1.22	1.22	1.22	1758.0	56.7
													Max	97.9
													Average	82.9

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

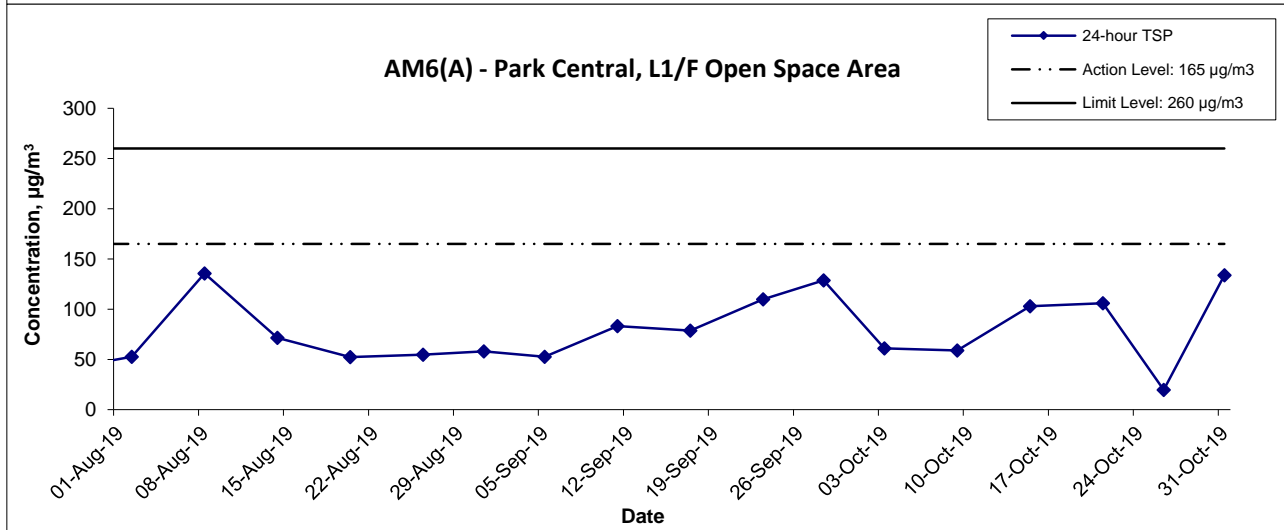
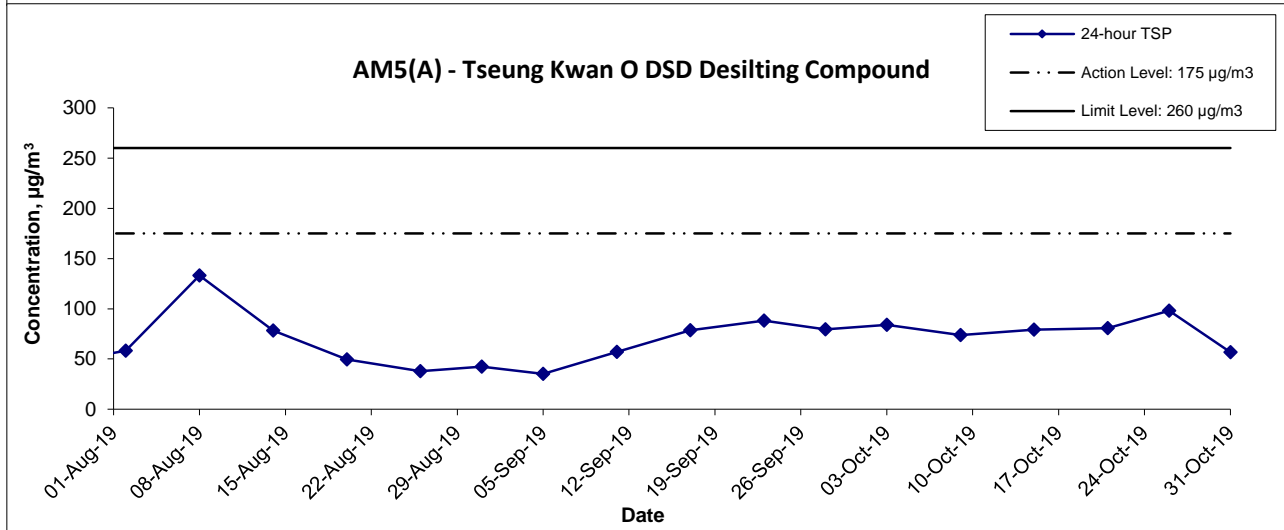
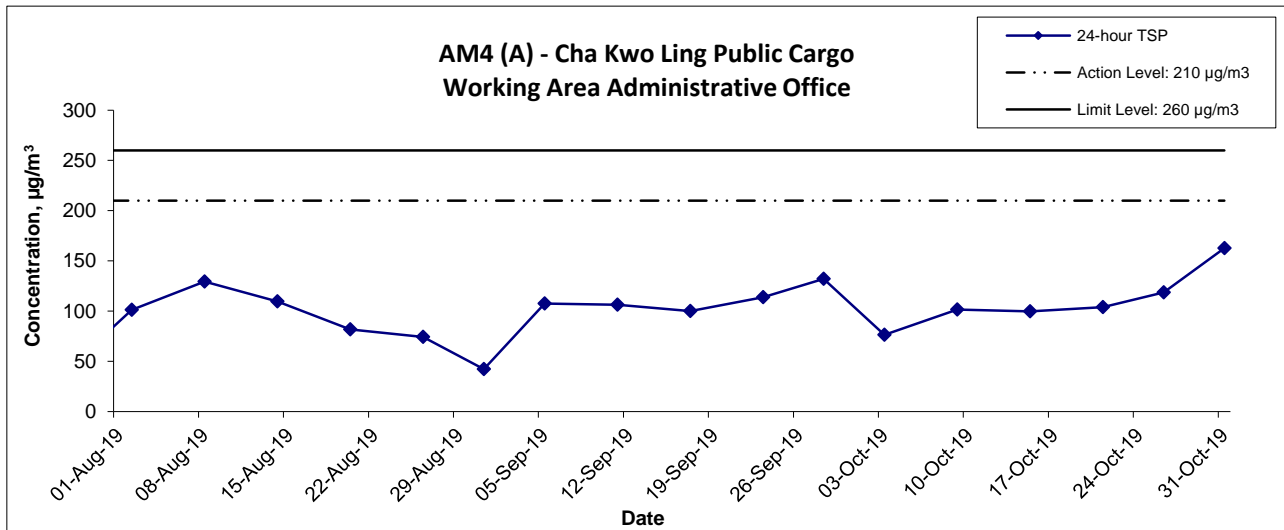
Start Date	Weather	Air	Atmospheric	Filter Weight (g)		Particulate	Elapse Time		Sampling	Flow Rate (m ³ /min.)		Av. flow	Total vol.	Conc.
	Condition	Temp. (K)	Pressure, Pa (mmHg)	Initial	Final	Weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
3-Oct-19	Sunny	301.8	760.1	3.4737	3.5809	0.1072	1066.1	1090.1	24.0	1.22	1.22	1.22	1756.4	61.0
9-Oct-19	Sunny	301.1	761.6	3.4771	3.5809	0.1038	1090.1	1114.1	24.0	1.22	1.22	1.22	1760.2	59.0
15-Oct-19	Sunny	298.8	765.0	3.2571	3.4396	0.1825	1114.2	1138.2	24.0	1.23	1.23	1.23	1771.3	103.0
21-Oct-19	Sunny	298.2	760.8	3.4442	3.6315	0.1873	1138.2	1162.2	24.0	1.23	1.23	1.23	1768.2	105.9
26-Oct-19	Sunny	298.8	763.1	3.4353	3.4701	0.0348	1162.2	1186.2	24.0	1.23	1.23	1.23	1768.9	19.7
31-Oct-19	Sunny	298.5	762.9	3.4588	3.6954	0.2366	1186.2	1210.2	24.0	1.23	1.23	1.23	1769.7	133.7
													Min	19.7
													Max	105.9
													Average	71.9

24-hr TSP Concentration Levels



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	Scale	Project	
	Date	Appendix	
	N.T.S	No. MA16034	F
	Oct-19		

24-hr TSP Concentration Levels



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	Scale	Project	
		N.T.S	
	Date	Appendix	
	Oct-19	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}
10-Oct-19	10:45	Sunny	69.8	72.1	64.7	65.5	68
16-Oct-19	10:30	Sunny	75.9	78.4	71.4		75
22-Oct-19	16:00	Sunny	74.2	75.7	72.3		74
28-Oct-19	10:15	Cloudy	74.2	76.5	70.3		74

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}
10-Oct-19	11:30	Sunny	67.9	71.2	64.5	63.6	66
16-Oct-19	9:30	Sunny	71.7	75.8	66.3		71
22-Oct-19	15:05	Sunny	73.6	74.9	71.6		73
28-Oct-19	16:05	Cloudy	73.8	74.9	72.3		73

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}
10-Oct-19	10:00	Sunny	70.3	73.2	65.3	65.6	69
16-Oct-19	11:15	Sunny	74.9	76.8	73.3		74
22-Oct-19	14:02	Sunny	75.3	76.6	72.7		75
28-Oct-19	15:15	Cloudy	74.2	75.7	72.3		74

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}
10-Oct-19	9:00	Sunny	62.7	65.9	57.7	62	54
16-Oct-19	13:30	Sunny	55.7	58.4	51.2		56 Measured \leq Baseline
22-Oct-19	10:05	Sunny	61.5	64.2	56.9		62 Measured \leq Baseline
28-Oct-19	9:00	Cloudy	67.5	70.8	64.2		66

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}
10-Oct-19	13:00	Sunny	67.9	70.2	65.0	68.2	68 Measured \leq Baseline
16-Oct-19	14:30	Sunny	70.6	72.6	66.2		67
22-Oct-19	11:00	Sunny	72.5	73.3	67.4		70
28-Oct-19	17:05	Sunny	70.5	72.8	67.2		67

Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

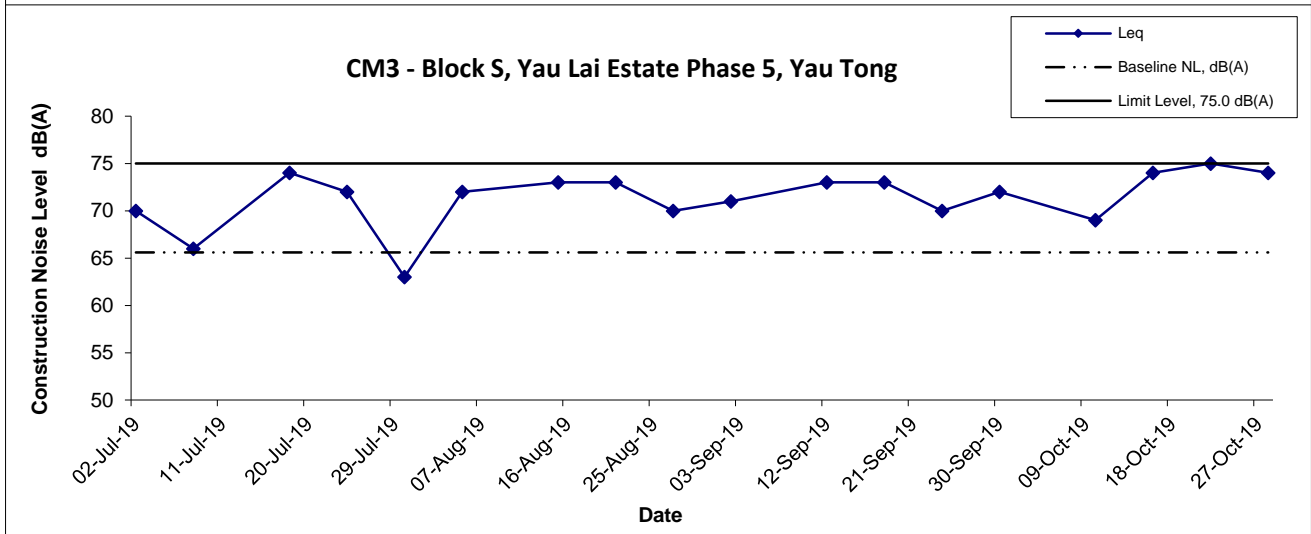
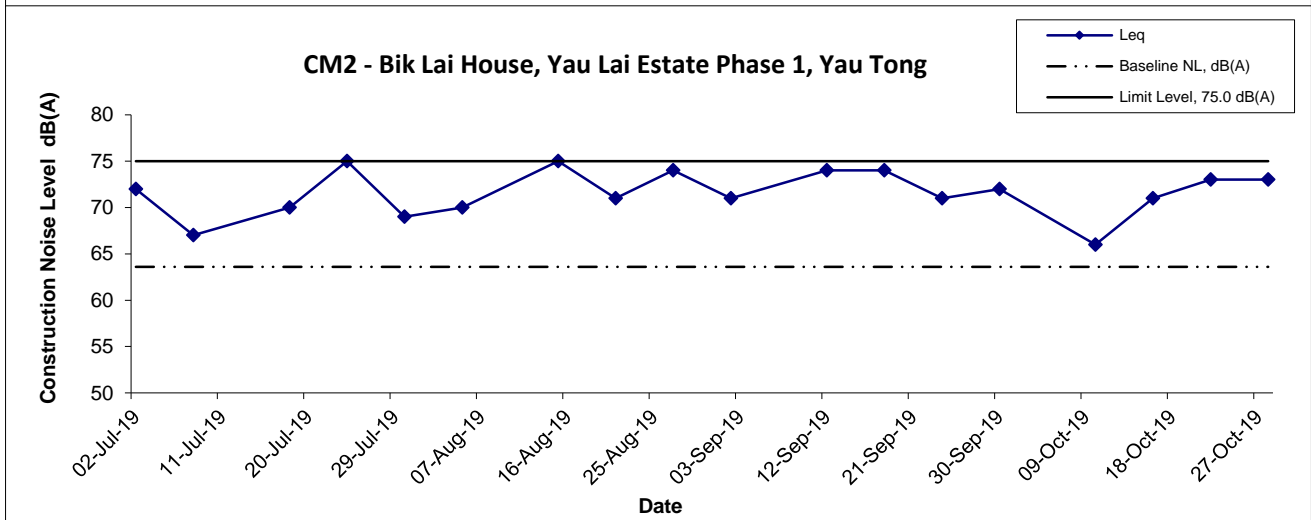
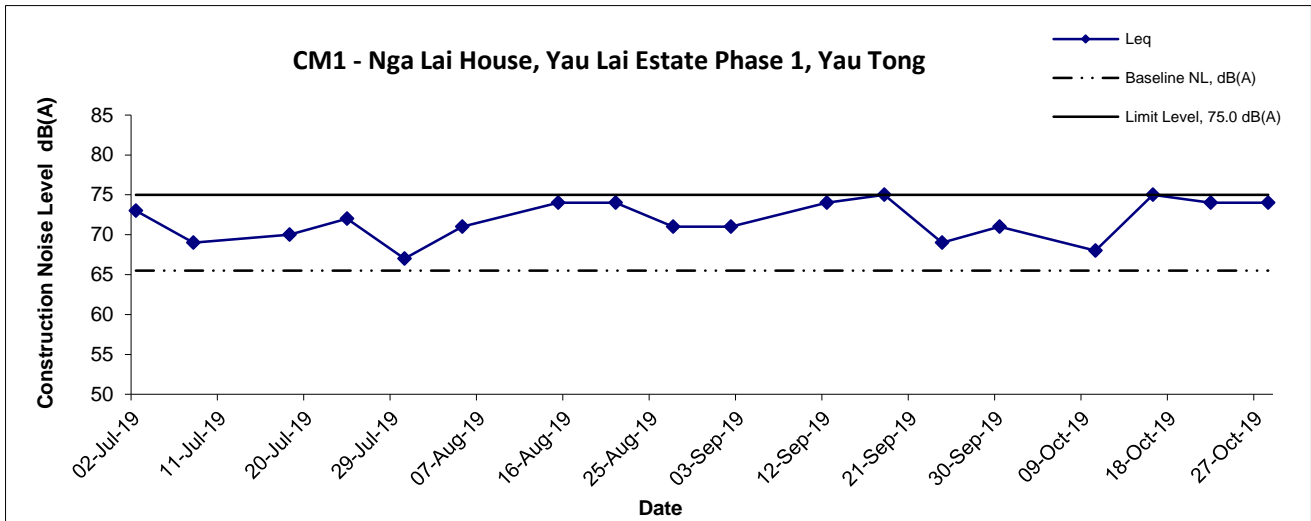
Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
10-Oct-19	16:05	Sunny	64.7	66.5	61.2	61.9	61
16-Oct-19	15:00	Sunny	73.4	76.1	70.4		73
22-Oct-19	10:30	Sunny	70.2	72.5	67.7		70
28-Oct-19	14:00	Cloudy	65.1	68.3	62.1		62

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}
10-Oct-19	15:15	Sunny	66.1	68.2	62.2	58.3	65
16-Oct-19	14:00	Sunny	65.7	68.5	59.0		65
22-Oct-19	13:00	Sunny	61.3	62.8	59.2		58
28-Oct-19	15:00	Cloudy	62.8	66.9	59.4		61

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}
10-Oct-19	14:20	Sunny	70.5	77.7	68.1	69.1	65
16-Oct-19	10:00	Sunny	67.1	69.0	63.6		67 Measured ≤ Baseline
22-Oct-19	16:30	Sunny	63.1	66.3	59.1		63 Measured ≤ Baseline
28-Oct-19	13:00	Cloudy	67.3	69.7	63.8		67 Measured ≤ Baseline

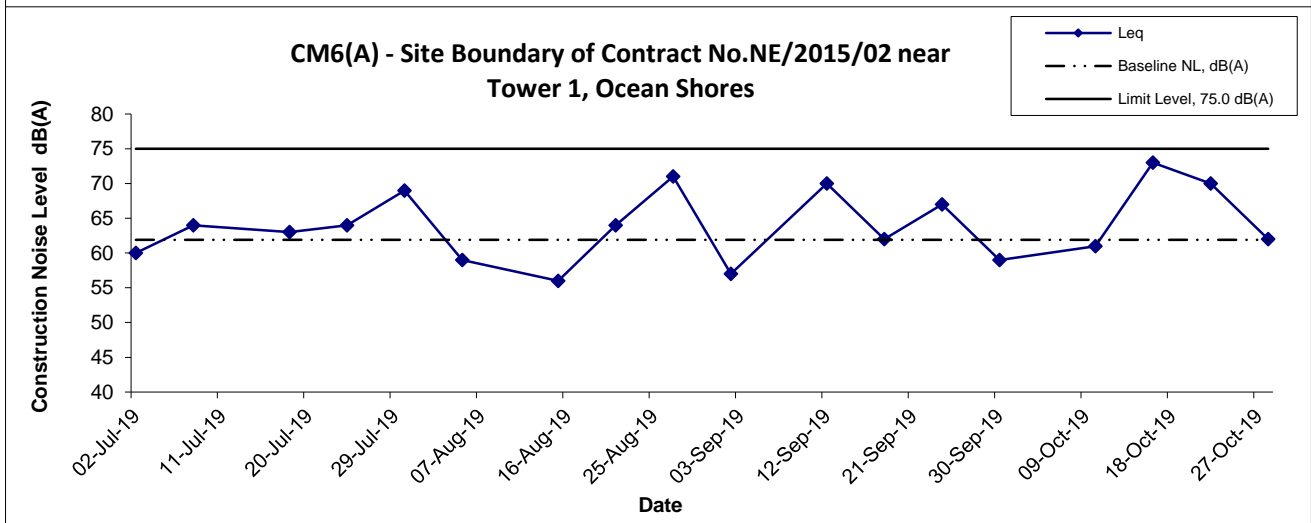
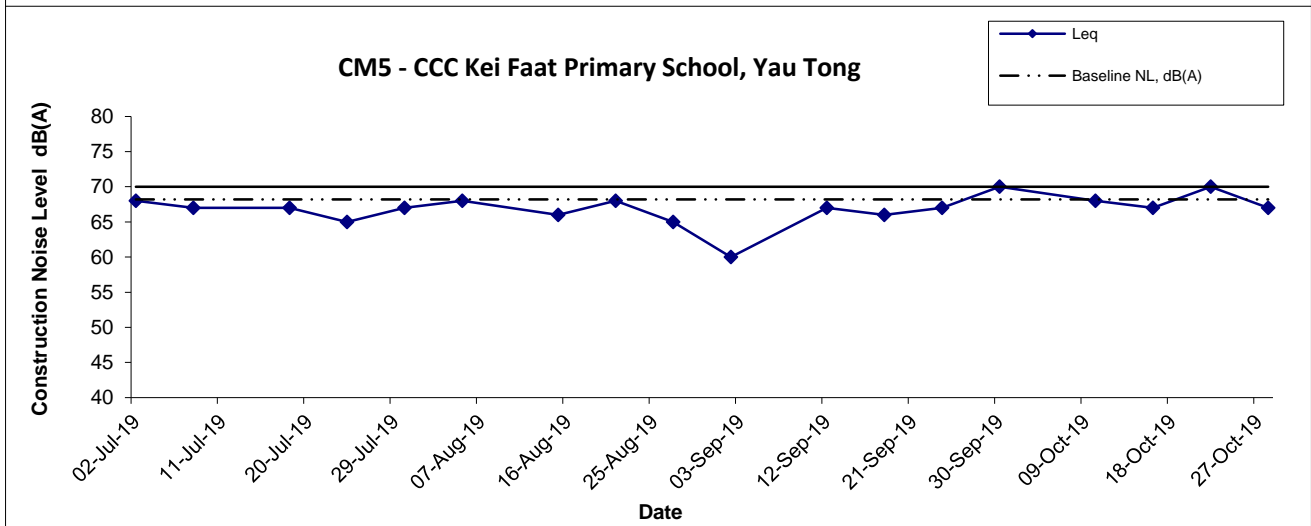
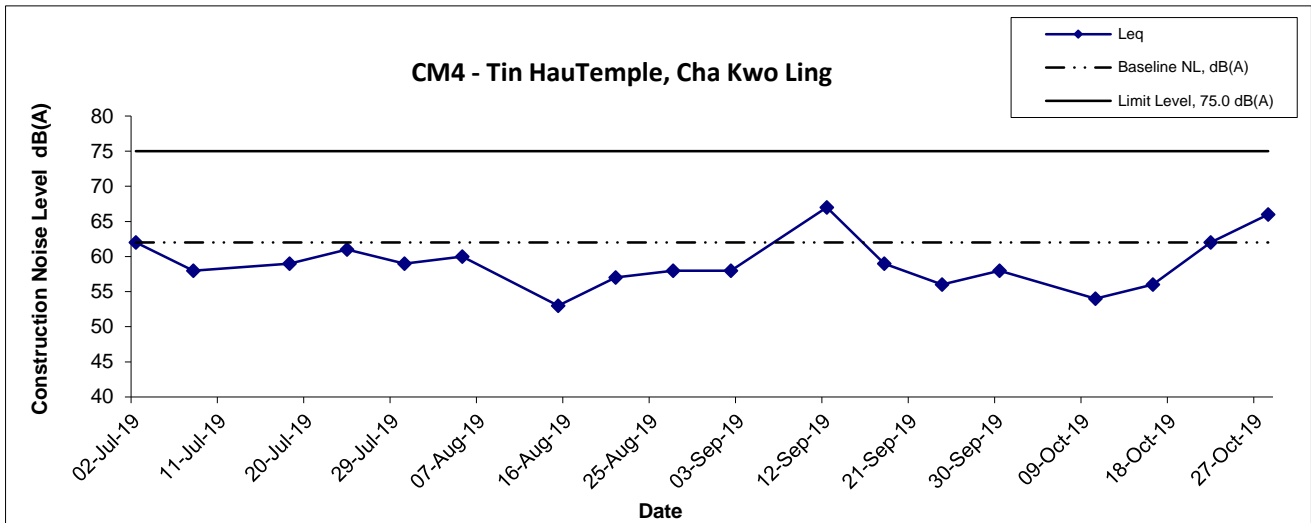
Location CM9(A) - Roof top of the Capri Tower 10							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
16-Oct-19	11:00	Sunny	63.4	64.6	60.5	58.5	62

Noise Levels



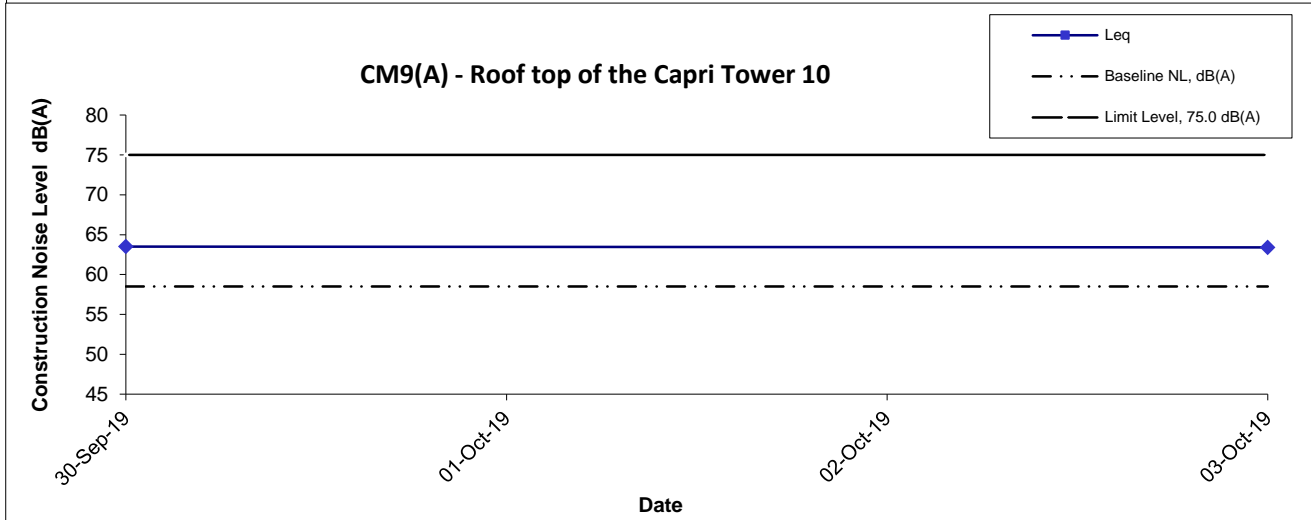
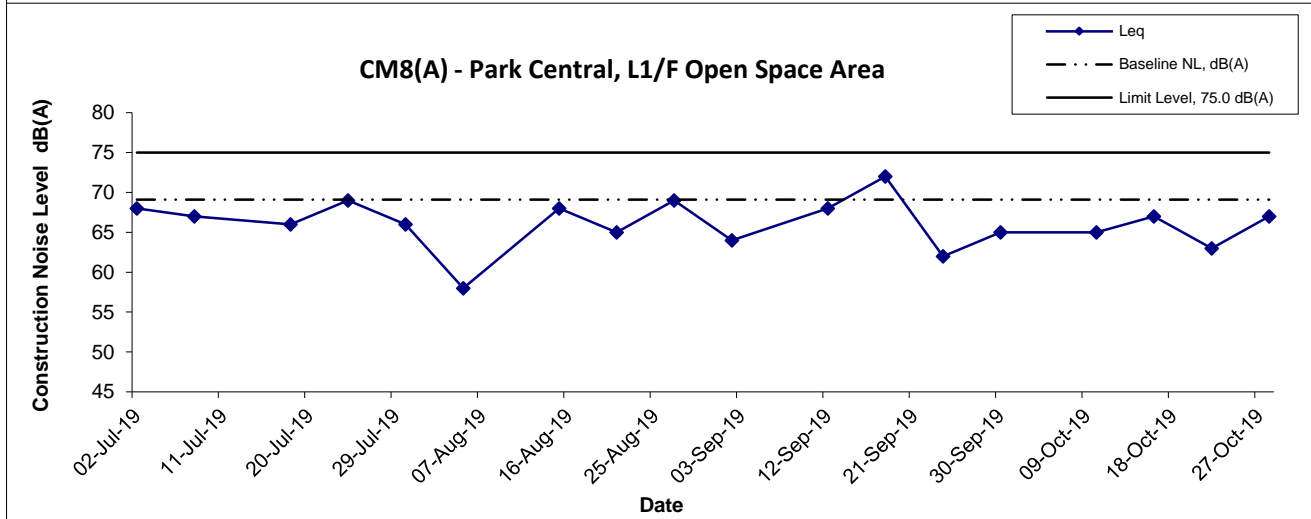
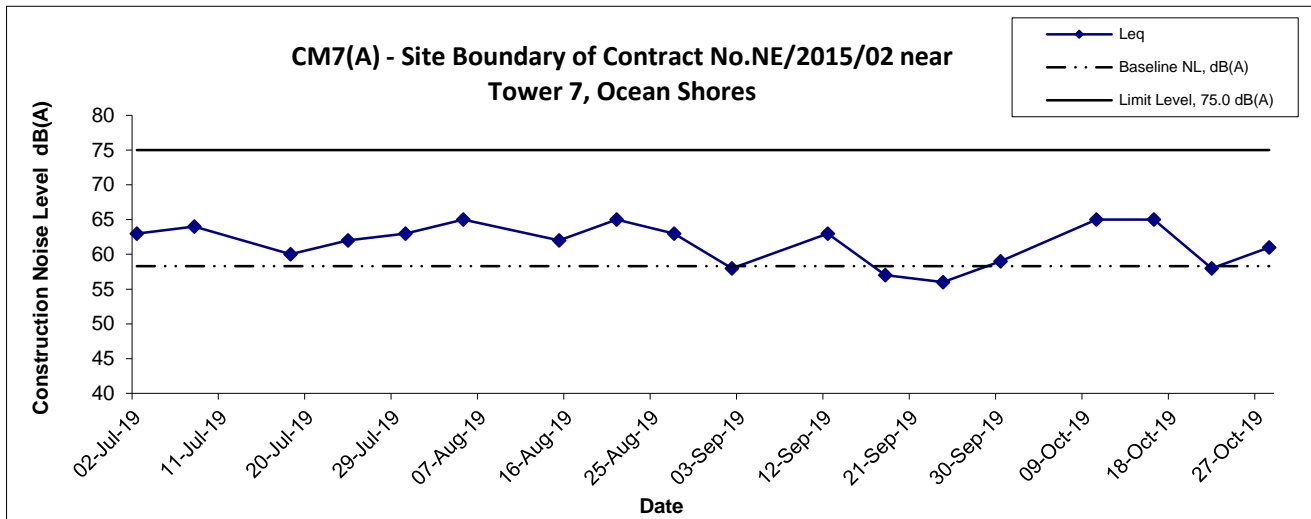
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale	Project	CINOTECH
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Noise Levels



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Noise Levels



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Appendix G - Noise Monitoring Results

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

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong									
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀				
4-Oct-19	22:35	Sunny	65.1	67.1	63.7	65.0	64.4	56	
	22:40		64.7	67.0	63.4				
	22:45		65.2	67.2	63.5				
11-Oct-19	22:20	Sunny	66.8	68.4	65.1	67.2		64	
	22:25		67.7	69.8	65.2				
	22:30		67.1	68.4	65.7				
18-Oct-19	20:00	Sunny	67.6	70.3	65.3	68.0		66	
	20:05		68.1	70.8	65.6				
	20:10		68.3	70.9	65.7				
25-Oct-19	22:45	Sunny	68.0	69.9	65.6	67.8	65		
	22:50		68.4	69.6	65.1				
	22:55		67.0	68.2	65.4				

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong									
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀				
4-Oct-19	22:05	Sunny	64.4	66.0	63.0	64.6	62.2	61	
	22:10		65.2	66.9	63.1				
	22:15		64.0	66.7	62.8				
11-Oct-19	21:55	Sunny	65.3	66.8	63.7	64.8		61	
	22:00		64.5	65.6	63.2				
	22:05		64.6	65.0	63.0				
18-Oct-19	20:30	Sunny	67.3	69.8	64.8	67.5		66	
	20:35		67.5	69.6	64.9				
	20:40		67.6	69.9	65.1				
25-Oct-19	22:20	Sunny	66.7	67.8	65.2	66.9	65		
	22:25		66.7	67.7	65.5				
	22:30		67.3	68.7	65.6				

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong									
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀				
4-Oct-19	21:35	Sunny	66.6	67.8	64.1	66.1	64.7	61	
	21:40		66.1	67.3	64.0				
	21:45		65.7	67.1	63.8				
11-Oct-19	21:30	Sunny	65.3	66.5	63.8	65.0		53	
	21:35		65.0	66.0	64.0				
	21:40		64.8	66.0	63.4				
18-Oct-19	21:00	Sunny	66.3	68.3	64.3	66.3		61	
	21:05		66.5	68.6	64.5				
	21:10		66.1	68.7	64.4				
25-Oct-19	22:00	Sunny	65.7	67.0	64.1	65.7	59		
	22:05		65.7	67.5	63.3				
	22:10		65.7	66.9	64.2				

Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores									
Date	Time	Weather	dB (A) (5-min)				Average L _{eq}	Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀				
10-Oct-19	19:00	Sunny	63.7	66.0	61.2	63.9	60.2	61	
	19:05		64.0	66.1	61.1				
	19:10		63.9	65.7	61.0				
16-Oct-19	20:00	Sunny	54.8	56.1	53.2	54.9		55 Measured ≤ Baseline	
	20:05		55.5	57.7	53.1				
	20:10		54.3	55.2	52.5				
22-Oct-19	19:30	Sunny	55.0	56.5	52.9	54.9		55 Measured ≤ Baseline	
	19:35		55.2	56.1	52.5				
	19:40		54.3	55.6	52.7				
28-Oct-19	19:00	Cloudy	56.4	58.9	53.8	56.4	56 Measured ≤ Baseline		
	19:05		56.7	58.6	53.2				
	19:10		56.2	58.7	52.9				

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 L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
4-Oct-19	23:35	Sunny	62.9	65.1	61.7	63.1	62.8	51
	23:40		63.3	64.3	62.2			
	23:45		63.0	65.2	61.9			
11-Oct-19	23:00	Sunny	66.6	68.3	64.5	66.9	63.7	64
	23:05		66.7	67.9	64.6			
	23:10		67.3	69.7	65.1			
18-Oct-19	23:30	Sunny	64.1	66.5	60.8	64.1	62.8	58
	23:35		64.3	66.3	60.4			
	23:40		63.8	66.1	60.6			
25-Oct-19	23:00	Sunny	68.1	70.2	65.6	68.1	63.7	66
	23:05		67.8	69.2	66.1			
	23:10		68.5	69.5	65.1			

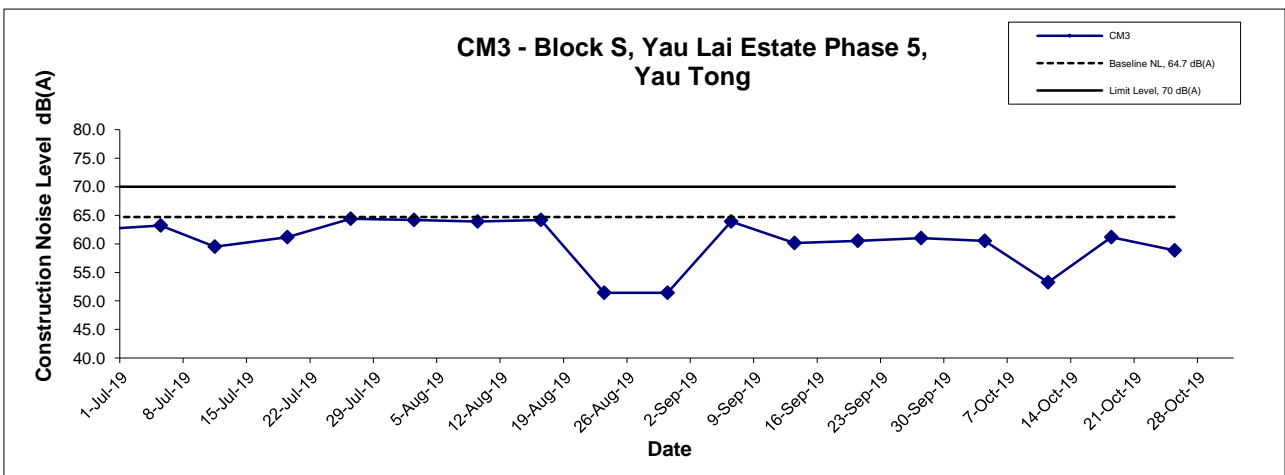
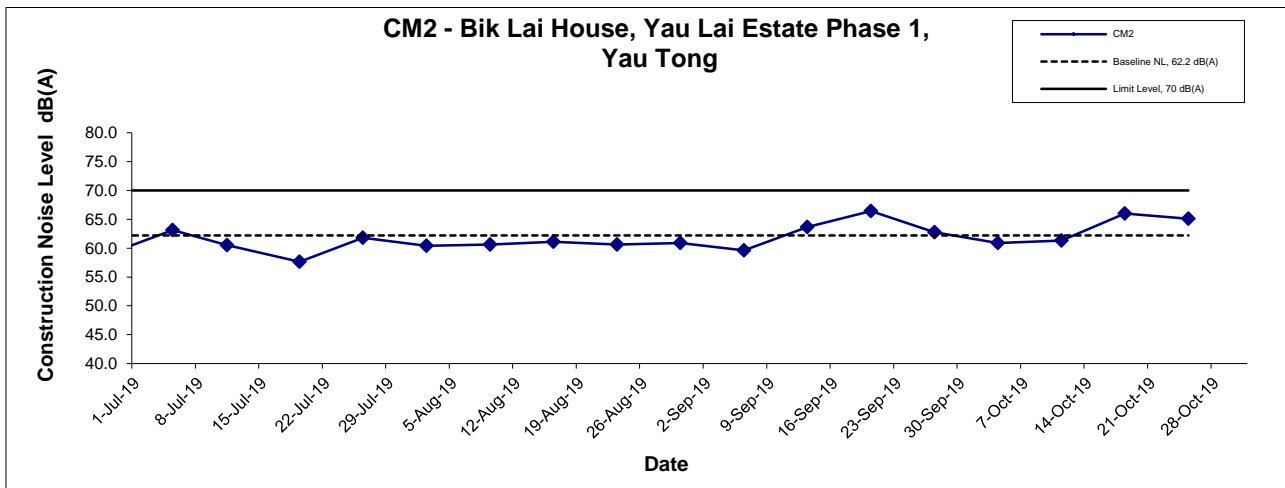
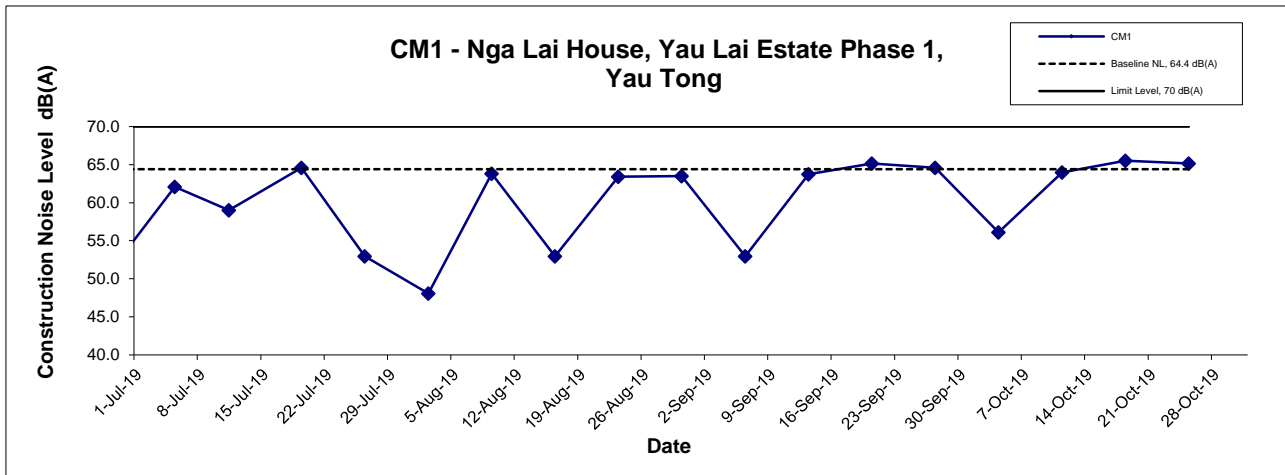
Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
4-Oct-19	23:05	Sunny	64.2	65.4	62.9	64.3	61.6	61
	23:10		64.5	65.6	63.0			
	23:15		64.3	65.5	62.9			
11-Oct-19	23:20	Sunny	64.3	65.6	63.1	64.1	61.2	61
	23:25		64.1	66.1	62.0			
	23:30		64.0	65.8	62.0			
18-Oct-19	23:00	Sunny	63.2	66.1	60.1	63.4	61.6	59
	23:05		63.5	65.7	60.3			
	23:10		63.4	66.3	60.2			
25-Oct-19	23:20	Sunny	65.5	67.1	64.1	65.5	61.2	63
	23:25		65.6	67.3	64.3			
	23:30		65.5	67.0	64.0			

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
4-Oct-19	0:05	Sunny	62.0	64.0	61.7	62.7	61.8	55
	0:10		62.9	64.1	62.3			
	0:15		63.1	64.1	62.2			
11-Oct-19	23:46	Sunny	63.4	64.6	62.2	63.7	62.9	56
	23:51		63.7	64.7	62.5			
	23:56		63.9	65.3	62.1			
19-Oct-19	0:00	Sunny	63.9	67.1	61.6	63.7	61.8	59
	0:05		63.7	67.2	61.2			
	0:10		63.6	66.9	61.5			
25-Oct-19	23:40	Sunny	63.7	65.7	61.2	63.5	62.9	55
	23:45		63.5	65.8	61.3			
	23:50		63.4	65.5	60.9			

Remark: The exceedances of night time noise limit level (55dB(A)) were not due to the Project but the road traffic near Eastern Harbour Crossing tunnel.

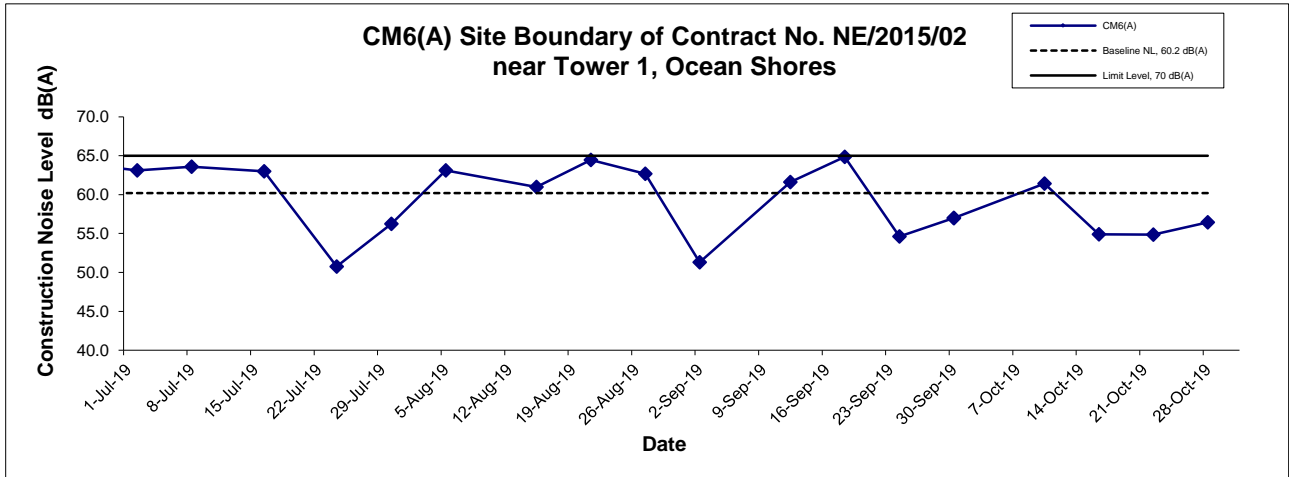
"Measured \leq Baseline" means that the averaged measured Leq is smaller than the baseline Leq, and therefore the measured levels are not valid exceedances.

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



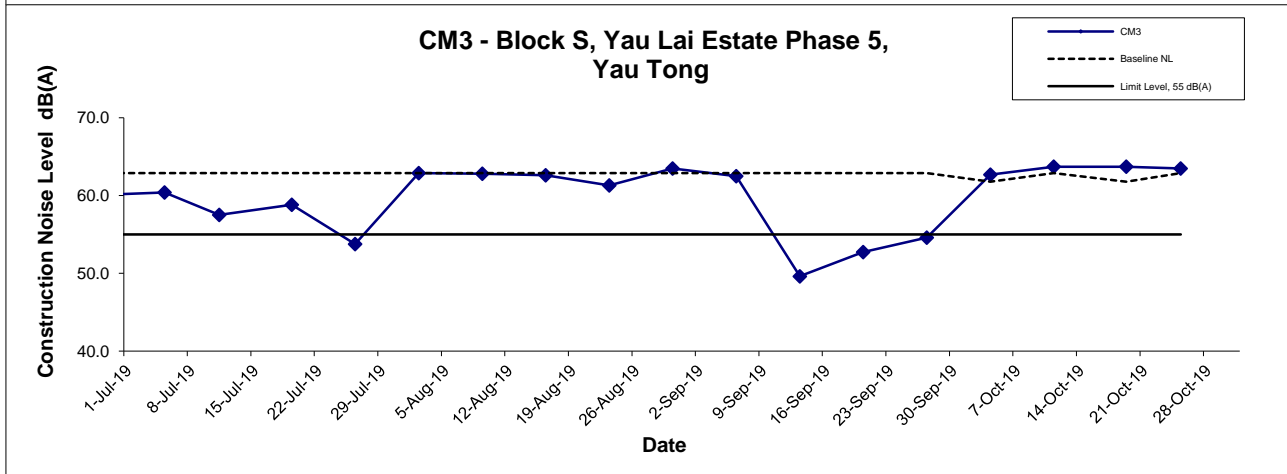
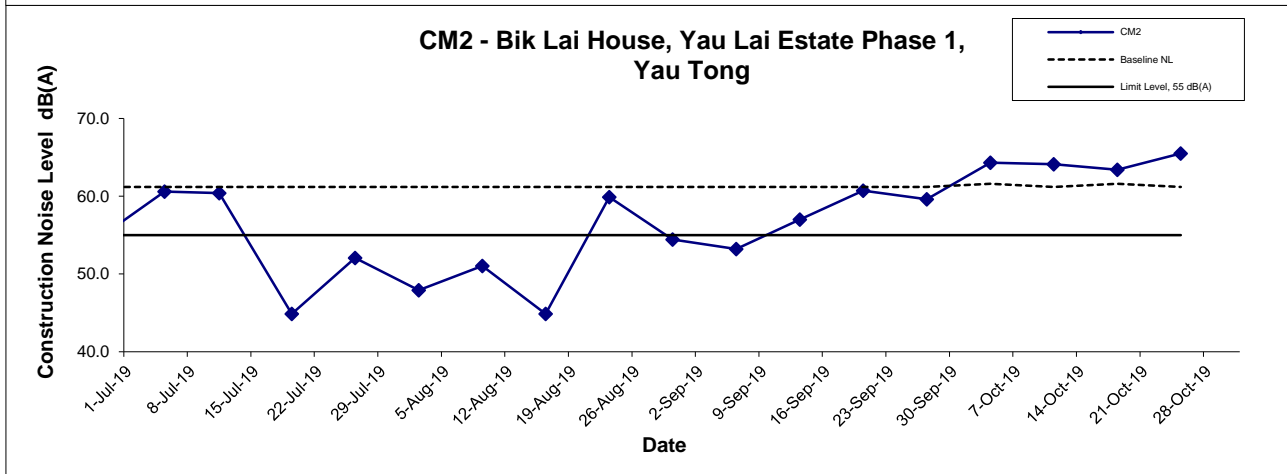
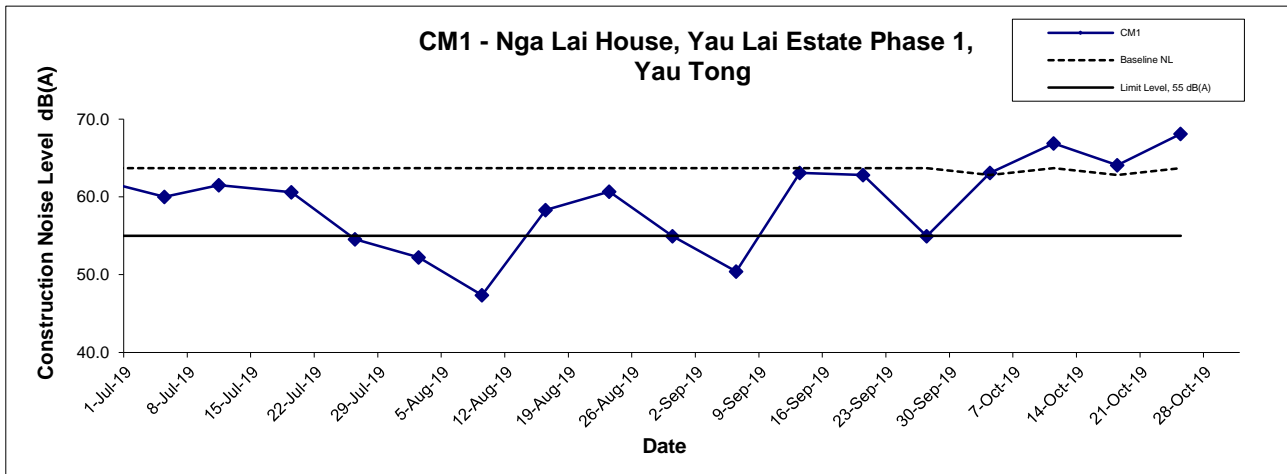
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Oct 19	Appendix G	

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	
	Date Oct 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	Project No. MA16034	<h1 style="margin: 0;">CINOTECH</h1>
	Date Oct 19	Appendix G	

**APPENDIX I
MARINE WATER QUALITY
MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

Appendix I - Action and Limit Levels for Marine Water Quality on 2 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.9 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.8 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.8 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.3 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 02 October 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	09:43	Surface	1.0	29.3 29.3	29.3	8.4 8.4	8.4	34.6 34.6	34.6	88.0 87.6	87.8	5.6 5.5	5.6	5.6	2.5 2.6	2.5	2.6	2.5 2.6	2.6	7.1	8.8 8.6	8.7
				Middle	8.5	29.2 29.2	29.2	8.5 8.5	8.5	34.9 35.0	34.9	89.8 89.8	89.8	5.7 5.7	5.7		2.6 2.6	2.6		6.7 6.9	6.8			
				Bottom	16.1	29.1 29.1	29.1	8.5 8.5	8.5	35.0 35.0	35.0	90.2 90.2	90.2	5.7 5.7	5.7		2.8 2.7	2.8		5.6 5.7	5.7			
C2	Sunny	Calm	08:01	Surface	1.0	29.5 29.5	29.5	8.2 8.2	8.2	34.3 34.3	34.3	85.0 84.7	84.9	5.4 5.4	5.4	5.4	2.8 2.8	2.8	3.7	2.8 4.2	4.2	5.2	5.7 5.9	5.8
				Middle	16.1	29.2 29.2	29.2	8.3 8.3	8.3	34.8 34.8	34.8	85.6 85.7	85.7	5.4 5.4	5.4		4.2 4.2	4.2		3.9 4.0	4.0			
				Bottom	31.1	29.1 29.1	29.1	8.4 8.4	8.4	34.9 34.9	34.9	85.6 85.8	85.7	5.4 5.4	5.4		4.0 4.1	4.0		5.8 6.0	5.9			
G1	Sunny	Calm	08:39	Surface	1.1	29.7 29.7	29.7	8.5 8.5	8.5	35.0 35.0	35.0	105.9 106.2	106.1	6.6 6.7	6.7	6.7	1.2 1.2	1.2	1.9	1.4 1.4	1.4	4.3	4.1 4.1	4.1
				Middle	3.7	29.5 29.5	29.5	8.5 8.5	8.5	35.0 35.0	35.0	105.9 105.8	105.9	6.7 6.7	6.7		1.4 1.4	1.4		4.2 4.8	4.1			
				Bottom	6.5	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	96.7 96.4	96.6	6.1 6.1	6.1		3.0 3.1	3.0		4.8 4.8	4.8			
G2	Sunny	Calm	08:19	Surface	1.1	29.5 29.5	29.5	8.5 8.5	8.5	35.0 35.0	35.0	106.1 106.1	106.1	6.7 6.7	6.7	6.5	1.0 1.0	1.0	1.3	1.3 1.3	1.3	7.0	7.4 7.4	7.4
				Middle	5.1	29.3 29.3	29.3	8.5 8.5	8.5	35.1 35.1	35.1	99.5 99.8	99.7	6.3 6.3	6.3		1.2 1.2	1.2		6.4 6.2	6.3			
				Bottom	9.0	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	96.0 95.6	95.9	6.1 6.1	6.1		1.7 1.7	1.7		7.2 7.4	7.3			
G3	Sunny	Calm	08:46	Surface	1.0	29.6 29.6	29.6	8.5 8.5	8.5	34.9 34.9	34.9	113.9 113.8	113.9	7.2 7.2	7.2	6.9	1.4 1.4	1.4	2.8	1.8 1.8	1.8	4.6	4.3 4.1	4.3
				Middle	3.8	29.3 29.3	29.3	8.5 8.5	8.5	35.0 34.9	34.9	103.6 104.1	103.9	6.5 6.6	6.6		1.8 1.8	1.8		4.2 4.2	4.2			
				Bottom	6.6	29.0 29.0	29.0	8.5 8.5	8.5	35.2 35.2	35.2	88.8 85.5	87.2	5.6 5.4	5.5		5.3 5.3	5.3		5.5 5.5	5.5			
G4	Sunny	Calm	09:00	Surface	1.1	29.7 29.7	29.7	8.5 8.5	8.5	34.9 34.9	34.9	109.1 109.3	109.2	6.8 6.9	6.9	6.8	1.1 1.1	1.1	2.5	1.8 1.7	1.7	5.2	4.2 4.3	4.3
				Middle	3.8	29.5 29.5	29.5	8.5 8.5	8.5	34.9 34.9	34.9	107.9 107.9	107.9	6.8 6.8	6.8		1.7 1.7	1.7		4.8 4.7	4.8			
				Bottom	6.6	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.1	35.1	92.1 91.5	91.8	5.8 5.8	5.8		4.7 4.7	4.7		6.4 6.5	6.5			
M1	Sunny	Calm	08:25	Surface	1.0	29.6 29.6	29.6	8.5 8.5	8.5	35.0 35.0	35.0	107.4 107.5	107.5	6.7 6.8	6.7	6.7	1.2 1.1	1.1	1.3	1.2 1.2	1.2	5.5	4.7 4.8	4.8
				Middle	3.1	29.5 29.5	29.5	8.5 8.5	8.5	35.0 35.0	35.0	106.2 105.8	106.0	6.7 6.7	6.7		1.2 1.2	1.2		4.3 4.2	4.3			
				Bottom	5.1	29.5 29.5	29.5	8.5 8.5	8.5	35.0 35.0	35.0	101.5 101.3	101.4	6.4 6.4	6.4		1.5 1.7	1.6		7.5 7.6	7.6			
M2	Sunny	Calm	08:14	Surface	1.1	29.4 29.4	29.4	8.5 8.5	8.5	35.1 35.1	35.1	103.8 103.6	103.7	6.5 6.5	6.5	6.3	0.9 0.9	0.9	1.0	1.1 1.1	1.1	6.8	5.7 5.5	5.6
				Middle	5.3	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	96.8 97.0	96.9	6.1 6.1	6.1		1.1 1.1	1.1		6.2 6.2	6.2			
				Bottom	9.5	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	96.5 96.4	96.5	6.1 6.1	6.1		1.1 1.2	1.1		8.7 8.6	8.7			
M3	Sunny	Calm	08:52	Surface	1.0	29.7 29.7	29.7	8.5 8.5	8.5	34.6 34.5	34.5	112.5 113.3	112.9	7.1 7.1	7.1	6.8	0.7 0.7	0.7	2.4	1.9 1.7	1.8	6.5	10.9 10.5	10.7
				Middle	3.8	29.4 29.4	29.4	8.5 8.5	8.5	34.9 34.9	34.9	102.7 102.6	102.7	6.5 6.5	6.5		1.7 1.7	1.8		3.8 3.8	3.8			
				Bottom	7.1	29.0 29.0	29.0	8.4 8.4	8.4	35.2 35.2	35.2	86.4 86.3	86.4	5.5 5.5	5.5		4.4 4.8	4.6		4.9 4.8	4.9			
M4	Sunny	Calm	08:09	Surface	1.0	29.3 29.3	29.3	8.4 8.4	8.4	34.8 34.9	34.8	92.3 92.1	92.2	5.8 5.8	5.8	5.8	2.7 2.7	2.7	2.2	2.6 2.6	2.6	8.0	6.6 6.6	6.6
				Middle	5.1	29.3 29.3	29.3	8.4 8.4	8.4	34.9 34.9	34.9	92.3 92.2	92.3	5.8 5.8	5.8		2.6 2.6	2.6		8.1 7.8	8.0			
				Bottom	9.0	29.3 29.3	29.3	8.5 8.5	8.5	35.1 35.1	35.1	97.8 97.9	97.9	6.2 6.2	6.2		1.4 1.3	1.4		9.4 9.3	9.4			
M5	Sunny	Calm	09:32	Surface	1.1	29.2 29.2	29.2	8.4 8.4	8.4	34.8 34.9	34.8	94.8 93.5	94.2	6.0 5.9	6.0	5.9	2.1 1.9	2.0	2.0	2.1 2.1	2.1	8.1	6.6 6.7	6.7
				Middle	5.5	29.2 29.2	29.2	8.4 8.4	8.4	34.9 34.9	34.9	91.5 91.6	91.6	5.8 5.8	5.8		2.1 2.1	2.1		10.1 10.0	10.1			
				Bottom	10.1	29.2 29.2	29.2	8.4 8.4	8.4	34.9 34.9	34.9	91.2 91.2	91.2	5.8 5.8	5.8		2.1 2.1	2.1		7.6 7.6	7.6			
M6	Sunny	Calm	09:14	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.7	0.0 0.0	0.0	1.4	1.4 1.4	1.4	5.3	0.0 0.0	0.0
				Middle	2.1	29.7 29.7	29.7	8.5 8.5	8.5	34.8 34.8	34.8	106.6 106.6	106.6	6.7 6.7	6.7		1.4 1.4	1.4		5.3 5.3	5.3			
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0

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 2 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.6 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 11.3 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 11.3 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.3 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 October 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	17:11	Surface	1.1	29.4 29.4	29.4	8.5 8.5	8.5	34.5 34.5	34.5	92.6 92.5	92.5	5.9 5.8	5.8	5.8	1.8 1.6	1.7	1.4	4.5 4.4	4.5	4.7
				Middle	9.1	29.2 29.2	29.2	8.5 8.5	8.5	35.0 35.0	35.0	90.5 90.5	90.5	5.7 5.7	5.7		1.0 0.9	1.0		6.3 6.3	6.3	
				Bottom	17.0	29.0 29.0	29.0	8.6 8.6	8.6	35.4 35.5	35.4	89.8 89.7	89.8	5.7 5.7	5.7		1.5 1.6	1.5		3.4 3.5	3.5	
C2	Sunny	Calm	15:28	Surface	1.1	29.4 29.4	29.4	8.2 8.2	8.2	34.5 34.5	34.5	89.4 89.2	89.3	5.7 5.6	5.6	5.6	1.9 2.0	1.9	2.9	6.5 6.6	6.6	3.8
				Middle	16.5	29.0 29.0	29.0	8.4 8.4	8.4	35.4 35.4	35.4	88.5 88.6	88.6	5.6 5.6	5.6		1.5 1.5	1.5		2.5 2.6	2.6	
				Bottom	32.1	28.8 28.8	28.8	8.4 8.4	8.4	35.7 35.7	35.7	87.2 87.1	87.2	5.5 5.5	5.5		5.3 5.5	5.4		2.3 2.2	2.3	
G1	Sunny	Calm	16:07	Surface	1.0	29.8 29.8	29.8	8.5 8.5	8.5	34.7 34.7	34.7	103.0 103.0	103.0	6.5 6.5	6.5	6.3	1.0 0.9	0.9	3.5	3.4 3.6	3.5	4.1
				Middle	4.0	29.6 29.5	29.6	8.5 8.5	8.5	34.8 34.8	34.8	97.3 97.0	97.2	6.1 6.1	6.1		1.6 1.7	1.6		5.2 5.0	5.1	
				Bottom	7.0	29.0 29.0	29.0	8.5 8.5	8.5	35.3 35.2	35.2	86.1 86.0	86.1	5.5 5.4	5.4		8.1 8.1	8.1		3.9 3.6	3.8	
G2	Sunny	Calm	15:48	Surface	1.0	29.5 29.5	29.5	8.5 8.5	8.5	34.7 34.7	34.7	97.7 97.6	97.7	6.2 6.1	6.1	6.1	0.5 0.6	0.5	0.8	8.5 8.4	8.5	6.7
				Middle	5.0	29.3 29.4	29.3	8.5 8.5	8.5	34.9 34.9	34.9	94.9 95.8	95.4	6.0 6.0	6.0		0.7 0.7	0.7		3.3 3.3	3.3	
				Bottom	9.0	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.1	35.1	90.5 90.4	90.5	5.7 5.7	5.7		1.1 1.0	1.1		8.4 8.3	8.4	
G3	Sunny	Calm	16:13	Surface	1.1	29.8 29.8	29.8	8.5 8.5	8.5	34.7 34.7	34.7	103.1 103.0	103.1	6.5 6.5	6.5	6.2	1.0 1.0	1.0	2.9	7.6 11.1	7.7	7.9
				Middle	4.1	29.3 29.3	29.3	8.5 8.5	8.5	34.8 34.8	34.8	95.1 95.7	95.4	6.0 6.0	6.0		2.3 2.2	2.2		10.6 5.2	10.9	
				Bottom	7.0	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.1	35.1	87.8 87.6	87.7	5.6 5.5	5.5		5.6 5.7	5.7		5.0 5.0	5.1	
G4	Sunny	Calm	16:27	Surface	1.1	29.8 29.8	29.8	8.5 8.5	8.5	34.6 34.6	34.6	105.0 104.8	104.9	6.6 6.6	6.6	6.6	0.4 0.4	0.4	1.3	3.4 3.4	3.4	4.7
				Middle	4.1	29.6 29.6	29.6	8.5 8.5	8.5	34.7 34.7	34.7	104.9 104.9	104.9	6.6 6.6	6.6		0.9 0.9	0.9		6.0 6.0	6.0	
				Bottom	7.0	29.2 29.2	29.2	8.5 8.5	8.5	35.0 35.0	35.0	91.6 91.6	91.6	5.8 5.8	5.8		2.6 2.5	2.5		4.7 4.7	4.7	
M1	Sunny	Calm	15:55	Surface	1.0	30.0 30.1	30.1	8.5 8.5	8.5	34.7 34.7	34.7	106.8 107.1	107.0	6.7 6.7	6.7	6.6	1.0 0.9	1.0	1.5	3.1 3.1	3.1	4.1
				Middle	3.1	29.9 29.9	29.9	8.5 8.5	8.5	34.7 34.7	34.7	102.7 102.6	102.7	6.4 6.4	6.4		1.6 1.6	1.6		5.0 4.9	5.0	
				Bottom	5.1	29.8 29.8	29.8	8.5 8.5	8.5	34.7 34.8	34.7	101.8 101.2	101.5	6.4 6.3	6.4		1.9 2.1	2.0		4.4 4.3	4.4	
M2	Sunny	Calm	15:42	Surface	1.0	29.3 29.3	29.3	8.4 8.4	8.4	34.8 34.7	34.7	91.4 91.0	91.2	5.8 5.7	5.8	5.8	1.5 1.5	1.5	1.2	2.5 2.7	2.5	3.1
				Middle	5.5	29.2 29.2	29.2	8.5 8.5	8.5	35.0 35.0	35.0	92.0 92.1	92.1	5.8 5.8	5.8		1.0 1.0	1.0		2.7 2.7	2.7	
				Bottom	10.1	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.1	35.1	91.7 92.0	91.9	5.8 5.8	5.8		1.1 0.9	1.0		4.1 4.3	4.2	
M3	Sunny	Calm	16:19	Surface	1.1	29.9 29.9	29.9	8.5 8.5	8.5	34.4 34.5	34.4	109.3 109.4	109.4	6.9 6.9	6.9	6.4	0.6 0.6	0.6	3.2	4.0 4.0	4.0	3.5
				Middle	4.0	29.3 29.3	29.3	8.5 8.5	8.5	34.9 34.9	34.9	93.7 93.4	93.6	5.9 5.9	5.9		3.0 3.2	3.1		2.9 3.1	3.0	
				Bottom	7.0	29.0 29.0	29.0	8.5 8.5	8.5	35.2 35.2	35.2	83.7 84.0	83.9	5.3 5.3	5.3		6.0 6.0	6.0		3.5 3.7	3.6	
M4	Sunny	Calm	15:34	Surface	1.1	29.3 29.3	29.3	8.4 8.4	8.4	34.6 34.6	34.6	88.0 87.9	88.0	5.6 5.6	5.6	5.5	2.2 2.1	2.2	2.1	6.6 6.7	6.7	3.8
				Middle	5.0	29.1 29.1	29.1	8.4 8.4	8.4	35.0 35.0	35.0	86.8 86.8	86.8	5.5 5.5	5.5		2.4 2.5	2.4		1.8 1.7	1.8	
				Bottom	9.0	29.1 29.1	29.1	8.4 8.4	8.4	35.1 35.1	35.1	88.7 88.8	88.8	5.6 5.6	5.6		1.6 1.6	1.6		2.9 2.8	2.9	
M5	Sunny	Calm	16:59	Surface	1.0	29.7 29.7	29.7	8.5 8.5	8.5	34.6 34.6	34.6	101.5 101.0	101.3	6.4 6.3	6.4	6.1	2.9 2.8	2.8	2.6	3.5 3.3	3.4	3.1
				Middle	6.0	29.4 29.5	29.4	8.5 8.5	8.5	34.8 34.7	34.8	93.5 93.8	93.7	5.9 5.9	5.9		1.9 1.9	1.9		3.4 3.5	3.5	
				Bottom	11.0	29.1 29.1	29.1	8.5 8.5	8.5	35.0 35.0	35.0	87.1 87.0	87.1	5.5 5.5	5.5		3.2 3.1	3.1		2.3 2.3	2.3	
M6	Sunny	Calm	16:42	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.6	0.0 0.0	0.0	0.5	0.0 0.0	0.0	3.4
				Middle	2.2	29.9 29.9	29.9	8.5 8.5	8.5	34.6 34.6	34.6	105.6 105.5	105.6	6.6 6.6	6.6		0.5 0.5	0.5		3.4 3.4	3.4	
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0	

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 4 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 6.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 7.0 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 2.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 2.9 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 October 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	10:50	Surface	1.0	29.3 29.4	29.3	8.5 8.5	8.5	34.5 34.5	34.5	93.2 92.8	93.0	5.9 5.9	5.9	5.8	1.9 1.7	1.8	1.4	2.6 2.8	2.7	3.1
				Middle	8.5	29.2 29.2	29.2	8.5 8.5	8.5	35.0 35.0	35.0	90.5 90.5	90.5	5.7 5.7	5.7		1.0 1.0	1.0		3.5 3.5	3.5	
				Bottom	16.1	29.1 29.0	29.1	8.6 8.6	8.6	35.2 35.3	35.2	90.1 90.0	90.1	5.7 5.7	5.7		1.3 1.4	1.3		3.0 2.9	3.0	
C2	Sunny	Calm	09:05	Surface	1.0	29.4 29.4	29.4	8.2 8.2	8.2	34.5 34.5	34.5	89.0 89.0	89.0	5.6 5.6	5.6	5.6	1.9 1.9	1.9	2.8	2.6 2.4	2.5	4.1
				Middle	16.0	29.0 29.0	29.0	8.4 8.4	8.4	35.3 35.3	35.3	89.0 88.9	89.0	5.6 5.6	5.6		1.2 1.2	1.2		5.8 6.0	5.9	
				Bottom	31.0	28.8 28.8	28.8	8.4 8.4	8.4	35.7 35.7	35.7	87.0 87.0	87.0	5.5 5.5	5.5		5.3 5.2	5.2		3.7 3.8	3.8	
G1	Sunny	Calm	09:46	Surface	1.1	29.7 29.8	29.7	8.5 8.5	8.5	34.7 34.7	34.7	103.3 103.1	103.2	6.5 6.5	6.5	6.4	1.1 1.0	1.0	2.0	4.5 4.3	4.4	3.8
				Middle	3.8	29.8 29.7	29.7	8.5 8.5	8.5	34.7 34.7	34.7	101.0 100.5	100.8	6.3 6.3	6.3		1.0 1.0	1.0		3.3 3.3	3.3	
				Bottom	6.5	29.4 29.1	29.2	8.5 8.5	8.5	35.0 35.2	35.1	90.0 88.2	89.1	5.7 5.6	5.6		3.9 4.0	3.9		3.8 3.8	3.8	
G2	Sunny	Calm	09:25	Surface	1.0	29.5 29.5	29.5	8.5 8.5	8.5	34.7 34.7	34.7	98.6 98.0	98.3	6.2 6.2	6.2	6.1	0.6 0.5	0.6	0.8	4.5 4.3	4.4	4.1
				Middle	5.1	29.2 29.2	29.2	8.5 8.5	8.5	35.0 34.9	34.9	93.9 94.3	94.1	5.9 6.0	5.9		0.9 0.8	0.9		3.6 3.6	3.6	
				Bottom	9.1	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.1	35.1	91.8 90.5	91.2	5.8 5.7	5.8		1.1 1.1	1.1		4.6 4.2	4.4	
G3	Sunny	Calm	09:53	Surface	1.1	29.8 29.8	29.8	8.5 8.5	8.5	34.7 34.7	34.7	102.9 102.8	102.9	6.5 6.5	6.5	6.4	1.0 1.0	1.0	2.8	4.9 4.7	4.8	4.0
				Middle	3.8	29.4 29.6	29.5	8.5 8.5	8.5	34.8 34.7	34.7	98.7 101.6	100.2	6.2 6.4	6.3		1.3 1.3	1.4		3.7 3.4	3.6	
				Bottom	6.5	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	86.4 86.4	86.4	5.5 5.5	5.5		5.9 6.0	5.9		3.5 3.8	3.7	
G4	Sunny	Calm	10:09	Surface	1.0	29.8 29.8	29.8	8.5 8.5	8.5	34.7 34.7	34.7	104.4 104.3	104.4	6.5 6.5	6.5	6.6	0.4 0.3	0.4	1.0	6.5 6.8	6.7	6.6
				Middle	3.8	29.7 29.7	29.7	8.5 8.5	8.5	34.7 34.7	34.7	105.5 105.0	105.3	6.6 6.6	6.6		0.7 0.9	0.8		4.5 4.5	4.6	
				Bottom	6.6	29.3 29.3	29.3	8.5 8.5	8.5	34.9 34.9	34.9	95.5 94.9	95.2	6.0 6.0	6.0		2.0 2.0	2.0		8.4 8.5	8.5	
M1	Sunny	Calm	09:32	Surface	1.0	30.1 30.1	30.1	8.5 8.5	8.5	34.7 34.7	34.7	107.2 107.2	107.2	6.7 6.7	6.7	6.6	1.0 1.0	1.0	1.6	9.5 8.8	9.2	7.5
				Middle	3.1	29.9 29.9	29.9	8.5 8.5	8.5	34.7 34.7	34.7	102.5 102.5	102.5	6.4 6.4	6.4		1.5 1.6	1.5		7.2 7.1	7.2	
				Bottom	5.1	29.7 29.7	29.7	8.5 8.5	8.5	34.8 34.8	34.8	100.4 99.7	100.1	6.3 6.3	6.3		2.2 2.5	2.3		6.5 6.0	6.3	
M2	Sunny	Calm	09:18	Surface	1.0	29.3 29.3	29.3	8.4 8.4	8.4	34.7 34.7	34.7	90.6 90.4	90.5	5.7 5.7	5.7	5.8	1.6 1.6	1.6	1.6	11.4 11.6	11.5	8.4
				Middle	5.1	29.2 29.2	29.2	8.5 8.5	8.5	35.0 35.0	35.0	91.9 91.8	91.9	5.8 5.8	5.8		1.1 1.0	1.0		6.3 6.2	6.3	
				Bottom	9.6	29.1 29.1	29.1	8.5 8.5	8.5	35.1 35.2	35.1	89.2 88.5	88.9	5.7 5.6	5.6		2.1 2.2	2.1		7.2 7.5	7.4	
M3	Sunny	Calm	10:01	Surface	1.1	29.9 29.9	29.9	8.5 8.5	8.5	34.4 34.4	34.4	108.8 109.1	109.0	6.8 6.8	6.8	6.5	0.6 0.6	0.6	3.5	5.4 5.1	5.3	5.7
				Middle	3.8	29.5 29.5	29.5	8.5 8.5	8.5	34.7 34.7	34.7	99.9 98.2	99.1	6.3 6.2	6.2		1.5 1.8	1.7		5.6 5.6	5.6	
				Bottom	6.5	29.1 29.1	29.1	8.5 8.5	8.5	35.2 35.2	35.2	80.4 80.5	80.5	5.1 5.1	5.1		8.2 8.1	8.1		6.1 6.1	6.1	
M4	Sunny	Calm	09:13	Surface	1.1	29.3 29.3	29.3	8.4 8.4	8.4	34.6 34.6	34.6	88.9 88.6	88.8	5.6 5.6	5.6	5.6	2.4 2.4	2.4	2.0	4.7 5.0	4.9	4.6
				Middle	5.1	29.1 29.1	29.1	8.4 8.4	8.4	35.0 35.0	35.0	87.3 87.0	87.2	5.5 5.5	5.5		2.1 2.2	2.1		5.4 5.3	5.4	
				Bottom	9.1	29.1 29.1	29.1	8.4 8.4	8.4	35.1 35.1	35.1	88.5 88.6	88.6	5.6 5.6	5.6		1.6 1.6	1.6		3.5 3.8	3.7	
M5	Sunny	Calm	10:40	Surface	1.1	29.7 29.7	29.7	8.5 8.5	8.5	34.6 34.6	34.6	100.7 100.5	100.6	6.3 6.3	6.3	6.1	2.8 2.8	2.8	2.7	5.7 5.9	5.8	8.2
				Middle	5.5	29.4 29.4	29.4	8.5 8.5	8.5	34.8 34.8	34.8	91.6 91.8	91.7	5.8 5.8	5.8		2.0 2.0	2.0		13.7 13.4	13.6	
				Bottom	10.0	29.1 29.1	29.1	8.5 8.5	8.5	35.0 35.0	35.0	87.5 87.4	87.5	5.5 5.5	5.5		3.3 3.3	3.3		5.0 5.3	5.2	
M6	Sunny	Calm	10:23	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.6	0.0 0.0	0.0	0.5	0.0 0.0	0.0	6.2
				Middle	2.0	29.9 29.9	29.9	8.5 8.5	8.5	34.6 34.6	34.6	105.8 105.8	105.8	6.6 6.6	6.6		0.5 0.5	0.5		6.0 6.3	6.2	
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0	

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 4 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.8 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	09:23	Surface	0.9	28.6	28.6	8.3	8.3	32.7	32.7	97.3	97.4	7.0	6.9	7.1	3.3	3.4	4.0	4.3	4.4	4.7
				Middle	9.0	28.0	28.0	8.3	8.3	34.6	34.6	94.4	94.4	7.2	7.2		3.4	4.2		4.4	4.8	
				Bottom	16.9	28.0	28.0	8.3	8.3	34.6	34.6	94.1	94.2	7.2	7.2		4.2	4.6		4.6	4.8	
C2	Fine	Calm	08:30	Surface	1.0	29.0	29.0	8.3	8.2	34.5	34.5	103.1	102.9	6.6	6.6	6.9	3.2	3.2	5.4	9.4	9.2	6.0
				Middle	16.0	28.0	28.0	8.3	8.3	34.5	34.5	93.0	93.0	7.3	7.3		6.5	6.5		4.0	4.1	
				Bottom	31.1	28.0	28.0	8.3	8.3	34.5	34.5	92.9	92.9	7.3	7.3		6.6	6.5		6.5	4.1	
G1	Fine	Calm	08:54	Surface	1.1	29.2	29.2	8.3	8.3	33.6	33.6	107.5	107.5	6.2	6.2	6.4	1.7	1.7	2.0	3.1	3.2	4.1
				Middle	4.0	28.9	28.8	8.3	8.3	33.8	34.0	102.2	102.1	6.6	6.6		1.7	1.7		4.0	3.9	
				Bottom	7.1	28.3	28.3	8.3	8.3	34.5	34.5	98.4	98.2	6.8	6.9		1.7	2.7		2.7	5.2	
G2	Fine	Calm	08:43	Surface	1.0	29.1	29.1	8.3	8.3	34.0	34.0	107.9	107.6	6.2	6.2	6.4	2.0	2.0	2.0	3.6	3.5	2.9
				Middle	4.1	28.6	28.6	8.3	8.3	34.3	34.3	102.6	102.6	6.5	6.5		1.9	1.9		2.3	2.3	
				Bottom	7.0	28.4	28.4	8.3	8.3	34.5	34.5	101.5	101.3	6.6	6.6		1.9	2.0		2.9	3.0	
G3	Fine	Calm	08:58	Surface	1.0	29.4	29.4	8.3	8.3	33.1	33.1	109.6	109.7	6.1	6.1	6.3	2.1	2.1	2.3	4.4	4.4	4.5
				Middle	4.0	29.0	29.0	8.3	8.3	33.7	33.7	102.7	102.5	6.5	6.5		2.3	2.3		5.0	5.1	
				Bottom	7.0	27.9	27.9	8.3	8.3	35.2	35.2	95.3	95.3	7.1	7.1		3.9	4.0		4.0	4.0	
G4	Fine	Calm	09:11	Surface	1.0	29.2	29.2	8.3	8.3	33.5	33.5	102.1	102.2	6.5	6.5	6.8	2.1	2.1	2.3	3.9	4.0	4.6
				Middle	4.0	28.6	28.8	8.3	8.3	33.5	33.5	95.6	95.6	7.0	7.0		2.0	2.0		4.1	5.0	
				Bottom	7.0	28.1	28.0	8.3	8.3	34.7	34.8	93.6	93.5	7.2	7.2		2.7	2.8		4.7	4.7	
M1	Fine	Calm	08:47	Surface	1.0	29.4	29.3	8.3	8.3	33.4	33.5	105.9	105.7	6.3	6.3	6.5	2.4	2.5	2.8	2.7	2.7	3.6
				Middle	3.0	28.8	28.8	8.3	8.3	34.0	34.0	100.8	100.8	6.6	6.6		2.4	2.4		3.4	3.5	
				Bottom	5.0	28.7	28.6	8.3	8.3	34.1	34.1	99.4	99.6	6.7	6.7		3.5	3.3		4.6	4.7	
M2	Fine	Calm	08:40	Surface	1.0	29.0	28.9	8.3	8.3	33.8	33.9	106.0	105.6	6.3	6.3	6.5	2.6	2.6	2.7	5.6	5.6	4.5
				Middle	6.0	28.2	28.2	8.3	8.3	34.8	34.8	99.6	99.5	6.8	6.8		2.4	2.4		3.9	3.9	
				Bottom	11.0	28.1	28.0	8.3	8.3	34.9	34.9	98.7	98.5	6.8	6.8		2.9	3.0		3.8	3.9	
M3	Fine	Calm	09:06	Surface	1.0	29.2	29.2	8.3	8.3	33.4	33.4	106.2	106.1	6.3	6.3	6.6	2.5	2.5	2.5	3.1	3.2	3.8
				Middle	4.1	28.6	28.6	8.3	8.3	34.1	34.2	98.3	98.4	6.8	6.8		2.5	2.5		4.1	4.0	
				Bottom	7.1	27.9	27.9	8.3	8.3	35.1	35.2	95.9	95.7	7.0	7.1		2.7	2.7		4.1	4.2	
M4	Fine	Calm	08:36	Surface	1.1	28.6	28.6	8.3	8.3	32.9	32.9	99.2	99.0	6.8	6.8	7.0	3.3	3.4	3.9	11.2	11.4	6.6
				Middle	5.0	28.2	28.2	8.3	8.3	33.9	33.9	95.1	95.1	7.1	7.1		4.4	4.5		5.2	5.1	
				Bottom	9.1	28.3	28.3	8.3	8.3	34.2	34.2	98.0	98.1	6.9	6.9		3.9	3.9		3.3	3.4	
M5	Fine	Calm	09:19	Surface	1.1	28.5	28.6	8.3	8.3	33.5	33.5	101.3	101.4	6.7	6.7	6.7	2.6	2.6	2.3	5.2	5.3	5.0
				Middle	6.0	28.5	28.5	8.3	8.3	33.5	33.5	98.8	98.9	6.8	6.8		2.2	2.2		3.9	4.0	
				Bottom	11.0	28.4	28.4	8.3	8.3	33.6	33.6	96.7	96.8	7.0	7.0		2.0	2.0		5.8	5.9	
M6	Fine	Calm	09:14	Surface	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	2.4	0.0	0.0	3.7	
				Middle	2.0	29.1	29.2	8.4	8.4	33.7	33.6	106.1	106.0	6.3		6.3	2.5		2.4	3.6		3.7
				Bottom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0

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 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 7.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 11.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.0 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 11.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.0 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	16:29	Surface	1.1	28.5 28.4	28.4	8.4 8.4	8.4	32.6 32.7	32.6	96.3 96.2	96.3	7.0 7.0	7.0	7.1	2.8 2.8	2.8	3.4	6.3 6.1	6.6	6.2
				Middle	8.9	27.9 27.9	27.9	8.4 8.3	8.3	34.3 34.3	34.3	94.2 94.2	94.2	7.2 7.2	7.2	7.2	3.5 3.4	3.5	3.4	9.2 9.0	9.2	
				Bottom	17.1	27.7 27.7	27.7	8.3 8.3	8.3	35.0 35.0	35.0	93.6 93.6	93.6	7.2 7.2	7.2	7.2	4.0 3.9	4.0	3.9	3.0 2.9	3.0	
C2	Fine	Calm	15:16	Surface	1.0	28.8 28.8	28.8	8.3 8.3	8.3	31.9 31.9	31.9	98.0 98.1	98.1	6.9 6.9	6.9	7.1	3.7 3.7	3.7	4.0	5.2 5.4	5.3	4.8
				Middle	16.0	27.9 27.8	27.8	8.3 8.3	8.3	34.3 34.4	34.3	93.0 92.9	93.0	7.3 7.3	7.3	7.3	4.0 4.0	4.0	4.0	5.5 5.4	5.5	
				Bottom	31.0	27.8 27.8	27.8	8.3 8.3	8.3	34.5 34.6	34.5	92.9 92.8	92.9	7.3 7.3	7.3	7.3	4.3 4.2	4.3	4.2	3.7 3.7	3.7	
G1	Fine	Calm	15:51	Surface	1.0	28.9 29.0	29.0	8.3 8.3	8.3	33.6 33.6	33.6	106.1 106.1	106.1	6.3 6.3	6.3	6.5	1.8 1.8	1.8	1.7	4.1 4.1	4.1	5.8
				Middle	4.1	28.5 28.6	28.6	8.3 8.3	8.3	34.0 34.0	34.0	100.7 100.8	100.7	6.7 6.6	6.6	6.6	1.7 1.7	1.7	1.7	9.6 10.3	10.0	
				Bottom	7.0	28.1 28.1	28.1	8.3 8.3	8.3	34.5 34.4	34.4	98.8 99.0	98.9	6.8 6.8	6.8	6.8	1.8 1.8	1.7	1.7	3.5 3.2	3.4	
G2	Fine	Calm	15:38	Surface	1.0	28.5 28.5	28.5	8.4 8.3	8.3	34.3 34.2	34.2	104.0 104.0	104.0	6.4 6.4	6.4	6.5	2.8 2.3	2.8	2.4	8.2 8.8	8.5	8.1
				Middle	4.0	28.6 28.6	28.6	8.3 8.3	8.3	34.1 34.2	34.2	103.3 103.2	103.3	6.5 6.5	6.5	6.5	2.3 2.3	2.3	2.3	7.2 7.3	7.3	
				Bottom	7.0	28.3 28.2	28.2	8.3 8.3	8.3	34.4 34.5	34.5	101.9 101.8	101.4	6.6 6.7	6.6	6.6	2.2 2.3	2.2	2.2	8.5 8.7	8.6	
G3	Fine	Calm	15:57	Surface	1.1	29.0 29.0	29.0	8.3 8.3	8.3	33.8 33.7	33.8	104.1 104.7	104.4	6.4 6.4	6.4	6.6	2.2 2.7	2.2	2.8	3.7 3.6	3.7	3.7
				Middle	4.0	28.5 28.2	28.4	8.3 8.3	8.3	34.0 34.3	34.2	99.7 99.4	99.6	6.7 6.8	6.7	6.7	2.7 2.8	2.7	2.7	3.6 3.5	3.6	
				Bottom	7.0	27.6 27.6	27.6	8.3 8.3	8.3	35.3 35.4	35.3	94.7 94.5	94.6	7.1 7.2	7.2	7.2	3.6 3.5	3.6	3.6	3.9 3.8	3.9	
G4	Fine	Calm	16:10	Surface	1.0	29.5 29.5	29.5	8.4 8.3	8.3	32.5 32.5	32.5	112.2 112.4	112.3	5.9 5.9	5.9	6.2	1.6 1.6	1.6	1.9	4.9 4.8	4.9	6.1
				Middle	4.0	28.4 28.4	28.4	8.3 8.3	8.3	34.1 34.1	34.1	103.3 103.6	103.5	6.5 6.5	6.5	6.5	1.9 1.9	1.9	1.9	6.4 6.2	6.3	
				Bottom	6.9	28.0 28.0	28.0	8.3 8.3	8.3	34.7 34.6	34.7	97.1 96.7	96.9	6.9 7.0	7.0	7.0	2.2 2.3	2.3	2.3	7.2 7.1	7.2	
M1	Fine	Calm	15:45	Surface	1.0	28.9 29.0	29.0	8.3 8.3	8.3	33.6 33.5	33.5	103.5 103.5	103.5	6.4 6.4	6.4	6.6	2.0 2.0	2.0	2.7	7.0 7.4	7.2	5.4
				Middle	3.1	28.5 28.5	28.5	8.3 8.3	8.3	34.0 34.0	34.0	100.3 100.3	100.3	6.7 6.7	6.7	6.7	2.8 2.8	2.8	2.8	5.1 5.1	5.1	
				Bottom	4.9	28.5 28.5	28.5	8.3 8.3	8.3	34.1 34.1	34.1	99.8 99.8	99.8	6.7 6.7	6.7	6.7	3.3 3.3	3.3	3.3	3.7 3.8	3.8	
M2	Fine	Calm	15:32	Surface	1.1	28.7 28.6	28.7	8.3 8.3	8.3	34.0 34.0	34.0	103.9 103.8	103.9	6.4 6.4	6.4	6.6	0.9 0.9	0.9	2.9	6.7 7.0	6.9	5.5
				Middle	5.1	27.9 27.9	27.9	8.3 8.3	8.3	34.9 34.9	34.9	99.1 99.0	99.1	6.8 6.8	6.8	6.8	1.1 0.9	1.0	1.0	4.1 4.0	4.1	
				Bottom	11.0	27.5 27.5	27.5	8.3 8.3	8.3	35.5 35.5	35.5	94.7 94.7	94.7	7.1 7.1	7.1	7.1	6.8 6.7	6.7	6.7	5.6 5.6	5.6	
M3	Fine	Calm	16:04	Surface	1.1	29.2 29.1	29.2	8.3 8.3	8.3	32.9 33.0	32.9	107.1 107.3	107.2	6.2 6.2	6.2	6.6	2.0 2.0	2.0	1.8	4.8 4.7	4.8	4.5
				Middle	4.0	28.5 28.4	28.5	8.3 8.3	8.3	33.7 33.7	33.7	95.4 95.1	95.3	7.1 7.1	7.1	7.1	1.7 1.7	1.7	1.7	6.0 6.0	6.0	
				Bottom	7.0	27.8 27.8	27.8	8.3 8.3	8.3	34.8 34.9	34.8	94.1 93.9	94.0	7.2 7.2	7.2	7.2	1.9 1.9	1.9	1.9	2.9 2.8	2.9	
M4	Fine	Calm	15:23	Surface	1.0	28.4 28.4	28.4	8.3 8.3	8.3	33.0 33.0	33.0	96.3 96.3	96.3	7.0 7.0	7.0	7.0	3.5 3.5	3.5	3.6	3.6 3.3	3.5	4.2
				Middle	4.9	28.2 28.2	28.2	8.3 8.3	8.3	33.6 33.7	33.6	96.0 96.0	96.0	7.0 7.1	7.0	7.0	4.0 4.1	4.1	4.1	4.4 4.5	4.5	
				Bottom	9.1	28.2 28.2	28.2	8.3 8.3	8.3	34.1 34.2	34.1	98.2 98.6	98.4	6.9 6.8	6.9	6.9	3.4 3.3	3.4	3.4	4.8 4.8	4.8	
M5	Fine	Calm	16:21	Surface	1.0	28.3 28.3	28.3	8.3 8.3	8.3	33.6 33.5	33.5	97.1 97.2	97.2	6.9 7.0	6.9	6.9	2.5 2.5	2.5	2.6	7.2 7.3	7.3	6.2
				Middle	6.0	28.3 28.3	28.3	8.3 8.3	8.3	33.5 33.5	33.5	97.7 97.7	97.7	6.9 6.9	6.9	6.9	2.6 2.7	2.6	2.6	6.5 6.5	6.5	
				Bottom	11.1	28.2 28.2	28.2	8.3 8.3	8.3	33.6 33.7	33.6	96.8 96.6	96.7	7.0 7.0	7.0	7.0	2.5 2.5	2.5	2.5	4.8 4.7	4.8	
M6	Fine	Calm	16:15	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.3	0.0 0.0	0.0	2.0	0.0 0.0	0.0	3.8
				Middle	2.0	29.0 28.9	29.0	8.3 8.3	8.3	33.7 33.7	33.7	106.0 106.1	106.1	6.3 6.3	6.3	6.3	2.0 2.0	2.0	2.0	3.9 3.7	3.8	
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.0	0.0	

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 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 5.1 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.5 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.5 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.8 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	11:09	Surface	1.1	28.9	28.9	8.8	8.8	35.0	35.0	109.0	108.5	6.9	6.9	6.7	0.6	0.6	3.2	7.1	7.1	6.7
				Middle	9.0	28.7	28.8	8.8	8.8	35.3	35.3	102.5	102.8	6.5	6.5		0.7	1.5		6.4	6.4	
				Bottom	17.1	28.7	28.7	8.8	8.8	35.4	35.4	103.1	97.7	6.2	6.2		6.2	7.3		7.6	6.8	
C2	Sunny	Calm	09:23	Surface	1.0	28.9	28.9	8.4	8.4	34.8	34.8	103.9	103.9	6.6	6.6	6.4	0.7	0.7	2.9	10.5	10.5	6.3
				Middle	16.5	28.7	28.7	8.6	8.6	35.1	35.1	97.3	97.4	6.2	6.2		4.1	4.1		5.2	5.4	
				Bottom	32.0	28.7	28.7	8.6	8.6	35.1	35.1	97.0	96.9	6.2	6.2		6.2	4.0		3.9	3.1	
G1	Sunny	Calm	10:03	Surface	1.1	29.2	29.3	8.7	8.7	35.1	35.1	118.7	118.6	7.5	7.5	7.4	0.9	0.8	1.1	8.0	7.9	6.8
				Middle	4.2	29.1	29.1	8.7	8.7	35.1	35.1	114.7	115.1	7.3	7.3		1.2	1.2		7.8	7.8	
				Bottom	7.1	28.8	28.8	8.7	8.7	35.2	35.2	106.8	106.6	6.8	6.8		6.8	1.3		1.3	4.6	
G2	Sunny	Calm	09:43	Surface	1.1	29.3	29.2	8.8	8.8	35.1	35.1	118.9	118.9	7.5	7.5	7.4	0.7	0.7	2.5	5.8	6.0	5.4
				Middle	5.0	29.1	29.2	8.8	8.8	35.1	35.1	116.2	116.4	7.3	7.4		0.8	0.8		6.1	5.6	
				Bottom	9.1	28.8	28.8	8.7	8.7	35.2	35.2	96.9	96.7	6.1	6.1		6.1	6.0		6.0	4.6	
G3	Sunny	Calm	10:10	Surface	1.1	29.2	29.2	8.7	8.7	34.3	34.5	107.9	107.6	6.8	6.8	6.8	0.7	0.7	1.6	6.5	6.6	8.9
				Middle	4.1	28.9	28.9	8.7	8.7	35.1	35.1	105.8	105.9	6.7	6.7		1.5	1.6		11.3	11.0	
				Bottom	7.1	28.8	28.8	8.7	8.7	35.2	35.2	98.2	98.0	6.2	6.2		6.2	2.5		2.5	9.0	
G4	Sunny	Calm	10:23	Surface	1.1	29.3	29.3	8.8	8.8	35.1	35.1	110.1	109.9	6.9	6.9	6.9	1.4	1.4	2.1	7.6	7.4	6.8
				Middle	4.1	28.9	28.9	8.8	8.8	35.1	35.1	107.9	107.9	6.8	6.8		1.8	1.8		6.4	6.5	
				Bottom	7.0	28.8	28.8	8.7	8.7	35.2	35.2	98.7	98.5	6.3	6.3		6.3	3.3		3.1	6.5	
M1	Sunny	Calm	09:49	Surface	1.1	29.2	29.2	8.7	8.7	35.0	35.0	106.3	106.2	6.7	6.7	6.6	1.1	1.2	1.6	5.6	5.6	6.8
				Middle	3.0	29.0	29.0	8.7	8.7	35.0	35.0	102.1	102.4	6.5	6.5		1.7	1.7		6.6	6.8	
				Bottom	5.0	29.0	29.0	8.7	8.7	35.0	35.0	100.9	99.8	6.4	6.4		6.4	2.0		2.0	7.9	
M2	Sunny	Calm	09:36	Surface	1.1	29.0	29.0	8.8	8.8	35.0	35.0	114.5	114.9	7.3	7.3	7.3	0.5	0.4	0.7	5.2	5.2	7.2
				Middle	5.5	29.1	29.1	8.8	8.8	35.1	35.1	116.7	116.7	7.4	7.4		0.9	0.9		6.5	6.7	
				Bottom	10.1	28.9	28.9	8.8	8.8	35.1	35.1	110.5	110.2	7.0	7.0		7.0	0.8		0.8	9.8	
M3	Sunny	Calm	10:17	Surface	1.1	29.2	29.2	8.7	8.7	34.6	34.6	109.5	109.6	6.9	6.9	6.6	0.7	0.7	2.2	4.6	4.6	6.2
				Middle	4.1	28.9	28.9	8.7	8.7	35.1	35.1	96.4	97.7	6.1	6.2		1.8	1.7		8.1	8.4	
				Bottom	7.1	28.8	28.8	8.7	8.7	35.2	35.2	90.9	90.6	5.8	5.8		5.8	4.3		4.3	5.4	
M4	Sunny	Calm	09:31	Surface	1.1	28.8	28.8	8.7	8.7	35.0	35.0	103.4	103.6	6.6	6.6	6.5	1.1	1.1	1.2	4.1	4.1	7.7
				Middle	5.0	28.8	28.8	8.7	8.7	35.1	35.1	101.7	101.6	6.5	6.5		1.2	1.2		11.8	11.8	
				Bottom	9.0	28.8	28.8	8.7	8.7	35.1	35.1	102.7	102.8	6.5	6.5		6.5	1.3		1.2	7.0	
M5	Sunny	Calm	10:57	Surface	1.1	28.9	28.9	8.7	8.7	34.9	34.9	107.6	107.5	6.8	6.8	6.7	0.9	0.9	3.3	6.1	6.1	5.8
				Middle	6.1	28.9	28.9	8.7	8.7	35.0	35.0	104.1	104.2	6.6	6.6		1.7	1.7		6.2	6.1	
				Bottom	11.1	28.8	28.8	8.7	8.7	35.2	35.2	101.9	100.5	6.5	6.4		6.4	6.5		7.4	5.2	
M6	Sunny	Calm	10:37	Surface	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	2.0	0.0	0.0	6.0	
				Middle	2.2	29.0	29.0	8.8	8.8	35.1	35.1	108.1	107.6	6.9		6.8	2.0		2.0	5.7		6.0
				Bottom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0

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 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.0 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 12.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.6 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 12.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.6 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 3.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.1 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	17:41	Surface	1.0	28.9 28.9	28.9	8.8 8.8	8.8	35.0 35.0	35.0	108.5 108.8	108.7	6.9 6.9	6.9	6.7	6.7	1.1 1.1	1.1	3.3	5.8	5.8	6.5		
				Middle	8.5	28.7 28.7	28.7	8.8 8.8	8.8	35.3 35.3	35.3	101.8 102.1	102.0	6.5 6.5	6.5						1.5 1.5	1.5		8.1 8.3	8.2
				Bottom	16.0	28.7 28.7	28.7	8.8 8.8	8.8	35.4 35.4	35.4	97.9 97.8	97.9	6.2 6.2	6.2						7.1 7.3	7.2		5.5 5.4	5.5
C2	Sunny	Calm	16:00	Surface	1.0	28.9 28.9	28.9	8.5 8.5	8.5	34.8 34.8	34.8	103.6 103.5	103.6	6.6 6.6	6.6	6.4	6.4	0.8 0.8	0.8	2.9	4.9	4.8	4.5		
				Middle	16.1	28.7 28.7	28.7	8.6 8.6	8.6	35.1 35.1	35.1	97.5 97.6	97.6	6.2 6.2	6.2						4.3 4.2	4.2		4.5 4.3	4.4
				Bottom	31.1	28.7 28.7	28.7	8.6 8.6	8.6	35.1 35.1	35.1	96.7 96.6	96.7	6.2 6.2	6.2						3.8 3.7	3.7		4.2 4.3	4.3
G1	Sunny	Calm	16:40	Surface	1.1	29.2 29.2	29.2	8.7 8.7	8.7	35.1 35.1	35.1	118.6 118.9	118.8	7.5 7.5	7.5	7.4	7.4	1.0 0.8	0.9	1.1	3.1	3.2	4.6		
				Middle	3.8	29.1 29.1	29.1	8.7 8.7	8.7	35.1 35.1	35.1	115.0 114.8	114.9	7.3 7.3	7.3						1.1 1.1	1.1		3.9 4.0	4.0
				Bottom	6.5	28.9 28.8	28.9	8.7 8.7	8.7	35.2 35.2	35.2	108.3 107.3	107.8	6.9 6.8	6.8						1.3 1.4	1.3		6.4 6.7	6.6
G2	Sunny	Calm	16:19	Surface	1.1	29.3 29.3	29.3	8.8 8.8	8.8	35.1 35.1	35.1	118.9 118.9	118.9	7.5 7.5	7.5	7.4	7.4	0.7 0.7	0.7	2.5	4.6	4.6	4.2		
				Middle	5.0	29.1 29.1	29.1	8.8 8.8	8.8	35.1 35.1	35.1	115.5 115.9	115.7	7.3 7.3	7.3						0.9 0.9	0.9		4.2 4.0	4.1
				Bottom	9.1	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	98.9 97.7	98.3	6.3 6.2	6.3						5.8 6.0	5.9		3.9 3.7	3.8
G3	Sunny	Calm	16:46	Surface	1.0	29.2 29.2	29.2	8.7 8.7	8.7	34.7 34.7	34.7	107.1 107.1	107.1	6.8 6.8	6.8	6.8	6.8	0.9 0.9	0.9	1.7	3.1	3.2	6.5		
				Middle	3.8	28.9 29.0	28.9	8.7 8.7	8.7	35.1 35.0	35.0	106.2 105.5	106.4	6.7 6.8	6.7						1.4 1.4	1.5		11.6 11.4	11.5
				Bottom	6.5	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	97.2 96.8	97.0	6.2 6.2	6.2						2.6 2.6	2.6		4.6 4.7	4.7
G4	Sunny	Calm	16:59	Surface	1.0	29.3 29.3	29.3	8.8 8.7	8.7	35.1 35.1	35.1	109.2 109.4	109.3	6.9 6.9	6.9	6.9	6.9	1.4 1.3	1.4	2.0	5.2	5.2	7.3		
				Middle	3.8	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.2	35.1	107.9 107.9	107.9	6.8 6.8	6.8						1.8 1.8	1.8		5.3 5.1	5.2
				Bottom	6.5	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	98.6 98.5	98.6	6.3 6.3	6.3						3.0 2.9	2.9		11.7 11.5	11.6
M1	Sunny	Calm	16:27	Surface	1.1	29.1 29.1	29.1	8.7 8.7	8.7	35.0 35.0	35.0	105.3 104.9	105.1	6.7 6.6	6.6	6.6	6.6	1.5 1.5	1.4	1.7	9.1	8.9	7.3		
				Middle	3.1	29.1 29.1	29.1	8.7 8.7	8.7	35.0 35.0	35.0	103.3 103.8	103.6	6.5 6.6	6.6						1.6 1.6	1.6		7.3 7.9	7.6
				Bottom	5.1	29.0 29.0	29.0	8.7 8.7	8.7	35.0 35.0	35.0	99.2 98.7	99.0	6.3 6.3	6.3						2.1 1.9	2.0		5.6 5.5	5.6
M2	Sunny	Calm	16:13	Surface	1.1	29.1 29.1	29.1	8.8 8.8	8.8	35.0 35.0	35.0	115.2 115.3	115.3	7.3 7.3	7.3	7.3	7.3	0.4 0.4	0.4	0.7	5.4	5.4	5.0		
				Middle	5.2	29.1 29.1	29.1	8.8 8.8	8.8	35.1 35.1	35.1	116.4 116.0	116.2	7.4 7.3	7.4						0.6 0.6	0.6		4.3 4.2	4.3
				Bottom	9.5	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	109.9 110.0	110.0	7.0 7.0	7.0						1.0 0.9	1.0		5.3 5.6	5.5
M3	Sunny	Calm	16:53	Surface	1.1	29.2 29.2	29.2	8.7 8.7	8.7	34.6 34.6	34.6	109.1 109.4	109.3	6.9 6.9	6.9	6.5	6.5	0.8 0.7	0.7	2.3	6.3	6.2	6.1		
				Middle	3.7	28.9 28.9	28.9	8.7 8.7	8.7	35.1 35.1	35.1	97.0 96.6	96.8	6.2 6.1	6.1						1.9 2.0	2.0		6.5 6.9	6.7
				Bottom	6.5	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	91.4 91.3	91.4	5.8 5.8	5.8						4.1 4.1	4.1		5.3 5.5	5.4
M4	Sunny	Calm	16:05	Surface	1.1	28.8 28.8	28.8	8.7 8.7	8.7	35.0 35.0	35.0	104.9 104.4	104.7	6.7 6.6	6.7	6.6	6.6	1.2 1.2	1.2	1.2	3.3	3.4	4.1		
				Middle	5.0	28.8 28.8	28.8	8.7 8.7	8.7	35.1 35.1	35.1	102.1 102.1	102.1	6.5 6.5	6.5						1.2 1.2	1.2		4.5 4.3	4.4
				Bottom	9.1	28.8 28.8	28.8	8.7 8.7	8.7	35.1 35.1	35.1	102.4 102.7	102.6	6.5 6.5	6.5						1.1 1.1	1.1		4.8 4.3	4.6
M5	Sunny	Calm	17:31	Surface	1.1	28.9 28.9	28.9	8.7 8.7	8.7	34.9 34.9	34.9	107.0 106.9	107.0	6.8 6.8	6.8	6.7	6.7	1.0 0.9	0.9	3.8	5.5	5.7	5.5		
				Middle	6.1	28.9 28.9	28.9	8.7 8.7	8.7	34.9 34.9	34.9	104.5 105.2	104.9	6.6 6.7	6.7						1.5 1.5	1.6		6.9 7.0	7.0
				Bottom	12.0	28.8 28.8	28.8	8.7 8.7	8.7	35.3 35.3	35.3	99.9 99.7	99.8	6.4 6.3	6.3						8.5 9.0	8.8		3.9 3.8	3.9
M6	Sunny	Calm	17:12	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.8	6.8	0.0 0.0	0.0	1.9	0.0	0.0	7.0		
				Middle	2.1	29.0 29.0	29.0	8.8 8.8	8.8	35.1 35.1	35.1	107.5 108.0	107.8	6.8 6.8	6.8						1.9 1.9	1.9		6.9 7.1	7.0
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0						0.0 0.0	0.0		0.0 0.0	0.0

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 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 9.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.1 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	11:00	Surface	1.0	29.2 29.2	29.2	8.5 8.5	8.5	34.5 34.5	34.5	89.3 89.2	89.3	5.7 5.7	5.7	5.6	5.6	1.5 1.4	1.5	2.2 2.2	2.2	2.8
				Middle	9.1	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.7	34.7	88.8 88.6	88.7	5.6 5.6	5.6	5.6	5.6	2.9 2.7	2.8	2.7 2.8	2.8	
				Bottom	17.1	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.8	34.7	88.4 88.1	88.3	5.6 5.6	5.6	5.6	5.6	3.5 3.3	3.4	3.5 3.4	3.5	
C2	Sunny	Calm	11:07	Surface	1.0	29.2 29.2	29.2	8.5 8.5	8.5	34.5 34.5	34.5	89.1 89.0	89.1	5.7 5.6	5.7	5.6	5.6	1.5 1.6	1.5	5.0 5.0	5.0	4.0
				Middle	16.0	29.1 29.0	29.1	8.5 8.5	8.5	34.6 34.7	34.6	88.6 88.6	88.6	5.6 5.6	5.6	5.6	5.6	2.1 2.6	2.3	3.4 3.3	3.4	
				Bottom	31.0	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.7	34.7	88.7 88.7	88.7	5.6 5.6	5.6	5.6	5.6	2.9 3.5	3.2	3.8 3.6	3.7	
G1	Sunny	Calm	11:31	Surface	1.1	29.4 29.3	29.3	8.8 8.8	8.8	35.0 35.0	35.0	107.7 106.7	107.2	6.8 6.7	6.8	6.8	6.7	0.7 0.9	0.8	4.7 4.7	4.7	4.0
				Middle	4.1	29.1 29.3	29.2	8.8 8.8	8.8	35.0 35.0	35.0	105.8 107.4	106.6	6.7 6.8	6.7	6.3	6.3	1.0 1.0	1.0	3.5 3.5	3.5	
				Bottom	7.1	29.0 28.9	29.0	8.8 8.8	8.8	35.1 35.2	35.1	99.3 98.9	99.1	6.3 6.3	6.3	6.3	6.3	2.4 2.3	2.4	3.9 3.9	3.9	
G2	Sunny	Calm	11:22	Surface	1.1	29.4 29.4	29.4	8.7 8.7	8.7	35.0 35.0	35.0	105.9 105.0	105.5	6.7 6.6	6.6	6.6	6.6	0.7 0.7	0.7	4.7 4.6	4.7	4.4
				Middle	5.1	29.3 29.3	29.3	8.7 8.7	8.7	35.0 35.0	35.0	104.1 104.1	104.6	6.6 6.6	6.6	6.6	6.6	1.0 1.2	1.1	5.8 5.9	5.9	
				Bottom	9.1	29.1 29.0	29.1	8.7 8.7	8.7	35.1 35.2	35.1	97.7 96.1	96.9	6.2 6.1	6.1	6.1	6.1	1.3 1.2	1.3	2.7 2.7	2.7	
G3	Sunny	Calm	11:35	Surface	1.1	29.6 29.6	29.6	8.7 8.8	8.7	34.8 34.8	34.8	102.8 101.3	102.1	6.5 6.4	6.4	6.4	6.3	0.4 0.4	0.4	3.5 3.3	3.4	4.1
				Middle	4.1	29.3 29.5	29.4	8.7 8.8	8.8	34.9 34.9	34.9	97.3 102.1	99.7	6.1 6.4	6.3	6.3	6.3	0.8 0.8	0.8	5.3 5.5	5.4	
				Bottom	7.0	28.9 29.0	28.9	8.7 8.8	8.7	35.2 35.1	35.2	88.9 87.6	88.3	5.6 5.6	5.6	5.6	5.6	2.6 2.4	2.5	3.6 3.6	3.6	
G4	Sunny	Calm	11:42	Surface	1.0	29.6 29.6	29.6	8.8 8.8	8.8	34.8 34.9	34.9	108.2 104.7	106.5	6.8 6.6	6.8	6.7	6.7	0.5 0.5	0.5	5.1 5.1	5.1	4.2
				Middle	4.0	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	90.8 92.2	91.5	5.8 5.9	5.8	5.8	5.8	1.1 1.0	1.1	3.7 3.7	3.7	
				Bottom	7.1	28.8 28.9	28.8	8.8 8.8	8.8	35.3 35.2	35.2	92.1 90.4	91.3	5.9 5.7	5.8	5.8	5.8	2.9 2.8	2.9	3.9 3.8	3.9	
M1	Sunny	Calm	11:26	Surface	1.1	29.5 29.4	29.4	8.7 8.7	8.7	35.0 35.0	35.0	100.2 98.0	99.1	6.3 6.2	6.2	6.2	6.2	1.3 1.2	1.2	6.1 6.1	6.1	3.7
				Middle	3.0	29.4 29.3	29.4	8.7 8.7	8.7	35.0 35.1	35.0	99.6 96.8	98.2	6.3 6.1	6.2	6.2	6.2	2.0 2.1	2.0	3.0 3.0	3.0	
				Bottom	5.0	29.3 29.3	29.3	8.7 8.7	8.7	35.1 35.1	35.1	97.0 97.0	97.0	6.1 6.1	6.1	6.1	6.1	3.8 3.1	3.5	2.0 2.0	2.0	
M2	Sunny	Calm	11:17	Surface	1.1	29.3 29.3	29.3	8.7 8.7	8.7	35.0 35.0	35.0	106.3 105.0	105.7	6.7 6.6	6.7	6.7	6.7	0.5 0.5	0.5	3.5 3.4	3.5	3.1
				Middle	6.1	29.2 29.2	29.2	8.7 8.7	8.7	35.1 35.0	35.0	105.4 105.3	105.4	6.7 6.7	6.7	6.7	6.7	0.7 0.6	0.6	2.7 2.5	2.6	
				Bottom	11.1	28.9 28.9	28.9	8.7 8.7	8.7	35.2 35.2	35.2	97.2 97.3	97.3	6.2 6.2	6.2	6.2	6.2	1.6 1.7	1.6	3.1 3.2	3.2	
M3	Sunny	Calm	11:37	Surface	1.0	29.6 29.3	29.4	8.7 8.7	8.7	34.8 34.7	34.7	98.0 87.0	92.5	6.2 5.5	5.8	5.8	5.8	0.4 0.4	0.4	4.1 3.9	4.0	4.5
				Middle	4.1	29.1 29.0	29.1	8.8 8.7	8.7	35.0 35.1	35.1	94.8 89.1	92.0	6.0 5.6	5.8	5.8	5.8	1.1 1.1	1.1	6.8 6.6	6.7	
				Bottom	7.0	28.9 28.9	28.9	8.8 8.8	8.8	35.2 35.2	35.2	87.8 84.8	86.3	5.6 5.4	5.5	5.5	5.5	2.8 2.7	2.7	2.9 2.7	2.8	
M4	Sunny	Calm	11:13	Surface	1.1	29.0 29.0	29.0	8.6 8.6	8.6	34.8 34.8	34.8	92.5 93.6	93.1	5.9 5.9	5.9	5.9	5.9	1.9 1.9	1.9	4.9 4.9	4.9	3.8
				Middle	5.1	29.0 29.0	29.0	8.6 8.6	8.6	34.9 34.9	34.9	92.4 92.8	92.6	5.9 5.9	5.9	5.9	5.9	1.7 1.7	1.7	3.7 3.7	3.7	
				Bottom	9.1	28.9 28.9	28.9	8.6 8.7	8.7	35.2 35.1	35.1	95.2 94.9	95.1	6.0 6.0	6.0	6.0	6.0	0.9 0.9	0.9	3.0 2.8	2.9	
M5	Sunny	Calm	10:46	Surface	1.1	29.2 29.2	29.2	8.4 8.5	8.4	34.5 34.5	34.5	90.1 89.3	89.7	5.7 5.7	5.7	5.7	5.7	1.4 1.3	1.3	3.1 3.0	3.1	2.6
				Middle	6.1	29.1 29.1	29.1	8.5 8.5	8.5	34.6 34.6	34.6	89.0 88.9	89.0	5.7 5.6	5.6	5.6	5.6	2.2 2.1	2.1	2.7 2.6	2.7	
				Bottom	11.0	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.7	34.7	89.1 89.0	89.1	5.7 5.7	5.7	5.7	5.7	3.1 3.3	3.2	1.9 2.0	2.0	
M6	Sunny	Calm	11:45	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
				Middle	2.2	29.4 29.5	29.5	8.8 8.8	8.8	34.9 34.9	34.9	105.6 107.3	106.5	6.7 6.8	6.7	6.7	6.7	0.4 0.4	0.4	1.7 1.7	1.7	
				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 12 October 2019 (Mid-Ebb Tide)

<u>Parameter (unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 0.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 0.0 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	18:05	Surface	1.0	29.2 29.2	29.2	8.5 8.5	8.5	34.5 34.5	34.5	89.2 89.2	89.2	5.7 5.7	5.7	5.6	1.4 1.4	1.4	2.6 2.7	2.7	2.8
				Middle	9.1	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.7	34.7	88.8 88.6	88.7	5.6 5.6	5.6	5.6	3.0 3.0	3.0	2.1 2.3	2.2	
				Bottom	17.1	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.8	34.7	88.2 88.2	88.2	5.6 5.6	5.6	5.6	3.5 3.4	3.4	3.5 3.6	3.6	
C2	Sunny	Calm	18:13	Surface	1.1	29.2 29.2	29.2	8.5 8.5	8.5	34.5 34.5	34.5	88.9 89.0	89.0	5.6 5.6	5.6	5.6	1.5 1.5	1.5	4.3 4.4	4.4	9.8
				Middle	16.0	29.1 29.0	29.0	8.5 8.5	8.5	34.6 34.7	34.6	88.6 88.7	88.7	5.6 5.6	5.6	5.6	2.2 2.6	2.4	6.9 7.2	7.1	
				Bottom	31.1	29.0 29.0	29.0	8.5 8.6	8.5	34.7 34.7	34.7	88.7 88.7	88.7	5.6 5.6	5.6	5.6	3.0 3.5	3.2	17.5 18.4	18.0	
G1	Sunny	Calm	18:36	Surface	1.1	29.4 29.4	29.4	8.8 8.8	8.8	35.0 35.0	35.0	107.8 107.6	107.7	6.8 6.8	6.8	6.8	0.6 0.7	0.7	6.4 6.3	6.4	5.3
				Middle	4.0	29.1 29.1	29.1	8.8 8.8	8.8	35.0 35.0	35.0	105.7 106.2	106.0	6.7 6.7	6.7	6.3	1.0 0.8	0.9	6.9 6.5	6.7	
				Bottom	7.1	29.0 28.9	29.0	8.8 8.8	8.8	35.2 35.2	35.2	99.1 98.9	99.0	6.3 6.3	6.3	6.3	2.7 2.4	2.6	2.6 2.9	2.8	
G2	Sunny	Calm	18:27	Surface	1.0	29.4 29.4	29.4	8.7 8.7	8.7	35.0 35.0	35.0	105.9 105.1	105.5	6.7 6.6	6.6	6.6	0.7 0.8	0.8	5.4 5.4	5.4	5.2
				Middle	5.0	29.2 29.3	29.3	8.7 8.7	8.7	35.0 35.0	35.0	103.7 103.0	103.4	6.6 6.5	6.6	6.5	1.1 1.2	1.1	5.1 5.1	5.1	
				Bottom	9.1	29.0 28.9	29.0	8.7 8.7	8.7	35.1 35.2	35.2	97.4 95.9	96.7	6.2 6.1	6.1	6.1	2.5 2.7	2.6	4.9 5.0	5.0	
G3	Sunny	Calm	18:40	Surface	1.1	29.6 29.7	29.6	8.7 8.8	8.7	34.8 34.8	34.8	102.7 101.6	102.2	6.5 6.4	6.4	6.4	0.3 0.3	0.3	10.7 10.5	10.6	8.9
				Middle	4.1	29.3 29.3	29.3	8.7 8.8	8.7	35.0 35.0	35.0	96.5 96.6	96.6	6.1 6.1	6.1	6.1	1.0 1.0	1.0	10.2 9.9	10.1	
				Bottom	7.1	28.9 28.9	28.9	8.8 8.7	8.7	35.3 35.2	35.2	89.2 88.3	87.6	5.7 5.5	5.6	5.6	2.5 2.4	2.5	5.9 5.9	5.9	
G4	Sunny	Calm	18:47	Surface	1.1	29.6 29.6	29.6	8.8 8.8	8.8	34.8 34.8	34.8	108.3 105.2	106.8	6.8 6.6	6.7	6.7	0.4 0.4	0.4	9.1 9.5	9.3	8.5
				Middle	4.0	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	90.6 90.5	90.6	5.7 5.7	5.7	5.7	1.7 2.0	1.9	11.4 11.1	11.3	
				Bottom	7.0	28.8 28.9	28.8	8.8 8.8	8.8	35.3 35.2	35.3	91.8 90.4	91.1	5.8 5.7	5.8	5.8	2.8 2.9	2.8	5.0 5.1	5.1	
M1	Sunny	Calm	18:31	Surface	1.1	29.5 29.4	29.4	8.7 8.7	8.7	35.0 35.0	35.0	99.2 98.1	99.2	6.3 6.2	6.2	6.2	2.4 2.3	2.4	3.7 3.6	3.7	7.0
				Middle	3.1	29.4 29.3	29.4	8.7 8.7	8.7	35.0 35.1	35.0	98.8 96.8	98.0	6.3 6.1	6.2	6.2	3.1 3.3	3.2	5.3 5.3	5.3	
				Bottom	5.1	29.2 29.3	29.3	8.7 8.7	8.7	35.1 35.1	35.1	96.1 96.8	96.5	6.1 6.1	6.1	6.1	3.5 3.6	3.6	11.8 12.0	11.9	
M2	Sunny	Calm	18:22	Surface	1.1	29.3 29.3	29.3	8.7 8.7	8.7	35.0 35.0	35.0	106.4 105.5	106.0	6.7 6.7	6.7	6.7	0.4 0.5	0.5	4.9 4.8	4.9	4.1
				Middle	6.1	29.1 29.1	29.1	8.7 8.7	8.7	35.1 35.1	35.1	103.6 104.5	104.1	6.6 6.6	6.6	6.6	0.8 0.7	0.7	2.4 2.2	2.3	
				Bottom	11.1	28.9 28.9	28.9	8.7 8.7	8.7	35.2 35.2	35.2	97.1 96.1	96.6	6.2 6.1	6.1	6.1	1.3 1.6	1.5	4.9 5.2	5.1	
M3	Sunny	Calm	18:43	Surface	1.0	29.6 29.3	29.4	8.7 8.7	8.7	34.8 34.6	34.7	98.0 86.2	92.1	6.2 5.5	5.8	5.8	0.3 0.3	0.3	10.1 10.5	10.3	6.3
				Middle	4.0	29.2 29.0	29.1	8.8 8.7	8.7	35.0 35.1	35.1	95.1 89.1	92.1	6.0 5.6	5.8	5.8	1.5 1.7	1.6	3.8 3.9	3.9	
				Bottom	7.0	28.9 28.9	28.9	8.8 8.7	8.7	35.2 35.2	35.2	88.0 84.1	86.1	5.6 5.3	5.5	5.5	2.2 2.0	2.1	4.7 4.6	4.7	
M4	Sunny	Calm	18:19	Surface	1.0	29.0 29.0	29.0	8.6 8.6	8.6	34.8 34.8	34.8	92.5 93.4	93.0	5.9 5.9	5.9	5.9	1.8 1.9	1.8	3.6 3.4	3.5	5.5
				Middle	5.0	29.0 29.0	29.0	8.6 8.6	8.6	34.9 34.9	34.9	92.4 92.7	92.6	5.9 5.9	5.9	5.9	1.7 1.7	1.7	9.5 10.1	9.8	
				Bottom	9.0	28.9 28.9	28.9	8.7 8.7	8.7	35.2 35.2	35.2	95.3 95.1	95.2	6.1 6.0	6.0	6.0	0.9 0.9	0.9	3.2 3.2	3.2	
M5	Sunny	Calm	17:53	Surface	1.1	29.2 29.2	29.2	8.4 8.5	8.4	34.5 34.5	34.5	90.0 89.2	89.6	5.7 5.7	5.7	5.7	1.5 1.2	1.3	3.2 3.4	3.3	3.5
				Middle	6.0	29.1 29.1	29.1	8.5 8.5	8.5	34.6 34.6	34.6	89.1 88.9	89.0	5.7 5.6	5.7	5.7	2.3 2.1	2.2	4.7 5.0	4.9	
				Bottom	11.1	29.0 29.0	29.0	8.5 8.5	8.5	34.7 34.7	34.7	89.2 89.0	89.1	5.7 5.7	5.7	5.7	3.1 3.1	3.1	2.3 2.3	2.3	
M6	Sunny	Calm	18:50	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3
				Middle	2.1	29.4 29.6	29.5	8.8 8.8	8.8	34.9 34.9	34.9	106.0 107.5	106.8	6.7 6.8	6.7	6.7	0.4 0.2	0.3	7.4 7.1	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 12 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.1 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.6 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	13:06	Surface	1.0	28.9 28.9	28.9	8.6 8.6	8.6	34.1 34.1	34.1	87.7 87.7	87.7	5.6 5.6	5.6	5.5	1.6 1.6	1.6	4.4	4.1 4.3	4.1	2.8
				Middle	9.0	28.9 28.9	28.9	8.6 8.6	8.6	34.5 34.5	34.5	86.1 86.1	86.1	5.5 5.5	5.5		2.3 2.3	2.3		2.2 2.2	2.2	
				Bottom	17.1	28.8 28.8	28.8	8.6 8.6	8.6	34.8 34.8	34.8	86.0 86.0	86.0	5.5 5.5	5.5		2.9 2.9	2.9		2.0 2.1	2.1	
C2	Cloudy	Moderate	12:01	Surface	1.0	28.9 28.9	28.9	8.4 8.4	8.4	34.1 34.1	34.1	88.9 88.9	88.9	5.7 5.7	5.7	5.6	1.6 1.5	1.6	2.8	6.6 6.2	6.4	4.7
				Middle	16.0	28.8 28.8	28.8	8.5 8.5	8.5	34.8 34.8	34.8	86.4 86.4	86.4	5.5 5.5	5.5		3.2 3.2	3.2		3.9 4.0	4.0	
				Bottom	31.0	28.8 28.8	28.8	8.5 8.5	8.5	34.9 34.9	34.9	85.9 85.9	85.9	5.5 5.5	5.5		3.7 3.7	3.7		3.7 3.8	3.8	
G1	Cloudy	Moderate	12:28	Surface	1.0	29.0 29.0	29.0	8.7 8.7	8.7	34.5 34.5	34.5	91.0 91.2	91.1	5.8 5.8	5.8	5.8	1.3 1.3	1.3	1.2	1.8 1.8	1.8	2.3
				Middle	4.0	28.9 28.9	28.9	8.7 8.7	8.7	35.0 35.0	35.0	91.7 91.7	91.7	5.8 5.8	5.8		1.2 1.2	1.2		3.0 3.0	3.0	
				Bottom	7.0	28.9 28.9	28.9	8.7 8.7	8.7	35.0 35.1	35.0	91.5 91.5	91.5	5.8 5.8	5.8		1.2 1.2	1.2		2.1 2.1	2.1	
G2	Cloudy	Moderate	12:18	Surface	1.1	29.1 29.1	29.1	8.8 8.8	8.8	34.4 34.4	34.4	99.7 99.6	99.7	6.3 6.3	6.3	6.2	1.0 1.1	1.0	2.2	4.3 4.3	4.3	3.6
				Middle	5.0	28.9 28.9	28.9	8.8 8.8	8.8	34.7 34.7	34.7	96.2 96.3	96.2	6.1 6.1	6.1		1.0 1.0	1.0		3.2 3.1	3.2	
				Bottom	9.1	28.8 28.8	28.8	8.8 8.8	8.8	35.2 35.2	35.2	91.5 91.2	91.4	5.8 5.8	5.8		4.5 4.7	4.6		3.4 3.1	3.3	
G3	Cloudy	Moderate	12:33	Surface	1.1	29.0 29.0	29.0	8.8 8.8	8.8	33.4 33.4	33.4	98.1 98.0	98.1	6.3 6.3	6.3	6.1	4.6 4.5	4.6	2.2	2.7 2.9	2.8	3.3
				Middle	4.1	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	92.4 92.4	92.4	5.9 5.9	5.9		1.0 1.0	1.0		2.9 2.7	2.8	
				Bottom	7.0	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	91.8 91.7	91.8	5.8 5.8	5.8		0.9 0.9	0.9		4.1 4.3	4.2	
G4	Cloudy	Moderate	12:46	Surface	1.0	29.1 29.1	29.1	8.8 8.8	8.8	34.1 34.1	34.1	95.6 95.6	95.6	6.1 6.1	6.1	6.0	0.9 0.9	0.9	1.0	2.6 2.7	2.7	3.3
				Middle	4.1	29.0 29.0	29.0	8.8 8.8	8.8	34.9 34.9	34.9	94.0 94.1	94.1	6.0 6.0	6.0		0.8 0.8	0.8		3.6 3.5	3.6	
				Bottom	7.1	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	91.9 91.8	91.9	5.8 5.8	5.8		1.3 1.3	1.3		3.7 3.7	3.7	
M1	Cloudy	Moderate	12:24	Surface	1.0	28.8 28.9	28.9	8.7 8.7	8.7	33.9 33.9	33.9	91.6 91.5	91.6	5.9 5.9	5.9	5.8	4.7 4.7	4.7	4.4	2.3 2.2	2.3	3.5
				Middle	3.0	28.9 28.9	28.9	8.7 8.7	8.7	34.5 34.5	34.5	89.5 89.6	89.6	5.7 5.7	5.7		4.2 4.2	4.2		1.7 1.8	1.8	
				Bottom	5.1	28.8 28.8	28.8	8.7 8.7	8.7	34.9 34.9	34.9	88.8 88.8	88.8	5.7 5.7	5.7		4.4 4.5	4.4		6.2 6.5	6.4	
M2	Cloudy	Moderate	12:13	Surface	1.1	29.0 29.0	29.0	8.8 8.8	8.8	34.1 34.1	34.1	99.9 99.9	99.9	6.4 6.4	6.4	6.1	1.2 1.2	1.2	2.2	3.8 4.0	3.9	3.3
				Middle	6.0	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	93.0 93.0	93.0	5.9 5.9	5.9		0.9 0.9	0.9		2.2 2.3	2.3	
				Bottom	11.0	28.7 28.7	28.7	8.7 8.7	8.7	35.2 35.3	35.2	91.1 91.0	91.1	5.8 5.8	5.8		4.3 4.5	4.4		3.8 3.7	3.8	
M3	Cloudy	Moderate	12:38	Surface	1.0	29.0 29.0	29.0	8.8 8.8	8.8	33.3 33.3	33.3	93.4 93.5	93.5	6.0 6.0	6.0	6.0	1.3 1.3	1.3	2.0	5.9 5.8	5.9	4.5
				Middle	4.1	29.0 29.0	29.0	8.8 8.8	8.8	34.3 34.3	34.3	94.0 94.1	94.1	6.0 6.0	6.0		0.9 0.9	0.9		2.5 2.5	2.5	
				Bottom	7.1	28.9 28.9	28.9	8.8 8.8	8.8	35.2 35.2	35.2	80.7 80.6	80.7	5.1 5.1	5.1		3.9 3.9	3.9		5.2 5.0	5.1	
M4	Cloudy	Moderate	12:08	Surface	1.1	28.9 28.9	28.9	8.7 8.7	8.7	34.5 34.5	34.5	92.4 92.4	92.5	5.9 5.9	5.9	5.8	1.3 1.3	1.3	1.5	6.6 6.8	6.7	5.1
				Middle	5.1	28.8 28.8	28.8	8.7 8.7	8.7	34.8 34.8	34.8	89.5 89.5	89.5	5.7 5.7	5.7		1.8 1.8	1.8		3.7 3.7	3.7	
				Bottom	9.0	28.8 28.8	28.8	8.7 8.7	8.7	35.1 35.1	35.1	90.2 90.2	90.2	5.7 5.7	5.7		1.3 1.3	1.3		4.7 4.9	4.8	
M5	Cloudy	Moderate	12:59	Surface	1.0	28.9 28.9	28.9	8.6 8.6	8.6	34.0 34.0	34.0	87.4 87.4	87.4	5.6 5.6	5.6	5.5	1.6 1.6	1.6	2.1	2.5 2.4	2.5	3.7
				Middle	6.1	28.9 28.9	28.9	8.6 8.6	8.6	34.5 34.5	34.5	86.2 86.3	86.3	5.5 5.5	5.5		2.3 2.3	2.3		4.1 3.9	4.0	
				Bottom	10.0	28.8 28.8	28.8	8.6 8.6	8.6	34.7 34.7	34.7	85.7 85.7	85.7	5.5 5.5	5.5		2.6 2.6	2.6		4.6 4.5	4.6	
M6	Cloudy	Moderate	12:53	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	5.8	0.0 0.0	0.0	2.2	0.0 0.0	0.0	3.0
				Middle	2.1	29.0 29.0	29.0	8.8 8.8	8.8	34.8 34.8	34.8	90.6 90.6	90.6	5.8 5.8	5.8		2.2 2.2	2.2		3.0 2.9	3.0	
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0	

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 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.3 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.3 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 4.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.9 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	18:29	Surface	1.0	28.9 28.9	28.9	8.6 8.6	8.6	34.1 34.1	34.1	87.6 87.6	87.6	5.6 5.6	5.6	5.5	8.1 8.1	8.1	4.4	9.6 9.4	9.5	8.2
				Middle	9.1	28.9 28.9	28.9	8.6 8.6	8.6	34.6 34.6	34.6	86.0 86.0	86.0	5.5 5.5	5.5		2.4 2.3	2.3		8.1		
				Bottom	17.0	28.8 28.8	28.8	8.6 8.6	8.6	34.8 34.8	34.8	86.0 86.0	86.0	5.5 5.5	5.5		2.9 2.9	2.9		7.1 6.7	6.9	
C2	Cloudy	Moderate	17:24	Surface	1.1	28.9 28.9	28.9	8.4 8.4	8.4	34.1 34.1	34.1	88.8 88.8	88.8	5.7 5.7	5.7	5.6	1.6 1.5	1.5	2.8	3.6 3.6	3.6	3.5
				Middle	16.0	28.8 28.8	28.8	8.5 8.5	8.5	34.8 34.8	34.8	86.4 86.3	86.4	5.5 5.5	5.5		3.2 3.1	3.2		3.5		
				Bottom	31.1	28.8 28.8	28.8	8.5 8.5	8.5	34.9 34.9	34.9	85.8 85.8	85.8	5.5 5.5	5.5		3.7 3.7	3.7		3.4 3.5	3.5	
G1	Cloudy	Moderate	17:51	Surface	1.0	29.0 29.0	29.0	8.7 8.7	8.7	32.3 32.4	32.4	95.3 95.3	95.3	6.1 6.1	6.1	6.0	1.9 1.9	1.9	1.4	2.8 2.9	2.9	4.5
				Middle	4.1	28.9 28.9	28.9	8.7 8.7	8.7	35.0 35.0	35.0	91.7 91.7	91.7	5.8 5.8	5.8		1.1 1.2	1.1		3.8 3.8		
				Bottom	7.1	28.9 28.9	28.9	8.7 8.7	8.7	35.0 35.0	35.0	91.6 91.5	91.6	5.8 5.8	5.8		1.2 1.2	1.2		6.8 6.9	6.9	
G2	Cloudy	Moderate	17:41	Surface	1.0	29.1 29.1	29.1	8.8 8.8	8.8	34.4 34.4	34.4	99.9 99.8	99.9	6.4 6.3	6.3	6.2	1.0 1.0	1.0	2.1	9.4 9.6	9.5	4.5
				Middle	5.0	28.9 28.9	28.9	8.8 8.8	8.8	34.7 34.7	34.7	96.0 96.0	96.0	6.1 6.1	6.1		1.0 1.0	1.0		2.0 2.1		
				Bottom	9.0	28.8 28.8	28.8	8.8 8.8	8.8	35.2 35.2	35.2	91.7 91.5	91.6	5.8 5.8	5.8		4.0 4.2	4.1		1.9 1.8	1.9	
G3	Cloudy	Moderate	17:56	Surface	1.1	29.0 29.0	29.0	8.8 8.8	8.8	33.4 33.4	33.4	97.8 97.7	97.8	6.3 6.3	6.3	6.1	4.3 4.3	4.3	2.1	2.1 1.9	2.0	2.6
				Middle	4.1	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	92.5 92.5	92.5	5.9 5.9	5.9		1.0 1.1	1.0		1.8 1.9		
				Bottom	7.1	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	91.6 91.6	91.6	5.8 5.8	5.8		1.0 1.0	1.0		4.0 4.0		
G4	Cloudy	Moderate	18:09	Surface	1.1	29.1 29.1	29.1	8.8 8.8	8.8	34.1 34.1	34.1	95.7 95.7	95.7	6.1 6.1	6.1	6.0	0.9 0.9	0.9	1.0	6.5 6.7	6.6	7.2
				Middle	4.1	29.0 29.0	29.0	8.8 8.8	8.8	34.9 34.9	34.9	93.9 94.0	94.0	6.0 6.0	6.0		0.8 0.8	0.8		9.0 9.1		
				Bottom	7.0	28.9 28.9	28.9	8.8 8.8	8.8	35.1 35.1	35.1	92.0 91.9	92.0	5.8 5.8	5.8		1.2 1.3	1.2		5.8 6.1	6.0	
M1	Cloudy	Moderate	17:47	Surface	1.1	28.9 28.9	28.9	8.7 8.7	8.7	33.9 33.9	33.9	91.5 91.4	91.5	5.9 5.8	5.8	5.8	4.7 4.6	4.6	4.4	4.1 4.1	4.1	5.2
				Middle	3.1	28.9 28.9	28.9	8.7 8.7	8.7	34.5 34.5	34.5	89.7 89.8	89.8	5.7 5.7	5.7		4.2 4.2	4.2		5.3 5.3		
				Bottom	5.1	28.8 28.8	28.8	8.7 8.7	8.7	34.9 34.9	34.9	88.8 88.9	88.9	5.7 5.7	5.7		4.5 4.5	4.5		6.2 6.5	6.4	
M2	Cloudy	Moderate	17:36	Surface	1.0	29.0 29.0	29.0	8.8 8.8	8.8	34.1 34.1	34.1	99.5 99.5	99.6	6.4 6.3	6.4	6.1	1.2 1.2	1.2	2.3	7.7 7.0	7.4	7.3
				Middle	6.0	28.8 28.8	28.8	8.7 8.7	8.7	35.2 35.2	35.2	93.1 93.1	93.1	5.9 5.9	5.9		0.8 0.8	0.8		4.9 4.9		
				Bottom	10.9	28.7 28.7	28.7	8.7 8.7	8.7	35.3 35.3	35.3	90.8 90.7	90.8	5.8 5.8	5.8		4.7 4.9	4.8		9.8 9.5	9.7	
M3	Cloudy	Moderate	18:01	Surface	1.0	29.1 29.1	29.1	8.8 8.8	8.8	33.6 33.6	33.6	94.8 94.8	94.8	6.1 6.1	6.1	6.0	1.1 1.1	1.1	2.0	9.1 9.1	9.1	6.9
				Middle	4.1	29.0 29.0	29.0	8.8 8.8	8.8	34.2 34.2	34.2	94.1 94.2	94.2	6.0 6.0	6.0		0.9 0.9	0.9		8.4 8.1	8.3	
				Bottom	7.1	28.9 28.9	28.9	8.8 8.8	8.8	35.2 35.2	35.2	80.6 80.5	80.6	5.1 5.1	5.1		4.0 4.0	4.0		3.5 3.4	3.5	
M4	Cloudy	Moderate	17:31	Surface	1.1	28.9 28.9	28.9	8.7 8.7	8.7	34.5 34.5	34.5	92.5 92.5	92.5	5.9 5.9	5.9	5.8	1.3 1.3	1.3	1.5	4.8 4.8	4.8	5.1
				Middle	5.1	28.8 28.8	28.8	8.7 8.7	8.7	34.8 34.8	34.8	89.5 89.5	89.5	5.7 5.7	5.7		1.8 1.8	1.8		4.7 4.5	4.6	
				Bottom	9.1	28.8 28.8	28.8	8.7 8.7	8.7	35.1 35.1	35.1	90.1 90.1	90.1	5.7 5.7	5.7		1.3 1.3	1.3		5.9 6.0	6.0	
M5	Cloudy	Moderate	18:23	Surface	1.1	28.9 28.9	28.9	8.6 8.6	8.6	34.0 34.0	34.0	87.5 87.6	87.6	5.6 5.6	5.6	5.5	1.6 1.5	1.5	2.1	10.0 10.1	10.1	6.5
				Middle	5.5	28.9 28.9	28.9	8.6 8.6	8.6	34.5 34.5	34.5	86.3 86.4	86.4	5.5 5.5	5.5		2.2 2.3	2.2		5.3 5.4		
				Bottom	10.0	28.8 28.8	28.8	8.6 8.6	8.6	34.7 34.7	34.7	85.7 85.7	85.7	5.5 5.5	5.5		2.5 2.5	2.5		4.3 4.0	4.2	
M6	Cloudy	Moderate	18:16	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	5.8	0.0 0.0	0.0	2.2	0.0 0.0	0.0	7.7
				Middle	2.0	29.0 29.0	29.0	8.8 8.8	8.8	34.8 34.8	34.8	90.5 90.5	90.5	5.8 5.8	5.8		2.2 2.2	2.2		8.0 7.4	7.7	
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0 0.0	0.0		0.0 0.0	0.0	

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 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 11.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 12.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 11.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 12.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 9.0 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 16 October 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	14:25	Surface	1.1	28.5	28.5	8.9	8.9	35.0	35.0	99.4	98.7	6.4	6.3	6.3	1.5	1.6	1.5	6.4	6.5	4.9
				Middle	9.1	28.5	28.5	8.8	8.9	35.0	35.0	98.5	97.4	6.3	6.2		1.5	1.5		4.5	4.5	
				Bottom	17.1	28.5	28.5	8.9	8.9	35.0	35.0	97.9	97.1	6.3	6.2		1.5	1.5		3.6	3.7	
C2	Sunny	Moderate	13:32	Surface	1.1	28.4	28.4	8.7	8.7	34.9	34.9	95.1	94.9	6.1	6.1	6.1	2.0	2.1	2.5	8.6	8.7	6.8
				Middle	16.1	28.4	28.4	8.7	8.7	35.0	35.0	94.3	94.3	6.0	6.0		2.6	2.7		7.0	7.1	
				Bottom	31.1	28.4	28.4	8.7	8.7	35.0	35.0	94.3	94.4	6.1	6.0		2.8	2.8		4.4	4.6	
G1	Sunny	Moderate	13:59	Surface	1.0	28.7	28.7	8.7	8.7	34.9	34.9	97.7	96.2	6.2	6.1	6.1	1.5	1.6	2.3	6.4	6.7	8.1
				Middle	4.1	28.5	28.5	8.7	8.7	34.9	34.9	94.6	94.5	6.1	6.0		2.0	1.9		5.7	5.8	
				Bottom	7.1	28.4	28.4	8.8	8.8	35.0	35.0	94.4	93.9	6.0	6.0		1.7	1.7		11.8	11.9	
G2	Sunny	Moderate	13:49	Surface	1.1	28.5	28.5	8.8	8.8	34.9	34.9	97.2	97.0	6.2	6.2	6.2	1.5	1.5	2.3	7.5	7.6	6.9
				Middle	5.1	28.5	28.5	8.8	8.8	34.9	34.9	96.7	96.7	6.2	6.2		1.6	1.5		6.4	6.5	
				Bottom	9.1	28.3	28.3	8.8	8.8	35.1	35.1	95.6	95.6	6.1	6.1		1.4	3.5		6.7	6.7	
G3	Sunny	Moderate	14:04	Surface	1.1	28.6	28.6	8.8	8.8	34.4	34.5	95.3	94.3	6.1	6.0	6.0	1.5	1.5	2.2	7.6	7.7	8.1
				Middle	4.1	28.6	28.6	8.8	8.8	34.6	34.9	93.0	92.5	5.9	5.9		2.1	2.1		7.4	7.5	
				Bottom	7.0	28.4	28.4	8.8	8.8	34.9	34.9	92.0	91.0	5.9	5.8		2.1	3.4		8.9	9.0	
G4	Sunny	Moderate	14:12	Surface	1.1	28.8	28.8	8.8	8.8	34.9	34.9	90.2	89.9	5.7	5.7	5.7	2.5	2.4	2.7	8.1	7.9	7.0
				Middle	4.0	28.5	28.5	8.8	8.8	35.0	35.0	89.9	89.5	5.8	5.7		2.8	2.8		7.6	8.4	
				Bottom	7.1	28.4	28.4	8.8	8.8	35.0	35.0	89.5	89.1	5.7	5.7		2.9	3.0		4.7	4.9	
M1	Sunny	Moderate	13:54	Surface	1.1	28.5	28.5	8.8	8.8	34.9	34.9	92.6	92.2	5.9	5.9	5.9	5.2	5.1	5.0	3.7	3.6	4.2
				Middle	3.1	28.4	28.4	8.8	8.8	34.9	34.9	91.8	91.6	5.9	5.9		5.1	5.2		3.4	3.5	
				Bottom	5.1	28.4	28.4	8.8	8.8	34.9	34.9	92.2	92.1	5.9	5.9		4.4	4.7		3.5	5.7	
M2	Sunny	Moderate	13:42	Surface	1.1	28.5	28.5	8.8	8.8	34.9	34.9	98.0	97.6	6.3	6.2	6.2	1.2	1.2	1.5	8.1	8.0	5.8
				Middle	5.5	28.5	28.5	8.8	8.8	34.9	34.9	97.1	97.0	6.2	6.2		1.2	1.5		4.7	4.8	
				Bottom	10.0	28.4	28.4	8.8	8.8	35.0	35.0	96.7	96.9	6.2	6.2		1.4	1.7		4.8	4.5	
M3	Sunny	Moderate	14:07	Surface	1.1	28.6	28.6	8.8	8.8	34.6	34.6	92.8	92.2	5.9	5.9	5.9	1.7	1.7	2.1	5.2	5.2	4.8
				Middle	4.1	28.5	28.5	8.8	8.8	34.9	34.9	91.6	91.7	5.9	5.8		1.8	2.0		5.2	4.8	
				Bottom	7.1	28.4	28.4	8.8	8.8	34.9	34.9	90.2	90.4	5.8	5.8		2.0	2.5		4.6	4.6	
M4	Sunny	Moderate	13:37	Surface	1.1	28.4	28.4	8.8	8.8	35.0	35.0	96.8	96.1	6.2	6.2	6.1	2.5	2.4	2.9	8.1	8.4	9.0
				Middle	5.0	28.4	28.4	8.8	8.8	35.0	35.0	95.4	95.2	6.1	6.1		2.4	3.1		13.2	13.1	
				Bottom	9.0	28.3	28.3	8.8	8.8	35.1	35.1	94.9	95.4	6.1	6.1		3.1	3.1		5.6	5.6	
M5	Sunny	Moderate	14:20	Surface	1.1	28.4	28.4	8.8	8.8	35.0	35.0	92.8	92.7	5.9	5.9	6.0	3.6	3.5	3.1	5.5	5.7	4.4
				Middle	6.1	28.3	28.3	8.8	8.8	35.1	35.1	96.4	96.4	6.2	6.1		2.0	2.0		4.5	4.6	
				Bottom	11.1	28.3	28.3	8.8	8.9	35.1	35.2	93.5	97.3	6.0	6.2		2.0	3.9		4.7	2.9	
M6	Sunny	Moderate	14:16	Surface	-	-	-	-	-	-	-	-	-	-	6.2	-	-	1.8	-	-	5.8	
				Middle	2.2	28.6	28.6	8.8	8.8	34.9	34.9	97.8	97.4	6.2		6.2	1.8		1.8	5.9		5.8
				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 16 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.2 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.2 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.9 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 16 October 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	9:28	Surface	1.1	28.5	28.5	8.9	8.9	35.0	35.0	99.6	98.8	6.4	6.3	6.3	1.9	1.9	2.0	5.2	5.2	4.9	
					28.5	28.5	8.9	8.9	35.0	35.0	97.9	6.3	1.9	1.9	3.1		5.2						
				Middle	9.2	28.5	28.5	8.8	8.9	35.0	35.0	98.5	97.6	6.3	6.2		1.5	1.5		2.0	4.4		3.5
					28.5	28.5	8.9	8.9	35.0	35.0	96.7	6.2	1.5	1.5	3.6		3.5						
				Bottom	17.1	28.5	28.5	8.9	8.9	35.0	35.0	98.0	97.0	6.3	6.2		2.7	2.7		2.0	5.8		6.0
					28.5	28.5	8.9	8.9	35.0	35.0	95.9	6.1	2.7	2.7	6.1		6.0						
C2	Sunny	Moderate	8:35	Surface	1.1	28.4	28.4	8.7	8.7	34.9	34.9	95.2	94.9	6.1	6.1	6.1	2.0	2.0	2.5	5.2	5.3	4.9	
					28.4	28.4	8.7	8.7	35.0	35.0	94.6	6.1	2.1	2.1	5.3		5.3						
				Middle	16.1	28.4	28.4	8.7	8.7	35.0	35.0	94.3	94.3	6.0	6.0		2.6	2.6		2.5	4.1		4.2
					28.4	28.4	8.7	8.7	35.0	35.0	94.3	6.0	2.6	2.6	4.2		4.2						
				Bottom	31.1	28.4	28.4	8.7	8.7	35.0	35.0	94.4	94.4	6.0	6.0		2.9	2.8		2.0	4.4		4.3
					28.4	28.4	8.7	8.7	35.0	35.0	93.3	6.0	2.7	2.7	4.1		4.2						
G1	Sunny	Moderate	9:02	Surface	1.0	28.7	28.7	8.7	8.7	34.9	34.9	94.7	96.5	6.3	6.2	6.1	1.5	1.5	2.3	4.4	4.3	4.9	
					28.7	28.7	8.7	8.7	34.9	34.9	94.7	6.0	6.2	1.5	1.5		4.1	4.3					
				Middle	4.0	28.5	28.5	8.7	8.7	34.9	34.9	94.9	94.7	6.1	6.1		2.1	2.0		2.3	4.5		4.6
					28.6	28.6	8.8	8.8	34.9	34.9	94.5	6.0	1.9	1.9	4.6		4.6						
				Bottom	7.0	28.4	28.4	8.7	8.8	35.0	35.0	93.6	93.7	6.0	6.0		3.1	3.4		2.0	5.8		5.8
					28.4	28.4	8.8	8.8	35.0	35.0	93.8	6.0	3.7	3.4	5.7		5.7						
G2	Sunny	Moderate	8:52	Surface	1.0	28.5	28.5	8.8	8.8	34.9	34.9	97.3	97.1	6.2	6.2	6.2	1.3	1.4	2.1	9.4	9.4	6.4	
					28.5	28.5	8.8	8.8	34.9	34.9	96.9	6.2	6.2	1.4	1.4		9.4	9.4					
				Middle	5.1	28.5	28.5	8.8	8.8	34.9	34.9	96.8	96.7	6.2	6.2		1.6	1.6		2.1	5.1		5.2
					28.5	28.5	8.8	8.8	34.9	34.9	96.6	6.2	6.2	1.7	1.7		5.3	5.3					
				Bottom	9.1	28.3	28.3	8.8	8.8	35.1	35.1	95.5	95.5	6.1	6.1		3.5	3.5		2.1	4.7		4.7
					28.3	28.3	8.8	8.8	35.1	35.1	95.5	6.1	6.1	3.3	3.4		4.5	4.6					
G3	Sunny	Moderate	9:07	Surface	1.0	28.6	28.6	8.8	8.8	34.4	34.5	95.7	94.4	6.1	6.0	6.0	1.4	1.5	2.2	6.8	6.9	5.8	
					28.6	28.6	8.8	8.8	34.6	34.6	93.8	6.0	1.6	1.6	6.9		6.9						
				Middle	4.1	28.5	28.5	8.8	8.8	34.9	34.9	93.0	93.0	6.0	5.9		2.0	1.9		2.2	6.9		6.9
					28.5	28.5	8.8	8.8	35.0	35.0	92.1	5.9	2.0	1.9	6.9		6.9						
				Bottom	7.0	28.4	28.4	8.8	8.8	34.9	34.9	91.3	91.2	5.9	5.8		3.2	3.1		2.2	3.8		3.8
					28.4	28.4	8.8	8.8	34.9	34.9	91.0	5.8	5.8	2.9	2.9		3.7	3.7					
G4	Sunny	Moderate	9:15	Surface	1.1	28.8	28.8	8.8	8.8	34.9	34.9	90.5	90.1	5.8	5.7	5.7	2.5	2.4	2.7	5.5	5.5	5.4	
					28.8	28.8	8.8	8.8	34.9	34.9	89.7	5.7	5.7	2.4	2.4		5.5	5.5					
				Middle	4.1	28.5	28.6	8.8	8.8	35.0	34.9	89.0	89.6	5.7	5.7		2.7	2.8		2.7	6.0		6.1
					28.6	28.6	8.8	8.8	34.9	34.9	89.2	5.7	5.7	2.7	2.8		6.1	6.1					
				Bottom	7.1	28.4	28.4	8.8	8.8	35.0	35.0	89.6	89.4	5.7	5.7		2.9	3.0		2.7	4.6		4.8
					28.4	28.4	8.8	8.8	35.0	35.0	89.2	5.7	5.7	3.0	3.0		4.9	4.8					
M1	Sunny	Moderate	8:57	Surface	1.0	28.5	28.5	8.8	8.8	34.9	34.9	92.7	92.3	5.9	5.9	5.9	3.2	3.1	2.9	5.5	5.6	7.8	
					28.5	28.5	8.8	8.8	34.9	34.9	91.9	5.9	5.9	3.0	3.1		5.6	5.6					
				Middle	3.0	28.4	28.4	8.8	8.8	34.9	34.9	92.1	91.9	5.9	5.9		2.9	2.9		2.9	7.5		7.5
					28.4	28.4	8.8	8.8	34.9	34.9	91.6	5.9	5.9	2.9	2.9		7.5	7.5					
				Bottom	5.1	28.4	28.4	8.8	8.8	34.9	34.9	92.0	92.1	5.9	5.9		2.5	2.6		2.9	9.9		10.2
					28.4	28.4	8.8	8.8	34.9	34.9	92.2	5.9	5.9	2.6	2.6		10.5	10.2					
M2	Sunny	Moderate	8:46	Surface	1.1	28.5	28.5	8.8	8.8	34.9	34.9	99.0	98.1	6.3	6.3	6.2	1.3	1.2	1.5	4.2	4.2	5.2	
					28.5	28.5	8.8	8.8	34.9	34.9	97.1	6.2	6.2	1.2	1.2		4.2	4.2					
				Middle	6.0	28.5	28.5	8.8	8.8	34.9	34.9	97.2	97.0	6.2	6.2		1.4	1.4		1.5	5.2		5.3
					28.5	28.5	8.8	8.8	35.0	35.0	96.7	6.2	6.2	1.4	1.4		5.3	5.3					
				Bottom	11.0	28.4	28.4	8.8	8.8	35.1	35.0	96.6	96.5	6.2	6.2		2.1	2.0		1.5	5.9		6.1
					28.4	28.4	8.8	8.8	35.0	35.0	96.4	6.2	6.2	1.9	2.0		6.3	6.1					
M3	Sunny	Moderate	9:10	Surface	1.1	28.6	28.6	8.8	8.8	34.6	34.6	92.7	92.1	5.9	5.9	5.8	1.7	1.7	2.0	4.6	4.6	4.6	
					28.6	28.6	8.8	8.8	34.6	34.6	91.5	5.9	5.9	1.8	1.7		4.5	4.6					
				Middle	4.1	28.5	28.5	8.8	8.8	34.8	34.8	91.0	90.5	5.8	5.8		1.9	1.9		2.0	5.3		5.4
					28.5	28.5	8.8	8.8	34.8	34.8	89.9	5.8	5.8	2.0	1.9		5.4	5.4					
				Bottom	7.0	28.4	28.5	8.8	8.8	34.9	34.9	91.8	91.4	5.9	5.8		2.4	2.4		2.0	3.8		3.9
					28.5	28.5	8.8	8.8	34.9	34.9	91.0	5.8	5.8	2.5	2.4		3.9	3.9					
M4	Sunny	Moderate	8:40	Surface	1.1	28.4	28.4	8.8	8.8	35.0	35.0	97.3	96.4	6.2	6.2	6.1	2.9	2.9	3.1	7.0	6.8	5.2	
					28.4	28.4	8.8	8.8	35.0	35.0	95.4	6.1	6.2	3.0	2.9		6.6	6.8					
				Middle	5.1	28.4	28.4	8.8	8.8	35.0	35.0	95.4	95.2	6.1	6.1		3.2	3.3		3.1	3.6		3.7
					28.4	28.4	8.8	8.8	35.0	35.0	94.9	6.1	6.1	3.3	3.3		3.7	3.7					
				Bottom	9.0	28.3	28.3	8.8	8.8	35.0	35.1	95.2	95.3	6.1	6.1		3.2	3.3		3.1	5.0		5.1
					28.3	28.3	8.8	8.8	35.1	35.1	95.4	6.1	6.1	3.3	3.3		5.1	5.1					
M5	Sunny	Moderate	9:23	Surface	1.1	28.4	28.4	8.7	8.8	35.0	35.0	92.9	92.7	6.0	5.9	6.0	3.6	3.5	3.4	10.4	10.3	9.1	
					28.4	28.4	8.8	8.8	35.0	35.0	92.5	5.9	5.9	3.5	3.5		10.1	10.3					
				Middle	6.1	28.3	28.3	8.8	8.8	35.1	35.1	96.3	94.8	6.2	6.1		2.8	2.7		3.4	10.3		10.2
					28.4	28.3	8.8	8.8	35.0	35.1	93.2	6.0	6.1	2.6	2.7		10.0	10.2					
				Bottom	11.1	28.3	28.3	8.8	8.9	35.1	35.1	97.4	97.4	6.2	6.2		3.6	3.9		3.4	6.8		6.9
					28.3	28.3	8.9	8.9	35.2	35.1	97.3	6.2	6.2	4.2	3.9		6.9	6.9					
M6	Sunny	Moderate	9:19	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	1.8	-	-	6.7		
				2.3	28.6	28.6	8.9	8.8	34.9	34.9	99.1	98.4	6.3	6.3		1.8	1.8		7.0	6.7			
				28.6	28.6	8.8	8.8	34.9	34.9	97.6	6.2	6.3	1.8	1.8		6.4	6.7						
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 16 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.7 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.7 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.7 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 18 October 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	15:26	Surface	1.0	28.5	28.5	8.8	8.8	34.9	34.9	102.1	102.0	6.5	6.5	6.4	1.2	1.2	1.1	4.0	4.1	6.2	
					28.5	8.8	34.9	101.9	6.5	6.5	1.1	1.1	4.1										
				Middle	9.1	28.5	28.5	8.9	8.9	35.0	35.0	99.0	99.0	6.3	6.3		1.1	1.1		6.4	6.3		
					28.5	8.9	35.0	99.0	6.3	6.3	1.1	1.1	6.5										
				Bottom	17.0	28.4	28.4	8.9	8.9	35.1	35.1	98.0	97.9	6.3	6.3		6.3	1.1		1.1	8.1		8.3
					28.4	8.9	35.1	97.8	6.3	6.3	1.1	1.1	8.1										
C2	Sunny	Calm	14:33	Surface	1.0	28.5	28.5	8.5	8.5	34.8	34.8	96.1	96.1	6.2	6.2	6.1	1.4	1.4	2.2	7.0	7.1	5.7	
					28.5	8.5	34.8	96.1	6.2	6.2	1.4	1.4	7.2										
				Middle	16.1	28.3	28.3	8.7	8.7	35.1	35.1	94.3	94.3	6.0	6.0		2.6	2.6		5.6	5.6		
					28.3	8.7	35.1	94.3	6.0	6.0	2.6	2.6	5.6										
				Bottom	31.1	28.3	28.3	8.7	8.7	35.2	35.2	94.0	94.0	6.0	6.0		6.0	2.7		2.7	4.3		4.3
					28.3	8.7	35.2	94.0	6.0	6.0	2.7	2.7	4.3										
G1	Sunny	Calm	15:00	Surface	1.1	28.6	28.6	8.9	8.9	34.6	34.6	103.1	102.4	6.6	6.5	6.4	1.2	1.2	1.5	4.6	4.7	5.0	
					28.6	8.9	34.7	101.7	6.5	6.5	1.2	1.2	4.7										
				Middle	4.0	28.3	28.3	8.9	8.9	35.0	35.0	96.8	96.8	6.2	6.2		1.9	1.9		5.1	5.2		
					28.3	8.9	35.1	96.8	6.2	6.2	1.9	1.9	5.3										
				Bottom	7.1	28.3	28.3	8.9	8.9	35.1	35.1	96.3	96.3	6.2	6.2		6.2	1.5		1.5	5.0		5.1
					28.3	8.9	35.1	96.3	6.2	6.2	1.5	1.5	5.0										
G2	Sunny	Calm	14:50	Surface	1.1	28.5	28.5	8.9	8.9	35.0	35.0	100.9	100.8	6.5	6.4	6.3	1.3	1.3	1.6	4.1	4.1	4.1	
					28.5	8.9	35.0	100.7	6.4	6.4	1.3	1.3	4.1										
				Middle	5.0	28.3	28.3	8.9	8.9	35.1	35.1	97.6	97.6	6.3	6.3		1.2	1.2		3.6	3.6		
					28.3	8.9	35.1	97.6	6.3	6.3	1.2	1.2	3.6										
				Bottom	9.0	28.3	28.3	8.9	8.9	35.2	35.2	95.8	95.6	6.1	6.1		6.1	2.2		2.2	4.7		4.7
					28.3	8.9	35.2	95.6	6.1	6.1	2.2	2.2	4.6										
G3	Sunny	Calm	15:05	Surface	1.1	28.6	28.6	8.9	8.9	34.7	34.7	100.5	100.3	6.4	6.4	6.4	1.2	1.2	1.7	5.5	5.7	5.4	
					28.6	8.9	34.7	100.1	6.3	6.3	1.4	1.3	5.8										
				Middle	4.1	28.4	28.4	8.9	8.9	34.9	34.8	98.2	98.3	6.3	6.3		1.3	1.3		5.0	5.0		
					28.5	8.9	34.8	98.3	6.3	6.3	1.3	1.3	5.0										
				Bottom	7.0	28.3	28.3	8.9	8.9	35.1	35.1	90.0	89.6	5.8	5.7		5.7	2.6		2.6	5.7		5.6
					28.3	8.9	35.1	89.2	5.7	5.7	2.6	2.6	5.4										
G4	Sunny	Calm	15:13	Surface	1.1	28.7	28.6	8.9	8.9	34.9	34.9	99.7	99.6	6.4	6.4	6.3	1.4	1.4	2.5	4.2	4.3	4.2	
					28.6	8.9	34.9	99.4	6.3	6.3	1.4	1.4	4.3										
				Middle	4.0	28.3	28.3	8.9	8.9	34.9	34.9	96.3	96.5	6.2	6.2		1.4	1.4		4.3	4.4		
					28.3	8.9	34.9	96.6	6.2	6.2	1.4	1.4	4.4										
				Bottom	7.1	28.3	28.3	8.9	8.9	35.2	35.2	91.9	91.9	5.9	5.9		5.9	4.8		4.7	4.0		4.1
					28.3	8.9	35.2	91.9	5.9	5.9	4.6	4.7	4.2										
M1	Sunny	Calm	14:55	Surface	1.1	28.4	28.4	8.9	8.9	34.9	34.9	97.9	97.6	6.3	6.2	6.2	2.4	2.3	2.7	4.1	4.0	3.9	
					28.4	8.9	34.9	97.3	6.2	6.2	2.3	2.3	3.9										
				Middle	3.0	28.4	28.4	8.9	8.9	34.9	34.9	95.5	95.6	6.1	6.1		2.6	2.6		3.9	3.9		
					28.4	8.9	34.9	95.6	6.1	6.1	2.6	2.6	3.8										
				Bottom	5.0	28.4	28.4	8.9	8.9	35.1	35.1	95.1	95.1	6.1	6.1		6.1	3.0		3.0	3.9		4.0
					28.3	8.9	35.1	95.1	6.1	6.1	3.0	3.0	4.0										
M2	Sunny	Calm	14:44	Surface	1.0	28.5	28.5	8.9	8.9	35.0	35.0	101.0	101.0	6.5	6.5	6.4	1.2	1.2	1.4	3.4	3.4	3.4	
					28.5	8.9	35.0	100.9	6.5	6.5	1.2	1.2	3.4										
				Middle	5.1	28.5	28.5	8.9	8.9	35.0	35.0	99.8	99.9	6.4	6.4		1.3	1.3		4.1	4.0		
					28.5	8.9	35.0	100.0	6.4	6.4	1.3	1.3	3.8										
				Bottom	9.1	28.4	28.4	8.9	8.9	35.1	35.1	97.1	97.1	6.2	6.2		6.2	1.6		1.7	2.8		2.8
					28.4	8.9	35.1	97.1	6.2	6.2	1.7	1.7	2.8										
M3	Sunny	Calm	15:08	Surface	1.0	28.7	28.7	9.0	9.0	34.7	34.7	101.8	101.7	6.5	6.5	6.4	0.9	0.9	1.5	5.6	5.7	6.3	
					28.7	9.0	34.7	101.6	6.5	6.5	0.9	0.9	5.7										
				Middle	4.0	28.3	28.3	9.0	9.0	34.9	34.9	97.7	98.3	6.3	6.3		1.4	1.3		5.6	5.6		
					28.3	9.0	34.9	98.8	6.3	6.3	1.3	1.3	5.6										
				Bottom	7.1	28.3	28.3	9.0	8.9	35.1	35.1	91.0	90.7	5.8	5.8		5.8	2.2		2.4	7.5		7.6
					28.3	8.9	35.1	90.3	5.8	5.8	2.6	2.4	7.6										
M4	Sunny	Calm	14:38	Surface	1.0	28.3	28.3	8.7	8.7	35.0	35.0	95.7	95.3	6.1	6.1	6.1	2.1	2.1	2.2	4.9	4.9	3.7	
					28.3	8.7	35.0	94.9	6.1	6.1	2.1	2.1	4.8										
				Middle	5.0	28.3	28.3	8.7	8.7	35.0	35.0	94.0	94.0	6.0	6.0		1.9	1.9		3.5	3.5		
					28.3	8.7	35.0	94.0	6.0	6.0	1.9	1.9	3.5										
				Bottom	9.0	28.3	28.3	8.8	8.8	35.1	35.1	94.0	94.1	6.0	6.0		6.0	2.5		2.5	2.6		2.7
					28.3	8.8	35.1	94.1	6.0	6.0	2.5	2.5	2.8										
M5	Sunny	Calm	15:21	Surface	1.0	28.4	28.4	8.9	8.9	35.0	35.0	98.8	98.9	6.3	6.3	6.3	1.9	1.8	2.7	8.7	8.6	4.9	
					28.5	8.9	35.0	98.9	6.3	6.3	1.8	1.8	8.4										
				Middle	6.0	28.3	28.3	8.8	8.8	35.1	35.1	97.2	97.3	6.2	6.2		1.7	1.7		2.6	2.7		
					28.3	8.8	35.1	97.3	6.2	6.2	1.7	1.7	2.7										
				Bottom	11.1	28.3	28.3	8.9	8.9	35.2	35.2	95.0	94.8	6.1	6.1		6.1	4.5		4.7	3.7		3.6
					28.3	8.9	35.2	94.8	6.1	6.1	4.8	4.7	3.4										
M6	Sunny	Calm	15:17	Surface	-	-	-	-	-	-	-	-	-	-	5.9	-	-	3.5	-	-	5.3		
				Middle	2.0	28.3	28.3	8.9	8.9	35.0	35.0	93.9	91.2	6.0		5.9	3.1		3.5	5.1		5.3	
				28.3	8.9	35.1	91.2	5.9	5.9	-	-	-											
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 18 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.2 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.2 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.2 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.6 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 18 October 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	10:29	Surface	1.1	28.5	28.5	8.8	8.8	34.9	34.9	101.7	101.6	6.5	6.5	6.4	1.2	1.2	1.1	8.9	9.1	6.0
					28.5	8.8	35.0	35.0	6.5	6.5	1.1	1.1	6.2	6.2	6.2		6.2	6.2		6.2		
				Middle	8.9	28.5	28.5	8.8	8.8	35.0	35.0	99.0	99.0	6.3	6.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2
C2	Sunny	Calm	9:37	Surface	1.1	28.5	28.5	8.5	8.5	34.8	34.8	96.2	96.2	6.2	6.2	6.1	1.4	1.4	2.2	6.4	6.2	5.0
					28.5	8.5	34.8	34.8	6.2	6.2	1.4	1.4	6.2	6.2	6.2		6.2	6.2		6.2		
				Middle	16.1	28.3	28.3	8.7	8.7	35.1	35.1	94.2	94.2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
G1	Sunny	Calm	10:04	Surface	1.1	28.6	28.6	8.9	8.9	34.7	34.7	101.5	101.5	6.5	6.5	6.3	1.2	1.2	1.5	6.4	6.2	6.1
					28.6	8.9	34.8	34.8	6.5	6.5	1.2	1.2	6.2	6.2	6.2		6.2	6.2		6.2		
				Middle	4.1	28.3	28.4	8.9	8.9	35.1	35.0	96.9	96.9	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
G2	Sunny	Calm	9:53	Surface	1.1	28.5	28.5	8.9	8.9	35.0	35.0	100.4	100.4	6.4	6.4	6.3	1.2	1.3	1.6	5.1	5.1	5.2
					28.5	8.9	35.0	35.0	6.4	6.4	1.3	1.3	5.0	5.0	5.0		5.0					
				Middle	5.1	28.3	28.3	8.9	8.9	35.1	35.1	97.6	97.7	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
G3	Sunny	Calm	10:08	Surface	1.0	28.6	28.6	8.9	8.9	34.6	34.6	101.1	101.0	6.5	6.5	6.3	1.1	1.1	1.5	4.9	4.9	5.4
					28.6	8.9	34.6	34.6	6.5	6.5	1.1	1.1	4.9	4.9	4.9		4.9					
				Middle	4.1	28.3	28.3	8.9	8.9	34.9	34.9	96.6	96.6	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
G4	Sunny	Calm	10:16	Surface	1.0	28.7	28.7	8.9	8.9	34.8	34.8	100.9	100.6	6.4	6.4	6.3	1.4	1.4	2.5	4.2	4.2	4.1
					28.7	8.9	34.8	34.8	6.4	6.4	1.4	1.4	4.1	4.1	4.1		4.1					
				Middle	4.1	28.3	28.3	8.9	8.9	34.9	34.9	95.5	95.6	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
M1	Sunny	Calm	9:59	Surface	1.1	28.4	28.4	8.9	8.9	34.9	34.9	99.4	99.1	6.4	6.3	6.2	2.5	2.4	2.7	5.8	5.7	4.9
					28.4	8.9	34.9	34.9	6.3	6.3	2.4	2.4	5.6	5.6	5.6		5.6					
				Middle	3.0	28.4	28.4	8.9	8.9	35.0	35.0	95.3	95.4	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
M2	Sunny	Calm	9:47	Surface	1.0	28.5	28.5	9.0	9.0	35.0	35.0	101.6	101.5	6.5	6.5	6.4	1.5	1.4	1.4	4.2	4.2	4.4
					28.5	9.0	35.0	35.0	6.5	6.5	1.3	1.3	4.2	4.2	4.2		4.2					
				Middle	5.0	28.5	28.5	8.9	8.9	35.0	35.0	99.2	99.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
M3	Sunny	Calm	10:11	Surface	1.1	28.7	28.6	9.0	9.0	34.7	34.8	101.5	101.2	6.5	6.5	6.4	0.9	1.0	1.6	5.0	5.2	4.0
					28.6	9.0	34.8	34.8	6.5	6.5	1.0	1.0	5.3	5.2	5.2		5.2					
				Middle	4.1	28.4	28.4	9.0	9.0	34.9	34.9	99.5	99.9	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
M4	Sunny	Calm	9:41	Surface	1.0	28.3	28.3	8.7	8.7	35.0	35.0	94.9	94.9	6.1	6.1	6.1	2.1	2.1	2.2	4.7	4.8	5.6
					28.3	8.7	35.0	35.0	6.1	6.1	2.1	2.1	4.9	4.9	4.9		4.9					
				Middle	5.0	28.3	28.3	8.7	8.7	35.0	35.0	94.0	94.1	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
M5	Sunny	Calm	10:25	Surface	1.1	28.6	28.5	8.9	8.9	35.0	35.0	99.3	99.1	6.3	6.3	6.3	1.9	1.9	2.5	5.5	5.6	5.2
					28.4	8.9	35.0	35.0	6.3	6.3	1.9	1.9	5.6	5.6	5.6		5.6					
				Middle	6.0	28.3	28.3	8.9	8.9	35.1	35.1	97.0	97.1	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
M6	Sunny	Calm	10:20	Surface	-	-	-	-	-	-	-	-	-	-	5.8	-	-	5.8	-	-	5.3	
					2.1	28.3	28.3	8.9	8.9	35.1	35.0	90.5	90.1	5.8		5.8	5.8		5.8	5.8		5.8
				Middle	2.1	28.3	28.3	8.9	8.9	35.0	35.0	89.7	90.1	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8

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 18 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.4 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 10.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 11.8 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 10.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 11.8 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.1 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	Weather	SeaCon	8:47	Surface	1.1	28.3 28.3	28.3	8.4 8.4	8.4	34.7 34.7	34.7	116.2 116.1	116.2	7.3 7.3	7.3	6.8	1.9 1.9	1.9	1.8	2.1 2.2	2.2	2.8
				Middle	9.1	28.2 28.2	28.2	8.4 8.4	8.4	35.0 35.0	35.0	100.6 100.6	100.6	6.3 6.3	6.3		1.1 1.1	1.1		3.1 3.0	3.1	
				Bottom	17.0	28.1 28.1	28.1	8.3 8.3	8.3	35.3 35.3	35.3	92.6 92.6	92.6	5.8 5.8	5.8		2.2 2.3	2.3		3.2 3.4	3.3	
C2	Weather	SeaCon	8:04	Surface	1.1	28.2 28.2	28.2	8.4 8.4	8.4	34.8 34.8	34.8	104.9 104.9	104.9	6.6 6.6	6.6	6.3	1.2 1.2	1.2	2.0	10.4 10.5	10.5	6.8
				Middle	16.0	28.0 28.0	28.0	8.4 8.4	8.4	34.9 35.0	34.9	96.2 96.1	96.2	6.1 6.1	6.1		1.6 1.6	1.6		4.3 4.6	4.5	
				Bottom	31.9	28.1 28.1	28.1	8.4 8.4	8.4	35.2 35.2	35.2	93.2 93.1	93.2	5.9 5.9	5.9		3.2 3.2	3.2		5.4 5.4	5.4	
G1	Weather	SeaCon	8:26	Surface	1.1	28.3 28.3	28.3	8.3 8.3	8.3	34.6 34.6	34.6	106.1 105.7	105.9	6.7 6.6	6.6	6.3	2.9 3.0	2.9	3.3	3.6 3.6	3.6	4.2
				Middle	3.9	28.2 28.2	28.2	8.3 8.3	8.3	34.8 34.8	34.8	95.1 95.1	95.1	6.0 6.0	6.0		3.2 3.3	3.3		3.4 3.5	3.5	
				Bottom	6.9	28.1 28.1	28.1	8.3 8.3	8.3	35.1 35.1	35.1	94.0 94.0	94.0	5.9 5.9	5.9		3.6 3.6	3.6		5.7 5.6	5.7	
G2	Weather	SeaCon	8:18	Surface	1.1	28.3 28.3	28.3	8.4 8.4	8.4	34.9 34.9	34.9	105.4 105.3	105.4	6.6 6.6	6.6	6.6	1.7 1.7	1.7	1.4	8.6 8.5	8.6	5.1
				Middle	4.1	28.1 28.1	28.1	8.4 8.4	8.4	35.0 35.0	35.0	103.5 103.6	103.6	6.5 6.5	6.5		1.1 1.2	1.1		3.1 3.2	3.2	
				Bottom	8.1	28.1 28.1	28.1	8.4 8.4	8.4	35.0 35.0	35.0	102.2 101.9	102.1	6.4 6.4	6.4		1.4 1.3	1.4		3.6 3.4	3.5	
G3	Weather	SeaCon	8:29	Surface	1.0	28.5 28.5	28.5	8.4 8.4	8.4	34.3 34.3	34.3	112.7 112.6	112.7	7.1 7.1	7.1	6.2	1.9 1.9	1.9	4.4	4.6 4.5	4.6	5.4
				Middle	4.1	28.1 28.1	28.1	8.3 8.3	8.3	34.8 34.8	34.8	86.2 85.9	86.1	5.4 5.4	5.4		3.6 3.7	3.6		7.4 7.2	7.3	
				Bottom	7.0	28.0 28.0	28.0	8.3 8.3	8.3	34.9 34.9	34.9	83.2 83.2	83.2	5.2 5.2	5.2		7.7 7.5	7.6		4.2 4.2	4.2	
G4	Weather	SeaCon	8:36	Surface	0.9	28.3 28.3	28.3	8.4 8.4	8.4	34.5 34.5	34.5	107.1 106.8	107.0	6.7 6.7	6.7	6.3	2.7 2.7	2.7	5.5	9.5 9.1	9.3	5.8
				Middle	4.0	28.1 28.1	28.1	8.3 8.3	8.3	34.9 34.9	34.9	92.0 91.9	92.0	5.8 5.8	5.8		4.0 4.0	4.0		3.9 3.9	3.9	
				Bottom	8.1	28.1 28.1	28.1	8.3 8.3	8.3	35.3 35.3	35.3	91.2 90.9	91.1	5.7 5.7	5.7		9.6 9.9	9.8		4.0 4.1	4.1	
M1	Weather	SeaCon	8:22	Surface	1.0	28.4 28.4	28.4	8.3 8.3	8.3	34.7 34.7	34.7	96.7 96.4	96.6	6.1 6.0	6.0	5.8	3.5 3.5	3.5	4.7	7.6 7.6	7.6	6.8
				Middle	3.0	28.1 28.1	28.1	8.3 8.3	8.3	34.9 34.9	34.9	89.2 89.1	89.2	5.6 5.6	5.6		4.9 4.9	4.9		8.6 9.0	8.8	
				Bottom	5.0	28.1 28.1	28.1	8.3 8.3	8.3	35.0 35.0	35.0	87.8 87.7	87.8	5.5 5.5	5.5		5.6 5.7	5.7		3.9 4.0	4.0	
M2	Weather	SeaCon	8:14	Surface	1.0	28.3 28.3	28.3	8.4 8.4	8.4	34.9 34.9	34.9	110.6 110.4	110.5	6.9 6.9	6.9	6.7	1.1 1.1	1.1	1.2	6.7 6.8	6.8	6.6
				Middle	4.1	28.2 28.2	28.2	8.4 8.4	8.4	34.9 34.9	34.9	104.2 104.2	104.2	6.6 6.6	6.6		1.3 1.3	1.3		7.6 7.6	7.6	
				Bottom	6.9	28.1 28.1	28.1	8.4 8.4	8.4	34.9 34.9	34.9	100.5 100.4	100.5	6.3 6.3	6.3		1.1 1.2	1.1		5.7 5.3	5.5	
M3	Weather	SeaCon	8:33	Surface	1.0	28.3 28.3	28.3	8.3 8.3	8.3	34.5 34.5	34.5	95.4 95.3	95.4	6.0 6.0	6.0	5.7	1.2 1.2	1.2	3.9	6.7 6.7	6.7	11.5
				Middle	4.1	28.1 28.1	28.1	8.3 8.3	8.3	34.8 34.8	34.8	86.9 86.8	86.9	5.5 5.5	5.5		3.6 3.6	3.6		10.3 11.1	10.7	
				Bottom	7.0	28.0 28.0	28.0	8.3 8.3	8.3	34.9 34.9	34.9	84.4 84.7	84.6	5.3 5.3	5.3		6.9 6.9	6.9		17.2 17.0	17.1	
M4	Weather	SeaCon	8:10	Surface	1.1	28.2 28.2	28.2	8.4 8.4	8.4	34.9 34.9	34.9	106.6 106.5	106.6	6.7 6.7	6.7	6.6	1.1 1.0	1.0	1.1	4.7 4.6	4.7	6.1
				Middle	6.1	28.1 28.1	28.1	8.4 8.4	8.4	34.9 34.9	34.9	102.2 101.7	102.0	6.4 6.4	6.4		1.1 1.1	1.1		7.0 6.5	6.8	
				Bottom	10.0	28.1 28.1	28.1	8.4 8.4	8.4	34.9 34.9	34.9	99.6 99.4	99.5	6.3 6.3	6.3		1.1 1.1	1.1		6.9 7.1	7.0	
M5	Weather	SeaCon	8:42	Surface	1.0	28.4 28.4	28.4	8.3 8.3	8.3	34.7 34.7	34.7	104.1 104.1	104.1	6.5 6.5	6.5	6.2	3.1 3.1	3.1	3.5	8.6 9.0	8.8	6.1
				Middle	6.1	28.1 28.1	28.1	8.3 8.3	8.3	34.9 34.9	34.9	94.1 94.1	94.1	5.9 5.9	5.9		3.7 3.9	3.8		6.6 6.5	6.6	
				Bottom	10.9	28.1 28.1	28.1	8.3 8.3	8.3	35.0 35.0	35.0	94.0 94.0	94.0	5.9 5.9	5.9		3.7 3.7	3.7		2.8 2.8	2.8	
M6	Weather	SeaCon	8:39	Surface	-	-	-	-	-	-	-	-	-	-	5.5	-	-	8.9	-	-	2.8	
				Middle	2.1	28.0 28.0	28.0	8.3 8.3	8.3	34.9 34.9	34.9	87.5 86.6	87.1	5.5 5.5		5.5	8.7 9.2		8.9	2.8 2.7		2.8
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

Remarks: *DA: Depth-Averaged
 **Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.
 No Mid-Flood Tide was occurred during the Construction works on 21 October 2019

Appendix I - Action and Limit Levels for Marine Water Quality on 21 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 4.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 12.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.6 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 12.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.6 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.0 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 23 October 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	Moderate	9:19	Surface	1.1	28.0 28.0	28.0	8.8 8.8	8.8	35.0 35.0	35.0	97.3 95.8	96.6	6.3 6.2	6.2	6.2	0.8 1.0	0.8	2.6	4.7 4.7	4.7	5.9
				Middle	9.0	27.8 27.8	27.8	8.8 8.8	8.8	35.2 35.3	35.3	94.2 95.1	94.7	6.1 6.1	6.1	6.1	0.9 0.8	0.9		6.5 6.3	6.4	
				Bottom	17.1	27.8 27.8	27.8	8.9 8.9	8.9	35.5 35.5	35.5	96.9 96.2	96.6	6.3 6.2	6.2	6.2	6.3 5.7	6.0		6.6 6.6	6.5	
C2	Fine	Moderate	8:05	Surface	1.0	27.9 27.9	27.9	8.5 8.5	8.5	34.8 34.9	34.9	94.8 94.1	94.5	6.1 6.1	6.1	6.0	1.2 1.2	1.2	1.7	7.1 7.1	7.1	5.4
				Middle	16.0	27.9 27.8	27.8	8.8 9.0	8.9	35.3 35.3	35.3	92.8 92.8	92.8	6.0 6.0	6.0	6.0	1.7 1.8	1.7		5.5 5.6	5.6	
				Bottom	26.9	27.9 27.9	27.9	8.9 9.0	8.9	35.3 35.3	35.3	92.2 92.2	92.2	5.9 6.0	5.9	5.9	1.8 2.3	2.0		3.4 3.4	3.4	
G1	Fine	Moderate	8:42	Surface	1.1	28.1 28.2	28.1	8.8 8.8	8.8	34.9 35.0	34.9	95.0 94.0	94.5	6.1 6.0	6.1	6.1	0.5 0.7	0.5	0.7	3.2 3.2	3.2	3.6
				Middle	4.1	27.9 27.9	27.9	8.8 8.8	8.8	35.1 35.1	35.1	94.6 94.8	94.7	6.1 6.1	6.1	6.1	0.6 0.6	0.7		3.9 4.1	4.0	
				Bottom	7.1	27.9 27.9	27.9	8.8 8.9	8.8	35.3 35.3	35.3	94.4 93.9	94.2	6.1 6.1	6.1	6.1	0.8 0.9	0.8		3.6 3.6	3.6	
G2	Fine	Moderate	8:28	Surface	1.0	27.9 27.9	27.9	9.0 9.0	9.0	35.0 35.1	35.0	97.0 97.5	97.3	6.3 6.3	6.3	6.3	0.5 0.4	0.5	0.5	2.8 2.8	2.8	2.3
				Middle	5.0	27.8 27.8	27.8	9.0 9.0	9.0	35.2 35.2	35.2	97.3 97.3	97.3	6.3 6.3	6.3	6.3	0.5 0.5	0.5		2.4 2.4	2.4	
				Bottom	9.0	27.9 27.9	27.8	9.0 9.0	9.0	35.2 35.2	35.2	96.5 95.6	96.1	6.2 6.2	6.2	6.2	0.6 0.8	0.7		1.6 1.7	1.7	
G3	Fine	Moderate	8:46	Surface	1.1	28.2 28.2	28.2	8.8 8.8	8.8	34.9 34.9	34.9	92.4 90.8	91.6	5.9 5.8	5.9	5.9	0.4 0.6	0.3	0.6	4.4 4.1	4.3	5.1
				Middle	4.0	28.1 28.0	28.0	8.8 8.8	8.8	35.1 35.1	35.1	92.0 91.8	91.9	5.9 5.9	5.9	5.9	0.6 0.6	0.6		4.6 4.6	4.6	
				Bottom	7.0	28.0 28.0	28.0	8.8 8.9	8.9	35.3 35.3	35.3	92.7 91.7	92.2	6.0 5.9	6.0	5.9	0.6 0.8	0.7		6.3 6.3	6.3	
G4	Fine	Moderate	8:57	Surface	1.1	28.1 28.1	28.1	8.8 8.8	8.8	35.0 35.1	35.1	92.9 93.3	93.1	6.0 6.0	6.0	6.0	0.8 0.9	0.9	1.0	6.5 6.7	6.6	5.8
				Middle	4.1	27.9 27.9	27.9	8.8 8.8	8.8	35.2 35.2	35.2	94.3 93.3	93.8	6.1 6.0	6.1	6.1	1.1 1.1	1.1		4.7 4.6	4.7	
				Bottom	7.1	27.9 27.9	27.9	8.8 8.9	8.8	35.3 35.2	35.3	92.3 94.0	93.2	5.9 6.1	6.0	6.0	1.0 1.1	1.1		6.0 6.1	6.1	
M1	Fine	Moderate	8:35	Surface	1.0	28.0 28.1	28.1	8.9 8.8	8.8	34.8 34.6	34.7	93.1 90.6	91.9	6.0 5.8	5.9	5.9	1.0 0.9	0.9	1.1	7.3 7.5	7.4	6.0
				Middle	3.1	28.0 28.0	28.0	8.8 8.8	8.8	34.9 35.0	34.9	91.7 90.2	91.0	5.9 5.8	5.9	5.9	1.3 1.1	1.2		6.6 6.9	6.8	
				Bottom	5.1	28.0 28.0	28.0	8.8 8.8	8.8	35.2 35.2	35.2	89.7 88.4	89.1	5.8 5.7	5.7	5.7	1.3 1.2	1.2		3.9 4.0	4.0	
M2	Fine	Moderate	8:22	Surface	1.0	27.9 27.9	27.9	8.9 8.9	8.9	35.0 35.0	35.0	98.2 97.6	97.9	6.3 6.3	6.3	6.3	0.4 0.3	0.3	0.5	3.2 3.2	3.2	3.3
				Middle	5.0	27.9 27.9	27.9	8.9 8.9	8.9	35.1 35.1	35.1	97.9 97.6	97.8	6.3 6.3	6.3	6.3	0.4 0.4	0.4		4.7 4.4	4.6	
				Bottom	9.0	27.8 27.8	27.8	8.9 9.0	8.9	35.2 35.2	35.2	96.6 96.7	96.7	6.2 6.2	6.2	6.2	0.9 0.8	0.9		2.3 2.2	2.3	
M3	Fine	Moderate	8:49	Surface	1.1	28.1 28.2	28.2	8.8 8.9	8.8	35.0 34.8	34.9	92.1 91.5	91.8	5.9 5.9	5.9	5.9	0.5 0.4	0.4	1.0	6.2 6.3	6.3	5.3
				Middle	4.0	28.0 28.0	28.0	8.9 8.9	8.9	35.1 35.1	35.1	92.2 92.2	92.2	5.9 5.9	5.9	5.9	0.8 0.8	0.8		4.8 4.7	4.8	
				Bottom	7.0	28.0 28.0	28.0	8.9 8.9	8.9	35.3 35.3	35.3	88.8 89.3	89.1	5.7 5.8	5.7	5.7	1.8 1.9	1.9		4.8 4.8	4.8	
M4	Fine	Moderate	8:14	Surface	1.1	27.9 27.9	27.9	9.0 9.0	9.0	34.9 35.1	35.0	99.5 98.9	99.2	6.4 6.4	6.4	6.4	0.3 0.3	0.3	0.5	5.1 5.2	5.2	4.2
				Middle	5.1	27.9 27.9	27.9	9.0 9.0	9.0	35.1 35.1	35.1	98.4 98.9	98.7	6.4 6.4	6.4	6.4	0.4 0.4	0.4		4.2 4.2	4.2	
				Bottom	9.0	27.9 27.9	27.9	9.0 9.0	9.0	35.2 35.2	35.2	97.8 98.6	98.2	6.3 6.4	6.3	6.3	0.8 0.7	0.8		3.3 3.4	3.4	
M5	Fine	Moderate	9:10	Surface	1.1	28.0 28.0	28.0	8.8 8.8	8.8	35.0 35.0	35.0	96.7 95.7	96.2	6.2 6.2	6.2	6.2	0.8 0.8	0.8	1.9	4.3 4.4	4.4	4.2
				Middle	6.0	27.8 27.8	27.8	8.8 8.8	8.8	35.0 35.0	35.0	93.1 92.4	92.8	6.0 6.0	6.0	6.0	1.2 1.1	1.2		4.9 5.2	5.1	
				Bottom	11.0	27.8 27.8	27.8	8.9 8.9	8.9	35.3 35.3	35.3	94.7 94.5	94.6	6.1 6.1	6.1	6.1	3.9 3.8	3.9		3.2 3.1	3.2	
M6	Fine	Moderate	9:05	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	-	-	7.0
				Middle	2.1	27.9 27.9	27.9	8.8 8.8	8.8	35.1 35.1	35.1	94.2 94.1	94.2	6.1 6.1	6.1	6.1	1.1 1.3	1.2		7.1 6.8	7.0	
				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 23 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 2.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 2.6 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.2 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.2 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 4.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.4 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 23 October 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	Moderate	16:10	Surface	1.1	27.9	27.9	8.7	8.7	35.2	35.2	95.4	93.7	6.2	6.0	6.0	0.6	0.5	1.2	3.4	3.4	3.8	
				Middle	9.3	27.9	27.9	8.7	8.7	35.2	35.2	91.5	91.4	5.9	5.9		0.5	0.5		0.5	4.9		5.0
				Bottom	18.1	27.8	27.8	8.7	8.7	35.5	35.5	90.6	90.5	5.8	5.8		2.6	2.6		2.6	2.9		2.9
C2	Fine	Moderate	14:46	Surface	1.0	27.9	27.9	9.6	9.6	34.9	34.9	87.6	87.3	5.7	5.6	5.6	1.1	1.2	2.0	5.5	5.5	4.3	
				Middle	16.1	27.9	27.9	9.7	9.6	35.1	35.2	84.5	85.0	5.5	5.5		1.1	1.1		1.1	3.9		3.9
				Bottom	27.4	27.9	27.9	9.7	9.6	35.3	35.3	84.6	84.7	5.5	5.5		3.4	3.6		3.9	3.4		3.4
G1	Fine	Moderate	15:23	Surface	1.0	28.2	28.2	8.8	8.8	34.9	34.9	92.3	90.7	5.9	5.8	5.8	0.7	0.7	0.6	2.2	2.2	2.9	
				Middle	5.1	28.1	28.1	8.8	8.8	35.1	35.1	89.8	89.4	5.8	5.8		0.6	0.6		0.6	4.1		4.1
				Bottom	9.1	27.9	27.9	8.8	8.8	35.2	35.2	89.7	89.0	5.8	5.8		0.7	0.7		0.7	2.5		2.5
G2	Fine	Moderate	15:08	Surface	1.0	28.0	28.0	8.9	8.9	35.0	35.0	91.1	90.8	5.9	5.8	5.8	0.5	0.5	2.0	4.6	4.7	6.2	
				Middle	5.0	28.0	28.0	8.9	8.9	35.1	35.1	89.7	90.0	5.8	5.8		1.0	1.0		1.0	8.4		8.4
				Bottom	9.1	27.9	27.9	8.9	8.9	35.2	35.1	89.3	89.0	5.8	5.7		4.7	4.6		4.4	5.5		5.5
G3	Fine	Moderate	15:28	Surface	1.0	28.2	28.2	8.8	8.8	35.0	34.9	92.1	90.0	5.9	5.8	5.7	0.4	0.4	1.0	2.6	2.7	3.3	
				Middle	4.3	28.0	28.0	8.8	8.8	35.3	35.2	90.1	89.1	5.8	5.7		0.3	0.4		0.4	2.0		2.0
				Bottom	8.0	27.9	27.9	8.8	8.8	35.3	35.3	83.1	84.1	5.4	5.4		2.3	2.3		2.3	5.4		5.4
G4	Fine	Moderate	15:41	Surface	1.1	28.2	28.2	8.8	8.8	35.1	35.1	96.0	95.5	6.2	6.1	6.1	0.6	0.5	1.4	7.4	7.4	5.8	
				Middle	4.1	28.0	28.0	8.8	8.8	35.1	35.1	92.4	92.8	6.0	6.0		1.1	1.2		1.1	4.3		4.3
				Bottom	7.0	27.9	27.9	8.8	8.8	35.2	35.2	86.2	87.6	5.6	5.6		2.7	2.4		2.4	5.7		5.7
M1	Fine	Moderate	15:15	Surface	1.1	28.0	28.1	8.9	8.9	35.0	35.0	88.4	86.2	5.7	5.5	5.5	1.5	1.6	1.9	5.5	5.6	8.6	
				Middle	3.1	28.1	28.1	8.8	8.8	35.1	35.0	84.4	84.3	5.4	5.4		1.9	1.8		1.8	10.4		10.3
				Bottom	5.5	28.0	28.0	8.8	8.8	35.1	35.1	83.6	83.7	5.4	5.4		2.6	2.4		2.4	9.8		9.9
M2	Fine	Moderate	15:01	Surface	1.0	28.0	28.0	9.0	9.0	35.0	35.0	92.8	92.3	6.0	5.9	5.9	0.2	0.2	1.1	4.6	4.6	6.5	
				Middle	5.5	27.9	27.9	9.0	9.0	35.2	35.2	91.1	90.9	5.9	5.9		0.8	0.8		0.8	5.1		5.1
				Bottom	10.0	27.9	27.9	9.0	9.0	35.2	35.2	89.3	88.9	5.8	5.7		2.5	2.4		2.4	9.9		9.9
M3	Fine	Moderate	15:34	Surface	1.1	28.2	28.3	8.8	8.8	34.9	34.8	88.0	87.6	5.7	5.6	5.4	0.2	0.2	1.4	7.1	6.9	6.6	
				Middle	4.0	28.1	28.1	8.7	8.7	35.2	35.2	80.2	81.9	5.2	5.3		1.6	1.6		1.6	4.4		4.4
				Bottom	6.7	28.0	28.0	8.7	8.7	35.3	35.3	72.8	72.2	4.7	4.6		4.6	2.6		2.6	2.6		8.7
M4	Fine	Moderate	14:54	Surface	1.1	28.1	28.0	9.1	9.1	35.0	35.0	94.3	93.5	6.1	6.0	6.0	0.4	0.3	0.6	1.9	2.0	2.9	
				Middle	5.0	27.9	28.0	9.1	9.1	35.1	35.1	92.8	92.5	6.0	6.0		0.2	0.2		0.2	2.5		2.4
				Bottom	9.0	27.9	27.9	9.1	9.1	35.2	35.2	90.7	90.5	5.9	5.8		1.3	1.2		1.2	4.3		4.3
M5	Fine	Moderate	15:59	Surface	1.0	27.8	27.8	8.7	8.7	35.3	35.3	89.7	88.6	5.8	5.7	5.8	4.8	4.4	5.1	6.5	6.5	8.9	
				Middle	6.0	27.8	27.8	8.7	8.7	35.4	35.4	90.5	89.8	5.8	5.8		5.6	6.1		6.1	9.9		9.9
				Bottom	11.0	27.7	27.7	8.8	8.8	35.5	35.4	92.8	91.9	6.0	5.9		4.5	4.8		4.8	10.4		10.4
M6	Fine	Moderate	15:48	Surface	-	-	-	-	-	-	-	-	-	-	6.0	-	-	0.5	-	-	6.6		
				Middle	2.0	28.2	28.2	8.8	8.8	35.1	35.1	93.7	93.6	6.0		6.0	0.5		0.5	0.5		6.6	6.6
				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 23 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.1 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.4 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.7 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 25 October 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	10:42	Surface	1.0	27.7 27.7	27.7	8.8 8.8	8.8	35.3 35.3	35.3	92.6 92.6	92.6	6.0 6.0	6.0	6.0	6.0	1.9 1.9	1.9	2.0	7.9 8.1	8.0	6.6
				Middle	9.0	27.7 27.7	27.7	8.8 8.9	8.8	35.3 35.2	35.2	92.3 92.3	92.3	6.0 6.0	6.0	6.0		1.9 1.9	1.9		5.0 5.3	5.2	
				Bottom	17.0	27.7 27.7	27.7	8.8 8.9	8.9	35.3 35.3	35.3	92.1 92.0	92.1	6.0 6.0	6.0	6.0		2.2 2.2	2.2		6.6 6.6	6.6	
C2	Sunny	Moderate	9:49	Surface	1.0	27.7 27.7	27.7	8.5 8.7	8.6	35.3 35.3	35.3	94.0 94.0	94.0	6.1 6.1	6.1	6.0	1.9 1.9	1.9	3.8	5.9 6.1	6.0	4.8	
				Middle	16.1	27.7 27.7	27.7	8.5 8.7	8.6	35.3 35.3	35.3	92.7 92.7	92.7	6.0 6.0	6.0		2.2 2.2	2.2		3.6 3.7	3.7		
				Bottom	31.0	27.6 27.6	27.6	8.7 8.7	8.7	35.4 35.4	35.4	90.4 90.4	90.4	5.9 5.9	5.9		5.9	7.3 7.4		7.3	4.6 4.7		4.7
G1	Sunny	Moderate	10:16	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.6 92.5	92.6	6.0 6.0	6.0	6.0	1.6 1.6	1.6	1.7	2.6 2.7	2.7	3.2	
				Middle	4.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	6.0 6.0	6.0		1.8 1.8	1.8		2.5 2.7	2.6		
				Bottom	7.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.5 92.5	92.5	6.0 6.0	6.0		6.0	1.8 1.8		1.8	4.3 4.2		4.3
G2	Sunny	Moderate	10:05	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	93.3 93.3	93.3	6.0 6.0	6.0	6.0	2.2 2.2	2.2	2.1	8.6 8.1	8.4	7.2	
				Middle	5.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	93.1 93.1	93.1	6.0 6.0	6.0		2.1 2.1	2.1		5.5 5.4	5.5		
				Bottom	9.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	6.0 6.0	6.0		6.0	2.2 2.2		2.2	7.6 8.2		7.9
G3	Sunny	Moderate	10:20	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.7 92.6	92.7	6.0 6.0	6.0	6.0	1.5 1.5	1.5	1.6	6.2 6.4	6.3	7.7	
				Middle	4.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	6.0 6.0	6.0		1.6 1.6	1.6		13.4 13.1	13.3		
				Bottom	7.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	6.0 6.0	6.0		6.0	1.7 1.7		1.7	3.7 3.6		3.7
G4	Sunny	Moderate	10:28	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.6 92.6	92.6	6.0 6.0	6.0	6.0	1.7 1.8	1.7	1.8	3.4 3.4	3.4	8.1	
				Middle	4.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	6.0 6.0	6.0		1.8 1.8	1.8		12.4 12.7	12.6		
				Bottom	7.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.3 92.3	92.3	6.0 6.0	6.0		6.0	1.9 1.9		1.9	8.4 8.0		8.2
M1	Sunny	Moderate	10:11	Surface	1.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.7 92.7	92.7	6.0 6.0	6.0	6.0	1.6 1.6	1.6	1.7	3.1 3.2	3.2	3.2	
				Middle	2.9	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.8 92.8	92.8	6.0 6.0	6.0		1.8 1.8	1.8		3.8 3.9	3.9		
				Bottom	5.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.6 92.6	92.6	6.0 6.0	6.0		6.0	1.6 1.6		1.6	2.6 2.6		2.6
M2	Sunny	Moderate	9:59	Surface	1.1	27.7 27.7	27.7	9.0 8.9	8.9	35.3 35.3	35.3	93.1 93.1	93.1	6.0 6.0	6.0	6.0	1.9 1.9	1.9	2.2	5.2 5.3	5.3	4.7	
				Middle	6.0	27.7 27.7	27.7	9.0 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	6.0 6.0	6.0		2.4 2.4	2.4		4.7 4.9	4.8		
				Bottom	11.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	6.0 6.0	6.0		6.0	2.3 2.3		2.3	3.9 4.0		4.0
M3	Sunny	Moderate	10:24	Surface	1.0	27.7 27.7	27.7	9.0 9.0	9.0	35.2 35.2	35.2	92.5 92.5	92.5	6.0 6.0	6.0	6.0	1.7 1.7	1.7	1.7	4.2 4.3	4.3	5.1	
				Middle	4.1	27.7 27.7	27.7	9.0 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	6.0 6.0	6.0		1.6 1.6	1.6		3.5 3.6	3.6		
				Bottom	7.1	27.7 27.7	27.7	9.0 8.9	8.9	35.3 35.3	35.3	92.4 92.4	92.4	6.0 6.0	6.0		6.0	1.7 1.7		1.7	7.6 7.3		7.5
M4	Sunny	Moderate	9:54	Surface	1.1	27.7 27.7	27.7	8.7 8.7	8.7	35.3 35.3	35.3	93.3 93.3	93.3	6.0 6.0	6.0	6.0	2.1 2.1	2.1	2.1	2.2 2.1	2.2	3.3	
				Middle	5.0	27.7 27.7	27.7	8.7 8.8	8.7	35.3 35.3	35.3	93.1 93.1	93.1	6.0 6.0	6.0		2.0 2.0	2.0		2.8 2.7	2.8		
				Bottom	9.1	27.7 27.7	27.7	8.7 8.8	8.8	35.3 35.3	35.3	92.9 92.9	92.9	6.0 6.0	6.0		6.0	2.1 2.1		2.1	5.0 5.1		5.1
M5	Sunny	Moderate	10:37	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	6.0 6.0	6.0	6.0	1.8 1.7	1.8	1.8	7.2 7.3	7.3	5.9	
				Middle	6.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	6.0 6.0	6.0		1.8 1.8	1.8		7.2 7.2	7.2		
				Bottom	11.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.2 92.2	92.2	6.0 6.0	6.0		6.0	2.0 1.9		1.9	3.3 3.4		3.4
M6	Sunny	Moderate	10:32	Surface	0.0	- -	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.0	0.0 0.0	0.0	1.8	0.0 0.0	0.0	2.4	
				Middle	2.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.5 92.5	92.5	6.0 6.0	6.0		1.8 1.8	1.8		2.3 2.4	2.4		
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0		0.0	0.0		0.0	0.0		0.0

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 25 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 9.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 25 October 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	17:08	Surface	1.0	27.7 27.7	27.7	8.8 8.9	8.8	35.3 35.3	35.3	92.6 92.6	92.6	6.0 6.0	6.0	6.0	6.0	1.8 1.8	1.8	2.0	2.6 2.6	2.6	3.1	
				Middle	9.0	27.7 27.7	27.7	8.8 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	92.3	6.0 6.0	6.0		6.0	1.9 1.9		1.9	3.0 2.9		3.0
				Bottom	17.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.0 92.0	92.0	92.0	6.0 6.0	6.0		6.0	2.2 2.3		2.2	3.7 3.9		3.8
C2	Sunny	Moderate	16:16	Surface	1.0	27.7 27.7	27.7	8.5 8.7	8.6	35.3 35.3	35.3	94.0 93.9	94.0	6.1 6.1	6.1	6.0	1.9 1.8	1.8	3.7	4.5 4.8	4.7	4.5		
				Middle	16.1	27.7 27.7	27.7	8.5 8.7	8.6	35.3 35.3	35.3	92.8 92.8	92.8	92.8	6.0 6.0		6.0	2.0 2.0		2.0	3.5 3.4		3.5	
				Bottom	31.0	27.6 27.6	27.6	8.7 8.7	8.7	35.4 35.4	35.4	90.4 90.4	90.4	90.4	5.9 5.9		5.9	5.9		7.3 7.0	7.2		5.4 5.3	5.4
G1	Sunny	Moderate	16:43	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.5 92.5	92.5	6.0 6.0	6.0	6.0	1.7 1.6	1.6	1.7	10.0 10.2	10.1	9.1		
				Middle	4.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	92.4	6.0 6.0		6.0	6.0		1.7 1.7	1.7		13.8 13.9	13.9
				Bottom	7.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.5 92.5	92.5	92.5	6.0 6.0		6.0	6.0		1.8 1.8	1.8		3.2 3.2	3.2
G2	Sunny	Moderate	16:32	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	93.3 93.3	93.3	6.0 6.0	6.0	6.0	2.2 2.2	2.2	2.2	5.8 6.1	6.0	4.5		
				Middle	5.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	93.1 93.1	93.1	93.1	6.0 6.0		6.0	6.0		2.1 2.1	2.1		3.8 3.8	3.8
				Bottom	9.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	92.9	6.0 6.0		6.0	6.0		2.3 2.3	2.3		3.7 3.7	3.7
G3	Sunny	Moderate	16:47	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.7 92.7	92.7	6.0 6.0	6.0	6.0	1.5 1.5	1.5	1.6	3.0 3.2	3.1	2.6		
				Middle	4.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	92.4	6.0 6.0		6.0	6.0		1.6 1.6	1.6		1.3 1.2	1.3
				Bottom	7.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.3 92.3	92.3	92.3	6.0 6.0		6.0	6.0		1.7 1.7	1.7		3.4 3.3	3.4
G4	Sunny	Moderate	16:55	Surface	1.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.6 92.6	92.6	6.0 6.0	6.0	6.0	1.8 1.8	1.8	1.8	3.9 3.9	3.9	4.1		
				Middle	4.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.4 92.4	92.4	92.4	6.0 6.0		6.0	6.0		1.8 1.8	1.8		3.1 3.0	3.1
				Bottom	7.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.2 92.2	92.2	92.2	6.0 6.0		6.0	6.0		1.9 1.9	1.9		5.2 5.2	5.2
M1	Sunny	Moderate	16:38	Surface	1.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.8 92.7	92.8	6.0 6.0	6.0	6.0	1.6 1.5	1.5	1.6	7.7 8.0	7.9	6.5		
				Middle	2.9	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.8 92.8	92.8	92.8	6.0 6.0		6.0	6.0		1.8 1.8	1.8		5.3 5.5	5.4
				Bottom	5.1	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.6 92.6	92.6	92.6	6.0 6.0		6.0	6.0		1.5 1.5	1.5		5.9 6.3	6.1
M2	Sunny	Moderate	16:26	Surface	1.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	93.1 93.1	93.1	6.0 6.0	6.0	6.0	1.9 1.8	1.9	2.2	8.9 9.2	9.1	7.0		
				Middle	6.0	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	92.9	6.0 6.0		6.0	6.0		2.4 2.4	2.4		4.2 3.9	4.1
				Bottom	11.1	27.7 27.7	27.7	8.9 8.9	8.9	35.3 35.3	35.3	92.9 92.9	92.9	92.9	6.0 6.0		6.0	6.0		2.3 2.3	2.3		7.7 7.9	7.8
M3	Sunny	Moderate	16:51	Surface	1.1	27.7 27.7	27.7	9.0 9.0	9.0	35.2 35.2	35.2	92.5 92.5	92.5	6.0 6.0	6.0	6.0	1.7 1.7	1.7	1.7	4.0 4.2	4.1	4.0		
				Middle	4.0	27.7 27.7	27.7	9.0 9.0	9.0	35.2 35.2	35.2	92.3 92.3	92.3	92.3	6.0 6.0		6.0	6.0		1.6 1.6	1.6		3.3 3.4	3.4
				Bottom	7.1	27.7 27.7	27.7	9.0 8.9	8.9	35.3 35.3	35.3	92.4 92.4	92.4	92.4	6.0 6.0		6.0	6.0		1.7 1.7	1.7		4.5 4.4	4.5
M4	Sunny	Moderate	16:21	Surface	1.1	27.7 27.7	27.7	8.7 8.7	8.7	35.3 35.3	35.3	93.3 93.3	93.3	6.0 6.0	6.0	6.0	2.1 2.1	2.1	2.0	6.4 5.9	6.2	6.9		
				Middle	5.0	27.7 27.7	27.7	8.7 8.8	8.7	35.3 35.3	35.3	93.1 93.1	93.1	93.1	6.0 6.0		6.0	6.0		1.9 1.9	1.9		7.1 6.9	7.0
				Bottom	9.1	27.7 27.7	27.7	8.7 8.8	8.8	35.3 35.3	35.3	92.9 92.9	92.9	92.9	6.0 6.0		6.0	6.0		2.1 2.1	2.1		7.3 7.7	7.5
M5	Sunny	Moderate	17:04	Surface	1.0	27.7 27.7	27.7	8.9 8.8	8.9	35.2 35.2	35.2	92.4 92.4	92.4	6.0 6.0	6.0	6.0	1.8 1.8	1.8	1.9	3.4 3.4	3.4	3.3		
				Middle	6.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.2 92.2	92.2	92.2	6.0 6.0		6.0	6.0		1.9 1.9	1.9		4.0 4.2	4.1
				Bottom	11.0	27.7 27.7	27.7	8.8 8.9	8.9	35.3 35.3	35.3	92.2 92.2	92.2	92.2	6.0 6.0		6.0	6.0		1.9 1.9	1.9		2.5 2.5	2.5
M6	Sunny	Moderate	16:59	Surface	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	6.0	0.0 0.0	0.0	1.8	0.0 0.0	0.0	8.5		
				Middle	2.0	27.7 27.7	27.7	8.9 8.9	8.9	35.2 35.2	35.2	92.5 92.5	92.5	92.5	6.0 6.0		6.0	6.0		1.8 1.8	1.8		8.3 8.7	8.5
				Bottom	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0 0.0	0.0	0.0	0.0 0.0		0.0	0.0		0.0	0.0		0.0	0.0

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 25 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C1: 2.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C1: 2.9 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 3.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 3.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 3.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 3.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 4.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 4.9 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	12:32	Surface	1.0	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.6 89.6	89.6	5.8 5.8	5.8	5.8	1.8 1.8	1.8	2.1	4.2 4.3	4.3	5.2
				Middle	8.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.3 89.3	89.3	5.8 5.8	5.8		2.1 2.1	2.1		9.0		
				Bottom	17.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.2 89.2	89.2	5.8 5.8	5.8		2.4 2.4	2.4		2.5		
C2	Sunny	Calm	11:04	Surface	1.0	27.4 27.4	27.4	8.6 8.6	8.6	35.3 35.3	35.3	94.3 94.2	94.3	6.1 6.1	6.1	6.0	1.3 1.3	1.3	1.9	5.3 5.3	5.3	4.3
				Middle	16.1	27.4 27.4	27.4	8.8 8.8	8.8	35.3 35.3	35.3	90.6 90.6	90.6	5.9 5.9	5.9		1.6 1.6	1.6		2.7 2.6		
				Bottom	31.0	27.3 27.3	27.3	9.0 9.0	9.0	35.4 35.5	35.4	90.1 90.1	90.1	5.9 5.9	5.9		2.8 3.0	2.9		5.1 5.1		
G1	Sunny	Calm	11:39	Surface	1.0	27.3 27.3	27.3	9.3 9.3	9.3	34.6 34.7	34.6	95.5 95.5	95.5	6.2 6.2	6.2	6.2	0.4 0.4	0.4	1.0	2.7 2.7	2.7	5.3
				Middle	3.9	27.4 27.4	27.4	9.3 9.3	9.3	35.2 35.1	35.1	94.5 94.6	94.6	6.2 6.2	6.2		0.7 0.7	0.7		6.8 6.8		
				Bottom	7.0	27.3 27.3	27.3	9.3 9.3	9.3	35.4 35.4	35.4	92.5 92.5	92.5	6.0 6.0	6.0		2.1 2.1	2.1		6.3 6.5		
G2	Sunny	Calm	11:23	Surface	1.0	27.3 27.3	27.3	9.2 9.2	9.2	34.5 34.3	34.4	95.4 95.4	95.4	6.2 6.3	6.3	6.3	1.2 1.2	1.2	1.8	3.6 3.6	3.6	4.3
				Middle	5.0	27.3 27.3	27.3	9.2 9.2	9.2	34.4 34.3	34.4	96.5 96.7	96.6	6.3 6.3	6.3		1.2 1.2	1.2		3.8 3.7		
				Bottom	9.0	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	88.9 88.9	88.9	5.8 5.8	5.8		2.9 2.9	2.9		5.6 5.5		
G3	Sunny	Calm	11:47	Surface	1.0	27.3 27.3	27.3	9.3 9.3	9.3	34.7 34.7	34.7	95.4 95.4	95.4	6.2 6.2	6.2	6.2	0.3 0.4	0.3	1.0	5.7 5.5	5.6	4.7
				Middle	4.0	27.4 27.4	27.4	9.3 9.3	9.3	35.2 35.2	35.2	94.3 94.2	94.3	6.1 6.1	6.1		0.7 0.7	0.7		3.4 3.5		
				Bottom	7.0	27.4 27.3	27.4	9.3 9.3	9.3	35.4 35.4	35.4	92.7 92.7	92.7	6.0 6.0	6.0		1.9 1.9	1.9		4.9 5.0		
G4	Sunny	Calm	12:00	Surface	1.0	27.4 27.4	27.4	9.3 9.3	9.3	34.6 34.7	34.7	95.8 95.5	95.7	6.3 6.2	6.2	6.2	6.3 6.3	6.3	3.6	5.7 5.8	5.8	5.1
				Middle	4.0	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	93.6 93.7	93.7	6.1 6.1	6.1		1.8 2.0	1.9		3.9 4.0		
				Bottom	7.0	27.3 27.3	27.3	9.2 9.2	9.2	35.4 35.4	35.4	90.7 90.6	90.7	5.9 5.9	5.9		2.5 2.7	2.6		5.6 5.6		
M1	Sunny	Calm	11:29	Surface	1.0	27.3 27.3	27.3	9.2 9.2	9.2	34.5 34.5	34.5	95.8 95.5	95.7	6.3 6.2	6.3	6.1	1.2 1.2	1.2	2.1	3.8 3.8	3.8	3.3
				Middle	3.0	27.4 27.4	27.4	9.2 9.2	9.2	35.1 35.0	35.0	91.5 91.7	91.6	6.0 6.0	6.0		2.1 2.0	2.0		2.3 2.2		
				Bottom	5.0	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	88.8 88.8	88.8	5.8 5.8	5.8		3.0 3.0	3.0		3.8 4.1		
M2	Sunny	Calm	11:16	Surface	0.9	27.3 27.3	27.3	9.1 9.1	9.1	35.2 35.2	35.2	95.4 95.1	95.3	6.2 6.2	6.2	6.1	0.8 0.7	0.8	1.2	2.9 3.0	3.0	4.1
				Middle	5.9	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	92.7 92.8	92.8	6.0 6.0	6.0		1.2 1.2	1.2		5.0 5.3		
				Bottom	11.0	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	91.3 91.2	91.3	5.9 5.9	5.9		1.6 1.5	1.5		4.1 4.1		
M3	Sunny	Calm	11:52	Surface	1.1	27.3 27.3	27.3	9.3 9.3	9.3	34.9 34.9	34.9	95.5 95.1	95.3	6.2 6.2	6.2	6.1	1.3 1.3	1.3	1.3	2.8 2.6	2.7	5.0
				Middle	4.0	27.4 27.4	27.4	9.2 9.2	9.2	35.0 35.0	35.0	93.3 93.4	93.4	6.1 6.1	6.1		1.1 1.1	1.1		7.8 7.4		
				Bottom	6.9	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	90.1 90.0	90.1	5.9 5.9	5.9		1.5 1.5	1.5		4.7 4.7		
M4	Sunny	Calm	11:10	Surface	1.0	27.3 27.3	27.3	9.1 9.1	9.1	35.2 35.2	35.2	97.3 95.6	96.5	6.3 6.2	6.3	6.2	0.8 0.8	0.8	1.1	3.7 3.7	3.7	4.7
				Middle	5.1	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	93.5 93.6	93.6	6.1 6.1	6.1		0.9 0.9	0.9		6.9 7.1		
				Bottom	9.0	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	90.9 90.9	90.9	5.9 5.9	5.9		1.6 1.6	1.6		3.5 3.2		
M5	Sunny	Calm	12:21	Surface	1.0	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	95.1 95.0	95.1	6.2 6.2	6.2	6.1	1.6 1.6	1.6	1.7	3.3 3.4	3.4	4.0
				Middle	5.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	91.0 91.2	91.1	5.9 5.9	5.9		1.7 1.7	1.7		4.3 4.3		
				Bottom	10.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.8 89.8	89.8	5.8 5.8	5.8		1.9 1.9	1.9		4.2 4.4		
M6	Sunny	Calm	12:08	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	6.3	-	-	4.6
				Middle	2.0	27.3 17.3	22.3	9.3 9.3	9.3	35.3 35.3	35.3	95.2 95.1	95.2	6.2 6.2	6.2		6.2 6.3	6.3		4.6 4.5		
				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 28 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.9 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.9 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.6 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

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 October 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	18:34	Surface	1.1	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.7 89.7	89.7	5.8 5.8	5.8	5.8	1.9 1.9	1.9	2.1	7.9 7.9	7.9	4.8
				Middle	8.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.3 89.3	89.3	5.8 5.8	5.8		2.1 2.2	2.2		3.1 3.2	3.2	
				Bottom	17.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.2 89.2	89.2	5.8 5.8	5.8		2.4 2.4	2.4		3.2 3.4	3.3	
C2	Sunny	Calm	16:50	Surface	1.0	27.4 27.4	27.4	8.6 8.6	8.6	35.3 35.3	35.3	94.1 94.0	94.1	6.1 6.1	6.1	6.0	1.3 1.3	1.3	2.1	6.2 6.2	6.2	6.0
				Middle	16.1	27.4 27.4	27.4	8.8 8.8	8.8	35.3 35.3	35.3	90.7 90.7	90.7	5.9 5.9	5.9		1.7 1.6	1.6		5.7 6.1	5.9	
				Bottom	31.0	27.3 27.3	27.3	9.0 9.0	9.0	35.5 35.5	35.5	90.1 90.1	90.1	5.9 5.9	5.9		3.1 3.3	3.2		6.0 5.9	5.9	
G1	Sunny	Calm	17:29	Surface	1.0	27.2 27.3	27.3	9.3 9.3	9.3	34.4 34.6	34.5	95.7 95.6	95.7	6.3 6.3	6.3	6.2	0.4 0.4	0.4	1.0	17.9 17.2	17.6	10.7
				Middle	3.9	27.4 27.4	27.4	9.3 9.3	9.3	35.2 35.2	35.2	94.4 94.5	94.5	6.1 6.1	6.1		0.7 0.7	0.7		9.2 9.7	9.5	
				Bottom	7.0	27.3 27.3	27.3	9.3 9.3	9.3	35.4 35.4	35.4	92.6 92.6	92.6	6.0 6.0	6.0		2.0 2.0	2.0		4.9 5.0	5.0	
G2	Sunny	Calm	17:09	Surface	1.0	27.3 27.3	27.3	9.2 9.2	9.2	34.5 34.5	34.5	95.5 95.4	95.5	6.2 6.2	6.2	6.3	1.2 1.2	1.2	1.8	7.4 7.2	7.3	8.4
				Middle	5.0	27.3 27.3	27.3	9.2 9.2	9.2	34.5 34.4	34.5	95.9 96.1	96.0	6.3 6.3	6.3		1.2 1.2	1.2		8.8 9.3	9.1	
				Bottom	9.0	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	89.0 88.9	89.0	5.8 5.8	5.8		2.9 2.9	2.9		8.9 8.7	8.8	
G3	Sunny	Calm	17:37	Surface	1.0	27.3 27.3	27.3	9.3 9.3	9.3	34.7 34.7	34.7	95.3 95.3	95.3	6.2 6.2	6.2	6.2	0.4 0.4	0.4	1.0	4.1 4.1	4.1	4.3
				Middle	4.0	27.4 27.4	27.4	9.3 9.3	9.3	35.2 35.2	35.2	94.3 94.2	94.3	6.1 6.1	6.1		0.7 0.7	0.7		4.2 4.3	4.3	
				Bottom	7.0	27.3 27.3	27.3	9.3 9.3	9.3	35.4 35.4	35.4	92.7 92.5	92.6	6.0 6.0	6.0		2.0 2.1	2.1		4.6 4.6	4.6	
G4	Sunny	Calm	17:52	Surface	1.0	27.4 27.4	27.4	9.2 9.2	9.2	34.8 34.8	34.8	95.4 95.3	95.4	6.2 6.2	6.2	6.2	6.3 6.3	6.3	3.8	3.3 3.1	3.2	5.1
				Middle	3.9	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	93.8 93.9	93.9	6.1 6.1	6.1		2.2 2.5	2.3		3.0 3.1	3.1	
				Bottom	7.0	27.3 27.3	27.3	9.2 9.2	9.2	35.4 35.5	35.4	90.5 90.4	90.5	5.9 5.9	5.9		2.8 3.0	2.9		9.2 9.0	9.1	
M1	Sunny	Calm	17:16	Surface	1.0	27.3 27.3	27.3	9.2 9.2	9.2	34.5 34.5	34.5	95.4 95.4	95.4	6.2 6.2	6.2	6.1	1.2 1.2	1.2	2.0	7.1 6.9	7.0	4.4
				Middle	3.0	27.4 27.4	27.4	9.2 9.2	9.2	35.0 35.0	35.0	91.9 92.1	92.0	6.0 6.0	6.0		1.9 1.9	1.9		2.8 3.0	2.9	
				Bottom	5.0	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	88.7 88.7	88.7	5.8 5.8	5.8		3.0 3.0	3.0		3.3 3.2	3.3	
M2	Sunny	Calm	17:02	Surface	0.9	27.3 27.3	27.3	9.1 9.1	9.1	35.2 35.2	35.2	95.0 94.7	94.9	6.2 6.2	6.2	6.1	0.7 0.7	0.7	1.0	4.7 4.9	4.8	6.6
				Middle	6.0	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	92.9 93.2	93.1	6.0 6.1	6.1		1.1 1.0	1.1		6.5 6.3	6.4	
				Bottom	11.5	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	91.1 91.1	91.1	5.9 5.9	5.9		1.3 1.2	1.3		9.0 8.4	8.7	
M3	Sunny	Calm	17:45	Surface	1.0	27.3 27.3	27.3	9.3 9.3	9.3	34.9 34.9	34.9	95.9 95.6	95.8	6.3 6.2	6.2	6.1	1.2 1.3	1.3	1.3	6.7 7.1	6.9	5.5
				Middle	4.0	27.4 27.4	27.4	9.2 9.2	9.2	35.0 35.0	35.0	93.0 93.1	93.1	6.1 6.1	6.1		1.1 1.1	1.1		2.4 2.4	2.4	
				Bottom	6.9	27.4 27.4	27.4	9.2 9.2	9.2	35.2 35.2	35.2	90.2 90.1	90.2	5.9 5.9	5.9		1.5 1.5	1.5		7.3 7.3	7.3	
M4	Sunny	Calm	16:56	Surface	1.1	27.3 27.3	27.3	9.1 9.1	9.1	35.2 35.2	35.2	97.8 97.5	97.7	6.4 6.4	6.4	6.2	0.8 0.8	0.8	1.1	5.3 5.5	5.4	4.7
				Middle	5.0	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	93.3 93.4	93.4	6.1 6.1	6.1		1.0 1.0	1.0		4.8 4.4	4.6	
				Bottom	9.0	27.4 27.4	27.4	9.1 9.1	9.1	35.3 35.3	35.3	91.0 91.0	91.0	5.9 5.9	5.9		1.6 1.6	1.6		3.9 4.0	4.0	
M5	Sunny	Calm	18:24	Surface	1.0	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	94.9 94.7	94.8	6.2 6.2	6.2	6.1	1.7 1.7	1.7	1.8	9.0 8.8	8.9	5.6
				Middle	5.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	91.3 91.5	91.4	5.9 6.0	5.9		1.8 1.7	1.8		2.8 2.9	2.9	
				Bottom	10.9	27.4 27.4	27.4	9.1 9.1	9.1	35.2 35.2	35.2	89.6 89.6	89.6	5.8 5.8	5.8		1.9 1.9	1.9		4.9 5.1	5.0	
M6	Sunny	Calm	18:04	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	6.4	-	-	5.2
				Middle	2.0	27.3 27.3	27.3	9.2 9.2	9.2	35.3 35.3	35.3	95.1 94.9	95.0	6.2 6.2	6.2		6.6 6.1	6.4		5.0 5.3	5.2	
				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 28 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 2.9 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.1 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 9.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 10.3 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 9.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 10.3 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.3 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 30 October 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	14:53	Surface	1.1	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	93.9 93.5	93.7	6.2 6.2	6.2	6.1	0.9 0.9	0.9	1.1	4.8 4.6	4.7	4.5
				Middle	9.1	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	91.1 91.2	91.2	6.1 6.1	6.1		1.1	1.1		5.3 5.4	5.3	
				Bottom	17.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	91.1 91.1	91.1	6.1 6.1	6.1		1.4 1.4	1.4		3.4 3.4	3.4	
C2	Sunny	Calm	13:14	Surface	1.1	27.0 27.0	27.0	8.2 8.2	8.2	32.4 32.4	32.4	89.3 89.3	89.3	5.9 5.9	5.9	5.9	1.3 1.4	1.3	1.8	5.3 5.1	5.2	5.3
				Middle	16.5	27.0 27.0	27.0	8.2 8.2	8.2	32.4 32.4	32.4	88.3 88.3	88.3	5.9 5.9	5.9		1.4 1.5	1.4		4.8 5.0	4.9	
				Bottom	32.1	26.9 26.9	26.9	8.2 8.2	8.2	32.5 32.6	32.5	88.4 88.7	88.6	5.9 5.9	5.9		2.5 2.6	2.5		5.7 5.9	5.8	
G1	Sunny	Calm	13:52	Surface	1.0	26.9 26.9	26.9	8.3 8.3	8.3	32.1 32.1	32.1	91.1 90.8	91.0	6.1 6.1	6.1	6.0	1.3 1.3	1.3	1.7	6.9 7.0	7.0	7.7
				Middle	4.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.7 89.0	88.9	5.9 5.9	5.9		1.8 1.7	1.7		9.0 9.1	9.1	
				Bottom	7.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.5	32.5	88.6 88.4	88.5	5.9 5.9	5.9		2.0 2.3	2.1		7.1 6.9	7.0	
G2	Sunny	Calm	13:32	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	93.5 93.1	93.3	6.2 6.2	6.2	6.1	1.2 1.2	1.2	1.6	5.0 4.8	4.9	5.8
				Middle	5.0	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	90.2 90.4	90.3	6.0 6.0	6.0		1.2 1.2	1.2		5.9 5.7	5.8	
				Bottom	9.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.2 90.2	90.2	6.0 6.0	6.0		2.3 2.3	2.3		6.7 6.5	6.6	
G3	Sunny	Calm	13:59	Surface	1.0	27.0 27.0	27.0	8.3 8.3	8.3	32.3 32.3	32.3	93.2 93.0	93.1	6.2 6.2	6.2	6.1	0.8 0.8	0.8	1.2	7.4 7.3	7.4	6.3
				Middle	4.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	89.5 89.4	89.5	6.0 6.0	6.0		1.0 1.0	1.0		5.3 5.4	5.4	
				Bottom	7.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.1 88.0	88.1	5.9 5.9	5.9		1.6 1.7	1.7		6.4 6.0	6.2	
G4	Sunny	Calm	14:13	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.3 32.3	32.3	92.1 91.9	92.0	6.1 6.1	6.1	6.0	1.9 2.0	1.9	2.0	7.7 7.3	7.5	7.1
				Middle	4.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.9 90.5	89.7	5.9 6.0	6.0		1.3 1.5	1.4		6.0 6.1	6.1	
				Bottom	7.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	86.7 86.6	86.7	5.8 5.8	5.8		2.5 2.7	2.6		8.1 7.6	7.9	
M1	Sunny	Calm	13:40	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	92.5 92.3	92.4	6.2 6.1	6.2	6.1	2.7 2.7	2.7	2.4	9.9 9.5	9.7	7.8
				Middle	3.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	91.0 91.1	91.1	6.1 6.1	6.1		2.6 2.5	2.5		10.1	10.0	
				Bottom	5.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	90.3 90.2	90.3	6.0 6.0	6.0		2.1 1.9	2.0		3.8 3.7	3.8	
M2	Sunny	Calm	13:27	Surface	1.0	26.9 26.9	26.9	8.3 8.3	8.3	32.3 32.3	32.3	94.4 94.3	94.4	6.3 6.3	6.3	6.2	1.4 1.4	1.4	2.1	5.6 5.8	5.7	7.0
				Middle	5.5	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.4	32.5	91.8 92.1	92.0	6.1 6.1	6.1		1.5 1.3	1.4		8.8 8.6	8.7	
				Bottom	10.1	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.3 90.2	90.3	6.0 6.0	6.0		3.4 3.5	3.5		6.5 6.4	6.5	
M3	Sunny	Calm	14:07	Surface	1.0	27.0 27.0	27.0	8.3 8.3	8.3	32.3 32.3	32.3	93.1 93.0	93.1	6.2 6.2	6.2	5.9	0.4 0.4	0.4	0.9	5.9 5.6	5.8	6.9
				Middle	4.1	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	83.9 84.1	84.0	5.6 5.6	5.6		1.0 1.0	1.0		5.3 5.3	5.3	
				Bottom	7.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	85.6 85.9	85.8	5.7 5.7	5.7		1.4 1.4	1.4		9.4 9.8	9.6	
M4	Sunny	Calm	13:20	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	91.3 90.1	90.7	6.1 6.0	6.0	6.0	2.1 2.5	2.3	2.3	7.0 7.0	7.0	6.9
				Middle	5.1	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	89.6 89.5	89.6	6.0 6.0	6.0		2.4 2.4	2.4		7.9 7.9	7.9	
				Bottom	9.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.3 90.3	90.3	6.0 6.0	6.0		2.3 2.3	2.3		5.9 5.9	5.9	
M5	Sunny	Calm	14:43	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	90.9 90.8	90.9	6.1 6.0	6.0	6.0	1.5 1.5	1.5	2.8	4.3 4.4	4.4	5.6
				Middle	6.0	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	89.3 89.3	89.3	5.9 5.9	5.9		3.2 3.2	3.2		7.0 7.2	7.1	
				Bottom	11.1	26.8 26.8	26.8	8.3 8.3	8.3	32.6 32.6	32.6	90.4 90.4	90.4	6.0 6.0	6.0		3.6 3.7	3.6		5.1 5.3	5.2	
M6	Sunny	Calm	14:25	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	0.5	-	-	9.5
				Middle	2.2	27.0 27.0	27.0	8.3 8.3	8.3	32.3 32.3	32.3	89.9 90.1	90.0	6.0 6.1	6.1		0.5 0.4	0.5		9.2 9.7	9.5	
				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 30 October 2019 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.5 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
 Water Quality Monitoring Results on 30 October 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	9:35	Surface	1.0	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	93.3 92.9	93.1	6.2 6.2	6.2	6.1	0.9 0.9	0.9	1.1	5.8 5.6	5.7	5.3
				Middle	8.7	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	91.3 91.5	91.4	6.1 6.1	6.1		1.1 1.1	1.1		6.2 6.4	6.3	
				Bottom	16.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	91.1 91.1	91.1	6.1 6.1	6.1		1.3 1.3	1.3		3.9 3.8	3.9	
C2	Sunny	Calm	8:03	Surface	1.0	27.0 27.0	27.0	8.1 8.2	8.2	32.3 32.3	32.3	89.3 89.3	89.3	5.9 5.9	5.9	5.9	1.2 1.3	1.2	1.7	5.2 4.9	5.1	5.0
				Middle	16.0	27.0 27.0	27.0	8.2 8.2	8.2	32.4 32.4	32.4	88.0 88.0	88.0	5.9 5.9	5.9		1.4 1.2	1.3		4.7 4.9	4.8	
				Bottom	31.1	26.9 26.9	26.9	8.2 8.2	8.2	32.5 32.5	32.5	88.2 88.3	88.3	5.9 5.9	5.9		2.3 2.5	2.4		5.2 5.1	5.2	
G1	Sunny	Calm	8:42	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.1 32.1	32.1	90.1 90.2	90.2	6.0 6.0	6.0	6.0	1.2 1.2	1.2	1.8	3.8 3.6	3.7	4.3
				Middle	3.7	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.2	32.3	89.2 89.8	89.5	5.9 6.0	6.0		1.5 1.4	1.5		4.5 4.3	4.4	
				Bottom	6.6	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	88.4 88.2	88.3	5.9 5.9	5.9		2.4 3.0	2.7		4.8 4.9	4.9	
G2	Sunny	Calm	8:25	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	92.9 92.8	92.9	6.2 6.2	6.2	6.1	1.2 1.2	1.2	1.5	4.5 4.4	4.5	4.0
				Middle	5.0	26.9 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	91.2 91.3	91.3	6.1 6.1	6.1		1.2 1.2	1.2		4.3 4.3	4.3	
				Bottom	9.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.6 90.6	90.6	6.0 6.0	6.0		2.2 2.2	2.2		3.2 3.3	3.3	
G3	Sunny	Calm	8:50	Surface	1.1	27.0 27.0	27.0	8.3 8.3	8.3	32.2 32.2	32.2	93.8 93.7	93.8	6.2 6.2	6.2	6.1	0.8 0.8	0.8	1.1	2.9 2.8	2.9	4.1
				Middle	3.7	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	89.7 89.6	89.7	6.0 6.0	6.0		1.0 1.0	1.0		3.3 3.5	3.4	
				Bottom	7.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.4 88.3	88.4	5.9 5.9	5.9		1.5 1.7	1.6		6.1 6.1	6.1	
G4	Sunny	Calm	9:03	Surface	1.0	26.9 26.9	26.9	8.3 8.3	8.3	32.3 32.3	32.3	92.6 92.3	92.5	6.2 6.2	6.2	6.0	1.8 1.9	1.8	1.9	6.0 5.9	6.0	5.6
				Middle	3.8	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	88.6 88.8	88.7	5.9 5.9	5.9		1.4 1.4	1.4		4.3 4.0	4.2	
				Bottom	6.5	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	86.9 86.8	86.9	5.8 5.8	5.8		2.3 2.4	2.4		6.7 6.5	6.6	
M1	Sunny	Calm	8:30	Surface	1.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	93.0 92.8	92.9	6.2 6.2	6.2	6.1	2.6 2.6	2.6	2.5	5.1 5.3	5.2	4.5
				Middle	3.1	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	90.8 90.9	90.9	6.0 6.1	6.0		2.6 2.6	2.6		4.5 4.6	4.6	
				Bottom	5.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	90.3 90.3	90.3	6.0 6.0	6.0		2.2 2.2	2.2		3.6 3.6	3.6	
M2	Sunny	Calm	8:17	Surface	1.0	26.9 26.9	26.9	8.3 8.3	8.3	32.3 32.3	32.3	94.8 94.6	94.7	6.3 6.3	6.3	6.2	1.5 1.4	1.5	2.0	6.0 5.8	5.9	5.5
				Middle	5.2	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	91.7 91.8	91.8	6.1 6.1	6.1		1.6 1.6	1.6		4.8 4.8	4.8	
				Bottom	9.5	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.7 90.5	90.6	6.0 6.0	6.0		2.9 3.0	3.0		5.7 5.6	5.7	
M3	Sunny	Calm	8:57	Surface	1.1	27.0 27.0	27.0	8.3 8.3	8.3	32.3 32.3	32.3	93.0 92.9	93.0	6.2 6.2	6.2	5.9	0.4 0.4	0.4	0.9	8.9 8.9	8.9	7.1
				Middle	3.8	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	84.3 85.5	84.9	5.6 5.7	5.6		1.0 0.8	0.9		7.2 7.0	7.1	
				Bottom	6.6	26.8 26.8	26.8	8.3 8.3	8.3	32.4 32.4	32.4	86.2 86.4	86.3	5.7 5.8	5.7		1.4 1.4	1.4		5.2 5.2	5.2	
M4	Sunny	Calm	8:10	Surface	1.0	27.0 27.0	27.0	8.3 8.3	8.3	32.4 32.4	32.4	89.9 89.8	89.9	6.0 6.0	6.0	6.0	2.3 2.3	2.3	2.1	2.9 2.7	2.8	4.7
				Middle	5.1	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	89.9 89.9	89.9	6.0 6.0	6.0		1.9 1.9	1.9		5.9 5.9	5.9	
				Bottom	9.0	26.9 26.9	26.9	8.3 8.3	8.3	32.6 32.6	32.6	90.3 90.3	90.3	6.0 6.0	6.0		2.2 2.1	2.1		5.2 5.5	5.4	
M5	Sunny	Calm	9:23	Surface	1.0	26.9 26.9	26.9	8.3 8.3	8.3	32.4 32.4	32.4	92.2 92.0	92.1	6.1 6.1	6.1	6.0	2.0 2.0	2.0	2.8	5.4 4.9	5.2	4.7
				Middle	5.6	26.9 26.9	26.9	8.3 8.3	8.3	32.5 32.5	32.5	89.3 89.3	89.3	5.9 5.9	5.9		3.3 3.3	3.3		3.7 3.8	3.8	
				Bottom	10.0	26.8 26.8	26.8	8.3 8.3	8.3	32.6 32.6	32.6	90.4 90.4	90.4	6.0 6.0	6.0		3.0 3.4	3.2		5.2 5.1	5.2	
M6	Sunny	Calm	9:10	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	0.5	-	-	6.7
				Middle	2.1	27.0 27.0	27.0	8.3 8.3	8.3	32.3 32.3	32.3	91.1 91.0	91.1	6.1 6.1	6.1		0.6 0.5	0.5		6.8 6.6	6.7	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

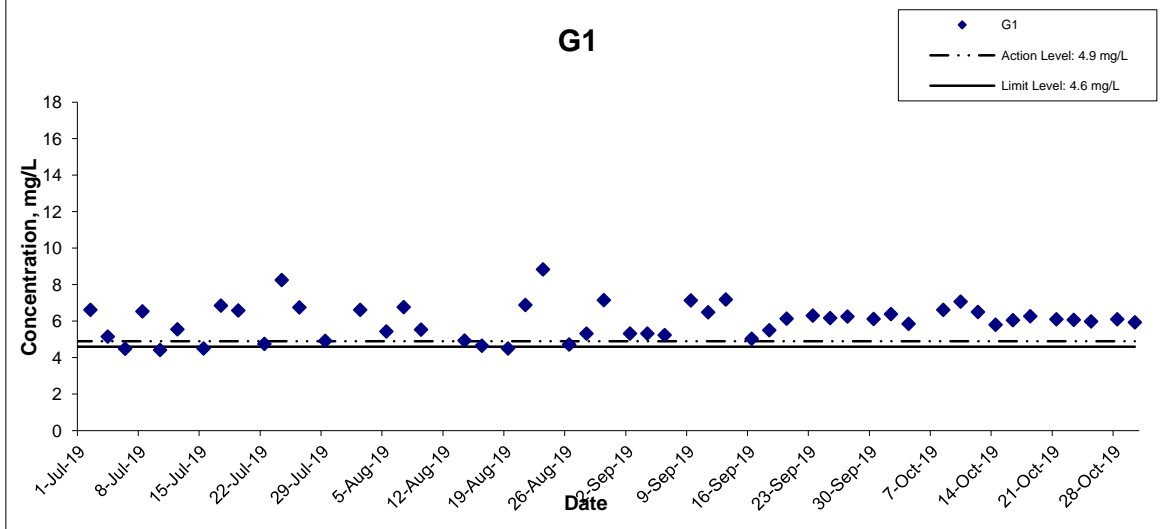
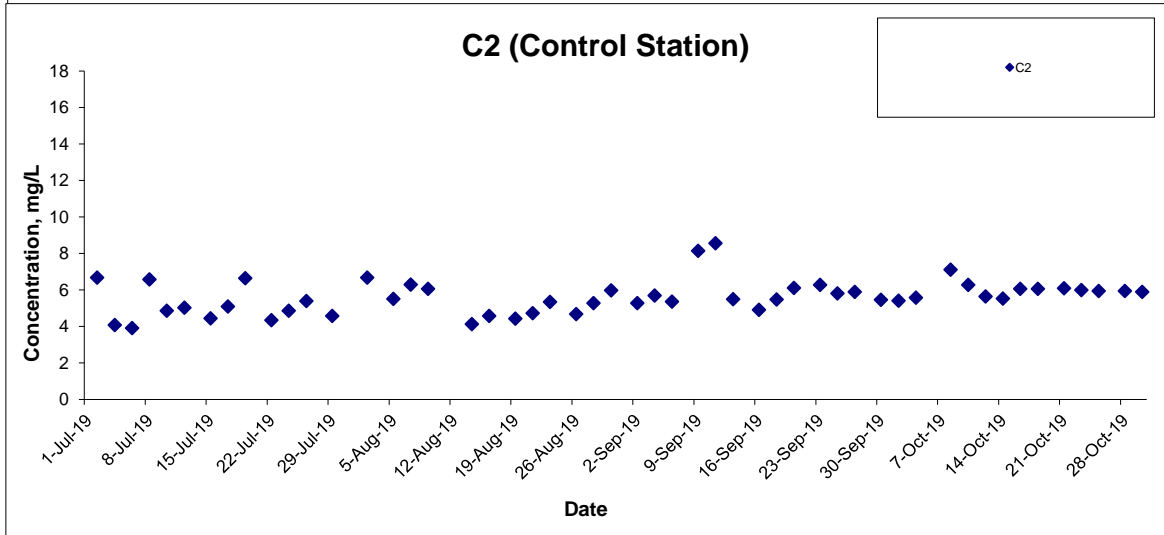
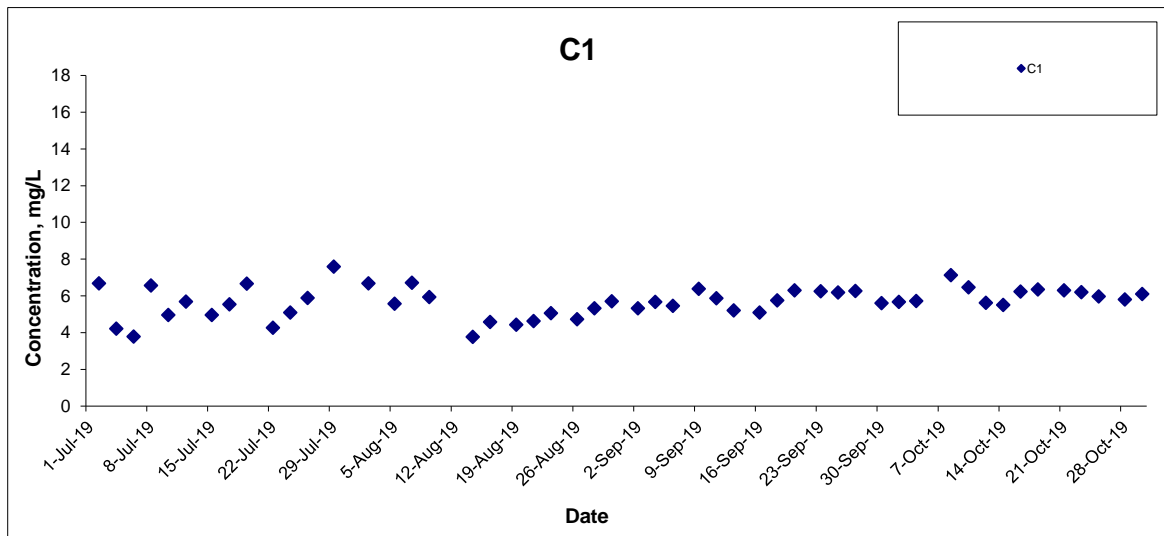
Appendix I - Action and Limit Levels for Marine Water Quality on 30 October 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C1: 1.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C1: 1.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 6.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 7.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 6.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 7.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C1: 4.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C1: 5.0 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

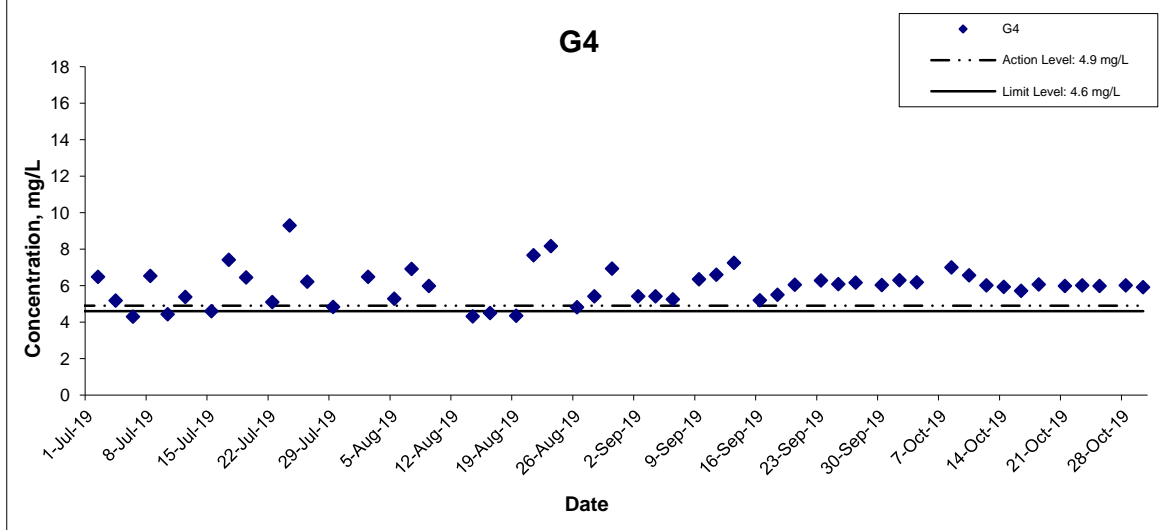
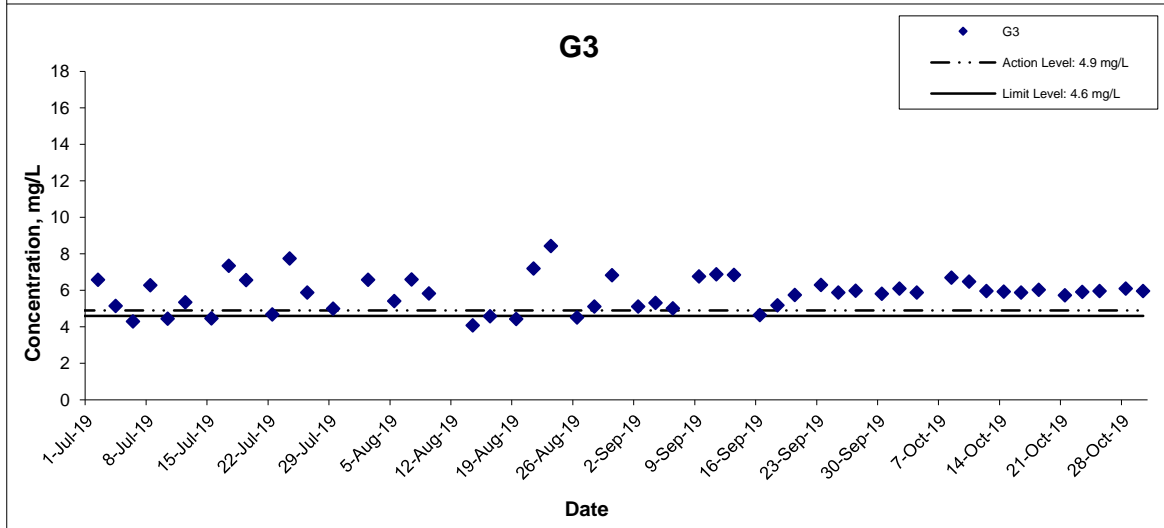
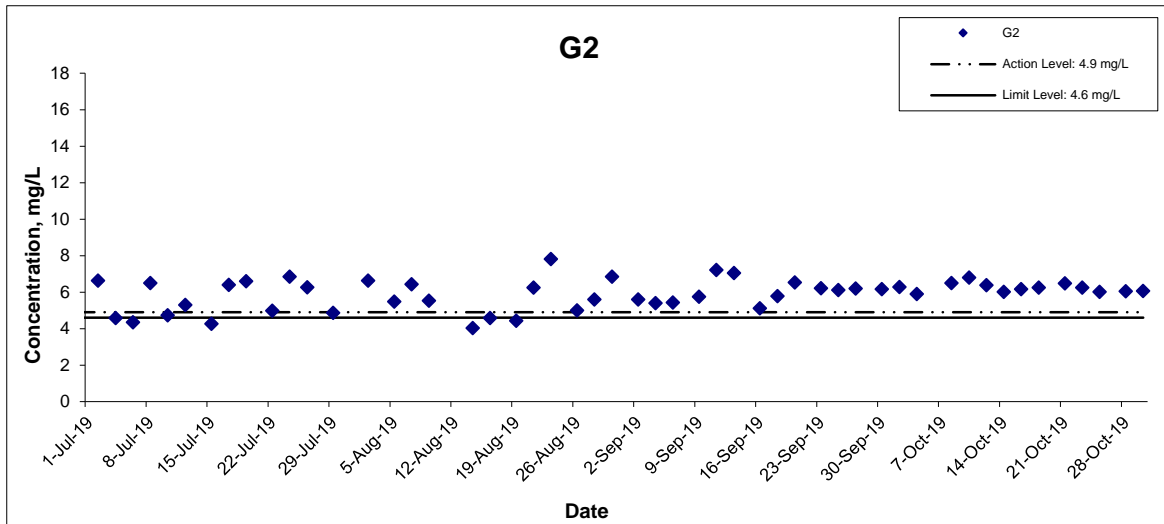
1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and 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



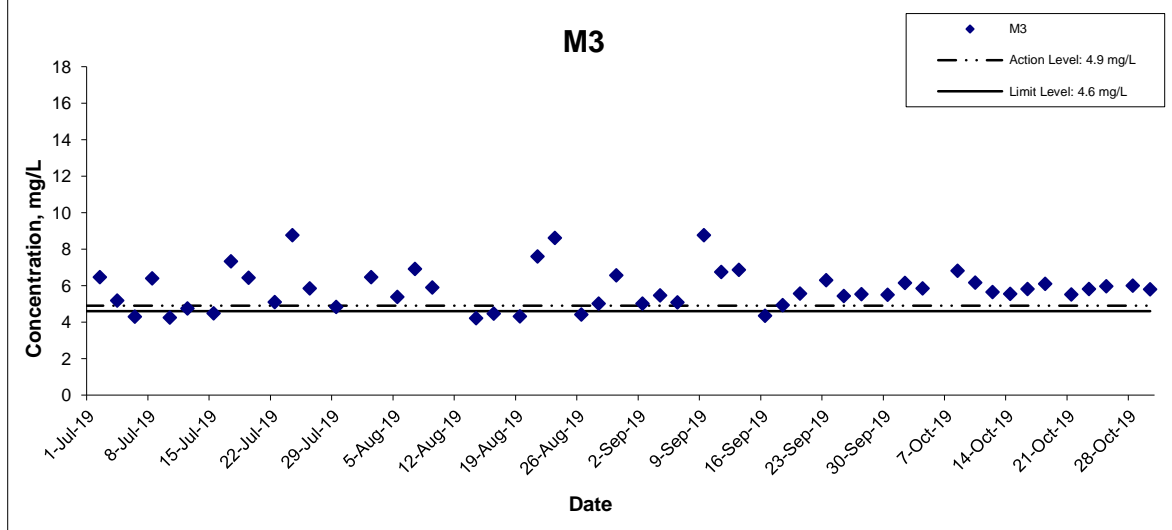
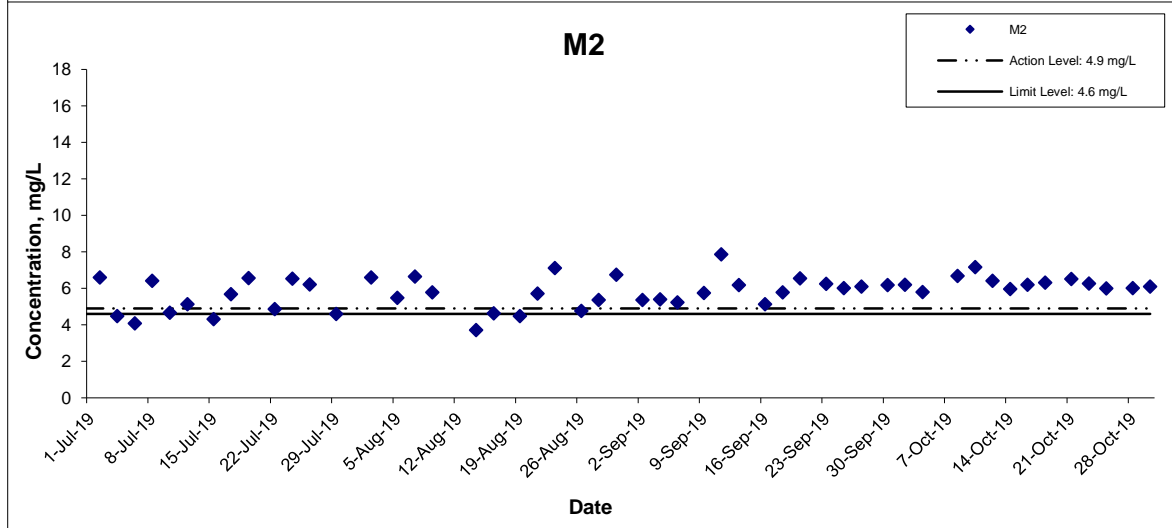
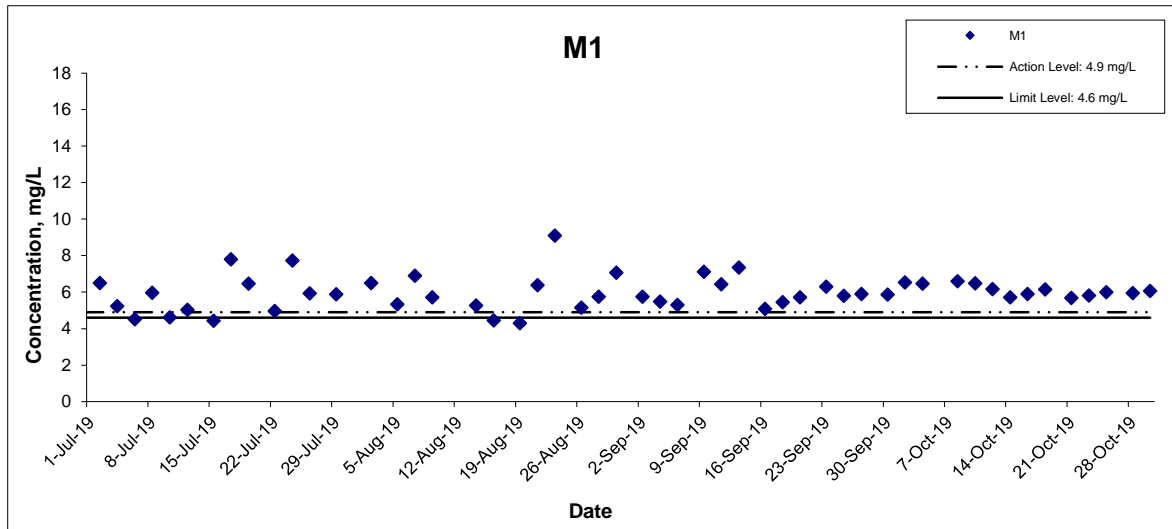
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Oct 19	Appendix I	

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



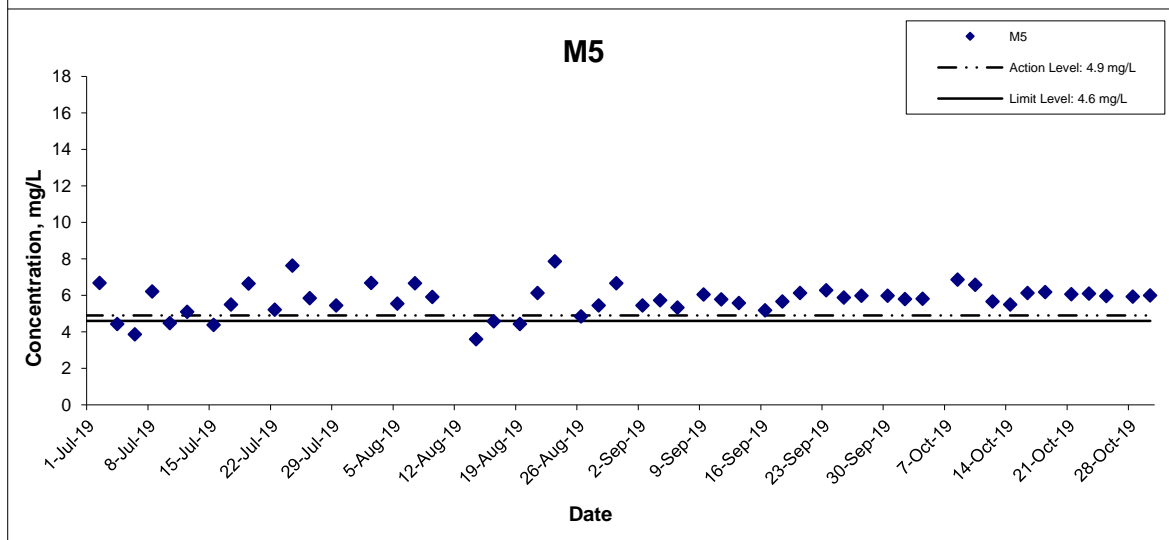
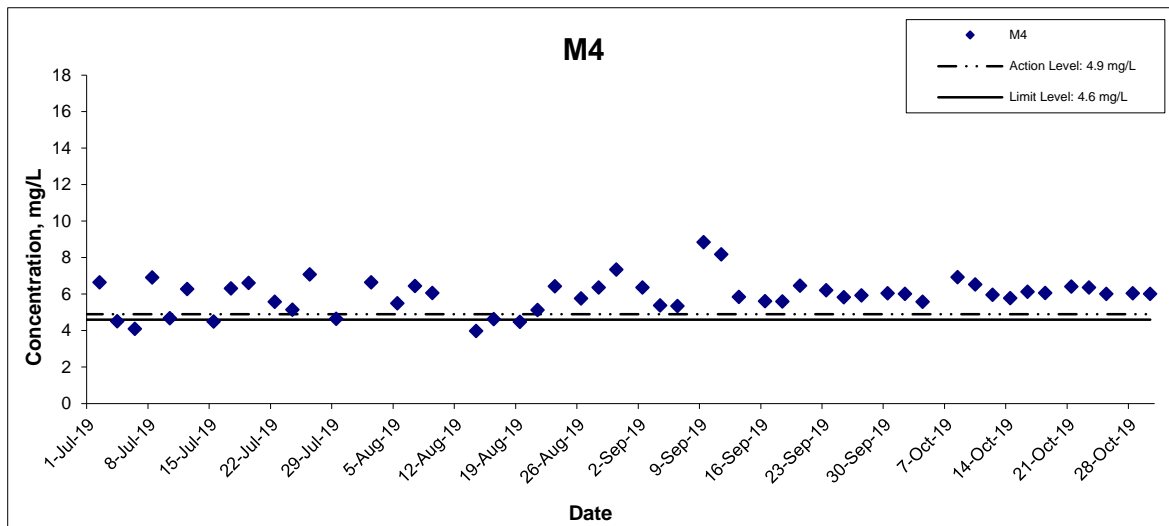
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	<p>Date</p> <p style="text-align: center;">Oct 19</p>	<p>Appendix</p> <p style="text-align: center;">I</p>	

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



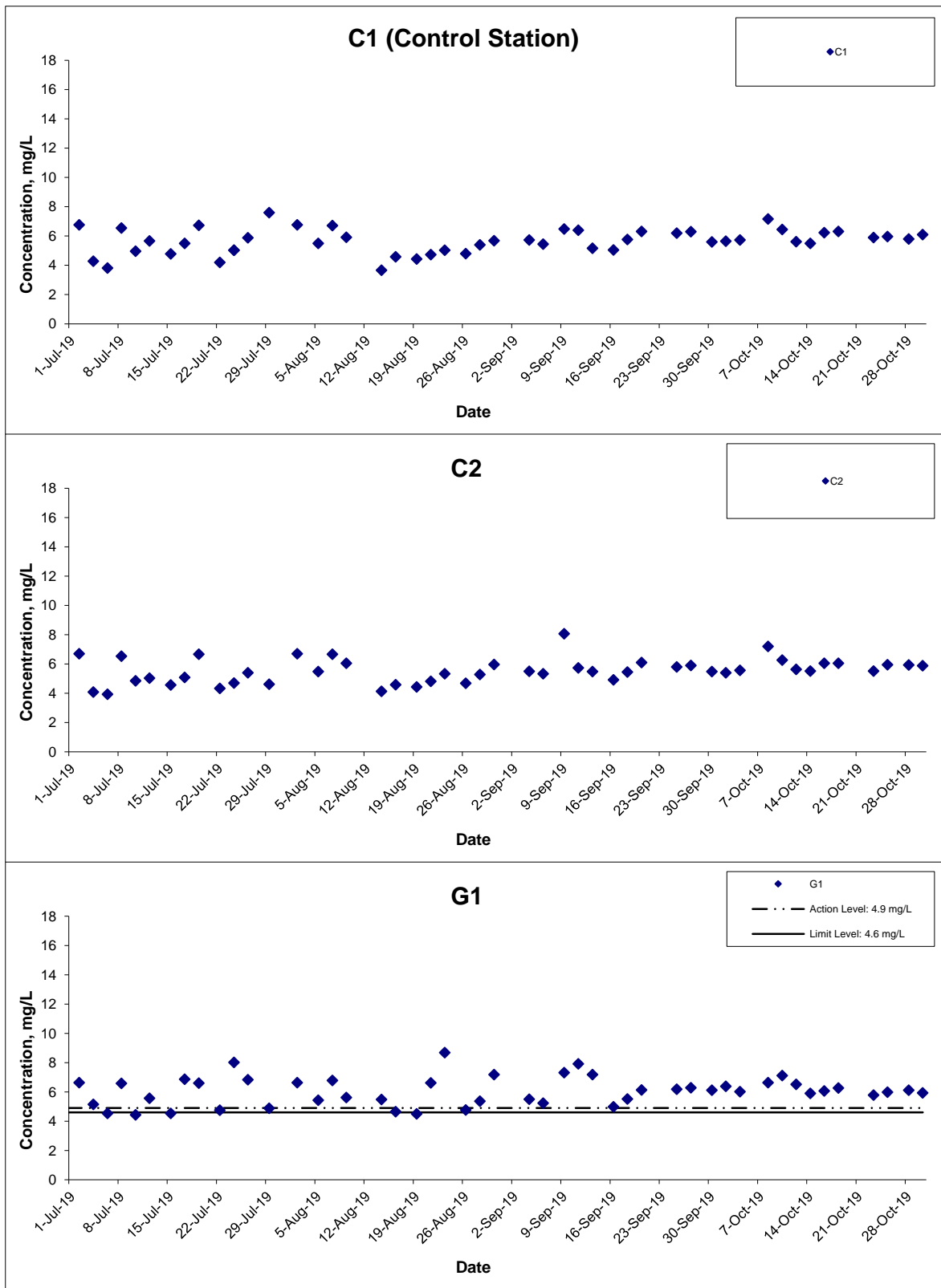
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	Date Oct 19	Appendix I	

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	Oct 19	Appendix	I	

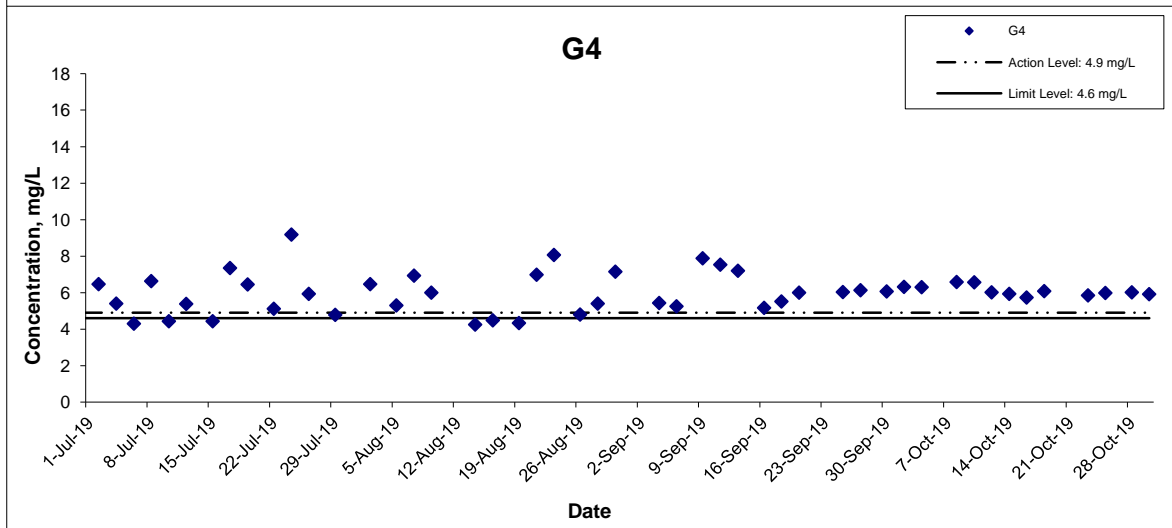
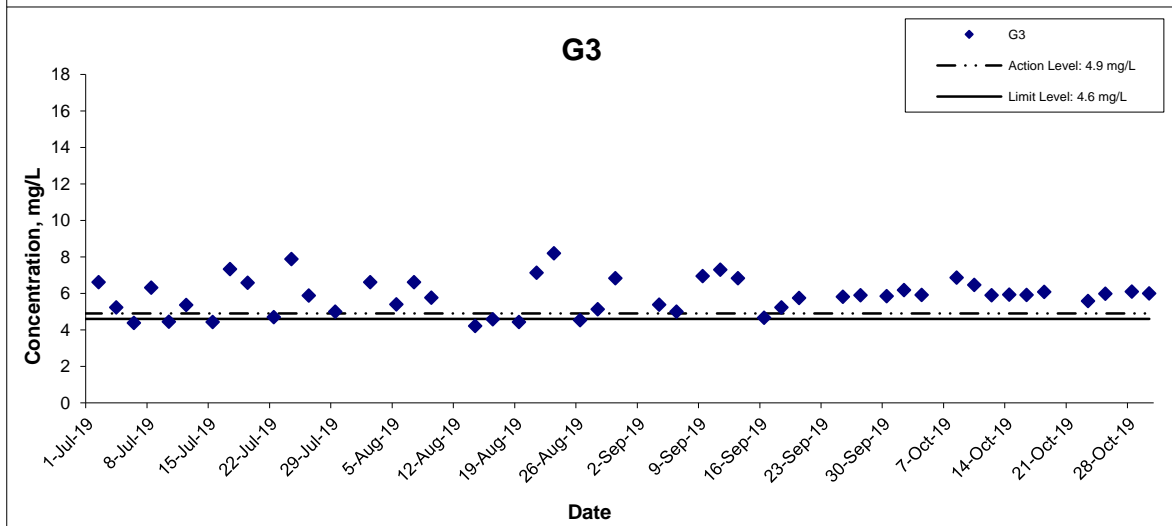
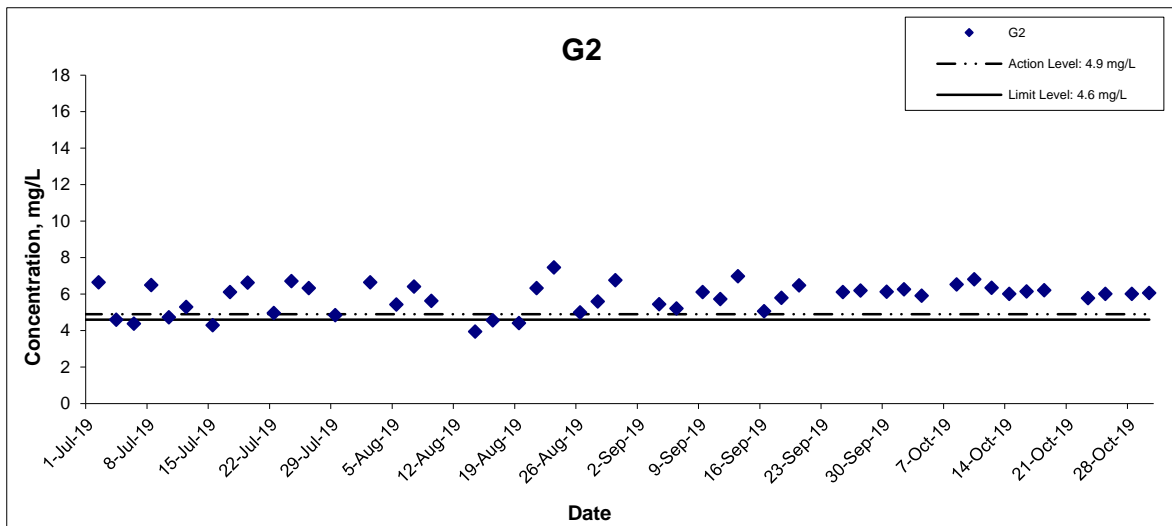
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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	Project No.	MA16034
	Date	Oct 19	Appendix	I

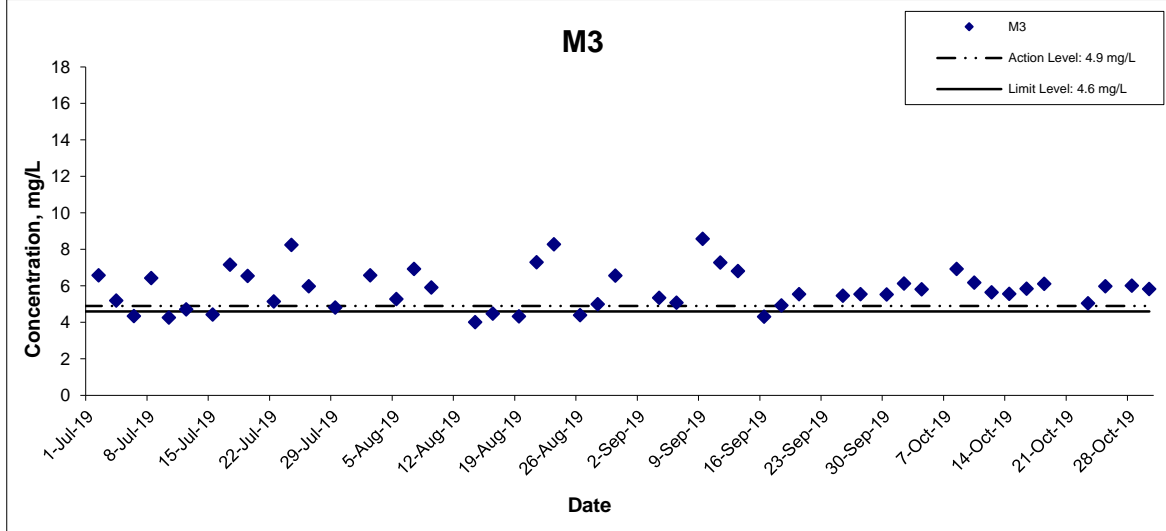
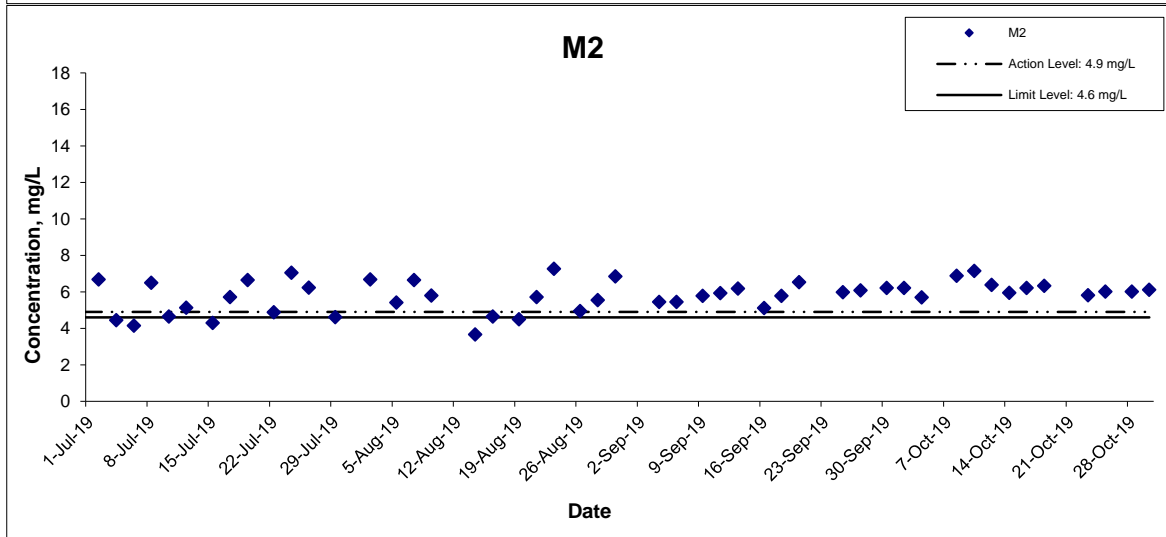
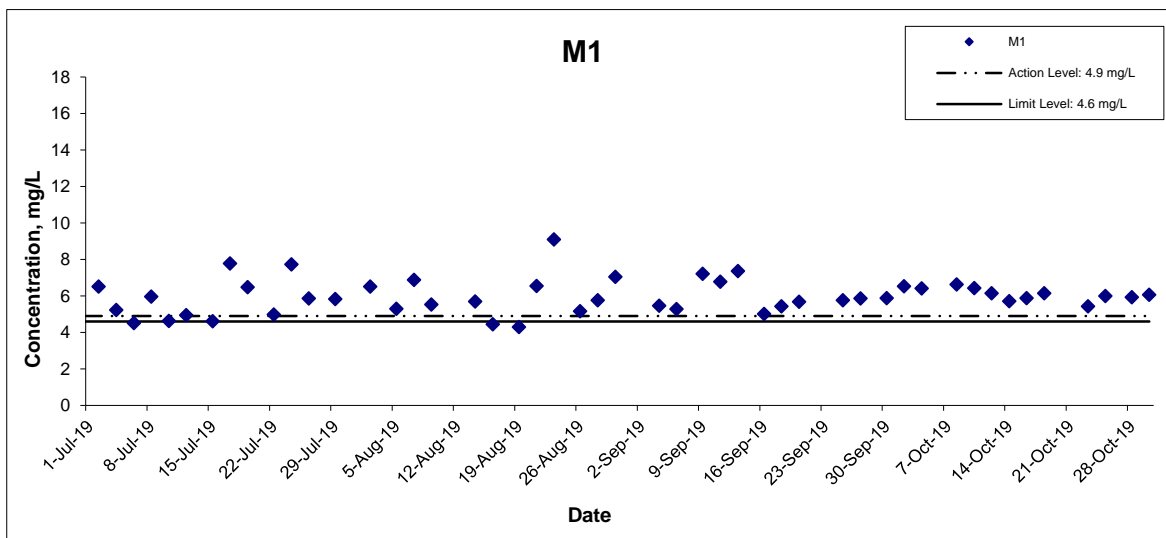


Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



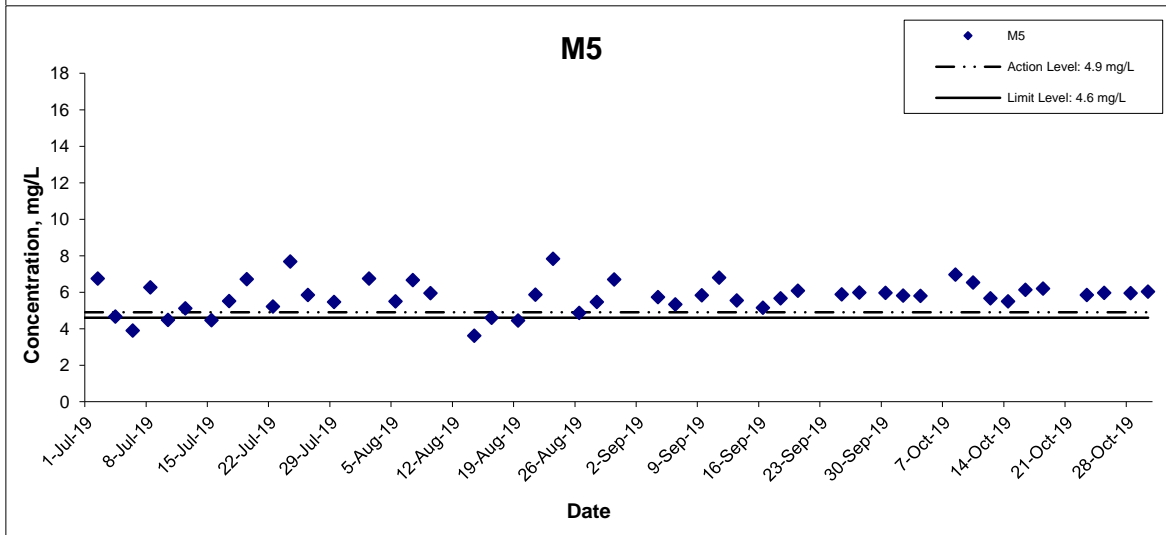
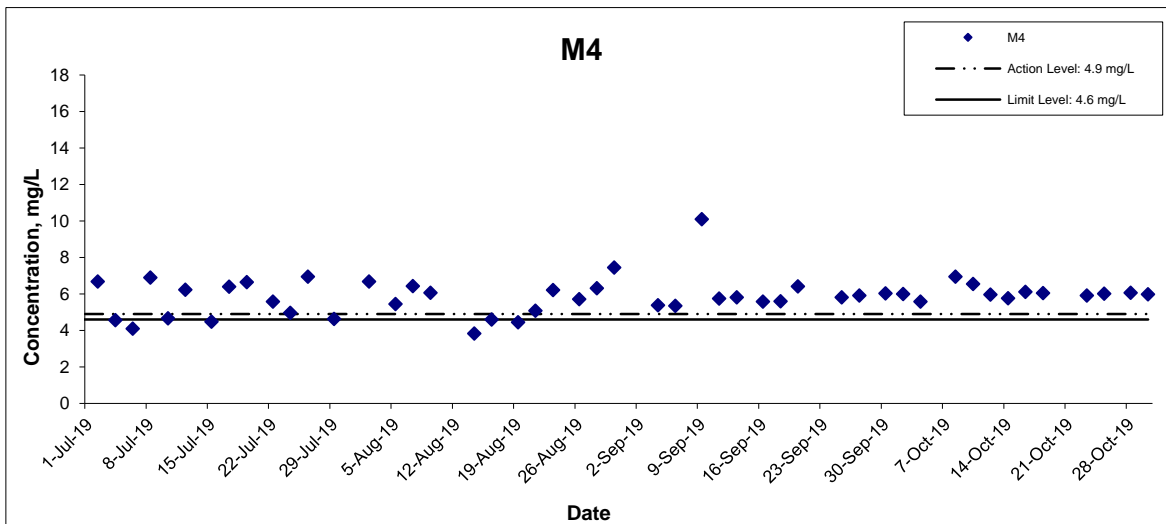
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Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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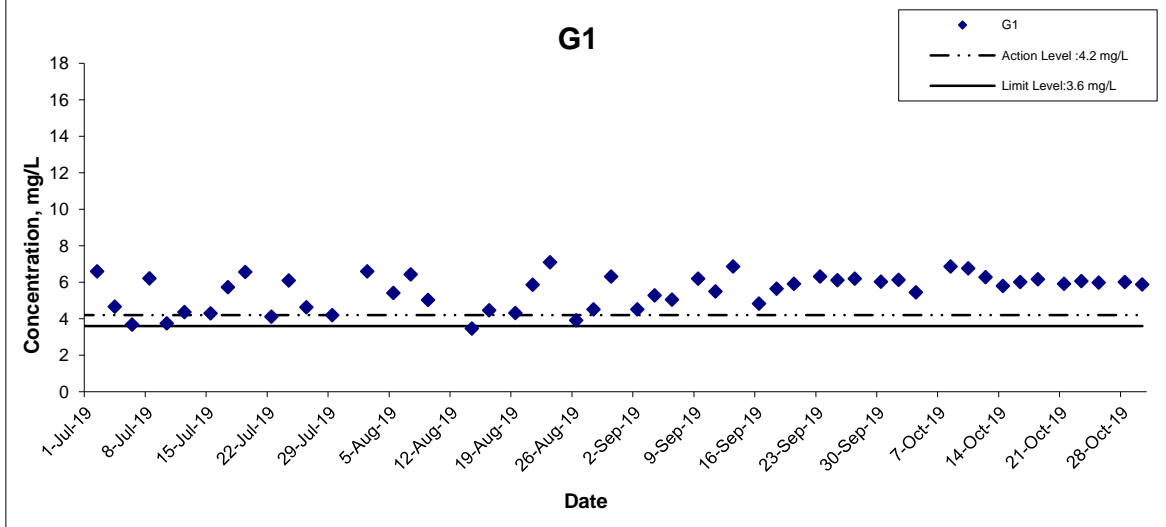
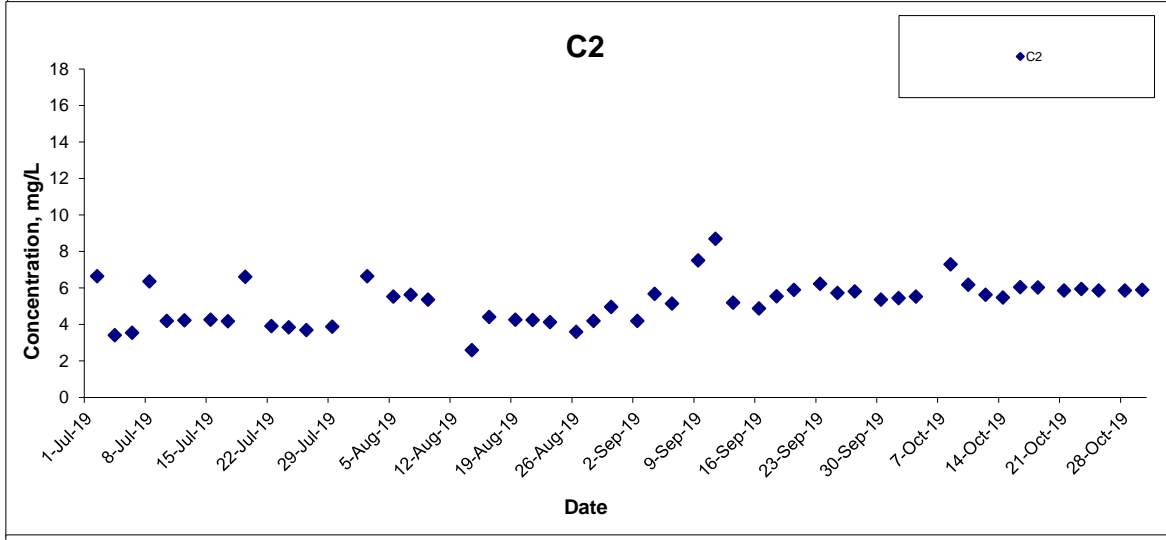
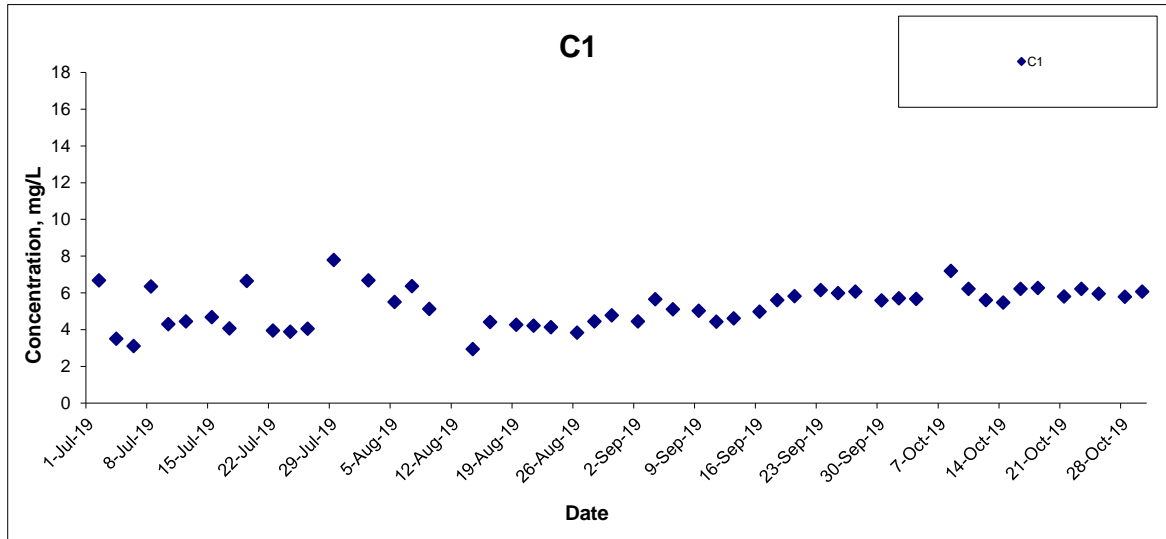
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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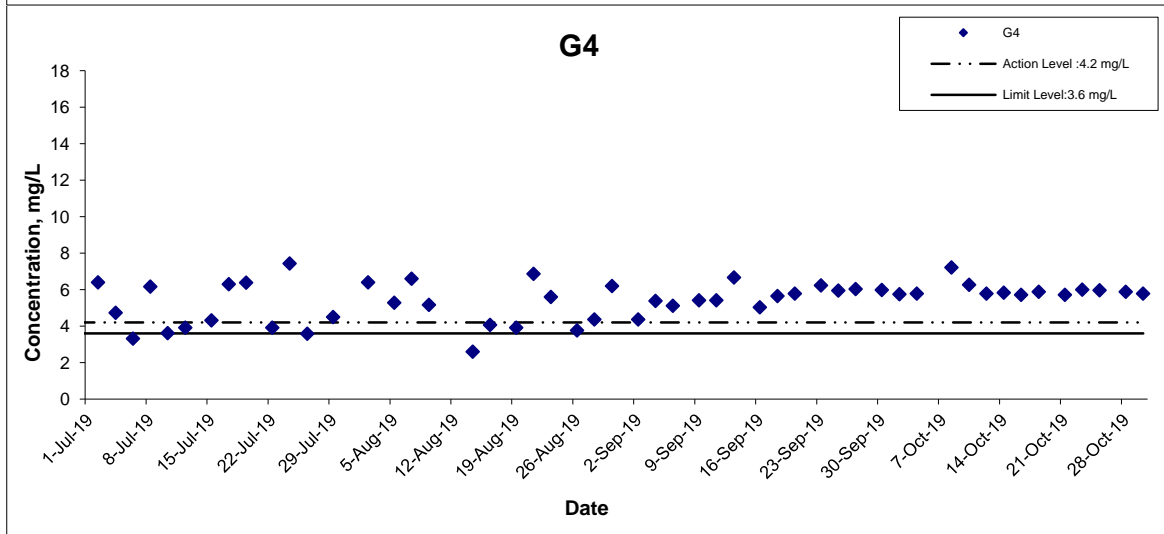
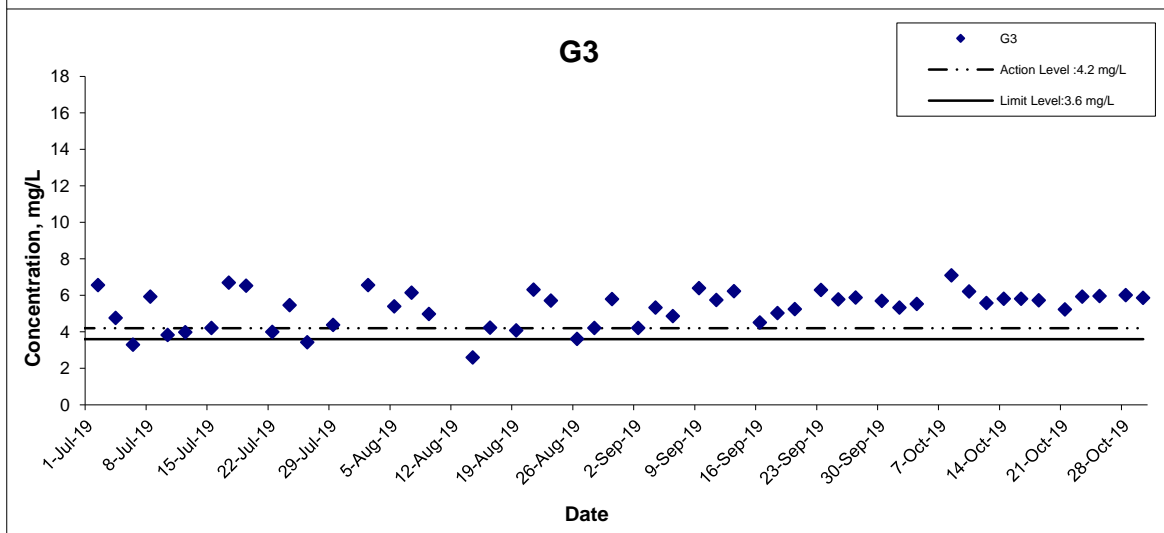
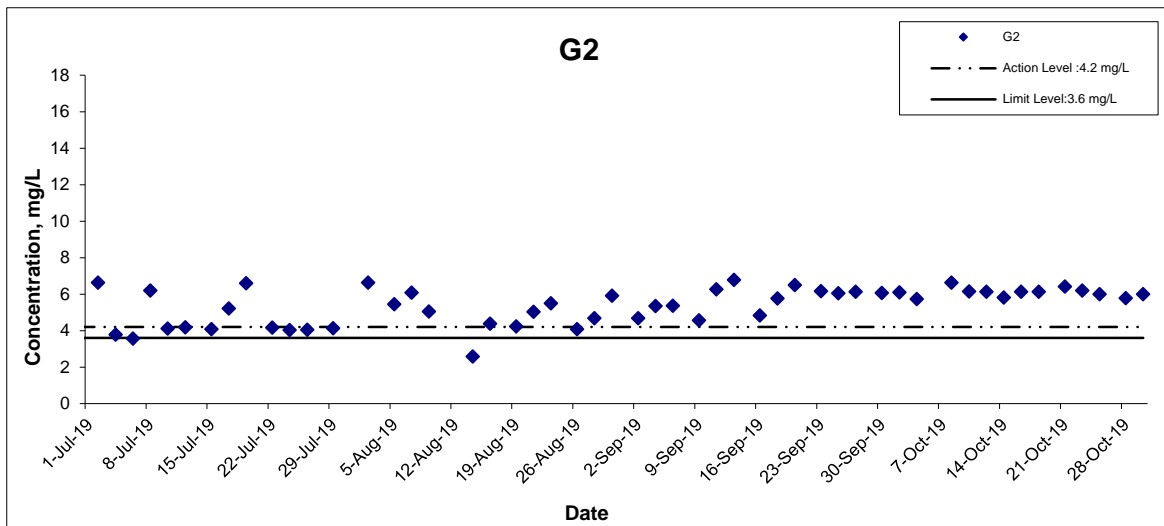


Dissolved Oxygen (Bottom) at Mid-Ebb Tide



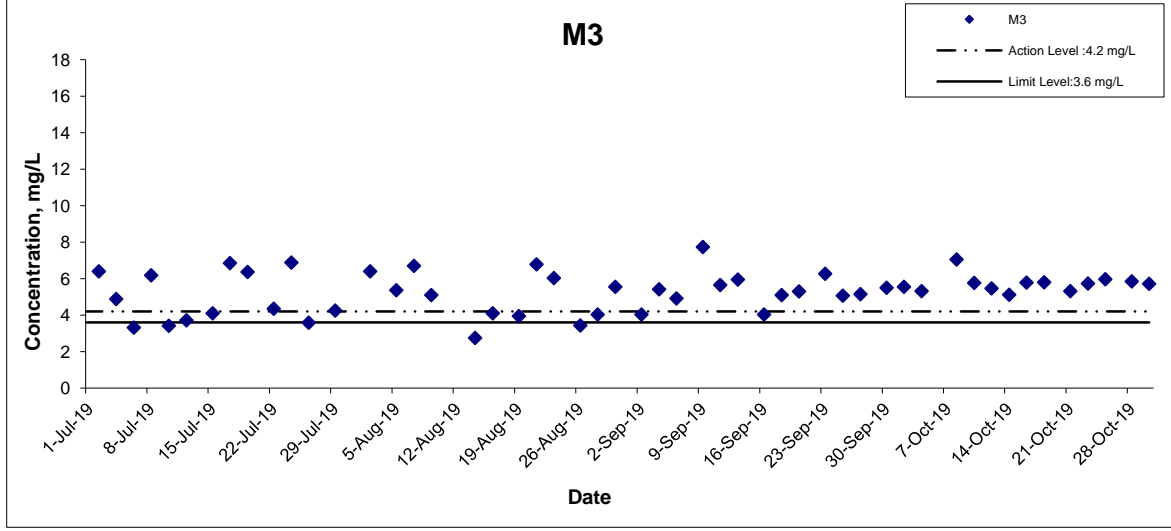
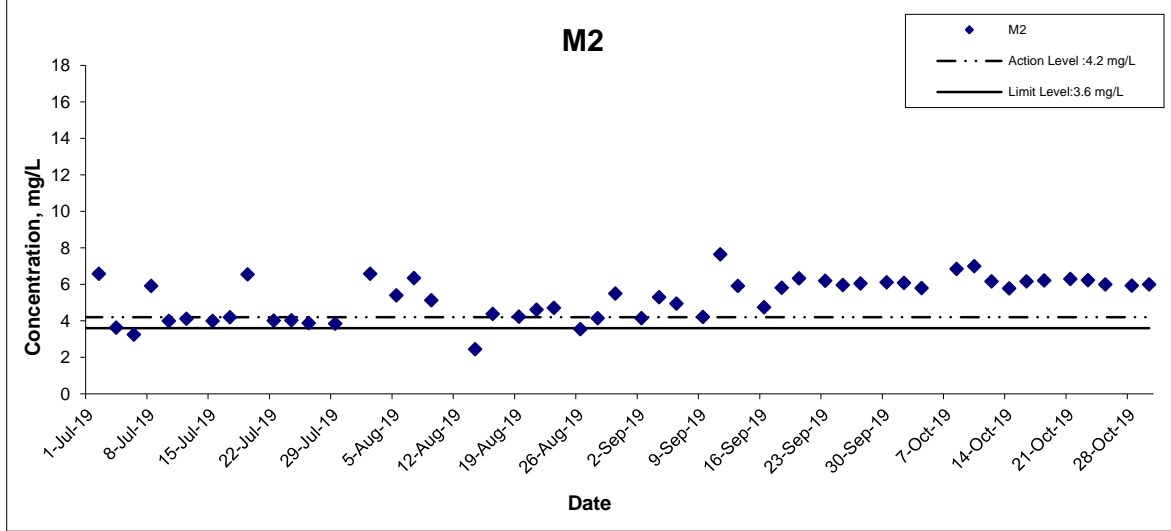
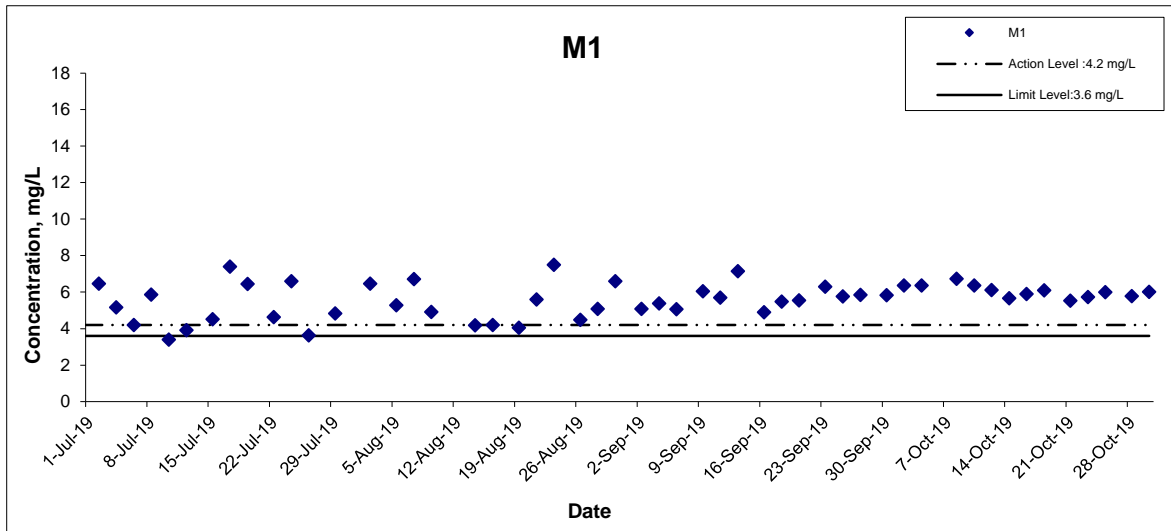
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



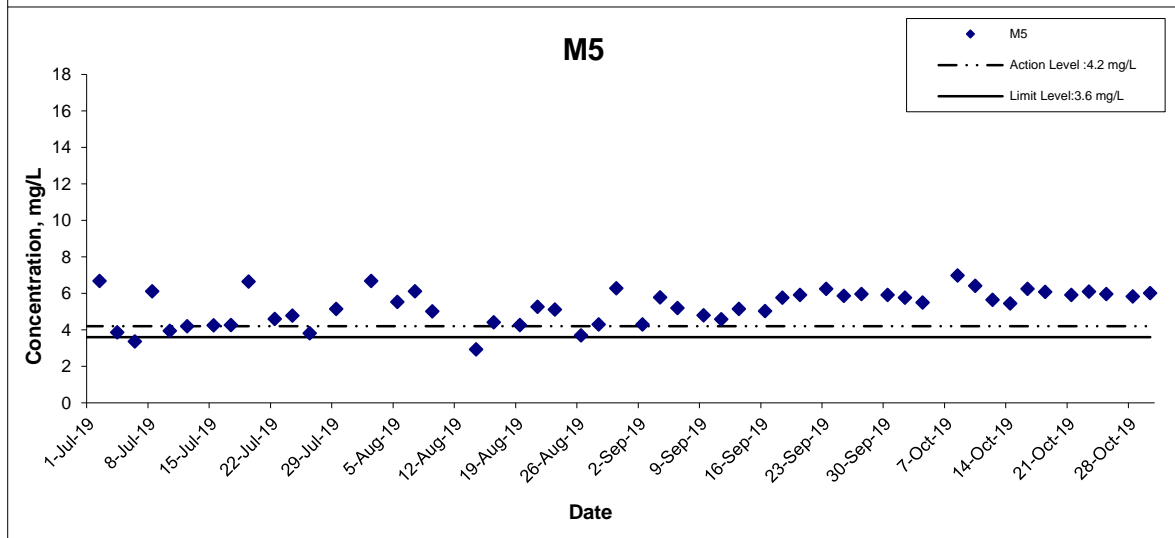
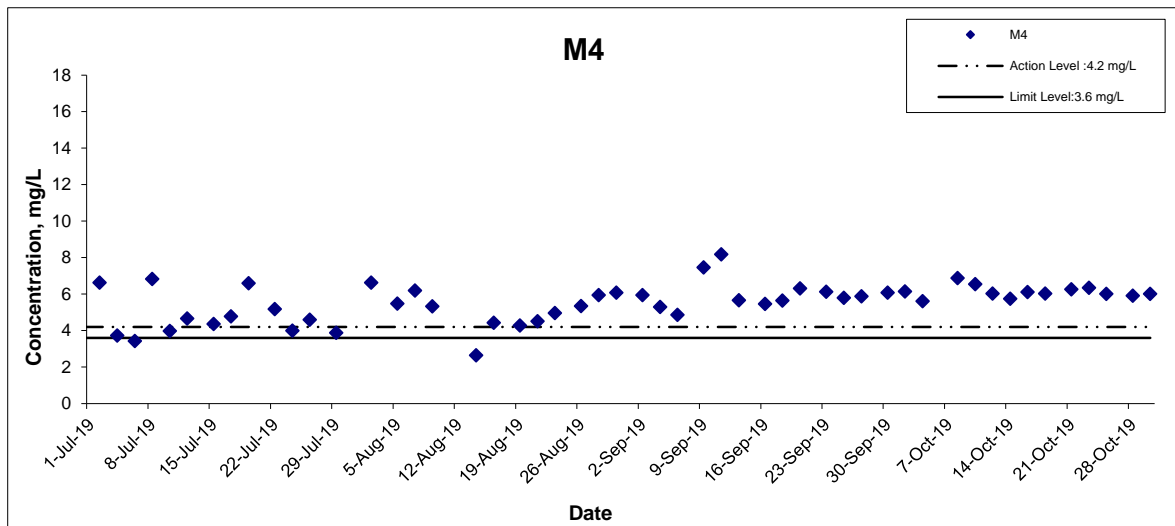
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



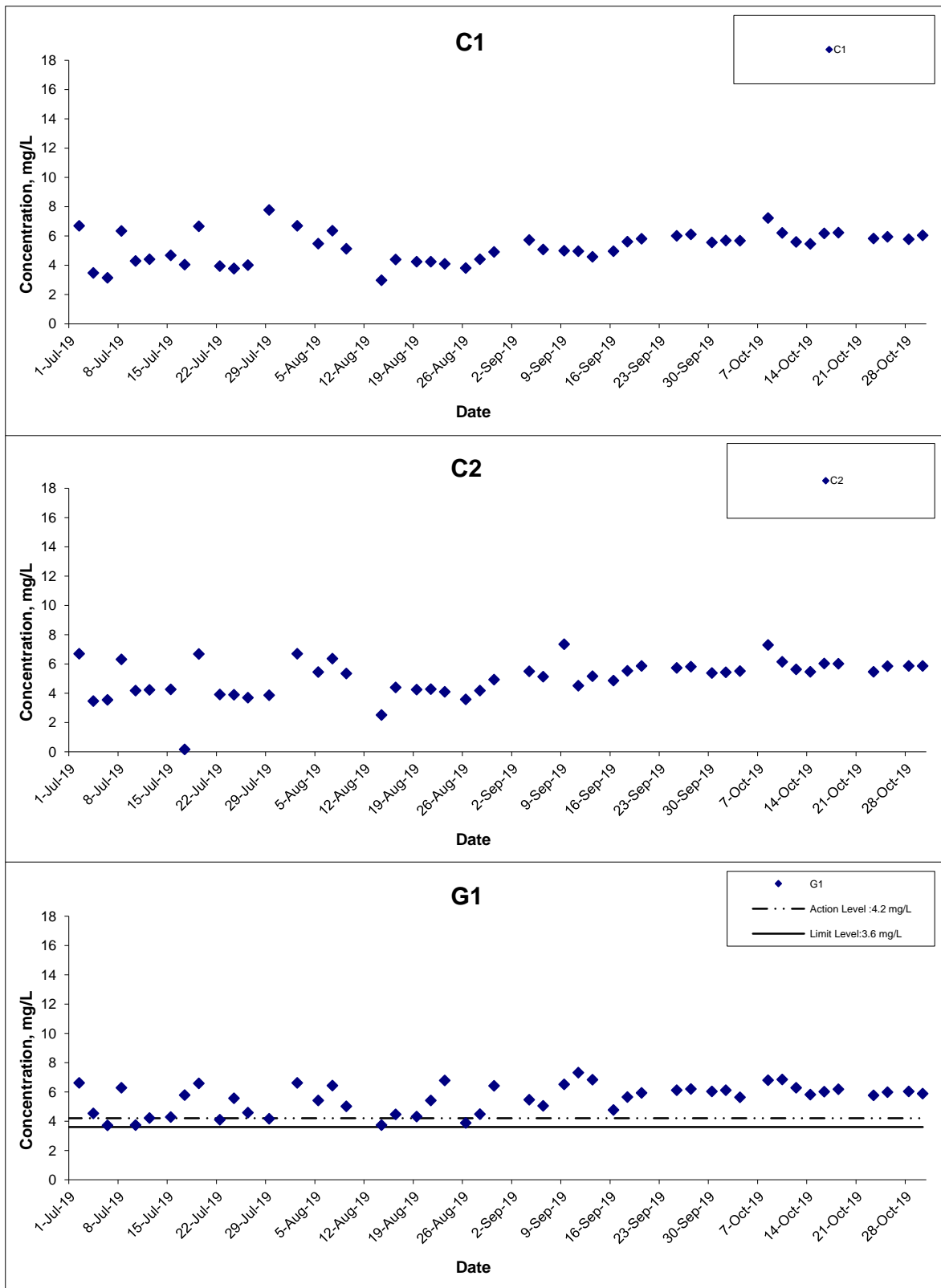
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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Dissolved Oxygen (Bottom) at Mid-Flood Tide



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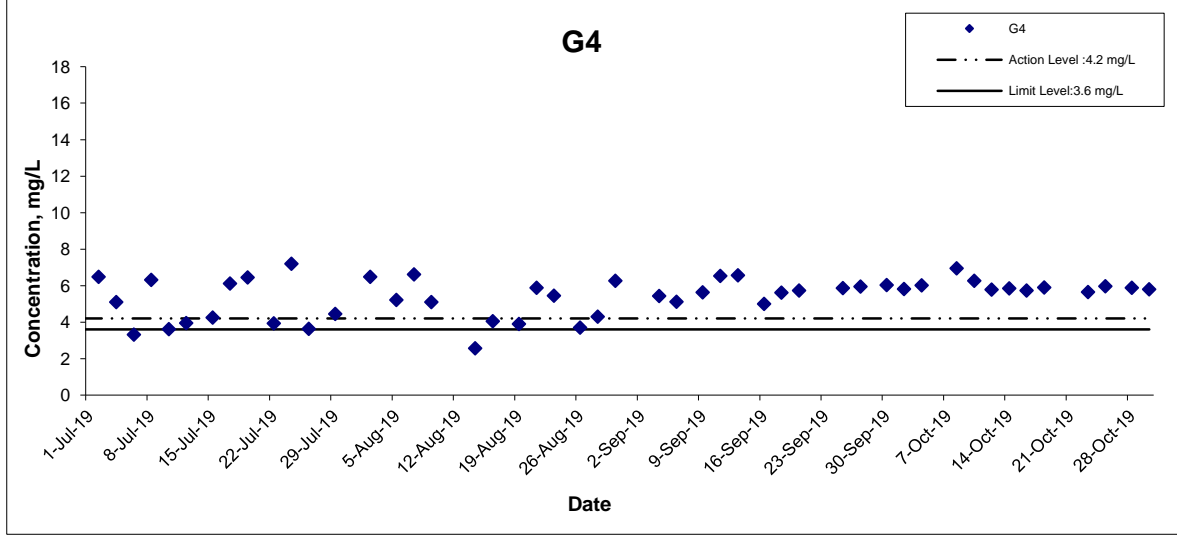
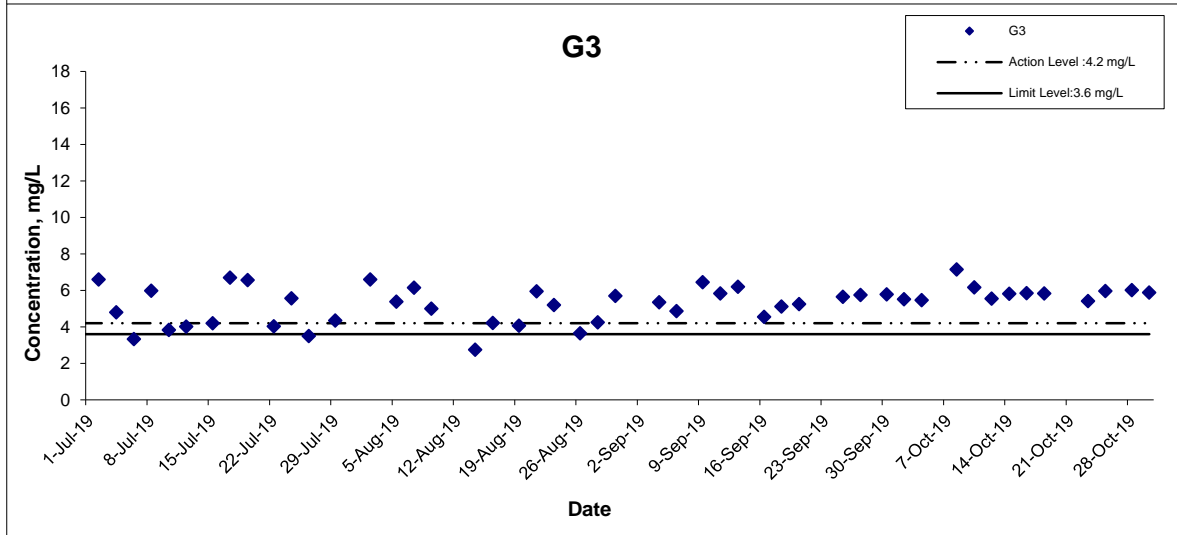
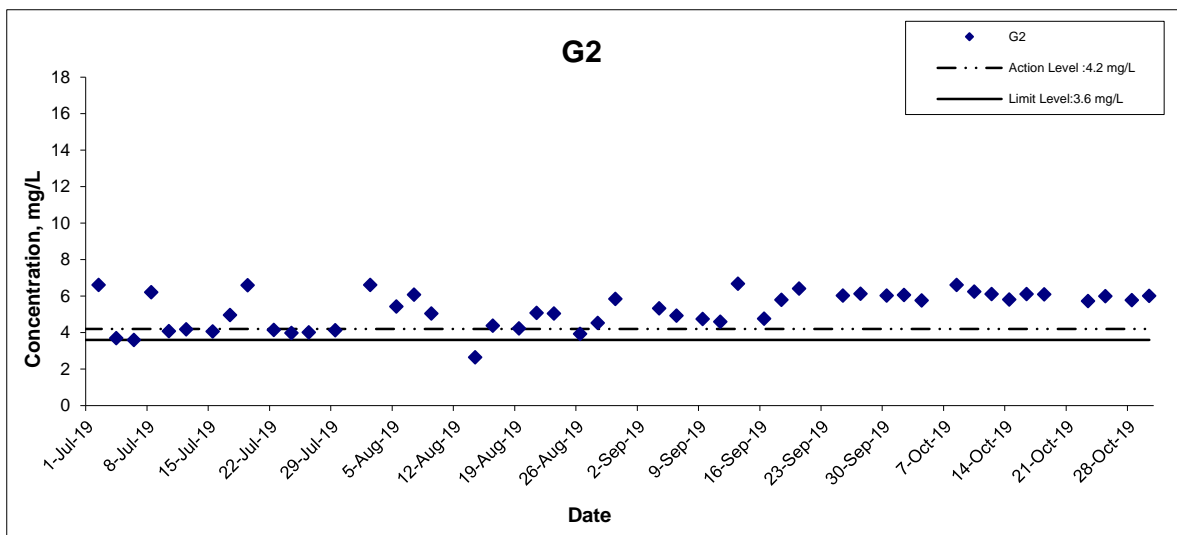
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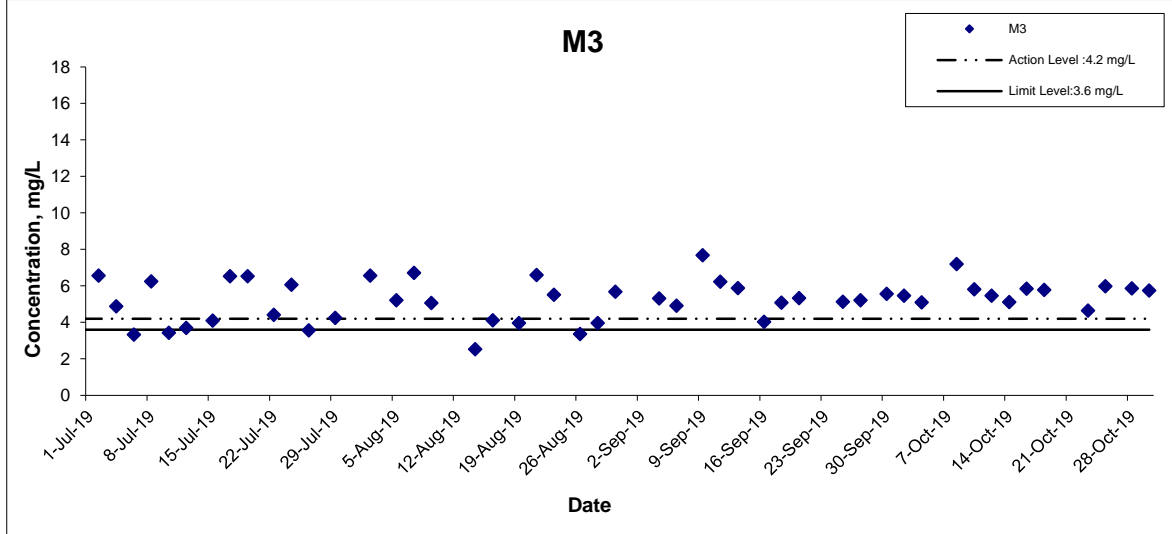
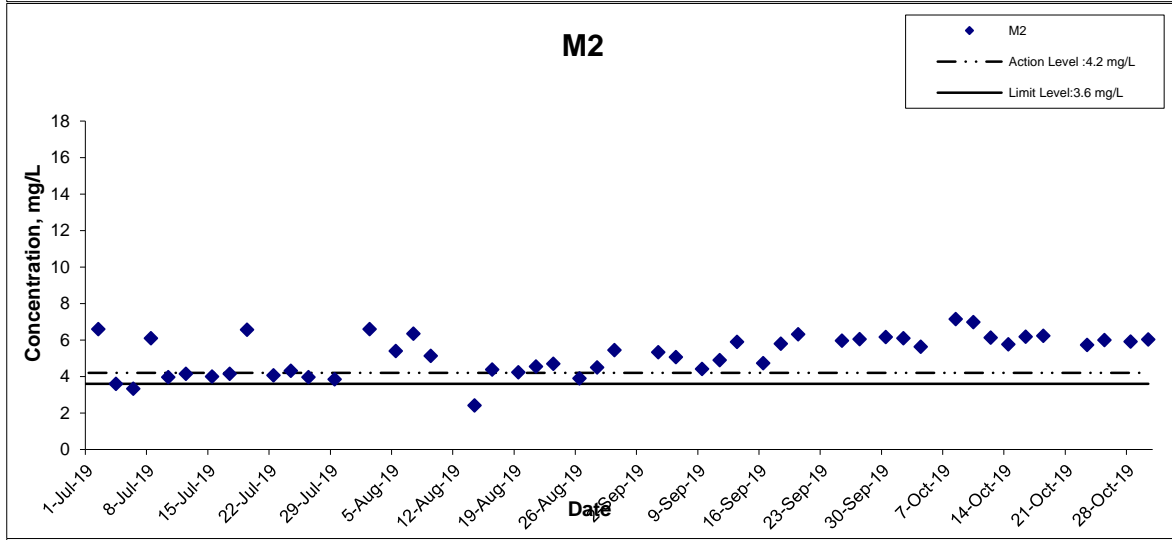
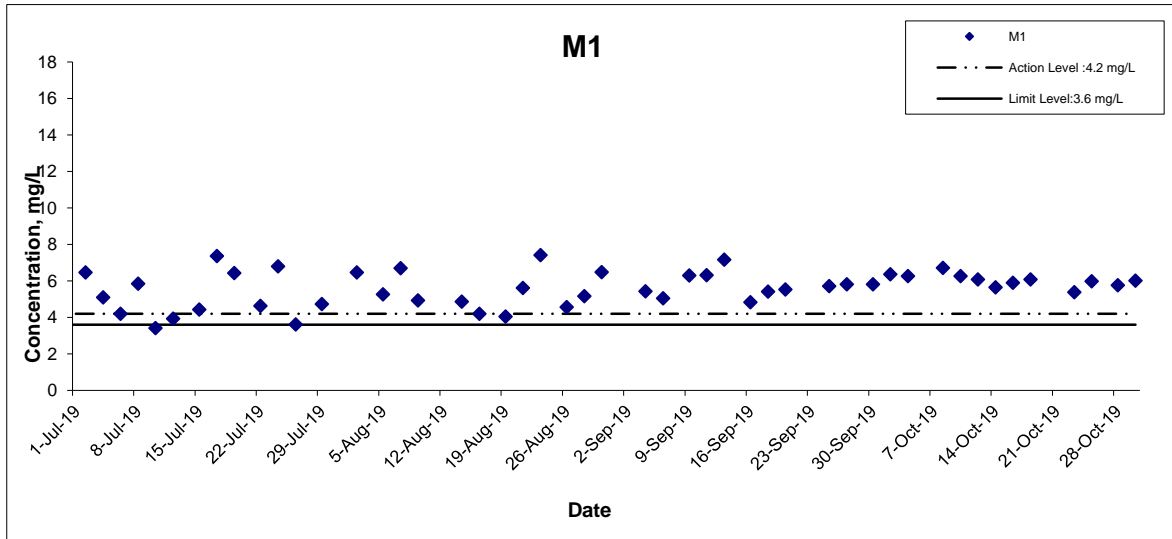


Dissolved Oxygen (Bottom) at Mid-Flood Tide



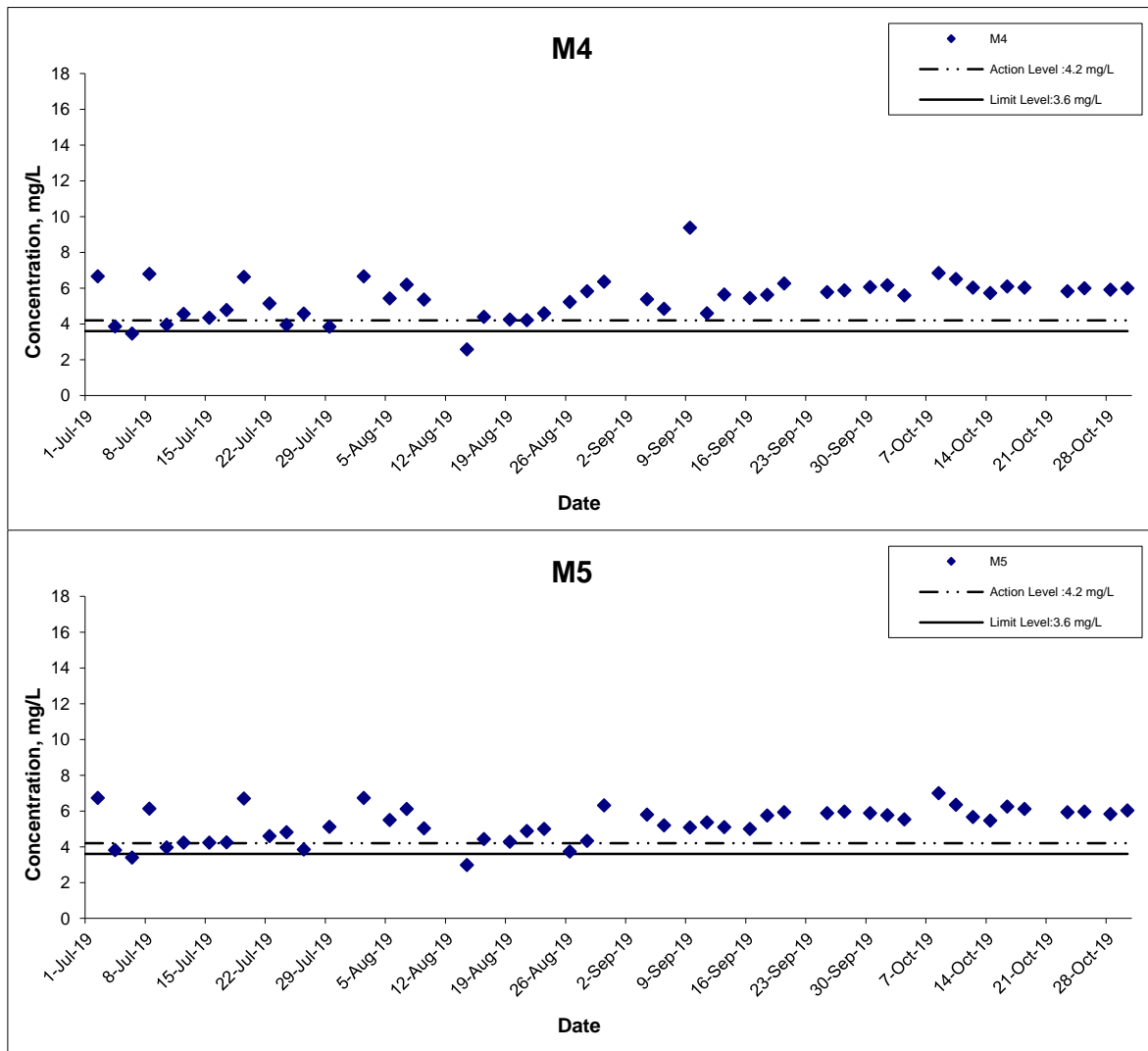
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



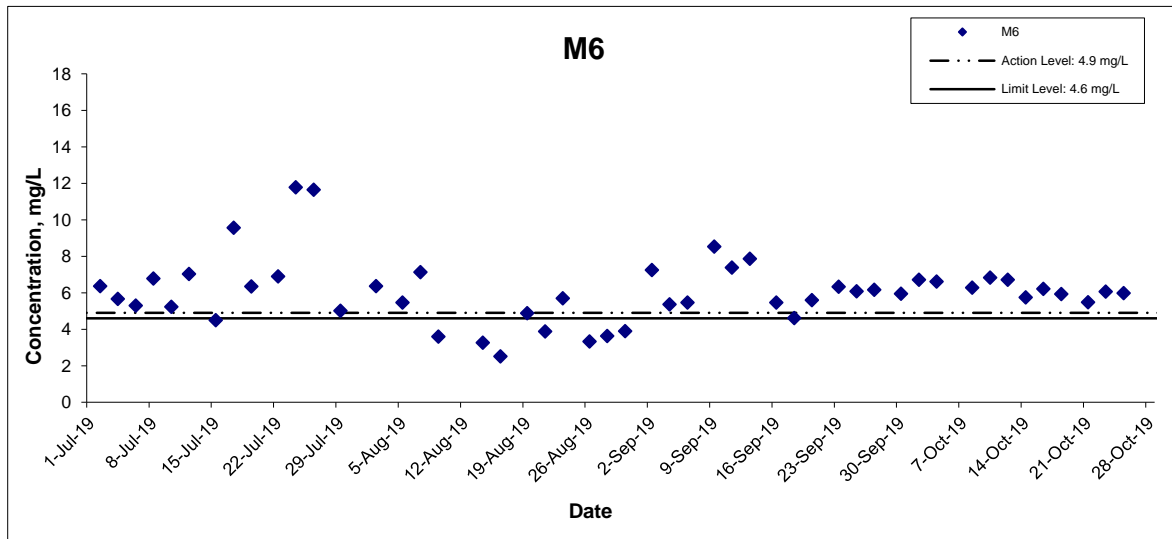
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



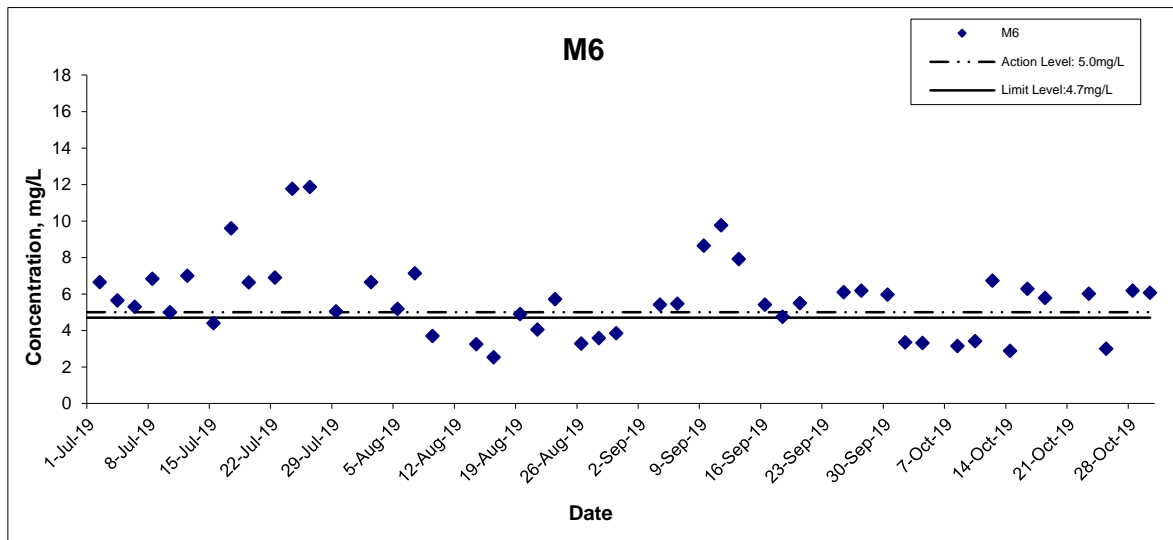
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale	N.T.S	Project No.	MA16034	CINOTECH
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Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



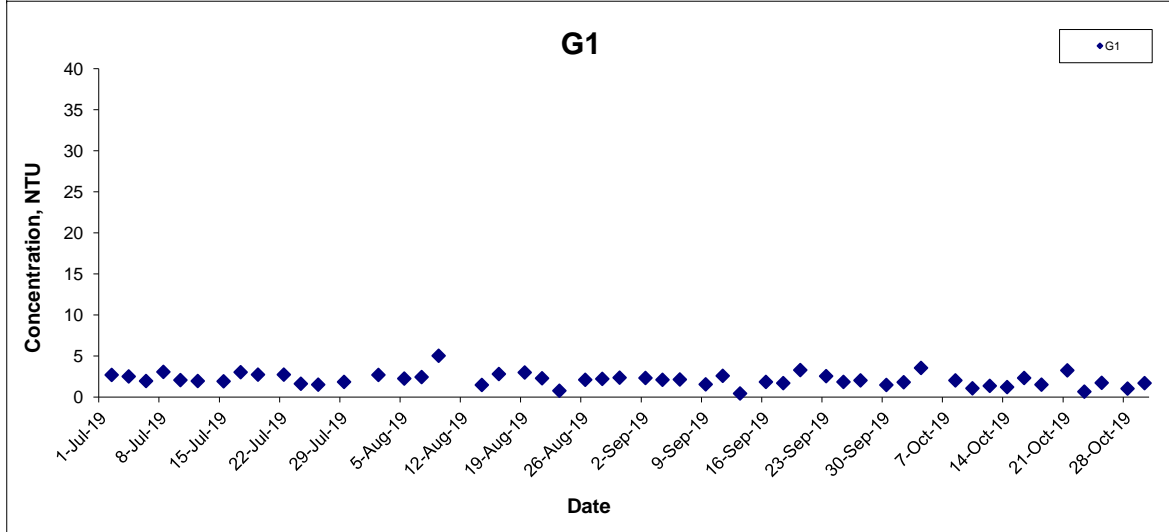
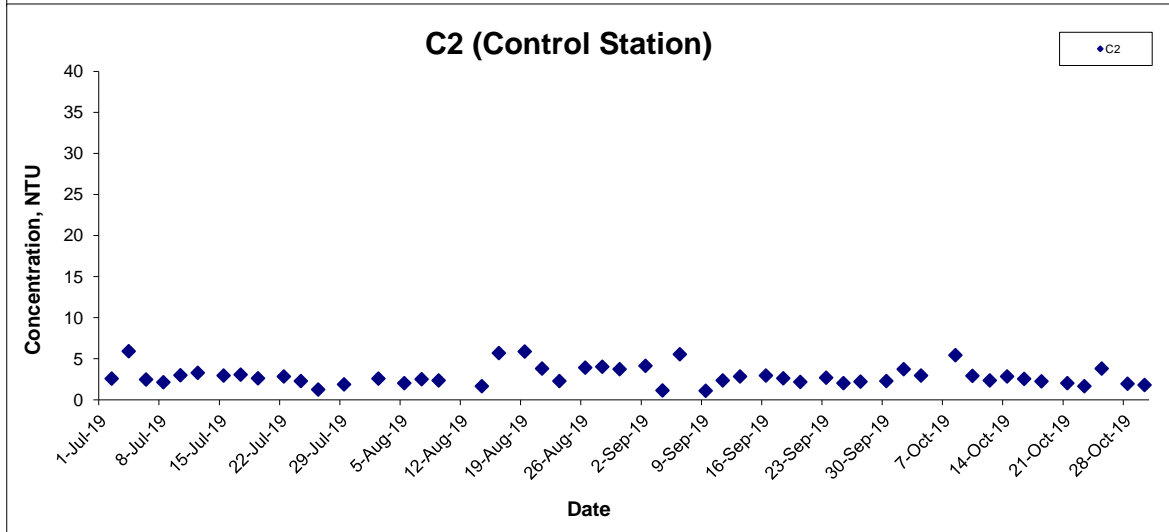
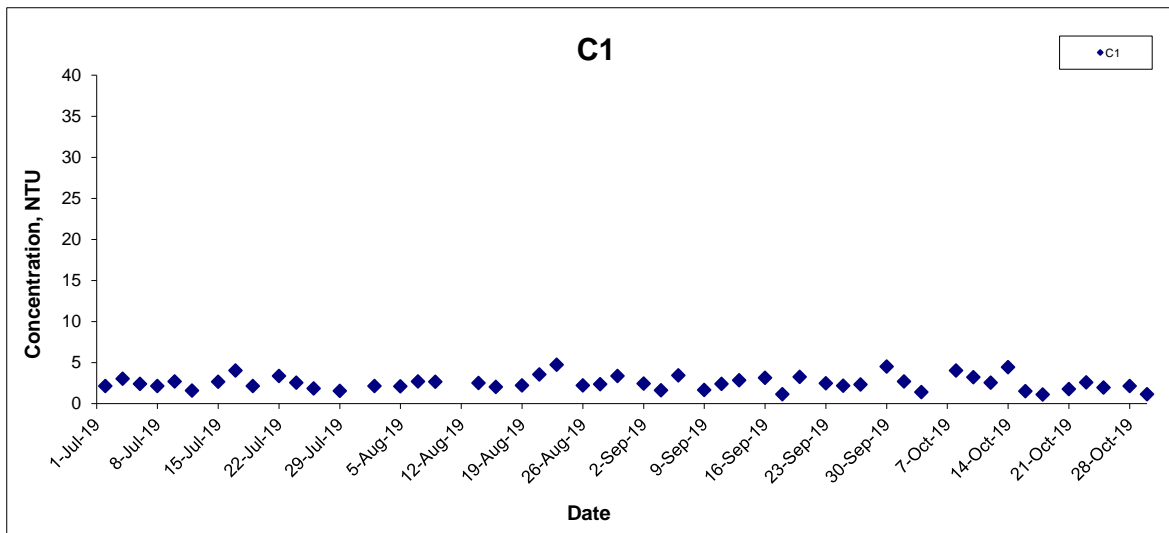
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



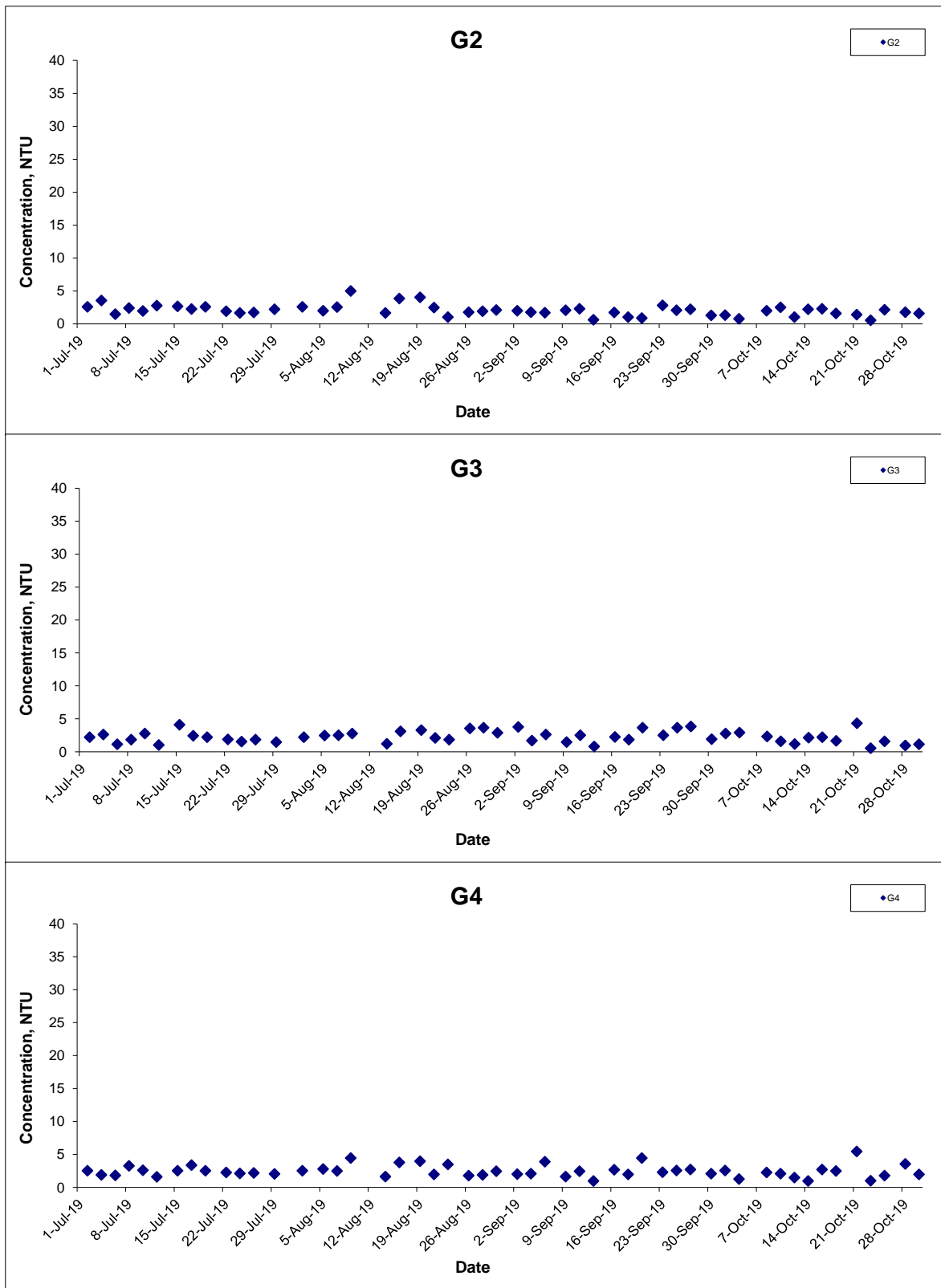
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Turbidity (Depth-averaged) at Mid-Ebb Tide



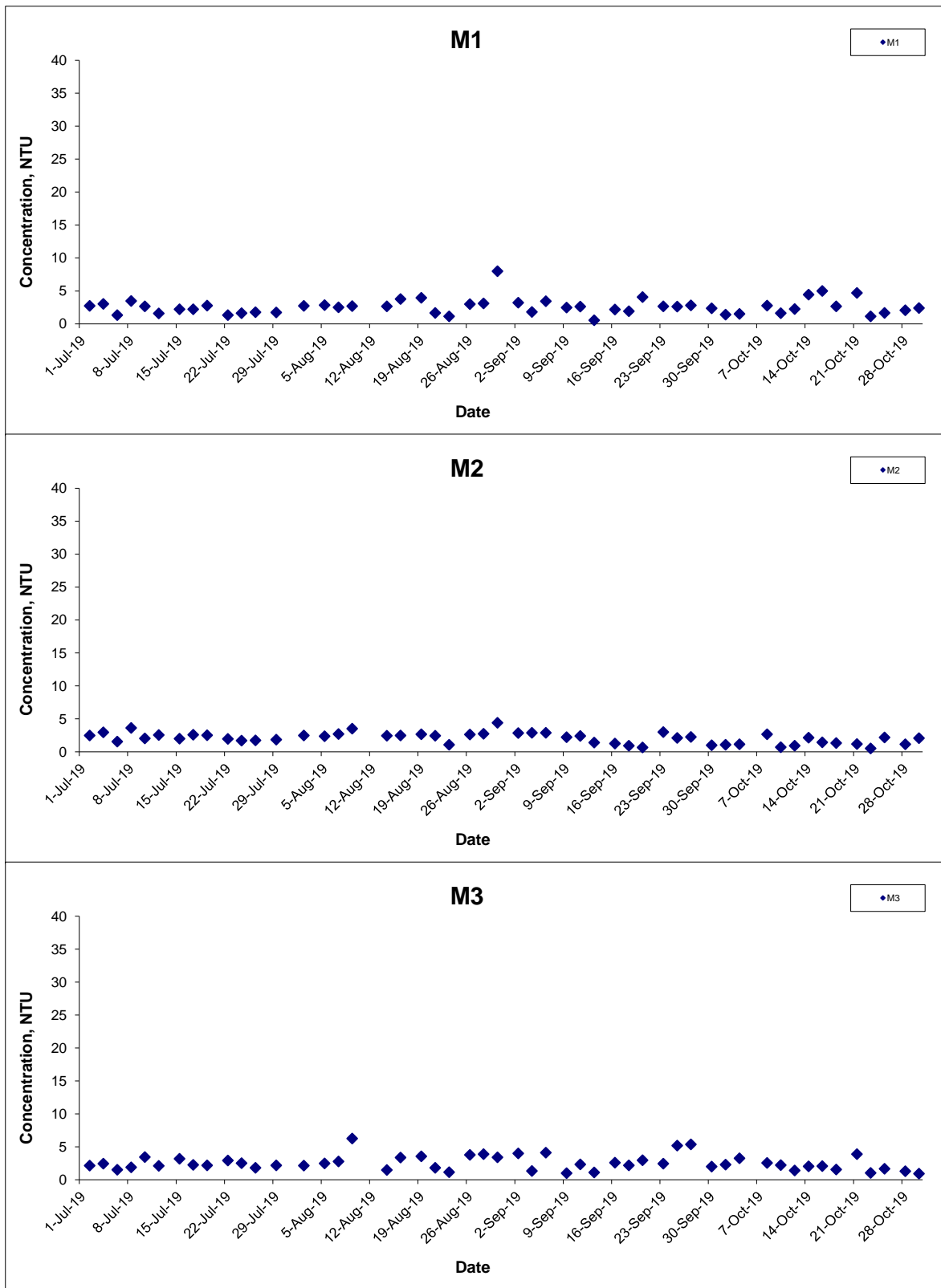
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Turbidity (Depth-averaged) at Mid-Ebb Tide



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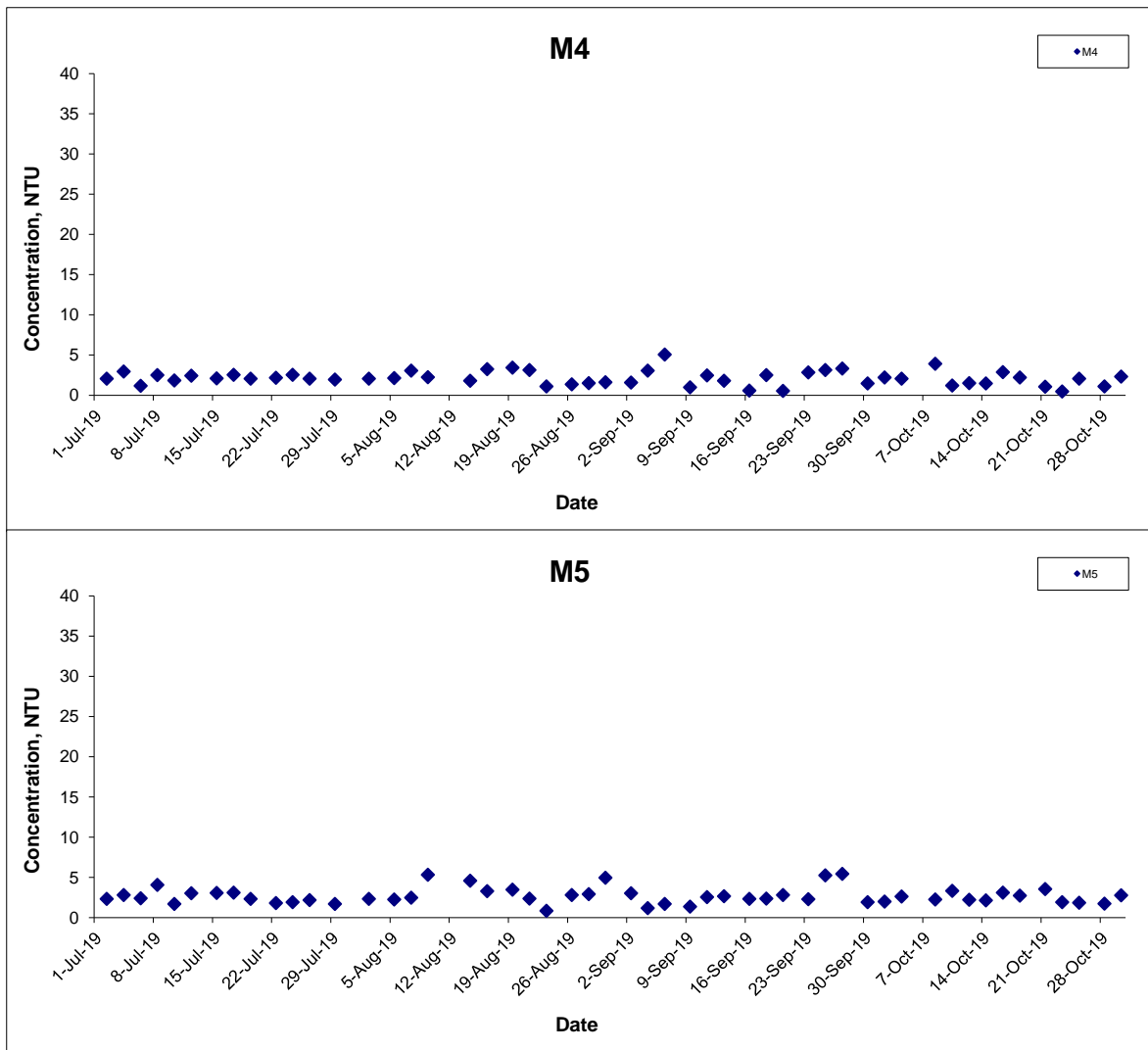
Turbidity (Depth-averaged) at Mid-Ebb Tide



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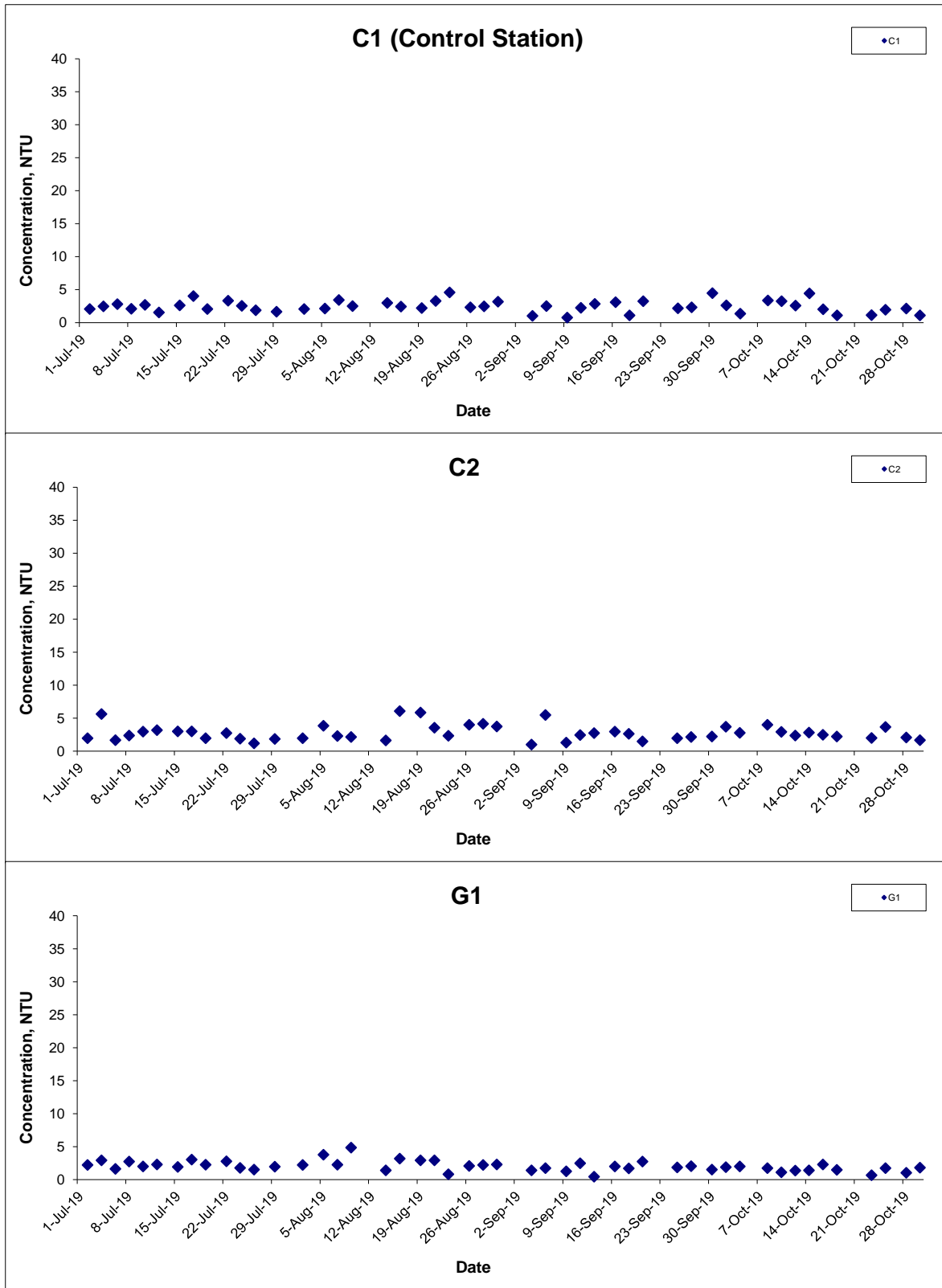


Turbidity (Depth-averaged) at Mid-Ebb Tide



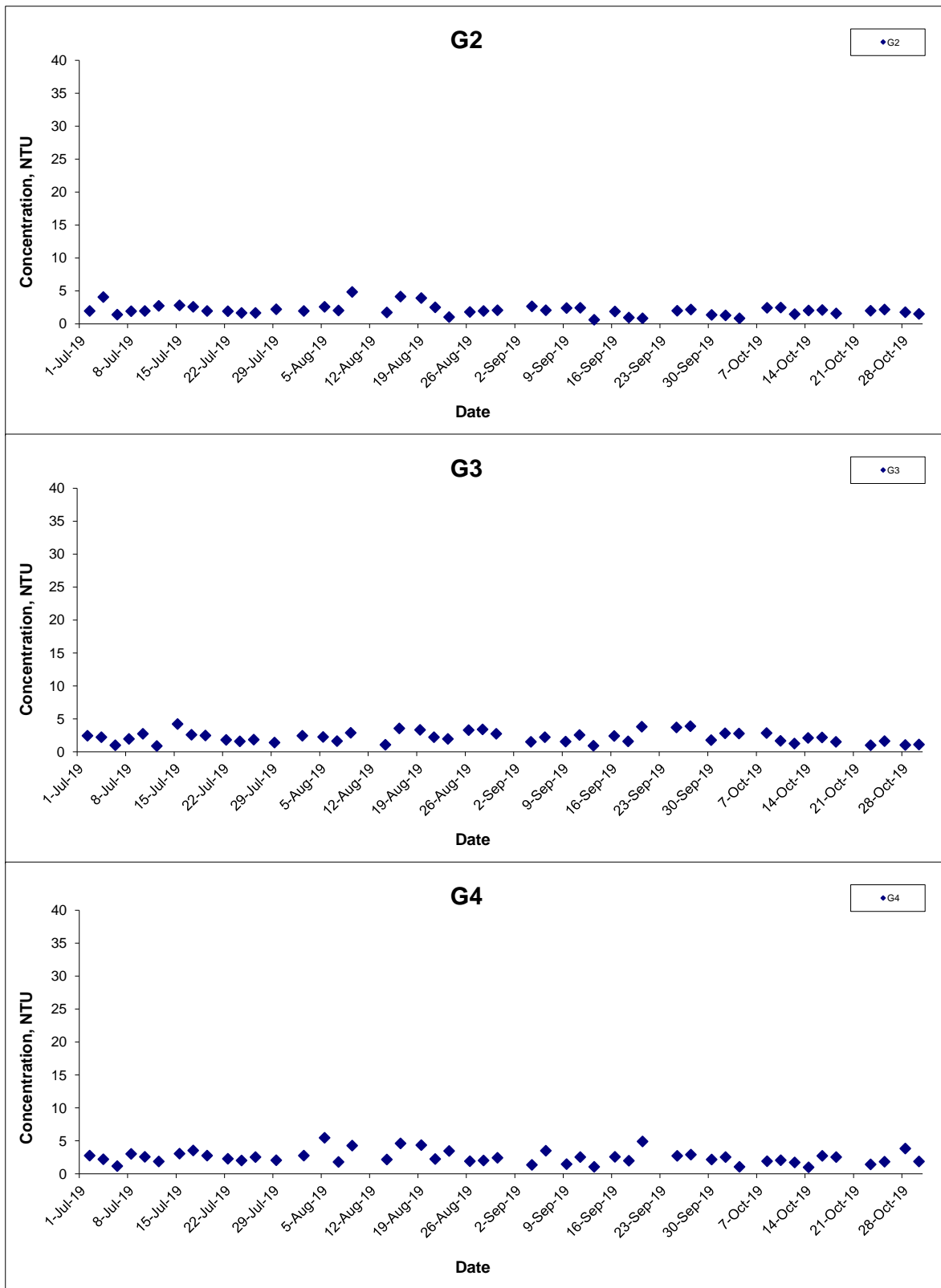
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Turbidity (Depth-averaged) at Mid-Flood Tide



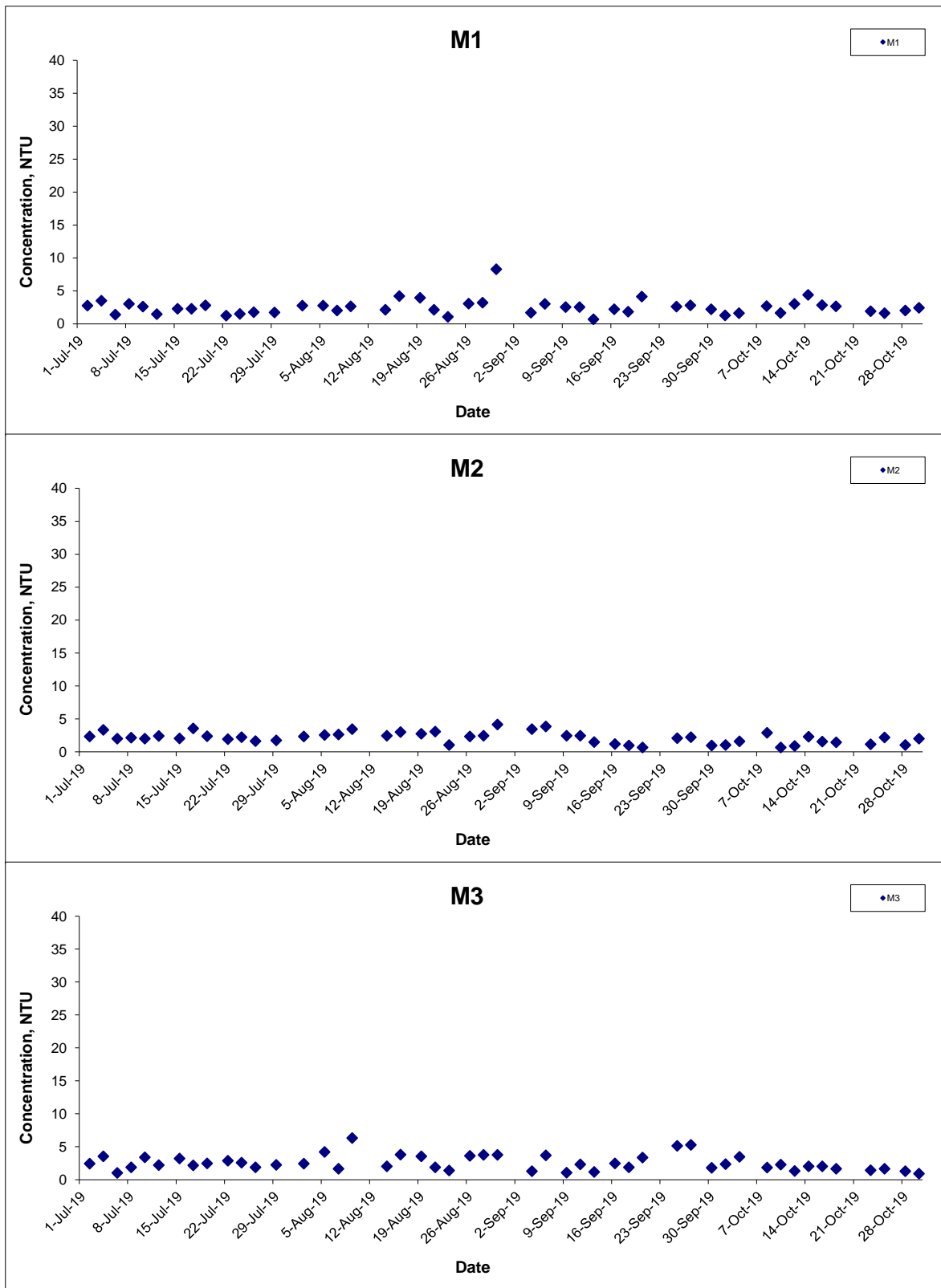
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Turbidity (Depth-averaged) at Mid-Flood Tide



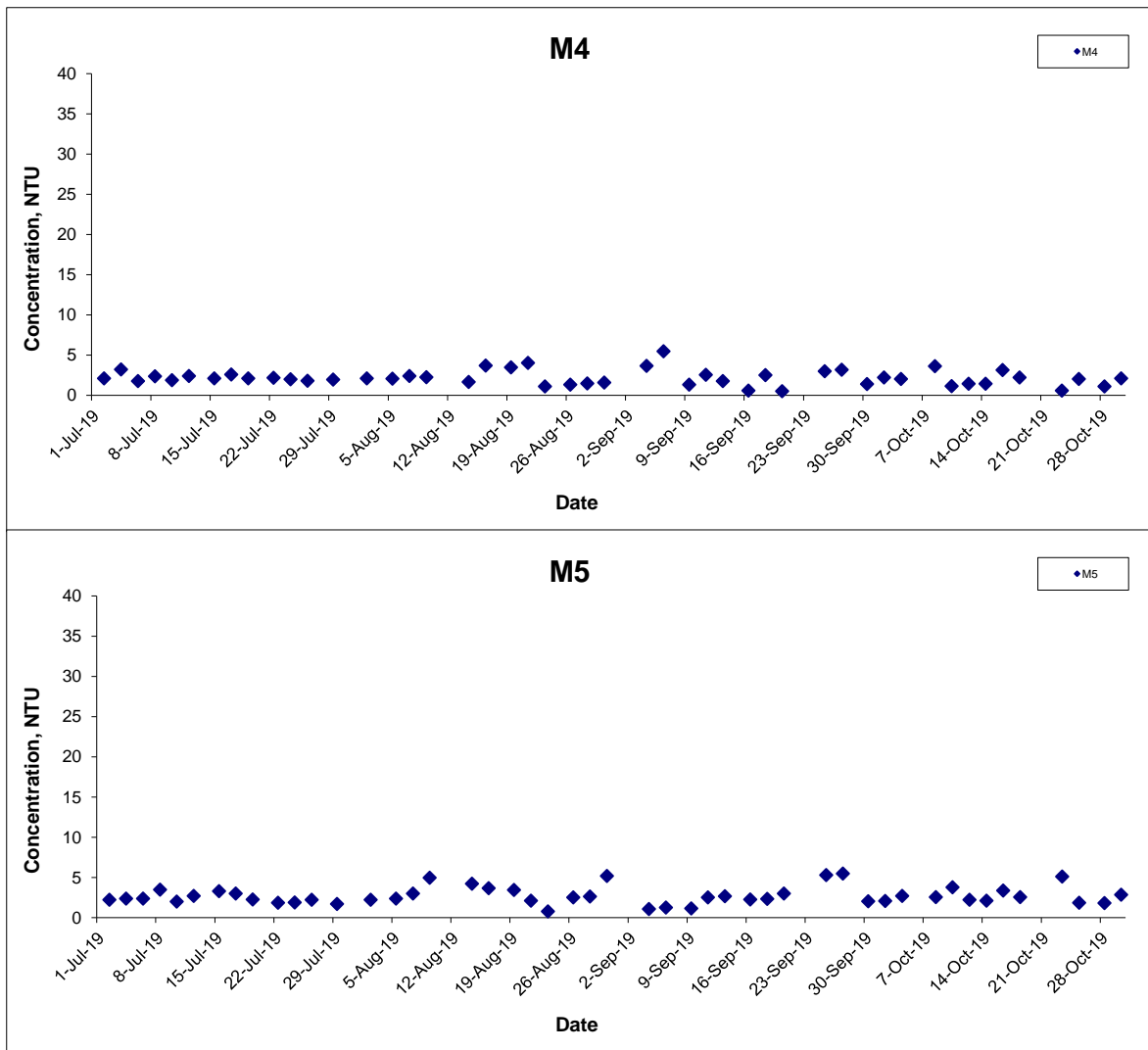
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Turbidity (Depth-averaged) at Mid-Flood Tide



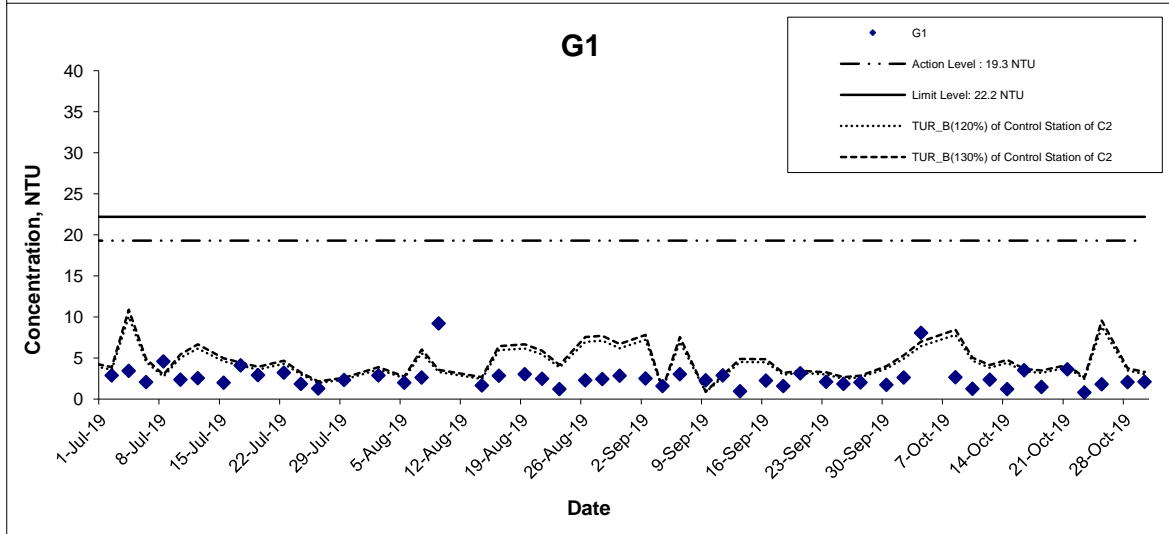
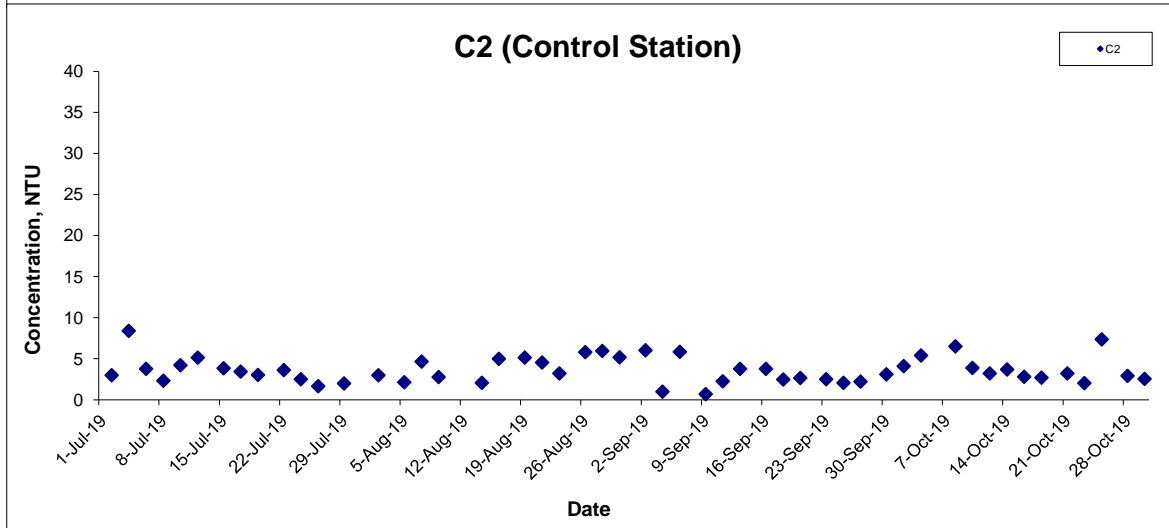
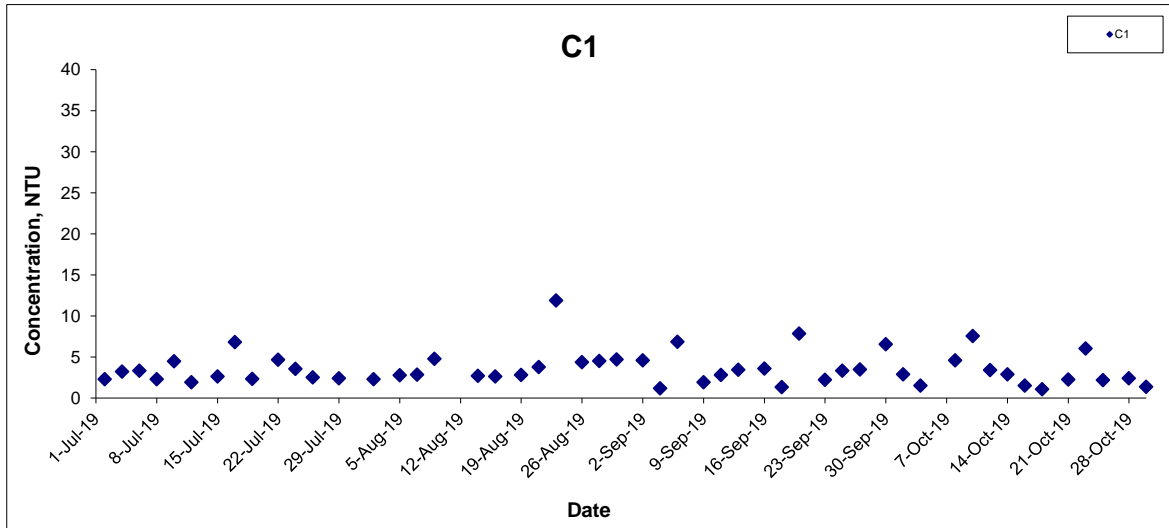
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Turbidity (Depth-averaged) at Mid-Flood Tide



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Turbidity (Bottom) at Mid-Ebb Tide



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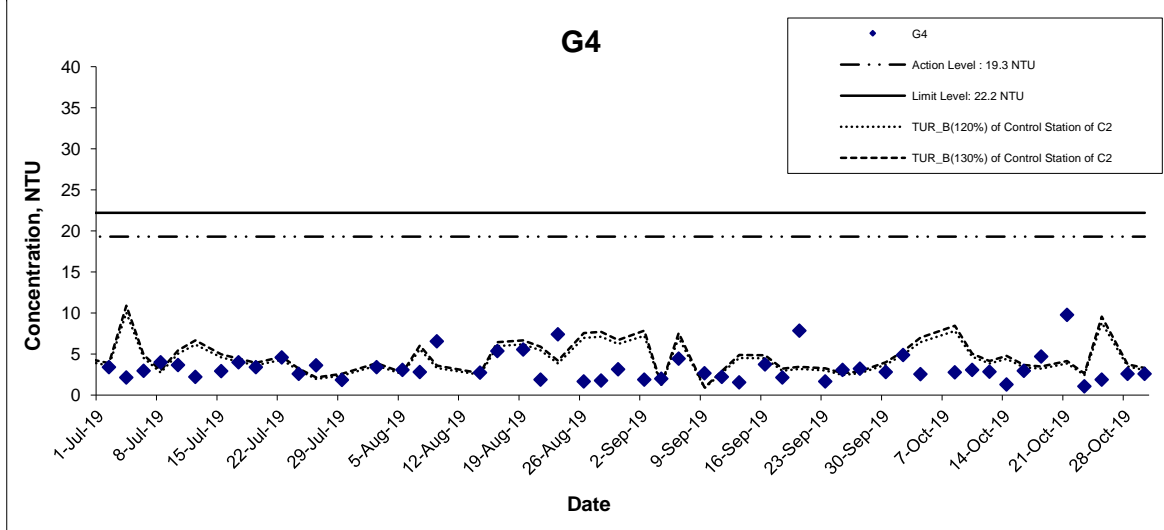
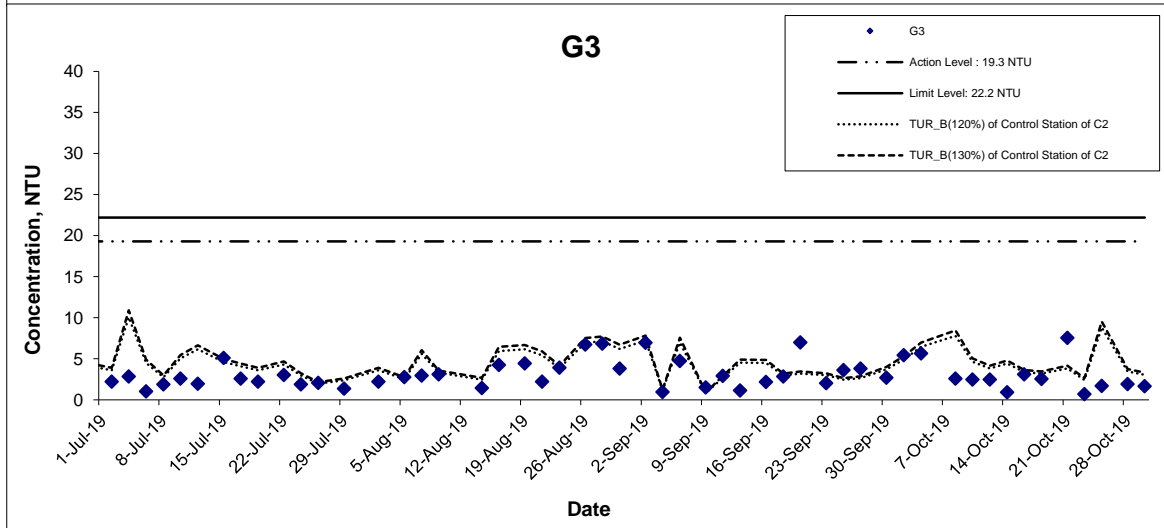
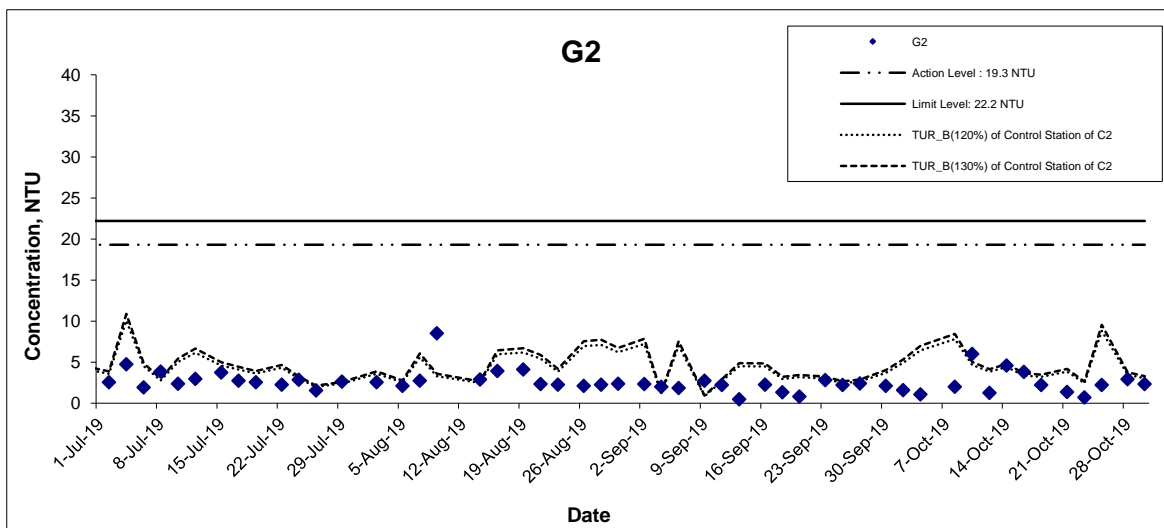
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Turbidity (Bottom) at Mid-Ebb Tide



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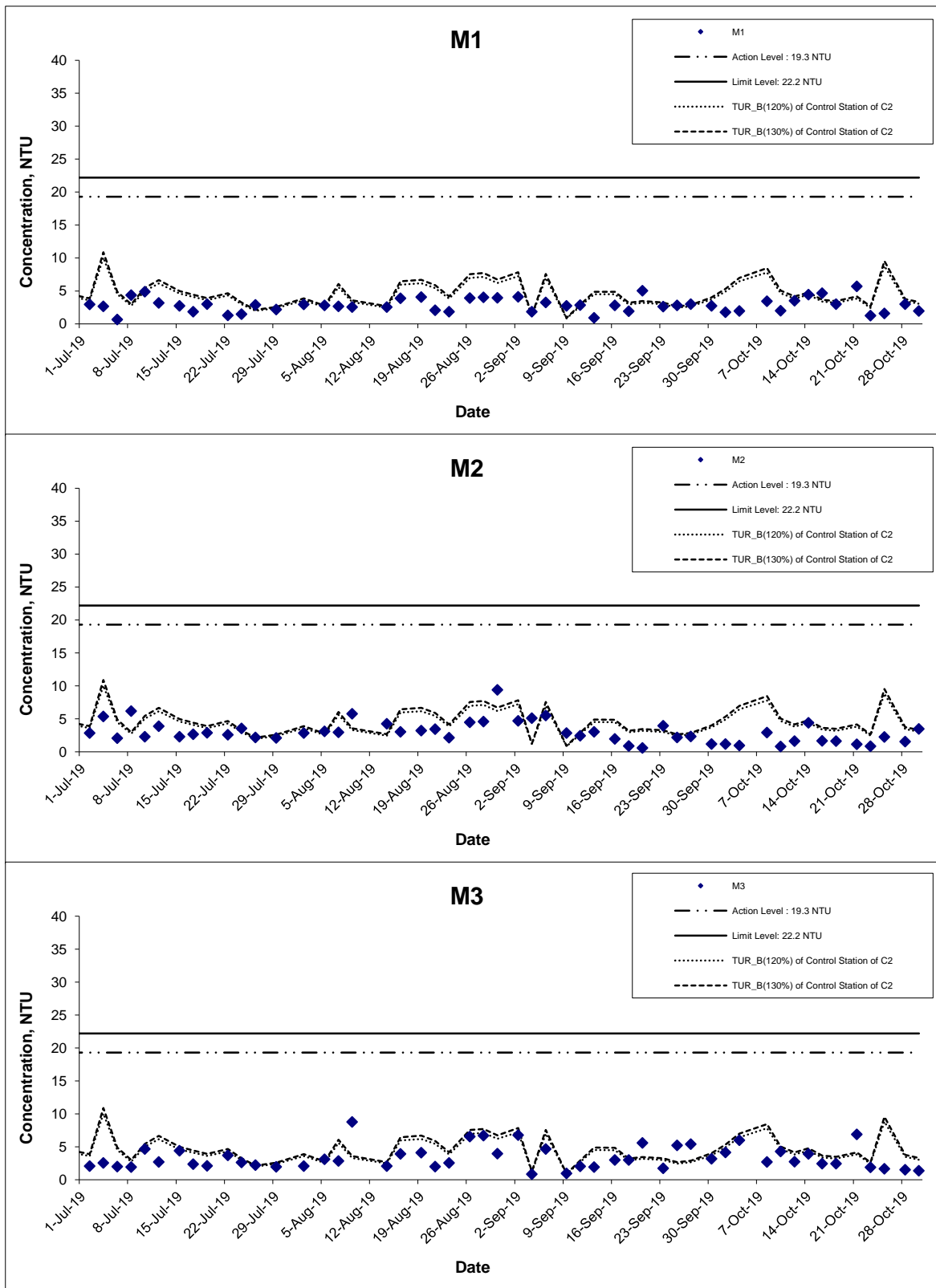
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Turbidity (Bottom) at Mid-Ebb Tide



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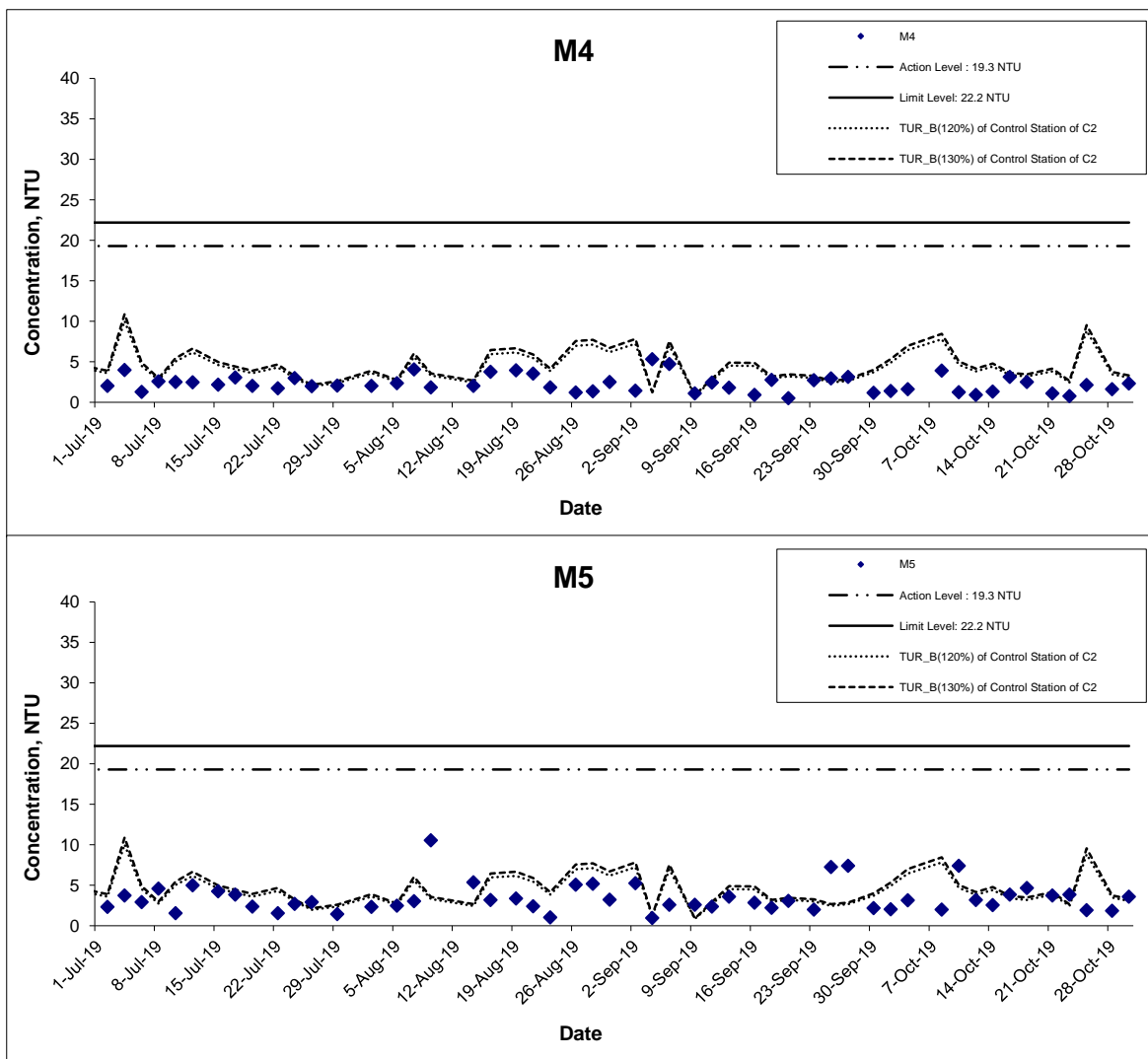
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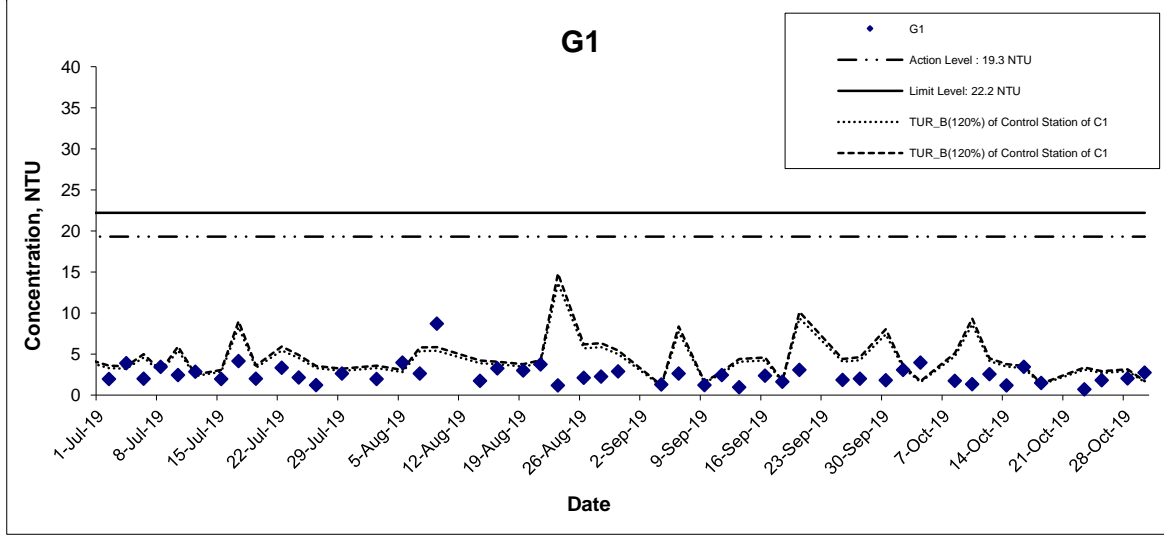
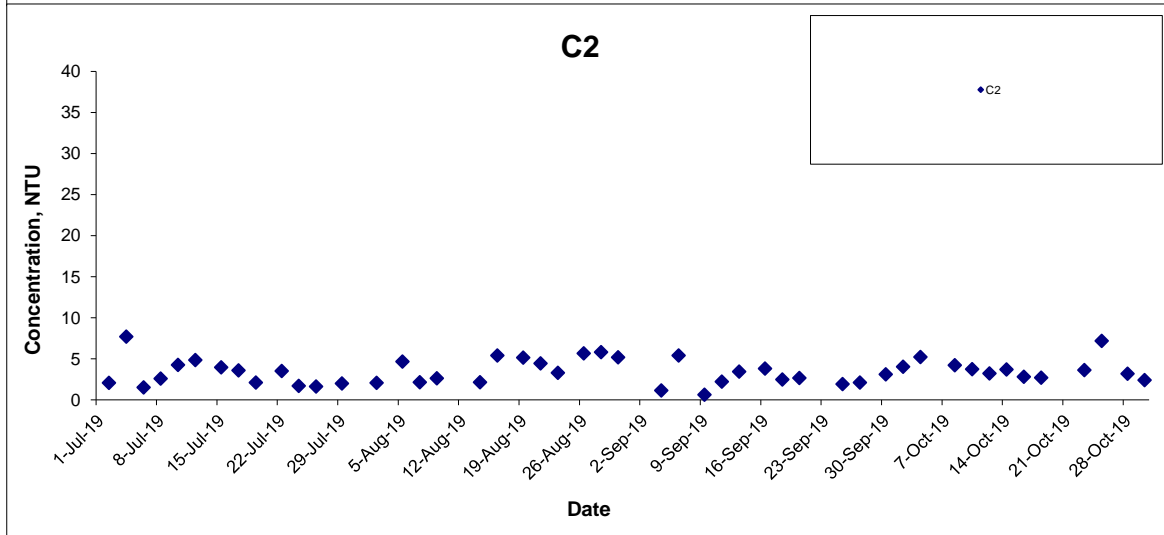
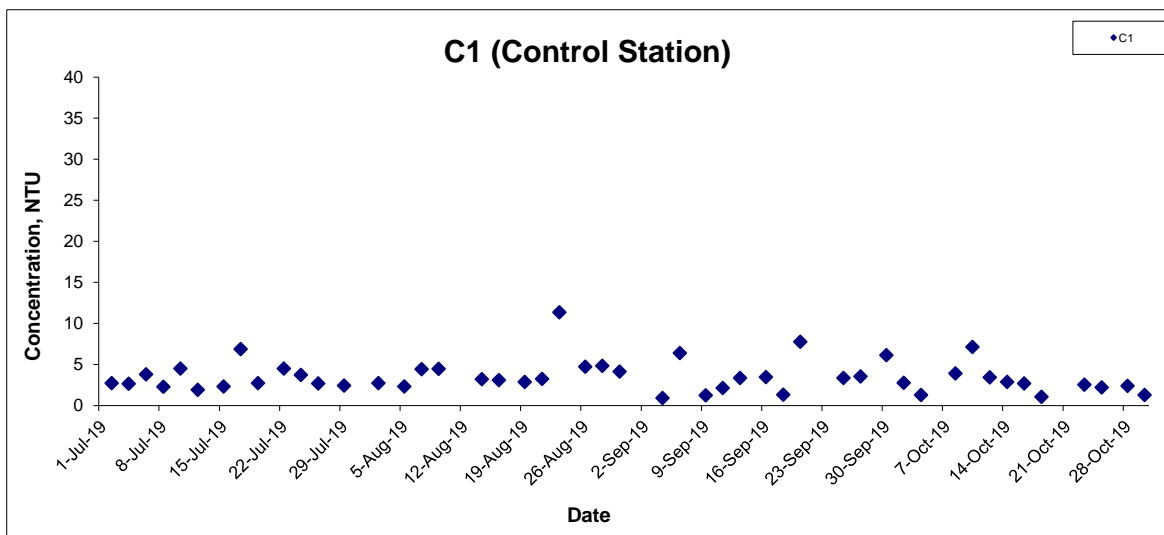


Turbidity (Bottom) at Mid-Ebb Tide



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Turbidity (Bottom) at Mid-Flood Tide



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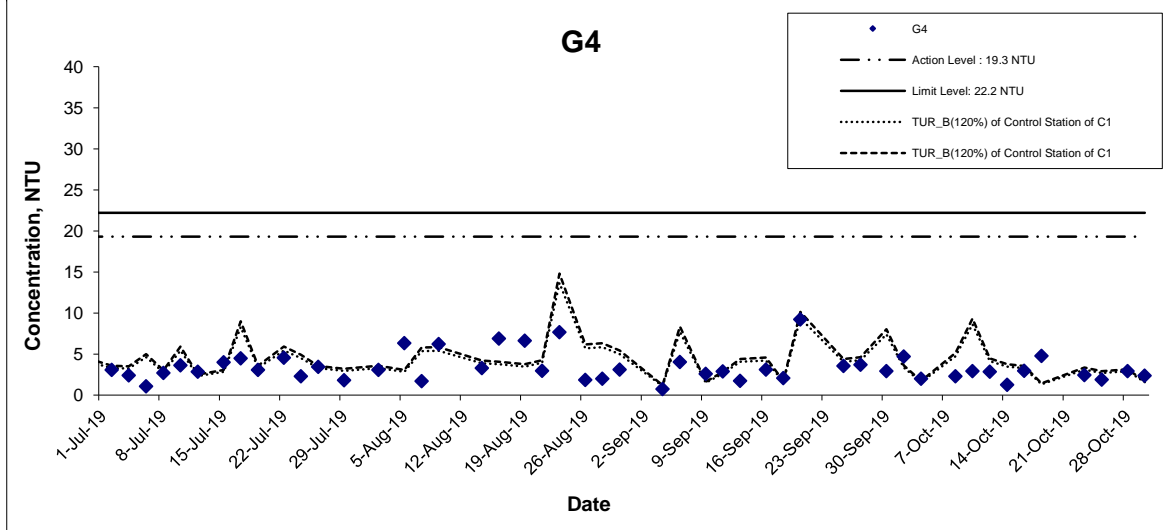
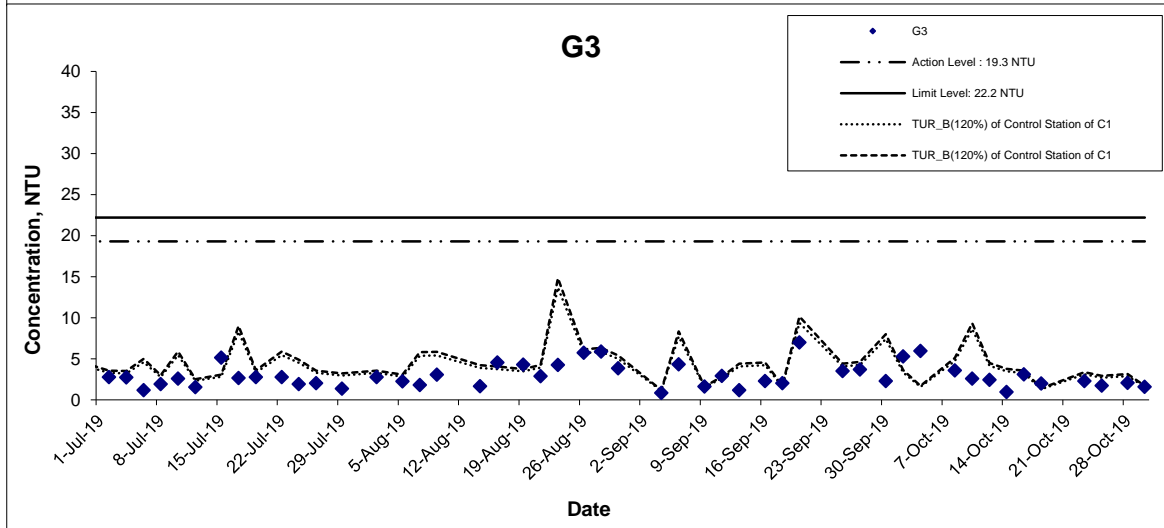
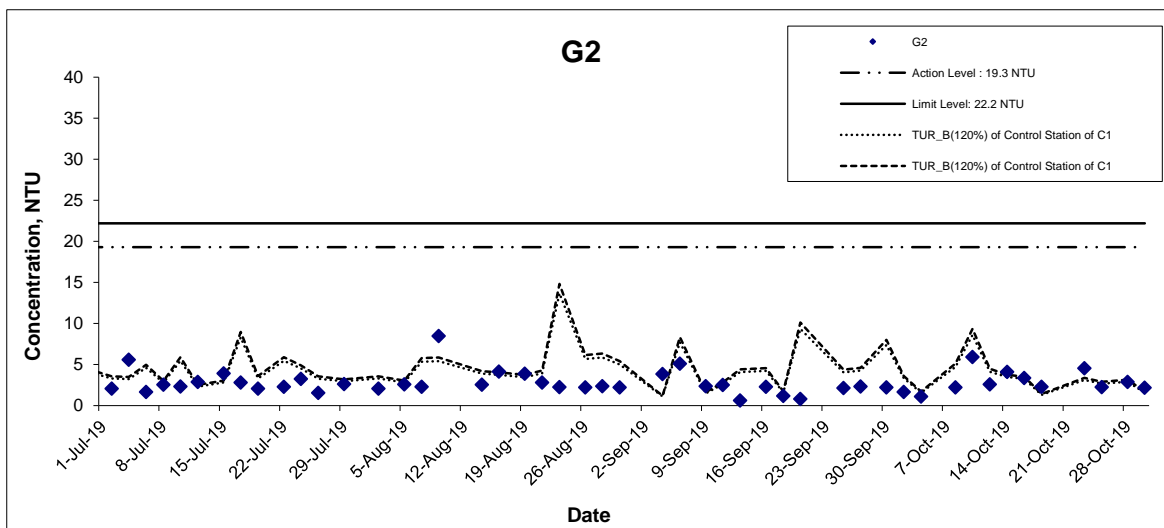
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Turbidity (Bottom) at Mid-Flood Tide



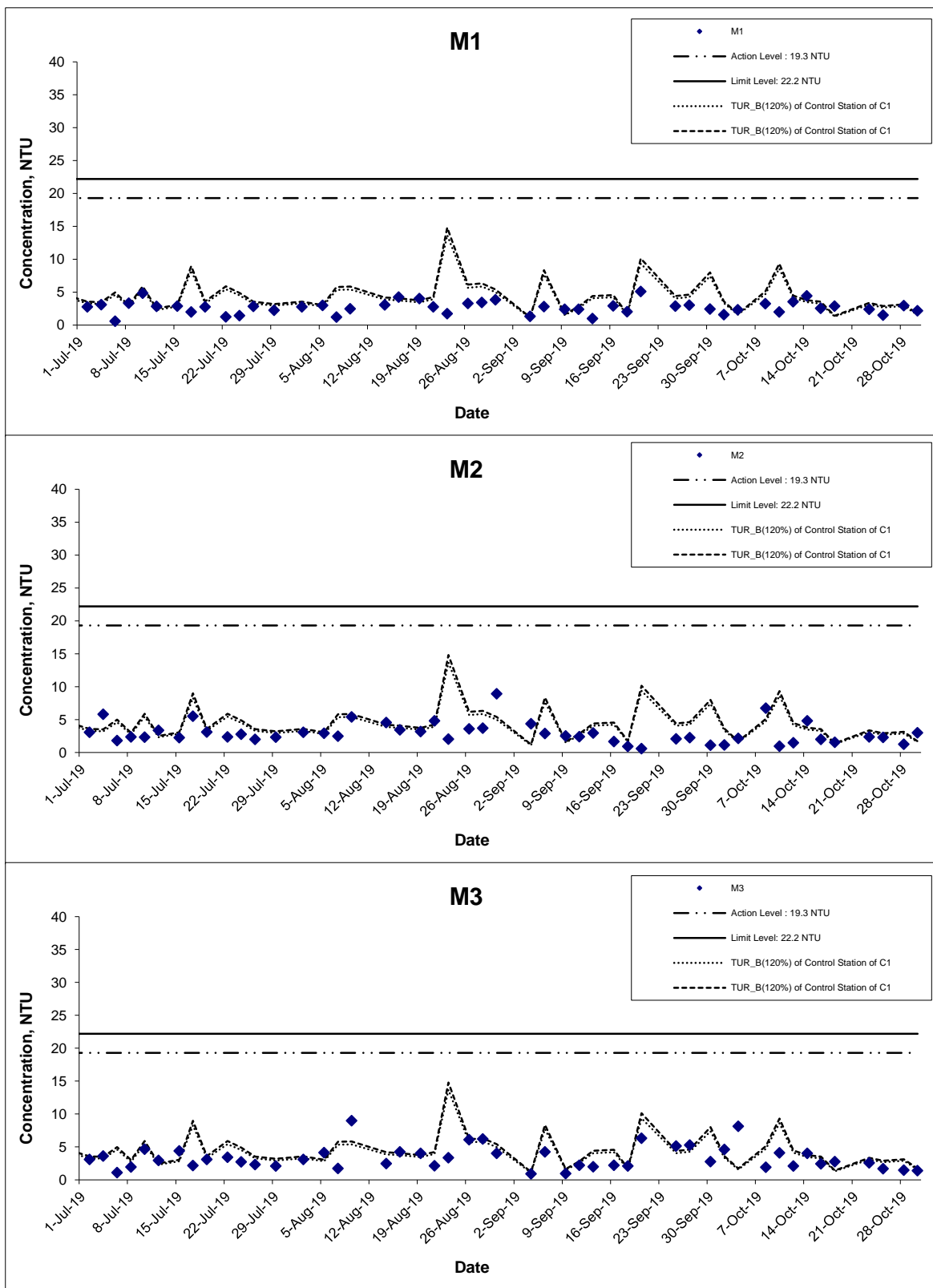
Title
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Turbidity (Bottom) at Mid-Flood Tide



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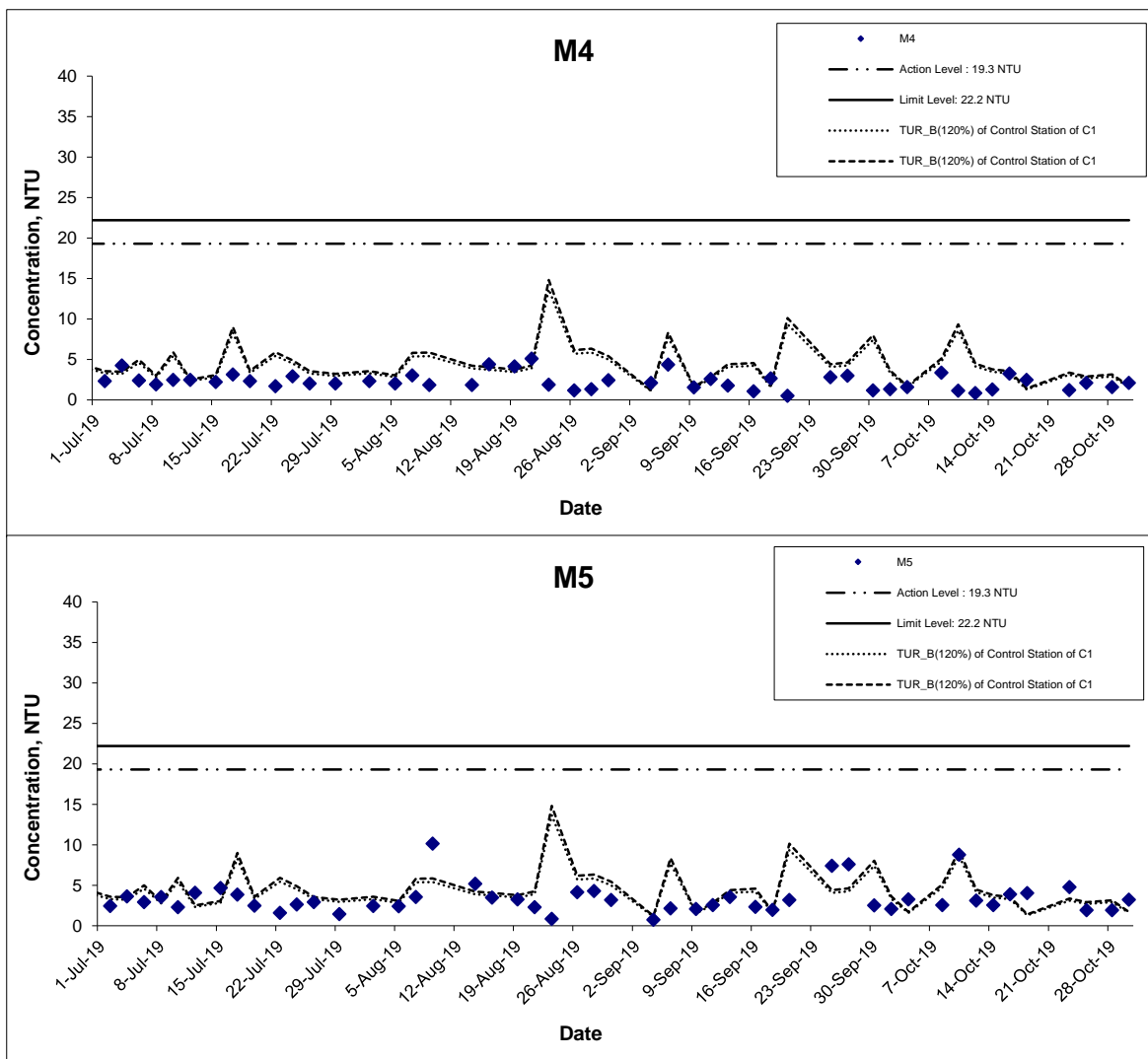
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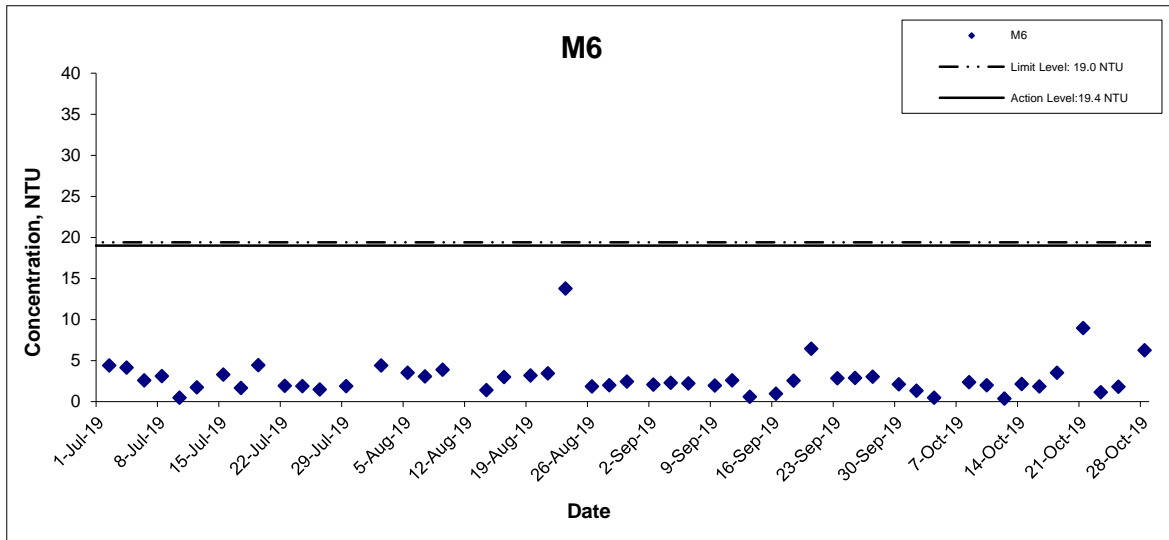


Turbidity (Bottom) at Mid-Flood Tide



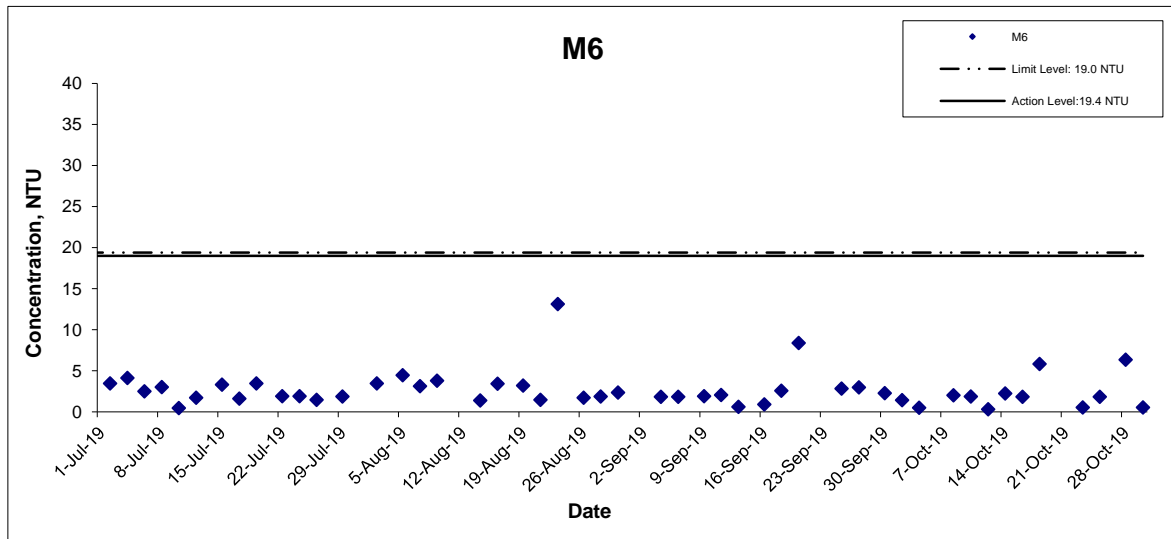
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Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



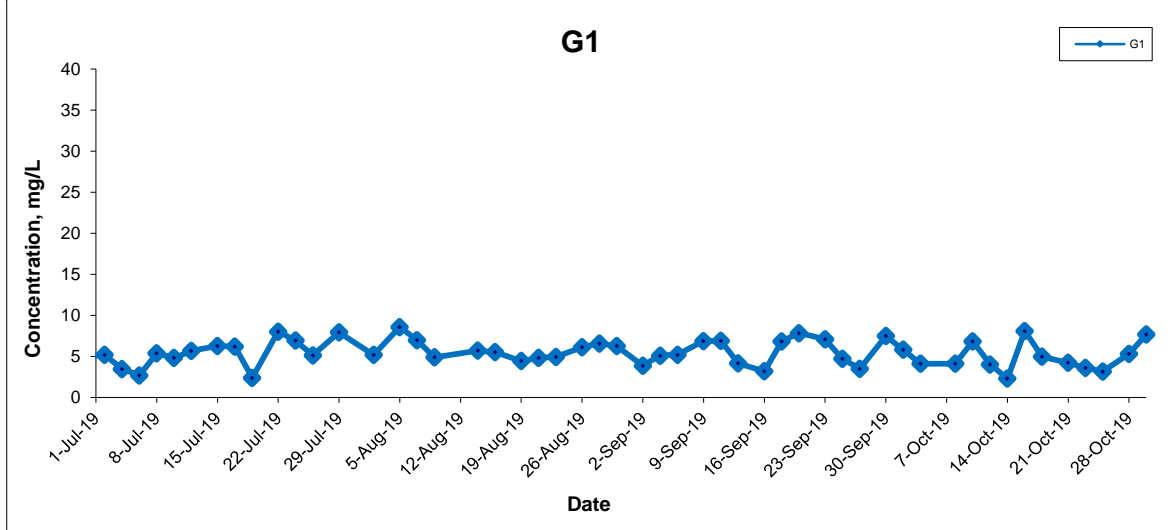
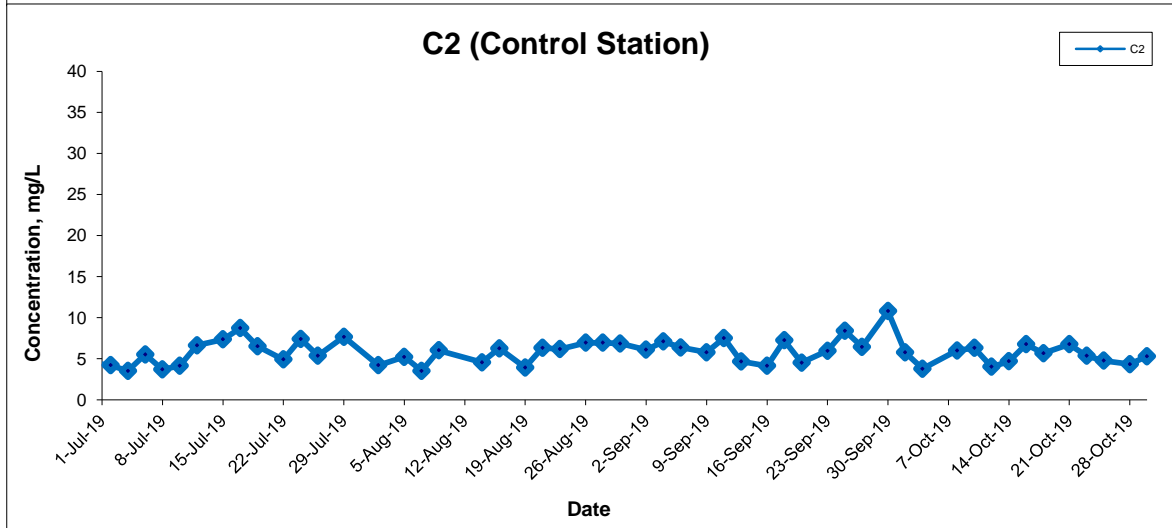
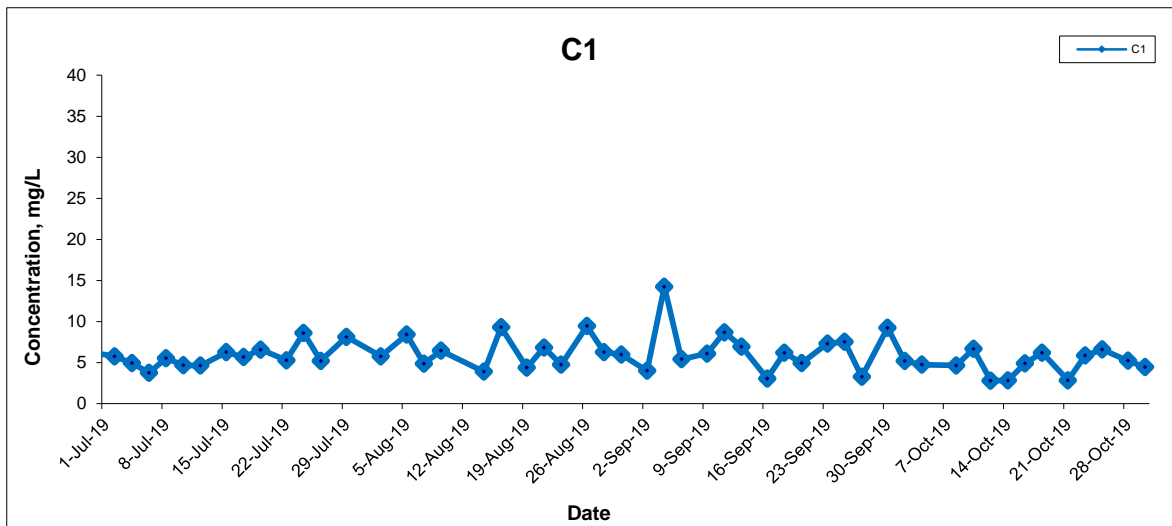
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale	N.T.S	Project No.	MA16034	CINOTECH
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Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



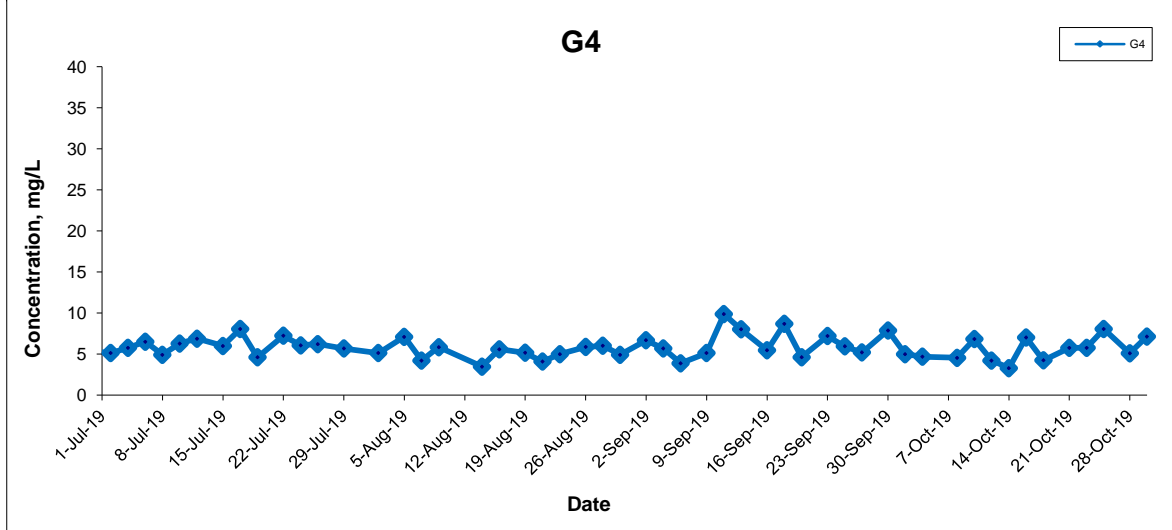
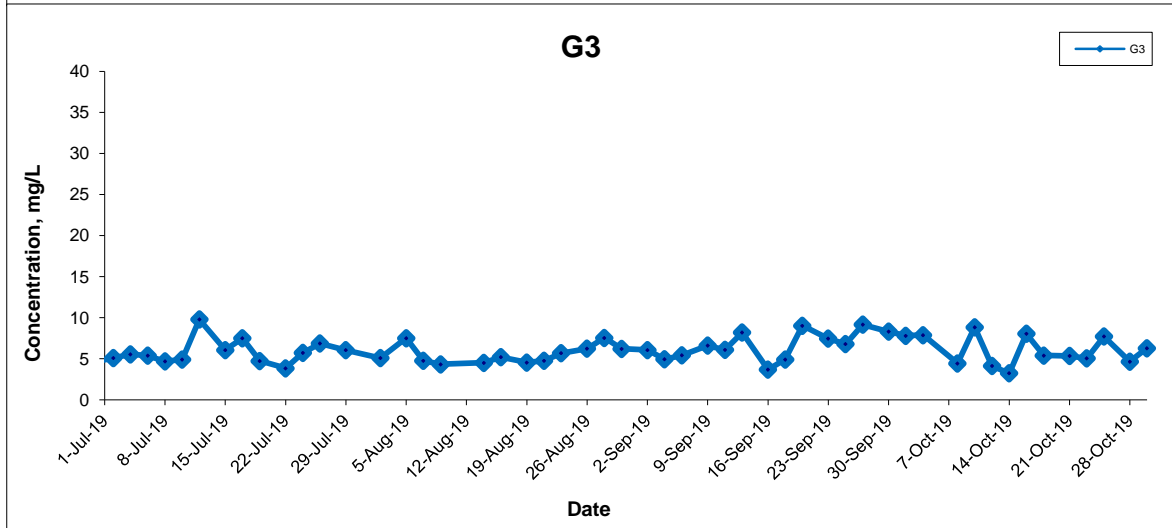
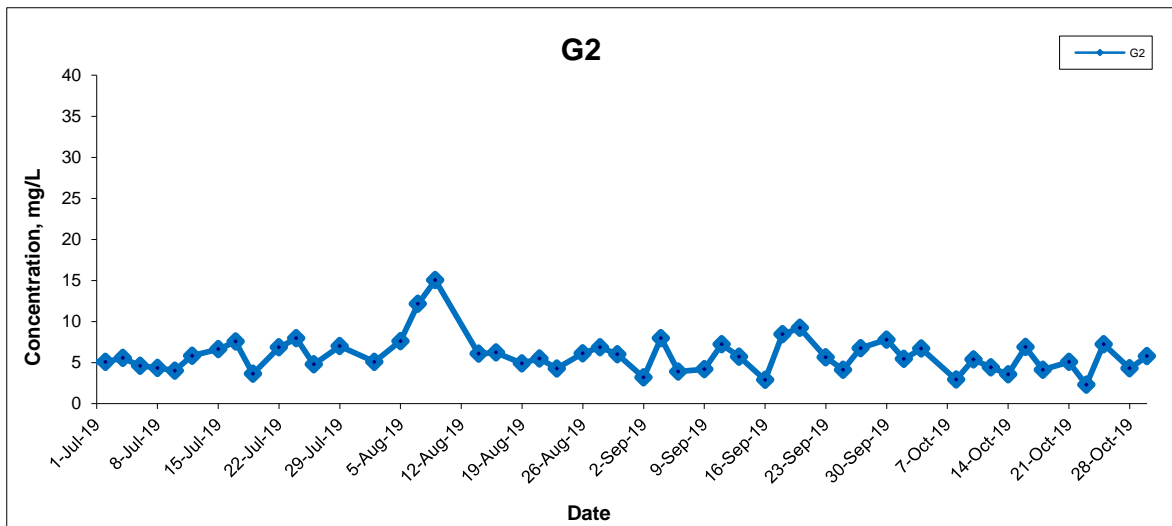
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



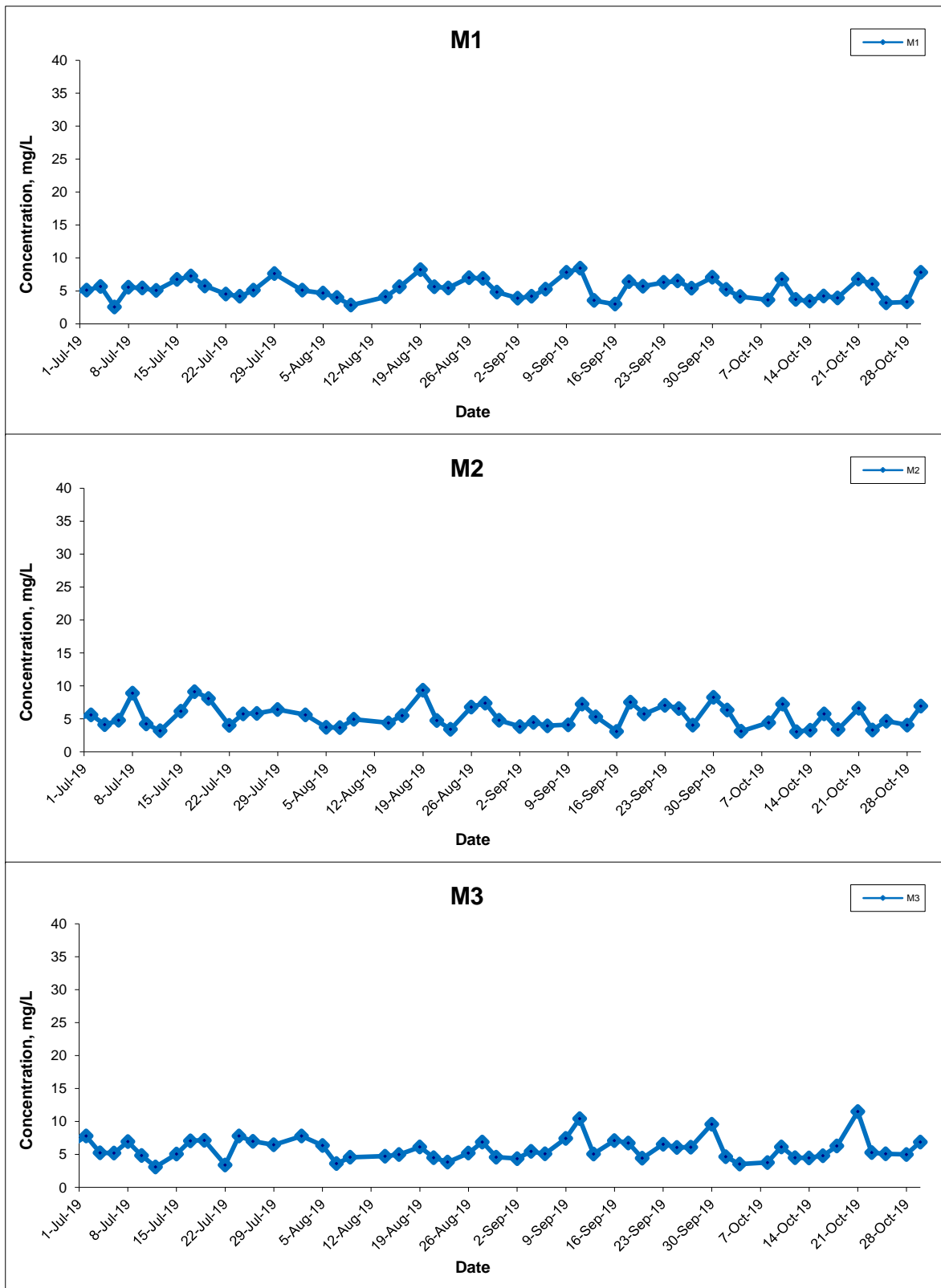
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



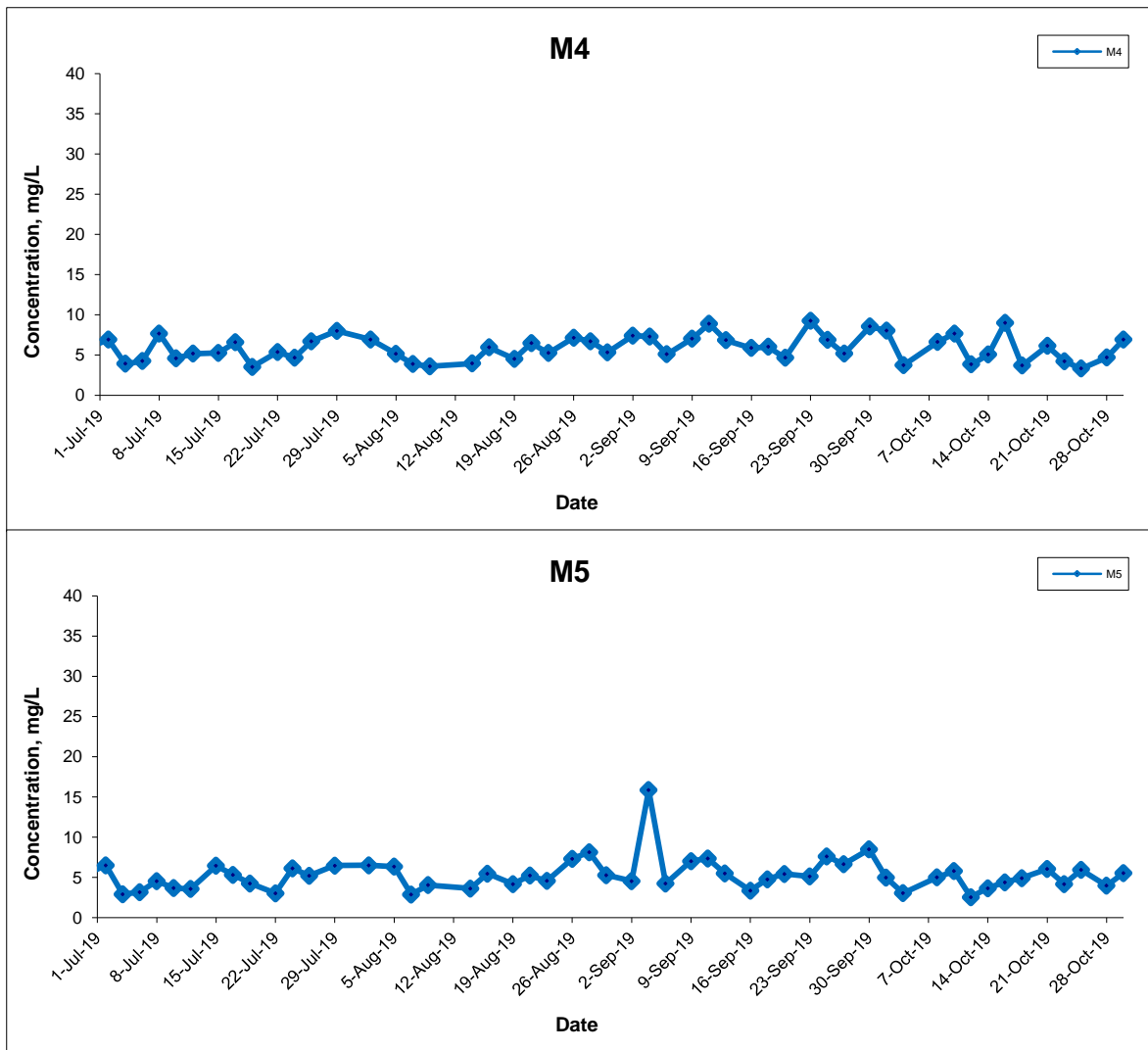
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



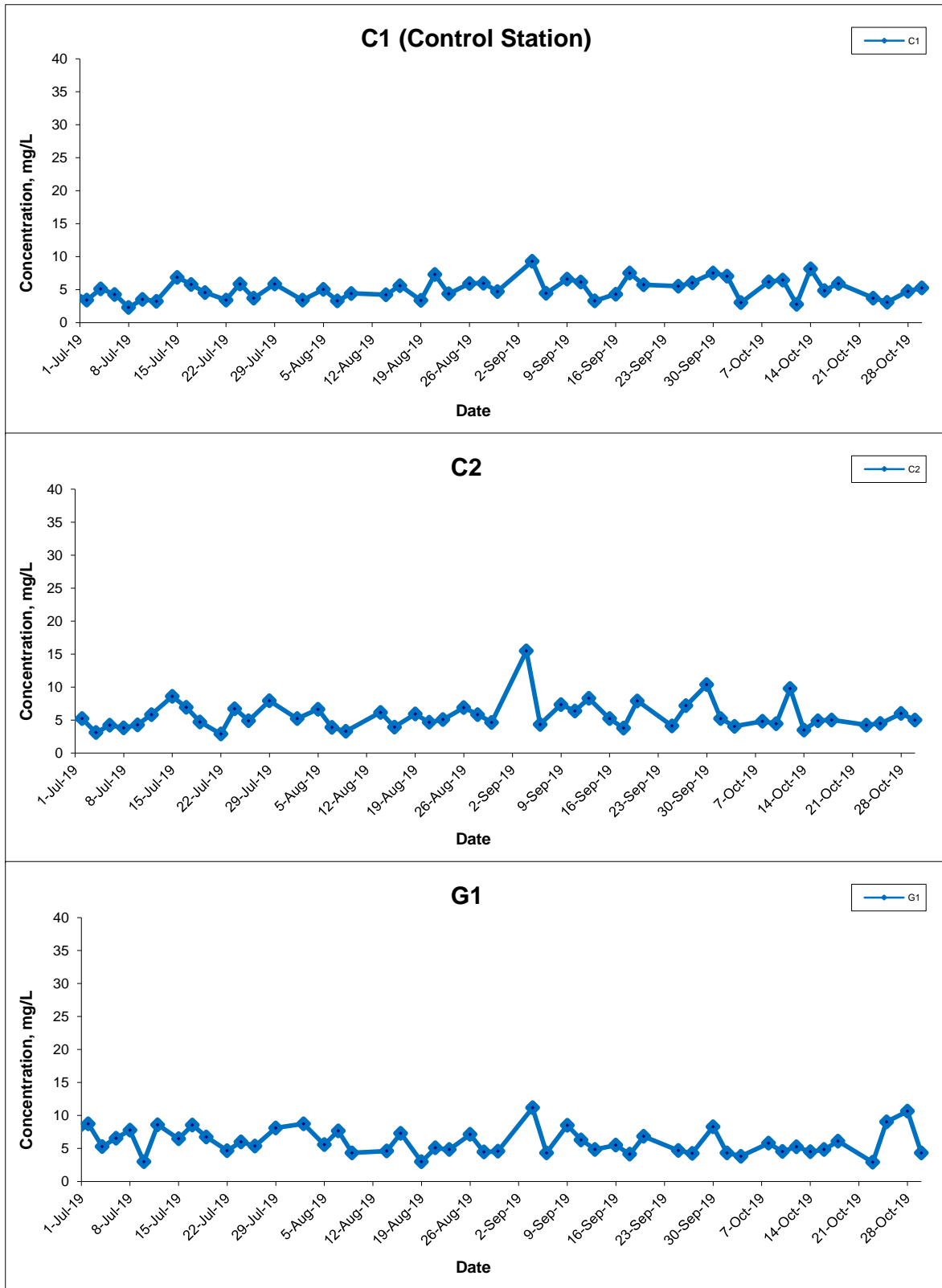
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



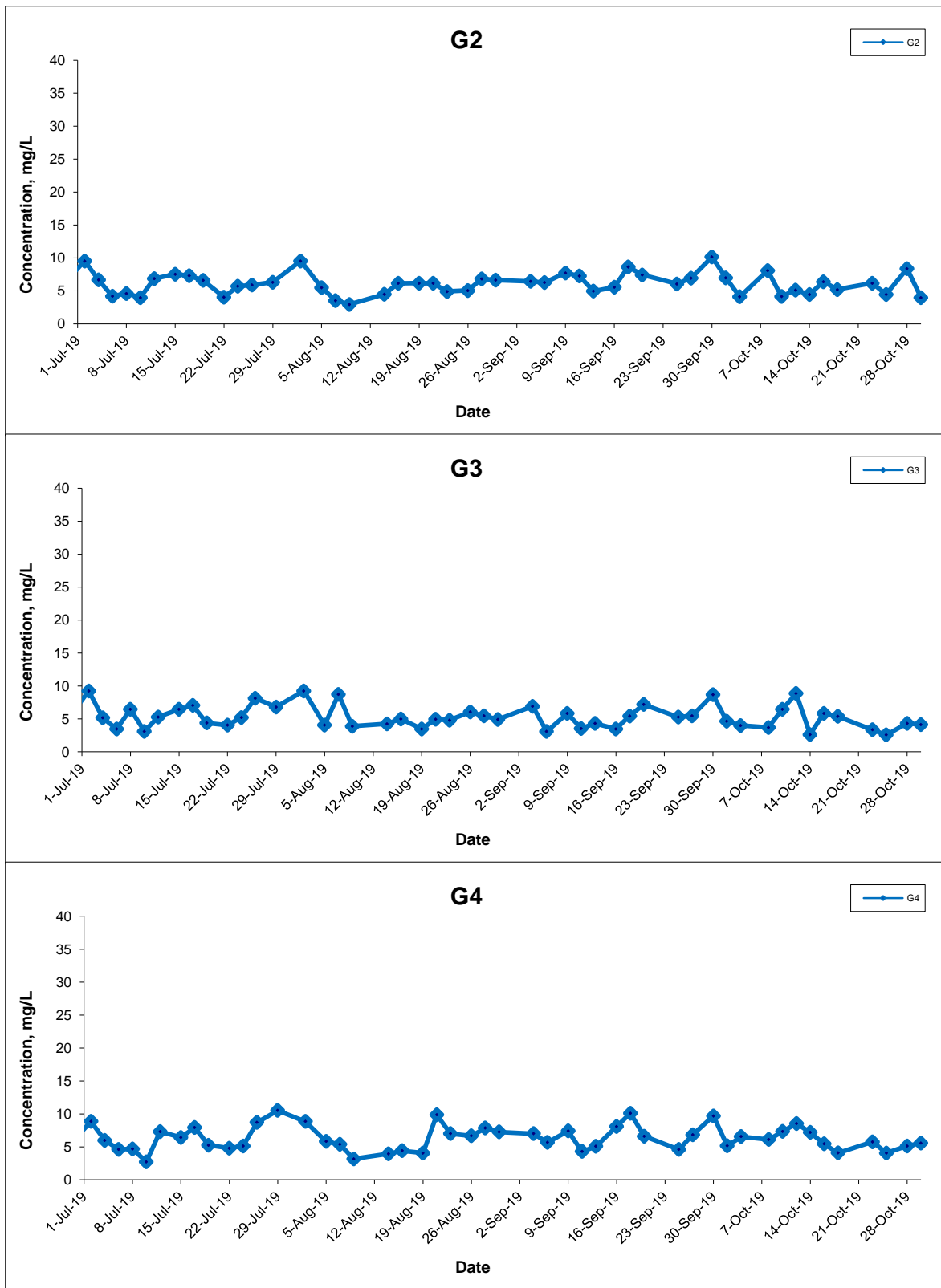
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale	N.T.S	Project No. MA16034	CINOTECH
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



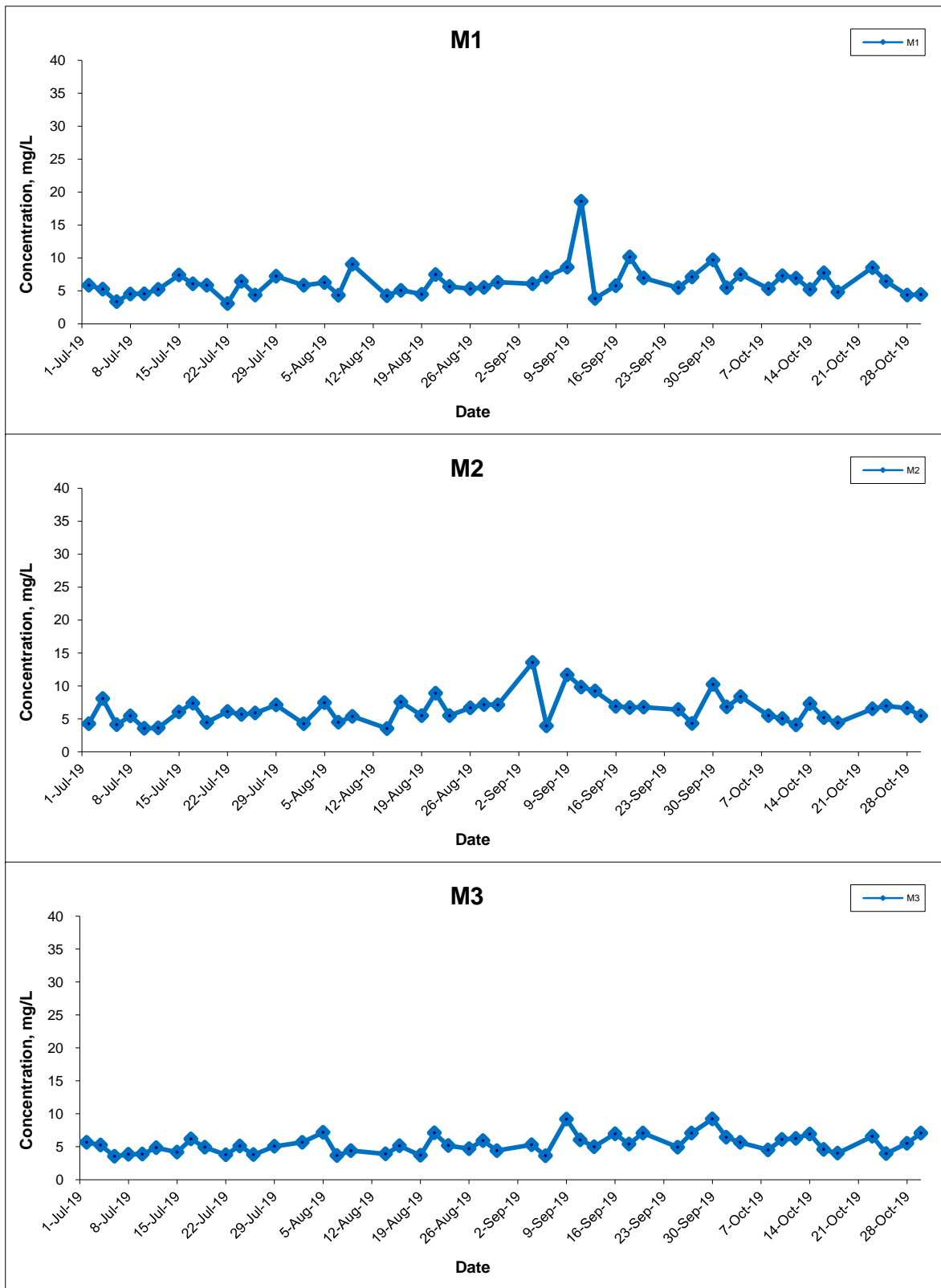
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Oct 19	Appendix I	

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



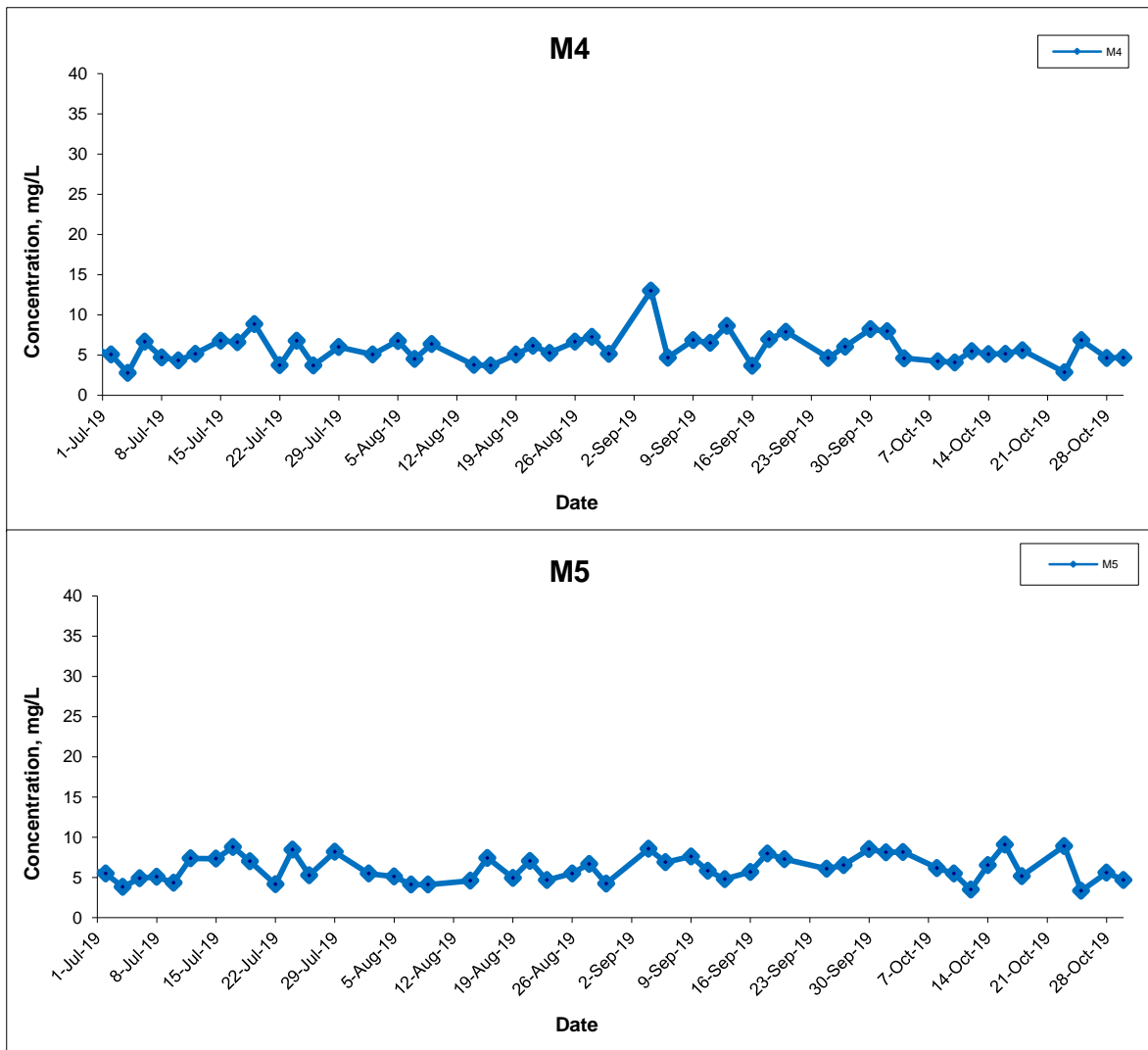
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Oct 19	Appendix I	

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



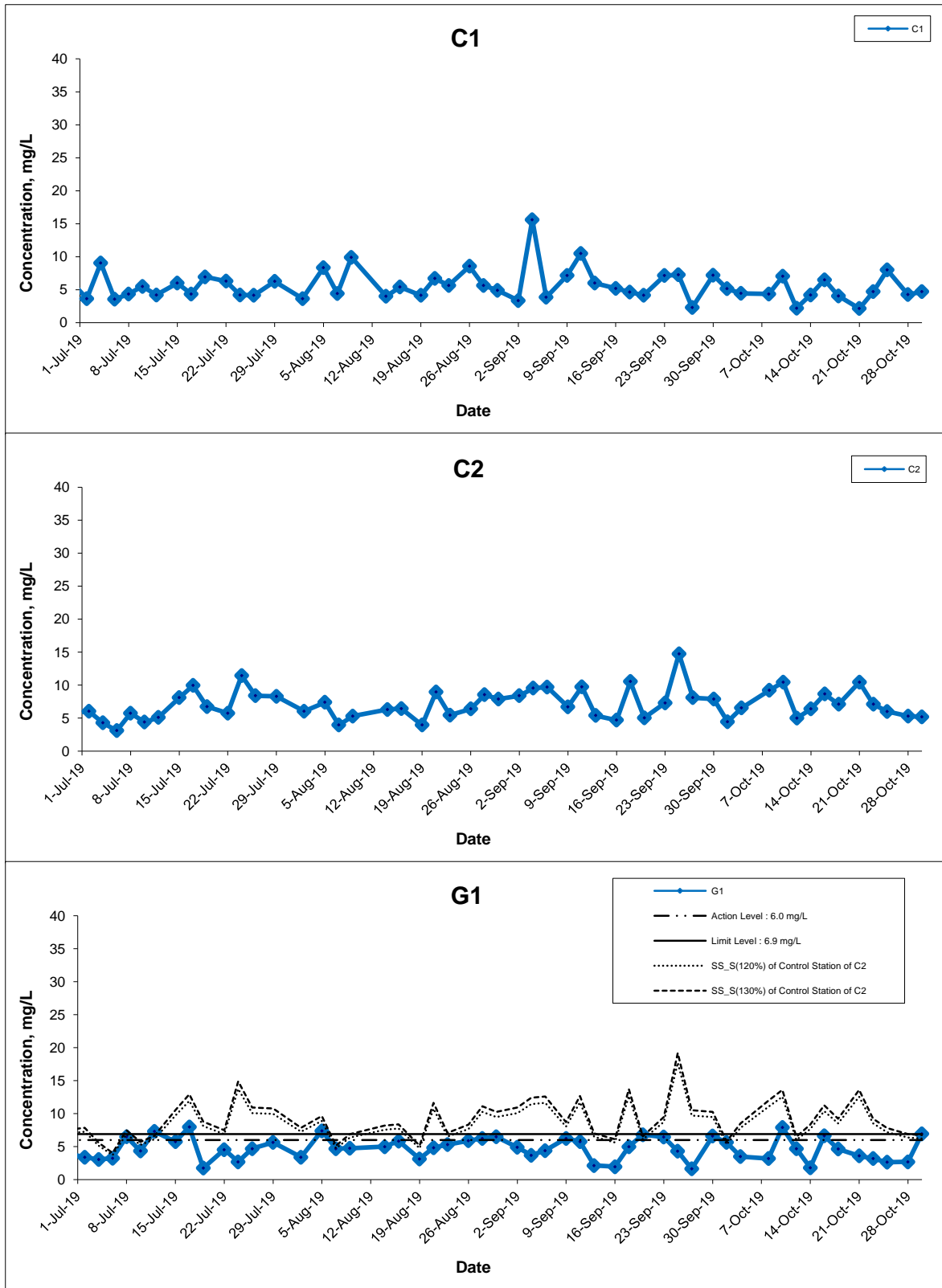
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



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Suspended Solids (Surface) at Mid-Ebb Tide



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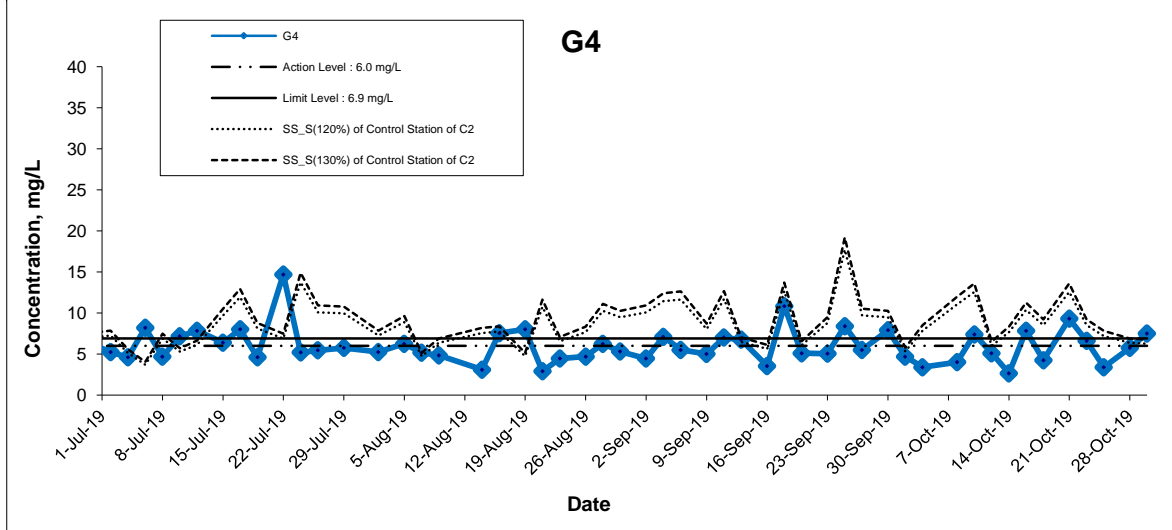
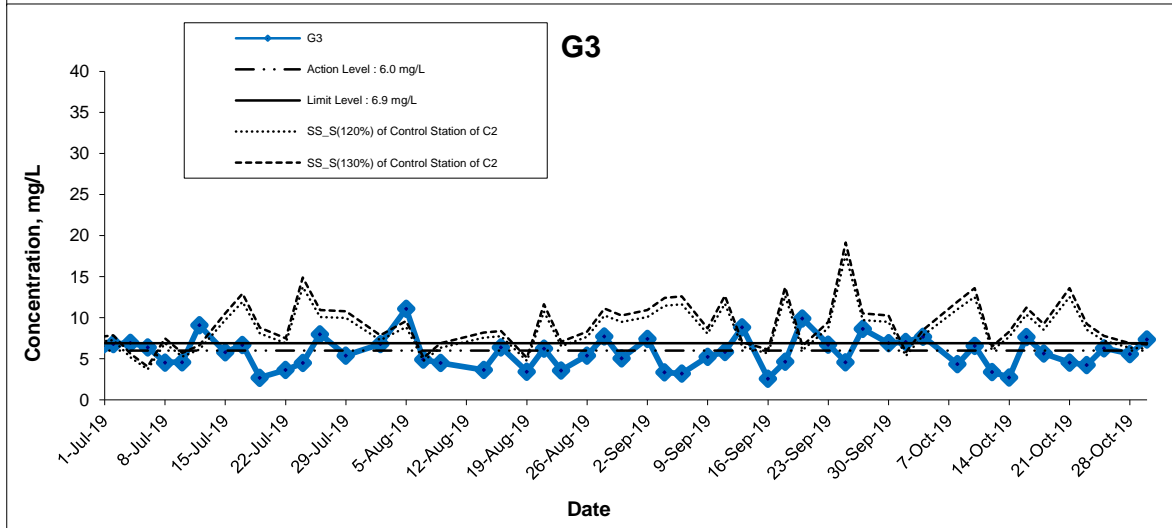
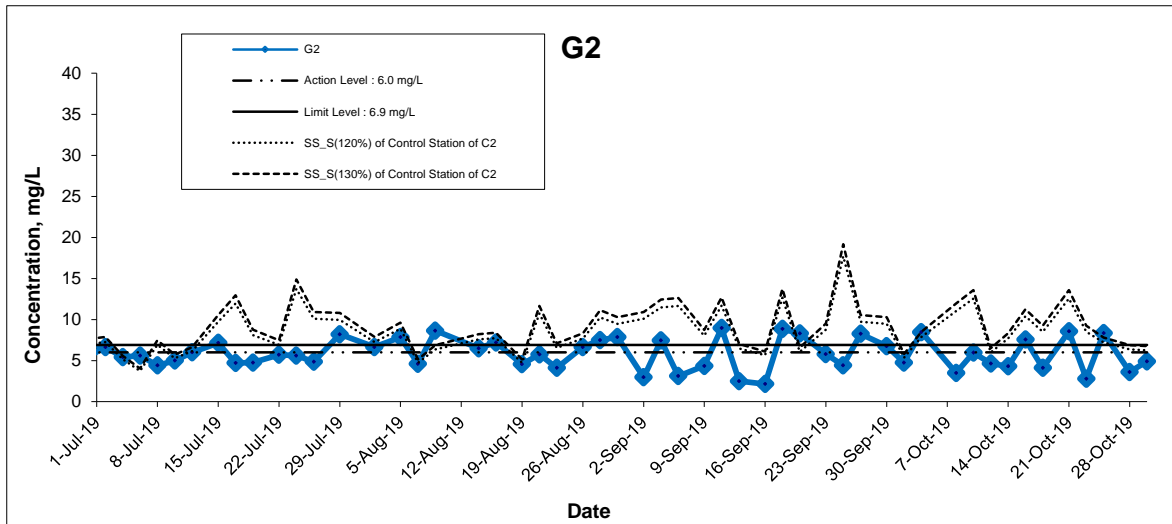
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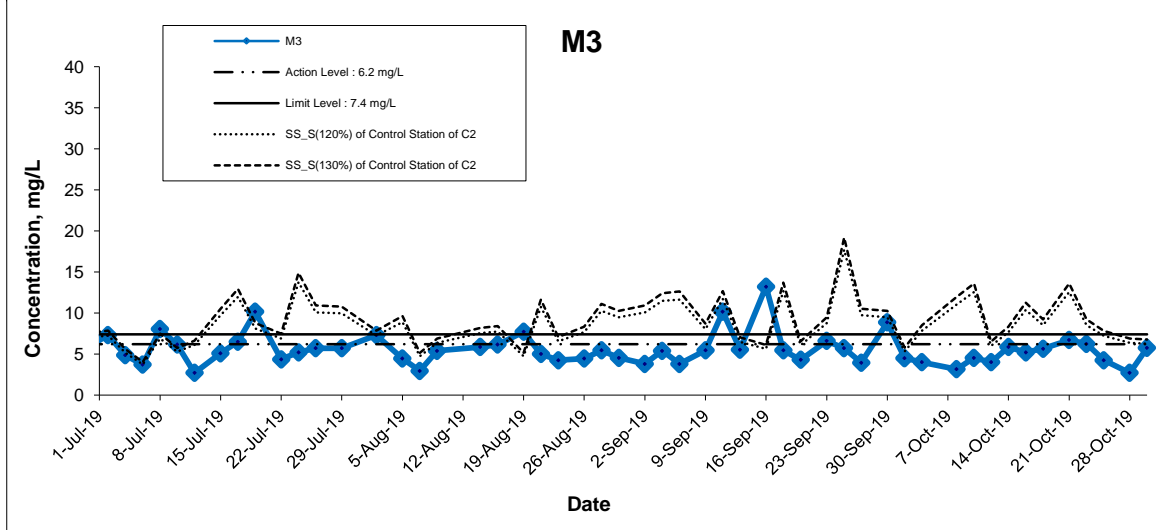
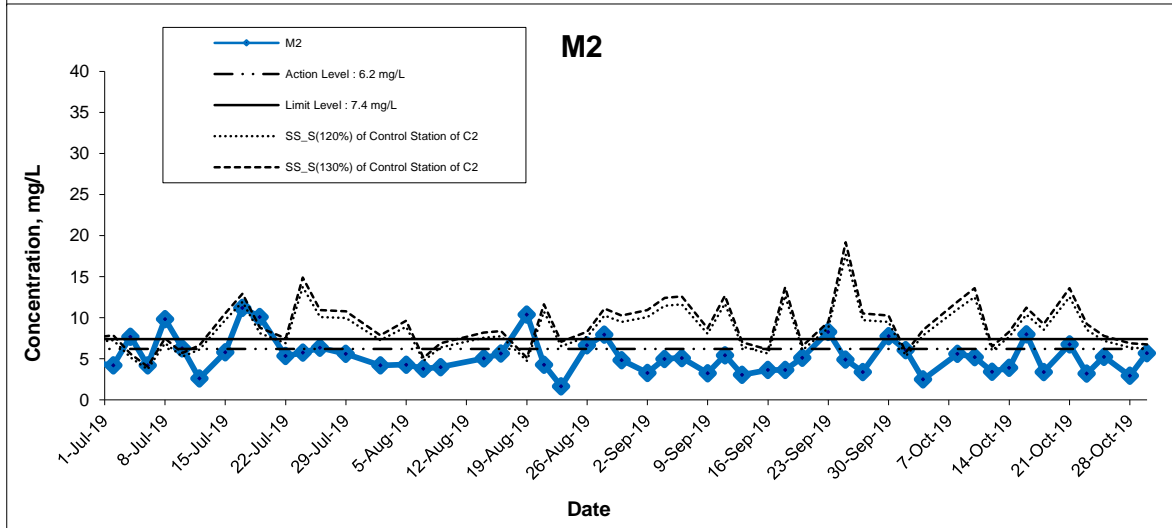
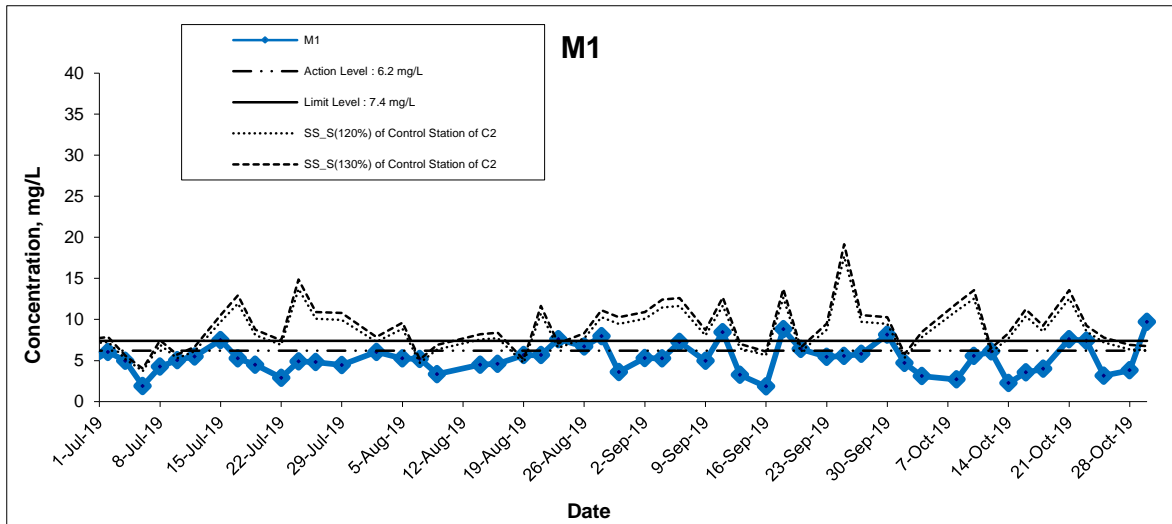


Suspended Solids (Surface) at Mid-Ebb Tide



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Suspended Solids (Surface) at Mid-Ebb Tide



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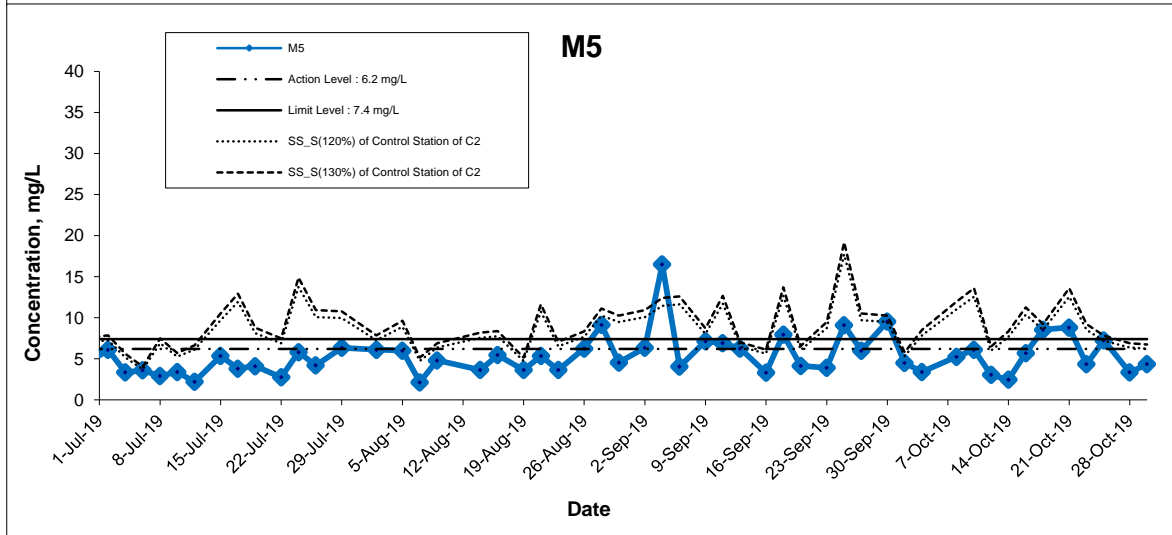
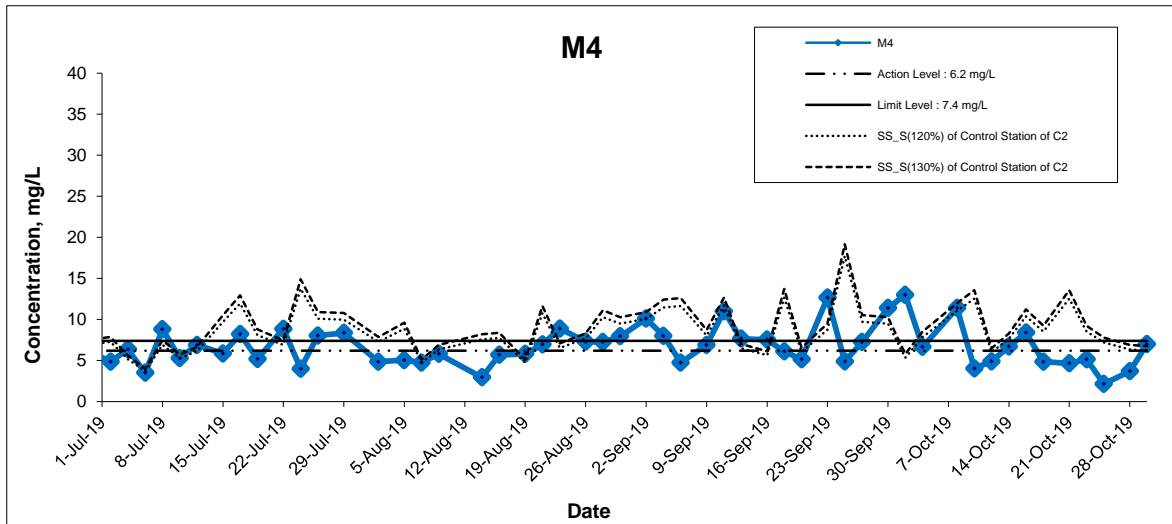
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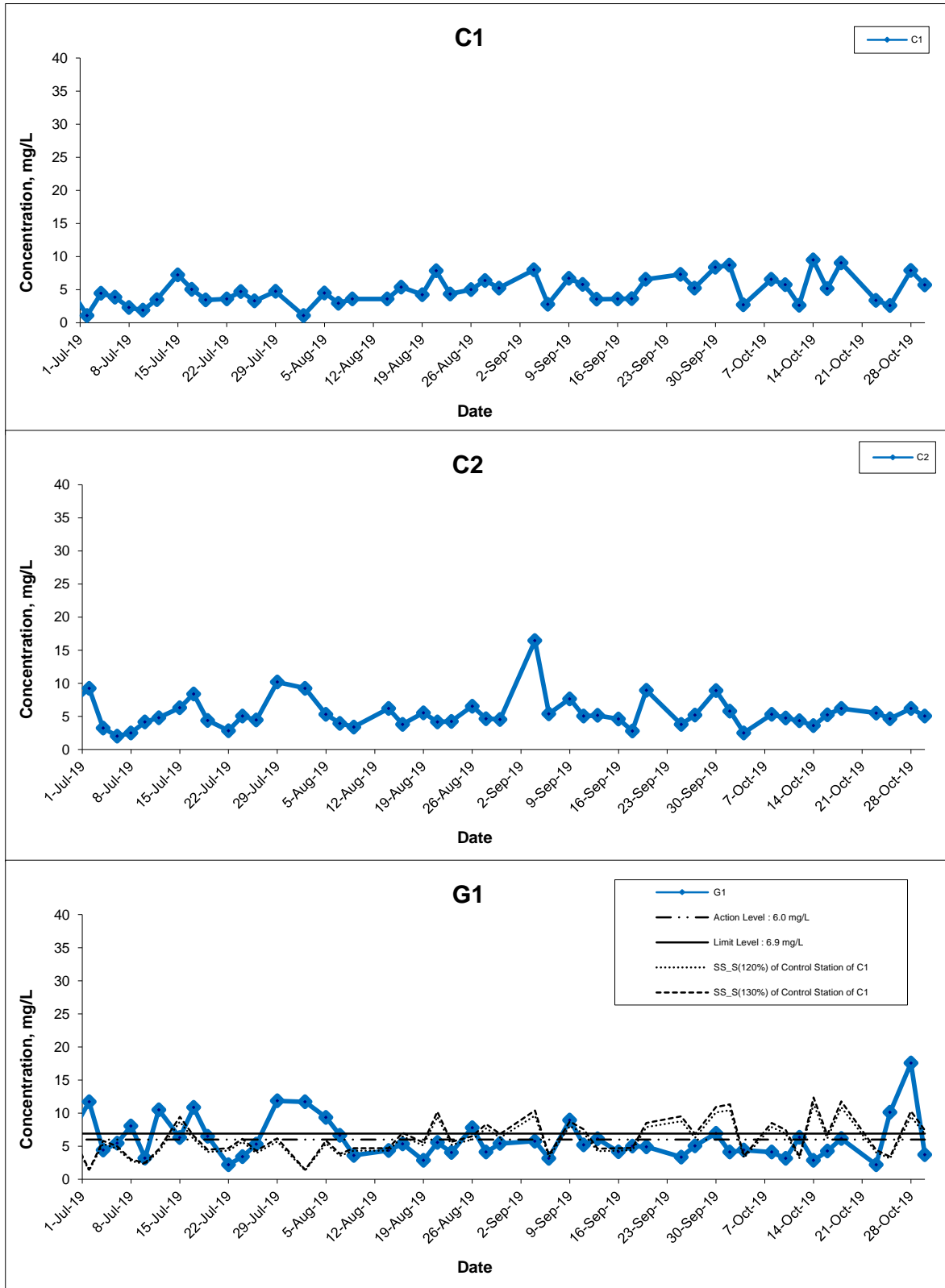


Suspended Solids (Surface) at Mid-Ebb Tide



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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

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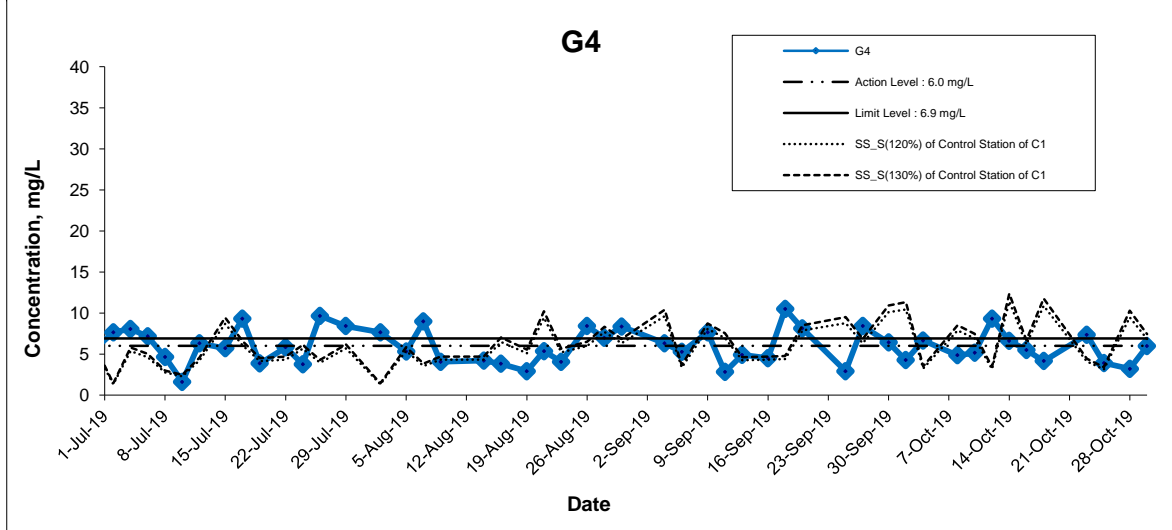
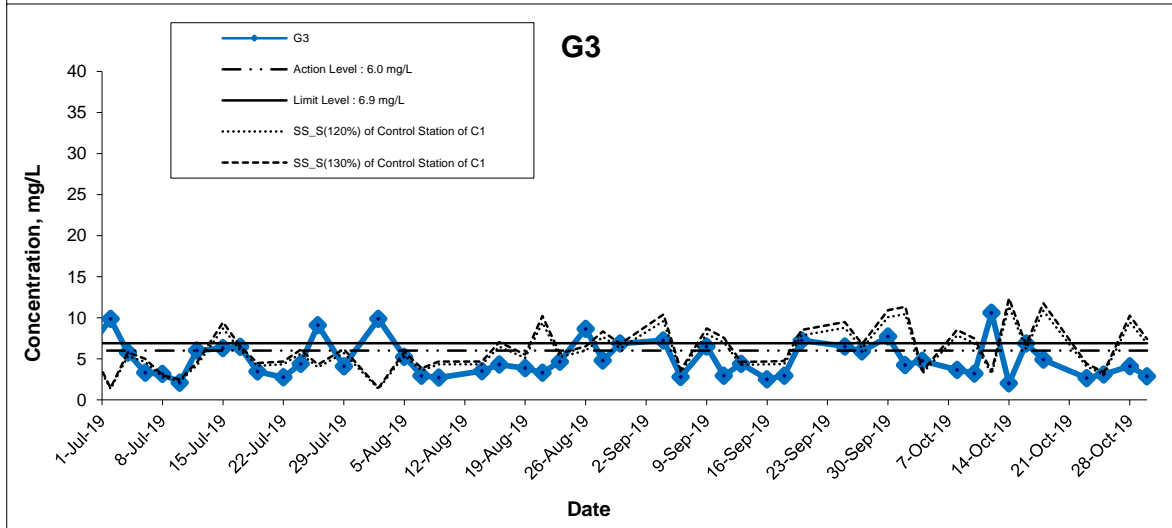
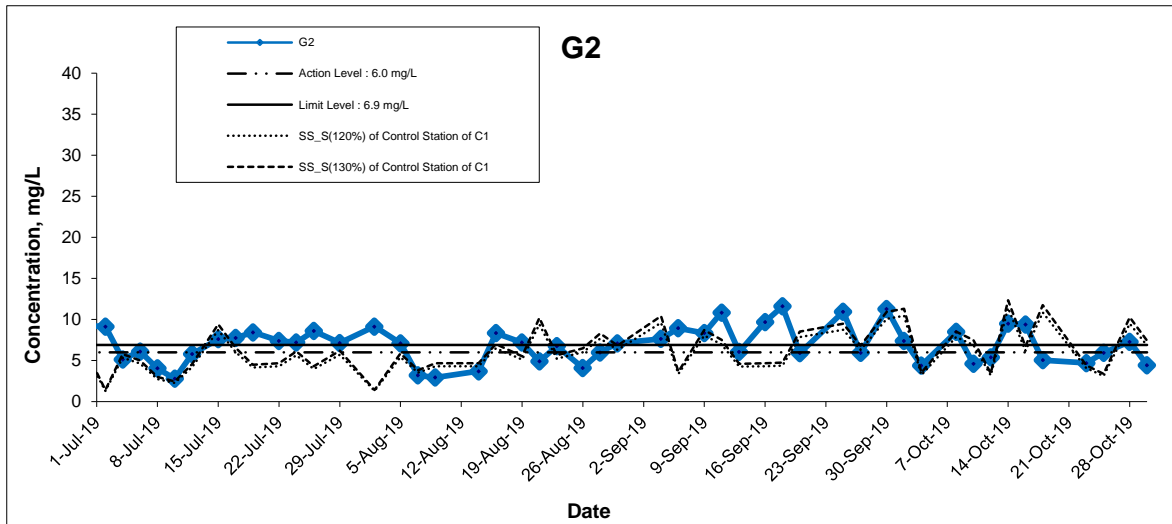
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Suspended Solids (Surface) at Mid-Flood Tide



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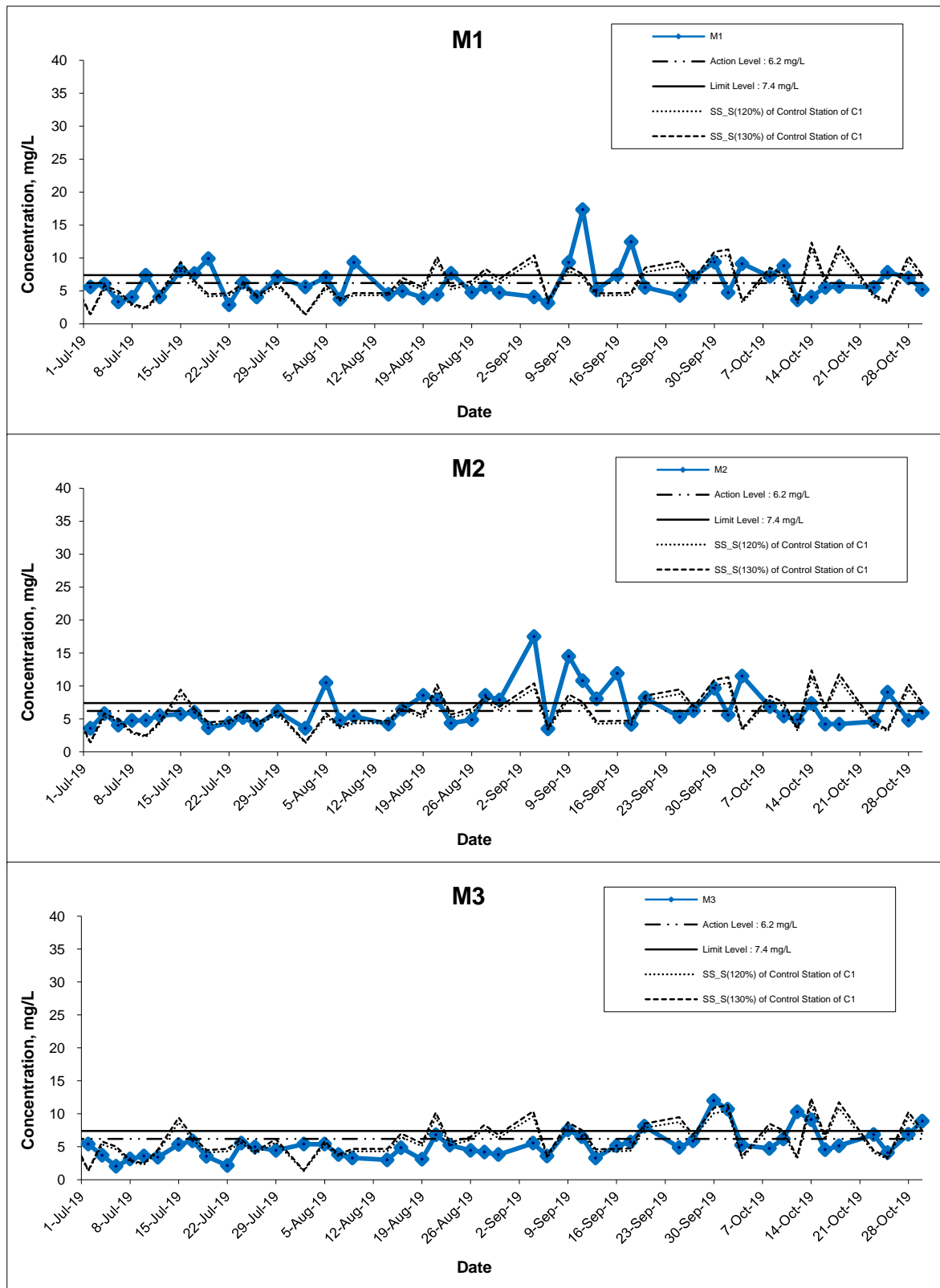
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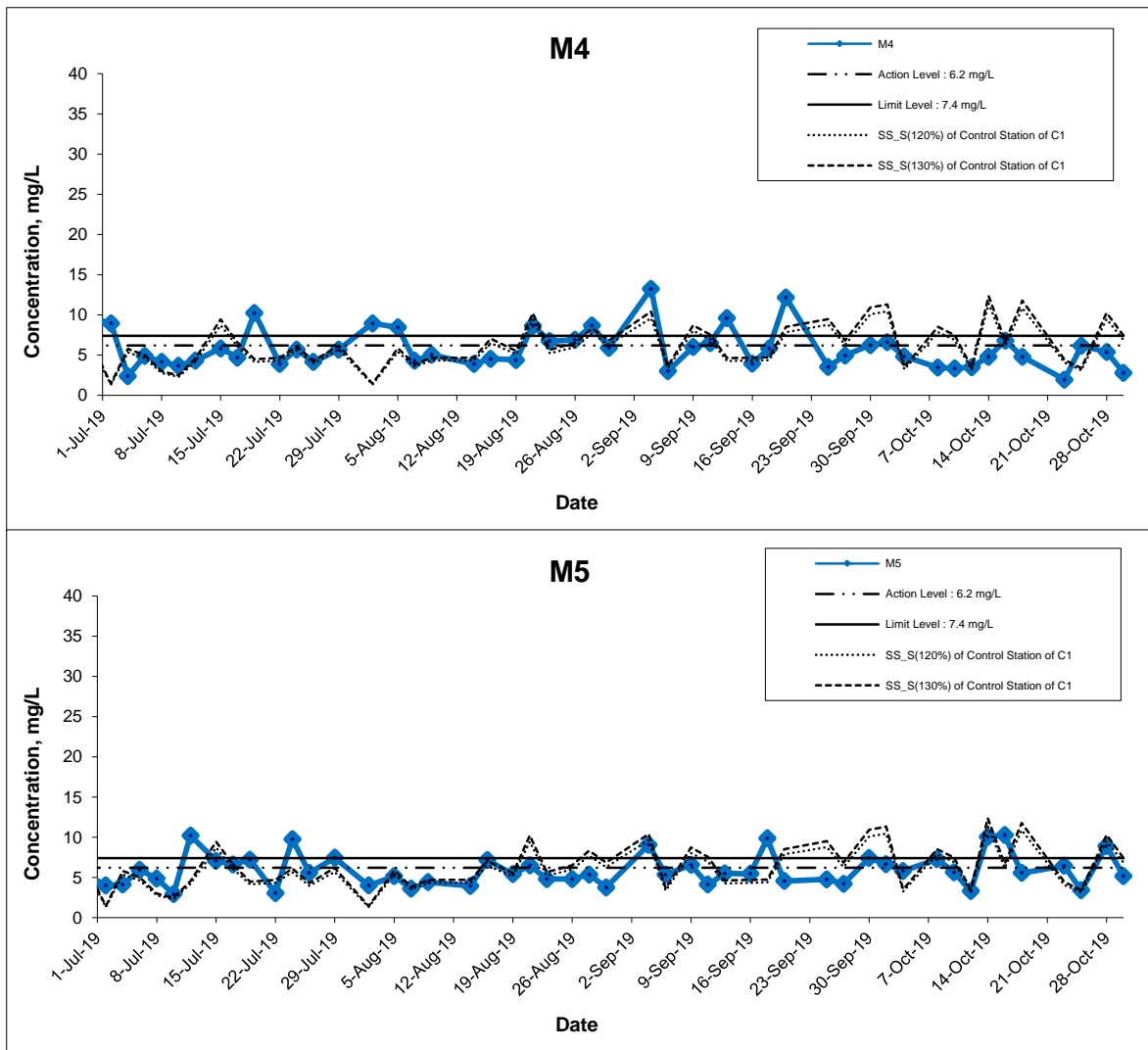


Suspended Solids (Surface) at Mid-Flood Tide



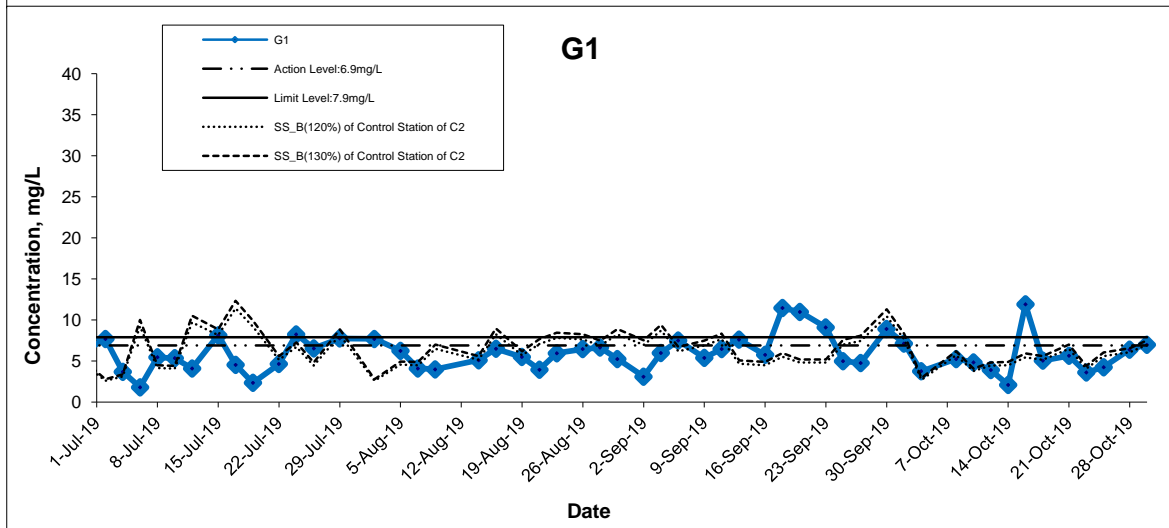
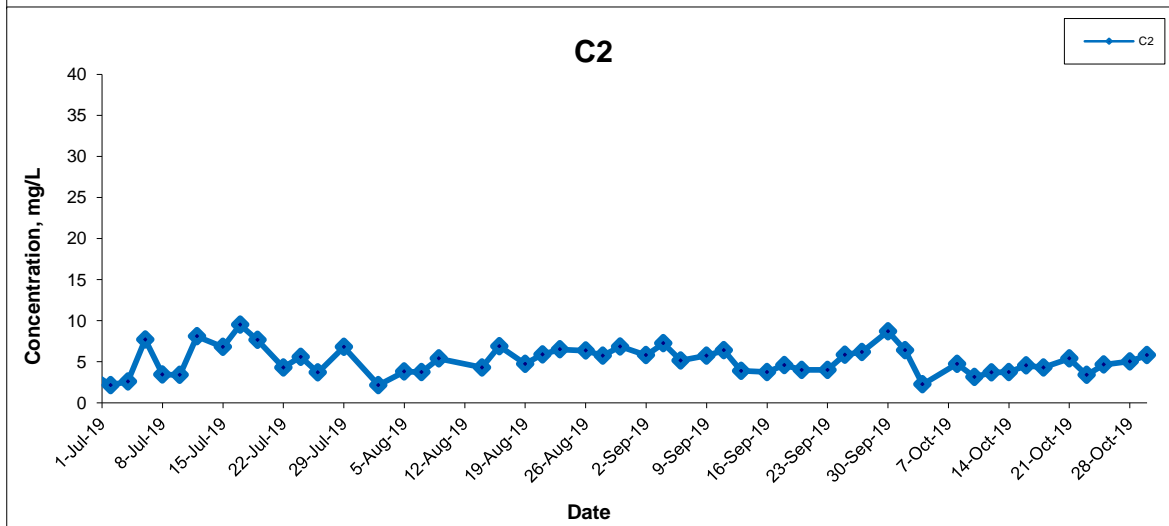
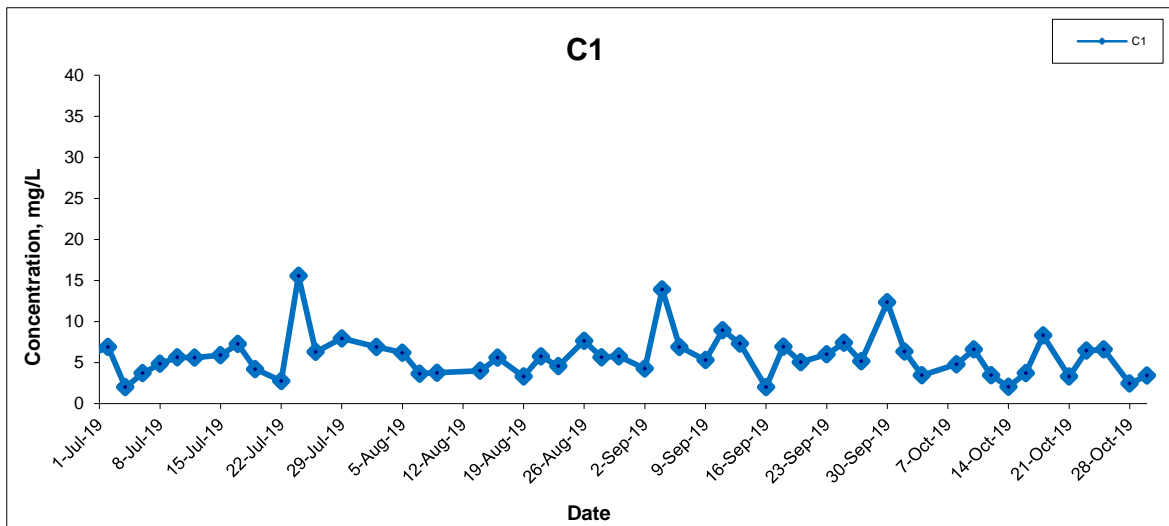
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Surface) at Mid-Flood Tide



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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

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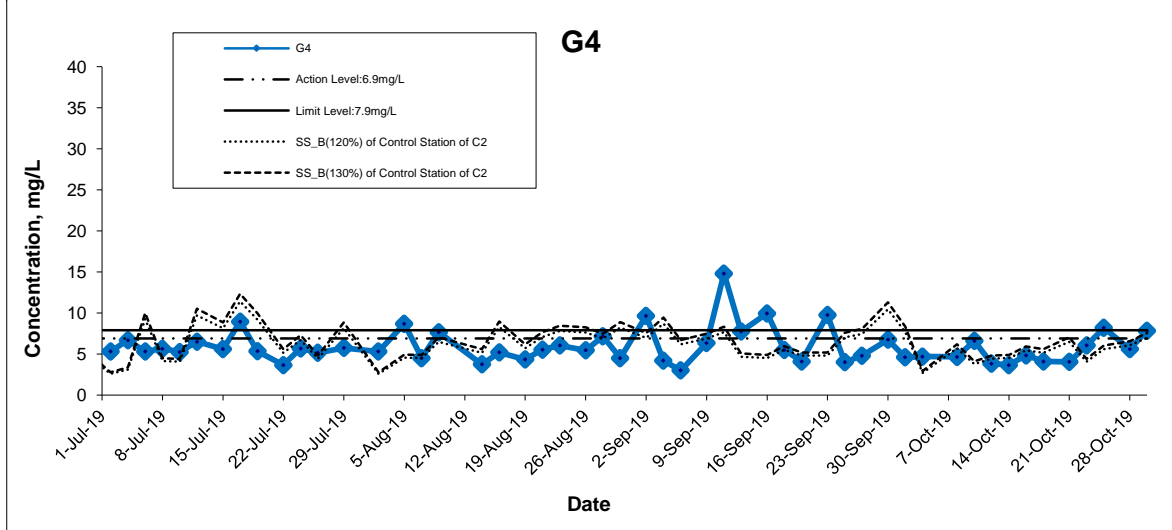
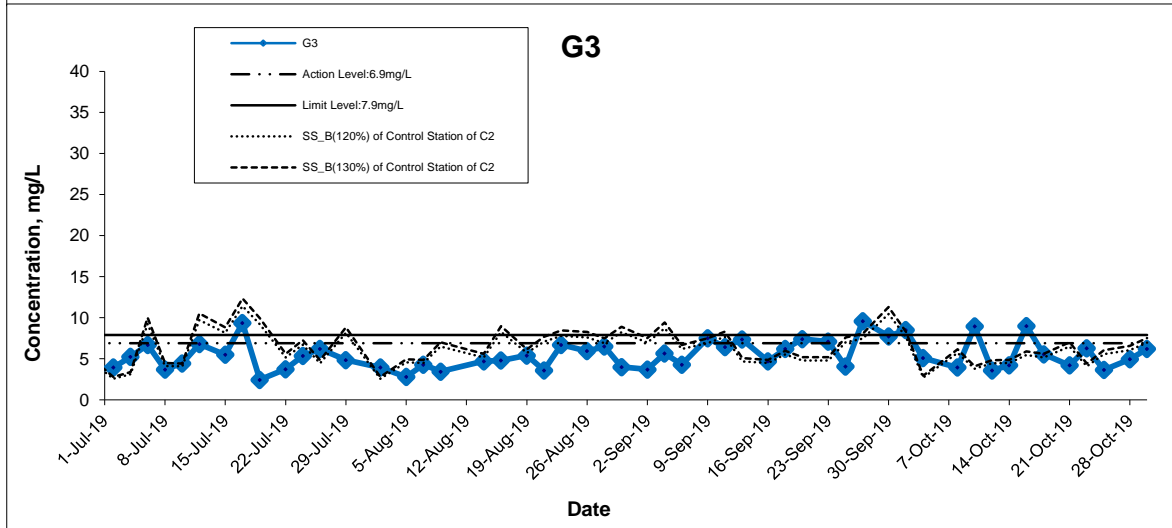
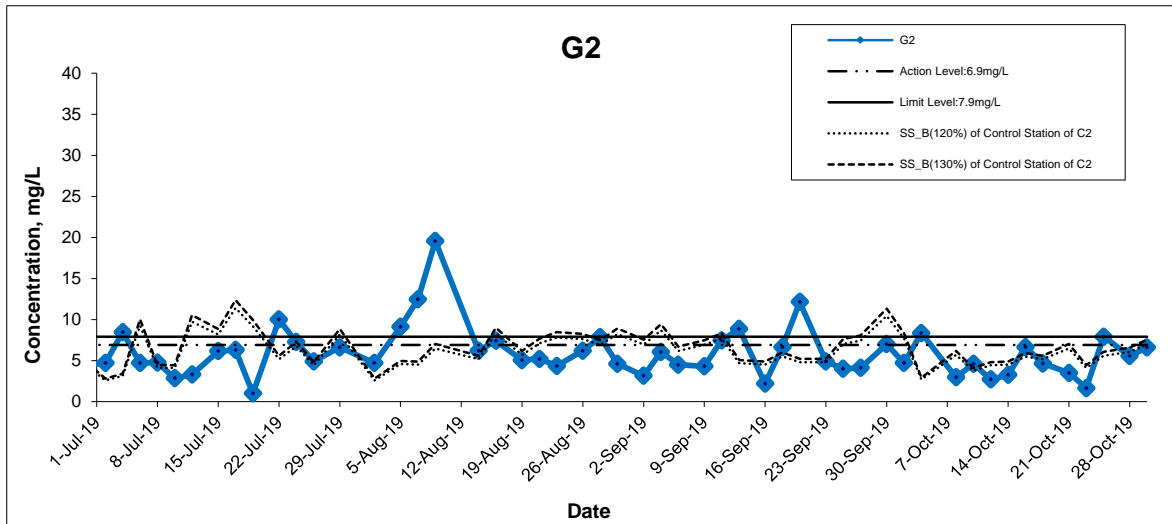
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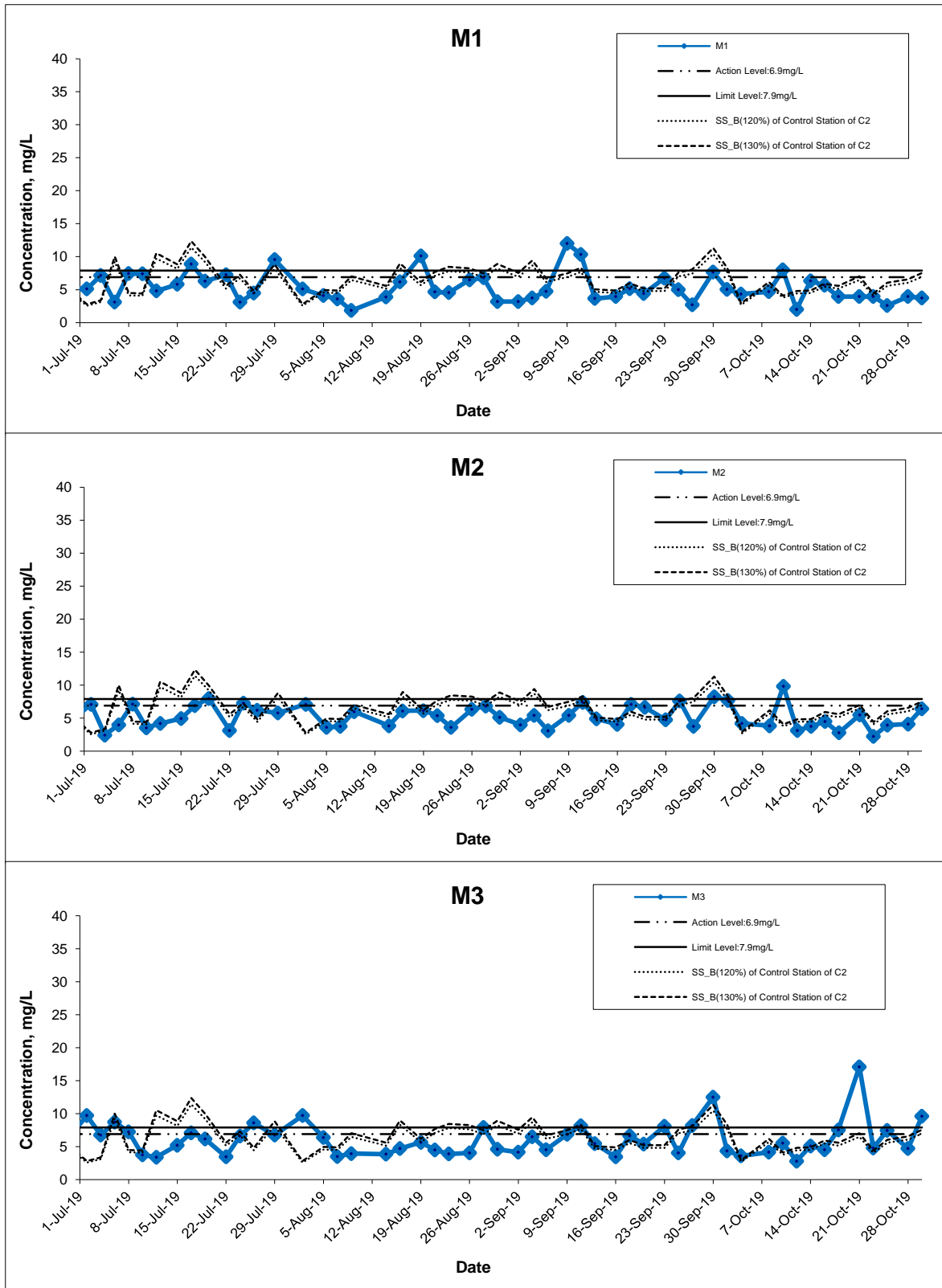


Suspended Solids (Bottom) at Mid-Ebb Tide



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	
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Suspended Solids (Bottom) at Mid-Ebb Tide



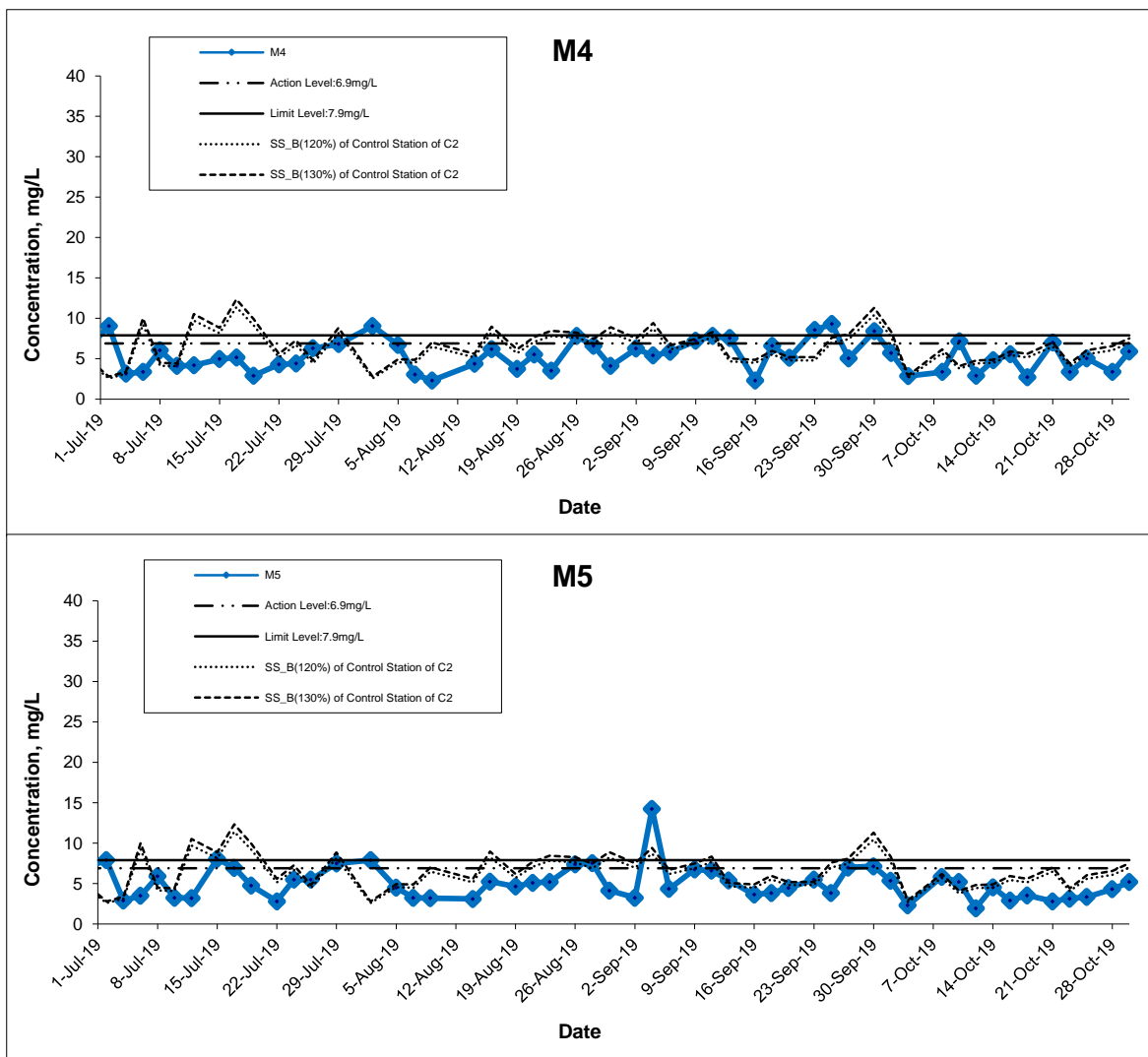
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 Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
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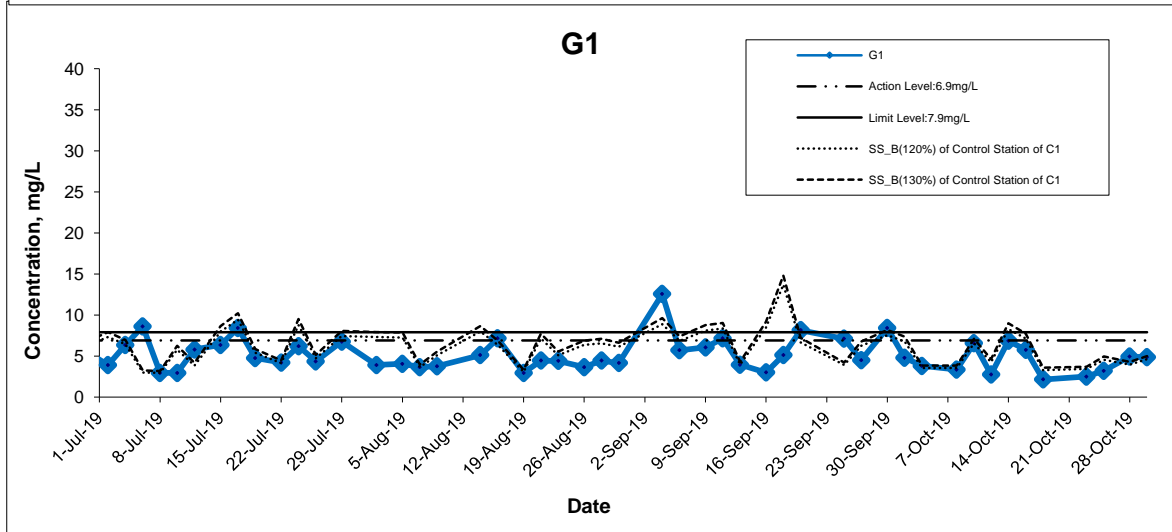
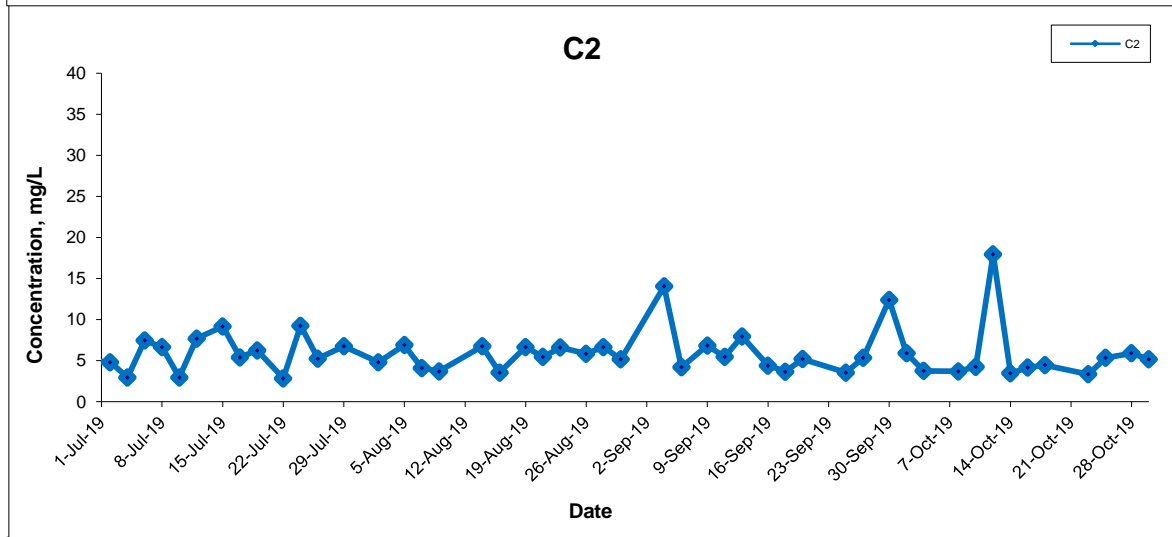
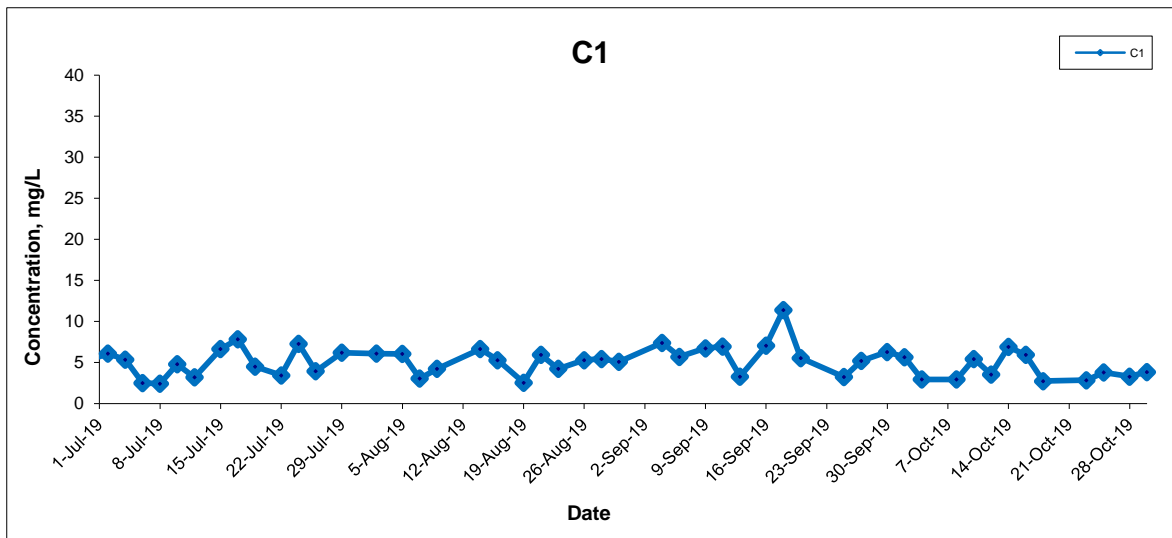


Suspended Solids (Bottom) at Mid-Ebb Tide



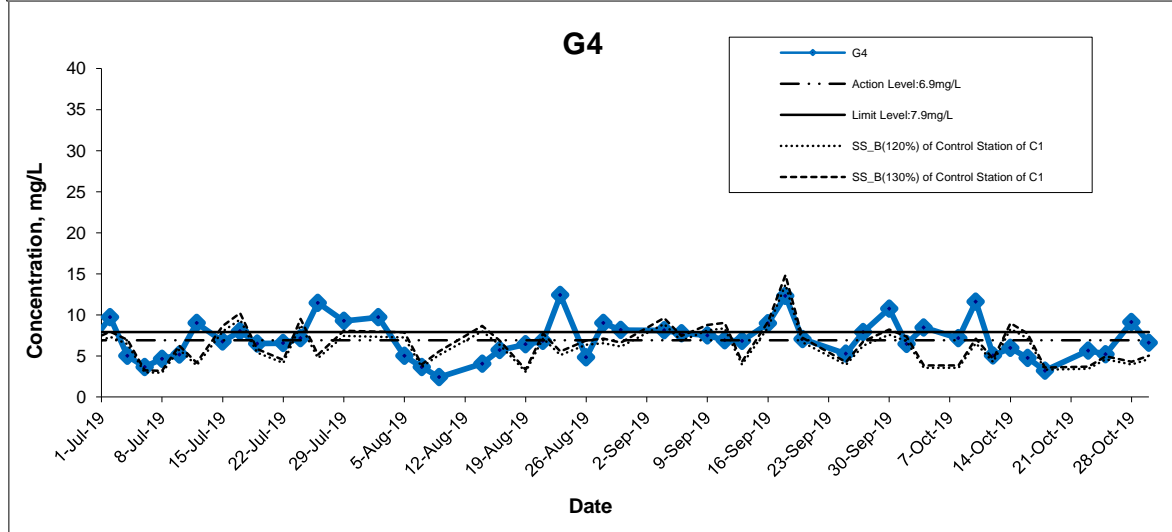
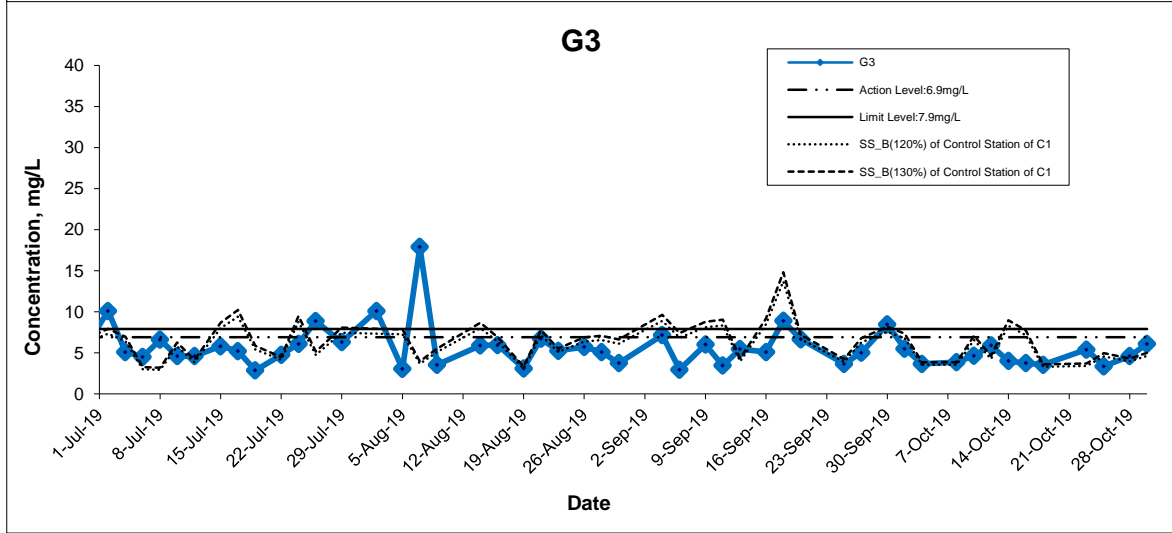
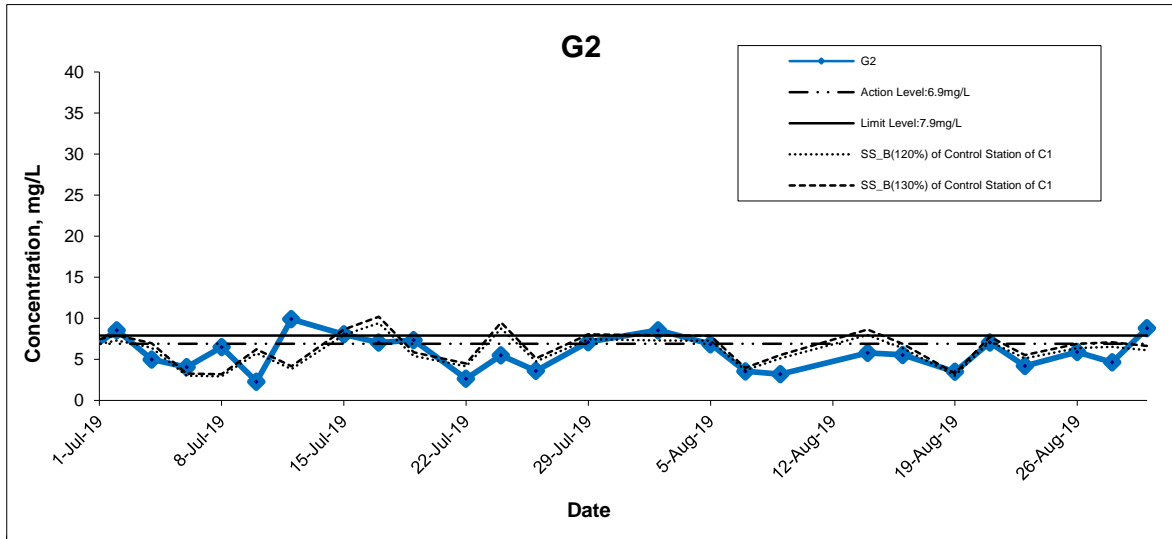
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Bottom) at Mid-Flood Tide



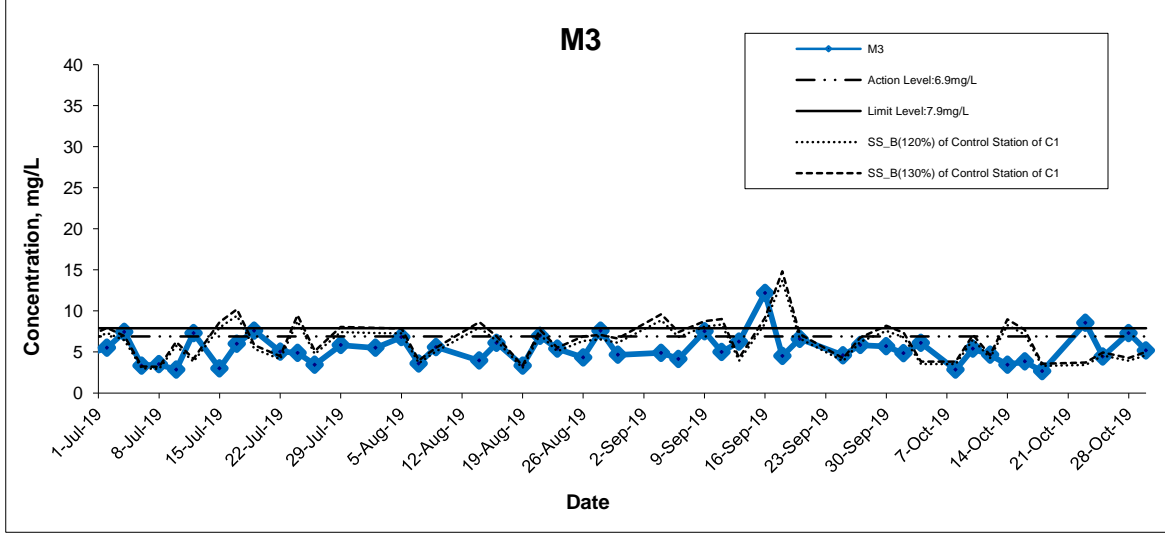
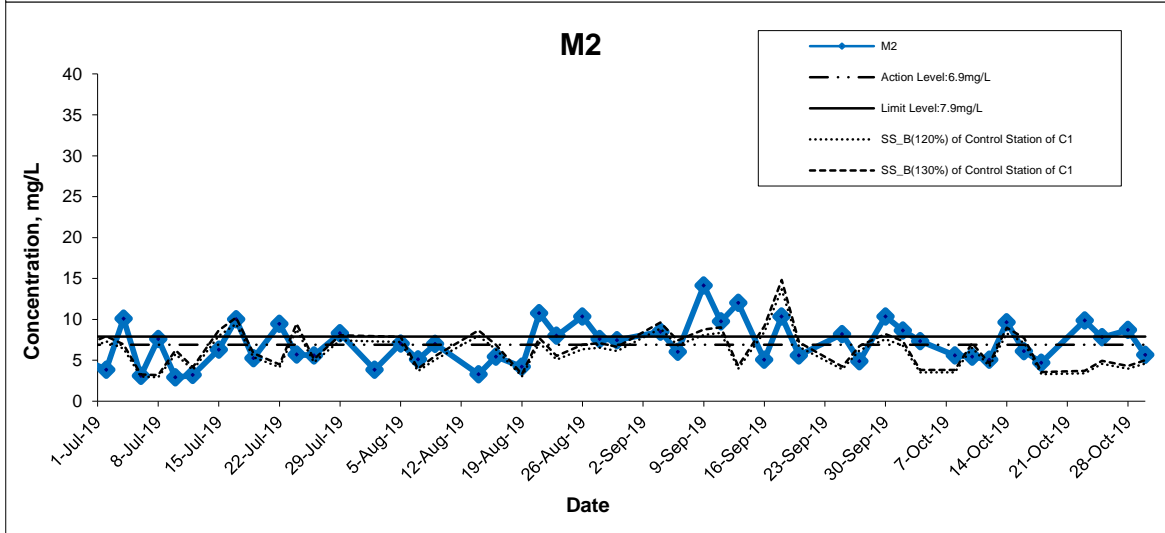
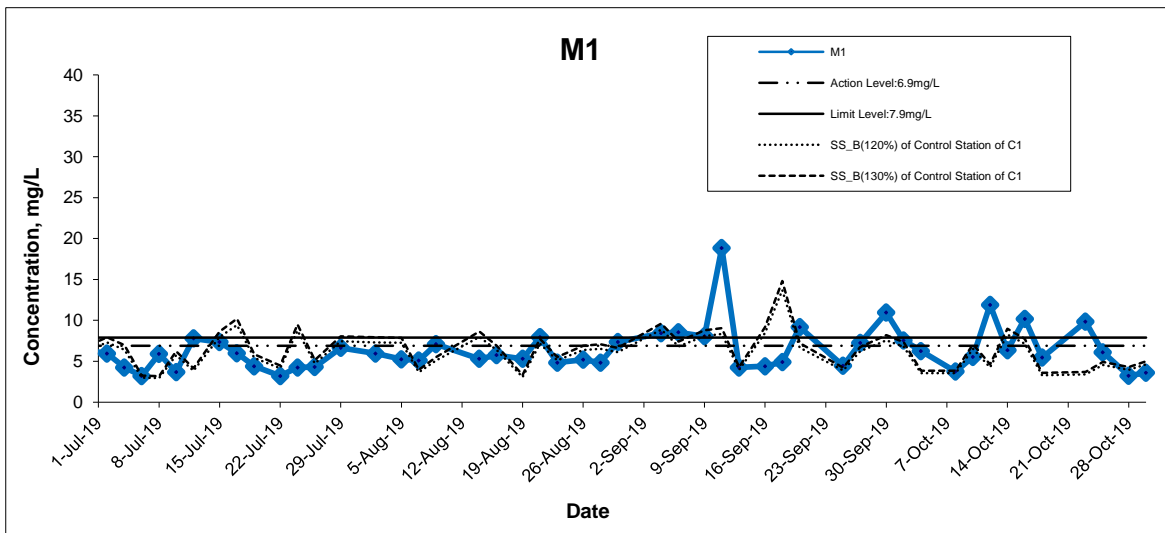
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Suspended Solids (Bottom) at Mid-Flood Tide



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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

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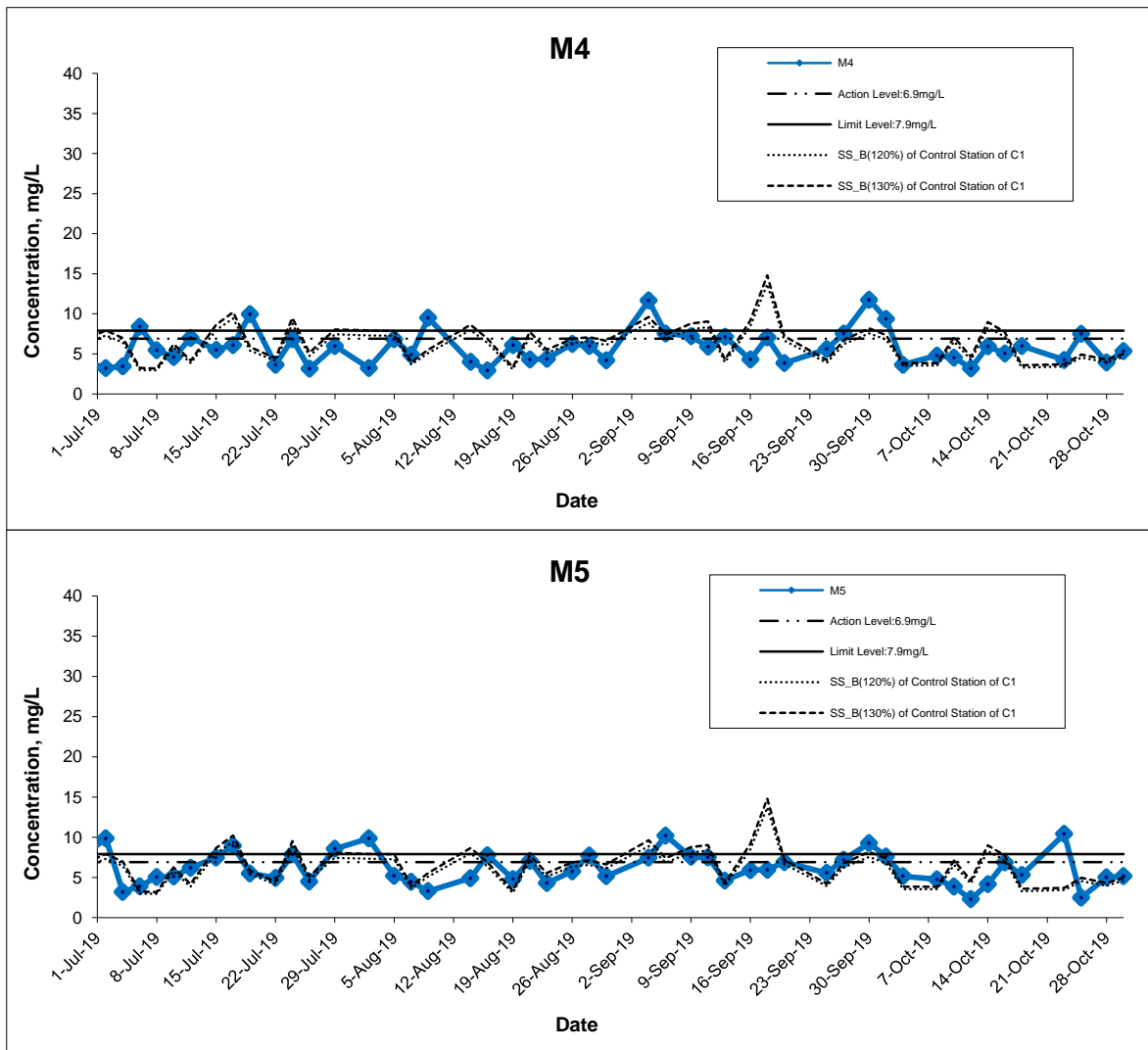
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Suspended Solids (Bottom) at Mid-Flood Tide



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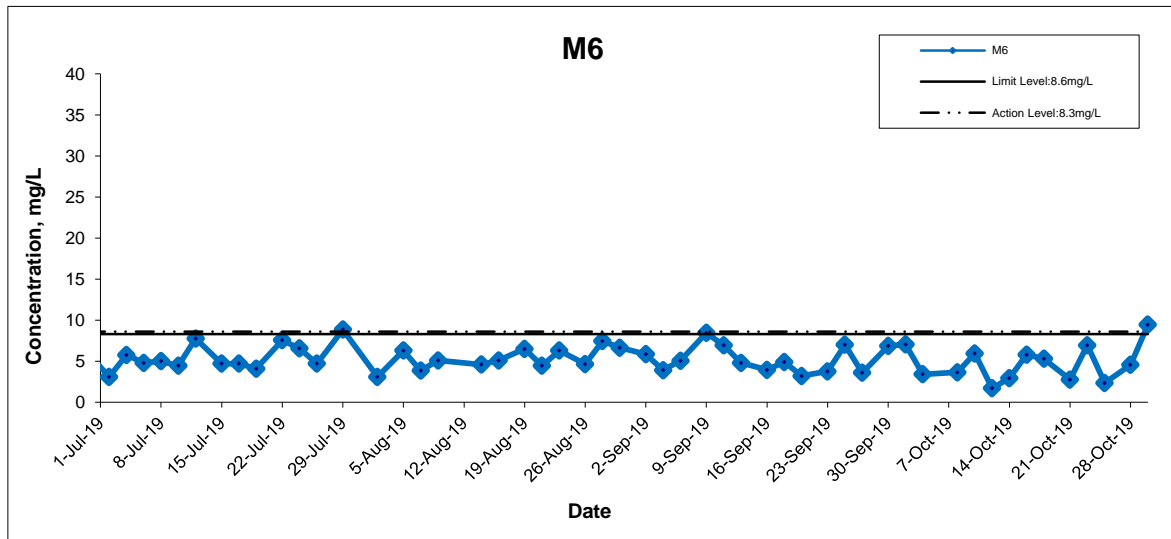
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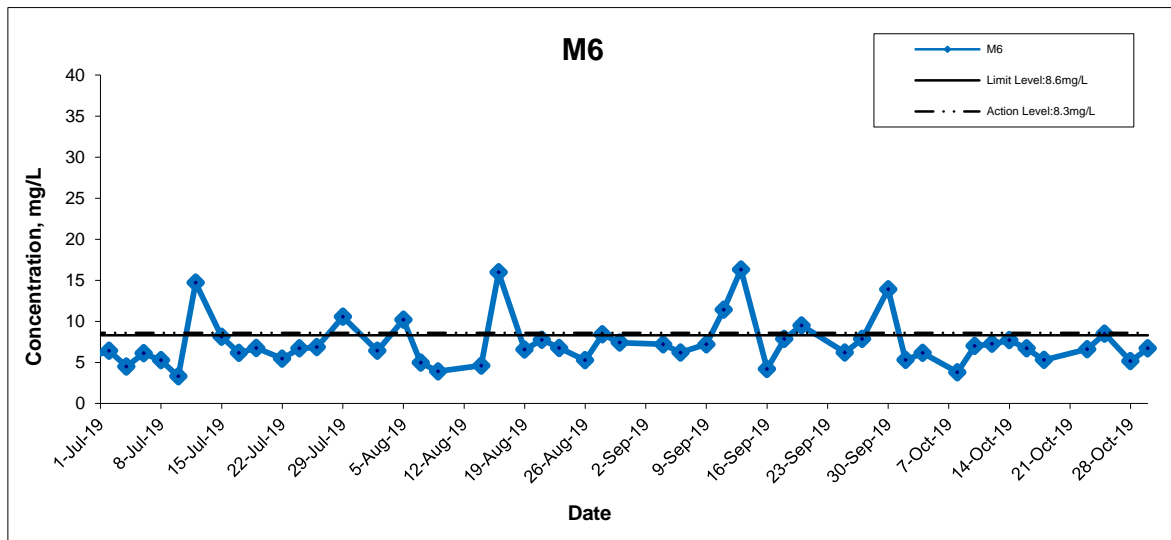


Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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



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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*
8-Oct-19	Sunny	Calm	9:02	Surface	1.0	29.3 29.3	29.3	8.5 8.5	8.5	34.7 34.7	34.7	89.5 89.2	89.4	5.7 5.6	5.7	5.7
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	29.1 29.1	29.1	8.5 8.5	8.5	34.9 34.9	34.9	75.3 75.2	75.3	4.8 4.8	4.8	4.8
14-Oct-19	Sunny	Moderate	12:23	Surface	1.0	29.2 29.2	29.2	8.6 8.6	8.6	34.8 34.8	34.8	89.5 89.2	89.4	5.7 5.6	5.7	5.7
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	29.0 29.0	29.0	8.5 8.5	8.5	35.0 35.0	35.0	75.3 75.2	75.3	4.8 4.8	4.8	4.8
21-Oct-19	Sunny	Calm	8:31	Surface	1.0	28.1 28.0	28.0	8.3 8.3	8.3	34.9 34.9	34.9	85.8 83.1	84.5	5.4 5.2	5.3	5.3
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	28.1 28.0	28.0	8.3 8.3	8.3	34.9 34.9	34.9	85.5 83.1	84.3	5.4 5.2	5.3	5.3
28-Oct-19	Sunny	Calm	11:42	Surface	1.0	27.4 27.4	27.4	8.3 8.3	8.3	34.9 34.9	34.9	85.8 85.5	85.7	5.4 5.4	5.4	5.4
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	27.4 27.4	27.4	8.3 8.3	8.3	34.9 34.9	34.9	83.3 83.1	83.2	5.3 5.2	5.3	5.3

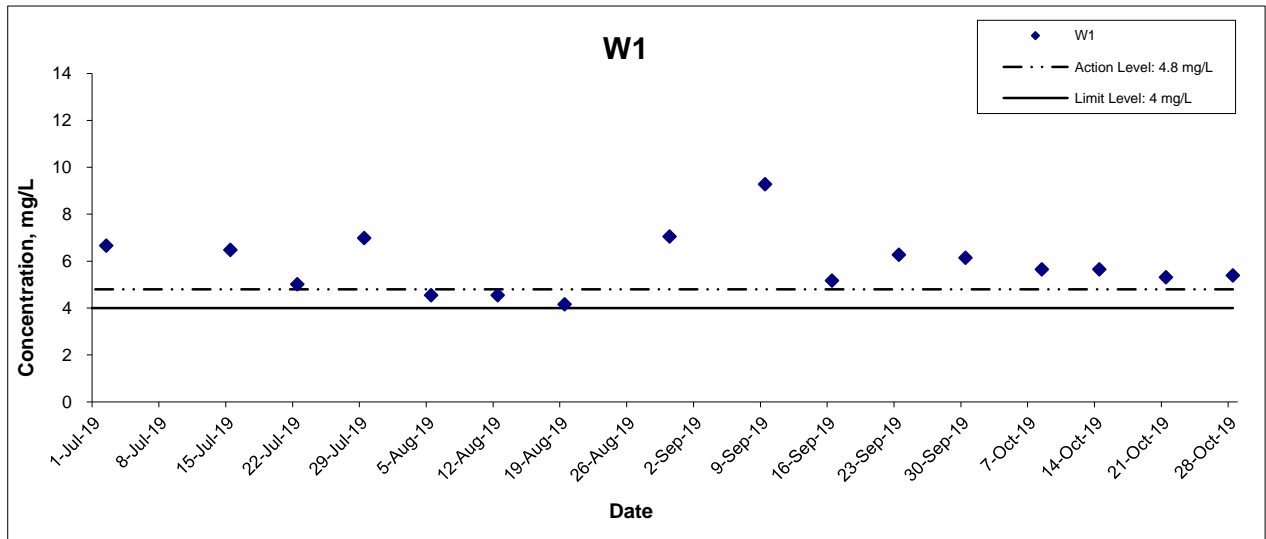
Water Quality Monitoring Results at W1 - Mid-Flood Tide

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*
8-Oct-19	Sunny	Calm	16:00	Surface	1.3	29.3 29.3	29.3	8.5 8.5	8.5	34.7 34.7	34.7	88.8 88.4	88.6	5.6 5.6	5.6	5.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	29.1 29.1	29.1	8.5 8.5	8.5	34.9 34.9	34.9	75.3 75.4	75.4	4.8 4.8	4.8	4.8
14-Oct-19	Sunny	Moderate	17:52	Surface	1.0	29.2 29.2	29.2	8.6 8.6	8.6	34.8 34.8	34.8	88.8 88.4	88.6	5.6 5.6	5.6	5.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	29.0 29.0	29.0	8.5 8.5	8.5	35.0 35.0	35.0	75.3 75.4	75.4	4.8 4.8	4.8	4.8
-	-	-	-	Surface	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	Middle	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	Bottom	-	-	-	-	-	-	-	-	-	-	-	
28-Oct-19	Sunny	Calm	17:32	Surface	1.0	27.4 27.4	27.4	8.4 8.4	8.4	34.9 34.9	34.9	86.0 85.7	85.9	5.5 5.5	5.5	5.5
				Middle	-	-	-	-	-	-	-	-	-	5.5		
				Bottom	3.0	27.4 27.4	27.4	8.4 8.4	8.4	34.9 34.9	34.9	83.3 83.3	83.3	5.3 5.3	5.3	5.3

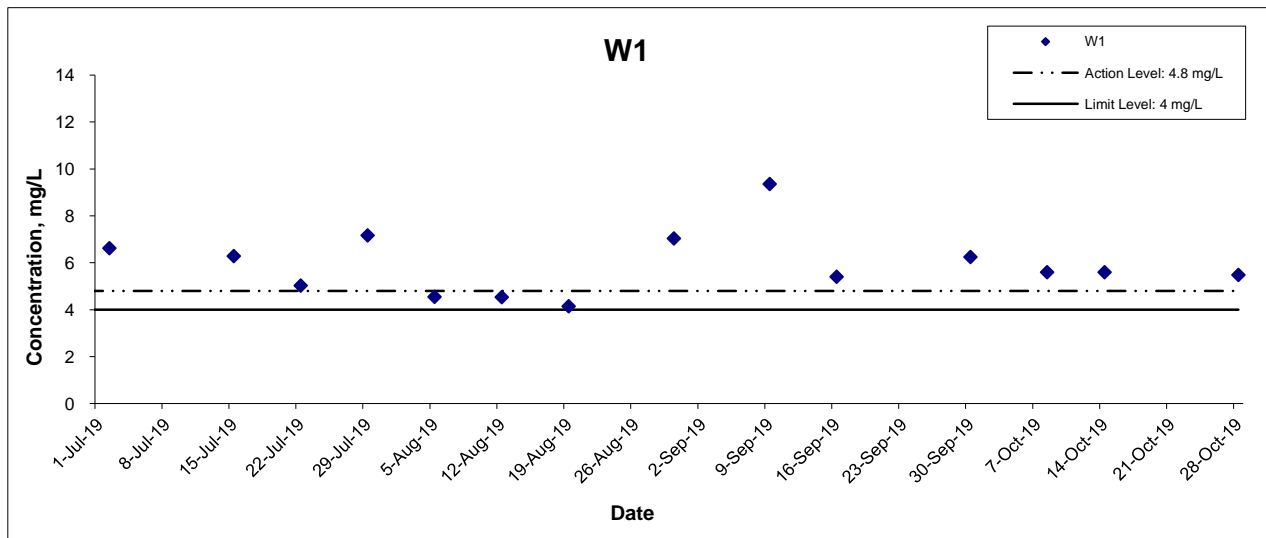
Remarks: *DA: Depth-Averaged

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

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

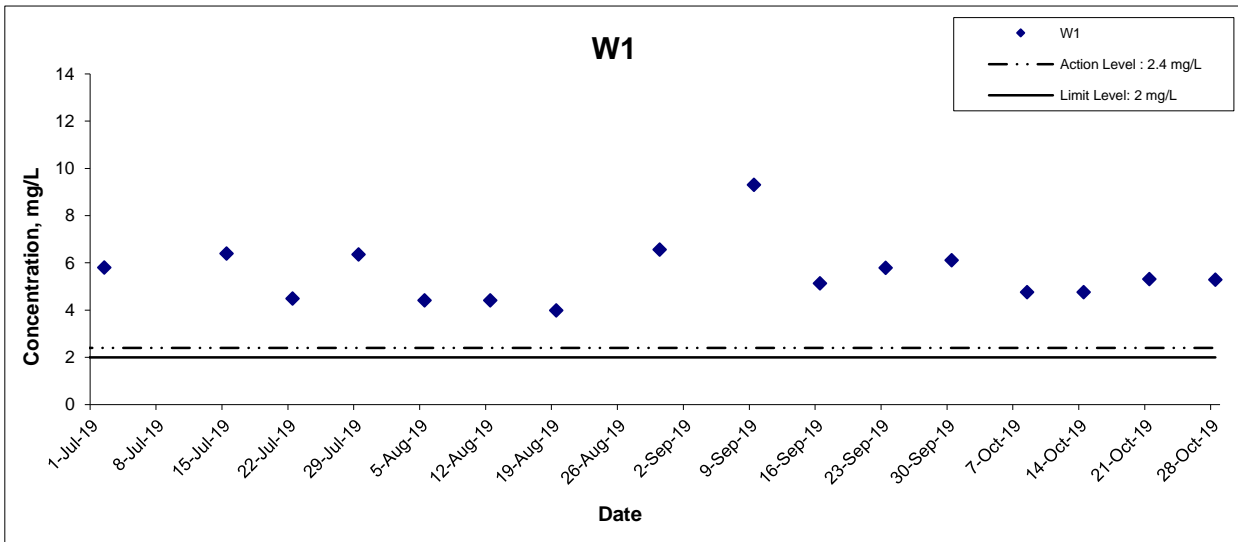


Dissolved Oxygen (Depth-Averaged) at Mid-Flood Tide

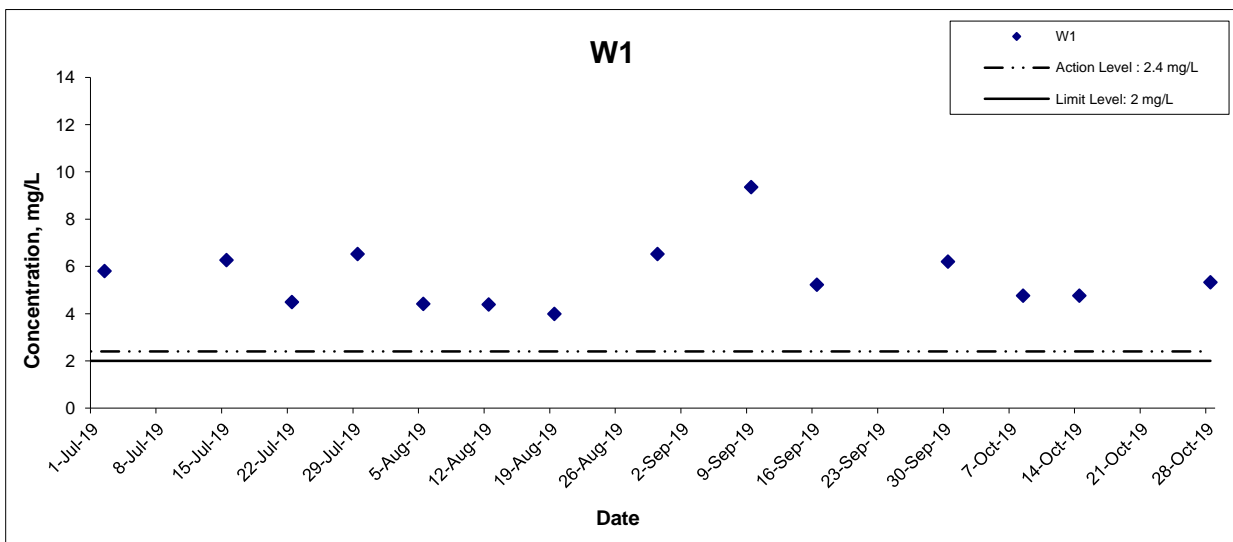


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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Dissolved Oxygen (Bottom) at Mid-Flood Tide



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**APPENDIX K
SUMMARY OF EXCEEDANCE**

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel –
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Appendix K – Summary of Exceedance

Reporting Period: October 2019

(A) Exceedance Report for Air Quality
 (NIL in the reporting month)

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise

Five (5) Action Level exceedances were recorded due to the documented complaints received in this reporting month.

Limit Level for Construction Noise

No exceedance for daytime and evening-time construction noise monitoring was recorded in the reporting month.

Nine (9) exceedance for nighttime construction noise monitoring was recorded in the reporting month.

Exceedance recorded during daytime
 (NIL in the reporting month)

Exceedance recorded during night-time

Date	Monitoring Location	Measured Level (Leq dB(A))	Baseline Noise Level (Leq dB(A))	Construction Noise Level (Leq dB(A))	Limit Level
4 October 2019	CM2	64.3	61.6	<u>61</u>	55
11 – 12 October 2019	CM1	66.9	63.7	<u>64</u>	
	CM2	64.1	61.2	<u>61</u>	
	CM3	63.7	62.9	<u>56</u>	
18 – 19 October 2019	CM1	64.1	62.8	<u>58</u>	
	CM2	63.4	61.6	<u>59</u>	
	CM3	63.7	61.8	<u>59</u>	
25 October 2019	CM1	68.1	63.7	<u>66</u>	
	CM2	65.5	61.2	<u>63</u>	

Agreement No. CE 59/2015 (EP)
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Design and Construction

Appendix K – Summary of Exceedance

(C) Exceedance Report for Water Quality

Fifty (51) Action Level and two-hundred and eight (208) Limit Level exceedances in marine water quality monitoring. Refer to the attached notifications for details. The reasons are under investigation.

NIL exceedance for groundwater quality monitoring was recorded in the reporting month.

(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)

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

- Notification of Exceedances

NOE No. 191004_noise (CM2) Exceedance Level: Limit

Time of Measurement: 23:05-23:20

Date of Noise Monitoring: 4 October 2019

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise


Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:05-23:20	64.3	61.6	<u>61</u>	When one documented complaint is received.	55	Limit

Field Observation(s) and Conclusion

(a) Statement of exceedance(s) Construction noise measured at CM2 exceeded the construction noise (night time) limit level.
(b) Cause of exceedance(s) The exceedance was not considered related to the Project works: <ul style="list-style-type: none"> • According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from the tunneling works was identified. • No construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedance of night time noise limit level were not due to the Project, the road traffic noise was identified as the dominant noise source.

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 16 September, 2019

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

- Notification of Exceedances

NOE No. 191011_noise (CM1-3) Exceedance Level: Limit

Time of Measurement: 23:00-00:01

Date of Noise Monitoring: 11-12 October 2019

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	66.9	63.7	<u>64</u>	When one documented complaint is received.	55	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:20-23:35	64.1	61.2	<u>61</u>	When one documented complaint is received.	55	Limit
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	23:46-00:01	63.7	62.9	<u>56</u>	When one documented complaint is received.	55	Limit

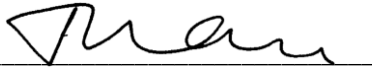
Field Observation(s) and Conclusion

(a) Statement of exceedance(s) Construction noise measured at CM1-3 exceeded the construction noise (night time) limit level.
(b) Cause of exceedance(s) The exceedance was not considered related to the Project works: <ul style="list-style-type: none"> • According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from the tunneling works was identified. • No construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedance of night time noise limit level were not due to the Project, the road traffic noise was identified as the dominant noise source.

Part C – Recommendation: No further action is required.

Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel
- Notification of Exceedances

ETL Signature: 

Date: 14 October, 2019

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

- Notification of Exceedances

NOE No. 191018_noise (CM1-3) Exceedance Level: Limit

Time of Measurement: 23:00-00:15

Date of Noise Monitoring: 18-19 October 2019

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:30-23:45	64.1	62.8	<u>58</u>	When one documented complaint is received.	55	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	63.4	61.6	<u>59</u>	When one documented complaint is received.	55	Limit
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	00:00-00:15	63.7	61.8	<u>59</u>	When one documented complaint is received.	55	Limit

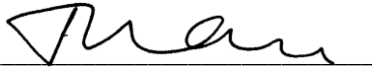
Field Observation(s) and Conclusion

(a) Statement of exceedance(s) Construction noise measured at CM1-3 exceeded the construction noise (night time) limit level.
(b) Cause of exceedance(s) The exceedance was not considered related to the Project works: <ul style="list-style-type: none"> • According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from the tunneling works was identified. • No construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedance of night time noise limit level were not due to the Project, the road traffic noise was identified as the dominant noise source.

Part C – Recommendation: No further action is required.

Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel
- Notification of Exceedances

ETL Signature: 

Date: 21 October, 2019

Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel
- Notification of Exceedances

NOE No. 191025_noise (CM1-2) **Exceedance Level:** Limit

Time of Measurement: 23:00-23:35

Date of Noise Monitoring: 25 October 2019

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	68.1	63.7	<u>66</u>	When one documented complaint is received.	55	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:20-23:35	65.5	61.2	<u>63</u>	When one documented complaint is received.	55	Limit

Field Observation(s) and Conclusion

<p>(a) Statement of exceedance(s) Construction noise measured at CM1-3 exceeded the construction noise (night time) limit level.</p>
<p>(b) Cause of exceedance(s) The exceedance was not considered related to the Project works:</p> <ul style="list-style-type: none"> • According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from the tunneling works was identified. • No construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedances of night time noise limit levels were not due to the Project, the road traffic noise was identified as the dominant noise source.

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 28 October, 2019

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: 02 October 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	4.45	G1	14:11	6.0	6.9	5.3	5.8	5.7
Mid-Ebb	C2	surface	4.5	G3	14:17	6.0	6.9	5.3	5.8	<u>7.1</u>
Mid-Ebb	C2	surface	4.45	M2	13:44	6.2	7.4	5.3	5.8	<u>6.1</u>
Mid-Ebb	C2	surface	4.5	M4	13:38	6.2	7.4	5.3	5.8	<u>13.0</u>
Mid-Ebb	C2	bottom	6.4	G1	14:11	6.9	7.9	7.7	8.3	7.2
Mid-Ebb	C2	bottom	6.4	G3	14:17	6.9	7.9	7.7	8.3	<u>8.5</u>
Mid-Ebb	C2	bottom	6.4	M2	13:44	6.9	7.9	7.7	8.3	7.7
Mid-Flood	C1	surface	8.7	G2	8:19	6.0	6.9	10.4	11.3	<u>7.4</u>
Mid-Flood	C1	surface	8.7	M3	8:52	6.2	7.4	10.4	11.3	<u>10.7</u>
Mid-Flood	C1	surface	8.7	M4	8:09	6.2	7.4	10.4	11.3	6.6
Mid-Flood	C1	surface	8.7	M5	9:32	6.2	7.4	10.4	11.3	6.7
Mid-Flood	C1	bottom	5.65	G2	8:19	6.9	7.9	6.8	7.3	7.3
Mid-Flood	C1	bottom	5.7	M1	8:25	6.9	7.9	6.8	7.3	<u>7.6</u>
Mid-Flood	C1	bottom	5.7	M2	8:14	6.9	7.9	6.8	7.3	<u>8.7</u>
Mid-Flood	C1	bottom	5.65	M4	8:09	6.9	7.9	6.8	7.3	<u>9.4</u>
Mid-Flood	C1	bottom	5.7	M5	9:32	6.9	7.9	6.8	7.3	<u>7.6</u>

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: 02 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	4.1	G3	14:17	4.9	5.3	<i><u>5.5</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.8	G3	8:46	3.3	3.6	<i><u>5.3</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.8	G4	9:00	3.3	3.6	<i><u>4.7</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.8	M3	8:52	3.3	3.6	<i><u>4.6</u></i>

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: 04 October 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)
ebb	Mid-Ebb	C2	surface	6.6	G2	15:48	6.0	6.9	7.9	8.5	<u>8.5</u>
ebb	Mid-Ebb	C2	surface	6.6	G3	16:13	6.0	6.9	7.9	8.5	<u>7.7</u>
ebb	Mid-Ebb	C2	surface	6.6	M4	15:34	6.2	7.4	7.9	8.5	<u>6.7</u>
ebb	Mid-Ebb	C2	bottom	2.25	G1	16:07	6.9	7.9	2.7	2.9	<u>3.8</u>
ebb	Mid-Ebb	C2	bottom	2.25	G2	15:48	6.9	7.9	2.7	2.9	<u>8.4</u>
ebb	Mid-Ebb	C2	bottom	2.25	G3	16:13	6.9	7.9	2.7	2.9	<u>5.1</u>
ebb	Mid-Ebb	C2	bottom	2.3	G4	16:27	6.9	7.9	2.7	2.9	<u>4.7</u>
ebb	Mid-Ebb	C2	bottom	2.3	M1	15:55	6.9	7.9	2.7	2.9	<u>4.4</u>
ebb	Mid-Ebb	C2	bottom	2.25	M2	15:42	6.9	7.9	2.7	2.9	<u>4.2</u>
ebb	Mid-Ebb	C2	bottom	2.25	M3	16:19	6.9	7.9	2.7	2.9	<u>3.6</u>
ebb	Mid-Ebb	C2	bottom	2.3	M4	15:34	6.9	7.9	2.7	2.9	<u>2.9</u>

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: 04 October 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-Flood	C1	surface	2.7	G1	9:46	6.0	6.9	3.2	3.5	<u>4.4</u>
Mid-Flood	C1	surface	2.7	G2	9:25	6.0	6.9	3.2	3.5	<u>4.4</u>
Mid-Flood	C1	surface	2.7	G3	9:53	6.0	6.9	3.2	3.5	<u>4.8</u>
Mid-Flood	C1	surface	2.7	G4	10:09	6.0	6.9	3.2	3.5	<u>6.7</u>
Mid-Flood	C1	surface	2.7	M1	9:32	6.2	7.4	3.2	3.5	<u>9.2</u>
Mid-Flood	C1	surface	2.7	M2	9:18	6.2	7.4	3.2	3.5	<u>11.5</u>
Mid-Flood	C1	surface	2.7	M3	10:01	6.2	7.4	3.2	3.5	<u>5.3</u>
Mid-Flood	C1	surface	2.7	M4	9:13	6.2	7.4	3.2	3.5	<u>4.9</u>
Mid-Flood	C1	surface	2.7	M5	10:40	6.2	7.4	3.2	3.5	<u>5.8</u>
Mid-Flood	C1	bottom	2.95	G1	9:46	6.9	7.9	3.5	3.8	3.8
Mid-Flood	C1	bottom	2.95	G2	9:25	6.9	7.9	3.5	3.8	<u>4.4</u>
Mid-Flood	C1	bottom	3.0	G3	9:53	6.9	7.9	3.5	3.8	3.7
Mid-Flood	C1	bottom	3.0	G4	10:09	6.9	7.9	3.5	3.8	<u>8.5</u>
Mid-Flood	C1	bottom	3.0	M1	9:32	6.9	7.9	3.5	3.8	<u>6.3</u>
Mid-Flood	C1	bottom	3.0	M2	9:18	6.9	7.9	3.5	3.8	<u>7.4</u>
Mid-Flood	C1	bottom	3.0	M3	10:01	6.9	7.9	3.5	3.8	<u>6.1</u>
Mid-Flood	C1	bottom	2.95	M4	9:13	6.9	7.9	3.5	3.8	3.7
Mid-Flood	C1	bottom	3.0	M5	10:40	6.9	7.9	3.5	3.8	<u>5.2</u>

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: 04 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	5.4	G1	16:07	6.5	7.0	<i><u>8.1</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G1	9:46	1.6	1.7	<i><u>3.9</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G3	9:53	1.6	1.7	<i><u>5.9</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G4	10:09	1.6	1.7	<i><u>2.0</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M1	9:32	1.6	1.7	<i><u>2.3</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M2	9:18	1.6	1.7	<i><u>2.1</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M3	10:01	1.6	1.7	<i><u>8.1</u></i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M5	10:40	1.6	1.7	<i><u>3.3</u></i>

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: 08 October 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	9.2	M4	8:36	6.2	7.4	11.0	12.0	<i><u>11.4</u></i>
Mid-Ebb	C2	bottom	4.8	M5	9:19	6.9	7.9	5.7	6.2	<i><u>5.9</u></i>
Mid-Flood	C1	surface	6.6	G2	15:38	6.0	6.9	7.9	8.5	<i><u>8.5</u></i>
Mid-Flood	C1	surface	6.6	M1	15:45	6.2	7.4	7.9	8.5	<i><u>7.2</u></i>
Mid-Flood	C1	surface	6.6	M2	15:32	6.2	7.4	7.9	8.5	<i><u>6.9</u></i>
Mid-Flood	C1	surface	6.6	M5	16:21	6.2	7.4	7.9	8.5	<i><u>7.3</u></i>
Mid-Flood	C1	bottom	2.95	G2	15:38	6.9	7.9	3.5	3.8	<i><u>8.6</u></i>
Mid-Flood	C1	bottom	3.0	G3	15:57	6.9	7.9	3.5	3.8	<i><u>3.9</u></i>
Mid-Flood	C1	bottom	3.0	G4	16:10	6.9	7.9	3.5	3.8	<i><u>7.2</u></i>
Mid-Flood	C1	bottom	3.0	M1	15:45	6.9	7.9	3.5	3.8	<i><u>3.8</u></i>
Mid-Flood	C1	bottom	3.0	M2	15:32	6.9	7.9	3.5	3.8	<i><u>5.6</u></i>
Mid-Flood	C1	bottom	2.95	M4	15:23	6.9	7.9	3.5	3.8	<i><u>4.8</u></i>
Mid-Flood	C1	bottom	3.0	M5	16:21	6.9	7.9	3.5	3.8	<i><u>4.8</u></i>

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: 08 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	3.9	M2	15:32	4.7	5.1	<u>6.7</u>

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 October 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	10.45	G1	10:03	6.0	6.9	12.5	13.6	<i><u>7.9</u></i>
Mid-Ebb	C2	surface	10.5	G3	10:10	6.0	6.9	12.5	13.6	<i><u>6.6</u></i>
Mid-Ebb	C2	surface	10.5	G4	10:23	6.0	6.9	12.5	13.6	<i><u>7.4</u></i>
Mid-Ebb	C2	bottom	3.15	G1	10:03	6.9	7.9	3.8	4.1	<i><u>4.9</u></i>
Mid-Ebb	C2	bottom	3.15	G2	9:43	6.9	7.9	3.8	4.1	<i><u>4.6</u></i>
Mid-Ebb	C2	bottom	3.15	G3	10:10	6.9	7.9	3.8	4.1	<i><u>9.0</u></i>
Mid-Ebb	C2	bottom	3.2	G4	10:23	6.9	7.9	3.8	4.1	<i><u>6.6</u></i>
Mid-Ebb	C2	bottom	3.2	M1	9:49	6.9	7.9	3.8	4.1	<i><u>8.0</u></i>
Mid-Ebb	C2	bottom	3.15	M2	9:36	6.9	7.9	3.8	4.1	<i><u>9.9</u></i>
Mid-Ebb	C2	bottom	3.15	M3	10:17	6.9	7.9	3.8	4.1	<i><u>5.6</u></i>
Mid-Ebb	C2	bottom	3.2	M4	9:31	6.9	7.9	3.8	4.1	<i><u>7.2</u></i>
Mid-Ebb	C2	bottom	3.2	M5	10:57	6.9	7.9	3.8	4.1	<i><u>5.2</u></i>
Mid-Flood	C1	surface	5.8	M1	16:27	6.2	7.4	6.9	7.5	<i><u>8.9</u></i>
Mid-Flood	C1	bottom	5.45	G1	16:40	6.9	7.9	6.5	7.1	<i><u>6.6</u></i>
Mid-Flood	C1	bottom	5.5	G4	16:59	6.9	7.9	6.5	7.1	<i><u>11.6</u></i>

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 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	3.9	G2	9:43	4.7	5.0	<i>6.0</i>
Bottom	19.3	22.2	Mid-Ebb	C2	3.9	M5	10:57	4.7	5.0	<i><u>7.4</u></i>
Bottom	19.3	22.2	Mid-flood	C1	7.2	M5	17:31	8.6	9.3	<i><u>8.8</u></i>

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 October 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	5.0	M1	11:26	6.2	7.4	6.0	6.5	<i>6.1</i>
Mid-Flood	C1	surface	2.7	G1	18:36	6.0	6.9	3.2	3.4	<i><u>6.4</u></i>
Mid-Flood	C1	surface	2.7	G2	18:27	6.0	6.9	3.2	3.4	<i><u>5.4</u></i>
Mid-Flood	C1	surface	2.7	G3	18:40	6.0	6.9	3.2	3.4	<i><u>10.6</u></i>
Mid-Flood	C1	surface	2.7	G4	18:47	6.0	6.9	3.2	3.4	<i><u>9.3</u></i>
Mid-Flood	C1	surface	2.7	M1	18:31	6.2	7.4	3.2	3.4	<i><u>3.7</u></i>
Mid-Flood	C1	surface	2.7	M2	18:22	6.2	7.4	3.2	3.4	<i><u>4.9</u></i>
Mid-Flood	C1	surface	2.7	M3	18:43	6.2	7.4	3.2	3.4	<i><u>10.3</u></i>
Mid-Flood	C1	surface	2.7	M4	18:19	6.2	7.4	3.2	3.4	<i><u>3.5</u></i>
Mid-Flood	C1	surface	2.7	M5	17:53	6.2	7.4	3.2	3.4	<i><u>3.3</u></i>
Mid-Flood	C1	bottom	3.55	G2	18:27	6.9	7.9	4.3	4.6	<i><u>5.0</u></i>
Mid-Flood	C1	bottom	3.6	G3	18:40	6.9	7.9	4.3	4.6	<i><u>5.9</u></i>
Mid-Flood	C1	bottom	3.6	G4	18:47	6.9	7.9	4.3	4.6	<i><u>5.1</u></i>
Mid-Flood	C1	bottom	3.6	M1	18:31	6.9	7.9	4.3	4.6	<i><u>11.9</u></i>
Mid-Flood	C1	bottom	3.6	M2	18:22	6.9	7.9	4.3	4.6	<i><u>5.1</u></i>
Mid-Flood	C1	bottom	3.6	M3	18:43	6.9	7.9	4.3	4.6	<i><u>4.7</u></i>

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 October 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	6.4	M4	12:08	6.2	7.4	7.7	8.3	<i>6.7</i>
Mid-Ebb	C2	bottom	3.8	M1	12:24	6.9	7.9	4.5	4.9	<i><u>6.4</u></i>
Mid-Ebb	C2	bottom	3.75	M3	12:38	6.9	7.9	4.5	4.9	<i><u>5.1</u></i>
Mid-Ebb	C2	bottom	3.8	M4	12:08	6.9	7.9	4.5	4.9	<i>4.8</i>
Mid-Ebb	C2	bottom	3.8	M5	12:59	6.9	7.9	4.5	4.9	<i>4.6</i>
Mid-Flood	C1	surface	9.5	G2	17:41	6.0	6.9	11.4	12.4	<i><u>9.5</u></i>
Mid-Flood	C1	surface	9.5	G4	18:09	6.0	6.9	11.4	12.4	<i>6.6</i>
Mid-Flood	C1	surface	9.5	M2	17:36	6.2	7.4	11.4	12.4	<i>7.4</i>
Mid-Flood	C1	surface	9.5	M3	18:01	6.2	7.4	11.4	12.4	<i><u>9.1</u></i>
Mid-Flood	C1	surface	9.5	M5	18:23	6.2	7.4	11.4	12.4	<i><u>10.1</u></i>
Mid-Flood	C1	bottom	6.9	M2	17:36	6.9	7.9	8.3	9.0	<i><u>9.7</u></i>

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 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	3.7	G2	12:18	4.4	4.8	<i>4.6</i>
Bottom	19.3	22.2	Mid-flood	C1	2.9	G2	17:41	3.5	3.8	<i><u>4.1</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.9	M1	17:47	3.5	3.8	<i><u>4.5</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.9	M2	17:36	3.5	3.8	<i><u>4.8</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.9	M3	18:01	3.5	3.8	<i><u>4.0</u></i>

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: 16 October 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	8.65	G1	13:59	6.0	6.9	10.4	11.2	<i>6.7</i>
Mid-Ebb	C2	surface	8.7	G2	13:49	6.0	6.9	10.4	11.2	<u><i>7.6</i></u>
Mid-Ebb	C2	surface	8.7	G3	14:04	6.0	6.9	10.4	11.2	<u><i>7.7</i></u>
Mid-Ebb	C2	surface	8.7	G4	14:12	6.0	6.9	10.4	11.2	<u><i>7.9</i></u>
Mid-Ebb	C2	surface	8.65	M2	13:42	6.2	7.4	10.4	11.2	<u><i>8.0</i></u>
Mid-Ebb	C2	surface	8.7	M4	13:37	6.2	7.4	10.4	11.2	<u><i>8.4</i></u>
Mid-Ebb	C2	bottom	4.55	G1	13:59	6.9	7.9	5.5	5.9	<u><i>11.9</i></u>
Mid-Ebb	C2	bottom	4.55	G2	13:49	6.9	7.9	5.5	5.9	<u><i>6.7</i></u>
Mid-Ebb	C2	bottom	4.55	G3	14:04	6.9	7.9	5.5	5.9	<u><i>9.0</i></u>
Mid-Ebb	C2	bottom	4.6	M1	13:54	6.9	7.9	5.5	5.9	<i>5.7</i>
Mid-Ebb	C2	bottom	4.6	M4	13:37	6.9	7.9	5.5	5.9	<i>5.6</i>
Mid-Flood	C1	surface	5.2	G2	8:52	6.0	6.9	6.2	6.7	<u><i>9.4</i></u>
Mid-Flood	C1	surface	5.2	G3	9:07	6.0	6.9	6.2	6.7	<u><i>6.9</i></u>
Mid-Flood	C1	surface	5.2	M4	8:40	6.2	7.4	6.2	6.7	<u><i>6.8</i></u>
Mid-Flood	C1	surface	5.2	M5	9:23	6.2	7.4	6.2	6.7	<u><i>10.3</i></u>
Mid-Flood	C1	bottom	6.0	M1	8:57	6.9	7.9	7.1	7.7	<u><i>10.2</i></u>

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: 16 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.8	G1	13:59	3.4	3.7	<i>3.5</i>
Bottom	19.3	22.2	Mid-Ebb	C2	2.8	G2	13:49	3.4	3.7	<i><u>3.8</u></i>
Bottom	19.3	22.2	Mid-Ebb	C2	2.8	M1	13:54	3.4	3.7	<i><u>4.7</u></i>
Bottom	19.3	22.2	Mid-Ebb	C2	2.8	M5	14:20	3.4	3.7	<i><u>3.9</u></i>
Bottom	19.3	22.2	Mid-flood	C1	2.7	G1	9:02	3.3	3.5	<i>3.4</i>
Bottom	19.3	22.2	Mid-flood	C1	2.7	G2	8:52	3.3	3.5	<i>3.4</i>
Bottom	19.3	22.2	Mid-flood	C1	2.7	M5	9:23	3.3	3.5	<i><u>3.9</u></i>

Note: ***Bold Italic*** means Action Level exceedance
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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: 18 October 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	7.1	M5	15:21	6.2	7.4	8.5	9.2	<u>8.6</u>
Mid-Ebb	C2	bottom	4.3	G3	15:05	6.9	7.9	5.2	5.6	5.6
Mid-Ebb	C2	bottom	4.3	M3	15:08	6.9	7.9	5.2	5.6	<u>7.6</u>
Mid-Flood	C1	surface	9.1	G1	10:04	6.0	6.9	10.9	11.8	6.2
Mid-Flood	C1	bottom	2.75	G2	9:53	6.9	7.9	3.3	3.6	<u>5.5</u>
Mid-Flood	C1	bottom	2.8	G3	10:08	6.9	7.9	3.3	3.6	3.6
Mid-Flood	C1	bottom	2.8	M1	9:59	6.9	7.9	3.3	3.6	<u>5.5</u>
Mid-Flood	C1	bottom	2.8	M2	9:47	6.9	7.9	3.3	3.6	<u>4.7</u>
Mid-Flood	C1	bottom	2.75	M4	9:41	6.9	7.9	3.3	3.6	<u>6.0</u>
Mid-Flood	C1	bottom	2.8	M5	10:25	6.9	7.9	3.3	3.6	<u>5.3</u>

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: 18 October 2019

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.7	G4	15:13	3.2	3.5	<u>4.7</u>
Bottom	19.3	22.2	Mid-Ebb	C2	2.7	M5	15:21	3.2	3.5	<u>4.7</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	G1	10:04	1.3	1.4	<u>1.5</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	G2	9:53	1.3	1.4	<u>2.3</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	G3	10:08	1.3	1.4	<u>2.0</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	G4	10:16	1.3	1.4	<u>4.8</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	M1	9:59	1.3	1.4	<u>2.9</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	M2	9:47	1.3	1.4	<u>1.6</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	M3	10:11	1.3	1.4	<u>2.7</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	M4	9:41	1.3	1.4	<u>2.5</u>
Bottom	19.3	22.2	Mid-flood	C1	1.1	M5	10:25	1.3	1.4	<u>4.0</u>

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

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 21 October 2019

Part A Exceedance Summary Tables

Table I: Parameter – 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	G2	8:18	6.0	6.9	12.5	13.6	<i>8.6</i>
Mid-Ebb	C2	surface	10.5	G4	8:36	6.0	6.9	12.5	13.6	<i>9.3</i>
Mid-Ebb	C2	surface	10.5	M1	8:22	6.2	7.4	12.5	13.6	<i>7.6</i>
Mid-Ebb	C2	surface	10.45	M2	8:14	6.2	7.4	12.5	13.6	<i>6.8</i>
Mid-Ebb	C2	surface	10.5	M3	8:33	6.2	7.4	12.5	13.6	<i>6.7</i>
Mid-Ebb	C2	surface	10.5	M5	8:42	6.2	7.4	12.5	13.6	<i>8.8</i>
Mid-Ebb	C2	bottom	5.4	M3	8:33	6.9	7.9	6.5	7.0	<i>17.1</i>
Mid-Ebb	C2	bottom	5.4	M4	8:10	6.9	7.9	6.5	7.0	<i>7.0</i>

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

Date of Water Quality Monitoring: 21 October 2019

Part A Exceedance Summary Tables

Table II: Parameter(s) – Dissolved Oxygen (DO) / Turbidity (TURB) / Suspended Solids (SS)

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	3.2	G3	8:29	3.8	4.2	<u>7.6</u>
Bottom	19.3	22.2	Mid-Ebb	C2	3.2	G4	8:36	3.8	4.2	<u>9.8</u>
Bottom	19.3	22.2	Mid-Ebb	C2	3.2	M1	8:22	3.8	4.2	<u>5.7</u>
Bottom	19.3	22.2	Mid-Ebb	C2	3.2	M3	8:33	3.8	4.2	<u>6.9</u>

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

Date of Water Quality Monitoring: 23 October 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	7.1	G4	8:57	6.0	6.9	8.5	9.2	6.6
Mid-Ebb	C2	surface	7.1	M1	8:35	6.2	7.4	8.5	9.2	7.4
Mid-Ebb	C2	surface	7.1	M3	8:49	6.2	7.4	8.5	9.2	6.3
Mid-Ebb	C2	bottom	3.4	G3	8:46	6.9	7.9	4.1	4.4	<u>6.3</u>
Mid-Ebb	C2	bottom	3.4	G4	8:57	6.9	7.9	4.1	4.4	<u>6.1</u>
Mid-Ebb	C2	bottom	3.4	M3	8:49	6.9	7.9	4.1	4.4	<u>4.8</u>
Mid-Flood	C1	surface	3.4	G2	15:08	6.0	6.9	4.1	4.4	<u>4.7</u>
Mid-Flood	C1	surface	3.4	G4	15:41	6.0	6.9	4.1	4.4	<u>7.4</u>
Mid-Flood	C1	surface	3.4	M1	15:15	6.2	7.4	4.1	4.4	<u>5.6</u>
Mid-Flood	C1	surface	3.4	M2	15:01	6.2	7.4	4.1	4.4	<u>4.6</u>
Mid-Flood	C1	surface	3.4	M3	15:34	6.2	7.4	4.1	4.4	<u>6.9</u>
Mid-Flood	C1	surface	3.4	M5	15:59	6.2	7.4	4.1	4.4	<u>6.5</u>
Mid-Flood	C1	bottom	2.85	G2	15:08	6.9	7.9	3.4	3.7	<u>5.5</u>
Mid-Flood	C1	bottom	2.9	G3	15:28	6.9	7.9	3.4	3.7	<u>5.4</u>
Mid-Flood	C1	bottom	2.9	G4	15:41	6.9	7.9	3.4	3.7	<u>5.7</u>
Mid-Flood	C1	bottom	2.9	M1	15:15	6.9	7.9	3.4	3.7	<u>9.9</u>
Mid-Flood	C1	bottom	2.9	M2	15:01	6.9	7.9	3.4	3.7	<u>9.9</u>
Mid-Flood	C1	bottom	2.9	M3	15:34	6.9	7.9	3.4	3.7	<u>8.6</u>
Mid-Flood	C1	bottom	2.85	M4	14:54	6.9	7.9	3.4	3.7	<u>4.3</u>
Mid-Flood	C1	bottom	2.9	M5	15:59	6.9	7.9	3.4	3.7	<u>10.4</u>

Note: ***Bold Italic*** means Action Level exceedance

Bold Italic with underline means Limit Level exceedance

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 23 October 2019

Part A Exceedance Summary Tables

Table II: Parameter(s) – Dissolved Oxygen (DO) / Turbidity (TURB) / Suspended Solids (SS)

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.0	M5	9:10	2.4	2.6	<i>3.9</i>
Bottom	19.3	22.2	Mid-flood	C1	2.6	G2	15:08	3.1	3.4	<i>4.6</i>
Bottom	19.3	22.2	Mid-flood	C1	2.6	M5	15:59	3.1	3.4	<i>4.8</i>

Note: ***Bold Italic*** means Action Level exceedance

Bold Italic with underline means Limit Level exceedance

Date of Water Quality Monitoring: 25 October 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	6.0	G2	10:05	6.0	6.9	7.2	7.8	<i>8.4</i>
Mid-Ebb	C2	surface	6.0	G3	10:20	6.0	6.9	7.2	7.8	<i>6.3</i>
Mid-Ebb	C2	surface	6.0	M5	10:37	6.2	7.4	7.2	7.8	<i>7.3</i>
Mid-Ebb	C2	bottom	4.65	G2	10:05	6.9	7.9	5.6	6.0	<i>7.9</i>
Mid-Ebb	C2	bottom	4.7	G4	10:28	6.9	7.9	5.6	6.0	<i>8.2</i>
Mid-Ebb	C2	bottom	4.65	M3	10:24	6.9	7.9	5.6	6.0	<i>7.5</i>
Mid-Flood	C1	surface	2.6	G1	16:43	6.0	6.9	3.1	3.4	<i>10.1</i>
Mid-Flood	C1	surface	2.6	G2	16:32	6.0	6.9	3.1	3.4	<i>6.0</i>
Mid-Flood	C1	surface	2.6	G4	16:55	6.0	6.9	3.1	3.4	<i>3.9</i>
Mid-Flood	C1	surface	2.6	M1	16:38	6.2	7.4	3.1	3.4	<i>7.9</i>
Mid-Flood	C1	surface	2.6	M2	16:26	6.2	7.4	3.1	3.4	<i>9.1</i>
Mid-Flood	C1	surface	2.6	M3	16:51	6.2	7.4	3.1	3.4	<i>4.1</i>
Mid-Flood	C1	surface	2.6	M4	16:21	6.2	7.4	3.1	3.4	<i>6.2</i>
Mid-Flood	C1	surface	2.6	M5	17:04	6.2	7.4	3.1	3.4	<i>3.4</i>
Mid-Flood	C1	intake	n.a.	M6	16:59	8.3	8.6	n.a.	n.a.	<i>8.5</i>
Mid-Flood	C1	bottom	3.8	G4	16:55	6.9	7.9	4.6	4.9	<i>5.2</i>
Mid-Flood	C1	bottom	3.8	M1	16:38	6.9	7.9	4.6	4.9	<i>6.1</i>
Mid-Flood	C1	bottom	3.8	M2	16:26	6.9	7.9	4.6	4.9	<i>7.8</i>
Mid-Flood	C1	bottom	3.8	M4	16:21	6.9	7.9	4.6	4.9	<i>7.5</i>

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

Date of Water Quality Monitoring: 28 October 2019

Parameter 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	bottom	5.05	G1	11:39	6.9	7.9	6.1	6.6	6.4
Mid-Flood	C1	surface	7.9	G1	17:29	6.0	6.9	9.5	10.3	<u>17.6</u>
Mid-Flood	C1	surface	7.9	G2	17:09	6.0	6.9	9.5	10.3	<u>7.3</u>
Mid-Flood	C1	surface	7.9	M1	17:16	6.2	7.4	9.5	10.3	7.0
Mid-Flood	C1	surface	7.9	M3	17:45	6.2	7.4	9.5	10.3	6.9
Mid-Flood	C1	surface	7.9	M5	18:24	6.2	7.4	9.5	10.3	<u>8.9</u>
Mid-Flood	C1	bottom	3.3	G1	17:29	6.9	7.9	4.0	4.3	<u>5.0</u>
Mid-Flood	C1	bottom	3.3	G2	17:09	6.9	7.9	4.0	4.3	<u>8.8</u>
Mid-Flood	C1	bottom	3.3	G3	17:37	6.9	7.9	4.0	4.3	<u>4.6</u>
Mid-Flood	C1	bottom	3.3	G4	17:52	6.9	7.9	4.0	4.3	<u>9.1</u>
Mid-Flood	C1	bottom	3.3	M2	17:02	6.9	7.9	4.0	4.3	<u>8.7</u>
Mid-Flood	C1	bottom	3.3	M3	17:45	6.9	7.9	4.0	4.3	<u>7.3</u>
Mid-Flood	C1	bottom	3.3	M5	18:24	6.9	7.9	4.0	4.3	<u>5.0</u>

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

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 28 October 2019

Part A Exceedance Summary Tables

Table II: Parameter(s) – Dissolved Oxygen (DO) / Turbidity (TURB) / Suspended Solids (SS)

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	2.4	M1	17:16	2.9	3.1	<i>3.0</i>

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

Date of Water Quality Monitoring: 30 October 2019

Parameter 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	5.2	G1	13:52	6.0	6.9	6.2	6.8	<u>7.0</u>
Mid-Ebb	C2	surface	5.2	G3	13:59	6.0	6.9	6.2	6.8	<u>7.4</u>
Mid-Ebb	C2	surface	5.2	G4	14:13	6.0	6.9	6.2	6.8	<u>7.5</u>
Mid-Ebb	C2	surface	5.2	M1	13:40	6.2	7.4	6.2	6.8	<u>9.7</u>
Mid-Ebb	C2	surface	5.2	M4	13:20	6.2	7.4	6.2	6.8	<u>7.0</u>
Mid-Ebb	C2	intake	n.a.	M6	14:25	8.3	8.6	n.a.	n.a.	<u>9.5</u>
Mid-Ebb	C2	bottom	5.8	G1	13:52	6.9	7.9	7.0	7.5	<u>7.0</u>
Mid-Ebb	C2	bottom	5.8	G4	14:13	6.9	7.9	7.0	7.5	<u>7.9</u>
Mid-Ebb	C2	bottom	5.8	M3	14:07	6.9	7.9	7.0	7.5	<u>9.6</u>
Mid-Flood	C1	surface	5.7	M3	8:57	6.2	7.4	6.8	7.4	<u>8.9</u>
Mid-Flood	C1	bottom	3.85	G1	8:42	6.9	7.9	4.6	5.0	<u>4.9</u>
Mid-Flood	C1	bottom	3.9	G3	8:50	6.9	7.9	4.6	5.0	<u>6.1</u>
Mid-Flood	C1	bottom	3.9	G4	9:03	6.9	7.9	4.6	5.0	<u>6.6</u>
Mid-Flood	C1	bottom	3.9	M2	8:17	6.9	7.9	4.6	5.0	<u>5.7</u>
Mid-Flood	C1	bottom	3.9	M3	8:57	6.9	7.9	4.6	5.0	<u>5.2</u>
Mid-Flood	C1	bottom	3.85	M4	8:10	6.9	7.9	4.6	5.0	<u>5.4</u>
Mid-Flood	C1	bottom	3.9	M5	9:23	6.9	7.9	4.6	5.0	<u>5.2</u>

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

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 30 October 2019

Part A Exceedance Summary Tables

Table II: Parameter(s) – Dissolved Oxygen (DO) / Turbidity (TURB) / Suspended Solids (SS)

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-Ebb	C2	2.5	M2	13:27	3.0	3.3	<i>3.5</i>
Bottom	19.3	22.2	Mid-Ebb	C2	2.5	M5	14:43	3.0	3.3	<i>3.6</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G1	8:42	1.6	1.7	<i>2.7</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G2	8:25	1.6	1.7	<i>2.2</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	G4	9:03	1.6	1.7	<i>2.4</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M1	8:30	1.6	1.7	<i>2.2</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M2	8:17	1.6	1.7	<i>3.0</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M4	8:10	1.6	1.7	<i>2.1</i>
Bottom	19.3	22.2	Mid-flood	C1	1.3	M5	9:23	1.6	1.7	<i>3.2</i>

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**

- Investigation Report of Environmental Quality Limit Exceedances (Oct 2019)

Part A Details of Investigation

For the 1st and 2nd week of October, exceedances for suspended solids have been recorded at different monitoring stations randomly. No sand plume outside the marine works area and at the designated discharge points within the Site were identified during the site inspection and water quality monitoring (Photo 1 - 4).

During site inspections, the water appears to be clear within and outside the cofferdam (Photo 1 and 3). To minimise the impact created due to construction, double-layered silt curtains are deployed at the Western side of the marine works area (Photo 3).

Besides, the water discharged from the works area appeared to be clean (Photo 5 - 6). From Photo 7, we can observe that the Contractor had followed the updated Silt Curtain Deployment Plan and deploy silt curtain accordingly.

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 (Oct 2019)

Part B Photo Record



Photo 1 (Recorded on 3rd October)



Photo 2 (Recorded on 3rd October)



Photo 3 (Recorded on 10th October)



Photo 4 (Recorded on 10th October)

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 (Oct 2019)



Photo 5 (Recorded on 8th October)



Photo 6 (Recorded on 9th October)

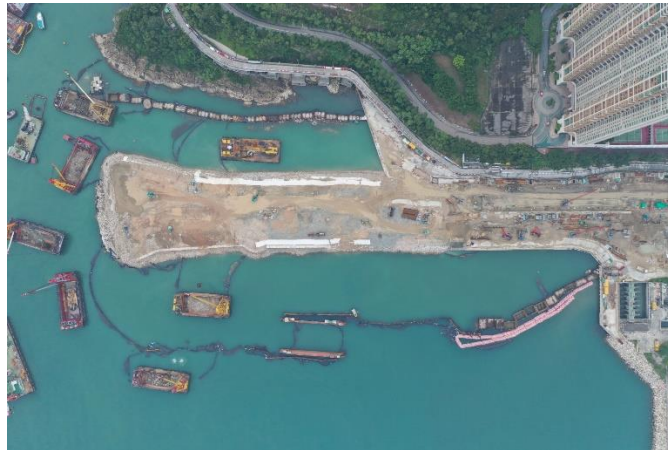


Photo 7 (Recorded on 11th October)

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 (Oct 2019)

Part C – Recommendations

During the rainy seasons, the contractor is reminded to cover the exposed of ground with sandbags and tarpaulin to reduce runoff.

Appropriate diversion of received rainwater to the wastewater treatment system within the site should be provided to minimise the chance of accidental runoff.

Cofferdam and silt curtain should be checked and maintained regularly; diver inspection for checking damage and leakage should be conducted weekly to ensure the functionality of cofferdam and silt curtains.



Reviewed

(Environmental Team Leader: Dr. HF Chan)

by:

Date: 15 October 2019

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 (Oct 2019)

Part A Details of Investigation

For the 3rd week of October, exceedances for suspended solids and turbidity have been recorded at different monitoring stations randomly. No sand plume outside the marine works area and at the designated discharge points within the Site were identified during the site inspection and water quality monitoring (Photo 1 - 4).

During site inspections, the water appears to be clear within and outside the cofferdam (Photo 2). To minimise the impact created due to construction, double-layered silt curtains are deployed at the Western side of the marine works area (Photo 3).

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 (Oct 2019)

Part B Photo Record



Photo 1 (Recorded on 17th October)



Photo 2 (Recorded on 17th October)



Photo 3 (Recorded on 16th October)



Photo 4 (Recorded on 16th October)

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 (Oct 2019)

Part C – Recommendations

During the wet seasons, the contractor is reminded to cover the exposed of ground with sandbags and tarpaulin to reduce runoff.

Appropriate diversion of received rainwater to the wastewater treatment system within the site should be provided to minimise the chance of accidental runoff. Cofferdam and silt curtain should be checked and maintained regularly; diver inspection for checking damage and leakage should be conducted weekly to ensure the functionality of cofferdam and silt curtains.



Reviewed

(Environmental Team Leader: Dr. HF Chan)

by:

Date: 23 October 2019

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 (Oct 2019)

Part A Details of Investigation

For the 4th week of October, exceedances for suspended solids and turbidity have been recorded at different monitoring stations randomly. No sand plume outside the marine works area and at the designated discharge points within the Site were identified during the site inspection and water quality monitoring (Photo 1 - 4).

During site inspections, the water appears to be clear within and outside the cofferdam (Photo 1 and 2). To minimise the impact created due to construction, double-layered silt curtains are deployed at the Western side of the marine works area (Photo 3). The treated water discharged from the work site is relatively clear and free of silt (Photo 5 and 6).

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 (Oct 2019)

Part B Photo Record



Photo 1 (Recorded on 24th October)



Photo 2 (Recorded on 24th October)



Photo 3 (Recorded on 23rd October)



Photo 4 (Recorded on 23rd October)

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 (Oct 2019)



Photo 5 (Recorded 21st October)



Photo 6 (Recorded 21st October)

Part C – Recommendations

Despite the wet season is ending, the contractor is reminded to provide sufficient drainage channels and keep sediment tanks free from mud and silt. In addition, the exposed of ground shall be covered tarpaulin fabric to reduce runoff.

Appropriate diversion of received rainwater to the wastewater treatment system within the site should be provided to minimise the chance of accidental runoff. Cofferdam and silt curtain should be checked and maintained regularly; diver inspection for checking damage and leakage should be conducted weekly to ensure the functionality of cofferdam and silt curtains.

Reviewed by: (Environmental Team Leader:(Dr. HF Chan)

Date: 30 October 2019

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 (Oct 2019)

Part A Details of Investigation

For the last week of October, exceedances for suspended solids and turbidity have been recorded at various monitoring stations. No sand plume outside the marine works area and at the designated discharge points within the Site were identified during the site inspection and water quality monitoring (Photo 1 - 4).

During site inspections, the water appears to be clear within and outside the cofferdam (Photo 1 and 2). In case of accidental discharge of muddy water, the contractor had already prepared spare silt curtain (Photo 3).

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 (Oct 2019)

Part B Photo Record



Photo 1 (Recorded on 31th October)

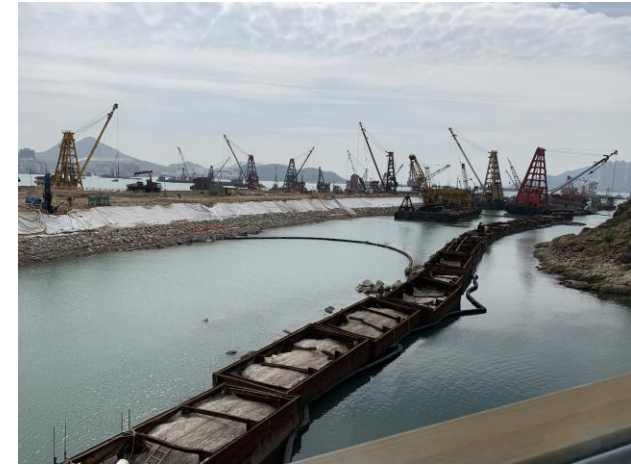


Photo 2 (Recorded on 31th October)

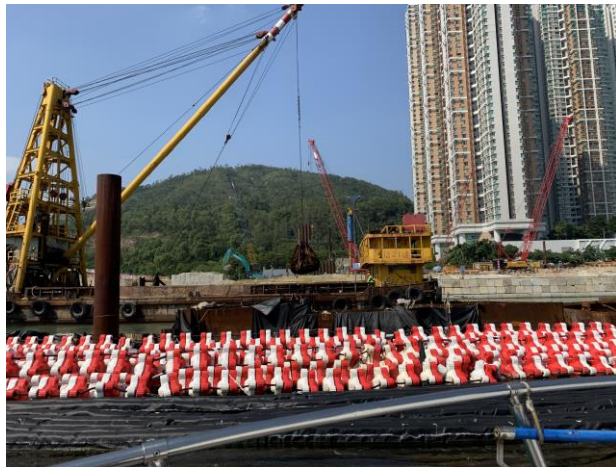


Photo 3 (Recorded on 31th October)



Photo 4 (Recorded on 30th October)

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 (Oct 2019)

Part C – Recommendations

Despite the wet season is ending, the contractor is reminded to provide sufficient drainage channels and keep sediment tanks free from mud and silt. In addition, the exposed of ground shall be covered tarpaulin fabric to reduce runoff.

Appropriate diversion of received rainwater to the wastewater treatment system within the site should be provided to minimise the chance of accidental runoff. Cofferdam and silt curtain should be checked and maintained regularly; diver inspection for checking damage and leakage should be conducted weekly to ensure the functionality of cofferdam and silt curtains.



Reviewed by: (Environmental Team Leader:(Dr. HF Chan)

Date: 4 November 2019

**APPENDIX L
SITE AUDIT SUMMARY**

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 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			
Although the broken silt curtain had been replaced with the new one in Portion VII, the new silt curtain is merely arranged in a chain of floating blocks without releasing the curtains down to the sea bed. The Contractor is reminded to follow the Silt Curtain Deployment Plan and improve the situation as soon as possible in order to prevent accidental spillage of muddy water.	25 Sep 19	✓	Silt curtain were fixed to the sea bed. The item had been rectified on 2 Oct 19.
Floating rubbish was found at sea. Contractor is reminded to clean rubbish in water regularly.	2 Oct 19	✓	Floating rubbish was cleared. The item had been rectified on 9 Oct 19.
Silt curtains in Platform 1C and 1D were broken. Contractor is reminded to maintain them in a good condition regularly	9 Oct 19	✓	New set of silt curtains were installed and being set up. The item had been rectified on 23 Oct 19.
Water from workers' rooms near the slide pile wall in Portion III was discharged from holes to the floor. Contractor is reminded that wastewater should not be directed to public sewerage system. Instead, it should be pumped to and treated in sedimentation tanks before discharge.	9 Oct 19	✓	Holes were sealed up and the wastewater discharged was pumped to sedimentation tanks. The item had been rectified on 16 Oct 19.
Ecology			
--	--	--	--
Noise			
Breakers in Portion III were found without a noise barrier in direction of nearby NSRs. Contractor is reminded to place barriers when breaking to minimize noise impacts.	9 Oct 19	✓	Noise barriers were set for breakers in Portion III. The item had been rectified on 16 Oct 19.
Acoustic sheets at top of tunnel's entrance were broken. Contractor is reminded to ensure that the noise barriers can effectively block noise impacts from construction site and tunnel works.	16 Oct 19	✓	Despite the acoustic sheets are still broken, the works in the tunnel are fully enclosed by blast door. Therefore the acoustic sheets are only an additional measure and the replacement are not necessary. The item had been rectified on 30 Oct 19.
Acoustic sheets at top of a semi-enclosure in Portion IVC were loose. Contractor is reminded to effectively block noise impacts done to nearby NSRs and is recommended to place a board at the roof to prevent noise emission.	23 Oct 19	✓	The semi-enclosure was repaired. The item had been rectified on 30 Oct 19.
Landscape and Visual			
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Air Quality			
--	--	--	--
Waste / Chemical Management			
Oil stain was found in Portion IVC and needs to be cleaned.	2 Oct 19	✓	Oil stain was cleaned. The item had been rectified on 9 Oct 19.
Mud was found in a perimeter drain near East Harbour Cross Tunnel (Portion III).	23 Oct 19	✓	The mud is removed. The item had been rectified on 30 Oct 19.

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 2019)

Items	Date	Status*	Follow up Action
<i>Impact on Cultural Heritage</i>			
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<i>Permits / Licenses</i>			
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- ✓ 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

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 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			
Despite the dredger's grabs operating in a relatively slow pace, splashing of materials and stir-up of sea bed sediments are still observed. The Contractor is recommended to conduct mitigation measures such as lower the height of grab when releasing materials from the grab to reduce impact to surrounding waters. (Location: Western marine works area, within cofferdam and double-layered silt curtain)	10 Oct 19	✓	During site inspection on 17 October 2019, the dredger's grab will release materials after the grab had submerge in sea water in order to minimize splashing of materials. This item was rectified on 17 Oct 19.
Noise			
The Contractor is reminded to put the acoustic box closer to the breaker to minimise noise impact. (Location: Area A)	17 Oct 19	✓	The acoustic box had located nearer to the breaker. This item was rectified on 24 Oct 19.
Landscape and Visual			
--	--	--	--
Air Quality			
The shelter of the drill-rig had been worn out. The Contractor is recommended to replace/repair the shelter to prevent dust emission	26 Sep 19	✓	The shelter had been set up. This item was rectified on 3 Oct 19.
Waste / Chemical Management			
During site inspection, some debris and construction-related items were found drifting on the sea surface (Western side) outside of the cofferdam. The Contractor is reminded to remove debris / waste drifting on the sea surface regularly.	3 Oct 19	✓	The debris had been removed; no debris was drifting on sea surface during site inspection on 10 October 2019. This item was rectified on 10 Oct 19.
Impact on Cultural Heritage			
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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

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 2019)

Contract No. NE/2017/02

Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works

Items	Date	Status *	Follow up Action
<i>Water Quality</i>			
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<i>Noise</i>			
--	--	--	--
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
The Contractor is reminded to cover stockpile of dusty material with tarpaulin fabric to prevent air quality impact due to wind erosion. (Location: Portion I)	17 Oct 19	✓	The Contractor had remove the stockpile shortly after site inspection on 17 th October 2019. This item was rectified on 17 th October.
<i>Waste / Chemical Management</i>			
--	--	--	--
<i>Impact on Cultural Heritage</i>			
--	--	--	--
<i>Permits / Licenses</i>			
--	--	--	--

- ✓ 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

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 2019)

Contract No. NE/2015/03

Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status *	Follow up Action
<i>Water Quality</i>			
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<i>Noise</i>			
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<i>Landscape and Visual</i>			
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<i>Air Quality</i>			
The Contractor is reminded to cover all the fences with tarpaulin fabric in order to minimise dust impact to the surrounding environment during the floor-tiling works.	26 Sep 19	✓	The Contractor had covered the fences completely with tarpaulin fabric to reduce the dust impact to surrounding areas. This item was rectified on 3 Oct 19.
<i>Waste / Chemical Management</i>			
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<i>Impact on Cultural Heritage</i>			
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<i>Permits / Licenses</i>			
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- ✓ 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

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction
Monthly EM&A Report

Appendix L - Site Audit Summary (September 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
<i>Water Quality</i>			
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<i>Noise</i>			
--	--	--	--
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
--	--	--	--
<i>Waste / Chemical Management</i>			
Accumulation of water was observed in the drip tray. The Contractor is recommended that still water in drip tray should be cleaned regularly to avoid overflow.	08 Oct 19	✓	Still water within drip tray was pumped out by the contractor to avoid accumulation. The item was rectified on 17 Oct 19.
Still oil is observed on the barge. Contractor should clean it up to avoid leakage to the sea	17 Oct 19	✓	Still oil was cleaned. The item was rectified on 22 Oct 19.
<i>Impact on Cultural Heritage</i>			
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<i>Permits / Licenses</i>			
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- ✓ 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 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 log 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the 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. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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)	<ul style="list-style-type: none"> 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 <i>in-situ</i> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation proposal. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; 	<ul style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation proposal; 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; 	<ul style="list-style-type: none"> • Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; 	<ul style="list-style-type: none"> • Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	IEC	ER	CONTRACTOR
	<ul style="list-style-type: none"> • If exceedance is found to be caused by the reclamation activities, repeat <i>in-situ</i> 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. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; 	<ul style="list-style-type: none"> • Discuss with IC(E), ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; 	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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%	<ul style="list-style-type: none"> • Ventilate to restore oxygen to >19%
	<18%	<ul style="list-style-type: none"> • Stop works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5% by volume)	<ul style="list-style-type: none"> • Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. > 1% by volume)	<ul style="list-style-type: none"> • Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon Dioxide	>0.5%	<ul style="list-style-type: none"> • Ventilate to restore carbon dioxide to < 0.5%
	>1.5%	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● The Engineer shall be informed immediately. ● The active construction may cease to suspend the work for the Engineer's review and mitigation. ● 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 prepare a contingency plan for the Engineer's approval with an alarm value is reached or exceeded ● The Contractor shall develop emergency plan for the Engineer's approval with an anticipated contingency measures can be taken to 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	<ul style="list-style-type: none"> ● 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.
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**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. <ul style="list-style-type: none"> • 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	^ ^

	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
/	<p>Emission from Vehicles and Plants</p> <ul style="list-style-type: none"> • 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 	<p>Reduce air pollution emission from construction vehicles and</p>	<p>Contractor</p>	<p>All construction sites</p>	<p>Construction stage</p>	<p>• APO</p>	<p>^</p> <p>^</p> <p>^</p>

	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	• APO	^
Noise Impact (Construction Phase)							
S4.8	<ul style="list-style-type: none"> 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	* (3)
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> 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	^ ^ ^

	<ul style="list-style-type: none"> 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. 						^ ^ ^
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	EB 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	EB 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	EB Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

	access.						
Silt Curtain Deployment Plan	<ul style="list-style-type: none"> 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 works	Contractor	NE/2015/01	Construction stage	EIAO	*(1), *(4), *(5)
S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	^ ^ ^ ^ ^ ^ ^ ^

	<p>grounds; and</p> <ul style="list-style-type: none"> 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	<p>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.</p>	Control potential impacts from filling activities and marine based construction	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> 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	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	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	EB 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	EB 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	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	*(2)
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: <ul style="list-style-type: none"> • 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	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ N/A ^

S5.8.9	<p>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.</p>	Control potential impacts from construction site runoff and land-based construction	EIS Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.10	<p>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.</p>	Control potential impacts from construction site runoff and land-based construction	EIS Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.11	<p>Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m³ 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.</p>	Control potential impacts from construction site runoff and land-based construction	EIS Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	<p>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.</p>	Control potential impacts from construction site runoff and land-based construction	EIS 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	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	*(6)
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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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-	EB 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	EB 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	EB 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	EB 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/	Control potential impacts from construction site runoff and land-based construction	EB 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	ED 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	ED 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	ED s Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

	should be paved with backfill to reduce vehicle tracking of soil and to prevent site runoff 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EIS 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	EIS 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	EIS 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^

S5.8.46	<p>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 Hazardous Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • 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	EIS 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							
S6.8.4	<p>Measures to Minimize Disturbance</p> <ul style="list-style-type: none"> • 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	<p>Standard Good Site Practice</p> <ul style="list-style-type: none"> • Placement of equipment or stockpile in designated works areas and access 	Reduce disturbance to	Contractor	Land-based works are	Construction Phase	N/A	^

	<p>routes selected on existing disturbed land to minimise disturbance to natural habitats.</p> <ul style="list-style-type: none"> • 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					<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
S6.8.6	<p>Measure to Minimize Groundwater Inflow</p> <ul style="list-style-type: none"> • 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	<p>N/A</p> <p>N/A</p>
S6.8.8	<p>Measure to Minimize Impact on Corals</p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> • It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, 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	<p>^</p> <p>^</p> <p>^</p>

	<p>coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage.</p> <ul style="list-style-type: none"> 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. <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>^</p>
<p>S6.8.9 S6.8.10</p>	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> 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. 	<p>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</p>	<p>Design Team, contractor</p>	<p>Marine and landbased works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

		bodies					
S6.8.11	<p>Compensation for Vegetation Loss</p> <ul style="list-style-type: none"> 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	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> 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	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> 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)	^ ^ ^ ^

	<p>containers; and</p> <ul style="list-style-type: none"> Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. 						^
S8.6.4	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> 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	<p>Waste Disposal Ordinance (Cap. 354)</p> <p>Land (Miscellaneous Provisions) Ordinance (Cap. 28)</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S8.6.5	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <p>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.</p> <p>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.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

S8.6.6	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> 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	<p>Storage, Collection and Transportation of Waste</p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> 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 Manage ment Plan	<p>Storage, Collection and Transportation of Waste (con't)</p> <ul style="list-style-type: none"> 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	<p>Storage, Collection and Transportation of Waste (con't)</p> <ul style="list-style-type: none"> 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	^

Manage ment 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 Manage ment Plan	<p>Sorting of C&D Materials</p> <ul style="list-style-type: none"> 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> 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		^ ^ ^

	<p>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.</p> <ul style="list-style-type: none"> 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. 						<p>N/A</p> <p>N/A</p>
<p>S8.6.26/ Waste Manage ment Plan</p>	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> 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 	<p>To ensure proper management of chemical waste</p>	<p>Contractor</p>	<p>All works sites</p>	<p>Construction Phase</p>	<p>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</p> <p>Waste Disposal (Chemical Waste) (General) Regulation</p>	<p>^</p>

	(Chemical Waste) (General) Regulation.						
S8.6.27/ Waste Manage ment Plan	<p>General Refuse</p> <ul style="list-style-type: none"> 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	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> 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	<p>Indirect vibration impact</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 to be limited 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 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/ 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	^

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 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 integration with existing coastline	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	<p>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:</p> <p>Methane 0-100% LEL and 0-100% v/v Carbon dioxide 0-100% Oxygen 0-21%</p>	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EP Landfill Gas Hazard Assessment Guidance Note	^
S11.5.10 S11.5.25	<p>Safety Measures</p> <ul style="list-style-type: none"> For staff working, or have responsibility for "at risk" area, 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 Flames" 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	EP Landfill Gas Hazard Assessment Guidance Note Labour Department's Code of Practice for Safety and Health at Work in Confined Space	^ ^ ^

	<ul style="list-style-type: none"> • 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 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 					<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>	
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	<p>through the pipeline/conduit. All piping /conducting should be capped at the end of each working day.</p> <ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
<p>S11.5.26 -</p>	<p>Monitoring</p> <ul style="list-style-type: none"> • Routine monitoring should be carried out in all excavations, manholes, 	<p>Protect the workers from</p>	<p>Contractor</p>	<p>Project sites within the</p>	<p>Construction phase</p>	<p>EP Landfill Gas Hazard</p>	<p>^</p>

	<p>Landfill Consultation Zone should be minimized by suitable precautionary measures recommended in Chapter 8 of the Landfill Gas Hazard Assessment Guidance Note.</p>	<p>stage within the Sai Tso Wan</p> <p>Protect the workers from landfill gas hazards</p>		<p>within the Sai Tso Wan Landfill Consultation Zone</p>	<p>phase</p>	<p>Hazard Assessment Guidance Note</p>	
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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
Noise Impact (Construction Phase)					
* (3)	Noise Mitigation Plan	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Breakers in Portion III were found without a noise barrier in direction of nearby NSRs. Contractor is reminded to place barriers when breaking to minimize noise impacts. • Acoustic sheets at top of tunnel's entrance were loose. Contractor is reminded to ensure that the noise barriers can effectively block noise impacts from construction site and tunnel works. • Acoustic sheets at top of a semi-enclosure in Portion IVC were loose. Contractor is reminded to effectively block noise impacts done to nearby NSRs and is recommended to place a board at the roof to prevent noise emission.
Water Quality Impact (Construction Phase)					
* (1), * (4), * (5)	Silt curtain deployment Plan	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Silt curtains in Platform 1C and 1D were broken. Contractor is reminded to maintain them in a good condition regularly

*(2)	S5.8.7	<ul style="list-style-type: none"> 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. 	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Although the broken silt curtain had been replaced with the new one in Portion VII, the new silt curtain is merely arranged in a chain of floating blocks without releasing the curtains down to the sea bed. The Contractor is reminded to follow the Silt Curtain Deployment Plan and improve the situation as soon as possible in order to prevent accidental spillage of muddy water. Water from workers' rooms near the site in Portion II was discharged from holes to the floor. Contractor is reminded that wastewater should not be directed to public sewerage system. Instead, it should be pumped to and treated in sedimentation tanks before discharge. Floating rubbish was found at sea. Contractor is reminded to clean rubbish in water regularly.
Waste / Chemical Management					
*(6)	S5.8.46	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on Packaging, Labelling and Storage of Chemical</p>	NE/2015/01	<p>Portion IVC</p> <p>Portion III</p>	<ul style="list-style-type: none"> Oil stain was found in Portion IVC and needs to be cleaned. Mud was found in a perimeter drain near East Harbour Cross Tunnel

	<p>Wastes” fish th Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> - 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. 			
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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
<i>Air Quality Impact</i>							
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: <ul style="list-style-type: none"> - 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, watering shall be applied to aggregate fines.	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^ ^

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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
	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p> <p>*(1)</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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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
/	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	• PCO	^ ^ ^
/	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	• PCO	^
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 <i>Supervisor</i> , odour suppressant will be applied over the marine sediments via water blaster to minimize the impact. - 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.	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	^ ^ ^ ^

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October 2019

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
	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
Noise Impact (Construction Phase)							
S4.8	<ul style="list-style-type: none"> - 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 	To minimize construction noise impact	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^

App N2 - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

October 2019

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
	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.	arising from the Project at the affected NSRs					
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	<p>Good Site Practice</p> <ul style="list-style-type: none"> - 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	^ ^ ^ ^ ^ ^

App N2 - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

October 2019

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
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
<i>Water Quality Impact (Construction Phase)</i>							
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	CED 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	CED 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 access.	Control potential impacts from filling activities	CED Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
Silt Curtain Deployment	<ul style="list-style-type: none"> - Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. 	Control potential impacts from	Contractor	NE/2015/02	Construction stage	EIAO	^ ^

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Plan	<ul style="list-style-type: none"> - Sufficient stock of silt curtain should be provided on site. 	marine works					^
Sediment Management Plan	<ul style="list-style-type: none"> - 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 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 	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	^ ^ ^ ^ ^ ^

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	<p>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.</p> <ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p>
S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> - 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; 	Control potential impacts from filling activities and marine-based construction	CED Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	<ul style="list-style-type: none"> - 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p>
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	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> - 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. 	Control potential impacts from dredging and filling works for Reclamation for Road P2	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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	<ul style="list-style-type: none"> - 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. 						<p>N/A</p> <p>^</p>
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	CED 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	CED 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	Control potential impacts from construction site	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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	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.	runoff and land-based construction					
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	CED 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	CED 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	CED 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	CED 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	CED 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	CED 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	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		runoff and land-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	CED 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	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	*(5)
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	CED 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	CED 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	CED 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	CED 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	Control potential impacts from construction site	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	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.	runoff and land-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	CED 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	CED 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	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.25 - S5.8.27 & Table 5.18	<p>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.</p>	Control potential impacts from construction site runoff and land-based construction	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A
S5.8.28	<p>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.</p>	Control potential impacts from construction site runoff and land-based construction	CED Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.29 - S5.8.31	<p>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</p>	Control potential impacts from construction site runoff and land-based	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	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.	construction					
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	CED 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	CED 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	CED 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	CED 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	CED 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	CED 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-	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		based construction					
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	CED 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	CED 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	CED Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CED 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	CED 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	CED 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	CED Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^

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S5.8.46	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The “Code of Practice on Packaging Labelling of Chemical Wastes” issued by the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> - 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	CED Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^ ^
S5.8.47	<p>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.</p>	Control potential impacts from floating refuse and debris	CED Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							
S6.8.4	<p><i>Measures to Minimize Disturbance</i></p> <ul style="list-style-type: none"> - 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; 	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust	Design Team / Contractor	Land-based works are	Construction Phase	N/A	^ ^

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	<ul style="list-style-type: none"> - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities 	generation					^
S6.8.5	<p>Standard Good Site Practice</p> <ul style="list-style-type: none"> - 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 the nearby watercourses. 	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^ ^ ^ ^
S6.8.6	<p>Measure to Minimize Groundwater Inflow</p> <ul style="list-style-type: none"> - 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	<p>Measure to Minimize Impact on Corals</p>	Minimize loss of	Design team,	Within	Prior	N/A	

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	<p><u>Coral translocation</u></p> <ul style="list-style-type: none"> - It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, 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) who is/are approved by AFCD prior to commencement of coral translocation. <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> - 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. 	coral	contractor, project operator	reclamation areas and pier footprint	construction		<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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S6.8.9 S6.8.10	<p><i>Measure to Control Water Quality Impact</i></p> <ul style="list-style-type: none"> - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. - Diverting of the site runoff to silt trap facilities before discharging into storm drain; - Proper waste and dumping management; and - Standard good-site practice for land-based construction. 	Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	N/A ^ ^ ^ ^
S6.8.11	<p><i>Compensation for Vegetation Loss</i></p> <ul style="list-style-type: none"> - 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	^
<i>Fisheries Impact</i>							
S7.7.3	<i>Measure to Control Water Quality Impact</i>	Control water	Design Team	Marine work	Construction	WQO	

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	<ul style="list-style-type: none"> - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. 	quality impact, especially on suspended solid level	/ Contractor	area	phase		^
Waste Management (Construction Phase)							
S8.6.3	<i>Good Site Practices and Waste Reduction Measures</i> <ul style="list-style-type: none"> - 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	<i>Good Site Practices and Waste Reduction Measures (con't)</i> <ul style="list-style-type: none"> - 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)	^ ^ ^

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	<ul style="list-style-type: none"> - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 					Ordinance (Cap. 28)	^
S8.6.5	<p>Waste Management Plan (WMP)</p> <p>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.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	<p>Waste Management Plan (WMP)</p> <ul style="list-style-type: none"> - 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	<p>Storage, Collection and Transportation of Waste</p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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 	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^

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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
	- Different locations should be designated to stockpile each material to enhance reuse.						^
S8.6.8/ Waste Management Plan	<p>Storage, Collection and Transportation of Waste (con't)</p> <ul style="list-style-type: none"> - 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		*(4) ^ ^ ^ ^ ^
S8.6.9/ Waste Management Plan	<p>Stog, Clllectin nd Transportation of Waste (con't)</p> <ul style="list-style-type: none"> - 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/	<p>Sorting of C&D Materials</p> <ul style="list-style-type: none"> - Sorting to be performed to recover the inert materials, reusable and recyclable materials before 	To minimize potential adverse	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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	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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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 handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. 	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^ *(3) N/A
S8.6.21/ Waste	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and 	To ensure the sediment to be	NE/2015/02	All works areas with sediments	Construction Phase	ETWB TC(W) No. 34/2002 &	N/A

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Management Plan	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.	disposed of in an authorized and least impacted way		concern		Dumping at Sea Ordinance	
S8.6.23	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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	N/A
S8.6.24 - S8.6.28/ Waste Management Plan	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excavated 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 	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	^ ^

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	<p>contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).</p> <ul style="list-style-type: none"> - 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 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. 						<p>^</p> <p>^</p> <p>N/A</p> <p>N/A</p>
S8.6.26/ Waste	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> - If chemical wastes are produced at the construction site, the Contractor would be required to 	To ensure proper management of	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	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.	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)	
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	

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	<ul style="list-style-type: none"> - 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.	^ ^ ^ ^
<i>Landscape and Visual Impact (Construction Phase)</i>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area attractor's temporary work areas to be minimised and 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	To minimize tree	CEDD (via	As per	Site clearance	ETWB TC	^

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Landscape Mitigation Plan	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 work areas. (Tree protection measures will be detailed in Tree Removal Application stage).	loss	Contractor)	approved Tree Removal Application(s)	and throughout construction period	3/2006 and as per tree protection measures in Particular Specification	
Table 10.8.1/ Landscape Mitigation Plan	CM5 - Trees unavoidably affected by the works shall be transplanted where practicable. Where possible, trees should be transplanted direct to permanent locations rather than temporary holding nurseries. A detailed tree transplanting specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table 10.8.1/ Landscape Mitigation Plan	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2 landscape deck, TKO	Beginning of construction period	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1/ Landscape	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	N/A	^

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Mitigation Plan					period		
Table 10.8.1/ Landscape Mitigation Plan	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion and integration with environment	CEDD (via Contractor)	Built structures	Design and construction stage	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	^
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and permanent reclamation for	Construction planning and reclamation stages	N/A	N/A

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				TKO Interchange slip roads 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
<i>Air Quality Impact</i>					
* (1)	S3.8.7	- The shelter of the drill-rig had been worn out. The Contractor is recommended to replace/repair the shelter to prevent dust emission	NE/2015/02	Portion IX	<ul style="list-style-type: none"> • 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.
<i>Noise Impact</i>					
* (2)	Noise Mitigation Plan	- The Contractor is reminded to put the acoustic box closer to the breaker to minimise noise impact	NE/2015/02	Area A	<ul style="list-style-type: none"> • Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan
<i>Water Quality Impact</i>					
* (3)	S8.6.20	- Despite the contractor's mitigation relative to slope, splashing of materials and stir-up of sea bed sediments are still observed. The Contractor is recommended to conduct mitigation measures such as lower the height of grab when releasing materials from the grab to reduce impact to surrounding waters.	NE/2015/02	Western marine works area, within cofferdam and double-layered silt curtain	<ul style="list-style-type: none"> • 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.

<i>Waste / Chemical Management</i>					
*(4)	S8.6.8/ Waste Management Plan	- During site inspection, some debris and construction-related items were found drifting on the sea surface (Western side) outside of the cofferdam. The Contractor is reminded to remove debris / waste drifting on the sea surface regularly.	NE/2015/02	Western marine works area	<ul style="list-style-type: none"> Remove waste in timely manner;

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

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<i>Air Quality (Construction Phase)</i>							
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: x - 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	^ ^

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	<p>reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> - 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 						<p>^</p> <p>*(1)</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	construction process in order to enforce controls and modify method of work if dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> • 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	• APO	^ ^ ^
/	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	• APO	^
Sediment Management Plan	<ul style="list-style-type: none"> - 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 <i>Supervisor</i>, 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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	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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Noise Impact (Construction Phase)							
S4.8	<ul style="list-style-type: none"> - 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	<p>Good Site Practice</p> <ul style="list-style-type: none"> - 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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	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p>
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	EIB 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	EIB 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	EIB Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	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	EIS 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	EIS 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	EIS Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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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	EIB 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	EIB 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	EIB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	EIB 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	EIB 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	EIB 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	EIB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	EIB 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	EIB 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	EIB 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-	EIB Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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		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	EIS 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	EIS Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A

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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	EB 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	EB 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 runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	EB 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	EB 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	EB 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-	EB Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		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	EB 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	EB 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	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	EB 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	EB 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	EB 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-	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	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	EIS 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	EIS 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 detail 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^

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	- 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	EB Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							
S6.8.4	<p>Measures to Minimize Disturbance</p> <ul style="list-style-type: none"> - 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	<p>Standard Good Site Practice</p> <ul style="list-style-type: none"> - 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	^ ^

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	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S6.8.6	<p>Measure to Minimize Groundwater Inflow</p> <ul style="list-style-type: none"> - 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	<p>N/A</p> <p>N/A</p>
S6.8.8	<p>Measure to Minimize Impact on Corals</p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> - It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, 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	<p>^</p> <p>^</p> <p>^</p>

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	<p>pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage.</p> <ul style="list-style-type: none"> - 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. <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p>
<p>S6.8.9 S6.8.10</p>	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> - 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. 	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater</p>	<p>Design Team, contractor</p>	<p>Marine and landbased works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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		discharge, accidental chemical spillage and construction site runoff to the receiving water bodies					
S6.8.11	<p>Compensation for Vegetation Loss</p> <ul style="list-style-type: none"> - 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	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> - 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	^

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Waste Management (Construction Phase)							
S8.6.3	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - 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)	^ ^ ^

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	<ul style="list-style-type: none"> - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 						^
S8.6.5	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <p>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.</p> <p>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.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - 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	<p>Storage, Collection and Transportation of Waste</p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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	-	^ ^ ^

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	<ul style="list-style-type: none"> - 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	<p><i>Storage, Collection and Transportation of Waste (con't)</i></p> <ul style="list-style-type: none"> - 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	<p><i>Storage, Collection and Transportation of Waste (con't)</i></p> <ul style="list-style-type: none"> - 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	^

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	(including disposal sites) should be proposed.	from waste collection and disposal					
S8.6.11 - S8.6.13/ Waste Manage ment Plan	<p>Sorting of C&D Materials</p> <ul style="list-style-type: none"> - 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 Manage ment Plan	<p>Sediments</p> <ul style="list-style-type: none"> - 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

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	<p>sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG.</p> <p>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.</p> <ul style="list-style-type: none"> - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 3-3.95m) 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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		^ ^

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	<p>discharged according to the Water Pollution Control Ordinance (WPCO).</p> <ul style="list-style-type: none"> - 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. 						<p>^</p> <p>N/A</p>
S8.6.21/ Waste Manage ment Plan	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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

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	<p>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.</p> <ul style="list-style-type: none"> - 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. 						<p>^</p> <p>N/A</p> <p>N/A</p>
S8.6.26/ Waste	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> - 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,	^

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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 on-trail temporary areas to be limited to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction	N/A	^

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Mitigation Plan					period		
Table 10.8.1/ Landsca pe 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/ Landsca pe 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/ Landsca pe 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 areas (Tree protection measures to be detailed at Tree Protection 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	^

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10.8.1/ Landsca pe 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/ Landsca pe 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/ Landsca pe 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/ Landsca pe 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	^

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Plan							
Table 10.8.1/ Landsca pe 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/ Landsca pe 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 pe 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

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		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
<i>Air Quality Impact</i>					
* (1)	S3.8.7	The Contractor is reminded to cover stockpile of dusty material with tarpaulin fabric to prevent air quality impact due to wind erosion. (Location: Portion I)	NE/2017/02	Road P2/D4 and Associated Works	- The Contractor had remove the stockpile shortly after site inspection on 17th October 2019.

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: <ul style="list-style-type: none"> - 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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	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> - 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 						<p>^</p> <p>^</p> <p>N/A</p> <p>*(1)</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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EIA Ref. / EP Submiss ion	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
	dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> • 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	• APO	^
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	<p>Good Site Practice</p> <ul style="list-style-type: none"> - 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)							
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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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-	EB Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	EB 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	EB 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	EB 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	E&B 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	E&B 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	E&B 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	EIB 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	EIB 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	EIB 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-	EIB 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	EB 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	EB 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	EB 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 runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	EB 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	EB 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	EB 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	EB 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	EB 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-	EB 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	EB 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	EB 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	EB 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

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Ecological Impact							
S6.8.4	<p>Measures to Minimize Disturbance</p> <ul style="list-style-type: none"> - 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 	<p>Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation</p>	<p>Design Team / Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^ ^ ^</p>
S6.8.5	<p>Standard Good Site Practice</p> <ul style="list-style-type: none"> - 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 	<p>Reduce disturbance to surrounding habitats</p>	<p>Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^ ^ ^ ^ ^</p>

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	the nearby watercourses.						
S6.8.8	-						
S6.8.9 S6.8.10	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> - 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	^ ^

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S6.8.11	<p>Compensation for Vegetation Loss</p> <ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - 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)	^

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	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	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <p>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.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <p>- C&D materials would be reused in the project and other local concurrent projects as far as possible.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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S8.6.7	<p><i>Storage, Collection and Transportation of Waste</i></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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	<p><i>Storage, Collection and Transportation of Waste (con't)</i></p> <ul style="list-style-type: none"> - 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		^ ^ ^ ^ ^

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S8.6.9/ Waste Management Plan	<p>Storage, Collection and Transportation of Waste (con't)</p> <ul style="list-style-type: none"> - 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	<p>Sorting of C&D Materials</p> <ul style="list-style-type: none"> - 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - Requirements of the Air Pollution Control (Construction Dust) Regulation, where 	To determine the best handling	Contractor	All works areas with	Construction Phase		^

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	<p>relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment.</p> <ul style="list-style-type: none"> - 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 Manage ment	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> - 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	^

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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	<p>General Refuse</p> <ul style="list-style-type: none"> - 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	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> - 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 Submiss ion	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 on-trator's temporary work areas to be initiated 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	^

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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 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

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Plan							
Table 10.8.1/ Landsca pe 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/ Landsca pe 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/ Landsca pe 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	^

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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
<i>Air Quality Impact</i>					
*(1)	S3.8.7	- 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.	NE/2017/02	Road P2/D4 and Associated Works	The Contractor is reminded to cover all the fences with tarpaulin fabric in order to minimize dust impact to the surrounding environment during the floor-tiling works..

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

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<i>Air Quality Impact (Construction Phase)</i>							
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

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	<ul style="list-style-type: none"> - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. - Imposition of speed controls for vehicles on site haul roads. - Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. 						<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>N/A</p>

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EIA Ref. / EP Submiss ion	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
	<ul style="list-style-type: none"> - 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
/	<p>Emission from Vehicles and Plants</p> <ul style="list-style-type: none"> • 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	• APO	^ ^ ^
/	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	• APO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> - 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

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	<ul style="list-style-type: none"> - Subject to the odour intensity and instruction by the <i>Supervisor</i>, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact. - 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. 						<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>

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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<p>Good Site Practice</p> <ul style="list-style-type: none"> - 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	^ ^

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	<ul style="list-style-type: none"> - 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	EIB 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	EIB Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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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	EIB Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
Silt Curtain Deploym ent Plan	<ul style="list-style-type: none"> - 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 works	Contractor	NE/2015/01, NE/2015/02, NE/2017/01	Construction stage	EIAO	^ ^ ^
Sediment Manage ment Plan	<ul style="list-style-type: none"> - 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

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	<ul style="list-style-type: none"> - 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 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. 						<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>

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S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> - 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>grounds; and</p> <ul style="list-style-type: none"> - 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	<p>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.</p>	<p>Control potential impacts from filling activities and marine based construction</p>	<p>CEDB Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> - 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 	<p>Control potential impacts from dredging and filling works for Reclamation for Road P2</p>	<p>EB Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A N/A N/A</p>

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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	EIS 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	EIS 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	EIS 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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-	EB 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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	EIS 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-	EIS 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	EB 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	EB 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	EIS 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 runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	EIS 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	EIS 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	EB 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	EB 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	EB 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-	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EB 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	EIS 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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	* (1) ^
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	EIS Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

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Ecological Impact							
S6.8.4	<p>Measures to Minimize Disturbance</p> <ul style="list-style-type: none"> - 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	<p>Standard Good Site Practice</p> <ul style="list-style-type: none"> - 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	<p>Measure to Minimize Groundwater Inflow</p> <ul style="list-style-type: none"> - 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	<p>Measure to Minimize Impact on Corals</p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> - It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, 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

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	<p>who is/are approved by AFCD prior to commencement of coral translocation.</p> <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> - 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. 						<p>N/A</p> <p>N/A</p>
<p>S6.8.9</p> <p>S6.8.10</p>	<p><i>Measure to Control Water Quality Impact</i></p> <ul style="list-style-type: none"> - 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. 	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the</p>	<p>Design Team, contractor</p>	<p>Marine and land based works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>N/A</p>

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		receiving water bodies					
S6.8.11	<p>Compensation for Vegetation Loss</p> <ul style="list-style-type: none"> - 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	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> - 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)	^ ^ ^

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	<ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - 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	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <p>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</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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	<p>areas for segregation and temporary storage of reusable and recyclable materials.</p> <p>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.</p>						
S8.6.6	<p>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - 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	<p>Storage, Collection and Transportation of Waste</p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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 Manage ment	<p>Storage, Collection and Transportation of Waste (con't)</p> <ul style="list-style-type: none"> - 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		^ ^ ^

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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	<i>Storage, Collection and Transportation of Waste (con't)</i> - 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	<i>Sorting of C&D Materials</i> - 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	^ ^ ^

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	<p>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</p>						
<p>S8.6.17 – S8.6.20</p>	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - 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 	<p>To determine the best handling and treatment of sediment</p>	<p>Contractor</p>	<p>All works areas with sediments concern</p>	<p>Construction Phase</p>	<p>^ ^ ^</p>	<p>N/A</p>

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	handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						
S8.6.21/ Waste Manage ment Plan	<p>Sediments (con't)</p> <ul style="list-style-type: none"> 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> 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	<p>Sediments (con't)</p> <ul style="list-style-type: none"> The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excavated 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	^

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	<p>specified by the DEP.</p> <ul style="list-style-type: none"> - 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. 						<p>N/A</p> <p>N/A</p>
S8.6.26/ Waste Management Plan	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> - 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	^

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	at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.						
S8.6.27/ Waste Manage ment Plan	<p>General Refuse</p> <ul style="list-style-type: none"> - 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	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> - 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	<p>Indirect vibration impact</p> <ul style="list-style-type: none"> - 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

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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 to be limited 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

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10.8.1/ Landsca pe 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/ Landsca pe 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 work areas (Tree protection measures to be detailed at Tree Protection 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/ Landsca pe 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/ Landsca pe	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

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Mitigation Plan				landscape deck, TKO			
Table 10.8.1/ Landsca pe 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/ Landsca pe 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/ Landsca pe 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

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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

App N5 - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

October 2019

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
Waste Management (Construction Phase)					
* (1)	S5.8.46	<p>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:</p> <ul style="list-style-type: none"> - 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. 	NE/2017/01	Construction of TKO Interchange	<ul style="list-style-type: none"> • 8 October 2019: Accumulation of water was observed in the drip tray. The Contractor is recommended that still water in drip tray should be cleaned regularly to avoid overflow. • 17 October 19: Still oil is observed on the barge. Contractor should clean it up to avoid leakage to the sea

**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
405	29-Oct-19	17-Oct-2019 / Marine Works area near Ocean Shore	District Council Member (Mr. Chan)	Noise	Daytime times noise nuisance	Y	Investigation undergoing	On-going
404	15-Oct-19	12-Oct-19 / Marine Works area near Ocean Shore	Residents of Ocean Shores	Noise / Working Hours	Noise nuisance due to operation of barge on Saturday early morning	Y	The time of complaint falls within daytime and the major works conducted are dredging and reclamation. The contractor did not require any extra mitigation measures. The contractor had applied sound-proofing mat on the engine floor of the barges and is recommended to strictly follow the requirements of noise mitigation plan. The details shall be refer to CIR-N86	Draft CIR submitted
403	15-Oct-19	Oct-19 (Not Specified) / C2 Construction Site	Residents of Ocean Shores	Noise / Working Hours	Operation of marine construction works during late hours	Y	The major construction works is trimming works for the rock mount during the time period of complaint. Mitigation measures provided by the Contractor included provision of noise insulating mats to the engine floor of the barges and shorten the work hours by ending construction works on or before 21:00 since early Oct 2019. Details shall be referred to CIR-N85.	Draft CIR submitted
402	10-Oct-19	09-Oct-2019/ Site near TKO CPC	Residents of Ocean Shores	Noise	Noise nuisance of construction works at marine work area during early morning	Y	No construction activity at both the Cavern near the BCMCP Bridge and Platform 1B, including the barge, in particular during the complaint period between 2am and 3am on 9 Oct 2019. Since no works had conducted during the time of complaint, no mitigation measures are required. The details shall be referred to CIR-N84.	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
401	5-Oct-19	05-Oct-2019 / C2 Portion IX	District Council Member (Mr. Chan)	Noise	High noise level from works area during daytime	Y	The time period of complaint falls under day-time and therefore the Contractor is required to carry out mitigation measures according to the latest CNMP only. The construction activities had been reviewed and no non-compliance was identified. No Limit Level of Exceedance at daytime was recorded during October 2019. For mitigation measures, the Contractor had set up sound-proofing mats and SlientUp to reduce noise impact. The details shall be refer to CIR-N83.	Draft CIR submitted
400	16-Sep-19	10-Sep-19 / TKO Marine Works Area	District Council Member (Mr. Chan)	Water	Muddy water discharge and deficiency in water quality mitigation measures	N	With accordance to the Contractor and RE, the silt curtains were deployed regarding to SCDP ver. 8 since 10-Sep-19, site inspection on 12-Sep-19 also showed the silt curtains were deployed properly. Despite there are chances of accidental muddy water discharge due to the removal of cofferdam on 13-Sep-19, local silt curtain had been place in order to minimize the unavoidable impact by related loading and unloading of fill materials. No muddy water had been observed outside the silt curtain area. Nevertheless, the Contractor is recommend to expand the coverage of the local silt curtain in order to well-confine the muddy water released from the grab. On top of that, the Contractor shall always follow the SCDP to ensure the minimization of impacts. Details should be referred to CIR-C30.	Closed
399	16-Sep-19	16-Sep-19 (Not Specified) / LT Interchange Potion III	Resident of Bik Lai House, Yau Lai Estate	Noise	Noise emission from the tunnel entrance (Potion III)	Y	No construction works was carried out during the time of complaint. Details should be referred to CIR-N82.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
398	16-Sep-19	13-Sep-19 / Works Area of LT-TKO Tunnel outside Tiu King Leng MTR Station	Anonymous	Air / Water	Dark smoke emission and muddy water discharge from the marine work vessels near shore	N	No dark smoke emission was observed during the site inspection conducted in the week of the complaint. The Contractor has applied an air filtering tank to clean the exhaust from the barge before emission. Details should be referred to CIR-C30.	Closed
397	6-Sep-19	30 Aug-19 / Works area near Ocean Shores	Resident of Ocean Shores	Noise / Working hours	Noise emitted from Barge during Evening times	Y	The unloading works had been reviewed and no limit level of exceedance were recorded during August to early September. Since the period of complaint falls under evening times, no mitigation measures were required by the CNP. Details should be referred to CIR-N81.	Draft CIR submitted
396	6-Sep-19	30 Aug-19 / Works area near Ocean Shores	Resident	Noise	Noise nuisance from LT-TKO Tunnel	Y	The major works conducted were shortcreting, mucking out, maintaining, drilling and unloading. No limit level of exceedance in the restricted hours (19:00-23:00) between late August and early September were recorded. The Contractor is recommended to keep following noise mitigation plan to minimize noise nuisance. Details should be referred to CIR-N80.	Closed
395	6-Sep-19	31 Aug-19 / Works area near Ocean Shores	District Council Member (Mr. Chan)	Noise	Noise Nuisance during evening and night times	Y		Closed
394	6-Sep-19	Not specified (Sep-19) / Works area near Ocean Shores	Anonymous	Noise / Operating Hours	Noise nuisance during Evening & occasionally in Night time	Y		Closed
393	30-Aug-19	30 Aug-19 / Marine works Area	District Council Member (Mr. Chan)	Water	Alleged muddy water discharge	N	High rainfall was recorded during period of complaint, therefore muddy water discharge at outfall from upstream and some surface runoff within the site is expected. However, no major silt curtain deficiency was observed during on-site observation and no leakage of muddy water from the marine works area was observed. Details should be referred to CIR-W12.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
392	29-Aug-19	20-27 Aug-19/ Portion 4C	Resident of Bik Lai House, Yau Lai Estate	Noise	Noise nuisance from the operation of heavy machineries and missing of noise mitigation measures at Portion 4C	Y	A noise insulating cover was erected before the period of complaint, however, due to restricted site condition in the relocated breaking works area, the erection of the cover could not be carried out. Nevertheless, movable noise barriers and local semi-enclosure was adopted for breaking works. Details should be referred to CIR-N79.	Draft CIR submitted
391	26-Aug-19	10-Jul-19 / Construction site near Ocean shore	District Council Member (Mr. Chan)	Noise	Operation of construction works during late hours	Y	1 derrick barge was operated during the period of complaint with valid CNP. Regular maintenance and checking should be conducted for all operating barges. Details should be referred to CIR-N78.	Draft CIR submitted
390	26-Aug-19	31-Jul-19 / Construction site near Ocean shore	District Council Member (Mr. Chan)	Noise	Intermittent noise emitted from collision during night-time	Y	The noise source is suspected to be the collision between cofferdam and its broken part as the cofferdam was found damaged next morning. No construction was conducted at night time of 31 July. The contractor is recommended to maintain and check cofferdam regularly. Details should be referred to CIR-N77.	Closed
389	29-Jul-19	17 to 24-Jul-19 / Marine Construction Site near O King Road	Resident of Ocean Shore	Noise	Noise nuisance from the barge operating in reclamation works area near O King Road during evening times.	Y	1 derrick barge was operated during the period of complaint with valid CNP. Regular maintenance should be provided for all operating barges. Details shall refer to CIR-N76.	Closed
388	12-Jul-19	8-Jul-19 / Construction Site near Ocean Shores	District Council Member (Mr. Chan)	Noise	Noise nuisance and inadequate noise barrier at the construction site near Ocean shore	Y	Although Contractor has adopted a noise mitigation measure of drill rigs at Portion IV near Ocean Shore such as noise barrier with sound insulating fabric, the existing noise barrier in Portion IX and some in Portion IV are not adequate in screening the direct line of sight to Ocean Shore. Details should be referred to CIR-N75.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
387	12-Jul-19	8 to 12-Jul-19 / Portion 4C of C1 Construction Site	Resident of Bik Lai House	Noise	Breaking noise emitted from the operation of 2 PMEs at Portion 4C during weekday daytime.	Y	Two breakers were operated intermittently at the Portion 4C of C1 construction site during the period of complaint between 07:00 to 19:00. As observed during the site inspection/noise monitoring, movable noise barrier could not completely screen off the direct line-of-sight from PMEs to Yau Lai Estate. Contractor has adopted mitigation measure to minimize the noise impact from breakers including using a noise barrier with noise insulating fabric, adopted a less noisy hydraulic spitting method for breaking works and has been developing a semi-enclosure noise barrier to replace the existing movable noise barrier. Details should be referred to CIR-N74.	Closed
386	10-Jul-19	9 to 10-Jul-19 / Not Specific	District Council Member (Mr. Chan)	Noise	Noise nuisance and disturbance from the TKOLT tunnel construction site involves intermittent noise emitted from collision during night-time.	Y	No construction works was carried out during the time of complaint. Details should be referred to CIR-N73.	Closed
385	4-Jul-19	Late Jun-19 to 4-Jul-19 / Reclamation Area	Resident of Ocean Shore	Noise	The reclamation works continued into the evening during weekdays and works were also operated on Sunday.	Y	See Complaint no 384.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
384	3-Jul-19	3-Jul-19 / Near Ocean Shore	District Council	Noise	The construction site was constantly emitting metallic percussion noise in the early morning.	Y	The concerned metallic percussion noise source was suspected from the collision between the detached sheet pile and the adjacent sheet pile of the broken cofferdam. The detached sheet pile was fixed by re-sealing it to the adjacent sheet pile. Details should be referred to CIR-N72.	Closed
383	29-Jun-19	Jun-19 / Lam Tin Interchange	Resident of Yau Lai Estate, Yung Lai House	Noise	Noise nuisance from construction works during weekday daytime and evening times. Noise barriers was found missing in certain parts of the construction areas.	Y	Some noise mitigation measures were observed during the site inspection including idle equipment were turned off and noise barrier has been erected close to noisy PMEs in the right direction facing Yau Lai Estate. However, the above mitigation measures were not applied to whole construction site such as noise barriers were not placed close enough to the noisy PMEs due to the uneven surface and other inconvenience. Details should be referred to CIR-N71.	Closed
382 (N08/RE/00 011019-19)	17-Jun-19	6-Jun-19 / Cofferdam area	District Council	Air	Dark smoke nuisance from the tug boat inside the cofferdam area.	N	During site audit, no violation of the Air Pollution Control (Smoke) Regulation from the construction site was observed by the ET. Air filter has been replaced on derrick barge to reduce the dark smoke emission upon the receipt of the complaint. The Contractor is recommended to replace the air filters regularly. Details should be referred to CIR-A15.	Closed
381 (N08/RE/00 015098-19)	11-Jun-19	1-Jun-19 / Near confferdam	District Council	Water	Muddy water discharge from construction site near the cofferdam area on 4 June 19	N	High volume of upstream muddy water was collected due high rainfall according to reports and observation. As a result, the muddy water from upstream was discharged into the Junk Bay via various outfalls in Junk Bay, as observed during the rainstorm events. No sand plume within the cofferdam area and no muddy water discharge at the designated discharge point within the Site was identified during the site inspection and water quality monitoring. Details should be referred to CIR-W11.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
380	11-Jun-19	6-Jun-19 / Near Tong Yin Street	Resident of Ocean Shore	Air	Odour nuisance from construction site near Tong Yin Street	N	No oil leakage from mobile crane was observed during the site inspection in June 2019. According to the testing reports, all ULSD fuel applied in the PMEs during the construction period contains sulphur content lower than 0.005% by weight, which complied with the Air Pollution Control (Fuel Restriction) Regulations. Details should be referred to CIR-A14.	Closed
379	11-Jun-19	4-Jun-19 / Near cofferdam area	General Public	Water	Discharge of mud water into Junk Bay from TKOLT construction site	N	See Complaint no 381.	Closed
378	11-Jun-19	13-Apr-19 / Near cofferdam area	General Public	Air	Dark smoke nuisance from construction site involves derrick barge operation near cofferdam area (daytime)	N	No violation of the Air Pollution Control (Smoke) Regulation was recorded from the construction site was observed. The contractor was recommended to install carbon filter at smoke exhaust of the barge as a more effective mitigation measures. Details should be referred to CIR-C27.	Closed
377	11-Jun-19	2-Jun-19 / Lam Tin Interchange	General Public	Noise	Complaint about the noise nuisance from Lam Tin Interchange construction site in daytime holiday.	Y	Only drilling works inside the tunnel was conducted during daytime under valid CNP. Groundborne noise is considered as the major factor contributing to the noise nuisance, the Contractor are recommended to re-schedule the drilling works inside the tunnel to less sensitive hours. Details should be referred to CIR-N70.	Closed
376	11-Jun-19	9-Jun-19 / Near Yau Lai Estate	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance near Yau Lai Estate involves vehicle movement (roller) during morning to 15:00 in holiday.	Y	No works involving roller was involved. Only drilling works inside the tunnel and dismantling of crusher shelter was conducted during Sunday daytime under valid CNP. Groundborne noise is considered as the major factor contributing to the noise nuisance, the Contractor are recommended to re-schedule the drilling works inside the tunnel to less sensitive hours. Details should be referred to CIR-N70.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
375	11-Jun-19	9-Jun-19 / Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance from Lam Tin Interchange construction site in daytime holiday.	Y	See Complaint no. 376.	Closed
374	4-Jun-19	3-Jun-19 / Near Ping Tin Estate	Resident of Ping Sin House in Ping Tin Estate	Noise	Vibration from the construction of Lam Tin Interchange in evening time at around 20:00	Y	Groundborne noise is considered as the major factor contributing to the noise nuisance. The reverse circulation drilling works may have emitted groundborne noise, however, only 1 unit was used in Portion II. Therefore, blasting is considered as the major cause for the vibration. Details should be referred to CIR-N69.	Closed
373	4-Jun-19	2-Jun-19 / Near ocean Shore	Resident of Ocean Shore	Noise	Complaint about the noise nuisance from the construction site near Ocean Shore and the construction site operation in day time holiday.	Y	No construction activity was conducted at the time of complaint as confirmed by Engineer. Therefore, the noise nuisance was not due to the construction site. Details should be referred to CIR-N68.	Closed
372	4-Jun-19	1-Jun-19 / Near ocean Shore	Resident of Ocean Shore	Others	Complaint about the construction site operation in the early morning on Saturday.	N	See Complaint no. 373.	Closed
371	30-May-19	30-May-19 / Near Ocean Shore	Resident of Ocean Shore	Noise	Noise nuisance from construction site near Ocean Shore during night time.	Y	See Complaint no. 373.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
370 (N08/RE/00 015098-19)	29-May-19	19 & 26-May-19 / Near Ocean Shore	Resident of Ocean Shore	Noise	Noise nuisance about dredging mud and loudspeaker in the construction site near Ocean Shore during daytime holiday.	Y	Noise barriers/ Noise absorptive materials have been used to mitigate the noise generated from the construction works. Only walkie-talkies were used for communication in the construction site. Details should be referred to CIR-N67.	Closed
369	13-May-19	Not specific / Lam Tin interchange	Resident of Yau Lai Estate	Noise	Noise nuisance from the blasting work inside tunnel which involves explosion noise impact during midnight	Y	Contractor has adopted a mitigation measure for reduce the blasting noise impact from the tunnel such as blasting doors and did not conduct blasting works during mid-night blasting since mid-May 2019. Details should be referred to CIR-N66.	Closed
368	19-May-19	19-May-19 / Near cofferdam area	General Public	Noise	Noise nuisance from barge with in cofferdam area in daytime holiday	Y	See Investigation / Mitigation Action for complaint no. 361.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
367	5-May-19	5-May-19 / Lam Tin Tunnel - TKO entrance	Resident near Lam Tin Tunnel - TKO entrance	Noise & Air	Noise and air nuisance from construction near Lam Tin Tunnel - TKO entrance	Y	The major works during the period of complaint is scaling by breaker on day time holiday (Sunday). The works is compiled with CNP and no air quality action and noise limit level exceedance during the monitoring. Regarding the existing air quality mitigation measures, the water spray for the breaker was insufficient and the dust emission during unloading of dusty materials was observed. As the review of exiting noise mitigation measure, a broken noise SilentMat was found on the hammer of breaker. According to the above observation, Contractor has adopted several improvement such as conduct a sufficient water spray during breaking and unloading materials, replaced the noise SilentMat of the breaker and placed the noise barrier between PME and NSRs. Details should be referred to CIR-C29.	Closed
366	4-May-19	4-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime.	Y	Regarding the observation during site inspection, the hammer of the breaker was surrounded by a broken noise absorption material and a noise barrier of a driller was placed in the incorrect direction of NSRs. Contractor has improved the above mitigation measures including replaced the noise absorption materials and relocated the noise barrier to facing the NSRs. Details should be referred to CIR-N65.	Closed
365	1-May-19	1-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime.	Y	See investigation / mitigation actions for Complaint No.366	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
364	1-May-19	1-May-19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime	Y	See investigation / mitigation actions for Complaint No.366	Closed
363	30-Apr-19	6th – 22th April -19 / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Noise nuisance from construction of Lam Tin Interchange in daytime and evening time	Y	See investigation / mitigation actions for Complaint No.366	Closed
362 (N08/RE/00 013396-19)	8-May-19	7-May-2019 / Junk Bay	District Council	Noise	Noise nuisance from marine works in the Junk Bay in the night-time (06:45)	Y	No marine works in the Junk Bay was conducted as confirmed by RE. No CCTV footage was recorded during the time of complaint. It was suggested that Contractor should conduct 24 hours CCTV monitoring. Details should be referred to CIR-N64.	Closed
361	7-May-19	28 Apr 2019 / Cofferdam Area	General Public	Noise	Noise nuisance from construction site at cofferdam area in holiday	Y	The reclamation works involves barges during the time of complaints has been compiled with the CNP. As review of existing mitigation measure, the sound proofing canvases for the barges were hanged up. Details should be referred to CIR-N63.	Closed
360	2-May-19	27-04-2019/ Construction in Tong Tin Street	General Public	Noise	The complaint about the noise nuisance from cofferdam area during daytime and evening-time.	Y	The light source was found from the lighting of derrick barge within the cofferdam area and the noise source was found from the barge during filling works. Contractor has adopted The sound proofing canvases for the derrick barge was hanged up but no light mitigation measure. Details should be referred to CIR-C28.	Closed
359	30-Apr-19	30-04-2019/ Near Ocean Shore	Resident of Ocean Shore	Noise	The complaint about the noise nuisance involve percussion noise near Ocean Shore during daytime.	Y		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
358	30-Apr-19	27-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance during evening time.	Y		Closed
357	23-Apr-19	20-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance near cofferdam area during daytime.	Y		Closed
356	23-Apr-19	19-04-2019/ Near cofferdam area	General Public	Noise	The complaint about the noise nuisance near cofferdam area during holiday.	Y		Closed
355	17-Apr-19	17-04-2019/ Near cofferdam area	General Public	Noise & light	The complaint about the noise nuisance and light pollution near cofferdam area during evening-time.	Y		Closed
354	30-Apr-19	20 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		The marine reclamation works at the Portion IX in C2 construction site was the major construction activity during the period of complaints. The concerned reclamation works is compiled with the relevant CNP. Details should be referred to CIR-O2.
		19 Apr 2019 / Cofferdam Area						
		15 Apr 2019 / Cofferdam Area						
		07 Apr 2019 / Cofferdam Area						
		31 Mar 2019 / Cofferdam Area						

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
353	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore (Mr. Chan)	Air	According to the complainant, large amount of smoke and exhaust was seen emitting from barges working within the cofferdam	N	See Investigation / Mitigation Action for complaint no. 329.	Closed
352	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore	Noise	The complainant complained about the noise nuisance from the cofferdam area in Tiu Keng Leng during day-time.	Y	The major works during the time of complaints was a crawler crane unloading H piles to the Portion V of C2 construction site. Noise barriers were erected between the crane and NSRs to reduce noise impact. Details should be referred to CIR-N62.	Closed
351	13-Apr-19	13-04-2019/Cofferdam Area	Resident of Ocean Shore	Noise	The complainant complained the noise nuisance from the cofferdam area in Tiu Keng Leng during day-time.	Y		
350	8-Apr-19	07 Apr 2019 / Cofferdam Area in TKO	-	Air & Others	The complainant complained the dark smoke generation and the construction works from the cofferdam area in Tiu Keng Leng during holiday.	N	See Investigation / Mitigation Action for complaint no. 329.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
349	7-Apr-19	07-04-2019/Cofferdam Area	Resident of Ocean Shore	Air	Dark smoke generation from the cofferdam area in Tiu Keng Leng during day-time.	N		Closed
348	2-Apr-19	02 Apr 2019 / LTT-TKO	-	Others	The complainant complained the LTT construction site was working during holiday.	N		Closed
347	1-Apr-19	01 Apr 2019 / Cofferdam Area	Resident of Ocean Shore	Noise	Percussive noise from the cofferdam area in Tiu Keng Leng during day-time.	Y		Closed
346	31-Mar-19	31st March 2019 / Construction of Road P2	District Council	Others	Complaint about the construction site operation of Road P2 in day time holiday	N	A tug boat and a derrick barge were operated for the marine reclamation work within the cofferdam area during the time of complaint. As the review of relevant CNP, no violation was observed. Details should be referred to CIR-O1.	Closed
345	26-Mar-19	26th March 2019 / Construction of Road D4	Resident of Park Central	Noise	Complaint about the noise nuisance in day time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed
344	28-Mar-19	26th March 2019 / Construction of Road P2	District Council	Noise	Complaint letter received regarding noise nuisance and dark smoke generation from the marine barges	Y	See Investigation / Mitigation Action for complaint no. 378.	Closed
343	25-Mar-19	25th March 2019 / Construction of Road D4	Resident of Park Central	Noise	Complaint about the noise nuisance sound like a breaking works in day time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed

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.	Closed
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		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
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		Closed
339	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the construction noise nuisance involving percussive noise in early morning (07:00)	Y		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.	Closed
337	20-Mar-19	19th March 2019 / Construction of Road D4 and Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complaint about the noise nuisance from the construction vehicle near Park Central in night time.	Y	See Investigation / Mitigation Action for complaint no. 329.	Closed
336	20-Mar-19	20th March 2019 / Construction of Road	Resident of Park Central	Noise & Pest	Complaint about the noise and pest nuisance from the construction site near Park Central in evening 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	
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.	Closed	
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		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		Closed	
332	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complaint about the noise nuisance during day time, evening time and night time.	Y		The construction activities in the complaint dates are complied with CNP. No noise limited level exceedance was recorded. During the site inspection, no noise barriers were erected between noisy PMEs and NSRs at LTI. Regarding the observation in the inspection, Contractor has adopted an improvement such as placed the noise barriers between the PMEs and NSPs to reduce noise nuisance. Details should be referred to CIR-N61.	Closed
331	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complaint about the noise nuisance in night time and the past few days. (Before 07:00)	Y			Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
330	17-Mar-19	17th March 2019 / Construction of Lam Tin Interchange	General Public	Noise	Complaint about the noise nuisance from in night time holiday.	Y		Closed
329	15-Mar-19	15th March 2019 / Construction of Road D4	Resident of Park Central	Noise & Air	Complaint about the noise from the construction works and the odour nuisance involves engine oil from construction machine	Y	The construction activities in the complaint dates are compiled with the CNMP. No noise and air quality limit level exceedance were recorded. Contractor had implemented the mitigation measures for the noise and odour nuisances including acoustic mat was erected between the PME and NSR, ultra-low sulphur diesel was applied as fuel oil in PME and general refuses were disposed properly. Details should be referred to CIR-C26.	Closed
328	14-Mar-19	9th March 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complaint about the noise nuisance involve drilling work in the day time (08:00).	Y	A formation works was conducted in 7 am to 7pm on 9 Mar 2019. No noise limit level exceedance was recorded in the nearest noise monitoring result. However, there was no any adoption of mitigation measure to minimize the noise nuisance from the site. As response the received complaint, the contractor should place the noise barrier between the PMEs and NSR. Details should be referred to CIR-N58.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
327	13-Mar-19	13th March 2019 / Construction of Lam Tin Interchange	Resident of Bik Lai House	Noise	Noise nuisance suspected from the construction works involving chiseling during evening time (22:07).	Y	A handling processed rock at Lam Tin Interchange was conducted on the complaint date in 7 pm to 11 pm involving dump truck and excavator which construction activities was compiled with the CNP. No noise limit level exceedance was record in the evening time monitoring. However, the noise barrier was not placed in the direction of the Yau Lai Estate during breaking works, the contractor had implemented a mitigation measure such as placed the noise barrier to reduce noise level from the breaker but the noise barrier was far from the concerned breaker. Details should be referred to CIR-N59.	Closed
326	13-Mar-19	13th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Noise nuisance suspected from marine works near Ocean Shores in the day time (16:30)	Y	See Investigation / Mitigation Action for complaint no. 322.	Closed
325	9-Mar-19	9th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involve machine and percussive noise in night time (02:00 - 03:00).	Y	Only drilling works were conducted inside the tunnel in early morning under valid CNP. Groundborne noise is considered as the factor that contributes to the noise nuisance. The Contractor is recommended to reschedule drilling works to less sensitive hours. Details should be referred to CIR-N56.	Closed

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.	Closed
323 (EPD-N08/RE/00006523-19)	4-Mar-19	4th March 2019/ Cofferdam Area	Resident of Ocean Shore	Noise	Construction noise (Evening time)	Y	Only 1 derrick barge and a tug boat was used in the evening time under valid CNP. No Limit Level Exceedances were recorded at Station CM6(A) during evening time. Acoustic mat should be used to screen the engine of the barge to reduce the noise nuisance from the reclamation works. Lubricants should be applied to the barge to reduce the noise emission during barge movement.	Closed
322	13-Mar-19	1st March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Noise nuisance suspected from a yellow excavator near Ocean Shores in day time (15:44).	Y	No noise limit level exceedance was recorded and the number of operating PMEs complied with the CNMP. The sound proofing canvases were not always adopted as a mitigation measure to screen the noise emitted from the engine of the barge. Contractor should adopt the aforementioned mitigation measures as far as practicable. The contractor was also 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
321	28-Feb-19	28th February 2019 / Construction of Lam Tin Interchange	Management Section of Yau Lai Estate	Noise	Construction noise (Night time)	Y	Only drilling works were conducted inside the tunnel in early morning under valid CNP. Groundborne noise is considered as the factor that contributes to the noise nuisance. The Contractor is recommended to reschedule drilling works to less sensitive hours. Details should be referred to CIR-N55.	Closed
320	22-Feb-19	22nd February 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complaint about the noise nuisance involving percussive noise in early morning (Day time). Complainant said the construction should be operated after 08:00.	Y	See Investigation / Mitigation Action for complaint no. 313.	Closed
319	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involving percussive noise in night time	Y		Closed
318	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about the noise nuisance involving percussive noise from the construction in night time	Y		Closed
317	25-Feb-19	23th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complained about the odour nuisance of petroleum smell	N	See Investigation/ Mitigation Action on Complaint no.294. Details should be referred to CIR-A12.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
316	18-Feb-19	18th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complaint about the dark smoke and odour nuisances	N		Closed
315	17-Feb-19	15th February 2019 / Construction of Lam Tin Interchange, Road P2 and Tseung Kwan O Interchange	General Public	Noise	Complained about construction noise (Daytime)	Y	The metal wire used for anchoring the barge inside the cofferdam area are the source for the noise nuisance. Ropes were used to replace metal wire to reduce noise nuisance from metal collision while mooring boats. Details should be referred to CIR-N54.	Closed
314	17-Feb-19	16th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air	Dust nuisance suspected from the construction works and absence of water spraying near Lam Tin Interchange in daytime.	N	No Air Quality action level or limit level exceedance during the monitoring conducted by ETL. Contractor had implemented mitigation measure to reduce and prevent dust emission including conducted water sprays and covered the cement bags. Details should be referred to CIR-A13.	Closed
313	17-Feb-19	17th February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Construction noise nuisance from the drilling and breaking works at Branch Tunnel in the morning (Day time)	Y	Breaking and drilling works were conducted during the time of complaint. The breakers were often seen wrapped with acoustic mat, however, they are easily damaged during the breaking works. Noise barrier are more effective in reducing the noise nuisance than the acoustic mat, but the erection of noise barrier are not often adopted properly to screen the noise from the NSR due to the additional works involved and the landform on site. Groundborne noise could also be a factor contributing to noise nuisance. Details should be referred to CIR-N53.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
312	16-Feb-19	16th February 2019 / Construction of Lam Tin Interchange	District Council	Noise	Complained about the explosion noise (Daytime)	Y	No exceedances were recorded and recommendation were made to further enhance the mitigation measures, such as regularly and reviewing the noise control activities that are being carried out on site regularly to ensure compliance with statutory requirement, provide training for the workers to prevent unnecessary noise disturbance and frequently check and maintain the absorptive lining adhered on blasting doors on a regular basis.	Closed
311	15-Feb-19	15th February 2019 / Construction of Lam Tin Interchange	Public	Noise	Complained about the explosion noise (Daytime)	Y	See Investigation / Mitigation Action for complaint no. 312.	Closed
310	14-Feb-19	14th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Construction noise nuisance about the rock handling work at LTI (Daytime)	Y	Dump truck and excavator was used to transfer crushed rocks from the crusher with valid CNP. Additional noise barrier was added at the site boundary near Shun Lai house, Yau Lai Estate to reduce the direct-line of sight from the NSRs to the site. Details should be referred to the CIR-N51.	Closed
309	13-Feb-19	13th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Construction noise nuisance about the rock handling work at LTI (evening time)	Y		Closed
308	13-Feb-19	1th - 13th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Management Section of Kwong Tin Estate	Noise	Complaint about construction noise (Night time)	Y	See Investigation/ Mitigation Action on Complaint no.302. Details should be referred to CIR-N48.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
307	13-Feb-19	13th February 2019 / Construction at Tsung Kwan O (C1)	Resident of Ocean Shore	Noise	The complaint about the noise nuisance in day time	Y	Noise nuisance was originated from the beeping noise emitted during vehicle reversing of the loader. The total length of beeping noise should be less than 5 mins. The reverse alarm system is a necessary safety measure that cannot be revoked. Details should be referred to CIR-N50.	Closed
306	13-Feb-19	13th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction works involving chiseling noise in night time	Y	See Investigation/ Mitigation Action on Complaint no.302. Details should be referred to CIR-N48.	Closed
305	12-Feb-19	12th February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction works involving chiseling noise in night time.	Y		Closed
304	8-Feb-19	8th February 2019 / Construction of Road P2 and Associated Works	Resident of Ocean Shore	Noise	Noise nuisance suspected from marine works near Ocean Shores in the day time	Y	There were two construction activities in the site including dredging and trimming in day time on 8 Feb 2019. Details should be referred to CIR-N49.	Closed
303	2-Feb-19	27th January - 2nd February 2019 / Construction of works at the TKO-Lam Tin tunnel	Resident of Ping Tin Estate	Noise	Noise nuisance suspected from the construction works involving chiseling noise during day time, evening time and night time.	Y	Project-related. The following recommendations were made to further enhance the mitigation measures: <input type="checkbox"/> Frequent checking and repair the gaps or broken acoustic sheets; <input type="checkbox"/> Replace any broken SilentMat for wrapping the breaker head; <input type="checkbox"/> To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively;	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
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	<input type="checkbox"/> The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers <input type="checkbox"/> To continue to strictly follow the requirements in the approved CNMP. <input type="checkbox"/> To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer; and <input type="checkbox"/> Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	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
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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.	Closed
297	30th January 2019	27 th - 30th January 2019 / Construction works at TKO-Lam Tin tunnel	Resident of Hong Nga Court	Noise	Noise nuisance suspected from the construction involving chiselling works	Y	See Investigation/ Mitigation Action on Complaint no.290. Details should be referred to CIR-N45.	Closed
296	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: <input type="checkbox"/> To arrange a signalman instead of mobile crane reversing signal for minimize the beeping noise disturbance; <input type="checkbox"/> Frequent checking and repair the operating PME; <input type="checkbox"/> The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers <input type="checkbox"/> To continue to strictly follow the requirements in the approved CNMP; <input type="checkbox"/> 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.	Closed

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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 complied with the Hong Kong Air Pollution Control (Marine Light Diesel) Regulation, therefore the odour problem should be minimised. Smoke filtering tanks were adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell. The situation has improved after the filter has been replaced. Details should be referred to CIR-A12.	Closed
293 (EPD-K15/RE/00 003291-19)	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.	Closed
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: <input type="checkbox"/> Frequent checking and repair the gaps or broken acoustic sheets; <input type="checkbox"/> Replace any broken SilentMat for wrapping the breaker head;	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	<input type="checkbox"/> To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; <input type="checkbox"/> The deployment of Cantilever noise barrier should screen the line-of-sight from sensitive receivers	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	<input type="checkbox"/> To continue to strictly follow the requirements in the approved CNMP. <input type="checkbox"/> RE/RSS should monitor the plant and machine to ensure construction activities are in compliance of CNP.	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
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.	Closed
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.	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: <input type="checkbox"/> To regularly check and review the noise control activities that are being carried out on site to ensure compliance with statutory requirement. <input type="checkbox"/> Machines may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. <input type="checkbox"/> To provide training for the workers to prevent unnecessary noise disturbance. <input type="checkbox"/> 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 16 th Jan 2019. Details should be referred to CIR-N41.	Closed

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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.	Closed
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.	Closed
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.	Closed
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.	Closed

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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.	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.	Closed
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.	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
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.	Closed
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
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	<p>The complaints are considered as project-related.</p> <p>The following recommendations were made to further enhance the mitigation measures:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Frequent checking and repair the gaps or broken acoustic sheets; <input type="checkbox"/> Replace any broken SilentMat for wrapping the breaker head; <input type="checkbox"/> To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; <input type="checkbox"/> The deployment of Cantilever noise barrier <input type="checkbox"/> To continue to strictly follow the requirements in the relevant CNP. <input type="checkbox"/> To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer. <input type="checkbox"/> Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP. <p>Details refer to CIR-N40.</p>	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
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.	Closed
274 (EPD-N08/RE/00001234-19)	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.	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: <input type="checkbox"/> Frequent checking and repair the gaps or broken acoustic sheets; <input type="checkbox"/> Replace any broken SilentMat for wrapping the breaker head; <input type="checkbox"/> To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; <input type="checkbox"/> The deployment of Cantilever noise barrier <input type="checkbox"/> To continue to strictly follow the requirements in the relevant CNP. <input type="checkbox"/> To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer. <input type="checkbox"/> Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP.	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
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.	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	<p>The complaints are considered as project-related.</p> <p>The following recommendations were made to further enhance the mitigation measures:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Frequent checking and repair the gaps or broken acoustic sheets; <input type="checkbox"/> Replace any broken SilentMat for wrapping the breaker head; <input type="checkbox"/> To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; <input type="checkbox"/> The deployment of Cantilever noise barrier <input type="checkbox"/> To continue to strictly follow the requirements in the relevant CNP. <input type="checkbox"/> To conduct an ad hoc ground-borne noise monitoring with the coordination of the Engineer. <input type="checkbox"/> Engineer should monitor the plant and machine to ensure construction activities are in compliance of CNP. 	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
270 (EPD-K15/RE/0000691-19)	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.	Closed
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.	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
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	<p>No exceedances were record at the nearest monitoring station. The following recommendation were made to further enhance the mitigation measure:</p> <ul style="list-style-type: none"> • 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	<p>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:</p> <ul style="list-style-type: none"> • 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; <p>Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.</p>	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	<p>No exceedances were record at the nearest monitoring station. The following recommendation were made to further enhance the mitigation measure:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>	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 to 1) regular check if the site vessels and cofferdam are in good-condition; 2) To regular monitor the operation of any activities in the cofferdam area; 3) To implement the proposed site vessels safety and the emergency responses including clearance measures Details of the investigation should be referred to CIR-W10	Closed
262	30 th December 2018	26 th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
261	26 th December 2018	26 th December 2018/ Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
260	26 th December 2018	26 th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise of Lam Tin Interchange.	Y	Refer to investigation for complaint no. 254	Closed
259	26 th December 2018	26 th 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	18 th December 2018	18 th December 2018/ Construction of Lam Tin Interchange	Engineering Section of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	<p>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.</p> <p><u>Mitigation measures:</u> 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 and Mitigation Measures” EEM&A and the approved CNMP of this Contract had been implemented by the Contractor, including the following:</p> <ul style="list-style-type: none"> • 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	18 th December 2018	18 th December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	There was no major construction works at the concerned area during the time of complaint and confirmed by the Resident Engineer. Steel cable wire for anchoring between barge and pier is considered as a possible noise source. The Contractor has replaced the cable wire for anchoring between barge and pier with ropes between 27 Dec and 2 Jan to reduce noise impact.	Closed
256	17 th December 2018	15 th December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking and piling activities	N	<p>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)</p> <p>The following recommendations were made for the Contractor to enhance the mitigation measures:</p> <ul style="list-style-type: none"> • 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; <p>To ensure all erected noise barriers and sound proofing canvases wrapped on PME are intact and in good condition.</p>	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
254	16 th December 2018	16 th December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	<ul style="list-style-type: none"> The night-time works were only conducted inside the tunnels with valid CNP. The noise nuisances are not considered as air-borne in nature, but ground-borne noise. 2.17 In order to confirm the possible ground-borne nature of the noise nuisances for complaints summarized in this report, CEDD has engaged the environmental team to conduct ad hoc ground-borne noise monitoring with the coordination of the Engineer. The findings will be provided in a separate report for the ad hoc monitoring. 	Closed
253	15 th December 2018	15 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
252	30 th November 2018	30 th November 2018/ Construction of Road D4	Resident of Park Central	Noise & Air	Complained about the construction noise and dust resuspension in Road D4.	Y	<p>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.</p> <p>Based on the noise and air monitoring results in November 2018, no Limit Level Exceedance was recorded.</p> <p>Mitigation Measures</p> <ul style="list-style-type: none"> 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	28 th November 2018	27 th November 2018/ Construction of TKO portal	Public	Noise	Complained about the construction noise from the marine works.	Y	<p>The complaint lodged on 25th November 2018 is considered as non-project related, as no works was conducted on that day.</p> <p>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.</p>	Closed
250	26 th November 2018	26 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
249	25 th November 2018	20 th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from the Excavators in LTI on Sunday morning.	Y	Refer to the investigation for complaint no. 251	Closed
248	20 th November 2018	20 th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance during transfer of material in evening time at LTI	Y	Regular noise monitoring results for restricted and non-restricted hours show full compliance of the noise criteria (night-time noise exceedance is considered non-project related). The contractor is reminded to adopt cantilever noise barriers at Lam Tin Interchange to screen noise effectively by screening the line-of-sight from sensitive receivers	Closed
247	20 th November 2018	19 th November 2018/ Lam Tin Interchange	Public	Noise	Complained about the noise nuisance from rock dropping during evening time	Y	Refer to the investigation for complaint no. 248	Closed
246	19 th November 2018	19 th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from dump truck in evening time	Y	Refer to the investigation for complaint no. 248	Closed
245	8 th November 2018	8 th November 2018/ Lam Tin Interchange	Public	Noise	Complained about construction noise during night time from LTI	Y	Refer to the investigation for complaint no. 248	Closed
243	8 th November 2018	8 th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the construction noise during evening time from LTI.	Y	Refer to the investigation for complaint no. 248	Closed
242	7 th November 2018	7 th 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	6 th November 2018	6 th November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during evening time	Y	Refer to the investigation for complaint no. 248	Closed
240	6 th November 2018	6 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
239	25 th October 2018	25 th October 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about daytime construction noise near Ocean Shore.	Y	<p>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)</p> <p>Additional mitigation measures adopted by Contractor upon receipt of complaint:</p> <ul style="list-style-type: none"> ➤ A more effective acoustic barrier was erected that covered the direct line of sight from the entire Ocean Shore during piling works. <p>Existing Mitigation Measures adopted by Contractor</p> <ul style="list-style-type: none"> ➤ 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
238	23 rd October 2018	23 rd 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
237	18 th October 2018	18 th 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	18 th October 2018	18 th 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	18 th October 2018	18 th 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	18 th October 2018	18 th 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	15 th October 2018	15 th 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	14 th October 2018	14 th 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	12 th October 2018	12 th 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	11 th October 2018	11 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
229	9 th October 2018	9 th 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
228	9 th October 2018	9 th 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	3 rd October 2018	3 rd 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	<p>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).</p> <p>Mitigation Measures adopted by Contractor</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ 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; <p>Powered mechanical equipment (PME) for breaker was equipped with noise barriers at Portion 4C.</p>	Closed
226	28 th September 2018	28 th September 2018/ Construction of Road P2	Resident of Ocean Shores	Noise	Complained about noise nuisance from portion IV	Y	<ul style="list-style-type: none"> ➤ See Investigation / Mitigation Measures for Complaint No. 222 	Closed
225	26 th September 2018	26 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
224	18 th September 2018	18 th 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
223	13 th September 2018	9 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
222	12 th September 2018	12 th September 2018/ Construction of Road P2	Resident of Ocean Shores	Noise	Complained about the noise nuisance from piling works	Y	<p>Mitigation Measures adopted by the Contractor</p> <ul style="list-style-type: none"> ➤ 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	11 th September 2018	9 th 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 Proposed Mitigation Measures" of the EM&A Manual as follows: <u>Noise:</u> Walkie-talkie was used instead of broadcasting to reduce the noise nuisance.	Closed
220	11 th September 2018	26 th September 2018/ Lam Tin Interchange	Public	Noise	Complained about the construction noise	Y	➤ See Investigation / Mitigation Measures for Complaint No. 218	Closed
219	7 th September 2018	7 th 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 <ul style="list-style-type: none"> ➤ 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	6 th September 2018	6 th September 2018/ Construction in LTI	Public	Noise	Complained about noise nuisance in LTI	Y	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule Prepared Mitigation Measures” 6 EM&A as follows:</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ 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	5 th September 2018	5 th September 2018/ Construction of Road P2	Public	Air Quality	Complained about dark smoke emission from derrick barges.	N	<p>The Contractors has adopted the following environmental mitigation measures to reduce dark smoke nuisance from construction barges since June for dark smoke complaints:</p> <ul style="list-style-type: none"> ➤ 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	5 th September 2018	5 th 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	5 th September 2018	5 th September 2018/ Construction of Road P2	Public	Water Quality	Complained about the oil leakage within the cofferdam	N	<p>The Contractors had taken measures to clean up and prevent any further oil spillage for marine works in the future:</p> <ul style="list-style-type: none"> ➤ 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. <p>The Contractor had implemented environmental measures in accordance with the “Implementation Schedule Proposed Mitigation Measures” of EM&A as below:</p> <ul style="list-style-type: none"> ➤ Construction activities should not cause foam, oil, grease, scum, little or other objectionable matter to be present on the water within the site. <p>Standard good-site practice is adopted to prevent any fuels and solvent entering the nearby watercourses.</p>	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
214	4 th September 2018	4 th 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
213	31 st August 2018	31 st 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	27 th August 2018	27 th 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	22 nd August 2018	22 nd 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	21 st August 2018	21 st 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
209	21 st August 2018	20 th & 21 st 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	<p>The Contractors had implemented environmental mitigation measures to reduce dark smoke nuisance from construction barges to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ 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	20 th August 2018	17 th August/ Construction of Road P2	DC Member	Water Quality	The complainant complained that muddy water was discharged from the construction site.	N	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> ➤ 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	18 th August 2018	18 th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air Quality	The complainant complained about dust nuisance from surface blasting.	N	<p>According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at following Stations.</p> <p>AM2 – Sai Tso Wan Recreation Ground; AM3 Yau Lai Estate, Bik Lai House.</p> <p>No exceedance was recorded in the above station during August.</p> <p>Mitigation Measures and Follow up Actions by Contractor The Contractor had implemented environmental mitigation measures in accordance with “Implementation Schedule of Mitigation Measures” of EM&A Manual as follows: Air Quality:</p> <ul style="list-style-type: none"> ➤ 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	13 th August 2018	13 th 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	10 th August 2018	10 th 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	9 th August 2018	9 th 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	<p>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.</p> <p>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.</p> <p>There was no exceedance recorded in the above station during daytime in August.</p>	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	9 th August 2018	9 th August 2018/ Construction of Lam Tin Interchange	Property Management of Tak Tin Estate	Noise	The complainant complained about the noise nuisance during 8pm	Y	<p>Mitigation Measures and Follow up Actions by Contractor</p> <p>The Contractor had implemented environmental mitigation measures in accordance with "Implementation of Proposed Mitigation Measures" E&A Manual as follows:</p> <p>Noise:</p> <ul style="list-style-type: none"> ➤ 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 <p>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.</p> <p>CM1 – Nga Lai House, Yau Lai Estate Phase 1, Yau Tong, Station;</p> <p>CM2 – Bik Lai House, Yau Lai Estate Phase 1, Yau Tong;</p> <p>CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong.</p> <p>There was no exceedance recorded in the above station during daytime in August.</p>	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	1 st August 2018	1 st August 2018/ Construction of Lam Tin Interchange	Resident of Yeung Mei House	Noise	The complainant complained about the construction noise during night-time.	Y	<p>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.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with "Implementation Schedule of Proposed Mitigation Measures" EEMA Manual as follows:</p> <ul style="list-style-type: none"> ➤ 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	26 th July 2018	26 th 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	<p>The Contractor had implemented environmental mitigation measures in accordance with "Implementation Schedule of Proposed Mitigation Measures" EEMA Manual as follows:</p> <ul style="list-style-type: none"> ➤ Sandbags barrier was placed along the working area to prevent direct discharge 	Closed
200	26 th July 2018	26 th July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on 24 th July 2018, the situation has yet been addressed.	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
199	24 th July 2018	23 rd 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
	25 th July 2018	25 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
198	21 st July 2018	21 st July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained about the noise from metal occasionally in the marine works area.	Y	<p>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.</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ 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	21 st July 2018	21 st July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from breaker.	Y	<p>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</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation of Proposed Mitigation Measures” of EM&A as follows:</p> <ul style="list-style-type: none"> ➤ 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
196	20 th 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	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule Proposed Mitigation Measures” of EM&A as follows:</p> <ul style="list-style-type: none"> ➤ Blasting cage were surrounded with impervious material during surface blasting ➤ Water spraying was provided at the blasting cage to enhance dust suppression 	Closed
195	17 th July 2018	16 th 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	12 th July 2018	12 th 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	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule Proposed Mitigation Measures” of EM&A as follows:</p> <ul style="list-style-type: none"> ➤ 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	12 th July 2018	12 th 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	<p>According to the information provided and confirmed by the Engineer, loading and unloading of treated sediment was conducted in Work Area A.</p> <p>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</p> <p>The Contractors had implemented environmental mitigation measures to reduce dust nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Covered the stockpile of treated marine sediment with tarpaulin sheets 	Closed
192	23 rd July 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June, 2 nd and 3 rd July 2018, the complainant complained that the situation has not yet been addressed.	Y	<p>The Contractor had implemented environmental mitigation measures in accordance with “Implementation Schedule of Proposed Measures” of EM&A Manual as follows:</p> <ul style="list-style-type: none"> ➤ 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	3 rd July 2018	3 rd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June, 2 nd July 2018, the complainant complained that the situation has not yet been addressed.	Y	The Contractor had implemented environmental mitigation measures in accordance with "Implementation Schedule of Proposed Measures" of EM&A Manual as follows: ➤ Replaced and fixed the uneven metal plate on Lei Yue Mun Road near ambulance depot	Closed
	2 nd July 2018	2 nd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June 2018, the complainant complained that the situation has not yet been addressed.	Y	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.	Closed
	27 th June 2018	26 th and 27 th 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	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	Closed
	25 th June 2018	23 rd 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	➤ Additional water filter tank was adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell	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	22 nd June 2018	Not Specific/ Construction of Lam Tin Interchange	Public	Waste Management	The complainant complaint about the housekeeping of the construction site.	N	<p>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.</p> <p>Despite, the Contractor was reminded to follow the relevant mitigation measures related to waste management:</p> <ul style="list-style-type: none"> ➤ 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	20 th June 2018	28 th 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	20 th June 2018	20 th June 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about construction noise starting from 6 am.	Y	<p>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)</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation of Proposed Mitigation Measures” of EM&A as follows:</p> <ul style="list-style-type: none"> ➤ 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	7 th June 2018	7 th 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	<p>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.</p> <p>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.</p> <p>The Contractors had implemented environmental mitigation measures to minimize the air nuisance to the nearby sensitive receivers as follows: <u>Odour Emission from Exhausted Gas:</u></p> <ul style="list-style-type: none"> ➤ Additional water filter tank was adopted on the deck level of derrick barges to reduce emission of dark smoke and exhaust smell 	Closed
186	6 th June 2018	6 th 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
185	6 th June 2018	30 th May and 30 th 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
184	6 th June 2018	Not specified / Construction of Road P2	SKDC member	Landscape	The complainant complained about excessive tree felling near Ocean Shores.	N	<p>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.</p> <p>The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ 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	4 th June 2018	4 th 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	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures”</p> <ul style="list-style-type: none"> ➤ 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	1 st June 2018	Not specified/ Construction of Lam Tin Interchange	Sin Fat Road Tennis Court	Air Quality	The complainant complained about the dust	N	<p>The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ 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

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
July 2019	8 ²	0	0
August 2019	5	0	0
September 2019	4	0	0
October 2019	5	0	0
Total	405	1	1

1. Complaint No. 378, 363, 362 were received after the submission of EMA Monthly Report (April 2019)
2. Two new complaints was received after the submission of the EMA Report (July 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 138/20 17	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 138/20 17	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**

Monthly Summary Waste Flow Table for Oct 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	0.320	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	0.240	0.000	1.120	0.102
Sub-total	663.791	391.127	0.000	425.903	237.888	0.000	0.000	2.045	0.000	6.720	0.658
July	119.093	75.619	0.000	75.619	43.474	0.000	0.000	0.000	0.000	3.444	0.206
August	107.353	67.789	0.000	67.789	39.564	0.000	0.000	0.000	0.000	0.000	0.260
September	103.041	67.690	0.000	67.690	35.351	0.000	0.000	0.000	0.000	3.200	0.301
October	128.926	52.998	0.000	52.998	75.928	0.000	0.000	0.000	0.000	0.000	0.323
November											
December											
Total	1122.204	655.223	0.000	689.999	432.205	0.000	0.000	2.045	0.000	13.364	1.749

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/m³; soil = 2.0 tonnes/m³
- (7) excavated: rock = 2.0 tonnes/m³; soil = 1.8 tonnes/m³; broken concrete and bitumen = 2.4 tonnes/m³, soil and rock = 1.9 tonnes/m³
- (8) C&D Waste = 0.9 tonnes/m³; bentonite slurry = 2.8 tonnes/m³
- Diesel density: 0.8kg/l
- Numbers are rounded off to the nearest three decimal places
- The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"

Monthly Summary Waste Flow Table for 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	119.91265	0.00000	30.10000	0.00000	2.16472	87.64793	95.27000	0.00000	0.00000	0.00000	0.03852
SUB-TOTAL	517.10039	0.00000	39.26064	0.00000	16.06364	461.77612	254.57000	0.00000	0.00000	4.83000	0.28874
Jul	96.20817	0.00000	31.19800	0.00000	1.79282	63.21735	27.25000	0.00000	0.00000	0.00000	0.03452
Aug	63.31885	0.00000	5.70210	0.00000	0.95750	56.65926	211.19000	0.00000	0.00000	0.00000	0.05126
Sep	80.82131	0.00000	19.19073	0.00000	0.15133	61.47926	70.20000	0.00000	0.00000	0.00000	0.05146
Oct	66.19248	0.00000	0.00000	0.00000	7.50708	58.68541	0.00000	0.00000	0.00000	0.00000	0.09922
Nov											
Dec											
TOTAL	823.64121	0.00000	95.35147	0.00000	26.47235	701.81739	563.21000	0.00000	0.00000	4.83000	0.52520

Note: Conversion to 1000m³ for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m³ 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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
		(see Note 1)						(see Note 2)		
(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	0.3006	0	0	0	0.3006	0	0	0	0	0.0065
Aug	1.1213	0	0	0	1.1213	0	0	0	0	0.0260
Sep	0.4794	0	0	0	0.4794	0	0	0	0	0.0065
Oct	0.3006	0	0	0	0.3006	0	0	0	0	0.0195
Nov	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0
Total	4.5530	0	0	0	4.5530	0	0	0	0	0.0975

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.



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	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0
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 6m³ of general refuse.
 - (4) The commencement date of the Contract is 9 November 2018. The current reporting period is from 1 October 2019 to 31 October 2019.

Name of Department : _____ CED

Monthly Summary of Waste Flow for 2019 (Year)

Mth	Total Quantities of Inert C&D Materials Generated						Monthly Total Quantities of C&D Wastes Generated				
	Total Quantity Generated	Hard Rock Large Brk Core	Reused in Contract	Reused in Projects	Dispersed as Public Fill	Imported Fill	1 Metal s	Papier cardboard packaging	Plastics (see Note)	Chemical Waste	Others, e.g. refuse
	(in '000)	(in '000)	(in '000)	(in '000)	(in '000)	(in '000)	(in '000)	(kg)	(in '000)	(kg)	(in '000)
Accumulated from 2	1.23	480	0.17	5365	0.427	405	0.59793	0	0.3056	0	0
Jan	0.00	0	0	0	0.00	0	0	0	0	0	0
Feb	0.00	0	0	0	0.00	260	0	0	0	0	0
Mar	0.00	480	0	0	0.00	480	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0
May	0.54	930	0	0	0.54	930	0	0	0	0	0
Jun	0.48	370	0	0	0.48	3760	0	0	0	0	0.01
Subtotal	2.75	0	0.17	0.74	1.61	0.15	0	0	0	0	0.52
July	0.06	690	0	0	0.06	690	0	0	0	0	0.12
Aug	0.00	0	0	0	0.00	0	0	0	0	0	0.00
Sept	0.11	350	0	0	0.11	0	0	0	0	0	0.00
Oct	0.01	150	0	0	0.01	150	0	0	0	0	0.00
Nov											
Dec											
Total	2.46	0	0.17	0.74	1.30	0.15	0	0	0	0	0.23

- Notes:
- The performance targets are given in PS Clause 6.14.
 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported from outside the site.
 - Plastics refer to plastic tiles/slabs, plastic sheets/film from packaging materials.
 - Crushed shall also submit the latest forecast of the total amount of C&D materials, separate to the other categories, to be generated from the site. The total amount of C&D materials expected to be generated is 50,000 m³.

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	0.0949	0.0000	0.0000	0.0200	0.0749	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020
Aug	0.0633	0.0000	0.0000	0.0000	0.0633	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036
Sep	0.0588	0.0000	0.0000	0.0000	0.0588	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010
Oct	0.0678	0.0000	0.0000	0.0000	0.0678	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036
Nov											
Dec											
Total	0.6131	0.0000	0.0000	0.1800	0.4331	0.0000	0.0148	0.0000	0.0080	0.0000	0.0202

- Notes:
1. Assume the density of soil fill is 2 ton/m³.
 2. Assume the density of rock and broken concrete is 2.5 ton/m³.
 3. Assume the density of mixed rock and soil is 1.9 ton/m³.
 4. Assume the density of slurry and bentonite is 2.8 ton/m³.
 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/m³.
 7. The non-inert C&D wastes are disposed at NENT.

**APPENDIX Q
TENTATIVE CONSTRUCTION
PROGRAMME**

High Level 3 Months Look Ahead Programme

Activities	Nov-19	Dec-19	Jan-20
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			
Bridge Construction			
Cavern Excavation			
East Ventilation Building			

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	2019			2020	
							Oct	Nov	Dec	Jan	
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works											
Target Key Date and Section Completion of the Works (Revised Contract Key Date)											▼ Target Key Date and Section Completion of the Works (Revised Contract Key Date)
A10420	Key Date 1_Portion IX Foundation and Relcamation	0	0	04-Jan-20	04-Jan-20	0%				◆ Key Date 1_Portion IX Foundation and Relcamation	
Target Key Date and Section Completion of the Works (Possible Contract Key Date)											▼ Target Key Date and Section Completion of the Works (Possible Contract Key Date)
A10770	Key Date 1_Portion IX Foundation and Relcamation	0	0	04-Jan-20	04-Jan-20	0%				◆ Key Date 1_Portion IX Foundation and Relcamation	
Interface Issue											
K10419-21	Removal South Side Temporary Steel Cofferdam for access by C6	0	0	31-Oct-19	31-Oct-19	0%		▼ Interface Issue		◆ Removal South Side Temporary Steel Cofferdam for access by C6	
Area Handover Date											▼ Area Handover Date
A10660	Area C	0	0	31-Dec-19	31-Dec-19	0%				◆ Area C	
A10700	Area X (Additional Works Area)	0	0	31-Dec-19	31-Dec-19	0%				◆ Area X (Additional Works Area)	
Preliminaries, Submission, Contractor's Design Submission and Approval											
Contractor's Design Submission and Acceptance											▼ Contractor's Design Submission and Acceptance
Foundation Design											
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44											▼ DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44
S11420	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	16	16	07-Oct-19	22-Oct-19	0%				◆ Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	
E&M Design											
Statutory Approval for E&M Works											▼ Statutory Approval for E&M Works
S11570-11	FSD Approval for Underpass GBP	0	0	12-Nov-19	12-Nov-19	0%				◆ FSD Approval for Underpass GBP	
S11570-12	FSD Approval for Plant room GBP	0	0	12-Nov-19	12-Nov-19	0%				◆ FSD Approval for Plant room GBP	
Detail Design for E&M Works (Tunnel and associated)											▼ Detail Design for E&M Works (Tunnel and associated)
Plumbing and Drainage Detail Design											
Underpass											▼ Underpass
S11659	Accept detail design by the Supervisor	7	7	15-Oct-19	21-Oct-19	0%				◆ Accept detail design by the Supervisor	
Plantroom											▼ Plantroom
S11660-11	Accept detail design by the Supervisor	7	7	10-Oct-19	16-Oct-19	0%				◆ Accept detail design by the Supervisor	
Design of Architectural Finishes for Internal Walls of U-Trough Structures											▼ Design of Architectural Finishes for Internal Walls of U-Trough Structures
S11680	Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	21	21	01-Oct-19	21-Oct-19	0%				◆ Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	
S11700	Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	14	14	22-Oct-19	04-Nov-19	0%				◆ Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	
S11720	Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	21	21	05-Nov-19	25-Nov-19	0%				◆ Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	
Irrigation System											▼ Irrigation System
S11789	Reviewed by WSD	28	28	04-Oct-19	31-Oct-19	0%				◆ Reviewed by WSD	
S11790	Formal Submission to Supervisor	14	14	01-Nov-19	14-Nov-19	0%				◆ Formal Submission to Supervisor	
S11800	Review and Accept Submission for Waterpoints and associated elements	21	21	15-Nov-19	05-Dec-19	0%				◆ Review and Accept Submission for Waterpoints and associated elements	
Contractor Cost Saving Design											
DDA Submission for CSD3(A) of Reclaimed Section (P2 CH105 - P2 CH305)											▼ DDA Submission for CSD3(A) of Reclaimed Section (P2 CH105 - P2 CH305)
S11978	Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (P2 CH105 - P2 CH305)	21	21	30-Sep-19	20-Oct-19	0%				◆ Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (P2 CH105 - P2 CH305)	
S11979	Review and Accept DDA Submission for CSD of Reclaimed Section by HyD (P2 CH105 - P2 CH305)	21	21	30-Sep-19	20-Oct-19	0%				◆ Review and Accept DDA Submission for CSD of Reclaimed Section by HyD (P2 CH105 - P2 CH305)	
Major Temporary Works Design											▼ Major Temporary Works Design
ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)											▼ ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)
S12620	Prepare and Submit ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	18	18	23-Oct-19	09-Nov-19	0%				◆ Prepare and Submit ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	
S12640	Review and Discuss ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	21	21	10-Nov-19	30-Nov-19	0%				◆ Review and Discuss ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	
S12660	Resubmit ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	14	14	01-Dec-19	14-Dec-19	0%				◆ Resubmit ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	
S12680	Accept ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	21	21	15-Dec-19	04-Jan-20	0%				◆ Accept ELS Design for U-Trough A & B within the Reclaimed Section (S200 CH 821 - CH 755)	

█ Actual Work ◆ Milestone
█ Remaining Work ▼ Summary
█ Critical Remaining Work

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road
P2 and Associated Works

3 Month Rolling Programme
Page : 1 of 8

Date	Revision	Checked	Approved
20-Oct-19	3MRP (Oct 2019)		

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	2019			
							Oct	Nov	Dec	2020 Jan
ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)										
S12780	Prepare and Submit ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)	18	18	23-Oct-19	09-Nov-19	0%				
S12800	Review and Discuss ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)	21	21	10-Nov-19	30-Nov-19	0%				
S12820	Resubmit ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)	14	14	01-Dec-19	14-Dec-19	0%				
S12840	Accept ELS Design for U-Trough C (CT01 CH 366.059- CH 177.156)	21	21	15-Dec-19	04-Jan-20	0%				
ELS Design for U-Trough A & B (P2 CH363 - CH411)										
S12940	Prepare and Submit ELS Design for U-Trough A & B (P2 CH363 - CH411)	18	18	23-Oct-19	09-Nov-19	0%				
S12960	Review and Discuss ELS Design for U-Trough A & B (P2 CH363 - CH411)	21	21	10-Nov-19	30-Nov-19	0%				
S12980	Resubmit ELS Design for U-Trough A & B (P2 CH363 - CH411)	14	14	01-Dec-19	14-Dec-19	0%				
S13000	Accept ELS Design for U-Trough A & B (P2 CH363 - CH411)	21	21	15-Dec-19	04-Jan-20	0%				
ELS Design for U-Trough A & B SR2 (CH100-CH170)										
S13002	Prepare and Submit ELS Design for U-Trough A & B (SR2 CH100 - CH170)	18	18	23-Oct-19	09-Nov-19	0%				
S13004	Review and Discuss ELS Design for U-Trough A & B (SR2 CH100 - CH170)	21	21	10-Nov-19	30-Nov-19	0%				
S13006	Resubmit ELS Design for U-Trough A & B (SR2 CH100 - CH170)	14	14	01-Dec-19	14-Dec-19	0%				
S13008	Accept ELS Design for U-Trough A & B (SR2 CH100 - CH170)	21	21	15-Dec-19	04-Jan-20	0%				
Formwork/Falsework Design (For reclamation area)										
S13161	Prepare and Submit Formwork/Falsework Design	18	18	15-Dec-19	01-Jan-20	0%				
S13161-1	Review and Discuss Formwork/Falsework Design	21	21	02-Jan-20	22-Jan-20	0%				
ELS Design for Abutment Pile Cap										
S13179-11	Prepare and Submit ELS Design for Abutment Pile Cap	18	18	23-Oct-19	09-Nov-19	0%				
S13179-12	Review and Discuss ELS Design for Abutment Pile Cap	21	21	10-Nov-19	30-Nov-19	0%				
S13179-13	Resubmit ELS Design for Abutment Pile Cap	14	14	01-Dec-19	14-Dec-19	0%				
S13179-14	Accept ELS Design for Abutment Pile Cap	21	21	15-Dec-19	04-Jan-20	0%				
Major Construction Works Method Statement										
Construction Road P2 Underpass Structure CH105-318										
S13190	Prepare and Submit Method Statement for Construction Road P2 Underpass Structure	18	18	21-Oct-19	07-Nov-19	0%				
S13200	Review and Discuss Method Statement for Construction Road P2 Underpass Structure	21	21	08-Nov-19	28-Nov-19	0%				
S13220	Resubmit Method Statement for Construction Road P2 Underpass Structure	7	7	29-Nov-19	05-Dec-19	0%				
S13240	Accept Method Statement for Construction Road P2 Underpass Structure	21	21	06-Dec-19	26-Dec-19	0%				
Installation of bored pile for construction of abutment										
S13420	Prepare and Submit Method Statement for Installation of bored piling	18	18	23-Oct-19	09-Nov-19	0%				
S13440	Review and Discuss Method Statement for Installation of bored piling	21	21	10-Nov-19	30-Nov-19	0%				
S13460	Resubmit Method Statement for Installation of bored piling	7	7	01-Dec-19	07-Dec-19	0%				
S13480	Accept Method Statement for Installation of bored piling	21	21	08-Dec-19	28-Dec-19	0%				
Abutment Pile Cap Construction										
S13500	Prepare and Submit Method Statement for Abutment Pile Cap Construction	18	18	29-Dec-19	15-Jan-20	0%				
S13520	Review and Discuss Method Statement for Abutment Pile Cap Construction	21	21	16-Jan-20	05-Feb-20	0%				
Removal of Water Gate										
S13884	Review and Discuss Method Statement for Removal of Water Gate	21	21	25-Sep-19	15-Oct-19	0%				
S13886	Resubmit Method Statement for Removal of Water Gate	7	7	16-Oct-19	22-Oct-19	0%				
S13888	Accept Method Statement for Removal of Water Gate	21	21	23-Oct-19	12-Nov-19	0%				
ELS of U-Troughs (P2 CH363-411)										
S14120-02	Prepare and Submit Method Statement for Excavation and ELS of U-Troughs (P2 CH363-411)	18	18	05-Jan-20	22-Jan-20	0%				

█ Actual Work ◆ Milestone
█ Remaining Work ▬ Summary
█ Critical Remaining Work

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road
P2 and Associated Works

3 Month Rolling Programme
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Date	Revision	Checked	Approved
20-Oct-19	3MRP (Oct 2019)		

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	2019				2020
							Oct	Nov	Dec	Jan	
ELS of U-Troughs (SR2 100-170)											ELS of U-Trou
S14120-22	Prepare and Submit Method Statement for Excavation and ELS of U-Troughs (SR2 100-170)	18	18	05-Jan-20	22-Jan-20	0%					Prepare and S
ELS of "U-Trough A Type 3 and U-Trough B Type 4" from S200 CH821 to P2 CH105											ELS of "
S14121-01	Prepare and Submit Method Statement for Excavation and ELS of U-Troughs	18	18	18-Dec-19	04-Jan-20	0%					Prepare and Submit Method Statement for Excav
S14121-02	Review and Discuss Method Statement for Excavation and ELS of U-Troughs	21	21	05-Jan-20	25-Jan-20	0%					Review a
ELS of U-Trough C Structures CT01 CH201 - CH366 & CT01 CH117 - CH201											ELS of U-Trou
S14121-17	Prepare and Submit Method Statement for Excavation and ELS of U-Troughs	18	18	05-Jan-20	22-Jan-20	0%					Prepare and S
Construction of U-Troughs structure (P2 CH363-411)											Construction o
S14130	Prepare and Submit Method Statement for Construction of U-Troughs Structure (P2 CH363-411)	18	18	05-Jan-20	22-Jan-20	0%					Prepare and S
Construction of U-Trough A structure Type 3 and U-Trough B Type 4" from S200 CH821 to P2 CH105											Construction o
S14201	Prepare and Submit Method Statement for Construction of U-Troughs Structure	18	18	05-Jan-20	22-Jan-20	0%					Prepare and S
Construction of U-Trough C Structures CT01 CH201 - CH366 & CT01 CH117 - CH201											Construct
S14217	Prepare and Submit Method Statement for Construction of U-Troughs Structure	18	18	05-Jan-20	22-Jan-20	0%					Prepare and S
S14218	Review and Discuss Method Statement for Construction of U-Troughs Structure	21	21	05-Jan-20	25-Jan-20	0%					Review a
Procurement of Major Material											Procurement of Major M
Civil/Structural											Civil/Structural
S14981	Procurement and Delivery of Steel H-Pile	800	29	31-Jan-17 A	18-Oct-19	96.38%					Procurement and Delivery of Steel H-Pile
S14983	Procurement and Delivery of ELS Wailing & Struts Members	1015	120	20-Jan-17 A	17-Jan-20	88.18%					Procurement and Delive
S14987	Cast-in for sign gantry and Road Works	120	120	20-Sep-19	17-Jan-20	0%					Cast-in for sign gantry a
S14997	Offsite Fabrication of Steel Works for the Sign Gantry	60	60	20-Sep-19	18-Nov-19	0%					Offsite Fabrication of Steel Works for the Sign Gantry
S14999	Offsite Fabrication of Traffic and directional signs	60	60	20-Sep-19	18-Nov-19	0%					Offsite Fabrication of Traffic and directional signs
Section 2 of the Works (All Works Within Portion II)											
Roadworks											
LC12004	Site Formation Works	18	30	11-Jun-19 A	26-Oct-19	0%					Site Formation Works
LC12014	Drainage Installation	25	22	09-Jul-19 A	26-Oct-19	11.6%					Drainage Installation
LC12024	Precast Concrete Profile Barrier Installation	60	60	28-Oct-19	08-Jan-20	0%					Precast Concrete Profile Installati
LC12026	Watermains Installation	24	24	09-Jan-20	08-Feb-20	0%					Watermains Installation
Section 3 of the Works All Works within Portion IV, V, VI, VII, VIII, and IX											
Existing Land Section											
Retaining Wall P2-A CH 500- 650											
LC11933	Slope Works (Slope P) incl. drainage & utility works and Road Works at Tong Yin Street	120	120	09-Nov-19	06-Apr-20	0%					Slope Works (Slope P) incl. drainage & utility works and Road Works at Tong Yin Street
Bay 5-15											Bay 5-15
LC11989	Excavation and Drainage Works (Bay 1 - 15)	60	42	22-Jul-19 A	09-Nov-19	30.5%					Excavation and Drainage Works (Bay 1 - 15)
LC11990	Installation of Precast Concrete Profile Barrier	60	60	09-Nov-19	22-Jan-20	0%					Installation of
P2 Road											
P2 CH 318 - 363											
Structure P2 CH 318 - 363 & SR2 CH100-110 (U Trough B)											
Bay 4											Bay 4
LC08250	Removal of 3rd Layer Struts and Wallings (Bay 4)	7	7	11-Oct-19	18-Oct-19	0%					Removal of 3rd Layer Struts and Wallings (Bay 4)
LC08310	Construction of 1st Wall to -1.6mPD (Bay 4)	14	14	07-Nov-19	22-Nov-19	0%					Construction of 1st Wall to -1.6mPD (Bay 4)
LC08320	Waterproofing Works at 1st Wall (Bay 4)	3	3	23-Nov-19	26-Nov-19	0%					Waterproofing Works at 1st Wall (Bay 4)
LC08330	Concrete Infill to -1.9mPD (Bay 4)	3	3	27-Nov-19	29-Nov-19	0%					Concrete Infill to -1.9mPD (Bay 4)
LC08340	Formation of Construction Joint at 1st Wall (Bay 4)	2	2	30-Nov-19	02-Dec-19	0%					Formation of Construction Joint at 1st Wall (Bay 4)

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Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	2019			
							Oct	Nov	Dec	2020 Jan
LC08350	Removal of 2nd Layer Wailing and Struts (Bay 4)	7	7	03-Dec-19	10-Dec-19	0%				Removal of 2nd Layer Wailing and Struts (Bay 4)
LC08410	Construction of 2nd Wall to +1.3mPD (Bay 4)	14	14	27-Dec-19	13-Jan-20	0%				Construction of 2nd Wall to +1.3mPD (Bay 4)
LC08420	Waterproofing Works at 2nd Wall (Bay 4)	3	3	14-Jan-20	16-Jan-20	0%				Waterproofing Works at 2nd Wall (Bay 4)
LC08430	Concrete Infill to +1.0mPD (Bay 4)	3	3	17-Jan-20	20-Jan-20	0%				Concrete Infill to +1.0mPD (Bay 4)
LC08440	Formation of Construction Joint at 2nd Wall (Bay 4)	2	2	21-Jan-20	22-Jan-20	0%				Formation of Construction Joint at 2nd Wall (Bay 4)
Bay 1		100	100	03-Oct-19	04-Feb-20					
LC08080	Construction of 1st Wall up to -1.6 mPD (Bay 1)	14	14	03-Oct-19	19-Oct-19	0%	Construction of 1st Wall up to -1.6 mPD (Bay 1)			
LC08090	Waterproofing Works for 1st Wall (Bay 1)	3	3	21-Oct-19	23-Oct-19	0%	Waterproofing Works for 1st Wall (Bay 1)			
LC08100	Concrete Infill for 1st Wall (Bay 1)	3	3	24-Oct-19	26-Oct-19	0%	Concrete Infill for 1st Wall (Bay 1)			
LC08110	Construction of Construction Joint for 1st Wall (Bay 1)	2	2	28-Oct-19	29-Oct-19	0%	Construction of Construction Joint for 1st Wall (Bay 1)			
LC08120	Removal of 2nd Layer of Wailing and Strut (Bay 1)	7	7	28-Oct-19	04-Nov-19	0%	Removal of 2nd Layer of Wailing and Strut (Bay 1)			
LC08130	Construction of 2nd Wall up to +1.3mPD (Bay 1)	14	14	05-Nov-19	20-Nov-19	0%		Construction of 2nd Wall up to +1.3mPD (Bay 1)		
LC08140	Waterproofing Works at 2nd Wall (Bay 1)	3	3	21-Nov-19	23-Nov-19	0%		Waterproofing Works at 2nd Wall (Bay 1)		
LC08150	Concrete Infill for 2nd Wall to +1.0mPD (Bay 1)	3	3	25-Nov-19	27-Nov-19	0%		Concrete Infill for 2nd Wall to +1.0mPD (Bay 1)		
LC08160	Construction of Construction Joint for 2nd Wall (Bay 1)	2	2	28-Nov-19	29-Nov-19	0%		Construction of Construction Joint for 2nd Wall (Bay 1)		
LC08170	Removal of 1st layer Wailing and Strut (Bay 1)	7	7	30-Nov-19	07-Dec-19	0%		Removal of 1st layer Wailing and Strut (Bay 1)		
LC08180	Construction of 3rd Wall up to +5.0mPD (Bay 1)	18	18	30-Nov-19	20-Dec-19	0%		Construction of 3rd Wall up to +5.0mPD (Bay 1)		
LC08190	Waterproofing Work at 3rd Wall (Bay 1)	3	3	21-Dec-19	24-Dec-19	0%		Waterproofing Work at 3rd Wall (Bay 1)		
LC08200	Drainage Works and Backfilling to +5.7mPD (Bay 1)	30	30	27-Dec-19	04-Feb-20	0%				Drainage Works and Backfilling to +5.7mPD (Bay 1)
Bay 2+3		68	68	05-Oct-19	24-Dec-19					
LC08260	Construction of Base Slab (Bay 2+3)	23	23	05-Oct-19	01-Nov-19	0%	Construction of Base Slab (Bay 2+3)			
LC08280	Concrete Infill at Base Slab (Bay 2+3)	2	2	02-Nov-19	04-Nov-19	0%	Concrete Infill at Base Slab (Bay 2+3)			
LC08290	Formation of Construction Joint at Base Slab (Bay 2+3)	2	2	05-Nov-19	06-Nov-19	0%	Formation of Construction Joint at Base Slab (Bay 2+3)			
LC08300	Removal of 3rd Layer Wailing and Struts (Bay 2+3)	7	7	07-Nov-19	14-Nov-19	0%	Removal of 3rd Layer Wailing and Struts (Bay 2+3)			
LC08360	Construction of 1st Wall to -1.6mPD (Bay 2+3)	14	14	23-Nov-19	09-Dec-19	0%		Construction of 1st Wall to -1.6mPD (Bay 2+3)		
LC08370	Waterproofing Works at 1st Wall (Bay 2+3)	3	3	10-Dec-19	12-Dec-19	0%		Waterproofing Works at 1st Wall (Bay 2+3)		
LC08380	Concrete Infill to -1.9mPD (Bay 2+3)	3	3	13-Dec-19	16-Dec-19	0%		Concrete Infill to -1.9mPD (Bay 2+3)		
LC08390	Formation of Construction Joint at 1st Wall (Bay 2+3)	2	2	17-Dec-19	18-Dec-19	0%		Formation of Construction Joint at 1st Wall (Bay 2+3)		
LC08400	Removal of 2nd Layer of Wailing and Strut (Bay 2+3)	5	5	19-Dec-19	24-Dec-19	0%		Removal of 2nd Layer of Wailing and Strut (Bay 2+3)		
P2 CH 411- 500		37	37	19-Mar-19 A	19-Nov-19					
Structure P2 CH 411 - 500 (U Trough A)		37	37	19-Mar-19 A	19-Nov-19					
Wall Stem		37	37	19-Mar-19 A	19-Nov-19					
LC15240	Backfilling and Removal of Sheetpile at the edge	35	14	19-Mar-19 A	23-Oct-19	60%	Backfilling and Removal of Sheetpile at the edge			
LC15270	Installation of Precast Concrete Profile Barrier (192m)	30	23	23-Jul-19 A	19-Nov-19	23.33%	Installation of Precast Concrete Profile Barrier (192m)			
SR2		247	70	18-Jul-19 A	12-Dec-19					
Retaining Wall SR2-A & B CH250 - 310		247	70	18-Jul-19 A	12-Dec-19					
Retaining Wall SR2-B		247	70	18-Jul-19 A	12-Dec-19					
LC16860	Construction of Drainage and Manhole	40	30	18-Jul-19 A	26-Oct-19	25%	Construction of Drainage and Manhole			
LC16880	Installation of Precast Concrete Profile Barrier	40	40	28-Oct-19	12-Dec-19	0%	Installation of Precast Concrete Profile Barrier			
SR2 CH170 - 250		49	49	03-Oct-19	29-Nov-19					
Structure SR2 CH 170 - 250 (U Trough A)		49	49	03-Oct-19	29-Nov-19					
LC17395	Construction of wall stem 2nd pour (top level) at CH170 - 182.5	9	9	20-Nov-19	29-Nov-19	0%	Construction of wall stem 2nd pour (top level) at CH170 - 182.5			
LC17520	Installation of Precast Concrete Profile Barrier	40	40	03-Oct-19	19-Nov-19	0%	Installation of Precast Concrete Profile Barrier			

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							Oct	Nov	Dec	2020 Jan	
Portion IV & VII											
Construction of DN2100 stormwater at Portion IV & VII											
Drainage works											
SMH9101-SMH9102											
LC17689	Construction of Temporary Road for Diversion	15	15	06-Jan-20	22-Jan-20	0%					
LC17689-01	Sheet pile installation for Dia. 900 Drain Pipe SMH9101 to SMH9102	10	10	11-Jan-20	22-Jan-20	0%					
LC17689-02	Trench Excavation and Strut Installation for Construction of Dia. 900 Drain Pipe (SMH9101 to SMH9102)	7	7	21-Jan-20	31-Jan-20	0%					
SMH9102-SMH9103											
LC17689-06	Preboring and sheet pile installation for Dia. 900 Drain Pipe SMH9102 to SMH9103	20	20	18-Nov-19	10-Dec-19	0%					
LC17689-07	Trench Excavation and Strut Installation for Construction of Dia. 900 Drain Pipe (SMH9102 to SMH9103)	7	7	11-Dec-19	18-Dec-19	0%					
LC17689-08	Bedding And Inspection	3	3	19-Dec-19	21-Dec-19	0%					
LC17689-09	Manhole construction and Pipe Laying (SMH9102)	14	14	20-Dec-19	08-Jan-20	0%					
LC17689-10	Inspection & Backfill	10	10	06-Jan-20	16-Jan-20	0%					
TKO Town Centre South Reinstatement (PS Cl. 1.45)											
LC17720	TTA application of road works (After handover of Area C)	35	35	02-Jan-20*	14-Feb-20	0%					
New Reclaimed Section											
Marine Works											
Surcharge											
Surcharging											
MC13195-02	Surcharge Area 2b2b (CH260-300) (1600m3)	60	50	10-Sep-19 A	08-Nov-19	16.67%					
MC13215	Surcharge Area 4 (CH300-380 W) (4584m3)	60	60	09-Oct-19	07-Dec-19	0%					
MC13235	Surcharge Area 3 (CH304-363 E) (3043m3)	120	113	13-Sep-19 A	10-Jan-20	5.83%					
MC13255	Surcharge Area 5 (CH380-440) (4260m3)	60	60	05-Oct-19	03-Dec-19	0%					
MC13275	Surcharge Area 6 (CH440-510) (7707m3)	60	60	03-Oct-19	01-Dec-19	0%					
Removal of Surcharge											
MC13300	Removal of Surcharge Area 1b1 (CH30-75) (3701m3)	4	3	27-Aug-19 A	28-Oct-19	25%					
MC13310	Removal of Surcharge Area 1b2 (CH75-89) (1151m3)	2	2	26-Oct-19	28-Oct-19	0%					
MC13315	Removal of Surcharge Area 2a1 (CH89-135) (1173m3)	2	2	29-Oct-19	30-Oct-19	0%					
MC13315-01	Removal of Surcharge Area 2a2 (CH135-190) (1939m3)	2	2	29-Oct-19	30-Oct-19	0%					
MC13315-02	Removal of Surcharge Area 2a3 (CH185-200) (528m3)	2	2	29-Oct-19	30-Oct-19	0%					
MC13375	Removal of Surcharge Area 3 (CH304-363 E) (3043m3)	4	4	11-Jan-20	15-Jan-20	0%					
MC13395	Removal of Surcharge Area 5 (CH380-440) (4260m3)	8	8	04-Dec-19	12-Dec-19	0%					
MC13415	Removal of Surcharge Area 6 (CH440-510) (7707m3)	8	8	02-Dec-19	10-Dec-19	0%					
Concrete Coping											
Eastern Seawall											
MC13435	Coping Area 2 (CH160-189) (29m)	10	10	18-Dec-19	31-Dec-19	0%					
MC13455	Coping Area 2 (CH71-160) (93m)	20	20	02-Jan-20	24-Jan-20	0%					
Armour Protection											
Laying of Underlayer Armour Rock (West)											
MC13615	Armour CH271-311 (965m3)	2	2	06-Nov-19	07-Nov-19	0%					
MC13635	Armour CH311-375 (2501m3)	10	10	25-Oct-19	05-Nov-19	0%					
MC13655	Armour CH375-440 (2559m3)	10	10	14-Oct-19	24-Oct-19	0%					
Laying of Armour Rock (West)											

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							Oct	Nov	Dec	Jan	
MC13695	Armour CH271-311 (1833m3)	3	3	13-Dec-19	16-Dec-19	0%					Armour CH271-311 (1833m3)
MC13715	Armour CH311-375 (4767m3)	10	10	02-Dec-19	12-Dec-19	0%					Armour CH311-375 (4767m3)
MC13735	Armour CH375-440 (4882m3)	10	10	20-Nov-19	30-Nov-19	0%					Armour CH375-440 (4882m3)
MC13755	Armour CH440-500 (4735m3)	10	10	08-Nov-19	19-Nov-19	0%					Armour CH440-500 (4735m3)
Laying of Underlayer Armour Rock (East)		64	64	03-Oct-19	17-Dec-19						Laying of Underlayer Armour Rock (East)
MC13775	Armour CH71-190 (berm stone 820m3)	17	17	28-Nov-19	17-Dec-19	0%					Armour CH71-190 (berm stone 820m3)
MC13795	Armour CH190-250 (1218m3)	5	5	22-Oct-19	26-Oct-19	0%					Armour CH190-250 (1218m3)
MC13815	Armour CH250-300 (1674m3)	5	5	16-Oct-19	21-Oct-19	0%					Armour CH250-300 (1674m3)
MC13835	Armour CH300-375 (2501m3)	10	10	03-Oct-19	15-Oct-19	0%					Armour CH300-375 (2501m3)
Laying of Armour Rock (East)		23	23	12-Oct-19	07-Nov-19						Laying of Armour Rock (East)
MC13895	Armour CH190-250 (2310m3)	4	4	04-Nov-19	07-Nov-19	0%					Armour CH190-250 (2310m3)
MC13915	Armour CH250-300 (3181m3)	5	5	29-Oct-19	02-Nov-19	0%					Armour CH250-300 (3181m3)
MC13935	Armour CH300-375 (4767m3)	7	7	21-Oct-19	28-Oct-19	0%					Armour CH300-375 (4767m3)
MC13955	Armour CH375-440 (4882m3)	7	7	12-Oct-19	19-Oct-19	0%					Armour CH375-440 (4882m3)
Full-scale Treatment of Cement S/S of Marine Sediment		413	65	06-Jan-18 A	06-Dec-19						Full-scale Treatment of Cement S/S of Marine Sediment
MC14080	Curing, Stockpiling and Filling	313	40	06-Jan-18 A	07-Nov-19	87.22%					Curing, Stockpiling and Filling
MC14085	Removal of Concrete Block Wall	70	65	30-Mar-19 A	06-Dec-19	7.14%					Removal of Concrete Block Wall
Removal of Temporary Works		117	87	15-Aug-19 A	04-Jan-20						Removal of Temporary Works
MC14090	Removal of Temporary Cofferdam - Stage 1 (South Side) (NCE196 = 2D)	39	34	15-Aug-19 A	31-Oct-19	12.82%					Removal of Temporary Cofferdam - Stage 1 (South Side) (NCE196 = 2D)
MC14095	Removal of Temporary Cofferdam - Stage 2 (West Part)	23	23	01-Nov-19	27-Nov-19	0%					Removal of Temporary Cofferdam - Stage 2 (West Part)
MC14095-01	Removal of Temporary Cofferdam - Stage 2 (East Part)	22	22	28-Nov-19	23-Dec-19	0%					Removal of Temporary Cofferdam - Stage 2 (East Part)
MC14115	Removal of Water Gate	21	21	30-Nov-19	24-Dec-19	0%					Removal of Water Gate
MC14135	Removal of Silt Curtain	7	7	27-Dec-19	04-Jan-20	0%					Removal of Silt Curtain
Modification Works of Existing Seawall		70	70	01-Nov-19	24-Jan-20						Modification Works of Existing Seawall
MC14145	Excavation and Removal of existing seawall	15	15	01-Nov-19*	18-Nov-19	0%					Excavation and Removal of existing seawall
MC14165	Excavation down to -0.5mPD	20	20	19-Nov-19	11-Dec-19	0%					Excavation down to -0.5mPD
MC14185	Installation of Guidance Rail	4	4	12-Dec-19	16-Dec-19	0%					Installation of Guidance Rail
MC14205	Installation of Leveling Stone (47nos.)	6	6	17-Dec-19	23-Dec-19	0%					Installation of Leveling Stone (47nos.)
MC14225	Installation of Seawall (39nos)	5	5	24-Dec-19	31-Dec-19	0%					Installation of Seawall (39nos)
MC14245	Construction of Mass Concrete Coping	10	10	02-Jan-20	13-Jan-20	0%					Construction of Mass Concrete Coping
MC14265	Reinstatement of 1.5m thick rock armour type 5	3	3	14-Jan-20	16-Jan-20	0%					Reinstatement of 1.5m thick rock armour type 5
MC14285	Reinstatement of 2.3m thick rock armour type 6	3	3	17-Jan-20	20-Jan-20	0%					Reinstatement of 2.3m thick rock armour type 6
MC14305	Grade 400 Rock fill	4	4	21-Jan-20	24-Jan-20	0%					Grade 400 Rock fill
Land Works		552	497	15-Jun-19 A	27-May-21						
Road P2 Underpass (CH105-CH318)		552	497	15-Jul-19 A	27-May-21						
Instrumentation and Monitoring for Road P2 Structure Construction		501	482	16-Sep-19 A	27-May-21						
LC17740	Installation of Instrumentation including observation well & piezometers, etc	22	22	16-Sep-19 A	04-Nov-19	0%					Installation of Instrumentation including observation well & piezometers, etc
LC17760	Monitoring of Instrumentation	460	460	05-Nov-19	27-May-21	0%					Monitoring of Instrumentation
Underpass		160	105	15-Jul-19 A	29-Jan-20						
Underpass P2 CH 105 - 318		160	105	15-Jul-19 A	29-Jan-20						
Foundation (Non Surcharge)		65	20	24-Jul-19 A	15-Oct-19						
LC17773	Installation of Socketed H-pile (13 nos) at P2 CH160 to CH208 (west side) - (Rig x 1) (NCE200=2D)	65	20	24-Jul-19 A	15-Oct-19	69.23%					Installation of Socketed H-pile (13 nos) at P2 CH160 to CH208 (west side) - (Rig x 1) (NCE200=2D)
Foundation (On Top Surcharge)		65	33	13-Aug-19 A	30-Oct-19						

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							Oct	Nov	Dec	Jan
LC17815	Installation of Socketed H-pile (23 nos) at P2 CH105 to CH208 Drilling to RH - 3d/nos - (Rig x 3)	26	20	13-Aug-19 A	15-Oct-19	23.08%	█	█	█	
LC17815-1	Installation of Socketed H-pile (3nos) at P2 CH105 to CH110 2a3 Drilling to FL - 3d/nos - (Rig x 1)	10	10	10-Oct-19	21-Oct-19	0%	█			
LC17820	Installation of Socketed H-pile (23 nos) at P2 CH105 to CH208 Drilling to FL - 2d/nos - (Rig x 3)	15	15	04-Oct-19	22-Oct-19	0%	█			
LC17820-1	Installation of Socketed H-pile (3 nos) at P2 CH105 to CH110 2a3 Drilling to FL - 3d/nos (Rig x 1)	9	9	12-Oct-19	22-Oct-19	0%	█			
LC17823	Installation of Socketed H-pile (8 nos) Except PPW Zone at P2 CH208 to CH264 Drilling to RH - 3d/nos - (Rig x 1)	24	18	21-Aug-19 A	19-Oct-19	25%	█	█		
LC17838	Demobilization of H-pile machine	7	7	19-Oct-19	26-Oct-19	0%	█			
LC17840	Loading Test for Pre-bored Socketed H-Pile	10	10	19-Oct-19	30-Oct-19	0%	█			
LC17845	Remove All Concrete Block & Area 1b Surcharge	14	13	05-Sep-19 A	28-Oct-19	10%	█			
LC17846	Remove All Concrete Block Areas 2a1 Surcharge after the Piling on Top of Surcharge Complete	7	7	23-Oct-19	30-Oct-19	0%	█			
LC17866	Remove All Concrete Block Areas 2a2 Surcharge after the Piling on Top of Surcharge Complete	7	7	23-Oct-19	30-Oct-19	0%	█			
LC17886	Remove All Concrete Block Areas 2a3 Surcharge after the Piling on Top of Surcharge Complete	7	7	23-Oct-19	30-Oct-19	0%	█			
ELS		124	105	15-Jul-19 A	29-Jan-20					
LC17860	Installation of sheetpile wall (Bulkhead; 92pcs) at P2 CH105 (Rig x 1)	14	14	28-Sep-19	16-Oct-19	0%	█			
LC18000-1	Installation of Sheetpile Wall 2a3 (8m; 13pcs)(east Side) at P2 CH105 - 110 (rig 1)	9	9	18-Oct-19	28-Oct-19	0%	█			
LC18000-3	Remaining Sheetpiling Works and Re-Sheetpiling for the Abortive Works(east side) at P2 CH110 - 202	5	29	28-Aug-19 A	25-Oct-19	0%	█			
LC18010	Installation of dewatering well and king posts (Rig x 2)	22	19	15-Jul-19 A	31-Oct-19	13.64%	█			
LC18013	Advance Excavation from +3.5mPD to +2.5mPD except 12m area next to P2 CH318-CH363 (7826m3) (1200m3/day; plant x 3)	7	7	01-Nov-19	08-Nov-19	0%		█		
LC18020	Excavation to +0.5mPD except 12m area next to P2 CH318-CH363 (14454m3) (1200m3/day; plant x 3)	12	12	09-Nov-19	22-Nov-19	0%		█		
LC18020-01	Excavation to +0.5mPD for 12m area next to P2 CH318-CH363 (2400m3) (1200m3/day; plant x 3)	2	2	23-Nov-19	25-Nov-19	0%		█		
LC18025	Installation of 1st layer strut/waler @+1.5mPD and +0.5mPD (foam room & plant room)	21	21	14-Nov-19	07-Dec-19	0%		█		
LC18026	Installation of Dewatering Pumps and System	14	14	30-Nov-19	16-Dec-19	0%		█		
LC18027	Pumping Test	7	7	17-Dec-19	23-Dec-19	0%		█		
LC18030	Excavation to -1.0 ~ -1.6mPD and -0.5mPD (14810m3) (1000m3/day; plant x 3)	15	15	24-Dec-19	13-Jan-20	0%			█	
LC18035	Installation of 2nd layer strut/waler @-1.5 ~ -2.5mPD and -4.0mPD (foam room & plant room)	15	15	09-Jan-20	29-Jan-20	0%			█	
U-Trough A and B		173	135	15-Jun-19 A	04-Mar-20					
"U-Trough A Type 3 and U-Trough B Type 4" from S200 CH821 to P2 CH105		173	135	15-Jun-19 A	04-Mar-20					
Ground Investigation		87	49	15-Jun-19 A	18-Nov-19					
LC20800	Pre-drilling works ("S200 CH905 to P2 CH105")(23 nos)(Area 2b)(2 Rigs) (NCE196&200=2.5D)	85	30	15-Jun-19 A	26-Oct-19	64.71%	█			
LC20805	Pre-drilling works ("S200 CH821 - 905")(7 nos)(Area 4)(1-2 Rig)	35	35	09-Oct-19	18-Nov-19	0%	█			
Foundation		100	100	11-Oct-19	11-Feb-20					
LC20840	Installation of Pre-bored socketed H-Pile("S200 CH821 - 905")(27 nos)(Area 4)(2 Rigs)	67	67	19-Nov-19	11-Feb-20	0%		█		
LC20850	Installation of Pre-bored socketed H-Pile("S200 CH821 - 905")(13 nos)(Area 3)(2 Rigs)	33	33	11-Oct-19	18-Nov-19	0%	█			
ELS		48	48	06-Jan-20	04-Mar-20					
LC21000	Installation of sheetpile wall (368m, 920pcs. @20pcs/d)	48	48	06-Jan-20	04-Mar-20	0%			█	
LC21010	Installation of dewatering well and king posts	48	48	06-Jan-20	04-Mar-20	0%			█	
"U-Trough A Type 1 & 2" from S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1		92	92	05-Oct-19	24-Jan-20					
Ground Investigation		90	90	05-Oct-19	22-Jan-20					
LC22140	Pre-drilling works (S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1)(27 nos)(Area 5)(4 Rigs)	35	35	05-Oct-19	15-Nov-19	0%	█			
LC22150	Pre-drilling works (S200 CH674 - CH821, S100/CH280, S300/CH403.5 & S400/CH158.1)(43 nos)(Area 6)(4 Rigs)	55	55	16-Nov-19	22-Jan-20	0%	█			
Foundation		44	44	02-Dec-19	24-Jan-20					
LC22160	Plant mobilization and set up for piling works	10	10	02-Dec-19	12-Dec-19	0%		█		
LC22180	Installation of Pre-bored socketed H-Pile(S200 CH674-821, S100/CH280, S300/CH403.5 & S400/CH158.1)(36nos)(Area5)(4-5Rig)	34	34	13-Dec-19	24-Jan-20	0%		█		
U-Trough C Structures		154	154	03-Oct-19	08-Apr-20					

█ Actual Work ◆ Milestone
█ Remaining Work ▬ Summary
█ Critical Remaining Work

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road
P2 and Associated Works

3 Month Rolling Programme
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Date	Revision	Checked	Approved
20-Oct-19	3MRP (Oct 2019)		

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	2019				2020
							Oct	Nov	Dec	Jan	
"U-Trough C Type 1, 2, 3 & 4" from CT01 CH117.156 - CH366											
Ground Investigation											
LC23380	Pre-drilling works (20 nos)(Area 5)(1-2 Rigs)	50	50	03-Oct-19	03-Dec-19	0%					
LC23385	Pre-drilling works (10 nos)(Area 6)(1 Rigs)	50	50	03-Oct-19	30-Nov-19	0%					
LC23390	Pre-drilling works (10 nos)(Area 3)(1 Rigs)	50	50	03-Oct-19	30-Nov-19	0%					
Foundation											
LC23400	Plant mobilization and set up for piling works	10	10	01-Nov-19	12-Nov-19	0%					
LC23420	Installation of Pre-bored socketed H-Pile (96 nos)(4 Rigs)	120	120	13-Nov-19	08-Apr-20	0%					
TKO Bridge Abutment											
LC24900	Pre-drilling Works (10 nos, 5D/hole, 1 rig)	50	50	03-Oct-19	30-Nov-19	0%					
LC24920	Plant Mobilization and Set Up for Piling Works	12	12	11-Dec-19	24-Dec-19	0%					
LC24940	Installation of Bored Piles (10 nos) 3 plants, 14D/pile	50	50	27-Dec-19	27-Feb-20	0%					

- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone
- Summary

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road
P2 and Associated Works

3 Month Rolling Programme
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Date	Revision	Checked	Approved
20-Oct-19	3MRP (Oct 2019)		

High Level 3 Months Look Ahead Programme			
Activities	Nov-19	Dec-19	Jan-20
Trial pit			
Underground utilities detection			
Temporary traffic arrangement Setup			
Construction of drainage and watermain			
Bored Piles			
Pile Cap construction			
Pre-bored Socket-H Pile			

3-Month Rolling Programme

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020
							Oct	Nov	Dec	Jan
NE/2017/06 TKO-LTT TCSS_3MRP										
Contract Award / Commencement of Works										
General										
	Contract Award	0				0				
Access Date										
General										
	Access Date	0				0				
Key Date and Stages / Sections of the Achievement										
General										
	Key Date and Stages / Sections of the Achievement	0				0				
Cost Centre Milestone Dates										
General										
	CC B - Central System - TKOLTT	21	15-Dec-19	12-Jan-20		795				
	DWP8840 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		560			◆	
	CC B1 - Central System - CBL	0	15-Dec-19	15-Dec-19		992				
	DWP8900 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		992			◆	
	CC C - Traffic Control Devices - TKOLTT	0				0				
	CC C1 - Traffic Control Devices - CBL	0				0				
	CC D - Communication System - TKOLTT	0	12-Jan-20	12-Jan-20		532				
	DWP9140 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		532			◆	
	CC D1 - Communication System - CBL	0	12-Jan-20	12-Jan-20		964				
	DWP9080 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		964			◆	
	CC E - CCTV System - TKOLTT	0	12-Jan-20	12-Jan-20		532				
	DWP9200 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		532			◆	
	CC E1 - CCTV System - CBL	0	12-Jan-20	12-Jan-20		964				
	DWP9260 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		964			◆	
	CC F - Building PABX System - TKOLTT	0	12-Jan-20	12-Jan-20		532				
	DWP9320 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		532			◆	
	CC G - ET System - TKOLTT	0				0				
	CC H - PA System - TKOLTT	0	12-Jan-20	12-Jan-20		532				
	DWP9380 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		532			◆	
	CC I - Radio System - TKOLTT	0	12-Jan-20	12-Jan-20		532				
	DWP9500 Acceptance of Final System Proposal for Works	0	12-Jan-20	12-Jan-20		532			◆	
	CC J - Detection System - TKOLTT	0	15-Dec-19	15-Dec-19		560				
	DWP9560 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		560			◆	
	CC J1 - Detection System - CBL	0	15-Dec-19	15-Dec-19		992				
	DWP9680 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		992			◆	
	CC K - Manual Fallback System - TKOLTT	0	15-Dec-19	15-Dec-19		560				
	DWP9620 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		560			◆	
	CC L - Operation Facilities - TKOLTT	0	15-Dec-19	15-Dec-19		560				
	DWP9740 Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		560			◆	
	CC M - Power Distribution System - TKOLTT	0				0				
	CC M1 - Power Distribution System - CBL	0				0				
	CC N - Speed Enforcement System - TKOLTT	0	15-Dec-19	15-Dec-19		560				

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

3-Month Rolling Programme

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020
							Oct	Nov	Dec	Jan
DWP9910	Acceptance of Preliminary System Proposal for Works	0		15-Dec-19		560			◆	
CC N1 - Speed Enforcement System - CBL										
DWP10390	Acceptance of Preliminary System Proposal for Works	0	15-Dec-19	15-Dec-19		992			◆	
CC O - Government Optical Fibre System - TKOLTT										
DWP10040	Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		560			◆	
CC O1 - Government Optical Fibre System - CBL										
DWP10100	Acceptance of Final System Proposal for Works	0	15-Dec-19	15-Dec-19		992			◆	
CC P - Training and Documentation - TKOLTT										
CC P1 - Training and Documentation - CBL										
CC Q - Comprehensive Maintenance Services and DLP - TKOLTT										
CC Q1 - Comprehensive Maintenance Services and DLP - CBL										
Preliminary		323	29-Oct-18	28-Nov-19		1222				
Preliminary and General		323	29-Oct-18	28-Nov-19		1222				
General		307	29-Oct-18	09-Nov-19		1237				
Resource and Insurance		0				0				
Site Accommodation and Facilities		0				0				
Planning and Programme		377	29-Oct-18	09-Nov-19		1486				
GEN.0.03A	Prepare and submit the 3-month Rolling Programme	6	29-Oct-18	03-Nov-18		1486	█			
GEN.0.03B	Prepare and submit the Works Programme	6	04-Nov-19	09-Nov-19		1486		█		
Management System		22	04-Nov-19	28-Nov-19		1222				
Quality Management Plan		0				0				
Safety Management		17	04-Nov-19	21-Nov-19		1474				
GEN.0.05B	Prepare and submit the Materials - Personal Protective Equipment for Workers	8	04-Nov-19	11-Nov-19		1484		█		
GEN.0.05C	Prepare and submit the Materials - Personal Protective Equipment for Resident Engineer	12	04-Nov-19	16-Nov-19		1479		█		
GEN.0.05D	Prepare and submit the Site Traffic Safety Management Plan	17	04-Nov-19	21-Nov-19		1474		█		
Environment; Management Plan		0				0				
Sub-Contract Management		0				0				
Risk Management		25	04-Nov-19	28-Nov-19		1467				
GEN.0.08	Prepare and submit the Systematic Risk Management Plan	25	04-Nov-19	28-Nov-19		1467		█		
Software Management		0				0				
Interface Management		12	04-Nov-19	16-Nov-19		1479				
GEN.0.10	Prepare and submit the Interface Management Plan	12	04-Nov-19	16-Nov-19		1479		█		
Design Stage		636	07-Jan-18	23-Feb-20		1092				
Prepare / Submission of PSP for TKO-LTT TCSS and CBL TCSS		268	21-Jan-19	15-Dec-19		176				
Preliminary Design (Software)		0				0				
Preliminary Design (Hardware)		0				0				
Central System		0				0				
Traffic Control Devices		0				0				
Communication System		0				0				
CCTV System		0				0				
Building PABX System		0				0				
Emergency Telephone System		0				0				
Public Address System		0				0				
Radio System		0				0				
Detection System		0				0				

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

3-Month Rolling Programme

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020	
							Oct	Nov	Dec	Jan	
Manual Fallback System											
Operation Facilities											
Power Distribution System											
Speed Enforcement System											
DWP1660	Resubmission of PSP	14	21-Jan-19	03-Feb-19		221	[Actual Work]				
DWP1670	Approval of PSP Proposal	28	18-Nov-19	15-Dec-19		221		[Remaining Work]			
Optical Fibre System											
Prepare / Submission of FSP For TKO-LTT TCSS and CBL TCSS							636	07-Jan-18	23-Feb-20		
Final Design (Software)							0				
Final Design (Hardware)							0				
Central System							232	28-Apr-19	15-Dec-19		
DWP1770	Comment on FSP / Meeting With Engineer	28	28-Apr-19	25-May-19		246	[Actual Work]				
DWP1780	Resubmission of FSP	14	04-Nov-19	17-Nov-19		246		[Remaining Work]			
DWP1790	Approval of FSP Proposal	28	18-Nov-19	15-Dec-19		246		[Remaining Work]			
Traffic Control Devices							399	21-Jan-19	23-Feb-20		
DWP1800	Preparation & Submission of Traffic Control System FSP for TKO-LTT TCSS and CBL TCSS	42	21-Jan-19	03-Mar-19		172	[Actual Work]				
DWP1810	Comment on FSP / Meeting With Engineer	28	16-Dec-19	12-Jan-20		172		[Remaining Work]			
DWP1820	Resubmission of FSP	14	13-Jan-20	26-Jan-20		172		[Remaining Work]			
DWP1830	Approval of FSP Proposal	28	27-Jan-20	23-Feb-20		172		[Remaining Work]			
Communication System							413	26-Nov-18	12-Jan-20		
DWP1850	Comment on FSP / Meeting With Engineer	28	26-Nov-18	23-Dec-18		214	[Actual Work]				
DWP1860	Resubmission of FSP	14	02-Dec-19	15-Dec-19		214		[Remaining Work]			
DWP1870	Approval of FSP Proposal	28	16-Dec-19	12-Jan-20		214		[Remaining Work]			
CCTV System							736	07-Jan-18	12-Jan-20		
DWP1890	Comment on FSP / Meeting With Engineer	28	07-Jan-18	03-Feb-18		200	[Actual Work]				
DWP1900	Resubmission of FSP	14	02-Dec-19	15-Dec-19		200		[Remaining Work]			
DWP1910	Approval of FSP Proposal	28	16-Dec-19	12-Jan-20		200		[Remaining Work]			
Building PABX System							70	04-Nov-19	12-Jan-20		
DWP1930	Comment on FSP / Meeting With Engineer	28	04-Nov-19	01-Dec-19		205		[Remaining Work]			
DWP1940	Resubmission of FSP	14	02-Dec-19	15-Dec-19		205		[Remaining Work]			
DWP1950	Approval of FSP Proposal	28	16-Dec-19	12-Jan-20		205		[Remaining Work]			
Emergency Telephone System							455	26-Nov-18	23-Feb-20		
DWP1960	Preparation & Submission of Emergency Telephone System FSP for TKO-LTT TCSS and CBL TCS	42	26-Nov-18	06-Jan-19		167	[Actual Work]				
DWP1970	Comment on FSP / Meeting With Engineer	28	16-Dec-19	12-Jan-20		167		[Remaining Work]			
DWP1980	Resubmission of FSP	14	13-Jan-20	26-Jan-20		167		[Remaining Work]			
DWP1990	Approval of FSP Proposal	28	27-Jan-20	23-Feb-20		167		[Remaining Work]			
Public Address System							371	07-Jan-19	12-Jan-20		
DWP2010	Comment on FSP / Meeting With Engineer	28	07-Jan-19	03-Feb-19		212	[Actual Work]				
DWP2020	Resubmission of FSP	14	02-Dec-19	15-Dec-19		212		[Remaining Work]			
DWP2030	Approval of FSP Proposal	28	16-Dec-19	12-Jan-20		212		[Remaining Work]			
Radio System							145	21-Aug-19	12-Jan-20		
DWP2050	Comment on FSP / Meeting With Engineer	28	21-Aug-19	17-Sep-19		193	[Actual Work]				
DWP2060	Resubmission of FSP	14	02-Dec-19	15-Dec-19		193		[Remaining Work]			
DWP2070	Approval of FSP Proposal	28	16-Dec-19	12-Jan-20		193		[Remaining Work]			
Detection System							315	04-Feb-19	15-Dec-19		

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

3-Month Rolling Programme

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020
							Oct	Nov	Dec	Jan
DWP2100	Resubmission of FSP	14	04-Feb-19	17-Feb-19		230				
DWP2110	Approval of FSP Proposal	28	18-Nov-19	15-Dec-19		230				
Manual Fallback System		385	26-Nov-18	15-Dec-19		368				
DWP2140	Resubmission of FSP	14	26-Nov-18	09-Dec-18		368				
DWP2150	Approval of FSP Proposal	28	18-Nov-19	15-Dec-19		368				
Operation Facilities		315	04-Feb-19	15-Dec-19		319				
DWP2180	Resubmission of FSP	14	04-Feb-19	17-Feb-19		319				
DWP2190	Approval of FSP Proposal	28	18-Nov-19	15-Dec-19		319				
Power Distribution System		427	24-Dec-18	23-Feb-20		156				
DWP2200	Preparation & Submission of Power Distribution System FSP for TKO-LTT TCSS and CBL TCSS	42	24-Dec-18	03-Feb-19		156				
DWP2210	Comment on FSP / Meeting With Engineer	28	16-Dec-19	12-Jan-20		156				
DWP2220	Resubmission of FSP	14	13-Jan-20	26-Jan-20		156				
DWP2230	Approval of FSP Proposal	28	27-Jan-20	23-Feb-20		156				
Speed Enforcement System		70	16-Dec-19	23-Feb-20		221				
DWP2240	Preparation & Submission of Speed Enforcement System FSP for TKO-LTT TCSS and CBL TCSS	42	16-Dec-19	26-Jan-20		221				
DWP2250	Comment on FSP / Meeting With Engineer	28	27-Jan-20	23-Feb-20		221				
Optical Fibre System		315	04-Feb-19	15-Dec-19		280				
DWP2300	Resubmission of FSP	14	04-Feb-19	17-Feb-19		280				
DWP2310	Approval of FSP Proposal	28	18-Nov-19	15-Dec-19		280				
Preparation of Functional Design Specification (FDS)		80	04-Nov-19	11-Feb-20		34				
Preparation of Software Project Plan (SPP)		0				0				
Preparation of Software Architect Document		0				0				
Preparation of Software requirement Specification		0				0				
Preparation & Submission of Function Design Specification (FDS)		100	04-Nov-19	11-Feb-20		39				
DWP7730	Preparation of Submission of Function Design Specification (FDS)	30	04-Nov-19	03-Dec-19		39				
DWP8230	Comment on FDS / Discussion with Engineer	28	04-Dec-19	31-Dec-19		39				
DWP8240	Resubmission of FDS	14	01-Jan-20	14-Jan-20		39				
DWP8250	Approval of FDS	28	15-Jan-20	11-Feb-20		39				
Software Development (except GUI) for TKO-LTT TCSS and CBL TCSS		331	07-Jan-19	19-Feb-20		1156				
DWP7620	Detailed Design of Software Changes	66	30-May-19	03-Aug-19		248				
DWP7630	Prepare Design of Software Tractability Matrix w.r.t. Specifications	10	21-Nov-19	01-Dec-19		248				
DWP7640	S/W Module Coding	190	30-May-19	05-Dec-19		273				
DWP7650	Configuration / Interface with other TCSS Systems / Equipment	40	01-Dec-19	10-Jan-20		248				
DWP7660	Software Module Testing	40	10-Jan-20	19-Feb-20		248				
Allocation of New Functionality to Existing or New Modules		0				0				
Traffic Plan Coding		387	07-Jan-19	28-Jan-20		1406				
DWP2430	Plan Coding	130	07-Jan-19	16-May-19		1406				
DWP2440	Plan Verification	25	19-Dec-19	13-Jan-20		1406				
DWP2450	Plan Finalization	15	13-Jan-20	28-Jan-20		1406				
GUI Development for TKO-LTT TCSS and CBL TCSS		244	30-May-19	29-Jan-20		1301				
DWP2460	Develop GUI	190	30-May-19	05-Dec-19		1301				
DWP2500	Review and Finalization of GUI	140	19-Jul-19	05-Dec-19		299				
DWP2510	Development of Detailed Display	50	10-Dec-19	29-Jan-20		1405				
DWP2520	Prpulate Base Map with Icons	50	10-Dec-19	29-Jan-20		1405				
DWP2530	Development of Page Based Display	50	10-Dec-19	29-Jan-20		299				

- Remaining Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

3-Month Rolling Programme

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020
							Oct	Nov	Dec	Jan
DWP2540	GUI Development Completion	0	29-Jan-20	29-Jan-20		299				
Preparation / Submission of FAT Procedures		42	16-Dec-19	09-Feb-20		302				
Central System		56	16-Dec-19	09-Feb-20		246				
DWP2550	Preparation & Submission of Central System FAT Procedure	28	16-Dec-19	12-Jan-20		246				
DWP2560	Comment on FAT Procedure / Meeting With Engineer	28	13-Jan-20	09-Feb-20		246				
Traffic Control Devices		0				0				
Communication System		28	13-Jan-20	09-Feb-20		214				
DWP2630	Preparation & Submission of Communication System FAT Procedure	28	13-Jan-20	09-Feb-20		214				
CCTV System		28	13-Jan-20	09-Feb-20		200				
DWP2670	Preparation & Submission of CCTV System FAT Procedure	28	13-Jan-20	09-Feb-20		200				
Building PABX System		28	13-Jan-20	09-Feb-20		205				
DWP2710	Preparation & Submission of Building PABX System FAT Procedure	28	13-Jan-20	09-Feb-20		205				
Emergency Telephone System		0				0				
Public Address System		28	13-Jan-20	09-Feb-20		212				
DWP2790	Preparation & Submission of Public Address System FAT Procedure	28	13-Jan-20	09-Feb-20		212				
Radio System		28	13-Jan-20	09-Feb-20		193				
DWP2830	Preparation & Submission of Radio System FAT Procedure	28	13-Jan-20	09-Feb-20		193				
Detection System		56	16-Dec-19	09-Feb-20		230				
DWP2870	Preparation & Submission of Detection System FAT Procedure	28	16-Dec-19	12-Jan-20		230				
DWP2880	Comment on FAT Procedure / Meeting With Engineer	28	13-Jan-20	09-Feb-20		230				
Manual Fallback System		56	16-Dec-19	09-Feb-20		368				
DWP2910	Preparation & Submission of Manual Fallback System FAT Procedure	28	16-Dec-19	12-Jan-20		368				
DWP2920	Comment on FAT Procedure / Meeting With Engineer	28	13-Jan-20	09-Feb-20		368				
Operation Facilities		56	16-Dec-19	09-Feb-20		319				
DWP2950	Preparation & Submission of Operation Facilities FAT Procedure	28	16-Dec-19	12-Jan-20		319				
DWP2960	Comment on FAT Procedure / Meeting With Engineer	28	13-Jan-20	09-Feb-20		319				
Power Distribution System		0				0				
Speed Enforcement System		0				0				
Optical Fibre system		56	16-Dec-19	09-Feb-20		280				
DWP3070	Preparation & Submission of Optical Fibre System FAT Procedure	28	16-Dec-19	12-Jan-20		280				
DWP3080	Comment on FAT Procedure / Meeting With Engineer	28	13-Jan-20	09-Feb-20		280				
Preparation / Submission of SCT Procedures		0				0				
Preparation / Submission of SAT Procedures		0				0				
Equipment Manufacturing and FAT Stage for TKO-LTT TCSS and CBL TCSS		0				0				
Construction Stage for TKO-LTT TCSS		0				0				
SAT for TKO-LTT TCSS		0				0				
Operability Period Test for the TKO-LTT TCSS		0				0				
DLP for the TKO-LTT TCSS		0				0				
Documentation Submission for TKO-LTT TCSS		0				0				
Training for TKO-LTT TCSS		0				0				
Equipment Manufacturing and Delivery for CBL TCSS		0				0				
Construction Stage for CBL TCSS		0				0				
SAT for CBL TCSS		0				0				

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

Activity ID	Activity Name	Original Duration	Planned Start	Planned Finish	Actual Finish	Total Float	2019			2020
							Oct	Nov	Dec	Jan
	Operability Period Test For the CBL TCSS	0				0				
	DLP for the CBL TCSS	0				0				
	Documentation Submission for CBL TCSS	0				0				
	Training for CBL TCSS	0				0				



<ul style="list-style-type: none"> Remaining Level of Effort Actual Work Remaining Work Critical Remaining Work ◆ ◆ Milestone 	NE/2017/06 TKO-LTT TCSS Page 6 of 6	
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Subject: 3 Months Look Ahead Programme

Activities	Nov, 2019
Re-plant shrubs along the roadside	
Reinstate the beam barrier	
Re-surfacing of Po Shun Road	

Subject: Construction Programme (Oct, 2019)

Activities	Week 1	Week 2	Week 3	Week 4
Floor tiles installation at kerb side at + 12.15mPD platform				
Installation of stainless steel hand railing at Main Deck				
Footpath and cycle track reinstatement works				

Activity ID	Activity Name	Original Duration	Start	Finish	2019					2020		
					Oct	Nov	Dec	Jan	Feb	Mar		
Tseung Kwan O Interchange and Associated Works 201911												
Contract Key Date & Milestone												
Contract Access Date												
CD-10050	Portion III (557 days after starting date or earlier date noticed by the Project Manager)	0	08-Nov-19*									
CD-10060	Portion II ((705 days after starting date or earlier date noticed by the Project Manager) - ** 28/12/2019	0	28-Dec-19*									
Tentative Access Date												
CD-10051	Tentative Access Date for Portion III (Only for Bridge S300 - 4J, 4K)	0	05-Nov-19 A									
CD-10052	Tentative Access Date for Portion III (Bridge S100 - (3D,3E) , Bridge S200 - (2B, 2C))	0	13-Nov-19*									
Contractor's Target Key Date												
Sloping Seawall Structure												
CD-10160	Accept and Possession of the Sloping Seawall Structure (Portion III - 4K)	0	08-Nov-19									
CD-10161	Accept and Possession of the Sloping Seawall Structure (Portion III - 2B, 3E)	0	13-Nov-19									
Major Design Work												
Superstructure												
Bridge ML												
CD-10290	Acceptance of Detail Design of Bridge ML. (Pier and Deck)	0	04-Oct-19 A	04-Oct-19 A								
Bridge S200												
CD-10330	Acceptance of Detail Design of Bridge S200 (Pier and Deck)	0	12-Nov-19	12-Nov-19								
Bridge S100												
CD-10350	Acceptance of Detail Design of Bridge S100 (Pier and Deck)	0	10-Nov-19	10-Nov-19								
Major Safety/ Environment Element												
Independent Safety Audit												
CD-10430	Completion of 4th Independent Safety Audit	0	22-Jan-20	22-Jan-20*								
Safety Bulletin Board												
CD-10461	Completion of 2nd Safety Bulletin Board	0	22-Jan-20	22-Jan-20*								
Miscellaneous Work												
Video Film												
CD-10480	Completion of Construction Video Film for Release II	0	10-Jan-20	10-Jan-20*								
Major Construction Work												
Bridge S300												
CD-10590	Completion of Pre-drilling Bridge S300	0	24-Jan-20	24-Jan-20								
Bridge S200												
CD-10680	Completion of Pre-drilling Bridge S200	0	07-Jan-20	07-Jan-20								
Bridge S100												
CD-10770	Completion of Pre-drilling Bridge S100	0	07-Jan-20	07-Jan-20								
Preliminary & Pre-Construction Work												
Initial Document Submission												
Insurance												
PRE-10570	Prepare, Submit and Acceptance of Professional Indemnity Insurance for the Work in Respect of the Designer	60	10-Jan-18 A	09-Oct-19 A								
BIM & Simulation of Construction Method												
Construction Method Simulation (CMS)												
PRE-10810	Prepare and Submit the Construction Method Simulation - Span Segment Erection	120	10-Jul-19 A	21-Nov-19								
Pre-Construction Work												
Site Accommodation												
Site Accommodation (Construction Work)												
PRE-11770	Hoarding Erection	90	07-Mar-18 A	04-Dec-19								
Survey												
Survey (Construction Work)												
PRE-11962	Initial Survey & Conditional Survey of Existing Structure (Portion II)	3	28-Dec-19	30-Dec-19								
PRE-11964	Initial Survey & Conditional Survey of Existing Structure (Portion III -3D,3E,2B,2C)	3	13-Nov-19	15-Nov-19								
PRE-11965	Initial Survey & Conditional Survey of Existing Structure (Portion III -4J)	3	28-Oct-19 A	09-Nov-19								
Conditional Survey (Documentation)												
PRE-11931	Prepare and Submit Report for Condition Survey (Portion III - 4K)	3	05-Sep-19 A	09-Nov-19								
PRE-11932	Project Manager to acknowledge the Report Submission of Condition Survey (Portion III -4K)	3	09-Nov-19	12-Nov-19								
PRE-11933	Prepare and Submit Report for Condition Survey (Portion II)	3	31-Dec-19	02-Jan-20								
PRE-11934	Project Manager to acknowledge the Report Submission of Condition Survey (Portion II)	3	31-Dec-19	02-Jan-20								
PRE-11937	Prepare and Submit Report for Condition Survey (Portion III -3D,3E, 2B,2C)	3	16-Nov-19	18-Nov-19								
PRE-11938	Project Manager to acknowledge the Report Submission of Condition Survey (Portion III -3D,3E, 2B,2C)	3	19-Nov-19	21-Nov-19								
PRE-11939	Prepare and Submit Report for Condition Survey (Portion III -4J)	3	31-Oct-19 A	10-Nov-19								
PRE-11939a	Project Manager to acknowledge the Report Submission of Condition Survey (Portion III -4J)	3	11-Nov-19	13-Nov-19								
Initial Survey (Documentation)												
Initial Survey (Documentation)												

■ Works
 ■ Critical Works
 ■ Actual

Activity ID	Activity Name	Original Duration	Start	Finish	2019						
					Oct	Nov	Dec	Jan	Feb	Mar	
Bridge S100											
CON-14060	Rebar, Formwork/Falsework & Concreting for Pier Head Segment Diaphragm 3B (1 no. Pier Head Segment/ Team 4)	15	03-Jan-20	20-Jan-20							
CON-14070	Rebar, Formwork/Falsework & Concreting for Pier Head Segment Diaphragm 3C (1 no. Pier Head Segment/ Team 5)	15	27-Dec-19	14-Jan-20							
Concrete Curing and Formwork Removal											
Bridge ML											
CON-14170	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 1EN (1 no.)	10	30-Dec-19	10-Jan-20							
CON-14190	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 1ES (2 nos.)	10	03-Jan-20	15-Jan-20							
Bridge S300											
CON-14260	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 4E (1 no.)	10	13-Dec-19	27-Dec-19							
CON-14290	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 4D (1 no.)	10	13-Dec-19	27-Dec-19							
Bridge S100											
CON-14460	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 3B (1 no.)	10	21-Jan-20	04-Feb-20							
CON-14470	Concrete Curing & Formwork Removal for Pier Head Segment Diaphragm 3C (1 no.)	10	15-Jan-20	29-Jan-20							
Span Segment Erection											
Span Segment Erection (Including Plant Mobilisation, Erection & removal of Temp. Work)											
Bridge ML											
Span Segment ML-2N											
CON-14530	[LF1-1] Erection of Span Segment@Bridge ML- 2N - Span 1E-N (14 nos/ 7 Pairs - LF)	23	11-Jan-20	10-Feb-20							
Bridge S300											
Span Segment S300-1											
CON-14700	[HB2-1a] Erection of Span Segment@Bridge S300-1 - Span 4E (6nos. - HB 2)	23	31-Dec-19	31-Jan-20							
Span Segment S300-2											
CON-14750	[HB2-1b] Erection of Span Segment@Bridge S300-2- Span 4E (6 nos - HB 2)	23	31-Dec-19	31-Jan-20							

**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	2-Oct-19	9:00	Sunny	30	0	0	20.9
	2-Oct-19	13:30	Sunny	30	0	0	20.9
	2-Oct-19	9:30	Sunny	30	0	0	20.9
	2-Oct-19	9:58	Sunny	30	0	0	20.9
	2-Oct-19	10:15	Sunny	30	0	0	20.9
	3-Oct-19	9:30	Sunny	29	0	0	20.9
	3-Oct-19	14:12	Sunny	29	0	0	20.9
	3-Oct-19	15:00	Sunny	29	0	0	20.9
	3-Oct-19	15:18	Sunny	29	0	0	20.9
	3-Oct-19	15:40	Sunny	29	0	0	20.9
	4-Oct-19	8:28	Sunny	29	0	0	20.9
	4-Oct-19	13:30	Sunny	29	0	0	20.9
	4-Oct-19	14:12	Sunny	29	0	0	20.9
	4-Oct-19	14:28	Sunny	29	0	0	20.9
	4-Oct-19	14:52	Sunny	29	0	0	20.9
	5-Oct-19	8:30	Sunny	29	0	0	20.9
	5-Oct-19	13:28	Sunny	29	0	0	20.9
	5-Oct-19	8:52	Sunny	29	0	0	20.9
	5-Oct-19	9:18	Sunny	29	0	0	20.9
	5-Oct-19	9:30	Sunny	29	0	0	20.9
	8-Oct-19	9:00	Cloudy	28	0	0	20.9
	8-Oct-19	13:15	Cloudy	28	0	0	20.9
	8-Oct-19	13:42	Cloudy	28	0	0	20.9
	8-Oct-19	14:03	Cloudy	28	0	0	20.9
	8-Oct-19	14:21	Cloudy	28	0	0	20.9
	9-Oct-19	8:32	Cloudy	28	0	0	20.9
	9-Oct-19	13:15	Cloudy	28	0	0	20.9
	9-Oct-19	8:52	Cloudy	28	0	0	20.9
	9-Oct-19	9:13	Cloudy	28	0	0	20.9
	9-Oct-19	9:28	Cloudy	28	0	0	20.9
	10-Oct-19	8:42	Sunny	28	0	0	20.9
	10-Oct-19	13:30	Sunny	28	0	0	20.9
	10-Oct-19	13:48	Sunny	28	0	0	20.9
10-Oct-19	14:08	Sunny	28	0	0	20.9	
10-Oct-19	14:23	Sunny	28	0	0	20.9	
11-Oct-19	9:03	Sunny	29	0	0	20.9	
11-Oct-19	13:28	Sunny	29	0	0	20.9	
11-Oct-19	9:18	Sunny	29	0	0	20.9	
11-Oct-19	9:29	Sunny	29	0	0	20.9	
11-Oct-19	9:52	Sunny	29	0	0	20.9	

APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

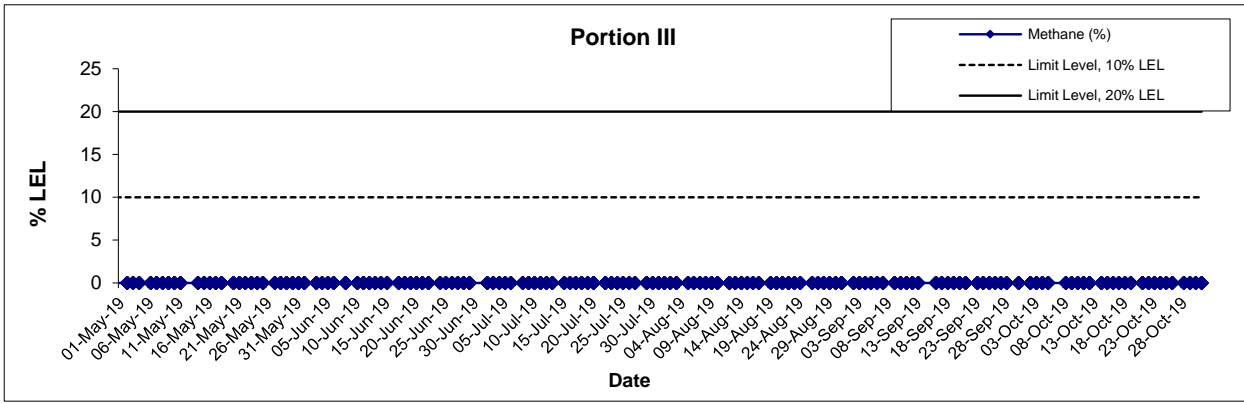
Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	12-Oct-19	8:28	Sunny	29	0	0	20.9
	12-Oct-19	13:32	Sunny	29	0	0	20.9
	12-Oct-19	9:18	Sunny	29	0	0	20.9
	12-Oct-19	9:29	Sunny	29	0	0	20.9
	12-Oct-19	10:03	Sunny	29	0	0	20.9
	14-Oct-19	8:28	Rainy	26	0	0	20.9
	14-Oct-19	13:43	Rainy	26	0	0	20.9
	14-Oct-19	14:03	Rainy	26	0	0	20.9
	14-Oct-19	14:22	Rainy	26	0	0	20.9
	14-Oct-19	14:39	Rainy	26	0	0	20.9
	15-Oct-19	8:26	Rainy	26	0	0	20.9
	15-Oct-19	13:34	Rainy	26	0	0	20.9
	15-Oct-19	13:57	Rainy	26	0	0	20.9
	15-Oct-19	14:13	Rainy	26	0	0	20.9
	15-Oct-19	14:28	Rainy	26	0	0	20.9
	16-Oct-19	8:08	Sunny	26	0	0	20.9
	16-Oct-19	13:32	Sunny	26	0	0	20.9
	16-Oct-19	13:50	Sunny	26	0	0	20.9
	16-Oct-19	14:18	Sunny	26	0	0	20.9
	16-Oct-19	14:29	Sunny	26	0	0	20.9
	17-Oct-19	9:05	Sunny	26	0	0	20.9
	17-Oct-19	13:18	Sunny	26	0	0	20.9
	17-Oct-19	13:42	Sunny	26	0	0	20.9
	17-Oct-19	14:05	Sunny	26	0	0	20.9
	17-Oct-19	14:21	Sunny	26	0	0	20.9
	18-Oct-19	9:05	Cloudy	27	0	0	20.9
	18-Oct-19	14:03	Cloudy	27	0	0	20.9
	18-Oct-19	9:32	Cloudy	27	0	0	20.9
	18-Oct-19	9:48	Cloudy	27	0	0	20.9
	18-Oct-19	10:12	Cloudy	27	0	0	20.9
	19-Oct-19	9:13	Sunny	26	0	0	20.9
	19-Oct-19	13:32	Sunny	26	0	0	20.9
19-Oct-19	9:29	Sunny	26	0	0	20.9	
19-Oct-19	9:53	Sunny	26	0	0	20.9	
19-Oct-19	10:18	Sunny	26	0	0	20.9	
21-Oct-19	8:20	Sunny	25	0	0	20.9	
21-Oct-19	13:32	Sunny	25	0	0	20.9	
21-Oct-19	8:53	Sunny	25	0	0	20.9	
21-Oct-19	9:16	Sunny	25	0	0	20.9	
21-Oct-19	9:29	Sunny	25	0	0	20.9	

APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

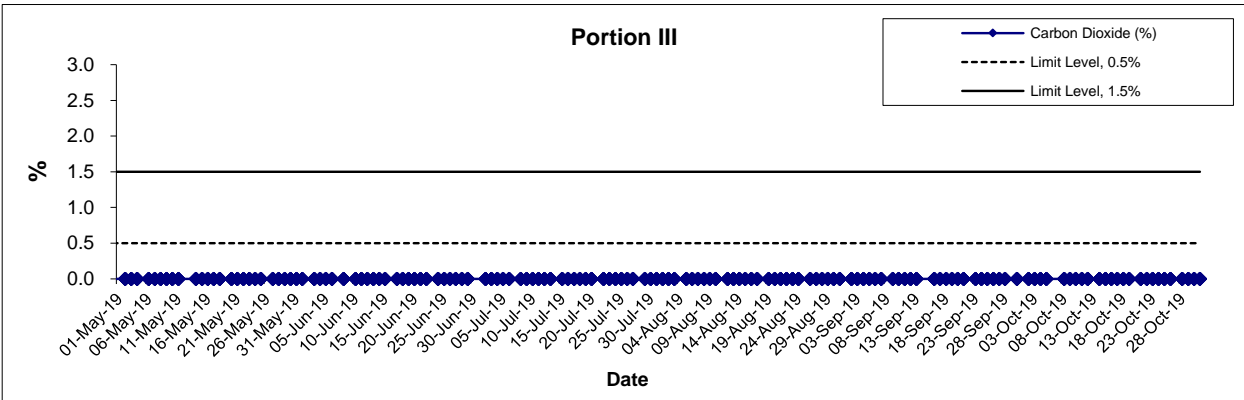
Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	22-Oct-19	9:05	Sunny	25	0	0	20.9
	22-Oct-19	13:34	Sunny	25	0	0	20.9
	22-Oct-19	9:28	Sunny	25	0	0	20.9
	22-Oct-19	9:47	Sunny	25	0	0	20.9
	22-Oct-19	10:00	Sunny	25	0	0	20.9
	23-Oct-19	8:15	Sunny	26	0	0	20.9
	23-Oct-19	13:22	Sunny	26	0	0	20.9
	23-Oct-19	8:37	Sunny	26	0	0	20.9
	23-Oct-19	8:51	Sunny	26	0	0	20.9
	23-Oct-19	9:19	Sunny	26	0	0	20.9
	24-Oct-19	8:30	Sunny	26	0	0	20.9
	24-Oct-19	14:05	Sunny	26	0	0	20.9
	24-Oct-19	14:32	Sunny	26	0	0	20.9
	24-Oct-19	14:48	Sunny	26	0	0	20.9
	24-Oct-19	15:10	Sunny	26	0	0	20.9
	25-Oct-19	8:25	Sunny	26	0	0	20.9
	25-Oct-19	13:19	Sunny	26	0	0	20.9
	25-Oct-19	8:49	Sunny	26	0	0	20.9
	25-Oct-19	9:12	Sunny	26	0	0	20.9
	25-Oct-19	9:28	Sunny	26	0	0	20.9
	26-Oct-19	8:32	Sunny	26	0	0	20.9
	26-Oct-19	13:16	Sunny	26	0	0	20.9
	26-Oct-19	13:30	Sunny	26	0	0	20.9
	26-Oct-19	13:48	Sunny	26	0	0	20.9
	26-Oct-19	14:05	Sunny	26	0	0	20.9
	28-Oct-19	8:42	Sunny	25	0	0	20.9
	28-Oct-19	14:01	Sunny	25	0	0	20.9
	28-Oct-19	9:15	Sunny	25	0	0	20.9
	28-Oct-19	9:32	Sunny	25	0	0	20.9
	28-Oct-19	9:50	Sunny	25	0	0	20.9
	29-Oct-19	8:22	Sunny	23	0	0	20.9
	29-Oct-19	13:32	Sunny	23	0	0	20.9
	29-Oct-19	13:53	Sunny	23	0	0	20.9
	29-Oct-19	14:19	Sunny	23	0	0	20.9
	29-Oct-19	14:32	Sunny	23	0	0	20.9
	30-Oct-19	9:01	Sunny	24	0	0	20.9
	30-Oct-19	13:22	Sunny	24	0	0	20.9
	30-Oct-19	9:32	Sunny	24	0	0	20.9
	30-Oct-19	9:59	Sunny	24	0	0	20.9
	30-Oct-19	10:18	Sunny	24	0	0	20.9
31-Oct-19	8:28	Sunny	25	0	0	20.9	
31-Oct-19	13:22	Sunny	25	0	0	20.9	
31-Oct-19	13:46	Sunny	25	0	0	20.9	
31-Oct-19	14:05	Sunny	25	0	0	20.9	
31-Oct-19	14:21	Sunny	25	0	0	20.9	

APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

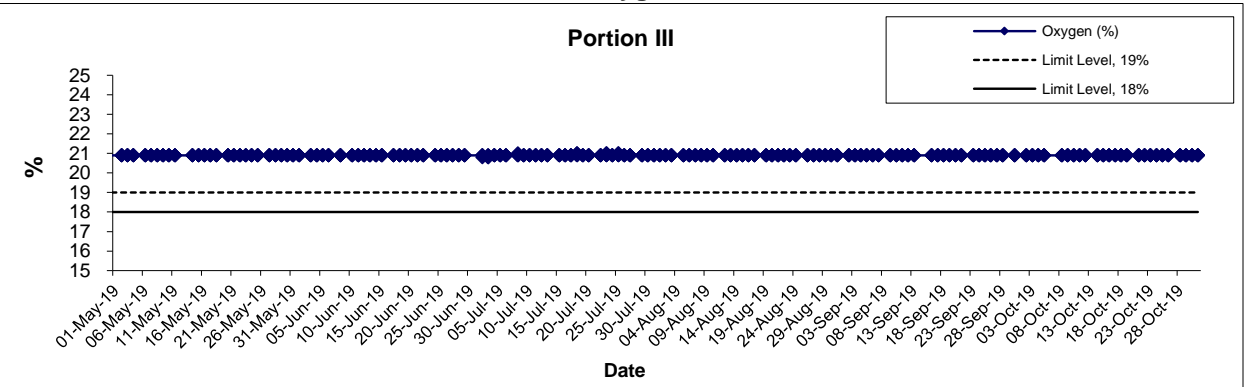
Methane



Carbon Dioxide



Oxygen



Agreement No. CE 59/2015 (EP) Environmental Test for Teung Kan O - Larin Tunnel – Design and Construction	Scale	Project	
	Date	Appendix	
	N.T.S	No. MA16034	
	Oct-19	R	

**APPENDIX T
CULTURAL HERITAGE MONITORING
RESULTS**

Appendix T – Cultural Heritage Monitoring Results

Date	Tilting				Settlement (mm)			Vibration (mm/s)		
	THT-TM-01	THT-TM-02	THT-TM-03	THT-TM-04	THT-BSP-1	THT-BSP-2	THT-BSP-3	Measurement Direction		
								Tran	Vertical	Longitudinal
2-Oct-19	1 : 11841	-1 : 89996	1 : 3082	-1 : 12857	+4	Stop monitoring	Stop monitoring	0.126	0.118	0.095
3-Oct-19	1 : 10975	-1 : 56248	1 : 3435	-1 : 17308	+2	Stop monitoring	Stop monitoring	0.126	0.118	0.095
4-Oct-19	1 : 17306	1 : 449981	1 : 4455	-1 : 56249	+2	Stop monitoring	Stop monitoring	0.126	0.118	0.095
5-Oct-19	1 : 40906	-1 : 10975	1 : 5844	1 : 34615	No Data	Stop monitoring	Stop monitoring	0.166	0.134	0.110
8-Oct-19	1 : 26469	-1 : 12857	1 : 6923	1 : 18000	+2	Stop monitoring	Stop monitoring	0.158	0.118	0.102
9-Oct-19	1 : 89993	-1 : 26469	1 : 10227	1 : 14516	+3	Stop monitoring	Stop monitoring	0.142	0.118	0.102
10-Oct-19	1 : 40906	-1 : 32142	1 : 8490	1 : 28125	+2	Stop monitoring	Stop monitoring	0.142	0.126	0.095
11-Oct-19	1 : 19564	-1 : 89996	1 : 6923	1 : 20454	+2	Stop monitoring	Stop monitoring	0.142	0.142	0.102
12-Oct-19	1 : 26469	1 : 23683	1 : 7258	1 : 14516	+2	Stop monitoring	Stop monitoring	0.142	0.150	0.142
14-Oct-19	1 : 15516	1 : 20454	1 : 5844	1 : 10465	+2	Stop monitoring	Stop monitoring	0.126	0.126	0.087
15-Oct-19	1 : 11841	1 : 64283	1 : 6618	1 : 8654	+2	Stop monitoring	Stop monitoring	0.134	0.166	0.102
16-Oct-19	1 : 10227	1 : 28124	1 : 5625	1 : 11250	+2	Stop monitoring	Stop monitoring	0.158	0.134	0.102
17-Oct-19	1 : 15516	1 : 112495	1 : 7258	1 : 14516	+5	Stop monitoring	Stop monitoring	0.126	0.236	0.118
18-Oct-19	1 : 26469	-1 : 56248	1 : 9000	1 : 23684	+4	Stop monitoring	Stop monitoring	0.142	0.197	0.095
19-Oct-19	1 : 89993	1 : 449981	1 : 7627	1 : 18000	+4	Stop monitoring	Stop monitoring	0.142	0.110	0.110

Date	Tilting				Settlement (mm)			Vibration (mm/s)		
	THT-TM-01	THT-TM-02	THT-TM-03	THT-TM-04	THT-BSP-1	THT-BSP-2	THT-BSP-3	Measurement Direction		
								Tran	Vertical	Longitudinal
21-Oct-19	1 : 15516	-1 : 89996	1 : 6081	1 : 12162	+2	Stop monitoring	Stop monitoring	0.142	0.118	0.087
22-Oct-19	1 : 19564	1 : 64283	1 : 5625	1 : 9783	+4	Stop monitoring	Stop monitoring	0.126	0.102	0.102
23-Oct-19	1 : 12856	1 : 449981	1 : 5056	1 : 13235	+1	Stop monitoring	Stop monitoring	0.118	0.126	0.087
24-Oct-19	1 : 19564	1 : 44998	1 : 5844	1 : 13235	+3	Stop monitoring	Stop monitoring	0.126	0.150	0.110
25-Oct-19	1 : 12856	1 : 34614	1 : 6081	1 : 9783	+2	Stop monitoring	Stop monitoring	0.142	0.118	0.102
26-Oct-19	1 : 17306	-1 : 56248	1 : 6618	1 : 9184	+4	Stop monitoring	Stop monitoring	0.126	0.126	0.102
28-Oct-19	1 : 19564	1 : 44998	1 : 6338	1 : 11250	+4	Stop monitoring	Stop monitoring	0.134	0.118	0.095
29-Oct-19	1 : 10975	-1 : 89996	1 : 6081	1 : 11250	+3	Stop monitoring	Stop monitoring	0.370	0.402	0.102
30-Oct-19	1 : 33795	1 : 34614	1 : 6923	1 : 14516	+5	Stop monitoring	Stop monitoring	0.134	0.166	0.102
31-Oct-19	1 : 26469	1 : 112495	1 : 5844	1 : 12162	+4	Stop monitoring	Stop monitoring	0.134	0.142	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**

Construction Phase Daily Piezometer Monitoring Results in October 2019

Date	Daily Piezometer Monitoring		
	38568-LDH1 (P)	TKO-LBH907	
2-Oct-19	n.a.	n.a.	
3-Oct-19	n.a.		
4-Oct-19	n.a.		
5-Oct-19	n.a.		
8-Oct-19	n.a.		
9-Oct-19	n.a.		
10-Oct-19	87.65		
11-Oct-19	n.a.		
12-Oct-19	n.a.		
14-Oct-19	n.a.		
15-Oct-19	n.a.		
16-Oct-19	n.a.		
17-Oct-19	n.a.		
18-Oct-19	n.a.		
19-Oct-19	n.a.		
20-Oct-19	n.a.		
21-Oct-19	n.a.		
23-Oct-19	n.a.		
24-Oct-19	n.a.		
25-Oct-19	n.a.		
26-Oct-19	n.a.		
28-Oct-19	n.a.		
30-Oct-19	n.a.		
Action Level (mPD)	+74.65		+17.59

Note:

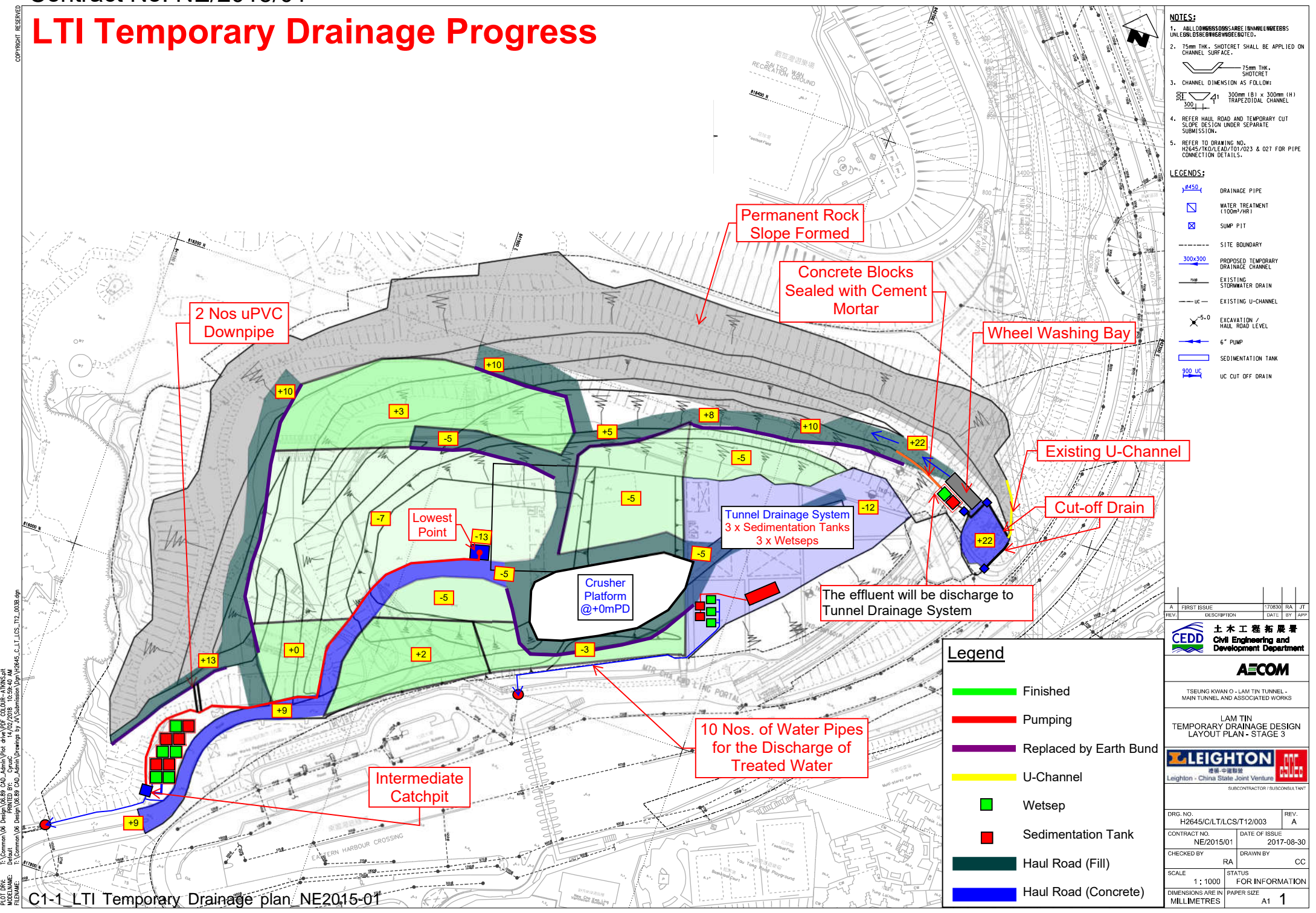
Bold Italic with underline means Action Level exceedance

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**

LTI Temporary Drainage Progress

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- NOTES:**
1. ALL DIMENSIONS ARE LARGE 1000 MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. 75mm THK. SHOTCRETE SHALL BE APPLIED ON CHANNEL SURFACE.
 3. CHANNEL DIMENSION AS FOLLOW:

	75mm THK. SHOTCRETE 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/T/0/LEAD/T01/02/3 & 027 FOR PIPE CONNECTION DETAILS.

- LEGENDS:**
- 450 Drainage Pipe
 - WATER TREATMENT (100m³/HR)
 - SUMP PIT
 - SITE BOUNDARY
 - PROPOSED TEMPORARY DRAINAGE CHANNEL
 - EXISTING STORMWATER DRAIN
 - EXISTING U-CHANNEL
 - EXCAVATION / HAUL ROAD LEVEL
 - 6" PUMP
 - SEDIMENTATION TANK
 - UC CUT OFF DRAIN

REV.	DESCRIPTION	DATE	BY	APP.
A	FIRST ISSUE	17/08/30	RA	JT

土木工程師 土木工程師
CEDD 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

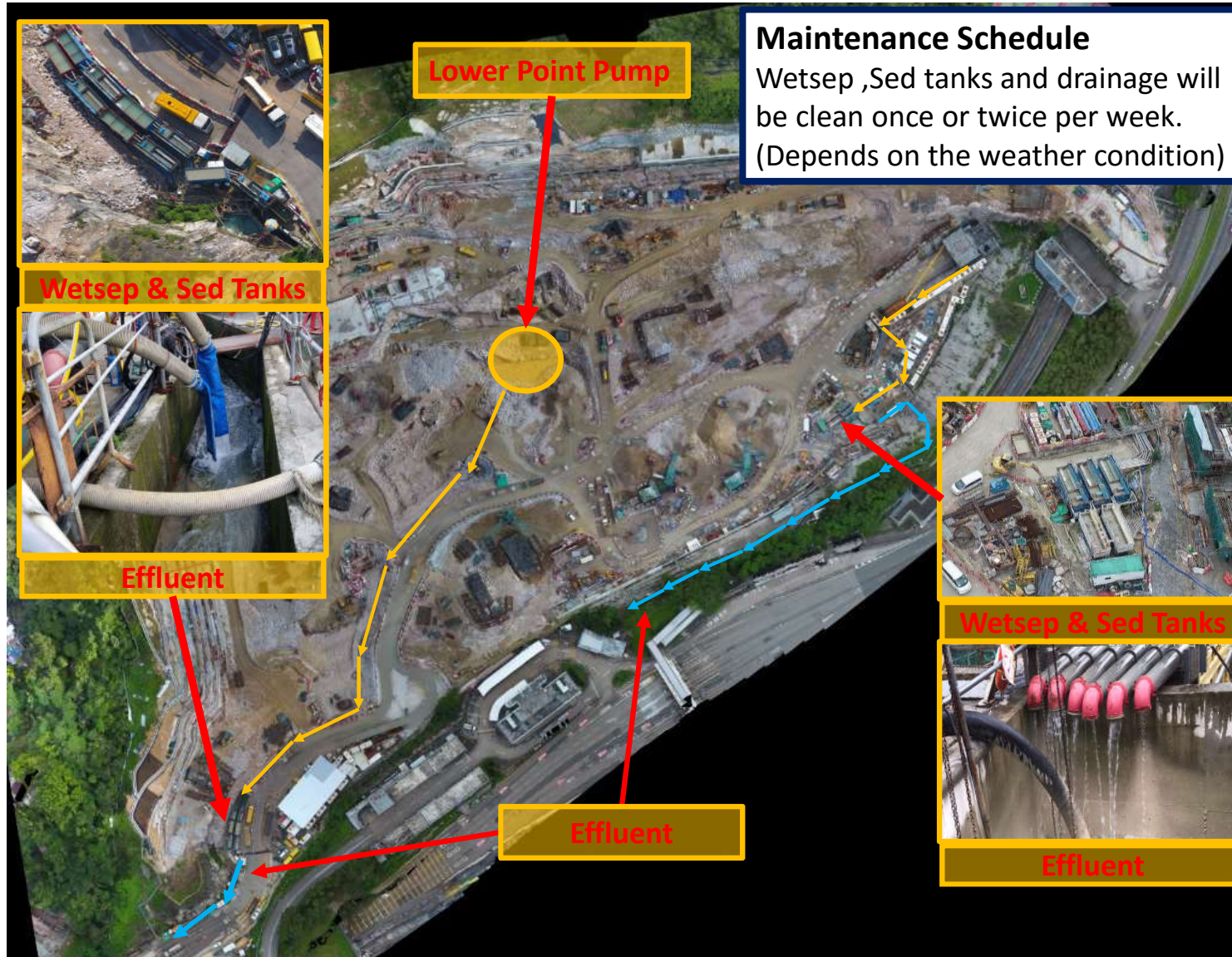
LEIGHTON **CEDD**
 Leighton - China State Joint Ventures
 SUBCONTRACTOR / SUBCONSULTANT

DRG. NO. H2645/C/LT/CS/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 1

Legend

- Finished
- Pumping
- Replaced by Earth Bund
- U-Channel
- Wetsep
- Sedimentation Tank
- Haul Road (Fill)
- Haul Road (Concrete)

T:\Common\06 Design\06_09 CAD_Admin\Plot_dwg\PDF_COLOUR_A1M10.ctb
 T:\Common\06 Design\06_09 CAD_Admin\Drawings by A\Submission\Draw\H2645_C.LT.LTCS.T12_00303.dwg
 PLOT DATE: 2017/08/30 10:00:00
 PLOT BY: [Name]
 PLOT SCALE: 1:1000



FOR CONSTRUCTION

ISSUE/REVISION

NO.	DATE	DESCRIPTION	BY	CHK
B	JUL 16	WORKING DRAWING	ALC	
A	OCT 15	TENDER ADDENDUM NO.1	CYKC	
-	AUG 15	TENDER DRAWING	CYKC	

STATUS
WORKING DRAWING

SCALE
1:500
DIMENSION UNIT
METRES

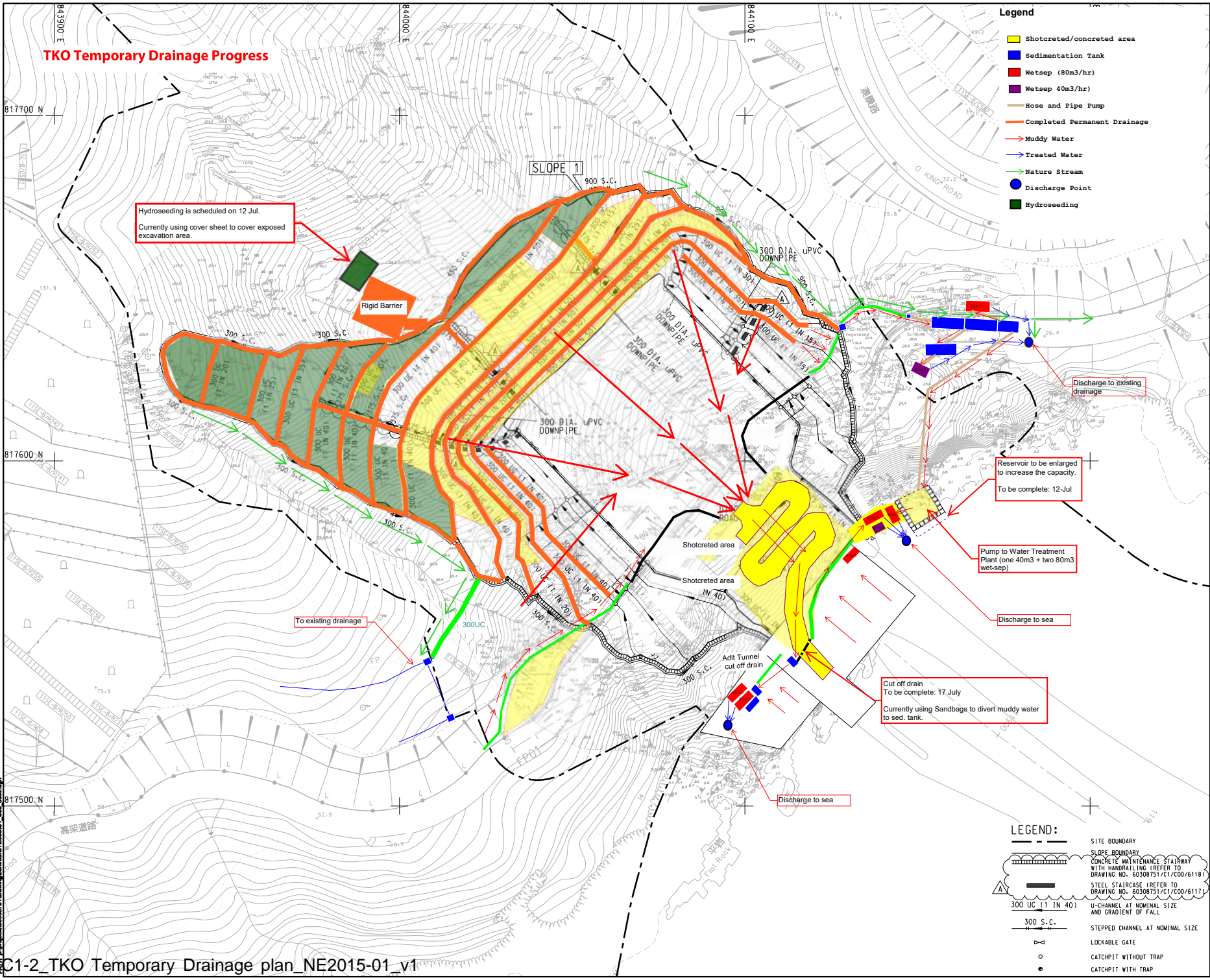
KEY PLAN

PROJECT NO. 60308751
CONTRACT NO. NE/2015/01

SHEET TITLE
TSEUNG KWAN O PORTAL SITE FORMATION DRAINAGE LAYOUT PLAN

SHEET NUMBER
60308751/C1/C00/6092B 3

Project Management Initials: Designer: BMS Checked: CHC Approved: CHN
 ISO 9001:2015 Approved: CHN
 2015/08/20
 60308751/C1/C00/6092B



- Legend**
- Shotcreted/concreted area
 - Sedimentation Tank
 - Wetsep (80m³/hr)
 - Wetsep 40m³/hr
 - Hose and Pipe Pump
 - Completed Permanent Drainage
 - Muddy Water
 - Treated Water
 - Nature Stream
 - Discharge Point
 - Hydroseeding

- LEGEND:**
- SITE BOUNDARY
 - SLOPE BOUNDARY
 - CONCRETE MAINTENANCE STAIRWAY WITH HANDRAILING (REFER TO DRAWING NO. 60308751/C1/C00/6118)
 - STEEL STAIRCASE (REFER TO DRAWING NO. 60308751/C1/C00/6117)
 - U-CHANNEL AT NOMINAL SIZE AND GRADIENT OF FALL
 - STEPPED CHANNEL AT NOMINAL SIZE
 - LOCKABLE GATE
 - CATCHPIT WITHOUT TRAP
 - CATCHPIT WITH TRAP

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

Wetsep

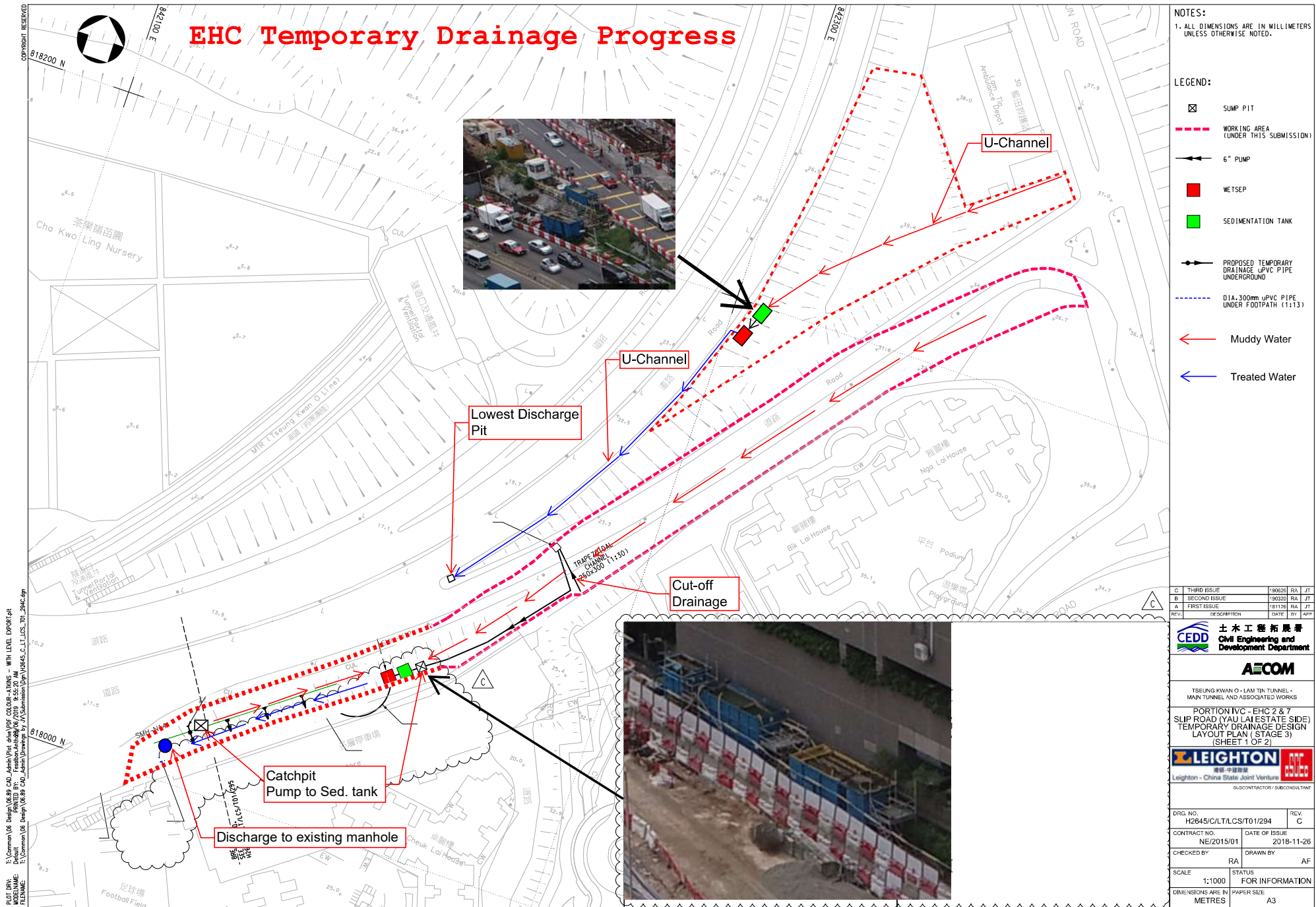
Effluent

Extension of Sed tanks

Contract Number NE/2015/01

2019年6月28日
新界

The image is an aerial photograph of a construction site, likely a dam or reservoir project. The central feature is a large, curved concrete structure with multiple levels and openings. Surrounding this are various construction elements and infrastructure. Red arrows point from callout boxes to specific areas: one points to a blue tarp-covered area in the upper left; another points to a worker in a yellow vest clearing a site; a third points to a large concrete structure labeled 'Sed tanks'; a fourth points to a worker near a concrete structure labeled 'Extension of Sed tanks'; a fifth points to a blue truck labeled 'Wetsep'; a sixth points to a concrete structure labeled 'Effluent'; and a seventh points to a concrete structure labeled 'Extension of Sed tanks'. A text box in the upper right provides a maintenance schedule. The text 'Contract Number NE/2015/01' is overlaid in the center. A date stamp '2019年6月28日 新界' is visible in the top left callout box.



C	THIRD ISSUE	190626	RA	JT
B	SECOND ISSUE	190320	RA	JT
A	FIRST ISSUE	181126	RA	JT
REV.	DESCRIPTION	DATE	BY	APP

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

AECOM

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

PORTION IVC - EHC 2 & 7
SLIP ROAD (YAU LAI ESTATE SIDE)
TEMPORARY DRAINAGE DESIGN LAYOUT PLAN (STAGE 3)
(SHEET 1 OF 2)

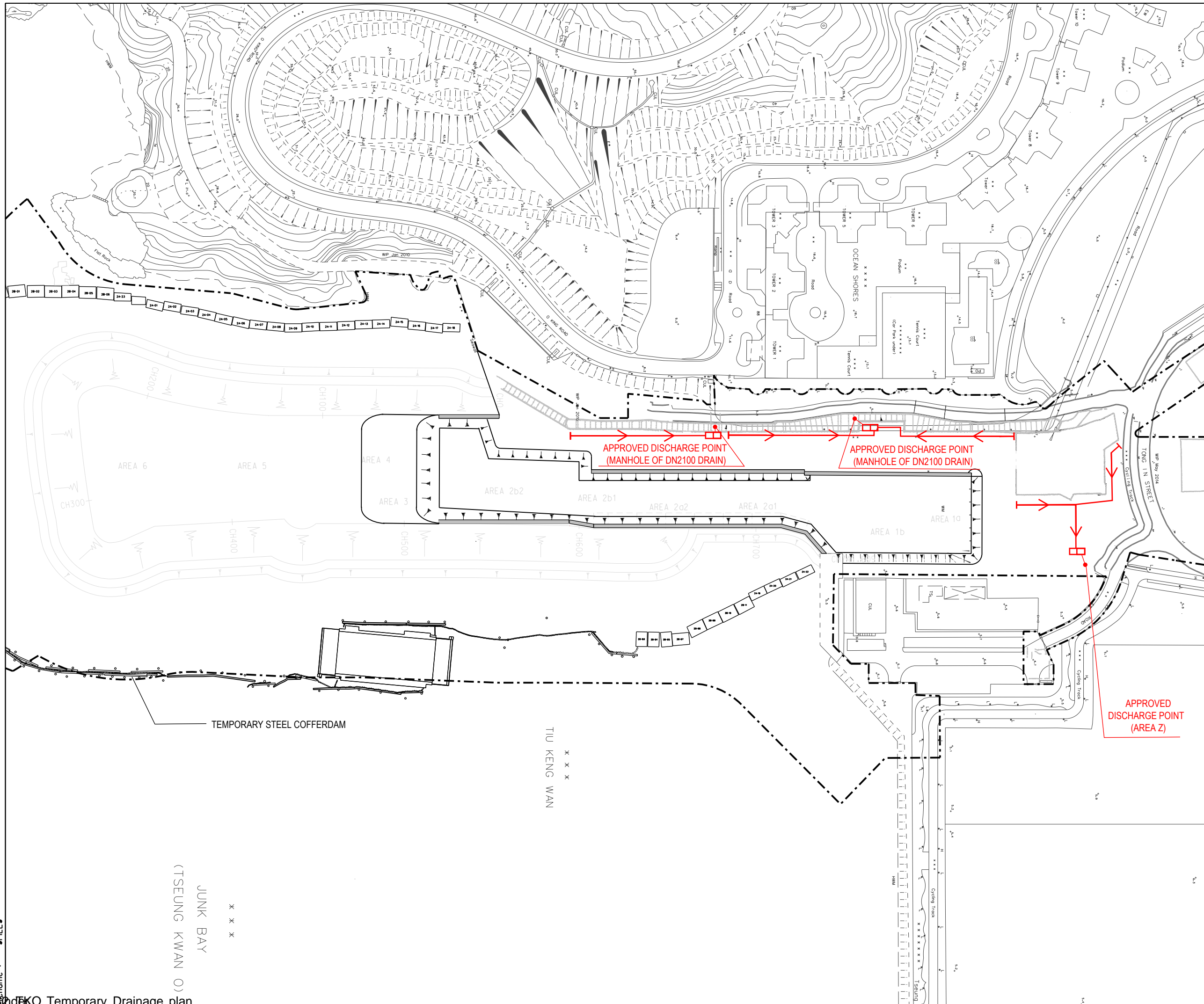
LEIGHTON 中國建築
Leighton - China State Joint Venture

DRG. NO. H2645/C/LT/LCS/T01/294

CONTRACT NO. NE/2015/01 DATE OF ISSUE 2018-11-26

CHECKED BY RA DRAWN BY AF

SCALE 1:1000 STATUS FOR INFORMATION
DIMENSIONS ARE IN METRES PAPER SIZE A3



LEGEND

- FLOW PATH
- SEDIMENTATION/ DESILTING TANK AND WETSEP (80m3/hr)
- TEMPORARY CONCRETE BLOCK WALL

Temporary Works Design Drawings
in compliance with Contract No. NE/2015/02

09/05/2019

Chengrui Hu MSc, C.Eng, MICE, MHKIE, RPE Date
Independent Checking Engineer
on behalf of: Hewson Consulting Limited,
Unit 1101, 11/F, 9 Chong Yip Street,
Kwun Tong, Kowloon, Hong Kong

Rev.	Description	By	Date

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

Supervisor AECOM Asia Co. Ltd.

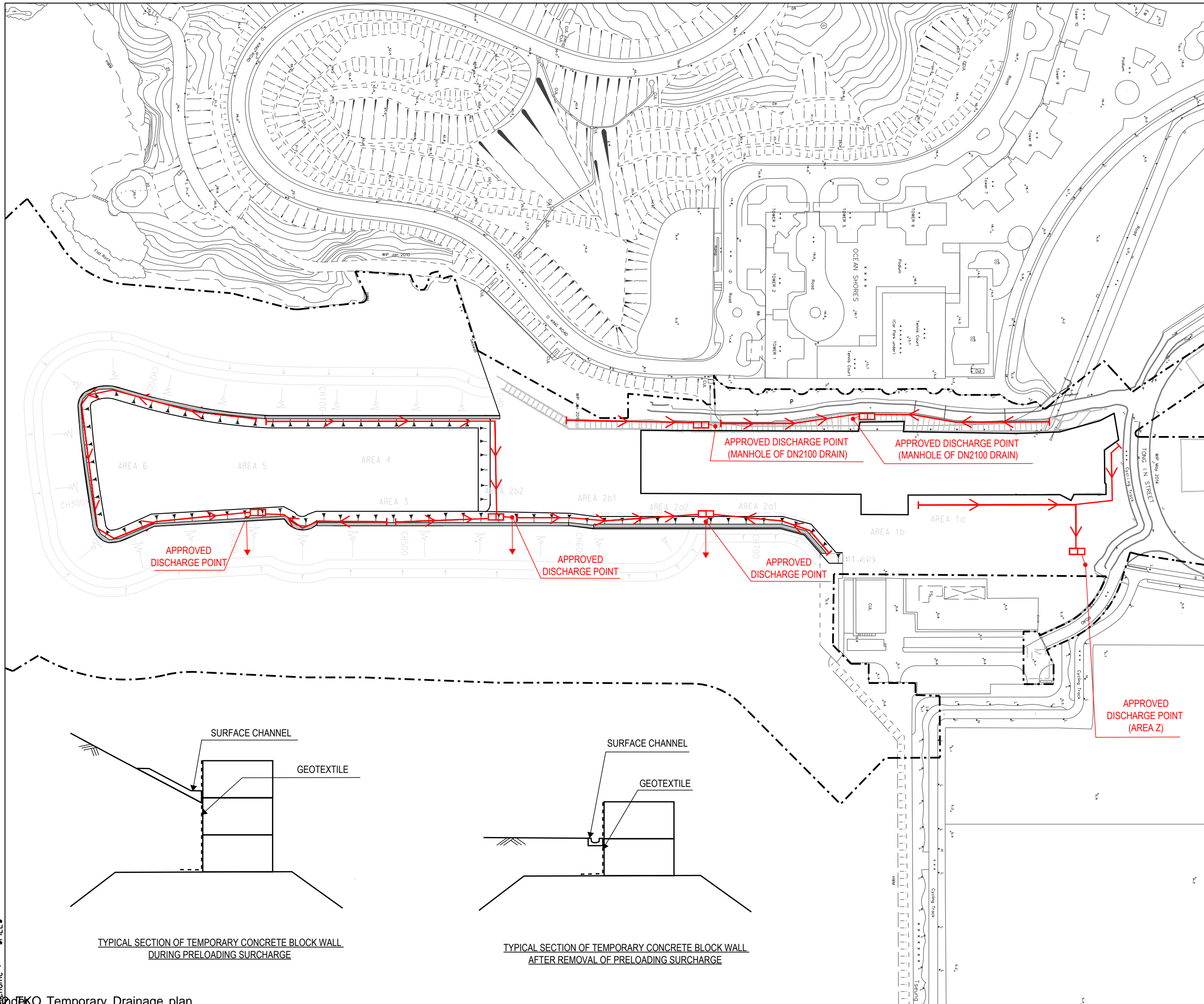
Contractor 中國路橋
CRBC-Build King Joint Venture

Project title
工程名稱
Contract No. NE/2015/02
Tseung Kwan O - Lam Tin Tunnel
Road P2 and Associated Works

Drawing title
圖紙名稱
TEMPORARY DRAINAGE MANAGEMENT PLAN
AT PORTION V, VI, IX AND AREA Z PRIOR TO
REMOVAL OF TEMPORARY STEEL COFFERDAM

Drawing no. 圖紙編號	NE/2015/02/SK/0321	Rev. 修訂	-
Drawn By 繪圖	AL	Checked By 覆核	Approved By 批准人
Scale 比例	1:600 @ A1	Status 階段	

Printed by : \$DATE\$
Filename : \$FILE\$



- LEGEND**
- FLOW PATH
 - SEDIMENTATION/ DESILTING TANK AND WETSEP (80m3/hr)
 - TEMPORARY CONCRETE BLOCK WALL

Temporary Works Design Drawings
in compliance with Contract No. NE/2015/02

22/05/2019

Chengrui HU MSc, CEng, MICE, MHKIE, RPE Date
Independent Checking Engineer
on behalf of: Hewson Consulting Limited,
Unit 1101, 11/F, 9 Chong Yip Street,
Kwun Tong, Kowloon, Hong Kong

Rev.	Description	By	Date

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

Supervisor
AECOM AECOM Asia Co. Ltd.

Contractor
CRBC 中國路橋 BuildKing
CRBC-Build King Joint Venture

Project title
Contract No. NE/2015/02
Tseung Kwan O - Lam Tin Tunnel
Road P2 and Associated Works

Drawing title
TEMPORARY DRAINAGE MANAGEMENT PLAN
AT PORTION V, VI, IX AND AREA Z AFTER THE
REMOVAL OF TEMPORARY STEEL COFFERDAM

Drawing no. 圖紙編號	NE/2015/02/SK/1321	Rev. 修訂	-
Drawn By 繪圖	AL	Checked By 覆核	Approved By 批准人
Scale 比例	1:600 @ A1	Status 階段	7

Printed by : \$DATE\$
Filename : \$FILE\$

TYPICAL SECTION OF TEMPORARY CONCRETE BLOCK WALL
DURING PRELOADING SURCHARGE

TYPICAL SECTION OF TEMPORARY CONCRETE BLOCK WALL
AFTER REMOVAL OF PRELOADING SURCHARGE

Surface Runoff Assessment for Portion IX (inc. surcharge area)	
Portion IX Surface area :	19683.57 m ²
Design rainfall Assuming 1 hour heavy rainfall has occurred :	70 mm/h
Design Peak Runoff (Q_p):	$Q_p = C i A$ $= 0.1 \times 70 \times 19683.5$ $= 137.78499 \text{ m}^3/\text{h}$
Water Treatment Facility Capacity of water treatment plant	= 80 m ³ /h
Number of water treatment plant	= 138 / 80
	= 1.72

Thus, 2 no of water treatment plant are required. In addition, 3 others are provided on site for emergency use



Contract No.: NE/2017/02

**Contract Title: Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and
Associated Works**

Flooding Mitigation Plan

Treatment facility







Bunding

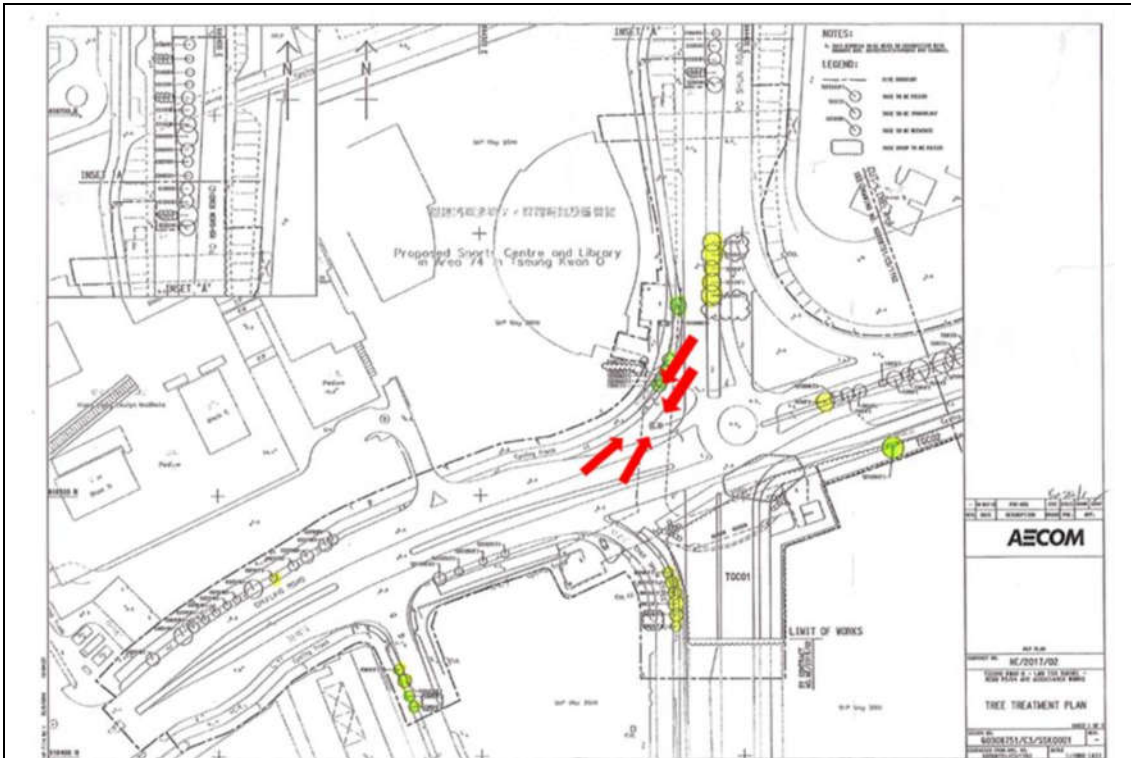


Bunding is provided to prevent the surface runoff.



Surface runoff collection





Height difference between the road and site area to form a natural flow. Sump pit was provided for wastewater collection.



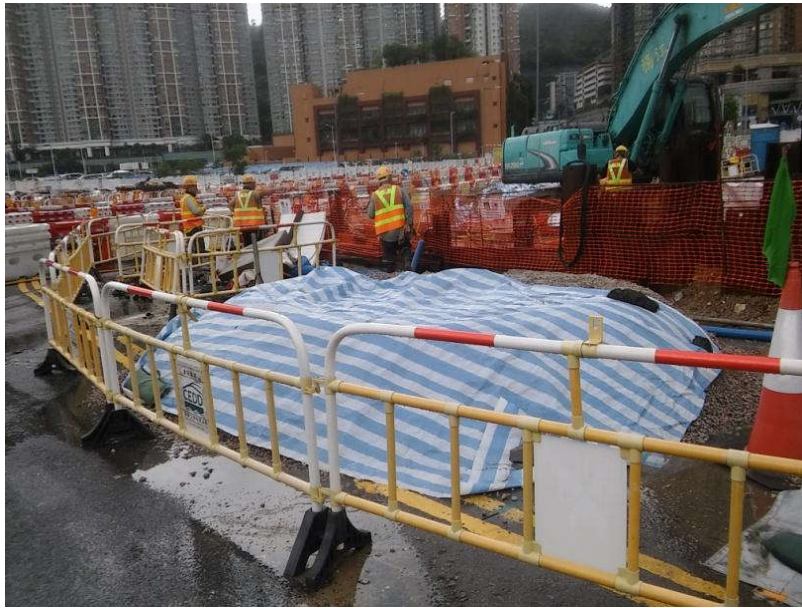
Gully Protection



Gully were protected and covered by geotextile.



Stockpile Cover





Stockpile Should be proper cover with tarpaulin.

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	5.50	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.



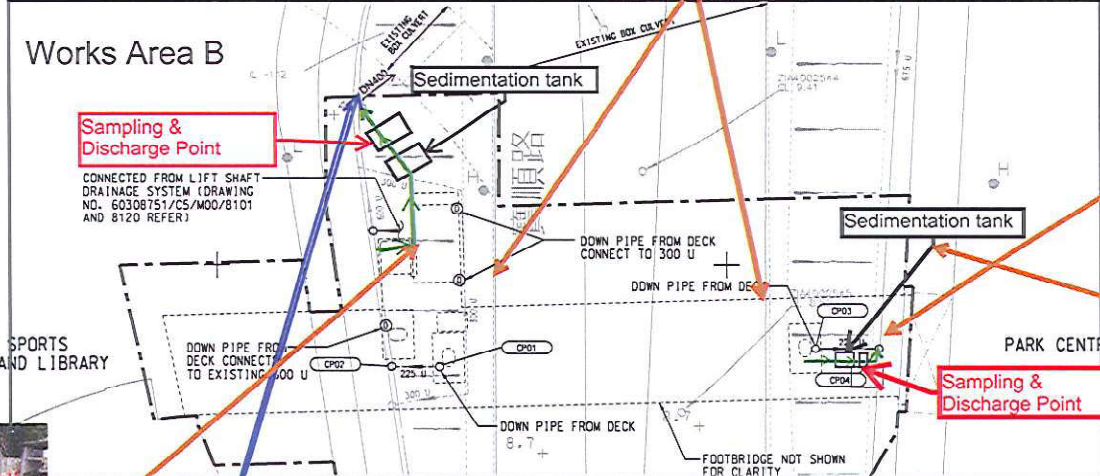
Exposed slope is covered by taupaulin



Sampling & Discharge Point



Manhole Inspection for Silt measurement, we have regular cleaning the channel weekly or in an emergency



Sampling & Discharge Point

CONNECTED FROM LIFT SHAFT DRAINAGE SYSTEM (DRAWING NO. 60308751/CS/M00/8101 AND 8120 REFER)

AREA 74 SPORTS CENTRE AND LIBRARY

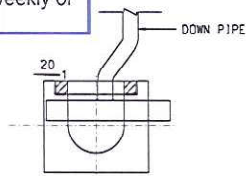
PARK CENTRAL

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 ID culvert



DETAILS CONNECTION OF DOWNPIPE TO U-CHANNEL WITH GRATING



PROJECT
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL
NORTHERN FOOTBRIDGE

CLIENT
CEDD
Civil Engineering and
Development Department

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK
-	AUG 16	TENDER DRAWING	AMH

STATUS

SCALE A1: 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

俊和-上隧-中冶聯營
CW - STEC - CMGC JV

